# PROPOSED PLAN
## INLAND AREA, FORMER NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD
### Installation Restoration Site 22 Main Magazine Area

Concord, California April 2010

# 1.0 INTRODUCTION

The Department of the Navy (Navy) encourages the public to comment on this ***Proposed Plan*** for remediation of ***Installation Restoration (IR)*** Site 22, Main Magazine Area, in the Inland Area at the former Naval Weapons Station Seal Beach Detachment Concord (NAVWPNSTA Concord), located in Concord, California.

This Proposed Plan presents the Navy's preferred remedial alternative to address arsenic contamination in surface soil that poses an unacceptable risk to human health (residential use only) and endrin contamination in surface soil that poses unacceptable risk to wildlife at Site 22. The Navy proposes to respond to arsenic and endrin contamination concerns at Site 22 by:

- Using ***land use controls (LUCs)*** to limit exposure to arsenic-contaminated soil.
- Excavating surface soil that contains endrin at concentrations above ***remedial goals.***

The Proposed Plan summarizes the site history, explains the scope of the response action, evaluates alternatives for addressing remediation of Site 22, identifies the Navy's ***preferred alternative***, and explains the basis for the selection. In consultation with the regulatory agencies, the Navy may modify or select another response action based on new information or public comments. Therefore, the public is encouraged to review all of the alternatives presented in the Proposed Plan. The Navy will review and consider all comments received before final selection of the remedial action.

The Navy will provide responses to comments received on the Proposed Plan in a ***Responsiveness Summary***. The Responsiveness Summary and the Navy's selected remedy will be documented in a ***Record of Decision (ROD)*** for Site 22.

## About this Proposed Plan

As the lead agency responsible for investigation and remediation of contamination resulting from historical Navy operations at the former NAVWPNSTA Concord, the Navy has prepared this Proposed Plan to provide an opportunity for the community to participate in the Navy's decision-making and remedy selection process for Site 22. The Navy prepared this Proposed Plan pursuant to the requirements of Section (§) 117(a) of the ***Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA),*** as amended by the ***Superfund Amendments and Reauthorization Act (SARA)*** and § 300.430(f)(2) of the ***National Oil and Hazardous Substances Pollution Contingency Plan (NCP).*** CERCLA and the NCP establish a comprehensive, statutory framework for identifying, investigating, and cleaning up releases of hazardous substances to the environment. Figure 1 on page 2 illustrates the status of Site 22 in the CERCLA process.

This Proposed Plan summarizes information that can be found in greater detail in the ***Remedial Investigation (RI)*** *for Installation Restoration Site 22, Main Magazine Area, Former Naval Weapons Station Concord,* Concord, California, dated February 20, 2007 and the ***Feasibility Study*** *for Installation Restoration Site 22, Main Magazine Area, Former Naval Weapons Station Concord,* Concord, California, dated November 2008, along with other

## Proposed Plan Public Meeting

**April 14, 2010**
**6:00 – 8:00 PM**

Clyde Community Center
109 Wellington Avenue
Clyde, CA 94520

This public meeting is an opportunity for the community to hear about the Navy's Proposed Plan and to provide formal oral and written comments.

* Words in bold italic type are defined in the glossary on page 13

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## Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Process

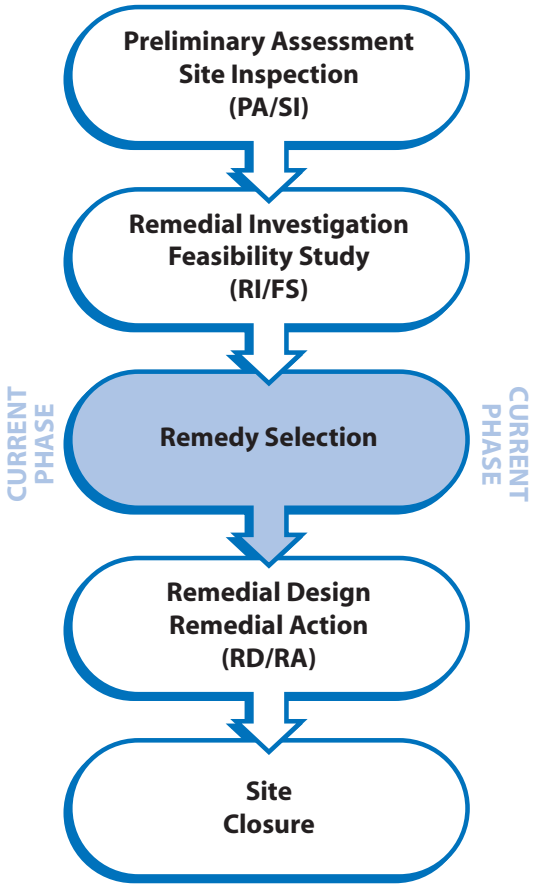


Figure 1- CERCLA Process

documents in the administrative record file for Site 22. The administrative record contains the reports and historical documents used to select remedial alternatives. The Navy encourages the public to review these documents to gain an understanding of Site 22 and the environmental assessments and investigations that have been conducted. The documents are available for public review at the locations listed on page 14.

## 2.0 SITE BACKGROUND

The former NAVWPNSTA Concord was a major naval munitions transport and shipment facility located in the north-central portion of Contra Costa County, California, about 30 miles northeast of San Francisco (Figure 2). The facility included two principal areas: the Inland Area and the Tidal Area. As a result of workload and budget reductions, the former NAVWPNSTA Concord was placed into a reduced operational status in October 1999. Port operations in the Tidal Area were assumed by the Department of the Army's Surface Deployment and Distribution Command under a use permit from the Navy.

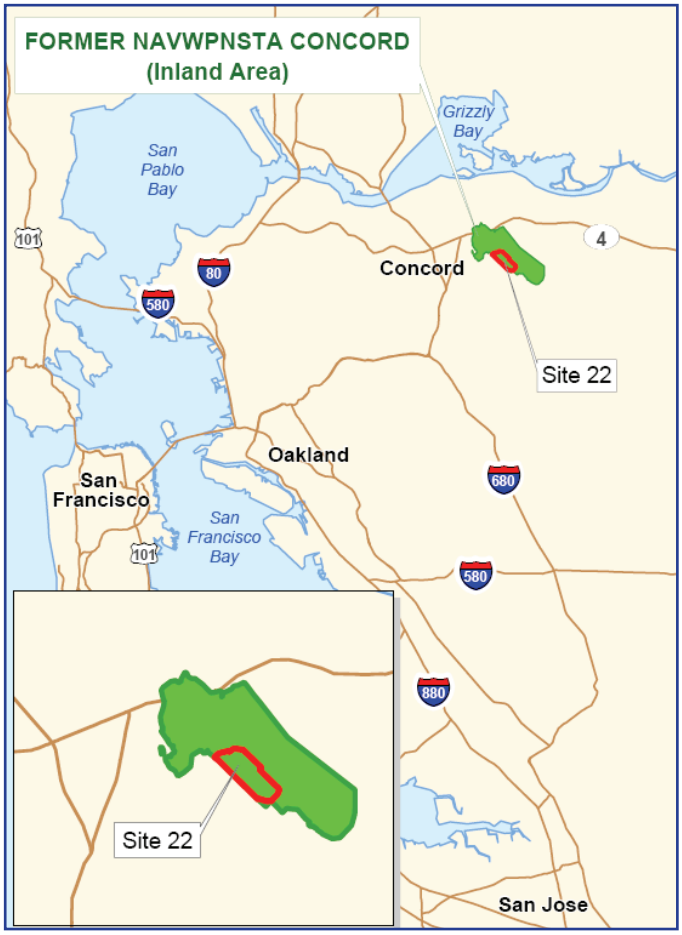


Figure 2. Site Location

In 2005, the Defense Base Realignment and Closure (BRAC) Commission recommended the closure of the Inland Area except for such property and facilities as necessary to support Army operations in the Tidal Area. The Inland Area was declared surplus in March 2007 and was operationally closed in September 2008.

Site 22 consists of 531 acres and is located in the southwestern portion of the Inland Area. The site includes 14 buildings and 116 ammunition magazines connected by a series of parallel roads and railroad spurs and surrounded by open grassland (Figure 3). These magazines and buildings were constructed between 1945 and 1953 on agricultural land to support wartime activities. The Navy stored ammunition and explosives, including missiles, fuzes, detonation materials, and black powder, in the magazines until early 2000. The site is bordered by Concord High School and Dana Estates, a residential area, to the southwest. Two chain-link fences separate the residential area from Site 22; the area between the fences is referred to as the "Double Fence Line Area."

Site 22 includes three ***solid waste management units (SWMUs)***: 33, 52, and 53:

- SWMU 33 is a former underground storage tank (UST) that was removed in 1991 and is associated with Building 6LC98 and the steam boiler that provided heating in the magazine building.

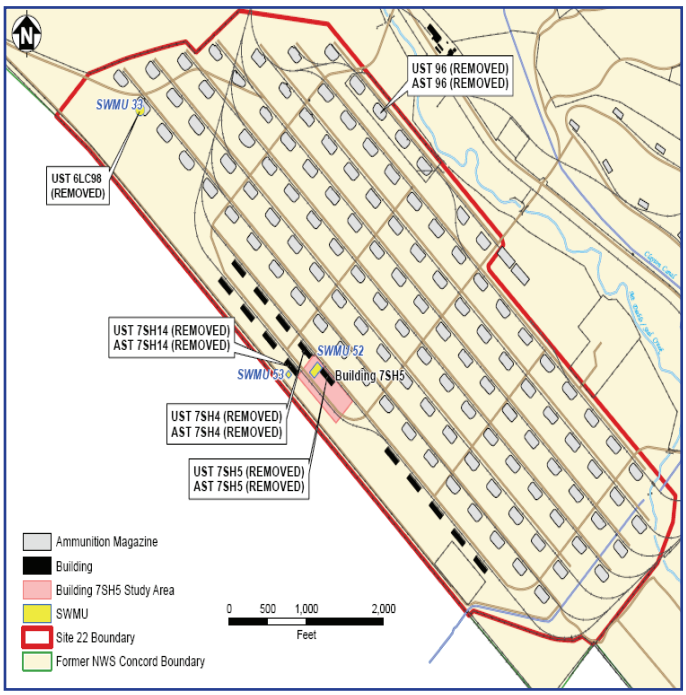


**Figure 3. Site Layout**

- SWMU 52 is composed of a septic tank and drain field that was associated with Building 7SH5, a 1,000-gallon capacity aboveground storage tank (AST), and an UST. The septic tank and drain field were abandoned in 2005. Building 7SH5 was constructed in 1944 as a storehouse for inert equipment. In 1957, the building was converted to test missile components. The AST was cleaned and removed in 2004 and the UST was removed in 1997.

- SWMU 53 includes Building 7SH14, which contains a sink and sanitary sewer system, UST, and a 1,000-gallon capacity AST. The sanitary system drained to the inlet manhole of a septic tank that was abandoned in 2005. The UST was removed in 1997 and the AST was cleaned and removed in 2004.

## Previous Investigations

Investigations have been ongoing at the former NAVWPNSTA Concord since 1983. The initial investigations were part of base-wide studies to differentiate sites posing little or no threat to human health and the environment from those sites that warranted further investigation. Follow-on investigations (between 1995 and 2008) were more site specific and delineated the nature and extent of contamination at Site 22. A comprehensive list of investigations at Site 22 is presented in the box on page 4.

## Initial Studies

Site 22 initially consisted of Building 7SH5, where missile components were tested, and was evaluated in the 1983 Initial Assessment Study and the 1992 Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) for Concord Naval Weapons Station. The RFA recommended further investigation of Building 7SH5. A Site Inspection was conducted to collect and analyze soil samples for the presence of metals, ***volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs),*** organotins, and ***total petroleum hydrocarbons (TPH).*** The sampling results showed arsenic at concentrations that exceeded the U.S. Environmental Protection Agency (EPA) Region 9 ***preliminary remediation goal (PRG)*** for residential use.

Other concerns within the current Site 22 area included SWMUS 33, 52, and 53. An investigation of the former 1,000-gallon diesel USTs near Building 7SH5 and at SWMU 33 was performed in 1993. The

## PREVIOUS INVESTIGATIONS AT SITE 22

- Initial Assessment Study (1983)
- ***Resource Conservation and Recovery Act (RCRA)*** Facility Assessment (RFA) (1991–1992)
- UST Investigation (1993)
- RFA Confirmation Study (1995-1997)
- Site Inspection at Building 7SH5 (1992)
- Phase I Remedial Investigation for Building 7SH5 Area (1995-1997)
- Phase II Remedial Investigation for Building 7SH5 Area Groundwater (1998)
- Supplemental Remedial Investigation for Building 7SH5 Area (2003)
- Groundwater Sampling for Perchlorate (2003)
- Health Consultation by the Agency for Toxic Substances and Disease Registry (2005)
- Remedial Investigation for the Expanded 531-acre Site 22 Magazine Area (2005-2007)
- Supplemental Pesticide Investigations (2007-2008)
- Feasibility Study (2007-2008)

tanks were removed, and no further action was recommended for SWMU 33. An RFA confirmation study also investigated the septic tanks at Buildings 7SH5 and 7SH14. Based on the study, no further action was recommended for SWMUs 52 and 53.

## Remedial Investigations

The sampling results from the Site Inspection for Building 7SH5 indicated arsenic existed at concentrations greater than the EPA Region 9 residential PRGs. As a result, the site moved into the Remedial Investigation phase of the CERCLA process shown on Figure 1. RIs at Site 22 were conducted in phases. While the earlier RIs focused on Building 7SH5, investigations were later expanded to include the 531-acre Magazine Area and Double Fence Line Area. This is because elevated concentrations of arsenic were detected in surface soil in open grasslands around Building 7SH5 that did not appear to be associated with Building 7SH5. As such, the RI completed in 2007 focused on the expanded 531-acre site. The following is a chronology of the phased RIs:

- **First RI (Phase I): 1997**

The Navy collected soil and groundwater samples around Building 7SH5 during the Phase I RI to assess impacts of past activities at the site. Chlorinated VOCs and motor oil were detected in groundwater samples. Although arsenic in soil exceeded the EPA Region 9 PRG, further analysis suggested that it was not the result of activities at Building 7SH5.

- **Second RI (Phase II – Groundwater RI): 1998**

The Navy conducted a Phase II RI to evaluate the extent of chlorinated VOCs and TPH in groundwater and to delineate the source of contamination. Results of the sampling indicated no evidence of a contaminated groundwater plume.

- **Third RI (Supplemental RI): 2003**

Though the concentrations of arsenic found during the First RI were not attributed to Building 7SH5, the contaminant remained a concern. As such, the Navy conducted a Supplemental RI in 2003. The Supplemental RI indicated that concentrations of arsenic were elevated in surface soils collected from open grasslands and from ditches located within the site compared with arsenic concentrations near Building 7SH5. Arsenic concentrations also decreased with depth. These results indicated that the potential source of arsenic may be related to application of arsenic-containing herbicides to surface soils by the Navy or by previous landowners.

- **Fourth RI (Final RI for the Expanded 531-acre Site 22 Magazine Area) : 2007**

The Navy collected soil, groundwater, sediment, and plant and invertebrate tissue samples to evaluate the nature and extent of arsenic contamination at the expanded 531-acre Site 22. The Navy also evaluated the distribution of pesticides at the site. The results of the RI showed that arsenic was present in more than 400 acres of surface soil. The insecticide dieldrin was detected in one soil sample from the Magazine Area at a concentration that exceeded the EPA Region 9 PRG. This detection coincides with the location of endrin and is addressed in the preferred alternative.

# 3.0 SUMMARY OF SITE RISKS

In addition to delineating the nature and extent of contamination, the 2007 RI also assessed risks to human health and the environment. "Risk" is the likelihood or probability that a hazardous chemical, when released into the environment, will cause adverse effects on exposed humans or other organisms. A ***baseline human health risk assessment (BHHRA)*** and a ***screening-level ecological risk assessment (SLERA)*** were conducted to assess the risk. These assessments identified ***chemicals of concern (COC)***, which are chemicals that pose a potential risk to humans, plants, or animals.

## Human Health Risk Assessment

The Navy conducted a BHHRA to assess risk to potential human receptors from exposure to soil and groundwater at Site 22. This BHHRA considered the various ways humans might be exposed to chemicals of potential concern, including the possible chemical concentrations that could be encountered and the potential frequencies and durations of exposures. Exposure to ranchers, industrial workers, construction workers, and potential future residents was considered.

Risk calculations were also based on conservative assumptions to protect human health. "Conservative" means the assumption will tend to overestimate risk. The use of conservative assumptions results in remediation goals that are more protective of human health. Human health risk is classified as cancer (from exposure to carcinogens) or noncancer (from exposure to noncarcinogens). A ***hazard index (HI)*** of 1 or less is considered protective of noncancer health hazards. Cancer risk is generally expressed as a probability. For example, a cancer risk probability of 5 in 100,000 ($5 \times 10^{-5}$) indicates that out of 100,000 people, 5 cancer cases may occur as a result of exposure to contaminants. The Navy uses the federally established ***risk management range*** of $10^{-4}$ to $10^{-6}$ to evaluate site cancer risks. When the risk is above this range (above $10^{-4}$, in other words), action is generally warranted; when risk is within this range, site-specific factors are considered to determine whether action is required.

The BHHRA indicated arsenic in surface soil resulted in risk above the risk management range and a hazard index greater than 1 under a residential exposure scenario. However, risks were below or within the risk management range, and hazard indices were less than 1 for the rancher, industrial worker, and construction worker exposure scenarios.

## Screening-Level Ecological Risk Assessment

The Navy conducted a SLERA to assess risk to plants, invertebrates, birds, and mammals from exposure to soil and groundwater at Site 22. The screening-level approach used conservative assumptions and available scientific literature to evaluate ecological risk in accordance with EPA guidance. The SLERA concluded that the potential is limited for exposure to chemicals in surface soil at concentrations that would cause adverse effects at Site 22.

## Supplemental Pesticide Investigation

The Navy conducted a supplemental investigation in 2007 to evaluate the nature and extent of pesticides near Magazine 6PC-33. Surface soil samples were analyzed for organochlorine pesticides. Only endrin, a pesticide and insecticide commonly used for crops such as cotton, was retained as a chemical of ecological concern. Concentrations of endrin and its metabolites were shown to pose unacceptable risk to ***omnivorous*** birds (such as the American Robin) and omnivorous mammals (such as the western harvest mouse). Remedial action was recommended for endrin in surface soils from 0 to 0.5 feet below ground surface (bgs) within a 500-square-foot area (Figure 4).

## Feasibility Study

Based on the 2007 RI and the Supplemental Pesticide Investigation, the Navy proceeded with an FS to address potential risks to humans and wildlife

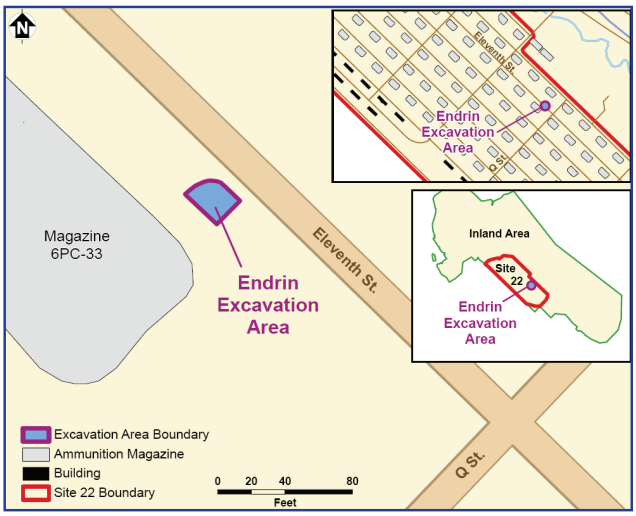


**Figure 4. Proposed Excavation Area**

associated with arsenic and endrin contaminated surface soil. The FS identified ***remedial action objectives (RAOs)*** and remedial alternatives for contaminated surface soil at Site 22. The remedial alternatives identified in the FS were evaluated against seven of the nine criteria required by CERCLA and as specified in the NCP. The two final criteria are state acceptance and community acceptance. State and community acceptance will be evaluated after this public comment period and will be addressed in a responsiveness summary in the ROD. Figure 5 describes the nine remedial alternative evaluation criteria.

## 4.0 REMEDIAL ACTION OBJECTIVES

RAOs provide the foundation for development of remedial alternatives. RAOs are medium-specific (such as soil and groundwater) goals for the protection of human health and the environment.

Each RAO specifies (1) the COCs, (2) the exposure routes and receptors (organisms exposed), and (3) an acceptable chemical concentration or range of concentrations for each exposure pathway and medium (known as "remedial goals"). The following RAOs were identified for Site 22 based on the potential for future residents to be exposed to surface soils that contain elevated concentrations of arsenic and for wildlife to be exposed to surface soils that contain elevated concentrations of endrin:

- Prevent residential exposure to arsenic in surface soils at Site 22 through inhalation, ingestion, and dermal contact with soils that contain arsenic at concentrations that would result in a cancer risk that exceeds $10^{-4}$ (39 milligrams per kilogram [mg/kg]) and a hazard index of greater than 1 (22 mg/kg).
- Prevent exposure of omnivorous birds and omnivorous mammals to total endrin in surface soils at concentrations above the remedial goal of 0.05 mg/kg.

The remedial goal identified for arsenic is 22 mg/kg, which is based on risk to potential future residents. The remedial goal for total endrin is 0.05 mg/kg, which is based on risk posed to the American Robin.

## 5.0 SUMMARY OF REMEDIAL ALTERNATIVES

This section summarizes the remedial alternatives developed in the *Feasibility Study for Installation Restoration Site 22, Main Magazine Area*. The Navy developed and considered eight remedial alternatives in the FS: four address protection of humans, and the other four address protection of wildlife. The remedial alternatives to protect potential future residents from the herbicide arsenic in surface soil are (1) no action, (2) land use controls, (3) excavation and off-site disposal, and (4) excavation, on-site containment, and land use controls. The remedial alternatives to protect wildlife from the pesticide endrin in surface soil are (1) no action, (2) ***on-site stabilization*** and land use controls, (3) excavation and off-site disposal, and (4) excavation, containment, and land use controls. Each alternative is discussed in more detail below and is summarized in Table 1.

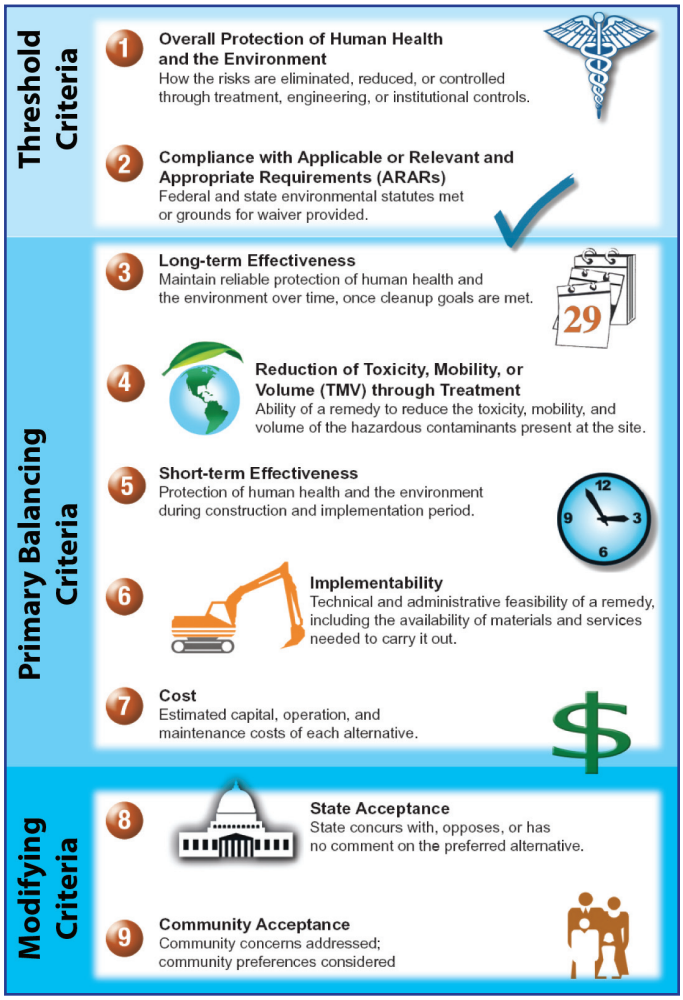


**Figure 5. Criteria for Comparison of Alternatives**

| TABLE 1. SUMMARY OF REMEDIAL ALTERNATIVES | |
|---|---|
| Alternative Number | Description |
| | **Human Health** |
| H1 | No Action |
| H2 | Land Use Controls |
| H3 | Excavation and Off-site Disposal |
| H4 | Excavation, Containment, and Land Use Controls |
| | **Ecological Health** |
| E1 | No Action |
| E2 | On-Site Stabilization and Land Use Controls |
| E3 | Excavation and Off-site Disposal |
| E4 | Excavation, Containment, and Land Use Controls |

## Remedial Alternatives to Protect Human Health from Arsenic in Soil

**Alternative H1 — No Action**
Estimated Capital Cost: $0
Estimated Future Value Annual Operation and Maintenance Cost: $0
Estimated Future Value Total Cost: $0
Estimated Total Present Value Cost: $0
Estimated Time to Complete Remediation: Not applicable

No remedial action or monitoring would be conducted. By law, the no-action alternative must be evaluated to establish a baseline for comparison with other alternatives that involve cleanup actions. Under this alternative, no response actions would be conducted at Site 22; therefore, there would be no associated costs. No attempt would be made to monitor or control exposure to chemicals in surface soil.

**Alternative H2 —LUCs**
Estimated Capital Cost: $0.17 Million
Estimated Future Value Annual Operation and Maintenance Cost: $0.59 Million
Estimated Future Value Total Cost: $0.76 Million
Estimated Total Present Value Cost: $0.54 Million
Estimated Time to Complete Remediation: 12 Months

LUCs would be implemented through access restrictions, land use restrictions, and covenants to restrict residential use of the property. Implementation of this remedial alternative will not preclude further response actions or other soil management activities by future landowners or property developers to support less restricted uses of the property. The LUCs are expected to take 1 year or less to implement, followed by long-term monitoring.

***This option is the Preferred Alternative for Protection of Human Health.***

**Alternative H3 — Excavation and Off-Site Disposal**
Estimated Capital Cost: $32.5 Million
Estimated Future Value Annual Operation and Maintenance Cost: $0
Estimated Future Value Total Cost: $35.7 Million (year 1 only)
Estimated Total Present Value Cost: $34.7 Million
Estimated Time to Complete Remediation: 27 Months

Surface soil (0 to 0.5 foot bgs) that contains arsenic at concentrations above the remedial goal would be excavated and transported off site to a licensed disposal facility.

**Alternative H4 — Excavation, Containment, and LUCs**
Estimated Capital Cost: $19.8 Million
Estimated Future Value Annual Operation and Maintenance Cost: $1.5 Million
Estimated Future Value Total Cost: $19.3 Million
Estimated Total Present Value Cost: $18.2 Million
Estimated Time to Complete Remediation: 27 Months

Surface soil (0 to 0.5 foot bgs) that contains arsenic at concentrations above the remedial goal would be excavated and placed in a corrective action management unit (CAMU) (Figure 6). LUCs would be implemented for the CAMU to maintain the effectiveness of the alternative, and other areas of the site would be available for unrestricted use. The CAMU would require long-term maintenance and monitoring.

## Remedial Alternatives to Protect Ecological Health from Pesticides in Soil

**Alternative E1 — No Action**
Estimated Capital Cost: $0
Estimated Future Value Annual Operation and Maintenance Cost: $0
Estimated Future Value Total Cost: $0
Estimated Total Present Value Cost: $0
Estimated Time to Complete Remediation: Not applicable

No remedial action or monitoring would be conducted. By law, the no-action alternative must be evaluated to establish a baseline for comparison with other alternatives involving cleanup actions. Under this alternative, no response actions would be conducted at Site 22; therefore, there would be no associated costs. No attempt would be made to monitor or control exposure of wildlife to chemicals in surface soil.

**Alternative E2 — On-Site Stabilization and LUCs**
Estimated Capital Cost: $37,000
Estimated Future Value Annual Operation and Maintenance Cost: $12,000
Estimated Future Value Total Cost: $49,000
Estimated Total Present Value Cost: $43,000
Estimated Time to Complete Remediation: 8 Months

On-site stabilization would be used to remediate endrin-contaminated surface soil that poses risk to wildlife at Site 22. LUCs would be required to monitor and maintain the treated area and restrict access to humans because the treated material contains arsenic.

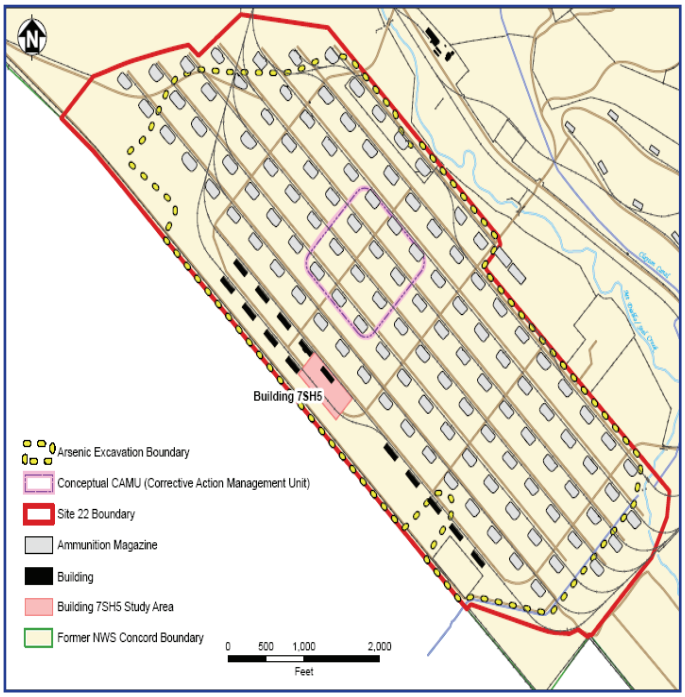


**Figure 6. Arsenic Excavation and CAMU**

**Alternative E3 — Excavation and Off-Site Disposal**
Estimated Capital Cost: $41,000
Estimated Future Value Annual Operation and Maintenance Cost: $0
Estimated Future Value Total Periodic Cost: $41,000
Estimated Total Present Value Cost: $40,000
Estimated Time to Complete Remediation: 6 Months

Surface soil (0 to 0.5 foot bgs) that contains endrin at concentrations above the remedial goal (0.05 mg/kg) would be excavated and transported off site to a licensed disposal facility. The cost of Alternative E3 shown above assumes implementation with Alternative H2 (Land Use Controls).

***This option is the Preferred Alternative for Protection of Wildlife.***

**Alternative E4 — Excavation, Containment, and LUCs**
Estimated Capital Cost: $9,000
Estimated Future Value Annual Operation and Maintenance Cost: $12,000
Estimated Future Value Total Cost: $21,000
Estimated Total Present Value Cost: $16,000
Estimated Time to Complete Remediation: 27 Months

Surface soil (0 to 0.5 foot bgs) that contains endrin at concentrations above the remedial goal would be excavated, stockpiled, and placed in the same CAMU constructed to store the arsenic-contaminated soils in Alternative H4 (Excavation, Containment, and LUCs). LUCs would be implemented for the CAMU to maintain the effectiveness of the alternative, and other areas of the site would be available for unrestricted use. The CAMU would require long-term maintenance and monitoring. Alternative E4 may be implemented only with Alternative H4 (Excavation, Containment, and LUCs). Costs presented reflect the incremental cost of confirmation samples and groundwater monitoring.

# 6.0 EVALUATION OF REMEDIAL ALTERNATIVES

In evaluating the remedial alternatives in the FS, the Navy conducted a ranking analysis to compare the remedial alternatives against the first seven NCP criteria. A score from 1 to 5 was assigned to each

alternative for each of the seven of the nine specific NCP evaluation criteria; a score of 5 was favorable, and 1 was least satisfactory. The results of this ranking analysis are summarized in Table 2. The following is a summary of the remedial alternative evaluation:

**1. Overall Protection of Human Health and the Environment**

Taking no action (H1) would not protect human health because contaminated surface soil would remain in place and the potential for exposure to arsenic would not be reduced. LUCs (H2), Excavation and Off-Site Disposal (H3), and Excavation, Containment, and LUCs (H4) would all protect human health by eliminating the exposure pathway and were ranked equally based on this criterion.

Taking no action (E1) would not protect ecological health because contaminated surface soil would remain in place, and the potential for exposure to wildlife would not be reduced. On-Site Treatment and LUCs (E2) would eliminate exposure to wildlife, while Excavation and Off-Site Disposal (E3) and Excavation, Containment, and LUCs (E4) would reduce concentrations of endrin in surface soil to acceptable levels. On-Site Treatment and LUCs (E2), Excavation and Off-Site Disposal (E3), and Excavation, Containment, and LUCs (E4) were ranked equally based on this criterion.

**2. Compliance with ARARs**

***Applicable or relevant and appropriate requirements (ARARs)*** are federal and state laws and regulations that are identified for each remedial alternative. Because the No Action Alternatives (H1 and E1) do not include any actions, a discussion of compliance with ARARs is not appropriate for these alternatives. All other remedial alternatives would comply with all chemical-, location-, and action-specific ARARs. The ARARs are presented in Appendix A (Page 15) after the Glossary.

**3. Long-Term Effectiveness and Permanence**

For human health, Excavation and Off-Site Disposal (H3) is the most effective alternative in the long term because surface soil that poses a risk to humans under a conservative residential land use scenario would be eliminated from the site. LUCs (H2) and Excavation, Containment, and LUCs (H4) rely on LUCs to restrict use of Site 22 and prohibit all or portions of the site from residential use, thereby eliminating the exposure pathway. In addition, LUCs and the CAMU in Alternative H4 (Excavation, Containment, and LUCs) must be monitored and maintained to sustain the protectiveness of the remedial alternative.

For ecological health, Excavation and Off-Site Disposal (E3) is the most effective and permanent alternative in the long term because surface soil that poses a risk to wildlife would be excavated

**TABLE 2: COMPARATIVE ANALYSIS OF ALTERNATIVES**

| Remedial Alternative | Overall Protection of Human Health and Environment | Compliance with ARARs | Long-Term Effectiveness/ Permanence | Reduction of Toxicity, Mobility, or Volume through Treatment | Short-Term Effectiveness | Implement-ability | Cost | Relative Ranking |
|---|---|---|---|---|---|---|---|---|
| **Human Health** | | | | | | | | |
| H1: No Action | 1 | 1 | 1 | 1 | 1 | 1 | 5 | 11 |
| **H2: Land Use Controls** | **5** | **5** | **3.5** | **1** | **5** | **5** | **5** | **29.5** |
| H3: Excavation and Off-Site Disposal | 5 | 5 | 5 | 1 | 3.5 | 5 | 1 | 25.5 |
| H4: Excavation, Containment, and Land Use Controls | 5 | 5 | 3.5 | 1 | 3.5 | 4 | 3 | 25 |
| **Ecological Health** | | | | | | | | |
| E1: No Action | 1 | 1 | 1 | 1 | 1 | 1 | 5 | 11 |
| E2: On-Site Treatment and Land Use Control | 5 | 5 | 4 | 4 | 4 | 4.5 | 3 | 29.5 |
| **E3: Excavation and Off-Site Disposal** | **5** | **5** | **5** | **1** | **4** | **5** | **5** | **30** |
| E4: Excavation, Containment, and Land Use Controls | 5 | 5 | 3.5 | 1 | 3.5 | 5 | 5 | 28 |

Notes:
Each individual rating was on a scale from 1 to 5, with 5 being the most satisfactory and given the highest rating and 1 being the least satisfactory and given the lowest rating. Individual ratings for each criterion were then summed to give a total score or relative ranking. Since there were 7 criteria, the maximum total score would be 35.

and removed from the site. This alternative does not rely on LUCs to sustain the protectiveness of the remedial alternative, as is required under On-Site Treatment and LUCs (E2) and Excavation, Containment, and LUCs (E4).

**4. Reduction of Toxicity, Mobility, or Volume through Treatment**

For human health, none of the alternatives includes treatment of arsenic in surface soil to reduce the toxicity, mobility, or volume of contaminated soil. Therefore, none satisfies the statutory preference for treatment.

For ecological health, On-Site Treatment and LUCs (E2) would reduce the mobility of contaminated soil through stabilization. The process of stabilization renders endrin immobile. Excavation and Off-Site Disposal (E3) and Excavation, Containment, and LUCs (E4) do not reduce the toxicity, mobility, or volume through treatment.

**5. Short-Term Effectiveness**

For human health, the LUCs alternative (H2) is the most effective option in the short term because surface soil with arsenic at concentrations above the remedial goal would not be disturbed. Excavation and Off-Site Disposal (H3) and Excavation, Containment, and LUCs (H4) include excavation of a considerable volume of contaminated surface soil, so that the community, remedial workers, or the environment may be exposed. These differences are reflected in the rankings on Table 2.

For ecological health, On-Site Treatment and LUCs (E2) and Excavation and Off-Site Disposal (E3) are the most effective options in the short term. Equipment and personnel can be mobilized within 2 months after a remedial action/remedial design work plan is approved. Once surface soil is stabilized or removed and transported off site or contained, it would no longer pose a threat to wildlife. Excavation, Containment, and LUCs (E4) is also effective at removing contaminated soil in the short term. However, the CAMU will not be sealed until after the remedial action for arsenic-contaminated soil is completed.

**6. Implementability**

For human health, the LUCs alternative (H2) is the easiest option to implement because it consists only of legal and administrative actions. Excavation and Off-Site Disposal (H3) and Excavation, Containment, and LUCs (H4) include activities that are relatively common (such as excavation, demolition, transportation, or off-site disposal), and vendors and equipment for these activities are readily available. However, Excavation and Off-Site Disposal (H3) and Excavation, Containment, and LUCs (H4) include excavation of a considerable amount of surface soil on top of and surrounding the ammunition magazines, which may increase the difficulty in implementing the alternatives. Excavation, Containment, and LUCs (H4) would be the most difficult to implement because it would involve creating space for the CAMU, construction of the containment unit, and long-term maintenance and monitoring. The placement, size, and shape of the magazines would significantly impede timely and effective soil removal in all removal alternatives.

For ecological health, Excavation and Off-Site Disposal (E3) is the easiest to implement if either Excavation and Off-Site Disposal (H3) or Excavation, Containment, and LUCs (H4) is chosen because the excavating equipment is also required for the human health alternatives. Excavation and Off-Site Disposal (E3) includes surface soil excavation, transportation, and disposal at an off-site licensed disposal facility; these activities are relatively common, and vendors and equipment are available. On-Site Treatment and LUCs (E2) is moderately easy to implement because vendors are readily available, and the technology is well known. Excavation, Containment, and LUCs (E4) would be difficult to implement because it would involve construction and long-term maintenance and monitoring of the CAMU, in addition to soil excavation. Although these construction technologies are common, the increased complexity of Excavation, Containment, and LUCs (E4) makes it the least implementable compared with Alternatives E2 and E3.

**7. Cost**

For human health, no cost is associated with Alternative H1 because no action would be implemented. All the other alternatives involve significant costs; LUCs (H2) is the least expensive, and Excavation and Off-Site Disposal (H3) is the most expensive (more than 60 times the cost of LUCs).

For ecological health, no cost is associated with Alternative E1 because no action would be implemented. All costs for the ecological alternatives are incremental and would be incurred in addition to the cost of remediating for human health; that is why the costs are much lower than the costs of human health alternatives. Excavation

and Off-Site Disposal (E3) would be more cost-effective to implement than On-Site Treatment and LUCs (E2); Excavation, Containment, and LUCs (E4) is more cost effective only if Alternative Excavation, Containment, and LUCs (H4) is selected as the preferred alternative for human health. Excavation and Off-Site Disposal (E3) would be the least expensive.

# 7.0 THE PREFERRED REMEDIAL ALTERNATIVE

The preferred alternative selected is protective of human health and the environment and eliminates, reduces, or controls exposures to human and environmental receptors through all potential exposure pathways (to wildlife, workers, or residents) currently or in the future.

## Human Health

The preferred remedial alternative for human health is implementation of LUCs (Alternative H2). LUCs would be implemented to restrict use of the property and limit the exposure of future landowners or users of the property to arsenic-contaminated soil. Monitoring and inspections would be conducted to ensure that the LUCs were being maintained. Implementation of this remedial alternative will not preclude further response actions or other soil management activities by future landowners or property developers to support less restricted uses of the property.

The goal of realizing reasonably anticipated future land uses was considered along with the remedy selection criteria established in CERCLA and the NCP. The Navy acknowledges that the City of Concord's current ***Preferred Reuse Plan*** indicates that the Site 22 area is designated to be developed primarily for residential reuse, along with some recreational and commercial uses after the property is conveyed from the Navy and subsequently developed. However, considerations of implementability, short-term effectiveness, cost, and technical limitations prompted the Navy to select LUCs as the preferred alternative for addressing human health risks. The arsenic-contaminated area of Site 22 spans roughly 438 acres and contains 114 magazines and 16 buildings. The placement, size, and shape of the magazines significantly impede soil removal. Moreover, the expansive area that would require remedial action renders soil removal an extremely expensive option compared with LUCs. Area-wide soil removal could be readily accomplished during site redevelopment activities for future reuse when the magazines are demolished. Compared with soil removal, implementation of LUCs equally protects human health. However, this alternative avoids considerable costs and implementability concerns. The preferred alternative offers the best option compared with the other alternatives with regard to the five balancing criteria and two modifying criteria specified by the NCP.

The preferred remedial alternative for human health was selected for the reasons summarized below.

(1) The alternative protects human health by implementing LUCs that will prevent human exposure under a future potential residential scenario unless a future landowner or developer conducts further cleanup or takes other actions to support less restricted future reuse of the property.

(2) The alternative is the most effective in the short term and would have the smallest effect on the community, remedial workers, or the environment because surface soil would not be disturbed.

(3) The alternative would be implemented in the shortest period because only legal and administrative controls would be necessary. Periodic costs would include 5-year reviews.

(4) The alternative meets federal and state ARARs.

(5) The alternative is the most cost effective to implement.

(6) The alternative will not prevent a future landowner or developer from conducting further cleanup or taking other actions to support less restricted future reuse of the property, with the associated costs borne by the new owner or developer as part of property redevelopment.

## Ecological Health

The preferred remedial alternative for protection of ecological health is excavation and off-site disposal of endrin-contaminated surface soil (Alternative E3). Approximately 10 cubic yards of soil would be excavated over a 500-square-foot area. The excavation would be backfilled with clean soil after confirmation samples show concentrations of endrin are below the remedial goal. Samples would be collected from the stockpiled soil for waste characterization before transport by truck

to a licensed disposal facility outside of Former NAVWPNSTA Concord. Alternative E3 will eliminate the endrin risk and create a safe habitat for wildlife at Site 22.

The preferred remedial alternative for ecological health was selected for the reasons summarized below.

(1) The alternative would be most effective and permanent in the long term because surface soil that poses a risk to wildlife would be excavated and removed from the site.

(2) The alternative would be effective in the short term, as the contaminated soil would be removed quickly and would no longer pose a risk to wildlife; the soil would be removed and transported off site.

(3) The alternative is the most cost effective to implement.

## Summary

The Base Remedial Project Managers (RPMs) include the Navy, EPA, Department of Toxic Substances Control (DTSC), and the San Francisco Bay Regional Water Quality Control Board (Water Board). The primary goals of the RPMs are to protect human health and the environment, coordinate environmental investigations, and expedite the environmental restoration of Former NAVWPNSTA Concord. The RPMs have coordinated on all major documents and investigations associated with Site 22, including the RI and FS Reports.

Based on the information available at this time, the Navy believes LUCs (Alternative H2) to be protective of human health for the current land use and excavation and off-site disposal of endrin-contaminated surface soil (Alternative E3) to be protective of ecological health. The preferred remedial alternatives may be modified in response to public comments or new information.

# 8.0 COMMUNITY PARTICIPATION

The Navy encourages the public to gain a more thorough understanding of Site 22 and the CERCLA activities that have been conducted at Former NAVWPNSTA Concord. An information repository has been established to provide public access to technical reports and other Installation Restoration Program information that supports the remedial action alternative decision. The administrative record contains the reports and historical documents used to select remedial alternatives. Restoration Advisory Board Meetings are also held every other month and are open to the public.

All Site 22 documents, meeting minutes, newsletters, public meeting announcements, and other items are available for review on the Navy's website, www.bracpmo.navy.mil.

Consideration of public input is an important part of the remedy selection process. The Navy, EPA, DTSC, and the Water Board, encourage all community members, business owners, and other interested stakeholders to provide input on the proposed remedy. The Navy will select the final remedy for Site 22 only after comments submitted during the public comment period have been considered.

The dates for the public comment period and the date, location, and time of the public meeting are provided on the front page of this Proposed Plan.

## How You Can Comment on the Navy's Proposed Plan

The Navy will accept comments on this Proposed Plan during a **30-day public comment period** from April 1-30. All written comments can be provided by letter, fax, or e-mail to Kathy Stewart, BRAC Environmental Coordinator. Letters must be postmarked by April 30.

**Kathy Stewart**
BRAC Program Management Office West
1 Avenue of the Palms, Suite 161
San Francisco, CA 94130-1807
Phone: (415) 743-4715
Fax: (415) 743-4700
E-mail: Kathryn.Stewart@navy.mil

**Comments may also be provided verbally during the public meeting on April 14, 2010.**

# 9.0 GLOSSARY OF TERMS

**Applicable or relevant and appropriate requirements (ARAR):** Federal, state, and local regulations and standards determined to be legally applicable or relevant and appropriate to remedial actions at a CERCLA site.

**Baseline Human Health Risk Assessment (BHHRA):** Estimate of potential harmful effects humans may experience as a result of exposure to chemicals.

**Chemicals of Concern (COCs):** Chemicals identified as having the potential to pose a significant threat to human health and the environment.

**Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA):** Commonly referred to as "Superfund", this act was passed to address contamination resulting from past practices of handling and disposing of hazardous materials which, although acceptable at the time, often resulted in release of pollutions into surroundings soil and groundwater.

**Corrective action management unit (CAMU):** An area within a facility that is used only for managing CAMU-eligible wastes for implementing remediation at the facility. A CAMU must be located within the contiguous property under the control of the owner or operator where the wastes to be managed in the CAMU originated.

**Department of Toxic Substances Control (DTSC):** A part of the California Environmental Protection Agency and California's lead environmental regulatory agency. Its mission is to protect public health and the environment from toxic substances.

**Feasibility Study (FS):** An engineering evaluation to identify, screen, and compare remedial alternatives for a site.

**Hazard index (HI):** For human health, a calculated value used to represent a potential noncancer health risk. An HI value of 1 or less is considered an acceptable exposure level.

**Installation Restoration (IR):** The IR Program is the Department of Defense's comprehensive program to investigate and clean up environmental contamination at military facilities in full compliance with CERCLA.

**Land Use Controls (LUC):** Any type of physical, legal, or administrative mechanism that restricts the use of, or limits access to, real property to prevent or reduce risks to human health and the environment.

**National Oil and Hazardous Substances Pollution Contingency Plan (NCP):** The regulation that implements CERCLA by providing the organizational structure and procedures to prepare for and respond to discharges of oil and the release or threatened release of hazardous substances, pollutants, and contaminants.

**Omnivorous:** Omnivores are species that eat both plants and animals as their primary food sources.

**Preferred Alternative:** The remedial alternative selected by the Navy, in conjunction with the regulatory agencies, that best satisfies the RAOs based on the evaluation of remedial alternatives presented in the FS.

**Preferred Reuse Plan:** The reuse plan is a document that presents the preferred reuse of the City Council for the Former NAVWPNSTA Concord, based on input from residents and other interested parties on a number of alternative plans. The City Council selected the "Clustered Villages" alternative, which includes three clusters of residential and commercial development, as well as community facilities, at Site 22.

**Preliminary Remediation Goal (PRG):** Risk-based concentrations derived from EPA toxicity data. EPA PRGs are considered to be protective of human health.

**Proposed Plan:** A document that reviews the remedial alternatives presented in the FS, summarizes the recommended remedial action, explains the reasons for recommending the action, and notifies the community of the proposed remediation.

**Remedial Action Objective:** A statement containing a cleanup goal for the protection of one or more receptors from one or more chemicals in a specific medium (such as soil, groundwater, or air) at a site.

**Record of Decision (ROD):** A decision document that identifies the remedial alternatives chosen for implementation at a CERCLA site; the ROD is based on information from the RI Report and FS and on public comments and community concerns.

**Remedial Goal:** Chemical concentration limit that provides a numerical goal for the remedial alternatives; may be based on human or ecological risk calculations, federal or state regulations,

background concentrations, or other numerical standards.

**Remedial Investigation (RI):** A phase of environmental study that includes collecting samples to evaluate the extent and type of contamination present at a site. This information is used to help develop remedies.

**Resource Conservation and Recovery Act (RCRA):** Establishes the framework for treatment, storage, transportation, and disposal of hazardous substances.

**Responsiveness Summary:** A summary of oral and written comments on the proposed plan received during the comment period, and responses to those comments provided in the ROD.

**Risk management range:** The range of cancer risks (from $10^{-4}$ to $10^{-6}$) defined by EPA in evaluating whether potential risk to human health is acceptable. Cancer risks within or exceeding this range may require further assessment to determine whether remedial action is warranted. Cancer risks below the risk management range generally do not require any further action.

**San Francisco Bay Regional Water Quality Control Board (Water Board):** The California water quality authority, which is part of California Environmental Protection Agency. Its mission is to preserve, enhance, and restore California's water resources.

**Screening-level ecological risk assessment (SLERA):** An analysis of the potential ecological effects caused by exposure to hazardous substances at a site using conservative exposure assumptions and maximum detected chemical concentrations.

**Semivolatile organic compounds (SVOC):** An organic (carbon containing) compound that does not readily evaporate at room temperature. SVOCs include certain oils and pesticides.

**Solid waste management unit (SWMU):** Any unit where wastes have been placed regardless of whether the unit was designed to accept solid waste or hazardous waste such as oil/water separator or storage tanks.

**Stabilization:** The process by which chemicals are physically or chemically bound or enclosed within the soil. It involves mixing the soil in place with a binder, such as Portland cement, to immobilize the arsenic.

**Superfund Amendments and Reauthorization Act (SARA):** SARA amended CERCLA on October 17, 1986, making several important changes and additions to the program, including new enforcement authorities and settlement tools.

**Total petroleum hydrocarbons (TPH):** A family of several hundred chemical compounds in crude oil, such as benzene, hexane, toluene, and others. TPH includes motor oil-, diesel-, and gasoline-range hydrocarbons present in a sample.

**U.S. Environmental Protection Agency (EPA):** The federal regulatory agency responsible for administration and enforcement of CERCLA (and other federal environmental regulations). EPA is the lead regulatory agency for Former NAVWPNSTA Concord.

**Volatile organic compounds (VOC):** An organic (carbon containing) compound that evaporates readily at room temperature. VOCs are found in industrial solvents commonly used in dry cleaning, metal plating, and machinery degreasing operations.

## Information Repository

Concord Public Library
2900 Salvio Street
Concord, California 94519
Phone: (925) 646-5455

## Administrative Record File

Contact: Ms. Diane Silva
Administrative Records Coordinator
Naval Facilities Engineering Command, Southwest
1220 Pacific Highway
FISC Building 1, 3rd Floor
San Diego, California 92132-5190
Telephone: (619) 532-3676

*Please call in advance for an appointment Monday through Friday between 8:30 a.m. and 4:30 p.m.*

## INTERNET CONNECTION

For more information on the closure and transfer of Former NAVWPNSTA Concord, please visit the website at:
http://www.bracpmo.navy.mil

## APPENDIX A: APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

CERCLA requires that remedial actions meet federal or state (if more stringent) environmental standards, requirements, criteria, or limitations that are determined to be ARARs.

The following summarizes the federal and state chemical-, location-, and action-specific ARARs for the preferred alternative described in this Proposed Plan. During the FS process, the Navy received state ARARs from the California Department of Fish and Game. The Navy reviewed these requirements and determined which should be ARARs for Site 22 and these requirements are identified below. Please refer to the Site 22 FS (Appendix C) for more specific information on potential ARARs.

**Potential Chemical-specific ARARs**

**Federal**

The substantive provisions of the following requirements are applicable for determining whether any excavated waste or investigation-derived waste is hazardous:

- Cal. Code Regs. tit. 22, §§ 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100

**State**

The substantive provisions of the following requirements are applicable for determining whether any excavated waste or investigation-derived waste is hazardous:

- Non-RCRA hazardous waste determinations at Cal. Code Regs. tit. 22 § 66261.22(a)(3) and (4), 66261.24(a)(2) to (a)(8), 66261.101, 66261.3(a)(2)(C) or 66261.3(a)(2)(F)
- Definitions of designated, nonhazardous and inert waste at Cal. Code Regs. tit. 27, §§ 20210, 20220, 20230
- San Francisco Bay Basin Water Quality Control Plan Chapters 2 and 3
- Cal. Water Code, div. 7, §§ 13243 and 13269 (Porter-Cologne Water Quality Control Act)

**Potential Location-Specific ARARs**

Location-specific ARARs are restrictions on the concentrations of hazardous substances or the site activities as a result of the characteristics of the site or its immediate environment.

**Federal**

The substantive provisions of the following requirements are potential federal location-specific ARARs:

- Migratory Bird Treaty Act of 1972, 16 U.S.C. § 703
- Endangered Species Act of 1973 , 16 U.S.C. § 1536(a), (h)(1)(B)

**State**

The substantive provisions of the following requirements are potential state location-specific ARARs:

- California Fish & Game Code Section 3511 prohibiting take of fully protected birds
- California Fish & Game Code Section 5650(a) and (b) prohibiting permitting releases of substances deleterious to fish, plant life or bird life to pass into waters of the state.

**Potential Action-Specific ARARs**

The following requirements are potential ARARs for Alternative H2 (Land Use Controls)

**Federal**

There are no federal action-specific ARARs for land use controls.

**State**

- Requirements for institutional controls at California Civil Code § 1471; Cal. Code Regs. tit. 22 § 67391.1; California Health and Safety Code § 25202.5, 25222.1, 25232(b)(1)(A)-(E), 25233(c), 25234, and 25355.5(a)(1)(C)

The following requirements are potential ARARs for Alternative H3 (Excavation and off-site disposal)

**Federal**

**Resource Conservation and Recovery Act**

- Cal. Code Regs. tit. 22, § 66262.10(a) and 66262.11 – Requires a generator to determine if generated waste is hazardous waste.
- Cal. Code Regs. tit. 22, § 66264.13(a) and (b) – Requires analysis of waste to determine if it is hazardous.
- 40 CFR § 264.554 (d)(1)(i-ii) and (d)(2), (e), (f) (h), (i), (j), and (k) – Allows the temporary staging of RCRA hazardous waste in piles.
- RCRA waste pile requirements at Cal. Code Regs. tit. 22, § 66264.251 (except 251[j], 251[e][11]), and § 66264.252(c) and (e) and (f).
- RCRA waste pile closure requirements Cal. Code Regs. tit. 22, § 66264.258(a) and (b) except references to procedural requirements.
- Bay Area Air Quality Management District Regulation 6-302 –prohibits source emissions that equal or exceed 20 percent opacity.

**State**

- Cal. Code Regs. tit. 27, § 20200(c) –requires accurate characterization of wastes.
- Cal. Code Regs. tit. 27, § 20210 –requires the discharge of designated waste to Class I or Class II waste management units.
- Cal. Code Regs. tit. 27, § 20220(b), (c), and (d) –requires the discharge of nonhazardous solid waste to classified units.

Kathy Stewart
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# Proposed Plan for Installation Restoration Site 22
# Main Magazine Area

Inland Area, Former Naval Weapons Station Seal Beach Detachment Concord
Concord, California

INLAND AREA,
FORMER NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD
Installation Restoration Site 22 Main Magazine Area

PUBLIC MEETING
April 14, 2010
6:00 – 8:00 PM
**Clyde Community Center**
109 Wellington Avenue, Clyde, CA 94520

# C O M M E N T  S H E E T

Your comments, concerns, and suggestions are important to us. Please use this comment sheet to write down the issues you think we should consider for the Inland Area, Fomer Naval Weapons Station Seal Beach Detachment Concord, Installation Restoration Site 22 Main Magazine Area Proposed Plan by April 30, 2010. Please turn in your comment sheet at the end of the public meeting or submit it to:

**Kathy Stewart**
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1 Avenue of the Palms, Suite 161
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Phone: (415) 743-4715
Fax: (415) 743-4700
E-mail: Kathryn.Stewart@navy.mil

**Name:**
(optional)

**Address:**
(optional)

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