Final
Record of Decision
Site 13—Paint Solvents Disposal Ground

Naval District Washington, Indian Head
Indian Head, Maryland

Naval Facilities Engineering Command Washington

Contract Number N62470-95-D-6007

CTO-0122

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Acronyms and Abbreviations

BERA	Baseline Ecological Risk Assessment
CDI	chronic daily intake
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Chemical of Concern
COPC	Chemical of Potential Concern
CSF	Cancer Slope Factor
CSM	Conceptual Site Model
ELCR	excess lifetime cancer rate
EPA	United States Environmental Protection Agency
FS	Feasibility Study
GRO	Gasoline-Range Organics
HEAST	health effects assessment summary tables
HHRA	human health risk assessment
HI	Hazard Index
HQ	Hazard Quotient
IAS	Initial Assessment Study
IR	installation restoration
IRIS	Integrated Risk Information System
LOAEL	lowest observed adverse effect level
MCL	Maximum Contaminant Level
MDE	Maryland Department of the Environment
µg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
µg/L	microgram(s) per liter
Navy	Department of the Navy
NCEA	National Center for Environmental Assessment
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NDWIH	Naval District Washington, Indian Head
NOAEL	no observed adverse effect level
NPL	National Priorities List
PCB	polychlorinated biphenyl
RAB	Restoration Advisory Board
RBC	Risk-Based Concentration
RfD	Reference Dose
RI	Remedial Investigation

ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SERA	Screening-Level Ecological Risk Assessment
SF	slope factor
SVOC	semi volatile organic compound
TPH	total petroleum hydrocarbons
VOC	volatile organic compound

SECTION 1

Declaration

1.1 Site Name and Location

Site 13—Paint Solvents Disposal Ground
Naval District Washington, Indian Head
Indian Head, Maryland
CERCLIS ID No. MD7170024684

1.2 Statement of Basis and Purpose

This Record of Decision (ROD) presents the Selected Remedy for Site 13, Paint Solvents Disposal Ground at the Naval District Washington, Indian Head (NDWIH) at Indian Head, Maryland. The Selected Remedy was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and, to the extent practical, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on information contained in the Administrative Record file for NDWIH.[1]

The Department of the Navy (Navy) and the U.S. Environmental Protection Agency (EPA) jointly selected the remedy, and the Maryland Department of the Environment (MDE) concurs with the selected remedy.

1.3 Description of the Selected Remedy

The no further action remedy selection is based on the evaluation of site conditions and site-related risks during a remedial investigation, which indicated that current conditions are protective of human health and the environment.

1.4 Statutory Determinations

This remedy will not result in hazardous substances, pollutants, or contaminants remaining on site above levels that prevent unlimited use and unrestricted exposure; therefore, a 5-year review will not be required for this remedial action.

[1] On October 1, 2003, the installation management functions at Indian Head transferred from the Indian Head Division, Naval Surface Warfare Center (IHDIV-NSWC) to Naval District Washington. This installation will now be referred to as Naval District Washington, Indian Head (NDWIH).

1.5 Authorizing Signatures

_____ Date

T. L. Honey, CAPT
Deputy Commandant
Naval District Washington

_____ _____ Date

Abraham Ferdas, Director
Hazardous Site Cleanup Division
U.S. EPA - Region III

SECTION 2

Decision Summary

2.1 Site Name, Location, and Description

Naval District Washington, Indian Head is located in northwestern Charles County, Maryland, approximately 25 miles southwest of Washington, District of Columbia. NDWIH is a Navy facility consisting of the main installation on Cornwallis Neck Peninsula and the Stump Neck Annex on Stump Neck Peninsula. The main installation is approximately 2,500 acres and is bounded by the Potomac River to the northwest, west, and south, Mattawoman Creek to the south and east, and the town of Indian Head to the northeast (Figure 2-1). Included as part of the main installation are Marsh Island and Thoroughfare Island, which are located in Mattawoman Creek.

The Navy is the lead agency for site activities at NDWIH. The EPA and the MDE are support agencies. Funding is provided by the Navy.

Site 13 is located adjacent to the west side of Building 870, the Paint Shop (Figure 2-2).

2.2 Site History and Enforcement Activities

2.2.1 Site History

Site 13 is an approximately 400-square-foot wooded area adjacent to the west side of Building 870, which was constructed in 1953 and used as a paint shop. The building is currently used as an office and tool shop. When used as a paint shop, various items were painted by hand using aerosol sprays or paint spray booths. According to facility records and interviews with facility personnel, approximately 115 gallons per year of kerosene, mineral spirits, lacquer thinners, and solvents may have been disposed in a depressed area located in the woods behind the paint shop between 1953 and 1979. Approximately 1 percent of the 3,380 gallons of paint used annually may have been washed off during paint equipment cleaning operations, which took place over bare soil areas behind Building 870 (Fred C. Hart Associates, Inc., 1983).

2.2.2 Enforcement Activities

Site 13 has been under regulatory oversight (enforcement) since 1983 when an Initial Assessment Study (IAS) identified Site 13 as a paint solvents disposal area based on observations of severe vegetation stress and strong solvent odors in the air up to 25 feet from the back of Building 870. A RCRA Facility Assessment, which consisted of a Preliminary Review of available documents and a Visual Site Inspection, was conducted in 1988. The exact location of the solvent disposal area could not be determined during the Visual Site Inspection because areas of bare or depressed soil were not observed. A rusted and empty 55-gallon drum was observed in the wooded area south of the shop. Additionally, solvent odor near the present waste oil storage pad and stained soil beneath a

wooden pallet used for storage of paint cans were noted. In September 1995, NDWIH was placed on the National Priorities List (NPL).

In 2000, a remedial investigation (RI) was conducted at Site 13 (CH2M HILL, 2004). The investigation included sampling and analysis of surface and subsurface soil samples. A groundwater sample was collected and analyzed in 2002 following the RI, and the results are presented in the *Final Remedial Investigation Report, Sites 11, 13, 17, 21, and 25, Naval District Washington, Indian Head, Indian Head, Maryland* (herein referred to as the RI Report) (CH2M HILL, 2004).

Based on the conclusions of the RI, a Feasibility Study (FS) was not warranted and a No Further Action Proposed Plan was prepared and made available for public comment in 2004.

No other enforcement activities, removal actions, or remediation activities have been initiated at Site 13.

2.3 Community Participation

A Restoration Advisory Board (RAB) made up of community members, Navy, Federal, and State officials meets several times each year. The RAB is designed as a forum for the exchange of information between NDWIH and the local community regarding installation restoration (IR) activities.

The RI Report and Proposed Plan for Site 13 were made available to the public. The RI report was made available in May 2004, and the Proposed Plan was made available on May 28, 2004. These documents, which are included in the Administrative Record file, can be found in the Information Repository located in the NDWIH General Library, Building 620 (The Crossroads). The notice of the availability of the Proposed Plan was published in the *Maryland Independent* newspaper on May 28, 2004. A public comment period on the Proposed Plan was held from May 28, 2004, to June 28, 2004. In addition, a public meeting was held on June 17, 2004, to present the Proposed Plan to a broader community audience than those that had already been involved at the site.

At this meeting, representatives of the Navy, EPA, and MDE answered questions about the site and the decision that no further action is required to protect human health and the environment. No written comments were received during the public comment period. This is documented in the Responsiveness Summary, which is part of this ROD.

2.4 Scope and Role of the Response Action

Site 13 is included in the NDWIH IRP. No response action is necessary at this site to protect human health and the environment. Separate investigations and assessments are being conducted for other IR sites at NDWIH in accordance with CERCLA. Separate RODs and other CERCLA decision documents will be prepared for those other IR sites.

2.5 Site Characteristics

Characteristics of the site, the nature and extent of contamination, and the human health risk assessment are presented in greater detail in the RI Report.

2.5.1 Physical Setting

Site 13 is at an elevation of approximately 85 to 90 feet above mean sea level. Approximately 50 feet to the south and west of Building 870, the terrain slopes down into a wooded area. Two drainage swales radiate from the foot of this slope to the northwest and southwest of Building 870. The drainage swales contain water only during storm-runoff events. Site features and topography are shown on Figure 2-2.

Soil underlying the site (down to a depth of 46 feet below ground surface) consists of silty and sandy clays and sands. Groundwater occurs approximately 37 feet below ground surface. The general flow direction of the groundwater (the water table aquifer) is likely to the west, following the surface topography.

The nearest potable water wells are Well 2, located 1,800 feet north, and Well 7, located 1,950 feet southeast of the site. Well 2 was installed in 1902 in the Lower Patapsco aquifer with a depth of 409 feet. The well was abandoned and sealed in 1986. Well 7 was drilled in 1915 in the Patapsco aquifer with a depth of 419 feet. It was screened at three depths: 255'–265', 308'–317', and 377'–399'. Well 7 is active but is slated for abandonment. In general, potable water wells are installed in deeper aquifers than the water table aquifer and are unlikely to be affected by conditions at Site 13. The surrounding land use in the vicinity of Site 13 consists of undeveloped woodland. The site is not used for any facility activities.

There are no known areas of archeological or historical importance at Site 13.

2.5.2 Conceptual Site Model

Figure 2-3 presents the Conceptual Site Model (CSM) for human receptors at Site 13. The CSM integrates information regarding the physical characteristics of the site, potentially exposed populations, sources of contamination, and contaminant mobility (fate and transport) to identify exposure routes and receptors evaluated in the risk assessment. A well-defined CSM allows for a better understanding of the risks at a site and aids in the identification of the potential need for remediation. Soil where solvents may have been released is the source of contamination.

Human receptors under the current land use scenario (undeveloped woodland) include adolescent and adult trespassers/visitors. Human receptors under the future land use scenario (also undeveloped woodland) include the adult and child residents, adult and adolescent trespassers/visitors, industrial workers, and construction workers. Hypothetical future residential use of the site was evaluated to confirm that no land use controls would be needed at the site. However, residential development of the site with potable use of shallow groundwater is not a likely future land use.

2.5.3 Sampling Strategy

During the RI, surface and subsurface soil samples, including background samples (i.e., samples collected in areas considered to be unaffected by any releases at Site 13), were collected to determine if surface soil and subsurface soil have been adversely affected by solvent disposal. The soil samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), metals, explosive compounds, and total petroleum hydrocarbons (TPH).

Five boreholes were drilled during the RI field activities to obtain geologic information. Contaminant levels in surface and subsurface soils did not pose a threat to groundwater; therefore, groundwater sampling was not necessary. Following the RI, EPA and MDE expressed concern about groundwater quality and proposed that one monitoring well be installed at the site and sampled for low concentration VOCs. Figure 2-2 shows the locations of the soil sampling points and monitoring well.

2.5.4 Nature and Extent of Contamination

2.5.4.1 Summary

The nature and extent of contamination at Site 13 can be summarized as follows:

- Several inorganics, VOCs, SVOCs, explosives compounds, and TPH were detected in surface and subsurface soil samples. However, no COCs were identified for soil based on the analytical data, human health risk assessment, ecological risk assessment, or exceedances of regulatory standards or criteria.
- Comparison of soil analytical results to Federal screening levels established to protect groundwater from chemicals leaching from soil indicates that the detected concentrations of chemicals in soil samples were below the screening levels; therefore, the potential for these soils to serve as a source of groundwater contamination is low.
- Concentrations of VOCs in groundwater did not exceed applicable screening criteria. Therefore, operations at Building 870 have not adversely affected groundwater quality and have only minimally affected soil.

The nature and extent of soil and groundwater contamination is discussed in more detail below.

2.5.4.2 Soil

The RI evaluated the nature and extent of contamination and the potential risks to people, plants, and animals from existing soil. This was done by comparing the soil data to Federal screening levels established to be protective of people, plants, animals, and groundwater.

Surface Soil

Nine surface soil samples, including one sample collected in an area considered to be uncontaminated (i.e., a "background" sample), were collected and analyzed for VOCs, SVOCs, metals, explosive compounds, and TPH. Table 2-1 presents the data for surface soil.

Eighteen inorganic analytes were detected in the surface soils at Site 13. Sixteen metals had one or more detections that exceeded the facility-wide background 95% UCL. These

included arsenic, barium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, selenium, vanadium, and zinc. No screening criteria have been developed for calcium or magnesium. At least a portion of all metals are naturally occurring soil constituents.

Five VOCs [1,1,2–trichloroethane (1,1,2-TCA), acetone, methyl acetate, methylene chloride, and toluene] and thirteen SVOCs were detected in the surface soil samples. The number of detections and concentrations of VOCs and SVOCs were greatest in the samples collected closest to Building 870 and tended to decrease with distance from Building 870. None of these VOCs or SVOCs were detected in the site-related background sample; all are considered to be site related.

2, 6-Dinitrotoluene was the only explosive-related compound detected, in two surface soil samples at concentrations of 600 micrograms per kilogram (µg/kg) and 540 µg/kg, respectively. TPH Diesel Range Organics were detected in all samples with concentrations ranging from 9.9 milligrams per kilogram (mg/kg) in sample IS13SS05 to 1,400 mg/kg in sample IS13SS02. The highest detection was just west of Building 870. TPH Gasoline Range Organics (GRO) were detected in only one surface soil sample, at a concentration of 30 mg/kg.

Subsurface Soil

Five subsurface soil samples, including one background sample, were collected and analyzed for VOCs, SVOCs, metals, explosive compounds, and TPH. Table 2-2 presents the data for subsurface soil.

Sixteen inorganic analytes were detected in the subsurface soil. Sample IS13SB04 contained the largest number of maximum concentrations of inorganics at the site. Many of these inorganics are naturally occurring soil constituents.

One VOC (methylene chloride) was detected in the subsurface soil at a concentration of 1.2 µg/kg. Two SVOCs were detected in the subsurface soil samples: diethlyphalate at a concentration of 310 µg/kg, and pyrene at a concentration of 83 µg/kg.

TPH GRO was detected once in the subsurface southeast of Building 870, at a concentration of 66,000 µg/kg.

Groundwater

The nature of groundwater contamination at Site 13 is based on the data presented in the technical memorandum entitled "*Investigation of Groundwater Flow at Site 13, Indian Head Division-NSWC, Indian Head, Maryland*" (CH2M HILL, 2003). One monitoring well was installed and sampled for low concentration VOC analysis. Toluene was the only VOC detected, in the primary and duplicate samples, at a concentration of 0.32 micrograms per liter (µg/L) (Table 2-3). The concentration of toluene in the groundwater sample does not exceed either the EPA's Region III Risk-Based Concentration (RBC) for toluene in tap water or the Federal Maximum Contaminant Level (MCL) in drinking water (Table 2-4).

2.6 Current and Potential Future Land and Resource Uses

Site 13 is a wooded area adjacent to the west side of Building 870. The current land use for the site is as undeveloped woodland. Future use is expected to be the same as the current land use. Shallow groundwater beneath the site is not used for any purpose. The Navy has no plans to develop this resource in the future.

It is unlikely that Site 13 would be developed for residential use. However, hypothetical future residential use of the site was evaluated in the risk assessment to assess the need for institutional controls.

2.7 Summary of Site Risks

A detailed discussion of risks at Site 13 and the risk evaluation process is presented in the RI Report.

2.7.1 Human Health Risk Assessment

A baseline human health risk assessment (HHRA) was performed for soil at Site 13 to determine the current and future effects of contaminants in soil on human health. The receptors evaluated in the risk assessment for both current and future uses included:

- For current uses—adolescent and adult trespassers/visitors
- For future uses—adult and child residents, adult and adolescent trespassers/visitors, industrial workers, and construction workers

The Navy evaluated the residential exposure scenario to confirm that no land use restrictions would be necessary at the site. A detailed discussion of the HHRA is provided in Sections 3.3 and 5.6 of the RI Report.

2.7.1.1 Identification of Chemicals of Potential Concern

Chemicals of potential concern (COPCs) are those chemicals identified as a potential threat to human health and are evaluated further in the baseline risk assessment.

COPCs for soil under current and future scenarios included aluminum, arsenic, chromium, iron, manganese, and vanadium, although at least a portion of these COPCs are naturally occurring soil constituents. The chemical characteristics of the soil for future scenarios were estimated by pooling the results of the analyses for the surface soil and subsurface soil, as it is assumed that construction or excavation activities in the future would result in mixing of surface and subsurface soils. The baseline risk assessment subsequently determined that, under current conditions, soil does not represent an unacceptable risk.

Any transfer of COPCs to air from soil through volatilization and fugitive dust emissions was also considered to be a potential transport mechanism for the HHRA. However, no chemicals were retained as COPCs for this pathway.

Section 5.6.2 in the RI Report presents the identification of COPCs, including those that do not pose unacceptable risks to human health.

2.7.1.2 Exposure Assessment

The exposure assessment defines and evaluates the type and magnitude of human exposure to the chemicals present at or migrating from a site. The exposure assessment is designed to depict the physical setting of the site, identify potentially exposed populations, and estimate chemical intakes under the identified exposure scenarios. Actual or potential exposures are based on the most likely pathways of contaminant release and transport, as well as human activity patterns. A complete exposure pathway has three components: a source of chemicals that can be released into the environment, a route of contaminant transport through an environmental medium, and an exposure or contact point for a human receptor.

The onsite exposure points at Site 13 include the surface and subsurface soil. Although contaminants may be transported offsite via surface runoff to the drainage swales, the transport process could dilute the contaminant concentration. The risk associated with offsite contaminant movement could be less than the risk from the onsite contaminants. Therefore, the risk assessment considered only onsite exposure points. Because of the low potential for groundwater contamination by the subsurface soil, neither onsite nor offsite exposure to groundwater was considered in the HHRA. Only incidental ingestion of and dermal contact with soil were considered to be potential exposure routes. Existing and potential exposure pathways are illustrated in the conceptual exposure model (Figure 2-3).

The only medium of potential concern currently accessible at the site is surface soil. Based on current site use, potential receptors include adolescent and adult trespassers/visitors.

The projected future use of the site is consistent with current activities. Therefore, the trespasser/visitor is included for evaluation under the future use scenario. It also conservatively assumed that the site could be developed and used for industrial and/or residential activities in the future. It is not expected that the site will be developed for residential use; however, the residential scenario is conservatively included in this evaluation. The receptors in the future uses scenarios include the construction worker, industrial worker, adult resident, and child resident, in addition to the adult and adolescent trespasser/visitor. Section 5.6.3 in the RI Report presents a detailed discussion of the exposure assessment.

2.7.1.3 Toxicity Assessment

Toxicity assessment weighs the available evidence regarding the potential for a particular chemical to cause adverse effects in exposed individuals and provides a numerical estimate of the relationship between the extent of exposure and possible severity of adverse effects. Toxicity assessment consists of two steps: hazard identification and dose-response assessment. Hazard identification is the process of determining the potential adverse effects from exposure to a chemical. Dose-response assessment is the process of quantitatively evaluating the toxicity information and characterizing the relationship between the dose of the contaminant administered or received and the incidence of adverse health effects in the exposed population. From this quantitative dose-response relationship, toxicity values (e.g., reference doses [RfDs] and carcinogenic slope factors [CSFs]) are derived. These are the toxicity values, used in conjunction with the exposure assessment, to estimate noncarcinogenic hazards and carcinogenic risks.

The EPA has assessed the toxicity of many chemicals and has published the resulting toxicity information and toxicity values in the Integrated Risk Information System (IRIS) and Health Effects Assessment Summary Tables (HEAST) databases. Additionally, toxicity information is available from EPA's National Center for Environmental Assessment (NCEA).

Health effects are divided into two broad groups: noncarcinogenic and carcinogenic effects. This division is based on the different mechanisms of action currently associated with each category. Chemicals causing noncarcinogenic health effects were evaluated independently from those having carcinogenic effects. Some chemicals may produce both noncarcinogenic and carcinogenic effects, and were evaluated in both groups. Noncarcinogenic health affects are evaluated using the RfDs. Carcinogenic effects are evaluated using CSFs. Section 3.3.3 in the RI Report provides more detail of the toxicity assessment.

2.7.1.4 Risk Characterization

Methodology

The risk characterization summarizes and combines outputs of the exposure and toxicity assessments to characterize baseline risks, both in quantitative expressions and in qualitative statements. For carcinogens, risk is generally expressed as the incremental probability of an individual developing cancer over a lifetime of exposure to the carcinogen. This excess lifetime cancer risk (ELCR) is calculated from the following equation:

$$ELCR = CDI \times SF$$

where:

ELCR = excess lifetime cancer risk, a unitless probability (e.g. 33 percent) of an individual's developing cancer, that is in addition to the incidence of cancer in the general population unaffected by these releases

CDI = chronic daily intake averaged over 70 years (mg/kg-day)

SF = slope factor, (cancer potency factor), expressed as $(mg/kg\text{-}day)^{-1}$.

These risks are probabilities that usually are expressed in scientific notation (e.g., 1E-06). An excess lifetime cancer risk of 1E-06 indicates that an individual experiencing the reasonable maximum exposure estimate has a one in 1,000,000 chance of developing cancer as a result of site-related exposure. This is referred to as an "excess lifetime cancer risk" because it would be in addition to the risks of cancer individuals face from other causes such as smoking or exposure to too much sun. The chance of an individual developing cancer from all other causes has been estimated to be as high as one in three (33 percent) for women and one in two (50 percent) for men. The EPA generally acceptable risk range for site-related exposure is 1E-04 to 1E-06 (i.e., 1 in 10,000 to 1 in 1,000,000).

The potential for noncarcinogenic effects is evaluated by comparing an exposure level over a specified time period with an RfD derived for a similar exposure period. An RfD represents a level that an individual may be exposed to that is not expected to cause any deleterious effects. The ratio of exposure to toxicity is called a hazard quotient (HQ). An HQ less than one indicates that a receptor's dose of a single contaminant is less than the RfD and that toxic noncarcinogenic effects from that chemical are unlikely. The hazard index (HI) is

generated by adding the HQs for all COPCs that affect the same target organ (e.g., liver) or that act through the same mechanisms of action within a medium or across all media to which a given individual may reasonably be exposed. An HI less than one indicates that, based on the sum of all HQs from different contaminants and exposure routes, toxic noncarcinogenic effects from all contaminants are unlikely. An HI greater than one indicates that site-related exposures may present an unacceptable risk to human health.

The HQ is calculated as follows:

$$HQ = CDI/RfD$$

Where: CDI = chronic daily intake

RfD = reference dose

CDI and RfD are expressed in the same units and represent the same exposure period (i.e., chronic, subchronic, or short term). The CDI for HQ calculations may not be the same as that used in the ELCR calculations.

Carcinogenic Risks

- Carcinogenic risks for all evaluated receptors were within or below the EPA acceptable risk range (1E-04 to 1E-06).

Noncarcinogenic Risks

- Noncarcinogenic risks for all evaluated receptors had an HI less than one, except for the hypothetical child resident.

When the HI is greater than one, the HI is separated into HIs for individual toxicological endpoints (target organs or effects). If the HIs for each toxicological endpoint are below one, toxic noncarcinogenic effects are unlikely. The HIs for the individual toxicological endpoints for the hypothetical child resident are all below one; therefore, toxic noncarinogenic effects to the child resident are unlikely.

A detailed discussion of the risk characterization is provided in Section 3.3.4 and Section 5.6.4 of the RI Report. Section 3.3.5 in the RI Report presents the uncertainty analysis for the HHRA.

2.7.2 Ecological Risk Assessment

A screening-level ecological risk assessment (SERA) was conducted for Site 13 to estimate the risks the site would pose to ecological receptors if no action was taken. The SERA provided a conservative assessment of potential ecological risk. The general approach and site-specific approach for the ecological risk assessment are provided in Section 3.4 and Section 5.7, respectively, in the RI Report.

2.7.2.1 Identification of Chemicals of Concern

Chemicals of concern (COCs) are selected in Step 3A from a preliminary list of ecological COPCs. The selection process involves consideration of the ecological HQs based on refined exposure assumptions, patterns in detection, consideration of likely risk from chemicals without screening values, consideration of background concentrations, and consideration of

the basis of the direct contact and ingestion-based screening values compared to site conditions. If there are COCs at the end of Step 3A, the risk assessment process continues to Step 3B (revised problem formulation) and Step 4 (baseline ecological risk assessment work plan). No COCs were identified after Step 3A for Site 13. Detailed steps for identifying the COCs are provided in Sections 3.4.3, 3.4.4, and 5.7.4 in the RI Report.

2.7.2.2 Exposure Assessment

According to Superfund guidance (EPA, 1997), Step 3 initiates the problem formulation phase of the Baseline Ecological Risk Assessment (BERA). Under Navy guidance (CNO, 1999), the BERA is defined as Tier 2, and the first activity under Tier 2 is Step 3A. In Step 3A, the conservative assumptions employed in Tier 1 are refined and risk estimates are recalculated using the same conceptual site model for the site. This step is conducted to assist with the identification of risk drivers (i.e., chemicals that may pose the greatest risk).

In some cases, additional information is presented that has bearing on whether a chemical is identified as a potential risk driver. Risk estimates were based on maximum concentrations in Step 2 and average concentrations in Step 3A. For upper trophic level receptors, average chemical concentrations provide a more representative estimate of the likely level of chemical exposure because the local population (and, in many cases, individual organisms for highly mobile species with large home ranges relative to the size of the site) would be expected to occur throughout the site (where suitable habitat is present) and, in many cases, off the site. Mean concentrations (or some other estimate of central tendency) may also be appropriate for evaluating potential risks to populations of lower trophic level terrestrial and aquatic receptors because the members of the population are expected to be found throughout the site (where suitable habitat is present), rather than concentrated in one particular area.

While effects on individual organisms might be important for some receptors, such as rare and endangered species, population- and community-level effects are typically more relevant to ecosystems. In many cases, the average concentration is a conservative representation of the true site average because samples are generally biased toward areas of known or suspected contamination.

2.7.2.3 Ecological Effects Assessment

The purpose of the effects evaluation is to establish chemical exposure levels (screening values) that represent conservative thresholds for adverse ecological effects. Direct contact screening values were used to assess potential risks to the soil invertebrate and terrestrial plant communities. Ingestion screening values for dietary exposures were derived for each avian and mammalian receptor species and chemical evaluated in the assessment. Section 3.4.2.1 in the RI Report provides a detailed description of the screening values used in the ecological risk assessment.

2.7.2.4 Ecological Risk Characterization

For soil invertebrates and plants, the mean concentrations of seven metals (aluminum, chromium, iron, lead, mercury, vanadium, and zinc) exceeded soil screening values. There were no exceedances of lowest observed adverse effect level (LOAEL)-based HQs. For no observed adverse effect level (NOAEL)-based HQs, the only exceedance was for arsenic for

the short-tailed shrew (HQ = 1.6). Although the concentrations of aluminum, chromium, iron, lead, mercury, vanadium, and zinc exceeded soil screening values, the question that must be answered is the following: Do the concentrations of release-related inorganics in site soils pose an unacceptable risk to populations of plants and soil invertebrates at the site? Weights of evidence are discussed below. Section 5.7.4.3 in the RI Report provides a detailed description of the ecological risk characterization.

Background Comparisons. Of the inorganics with concentrations in excess of screening values, aluminum, chromium, iron, and vanadium were present at concentrations consistent with NDWIH background levels.

Lead, mercury, and zinc were the only inorganic COPCs present at higher concentrations than those found at background locations at the base. The areal extent of these contaminants was limited. Sample location IS13SS02 had the maximum mercury concentration, while sample location IS13SS04 and IS13SS05 had the maximum and second highest concentrations, respectively, of both lead and zinc. None of these samples were located in the swales. All are clustered around Building 1753. Concentrations declined away from the building. Of lead, mercury, and zinc, only mercury exceeded its screening values in samples IS13SS07 and IS13SS09, the furthest downslope samples. The pattern and level of mercury concentrations in the soil (i.e., low-level and widespread) suggest it may not have been site related because there is no distinct pattern of decreasing mercury concentrations with distance away from the building as one would expect if mercury had been released.

The surface soil sampling (0 to 6 inches) adequately characterized the concentrations of inorganics in the soil column. There is a 3- to 4-inch organic layer underlain by fine-grained and compact soil. It is unlikely that contaminants have moved vertically in significant quantities.

In addition, the impact of Site 13 on downgradient ecological systems has likely been minimal. Site 13 is an approximately 400-square-foot wooded area adjacent to the west side of Building 870, which was used as a paint shop. Site 13 has not likely contributed in a significant way to contaminant levels in Mattawoman Creek. The strength of this contaminant source is not great, and there is no direct migration pathway to Mattawoman Creek. The hydrologic route from Site 13 to the creek is lengthy and of low velocity, with many depositional areas along the pathway. The stream eventually discharges to a water body adjacent to Town Gut Landfill.

An additional site investigation activity was conducted to assess whether the historically documented 400-ft^2 area of stressed vegetation west of Building 870 was still present. On May 14, 2002, a CH2M HILL environmental specialist visited the area. There was no stressed vegetation and saplings were growing within the area suspected to be historically bare. With respect to vegetation density, the area behind Building 1753 was no different than the majority of the surrounding forest. No invertebrates were found in the soil in the suspect area. However, invertebrates were also absent in other nearby areas not impacted by the site.

The results of the ecological risk assessment indicate that chemicals in the soil at Site 13 pose minimal risk to ecological receptors. Supporting evidence for this conclusion is provided in Section 5.7.4.5 in the RI Report.

2.7.3 Conclusions

There were no unacceptable risks to human health or ecological receptors from exposure to the chemicals detected at Site 13. All cancer risks were within or below the EPA acceptable risk range of 1E-04 to 1E-06. All target-organ-specific HI values were less than one. The ecological risk assessment concluded, based on the weight of scientific evidence, that risk to ecological receptors was minimal.

According to the RI report, no evidence of significant solvent disposal was detected in surface and subsurface soils at Site 13. Sections 5.8.3 and 5.8.4 in the RI Report present the conclusions of the HHRA and ERA, respectively.

2.8 Selected Remedy

The Navy and the EPA, with the support of the MDE, have selected no further action as the preferred alternative for Site 13. Based on the results of investigations conducted at Site 13, the Navy, EPA, and MDE have determined that the site does not pose an unacceptable risk to people, plants, and animals; therefore, no alternative other than the no further action alternative was evaluated. Under this alternative, no response action will be performed at the site; therefore, no institutional controls, remedy schedule, capital cost estimation, or annual operation and maintenance are necessary.

2.9 Documentation of Significant Changes

The Proposed Plan for Site 13, Paint Solvents Disposal Ground, at NDWIH, Indian Head, Maryland, was released for public comment on May 28, 2004. The Proposed Plan identified that no action is necessary for protection of human health and the environment. No written or oral comments were received during the public comment period. It was determined that no significant changes to this decision, as originally identified in the Proposed Plan, were necessary or appropriate.

Table 2-1
Detected Compounds in Site 13 Surface Soil Samples
Record of Decision
NDWIH, Indian Head, Maryland

Station ID	IS13SO01		IS13SO02	IS13SO03	IS13SO04A	IS13SO05		IS13SO06
Sample ID	IS13SS010001	IS13SS010001P	IS13SS020001	IS13SS030001	IS13SS040001	IS13SS050001	IS13SS050001P	IS13SS060001
Sample Date	07/18/00	07/18/00	07/18/00	07/18/00	07/31/00	07/31/00	07/31/00	07/18/00
Chemical Name								
Volatile Organic Compounds (UG/KG)								
1,1,2-Trichloroethane								
Acetone			37					
Methyl acetate		7.2 J	33 J	14 J				2.4 J
Methylene chloride			2.1 J					
Toluene								
Semi-volatile Organic Compounds (UG/KG)								
Acetophenone	220 J	520	570	330 J				120 J
Benzaldehyde	170 J	290 J	410 J	240 J				100 J
Benzo(a)anthracene							180 L	
Benzo(a)pyrene		67 J			52 J		41 L	
Benzo(b)fluoranthene		66 J			95 J	47 J	320 L	
Benzo(k)fluoranthene							110 L	
Chrysene		69 J			52 J	40 J	240 L	
Fluoranthene		58 J			55 J	56 J	380 L	46 J
Indeno(1,2,3-cd)pyrene		52 J			43 J			
Phenanthrene							120 L	
Phenol		110 J	150 J					
Pyrene	97 J	210 J			110 J		200 L	140 J
bis(2-Ethylhexyl)phthalate					220 J		110 L	
Explosives (UG/KG)								
2,6-Dinitrotoluene			600	540				
Total Metals (MG/KG)								
Aluminum	5,120	4,100	3,580	3,990	8,490	6,510	6,470	9,170
Arsenic	4.5 L	6.4 L	8.1 L	5.7 L	6.3	11	10.6	3.4 L
Barium	40.6 J	58.7 J	37.7 J	67	55.4	105	71.4	26.3 J
Cadmium	0.21 J	0.34 J	0.38 J	0.58 J	0.82 J	1 J	1.3	
Calcium	695 J	1,200 J	693 J	1,500 J	2,110	4,660	2,250	235
Chromium	11.7	11.8	14.7	10.2	29.8	22.7	24.3	11.7 L

J - Estimated Value
K - Biased high
L - Biased low
I - A peak was found in the diphenyl ether channel. The presence of interferences in indicated.

Table 2-1
Detected Compounds in Site 13 Surface Soil Samples
Record of Decision
NDWIH, Indian Head, Maryland

Station ID	IS13SO01		IS13SO02	IS13SO03	IS13SO04A	IS13SO05		IS13SO06
Sample ID	IS13SS010001	IS13SS010001P	IS13SS020001	IS13SS030001	IS13SS040001	IS13SS050001	IS13SS050001P	IS13SS060001
Sample Date	07/18/00	07/18/00	07/18/00	07/18/00	07/31/00	07/31/00	07/31/00	07/18/00
Chemical Name								
Cobalt	8 L	14.7 L	4.9 L	14.3 L	7.2 J	5.9 J	6.4 J	3.2 J
Copper	7.7	11.7	9.1	7.2 J	14.5	17	17.4	5.8 J
Iron	8,430	11,800	16,800	7,150	13,000 J	13,900 J	15,000 J	11,700 J
Lead	47.1	84	71.4	59.1	211 K	112 K	153 K	13.2 J
Magnesium	378 J	366 J	262 J	478 J	1,510 J	2,030 J	2,550 J	521 J
Manganese	285	600	154	326	214 J	119 J	130 J	64.7 L
Mercury	0.18 L	0.17 L	0.58 L	0.27 L	0.23	0.14	0.14	
Nickel	4.2 J	5 J	5.1 J	6.6 J	12.8	33.8 J	34.2	4.5 J
Potassium	230 J	235 J	243 J	287 J	372 J	382 J	386 J	389 J
Selenium								
Vanadium	20	23.3	34.6	25.7	23.6	24.7	26	21.8
Zinc	61 J	91.9 J	39.2 J	150 J	444 J	247 J	164 J	22.2 J
Wet Chemistry (MG/KG)								
% Moisture	22.7	34.5	42.1	30.3	21.7	17.6	18	14.8
% Solids	64.8	68	60.3	70.8	79.4	81.7	82.1	86.2
Total organic carbon (TOC)	72,900	33,400	247,000	113,000	14,900	26,300	36,200	26,000
pH	5.8	5.9	4.6	4.8	6.8	6.8	6.7	5.2
Total Petroleum Hydrocarbons (MG/KG)								
TPH-diesel range	60	70	1,400	110	22	9.9	16	27
Total petroleum hydrocarbons (TPH)								

J - Estimated Value
K - Biased high
L - Biased low
I - A peak was found in the diphenyl ether channel. The presence of interferences in indicated.

Table 2-1
Detected Compounds in Site 13 Surface Soil Samples
Record of Decision
NDWIH, Indian Head, Maryland

Station ID	IS13SO07		IS13SO08		IS13SO09		IS13SO10	
Sample ID	IS13SS070001		IS13SS080001		IS13SS090001		IS13SS100001	
Sample Date	07/18/00		07/18/00		07/18/00		07/18/00	
Chemical Name								
Volatile Organic Compounds (UG/KG)								
1,1,2-Trichloroethane	20	I						
Acetone								
Methyl acetate					2.8	J		
Methylene chloride								
Toluene	3.1	J			1.6	J		
Semi-volatile Organic Compounds (UG/KG)								
Acetophenone	94	L	120	J	92	J		
Benzaldehyde					66	J		
Benzo(a)anthracene								
Benzo(a)pyrene								
Benzo(b)fluoranthene								
Benzo(k)fluoranthene								
Chrysene								
Fluoranthene			50	J	55	J		
Indeno(1,2,3-cd)pyrene								
Phenanthrene								
Phenol								
Pyrene								
bis(2-Ethylhexyl)phthalate			47	J				
Explosives (UG/KG)								
2,6-Dinitrotoluene								
Total Metals (MG/KG)								
Aluminum	7,080		8,550		6,340		6,370	J
Arsenic	5.7	L	4.1	L	10.1	L	5.1	L
Barium	30.9	J	23.9	J	21.1	J	29.3	J
Cadmium					0.21	J		
Calcium	269	J	193		173	J	2,420	
Chromium	11	L	9.1	L	9.6		28.9	L

J - Estimated Value
K - Biased high
L - Biased low
I - A peak was found in the diphenyl ether channel. The presence of interferences in indicated.

Table 2-1
Detected Compounds in Site 13 Surface Soil Samples
Record of Decision
NDWIH, Indian Head, Maryland

Station ID	IS13SO07		IS13SO08		IS13SO09		IS13SO10	
Sample ID	IS13SS070001		IS13SS080001		IS13SS090001		IS13SS100001	
Sample Date	07/18/00		07/18/00		07/18/00		07/18/00	
Chemical Name								
Cobalt	3.4	J	7.2	J	2.8	L	2.6	J
Copper	7	J	5.4	J	9.7		4.1	J
Iron	8,550	J	11,900	J	9,960		20,800	J
Lead	36	J	22.9	L	41.7		9.6	J
Magnesium	340	J	429	J	345	J	1,990	
Manganese	50.1	L	157	L	29.6		95.1	L
Mercury	0.27	J	0.12	J	0.2	L		
Nickel	4.9	J	3.5	J	6.3	J	3.4	J
Potassium	285	J	226	J	321	J	2,620	
Selenium					1.4	L		
Vanadium	23.2		19.7		27.8		20.4	
Zinc	29.7	J	16.5	J	23.4	J	28.3	J
Wet Chemistry (MG/KG)								
% Moisture	48.7		17.6		30.3		32.2	
% Solids	57.4		83		59.9		76	
Total organic carbon (TOC)	165,000		49,600		127,000		7,490	
pH	4.8		4.9		4.5		7	
Total Petroleum Hydrocarbons (MG/KG)								
TPH-diesel range	110		300		30		7.1	
Total petroleum hydrocarbons (TPH)					30			

J - Estimated Value
K - Biased high
L - Biased low
I - A peak was found in the diphenyl ether channel. The presence of interferences in indicated.

Table 2-2
Detected Compounds in Site 13 Subsurface Soil Samples
Record of Decsison
NDWIH, Indian Head, Maryland

Station ID	IS13SO01		IS13SO02		IS13SO03		IS13SO04B		IS13SO05	
Sample ID	IS13SB011920		IS13SB021719		IS13SB032527		IS13SB042830		IS13SB052425	
Sample Date	07/17/00		07/31/00		07/31/00		07/31/00		07/31/00	
Chemical Name										
Volatile Organic Compounds (UG/KG)										
Methylene chloride							1.2	J		
Semi-volatile Organic Compounds (UG/KG)										
Diethylphthalate	310	J								
Pyrene					83	J				
Total Metals (MG/KG)										
Aluminum	3,970		3,680		1,330		5,820		4,590	
Arsenic	2	L	0.97	J			12.8		9.4	
Barium	13.5	J	14.3	J	5.8	J	25.5	J	15.6	J
Cadmium	0.2	J								
Calcium							74.9	J		
Chromium	5.3		4.7		4.4		26.8		32.1	
Cobalt	5.3	L	2.8	J	2.5	J	3.7	J	3.6	
Copper	8.8		5.3	J	2.6	J	8.3		6.7	
Iron	13,800		10,600	J	2,790	J	31,400	J	24,900	J
Lead	3.4		4.1	K	1.2	K	7.1	K	4.6	K
Magnesium	362	J	332	J	150	J	152	J	172	J
Manganese	67.6		62.6	J	30.8	J	96.2	J	69.5	J
Nickel	6.5	J	3.5	J	2.1	J	6.1	J	5.6	J
Potassium	468	J	398	J	153	J	336	J	346	J
Vanadium	17.7		12.2		5.6	J	18.8		15	
Zinc	25.1	J	12.6	J	5.9	J	16.8	J	16.7	J
Wet Chemistry (MG/KG)										
% Moisture	5.6		7.2		7.2		11.5		12.6	
% Solids	94.7									
pH	5.8									
Total Petroleum Hydrocarbons (MG/KG)										
TPH-gas range									66	

J - Estimated Value
K - Biased high
L - Biased low

Table 2-3
Raw Data and Detected Constituents for Monitoring Well Groundwater Sample
Investigation of Groundwater at Site 13
Record of Decision
NDWIH, Indian Head, Maryland

Station ID	IS13MW01			
Sample ID	IS13MW010103		IS13MW010103P	
Sample Date	01/22/03		01/22/03	
Chemical Name				
Volatile Organic Compounds (UG/L)				
1,1,1-Trichloroethane	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	0.5	U	0.5	U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	0.5	U	0.5	U
1,1,2-Trichloroethane	0.5	U	0.5	U
1,1-Dichloroethane	0.5	U	0.5	U
1,1-Dichloroethene	0.5	U	0.5	U
1,2,3-Trichlorobenzene	0.5	U	0.5	U
1,2,4-Trichlorobenzene	0.5	U	0.5	U
1,2-Dibromo-3-chloropropane	1	R	1	R
1,2-Dibromoethane	0.5	U	0.5	U
1,2-Dichlorobenzene	0.5	U	0.5	U
1,2-Dichloroethane	0.5	U	0.5	U
1,2-Dichloropropane	0.5	U	0.5	U
1,3-Dichlorobenzene	0.5	U	0.5	U
1,4-Dichlorobenzene	0.5	U	0.5	U
2-Butanone	5	R	5	R
2-Hexanone	5	U	5	U
4-Methyl-2-pentanone	5	U	5	U
Acetone	2.8	B	2.9	B
Benzene	0.5	U	0.5	U
Bromochloromethane	0.5	U	0.5	U
Bromodichloromethane	0.5	U	0.5	U
Bromoform	0.5	U	0.5	U
Bromomethane	0.5	U	0.5	U
Carbon disulfide	0.5	U	0.5	B
Carbon tetrachloride	0.5	U	0.5	U
Chlorobenzene	0.5	U	0.5	U
Chloroethane	0.5	U	0.5	U
Chloroform	0.5	U	0.5	U

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
R - Unreliable result

Table 2-3
Raw Data and Detected Constituents for Monitoring Well Groundwater Sample
Investigation of Groundwater at Site 13
Record of Decision
NDWIH, Indian Head, Maryland

Station ID	IS13MW01			
Sample ID	IS13MW010103		IS13MW010103P	
Sample Date	01/22/03		01/22/03	
Chemical Name				
Chloromethane	0.5	U	0.5	U
Cumene	0.5	U	0.5	U
Cyclohexane	0.5	U	0.5	U
Dibromochloromethane	0.5	U	0.5	U
Dichlorodifluoromethane(Freon-12)	0.5	U	0.5	U
Ethylbenzene	0.5	U	0.5	U
Methyl acetate	0.5	U	0.5	U
Methyl-tert-butyl ether (MTBE)	0.5	U	0.5	U
Methylcyclohexane	0.5	U	0.5	U
Methylene chloride	1.2	B	1.4	B
Styrene	0.5	U	0.5	U
Tetrachloroethene	0.5	U	0.5	U
Toluene	**0.32**	**J**	**0.32**	**J**
Trichloroethene	0.5	U	0.5	U
Trichlorofluoromethane(Freon-11)	0.5	U	0.5	U
Vinyl chloride	0.5	U	0.5	U
Xylene, total	0.5	U	0.5	U
cis-1,2-Dichloroethene	0.5	U	0.5	U
cis-1,3-Dichloropropene	0.5	U	0.5	U
trans-1,2-Dichloroethene	0.5	U	0.5	U
trans-1,3-Dichloropropene	0.5	U	0.5	U

Notes:
Bolded font indicates constituent is detected in the sample.
Sample IS13MW010103 is the primary (or parent) sample.
Sample IS13MW010103P is the duplicate sample.

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
R - Unreliable result

Table 2-4
Comparison of Detected Constituent to Screening Criteria for Monitoring Well Groundwater Sample Data
Investigation of Groundwater at Site 13
Record of Decision
NDWIH, Indian Head, Maryland

Station ID	MCL	Tap Water Adjusted RBC *	IS13MW01	
Sample ID			IS13MW010103	IS13MW010103P
Sample Date			01/22/03	01/22/03
Chemical Name				
Volatile Organic Compounds (UG/L)				
Toluene	1,000	75	0.32 J	0.32 J

Note:
*Tapwater RBC for toluene, a non-caricogenic constituent, was adjusted by dividing the RBC by 10 resulting in a hazard quotient of 0.1 to account for multiple constituents.

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
R - Unreliable result
U - Analyte not detected

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Figure 2-1
Facility Map
Record of Decision
NDWIH, Indian Head, Maryland

CH2MHILL

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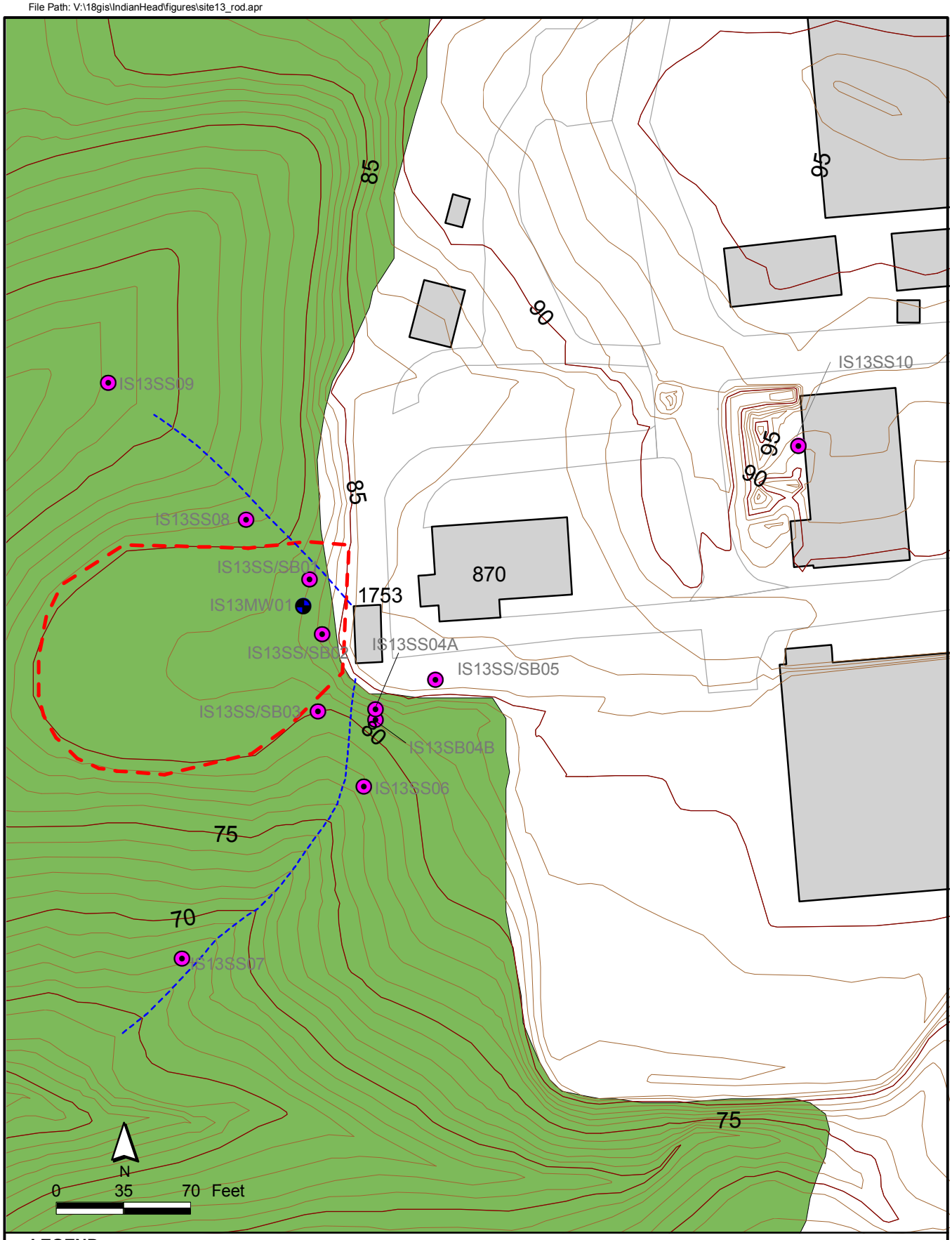

LEGEND

- Soil Sample
- Monitoring Well
- Wooded Area
- Approximate IR Site Boundary
- Buildings
- Swale
- Railroads
- Road
- Topographic Contours (1 foot Intervals)
- Topographic Index Contours (5 foot Intervals)

Figure 2-2
Site 13 Topography and Sampling Locations
Record of Decision
NDWIH, Indian Head, MD

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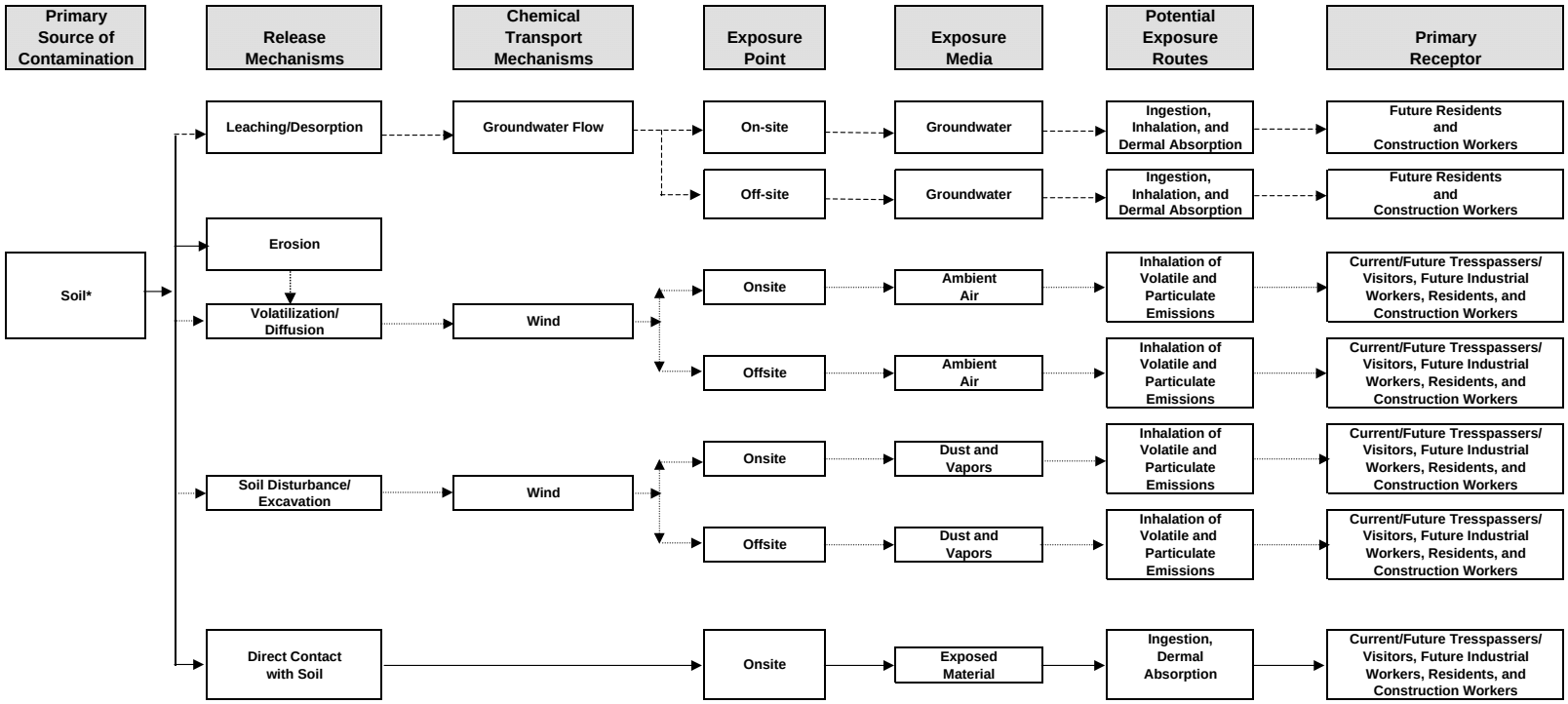

* Current scenario is for surface soil and future scenarios are for surface and subsurface soil combined.

Complete Pathway
Incomplete Pathway
Pathway not evaluated because no CPOCs identified

Figure 2-3
Conceptual Exposure Model for Potential Human Exposures-Site 13
Record of decision
NDWIH, Indian Head, Maryland

SECTION 3

Responsiveness Summary

The Responsiveness Summary is a concise and complete summary of significant comments received from the public and includes responses to these comments. The Responsiveness Summary was prepared after the public comment period, which ended on June 28, 2004, in accordance with guidance in "Community Relations in Superfund: A Handbook" (OSWER Directive 9320.3B, January 1992). The Responsiveness Summary provides the decisionmaker with information about the views of the community. It also documents how the Navy, EPA, and MDE considered public comments during the decision-making process and provides answers to major comments.

3.1 Overview

The Proposed Plan, as presented to the public, identified that no remedial action is necessary to protect human health and the environment.

3.2 Background on Community Involvement

The public comment period for the no further action decision for Site 13 began on May 28, 2004, and ended on June 28, 2004. A public meeting was held on June 17, 2004, at the Indian Head Senior Center, 100 Cornwallis Square, Indian Head, Maryland, to accept oral and written comments on this decision.

3.3 Summary of Comments Received During the Public Comment Period and Navy Responses

No significant comments were received during the public comment period.

SECTION 4

References

CH2M HILL. 2004. *Final Remedial Investigation Report, Sites 11, 13, 17, 21, and 25* for Naval District Washington, Indian Head, Maryland.

CH2M HILL. 2003. *Investigation of Groundwater Flow at Site 13,* Naval District Washington, Indian Head, Maryland.

Fred C. Hart Associates, Inc., 1983. *Initial Assessment Study of Naval Ordnance Station*, Indian Head, Maryland.

Appendix A
Glossary

APPENDIX A

Glossary

This glossary defines terms used in this Record of Decision (ROD) describing CERCLA activities. The definitions apply specifically to this ROD and may have other meanings when used in different circumstances.

Administrative Record File: A file that contains all information used by the lead agency to make its decision in selecting a response under CERCLA. This file is to be available for public review, and a copy is to be established at or near the site, usually at one of the information repositories. Also, a duplicate is filed in a central location, such as regional or state office.

Aquifer: An underground formation of materials such as sand, soil, or gravel that can store and supply groundwater to wells and springs.

Background Concentrations: Concentrations of chemical compounds or elements in environmental media that are representative of naturally occurring conditions or that may be attributable to historic, widespread human activity.

Baseline Risk Assessment: A study conducted as a supplement to a remedial investigation to determine the nature and extent of contamination at a Superfund site and the risks posed to public health and the environment.

Carcinogen: A substance that may cause cancer.

Comment Period: A time during which the public can review and comment on various documents and actions taken, either by the Navy, EPA, or MDE. For example, a comment period is provided when EPA proposes to add sites to the National Priorities List. A minimum 30-day comment period is held to allow community members to review the Administrative Record file and review and comment on the Proposed Plan.

Community Relations: The Navy and NDWIH program to inform and involve the public in the Superfund process and respond to community concerns.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): A federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act (SARA). The act created a special tax that goes into a trust fund to investigate and clean up abandoned or uncontrolled hazardous waste sites. Under the program, EPA can do either of the following:

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

Contaminant: Any physical, biological, or radiological substance or matter that, at certain threshold concentration, could have an adverse effect on human health or the environment.

Drinking Water Standards: Standards for the quality of drinking water that are set forth by EPA and MDE.

Ecological Receptor: A plant or animal that may be exposed to a contaminant in the environment.

Feasibility Study: See Remedial Investigation and Feasibility Study.

Groundwater: Water beneath the ground surface that fills spaces between materials such as sand, soil, or gravel to the point of saturation. In aquifers, groundwater occurs in quantities sufficient for drinking water, irrigation, and other uses. Groundwater may transport substances that have percolated downward from the ground surface as it flows toward its point of discharge.

Hazardous Substance: Any material that poses a threat to public health or the environment. Typical hazardous substances are materials that are toxic, corrosive, ignitable, explosive, or chemically reactive.

Information Repository: A file containing information, technical reports, and reference documents regarding a Superfund site that is made available to the public. Information repositories for NDWIH are at the Charles County Library, La Plata Branch, Charles and Garrett Streets, La Plata, Maryland and the NDWIH General Library, Indian Head Division, Naval Surface Warfare Center, Building 620, 101 Strauss Avenue, Indian Head, Maryland.

Maximum Contaminant Levels (MCLs): National standards for acceptable levels of contaminants in public drinking water systems. These are legally enforceable standards for supplies of drinking water set by EPA under the Safe Drinking Water Act and by MDE.

Metals: Metals are naturally occurring elements in the earth. Arsenic, cadmium, iron, mercury, and silver are examples of metals. Exposure to some metals, such as arsenic and mercury, can have toxic effects. Other metals, such as iron, are essential to the metabolism of humans and animals.

Monitoring Wells: Wells drilled at specific locations on or near a site where groundwater can be sampled at selected depths and studied to assess the groundwater flow direction and the types and amounts of contaminants present.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP): Federal regulations that provide the organizational structure and procedures for preparing for and responding to discharges of oil and release of hazardous substances, pollutants, or contaminants.

National Priorities List (NPL): The EPA list of the most serious uncontrolled or abandoned hazardous waste sites identified or possible long-term remedial response. The list is based on the score a site receives in the Hazard Ranking System. EPA is required to update the NPL at least once a year.

Organic Compounds: Naturally occurring or man-made chemicals containing carbon. Volatile organics can evaporate more quickly than semivolatile organics. Other organics associated with RI/FS activities include pesticides and polychlorinated biphenyls (PCBs). Some organic compounds may cause cancer; however, their strength as a cancer-causing

agent can vary widely. Other organics may not cause cancer but may be toxic. The concentrations that can cause harmful effects can also vary widely.

Parts per Billion (ppb)/Parts per Million (ppm): Units commonly used to express low concentrations of contaminants. For example, one ounce of a chemical in a million ounces of water is 1 ppm. One ounce of a chemical in a billion ounces of water is 1 ppb. If one drop of a chemical is mixed in a competition-size swimming pool, the water will contain about 1ppb of the chemical. Parts per million are equivalent to mg/L and mg/kg. Parts per billion are equivalent to µg/L and µg/kg.

Proposed Plan: A public participation requirement of SARA in which the lead agency summarizes for the public the preferred clean-up strategy and rationale for preference and reviews the alternatives presented in the detailed analysis of the FS. The Proposed Plan may be prepared either as a fact sheet or as a separate document. In either case, it must actively solicit public review and comment on all alternatives under consideration.

Record of Decision (ROD): An official public document that selects the clean-up alternative(s) which will be used at NPL sites. The ROD is based on information and technical analysis generated during the RI/FS and consideration of public comments and community concerns. The ROD explains the remedy selection process and is issued by the lead agency following the public comment period.

Remedial Action: The actual construction or implementation phase that follows the remedial design for the selected clean-up alternative at a site on the NPL.

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

Response Action: As defined by CERCLA Section 101(25), means remove, removal, remedy, or remedial action, including enforcement activities.

Responsiveness Summary: A summary of written public comments received by the lead agency during a comment period and the responses to these comments prepared by the lead agency. The responsiveness summary is an important part of the ROD, highlighting community concerns for decision makers.

Revegetate: To replace topsoil, seed, and mulch on prepared soil to prevent wind and water erosion.

Superfund: An informal name for CERCLA.

Superfund Amendments and Reauthorization Act (SARA): The public law enacted to reauthorize the funding provisions and amend the authorities and requirements of CERCLA and associated laws. Section 120 of SARA requires that all federal facilities be subject to and comply with this act in the same manner and to the same extent as any non-government entity.

Surface Water: Bodies of water that are above ground, such as rivers, lakes, ponds, and streams.