Naval Air Station Pensacola
Installation Restoration Program
Site 38 — Operable Unit 11
July 2005

Navy Announces Proposed Plan

This Proposed Plan identifies the Preferred Alternative for cleaning up the contaminated soil and groundwater at Naval Air Station (NAS) Pensacola Site 38 (Operable Unit 11) and provides the rationale for this preference. In addition, this plan includes summaries of other cleanup alternatives evaluated for use at this site. This document is issued by the U.S. Navy (the lead agency for site activities), the Florida Department of Environmental Protection (FDEP, the support agency), and the U.S. Environmental Protection Agency (USEPA). The Navy, in consultation with 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 advertised in this document, and may modify the preferred alternative or select another response action presented in this plan based on new information or public comments. Therefore, the public is encouraged to review and comment on <u>all</u> the alternatives presented in the 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 Contingency Plan (NCP). This proposed plan summarizes information that is detailed in the Remedial Investigation/Focused Feasibility Study (RI/FFS) reports 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 that have been conducted at the site.**

Dates to Remember

Public Comment Period:
July 1, 2005 – August 14, 2005

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

For more information, see the Administrative Record at the following locations:

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.

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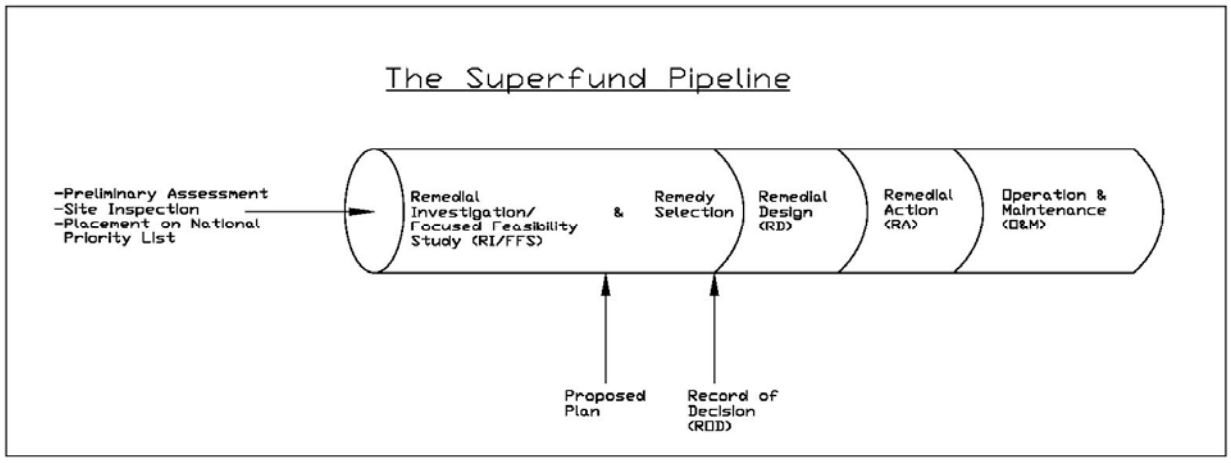


Site History

NAS Pensacola was placed on USEPA's National Priorities List (NPL) in December 1989. The Comprehensive, Environmental Response, Compensation, and Liability Act (CERCLA) 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. Site 38 is one of a number of areas at the base being investigated under these programs.

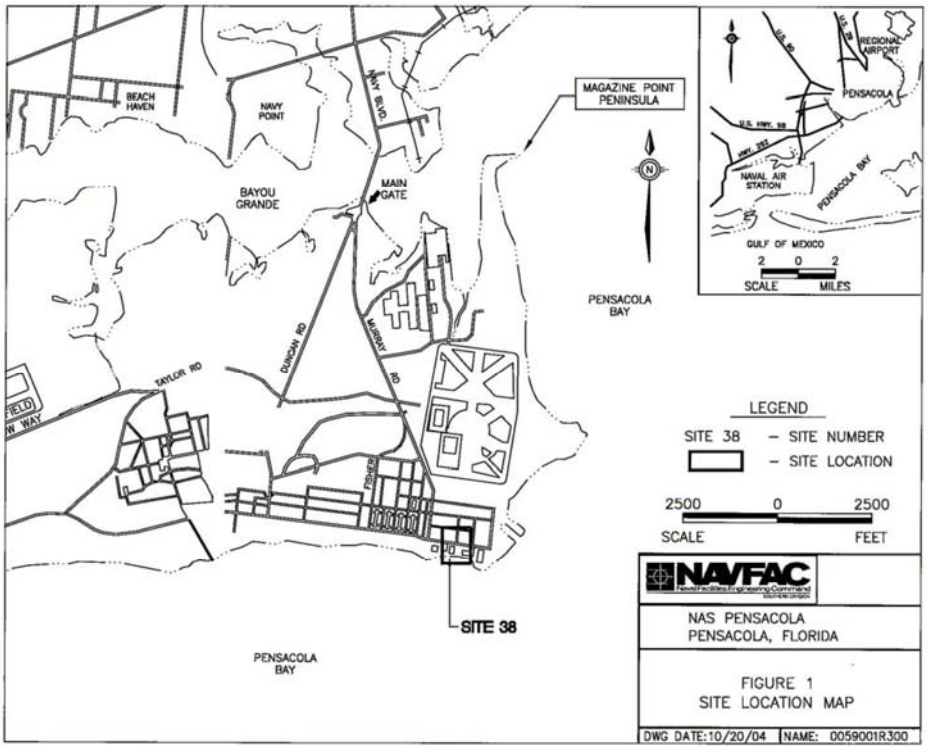
Site 38 includes Buildings 71 and 604, surrounding areas, and the associated industrial waste sewer line (Figure 1). The southern edge of the one-acre site borders Pensacola Bay. Building 71 was used from about 1935 to the late 1970s for aircraft painting and paint stripping operations. More recently, it housed hazardous wastes. Building 604 was used for plating operations and other industrial purposes until it was discontinued in 1996 as part of base realignment.

Both operations discharged waste materials into Pensacola Bay during their first years of operation, and both were connected to the industrial wastewater treatment plant (IWTP) in the early 1970s to eliminate this discharge into the bay.

Based on the RI, the following areas are potential sources of contaminant releases:

- Paint stripping operations at former Building 71
- Former underground solvent storage tank and plating shop at Building 604

Localized areas of contamination were also identified along the IWTP sewer line**.**



Site Characteristics
The September 30, 1998, RI report concluded that soil and groundwater at the property were impacted by past activities. Impact is determined by comparing the contaminant levels at the site to compound-specific preliminary remediation goals (PRGs). Subsequently, FDEP developed cleanup target levels for soil and groundwater that the Navy and EPA accept as default levels for assessing risk. These goals can be based on the evaluation of risk, or they can be previously calculated agency-accepted numbers. Compounds with levels that fall below the PRGs for this site are not of concern; therefore, they are not discussed in this proposed plan.

Contaminants from the following groups were detected in soil, groundwater, or both:

- *Inorganic chemicals* are naturally occurring metals that can be toxic in large doses.
- *Pesticides* are used to kill unwanted insects, plants, or other pests.
- *Polychlorinated biphenyls (PCBs)* are man-made substances once widely used in electrical components.
- *Semivolatile organic compounds (SVOCs)* are common components of asphalt, coal, tar, and jet and diesel fuels.
- *Volatile organic compounds (VOCs)* are commonly used in solvents used for cleaning industrial equipment.

Soil — Inorganics, pesticides, PCBs, and SVOCs were detected in both surface and subsurface soil samples from the site at levels exceeding PRGs. VOCs were detected above PRGs in subsurface soil but not in surface soil. The main areas of soil contamination were centered around Buildings 71 and 604, and at distinct points along the IWTP sewer lines.

Groundwater — Groundwater sampling was conducted in four separate events: 1993/1994, 1995/1996, 1998/1999, and 2000. Results showed that inorganics, SVOCs, and VOCs were present above their PRGs in the shallow groundwater below both Buildings 71 and 604. These findings are consistent with soil exceedances. However, based on sampling events over the years, concentrations in the groundwater appear to be decreasing.

Summary of Site Risks
Federal regulations require that a Baseline Risk Assessment (BRA) be conducted to determine if an NPL site poses an unacceptable threat, now or in the future, to human health or the environment. Human health risk assessment was performed for both Site 38 study areas: Building 71 and Building 604. As part of the BRA, studies have been conducted to determine where cleanup is needed and what the cleanup levels should be.

Human Health Risk Assessment — To determine potential risks to human health from exposure to contaminants in soil and groundwater, the BRA was prepared as part of the RI Report. Human health risk associated with exposure to contaminants in soil and groundwater was assessed for two potential scenarios: future site residents (under a residential use scenario), and current and future site workers and maintenance personnel (under an industrial use scenario). The full study can be found in the RI Report, which is in the Administrative Record. Additional comparisons to current FDEP soil and groundwater cleanup target levels (SCTLs, GCTLs) are presented in the FFS Report.

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 calculated by multiplying the expected intake level with the cancer potency factor. A future child or adult resident's exposure to potential cancer causing chemicals is combined with 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 if no cleanup actions are

conducted. The USEPA's 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. By adding the hazard quotients for all contaminants within a medium or across all media to which a given population may reasonably be exposed, the hazard index can be generated. The hazard index provides a useful reference point for gauging the potential significance of exposure to contamination in more than one medium. The hazard index refers to noncarcinogenic effects and is the ratio for the level of exposure to an acceptable level for a chemical of potential concern (COPC). A value greater than or equal to 1.0 indicates that there may be a concern for noncarcinogenic health effects. Below is a summary the total ILCRs and hazard indices calculated for Site 38.

Incremental Lifetime Cancer Risk (ILCR) and Hazard Indices (HI)
Based on Remedial Investigation Data

	Site Resident			Site Worker		Site Trespasser	
	Adult	Child	LWA	Adult		Adolescent	
	HI	HI	ILCR	HI	ILCR	HI	ILCR
Sum of Soil and Groundwater Pathways – Building 71 Study Area	13.6	32.1	3E-03	4.8	8E-04	0.014	4E-07
Sum of Soil and Groundwater Pathways – Building 604 Study Area	42.6	99.9	1E-01	15.1	3E-02	0.020	2E-06

Human Health Risk Assessment: Soil

The BRA identified two chemicals of concern (COCs), arsenic (metal) and benzo(a)pyrene equivalents (SVOCs [BEQs]), under future residential or industrial use at Site 38.

Additional evaluation was performed in the FFS. Risk from exposure to contaminated soil was evaluated by comparing all detected contaminants to FDEP SCTLs under both residential and industrial use scenarios. Residential SCTLs are more stringent than industrial SCTLs. Inorganics detected in soil were also compared to reference concentrations (RCs). RCs (also called background concentrations) represent the level of each contaminant that naturally occurs at the site. A level above the RC could be considered excessive and a possible risk to human health. For comparison purposes, detected concentrations of each inorganic chemical were compared to the greater of two: RC and/or residential SCTL. Detected concentrations exceeding either residential or industrial SCTLs were then listed as COPCs and evaluated further.

The further evaluation was conducted to refine the list of *potential* contaminants to *actual* COCs using tools recommended by FDEP:

- COPCs were compared to three times the SCTL (3X SCTL) for both residential and industrial scenarios to determine whether the location was a "hot spot." If a contaminant concentration exceeded 3X SCTL, it was considered a COC.
- In addition, for each COPC, the 95% Upper Confidence Limit (UCL) was calculated to determine the average contaminant concentration over an entire area or "site-wide," because the location of an individual's exposure is likely to be over an entire area. Each 95% UCL was then compared to its respective SCTL. If the 95% UCL exceeded its respective SCTL then it was considered a COC.
- All soil detections were also compared to FDEP's Leachability SCTL to determine the likelihood of contaminants leaching into the groundwater. Contaminant concentrations exceeding their respective leachability SCTLs are also COCs.

COCs were identified for the two scenarios — residential and industrial — for both surface and subsurface soil intervals.

- Under the residential scenario, all the COCs were identified as described above.
- Under the industrial scenario, all the COCs were identified as described above with the exception that only locations with a "grassy" surface were included. Locations under concrete or asphalt pavement were not included because the exposure pathway is incomplete (i.e., surface soil is not exposed and rain water will not infiltrate).

The following tables list COCs based on these evaluations.

Chemicals of Concern for Residential Scenario	
Building 71	**Building 604**
Surface Soil	
Arsenic	Arsenic
Chromium	Cadmium
Copper	Chromium
Vanadium	Copper
Aroclor-1254	Vanadium
Benzo(a)pyrene	Beta-BHC
Phenol	Delta-BHC
1,2-Dichloroethane	Benzo(a)pyrene
2-Methylphenol	Dieldrin
4-Methylphenol	Acetone
Chloroform	Methylene chloride
Tetrachloroethene	Tetrachlorethene
Trichloroethene	
Subsurface Soil	
Arsenic	Antimony
Chromium	Arsenic
Copper	Copper
Aroclor-1254	Vanadium
Benzo(a)pyrene	Dieldrin
Phenol	Benzo(a)anthracene
1,2-Dichlorothane	Benzo(a)pyrene
4-Methylphenol	Benzo(b)fluoranthene
Chloroform	Dibenz(a,h)anthracene
Tetrachloroethene	
Trichloroethene	

Chemicals of Concern for Industrial Scenario	
Building 71	**Building 604**
Surface Soil	
Aroclor-1254	Arsenic
	Cadmium
	Chromium
	Beta-BHC
	Delta-BHC
	Dieldrin
	Benzo(a)pyrene
	Acetone
Subsurface Soil	
Arsenic	Antimony
Aroclor-1254	Benzo(a)pyrene

Figure 2 shows areas impacted by the chemicals of concern.

Human Health Risk Assessment: Groundwater

Site 38 groundwater has been sampled four times: 1993/1994 (original RI), 1995 (USEPA), 1998/1999, and 2000. Groundwater concentrations decreased over these sampling events. Data from the 2000 sampling event represent the current conditions of the groundwater contaminant plume; therefore, the 2000 sampling event data were used to define the nature and extent of contamination and delineate areas requiring further assessment. Analytical data collected from groundwater sampling are compared with RC and GCTLs. As with the soil, the larger value (GCTL or RC) was used as the screening criterion. Also, the three most downgradient wells at each study area were compared with Marine Surface Water Quality (MSWQ) criteria to evaluate concentrations at a representative point of discharge into Pensacola Bay. For the Building 71 study area, wells 38GS02, 38GS03, and 38GS13 were used in this comparison. These wells are approximately 32 feet from the sea wall. For the Building 604 study area, wells 38GS07, 38GS18, and 38GS32 were used; these wells are approximately 130 feet from Pensacola Bay. Lastly, groundwater concentrations were compared against Natural Attenuation Default Source (NADS) concentrations in Chapter FAC 62-777 to evaluate natural attenuation. Contaminants exceeding any of these criteria were listed as COCs. Groundwater COCs include barium, cadmium, copper, iron, lead, manganese, mercury, zinc, acenaphthene, anthracene, dibenzofuran, fluoranthene, naphthalene, phenanthrene, pyrene, bis(2-ethylhexyl)phthalate, ethylbenzene, 1,2-dibromo-3-chloropropane, trichloroethene, tetrachloroethene, vinyl chloride.

Ecological Risk

There are no risks to environmental receptors associated with surface soil contamination. This is primarily because there are no natural terrestrial habitat features (e.g., open space or trees) in or around Site 38. The only terrestrial receptors are shorebirds that periodically visit the area. Additionally, most of the site is covered by asphalt, concrete, and buildings preventing exposure to soil. Contamination in the small grassy areas is minimal.

Summary of Remedial Alternatives

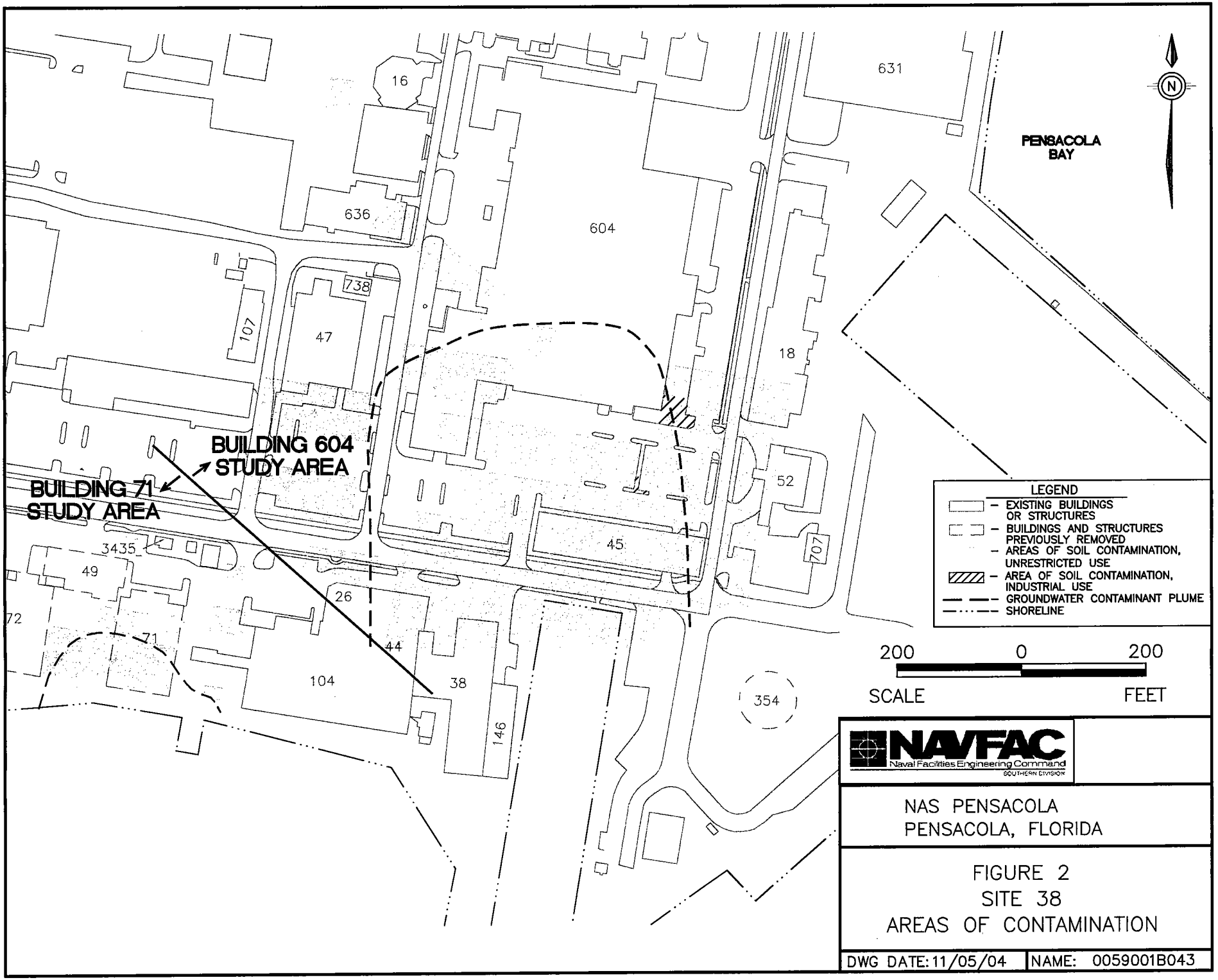
Remedial alternatives for Site 38 are presented as follows. The alternatives are numbered to correspond with the FFS report.

Many of these alternatives include common components. The soil is hazardous waste as defined by RCRA and therefore is subject to the RCRA land disposal restrictions (LDRs) if the waste is excavated and removed from the area. The groundwater is not a RCRA hazardous waste; therefore, the LDR standards are not applicable.

Some of the remedies include institutional controls (e.g., deed restrictions such as easement or covenant) to limit the use of portions of the property or to ensure that the water is not used as drinking water. These resource-use restrictions are discussed in each alternative, as appropriate. The type of restriction and enforceability will need to be determined for the selected remedy in the Record of Decision (ROD). Monitoring to ensure the effectiveness of the remedy, including deed restrictions, is a component of each alternative except the no-action alternative.

Soil Alternatives

Alternative S1: No Action
Estimated Capital Cost: $0
Estimated Present Worth of 5-year Re-evaluation for 30 years: $24,400
Estimated Present Worth Cost: $24,400
Estimated Construction Time Frame: None


16
631
PENSACOLA BAY
636
604
738
107
47
18
BUILDING 604 STUDY AREA
BUILDING 71 STUDY AREA
52
3435
45
707
49
26
72
71
44
104
38
354
146
LEGEND
EXISTING BUILDINGS OR STRUCTURES
BUILDINGS AND STRUCTURES PREVIOUSLY REMOVED
AREAS OF SOIL CONTAMINATION, UNRESTRICTED USE
AREA OF SOIL CONTAMINATION, INDUSTRIAL USE
GROUNDWATER CONTAMINANT PLUME
SHORELINE
200 0 200
SCALE FEET
NAVFAC
Naval Facilities Engineering Command
SOUTHERN DIVISION
NAS PENSACOLA
PENSACOLA, FLORIDA
FIGURE 2
SITE 38
AREAS OF CONTAMINATION
DWG DATE: 11/05/04
NAME: 0059001B043

Regulations governing the CERCLA program require that the no-action alternative be evaluated to establish a baseline for comparison. Under this alternative, the Navy would take no action at the site to prevent exposure to soil contamination. The NCP requires any alternative that leaves contamination onsite to be re-evaluated every 5 years to ensure adequacy of the alternative.

Alternative S2: Existing Surface Cap with Institutional Controls
Estimated Capital Cost: $50,000
Estimated Present Worth of 5-year Re-evaluation for 30 years: $61,000
Estimated Present Worth Cost: $135,400
Estimated Construction Time Frame: None

Under Alternative S2, the existing asphalt and concrete covering the site would be designated as a cap and maintained as necessary. Institutional controls such as a land-use control agreement (LUCA) would be implemented to limit access and property use to industrial/commercial, thereby limiting potential exposure to contamination. The LUCA would also prohibit use of groundwater onsite due to the potential for soil-to-groundwater impacts. Natural attenuation mechanisms and the existing surface cap would minimize the potential offsite impacts due to leaching. This alternative does not require any change to existing activities since current activities at Site 38 are industrial/commercial. However, to minimize exposures, pavement would have to be maintained, and personnel must notify the base environmental office to obtain proper instruction and health and safety procedures before invasive activities.

Alternative S3: Excavation of Hot Spots/Acute Toxicity and Leachability Criteria Exceedances for Unrestricted Use with Offsite Disposal
Estimated Capital Cost: $28,095,300
Estimated Present Worth Cost: $28,095,300
Estimated Construction Time Frame: 5 years

Under Alternative S3, soil would be excavated/removed in areas where contaminants exceed 3X residential SCTLs and leachability criteria and disposed of in an appropriate landfill. This would remove the risk of exposure for the residential-use scenario and be protective of groundwater. Institutional controls would not be required. Under this alternative, it is assumed that Building 604's activities will be relocated, and the building will be demolished and reconstructed, thereby significantly adding to the overall cost and difficulty of implementing this alternative.

Alternative S4: Excavation of Industrial Hot Spots and Leachability Criteria Exceedances with Offsite Disposal
Estimated Capital Cost: $365,200
Estimated Present Worth of 5-year Re-evaluation for 30 years: $85,500
Estimated Present Worth Cost: $450,700
Estimated Construction Time Frame: 1 year

Under Alternative S4, soil not under the existing cap would be excavated to 3X industrial SCTLs and leachability criteria and disposed of in an appropriate landfill. The asphalt and concrete surfaces limit the risk of exposure and groundwater infiltration. Soil under these surfaces would not be removed. Institutional controls would be implemented to limit access and property use to industrial uses, minimizing potential exposure to contamination left in place. The existing asphalt and concrete cover would be designated as a cap and maintained. Controls would be required where contaminated soil is left in place. These controls include maintenance of pavement and notifying the base environmental office to obtain proper instruction and health and safety procedures before invasive activities. Under this alternative, Building 604 does not require demolition and reconstruction.

Alternative S5: Capping
Estimated Capital Cost: $232,700
Estimated Present Worth 5-year O&M: $80,600
Estimated Present Worth Cost: $313,300
Estimated Construction Time Frame: 1 year

Alternative S5 calls for a "cap". Capping is a source control alternative that reduces the risk of exposure by placing a cover system (cap) over the contaminated area. Under this alternative, presently uncovered areas with 3X industrial SCTLs and leachability criteria exceedances would be covered with a cap, creating a system that functions as a continuous cover over the entire contaminated area. The primary purpose of a cap is to prevent direct contact with, and ingestion of, contaminated materials. The secondary purpose is to prevent rainwater from filtering through the soil, minimizing the potential for contaminants to leach from soil to groundwater. For this alternative, only the industrial-use scenario was considered applicable; therefore, institutional controls would be required to limit site use.

Groundwater Alternatives

Alternative G1: No Action
Estimated Capital Cost: $0
Estimated Present Worth of 5-year Re-evaluation for 30 years: $99,600
Estimated Present Worth Cost: $99,600
Estimated Construction Time Frame: None

This alternative is required by the NCP as a baseline for comparison with other alternatives. Under this alternative, no action is taken to treat or prevent potential exposure to contaminated groundwater, or reduce volume, toxicity, or mobility of contaminants. This alternative would rely on natural attenuation processes to reduce contaminant concentrations over time, and does not include any institutional controls. Future site use would be uncontrolled and the site could be used for residential purposes.

Alternative G2: Monitored Natural Attenuation with Institutional Controls
Estimated Capital Cost: $310,900
Estimated Annual Monitoring Cost: $54,400
Estimated Present Worth Cost: $625,900
Estimated Construction Time Frame: None

Alternative G2 would consist of a Monitored Natural Attenuation (MNA) response action combined with institutional controls. MNA relies on the natural attenuation processes that control plume migration and reduce contaminant mass to achieve remedial objectives within a reasonable time frame. It applies to organic contamination such as chlorinated solvents, as well as inorganics. Final cleanup goals would be met throughout the entire plume within an estimated time frame of 5 years.

Alternative G3: Enhanced Bioremediation
Estimated Capital Cost: $580,500
Estimated Present Worth O&M Cost: $332,700
Estimated Present Worth Cost: $1,098,600
Estimated Construction Time Frame: 2 years

Alternative G3 would use technologies to add nutrients, oxygen, or other compounds to groundwater to enhance subsurface conditions with the goal of maximizing the rate and efficiency of contaminant biodegradation or transformation. The efficiency and effectiveness of bioremediation depends on site-specific factors such as electron acceptors, electron donors, nutrients, bioavailability, competing substances, population of microorganisms, pH, temperature, and contaminant concentrations.

Alternative G4: Groundwater Extraction and Discharge to Federally Owned Treatment Works (FOTW)
Estimated Capital Cost: $261,000
Estimated Present Worth O&M Cost: $1,682,700
Estimated Present Worth Cost: $1,943,700
Estimated Construction Time Frame: 2 years

Under Alternative G4, a groundwater recovery system would be installed. The overall objective of the groundwater recovery system would be containment of groundwater, in which contaminants exceed RGs, to prevent offsite migration. Groundwater recovery is possible using various extraction system configurations, including extraction wells, interceptor trenches, or vacuum extraction. For this evaluation, groundwater recovery using extraction wells was assumed. Preliminary plume recovery was modeled using CAPZONE and GWPATH. Based on this model, it appears that one extraction well would be required to collect groundwater at Building 71, and one extraction well would be required at Building 604.

Evaluation of Alternatives

Nine criteria are used to evaluate the different remediation alternatives individually and against each other in order to select a remedy. This section of the Proposed Plan profiles the relative performance of each alternative against the nine criteria, noting how it compares to the other options under consideration. The nine evaluation criteria are discussed below along with the comparison of each alternative to these criteria. The "Detailed Analysis of Alternatives" can be found in the FFS.

Evaluation Criteria for Superfund Remedial Alternatives
Overall Protection of Human Health and the Environment determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.
Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) evaluates whether the alternative meets federal and state environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.
Long-term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time.
Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment evaluates an alternative's use of treatment to reduce harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
Short-Term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.
Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
Cost includes estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30%.
State/Support Agency Acceptance considers whether the state agrees with the Navy's analyses and recommendations, as described in the RI/FFS and the Proposed Plan.
Community Acceptance considers whether the local community agrees with the Navy's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

Evaluation of Soil Alternatives					
Criteria	**Alternative S1**	**Alternative S2**	**Alternative S3**	**Alternative S4**	**Alternative S5**
THRESHOLD CRITERIA					
Overall Protection of Human Health and the Environment	No reduction in risk. No additional protection to human health. Soils exceeding leachability criteria remain; however, natural attenuation prevents offsite migration to Pensacola Bay.	Reduces potential for uncontrolled site access and restricting use. Existing cap remains to prevent exposure, and fencing placed around several grassy areas with 3X ISCTL exceedances. Soils exceeding leachability criteria remain; however, natural attenuation prevents offsite migration to Pensacola Bay.	Soil posing risk removed and replaced with clean backfill. Soils exceeding LC removed.	Soil posing risk that is not under the existing cap removed and replaced with clean backfill. Soils exceeding LC that are not under the existing cap removed. Institutional controls implemented.	Soil posing risk capped and maintained to reduce risk. Soil exceeding leachability capped and maintained to prevent infiltration. Institutional controls implemented.
Compliance with ARARs	Does not comply with Remedial Goals (RGs). Risk remains under uncontrolled future use.	Does not comply with RGs. Six locations have viable exposure pathway.	Complies with residential RGs by removing locations exceeding leachability.	Complies with industrial RGs by removing locations exceeding leachability that are not under the existing cap. Migration from surface water to groundwater prevented with existing cap.	Potential for contact with contaminants eliminated by removing the primary pathways.
BALANCING CRITERIA					
Long-term Effectiveness and Permanence	No means to prevent exposure. Long-term effectiveness is minimal. Soil concentrations remain with the exception of natural attenuation.	Limits exposure to soil contamination. Maintenance and inspection program required for cap. Site access and control remain limited.	Provides permanent exposure reduction.	Provides long-term effectiveness by removing soil posing an industrial risk. Removes soil with potential for contaminant leaching.	Provides long-term effectiveness by limiting exposure to soil contamination and management of the cap. Maintenance and inspection program required for cap. Site access and control remains limited.
Reduction of Toxicity, Mobility, or Volume through Treatment	Contaminants remain untreated and in place. However, natural attenuation reduces toxicity, mobility, and volume.	Contaminants remain untreated and in place. However, natural attenuation reduces toxicity, mobility, and volume.	Contamination is not reduced but removed and disposed of at secure sanitary landfill.	Contamination is not reduced but removed and disposed of at secure sanitary landfill.	Contaminants remain untreated and in place. However, natural attenuation reduces toxicity, mobility, and volume.

Evaluation of Soil Alternatives					
Criteria	**Alternative S1**	**Alternative S2**	**Alternative S3**	**Alternative S4**	**Alternative S5**
Short-Term Effectiveness	No short-term risks.	No short-term risks.	Construction workers at risk for dermal contact or ingestion; however, personal protective equipment (PPE) reduces exposure. Community exposed to soils during transportation; however, controls used as required by DOT to minimize risks. Includes extensive shoring, structural controls, and building demolition.	Construction workers at risk for dermal contact or ingestion; however, PPE reduces exposure. Community exposed to soils during transportation; however, controls used as required by DOT to minimize risks.	Will not cause adverse impacts to the surrounding environment. Engineering controls used to manage storm water runoff. Construction workers at risk for dermal contact or ingestion; however, PPE will reduce exposure.
Implementability	Feasible and easily implemented. Requires re-evaluation every 5 years.	Feasible and easily implemented. Institutional controls implemented through administrative coordination. Site formally documented as industrial/ commercial use. Re-evaluation required for any significant changes to the base.	Easily implemented. Shoring and structural specialists might be required.	Easily implemented. Institutional controls implemented through administrative coordination. Site formally documented as industrial/ commercial use.	Easily implemented. Institutional controls implemented through administrative coordination. Site formally documented as industrial/ commercial use. Requires re-evaluation every 5 years.
Cost	$24,400	$61,000	$28,095,300	$450,700	$313,300
MODIFYING CRITERIA					
Support Agency Acceptance	FDEP and USEPA involved in process and have had opportunity to comment.	FDEP and USEPA involved in process and have had opportunity to comment.	FDEP and USEPA involved in process and have had opportunity to comment.	FDEP and USEPA involved in process and have had opportunity to comment.	FDEP and USEPA involved in process and have had opportunity to comment.
Community Acceptance	Established after public-comment period on proposed plan.	Established after public-comment period on proposed plan.	Established after public-comment period on proposed plan.	Established after public-comment period on proposed plan.	Established after public-comment period on proposed plan.

Evaluation of Groundwater Alternatives				
Criteria	**Alternative G1**	**Alternative G2**	**Alternative G3**	**Alternative G4**
THRESHOLD CRITERIA				
Overall Protection of Human Health and the Environment	Provides no additional protection under the current scenario or for future use prior to natural attenuation achieving RGs.	Groundwater use and site access restricted through institutional controls, thereby, providing long-term effectiveness and permanence.	Actively enhances biological degradation. Groundwater use and site access restricted through institutional controls.	Recovers and contains groundwater exceeding RGs. Also removes mass in contaminated zones. Human health and environmental protected through FOTW's treatment processes.
Compliance with ARARs	Does not comply with ARARs because groundwater could be consumed or used in an uncontrolled-use scenario. However, concentrations are decreasing and are not discharging into the Pensacola Bay.	Modeling of current groundwater data predicts concentrations degrading to below RGs in the next 5 years.	Monitoring required to ensure compliance with Marine Surface Water Quality Criteria (MSWQ) criteria.	Complies with ARARs. Contaminated groundwater removed using extraction wells. Subject to NPDES requirements and FOTW effluent discharges must meet the NPDES permit requirements.
BALANCING CRITERIA				
Long-term Effectiveness and Permanence	Does not provide long-term effectiveness and permanence. Contaminants are decreasing but no action does not reduce the magnitude of risk and does not provide a means for monitoring.	Overwhelming evidence that MNA is feasible and effective which provides a long-term, permanent aquifer remediation.	Eliminates risk by enhancing degradation process.	Contains and reduces contamination. Monitoring required to ensure contaminant removal.
Reduction of Toxicity, Mobility, or Volume through Treatment	Does not reduce toxicity, mobility, or volume with the exception of natural attenuation.	Natural attenuation continues to reduce contaminants over time.	Directly reduces the volume and toxicity of contaminants. Migration towards current transport dynamics.	Reduces toxicity and volume of contaminated groundwater. Eliminates migration. Removal is expected to be permanent.
Short-Term Effectiveness	No risk would be posed to community, workers, or the environment during implementation.	No risks are associated with implementation of MNA. Restrictions will be implemented to protect community and workers from groundwater. Some short-term risk during sampling, however, PPE will be used to minimize exposure.	Restrictions implemented to protect community from groundwater. Some short-term risk during implementation and sampling; however, PPE used to minimize exposure.	Impacts to surrounding environment during construction are not anticipated. Approval to FOTW required. Some short-term risk during implementation and sampling; however, PPE used to minimize exposure.

Evaluation of Groundwater Alternatives				
Criteria	**Alternative G1**	**Alternative G2**	**Alternative G3**	**Alternative G4**
Implementability	Feasible and readily implemented. Groundwater monitoring and report preparation required every 5 years for 30 years.	Feasible and readily implemented. Remedial design phase required.	Feasible and readily implemented. Pilot study and remedial design phase required.	Feasible; construction is minimal in difficulty.
Cost	$99,600	$625,900	$1,098,600	$1,943,700
MODIFYING CRITERIA				
Support Agency Acceptance	FDEP and USEPA involved in process and have had opportunity to comment.	FDEP and USEPA involved in process and have had opportunity to comment.	FDEP and USEPA involved in process and have had opportunity to comment.	FDEP and USEPA involved in process and have had opportunity to comment.
Community Acceptance	Established after public-comment period on proposed plan.	Established after public-comment period on proposed plan.	Established after public-comment period on proposed plan.	Established after public-comment period on proposed plan.

Summary of the Preferred Alternative
The preferred alternative for Site 38 is a combination of Soil Alternative S4 (excavation for industrial use) and Groundwater Alternative G2 (monitored natural attenuation).

The preferred soil alternative was selected over other alternatives because it is expected to achieve long-term risk reduction for industrial use by removing exposed contaminated soil. The preferred groundwater alternative was selected over the other alternatives because it is also expected to achieve long-term risk reduction of groundwater through natural attenuation in a short time, as compared with the other alternatives. Hence, the combination of Alternatives S4 and G2, hereafter referred to as the Preferred Alternative, will reduce risk in a reasonable time frame and at a lower cost than some of the other alternatives, along with providing long-term reliability.

Based on the information available at this time, the Navy, USEPA, and FDEP believe the Preferred Alternative will be protective of human health and the environment, comply with ARARs, be cost-effective, and use permanent solutions and alternative treatment technologies to the maximum extent practicable. The Preferred Alternative can change in response to public comment or new information.

Community Participation
The Navy provides information regarding the cleanup of Site 38 to the public through 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 more comprehensive understanding of the site and the Superfund activities that have been conducted at the site.

The dates for 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 Site 38, please contact Greg Campbell at 1-850-452-4611, ext. 103.

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

Applicable or Relevant and Appropriate Requirements (ARARs) — The federal and state environmental laws that a selected remedy will meet. These requirements may vary among sites and alternatives.

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

Bioremediation — The use of microorganisms to transform or alter through metabolic or enzymatic action, hazardous organic contaminants into nonhazardous substances.

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 phrases such as Remedial Investigation/Focused 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 the 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 trust fund, commonly known as "Superfund," to investigate and clean up abandoned or uncontrolled hazardous waste sites. Under CERCLA the USEPA can either:

- Pay for cleanup when parties responsible for the contamination cannot be located or are unwilling or unable to do the work.
- Take legal action to force parties responsible for site contamination to clean up the site or pay back federal government for cost of the cleanup.

Contaminant plume — A column of contamination with measurable horizontal and vertical dimensions that is suspended in and moves with groundwater.

Groundwater — Underground water that fills pores in soils or openings in rocks to the point of saturation. Groundwater is often used as a source of drinking water via municipal or domestic wells.

Information Repository — A file containing information, technical reports, and reference documents regarding an NPL site. The information repository for Site 38 is at the NAS Pensacola Library, Building 634, Naval Air Station Pensacola.

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

Monitoring — Ongoing collection of information about the environment that helps gauge the effectiveness of a cleanup action.

National Contingency Plan (NCP) — A 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.

Present worth analysis — A method of evaluation of expenditures that occur over different time periods. By discounting costs to a common base year, the costs for different remedial action alternatives can be compared on the basis of a single figure for each alternative.

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/FFS and consideration of public comments and community concerns.

Reference Concentration (RC) — Also called "background concentration." This is the level of a naturally occurring substance (usually inorganic or heavy metal) commonly found in the area of the investigation. Contaminant concentrations found at or below this level can be considered "naturally occurring."

Remedial Investigation/Focused Feasibility Study (RI/FFS) — Investigation and analytical studies usually performed at the same time in an interactive process and together referred to as the

"RI/FFS." 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) — The federal act that established a regulatory system to track hazardous wastes from the time they are generated to their final disposal.

Upper Confidence Limit — A conservative estimate of the average of a given set of samples across an area. A 95% UCL would have a 95% certainty that the true average is less than the value used for risk calculations or comparisons.

USE THIS SPACE TO WRITE YOUR COMMENTS

Your input on the Proposed Plan for Site 38 is important in helping the Navy select a final remedy for the site.

You may use the space below to write your comments, then fold, and mail. Comments must be postmarked by January 14, 2004. If you have any questions during the comment period, please contact Greg Campbell at (850) 452-4611 ext. 103. Those with electronic communications capabilities may submit their comments to the Navy via Internet at the following email address: Gregory.campbell@navy.mil.

Name_____
Address_____
City_____
State_____ Zip_____

NAS PENSACOLA SITE 38

PROPOSED PLAN
PUBLIC COMMENT SHEET

Fold on dashed lines, staple, stamp, and mail

Place Stamp Here

Name
Address
City _____ State ___Zip

Greg Campbell
Remedial Project Manager
NAS Pensacola
Code 2200, Building 1754
190 Radford Blvd.
Pensacola, Florida 32508-5000

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