Department of the Navy

Proposed Plan for OU-3

Naval Air Warfare Center
Warminster, Pennsylvania

August 1994

NAVY ANNOUNCES PROPOSED PLAN

The Department of the Navy has completed a **Focused Feasibility Study** (FFS) for Operable Unit 3 addressing **groundwater** associated with Area C at the Naval Air Warfare Center (NAWC or "Site") in Warminster, Pennsylvania. This FFS has been completed as part of the Navy's Installation Restoration Program (IRP) and the Superfund Remedial Program. The purpose of this FFS was to evaluate remedial alternatives for contaminated **groundwater** in **overburden** and **shallow bedrock** attributable to Area C at NAWC. This Proposed Plan summarizes the findings of the FFS report, identifies the remedial alternative preferred by the Navy and the United States Environmental Protection Agency (EPA), and explains the reasons for this preference. In addition, the Proposed Plan explains how the public can participate in the decision-making process and provides addresses and telephone numbers for the appropriate Navy contacts.

This is the second Proposed Plan issued by the Navy for the Site. The first Proposed Plan was issued on April 26, 1993, and addressed Operable Unit 1 (OU-1), which included contaminated groundwater in overburden and shallow bedrock attributable to Area A and Area B at NAWC. Subsequent to the issuance of the Proposed Plan for OU-1, the Navy and EPA conducted a Superfund Removal Action, providing water treatment systems and public water connections to residences in the vicinity of NAWC. This Removal Action was designated as Operable Unit 2 (OU-2). Due to the time-critical nature of this Removal Action, a Proposed Plan was not issued for OU-2. This Proposed Plan addresses contaminated groundwater in overburden and shallow bedrock attributable to Area C, or Operable Unit 3 (OU-3).

Subsequent Proposed Plans shall address contaminated groundwater in deep bedrock, soils, waste, and any other media of concern.

This document is issued by the Navy, the lead agency for IRP and Superfund activities at the facility, and by EPA, the support agency for Superfund activities. The Navy and EPA will select a remedy for contaminated groundwater in overburden and shallow bedrock attributable to Area C (OU-3) after the public comment period has ended and the comments submitted during this time have been reviewed and considered.

The Navy is issuing this Proposed Plan as part of its public participation responsibilities under the Superfund law, and in particular, Sections 113(k), 117(a), and 121(f) of the **Comprehensive Environmental Response, Compensation, and Liability Act** (CERCLA, commonly referred to as Superfund), as amended by the Superfund Amendments and Reauthorization Act. This document summarizes information that can be found in greater detail in the FFS and **Remedial Investigation** (RI) reports for OU-3 and other Site documents contained in the **administrative record** file for this Site. The Navy invites the public to review the materials available and to comment on the Proposed Plan during the public comment period.

PUBLIC MEETING DATE

A public meeting to discuss this Proposed Plan will be held on **September 8, 1994** at **McDonald Elementary School**, Street Road, Warminster, Pennsylvania at 7:00 p.m.

NOTE: A glossary of relevant technical and regulatory terms is provided at the end of this Proposed Plan. These terms are initially indicated in **boldface** within the Proposed Plan.

The Navy, in consultation with EPA, may modify the preferred alternative or select another rem dy presented in this Proposed Plan or the FFS Report for OU-3, based on new information or public comments. **The public is encouraged to review and comment on all the alternatives identified here.**

The administrative record file is available at

NAWC Warminster Public Affairs Office
Jacksonville Road (Building 3)
Warminster, Pennsylvania 18974
(215) 441-3067
Hours: Monday - Friday, 9 a.m - 4 p.m.

Bucks County Library
150 South Pine Street
Doylestown, Pennsylvania 18901
(215) 348-9081
Hours: Monday - Thursday, 9 a.m - 9 p.m.
Friday, 9 a.m. - 6 p.m.
Saturday, 9 a.m. - 5 p.m.

A remedy for contaminated groundwater in overburden and shallow bedrock attributable to Area C will be selected in a **Record of Decision** (ROD), which will be issued after all public comments are considered. The ROD will also be placed in the administrative record file for review by the public.

SITE BACKGROUND

NAWC is a 734-acre facility located in Warminster Township and Ivyland Borough, Bucks County, Pennsylvania (see Figure 1 for Site Location Map). The facility lies in a populated suburban area surrounded by private homes, various commercial and industrial activities, and a golf course. On-site areas include various buildings and other complexes connected by paved roads, the runway and ramp area, mowed fields, and a small wooded area.

Commissioned in 1944, the facility's main function is research, development, testing, and evaluation for Naval aircraft systems. NAWC also conducts studies in anti-submarine warfare systems and software development. Historically, wastes were generated during aircraft maintenance and repair, pest control, fire-fighting training, machine and plating shop operations, spray painting, and various materials research and testing activities in laboratories. These wastes included paints, solvents, sludges from industrial wastewater treatment, and waste oils that were disposed in several pits, trenches, and landfills throughout the facility property.

NAWC was listed on the Superfund **National Priorities List** in 1989. This list includes sites where uncontrolled hazardous substance releases may potentially present serious threats to human health and the environment. The areas of concern identified to date by the Navy at NAWC include eight waste disposal locations (see Figure 2 for Waste Disposal Locations Map) covering more than seven acres, including

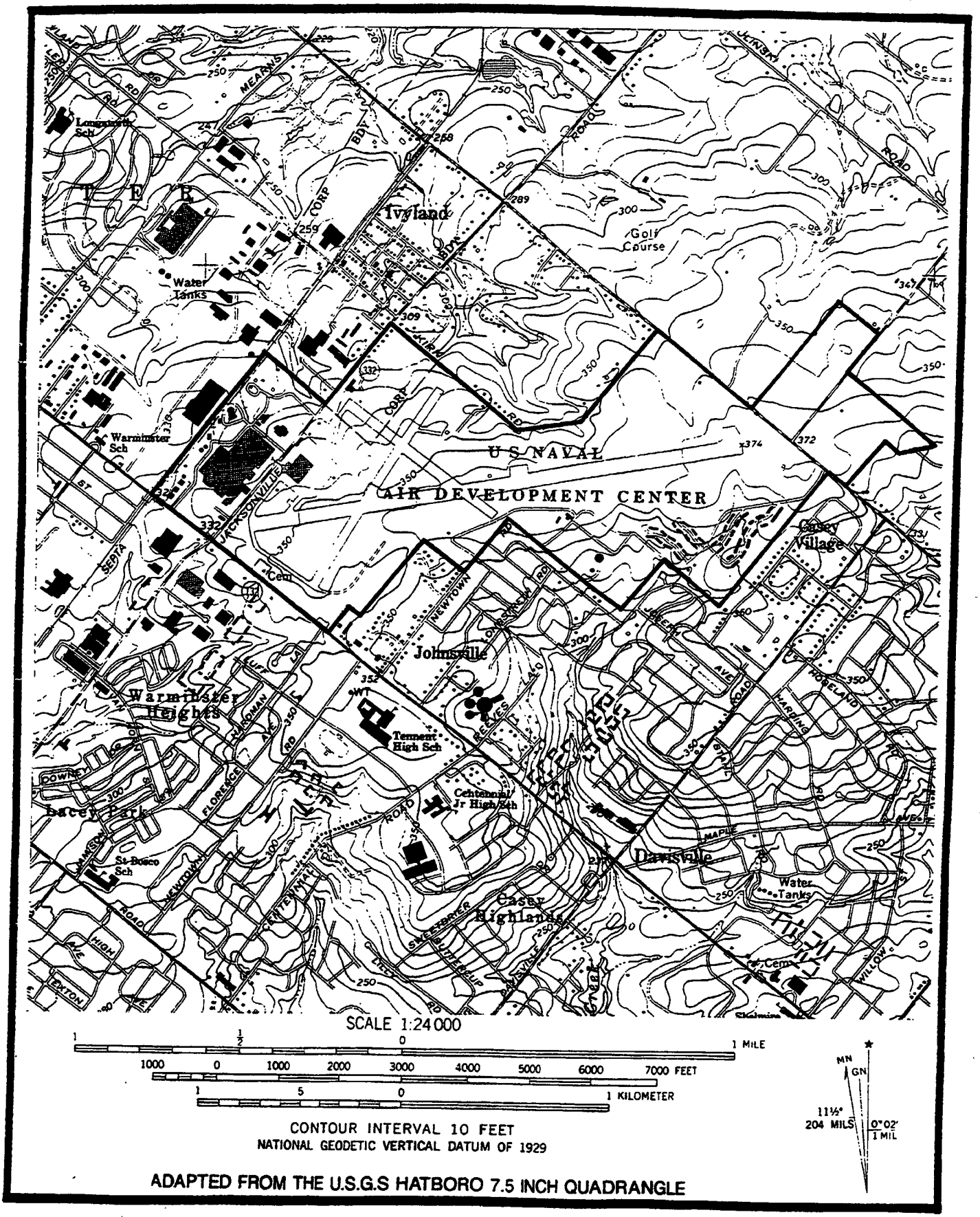
- Three waste disposal pits (sites 1, 3, and 6)
- Two sludge disposal pit areas (sites 2 and 7)
- Two landfills (sites 4 and 5)
- One fire training area (site 8)

To date, potential hazardous substance releases at NAWC Warminster have been addressed under CERCLA in three phases: a Phase I RI, a Phase II RI, and a Focused RI, which is currently in progress.

The Phase I RI was initiated in late 1988 and was completed on September 11, 1990 with the release of the Phase I (or Stage I) RI report. Phase I involved mapping **volatile organic compounds** (VOCs) in soil gas and detecting any buried materials through electromagnetic surveys. The eight waste disposal locations were also investigated through soil borings and installation and sampling of shallow groundwater monitoring wells, which were installed to monitor overburden and shallow bedrock **aquifers**. Test pits were excavated, nearby wells were inventoried, and a bedrock fracture-trace analysis was conducted.

The Phase II RI began at the end of 1991 and included installing overburden and shallow bedrock monitoring wells, sampling and analyzing groundwater, and evaluating aquifer characteristics by performing hydraulic tests. Both the Phase I and Phase II RI investigated the nature and extent of shallow groundwat r contamination within the vicinity of sites 1, 2, and 3 (collectively referred to as Area A), sites 5, 6, and 7 (Area B) and sites 4 and 8 (collectively referred to as Area C).

The Focused RI began in 1993 to further investigate the nature and extent of contaminated groundwater attributable to Areas A, B, and C and includes studies of deep bedrock aquifers in



ADAPTED FROM THE U.S.G.S HATBORO 7.5 INCH QUADRANGLE

FIGURE 1

NAWC WARMINSTER
SITE LOCATION MAP

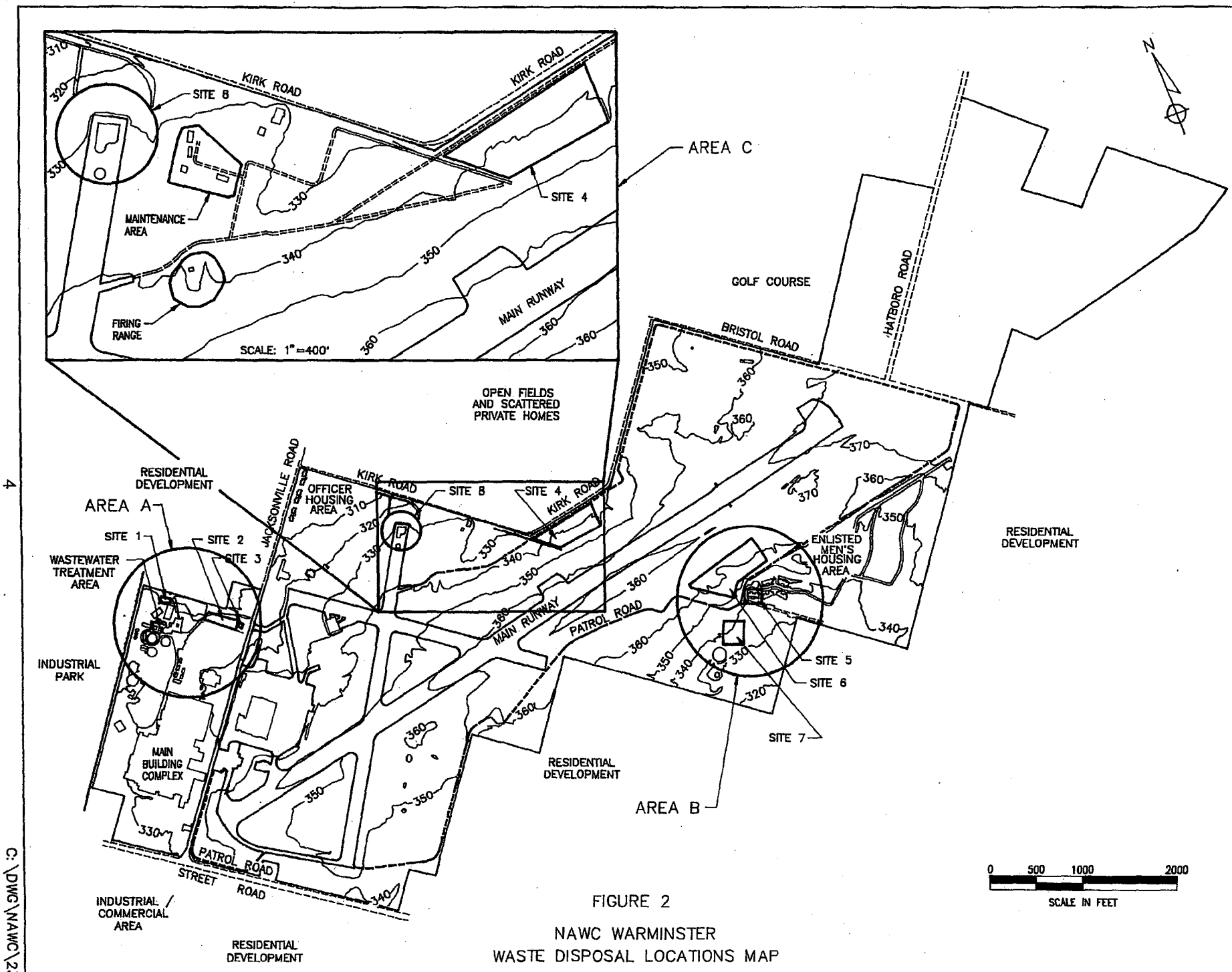


FIGURE 2

NAWC WARMINSTER

WASTE DISPOSAL LOCATIONS MAP

these areas. In addition, the Focused RI has initiated the investigation of groundwater in the vicinity of the main building complex at the base.

Investigation work addressing Area C under the Focused RI has been completed. The results of this work are summarized in an RI report for OU-3 dated August 1994. The RI report for OU-3 provides a basis for the FFS for OU-3 and this Proposed Plan for OU-3.

The results of the balance of work to be completed under the Focused RI will be described in a subsequent RI report. Focused Feasibility Studies and Proposed Plans will be prepared and issued as needed based on the results of this subsequent RI report. Future RI work will investigate any potential contamination not fully investigated by previous studies and any additional potential contamination.

The findings of the RI work to date with respect to contaminated groundwater in overburden and shallow bedrock aquifers attributable to Area C are detailed in the RI report for OU-3. The primary findings can be summarized as follows:

- Tetrachloroethene (PCE) was detected in 10 out of the 34 monitoring wells sampled at concentrations ranging from 1 to 29 micrograms per liter (µg/l). In addition, acetone was detected in nine of 24 monitoring wells at levels ranging from 8 to 74 µg/l. These were the only organic contaminants detected at significant concentrations or frequency.

- Groundwater samples from monitoring wells in Area C contained manganese, arsenic, antimony, beryllium, and thallium at concentrations that resulted in elevated calculated risks. With the exception of thallium, these compounds appear to be within natural background levels.

- Groundwater flow from Area C within overburden and shallow bedrock is to the north.

- PCE attributable to Area C has migrated north to residential wells along Kirk Road. In addition, 2 µg/l of PCE has been detected in a monitoring well located 800 feet north of Area C. (The affected residences have been provided with water treatment systems and are being connected to a public water supply under Removal Actions conducted by the Navy and EPA.)

- Based on available data, the specific location of th r lease(s) of the organic groundwat r contaminants and elevated levels of inorganics is unknown.

SUMMARY OF SITE RISKS

As part of the Focused RI, a risk assessment was conducted with available data to estimate the potential risks to human health posed by the contaminated groundwater in overburden and shallow bedrock aquifers attributable to Area C. To assess these risks, the potential exposure scenarios identified below were assumed. (Due to the Removal Action referenced above, there is no known actual exposure to the contaminated groundwater of concern.)

- Ingestion of the groundwater as a drinking water source.

- Dermal exposure to the groundwater (e.g., through handwashing and bathing).

- Inhalation of contaminants in groundwater (i.e., volatile compounds emitted during showering).

Potential human health risks are categorized as **carcinogenic** or **noncarcinogenic**. A hypothetical carcinogenic risk increase from exposure should ideally fall below a risk range of 1×10^{-6} (an increase of one case of cancer for one million people exposed) to 1×10^{-4} (one additional case per 10,000 people exposed). Noncarcinogenic risks are estimated utilizing **Hazard Indices** (HI), where an HI exceeding one is considered an unacceptable health risk. Federal Maximum Contaminant Levels (MCLs) for public drinking water supplies are also utilized to assess potential risks posed by exposure to groundwater.

The risk assessment for contaminated groundwater in overburden and shallow bedrock attributable to Area C (OU-3) found the carcinogenic risk for hypothetical exposure to this groundwater was an estimated 1.2×10^{-4}. The carcinogenic risk associated with PCE, the only organic contaminant contributing to this risk, was 3.1×10^{-6}. The carcinogenic risks for arsenic and beryllium were calculated at 8.7×10^{-5} and 3.3×10^{-5}, respectively. However, the detected levels of arsenic and beryllium may be attributable to natural geologic conditions. While the overall carcinogenic risk attributable to groundwater contaminated by Area C could potentially be considered acceptable, PCE has been detected

in resid ntial wells formerly used for drinking water and bathing purposes at levels ranging up to 31 µg/l, in exceedance of the MCL of 5 µg/l for PCE.

The total Hazard Index and the Hazard Indices for each substance were calculated using unfiltered monitoring well sample results. Using these data, the total Hazard Index was determined to be well in exceedance of one, primarily due to elevated levels of manganese downgradient of site 4, and to a lesser extent, antimony and thallium in wells elsewhere in Area C. It appears that manganese and antimony are naturally occurring and at background concentrations. Additional sampling and data evaluation may be performed to determine if the levels are within natural background levels.

Actual or threatened releases of hazardous substances from NAWC Warminster, if not addressed by a response action, may present potential or actual threats to public health, welfare, or the environment.

REMEDIAL ACTION OBJECTIVES

The general objective of the remedy for contaminated groundwater in overburden and shallow bedrock attributable to Area C (OU-3) is to eliminate the unacceptable risk associated with exposure or potential exposure to this groundwater.

SUMMARY OF ALTERNATIVES

In the FFS, engineering technologies that are capable of eliminating the unacceptable risk associated with contaminated groundwater in overburden and shallow bedrock attributable to Area C aquifers were identified and evaluated. The technologies determined to be most applicable were developed into remedial alternatives. The Navy has developed three remedial alternatives for OU-3. Costs and implementation times were estimated for each alternative described in this section.

Alternative 1: No Action with Groundwater Monitoring

CERCLA requires that the "no action" alternative be evaluated at every site to establish a baseline for comparison with action alternatives.

Under this alternativ , no remedial action would be undertaken to address contaminated groundwat r in overburden and shallow bedrock aquifers attributable to Area C. Instead, the groundwater of concern would be monitored over an estimated 30 years.

Under this alternative, an estimated total of 16 overburden and shallow bedrock wells would be sampled quarterly for a 30-year period. The frequency of sampling may be reduced once a reliable trend has been established. Additional wells would be installed in the downgradient area. Because this alternative would result in contaminated groundwater remaining at the facility, five-year reviews would be required to monitor the effectiveness of this alternative. The **present worth** of this alternative is estimated to be $1,853,000 over a 30-year period, with a capital cost of $69,696 and an operation and maintenance (O&M) cost of $116,000 annually.

The additional monitoring wells could be installed in approximately six weeks, after a field crew and equipment are mobilized.

General Discussion Regarding the Remaining Alternatives

Alternatives 2 and 3 have several common elements. In each case, contaminated groundwater in overburden and shallow bedrock aquifers attributable to Area C would be extracted using a series of extraction wells. The extraction well network would be located as necessary to maximize the effectiveness of the system. An estimated eight extraction wells would be installed, generating an estimated total flow of 52 gallons per minute. In each case, the extracted groundwater would then be pumped to a treatment system to treat the groundwater as necessary to meet effluent limits consistent with **National Pollutant Discharge and Eliminati n System** (NPDES) requirements. On-site and off-site monitoring wells would be constructed and/or monitored on a quarterly basis for an estimated 30 years. In addition, an additional round of unfiltered and filtered samples would be collected from monitoring wells within Area C to provide additional data to assess risks from potential exposure to metals. Using these additional data, a final Risk Assessment for metals would be performed. The nature and extent of the extraction system would be modified as needed based on this Final Risk Assessment for metals.

The specific remedial alt rnatives outlined below differ primarily according to the location of the treatment system or the location of the discharge of the treated water.

Alternative 2: Groundwater Extraction, Treatment at Area C, and Discharge to Surface Water in Vicinity of Area C

Under Alternative 2, the treatment of the extracted groundwater would be conducted within a treatment plant to be constructed within Area C. This treatment system is projected to include, at a minimum, filtration and carbon adsorption. After treatment, the groundwater would be piped and discharged to an intermittent, unnamed tributary of Little Neshaminy Creek located immediately north of Area C and Kirk Road.

The present worth of Alternative 2 has been estimated at $5,075,000 with a capital cost of $1,545,393 and an operation and maintenance cost of $229,629 annually. This alternative could be constructed in 12 months or less.

Alternative 3 - Groundwater Extraction, Treatment at Area A or Area C, and Discharge to Surface Water at Area A System Outfall

Under Alternative 3, the treatment of the extracted groundwater would also be conducted within a treatment plant to be constructed within Area C or conveyed by pipe to Area A where it would be treated either by the treatment system being constructed within Area A to treat contaminated groundwater from Area A and Area B (OU-1) or by a separate system to be constructed within Area A. The treatment facility within Area C or the separate system within Area A is projected to include, at a minimum, filtration and carbon absorption. In both cases, the treated water would be discharged to the outfall of the Area A plant.

The present worth of Alternative 3 has been estimated to range from $4,944,000 to $5,224,000 with a capital cost ranging from $1,186,852 to $1,839,690 and an operation and maintenance cost ranging from $214,729 to $244,444 annually. This alternative could be constructed in 12 months or less.

EVALUATION OF ALTERNATIVES

The preferred alternative for contaminated groundwater in overburden and shallow bedrock aquifers attributable to Area C at NAWC is Alternative 3 - Groundwater Extraction, Treatment at Area A or Area C, and Discharge to Surface Water at Area A System Outfall. Given available information, Alternative 3 provides the best balance of trade-offs with respect to the CERCLA criteria used to evaluate alternatives. This section profiles the performance of the preferred alternative and/or options against these criteria. A glossary of the evaluation criteria is provided at the end of this Proposed Plan.

Analysis

The three alternatives were evaluated in relation to one another for each criterion that was used for the detailed analysis, except for State acceptance and community acceptance. State and community acceptance is to be addressed in the ROD following comments on this Proposed Plan. This analysis identifies the relative advantages and disadvantages of each alternative.

Overall Protection

Alternative 1 would not be protective of human health and the environment. Alternatives 2 and 3 would protect human health and the environment by eliminating the unacceptable health risk associated with contaminated groundwater attributable to Area C in overburden and shallow bedrock aquifers.

Compliance with ARARs

Alternative 2 includes the discharge of treated groundwater to the unnamed tributary of Little Neshaminy Creek immediately north of Kirk Road. Due to the low flow rate of this tributary, it is unknown whether this discharge could meet NPDES requirements for effluent quality to be developed by the Commonwealth of Pennsylvania. Alternative 3 is expected to meet all **applicable or relevant and appropriate requirements** (ARARs) for discharge of treated water.

Alternatives 2 and 3 would reduce groundwater contaminants attributable to Area C to background level per ARARs of the Commonwealth of Pennsylvania.

Since no action would be taken under Alternative 1, there would be no ARARs in this case.

L ng-T rm Effectivene s and Perman nc

Alternatives 2 and 3 provide a permanent remedy and both would be effectiv over the long term in addressing groundwater contamination at Area C. Both alternatives would require groundwater monitoring to evaluate their effectiveness. Operation and maintenance of the treatment plant and monitoring of the treated discharges would be required for both alternatives.

Alternatives 2 and 3 would also be effective over the long term for remediating all contaminated groundwater attributable to NAWC by preserving the capacity of the OU-1 treatment system currently being constructed within Area A to the extent necessary. Alternative 2 would do so by establishing a separate treatment facility within Area C, and Alternative 3 would provide for a separate treatment system within either Area A or Area C for treating groundwater from Area C, if appropriate.

Alternative 1 would not provide a permanent remedy and would not be effective over the long term.

Reduction of Toxicity, Mobility, or Volume by Treatment

Alternatives 2 and 3 would reduce the toxicity, mobility, and volume of groundwater contaminants by treatment. The treatment systems for these alternatives would generate residuals that would require further treatment or disposal.

Alternative 1 would not use treatment to reduce the toxicity, mobility, or volume of groundwater contaminants.

Short-Term Effectiveness

There would be no additional risks to the public or the environment under Alternatives 2 and 3. In the case of these alternatives, workers would be required to wear protective equipment during activities where they may be exposed to hazardous materials.

Under Alternative 1, groundwater contaminants would continue to present potential unacceptable risks to human health.

Implementability

For Alternatives 2 and 3, the remedial technologies and process options proposed for groundwat r extraction and treatment are all demonstrated and commercially available.

Alternative 2 includes the discharge of treated groundwater to the unnamed tributary of Little Neshaminy Creek north of Kirk Road. Due to the low flow rate of this tributary, it is unknown whether this discharge could meet NPDES requirements for effluent quality to be developed by the Commonwealth of Pennsylvania.

Under Alternative 3, available information indicates that extracted groundwater could be treated to meet the NPDES requirements of concern.

No remedial action is included under Alternative 1.

Cost

The present worth of Alternative 1 is $1,853,000. The present worth of Alternative 2 is $5,075,000. The present worth of Alternative 3 ranges from $4,944,000 to $5,224,000.

State and Community Acceptance

The Commonwealth of Pennsylvania and community acceptance of the preferred alternative outlined in this Proposed Plan will be evaluated at the conclusion of the public comment period and will be described in the ROD for OU-3.

SUMMARY OF THE PREFERRED ALTERNATIVE

At this time, the Navy, with the support of EPA, has selected Alternative 3 - Groundwat r Extraction, Treatment at Area A or Area C, and Discharge to Surface Water at Area A System Outfall as the preferred alternative for remediation of contaminated groundwater attributable to Area C at NAWC in overburden and shallow bedrock aquifers. This alternative would eliminate the unacceptable health risks associated with the groundwater of concern. Treatment would be utilized to reduce the volume and toxicity of the contaminants in the groundwater prior to discharge. Alternative 3 would achieve this in a cost-effective manner and would comply with NPDES requirements for surface water discharges of treated water. In addition, Alternative 3 would reduce groundwater contaminants in overburden and shallow bedrock attributable to Area C at NAWC to background

levels per ARARs of th Commonwealth of Pennsylvania. The preferred alternative is believed to provide the best balance of trade-offs among the alternatives with respect to the response criteria.

Based on available information, the Navy and EPA believe the preferred alternative would be protective of human health and the environment, would be cost effective, and would use permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Because contaminants would be reduced in volume through treatment, the remedy would meet the statutory preference for use of a remedy that involves treatment as a principal element.

THE COMMUNITY ROLE IN THE SELECTION PROCESS

The Navy solicits written comments from the community on the preferred alternative for OU-3 and the other alternatives for OU-3 identified in this Proposed Plan. The Navy has set a public comment period from August 19 through September 19, 1994, to encourage public participation in the remedy selection process for OU-3 . The comment period includes a public meeting. At this meeting, the Navy, with EPA, will present the RI/FFS reports and Proposed Plan, answer questions, and accept both oral and written comments.

Th public meeting is scheduled for 7:00 p.m. on September 8, 1994 and will be held at MacDonald Elementary School, Street Road, Warminster, Pennsylvania. Comments will be summarized and responses provided in the Responsiveness Summary section of the ROD. The ROD is the document that will present the Navy's selection of the remedy for OU-3. To send written comments or obtain further information, contact

David Polish
Public Affairs Officer
Naval Air Warfare Center
Aircraft Division, Code 041
Warminster, PA 18974-5000
(215) 441-3067

Please note that all comments must be submitted and postmarked on or before September 19, 1994.

GLOSSARY OF EVALUATION CRITERIA

Overall Protection addresses whether remedies are protective of human health and the environment. A remedy is protective if it adequately eliminates, reduces, or controls all current and potential site risks posed through each exposure pathway at the site.

Compliance with ARARs is one of the statutory requirements for remedy selection. However, CERCLA allows selecting a remedy that will not attain ARARs if certain conditions exist. One condition is if the remedy is an interim measure and the final remedy will attain ARARs upon completion.

Long-Term Effectiveness and Permanence refers to the magnitude of residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time after clean-up goals have been met.

Reduction of Toxicity, Mobility, or Volume addresses remedies that employ treatment as a principal element by ensuring that the relative performance of the treatment technologies will be assessed. This criterion examines the magnitude, significance, and irreversibility of reductions.

Cost includes capital costs and annual operation and maintenance costs incurred over the life of the remedial action.

Short-Term Effectiveness refers to the short-term impacts of the remedy on the neighboring community, workers, or surrounding environment. This includes potential threats to human health and the environment associated with the removal, treatment, and transportation of hazardous substances.

Implementability is the technical and administrative feasibility of a remedy, as well as the availability of materials and services needed to implement the selected solution.

State Acceptance indicates whether the state concurs with, opposes, or has no comment on the preferred remedy. Formal state comments usually will not be received until the state has reviewed the FFS report and draft Proposed Plan.

Community Acceptance will be addressed in the ROD following a review of the community's comments received on the RI/FFS reports and the Proposed Plan.

TERMS USED IN THE PROPOSED PLAN

Administrative Record: An official compilation of site-related documents, data, reports, and other information that are considered important to the status of and decisions made relative to a Superfund site. The public has access to this material.

Applicable or Relevant and Appropriate Requirements (ARARs): The federal and state requirements that a selected remedy must attain. These requirements may vary among sites and remedial alternatives.

Aquifer: A zone below the surface of the earth capable of producing water, as from a well.

Carcinogenic: A type of risk resulting from exposure to chemicals that may cause cancer in one or more organs (e.g., lungs, skin, glands).

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, known as Superfund, to investigate and clean up abandoned or uncontrolled hazardous substance facilities.

Groundwater: Water found beneath the earth's surface in geologic formations that are fully saturated. When it occurs in sufficient quantity, groundwater may be used as a water supply.

Hazard Index (HI): A value used to evaluate the potential for noncarcinogenic effects that occur in humans.

National Pollutant Discharge and Elimination System (NPDES): Federal or state regulations that pertain to the discharge of pollutants and contaminants to surface waters.

National Priorities List (NPL): EPA's list of the nation's top priority hazardous substance facilities that may be eligible to receive federal money for response under CERCLA.

Noncarcinogenic: A type of risk resulting from exposure to chemicals that may cause systemic human health effects (e.g., central nervous system or immune system impairment).

Operable Unit (OU): A discrete portion of a site or a discrete action representing an incremental step in the investigation and remediation of hazardous substances at a facility.

Overburden: Unconsolidated soil, fill, or waste material and highly weathered bedrock that overlies competent bedrock.

Present Worth: A term used to indicate the discounting of sums to be received in the future to their present value equivalent or the amount that will accumulate to that sum if invested at prevailing interest rates.

Record of Decision (ROD): A legal document that describes the remedy selected for a Superfund facility, why the remedial actions were chosen and others not, how much they cost, and how the public responded.

Remedial Action (RA): Actual implementation, following design, of the selected remedy to prevent or minimize the release of hazardous substances.

Remedial Design (RD): The technical analysis and procedures that follow the selection of remedy for a facility and result in a detailed set of plans and specifications for implementation of the remedy.

Remedial Investigation/Feasibility Study (RI/FS): A two-part study of a hazardous substance facility that supports the selection of a remedy for a site. The first part, the RI, identifies the nature and extent of contamination at the facility. The second part, the FS, identifies and evaluates alternatives for addressing the contamination. A **Focused FS (FFS)** is a streamlined version of the FS and evaluates a limited number of alternatives for a specific problem at the facility.

Shallow Bedrock: Bedrock directly beneath overburden that is monitored by "shallow bedrock monitoring wells" identified in the Phase II Remedial Investigation Report.

Volatile Organic Compounds (VOCs): Organic liquids [e.g., vinyl chloride and trichloroethene (TCE)] that readily evaporate under atmospheric conditions.

MAILING LIST

If you did not receive this Proposed Plan in the mail and wish to be placed on the mailing list for future information pertaining to this site, please fill out, detach, and mail this form to

David Polish
Public Affairs Officer
Naval Air Warfare Center - Code 041
Jacksonville Road
Warminster, Pennsylvania 18974-5000

Name _____ Affiliation _____

Address _____ Phone ( )_____

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