PROPOSED PLAN FOR GROUNDWATER AT SITES 11 AND 17 NWS YORKTOWN VA
(DRAFT FINAL ACTING AS FINAL)
05/01/2009
NAVFAC MID ATLANTIC

Draft Final
Proposed Plan for Groundwater

Site 11: Abandoned Explosives Burning Pits
and
Site 17: Holm Road Landfill
Naval Weapons Station Yorktown

May 2009

1 Introduction

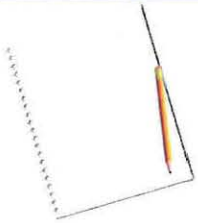
This **Proposed Plan** describes the rationale for proposing a no-action remedy for **groundwater** at **Installation Restoration Program (IRP)** Sites 11 (Abandoned Explosives Burning Pits) and 17 (Holm Road Landfill), at Naval Weapons Station (WPNSTA) Yorktown, Yorktown, Virginia. No action is proposed for groundwater at these **sites,** based on investigations that demonstrate that there are no unacceptable human health or **ecological risks** from exposure to groundwater.

All media other than groundwater at Sites 11 and 17 have been addressed by previous investigations or actions.

This Proposed Plan for groundwater is issued jointly by the U.S. Navy (Navy), the lead agency for environmental cleanup activities at WPNSTA Yorktown, the **U.S. Environmental Protection Agency (USEPA) Region 3**, the lead regulatory agency, and the Commonwealth of **Virginia Department of Environmental Quality (VDEQ),** the support regulatory agency. It will be available for public review and comment at the Virgil I. Grissom Public Library (366 DeShazor Drive, Newport News, Virginia, 23608, 757-369-3190) during the 30-day **public comment period.** A public meeting will be held during the public comment period to provide an opportunity for the public to learn about the Proposed Plan, ask questions, and offer information and comment. This Proposed Plan is issued to fulfill public participation requirements under Section 117(a) of the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980**, as amended by the **Superfund Amendments and Reauthorization Act of 1986,** and Section 300.430(f)(2) of the **National Oil and Hazardous Substances Pollution Contingency Plan (NCP)**. The Navy and USEPA Region 3, in consultation with VDEQ, will make the final decision on this plan for Sites 11 and 17 groundwater after reviewing and considering all information submitted during the 30-day public comment period.

Information documenting groundwater investigations at these sites is available to the public in the **Administrative Record (AR)** file for WPNSTA Yorktown. Details regarding the dates of the public comment period, the date and time of the public meeting, and location of the AR are included in the text box entitled "Please Mark Your Calendar." In addition, a glossary of key terms is provided at the end of

Please Mark Your Calendar



Public Comment Period

May 18 to June 16, 2009

The Navy will accept written comments on this Proposed Plan during the public comment period. To submit comments or obtain further information, please refer to the names and contact information included at the end of Section 7. A blank sheet has been added at the end of this document to be used for writing comments.

Attend the Public Meeting

May 20, 2009 at 3:30PM

York County Public Library – Yorktown
8500 George Washington Memorial Highway
Yorktown, Virginia 23692

The Navy will hold a public meeting to explain the Proposed Plan. Verbal and written comments will be accepted at this meeting.

Location of Administrative Record File:

NAVFAC Atlantic

6506 Hampton Boulevard, Norfolk, VA 23508
Phone: 757.322.4785

this Proposed Plan; glossary terms are identified in bold print the first time they appear in this Proposed Plan.

2 Site Background

Site 11 (Abandoned Explosives Burning Pits)

Site 11 is a 0.5-acre area lying east of Main Road, north of a steep ravine that leads to Indian Field Creek, just south of Site 17, and west of Site 1 (Figure 1). It is composed of both grass-covered cleared areas and wooded areas. The ground surface is relatively flat. Railroad tracks run along the western and northern portions of the site. Surface runoff flows to the southeast into a drainage ditch that is only wet following storm events; groundwater does not **recharge** the drainage ditch. This **intermittent** drainage ditch continues eastward and becomes a **tributary** to Indian Field Creek.

Explosives and explosives-contaminated materials were burned in pits at the site between 1930 and 1950. The burning of waste residue resulted in potential releases to soil, groundwater, and sediments within an intermittent drainage ditch. Approximately 200 pounds of residues from explosives-related combustion may have been deposited at the site after 20 years of burning disposal activities.

Site 17 (Holm Road Landfill)

Site 17 is a 2-acre former disposal area lying south of Holm Road and east of Main Road (Figure 2). It is composed of both grass-covered cleared areas and wooded areas, with industrial buildings to the north and west. The site lies on a **topographic** high. Rain runoff from the site discharges to offsite drainage ditches that feed tributaries of Indian Field Creek east of the site and to an isolated wetland area. Former railroad tracks (now gravel) bisect the western third of the site. In addition, railroad tracks lie along the eastern boundary of the site.

Disposal activities at Site 17 were conducted for approximately 10 years between the 1950s and the 1960s. Wastes reportedly disposed there included acid batteries from underwater weapons, hydraulic fluids from the de-milling of torpedoes, drums, and scrap metal. An estimated 60 tons of waste were deposited in the disposal area over 10 years (C.C. Johnson & Associates, Inc. and CH2M HILL, 1984; reference citation included in Table 1 below).

Site 11 and 17 Previous Investigations and Actions

Groundwater at Sites 11 and 17 has been characterized as part of several investigations since 1993 that are documented in the AR files for WPNSTA Yorktown (Table 1). Given their proximity to one another, most of the investigations associated with these sites were conducted together.

These previous groundwater investigations are summarized below.

Round One Remedial Investigation Report Sites 1-9, 11, 12, 16-19, and 21 (Baker and Weston, 1993)

In 1993, an RI was conducted to determine the nature and extent of contamination at several sites at WPNSTA Yorktown, including Sites 11 and 17. Groundwater, as well as other media, were sampled during this investigation. Even though the groundwater contamination at both Sites 11 and 17 was found to be minimal, further investigation of potential human health and ecological risks were recommended.

Round Two Remedial Investigation Report Sites 11 and 17 (Baker, 1998)

In 1998, another RI was conducted to assess the nature and extent of contamination, address data gaps, and assess the potential human health and ecological risks associated with contamination at Sites 11 and 17. Groundwater and other media were sampled during this investigation. For groundwater, this investigation included only a human health, and not ecological, risk assessment. Although this assessment concluded that there were no potential unacceptable human health risks from exposure to groundwater at Sites 11 and 17, it did not consider possible human health risks from groundwater as a potential future drinking water source.

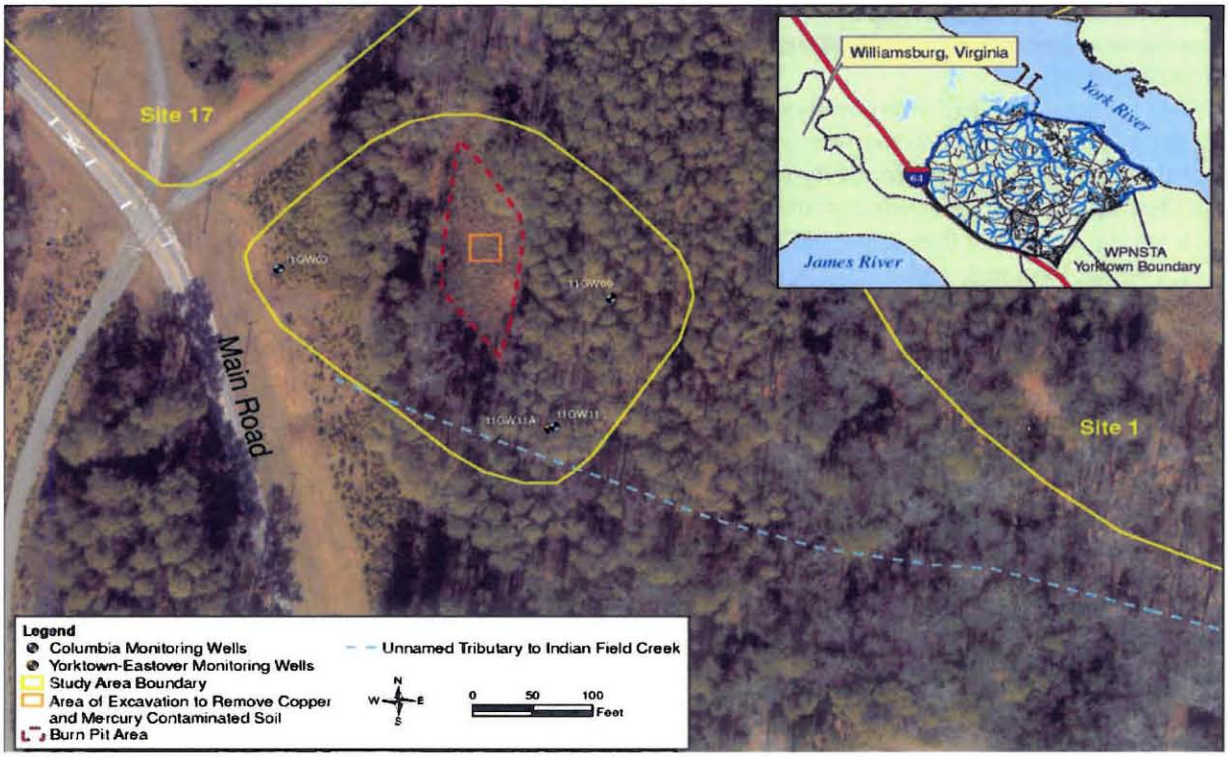


Figure 1. Site 11 Map

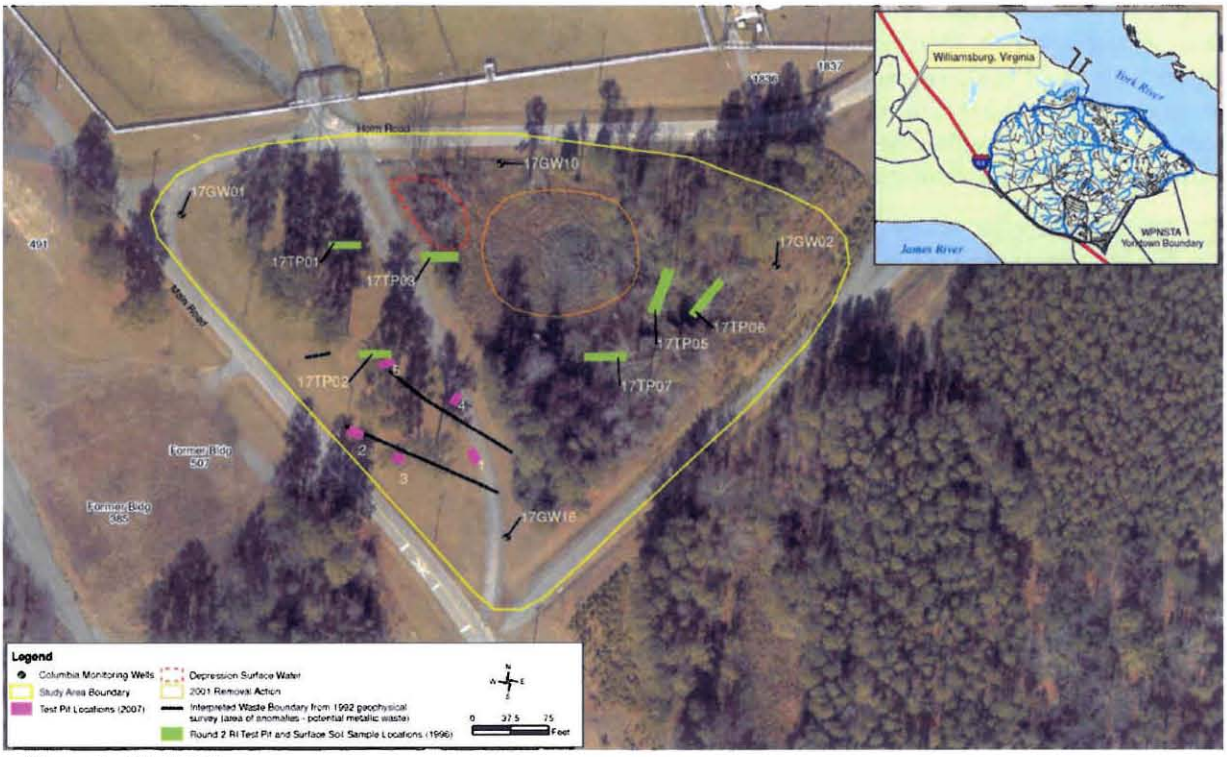


Figure 2. Site 17 Map

Phase 1 Remedial Investigation Report for Groundwater at Sites 1, 3, 6, 7, 11, 17, 24, and 25 (CH2M HILL, 2007)

In 2004, a groundwater RI was completed to support a regional approach to investigating groundwater within an area formerly referred to as **Operable Unit** 1 that includes Sites 11 and 17. However, following this investigation, the Navy, USEPA Region 3, and VDEQ agreed to address groundwater on a site-specific basis and not on a regional level as a CERCLA operable unit.

Evaluation of Human Health Risk Associated with Potable Use of Groundwater for Sites 11 and 17 (CH2M HILL, 2008)

In 2007, a Technical Memorandum was prepared that evaluated the potential future use of groundwater at Sites 11 and 17 as a drinking water source. This evaluation was necessary because previous human health risk evaluations did not consider this potential future use scenario. Based on this technical memorandum, the Navy, USEPA Region 3, and VDEQ agreed that there were no potential unacceptable human health risks posed by using groundwater at Sites 11 and 17 as a future drinking water source. The Navy, USEPA Region 3, and VDEQ also agreed that, based on the conclusions of the technical memorandum, groundwater at these sites does not pose a potential unacceptable ecological risk.

3 Site Characteristics

Sites 11 and 17 consist of both grass-covered cleared areas and wooded areas. Although there are no restrictions on the land use at these sites, these areas are currently not being used. Given their proximity to each other, the **geology** at both sites is similar. The uppermost hydrogeologic unit is the Columbia **aquifer**. This unit extends from the ground surface to about 15 feet below ground surface (bgs) and consists of sands. This unit overlies the Yorktown **confining unit**, a silt and clay unit that extends to about 30 feet bgs. The Yorktown confining unit overlies the Yorktown-Eastover aquifer, a sandy unit with shell **hash** that extends to about 90 feet bgs.

Groundwater at both sites is first encountered within the Columbia aquifer at approximately 5 to 10 feet bgs. Columbia and Yorktown-Eastover aquifer groundwater generally flow eastward toward Indian Field Creek. There is no current or expected future use for groundwater at these sites because drinking water is supplied to WPNSTA Yorktown and the surrounding area by the City of Newport News Waterworks.

4 Scope and Role of Response Action

WPNSTA Yorktown was placed on the **National Priorities List** in October 1992. Sites 11 and 17 are two of twenty-four sites at WPNSTA Yorktown currently in various stages of being investigated, addressed and/or closed out in accordance with CERCLA and the NCP. A summary of how the Navy, in partnership with the USEPA Region 3 and VDEQ, is addressing all CERCLA sites at WPNSTA Yorktown is provided in the **Site Management Plan,** which is updated annually and available in the AR file.

Table 1. Previous Investigations

Document Title /Milestone	Author/Date	AR Document Number
Initial Assessment Study, Naval Weapons Station Yorktown	C.C. Johnson & Associates and CH2M HILL, 2008	00274
Round One Remedial Investigation Report for Sites 1-9, 11, 12, 16-19, and 21	Baker and Weston, 1993	00313
Round Two Remedial Investigation Report for Sites 11 and 17	Baker, 1998	01553
Phase 1 Remedial Investigation for Groundwater at Sites 1, 3, 6, 7, 11, 17, 24, and 25	CH2M HILL, 2007	02158
Evaluation of Human Health Risk Associated with Potable Use of Groundwater for Sites 11 and 17, Technical Memorandum	CH2M HILL, 2008	02274

As noted earlier in this Proposed Plan, based on the conclusions of the previous investigations, there are no unacceptable risks to human health or the environment from exposure to groundwater at Sites 11 and 17. No action for groundwater at these sites is intended to be the final decision and does not include or affect any other site at WPNSTA Yorktown.

5 Summary of Site Risks

Potential human health and ecological risks from exposure to groundwater at Sites 11 and 17 were evaluated in the 1998 RI (Baker, 1998) and 2008 Technical Memorandum (CH2M HILL, 2008). These studies determined that there are no potential unacceptable risks to human health or the environment from current or potential future exposure to groundwater at these sites, as summarized below.

Additional information regarding human health and ecological risk evaluations is included in text boxes within this section.

Groundwater Human Health Risks

A **Human Health Risk Assessment (HHRA)** was completed as part of the 1998 RI (Baker, 1998). With no current land use at these sites, this assessment only considered potential future risks. Potential future risks were evaluated for the construction worker and adult and child residents. The potential future **exposure pathways** were **dermal contact** for construction workers in the event that construction activities resulted in management of groundwater, and dermal contact and accidental **ingestion** for residents from non-**potable** uses of groundwater (e.g., watering lawns, washing cars). Using conservative exposure assumptions (**reasonable maximum exposure [RME]** calculations), this assessment concluded that there were no potential future unacceptable human health risks from exposure to groundwater at Sites 11 and 17. However, possible risks from exposure to groundwater as a potential future drinking water source were not evaluated in the 1998 HHRA.

Potential risks to adult and child residents from using groundwater as a future drinking water source at Sites 11 and 17 were evaluated in the 2008 Technical Memorandum (CH2M HILL, 2008). Based on conservative exposure assumptions (RME calculations), potential non-cancer risks from drinking groundwater were identified at Site 17 only. Otherwise, the cancer risk calculated for groundwater at Sites 11 and 17 were below the unacceptable range indicated in the NCP (1 x 10-4). The risks calculated were 2.8 x10-5 and 5.3 x 10-5 for Sites 11 and 17, respectively. The non-cancer risk presented by groundwater at Site 11 was similarly acceptable, with a calculated **hazard index (HI)** of less than 1 (0.52).

Specifically, RME calculations for groundwater at Site 17 identified an HI greater than 1 (1.4) for the child resident, indicating potential **non-cancer risks** from drinking groundwater at Site 17. However, the Navy, USEPA Region 3, and VDEQ agreed that the non-cancer RME risks associated with Site 17 groundwater are not unacceptable because no risks were identified under more realistic exposure assumptions (**central tendency exposure [CTE] calculations**). Based on CTE calculations, the HI was less than 1 (0.23), indicating that there are no potential non-cancer risks from drinking groundwater at Site 17.

Groundwater Ecological Risks

An **Ecological Risk Assessment (ERA)** was completed as part of the 1998 RI (Baker, 1998). However, this assessment did not include a risk evaluation of the groundwater data. Evaluation of groundwater data from an ecological risk perspective was completed as part of the 2008 Technical Memorandum (CH2M HILL, 2008). Based on the latter evaluation, the Navy, USEPA Region 3, and VDEQ agreed that groundwater does not pose unacceptable ecological risk because:

- No exposure points are present because groundwater does not **discharge** within the boundaries of either Site 11 or Site 17.
- Groundwater flows from these sites beneath Site 1 prior to discharging to Indian Field Creek, approximately 1,100 feet and 1,400 feet downgradient of Sites 11 and 17, respectively.
- Potential ecological risks related to surface water and sediment adjacent to Sites 1 and 3 are evaluated directly as part of investigations of Site 1 and Site 3.

6 Preferred Alternative

Historical investigations did not identify any potential unacceptable risks to human health or the environment from exposure to groundwater at Sites 11 or 17. Therefore, no alternative other than no action is required to protect human health and the environment. Under this alternative, no response action will be performed for groundwater at Sites 11 and 17 and no restrictions on groundwater use or exposure are necessary. There is no cost to implement this no-action alternative. The Navy and USEPA Region 3 may reconsider the groundwater no-action alternative, or select another alternative for groundwater, if public comments or additional data indicate that another alternative warrants consideration.

With decision documents for all other media at Sites 11 and 17 already in place stating that no further action is required for protection of human health and the environment, this groundwater remedial decision of no action would complete the CERCLA process for the sites.

Commonwealth Acceptance

The VDEQ supports the no-action alternative for groundwater. The VDEQ's final concurrence with the no-action alternative for groundwater will be provided following review of all comments received during the 30-day public comment period.

Community Acceptance

Community acceptance will be evaluated after the 30-day public comment period and will be fully documented in the final decision document (**Record of Decision [ROD]**) that will follow this Proposed Plan.

What is Human Health Risk and How is it Calculated?

A HHRA estimates the likelihood of health problems occurring if no cleanup action were taken, and consists of the following four-step process:

Step 1: Analyze Contamination

Step 2: Estimate Exposure

Step 3: Assess Potential Health Dangers

Step 4: Characterize Site Risk

In **Step 1**, comparisons of the concentrations of site chemicals to scientific studies on the effects those chemicals have on people help determine which chemicals at the site pose a threat to human health.

In **Step 2**, the Navy considers the concentration of chemicals at the site and different ways that people might be exposed to chemicals, including how often and how long people may be exposed, to calculate the reasonable maximum exposure (RME). The RME represents the highest level of human exposure that could reasonably be expected to occur.

In **Step 3**, the Navy uses the information from Step 2, combined with **toxicity** information, to assess potential health risks. The Navy considers two types of risk: (1) **cancer risk**, and (2) non-cancer risk. The likelihood of any kind of cancer resulting from a contaminated site is generally expressed as a probability, usually expressed in scientific notation; i.e., a risk of 10^{-4} means that for every 10,000 people that could be exposed, one extra cancer occurrence may result from that exposure). For non-cancer health effects, the Navy calculates a hazard index (HI), which is the ratio between the "reference dose," (the dosage at which no adverse health effects are expected), and the RME (the estimated maximum exposure level). An HI of less than 1 indicates that non-cancer health effects are unlikely to occur.

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

WHAT IS ECOLOGICAL RISK AND HOW IS IT CALCULATED?

An ERA evaluates the potential risks to plants, animals, habitats, and ecological communities. It is conducted using a step-wise process that includes decision points at which agreement among stakeholders is reached to decide if the process should continue or terminate. The process continues until a final decision has been reached (i.e., remedial action if unacceptable risks are identified, or no further action if risks are acceptable). The process can also be iterative if data needs are identified at any step; the needed data are collected and the process starts again at the point appropriate to the type of data collected. An ERA has three principal components:

1. **Problem Formulation establishes the goals, scope, and focus of the ERA and includes:**
   - Compiling and reviewing existing information on the habitats, plants, and animals that are present on or near the site
   - Identifying and evaluating area(s) where site-related chemicals may be found (source areas) and at what concentrations
   - Evaluating potential movement (transport) of chemicals in the environment
   - Identifying possible exposure media (soil, air, water, sediment)
   - Evaluating if/how the plants and animals may be exposed (exposure pathways)
   - Evaluating routes of exposure (for example, ingestion or uptake)
   - Identifying specific **receptors** (plants and animals) that could be exposed
   - Specifying how the risk will be measured (assessment and measurement endpoints) for all complete exposure pathways
2. **Risk Analysis, which includes:**
   - Exposure Estimate - An estimate of direct exposures to lower trophic level receptors (organisms low on the food chain, such as plants and insects) and upper trophic level receptors (organisms higher on the food chain, such as birds and mammals), and indirect exposures (exposures via the food chain) for upper trophic level receptors.
   - Effects Assessment - The concentrations of chemicals at which an adverse effect may occur are calculated.
3. **Risk Calculation or Characterization:**
   - An evaluation of the uncertainties (potential degree of error) that are associated with the predicted risk estimate and their effects on ERA conclusions.

The three principal components of an ERA are implemented as an 8-step, 3-tiered process:

1. **Tier 1: Screening-level ERA, or SLERA (Steps 1-2)** – This is an assessment of ecological risk using the three steps described above and very conservative assumptions (such as using maximum chemical concentrations).
2. **Tier 2: Baseline ERA, or BERA (Steps 3-7)** – If potential risks are identified in the SLERA, a BERA is typically conducted. The BERA is a reiteration of the three steps described above but uses more site-specific and realistic exposure assumptions, as well as additional methods not included in the SLERA, such as consideration of **background** concentrations. The BERA may also include the collection of site-specific data (such as measuring the concentrations of chemicals in the tissues of organisms, such as fish) to evaluate key risk issues identified in the SLERA.
3. **Tier 3: Risk Management (Step 8)** – In Step 8, recommendations are developed on ways to counter any unacceptable ecological risks that were identified in the BERA and may include other activities such as evaluating remedial alternatives.

7 Community Participation

The Navy and USEPA Region 3, in consultation with the VDEQ, will make the final decision on this proposed plan for groundwater at Sites 11 and 17 after reviewing and considering all information and comments submitted during the 30-day public comment period. The public comment period for this Proposed Plan will extend from May 18 to June 16, 2009, and the public meeting to discuss the Proposed Plan will be held on May 20, 2009 at 3:30 PM. Details regarding the public comment period and public meeting are included in the text box in Section 1 entitled "Please Mark Your Calendar". The Navy will summarize and respond to all comments submitted in a responsiveness summary that will be included in the ROD. This Proposed Plan and the ROD will become part of the AR file for WPNSTA Yorktown.

Public participation is encouraged because the preferred alternative put forward here may be modified or another alternative selected, based on new information and/or public comments received. The public is encouraged to gain a more comprehensive understanding of Sites 11 and 17 and the Navy's IRP by attending this and other public meetings advertised in the *Daily Press* and *Virginia Gazette* newspapers and

accessing information in the AR file. A transcript of the public meeting regarding the Proposed Plan and minutes of other public meetings will be included in the AR file.

During the comment period, interested parties may submit written comments to the following address:

Mr. Thomas Kowalski
Commander, NAVFAC Mid-Atlantic
9742 Maryland Avenue
Building N-26, Room 3208
Norfolk, Virginia 23511-3095
Phone 757-445-6618
Fax (757) 444-3000
Email tom.kowalski@navy.mil

For further information, please contact:

Mr. Rob Thomson, P.E., R.E.M.
USEPA (Region 3)
1650 Arch Street
Philadelphia, PA 19103
Phone (215) 814-3357
Fax (215) 814-3025
Email Thomson.Bob@epamail.epa.gov

Mr. Wade Smith
Virginia Department of Environmental Quality
629 East Main Street, 4th Floor
Richmond, VA 23219
Phone (804) 698-4125
Fax (804) 698-4234
Email wmsmith@deq.virginia.gov

Glossary

Administrative Record (AR): A compilation of documents relied upon to select a remedial response. The AR is available to the public and is in the IRP Information Repository.

Aquifer: An underground layer of water-bearing soils and/or geologic formations from which groundwater can be extracted.

Background: The concentration of a naturally occurring or manmade constituent, such as a metal, found in groundwater, soil, sediment, and surface water in areas not adversely affected by spills, releases, or other site-specific activities. Background concentrations of some metals and other constituents are often at levels that may pose a risk to human health or the environment. These background-related risks should be considered (i.e., subtracted) when calculating the risk posed by site conditions.

Cancer Risk: The incremental probability of an individual developing cancer over a lifetime as a result of exposure to a potential carcinogen.

Central Tendency Exposure (CTE) Calculations: Mean concentration of site data that is used as an exposure concentration in the risk assessment.

Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA): A federal law, commonly referred to as the "Superfund" Program, passed in 1980 and amended by the Superfund Amendments and Reauthorization Act of 1986. CERCLA provides for cleanup and emergency response in connection with existing inactive hazardous waste disposal sites that endanger public health and safety or the environment.

Confining Unit: A geologic formation that consists of impermeable or distinctly less-permeable material bounding one or more aquifers.

Decision Documents: Documents prepared to record a remedy selection decision; these include Proposed Plans, RODs, ESDs, and ROD Amendments.

Dermal Contact: Exposure to a chemical through contact with the receptor's skin.

Discharge: The location at which groundwater leaves an aquifer and flows to the surface.

Ecological: Refers to plants and animals in the environment.

Ecological Risk Assessment (ERA): An organized process used to describe and estimate the likelihood of adverse impacts to the environment from exposure to chemicals in the environment.

Explanation of Significant Differences (ESD): A document required by 40 CFR Section 300.435(c)(2)(i) to make significant changes to a ROD.

Exposure Pathways: The pathway a chemical takes from the source of contamination to the exposed individual.

Five-Year Review: A document prepared to evaluate if the implementation and performance of site remedies remain protective of human health and the environment.

Geology: Soil and rock that underlie the ground's surface.

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

Hash: Loose pieces of shells that have been broken by marine environments.

Hazard Index (HI): Summation of the non-cancer risks to which an individual is exposed. An HI value of 1.0 or less indicates that non-cancer adverse human health effects are unlikely to occur.

Human Health Risk Assessment (HHRA): An organized process used to describe and estimate the likelihood of adverse impacts to human health from exposure to chemicals in the environment.

Ingestion: Exposure to a chemical through a receptor's mouth, either directly or through transfer of contamination on the hands to food.

Installation Restoration Program (IRP): The Navy program charged with implementing environmental cleanups under CERCLA at Navy installations. The Navy, as lead agency, acts in partnership with USEPA Region 3 and VDEQ to address environmental investigations at Navy facilities through the IRP.

Intermittent: A stream that only flows at certain times of the year and therefore is not continually flowing.

Media: Soil, groundwater, surface water, or sediment at a site.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP): Provides the organizational structure and procedures needed to prepare for and respond to discharges of oil and releases of hazardous substances, pollutants, and contaminants.

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

Non-cancer Risk: Probability that a chemical will produce a non-cancer effect in humans. Estimate of this probability is identified as the hazard quotient, the sum of which is identified as the HI.

Operable Unit: Each of a number of separate activities undertaken as part of a Superfund site cleanup. The cleanup of a site can be divided into a number of operable units, depending on the complexity of the problems associated with a site.

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

Potable: Any liquid that is considered safe for drinking.

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

Reasonable Maximum Exposure (RME) Calculations: The highest exposure that is reasonably expected to occur at a site. The intent of the RME is to estimate a conservative exposure case (i.e., well above the average case) that is still within the range of possible exposures.

Receptors: Humans, animals, or plants that may be exposed to risks from contaminants related to a site.

Recharge: The process by which groundwater is replenished.

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

Remedial Action: A cleanup method proposed or selected to address contaminants at a site.

Remedial Investigation (RI): Extensive technical study conducted to characterize the nature and extent of risks posed by a site.

Risk: A measure of the probability that damage to life, health, property, or the environment will occur as a result of exposure to chemicals in the environment.

Site: The area of a facility where a hazardous substance, hazardous waste, hazardous constituent, pollutant, or contaminant from the facility has been deposited, stored, disposed of, placed; has migrated; or otherwise come to be located.

Site Management Plan: Annual document generated in accordance with the Federal Facilities Agreement, which provides a 5-year plan for CERCLA Installation Restoration activities.

Superfund Amendments and Reauthorization Act of 1986: This law amended CERCLA to stress the importance of permanent remedies and innovative treatment technologies, provide enforcement authorities and settlement tools, increase State involvement, increase the focus on human health, and encourage greater citizen participation in making decisions on how sites should be cleaned up.

Topographic: Surface features relative to elevation.

Toxicity: The degree to which a substance can harm human or ecological receptors.

Tributary: A stream that joins a river instead of the ocean.

U.S. Environmental Protection Agency (USEPA): The federal agency responsible for administration and enforcement of CERCLA (and other environmental statutes and regulations), and with final approval authority for the selected remedy.

Virginia Department of Environmental Quality (VDEQ): The Commonwealth agency responsible for administration and enforcement of environmental regulations.

Please print or type your comments here.

Place stamp here

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