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NAS PENSACOLA
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RESPONSE TO U S EPA REGION IV TECHNICAL COMMENTS ON PROPOSED PLAN
OPERATING UNIT 13 SITES 8 AND 24 NAS PENSACOLA FL
08/01/2004
U S EPA REGION IV

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**RESPONSES TO TECHNICAL COMMENTS
U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 4
NAS PENSACOLA
PROPOSED PLAN — OPERABLE UNIT 13 (SITES 8 AND 24)**

Comment 1:

The Introduction section should state that the Proposed Plan fulfills the requirements of Section 117(a) of CERCLA.

Response:

The Introduction of the Proposed Plan has been modified to include this statement.

Comment 2:

On page 4, last paragraph of the RI Findings - Groundwater section, a statement is made that the exposure pathway is not completed. On page 8, last paragraph in the Comparison of Alternatives — Groundwater section, it is again stated that a risk pathway is not complete. On page 9, in the Preferred Alternatives — Groundwater section, it is stated that the exposure pathway is not complete. The Proposed Plan should describe how the groundwater pathway is not complete in the RI Findings section. [The proposed plan describes how the gw pathway is not complete; however, it does not define what is meant by complete. A statement should be added defining a complete pathway, (i.e., contaminated media coming in contact with a receptor).]

Response:

Exposure pathway and exposure pathway completion are now described in this section. In addition, "Exposure Pathway" has been added to the glossary.

Comment 3:

In the Description of Alternatives section, include the estimated volumes and implementation time frames associated with removing the soils in Alternatives S-3(a) and S-3(b). For Alternative G-3, include more information on the groundwater monitoring such as what constituents will be monitored and the remediation levels to be achieved.

Response:

Based on the successful removal action completed by the Navy in July 2004 to meet residential and leachability criteria, only the no-action alternative is retained.

Alternative G-3: Additional information on groundwater monitoring was added to this discussion. In addition, the COCs and their cleanup goals remaining after the additional sampling completed during the IRA are presented in Table 5.

Comment 4:

On page 8, in the Comparison of Alternatives section, the Proposed Plan fails to state the implementability, and short- and long-term effectiveness of the alternatives. These are primary balancing criteria that should be considered. [Use the language in the ROD]

Response:

Implementability and short- and long-term effectiveness are now described in this section.

Comment 5:

On page 8, last paragraph in the Comparison of Alternatives — Groundwater section, state whether the alternative will comply with the ARARs.

Response:

The completed removal action will aid in the compliance with ARARs by effectively treating the contaminant source in soil. The Navy fully expects that groundwater will return to its natural state.

Comment 6:

The Proposed Plan should state that the preferred alternative does not satisfy the statutory preference for treatment as a principal element and justify why not meeting the preference is acceptable in this case. [The soil is being treated. The gw is being monitored. The pp needs to justify why monitoring the gw is acceptable, (i.e., source removal will allow the gw to return to its natural state).]

Response:

The following paragraph has been added:

In cleanups of this sort, groundwater treatment is preferred over simple monitoring. This preferred alternative does not directly treat the groundwater. However, by removing the soil that is acting as the source of groundwater contamination, the Navy will be “treating” the contamination source and expects monitoring to reveal decreasing levels of contaminants in the groundwater. The Navy fully expects groundwater to return to its natural state once the contaminant source is removed.

**RESPONSE TO TECHNICAL COMMENTS
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
DRAFT PROPOSED PLAN AND PUBLIC NOTICE, OPERABLE UNIT 13
SITES 8 AND 24, NAS PENSACOLA**

Comment 1:

The Focused Feasibility Study (FFS) for OU 13 submitted May 15, 1998 should be finalized before submitting the Final Proposed Plan and Public Notice.

Response:

The Navy concurs that the FFS should be finalized before submitting the Final Proposed Plan and Public Notice. The Final Focused Feasibility Study Report was submitted on October 13, 2000. FDEP's concurrence was received on May 21, 2001. An FFS Report Addendum was submitted on September 17, 2001. FDEP's concurrence was received on October 3, 2001.

Comment 2:

The FFS should include a comparative analysis for soil cleanup using the leachability scenario for cadmium and dieldrin (see Figure 2-3 in the FFS).

Response:

This analysis has been completed and included in the Final FFS. In addition, a removal action was conducted for soil to achieve residential and leachability criteria.

Comment 3:

The FFS should also include a comparative analysis and estimated time for Monitored Natural Attenuation of Groundwater as a potential remedy.

Response:

By completing the removal action of soil exceeding leachability criteria, the Navy believes that groundwater will return to its natural state. Institutional controls will be used to ensure that groundwater at OU 13 is not used as a potable water source. Monitoring is a component of Alternative G-3.

Comment 4:

The figure on page 3 does not correctly depict the extent of contamination for surface soils using an industrial scenario at the sites (see Figure 2-2 of the FFS).

Response:

By completing the removal action, the Navy has met the criteria for a residential scenario. The figure is no longer included.

Comment 5:

Soil cleanup goals for leachability should be included in Table 1, Cleanup Goals for Surface Soil.

Response:

Alternatives addressing leachability were included in the FFS. The subsequent July 2004 removal action excavated approximately 842 cubic yards of soil exceeding leachability criteria.

Comment 6:

Cleanup goals for subsurface soils based on leachability should be listed for cadmium and dieldrin. Since cadmium and dieldrin are leaching to groundwater, a comparative analysis for soil cleanup using the leachability scenario for cadmium and dieldrin should be included in the FFS and proposed plan.

Response:

Alternatives addressing leachability were included in the FFS. The subsequent July 2004 removal action excavated approximately 842 cubic yards of soil exceeding leachability criteria, and therefore, no soil remains onsite above leachability criteria.

Comment 7:

In Table 2, the applicable standard for Dieldrin, Manganese, and Thallium are 0.006 (GCTL), 50 (FSDWS), and 2 (FPDWS) micrograms per liter ($\mu\text{g/L}$), respectively.

Response:

Additional groundwater sampling was conducted as part of the removal action from August 2002 to April 2004. Additional groundwater monitoring wells were installed, and groundwater samples were collected to evaluate whether the constituents detected in soil affected groundwater. Based on the additional sampling, the remaining COCs are presented in Table 5. Thallium is no longer considered a COC, and the current GCTL for dieldrin (0.005 $\mu\text{g/L}$) is presented. The goal for manganese has been corrected to 50 $\mu\text{g/L}$. The other remaining COCs for groundwater are cadmium and iron.

The U.S. Navy has proposed a remedial action plan for Operable Unit 13 (OU 13) at Naval Air Station (NAS) Pensacola, Florida. A remedial action plan describes the Navy's choice of options for cleaning up a site.

OU 13 consists of Site 8 — the Public Works Center (PWC) — and Site 24 — part of the Barrancas National Cemetery. Site 8 was used as a disposal area, a shooting range, and a pesticide handling area before construction of the PWC facility. Site 24 was once used as a pesticide mixing and handling area. Site contamination stems from past practices.

The Remedial Investigation (RI) Report and Addendum concluded that soil and groundwater at the property were impacted by past site activities. The investigation detected varying amounts of inorganic materials, volatile and semivolatile organic compounds, and pesticides in the soil. Groundwater impacts were primarily recorded from inorganic materials, volatile organic compounds, and a trace of the pesticide dieldrin. Both soil and groundwater impacts can be attributed to fertilizer and pesticide use and specific disposal patterns on the property. Remedies were reviewed for soil and groundwater contamination in the Focused Feasibility Study.

Risk Characterization: A baseline risk assessment was conducted to address ecological and human exposure to the contaminants found in the soil and groundwater at OU 13. Contaminant concentrations in soil were considered a potential threat to future site workers or hypothetical residents. Under current conditions, groundwater is not used for drinking water or other similar purposes; therefore, the contaminants detected in groundwater do not present a risk to human health or the environment.

Removal Action:

In July 2004, CH2M Hill performed a removal action on soil identified as exceeded residential and leachability cleanup goals. Approximately 842 cubic yards of soil were removed from the site. The removal eliminates the potential threat to groundwater from the source action and direct exposure risk to human health.

Proposed Action: Separate remedies have been proposed for soil and groundwater at OU 13. Because excess risk does not remain onsite from soil, the preferred alternative is “No Further Action.” The remedy proposed for groundwater is G-2, Institutional Controls. Groundwater use will be administratively restricted to prevent future exposures. These alternatives will be protective, cost-effective, and achieve all federal and state requirements.

The U.S. Navy is accepting written comments from October 2, 2004, to November 15, 2004, to encourage public input and participation in the selection process. A public meeting may be held in conjunction with the public comment period if a timely request is made. Written comments, requests for a public meeting, or requests for information should be directed to:

Commanding Officer
NAS Pensacola, Code 22000
Attn: Greg Campbell
190 Radford Blvd.
Pensacola, Florida 32508-5217

For More Information: The Remedial Investigation Report, Remedial Investigation Report Addendum, Focused Feasibility Study Report, Action Memorandum, and other documents regarding OU 13 may be found in the public information repositories established at the NAS Pensacola Library (Building 633) and the John C. Pace Library at the University of West Florida.

**Superfund Program
Proposed Plan
Operable Unit 13**



**Naval Air Station Pensacola
Installation Restoration
Program**

August 2004

ANNOUNCEMENT OF PROPOSED PLAN

This Proposed Plan identifies the Preferred Alternative for addressing soil and groundwater at Operable Unit (OU) 13 at Naval Air Station (NAS) Pensacola, Florida, and provides the rationale for this preference. In addition, this Plan identifies other cleanup alternatives evaluated for use at this site. This document is issued by the U.S. Navy, the Lead Agency for site activities, and the U.S. Environmental Protection Agency (USEPA) and the Florida Department of Environmental Protection Restoration Program (IRP); the Navy encourages community involvement in selecting the alternative for OU 13. This plan provides background information on the public's role in helping the Navy make a final decision. This document meets the requirements of Section 117(a) of the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as "Superfund." The box below explains how Superfund works.

Dates to Remember:

MARK YOUR CALENDAR

PUBLIC COMMENT PERIOD:

October 2 — November 15, 2004

The Navy will accept written comments on the Proposed Plan during the comment period.

PUBLIC MEETING:

A public meeting will be held if one is requested from members of the public before the end of the comment period.

For more information, see the Administrative Record kept at the following information repositories:

**NAS Pensacola Library
Building 634**

M-F: 8 a.m. to 6 p.m.

Sat: 9:30 a.m. to 5 p.m.

**John C. Pace Library
University of West Florida**

M-Thur: 8 a.m. to 10 p.m.

Fri: 8 a.m. to 6 p.m.

Sat: 10 a.m. to 6 p.m.

Sun: 1 p.m. to 5 p.m.

THE SUPERFUND PIPELINE

**Pre-Remedial Response
Process:**

- Preliminary Assessment
- Site Inspection
- Placement on National Priority List (NPL)

Remedial Response Process:

Remedial Investigation/ Feasibility Study (RI/FS) → Remedy Selection → Remedial Design (RD) → Remedial Action (RA) → Operations & Maintenance (O&M)

Proposed Plan ▲

Record of Decision (ROD) ▲

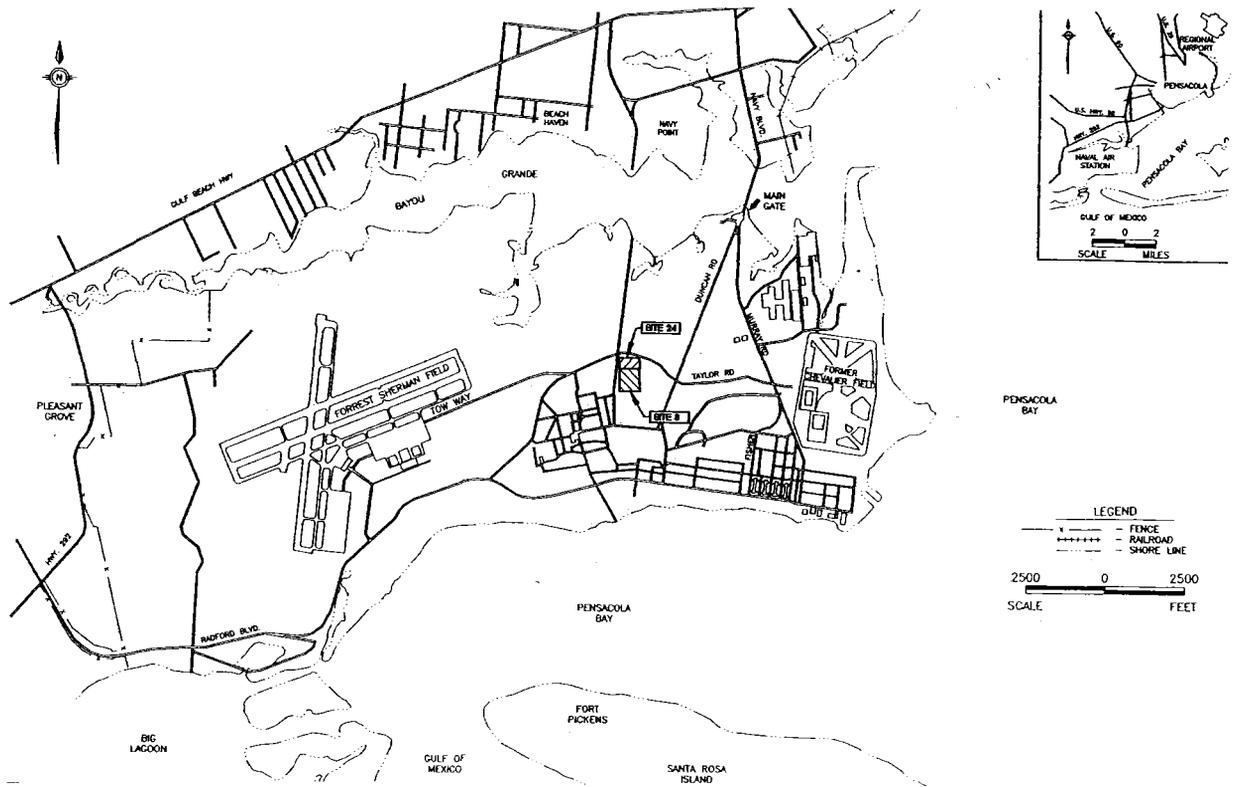


Figure 1 above shows where OU 13 is located. The Navy, along with the USEPA and FDEP, will select a final remedy for the site after reviewing and considering all information submitted during the 45-day public comment period. The Navy, in consultation with USEPA and FDEP, may modify the Preferred Alternative or select another response action presented in this Plan based on new information or public comment on all the alternatives identified in this Proposed Plan. The Navy is issuing this Proposed Plan as part of its public participation responsibilities under Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This Proposed Plan summarizes information detailed in the RI/FS report and other documents contained in the Administrative Record file for this site. The Navy, USEPA, and FDEP encourage the public to review these documents to gain a more comprehensive understanding of the site and Superfund activities.

SITE HISTORY

NAS Pensacola was placed on USEPA's National Priorities List (NPL) in December 1989. The federal

CERCLA law governs cleanup for sites on the NPL. In addition, an environmental permit was issued in 1988 under the Resource Conservation and Recovery Act (RCRA). This permit ensures that ongoing activities are environmentally sound and that spills or leaks of hazardous waste and/or their constituents are investigated and cleaned up. The Federal Facilities Agreement, signed in October 1990, outlines NAS Pensacola's regulatory path through these federal laws. OU 13, which consists of Sites 8 and 24, is one of 13 operable units at NAS Pensacola. The purpose of each operable unit is defined in the *FY 2004 Site Management Plan* for NAS Pensacola, which is in the Administrative Record.

Operable Unit 13

OU 13 consists of Site 8 (the Rifle Range Disposal Area) and Site 24 (the DDT Mixing Area). Site 8 includes Building 3561, which houses the NAS Pensacola Public Works Center (PWC) Maintenance/Material Department, and an asphalt paved area around that building, along with several office trailers, fenced storage areas, another building, and a

parking lot. Most of Site 8 is surrounded by chain-link fencing. Site 8 contained a refuse disposal/burning area and a rifle range during the 1950s and 1960s. Building 3651 was constructed in 1976. During the 1980s, a pesticide storage and equipment rinsing area existed on the building's east side.

Site 24 is immediately north of Building 3561, and the northern portion is encompassed by the northwest corner of the Barrancas National Cemetery. The southern portion contains a fenced storage area with a gravel and crushed shell surface. An unimproved dirt road runs east-west across the southern edge of the site. Site 24 was once used as a pesticide mixing and handling area.

SITE CHARACTERISTICS

In 1996, the Navy conducted a RI/FS at OU-13. The August 26, 1998 RI Report and September 17, 1999 RI Report Addendum concluded that soil and groundwater at OU 13 were impacted by past activities. Contaminants from the following contaminant groups were detected in soil, groundwater, or both.

- *Inorganic compounds* — Typically elemental metals (such as aluminum, manganese, and mercury), but also compounds such as cyanide. Inorganics are naturally occurring compounds that can be toxic in large doses.
- *Pesticides* — Used to kill insects, unwanted plants, or other pests. Dieldrin is an example found at this site.
- *Semivolatile organic compounds (SVOCs)* — Common components of asphalt, coal tar, and jet and diesel fuels.
- *Volatile organic compounds (VOCs)* — Commonly used in solvents and industrial operations like electroplating and paint stripping.

Soil

Site 8 — Soil samples revealed inorganic and organic compounds exceeding preliminary remediation goals (PRGs; these included USEPA Risk-Based Concentrations and FDEP Soil Cleanup Target Levels). Past waste disposal and construction activities had disturbed the upper 5 to 10 ft of soil across the site, as indicated by the debris (charred metal, glass, and plastic fragments) occasionally encountered in the subsurface soil (more than 1 ft below the surface). The RI

determined that the inorganic exceedances at Site 8 were due to the red clayey road base fill across the area and were below the applicable reference concentrations (RCs) for NAS Pensacola. An SVOC exceedance of (benzo(a)pyrene [BAP]) was likely from asphalt fragments in the sample. The dieldrin and aldrin exceedances were determined to be from past disposal of pesticide rinsates at the former tank wash rack rinsing area.

Site 24 — Soil samples revealed inorganic compounds (arsenic, aluminum, iron, and manganese), pesticides (dieldrin, aldrin, and heptachlor epoxide), and SVOCs (benzo(b)fluoranthene [BBF], BAP, and dibenz(a,h)anthracene [DAA]) greater than the PRGs. Aluminum, iron, and manganese commonly occur as essential nutrients in fertilizers (and are common in NASP native soil); arsenic-based compounds are common ingredients in herbicides and pesticides. Because most of the site is (and historically has been) a maintained grass field, the presence of the inorganic compounds has been attributed to routine herbicide, fertilizer, and pesticide application. The detection of the pesticides is consistent with their past use at the site. The SVOC detections are suspected to be the result of past dust-control practices (the spreading of waste oil) along previously unpaved John Tower Road and/or residuals from vehicle traffic (incomplete fuel combustion) along the road.

As part of the RI, a baseline risk assessment (consisting of a human and an ecological component) was completed for OU 13. The risk assessment identifies contaminants of concern (COCs) based on acute, chronic, and cumulative exposure. The human health risk assessment identified two areas where surface soil poses risk to a hypothetical future resident. Levels of dieldrin and arsenic were found in an area of about 0.60 acre at Site 8. At Site 24, arsenic, benzo(a)pyrene equivalents (BEQs), and dieldrin were found in an area of about 0.33 acre. Florida's default cleanup target levels (i.e., Soil Cleanup Target Levels from Chapter 62-777, Florida Administrative Code [FAC], evaluated originally as PRGs) for the identified contaminants of concern (COCs) in soil are presented in Table 1 on page 5.

Groundwater

Site 8 — Only cadmium, manganese, and an isolated lead detection exceeded both PRGs and RCs in Site 8 groundwater. The distribution of the findings is consistent with the site’s northerly shallow groundwater flow and the past disposal of metallic-alloy aircraft refuse or other metallic material beneath Building 3561.

Site 24 RI Findings. Exceedances detected in shallow groundwater can be attributed to fertilizer application, which commonly contains water-soluble forms of these inorganics as essential nutrients. Metal fragments found in the subsurface soil north of Building 3678 indicate that Site 8 disposal activities may have extended to Site 24, which would account for the sporadic antimony, cadmium, nickel, and thallium exceedances detected in shallow groundwater. Relatively low concentrations of VOCs (methylene chloride, trichloroethene, and vinyl chloride) that slightly exceeded PRGs are also suspected to be the result of past disposal activities at Site 8 and/or 24. Also, one sample showed an exceedance of the pesticide dieldrin. The sample location corresponds to soil sample exceedances, indicating that soil contamination has leached to groundwater in a limited area. Generally, contamination of the groundwater under OU 13 does not currently present risk to receptors (such as people, plants, or animals) because the exposure pathway is not completed. An exposure pathway is how contaminants – in media such as soil, air, or water – might come in contact with receptors. An example of a complete exposure pathway--when that connection can be established—is a worker inhaling dust from a construction site. Without exposure, there is no risk (see the box at the top of page 5). Because potable water for NAS Pensacola is supplied from Corry Station, approximately four miles away, there is no complete pathway. The general water quality of the shallow aquifer at NAS Pensacola is too low to be considered a practical source of drinkable water.

State of Florida Drinking Water Standards for groundwater COCs from Chapter 62-550, FAC are presented in Table 2. These standards include Florida Primary/Secondary Drinking Water Standards (FPDWS/FSDWS), which are generally in accordance with the federal Safe Drinking Water Act Maximum Contaminant Levels (MCLs). Contaminants above

FPDWS/FSDWS and MCLs appear to attenuate before reaching OU 13’s boundary. However, the shallow groundwater is not used as a drinking water source due to its poor quality. Because higher quality water sources are available for the base system, shallow groundwater is unlikely to be used in the future.

Table 1
FDEP Default Cleanup Goals¹ for Soil (in mg/kg)
Based on RI Data

COC	Leachability ²	Direct Exposure	
		Residential Scenario	Industrial Scenario
Surface Soil			
Arsenic	29	0.8	3.7
BEQ	8	0.1	0.5
Chlordane	9.6	3.1	12
Dieldrin	0.004	0.07	0.3
Heptachlor Epoxide	0.6	0.1	0.4
Subsurface Soil			
Cadmium	8	NA	NA
Dieldrin	0.004	NA	NA

Notes:
 mg/kg = Milligrams per kilogram or parts per million (ppm).
 COC = Contaminant of concern.
 1 = Cleanup Goals are as listed in Florida Administration Code, Chapter 62-777, Table II, Soil Cleanup Target Levels.
 2 = Leachability based on protection of groundwater.

Table 2
Drinking Water Standards (Cleanup Goals) for Groundwater (in µg/L)
Based on RI Data

COC	FPDWS or FSDWS	
	Site 8	
Barium	2,000	
Cadmium	5	
Manganese	50	
Zinc	5,000	
Site 24		
Antimony	6	
Arsenic	50	
Benzene	1	
Cadmium	5	
Chlordane (total)	2	
4-4'-DDD	0.1	

Table 2
Drinking Water Standards (Cleanup Goals) for Groundwater (in µg/L)
Based on RI Data

COC	FPDWS or FSDWS
Delta-BHC ¹	2.1
1,4-Dichlorobenzene	75
1,1-Dichloroethene	7
1,2-Dichloroethene(cis)	70
Dieldrin ¹	0.005
Heptachlor	0.4
Heptachlor Epoxide	0.2
Manganese	50
Nickel	100
Tetrachloroethene	3
Thallium	2
Trichloroethene	3
Vinyl Chloride	1
Zinc	5,000

Notes:
 µg/L = Micrograms per liter or parts per billion (ppb).
 FPDWS = Florida Primary Drinking Water Standard.
 FSDWS = Florida Secondary Drinking Water Standard.
 1 = Under Chapter 62-777, Table 1, the Groundwater Cleanup Target Level (GCTL) for dieldrin is 0.005 ppb and 2.1 ppb for delta-BHC. The GCTLs are to-be-considered (TBC) criteria.

SUMMARY OF SITE RISKS

Federal regulations require that a Baseline Risk NPL site poses an unacceptable threat, now or in the future, to human health or the environment. This study provides a basis for determining whether cleanup is needed and what the cleanup levels should be.

In the BRA for OU 13 contained in the RI Report, the human health risk associated with exposure to contaminants in soil and groundwater was assessed for possible future site residents (children and adults under a hypothetical residential land use) and for possible exposure to future site workers and maintenance personnel (under an industrial land use). The full study is in the final RI Report (August 26, 1998).

Incremental Lifetime Cancer Risk (ILCR) refers to the cancer risk over and above the background cancer risk of 1 in 4 (as reported by the American Cancer Society) in

unexposed individuals. ILCRs are determined by multiplying the intake level with the cancer potency factor. A future child or adult resident's exposure to potential carcinogens is combined for a lifetime weighted average (LWA) to calculate ILCR. The calculated risk probability is typically expressed in scientific notation (e.g., 1.0E-6). For example, an ILCR of 1.0E-4 means that one additional person out of ten thousand may be at risk of developing cancer due to excessive exposure at a site if no actions are conducted. The USEPA acceptable target risk range is 1.0E-4 to 1.0E-6 (1 in 10,000 to 1 in 1,000,000). Florida's acceptable risk is 1.0E-6 (1 in 1,000,000).

Concern for potential noncarcinogenic (not cancer-causing) effects of a single contaminant in a single medium is expressed as the hazard quotient (HQ). By adding the HQs for all contaminants within a medium or across all media to which a given population may reasonably be exposed, the hazard index (HI) can be generated. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media. The HI refers to noncarcinogenic effects and is the ratio for the level of exposure to an acceptable level for a contaminant of potential concern; A value greater than or equal to 1.0 indicates that there may be a concern for noncarcinogenic health effects. Table 3 summarizes the total ILCRs and HIs calculated for OU 13.

Table 3
Total Site Incremental Lifetime Cancer Risk and Hazard Indices
Based on RI Data

	Future Resident Child	Future Resident Adult	Future Site Worker	Future Maintenance Worker
All Pathways Cumulative Total Risk/Hazard (Site 8)				
HI	5.18	1.9	0.75	NA
ILCR*	-	2.6E-5	4E-6	NA
All Pathways Cumulative Total Risk/Hazard (Site 24)				
HI	14.98	6.19	2.08	0.01
ILCR*	-	3.48E-4	9.3E-5	1.0E-06

Notes:
 HI = Hazard index.
 ILCR = Incremental Lifetime Cancer Risk.
 * = For site residents, the ILCR is the lifetime weighted average (combined child and adult exposure).

Bold values indicate risk levels that exceed acceptable levels.

Human Health: Soil — The BRA identified COCs under future residential or industrial use at Sites 8 and 24. The COCs for industrial use were previously listed in Table 1.

Human Health: Groundwater — The BRA identified COCs under future residential or industrial use. However, the shallow groundwater is not used as a drinking water source due to its poor ambient quality. Because higher quality water sources are available for the base system, shallow groundwater is unlikely to be used in the future. The COCs and corresponding drinking water standards were listed in Table 2.

Ecological Risk Assessment: As presented in the RI report, based on model prediction of receptor species' dietary exposure to detected soil parameters, contaminant uptake may present a risk. Maximum 4-4'-DDD and lead surface soil concentrations exceeded the literature based no-observed-adverse-effect levels (NOAELs) for a robin's dietary exposure. However, the NOAEL is a level that typically provides a low degree of confidence; therefore, the fact that these concentrations do not exceed the established lowest-observed-adverse-effect levels (LOAELs) is more significant.

Risk to potential receptors from dermal exposure to contaminants is expected to be negligible. Food chain biomagnification of lead is also considered unlikely, and it has been reported that forms of lead other than "shot" are unlikely to cause clinical signs of poisoning in birds. Biouptake of other inorganic constituents by small mammals is not expected to represent a significant pathway due to the limited infaunal community associated with the grass field, as well as to the lack of floral diversity.

It is important to note that the models used for this ecological risk assessment are very conservative and represent a worst-case exposure scenario (i.e., exposure to maximum detected concentrations is assumed). Also, the model does not take into account whether food sources actually occur at the site. It is based solely on contaminant concentrations and an assumption that animals will occur in the area and take all of their food from the location of the highest detected concentration. Actual exposure potentials are generally much lower than the model prediction.

INTERIM REMOVAL ACTION FINDINGS

Following an evaluation of the RI findings and the accompanying BRA, the Navy determined that it was appropriate to perform an interim removal action (IRA) to remove the principal threats of contaminated soil on Sites 8 and 24. As part of this process, remedial goals consistent with federal and state regulations were developed. It was at this time (2002) that FDEP began requiring that a point-by-point comparison of site analytical data to soil and groundwater cleanup target levels (CTLs) contained in FAC 62-777 be performed. These CTLs are based on generalized risk for residential and industrial exposure for soil, calculated risk for soil to groundwater, and primary and secondary maximum contaminant levels (MCLs) for groundwater.

As part of the IRA from August 2002 through June 2004, additional soil sampling activities were conducted at OU 13 to delineate or confirm the presence of contaminants and determine the leachability properties using Synthetic Precipitation Leaching Procedure (SPLP) methodology. In addition, groundwater monitoring wells were installed and groundwater samples were collected to evaluate whether the constituents detected in soil affected groundwater. This additional work is documented in the *Action Memorandum for OU 13*, July 1, 2004. Based on this additional soil and groundwater data when compared to FDEP CTLs, remaining COCs were identified for soil (Table 4) and groundwater (Table 5).

Table 4
FDEP Default Cleanup Goals for Soil (mg/kg) Based on IRA Data

	Leachability	Direct Exposure	
		Residential Scenario	Industrial Scenario
Soil at Site 8			
Dieldrin	0.004	0.07	0.3
Cadmium	8		
Soil at Site 24			
Dieldrin	0.004	0.07	0.3
Arsenic	29	0.8	3.7
Benzo(a)pyrene	8	0.1	0.5

- Notes:*
 mg/kg = Milligrams per kilogram or parts per million (ppm).
 1 = Cleanup Goals are as listed in Florida Administration Code, Chapter 62-777, Table II, Soil Cleanup Target Levels.
 2 = Leachability based on protection of groundwater.

Table 5
Drinking Water Standards (Cleanup Goals) for Groundwater
(µg/L) Based on IRA Data

	FPDWS, FSDWS or Reference Concentration	Source
Cadmium	5	FPDWS
Dieldrin	0.005	GCTL
Iron	1,707	Reference Concentration
Manganese	50	FSDWS

Notes:

- µg/L = Micrograms per liter or parts per billion (ppb).
- FPDWS = Florida Primary Drinking Water Standard.
- FSDWS = Florida Secondary Drinking Water Standard.
- GCTL = Under Chapter 62-777, Table 1, the Groundwater Cleanup Target Level (GCTL) for dieldrin is 0.005. The GCTLs are to-be-considered (TBC) criteria.

On Site 24, dieldrin was repeatedly not detected in groundwater despite its presence in soil above the leachability CTL. Arsenic values in soil are consistent with naturally-occurring concentrations at NASP. The BaP detected in soil has been linked to small pieces of asphalt included in the sample and vehicular traffic along John Tower Road. Therefore, the dieldrin, arsenic, and BaP in soil on Site 24 will not be addressed as part of the OU remedy.

On Site 8, the IRA sampling activities identified a cadmium-impacted area west of Building 3651 and a dieldrin-impacted area just east of Building 3561. The dieldrin contamination was further delineated into two smaller areas, one area to a depth of 5 ft below land surface (bls) and the second area to a depth of 10 ft bls. Based on the results of the investigations, approximately 468 cubic yards of cadmium contaminated soil and 374 cubic yards of dieldrin contaminated soil are present at the site.

Site 8 soil was considered to be the "principal threat" because the COCs are found at concentrations that pose a risk. Cadmium and dieldrin were a concern because of their potential to leach to groundwater. Although contaminated groundwater also poses a risk, it is not considered a "principal threat" as defined by USEPA guidance. The Navy is performing an IRA to remove the cadmium and dieldrin-contaminated soil on Site 8, therefore eliminating the threat.

SCOPE AND ROLE OF THE ACTION

This Proposed Plan addresses long-term cleanup of soil and groundwater at OU 13. The purpose of this Proposed Plan is to present the alternatives from which the Navy, with regulatory approval, will select a remedy to prevent future exposure to contamination at the site through contact with soil or groundwater.

REMEDIAL ACTION OBJECTIVES

The Remedial Action Objectives (RAOs) for OU 13 are the following:

- Control migration and leaching of contaminants in surface and subsurface soil to groundwater that could result in groundwater contamination in excess of drinking water standards.
- Reduce or eliminate further contamination of site groundwater.

The removal action met both RAOs identified for the OU.

SUMMARY OF REMEDIAL ALTERNATIVES

Prior to the IRA findings being available, several alternatives for soil and groundwater were evaluated for OU 13 and were included in the *Final Focused Feasibility Study (FFS)* of May 3, 2000, and the *FFS Addendum* of October, 2001. These alternatives were based solely on the RI findings and are listed in Table 6.

Table 6
Summary of Remedial Alternatives in FFS
OU 13

Medium	RI/FS Designation	Description
Soil	S-1	No action.
	S-2	Institutional controls.
	S-3(a)	Excavation to residential cleanup goals with offsite disposal.
	S-3(b)	Excavation to industrial cleanup goals with offsite disposal.
	S-3(c)	Excavation to residential cleanup goals and leachability criteria.
Groundwater	S-3(d)	Excavation to industrial cleanup goals and leachability criteria.
	G-1	No action.
	G-2	Institutional controls.
	G-3	Institutional controls with long-term monitoring.

Note:

- RI/FS = Remedial Investigation/Feasibility Study.

With the results of the IRA sampling now available, it is possible to streamline these alternatives to address the COCs on OU 13. With the execution of an IRA to remove the principal threat, soil alternatives can be drastically narrowed (no contaminated soil remains). The alternatives that remain viable for consideration include the following:

Soil: S-1

Groundwater: G-1, G-2, and G-3

No Action Alternatives

Alternative S-1/G-1: No Action.

Regulations governing the Superfund program require that the "no action" alternatives (S-1, G-1) be evaluated to establish a baseline for comparison. Under this alternative, the Navy would take no action at OU 13. Federal law requires site conditions to be evaluated every 5 years for 30 years or more at sites such as this if contaminated soil or water is left in place.

Groundwater Alternatives

Alternative G-1 is presented above.

Alternative G-2: Institutional Controls

Alternative G-3: Institutional Controls with Long-Term Monitoring.

Alternative G-2 would prohibit use of the groundwater at OU 13 as a drinking water source. The cost of Alternative G-2 is estimated at \$149,400. Alternative G-3 adds groundwater monitoring to Alternative G-2. Monitoring will look for the constituents listed in Table 5. Cleanup goals for groundwater COCs are also presented in Table 5. The cost of this alternative is estimated at \$610,200 for 30 years.

EVALUATION OF ALTERNATIVES

In selecting a preferred cleanup alternative, the Navy uses nine criteria (see box at right) to evaluate each alternative.

The first two criteria are essential and must be met before an alternative is considered further.

The next five criteria are used to further evaluate all options that meet the first two criteria.

- **Overall Protection of Human Health and the Environment** — Assesses the degree to which an alternative eliminates, reduces, or controls health and environmental threats through treatment, engineering methods, or institutional controls.
- **Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)** — Assesses compliance with federal and/or state requirements.
- **Cost** — Weighing the benefits of a remedy against the cost of implementation.
- **Implementability** — Refers to the technical feasibility and administrative ease of a remedy.
- **Short-Term Effectiveness** — Length of time for remedy to achieve protection and potential impacts of construction and implementation of the remedy.
- **Long-Term Effectiveness and Performance** — Degree to which a remedy can maintain protection of health and the environment once cleanup goals have been met.
- **Reduction of Toxicity, Mobility, or Volume Through Treatment** — Refers to expected performance of the treatment technologies to lessen the harmful nature, movement, or amount of contaminants.
- **State Acceptance** — Consideration of the state's opinion of the preferred alternatives.
- **Community Acceptance** — Consideration of public comments on the Proposed Plan.

The final two criteria are used to further evaluate the Navy's Proposed Plan after the public comment period has ended and comments from the community, USEPA, and FDEP have been received.

Soil: Following successful execution of the IRA, S-1 complies with Applicable or Relevant and Appropriate Requirements (ARARs) and is protective of human health.

Groundwater: Because groundwater contamination at OU 13 does not reach receptors and a risk pathway is not complete, there is currently no risk to receptors. Therefore, all of the groundwater alternatives protect human health and the environment and will comply with ARARs (including FPDWS and FSDWS and the Safe Drinking Water Act MCLs). In addition, the completed removal action will aid in the compliance with ARARs by effectively treating the

contaminant source in soil. Long-term effectiveness for all alternatives is based on natural processes, which may or may not achieve FPDWS. Alternatives G-1 and G-2 would eliminate risk by preventing use of the groundwater as a drinking water source. Alternative G-3 documents long-term effectiveness through monitoring. All alternatives are considered implementable and without short-term risks from implementation. NAS Pensacola property will remain under Navy control, and use of the aquifer below OU 13 is unlikely to change.

SUMMARY OF THE PREFERRED ALTERNATIVES

The following alternatives have been selected as "preferred" for soil and groundwater. The Navy believes these alternatives will adequately protect human health and the environment, attain all federal and state requirements (including ARARs), and are cost-effective, implementable and effective.

The USEPA and FDEP are expected to concur with the recommended alternatives. However, the Navy, in consultation with the USEPA and the FDEP, will not select a final alternative until public comment has been considered.

Soil: Alternative S-1 is the Navy's preferred alternative for soil. The Navy conducted a removal action to excavate the areas of contaminated soil at Site 8 identified during the RI/FS and IRA sampling.

Groundwater: Alternative G-2 is the Navy's preferred groundwater alternative. The property at OU 13 will remain under Navy control; therefore, use of the aquifer below OU 13 is unlikely to change from its current use, and there is currently no significant risk because the exposure pathway is not complete. Potable water for NAS Pensacola is obtained from Corry Station, approximately 4 miles away. The soil IRA will remove the principal threat to groundwater.

In cleanups of this sort, groundwater treatment is preferred over simple monitoring. This preferred alternative does not directly treat the groundwater. However, by removing the soil that is acting as the source of groundwater contamination, the Navy will be "treating" the contamination source. The Navy fully

expects groundwater to return to its natural state once the contaminant source is removed.

COMMUNITY PARTICIPATION

The Navy provides information regarding the cleanup of IRP sites at NAS Pensacola to the public through public meetings, the Administrative Record file for the site, and announcements published in the *Pensacola News Journal*. The Navy, USEPA, and FDEP encourage the public to gain a more comprehensive understanding of OU 13 and the Superfund activities that have been conducted at the site.

The dates for the public comment period and the locations of the Administrative Record files are provided on the front page of this Proposed Plan. If a public meeting is requested before the end of the public comment period, the date, location, and time of the meeting will be appropriately announced in the *Pensacola News Journal*.

For further information on OU 13, please contact Greg Campbell at (850) 452-4611, ext. 103.

GLOSSARY OF TERMS

This glossary defines terms used in this Proposed Plan. The definitions apply specifically to this Proposed Plan and may have other meanings when used in different circumstances.

Applicable or Relevant and Appropriate Requirements (ARARs): As outlined in CERCLA §121(d), federal standards, requirements, criteria, limitations, or more stringent state standards determined to be legally applicable or relevant and appropriate to the circumstances at a given site. ARARs are identified during the RI/FS and at other stages in the remedy selection process.

Baseline Risk Assessment (BRA): A study conducted as a supplement to a remedial investigation to determine the nature and extent of contamination at an NPL site and the risks posed to public health and/or the environment.

Cleanup: Actions taken to deal with a release or threatened release of hazardous substances that could

affect public health and/or the environment. The noun "cleanup" is often used broadly to describe various actions or phases such as a Remedial Investigation/Feasibility Study.

Comment period: A time for the public to review and comment on various documents and actions taken either by the Department of Defense installation or the USEPA. For example, a comment period is provided when USEPA proposes to add sites to the NPL. A minimum 45-day comment period is held to allow community members time to review the Administrative Record and review and comment on the Proposed Plan.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): A federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act (SARA). The act created a special tax that goes into a trust fund, commonly known as "Superfund," to investigate and clean up abandoned or uncontrolled hazardous waste sites. Under the program, the USEPA can either (1) pay for site cleanup when parties responsible for the contamination cannot be located or are unwilling or unable to perform the work or (2) take legal action to force parties responsible for site contamination to clean up the site or pay back the federal government for the cost of the cleanup.

Exposure Pathway: An exposure pathway is the method contaminants, or contaminated media such as soil, come in contact with people, plants, or animals that are considered "receptors." Exposure to contaminants occurs when an exposure pathway is "completed." Without exposure, there is no risk.

Feasibility Study: See Remedial Investigation/Feasibility Study.

Florida Primary Drinking Water Standard (FPDWS): This standard represents the maximum amount of particular contaminants that will be tolerated in a particular class of water. Maximum contaminant levels (Primary Drinking Water Standards) are generally in accord with EPA standards contained in the federal Safe Drinking Water Act.

Florida Secondary Drinking Water Standards (FSDWS): Non-enforceable guidelines regarding cosmetic effects (such as tooth or skin discoloration) or aesthetic effects (such as taste, odor, or color) of drinking water. No adverse health effects are generally associated with the secondary drinking water contaminants.

Groundwater: Water beneath the earth's surface that fills pores between materials such as sand, soil, or gravel. In aquifers, groundwater occurs in sufficient quantities for drinking water, irrigation, and other uses.

Information Repository: A file containing information, technical reports, and reference documents regarding an NPL site. Information repositories for NAS Pensacola are at the John C. Pace Library at the University of West Florida; and the NAS Pensacola Library, in Building 634, Naval Air Station Pensacola.

Installation Restoration Program (IRP): A program developed by the Department of Defense (DoD) to identify, assess, characterize, and clean up or control contamination from past hazardous waste disposal operations and hazardous materials spills at DoD facilities.

Land Use Control Implementation Plan (LUCIP): A detailed written plan designed to assure the effectiveness and reliability of a required land use control for as long as such controls are required in order for the remedial/corrective action to remain protective. Land use controls can be broadly interpreted to mean any restriction or control, arising from the need to protect human health and the environment, that limits use of and/or exposure to any portion of a property, including water resources.

Leach/leaching: The ability of a chemical, pesticide, or other contaminant to wash out of the soil.

Maximum Contaminant Level (MCL): The highest level of a contaminant that USEPA allows in drinking water. MCLs ensure that drinking water does not pose either a short-term or long-term health risk. USEPA sets MCLs at levels that are economically and technologically feasible. Some states set MCLs which are stricter than USEPA's.

National Contingency Plan (NCP): The federal regulation that guides the *National Priorities List* program.

National Priorities List (NPL): The USEPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial response using money from the trust fund.

Preliminary Remediation Goals (PRGs): Concentration goals for individual chemicals in specific medium and land use combinations which are used by risk managers as long-term targets during the analysis and selection of remedial alternatives.

Proposed Plan: A public participation requirement of SARA in which the lead agency summarizes for the public the preferred cleanup strategy and the rationale for the preference, reviews the alternatives presented in a detailed analysis of the RI/FS, and presents any waivers to the cleanup standards of Section 121(d)(4) that may be proposed. The proposed plan must actively solicit public review and comment on all alternatives under agency consideration.

Record of Decision (ROD): A public document that explains which cleanup alternative(s) will be used at NPL sites. The Record of Decision is based on information and technical analysis generated during the RI/FS and consideration of public comments and community concerns.

Remedial Investigation/Feasibility Study (RI/FS): Investigation and analytical studies usually performed at the same time in an interactive process and together referred to as the "RI/FS." They are intended to (1) gather the data necessary to determine the type and extent of contamination at an NPL site, (2) establish criteria for cleaning up the site, (3) identify and screen cleanup alternatives for remedial action, and (4) analyze in detail the technology and costs of the alternatives.

Resource Conservation and Recovery Act (RCRA): A federal law that established a regulatory system to track hazardous substances from the time of generation to disposal. The law requires safe and secure procedures to be used in treating, transporting, storing, and disposing

of hazardous substances. RCRA is designed to prevent new, uncontrolled hazardous waste sites.

Responsiveness Summary: A summary of oral and written public comments received by the lead agency during a comment period on key documents, along with the response prepared by the lead agency. The Responsiveness Summary, highlighting community concerns for decision-makers, is a key part of the ROD.

Superfund Amendments and Reauthorization Act (SARA): This act extensively amends CERCLA or Superfund. SARA's goals include a stepped-up pace of cleanup, increased public participation, and more stringent and better defined cleanup standards, emphasizing remedial actions that permanently and significantly reduce hazardous situations. Remedial actions are generally more extensive than removal actions, usually requiring a NPL listing, a detailed site study, and an analysis of the cost effectiveness of various cleanup options, known as a RI/FS. The act also requires that the USEPA or the state provide public notice and opportunity to comment on any proposed plan for remedial action prior to approval of the plan. In addition to requiring a cost-effective cleanup remedy for a Superfund site, as required by CERCLA, SARA requires that preference be given to remedies that permanently reduce the toxicity, volume, or mobility of the hazardous substances.

**NAS PENSACOLA OU 13
PUBLIC COMMENT SHEET**



Fold on dashed lines, staple, stamp, and mail

Place
Stamp
Here

Name
Address
City _____ State ____ Zip

**Commanding Officer
NAS Pensacola, Code 22000
Attn: Greg Campbell
190 Radford Blvd.
Pensacola, Florida 32508-5217**



MAILING LIST ADDITIONS/CORRECTIONS

**If you would like your name and address placed or corrected on the mailing list
for the Installation Restoration Program at NAS Pensacola, please complete
this form and return to:**

**Harry White,
NAS Pensacola Public Affairs Office,
Code 00B00,
190 Radford Boulevard, Building 191,
Pensacola, Florida 32508-5217.**

NAME:

ADDRESS:

TELEPHONE:

AFFILIATION (If any):

DEPARTMENT OF THE NAVY

COMMANDING OFFICER

CODE 00B00

NAS PENSACOLA

190 RADFORD BLVD.

PENSACOLA, FLORIDA 32508-5217

OFFICIAL BUSINESS