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Proposed Remedial Action Plan
Site 22: Camp Allen Salvage Yard
Naval Station Norfolk, Virginia

May 2001

This Proposed Plan presents the preferred remedial alternatives for addressing the soils impacted by Polychlorinated Biphenyls (PCBs) and metals (antimony, arsenic, iron, and lead) at Site 22, the Camp Allen Salvage Yard (CASY), at Naval Station Norfolk, Virginia, and provides the reasoning for this preference. In addition, this Proposed Plan includes summaries of other cleanup alternatives evaluated for use at Site 22. The location of the site is shown on Figure 1.

This document is issued by the U.S. Department of the Navy (Navy), the lead agency for site activities, and the U.S. Environmental Protection Agency (USEPA) Region III, and the Virginia Department of Environmental Quality (VDEQ), the support agencies. The Navy and USEPA, in conjunction with VDEQ, will make a final decision on the remedial approach for Site 22 after reviewing and considering all information submitted during the 30-day public comment period. The Navy and USEPA, along with VDEQ, may modify the preferred remedial alternative or select another response action discussed in this Proposed Plan based upon new information or public comments. Therefore, the public is encouraged to review and comment on all of the remedial alternatives presented 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 Camp Allen Salvage Yard Remedial Investigation/Feasibility (RI/FS) report and other documents contained in the Administrative Record file for Naval Station Norfolk. The administrative record file is available for public review at the Kirn Memorial Branch of the Norfolk Public Library in Norfolk, Virginia. The Navy, USEPA, and the VDEQ encourage the public to review these documents to better understand Site 22 and other Superfund activities that have been conducted at Naval Station Norfolk.

This Proposed Remedial Action Plan for Site 22 provides an overview of the status of the site and is divided into the following sections:

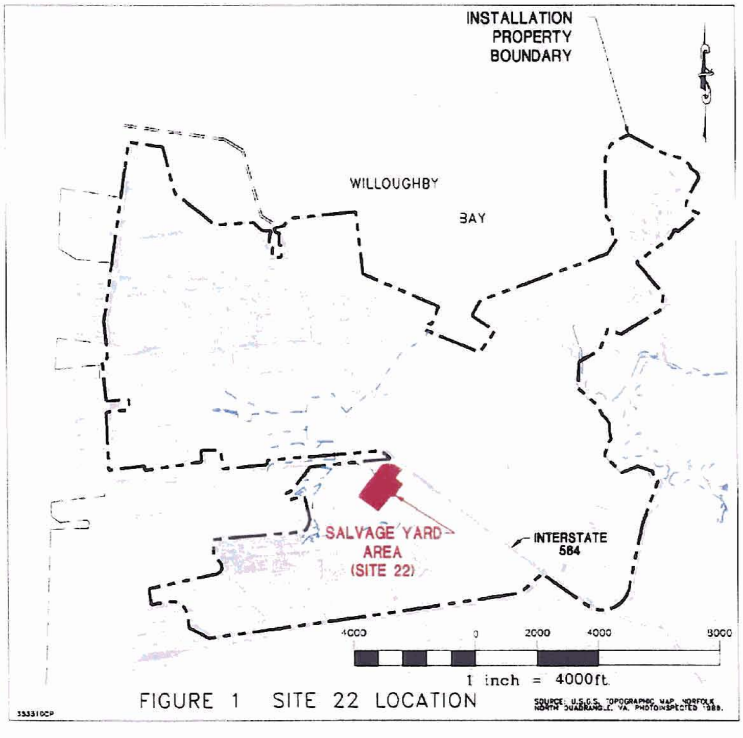

FIGURE 1 SITE 22 LOCATION

1.0 Site Description And Background

Site 22, referred to as the Camp Allen Salvage Yard, is located within the property boundary of the Naval Station Norfolk. As shown in Figure 2, the site is located within Naval Station Norfolk, south of the Naval Station airfield and Interstate 564 in the area known as Camp Allen. The site lies between Areas A and B of the Camp Allen Landfill (CAL) with Ingersol Street bordering the western to northeastern portions of the site.

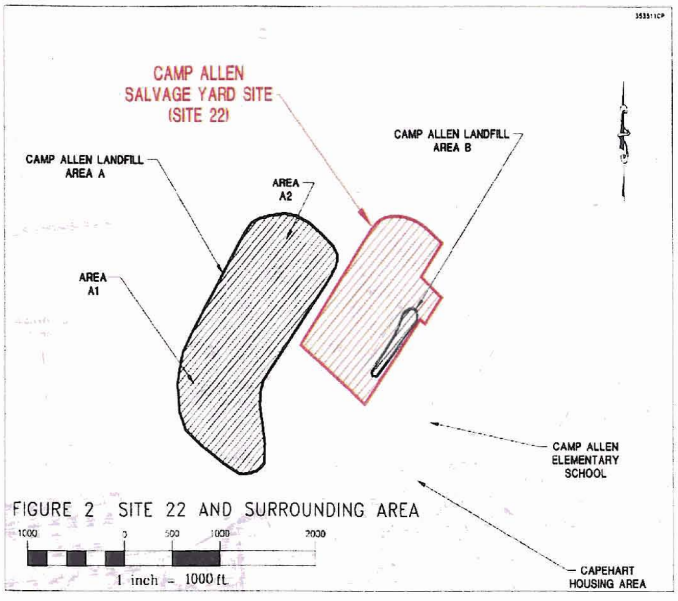

FIGURE 2 SITE 22 AND SURROUNDING AREA

Historically, the site and surrounding area was covered with strands of hardwoods and vast areas of tidal marsh. Development of the Naval Station has severely altered the original terrain. The Navy filled much of this area to allow for site development. The site was used as a salvage yard for over 50 years and provides limited habitat for wildlife. The facility was once dedicated to the salvaging and disposal of scrap materials generated by the Navy in the Tidewater area. The Navy managed the facility from 1940 until 1972. From 1972 until 1995, the site was managed by the Defense Reutilization and Marketing Services (DRMS). In 1995, use of the facility for the handling of scrap materials was discontinued. Portions of the site are sometimes used for the storage of construction materials associated with other Navy construction projects in the Camp Allen area. Figures 3 and 4 show the site as it appeared in 1999.

2.0 Site Characteristics

The Camp Allen Salvage Yard includes an area of approximately 22 acres of level ground surrounded by chain-link and barbed-wire fencing. The site was used as a storage and salvage yard, and numerous pieces of spare military equipment, old vehicle parts, and discarded electronic equipment were stored at the site. All of the site salvage or storage areas, structures, and buildings that were active during the salvaging process have been demolished and removed.

Currently, the site consists of level, barren ground with little vegetation. A paved parking area and the remains of railroad tracks are still present in the southern portion of the site. There is a storm water drainage basin, or "pond" that adjoins the eastern side of the site. This pond collects storm water that drains into a storm sewer that crosses the site. In May 1999, the Navy asked the U.S. Corps of Engineers to verify that the pond is not a regulated wetland. The Corps of Engineers inspected the site, and verified that the pond area is considered upland property, and therefore is not within the Army Corps jurisdiction as a wetland.

Summary of Studies and Investigations

Several environmental investigations have been performed at the Naval Station and Camp Allen area. They are summarized as follows:

Initial Assessment Study (IAS): In April of 1982, an IAS was conducted at the Naval Station. The IAS identified 18 sites of concern with regard to potential contamination. Site 22 was included as a potential area of concern.

Preliminary Assessment/Site Inspection (PA/SI): a PA/SI was performed at the Camp Allen Salvage Yard in January 1993. The PA/SI reviewed historical information for the site and involved a limited field effort to check for site contamination.

CAL Remedial Investigation and Feasibility (RI/FS): The RI investigation at the CAL Areas A and B was performed in 1993 and 1994 and characterized past disposal activities. The RI investigations detected volatile organic compounds (VOCs) in both the soils and groundwater. Based on the results of the RI, the Navy completed a FS and Decision Document that addressed the cleanup of contaminated soil and groundwater at CAL Areas A and B.

CAL Area B Soil and Debris Removal Action: Based on the results of the CAL RI/FS, the Navy completed a soil and debris removal action at CAL Area B in January 1995. Approximately 11,500 tons of contaminated soil and debris was removed from CAL Area B.

CAL Area A and B Groundwater Remediation: In July 1997 a groundwater remediation system was placed in operation. This system collects and treats VOCs and metal contaminants in the groundwater underlying the CAL Areas A and B, and the Camp Allen Salvage Yard.

Camp Allen Salvage Yard RI: A RI was conducted during the summer of 1996. Data gathered from the RI was used to identify the types, quantities, and locations of contaminants at the site. The RI indicated that:

- Semivolatile organic compounds (SVOCs), pesticides, PCBs, and metals have to some extent impacted the surface and subsurface soils. While the detected concentrations of most of these contaminants were below USEPA's screening values, PCBs concentrations exceeding screening values were found in both surface and subsurface soils, primarily in the southern half of the site.

- Storm water in drains at the site had levels of certain metals (principally arsenic and magnesium) that exceeded Federal Water Quality Criteria and Virginia Water Quality standards. These samples were collected from the storm drains located in the northern end of the site.

- Sediment samples collected from the storm drain and from the pond located in CAL Area B contained arsenic, pesticides, and PCBs at levels above USEPA's screening values.

- Groundwater samples collected during the RI indicate that the groundwater below the site has been impacted by antimony, arsenic, and iron above the USEPA Maximum Contaminant Levels (MCLs) Virginia Groundwater Quality Standards, and Virginia Drinking Water Standards.

Based on site history, previous investigations and findings from the RI, contamination from prior disposal practices and operating procedures at Site 22 has impacted surface and subsurface soils, sediment, and shallow groundwater to various degrees. In general, the contaminants of potential concern (COPCs) are PCBs and several metals (antimony, arsenic, lead, and iron). A summary of the COPCs is presented in Table 1. Detailed findings on the nature and extent of contamination at the site are presented in the RI Report. Based on the available information and analytical data, the major disposal areas within the site appear to have been in the southern portion of the site (shown on the left side of Figure 3).

Figure 3 - Camp Allen Salvage Yard and Camp Allen Landfill

Camp Allen Salvage Yard Non Time-Critical Removal Action: On September 2, 1997, the Navy issued a public notice of a proposed non-time-critical removal action at the site. The intent of this action was to remove PCB contaminated soils from the site. A public information meeting was held on September 30, 1997, and no additional comments were received from the public. In August 1998, the Navy performed a PCB removal action at the site. More than 4,100 tons of PCB contaminated soil was removed from the southern portion of the site.

Table 1
What are the "Chemicals of Potential Concern" at Site 22?

PCBs: PCBs have been identified in the surface and subsurface soils at Site 22 in concentrations ranging from non-detect to 4000 parts per billion. PCBs are a family of man-made chemicals with varying degrees of toxicity. Due to their insulating and nonflammable properties, PCBs have been used extensively as coolants and lubricants in transformers, capacitors, and other electrical equipment. The production and use of PCBs in new products ceased in the U.S. in October of 1977 because of evidence that PCBs accumulated in the environment and could cause human health hazards. Although PCBs are no longer manufactured, they still exist in many older transformers and capacitors, which have a life expectancy of 30 years or more.

PCBs are known carcinogens, particularly affecting the liver. Developmental and reproductive effects may also be attributed to PCB exposure. Studies have also shown that PCB-exposed workers may show signs of irritations such as lesions, rashes, and burning eyes. Exposure to PCBs may occur through the skin contact, ingestion of PCB contaminated fish and through the inhalation of contaminated indoor air in buildings that contain devices made with PCBs. It should also be noted that PCBs could be easily passed from a pregnant woman to a fetus through the bloodstream and from a breast-feeding mother to a nursing infant.

Antimony: Antimony has been detected in the surface and subsurface soils at Site 22 in concentrations as high as 34.1 parts per million. Small amounts of antimony are found in the earth's crust. Antimony metal is usually mixed with other metals to form a mixture of metals called alloys. Alloys containing antimony are commonly found in lead storage batteries, solder, sheet and pipe metal, bearings, and ammunition.

Exposure to antimony through inhalation or contact with the eyes and skin can cause irritation of the nose, throat, skin, and mouth. Other symptoms of exposure may cause dizziness, headache, cough, nausea, vomiting, stomach cramps, insomnia, and the inability to smell properly. Long- term toxicological effects from exposure to antimony in humans include: increased blood pressure, abdominal distress, ulcers, dermatosis, cardiac abnormalities, and ocular irritation.

Arsenic: Arsenic has been detected in the surface and subsurface soils at Site 22 in concentrations as high as 42 parts per million. Arsenic is a naturally occurring element in the earth's crust. It is produced primarily as a by-product from the operation of lead and copper smelters. Major uses of arsenic are in wood preservatives, glass, agricultural products, and nonferrous alloys.

Arsenic is a known poison as well as a known carcinogen which has been shown to cause skin and lung cancer. It is also a potential teratogen (causing developmental malformations). Oral exposure to arsenic can lead to digestive tract pain, nausea, vomiting, diarrhea, decreased production of red and white blood cells, liver and kidney damage. Skin contact with arsenic may cause burning, itching and a rash. Inhalation of arsenic can cause irritation of the nose and throat. Eye contact can lead to red, watery and irritated eyes.

Lead: Lead has been detected in the surface and subsurface soils at Site 22 in concentrations as high as 2,060 parts per million. Lead is a naturally occurring element. It is a heavy, soft metal with a wide industrial use due to its physical properties. Lead is commonly used in metal alloys, batteries, and ammunition. It can also be found it the pipes and solder of older houses and buildings.

Lead is known to be a probable teratogen. The inhalation of lead dust or fumes may cause irritation of the nose, throat, and eyes. Exposure can cause headache, irritability, poor appetite, colic, upset stomach, and muscle cramps. Long-term effects of lead may lead to high blood pressure, kidney and brain damage, and anemia.

Iron: Iron has been detected in the surface and subsurface soils at Site 22 in concentrations as high as 114,000 parts per million. It is an abundant naturally occurring element. Iron is widely used in metal alloys.

The inhalation of Iron may cause irritation to the respiratory tract. Extremely large oral dosages may cause gastrointestinal disturbances. An overdose of iron may lead to vomiting, bloody diarrhea, abdominal pain, lethargy, and shock. In the most severe cases, an overdose may cause an increase of acidity in the blood, bluish skin discoloration, fever, liver damage, and possibly death. Eye contact with iron may cause irritation, redness, and pain. Long-term inhalation exposure may result in mottling of the lungs, a condition referred to as siderosis.

3.0 Scope And Role of Proposed Plan

In 1975, the Department of Defense (DOD) began the Installation Restoration Program (IRP) program at military facilities to identify, evaluate, and remediate environmental contamination resulting from activities that involved hazardous and toxic materials. In 1976, Resource Conservation and Recovery Act (RCRA) was passed by Congress to address human health and environmental issues related to the management and disposal practices of hazardous wastes. In 1980 Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), or more commonly known as "Superfund". This program was put in place to investigate and remediate areas affected by past hazardous waste management practices. The CERCLA program is administered by the USEPA or state environmental agencies. The DOD's IRP was re-issued in 1981 to include additional responsibilities and authorities specified by CERCLA. The present IRP is consistent with CERCA and all applicable state laws.

Figure 4 - Camp Allen Treatment Plant and Camp Allen Salvage Yard

Starting with the IAS performed in 1982, the Navy has conducted, through the IRP, a number of environmental site assessments and clean-ups at the Naval Station. Site 22 is included on the list of sites at Naval Station Norfolk that pose a potential concern to human health and the environment.

In 1995, the Norfolk Naval Station was placed on USEPA's National Priorities List (NPL) of superfund sites.

A Site Management Plan was (SMP) and relative risk ranking study was developed in 1995 for the Naval Station. The SMP and risk ranking study provides the Navy with a management tool to organize, plan, and prioritize environmental remedial activities at Naval Station Norfolk.

The role of the preferred alternatives presented in this proposed plan is to address all of the potential threats posed by Site 22, and to eliminate sources of contamination that may pose unacceptable human health or ecological risks from contamination at the site. The specific objectives of the preferred remedies are referred to as Remedial Action Objectives (RAOs), which are listed in Section 5.

4.0 Summary of Site Risks

The public health risks associated with exposure to contaminated media within Site 22 were evaluated in a Human Health Risk Assessment (HHRA) that was presented in the RI Report. The HHRA evaluated and assessed the potential public health risks that might result under current and potential future land use scenarios. A summary of the HHRA process is presented in Table 2. It should be noted that the Navy has no plans to construct housing units on the site. At this time, the Navy intends to use the site as a recreational area. It should also be noted that there are no plans to use the groundwater underlying the site for any purposes. The City of Norfolk prohibits the use of the water table aquifer as a potable water source.

The HHRA evaluated the public health risks associated with exposure to contaminated media (soil, sediment, and groundwater) at the site. PCBs, antimony, arsenic, iron, and lead were all identified as chemicals of potential concern at the site. In the Human Health Risk Assessment the following categories were considered for exposure to the chemicals of potential concern at Site 22.

- Current adult and adolescent (ages 7-15 years) trespassers
- Future adult construction/utility workers
- Future adult and young child (ages 1-6 years) recreational use
- Future adult groundskeeper
- Future adult and young child on-site residents

Table 2
What is Risk and How is it Calculated?

A human health risk assessment estimates the "baseline risk." This is an estimate of the likelihood of health problems occurring if no cleanup action were taken at a site. To estimate the baseline risk at a site, the Navy performs the following four-step process:

Step 1: Analyze Contamination
Step 2: Estimate Exposure
Step 3: Assess Potential Health Dangers
Step 4: Characterize Site Risk

In Step 1, the Navy looks at the concentrations of contaminants found at a site as well as past scientific studies on the effects these contaminants have had on people (or animals, when human studies are unavailable). Comparisons between site-specific concentrations and concentrations reported in past studies help the Navy to determine which contaminants are most likely to pose the greatest threat to human health.

In Step 2, the Navy considers the different ways that people might be exposed to the contaminants identified in Step 1, the concentrations that people might be exposed to, and the potential frequency (how often) and length of exposure. Using this information, the Navy calculates a "reasonable maximum exposure" (RME) scenario that portrays the highest level of human exposure that could reasonably be expected to occur.

In Step 3, the Navy uses the information from Step 2 combined with the information on the toxicity of each chemical to assess potential health risks. The Navy considers two types of risk: (1) Cancer risk and (2) Noncancer risk. The likelihood of any kind of cancer resulting from a contaminated site is generally expressed as an upper bound probability; for example, a "1 in 10,000 chance." In other words, for every 10,000 people that could be exposed, one extra cancer may occur as a result of exposure to site contaminants. An extra cancer case means that one more person could get cancer then normally would be expected to from all other causes. For noncancer health effects, the Navy calculates a "hazard index." The key concept here is that a "threshold level" (measured usually as a hazard index of less than 1) exists below which noncancer health effects are no longer predicted.

In Step 4, the Navy determines whether site risks are great enough to cause health problems for people at or near the site. The results of the three previous steps are combined, evaluated, and summarized. The Navy adds up the potential risks from the individual contaminants and exposure pathways and calculates a total site risk.

The total site carcinogenic and noncarcinogenic risks estimated for all current and future receptors in the HHRA are presented in Table 3. Potentially unacceptable total site risks were calculated for four of the five categories: future adult construction/utility workers, future adult and young child recreational use, future adult groundskeeper, and future adult and young child on-site residents. The total carcinogenic and noncarcinogenic risks estimated for the category of current adult and adolescent trespassers are less than, or within the appropriate USEPA acceptable limit.

Although an ecological evaluation was not performed during the RI, the site can be characterized as highly disturbed. The storage and salvage activities as well as demolition activities have destroyed many of the habitats that may have existed previously when the area was part of the historic Boush Creek drainage system.

The pond area of the Camp Allen Landfill Area B collects storm water runoff from the areas south of Site 22. The concrete storm sewer carries the runoff from the pond area to a ditch on the north side of the site, which leads to Boush Creek. There are a number of inlets along this storm sewer within the site, and therefore, the COPCs may pose a risk to ecological receptors downstream in Boush Creek.

Table 3

Summary of Total Site Human Health Risks

Receptors	Adult		Young Child/Adolescent	
	Total ILCR	Total HI	Total ILCR	Total HI
Current Adult and Adolescent Trespassers	2.0E-05	0.15	9.3E-06	0.21
Future Adult Construction/Utility Workers	2.0E-05	8.03	NA	NA
Future Adult and Young Child Recreational Users	4.2E-05	0.30	3.6E-05	1.34
Future Adult Groundskeepers	1.9E-04	2.87	NA	NA
Future Adult and Young Child On-site Residents – (based on maximum exposure)	1.7E-04	3.09	2.2E-04	15.94

Notes:
ILCR = Incremental Lifetime Cancer Risks
HI = Noncancer Hazard Index
Shading indicates a risk level greater than USEPA acceptable target risk

5.0 Remedial Action Objectives

Based upon an evaluation of site conditions, risks, and legal requirements, remedial objectives were identified to protect people and the environment. These objectives are to:

- Remediate the remaining soil with PCB and inorganic (metals) contamination above site clean-up goals, which is estimated to be approximately 15,000 cubic yards of soil. This soil constitutes the principal threat to humans using the site.
- Eliminate the threat of sediments becoming a potential source of contamination to ecological receptors in the pond area, or to locations downstream from the discharge from the pond.
- Treat the groundwater in conjunction with the on-going groundwater remedial action for the Camp Allen Landfill, and insure that the groundwater at the site is treated to the same levels as that from the landfill.

A review of the HHRA indicates that the contaminants that present the greatest risk (i.e., the "risk drivers") in soil include: PCBs, antimony, arsenic, iron, and lead. The soil cleanup goals for PCBs, and metals at the site are provided in Table 4. In general, these cleanup goals are based on meeting an Incremental Lifetime Cancer Risk of 1.0 x 10-4 to 1.0 x 10-6 and a Hazard Quotient of 1.0.

6.0 Summary of Remedial Alternatives

This section summarizes the possible remedial approaches developed for soil, sediment, and groundwater at the site. The recommended remedial alternatives for the Site 22 are:

- Soil: Alternative SO-3 - Hot spot removal and off-site disposal; excavation, on-site stabilization, and off-site disposal of PCB contaminated soils
- Sediment: Alternative SD-4 - Placing an engineered cover over sediments in the pond area.
- Groundwater: Alternative GW-2 - Institutional controls plus the on-going Camp Allen Landfill groundwater remedial action.

Table 4

Soil Clean-up Goals

Contaminant	Clean-Up Goal or PRG (ppm)	Justification
Total PBS	Surface soils (0 to 3 foot depth): 2 ppm Subsurface soils (>3 foot to top of GW): 5 ppm	Soil clean-up goals provide a ILCR of 1×10^{-6} and an HQ of 1.0.
Antimony	41 ppm	PRG based on providing HQ of 0.5 for construction worker
Arsenic	28 ppm	Background concentration (provides an ILCR of 3.7×10^{-6} for a groundskeeper and a HQ of 0.5 for child recreational user)
Iron	31,100 ppm	PRG based on providing HQ of 0.5 for construction worker
Lead	400 ppm	EPA Residential Action Level

GW: Ground Water
HQ: Hazard Quotient
ILCR: Incremental Lifetime Cancer Risk
ppm: parts per million
PRG: Preliminary Remediation Goal

A detailed analysis of the possible remedial alternatives for the soil, sediment and groundwater at the site was conducted as part of the FS Report. This analysis was conducted in accordance with the USEPA document entitled "Guidance for Conducting Remedial Investigations and Feasibility Studies under Comprehensive Environmental Response, Compensation and Liability Act (CERCA)" and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

In accordance with CERCA, consideration was given to those remedial alternatives that attain or exceed applicable, or relevant and appropriate requirements (ARARs). The purpose of this requirement is to make CERCA response actions consistent with other pertinent federal and state environmental requirements. The ARARs considered in the development of remedial alternatives for the site are presented in the FS for Site 22.

Soil Remedial Alternatives

The following five remedial alternatives were considered for site soils (SO):

- SO-1: No Action
- SO-2: Institutional Controls
- SO-3: Hot Spot Removal and Off-Site Disposal; Excavation, On-Site Stabilization, and Off-Site Disposal
- SO-4: Hot Spot Removal and Off-Site Disposal; Excavation and On-Site Solvent Extraction
- SO-5: Hot Spot Removal and Off-Site Disposal/Excavation, Ex-Situ Thermal Desorption

Many of the soil alternatives share a few common components. The soils at the site contain hazardous wastes as defined by the Resource Conservation Recovery Act (RCRA) which in turn is subject to the RCRA land disposal restrictions if the waste is excavated and treated or moved from the area of contamination. Approximately 2,400 cubic yards of PCB contaminated soil from six hot spot areas will be excavated and disposed of at a Toxic Substance Control Act (TSCA) permitted landfill. Excavated areas will be backfilled with clean soil, and the site will be graded and landscaped. A brief description of these soil remedial alternatives, as well as estimated alternative costs are provided below.

Alternative SO-1: No Action

Description: Evaluation of the No Action Alternative is required by the NCP to provide a baseline comparison for other remediation alternatives. Under the No Action Alternative, no remedial actions would be performed for soils at the site.

Cost: There are no costs associated with this alternative.

Alternative SO-2: Institutional Controls

Description: Under this alternative, the existing fencing and gates at the site, which surround the site, would be maintained to limit public access to the site during site construction activities associated with site redevelopment. In addition, a warning sign would be installed at each gate entrance to indicate that worker precautions are to be followed when working at the site. The existing soil cover and vegetation would also be periodically inspected and maintained, as necessary, to limit surface water infiltration and minimize potential erosion.

The site is currently not used for residential purposes, and there are no plans to close the base or to convert the area to residential use. Under this alternative, the site would be given a land use category in the Base Master Plan that would prohibit residential use of the area. The Navy, USEPA, and the VADEQ intend to negotiate a Memorandum of Agreement (MOA) or a Land Use Control Assurance Plan (LUCAP) to insure that the Institutional Controls are periodically inspected and properly maintained. The Navy would also adopt Land Use Controls (LUCs) in the MOA, and the development of a Base Land Use Control Implementation Plan (LUCIP) that would include Site 22. These documents would define the future use of the site, should the Navy transfer ownership of the property. In addition, warning signs would be posted around the site to warn construction and utility workers of potential human health risks.

Cost: The estimated costs of alternative SO-2 are as follows:

Capital: $8,600
Operation and maintenance: $7,500 (annually)
Net present worth (30-year): $124,000

Alternative SO-3: Hot Spot Removal and Off-Site Disposal; Excavation, On-Site Stabilization, and Off-Site Disposal

Description: This alternative involves the removal and off-site disposal of soils that exceed site cleanup goals, including "hot spot" soils and PCB contaminated soils. The site has approximately 4,800 cubic yards (cy) of soil located in six "hot spots" areas (See Figure 5). These six hot spots are contaminated with metals that exceed the site cleanup goals. This soil will be excavated and placed in trucks for off-site disposal at a permitted landfill. The southern portion of the site contains approximately 14,000 cy of PCB and metals contaminated soil. This soil would be stabilized with portland cement to prevent the metals from leaching out of the soils. The stabilized soil can then hauled to a landfill permitted to accept soils that contain PCBs at concentrations less than 50 parts per million (ppm). In addition, approximately 100 cy of PCB contaminated soil with concentrations greater than 50 ppm will be excavated and transported to an incinerator for disposal. Excavated areas will be backfilled with clean soil, graded, and landscaped. All necessary soil characterization and confirmation sampling will be included in this alternative.

Cost: The estimated costs of SO-3 are as follows:

Capital: $3,361,000
Operation and maintenance: $7,500 (annually)
Net present worth (30-year): $3,477,000

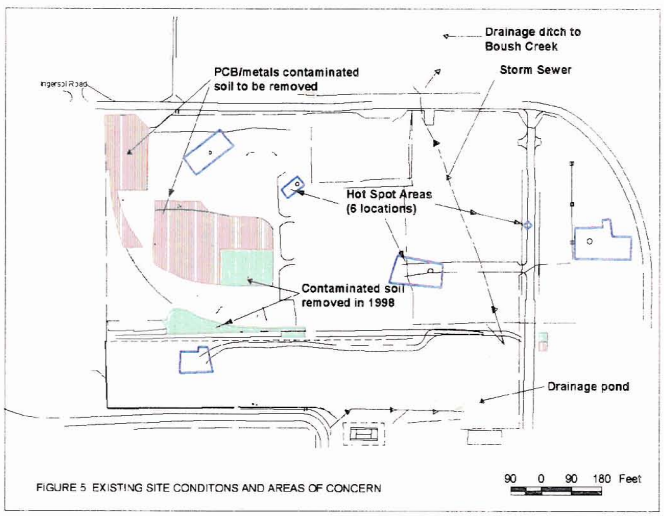

Figure 5

Alternative SO-4: Hot Spot Removal and Off-Site Disposal; Excavation and On-Site Solvent Extraction

Description: This alternative is similar to SO-3 in that it will include excavating approximately 4,800 cubic yards of soil contaminated with metals from six hot spots. This soil will be placed in trucks for off-site disposal at a permitted landfill. Approximately 14,000 cubic yards of PCB and metals contaminated soil will be treated on-site using a solvent extraction system. The solvent extraction system uses a series of chemical processes to remove the PCBs from the soil. This equipment would be trucked to the site, and assembled on a pad that would provide spill containment. The solvent extraction system would treat the

PCB contaminated soil to levels within the site cleanup goals. Treated soil would be placed back the excavated area, top soil would be placed, and the area will be graded and then landscaped. All necessary soil characterization and confirmation sampling will be included in this alternative. Once the soil treatment is complete, the equipment would be disassembled and removed from the site.

Cost: The estimated costs of SO-4 are as follows:

Capital: $9,866,000
Operation and maintenance: $7,500 (annually)
Net present worth (30-year): $9,982,000

Alternative SO-5: Hot Spot Removal and Off-Site Disposal/Excavation, Ex-Situ Thermal Desorption and Chemical Dechlorination

Description: This alternative would involve the removal and off-site disposal of "hot spot" soils that exceed the soil cleanup goals. As in alternatives SO-3 and SO-4, approximately 4,800 cubic yards of metals contaminated soil from six hot spots will be excavated and removed for disposal at a permitted landfill. Approximately 14,000 cubic yards of PCB and metal contaminated soils would be excavated and treated on-site using a thermal desorption system. The thermal desorption system uses heat and a chemical process to reduce the PCBs concentrations in the soil. The system would be designed to treat the soils to an acceptable level (less than 2 ppm). Treated soil would be placed back into the excavated area, top soil would be placed, the area will be graded then landscaped. All necessary soil characterization and confirmation sampling will be included in this alternative.

The estimated costs for SO-5 are as follows:

Capital: $10,101,000
Operation and maintenance: $7,500 (annually)
Net present worth (30-year): $10,216,000

Sediment Remedial Alternatives

The following remedial alternatives were developed for sediments (SD) in the pond area of the Camp Allen Landfill Area B:

- SD-1: No Action
- SD-2: Institutional Controls
- SD-3: Excavation and Removal of Sediments, Off-Site Disposal
- SD-4: Placing Clean Fill Over Sediments in Pond Area

Alternatives SD-3 and SD-4 share some similar components. Trees and shrubs surrounding the pond will be removed. Both alternatives require approximately 500,000 gallons of water to be pumped from the pond area. Depending on the characteristics of the water, it would be pumped directly to Boush Creek, or would be treated at the existing Camp Allen Landfill Groundwater Treatment Plant prior to disposal to Boush Creek. Both options involve the removal and disposal of sediments form the storm sewer (based upon laboratory results, all sediments are assumed to be no-hazardous). A suitable inlet structure to the existing storm sewer piping will be constructed to aid in the proper drainage of the pond. Landscaping will complete the site restoration efforts surrounding the pond area.

As previously noted, surface water has been included with sediments for purposes of alternative development and evaluation. Brief descriptions of these sediment remedial alternatives, as well as estimated alternative costs, are provided below.

Alternative SD-1: No Action

Description: Evaluation of the No Action Alternative is required by the NCP to provide a baseline comparison for other remediation alternatives. Under the No Action Alternative, no sediment remedial actions would be performed at the site.

There are no costs associated with alternative SD-01.

Alternative SD-2: Institutional Controls

Description: Under this alternative, the existing fencing and gates at the site, which surround the majority of the site, would be maintained to limit public access to the site during site construction activities associated with site redevelopment. In addition, a warning sign would be installed at each gate entrance to indicate that worker precautions to be followed when working on the storm drainage system or around the pond. The existing soil cover and vegetation would also be periodically inspected and maintained, as necessary, to limit surface water infiltration and minimize potential erosion.

The site is currently not used for residential purposes, and there are no plans to close the base or to convert the area to residential use. Current plans call for the site to be developed into a recreation facility. Under this alternative,

the site would be given a land use category in the Base Master Plan that would prohibit residential use of the area, as well as restrict invasive construction activities.

Cost: The estimated costs of alternative SD-2 are as follows:

Capital: $8,600 (same as SO-2)
Operation and maintenance: $25,600 (annually)
Net present worth (30-year): $168,000

Alternative SD-3: Excavation/Removal and Off-Site Sediment Disposal

Description: This alternative would involve the clearing of trees and shrubs, and the excavation and disposal of sediments from the pond area. Approximately 500,000 gallons of water will be pumped directly to Boush Creek, or will be treated at the Camp Allen Landfill Groundwater Treatment Plant, prior to disposal to Boush Creek. Sediments from the pond area (approximately 820 cubic yards) and storm drain (approximately 50 cubic yards) will be excavated and disposed of off-site. Approximately 2 feet of clean backfill will be place in the pond area. A suitable inlet structure will be added to the existing storm sewer piping. Grading and landscaping will complete the site restoration efforts surrounding the pond area.

In addition to the remediation of the sediments, Land Use Controls (LUCs) and fencing, as described under Alternative SO-2, would also be implemented under this alternative to restrict access to the site and limit the site to non-residential use.

Cost: The estimated costs of alternative SD-3 are as follows:

Capital: $285,000
Operation and maintenance: $0
Net present worth (30-year): $285,000

Alternative SD-4: Engineered Cover Over Sediments

Description: This alternative would involve the clearing of trees and shrubs, followed by placing engineered fill material in the pond area. Approximately 500,000 gallons of water will be pumped directly to Boush Creek, or will be treated at the Camp Allen Landfill Groundwater Treatment Plant, prior to disposal to Boush Creek. Sediments from the storm drain will be excavated and disposed of off-site. A minimum of 1 foot of compacted, engineered fill (approximately 1,900 cubic yards) will be place in the pond area. The placement of compacted, engineered fill on top of the existing sediments will prevent contaminants from leaching into the groundwater or surface water. A suitable inlet structure will be added to the existing storm sewer piping. Grading and landscaping will complete the site restoration efforts surrounding the pond area.

In addition to the remediation of the sediments, LUCs and fencing, as described under Alternative SO-2, would also be implemented under this alternative to restrict access to the site and limit the site to non-residential use.

Cost: The estimated costs of alternative SD-4 are as follows:

Capital: $235,000
Operation and maintenance: $0
Net present worth (30-year): $235,000

Groundwater Remedial Alternatives

This section presents a detailed analysis of the two remedial alternatives for groundwater (GW) developed for Site 22:

- Alternative GW-1: Continue on-going CAL groundwater remedial action
- Alternative GW-2: Institutional controls plus the on-going CAL groundwater remedial action

Both groundwater remedial alternatives incorporate the use of the Navy's on-going groundwater remediation effort for the Camp Allen Landfill.

Alternative GW-1: Continue On-Going CAL Groundwater Remedial Action

Description: As previously noted, the Navy is currently operating a groundwater remedial action for the CAL. Therefore, the "no action" alternative for groundwater is not applicable. Therefore, under Alternative GW-1, the Navy would continue with the current CAL remedial action for groundwater, which includes the ability to remediate the groundwater from Site 22.

Cost: There are no new or additional costs associated with Alternative GW-1.

Alternative GW-2: Institutional Controls Plus the On-Going CAL Groundwater Remedial Action with Monitoring

Description: This alternative would include the following three components:

- Implementation of institutional controls - The Navy would implement institutional controls to restrict groundwater use at the site. Although groundwater at the site is not currently used for any purpose, there are no official institutional controls in place to restrict groundwater use that are specific to Site 22. Under this alternative, institutional controls would be incorporated into the Master Plan or LUCIP to prohibit installation of water supply wells (for either potable or non-potable use) within the site. These institutional controls would be implemented for the entire site.

- On-going remediation of the groundwater via treatment at the CAL Groundwater Treatment Plant - As noted for alternative GW-1, the Navy would continue with the current CAL remedial action for groundwater, which includes the operation of groundwater recovery wells that essentially surround Site 22.

- Groundwater monitoring program - A groundwater monitoring program would be implemented to track trends in groundwater contamination at the site. The focus of this monitoring would be to verify that the groundwater clean-up goals for the overall CAL remedial action are being met within Site22. For costing purposes, it was assumed that the groundwater monitoring program would include the installation of three additional shallow monitoring wells. It was assumed that the groundwater monitoring program would include routine sampling over a thirty-year period. After the initial three-year monitoring period, trends would be evaluated to determine the need for modifications to the CAL groundwater remedial action and/or to the scope of monitoring at Site 22. The cost estimate for this alternative does not include the costs for any modifications to the on-going CAL groundwater remedial action that would be initiated to improve groundwater quality at Site 22.

Cost: The estimated costs of alternative GW-2 are as follows:

Capital: $12,150
Operation and maintenance: varies from $7,600 to $30,600 (annually)
Net present worth (30-year): $251,000

7.0 Evaluation of Remedial Alternatives

The National Contingency Plan outlines the approach for completing remedial alternatives. Evaluation of the alternatives uses nine evaluation criteria (see the glossary for a detailed explanation of each). A summary of the nine evaluation criteria is presented in the glossary at the end of this document. These evaluation criteria are grouped as "threshold," "primary balancing," and "modifying." All alternatives are evaluated against threshold and primary balancing criteria, which are technical criteria based on environmental protection, cost, and engineering feasibility.

To be considered for selection as the remedial approach, an alternative must meet the following threshold criteria: 1) overall protection of human health and the environment, and 2) compliance with applicable or relevant and appropriate requirements (ARARS), and to-be-considered (TBC) criteria.

The primary balancing criteria are then considered to determine which alternative provides the best combination of attributes. The primary balancing criteria are: 1) long-term effectiveness and permanence; 2) reduction in Toxicity, mobility, or volume through treatment; 3) short-term effectiveness; 4) ease of implementation; and 5) cost.

The preferred alternatives are evaluated further against the two modifying criteria: 1) acceptance by the state, and 2) acceptance by the community.

The remedial alternatives presented in Section 6 were evaluated in the FS against the threshold and primary balancing criteria described above. The two modifying criteria will be evaluated after the public comment period. With respect to USEPA/state acceptance, both the USEPA and VDEQ (the state) have reviewed this PRAP and concur with the preferred alternatives. However, based on new information and/or public comments, the Navy, in consultation with USEPA and VDEQ, may modify the preferred alternatives or select remedial alternatives other than those presented in the FS Report and this PRAP. Therefore, the public is encouraged to review and comment on all of the remedial alternatives, as well as the other information presented herein and in the RI/RA and FS Reports.

The following information summarizes and compares the remedial alternatives developed for soil, sediment (including surface water), and groundwater against each

other (media specific) using the remaining seven evaluation criteria.

7.1 Comparison of Soil Remedial Alternatives

Overall Protection: With respect to surface and subsurface soils, Alternatives SO-3, SO-4, and SO-5 would provide the greatest amount of overall protection by providing for active remediation of PCB and metals contamination at the site. The institutional controls noted in Alternatives SO-2, would help to minimize the chance for exposure to potential contamination. The No Action Alternative, SO-1, is not protective of human health and the environment and therefore is not considered in the remainder of the analysis.

With respect to groundwater protection, Alternative SO-2 would not provide any actions for minimizing leaching of potential contaminants from soil to groundwater. However, based on the results of the RI Report and subsequent monitoring, no leaching of Chemicals of Potential Concern to groundwater has been detected.

Compliance with ARARs: Alternatives SO-3, SO-4, and SO-5 would include the disposal of PCB contaminated soil, and would therefore need to meet the federal requirements for the disposal of PCB contaminated soil (40 CFR 750 and 761), which is a contaminant-specific ARAR. These alternatives would also comply with the federal ARARS for the transportation of hazardous materials (49 CFR Parts 107 and 171), and with the federal and state ARARs for the handling of hazardous wastes. There are no location- or action-specific ARARs associated with alternative SO-2.

Long-term Effectiveness and Permanence: Institutional controls would be effective in the long-term in restricting the site to non-residential land uses, thereby reducing any health hazards posed by potential contamination in these areas. However, Alternative SO-2 would not provide protection to other land use scenarios, including recreational users, construction workers, or groundskeepers.

Alternatives SO-3, SO-4, and SO-5 all provide a permanent solution in the sense that either of these alternatives provides specific actions for minimizing exposure to potential contaminants within the site (RAO for soil).

Alternative SO-2 does not provide any actions for minimizing leaching of potential contaminants from soil to groundwater. However, as previously indicated, the threat of contaminant leaching to groundwater appears to be minimal. Alternatives SO-3, SO-4, and SO-5 all would minimize any leaching of potential contaminants by removing the source material.

Reduction of Toxicity, Mobility, or Volume: Alternative SO-2 would not reduce the toxicity, mobility, or volume of potential contaminants through active treatment. There may be a reduction in toxicity and volume of potential contaminants in the long-term through natural processes such as biodegradation, volatilization, and dispersion. As previously noted, groundwater sampling results suggest that the actual degree of contaminant leaching to groundwater may be minimal.

Alternatives SO-3, SO-4, and SO-5 all provide for the reduction in either volume or toxicity of contaminants.

Short-term Effectiveness: Implementation of SO-2 would not pose a short-term risk to human health or the environment since no remedial actions would be implemented other than maintenance of the existing fencing and administrative actions associated with land use restrictions. Alternative SO-2 would not pose potential risks to human health or the environment during implementation.

Alternatives SO-3 would achieve short- term effectiveness since all contaminated soils could be excavated and removed from the site in a relatively short period of time. The short-term effectiveness of Alternatives SO-4 and SO-5 are not readily known, these alternatives may require a longer period of time to implement and to reach remediation objectives (clean-up goals).

Alternatives SO-3, SO-4, and SO-5 would a pose a potential risk to human health during implementation, as all of these alternatives include the excavation, removal, and disposal of PCB contaminated soil.

Implementability: There are no major implementability considerations under Alternative SO-2. Periodic inspection and maintenance of the existing fencing and storm drainage system would be required.

Alternative SO-3 is readily implementable, and the excavation and removal of PCB and inorganic contaminated soil is a common method of remediation.

The implementability of Alternatives SO-4 and SO-5 is not as easy as other alternatives. These remediation methods use specially designed equipment which requires a great

deal of planning, site preparation, and operation and maintenance.

Cost: The 30-year net present worth costs for the five soil alternatives are summarized below:

- Alternative SO-1: $0
- Alternative SO-2: $124,000
- Alternative SO-3: $3,477,000
- Alternative SO-4: $9,982,000
- Alternative SO-5: $10,216,000

7.2 Comparison of Sediment Remedial Alternatives

Overall Protection: With respect to sediments, Alternatives SD-3 and SD-4 would provide the greatest amount of overall protection. Although the institutional controls noted in Alternatives SD-2, would help to minimize the chance for exposure to potential contaminants, sediment removal or an engineered cover placed over the sediments would provide added protection. The No Action Alternative, Alternative SD-1, is not protective of human health and the environment and therefore is not considered in the remainder of the analysis.

With respect to potential contamination of sediments, Alternative SD-2 would provide protection through formal institutional controls, including land use restrictions, and maintenance of the existing fencing. However, Alternatives SD-3 and SD-4 would provide the highest level of protection through institutional controls plus the removal or covering the sediments.

Compliance With ARARs: Alternatives SD-3 and SD-4 would include activities within the pond area, which in not a wetland, as determined by the U.S. Army Corps of Engineers. Therefore, Federal ARARS associated with protection of wetlands does not apply. Preliminary information indicates that the sediments are not a characteristic or listed hazardous waste, therefore the federal and state ARARs associated with the disposal of hazardous wastes should not apply to Alternatives SD-3 and SD-4. However, any wastes generated as part of the sediment remedial action will be tested and will be disposed in accordance with federal and state waste disposal regulations and requirements.

Long-Term Effectiveness and Permanence: Estimated risk levels for sediments are acceptable for the current or future land use scenarios. Therefore, all alternatives would currently be protective of human health with respect to sediments.

Alternative SD-2 provides protection through formal institutional controls, including land use restriction, and maintenance of the existing landfill soil cover and fencing. However, Alternatives SD-3 and SD-4 will consist of the removal and/or covering of the sediments, thus providing a permanent solution by it eliminating the potential of sediments impacting ecological receptors in Boush Creek.

Reduction of Toxicity, Mobility, or Volume: Alternative SD-2 will not reduce the toxicity or volume of contaminants. Some reduction may be achieved under these alternatives through natural processes, such as volatilization, biodegradation and dispersion. Alternative SD-3 will reduce the volume of sediment at the site through sediments removal. Although Alternative SD-4 would not reduce the toxicity or volume of contaminated sediments, it would reduce the mobility of the sediments and would eliminate these contaminated sediments from entering the storm sewer and migrating toward Boush Creek and leaching into the groundwater and surface water.

Short-term Effectiveness: Alternative SD-2 would not pose potential risks to human health or the environment during implementation. Removal of storm sewer sediments under Alternative SD-3 and the construction of a cover under Alternative SD-4 would require extensive clearing, grubbing, and regrading activities that would disturb the sediments in the pond and impact the adjoining landfill, which may pose a risk to workers, nearby Navy personnel, and the environment.

Implementability: There are no major implementability considerations under Alternative SD-2. Alternatives SD-3 and SD-4 would be more difficult to implement because these alternatives require more human health and environmental protection measures. However, the technologies for dewatering, excavating sediments, or placing engineered fill over the pond are demonstrated processes, and institutional controls should be relatively straightforward to implement.

Cost: The 30-year net present worth costs for the four sediment alternatives are summarized below.

- Alternative SD-1: $0
- Alternative SD-2: $168,000
- Alternative SD-3: $285,000
- Alternative SD-4: $235,000

7.3 Comparison of Groundwater Remedial Alternatives

Overall Protection: With respect to groundwater, Alternatives GW-1 and GW-2 would provide the highest level of protection through the use of institutional controls and the continue use of the current CAL remedial action for groundwater, which includes the groundwater at Site 22. Nonetheless, Alternative GW-2 would provide more data to evaluate the performance of the overall groundwater remedial action, and to help determine if groundwater cleanup goals are being met.

Compliance with ARARs: Contaminant specific ARARs for Alternatives GW-1 and GW-2 includes the compliance with Maximum Contaminant Levels (MCLs) (40 CFR 141.11-141.16). Alternatives GW-1 and GW-2 would enable contaminant levels to be tracked and compared to state and federal MCLs and would prevent potential future consumption of groundwater exceeding MCLs through institutional controls and the use of the existing CAL groundwater on-going treatment. In addition the discharge from the groundwater treatment plant is required to meet the Clean Water Act NPDES discharge regulation (40 CFR Sections 122.41-122.5); the Virginia Pollution Discharge Elimination System regulations (9 VAC 25-31 et seq.) and Virginia Water Protection Permit Regulations (9 VAC 25-210 et seq.); and the Virginia Water Quality Standards (9 VAC 25-610 et seq.).

Long-term Effectiveness and Permanence: Under Alternatives GW-1 and GW-2, risks associated with potable and non-potable use of groundwater, respectively, would be within acceptable levels following groundwater restoration. Both alternatives provide a permanent solution for groundwater under the site, and while the groundwater is being treated, would meet groundwater RAOs 1 and 2. Alternatives GW-2 would actively monitor the migration of shallow groundwater toward site boundaries (groundwater RAO 3 and ROA 5), and would also monitor for any discharge of contaminated shallow groundwater to surface water (RAO 3). Alternatives GW-1 and GW-2 would be a permanent long-term remedy.

Reduction of Toxicity, Mobility, or Volume: Alternative GW-1 would not expand the current remedial goals (reduce the toxicity, mobility, volume of potential contaminants in the water table and Yorktown aquifers) through active treatment. Alternative GW-2 would allow for modifications to the CAL groundwater treatment system, if monitoring at Site 22 shows that these modifications are required. These modifications may expand the treatment system, thus reducing the mobility and volume of potential contaminants.

Short-term Effectiveness: Alternatives GW-1 and GW-2 do not involve additional remedial actions that would pose a risk to human health or the environment during implementation.

Implementability: There are no major implementability considerations associated with Alternatives GW-1, since this action is currently in place.

Alternative GW-2 would require the implementation of institutional controls. Institutional controls should be administratively straight forward to implement. The monitoring program would utilize standard sample collection and analytical methodologies. Equipment and services for sampling are readily available. In accordance with CERCLA, a site review would be required every five years to evaluate long-term contaminant trends and any associated risks to human health and the environment.

Cost: There are no additional costs associated with Alternative GW-1. The 30-year net present worth cost for Alternative GW-2 is $251,000.

8.0 The Preferred Remedial Alternatives

Identification of Preferred Remedial Alternatives

The preferred alternative for the clean up of Site 22 is a combination of the following alternatives:

- Soil: Alternative SO-3 -Hot Spot Removal and Off-Site Disposal; Excavation, On-Site Stabilization, and Off-Site Disposal
- Sediments: Alternative SD-4 - Placing Engineered Cover over Sediments in the Pond Area
- Groundwater: Alternative GW-2 - Institutional Controls plus the on-going CAL groundwater remedial action.

The preferred soil alternative SO-3 was selected over other alternatives because it is the most readily implementable option as well as the most reliable. Alternative SO-3 is expected to achieve substantial and long-term risk reduction through removal and disposal of contaminated soil. Thus, allowing the property to be used for the anticipated future use as a recreational area. The preferred sediment remedial option SD-4 was selected to provide a high level of protection by minimizing the mobility of

sediments. Although alternative SD-3 also offers a high level of protection from contaminants in the sediments, it is not as cost effective as alternative SD-4. Alternative GW-2 was the selected option for groundwater remediation at Site 22 because of the increased overall protection it offers over GW-1. In addition to the on-going remedial activities of the Camp Allen Landfill groundwater remediation plant, GW-2 would afford a higher level of protection through the uses institutional controls and a monitoring program.

Based upon the information available at this time, the Navy, USEPA, and the State of Virginia believe the Preferred Alternatives would be protective of human health and the environment, would comply with ARARs, would be cost-effective, and utilize permanent solutions and alternative treatment technologies to the maximum extent practicable. Because the preferred alternatives would treat the source materials constituting principal threats, the remedies chosen would also meet the statutory preference for the selection of a solution that involves treatment as a principal element. The preferred alternatives can change in response to public comment or new information.

9.0 Community Participation

A community relations program is being conducted through the on-going Installation Restoration Program for Naval Station Norfolk. Public input is important is a key element in the decision making process. Nearby residents and other interested parties are strongly encouraged to use the comment period to relay questions and concerns they may have about the proposed and preferred remedial alternatives for Site 22. The Navy will summarize and respond to public comments in a Responsiveness Summary that will become part of the official Record of Decision.

The Proposed Remedial Action Plan fulfills the public participation requirements of CERCLA Section 117(a), which specifies that the lead agency (the Navy) must publish a plan outlining remedial alternatives evaluated for the site and identify the preferred alternative. The remedial alternatives are presented in detail in the FS. All documents referenced in this Proposed Plan are available for public review in the Administrative Record (see "Available Information" below).

As part of the ongoing IRP at Naval Station Norfolk, the Navy has routinely held meetings of the Restoration Advisory Board (RAB), which is a standing group of Navy, regulatory, and community representatives. The mission of the RAB includes informing the local community of the Navy's ongoing and planned remedial activities associated with the IRP. The RAB meetings have included discussions on the status of remedial activities at Site 22. These meetings are open to the public and are held about every 6 months.

9.1 Public Comment Period

The public comment period for the Proposed Plan gives the public an opportunity to provide input regarding the planned process for remediating contamination at Site 22. The public comment period will begin on _____ 2001, and will end on _____ 2001 for this Proposed Remedial Action Plan for Site 22. A public meeting will be held on _____ 2001 from 6 PM to 7 PM at Building N-26 at Naval Station Norfolk. All interested parties are encouraged to attend the meeting to learn more about the alternatives developed for the site. The meeting will provide an additional opportunity for the public to submit comments on the Proposed Plan to the Navy.

During the comment period, interested parties may submit written comments concerning this PRAP should be sent to any of the following individuals:

Commander, Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Bldg. N-26)
Norfolk, Virginia 23511-2699
Attention: Remedial Project Manager, Ms. Winoma Johnson
(757) 322-4587

Commander, Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Bldg. N-26)
Norfolk, Virginia 23511-2699
Attention: Public Affairs Officer, Mr. John E. Peters
(757) 322-8005

Remedial Project Manager
USEPA, Region III (3HS50)
841 Chestnut Building
Philadelphia, Pennsylvania 19107
Attention: Mr. Harry Harbold, P.E.
(215) 814-3203

Virginia Department of Environmental Quality
Federal Facilities Program
629 East Main Street, 4th Floor
Richmond, Virginia 23240-0009
Attention: Mr. Devlin Harris
(804) 698-4226

Comments on the Proposed Plan must be postmarked no later than _____. Based on comments or new information, the Navy may modify the preferred alternatives outlined in the Proposed Plan.

For your convenience, page 18 of this document may be used to provide comments to the Navy. Please cut off the page, fold, and add postage where indicated. Use of this form to submit comments is not mandatory.

9.2 Record of Decision

After the public comment period, the Navy, in consultation with USEPA and VDEQ, will determine whether the Proposed Plan should be modified based on the comments received. These modifications, if required, will be made by the Navy and will be reviewed by USEPA and VDEQ. If the modifications substantially change the proposed remedy, additional public comments may be solicited. If not, then USEPA and the Navy will prepare and sign a Record of Decision (ROD). The ROD will detail the remedial actions chosen for the site and will include the Navy's responses to comments received during the public comment period.

9.3 Information Repositories

The Administrative Record for Site 22 is available to the community at the following locations:

Larchmont Public Library
6525 Hampton Blvd.
Norfolk, VA
757/441-5335

Mary Pretlow Public Library
9640 Granby Street
Norfolk, VA
757/441-1750

Kirn Memorial Branch
Norfolk Public Library
301 East City Hall Avenue
Norfolk, Virginia 23510
757/664-7323

9.4 Mailing List

If you are not currently on the mailing list and would like to receive future publications pertaining to Site 22, please complete the requested information and mail this form to:

Commander, Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Bldg. N-21)
Norfolk, Virginia 23511-2699
Attention: Public Affairs Officer, Mr. John E. Peters

Commander, Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Bldg. N-21)
Norfolk, Virginia 23511-2699
Attention: Public Affairs Officer, Mr. John E. Peters

Name

Address

Affiliation

Phone ( )

Please print or type comments here:

GLOSSARY

ARARs: Applicable or Relevant and Appropriate Standards, Limitations, Criteria, and Requirements; these are federal or state environmental rules and regulations.

Carcinogenic Risk: Cancer risks are expressed as a number reflecting the increased chance that a person will develop cancer if exposed to chemicals or substances. For example, EPA's acceptable risk range for Superfund sites is 1 x 10-4 to 1 x 10-6, meaning there is one additional chance in ten thousand (1 x 10-4) to one additional chance in one million (1 x 10-6) that a person will develop cancer if exposed to a site that is not remediated.

CERCLA: Comprehensive Environmental Response, Compensation and Liability Act. A federal law, commonly referred to as the Superfund Program, passed in 1980 that provides for cleanup and emergency response in connection with numerous existing inactive hazardous waste disposal sites that endanger public health and safety of the environment.

FS: Feasibility Study. Analysis of the practicability of a proposal. The feasibility study usually recommends selection of a cost-effective alternative.

Groundwater: Subsurface water that occurs in soils and geologic formations that are fully saturated.

HHRA: Baseline Human Health Risk Assessment. An evaluation of the risk posed to human health should remedial activities not be implemented.

HI: Hazard Index. A number indicative of noncarcinogenic health effects that is the ratio of the existing level of exposure to an acceptable level of exposure. A value equal to or less than one indicates that the human population is not likely to experience adverse effects.

Institutional Controls: Administrative methods to prevent human exposure to contaminants, such as by restricting the use of groundwater for drinking water.

Media: Soil, groundwater, surface water, or sediments at the site.

NCP: National Oil and Hazardous Substances Contingency Plan. Provides the organizational structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, and contaminants.

Nine Evaluation Criteria: Overall Protection of Human Health and the Environment - Addresses whether a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

- Compliance with ARARs: Addresses whether a remedy will meet all of the ARARs of other Federal and State laws and/or justifies a waiver.
- Long-Term Effectiveness and Permanence: The expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once clean-up goals have been met.
- Reduction in Toxicity, Mobility, or Volume through Treatment: The anticipated performance of the treatment technologies a remedy may employ.
- Short-Term Effectiveness: The period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period, until clean-up goals are achieved
- Implementability: The technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement an option.
- Cost: Estimated capital, O&M, and present-worth costs
- State Acceptance: State support agency comments on the Proposed Plan
- Community Acceptance: the public's general response to the alternatives described in the Proposed Plan and the RI and FS Reports. The specific responses to the public comments are addressed in the Responsiveness Summary section of the ROD

NPL: National Priorities List. A list, developed by EPA, of uncontrolled hazardous substances release sites in the United States that are considered priorities for long-term remedial evaluation and response.

Present-Worth Cost: Total cost, in current dollars, of the remedial action. The present-worth cost includes capital costs required to implement the remedial action, as well as

the cost of long-term operations, maintenance, and monitoring.

Proposed Plan: A document that presents a proposed cleanup alternative and requests public input regarding the proposed alternative.

Public Comment Period: The time allowed for the members of an affected community to express views and concerns regarding an action proposed to be taken by EPA, such as a rulemaking, permit, or Superfund remedy selection.

ROD: Record of Decision. A legal document that describes the cleanup action or remedy selected for a site, the basis for the choice of that remedy, and public comment on alternative remedies.

Remedial Action: Implementation of plans and specifications, developed as part of the design, to remediate a site.

RAOs: Remedial Action Objectives. Objectives of remedial actions which are developed based on contaminated media, contaminants of concern, potential receptors and exposure scenarios, human health and ecological risk assessment, and attainment of regulatory cleanup levels, if any exist.

RI: Remedial Investigation. A study of a facility that supports the selection of a remedy for a site where hazardous substances have been disposed. The RI identifies the nature and extent of contamination at the facility.

Site: The facility and any other areas in close proximity to the facility where a hazardous substance, hazardous waste, hazardous constituent, pollutant, or contaminant from the facility has been deposited, stored, disposed of, or placed or has migrated or otherwise come to be located

USEPA: United States Environmental Protection Agency