4/1/08 - 01784

Final

Action Memorandum
SWMU 14

(Q-50 Satellite Accumulation Area)

Naval Station Norfolk
Norfolk, Virginia

Naval Facilities Engineering Command
NAVFAC MID-ATLANTIC

Prepared for

Department of the Navy

Naval Facilities Engineering Command
Mid-Atlantic

LANTDIV CLEAN Program
Contract No. N62470-02-D-3052
CTO-173

April 2008

Prepared by

CH2MHILL

Virginia Beach, Virginia

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DECLARATION

ACTION MEMORANDUM

SWMU 14
Q-50 Satellite Storage Area
Naval Station Norfolk, Norfolk, Virginia

DATE: March 21, 2008

SUBJECT: Asphalt Cover, Solid Waste Management Unit (SWMU) 14, Naval Station Norfolk, Norfolk, Virginia

FROM: Commanding Officer, Naval Facilities Engineering Command, Mid-Atlantic

TO: CAPT S. J. DiNobile, USN
Commanding Officer
Naval Station Norfolk

This Action Memorandum documents approval for the removal action as described herein for SWMU 14 at Naval Station Norfolk in Norfolk, Virginia. This Action Memorandum serves as the Decision Document for the Engineering Evaluation/Cost Analysis (EE/CA) for SWMU 14 prepared under separate cover.

This decision document represents the selected removal action for SWMU 14 and is developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended, and is consistent with the National Oil and Hazardous Substance Pollution Contingency Plan (NCP). This decision is based on the Administrative Record for the site.

Conditions at SWMU 14 meet the NCP Section 300.415(b)(2) criteria for removal. Naval Facilities Engineering Command recommends approval of the proposed removal action. The total project ceiling if approved is estimated to be $4,239,000, based upon the cost estimate developed in the EE/CA from a conceptual design. Response actions should commence as soon as practicable to expedite the removal of the pathway to soil and buried debris (i.e., installation of the cover).

Approved by:

8 APR 2008

CAPT S. J. DiNobile, USN
Commanding Officer
Naval Station Norfolk

Date

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A Final EE/CA for SWMU 14

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Acronyms and Abbreviations

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DoN	Department of the Navy
E&S	Erosion and Sediment
EE/CA	Engineering Evaluation and Cost Analysis
EPIC	Environmental Photographic Interpretation Center
ERA	Ecological Risk Assessment
ERP	Environmental Restoration Program
ft	feet
FS	Feasibility Study
HHRA	Human Health Risk Assessment
IAS	Initial Assessment Study
IDW	Investigation-Derived Waste
IRP	Installation Restoration Program
LUC	Land Use Control
MRP	Munitions Response Program
NAVFAC	Naval Facilities Engineering command, Mid-Atlantic
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
NPL	National Priorities List
NSN	Naval Station Norfolk
NTCRA	Non-Time Critical Removal Action
O&M	Operation and Maintenance
PCB	Polychlorinated Biphenyl
RAO	Removal Action Objective
RBC	Risk-Based Concentration
RFA	RCRA Facility Assessment
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RRR	Relative Risk Ranking
SARA	Superfund Amendments and Reauthorization Act
SVOC	Semi-Volatile Organic Compound
SWMU	Solid Waste Management Unit
USEPA	United States Environmental Protection Agency

VDEQ	Virginia Department of Environmental Quality
VOC	Volatile Organic Compound

I. Purpose

This Action Memorandum documents approval for a non-time critical removal action (NTCRA) for the soil at Solid Waste Management Unit (SWMU) 14 (Q-50 Satellite Accumulation Area), Naval Station Norfolk (NSN), Norfolk, Virginia. The Engineering Evaluation / Cost Analysis (EE/CA) (CH2M HILL, 2008; Attachment A) focused on the contaminated soil and buried debris located at SWMU 14. SWMU 14 consists of a concrete storage pad surrounded by a grass-covered field, sometimes used as a temporary parking lot when the adjacent lots are full. Installation Restoration Program (IRP) Site 9 is an old nonhazardous construction debris landfill co-located with SWMU 14. SWMU 14 includes Site 9 in the EE/CA and this Action Memorandum. The NTCRA will address the contaminants that have been identified in the soil at SWMU 14 as potentially posing an unacceptable human health risk.

This Action Memorandum serves as the Decision Document for the EE/CA for the Navy to conduct the work proposed therein. The alternatives evaluated in the EE/CA are summarized below:

- Alternative 1: No Action
- Alternative 2: Soil Cover
- Alternative 3: Asphalt Cover (Parking Lot)
- Alternative 4: Excavation and Offsite Disposal

This Action Memorandum was completed in accordance with the removal program requirements defined by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), the Superfund Amendments and Reauthorization Act of 1986 (SARA), the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), and the United States Environmental Protection Agency's (USEPA) Superfund Removal Procedures Action Memorandum Guidance (USEPA, 1989).

The Department of the Navy (DoN) has broad authority under CERCLA Section 104 and Executive Order 12580 to carry out removal actions when the release is on, or the sole source of the release is from the DoN installation. The Navy/Marine Corps Environmental Installation Restoration Program (IRP), now subsumed with the Munitions Response Program (MRP) by the Environmental Restoration Program (ERP), was initiated to identify, assess, characterize, and clean up or control contamination from past hazardous waste disposal operations and hazardous material spills at Navy and Marine Corps activities. This Action Memorandum follows the guidelines published in the *Navy/Marine Corps ERP Manual* (Navy, 2006) and the *Guidance on Conducting Non-Time-Critical Removal Actions under CERCLA* (USEPA, 1993).

II. Site Conditions and Background

A. Site Description

This Action Memorandum addresses a NTCRA to mitigate potential human health risk in soil at SWMU 14. SWMU 14 is located in the northeastern corner of Sewell's Point at NSN

(Figure 1-1). The site consists of a concrete storage pad surrounded by a grass-covered field. Section II (D) provides detailed site characteristics.

This section describes SWMU 14, documented releases, and current National Priorities List (NPL) status. This section also reviews any previous and current actions conducted by the Navy in this area and discusses anticipated future actions at the state and local levels.

B. Removal Site Evaluation

SWMU 14 was initially identified from a 1982 Environmental Photographic Interpretation Center (EPIC) aerial photograph (USEPA, 1994) that showed a drum storage area and scrap metal pile north and east of the concrete pad, respectively. Historical plans of the area also showed stockpiled railroad ties and metal debris northeast of the pad. The site was also cited during the 1992 Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) (A. T. Kearney, 1992) site inspection, when areas of stained soil were observed. The original concrete pad for the accumulation area has since been removed. A new pad was installed west of the original location and was used for temporary storage of environmental investigation-derived waste (IDW). Volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and dioxins/furans are present at the site in soil due to previous staging activities, as determined by multiple environmental investigations (CH2M HILL, 2004).

Several environmental investigations for SWMU 14 have occurred since the early 1990s (after the Initial Assessment Study [IAS]):

- Baker Environmental, Inc. (Baker) completed two Relative Risk Ranking (RRR) studies in 1995-1996 to evaluate the presence of contamination and potential exposure pathways associated with SWMUs at NSN (Baker, 1996a and 1996b).
- CH2M HILL performed a supplemental investigation in summer 1998 for multiple SWMUs including SWMU 14 to further evaluate potential contaminants at expanded locations (CH2M HILL, 1998).
- CH2M HILL performed a multiphase Remedial Investigation (RI) for SWMU 14 in 1999, 2000, 2001, and 2002 (CH2M HILL, 2004). The RI included a baseline human health risk assessment (HHRA) and a screening ecological risk assessment (ERA).
- CH2M HILL performed a Trident sediment pore-water survey in 2006 to evaluate the potential for preferential pathways for groundwater from SWMU 14 into surrounding water bodies (CH2M HILL, 2007).

1. 1995-1996 Phase I and Phase II Relative Risk Ranking Studies

The RRR studies (Baker, 1996a and 1996b) were performed to evaluate potential contamination and exposure pathways at all SWMUs at NSN. Surface soil and groundwater samples were collected at SWMU 14 (Figure 2-1) during the 1995 Phase I RRR. Several VOCs, SVOCs, and metals were detected in each media at SWMU 14 above applicable screening and regulatory criteria, warranting further investigation. Therefore, additional surface water, sediment, surface soil samples, and groundwater samples were collected at SWMU 14 during the 1996 Phase II RRR (Figure 2-1). Several VOCs, SVOCs, pesticides,

PCBs, and metals were detected in one or more media above applicable screening and regulatory criteria. Therefore, an additional investigation to further delineate the extent of contamination was recommended.

2. 1998 Supplemental Investigation

A Supplemental Investigation was performed in 1998 at SWMU 14 (among other SWMUs) (CH2M HILL, 1998). The objectives were to determine the extent of contamination at each SWMU, to develop and evaluate economically feasible remedial alternatives for each SWMU, and to close out qualified SWMUs. Groundwater, surface soil, and subsurface soil samples were collected from new locations at SWMU 14 (Figure 2-1). The data showed several VOC, SVOC, PCB, and metal concentrations above applicable screening and regulatory criteria in soil and groundwater at SWMU 14. Therefore, an RI was initiated at SWMU 14.

3. 1999-2002 SWMU 14 Remedial Investigation

Three RI phases were conducted in 1999, 2000, and 2001 to assess the extent of the fill material and groundwater impacts at SWMU 14. A fourth, final investigation phase was completed in 2002 to fill data gaps from Phases I through III which were identified by the Tier I Partnering Team (CH2M HILL, 2004). The RI activities for SWMU 14 consisted of a geophysical survey, soil borings, installation of monitoring wells, and four phases of sampling in 1999, 2000, 2001, and 2002 (CH2M HILL, 2004). The objectives and activities of each phase are summarized below, followed by a summary of the results and conclusions of the multi-phase RI. Figures 2-2 through 2-4 show the sampling locations.

RI Phase I (1999). The sampling associated with the Phase I RI was proposed based on the results of the RRR studies and the 1998 Supplemental Investigation. Surface and subsurface soil samples were collected and eight new monitoring wells were installed followed by groundwater sampling. The Phase I RI objectives consisted of the following:

- Characterize the source(s) and downgradient extent of VOCs, SVOCs, PCBs, and metals in soil an groundwater;
- Evaluate if chemicals and constituents potentially reach ecological receptors in Willoughby Bay; and
- Characterize groundwater flow conditions in the shallow aquifer.

RI Phase II (2000). The Phase II RI consisted of sampling surface soil and subsurface soil, performing a geophysical survey of the subsurface, installing six new shallow monitoring wells, and monitoring well groundwater sampling. The Phase II RI objectives were as follows:

- Further characterize the nature and extent of the contamination;
- Establish upgradient concentration values for groundwater; and
- Investigate several anomalies detected during the geophysical survey.

RI Phase III (2001). The Phase III RI consisted of exploratory test pitting, surface soil sampling, subsurface soil sampling, installation of four new shallow monitoring wells, and groundwater sampling. The Phase III RI objectives were as follows:

- Further characterize the nature and extent of soil and groundwater contamination associated with SWMU 14;

- Determine, to the extent possible, the western and southern limits of waste/fill material associated with SWMU 14/Site 9 and establish background levels for soil outside of the fill area as well as groundwater upgradient of the material; and
- Determine the nature of the anomaly encountered at boring location DS19.

RI Phase IV – Data Gaps Investigation (2002). This phase of the RI focused on the evaluation of potential impacts of contaminated media on ecological and human receptors. The Phase IV RI consisted of sampling sediment, surface soil, and groundwater. The Phase IV RI objectives were as follows:

- Assess possible transport and deposition of material from SWMU 14 to the adjacent lagoon;
- Evaluate a potential lead hotspot identified during the previous RI sampling; and
- Further evaluate the mobility of contaminants in groundwater and specifically confirm the presence of chloroform.

Multi-Phase RI Results and Conclusions. Electromagnetic survey technology was used to establish the extent of the disturbed area and identify buried objects at SWMU 14 (which subsumed Site 9). The survey covered the entire area of the grass field and concrete pad. Following a review of the data, a ground-penetrating radar survey was performed to assess large anomalies identified in the electromagnetic survey. The result of the survey was a new estimated boundary containing SWMU 14 (Figures 2-2 through 2-4 display the determined boundary).

Groundwater data showed exceedances of the screening and regulatory criteria for several VOCs, SVOCs, pesticides, and metals. However, there were no PCB exceedances observed in the groundwater samples.

Surface soil data showed exceedances of screening criteria for several VOCs, SVOCs, pesticides, PCBs, metals, and dioxins/furans. Overall, metal exceedances of screening criteria and background levels occurred in the northern and southwestern portion of SWU 14.

In subsurface soil, SVOCs, pesticides, PCBs, metals, and dioxin/furans were detected at concentrations exceeding screening criteria. There were no VOC exceedances in subsurface soil. Subsurface soil data were also compared to the dredge fill background soil levels. SVOCs and pesticides/PCBs were detected within the delineated landfill area at concentrations that exceeded the screening criteria and background levels. Dioxin/furan concentration exceedances occurred at four sample locations in the eastern central portion of SWMU 14. There were no metals concentrations detected above the background levels nor the screening criteria in subsurface soil samples collected outside of the fill area, indicating that Site 9 and SWMU 14 are likely sources of metal contamination.

Five sediment samples were collected at the lagoon southeast of SWMU 14. SVOC, pesticides, and PCB data were below screening criteria. Arsenic and iron exceeded both human health and ecological screening values.

The RI concluded the presence of potentially unacceptable risk to human health due to exposure to several VOCs, SVOCs, PCBs, and/or metals in soil and groundwater. A feasibility study (FS) was recommended to address the unacceptable human health risk. No

unacceptable ecological risks were determined for site media; however, it was uncertain at the time whether groundwater discharged to the James River or Willoughby Bay at concentrations that would cause potential ecological risk in the sediment and sediment pore water. Therefore, further evaluation of sediment pore water was recommended.

4. 2007 Trident Survey

To address ecological concerns regarding the potential discharge of site groundwater to the surrounding water bodies, a Trident Probe study was conducted along the SWMU 14 area shoreline in September 2006. The results of the Trident Probe study indicated that there were no definable areas of groundwater discharge from SWMU 14 to the James River or Willoughby Bay and that there was significant attenuation by mixing with surface water in the weak discharge zones identified. The potential impact of possible chemical migration via groundwater from SWMU 14 to the James River and Willoughby Bay was negligible because pore water concentrations for site-related ecological risk drivers were less than detection limits, less than screening values, or are consistent with background levels. Based on this additional information, there is no unacceptable ecological risk from media associated with SWMU 14 (CH2M HILL, 2004 and 2007).

5. 2008 Engineering Evaluation / Cost Analysis

The EE/CA (CH2M HILL, 2008; Appendix A) evaluated four removal action alternatives to mitigate potential human health risk based on the conclusions of the multi-phase RI.

C. Physical Location

NSN is the largest naval base in the U.S. and is situated on 4,631 acres of land in the northwestern portion of Norfolk, Virginia. NSN is bounded by Willoughby Bay to the north, the confluence of the Elizabeth and James Rivers to the west, and the City of Norfolk to the south and east (Figure 2-1). A portion of the eastern facility boundary is formed by Mason Creek.

NSN includes approximately 4,000 buildings, 20 piers, and an airfield. The western portion of the facility is a developed waterfront area containing the piers and facilities for loading, unloading, and servicing naval vessels. The remaining portions of the facility consist of a combination of industrial, commercial, and residential uses. Residential and recreational areas also border the facility to the south, east, and northeast.

NSN began operations in 1917, when the Navy acquired 474 acres of land to develop a naval base to support World War I activities. Bulkheads were built along the coast to extend available land and, after dredge and fill operations, the total land under Navy control was 792 acres. An additional 143 acres of land was acquired and officially commissioned for a Naval Air Station in 1918. From 1936 through 1941, improvements to the piers and an expansion of supply/material handling facilities were also completed. During World War II, a power plant, numerous runways and hangars, a tank farm, and several housing complexes were completed, with the total area of the facility expanding to more than 2,100 acres. After World War II, NSN continued to acquire land through various land transfers and significant dredge and fill operations conducted in the areas of Mason Creek, Bousch Creek, and Willoughby Bay.

NSN provides support to vessels, aircraft, and other activities. NSN also houses many tenants, each performing different operations involving the servicing and maintenance of vessels and aircraft. The service and maintenance of ships includes utilities hook-up, onboard maintenance, and coordination of ship movements in the harbor. Additional functions include loading, unloading, and handling of fuels and oils used aboard the vessels. Ship and aircraft repair operations consist of paint stripping, patching, cleaning, repainting, engine overhauls, and sandblasting. Repair operations are conducted under appropriate environmental regulations.

D. Site Characteristics

This section provides background and historical information on SWMU 14, which is located in the northeastern corner of Sewell's Point at NSN (Figure 1-1).

1 Site History

SWMU 14 is a 13.2-acre area consisting of a concrete storage pad surrounded by a grass-covered field, sometimes used as a temporary parking lot when the adjacent lots are full. The current pad was previously used for temporary storage of environmental IDW materials (the pad is no longer used). The original pad, since removed and replaced by the current pad, served as a less-than-90-day hazardous waste accumulation area, where materials generated through various streams were processed (sampled, identified, labeled, and packaged) before being shipped to eventual disposal. Site 9 is a nonhazardous construction debris landfill co-located with and subsumed by SWMU 14 in the CERCLA process (Figure 2-1).

The peninsula at Sewell's Point is a manmade landmass formed from two distinct periods of fill activities. The first began in the early 1950s, when channels were dredged to allow for construction of the northernmost series of piers at the site. The resulting dredge material was used to create much of the land at Sewell's Point. The second was between 1974 and 1978, when the site's eastern portion was formed from the disposal of construction debris. This landfill was later designated as Site 9, Q Area Landfill. Site 9 was initially identified in the IAS (ES&E, 1983) and reportedly used for the disposal of nonhazardous construction debris. Inorganic contamination at SWMU 14 is mainly attributable to the landfill (CH2M HILL, 2004). Site 9 was recommended for No Further Action (Baker, 1997); however, because Site 9 and SWMU 14 are co-located, Site 9 has been carried through the CERCLA process with SWMU 14.

SWMU 14 was initially identified from a 1982 EPIC aerial photograph (USEPA, 1994). The site was also cited during the A.T. Kearney (1992) RFA site inspection, when areas of stained soil were observed. The original concrete pad was removed and a new pad was installed west of the original location. The new pad was used for temporary storage of environmental IDW. VOCs, SVOCs, pesticide/PCBs, and dioxins/furans are present at the site in soil due to previous staging activities, as determined by multiple environmental investigations (Section B).

The revetment along the shoreline in the area of the site was repaired in 2004-2005 after extensive damage to the shoreline by Hurricane Isabel.

2 Geology and Hydrogeology

The Sewell's Point peninsula was created with dredge fill and construction-debris fill. The dredge fill consists mainly of fine- to medium-grained sand and shell hash that comprises the western half of the Sewell's Point peninsula. Similar materials are found below the construction debris fill at 6 to 14 ft below ground surface (bgs) throughout the eastern portion of SWMU 14. The construction debris fill is composed of black to brown silts and sands with some gravel pockets. Metal debris, coal, glass fragments, and buried wood pilings were observed during the test pit and drilling activities during the RI (CH2M HILL, 2004). The RI and previous investigations indicated that the thickness of the landfill material increases significantly from the western and southern boundaries to the shoreline.

There are two significant aquifer systems located in the area: the surficial Columbia Aquifer and the underlying semiconfined Yorktown Aquifer. The Columbia Aquifer is shallow throughout SWMU14[1] and consists of 20 to 40 ft bgs discontinuous heterogeneous sand and shell lenses throughout the area. The water table is approximately 8 ft bgs and is relatively flat throughout the area. Groundwater flows east and north towards Willoughby Bay and west towards the Elizabeth River due to a slight hydraulic divide along the western edge of the site. Groundwater flow velocity at SWMU 14 ranges from 60 to 200 ft per year (CH2M HILL, 2004). Below the Columbia Aquifer is the remaining 20 to 40 ft of the Columbia Group geologic unit consisting of relatively impermeable silt, clay, and sandy clay, followed by the Yorktown Confining Unit, and then the Yorktown Aquifer. Water-bearing zones in the Yorktown Aquifer consist of fine to coarse sand, gravel, and shells. Groundwater at this site is not utilized as a potable water supply.

III. Release or Threatened Release into the Environment of a Hazardous Substance, Pollutant, or Contaminant

Site 9 is a former nonhazardous construction debris landfill. SWMU 14, which is within Site 9, is a former hazardous and nonhazardous IDW temporary storage pad. The original pad, since removed and replaced by the current pad, served as a less-than-90-day hazardous waste accumulation area, where materials generated through various streams were processed (sampled, identified, labeled, and packaged) before being shipped to eventual disposal. There are no known releases.

The multi-phase RI included an HHRA and ERA. No unacceptable risks were identified for ecological receptors. However, potential human health risk was identified for exposure to contaminants in soil and groundwater.

IV. National Priorities List Status

NSN was placed on the NPL on April 1, 1997.

[1] The groundwater beneath SWMU 14 may not be considered an aquifer (not the Columbia Aquifer) because it is contained in an unnatural dredge fill build-out and construction debris landfill rather than a natural zone or stratum (9VAC 20-80-10).

V. Maps, Pictures, and Other Graphic Representations

Several figures included in the EE/CA (Attachment A) provide graphical representation of SWMU 14 and its surroundings and the proposed removal action design. These include:

- Figure 1-1: Location of SWMU 14 and Site 9
- Figure 2-1: Sample Locations During Relative Risk Ranking Phases I and II (1995-1996) and Supplemental Investigation (1998) at SWMU 14
- Figure 2-2: Soil Boring Locations During RI Phases I, II, and III at SWMU 14
- Figure 2-3: Monitoring Well Locations During RI Phases I, II, and III at SWMU 14
- Figure 2-4: Sampling Locations During RI Phase IV at SWMU 14
- Figure 4-2: Conceptual Asphalt Cover Section
- Figure C-5: Conceptual Example Parking Lot Layout

VI. Summary of Actions to Date

A. Previous Actions

The Site 9, Q-Area Landfill, or Old Construction Debris Landfill, was created as part of filling operations from 1974 to 1978 to expand Sewell's Point. It has since been closed as recommended in the IAS. The previous concrete storage pad at SWMU 14, formerly used for temporary storage of environmental IDW, was demolished and replaced with a new pad. The area is no longer used for IDW storage.

B. Current Actions

There are no current actions. The near-future removal action is described herein and in the EE/CA (CH2M HILL, 2008).

VII. State and Local Authority's Role

A. State and Local Actions to Date

Under Executive Order 12580, the President delegates authority to undertake CERCLA response actions to the Department of Defense (DoD). Congress further outlined this authority in the Defense Environmental Restoration Program (DERP) Amendments, under 10 United States Code (USC) Sections 2701 through 2705. CERCLA Section 120 requires the Navy to apply state removal and remedial action law requirements at its facilities.

B. Potential for Continued State/Local Response

The Navy will continue to be the lead agency and the Navy's environmental restoration program will continue to be the exclusive source of funding for remedial actions on NSN property. As members of the NSN Tier I Partnering Team, the USEPA and Virginia

Department of Environmental Quality (VDEQ) will continue to be consulted until actions addressing the contaminated area are complete.

VIII. Threats to Public Health, Welfare or the Environment, and Statutory and Regulatory Authorities

Section 300.415 of the NCP lists the factors to be considered in determining the appropriateness of a NTCRA. Paragraph (b)(2)(i) of Section 300.415 applies to the conditions as follows:

300.451(b)(2)(i) *Actual or potential exposures to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.*

The multi-phase RI included an HHRA and ERA. No unacceptable risk was determined for ecological receptors in any media; however, potential human health risk was identified for exposure to soil and groundwater only. This removal action removes the exposure pathway to soil only. Groundwater media will be addressed separately.

IX. Endangerment Determination

Actual or threatened releases of pollutants and contaminants from SWMU 14, if not addressed by implementing the removal action discussed in this Action Memorandum, while not presenting an endangerment to ecological receptors, may present an endangerment to public health.

X. Proposed Actions and Estimated Costs

A. Proposed Actions

The scope of the removal action to be initiated at SWMU 14 consists of placement of an asphalt cover (to serve as a parking lot; Figure C-5) in order to remove the exposure pathway to soil. This removal action is anticipated to mitigate potential risks to human health.

1. Proposed Action Description

The preferred removal action alternative for SWMU 14 proposes installation of an asphalt cover (Figures 4-2 and C-5) to mitigate the potential human health risk. The NCP, Title 40 of the Code of Federal Regulations (40CFR), Section 300, provides regulations for implementing CERCLA and SARA and regulations specific to removal actions. The NCP defines a removal action as the "cleanup or removal of released hazardous substances from the environment, such actions as may be necessary to monitor, assess, and evaluate the threat of release of hazardous substances, the disposal of removed material, or the taking of such other actions as may be necessary to prevent, minimize, or mitigate damage to the public health or welfare or to the environment, which may otherwise result from a release or threat of release." A NTCRA is being considered for SWMU 14 to mitigate potential unacceptable human health risk from exposure to surface soil, subsurface soil, and subsurface debris, by removal of the exposure pathway via a barrier to the contaminated

media. Therefore, this Action Memorandum and the EE/CA refer to Alternative 3 (Asphalt Cover) as a "removal action," which is consistent with the NCP.

In addition to a barrier, the asphalt cover would serve as a much needed parking lot in this vicinity of NSN. LUCs would be required to assure that the asphalt cover (i.e., elimination of exposure route) remains in place until the site has met (or additional action is taken to meet) the requirements for unlimited use and unrestricted exposure. Other institutional controls not detailed in the EE/CA would be considered during the preparation of the LUC remedial design. The integrity of the asphalt cover would be monitored during quarterly site inspections. The asphalt cover will also be reviewed and documented as part of the 5-year review process for this and other IRP sites at NSN.

2. Contribution to Remedial Performance

The NTCRA for SWMU 14 will mitigate potential human health risks and satisfy project implementation and cost requirements. Results of previous investigations for SWMU 14 (Section II and Attachment A) have identified potential risk and delineated the nature and extent of contamination.

3. Description of Alternatives Technologies

Four alternatives were evaluated and compared based on their effectiveness, implementability, and cost. The EE/CA for SWMU 14 describes each of the alternatives considered in greater detail, and the process by which the alternatives were evaluated, compared, and selected. The preferred alternative for SWMU 14 is Alternative 3, Asphalt Cover. The selection of this alternative balances the effectiveness of Alternatives 1, 2, 3, and 4 against their implementability and cost.

4. Applicable or Relevant and Appropriate Requirements

The NCP requires that removal actions attain Federal and State Applicable or Relevant and Appropriate Requirements (ARARs) with limited exception to the extent practicable. Analysis of the removal action alternatives for SWMU 14 with the applicable ARARs is presented in the EE/CA (CH2M HILL, 2008; Attachment A). The removal action set forth in this Action Memorandum will comply with ARARs to the extent practicable.

5. Project Schedule

The Draft Final SWMU 14 EE/CA was made available to the public for comment for 30 days beginning on January 25, 2008. No comments were received from the public during the comment period.

The proposed estimated project schedule is as follows:

- EE/CA Public Comment Period 1 Month
- Preparation of Work Plan 3 Months
- Removal Action 3 Months
- Report Writing 3 Months

B. Estimated Costs

The NCP 40 CFR Part 300.415 dictates statutory limits of $2 million and 12 months of USEPA fund-financed removal actions, with statutory exemption for emergencies and actions consistent with the removal action to be taken. This removal action will not be USEPA fund-financed. The Navy ERP does not limit the cost or duration of the removal action (Navy, 2006).

1. Response Action Contract

The Navy will contract with an environmental remediation contractor to perform the required work associated with the removal action at SWMU 14. The estimated costs are itemized in Table 10-1.

TABLE 10-1
Alternative 3 – SWMU 14 Asphalt Cover
Estimated Cost of Removal Action

Preliminary	
Clearing and Grubbing	$2,262
Stripping/Mowing (leave in place)	$7,986
Field Office	$9,700
Maintenance of Traffic	$10,000
Safety Fence	$38,880
Demolish-to-Rubble Existing Concrete Pad	$65,340
Temporary Erosion and sediment Control Items	
Construction Entrance Temporary Road	$2,457
Excavation of Sediment Traps	$23,940
Backfill of Sediment Tarps	$687
Temporary Diversion	$19,140
Silt Fence	$1,836
Grading (If Necessary)	
Common Fill-Material (TBD)	$111,518
Common Fill-Grading	$69,709
Removal of Trees-10” to 18” Caliper	$768
Drainage	
Storm Drain Inlets (Catch Basins)	$45,750
Trench Excavation for Pipe installation	$15,193
12” Reinforced Concrete Pipe Class 4	$16,702
18” Reinforced Concrete Pipe Class 4	$29,482
24” Reinforced Concrete Pipe Class 4	$25,578
36” Reinforced Concrete Pipe Class 4	$59,738
Bioretention Fine	$4,230
Bioretention Planting (Trees)	$12,600
Bioretention Planting (Shrub)	$5,880
Bioretention Excavation (Sediment trap conversion + additional locations	$47,880
Bioretention Installation	$200,000
Riprap Outlet Protection	$2,463

Paving Items	
3" Asphalt Concrete Surface Course	$527,299
Hauling	$31,000
6" Graded Aggregate Base Course	$416,879
Hauling	$62,000
6" Graded Aggregate Sub-base Course	$484,784
Hauling	$62,000
White Pavement Paint	$12,050
Handicap Symbol White Pavement Paint	$1,338
Curb	$188,000
Post-Installation Topo Survey	$4,338
Subtotal	**$2,619,407**
Contingency (20%)	$523,881
Subtotal	**$3,143,289**
General Conditions (10%)	$314,329
Mobilization/Demobilization (1%)	$31,433
Subtotal	**$3,489,051**
Contractor OH/P (10%)	$348,905
Subtotal	**$3,837,956**
Performance Bond (0.4%)	$15,352
TOTAL	**$3,853,307**
Design Costs (6%)	$231,198
Construction Oversight (4%)	$154,132
TOTAL IMPLEMENTATION COST OF ALTERNATIVE 3	**$4,239,000**

Future costs, not included in this estimate include LUCs, O&M, and associated activities.

XI. Expected Change in the Situation Should Action Be Delayed or Not Taken

If no action is taken or the action is delayed, the potential for human health risk will remain.

XII. Outstanding Policy Issues

There are no outstanding policy issues regarding this action.

XIII. Enforcement

The Navy can and will perform the proposed response promptly and properly.

XIV. Recommendation

This Decision Document represents the selected removal action for SWMU 14 at NSN, Norfolk, Virginia, developed in accordance with CERCLA as amended, and is consistent with the NCP. This decision is based on the Administrative Record file for NSN.

Conditions at the site meet the NCP Section 300.415(b)(2) criteria for removal action. Naval Facilities Engineering Command in cooperation with the USEPA and VDEQ recommends approval of the proposed removal action. If approved, the total project ceiling if approved is

estimated to be $4,239,000 based upon the cost estimate developed in the EE/CA from a conceptual design. Response actions should commence as soon as practicable to expedite the removal of the pathway to soil and buried debris (i.e., installation of the cover).

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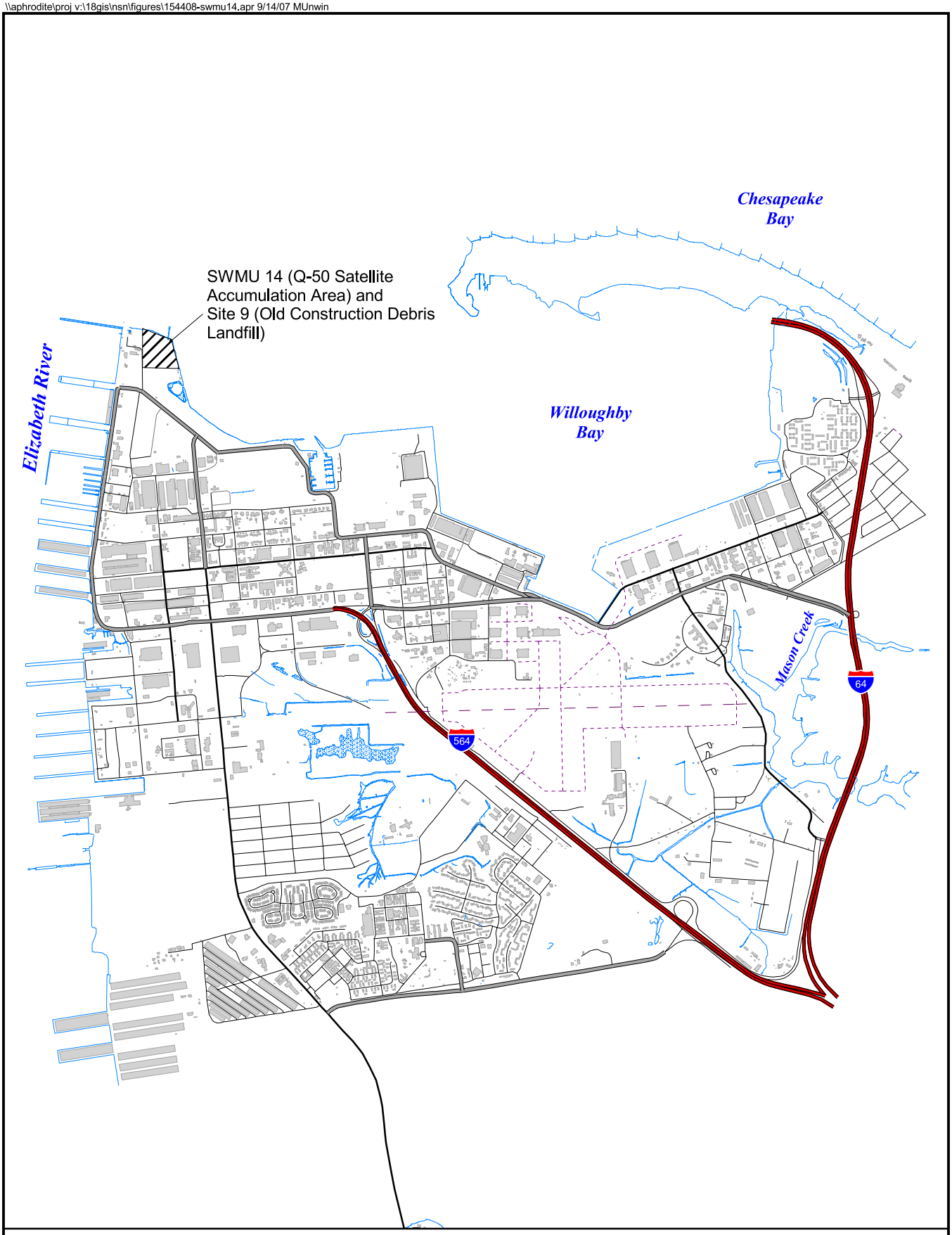
Virginia Administrative Code as of September 21, 2007. http://leg1.state.va.us/000/reg/TOC.HTM#T0004



LEGEND

Roads
- Arterial
- Alley
- Collector
- Interstate
- Local Road
- Ramp

- Buildings
- Shorelines

N

0 1625 3250 Feet

Figure 1-1
Location of SWMU 14 and Site 9
SWMU 14 Action Memo
Naval Station Norfolk
Norfolk, Virginia

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LEGEND

- Phase I RRR Surface Soil Sampling Location
- Phase I RRR Surface Soil and Groundwater Sampling Location
- Phase II RRR Surface Soil Sampling Location
- Phase II RRR Surface Soil and Groundwater Sampling Location
- SI Geoprobe Groundwater, Subsurface and Surface Soil Sample Location
- Phase I Sediment Sample Location
- Phase I Sediment and Surface Water Sampling Location
- Estimated Landfill Boundary (determined by geophysical survey in 2000)
- Accumulation Area Boundary

N

0 100 200 Feet

Figure 2-1
Sample Locations During Relative Risk Ranking Phases I and II (1995-1996) and Supplemental Investigation (1998) at SWMU 14
SWMU 14 Action Memo
Naval Station Norfolk
Norfolk, Virginia

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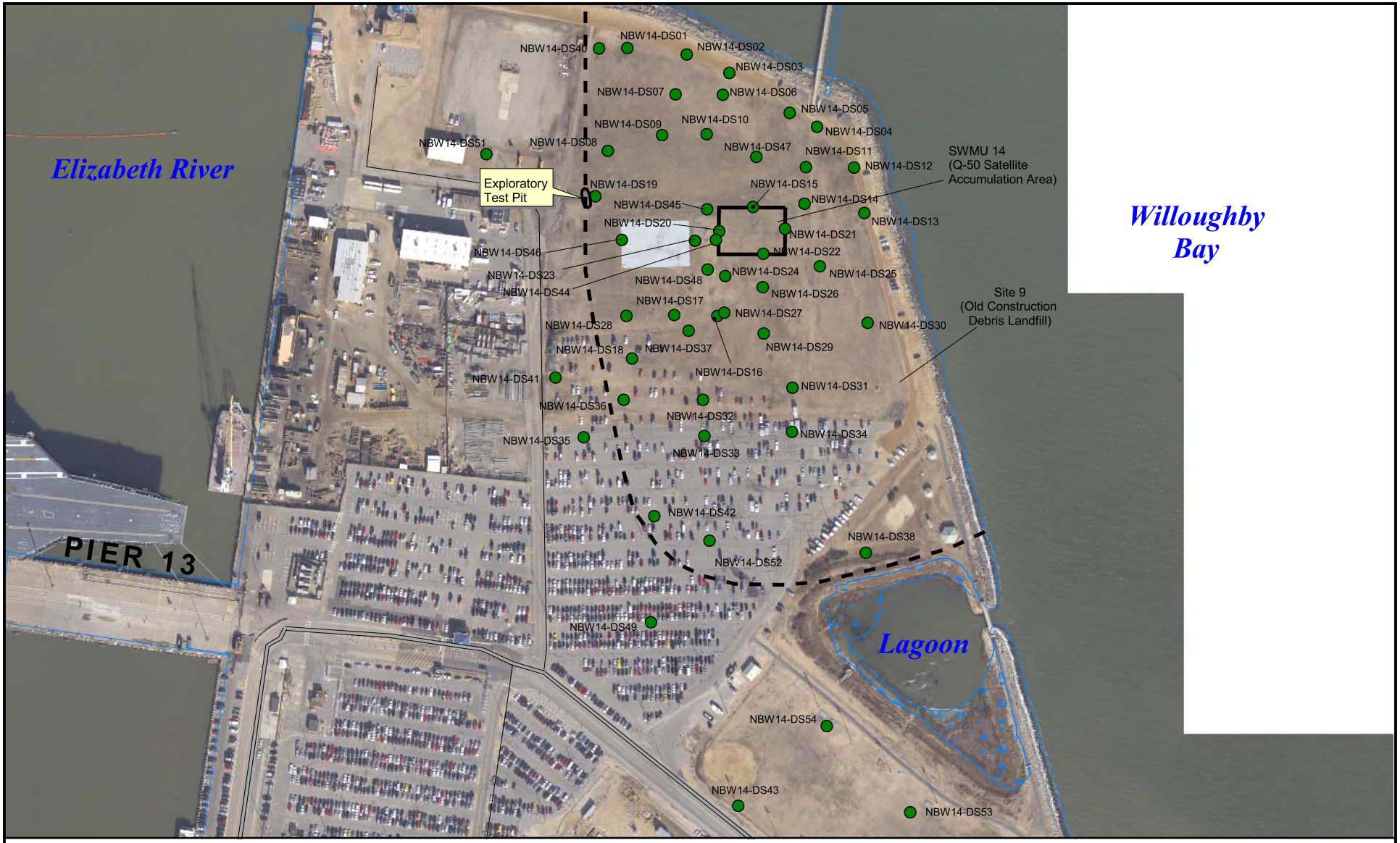

LEGEND

- Soil Borings
- Accumulation Area Boundary
- Estimated Landfill Boundary (determined by geophysical survey activities in 2000)

N

0 150 300 Feet

Figure 2-2
Soil Boring Locations During RI Phases I, II, and III at SWMU 14
SWMU 14 Action Memo
Naval Station Norfolk
Norfolk, Virginia

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LEGEND

- Monitoring Wells
- Accumulation Area Boundary
- Estimated Landfill Boundary (determined by geophysical survey activities in 2000)

N

0 200 400 Feet

Figure 2-3
Monitoring Well Locations During
RI Phases I, II, and III at SWMU 14
SWMU 14 Action Memo
Naval Station Norfolk
Norfolk, Virginia

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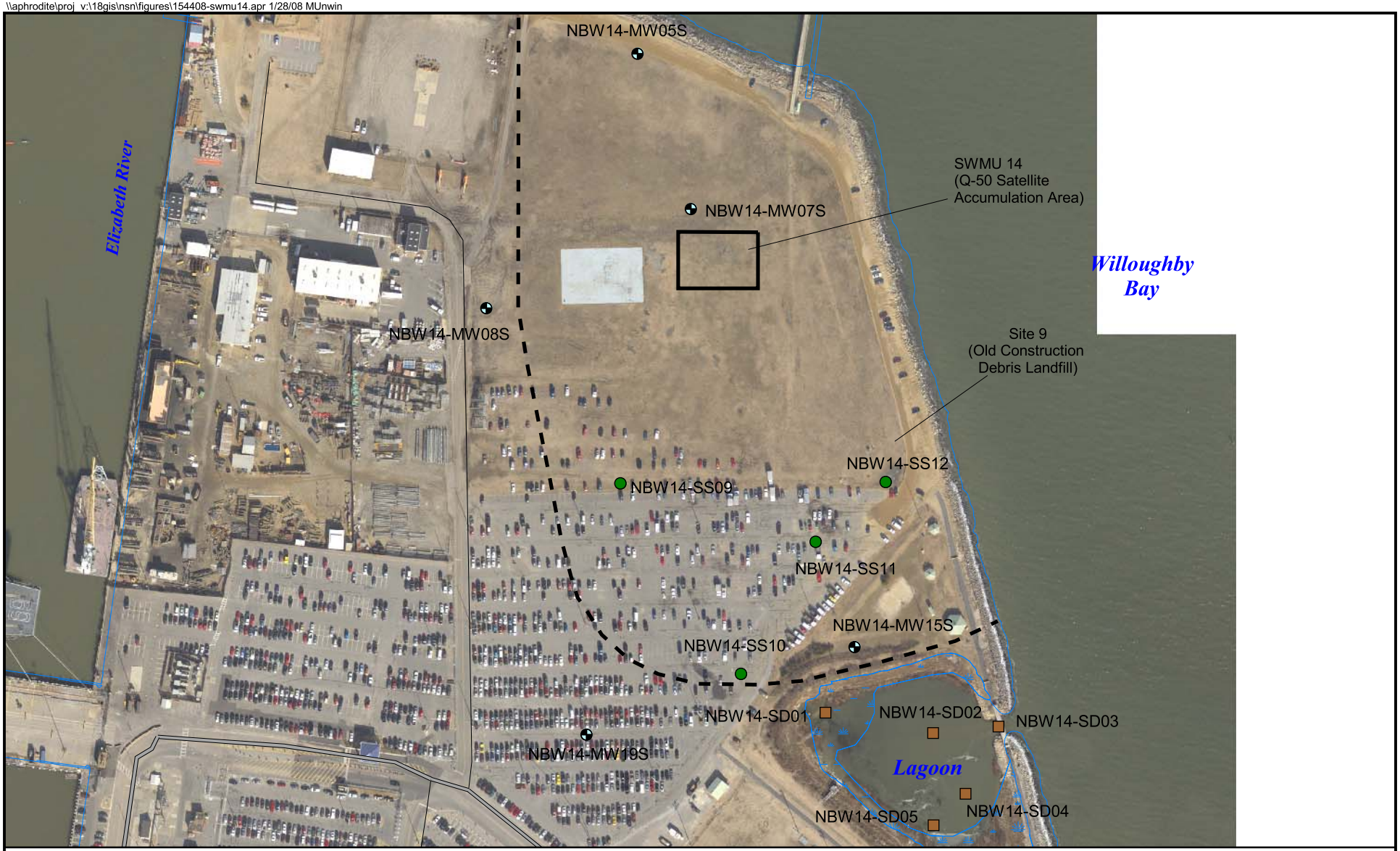

LEGEND

- Groundwater Sample Location
- Surface Soil Sample Location
- Sediment Sample Location
- Accumulation Area Boundary
- Estimated Landfill Boundary (determined by geophysical survey activities in 2000)

N

0 125 250 Feet

Figure 2-4
Sampling Locations During
RI Phase IV at SWMU 14
SWMU 14 Action Memo
Naval Station Norfolk
Norfolk, Virginia

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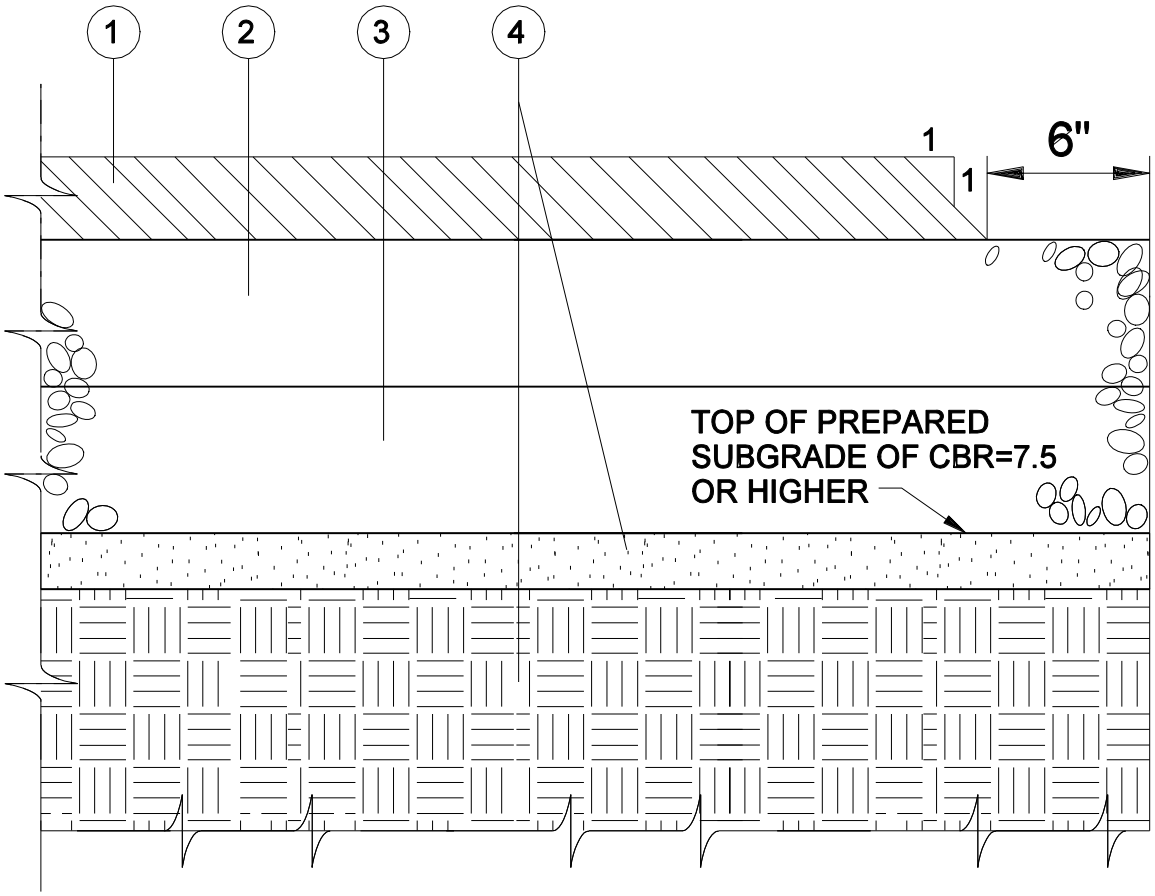

PAVEMENT LEGEND

1. 3" HMA SUPERPAVE 12.5-MM FOR SURFACE COURSE (VDOT DESIGNATION SM-12.5D)
2. 6" GRADED AGGREGATE BASE COURSE (VDOT DESIGNATION 21A)
3. 6" GRADED AGGREGATE SUBBASE COURSE (VA DESIGNATION 21B)
4. NATURAL SUBGRADE OR COMPACTED FILL (NOTES 1 AND 2)

NOTES:
1. NATURAL GRADE OR COMPACTED IMPORTED FILL MAY BE USED TO ENHANCE SITE DRAINAGE. TOPOGRAPHIC SURVEY TO BE PERFORMED TO DETERMINE NATURAL GRADE.
2. ASSUMED 8 INCHES OF IMPORTED BACKFILL WOULD BE NECESSARY ACROSS THE ENTIRE 13.2 ACRES TO OBTAIN A FINAL DESIRED SLOPE FOR DRAINAGE IN THIS CONCEPTUAL DESIGN. THE ASSUMED 8 INCHES OF FILL IS NOT PART OF THE ASPHALT COVER (PARKING LOT) - ONLY FOR GRADING.
3. THE PROPOSED SECTION OF ASPHALT CONCRETE PAVEMENT MAY BE ADJUSTED AS MORE DESIGN INFORMATION IS OBTAINED.

Figure 4-2
Conceptual Asphalt Cover Section
SWMU 14 Action Memo
Naval Station Norfolk
Norfolk, Virginia

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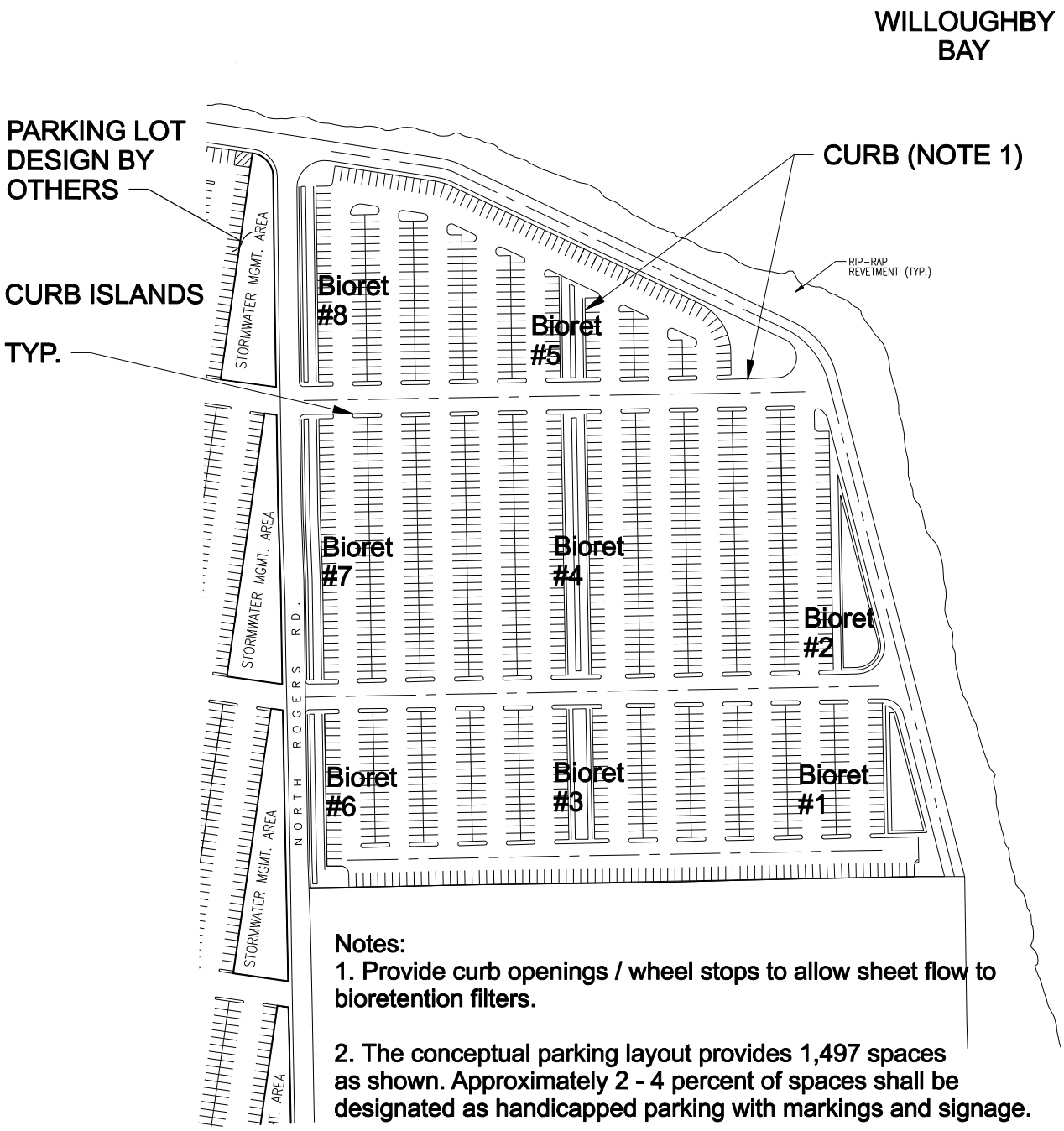

Notes:

1. Provide curb openings / wheel stops to allow sheet flow to bioretention filters.

2. The conceptual parking layout provides 1,497 spaces as shown. Approximately 2 - 4 percent of spaces shall be designated as handicapped parking with markings and signage.

3. The sizes of bioretention basins are preliminary and are subjected to change as the design advances.

4. No grass areas. Only impervious pavement and concrete. Bioretention areas will be lined to prevent infiltration through the cover. Water will be piped out of bioretention areas.

N

0 200 400 600

Scale In Feet

Figure C-5
Conceptual Example Parking Lot Layout
SWMU 14 EE/CA
Naval Station Norfolk
Norfolk, Virginia

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Attachment A
Final EE/CA for SWMU 14

Attachment A, the Final Engineering Evaluation/Cost Analysis (EE/CA) for SWMU 14 Q-50 Satellite Accumulation Area is also located in the Administrative Record File as document number 01767.

Attachment B, the Public Notice inviting the Public to comment on the EE/CA for SWMU 14 is also in the Administrative Record File as document number 01732.

Final

Engineering Evaluation/Cost Analysis (EE/CA) SWMU 14 (Q-50 Satellite Accumulation Area)

Naval Station Norfolk
Norfolk, Virginia

Contract Task Order 173

March 2008

Prepared for

Department of the Navy
Naval Facilities Engineering Command
Mid-Atlantic

Under the

LANTDIV CLEAN III Program
Contract N62470-02-D-3052

Prepared by

CH2MHILL

Virginia Beach, Virginia

Executive Summary

This report presents an Engineering Evaluation and Cost Analysis (EE/CA) for a non-time-critical removal action (NTCRA) for soil at SWMU 14, Naval Station Norfolk, Norfolk, Virginia. SWMU 14 is located in the northeast corner of Sewell's Point (Figure 1-1). Sewell's Point is a man-made landmass peninsula formed from dredge material during the 1950s and construction debris during the 1970s. SWMU 14 consists of a concrete storage pad surrounded by a grass-covered field, sometimes used as a temporary parking lot when the adjacent lots are full. The current pad was previously used for temporary storage of environmental investigation-derived waste (IDW) materials (the pad is no longer used). The original pad, since removed and replaced by the current pad, served as a less-than-90-day hazardous waste accumulation area before shipping and disposal.

In addition to the accumulation area, the peninsula at Sewell's Point is a man-made landmass formed from two distinct periods of fill activities. The first landfill activities began in the early 1950s, when the channels were dredged to allow for construction of the northernmost series of piers at the site. The resulting dredge material was used to create much of the land at Sewell's Point. The second period of filling occurred between 1974 and 1978, when the eastern portion of the site was formed from the disposal of construction debris. This landfill was later designated as Site 9, the Q-area Landfill, and reportedly used for the disposal of nonhazardous construction debris. Site 9 and SWMU 14 are collocated, therefore, both are evaluated as part of this investigation. The soil in and around SWMU 14 / Site 9 are the focus of this EE/CA and the NTCRA for the site.

Previous investigations at SWMU 14 identified the nature and extent of contamination in soil and groundwater. A Remedial Investigation, which included human health and ecological risk assessments, was completed by CH2M HILL in 2004. The groundwater beneath SWMU 14 is not being evaluated in this EE/CA; however, the need for land use controls (LUCs) and developing an appropriate path forward for site groundwater is currently being evaluated and will be part of the long term site management strategy.

The objective of this NTCRA is to mitigate potential unacceptable human health risk from exposure to contaminated surface soil, subsurface soil, and subsurface debris at SWMU 14. The Navy would also like to improve site usability. The following removal action alternatives were evaluated:

- **Alternative 1—**No Action
- **Alternative 2—**Soil Cover
- **Alternative 3—**Asphalt Cover (Parking Lot)
- **Alternative 4—**Excavation and Offsite Disposal

Alternative 1 (No Action) does not meet the objectives of the NTCRA to eliminate the potential for exposure to contaminants in soil that may pose a potential human health risk. As such, implementation of this alternative is not recommended.

Alternative 2 (Soil Cover) is effective in reducing exposure to soil by potential human receptors. Associated cost requirements are high but construction requirements are common

practice. Contaminated material remains in place at the site and LUCs, operation and maintenance (O&M), and periodic inspections would be required. The site would have limited future use as restrictions would be in place for allowable use to maintain the integrity of the cover.

Alternative 3 (Asphalt Cover) is effective in reducing exposure to soil by potential human receptors. Associated cost requirements are high but construction requirements are common practice. Contaminated material remains in place at the site and LUCs, operation and O&M, and periodic inspections would be required. However, the asphalt cover would provide an equivalently protective long-term performance barrier than the soil cover, and the asphalt cover would be utilized as a parking lot for the Navy. Therefore, Alternative 3 is the recommended alternative.

Alternative 4 (Excavation and Offsite Disposal) is more effective than the other alternatives in preventing potential human exposure, as this alternative includes removal of contaminated soil from the site. However, the cost of this alternative is excessively high and implementation would be very difficult. Removing soil/waste material would require specialized construction techniques with significant engineering constraints. The transportation and disposal of the large quantity of excavated material would be extremely costly.

In accordance with the National Oil and Hazardous Substance Pollution Contingency Plan (NCP), this EE/CA will be placed in the Administrative Record, and notice of its availability for public review, along with a brief summary, will be published in the local newspaper. The EE/CA will then be subjected to a 30-day public comment period. The public comment period will be held from January 25, 2008, through February 25, 2008. A public information session will also be held during or immediately following the public comment period, if requested. Following the public comment period, if comments are received, a Responsiveness Summary summarizing responses to significant comments will be prepared and included Action Memorandum describing the proposed removal action and placed in the Administrative Record.

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Acronyms and Abbreviations

ARAR	Applicable or Relevant and Appropriate Requirement
BMP	Best Management Practice
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
E&S	Erosion and Sediment
EE/CA	Engineering Evaluation and Cost Analysis
ERA	Ecological Risk Assessment
FEMA	Federal Emergency Management Agency
ft	feet
FS	Feasibility Study
HHRA	Human Health Risk Assessment
IAS	Initial Assessment Study
IDW	Investigation-Derived Waste
LUC	Land Use Control
NAVFAC	Naval Facilities Engineering command, Mid-Atlantic
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
NSN	Naval Station Norfolk
NTCRA	Non-Time Critical Removal Action
O&M	Operation and Maintenance
PCB	Polychlorinated Biphenyl
RAO	Removal Action Objective
RBC	Risk-Based Concentration
RFA	RCRA Facility Assessment
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
SARA	Superfund Amendments and Reauthorization Act
SVOC	Semi-Volatile Organic Compound
SWMU	Solid Waste Management Unit
TCLP	Toxicity Characteristic Leachate Procedure
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VDEQ	Virginia Department of Environmental Quality
VDOT	Virginia Department of Transportation
VOC	Volatile Organic Compound

SECTION 1

Introduction

This report presents an Engineering Evaluation and Cost Analysis (EE/CA) for a non-time-critical removal action (NTCRA) for soil at SWMU 14, Naval Station Norfolk, Norfolk, Virginia. SWMU 14 is located in the northeast corner of Sewell's Point (Figure 1-1). Sewell's Point is a man-made landmass peninsula formed from dredge material during the 1950s and construction debris during the 1970s. SWMU 14 consists of a concrete storage pad surrounded by a grass-covered field, sometimes used as a temporary parking lot when the adjacent lots are full. The current pad was previously used for temporary storage of environmental investigation-derived waste (IDW) materials (the pad is no longer used). The original pad, since removed and replaced by the current pad, served as a less-than-90-day hazardous waste accumulation area before shipping and disposal. Site 9 is an old nonhazardous construction debris landfill collocated with SWMU 14. SWMU 14 subsumes Site 9 in this EE/CA.

A removal action is being considered for SWMU 14, where potential current and future unacceptable human health risk exists due to the presence of dredge, soil, and construction debris impacted by volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), metals, and dioxins/furans (CH2M HILL, 2004).

1.1 Regulatory Background

This document is issued by the United States Department of the Navy (Navy), lead agency responsible for the NTCRA at SWMU 14, in partnership with the United States Environmental Protection Agency (USEPA) Region 3 and the Virginia Department of Environmental Quality (VDEQ),[1] under Section 104 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Superfund Amendments and Reauthorization Act (SARA) of 1986.

Section 104 of CERCLA and SARA allows an authorized agency to provide for remedial action and to remove, or arrange for removal of, hazardous substances, pollutants, or contaminants at any time, or to take any other response measures consistent with the National Oil and Hazardous Substance Pollution Contingency Plan (NCP) as deemed necessary to protect public health or welfare and the environment.

The NCP, Title 40 of the Code of Federal Regulations (40CFR), Section 300, provides regulations for implementing CERCLA and SARA and regulations specific to removal actions. The NCP defines a removal action as the "cleanup or removal of released hazardous substances from the environment, such actions as may be necessary to monitor, assess, and evaluate the threat of release of hazardous substances, the disposal of removed material, or the taking of such other actions as may be necessary to prevent, minimize, or mitigate

[1] The entity of the partnership between the Navy, USEPA Region 3, and VDEQ is called the NSN Tier I Partnering Team.

damage to the public health or welfare or to the environment, which may otherwise result from a release or threat of release." A removal action is being considered for SWMU 14 to mitigate potential unacceptable human health risk from exposure to surface soil, subsurface soil, and subsurface debris (no unacceptable ecological risk associated with the site). This removal action is not time-critical. NTCRAs are defined in 40CFR 300.415(b)(4) as "actions pertaining to an imminent threat to human health and the environment… that have planning periods of 6 months or more." For time-critical removal actions, activities shall begin as soon as possible to "abate, prevent, minimize, stabilize, mitigate, or eliminate the threat to public health or welfare of the United States or the environment (40CFR 300.415[b][3])."

40CFR 300.415 requires the lead agency to conduct an EE/CA when an NTCRA is planned for a site. The goals of an EE/CA are to identify the objectives of the removal action and to analyze the effectiveness, implementability, and cost of various alternatives that may satisfy these objectives. An EE/CA documents the removal action alternatives and selection process. Where the extent of the contamination is well defined and limited in extent, NTCRAs also allow for the expedited cleanup of sites in comparison to the remedial action process under CERCLA.

Community involvement requirements for NTCRAs include preparing an EE/CA and making it available for public review and comment for a period of 30 days. An announcement of the 30-day public comment period on the EE/CA is required in a local newspaper. Written responses to significant comments will be provided in a responsiveness summary to be attached to the Navy's Action Memorandum and will be included in the NSN Administrative Record. Information on the NSN Administrative Record can be found on the NSN Public Installation Restoration Program Web Site at http://public.lantops-ir.org/sites/public/nsn/Site%20Files/AdminRecords.aspx. The Administrative Record is available for public review at the Naval Facilities Engineering Command (NAVFAC) Atlantic Public Affairs Office.[2]

1.2 Purpose and Objectives

Submittal of this document fulfills the requirements for NTCRAs as defined by CERCLA, SARA, and the NCP. This EE/CA has been prepared in accordance with USEPA (1993) *Superfund, Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA*.

This EE/CA compares four removal alternatives based on their technical feasibility, ability to protect human health and the environment, ability to prevent the potential release of hazardous chemicals or substances, and cost. Individual goals of this EE/CA are to:

- Satisfy environmental review and public information requirements for removal actions.
- Satisfy administrative record requirements for documenting the removal action selection.
- Provide a framework for evaluating and selecting alternative technologies.

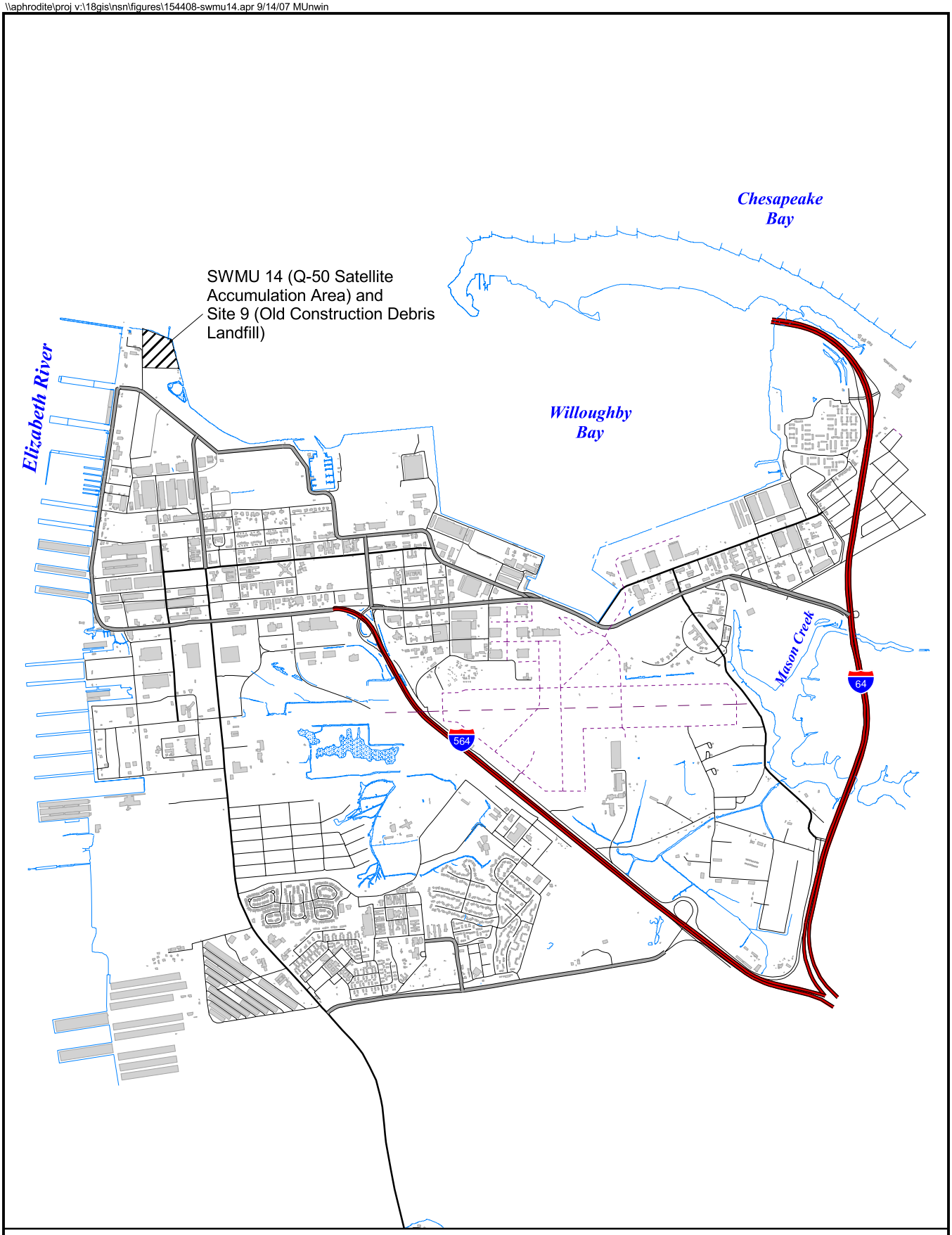
The objective of this NTCRA is to mitigate potential unacceptable human health risk from exposure to contaminated surface soil, subsurface soil, and subsurface debris at SWMU 14.

[2] Public Affairs Office, NAVFAC Atlantic, 6506 Hampton Blvd, Norfolk, VA 23508-1278; 757-322-8005; NFECL_PAO@navy.mil.

The Navy would also like to improve site usability. Potential unacceptable human health risk is also associated with exposure to groundwater at SWMU 14; however, groundwater beneath SWMU 14 is not being evaluated in this EE/CA. The need for land use controls (LUCs) and developing an appropriate path forward for site groundwater is currently being evaluated and will be part of the long term site management strategy.

This EE/CA will provide and/or reference key site background information that lead to the decisions to perform a NTCRA. The specific alternatives evaluated to meet the removal objective are as follows:

- **Alternative 1—**No Action
- **Alternative 2—**Soil Cover
- **Alternative 3—**Asphalt Cover (Parking Lot)
- **Alternative 4—**Excavation and Offsite Disposal



LEGEND

Roads
- Arterial
- Alley
- Collector
- Interstate
- Local Road
- Ramp

- Buildings
- Shorelines

N

0 1625 3250 Feet

Figure 1-1
Location of SWMU 14 and Site 9
SWMU 14 EE/CA
Naval Station Norfolk
Norfolk, Virginia

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SECTION 2

Site Characterization

This section provides a brief summary of background information for NSN, SWMU 14, and nearby sites. It also discusses previous environmental investigations and actions that occurred at SWMU 14.

2.1 Facility History

NSN is the largest naval base in the United States and is situated on 4,631 acres of land in the northwestern portion of Norfolk, Virginia. NSN is bounded by Willoughby Bay to the north, the confluence of the Elizabeth and James Rivers to the west, and the City of Norfolk to the south and east (Figure 1-1). A portion of the eastern facility boundary is formed by Mason Creek.

NSN includes approximately 4,000 buildings, 20 piers, and an airfield. The western portion of the facility is a developed waterfront area containing the piers and facilities for loading, unloading, and servicing naval vessels. The remaining portions of the facility consist of a combination of industrial, commercial, and residential uses. Residential and recreational areas also border the facility to the south, east, and northeast.

NSN began operations in 1917, when the Navy acquired 474 acres of land to develop a naval base to support World War I activities. Bulkheads were built along the coast to extend available land and, after dredge and fill operations, the total land under Navy control was 792 acres. An additional 143 acres of land was acquired and officially commissioned for a naval air station in 1918. From 1936 through 1941, improvements to the piers and an expansion of supply/material handling facilities were also completed. During World War II, a power plant, numerous runways and hangars, a tank farm, and several housing complexes were completed, with the total area of the facility expanding to more than 2,100 acres. After World War II, NSN continued to acquire land through various land transfers and significant dredge and fill operations conducted in the areas of Mason Creek, Bousch Creek, and Willoughby Bay.

NSN provides support to vessels, aircraft, and other activities. NSN also houses many tenants, each performing different operations involving the servicing and maintenance of vessels and aircraft. The service and maintenance of ships includes utilities hook-up, onboard maintenance, and coordination of ship movements in the harbor. Additional functions include loading, unloading, and handling of fuels and oils used aboard the vessels. Ship and aircraft repair operations consist of paint stripping, patching, cleaning, repainting, engine overhauls, and sandblasting. Repair operations are conducted under appropriate environmental regulations.

2.2 Site Description and Background

SWMU 14 is located in the northeastern corner of Sewell's Point at NSN (Figure 1-1). The 13.2-acre site consists of a concrete storage pad surrounded by a grass-covered field, sometimes used as a temporary parking lot when the adjacent lots are full. The current pad was previously used for temporary storage of environmental IDW materials (the pad is no longer used). The original pad, since removed and replaced by the current pad, served as a less-than-90-day hazardous waste accumulation area, where materials generated through various streams were processed (sampled, identified, labeled, and packaged) before being shipped to eventual disposal.

Site 9 is a nonhazardous construction debris landfill collocated with SWMU 14 (Figure 2-1). Site 9 is subsumed by SWMU 14 and will be addressed by the NTCRA evaluated herein.

2.2.1 Site Setting

NSN is located in the Tidewater area of Virginia, which is a low-lying peninsula in the Atlantic Coastal Plain Physiographic Province. The climate is classified as oceanic with typically mild winters and long, warm summers with high humidity. Precipitation averages 44 inches per year, with the heaviest precipitation occurring during July and August.

Topographically, NSN is nearly level. Elevations on NSN range from sea level at the north and west boundaries to approximately 15 feet (ft) above sea level in central portions of the NSN.

Hydrology

Four major surface water features surround the greater Norfolk area including the James River, Elizabeth River, Willoughby Bay, and Chesapeake Bay, all of which are tidal in nature. The majority of surface water on NSN flows to either Mason Creek or to the remnants of Bousch Creek, which discharge to Willoughby Bay, and ultimately to the Chesapeake Bay. Due to the proximity of tidal waters and the low relief of the land, both Mason Creek and the remnant tributaries of Bousch Creek are tidal throughout NSN. Some surface water runoff from NSN discharges directly to the Elizabeth River.

A Federal Emergency Management Agency (FEMA) flood insurance study established that the 100-year floodplain elevation at NSN is 8.5 ft above sea level (A.T. Kearny, 1992). Therefore, portions of NSN adjacent to Willoughby Bay and the Elizabeth River are within the 100-year floodplain.

Geology and Hydrogeology

NSN is in the outer Atlantic Coastal Plain Physiographic Province, which is characterized by low elevations and gently sloping relief. The Base is underlain by more than 2,000 ft of gently dipping sandy sediment, ranging in age from Recent to Lower Cretaceous.

The Sewell's Point peninsula was created with dredge fill and construction-debris fill. The dredge fill consists mainly of fine- to medium-grained sand and shell hash that comprises the western half of the Sewell's Point peninsula. Similar materials are found below the construction debris fill at 6 to 14 ft below ground surface (bgs) throughout the eastern portion of SWMU 14. The construction debris fill is composed of black to brown silts and

sands with some gravel pockets. Metal debris, coal, glass fragments, and buried wood pilings were observed during the test pit and drilling activities during the Remedial Investigation (RI) (CH2M HILL, 2004). The RI and previous investigations indicated that the thickness of the landfill material increases significantly from the western and southern boundaries to the shoreline.

There are two significant aquifer systems located in the area: the surficial Columbia Aquifer and the underlying semiconfined Yorktown Aquifer. The Columbia Aquifer is shallow throughout SWMU14[3] and consists of 20 to 40 ft bgs discontinuous heterogeneous sand and shell lenses throughout the area. The water table is approximately 8 ft bgs and is relatively flat throughout the area. Groundwater flows east and north towards Willoughby Bay and west towards the Elizabeth River due to a slight hydraulic divide along the western edge of the site. Groundwater flow velocity at SWMU 14 ranges from 60 to 200 ft per year (CH2M HILL, 2004). Below the Columbia Aquifer is the remaining 20 to 40 ft of the Columbia Group geologic unit consisting of relatively impermeable silt, clay, and sandy clay, followed by the Yorktown Confining Unit, and then the Yorktown Aquifer. Water-bearing zones in the Yorktown Aquifer consist of fine to coarse sand, gravel, and shells. Groundwater at this site is not utilized as a potable water supply.

2.2.2 Site History

The peninsula at Sewell's Point is a manmade landmass formed from two distinct periods of fill activities. The first began in the early 1950s, when channels were dredged to allow for construction of the northernmost series of piers at the site. The resulting dredge material was used to create much of the land at Sewell's Point. The second was between 1974 and 1978, when the site's eastern portion was formed from the disposal of construction debris.

This landfill was later designated as Site 9, Q Area Landfill. Site 9 was initially identified in the Initial Assessment Study (IAS) (Environmental Science and Engineering, 1983) and reportedly used for the disposal of nonhazardous construction debris. Inorganic contamination at SWMU 14 is mainly attributable to the landfill (CH2M HILL, 2004). Site 9 was recommended for No Further Action (Baker, 1997); however, because Site 9 and SWMU 14 are collocated, Site 9 has been carried through the CERCLA process subsumed by SWMU 14.

SWMU 14 was initially identified from a 1982 Environmental Photographic Interpretation Center (EPIC) aerial photograph (USEPA, 1994) that showed a drum storage area and scrap metal pile north and east of the concrete pad, respectively. Historical plans of the area also showed stockpiled railroad ties and metal debris northeast of the pad. The site was also cited during the 1992 Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) (A. T. Kearney, 1992) site inspection, when areas of stained soil were observed. The original concrete pad for the accumulation area has since been removed.

A new pad was installed west of the original location and was used for temporary storage of environmental IDW. VOCs, SVOCs, pesticide/PCBs, and dioxins/furans are present at the site in soil due to previous staging activities, as determined by multiple environmental investigations (CH2M HILL, 2004).

[3] The groundwater beneath SWMU 14 may not be considered an aquifer (not the Columbia Aquifer) because it is contained in an unnatural dredge fill build-out and construction debris landfill rather than a natural zone or stratum (9VAC 20-80-10).

The revetment along the shoreline in the area of the site was repaired in 2004-2005 after extensive damage to the shoreline by Hurricane Isabel.

2.2.3 Previous Investigations

Several environmental investigations for SWMU 14 have occurred since the early 1990s (after the IAS):

- Baker Environmental, Inc. (Baker) completed two Relative Risk Ranking (RRR) studies in 1995-1996 to evaluate the presence of contamination and potential exposure pathways associated with SWMUs at NSN (Baker, 1996a and 1996b).
- CH2M HILL performed a supplemental investigation in summer 1998 for multiple SWMUs including SWMU 14 to further evaluate potential contaminants at expanded locations (CH2M HILL, 1998).
- CH2M HILL performed a multiphase RI for SWMU 14 in 1999, 2000, 2001, and 2002 (CH2M HILL, 2004). The RI included a baseline human health risk assessment (HHRA) and a screening ecological risk assessment (ERA).
- CH2M HILL performed a Trident sediment pore-water survey in 2006 to evaluate the potential for preferential pathways for groundwater from SWMU 14 into surrounding water bodies (CH2M HILL, 2007).

Phase I and Phase II Relative Risk Ranking Studies (1995-1996)

The RRR studies were performed to evaluate potential contamination and exposure pathways at all SWMUs at NSN. Surface soil and groundwater samples were collected at SWMU 14 (Figure 2-1) and analyzed for VOCs, SVOCs, and metals (and cyanide) in 1995 during the Phase I RRR (Baker, 1996a). Several VOCs, SVOCs, and metals were detected in each media at SWMU 14 above applicable screening and regulatory criteria, warranting further investigation.

Therefore, surface water, sediment samples, and additional surface soil and groundwater samples were collected from expanded locations at SWMU 14 (Figure 2-1) in 1996 during the Phase II RRR (Baker, 1996b). All media were analyzed for VOCs, SVOCs, and metals. Soil and groundwater samples were also analyzed for pesticides and PCBs. Several VOCs, SVOCs, pesticides, PCBs, and metals were detected in one or media at SWMU 14 above applicable screening and regulatory criteria. Therefore, another investigation was recommended to help determine the scope of an RI at SWMU 14 and other SWMUs.

Supplemental Investigation (1998)

A Supplemental Investigation was performed in 1998 for SWMUs 9, 10, 12, 14, 16, 28, 32, 33, 34, 35, 38, 40, 41, and 42 (CH2M HILL, 1998). The objectives were to determine the extent of contamination at each SWMU, to develop and evaluate economically feasible remedial alternatives for each SWMU, and to close out qualified SWMUs. Groundwater, surface soil, and subsurface soil samples were collected from new locations at SWMU 14 (Figure 2-1) and analyzed for VOCs, SVOCs, pesticides, PCBs, and metals. The data showed several VOC, SVOC, PCB, and/or metal concentrations above applicable screening and regulatory criteria in soil and groundwater at SWMU 14. Therefore, an RI was initiated at SWMU 14.

SWMU 14 Remedial Investigation (1999-2002)

Three RI phases were conducted in 1999, 2000, and 2001 to assess the extent of the fill material and groundwater impacts at SWMU 14. A fourth, final phase was completed in 2002 to fill data gaps from Phases I through III which were identified by the Tier I Partnering Team (CH2M HILL, 2004).

The RI activities for SWMU 14 consisted of a geophysical survey, soil borings, monitoring well installations, and four phases of sampling in 1999, 2000, 2001, and 2002 (CH2M HILL, 2004). The objectives, activities, results, and conclusions of each phase of the RI are summarized below. Figures 2-2 through 2-4 show the sampling locations during the RI.

RI Phase I (1999)

The sampling associated with the RI Phase I was proposed based on the results of the RRR studies and the 1998 Supplemental Investigation. The Phase I RI objectives consisted of the following:

- Characterize the source(s) and downgradient extent of VOCs, SVOCs, PCBs, and metals in soil an groundwater;
- Evaluate if chemicals and constituents potentially reach ecological receptors in Willoughby Bay; and
- Characterize groundwater flow conditions in the shallow aquifer.

Eighteen surface and subsurface samples were collected and analyzed for metals, SVOCs, and pesticides/PCBs. Eight new shallow monitoring wells were installed and groundwater samples were analyzed for VOCs, SVOCs, pesticides/PCBs, and metals.

Geophysical Survey. Electromagnetic technology was used to establish the extent of the disturbed area and identify buried objects at SWMU 14 (which subsumed Site 9). The survey covered the entire area of the grass field and concrete pad. Following a review of the data, a ground-penetrating radar survey was performed to assess large anomalies identified in the electromagnetic survey. The result of the survey was a new estimated boundary containing SWMU 14 (Figures 2-2 through 2-4 and 2-6 display the determined boundary).

RI Phase II (2000)

The phase II objectives were to:

- Further characterize the nature and extent of the contamination;
- Establish upgradient concentration values for groundwater; and
- Investigate several anomalies detected during the geophysical survey.

The RI Phase II sampling was performed on groundwater, surface soil, and subsurface soil. Twenty surface and 17 subsurface soil samples were collected and analyzed for VOCs, SVOCs, pesticides/PCBs, and metals. Six new shallow monitoring wells and one existing monitoring well samples were collected and analyzed for VOCs, SVOCs, pesticides/PCBs, and metals.

RI Phase III (2001)

The RI Phase III objectives were to:

- Further characterize the nature and extent of soil and groundwater contamination associated with SWMU 14;
- Determine, to the extent possible, the western and southern limits of waste/fill material associated with SWMU 14/Site 9 and establish background levels for soil outside of the fill area as well as groundwater upgradient of the material; and
- Determine the nature of the anomaly encountered at boring location DS19.

Activities occurring during this phase of the RI included exploratory test pitting, groundwater sampling, surface soil sampling, and subsurface soil sampling. Four shallow monitoring wells were installed, sampled, and analyzed for VOCs, SVOCs, pesticides/PCBs, and metals. Nine surface and eight subsurface soil samples were collected and analyzed for VOCs, SVOCs, pesticides/PCBs, and metals from eleven new soil borings. Five of these samples were also analyzed for dioxin and pentachlorophenol.

RI Phase IV – Data Gaps Investigation (2002)

This phase of the RI focused on the evaluation of potential impacts of contaminated media on ecological and human receptors. The objectives were to:

- Assess possible transport and deposition of material from SWMU 14 to the adjacent lagoon;
- Evaluate a potential lead hotspot identified during the previous RI sampling;
- Further evaluate the mobility of contaminants in groundwater; and
- Confirm the presence of chloroform.

Five sediment samples were collected and analyzed for SVOCs, pesticides/PCBs, metals, pH, grain size, and total organic carbon; four surface soil samples were collected and analyzed for lead; and five groundwater samples from select monitoring wells were collected and analyzed for VOCs, SVOCs, pesticides/PCBs, metals, and total dissolved solids.

RI Results and Conclusions

The groundwater analytical results showed that there were exceedances of the screening criteria (USEPA Region 3 RBCs and Federal Maximum Contaminant Levels) for VOCs, SVOCs, pesticides, and metals. However, there were no PCB exceedances observed in the groundwater samples. In addition, the pesticide and SVOC exceedances were isolated to the samples collected within the debris-fill boundary. The concentrations of inorganics exceeded throughout both SWMU 14 and Site 9, indicating both of these areas are potential sources of contamination.

The surface soil analytical results showed exceedances of VOCs, SVOCs, pesticides, PCBs, metals, and dioxins/furans. Overall, inorganic exceedances of the screening criteria and the background levels occurred in the northern and southwestern portion of SWU 14.

In subsurface soil, SVOCs, pesticides, PCBs, metals, and dioxin/furans were detected at concentrations exceeding the screening criteria. There were no VOC exceedances in subsurface soil. Concentrations were compared to the dredge fill background soil levels.

SVOCs and pesticides/PCBs were detected within the landfill at concentrations that exceeded the RBCs and background levels. Dioxin/furan concentration exceedances occurred at four sample locations in the eastern central portion of SWMU 14. There were no metals concentrations detected above the background levels nor the screening criteria in subsurface soil samples collected outside of the fill area, indicating that Site 9 and SWMU 14 are likely sources of metal contamination.

Five sediment samples were collected at the SWMU 14 lagoon. SVOC, pesticides, and PCB results did not exceed the RBCs. Arsenic and iron exceeded both human health and ecological screening values.

The RI concluded the presence of potentially unacceptable risk to human health due to exposure to several VOCs, SVOCs, PCBs, and/or metals in surface soil, subsurface soil, sediment, and/or surface water. A feasibility study (FS) was recommended to address the unacceptable human health risk. No unacceptable ecological risks were determined for site media; however, it was uncertain whether groundwater discharged to the James River or Willoughby Bay at concentrations that would cause potential ecological risk in the sediment and sediment pore water. Therefore, further ERA of sediment pore water was also recommended.

Trident Survey (2007)

To address ecological concerns regarding the potential discharge of site groundwater to the surrounding water bodies, a Trident Probe study was conducted in September 2006. The Trident Probe is a direct-push, integrated temperature sensor, conductivity sensor, and sediment pore water sampler designed to detect areas where groundwater may be discharging to a surface water body. Differences in observed conductivity and temperature indicate areas where groundwater discharge is occurring. The integrated pore water sampler can be used to rapidly collect samples of the pore water for chemical analysis.

The results of the Trident Probe study indicated that there were no strong areas of groundwater discharge from SWMU 14 to the James River or Willoughby Bay and that there was significant attenuation by mixing with surface water in the weak discharge zones identified. The potential impact of possible chemical migration via groundwater from SWMU 14 to the James River and Willoughby Bay was negligible because pore water concentrations for site-related ecological risk drivers were less than detection limits, less than screening values, and/or are consistent with background.

Based on this additional information, there is no unacceptable ecological risk from media associated with SWMU 14 (CH2M HILL, 2004 and 2007).

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LEGEND

- Phase I RRR Surface Soil Sampling Location
- Phase I RRR Surface Soil and Groundwater Sampling Location
- Phase II RRR Surface Soil Sampling Location
- Phase II RRR Surface Soil and Groundwater Sampling Location
- SI Geoprobe Groundwater, Subsurface and Surface Soil Sample Location
- Phase I Sediment Sample Location
- Phase I Sediment and Surface Water Sampling Location
- Estimated Landfill Boundary (determined by geophysical survey in 2000)
- Accumulation Area Boundary

N

0 100 200 Feet

Figure 2-1
Sample Locations During Relative Risk Ranking Phases I and II (1995-1996) and Supplemental Investigation (1998) at SWMU 14
SWMU 14 EE/CA
Naval Station Norfolk
Norfolk, Virginia

CH2MHILL

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LEGEND

- Soil Borings
- Accumulation Area Boundary
- Estimated Landfill Boundary (determined by geophysical survey activities in 2000)

N

0 150 300 Feet

Figure 2-2
Soil Boring Locations During RI Phases I, II, and III at SWMU 14
SWMU 14 EE/CA
Naval Station Norfolk
Norfolk, Virginia

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LEGEND

- Monitoring Wells
- Accumulation Area Boundary
- Estimated Landfill Boundary (determined by geophysical survey activities in 2000)

N

0 200 400 Feet

Figure 2-3
Monitoring Well Locations During
RI Phases I, II, and III at SWMU 14
SWMU 14 EE/CA
Naval Station Norfolk
Norfolk, Virginia

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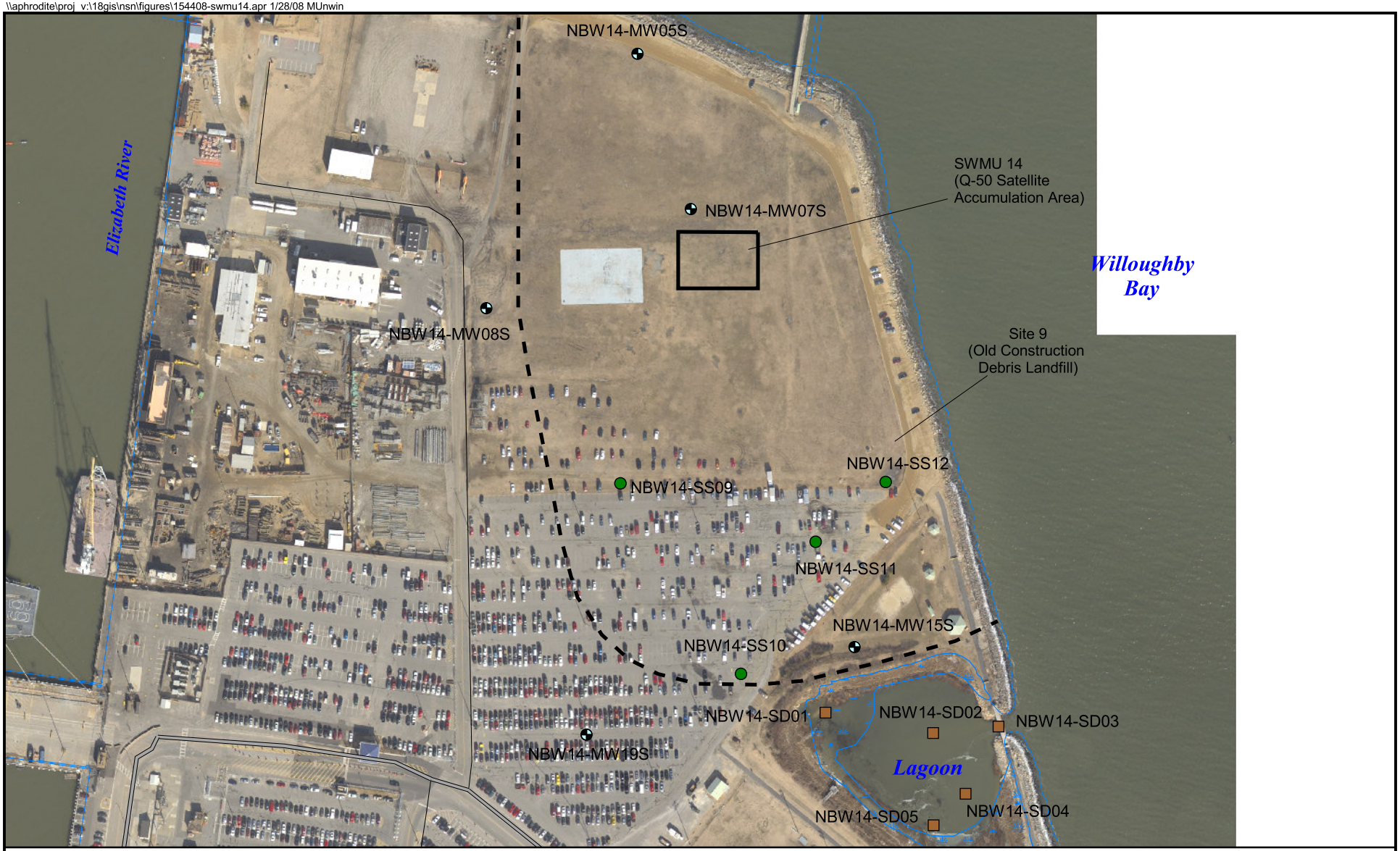


LEGEND

- Groundwater Sample Location
- Surface Soil Sample Location
- Sediment Sample Location
- Accumulation Area Boundary
- Estimated Landfill Boundary (determined by geophysical survey activities in 2000)

N

0 125 250 Feet

Figure 2-4
Sampling Locations During
RI Phase IV at SWMU 14
SWMU 14 EE/CA
Naval Station Norfolk
Norfolk, Virginia

CH2MHILL

SECTION 3

Identification of Removal Action Objectives

3.1 Statutory Limits on Removal Action

The NCP 40 CFR Part 300.415 dictates statutory limits of $2 million and 12 months of USEPA fund-financed removal actions, with statutory exemptions for emergencies and actions consistent with the remedial action to be taken. However, this removal action will not be USEPA fund-financed. The Navy Environmental Restoration Program does not limit the cost or duration of the removal action; nonetheless, cost-effectiveness is a recommended criterion for the evaluation of removal action alternatives.

3.2 Removal Action Scope

3.2.1 Removal Action Objective

The Removal Action Objective (RAO) for this interim action is to implement measures at SWMU 14 to reduce or eliminate potential unacceptable human health risk. Contaminants in surface soil, subsurface soil, and groundwater have been determined to be the principal sources of potential human health risk. This NTRCA addresses the mitigation of potential risk from exposure to surface and subsurface soil (and debris). Groundwater beneath SWMU 14 is not being evaluated in this EE/CA. The need for LUCs and developing an appropriate path forward for site groundwater is currently being evaluated and will be part of the long term site management strategy.

The Navy, in partnership with the USEPA and VDEQ, agree that human health risk at SWMU 14 associated with soil and debris would be acceptable following removal of the contaminated media or removal of the exposure pathway to the contaminated media.

3.2.2 Removal Action Scope

In the preparation of this EE/CA, four removal action alternatives were developed to meet the RAO:[4]

- **Removal Alternative 1: No Action**—The no action alternative implies that no removal work will be done at this site.
- **Removal Alternative 2: Soil Cover**—Elimination of exposure pathway to impacted soil and debris by installing a soil barrier.
- **Removal Alternative 3: Asphalt Cover (Parking Lot)**—Elimination of the exposure pathway to impacted soil and debris by installing an asphalt barrier.

[4] The NCP recognizes “capping of contaminated soils…” as an appropriate removal action (40 CFR 300.415[e][4]).

- **Removal Alternative 4: Excavation and Offsite Disposal**—Direct removal of the impacted soil (and debris) and restoration to pre-existing conditions.

3.3 Determination of Removal Schedule

The EE/CA will be placed in the Administrative Record, and notice of its availability for public review along with a brief summary will be published in the local newspaper. The EE/CA will then be subjected to a 30-day public comment period. The public comment period will be held from January 25, 2008, to February 25, 2008. A public information session will also be held during or immediately following the public comment period if requested. Following the public comment period, if comments are received, a Responsiveness Summary summarizing responses to significant comments will be prepared and included in the Administrative Record. Since this removal action has been designated non-time-critical, the start date will be determined by factors other than the urgency of the potential risk. A possible factor may include weather conditions. The total project period is predicted to last 10 months, from the end of the of the public comment period to completion of this removal action. Critical milestone periods are summarized below:

- EE/CA Public Comment Period 1 month
- Work Plan and Preparation 3 months
- Removal Action 3 months
- Completion Report Writing 3 months

The removal action timeframe includes the time required for mobilization and setup of equipment and performing the selected removal action.

3.4 Applicable or Relevant and Appropriate Requirements

The removal action will, to the extent practicable, comply with applicable or relevant and appropriate requirements (ARARs) under federal and state environmental laws, as described in 40 CFR 300.415. Appendix B contains the ARAR tables and provides a summary of each potentially related environmental law. Other federal and state advisories, criteria, and/or guidance will be considered as appropriate in formulating the removal action. Applicable requirements are those requirements specific to the conditions at SWMU 14 that satisfy all jurisdiction prerequisites of the law or requirements. Relevant and appropriate requirements are those that do not have jurisdiction authority over the particular circumstances at SWMU14, but are meant to address similar situations, and therefore are suitable for use at SWMU 14. Federal ARARs are determined by the lead agency (Navy). As outlined by 40 CFR 300.415(j), the lead agency may consider the urgency of the situation and the scope of the removal action to be conducted in determining whether compliance with ARARs is practicable. The NCP, 40 CFR 300.400(g)(2), specifies factors to consider in determining which requirements of other environmental laws are relevant and appropriate:

- The purpose of the requirement in relation to the purpose of CERCLA;
- The media regulated by the requirement;
- The substance(s) regulated by the requirement;

- The actions or activities regulated by the requirement;
- Variations, waivers, or exemptions of the requirement;
- The type of place regulated and the type of place affected by the release or CERCLA action;
- The type and size of the facility or structure regulated by the requirement or affected by the release; and
- Consideration of the use or potential use of affected resources in the requirement.

In some circumstances, a requirement may be relevant to the particular site-specific situation but may not be appropriate because of differences in the purpose of the requirement, the duration of the regulated activity, or the physical size or characteristic of the situation it is intended to address. There is more discretion in the judgment of relevant and appropriate requirements than in the determination of applicable requirements.

Three classifications of requirements are defined by USEPA in the ARAR determination process: chemical-specific, location-specific, and action-specific.

Chemical-specific ARARs are health or risk management-based numbers or methodologies that result in the establishment of numerical values for a given media that would meet the NCP "threshold criterion" of overall protection of human health and the environment. These requirements generally set protective cleanup concentrations for the chemicals of concern in the designated media. Federal and Virginia chemical-specific regulations that have been reviewed are summarized in Appendix B.

Location-specific ARARs restrict remedial activities and media concentrations based on the characteristics of the surrounding environments. Location-specific ARARs may include restrictions on removal actions within wetlands or coastal areas, near locations of known endangered species, or on protected waterways. The federal and Virginia location-specific regulations that have been reviewed are summarized in Appendix B.

Action-specific ARARs are requirements that define acceptable treatment and disposal procedures for hazardous substances. Federal and Virginia Action-specific ARARs that may affect the development and conceptual arrangement of removal alternatives are summarized in Appendix B.

3.5 General Disposal Requirements

Based on data from previous investigations, any excavated soil and debris from the removal action outlined in this EE/CA are assumed to be nonhazardous. Any excavated materials that would need to be disposed offsite would be sampled for toxicity characteristic leachate procedure (TCLP), reactivity, corrosivity, and ignitability for waste characterization.

To the extent practicable, shallow soils that would require excavation as part of construction activities should be managed onsite and utilized as general fill. Re-used site materials would be covered as part of site construction, and managed in the same manner as materials that do not require disturbance during construction activities.

Any materials that appear to be potentially hazardous would be set aside until analytical testing could be performed to confirm its nature. Appropriate nonhazardous materials would be disposed in a local Navy-approved and permitted Subtitle D landfill. Any materials classified as hazardous would be appropriately disposed.

SECTION 4

Description and Evaluation of Removal Action Alternatives

There is no unacceptable risk to human health under current industrial land use and there is no unacceptable ecological risk at SWMU 14. However, based on data from previous investigations conducted at the site (Section 2) and the HHRA evaluation (CH2M HILL, 2004), surface and subsurface soil, buried construction debris, and groundwater pose a potential risk to human receptors if site conditions or land use changes. Alternatives for mitigation of risk from exposure to groundwater will be evaluated separately from this EE/CA.

Four removal alternatives were developed for SWMU 14, consisting of a no action alternative, two barrier technology alternatives, and one excavation alternative.

4.1 Identification of Removal Action Alternatives

The objective of the NTCRA is to remove or eliminate exposure to contaminated soil and debris at SWMU 14. The four removal action alternatives developed for SWMU 14 are as follows:

- **Alternative 1—**No Action
- **Alternative 2—**Soil Cover
- **Alternative 3—**Asphalt Cover (Parking Lot)
- **Alternative 4—**Excavation and Offsite Disposal

For estimating purposes, the current grade of the site is assumed level (i.e., 0 percent [%]). A topographic survey will be performed prior to finalization of this EE/CA in order to ensure optimal cost accuracy. No offsite soil or debris transport and disposal (T&D) is anticipated for either of Alternatives 2 or 3 (i.e., it is assumed that no media will be transported offsite for Alternatives 2 or 3).

4.1.1 Alternative 1: No Action

The no action alternative implies that no removal work will be done at this site. The site will be left as it currently exists, leaving the soil and debris in place with no elimination of exposure pathway.

4.1.2 Alternative 2: Soil Cover

This alternative proposes the installation of soil cover (Figure 4-1 and Appendix C) which would serve as a barrier to contaminated media and meet Federal and Virginia requirements. Only LUCs would be required to assure that the barrier (i.e., elimination of exposure route) remains in place until contaminant levels diminish so as to allow

unrestricted use and unlimited exposure. Regular inspections would be conducted to verify the integrity of the cover.

Site preparation activities would include mobilization and setup of facilities, installation of erosion and sediment (E&S) controls, clearing of work areas, installation of access roads, and installation of appropriate drainage controls to the degree necessary to support construction. Temporary E&S controls would include silt fence, temporary diversion dikes, and sediment traps (Appendix C). Permanent controls after construction would include appropriate grading and site vegetation.

The demolition, excavation, and filling would be performed using mechanical earthwork equipment (e.g., excavators, bulldozers, and dump trucks). Demolition activities would include removal and/or modification (i.e., raising) existing monitoring wells within the site and removal of the Q-50 Satellite Accumulation Area, which consists of a 150 ft by 110 ft (16,500 square ft [ft^2]) concrete base.[5] Monitoring wells (to be determined) would be abandoned or modified to be in place after installation of the soil cover. Assuming the current Accumulation Area's concrete pad is 1 ft thick, approximately 611 cubic yards (yd^3) of concrete would be demolished and left in place to be covered.

After demolishing the Q-50 Satellite Accumulation Area, the 13.2-acre site would be cleared and grubbed in conjunction with being stripped and mowed. Following these preparatory activities, up to 43,000 yd^3 of clean backfill would be placed to amend the current grade as necessary (pending site topography to be determined by forthcoming survey; grading material is not part of the soil cover system). Following natural grade amendment, 18 inches of fill would be placed across the site to serve as the infiltration layer. Six inches of top soil would be placed and the cover would be vegetated. The final desired as-built soil cover slope would be a up to 2% to promote proper drainage. All equipment, materials, and temporary E&S and drainage controls would be removed from the site.

LUCs and operation and maintenance (O&M) for 30 years would include quarterly inspections and soil cover/vegetative maintenance (mowing not included because the site is currently mowed regularly).

4.1.3 Alternative 3: Asphalt Cover (Parking Lot)

This alternative proposes the installation of an asphalt cover (Figure 4-2 and Appendix C) which would serve as a barrier to contaminated media. In addition, the asphalt cover would serve as a much needed parking lot in this vicinity of NSN. LUCs would be required to assure that the barrier (i.e., elimination of exposure route) remains in place until contaminant levels diminish so as to allow unrestricted use and unlimited exposure. Other institutional controls not detailed in the EE/CA would be considered during the preparation of the LUC remedial design. The integrity of the asphalt cover would be monitored during regular inspections. The asphalt cover will also be reviewed and documented as part of the 5-year review process for this and other IR sites at NSN.

[5] Alternatively, a cost savings of approximately $102,000 (Appendix C) may be realized by leaving the Q-50 Satellite Accumulation Area's concrete base in place and covering it with the rest of the site . A topographic site survey will be used to aid in determining whether or not the concrete pad should be removed once the existing site drainage patterns are determined.

Site preparation activities would be the same as for Alternative 2, except that some additional drainage measures (temporary and permanent) would be implemented. These would include mobilization and setup of facilities, installation E&S controls, clearing of work areas, installation of access roads, and installation of appropriate drainage controls to the degree necessary to support construction. Temporary E&S controls and drainage controls would include silt fence, diversion dikes, and sediment traps (Appendix C). Permanent controls after construction (i.e., to be installed during construction) would include appropriate grading, sub-grade stormwater drainage piping, bioretention areas (lined to prevent infiltration; accumulated water would be piped out). Demolition activities would be the same as for Alternative 2.

The demolition, excavation, and filling would be performed using mechanical earthwork equipment (e.g., excavators, bulldozers, and dump trucks). Following natural grade amendment (pending topographic survey data), 6 inches of Virginia Department of Transportation (VDOT) Designation 21B aggregate sub-grade course would be placed across the site, followed by 6 inches of VDOT Designation 21A aggregate sub-grade course. Following this, 3 inches of VDOT Designation SM-12.5D surface course (asphalt) would be placed across the site. The final desired as-built asphalt cover slope would be sufficient to provide positive drainage.

Drainage piping and electrical conduits for anticipated parking lot lighting would be installed during the cap installation. Only drainage piping is included in the cost estimate – no other utilities or utility relocation are considered in this EE/CA. The asphalt cover would be installed as a parking lot with entrances and exits, painted parking stalls, curbs, and surface water drainage best management practices (BMPs) (i.e., bioretention features described above and in Appendix C).

All equipment, materials, and temporary E&S and drainage controls would be removed after construction. The electrical wiring and parking lot lighting installation, as well as any security features that are not considered in this EE/CA may be added to the project as construction is executed.

Operation and maintenance for 30 years would include quarterly inspections with asphalt and line painting assumed every 10 years. The asphalt re-paving is assumed to be equivalent to placing 3 inches of asphalt over one third of the parking lot every 10 years. Line painting assumed to occur over the entire parking lot every 10 years. Other means of site maintenance will be implemented as required, such as applying sealants or localized asphalt repairs, as necessary.

4.1.4 Alternative 4: Excavation and Offsite Disposal

This alternative proposes that after similar site setup and preparation described in Alternatives 2 and 3 (including the demolishment of the Accumulation Area), all debris and soil above the water table would be excavated, transported, and disposed offsite. Clean fill would be placed and the site would be re-graded and restored to pre-existing conditions. The excavation and filling would be performed using mechanical earthwork equipment (e.g., excavators, bulldozers, and dump trucks). Dump trucks would transport the soil and debris for disposal at a Subtitle D landfill. While dewatering would be minimized, groundwater would be encountered during excavation activities and would require

management as nuisance water. The volume of excavated materials, as well as subsequently required clean backfill for site restoration, would be substantial.

4.2 Evaluation of Alternatives

Table 4-1 presents the summary of the evaluation of Alternatives 1 through 4.

The *effectiveness* of a technology refers to its capability of removing the specific items in the volumes required, the degree to which the technology achieves the RAO, and the reliability and performance of the technology over time, including protection of human health and the environment, compliance with ARARs to the extent practical, long-term effectiveness and permanence, reduction in the toxicity, mobility or volume, and short-term effectiveness.

The *ease of implementation* of a technology refers to the availability of commercial services to support it, the constructability of the technology under specific site conditions, and the acceptability of the technology to all parties involved (regulators, public, owner, etc.), including technical feasibility, administrative feasibility, availability of services, support agency acceptance, and community acceptance.

For the *detailed cost analysis* of the alternatives, the expenditures required to complete each measure were estimated in terms of capital costs to complete initial construction activities. Capital costs consist of direct and indirect costs. Direct costs include the cost of construction, equipment, land and site development, treatment, transportation, and disposal. Indirect costs include engineering expenses, license or permit costs, and contingency allowances.

The costs estimated are provided to an accuracy of +50% and –30%. The alternative cost estimates are in 2007 dollars and based on engineering estimates, recent and continual project experience on similar projects, and information published by R.S. Means (2007) *Site Work and Landscape Cost Data* and R.S. Means (2007) *Heavy Construction Cost Data.* Refer to Appendix C for all cost estimate details pertaining to each alternative discussed in the following sections.

4.2.1 Alternative 1: No Action

The no action alternative implies that no removal work would be done at SWMU 14. The site would be left as it currently exists, leaving the soil and debris in place with no exposure barrier. Selection of this alternative does not satisfy the objective of this EE/CA which is to protect human health. This alternative is not desirable because contaminated media would both remain in place and offer little or no protection from exposure to surface soil, subsurface soil, and buried construction debris. There is no work or cost associated with this no action alternative.

4.2.2 Alternative 2: Soil Landfill Cover

This alternative proposes removing the exposure route to potential contaminants in surface and subsurface soil (and exposure to old construction debris) via installation of a soil cover over the entire site.

Alternative 2 satisfies the objective of the NTCRA, which is to mitigate potential human health risk. Implementation difficulty is moderately high considering the size of the site;

however, installation of soil covers is a common and well-refined construction process. The preliminary capital cost to implement the soil cover is approximately $2,699,000 (Appendix C). Including a potential variation in capital cost of -30% to +50% in accordance with EE/CA guidance, the estimated cost would likely range from $1,889,000 to $4,049,000. This total does not include the cost of LUCs and O&M, which would total approximately $627,000 for 30 years (present value cost using 3% discount factor).

The cost of the assumed imported grading material accounts for approximately $1.4 million of the total cost, and may not be necessary pending topographic survey data to evaluate natural grade. Imported grading material is not part of the soil cover system. If the accumulation area concrete pad can remain as-is without demolishment, the cost savings would be approximately $102,000.

4.2.3 Alternative 3: Asphalt (parking lot) Cover

This alternative proposes removing the exposure route to potential contaminants in surface and subsurface soil (and exposure to old construction debris) via installation of an asphalt cover over the entire site.

Alternative 3 satisfies the objective of the NTCRA, which is to mitigate potential human health risk. Similar to Alternative 2, the implementation difficulty of Alternative 3 is moderately high considering the size of the site and the asphalt component; however, installation of parking lots (the asphalt cover) is also a well-refined process and common industry practice. Assuming no imported grading material is necessary (i.e., assuming that natural grade is sufficient for desired post-construction drainage), the preliminary capital cost to implement the asphalt cover is approximately $4,239,000 (Appendix C). Including a potential variation in capital cost of -30% to +50% in accordance with EE/CA guidance, the estimated cost would likely range from $2,967,000 to $6,359,000. This total does not include the cost of LUCs and O&M, which would total approximately $1,074,000 for 30 years (present value cost using 3% discount factor).

The cost of the assumed imported grading material accounts for approximately $293,000 of the total cost, and may not be necessary pending topographic survey data to evaluate natural grade. Any grading material is not considered part of the cover system. If the accumulation area concrete pad can remain as-is without demolishment, the cost savings would be approximately $102,000.

4.2.4 Alternative 4: Excavation and Offsite Disposal

This alternative proposes that the Q-50 Satellite Accumulation Area would be demolished and all soil and debris above the water table would be excavated and disposed offsite. The site would be restored using fill and topsoil and vegetation.

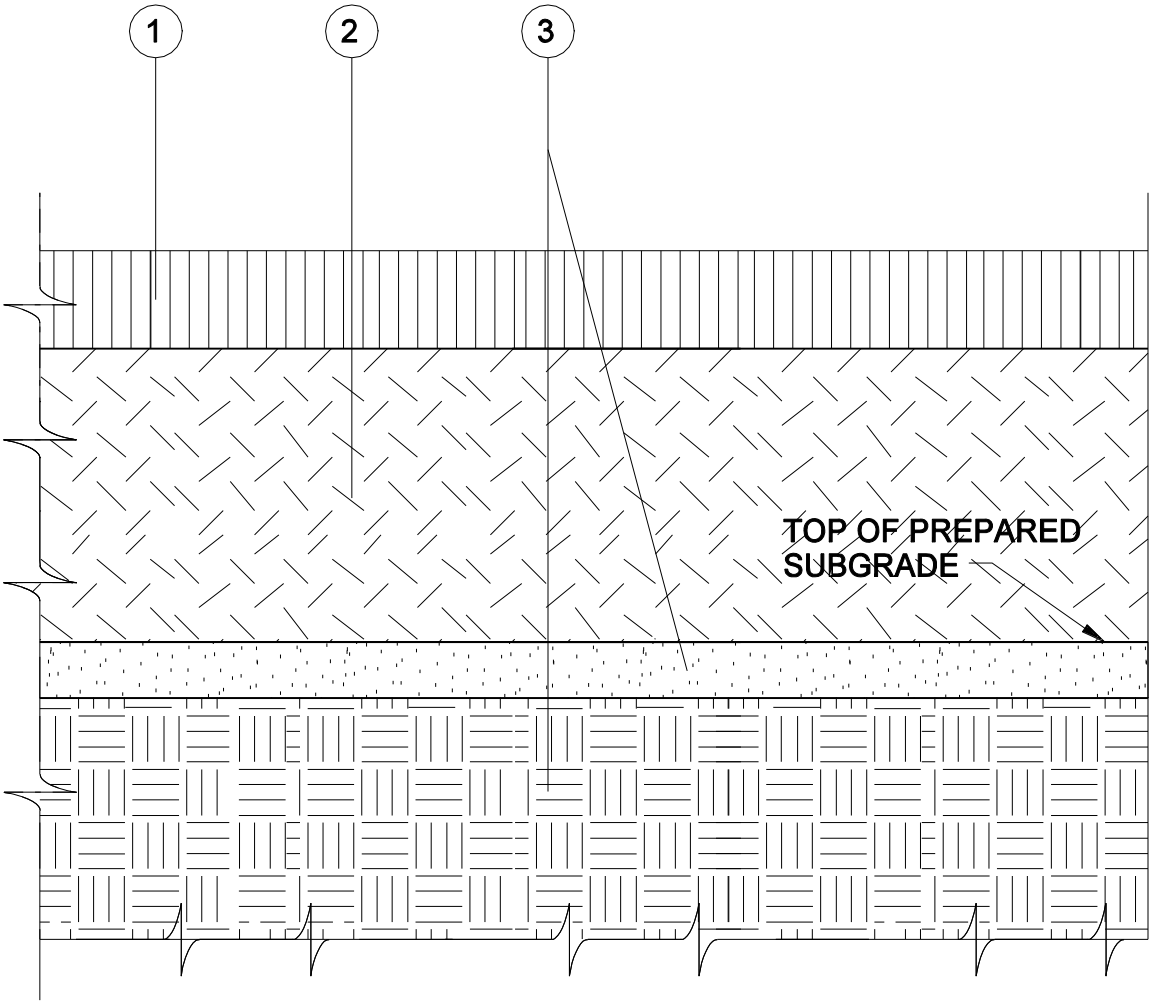
Alternative 4 satisfies the objective of the NTCRA, which is to mitigate potential human health risk. This alternative would prove most difficult to implement as compared to Alternatives 2 and 3. While excavation, transport, and disposal are also common industry practices, the scale of excavation (and required engineering constraints) and filling precludes further consideration of this alternative. Assuming an 8 ft depth to groundwater across the 13.2 acre site, over 170,000 yd^3 (approximately 290,000 tons assuming 1.7 tons/yd^3) of soil and debris (not accounting for heavier debris) would be excavated and

hauled offsite for disposal. The same quantity of backfill would be required to restore the site. Considering only transportation and disposal cost for this quantity of material, the cost would likely exceed $11,000,000.

Alternative 4 is included in the implementability and cost comparison between the alternatives. The high cost of Alternative 4 compared to Alternatives 2 and 3 precludes this removal alternative. Further, the high degree of difficulty to implement Alternative 4, including handling considerable volumes of excavated soil, debris, and fill, as well as the excessive disruption to NSN activities in the vicinity provides reason to dismiss this as a viable alternative.

TABLE 4-1
Evaluation of Removal Alternatives

Alternative	Description	Effectiveness	Ease of Implementation	Cost
Alternative 1 No Action	No removal work performed. Site left “as is.”	Both short- and long-term effectiveness are low. The contaminated soil would remain in place with no barrier. Risk will not change.	Easy Implementation. No action to implement.	No Cost $0
Alternative 2 Soil Cover	Remove exposure route via installation of soil cover consisting of 6” topsoil overlying 18” infiltration layer.	Short-term effectiveness is high. Long-Term Effectiveness is moderate. Barrier would be placed on top of contaminated soil, removing the exposure route. Soil cover would remain in place pending inspections and maintenance.	Moderately Difficult Implementation. A general contractor specializing in earthwork could readily install the soil cover. Only one contractor/equipment mobilization would be necessary.	Capital Cost $2,699,000
Alternative 3 Asphalt Cover (Parking Lot)	Remove exposure route via installation of an asphalt cover (to be a parking lot) consisting of 6” asphalt concrete surface course, overlying 6” aggregate base course, overlying 6” aggregate sub-base course.	Both short- and long-term effectiveness are high. Barrier would be placed on top of contaminated soil, removing the exposure route. Asphalt cover would remain in place and require relatively infrequent maintenance to remain in place.	Moderately Difficult Implementation. A general contractor specializing in earthwork and a subcontractor specializing in pavement could readily install the asphalt cover / parking lot. The asphalt component likely introduces additional mobilization and coordination above Alternative 2, making Alternative 3 more difficult to implement than Alternative 2.	Capital Cost $4,239,000
Alternative 4 Excavation and Offsite Disposal	Remove contaminated soil (i.e., remove risk). Excavate approximately 170,000 yd^3 (approximately 290,000 tons assuming 1.7 tons/yd^3) of soil (not considering weight of commingled construction debris) and haul offsite for disposal. The same quantity of backfill would be required to restore the site.	Both short- and long-term effectiveness are high. Contaminated soil would be removed and replaced with clean backfill. Subsequently, there would be no remaining risk. No long-term maintenance would be required.	Highly Difficult Implementation. Multiple general and specialized contractors could perform the excavation, hauling, backfilling operations, and specialized engineering constraints. Multiple mobilizations of personnel and equipment would be necessary to complete the removal action. Dewatering would likely be required. Vicinity Naval activities would be highly impacted. Lengthy removal completion timeframe.	Capital Cost Greater than $11,000,000 for just transport and disposal (at $38/ton nonhazardous).



SOIL CAP LEGEND

1 6" TOP SOIL FOR VEGETATIVE LAYER

2 18" FILL SOIL FOR INFILTRATION LAYER

3 NATURAL SUBGRADE OR COMPACTED FILL (NOTES 1 AND 2)

NOTES:
1. UP TO 2% SLOPE TO BE PROVIDED BY EITHER NATURAL GRADE OR COMPACTED IMPORTED FILL TO ENHANCE SITE DRAINAGE. TOPOGRAPHIC SURVEY TO BE PERFORMED TO DETERMINE NATURAL GRADE.
2. ASSUMED 8 INCHES OF IMPORTED BACKFILL WOULD BE NECESSARY ACROSS THE ENTIRE 13.2 ACRES TO OBTAIN UP TO 2% SLOPE FOR THIS CONCEPTUAL DESIGN. THE ASSUMED 8 INCHES OF FILL IS NOT PART OF THE SOIL COVER - ONLY FOR GRADING.

Figure 4-1
Typical Soil Cover Section
SWMU 14 EE/CA
Naval Station Norfolk
Norfolk, Virginia

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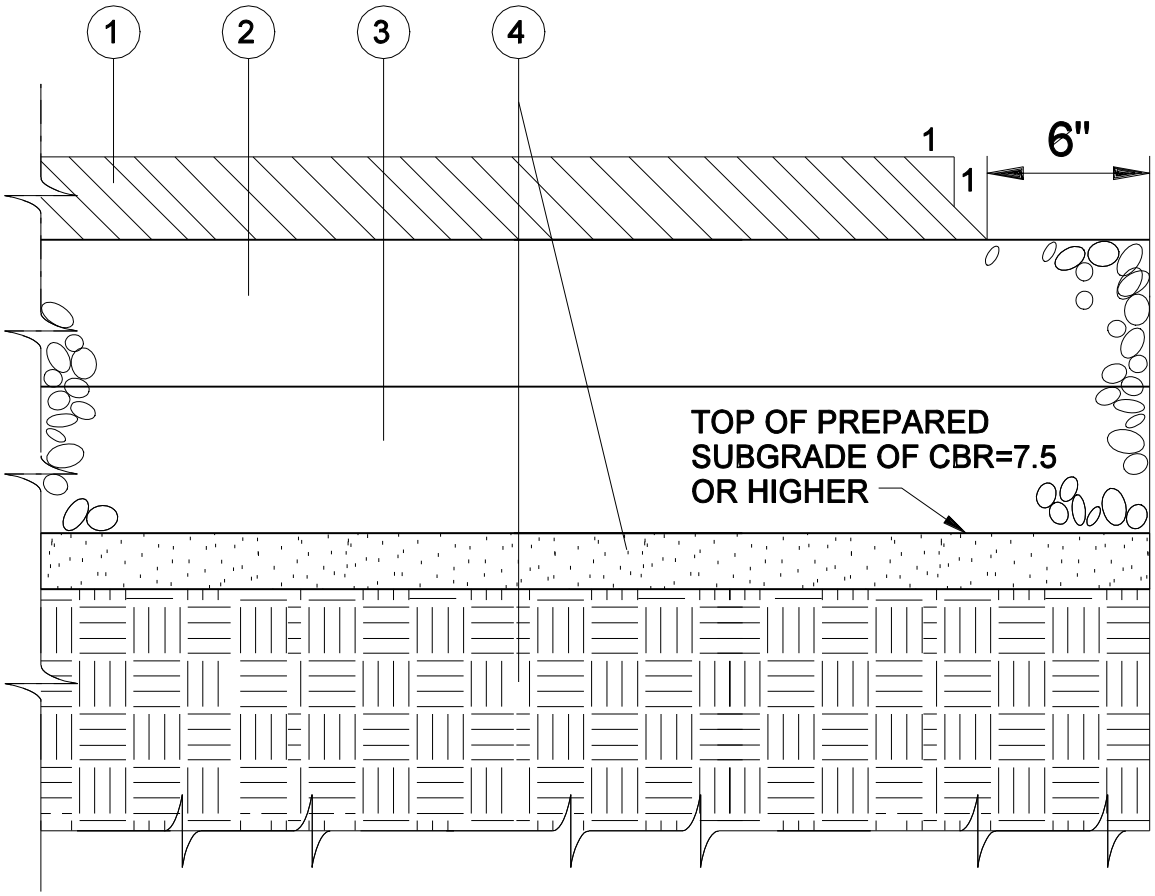

PAVEMENT LEGEND

1. 3" HMA SUPERPAVE 12.5-MM FOR SURFACE COURSE (VDOT DESIGNATION SM-12.5D)
2. 6" GRADED AGGREGATE BASE COURSE (VDOT DESIGNATION 21A)
3. 6" GRADED AGGREGATE SUBBASE COURSE (VA DESIGNATION 21B)
4. NATURAL SUBGRADE OR COMPACTED FILL (NOTES 1 AND 2)

NOTES:
1. NATURAL GRADE OR COMPACTED IMPORTED FILL MAY BE USED TO ENHANCE SITE DRAINAGE. TOPOGRAPHIC SURVEY TO BE PERFORMED TO DETERMINE NATURAL GRADE.
2. ASSUMED 8 INCHES OF IMPORTED BACKFILL WOULD BE NECESSARY ACROSS THE ENTIRE 13.2 ACRES TO OBTAIN A FINAL DESIRED SLOPE FOR DRAINAGE IN THIS CONCEPTUAL DESIGN. THE ASSUMED 8 INCHES OF FILL IS NOT PART OF THE ASPHALT COVER (PARKING LOT) - ONLY FOR GRADING.
3. THE PROPOSED SECTION OF ASPHALT CONCRETE PAVEMENT MAY BE ADJUSTED AS MORE DESIGN INFORMATION IS OBTAINED.

Figure 4-2
Conceptual Asphalt Cover Section
SWMU 14 EE/CA
Naval Station Norfolk
Norfolk, Virginia

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SECTION 5

Comparative Analysis of Removal Action Alternatives

Section 5 expands on the evaluation of the alternatives by providing a comparative analysis to assist the decision-making process by which a removal action will be selected. In Section 4, these alternatives were evaluated according to their effectiveness, ease of implementation, and cost. In this section, the alternatives are directly compared for each of the three criteria.

Levels of effectiveness were assessed based upon the "effectiveness criteria" that would be satisfied by each alternative. The "effectiveness criteria" from USEPA (1993) are as follows:

- Protection of human health;
- Protection of workers during implementation;
- Protection of environment;
- Compliance with ARARs;
- Level of treatment and containment expected; and
- Residual effect concerns.

Levels of implementability were assessed based upon the "implementability criteria" satisfied by each alternative. The "implementability criteria" from the USEPA (1993) are as follows:

1. Construction and operational considerations;
2. Demonstrated performance/useful life;
3. Adaptable to environment conditions;
4. Contributes to remedial performance;
5. Can be implemented in 1 year;
6. Availability of equipment, personnel and services, outside laboratory testing capacity, and offsite treatment and disposal capacity;
7. Permits required;
8. Easements or rights-of-way required;
9. Impact on adjoining property; and
10. Ability to impose institutional controls.

Evaluation of implementability essentially assesses the technical and administrative feasibility of completing each task. The technical feasibility consists of items 1 through 6 above, and the administrative feasibility involves items 7 through 10.

Table 5-1 summarizes the results of the alternative comparative analysis (similar to Table 4-1).

TABLE 5-1
Removal Alternative Comparison

Alternative	Effectiveness	Implementation	Cost
Alternative 1 – No Action	Not Effective	Easy	No cost
Alternative 2 – Soil Cover	Effective	Moderately Difficult	Moderately High
Alternative 3 – Asphalt Cover (Parking Lot)	Effective	Moderately Difficult	High
Alternative 4 – Excavation and Offsite Disposal	Effective	Highly Difficult	Excessive

Referring to Table 5-1:

- Alternative 1, "No Action," is not effective in that it does not accomplish the objective of this NTCRA, which is to mitigate potential human health risk. Although this alternative is easy to implement and there is no cost associated with it, it is not a desirable alternative, because the objective is not met.
- Alternative 2, "Soil Cover," is effective in eliminating potential human health risk by eliminating the exposure pathway with a barrier. It is moderately difficult to implement because of the size of the site, but from a technical standpoint is straight forward. The high cost of Alternative 2 is comparable to the cost of Alternative 3. A soil cover would not enhance the usability of the site (site usability would remain the same). Alternative 2 is not recommended.
- Alternative 3, "Asphalt Cover," is effective in eliminating potential human health risk by eliminating the exposure pathway with a barrier. It is moderately difficult to implement because of the size of the site, but from a technical standpoint is straight forward. The high cost of Alternative 3 is comparable to the cost of Alternative 2. The asphalt cover would be used as a permanent parking lot to alleviate parking congestion for the Navy in this area. Alternative 3 is recommended.
- Alternative 4, "Excavation and Offsite Disposal," is effective in eliminating potential human health risk by removing contaminated soil from the site. However, as discussed in Section 4.2.4, the excessively high cost and degree of difficulty to implement Alternative 4 compared to Alternatives 2 and 3 precludes this removal alternative.

SECTION 6

Recommended Removal Action Alternative

This EE/CA was performed in accordance with current USEPA and Navy guidance documents for a NTCRA under CERCLA. The purpose of this EE/CA was to identify and analyze alternatives to mitigate potential human health risk associated with contaminated soil resulting from past activities at SWMU 14. Four alternatives were identified, evaluated, and ranked.

The comparative analysis of the alternatives included evaluating the effectiveness, implementability, and cost of each. The evaluation of effectiveness included reviewing the protectiveness of the alternative; compliance with ARARs to the extent practical, long-term effectiveness and permanence, reduction in toxicity, mobility or volume, short-term effectiveness, and its ability to meet the removal action objective. Implementability included looking at the technical feasibility, availability, and administrative feasibility of the alternatives. The evaluation of cost included a review of capital costs of each alternative.

Based on the evaluation of and comparative analysis of the alternatives completed in Sections 4 and 5, the recommended removal action is Alternative 3, Asphalt Cover. The selection of this alternative balances the effectiveness of Alternatives 2, 3, and 4 against their implementability and cost. Alternative 3 involves constructing an asphalt cover at SMWU 14. The asphalt cover will serve as a parking lot for NSN, prevent exposure to future receptors, and require LUCs to ensure the site use is restricted to use as a parking area.

SECTION 7

References

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Appendix A
Analytical Data from RI

Table A-1
Groundwater Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-MW01S		NBW14-MW02S		NBW14-MW03S		NBW14-MW04S		NBW14-MW05S		NBW14-MW06S		NBW14-MW07S				NBW14-MW08S		NBW14-MW09S	
Sample ID	NBW14-MW01S-R01		NBW14-MW02S-R01		NBW14-MW03S-R01		NBW14-MW04S-R01		NBW14-MW05S-R01		NBW14-MW06S-R01		NBW14-MW07S-P-R01		NBW14-MW07S-R01		NBW14-MW07S-R02		NBW14-MW08S-R01		NBW14-MW09S-R01	
Sample Date	01/05/00		01/07/00		01/07/00		01/07/00		01/07/00		01/05/00		01/05/00		01/05/00		09/27/00		01/04/00		09/26/00	
Chemical Name																						
Volatile Organic Compounds (UG/L)																						
1,1,1-Trichloroethane	1	U	1	U	1	U	10	U	5	U	1	U	1	U	1	U	1	U	1	U	1	U
1,1,2,2-Tetrachloroethane	1	U	1	U	1	U	10	U	5	U	1	U	1	U	1	U	1	U	1	U	1	U
1,1,2-Trichloroethane	1	U	1	U	1	U	10	U	5	U	1	U	1	U	1	U	1	U	1	U	0.209	J
1,1-Dichloroethane	1	U	0.23	J	7.6		10	U	5	U	1	U	1	U	1	U	1	U	1	U	0.413	J
1,1-Dichloroethene	1	U	1	U	0.14	J	10	U	5	U	1	U	1	U	1	U	0.153	J	1	U	1	U
1,2,4-Trichlorobenzene	1	U	1	U	1	U	10	U	5	U	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dibromo-3-chloropropane	1	U	1	UR	1	UR	10	UR	5	UR	1	UR	1	UR	1	UR	1	U	1	UR	1	U
1,2-Dibromoethane	1	U	1	U	1	U	10	U	5	U	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichlorobenzene	1.3		0.19	J	15		4.3	J	0.88	J	0.15	J	1	U	1	U	1	U	1	U	1.25	B
1,2-Dichloroethane	1	U	1	U	1	U	10	U	5	U	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloropropane	1	U	1	U	1	U	10	U	5	U	1	U	1	U	1	U	1	U	1	U	0.191	J
1,3-Dichlorobenzene	0.29	J	1	U	14		1.6	J	5	U	1	U	1	U	1	U	1	U	1	U	1	U
1,4-Dichlorobenzene	17		1	U	23		8.4	J	5	U	1	U	1	U	1	U	0.202	J	1	U	0.282	J
2-Butanone	5	U	5	UR	5	UR	50	UR	25	UR	5	UR	5	UR	6.1	J	76.3	J	5	UR	5	UR
2-Hexanone	5	U	5	U	5	U	50	U	25	U	5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	5	U	5	U	5	U	29	J	56		5	U	9.9		10		78.2		5	U	3.29	J
Acetone	4.7	J	4.1	J	5	UR	50	UR	25	UR	2.2		11	J	13	J	160	J	5	UR	13.0	J
Benzene	25		0.49	J	0.38	J	1.4	J	5		1.3		0.36	J	0.35	J	1.67		1	U	7.33	
Bromochloromethane	1	U	1	U	1	U	10	U	5	U	1	U	1	U	1	U	1	U	1	U	1	U
Bromodichloromethane	1	U	1	U	1	U	10	U	5	U	1	U	1	U	1	U	1	U	1	U	1	U
Bromoform	1	U	1	U	1	U	10	U	5	U	1	U	1	U	1	U	1	U	1	U	1	U
Bromomethane	1	U	1	U	1	U	10	U	5	U	1	U	1	U	1	U	1	U	1	U	1	U
Carbon disulfide	1	U	1	U	1	U	10	U	5	U	1	U	1	U	0.27	J	1.04		1	U	1	U
Carbon tetrachloride	1	U	1	U	1	U	10	U	5	U	1	U	1	U	1	U	1	U	1	U	1	U
Chlorobenzene	15		1	U	1	U	130		38		0.43	J	1	U	1	U	0.392	J	1	U	2.91	
Chloroethane	1	U	1	U	10		10	U	5	U	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	1	U	1	U	1	U	10	U	5	U	1	U	1	U	1	U	1	U	1	U	1	U
Chloromethane	1	U	1	U	1	U	10	U	5	U	1	U	1	U	1	U	1	U	1	U	1	U
Dibromochloromethane	1	U	1	U	1	U	10	U	5	U	1	U	1	U	1	U	1	U	1	U	1	U
Ethylbenzene	12		0.15	J	1	U	2	J	14		0.2	J	0.2	J	0.2	J	1.2		1	U	0.453	J
Methylene chloride	2	U	2	U	2	U	20	U	10	U	0.32	J	2	U	2	U	0.627	B	2	U	0.919	J
Styrene	1	U	1	U	1	U	10	U	5	U	1	U	1	U	1	U	1	U	1	U	1	U
Tetrachloroethene	1	U	1	U	1	U	10	U	5	U	1	U	1	U	1	U	1	U	1	U	1	U
Toluene	2		1.6		1	U	1.3	J	48		0.4	J	1.4		1.3		7.01		1	U	0.648	J
Trichloroethene	1	U	1	U	0.21	J	10	U	5	U	1	U	1	U	1	U	0.446	B	1	U	1	U
Vinyl chloride	1	U	1	U	17		10	U	1.3	J	0.2	J	0.32	J	0.31	J	1	U	1	U	0.337	J
Xylene, total	24		0.4	J	1	U	2.1	J	86		0.95	J	1.7		1.6		9.61		1	U	1.45	
cis-1,2-Dichloroethene	0.32	J	1	U	3.8		10	U	1.8	J	0.21	J	0.37	J	0.34	J	2.07		1	U	0.561	J
cis-1,3-Dichloropropene	1	U	1	U	1	U	10	U	5	U	1	U	1	U	1	U	1	U	1	U	1	U
trans-1,2-Dichloroethene	1	U	1	U	7.6		10	U	5	U	1	U	1	U	1	U	0.151	J	1	U	1	U
trans-1,3-Dichloropropene	1	U	1	U	1	U	10	U	5	U	1	U	1	U	1	U	1	U	1	U	1	U
Semi-volatile Organic Compounds (UG/L)																						
1,1-Biphenyl	NA		NA		NA		NA		NA		NA		NA		NA		220	U	NA		10	U
1,2,4-Trichlorobenzene	10	U	10	U	10	U	10	U	10	U	10	U	100	U	100	U	NA		10	U	NA	
2,2'-Oxybis(1-chloropropane)	10	U	10	U	10	U	10	U	10	U	10	U	100	U	100	U	220	U	10	U	10	U
2,4,5-Trichlorophenol	25	U	25	U	25	U	2.7	J	25	U	25	U	250	U	250	U	540	U	25	U	25	U
2,4,6-Trichlorophenol	10	U	10	U	10	U	4.1	J	10	U	10	U	100	U	100	U	220	U	10	U	10	U
2,4-Dichlorophenol	10	U	10	U	10	U	5.5	J	19		4.4	J	100	U	100	U	220	U	10	U	10	U

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Groundwater Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-MW01S	NBW14-MW02S	NBW14-MW03S	NBW14-MW04S	NBW14-MW05S	NBW14-MW06S	NBW14-MW07S			NBW14-MW08S	NBW14-MW09S
Sample ID	NBW14-MW01S-R01	NBW14-MW02S-R01	NBW14-MW03S-R01	NBW14-MW04S-R01	NBW14-MW05S-R01	NBW14-MW06S-R01	NBW14-MW07S-P-R01	NBW14-MW07S-R01	NBW14-MW07S-R02	NBW14-MW08S-R01	NBW14-MW09S-R01
Sample Date	01/05/00	01/07/00	01/07/00	01/07/00	01/07/00	01/05/00	01/05/00	01/05/00	09/27/00	01/04/00	09/26/00
Chemical Name											
2,4-Dimethylphenol	6.1 J	10 U	7.5 J	3.8 J	65	52	390	390	290	10 U	27
2,4-Dinitrophenol	25 U	25 U	25 U	25 U	25 U	25 U	250 U	250 U	540 U	25 U	25 U
2,4-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
2,6-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
2-Chloronaphthalene	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
2-Chlorophenol	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
2-Methylnaphthalene	130	1.1 J	48	41	25	3.2 J	100 U	100 U	220 U	10 U	1 J
2-Methylphenol	2.1 J	10 U	2.8 J	10 U	260	80	220	220	130 J	10 U	2 J
2-Nitroaniline	25 U	25 U	25 U	25 U	25 U	25 U	250 U	250 U	540 U	25 U	25 U
2-Nitrophenol	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
3,3'-Dichlorobenzidine	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
3-Nitroaniline	25 U	25 U	25 U	25 U	25 U	25 U	250 U	250 U	540 U	25 U	25 U
4,6-Dinitro-2-methylphenol	25 U	25 U	25 U	25 U	25 U	25 U	250 U	250 U	540 U	25 U	25 U
4-Bromophenyl-phenylether	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
4-Chloro-3-methylphenol	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
4-Chloroaniline	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
4-Chlorophenyl-phenylether	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
4-Methylphenol	10 U	1.3 J	2 J	11	9.8 J	8.7 J	2,500	2,600	1,700	10 U	48
4-Nitroaniline	25 U	25 U	25 U	25 U	25 U	25 U	250 U	250 U	540 UJ	25 U	25 U
4-Nitrophenol	25 U	25 U	25 U	25 U	25 U	25 U	250 U	250 U	540 U	25 U	25 U
Acenaphthene	110	2.9 J	15	5.2 J	4.1 J	2.9 J	100 U	100 U	220 U	10 U	3 J
Acenaphthylene	1.6 J	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
Acetophenone	NA	NA	NA	NA	NA	NA	NA	NA	220 U	NA	10 U
Anthracene	4.2 J	10 U	10 U	10 U	1.9 J	1 J	100 U	100 U	220 U	10 U	10 U
Atrazine	NA	NA	NA	NA	NA	NA	NA	NA	220 U	NA	10 U
Benzaldehyde	NA	NA	NA	NA	NA	NA	NA	NA	220 U	NA	10 U
Benzo(a)anthracene	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
Benzo(a)pyrene	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
Benzo(b)fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
Benzo(g,h,i)perylene	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
Benzo(k)fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
Butylbenzylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
Caprolactam	NA	NA	NA	NA	NA	NA	NA	NA	220 U	NA	10 U
Carbazole	50	10 U	5.1 J	2.9 J	1.5 J	10 U	100 U	100 U	220 U	10 U	10 U
Chrysene	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
Di-n-butylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
Di-n-octylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
Dibenzofuran	52	10 U	5.8 J	2.8 J	1.4 J	1 J	100 U	100 U	220 U	10 U	1 J
Diethylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
Dimethyl phthalate	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
Fluoranthene	2.1 J	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
Fluorene	48	1.1 J	6.4 J	2.7 J	2.3 J	1.1 J	100 U	100 U	220 U	10 U	10 U
Hexachlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
Hexachlorobutadiene	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
Hexachlorocyclopentadiene	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
Hexachloroethane	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
Isophorone	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
Naphthalene	550	3.5 J	130	66	25	7.8 J	15 J	15 J	220 U	10 U	6 J
Nitrobenzene	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U

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SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-MW01S	NBW14-MW02S	NBW14-MW03S	NBW14-MW04S	NBW14-MW05S	NBW14-MW06S	NBW14-MW07S			NBW14-MW08S	NBW14-MW09S
Sample ID	NBW14-MW01S-R01	NBW14-MW02S-R01	NBW14-MW03S-R01	NBW14-MW04S-R01	NBW14-MW05S-R01	NBW14-MW06S-R01	NBW14-MW07S-P-R01	NBW14-MW07S-R01	NBW14-MW07S-R02	NBW14-MW08S-R01	NBW14-MW09S-R01
Sample Date	01/05/00	01/07/00	01/07/00	01/07/00	01/07/00	01/05/00	01/05/00	01/05/00	09/27/00	01/04/00	09/26/00
Chemical Name											
Pentachlorophenol	25 U	25 U	25 U	14 J	25 U	25 U	250 U	250 U	540 U	25 U	25 U
Phenanthrene	41	1.7 J	5.7 J	3.3 J	2 J	1.9 J	100 U	100 U	220 U	10 U	10 U
Phenol	1.5 J	1.1 J	10 U	10 U	49	290	880	920	400	10 U	11
Pyrene	1 J	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
bis(2-Chloroethoxy)methane	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
bis(2-Chloroethyl)ether	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	10 U	10 U	10 U	2.9 J	10 U	10 U	100 U	100 U	220 U	10 U	1 B
n-Nitroso-di-n-propylamine	10 U	10 U	10 U	10 U	10 U	10 U	100 U	100 U	220 U	10 U	10 U
n-Nitrosodiphenylamine	12	10 U	10 U	1.1 J	10 U	10 U	100 U	100 U	220 U	10 U	1 J
Pesticide/Polychlorinated Biphenyls (UG/L)											
4,4'-DDD	0.15	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 UJ
4,4'-DDE	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.028 J	0.1 U	0.1 UJ
4,4'-DDT	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 UJ
Aldrin	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.051 UJ	0.05 U	0.05 UJ
Aroclor-1016	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 UJ
Aroclor-1221	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2.1 UJ	2 U	2 UJ
Aroclor-1232	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 UJ
Aroclor-1242	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 UJ
Aroclor-1248	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 UJ
Aroclor-1254	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 UJ
Aroclor-1260	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 UJ
Dieldrin	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 UJ
Endosulfan I	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.051 UJ	0.05 U	0.05 UJ
Endosulfan II	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 UJ
Endosulfan sulfate	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 UJ
Endrin	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 UJ
Endrin aldehyde	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 UJ
Endrin ketone	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 UJ
Heptachlor	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.051 UJ	0.05 U	0.05 UJ
Heptachlor epoxide	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.051 UJ	0.05 U	0.05 UJ
Methoxychlor	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.51 UJ	0.5 U	0.5 UJ
Toxaphene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.1 UJ	5 U	5 UJ
alpha-BHC	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.051 UJ	0.05 U	0.05 UJ
alpha-Chlordane	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.051 UJ	0.05 U	0.05 UJ
beta-BHC	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.051 UJ	0.05 U	0.05 UJ
delta-BHC	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.051 UJ	0.05 U	0.05 UJ
gamma-BHC (Lindane)	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.051 UJ	0.05 U	0.05 UJ
gamma-Chlordane	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.051 UJ	0.05 U	0.05 UJ
Total Metals (UG/L)											
Aluminum	38.6 B	55.6 B	48 B	96.2 B	92.4 B	42.6 B	129 B	117 B	84.9 B	14.8 U	62.3 J
Antimony	1.4 U	1.4 U	1.4 U	1.6 J	1.4 U	1.4 U	1.4 U	1.4 U	1.9 U	1.6 J	1.9 U
Arsenic	3.8 J	3.5 J	2.9 U	2.9 U	21.2	14	27.1	23.2	18.4	2.9 U	13.3
Barium	160 J	1,510	2,060	941	94.4 J	27 J	80.9 J	76.8 J	135 J	19.8 J	22.2 J
Beryllium	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.12 B	0.15 U	0.1 U
Cadmium	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	0.3 U	3.4 U	0.3 U
Calcium	26,700	84,000	57,000	136,000	14,500	22,900	74,200	70,800	33,100	172,000	11,100
Chromium	2.8 B	2.2 U	3.8 B	2.2 U	5 B	2.2 U	2.2 U	2.2 U	2.8 L	2.2 U	1.2 L
Cobalt	2.9 U	2.9 U	2.9 U	3.7 B	2.9 U	2.9 U	2.9 U	2.9 U	2.3 B	2.9 U	0.95 B
Copper	1.2 L	1.2 L	0.8 UL	1.5 L	4.1 L	1.8 L	3.3 L	1.6 L	1.2 U	0.8 UL	2.6 J

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Sample ID	NBW14-MW01S-R01	NBW14-MW02S-R01	NBW14-MW03S-R01	NBW14-MW04S-R01	NBW14-MW05S-R01	NBW14-MW06S-R01	NBW14-MW07S-P-R01	NBW14-MW07S-R01	NBW14-MW07S-R02	NBW14-MW08S-R01	NBW14-MW09S-R01
Sample Date	01/05/00	01/07/00	01/07/00	01/07/00	01/07/00	01/05/00	01/05/00	01/05/00	09/27/00	01/04/00	09/26/00
Chemical Name											
Cyanide	10 U	10 U	10 U	10 U	12	11	145	147	136	10 U	45.5
Iron	7,950	18,400	18,900	38,300	329	209	215	182	114	4.7 B	109
Lead	1.6 U	2.9 B	1.6 U	1.6 U	13.2	1.6 U	1.9 B	1.9 B	2 U	1.6 U	2 U
Magnesium	50,500	236,000	266,000	331,000	27,500	10,000	585 J	580 J	1,070 J	28,000	22,000
Manganese	59.1	480	691	842	20	8.2 J	3 B	2.5 B	2.5 J	78.3	15.9
Mercury	0.04 B	0.024 U	0.024 U	0.028 B	0.025 B	0.058 B	0.043 B	0.024 U	0.1 U	0.024 U	0.1 U
Nickel	8.8 J	6.9 U	6.9 U	6.9 U	9.8 J	6.9 U	26.3 J	30.8 J	25.2 J	6.9 U	7 J
Potassium	74,700	164,000	192,000	183,000	134,000	60,900	109,000	103,000	217,000 J	11,700	104,000 J
Selenium	3 U	3 U	3 U	3 U	3 U	3.1 J	5.7	4.4 J	5 U	3 U	5 U
Silver	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	0.6 U	2.4 U	0.6 U
Sodium	710,000	3,870,000	4,600,000	4,490,000	1,410,000	731,000	1,710,000	1,650,000	2,080,000	67,400	657,000
Thallium	3.8 U	7.5 J	9.3 J	6.2 J	3.8 U	4.9 J	3.9 J	5.1 J	4.9 U	5.2 J	4.9 U
Vanadium	4.2 B	3.2 B	4.4 B	4.3 B	72.4	11.8 B	81.2	81	79.9	2.1 U	2.8 B
Zinc	9.7 B	34.8 B	10.8 B	80.8	13.6 B	16.7 B	19.1 B	10 B	0.9 UL	6.5 B	0.9 UL
Dissolved Metals (UG/L)											
Aluminum	21.7 B	21.6 B	25 B	15.3 B	41.7 B	45.2 B	97 B	91.8 B	126 B	28.7 B	60.5 B
Antimony	1.4 U	2 J	1.4 U	1.4 U	2.6 J	3.4 J	2.8 J	2 J	2.9 L	1.4 U	3.8 L
Arsenic	6 J	2.9 J	2.9 U	2.9 U	21.2	11.6	24.2	23.2	22.5 B	4.4 J	15.8
Barium	158 J	1,670	2,090	945	92.8 J	24.8 J	79.7 J	75.1 J	117 J	20.5 J	24 J
Beryllium	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.14 B	0.15 U	0.1 U
Cadmium	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	0.3 U	3.4 U	0.3 U
Calcium	25,800	81,800	55,400	138,000	14,200	20,500	75,400	70,500	27,800	175,000	12,000
Chromium	2.5 B	2.2 U	3.6 B	2.7 B	4.3 B	2.2 U	2.2 B	3.1 B	3.5 B	2.2 U	3.3 B
Cobalt	2.9 U	4.3 B	2.9 U	3.7 B	2.9 U	2.9 U	2.9 U	5.4 B	2.4 B	2.9 U	0.91 B
Copper	0.8 UL	0.8 UL	2.4 L	0.8 UL	1.6 L	23.2 L	5.3 L	6.6 L	1.9 J	0.8 U	5.2 J
Cyanide	NA	NA	NA	NA	NA	NA	NA	NA	124 L	NA	50 L
Iron	7,480	22,000	13,700	35,100	269	153	135	135	199	40.6 B	113
Lead	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	2 U	1.6 U	2 U
Magnesium	50,100	220,000	252,000	371,000	27,900	9,760	619 J	566 J	975 J	29,000	22,800
Manganese	55.9	514	595	864	19.3	8.6 J	4.1 B	3.9 B	3.5 B	78.1	16.5
Mercury	0.024 U	0.024 U	0.024 U	0.047 B	0.024 U	0.035 B	0.024 U	0.043 B	0.1 J	0.04 B	0.1 U
Nickel	6.9 U	6.9 U	6.9 U	6.9 U	8.2 J	7.9 J	27.7 J	32.5 J	25 J	6.9 U	11.5 J
Potassium	74,700	167,000	184,000	201,000	130,000	57,000	106,000	101,000	207,000 J	11,700	112,000 J
Selenium	3 U	3 U	3 U	6 U	3 U	3 U	3.2 J	4.6 J	5 U	3 U	5 U
Silver	2.4 U	2.4 U	2.9 B	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	0.6 U	2.4 U	0.6 U
Sodium	670,000	3,720,000	4,430,000	4,880,000	1,410,000	696,000	1,720,000	1,650,000	1,870,000	68,000	665,000
Thallium	4.8 J	9.4 J	5.7 J	8.8 J	6.7 J	5.8 J	5.9 J	4.4 J	4.9 U	5.9 J	4.9 U
Vanadium	3.2 B	5.1 B	2.1 U	6.6 B	50.5	8.4 B	81.9	75	79.1	2.1 U	3.1 J
Zinc	8.3 B	6.1 B	5.2 B	5.3 B	13 B	12.9 B	10.3 B	7 B	2.7 L	2.4 B	39.7

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Table A-1
Groundwater Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-MW11S		NBW14-MW12S		NBW14-MW13S		NBW14-MW13S		NBW14-MW14S		NBW14-MW15S		NBW14-MW16S		NBW14-MW16S		NBW14-MW17S		NBW14-MW18S		NBW14-MW19S	
Sample ID	NBW14-MW11S-R01		NBW14-MW12S-R01		NBW14-MW13S-P-R01		NBW14-MW13S-R01		NBW14-MW14S-R01		NBW14-MW15S-R01		NBW14-MW16S-P-R01		NBW14-MW16S-R01		NBW14-MW17S-R01		NBW14-MW18S-R01		NBW14-MW19S-R01	
Sample Date	09/27/00		09/27/00		09/26/00		09/26/00		09/27/00		09/27/00		08/24/01		08/24/01		08/24/01		08/24/01		08/24/01	
Chemical Name																						
Volatile Organic Compounds (UG/L)																						
1,1,1-Trichloroethane	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	1	U	1	U
1,1,2,2-Tetrachloroethane	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	1	U	1	U
1,1,2-Trichloroethane	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethane	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	0.3	J	1	U
1,1-Dichloroethene	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	1	U	1	U
1,2,4-Trichlorobenzene	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	1	U	0.2	B
1,2-Dibromo-3-chloropropane	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dibromoethane	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichlorobenzene	1	U	1	U	1.05		1.13		1.46	J	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloroethane	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloropropane	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	1	U	1	U
1,3-Dichlorobenzene	1	U	1	U	1	U	1	U	0.246	J	1	U	1	U	1	U	1	U	1	U	1	U
1,4-Dichlorobenzene	1	U	1	U	0.269	J	0.181	J	0.669	J	1	U	1	U	1	U	1	U	1	U	1	U
2-Butanone	5	UR	5	UR	5	UR	5	UR	10	UR	5	UR	5	UR	5	UR	5	UR	5	UR	5	UR
2-Hexanone	5	U	5	U	5	U	5	U	10	U	5	U	5	U	5	U	5	U	5	UR	5	U
4-Methyl-2-pentanone	5	U	5	U	5	U	5	U	10	U	5	U	5	U	5	U	5	U	5	U	5	U
Acetone	8.19	J	16.7	J	26.3	J	32.9	J	17.5	J	17.1	J	5	UR	5	UR	5	UR	5	UR	5	UR
Benzene	0.928	J	0.167	J	7.41		6.54		1.88	J	0.979	J	1	U	1	U	1	U	1	U	1	U
Bromochloromethane	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	1	U	1	U
Bromodichloromethane	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	1	U	1	U
Bromoform	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	1	U	1	U
Bromomethane	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	1	U	1	U
Carbon disulfide	1	U	0.0944	B	1	U	1	U	2	U	0.129	B	1	U	1	U	1	U	1	U	1	U
Carbon tetrachloride	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	1	U	1	U
Chlorobenzene	1	U	0.238	J	2.48		1.99		34.8		1	U	1	U	1	U	1	U	3		1	U
Chloroethane	1	U	1	U	1.02		1.01		2	U	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	1	U	1	U	1	U	1	U	2	U	1	U	1		1		3		0.8	J	4	
Chloromethane	2.17		1	U	1	U	1	U	2	U	1	U	1	U	0.2	J	1	U	1	U	0.2	J
Dibromochloromethane	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	1	U	1	U
Ethylbenzene	1	U	1	U	0.236	J	0.251	J	0.782	J	2.65		1	U	1	U	1	U	1	U	1	U
Methylene chloride	2	U	2	U	2	U	2	U	1.15	B	2	U	2	U	2	U	1	B	2	U	2	U
Styrene	1	U	1	U	1	U	1	U	0.329	J	1	U	1	U	1	U	1	U	1	U	1	U
Tetrachloroethene	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	1	U	1	U
Toluene	1	U	1	U	0.283	J	0.228	J	0.31	B	3.31		1	U	1	U	1	U	1	U	1	U
Trichloroethene	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	0.4	J	1	U	1	U
Vinyl chloride	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	1	U	1	U
Xylene, total	0.122	J	1	U	2.93		3.15		0.998	J	7.88		1	U	1	U	1	U	1	U	1	U
cis-1,2-Dichloroethene	1	U	1	U	1	U	0.136	B	2	U	1	U	0.2	J	0.2	J	1	U	1	U	1	U
cis-1,3-Dichloropropene	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	1	U	1	U
trans-1,2-Dichloroethene	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	1	U	1	U
trans-1,3-Dichloropropene	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	1	U	1	U
Semi-volatile Organic Compounds (UG/L)																						
1,1-Biphenyl	10	U	10	U	10	U	10	U	10	U	34		11	U	11	U	10	U	10	U	11	U
1,2,4-Trichlorobenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,2'-Oxybis(1-chloropropane)	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	10	U	10	U	11	U
2,4,5-Trichlorophenol	25	U	25	U	25	U	25	U	26	U	25	U	27	U	28	U	25	U	25	U	28	U
2,4,6-Trichlorophenol	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	10	U	10	U	11	U
2,4-Dichlorophenol	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	10	U	10	U	11	U

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SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-MW11S	NBW14-MW12S	NBW14-MW13S		NBW14-MW14S	NBW14-MW15S	NBW14-MW16S		NBW14-MW17S	NBW14-MW18S	NBW14-MW19S
Sample ID	NBW14-MW11S-R01	NBW14-MW12S-R01	NBW14-MW13S-P-R01	NBW14-MW13S-R01	NBW14-MW14S-R01	NBW14-MW15S-R01	NBW14-MW16S-P-R01	NBW14-MW16S-R01	NBW14-MW17S-R01	NBW14-MW18S-R01	NBW14-MW19S-R01
Sample Date	09/27/00	09/27/00	09/26/00	09/26/00	09/27/00	09/27/00	08/24/01	08/24/01	08/24/01	08/24/01	08/24/01
Chemical Name											
2,4-Dimethylphenol	10 U	10 U	10 U	10 U	10 U	82 J	11 U	11 U	10 U	10 U	11 U
2,4-Dinitrophenol	25 UJ	25 UJ	25 UJ	25 UJ	26 UJ	25 UJ	27 U	28 UJ	25 UJ	25 UJ	28 UJ
2,4-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U	10 U	11 UJ	11 U	10 U	10 U	11 U
2,6-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
2-Chloronaphthalene	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
2-Chlorophenol	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
2-Methylnaphthalene	10 U	10 U	39	32	18	120 J	11 U	11 U	10 U	10 U	11 U
2-Methylphenol	10 U	10 U	10 U	10 U	10 U	38	11 U	11 U	10 U	10 U	11 U
2-Nitroaniline	25 U	25 U	25 U	25 U	26 U	25 U	27 U	28 U	25 U	25 U	28 U
2-Nitrophenol	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
3,3'-Dichlorobenzidine	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
3-Nitroaniline	25 U	25 U	25 U	25 U	26 U	25 U	27 U	28 U	25 U	25 U	28 U
4,6-Dinitro-2-methylphenol	25 U	25 U	25 U	25 U	26 U	25 U	27 UJ	28 UJ	25 UJ	25 UJ	28 UJ
4-Bromophenyl-phenylether	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
4-Chloro-3-methylphenol	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
4-Chloroaniline	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
4-Chlorophenyl-phenylether	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
4-Methylphenol	4 J	10 U	10 U	1 J	10 U	90 J	11 U	11 U	10 U	10 U	11 U
4-Nitroaniline	25 U	25 U	25 U	25 U	26 U	25 U	27 U	28 U	25 U	25 U	28 U
4-Nitrophenol	25 U	25 U	25 U	25 U	26 U	25 U	27 U	28 U	25 U	25 U	28 U
Acenaphthene	1 J	10 U	39	41	58	220 J	11 U	11 U	10 U	10 U	11 U
Acenaphthylene	10 U	10 U	10 U	1 J	1 J	11	11 U	11 U	10 U	10 U	11 U
Acetophenone	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
Anthracene	10 U	10 U	2 J	2 J	3 J	13	11 U	11 U	10 U	10 U	11 U
Atrazine	10 U	10 U	10 U	10 U	10 U	10 U	11 UJ	11 UJ	10 UJ	10 UJ	11 UJ
Benzaldehyde	10 U	10 U	10 U	1 J	10 U	2 J	11 U	11 U	10 U	10 U	11 U
Benzo(a)anthracene	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
Benzo(a)pyrene	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
Benzo(b)fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
Benzo(g,h,i)perylene	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
Benzo(k)fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
Butylbenzylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
Caprolactam	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
Carbazole	10 U	10 U	8 J	5 J	4 J	86 J	11 U	11 U	10 U	10 U	11 U
Chrysene	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
Di-n-butylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
Di-n-octylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
Dibenzofuran	10 U	10 U	13	17	21	90 J	11 U	11 U	10 U	10 U	11 U
Diethylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
Dimethyl phthalate	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	3 J	10 U	11 U
Fluoranthene	10 U	10 U	1 J	10 U	2 J	17	11 U	11 U	10 U	10 U	11 U
Fluorene	10 U	10 U	15	15	19	91 J	11 U	11 U	10 U	10 U	11 U
Hexachlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
Hexachlorobutadiene	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
Hexachlorocyclopentadiene	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
Hexachloroethane	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
Isophorone	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U
Naphthalene	1 J	10 U	62	49	14	1,900	11 U	11 U	10 U	10 U	11 U
Nitrobenzene	10 U	10 U	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U	11 U

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SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-MW11S		NBW14-MW12S		NBW14-MW13S		NBW14-MW13S		NBW14-MW14S		NBW14-MW15S		NBW14-MW16S		NBW14-MW16S		NBW14-MW17S		NBW14-MW18S		NBW14-MW19S	
Sample ID	NBW14-MW11S-R01		NBW14-MW12S-R01		NBW14-MW13S-P-R01		NBW14-MW13S-R01		NBW14-MW14S-R01		NBW14-MW15S-R01		NBW14-MW16S-P-R01		NBW14-MW16S-R01		NBW14-MW17S-R01		NBW14-MW18S-R01		NBW14-MW19S-R01	
Sample Date	09/27/00		09/27/00		09/26/00		09/26/00		09/27/00		09/27/00		08/24/01		08/24/01		08/24/01		08/24/01		08/24/01	
Chemical Name																						
Pentachlorophenol	25	U	25	U	25	U	25	U	26	U	25	U	27	U	28	U	25	U	25	U	28	U
Phenanthrene	2	J	10	U	12		11		13		140	J	11	U	11	U	10	U	10	U	11	U
Phenol	10	U	10	U	10	U	10	U	10	U	51		11	U	11	U	10	U	10	U	11	U
Pyrene	10	U	10	U	10	U	10	U	10	U	10		11	U	11	U	10	U	10	U	11	U
bis(2-Chloroethoxy)methane	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	10	U	10	U	11	U
bis(2-Chloroethyl)ether	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	10	U	10	U	11	U
bis(2-Ethylhexyl)phthalate	10	U	2	B	1	B	2	B	10	U	10	U	11	U	11	U	10	U	10	U	11	U
n-Nitroso-di-n-propylamine	10	U	10	U	10	U	10	U	10	U	10	U	11	U	11	U	10	U	10	U	11	U
n-Nitrosodiphenylamine	10	U	10	U	4	J	10	U	10	U	10	U	11	U	11	U	10	U	10	U	11	U
Pesticide/Polychlorinated Biphenyls (UG/L)																						
4,4'-DDD	0.1	UJ	0.1	U	0.1	U	0.1	UJ	0.1	UJ	0.1	UJ	0.11	UL	0.12	U	0.11	U	0.11	U	0.11	U
4,4'-DDE	0.1	UJ	0.1	U	0.1	U	0.1	UJ	0.1	UJ	0.1	UJ	0.11	UL	0.12	U	0.11	U	0.11	U	0.11	U
4,4'-DDT	0.1	UJ	0.1	U	0.1	U	0.1	UJ	0.1	UJ	0.018	L	0.11	UL	0.12	U	0.11	U	0.11	U	0.11	U
Aldrin	0.05	UJ	0.05	U	0.05	U	0.05	UJ	0.05	UJ	0.0062	L	0.053	UL	0.059	U	0.056	U	0.053	U	0.056	U
Aroclor-1016	1	UJ	1	U	1	U	1	UJ	1	UJ	1	UJ	1.1	UL	1.2	U	1.1	U	1.1	U	1.1	U
Aroclor-1221	2	UJ	2	U	2	U	2	UJ	2	UJ	2	UJ	2.1	UL	2.4	U	2.2	U	2.1	U	2.2	U
Aroclor-1232	1	UJ	1	U	1	U	1	UJ	1	UJ	1	UJ	1.1	UL	1.2	U	1.1	U	1.1	U	1.1	U
Aroclor-1242	1	UJ	1	U	1	U	1	UJ	1	UJ	1	UJ	1.1	UL	1.2	U	1.1	U	1.1	U	1.1	U
Aroclor-1248	1	UJ	1	U	1	U	1	UJ	1	UJ	1	UJ	1.1	UL	1.2	U	1.1	U	1.1	U	1.1	U
Aroclor-1254	1	UJ	1	U	1	U	1	UJ	1	UJ	1	UJ	1.1	UL	1.2	U	1.1	U	1.1	U	1.1	U
Aroclor-1260	1	UJ	1	U	1	U	1	UJ	1	UJ	1	UJ	1.1	UL	1.2	U	1.1	U	1.1	U	1.1	U
Dieldrin	0.1	UJ	0.1	U	0.1	U	0.1	UJ	0.1	UJ	0.0053	L	0.11	UL	0.12	U	0.11	U	0.11	U	0.11	U
Endosulfan I	0.05	UJ	0.05	U	0.05	U	0.05	UJ	0.05	UJ	0.0034	L	0.053	UL	0.059	U	0.056	U	0.053	U	0.056	U
Endosulfan II	0.1	UJ	0.1	U	0.1	U	0.1	UJ	0.1	UJ	0.1	UJ	0.11	UL	0.12	U	0.11	U	0.11	U	0.11	U
Endosulfan sulfate	0.1	UJ	0.1	U	0.1	U	0.1	UJ	0.1	UJ	0.0088	L	0.11	UL	0.12	U	0.11	U	0.11	U	0.11	U
Endrin	0.1	UJ	0.1	U	0.1	U	0.1	UJ	0.1	UJ	0.1	UJ	0.11	UL	0.12	U	0.11	U	0.11	U	0.11	U
Endrin aldehyde	0.1	UJ	0.1	U	0.1	U	0.1	UJ	0.1	UJ	0.0089	L	0.11	UL	0.12	U	0.11	U	0.11	U	0.11	U
Endrin ketone	0.1	UJ	0.1	U	0.1	U	0.1	UJ	0.1	UJ	0.1	UJ	0.11	UL	0.12	U	0.11	U	0.11	U	0.11	U
Heptachlor	0.05	UJ	0.05	U	0.05	U	0.05	UJ	0.05	UJ	0.05	UJ	0.053	UL	0.059	U	0.056	U	0.053	U	0.056	U
Heptachlor epoxide	0.05	UJ	0.012	J	0.05	U	0.05	UJ	0.05	UJ	0.05	UJ	0.053	UL	0.059	U	0.056	U	0.053	U	0.056	U
Methoxychlor	0.5	UJ	0.5	U	0.5	U	0.5	UJ	0.5	UJ	0.5	UJ	0.53	UL	0.59	U	0.56	U	0.53	U	0.56	U
Toxaphene	5	UJ	5	U	5	U	5	UJ	5	UJ	5	UJ	5.3	UL	5.9	U	5.6	U	5.3	U	5.6	U
alpha-BHC	0.05	UJ	0.05	U	0.05	U	0.05	UJ	0.05	UJ	0.05	UJ	0.053	UL	0.059	U	0.056	U	0.053	U	0.056	U
alpha-Chlordane	0.05	UJ	0.05	U	0.05	U	0.05	UJ	0.05	UJ	0.05	UJ	0.053	UL	0.059	U	0.056	U	0.053	U	0.056	U
beta-BHC	0.05	UJ	0.05	U	0.05	U	0.05	UJ	0.05	UJ	0.05	UJ	0.053	UL	0.059	U	0.056	U	0.053	U	0.056	U
delta-BHC	0.05	UJ	0.05	U	0.05	U	0.05	UJ	0.05	UJ	0.05	UJ	0.053	UL	0.059	U	0.056	U	0.053	U	0.056	U
gamma-BHC (Lindane)	0.05	UJ	0.05	U	0.05	U	0.05	UJ	0.05	UJ	0.075	L	0.053	UL	0.059	U	0.056	U	0.053	U	0.056	U
gamma-Chlordane	0.05	UJ	0.05	U	0.05	U	0.05	UJ	0.05	UJ	0.05	UJ	0.053	UL	0.059	U	0.056	U	0.053	U	0.056	U
Total Metals (UG/L)																						
Aluminum	34.9	U	34.9	U	94.1	B	77.3	J	54	B	56.2	B	43.6	U	46	B	67.5	B	76.3	B	140	B
Antimony	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.7	UL	1.7	UL	1.7	UL	1.7	UL	1.7	UL
Arsenic	4.1	B	9.2	B	5.5	B	8.4	B	18.4		6.4	B	3.5	B	2.7	B	7.7	B	17.5	B	16.6	B
Barium	169	J	29.2	J	482		470		568		269		62.6	J	62.8	J	80.8	J	162	J	89.9	J
Beryllium	0.22	B	0.1	U	0.2	B	0.1	U	0.24	B	0.1	U	0.4	U	0.4	U	0.4	U	0.42	B	0.41	B
Cadmium	0.3	U	0.3	U	0.3	U	0.34	B	0.58	B	0.3	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
Calcium	159,000		15,800		21,700		21,800		80,300		137,000		70,000		69,100		58,200		174,000		132,000	
Chromium	1.2	L	1	L	1.4	L	1.4	L	3.2	L	0.5	UL	1	U	1	J	1	U	1	U	1.5	J
Cobalt	1.3	B	1.1	B	0.87	B	1	B	0.71	B	0.5	U	0.7	U	0.7	U	0.7	U	2.2	B	0.7	U
Copper	1.2	U	1.2	U	2.7	J	4.9	J	1.2	U	1.2	U	1.6	U	1.6	U	1.6	U	1.6	U	1.6	U

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
L - Reported value may be biased low
U - Not detected

Table A-1
Groundwater Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-MW11S	NBW14-MW12S	NBW14-MW13S		NBW14-MW14S	NBW14-MW15S	NBW14-MW16S		NBW14-MW17S	NBW14-MW18S	NBW14-MW19S
Sample ID	NBW14-MW11S-R01	NBW14-MW12S-R01	NBW14-MW13S-P-R01	NBW14-MW13S-R01	NBW14-MW14S-R01	NBW14-MW15S-R01	NBW14-MW16S-P-R01	NBW14-MW16S-R01	NBW14-MW17S-R01	NBW14-MW18S-R01	NBW14-MW19S-R01
Sample Date	09/27/00	09/27/00	09/26/00	09/26/00	09/27/00	09/27/00	08/24/01	08/24/01	08/24/01	08/24/01	08/24/01
Chemical Name											
Cyanide	1.9 L	1.1 L	1.3 L	1 L	2 L	2.2 L	NA	NA	NA	NA	NA
Iron	3,430	952	6,680	6,580	7,850	3,170	10.6 U	10.6 U	113 B	510	673
Lead	2 U	2 U	6.2	5.2	2 U	2 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Magnesium	190,000	23,500	42,800	42,400	178,000	171,000	47,200	46,700	61,800	113,000	94,500
Manganese	321	147	54.5	54.2	208	184	236	235	354	564	983
Mercury	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	2.2 J	2.9 J	5.5 J	5.8 J	3.3 J	1 J	1.6 J	2.3 J	1.4 U	4 J	1.8 J
Potassium	274,000 J	47,000 J	108,000 J	106,000 J	169,000 J	134,000 J	32,500 J	32,400 J	50,700 J	76,200 J	69,600 J
Selenium	5 U	5 U	5 U	5 U	5 U	5 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U
Silver	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Sodium	3,490,000	583,000	653,000	642,000	1,610,000	1,560,000	226,000	225,000	233,000	922,000	624,000
Thallium	4.9 U	4.9 U	4.9 U	9.2 B	4.9 U	7.9 B	5.2 B	6.7 B	5.4 B	7.7 B	5 B
Vanadium	1.5 B	4.2 J	3 J	3 B	1.9 B	3.8 J	0.6 U	0.79 B	1.1 B	1.3 B	0.6 U
Zinc	0.9 UL	0.9 UL	77.6	79.4	0.9 UL	0.9 UL	0.7 UL	0.7 UL	3.5 L	1.7 L	3.5 L
Dissolved Metals (UG/L)											
Aluminum	69.8 B	178 B	34.9 U	34.9 U	34.9 U	135 B	32.6 B	34 B	31.7 B	28.5 B	35.3 B
Antimony	1.9 UL	1.9 UL	1.9 UL	2 L	1.9 UL	3.3 L	2.5 U	3.3 B	4 B	2.8 B	3.1 B
Arsenic	5.1 B	11.7 B	3.7 B	4.3 B	18.4 B	9.6 B	2.8 U	2.8 U	3.9 J	9.6 J	9.1 J
Barium	178 J	29.8 J	412	430	553	271	57.9 J	56.6 J	72.3 J	134 J	91.7 J
Beryllium	0.1 U	0.14 B	0.1 U	0.1 U	0.1 U	0.1 U	0.19 B	0.2 B	0.27 B	0.33 B	0.43 B
Cadmium	0.3 U	0.3 B	0.3 U	0.3 U	0.3 U	0.3 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Calcium	158,000	15,900	18,300	18,800	79,500	146,000	72,700	71,500	52,800	172,000	128,000
Chromium	0.67 B	1.5 B	1.2 B	0.81 B	1.7 B	3.5 B	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Cobalt	0.86 B	1.4 B	0.88 B	1.1 B	1.2 B	1.2 B	0.6 U	0.81 B	0.6 U	1.4 B	0.99 B
Copper	1.3 J	2.3 J	1.2 U	1.2 U	1.4 J	3.7 J	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Cyanide	1.9 L	1.2 L	1 L	0.8 UL	1.3 UL	1.8 L	NA	NA	NA	NA	NA
Iron	3,700	1,440	5,420	5,500	7,950	4,150	12.4 U	12.4 U	12.4 U	371	312
Lead	2 U	2 U	2 U	11.7	2 U	2.1 B	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Magnesium	181,000	22,900	36,600	37,600	175,000	173,000	45,300	44,700	63,300	104,000	97,400
Manganese	321	148	44.5	45.5	209	206	231	230	347	493	970
Mercury	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	2.6 B	4.3 B	5.1 B	4.4 B	2.7 B	4.4 B	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
Potassium	266,000 J	46,200 J	93,600 J	95,800 J	164,000 J	144,000 J	34,700 J	34,300 J	56,400 J	75,500 J	81,500 J
Selenium	5 U	5.2	5 UN	5 U	5 U	5 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U
Silver	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
Sodium	3,380,000	578,000	606,000	611,000	1,640,000	1,700,000	246,000 J	242,000 J	316,000 J	990,000 J	741,000 J
Thallium	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	3.5 U	3.5 U	3.5 U	3.5 U	5.6 B
Vanadium	1.6 B	5.2 J	1.9 B	2.1 B	2.2 B	7 J	0.58 J	0.57 J	0.74 J	0.5 U	0.5 U
Zinc	0.9 UL	1.3 B	22.2 L	30	0.9 UL	17.7 L	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
L - Reported value may be biased low
U - Not detected

Table A-2
Surface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS01	NBW14-DS02	NBW14-DS03	NBW14-DS04	NBW14-DS05	NBW14-DS06	NBW14-DS07	NBW14-DS08	NBW14-DS09	NBW14-DS10	NBW14-DS11	NBW14-DS12	NBW14-DS13	NBW14-DS14	NBW14-DS15
Sample ID	NBW14-DS01-00	NBW14-DS02-00	NBW14-DS03-00	NBW14-DS04-00	NBW14-DS05-00	NBW14-DS06-00	NBW14-DS07-00	NBW14-DS08-00	NBW14-DS09-00	NBW14-DS10-00	NBW14-DS11-00	NBW14-DS12-00	NBW14-DS13-00	NBW14-DS14-00	NBW14-DS15-00
Sample Date	09/30/99	09/30/99	09/30/99	09/30/99	09/30/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99
Chemical Name															
Volatile Organic Compounds (UG/KG)															
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cumene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane(Freon-12)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butyl ether (MTBE)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane(Freon-11)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylene, total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
L - Reported value may be biased low

U - Analyte not detected

Table A-2
Surface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS01	NBW14-DS02	NBW14-DS03	NBW14-DS04	NBW14-DS05	NBW14-DS06	NBW14-DS07	NBW14-DS08	NBW14-DS09	NBW14-DS10	NBW14-DS11	NBW14-DS12	NBW14-DS13	NBW14-DS14	NBW14-DS15
Sample ID	NBW14-DS01-00	NBW14-DS02-00	NBW14-DS03-00	NBW14-DS04-00	NBW14-DS05-00	NBW14-DS06-00	NBW14-DS07-00	NBW14-DS08-00	NBW14-DS09-00	NBW14-DS10-00	NBW14-DS11-00	NBW14-DS12-00	NBW14-DS13-00	NBW14-DS14-00	NBW14-DS15-00
Sample Date	09/30/99	09/30/99	09/30/99	09/30/99	09/30/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99
Chemical Name															
Semi-volatile Organic Compounds (UG/KG)															
1,1-Biphenyl	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
1,2-Dichlorobenzene	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
1,3-Dichlorobenzene	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
1,4-Dichlorobenzene	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
2,2'-Oxybis(1-chloropropane)	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
2,4,5-Trichlorophenol	9,000 U	930 U	940 UL	4,500 U	1,800 U	930 U	920 UL	910 UL	930 UL	3,800 U	1,800 U	920 U	4,500 U	4,700 U	900 U
2,4,6-Trichlorophenol	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
2,4-Dichlorophenol	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
2,4-Dimethylphenol	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
2,4-Dinitrophenol	9,000 U	930 U	940 UL	4,500 U	1,800 U	930 U	920 UL	910 UL	930 UL	3,800 U	1,800 U	920 U	4,500 U	4,700 U	900 U
2,4-Dinitrotoluene	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
2,6-Dinitrotoluene	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
2-Chloronaphthalene	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
2-Chlorophenol	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
2-Methylnaphthalene	3,600 U	82 J	260 L	400 J	79 J	94 J	250 L	190 L	61 L	1,500 U	120 J	62 J	1,800 U	1,900 U	93 J
2-Methylphenol	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
2-Nitroaniline	9,000 U	930 U	940 UL	4,500 U	1,800 U	930 U	920 UL	910 UL	930 UL	3,800 U	1,800 U	920 U	4,500 U	4,700 U	900 U
2-Nitrophenol	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
3,3'-Dichlorobenzidine	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
3-Nitroaniline	9,000 U	930 U	940 UL	4,500 U	1,800 U	930 U	920 UL	910 UL	930 UL	3,800 U	1,800 U	920 U	4,500 U	4,700 U	900 U
4,6-Dinitro-2-methylphenol	9,000 U	930 U	940 UL	4,500 U	1,800 U	930 U	920 UL	910 UL	930 UL	3,800 U	1,800 U	920 U	4,500 U	4,700 U	900 U
4-Bromophenyl-phenylether	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
4-Chloro-3-methylphenol	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
4-Chloroaniline	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
4-Chlorophenyl-phenylether	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
4-Methylphenol	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
4-Nitroaniline	9,000 U	930 U	940 UL	4,500 U	1,800 U	930 U	920 UL	910 UL	930 UL	3,800 U	1,800 U	920 U	4,500 U	4,700 U	900 U
4-Nitrophenol	9,000 U	930 U	940 UL	4,500 U	1,800 U	930 U	920 UL	910 UL	930 UL	3,800 U	1,800 U	920 U	4,500 U	4,700 U	900 U
Acenaphthene	1,200 J	370 U	120 L	750 J	730 U	58 J	160 L	100 L	370 UL	1,500 U	100 J	370 U	280 J	230 J	360 U
Acenaphthylene	3,600 U	370 U	120 L	1,800 U	110 J	80 J	230 L	85 L	160 L	1,500 U	320 J	370 U	1,800 U	1,900 U	43 J
Acetophenone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	1,600 J	44 J	320 L	1,000 J	140 J	160 J	370 L	200 L	110 L	160 J	570 J	61 J	430 J	240 J	79 J
Atrazine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	3,000 J	100 J	330 L	2,800	310 J	230 J	570 L	390 L	420 L	540 J	910	130 J	600 J	1,000 J	180 J
Benzo(a)pyrene	2,400 J	73 J	360 L	2,200	270 J	180 J	910 L	410 L	450 L	460 J	760	140 J	450 J	860 J	160 J
Benzo(b)fluoranthene	2,600 J	160 J	1,100 L	2,700	790	690	2,400 L	910 L	630 L	780 J	3,000	270 J	640 J	1,100 J	390
Benzo(g,h,i)perylene	740 J	70 J	78 L	1,100 J	140 J	110 J	240 L	110 L	94 L	450 J	660 J	160 J	240 J	360 J	150 J
Benzo(k)fluoranthene	2,100 J	110 J	730 L	2,400	620 J	460	360 UL	480 L	530 L	780 J	1,600	180 J	570 J	1,100 J	270 J
Butylbenzylphthalate	3,600 U	370 U	370 UL	5,100	89 J	370 U	370 L	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	46 J
Caprolactam	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	580 J	370 U	130 UL	630 J	100 J	80 J	160 L	84 L	47 L	1,500 U	510 J	370 U	1,800 U	300 J	42 J
Chrysene	3,300 J	190 J	710 L	2,900	490 J	440	970 L	530 L	480 L	970 J	3,600	250 J	810 J	1,400 J	320 J
Di-n-butylphthalate	3,600 U	370 U	370 UL	1,800 U	100 J	370 U	120 L	530 L	370 UL	1,500 U	730 U	56 J	1,800 U	1,900 U	360 U
Di-n-octylphthalate	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
Dibenz(a,h)anthracene	3,600 U	370 U	58 L	430 J	730 U	60 J	160 L	64 L	57 L	1,500 U	340 J	57 J	1,800 U	1,900 U	64 J
Dibenzofuran	550 J	56 J	210 L	410 J	730 U	84 J	170 L	130 L	40 L	1,500 U	130 J	42 J	200 J	1,900 U	59 J
Diethylphthalate	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
Dimethyl phthalate	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
Fluoranthene	10,000	160 J	890 L	6,600	930	640	1,300 L	830 L	720 L	1,400 J	6,800	260 J	2,900	2,400	360
Fluorene	1,200 J	370 U	110 L	680 J	730 U	50 J	160 L	120 L	370 UL	1,500 U	93 J	370 U	440 J	440 J	360 U
Hexachlorobenzene	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
Hexachlorobutadiene	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
Hexachlorocyclopentadiene	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
Hexachloroethane	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
Indeno(1,2,3-cd)pyrene	1,200 J	89 J	200 L	1,600 J	180 J	160 J	430 L	180 L	170 L	530 J	1,100	170 J	280 J	460 J	180 J
Isophorone	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
Naphthalene	3,600 U	78 J	300 L	500 J	80 J	84 J	260 L	180 L	59 L	1,500 U	110 J	63 J	1,800 U	1,900 U	78 J
Nitrobenzene	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
Pentachlorophenol	9,000 U	930 U	940 UL	4,500 U	1,800 U	930 U	920 UL	910 UL	930 UL	3,800 U	1,800 U	920 U	4,500 U	4,700 U	900 U
Phenanthrene	9,700	200 J	600 L	5,200	410 J	360 J	800 L	700 L	300 L	500 J	3,200	190 J	2,700	1,100 J	240 J

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
L - Reported value may be biased low

U - Analyte not detected

Table A-2
Surface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS01	NBW14-DS02	NBW14-DS03	NBW14-DS04	NBW14-DS05	NBW14-DS06	NBW14-DS07	NBW14-DS08	NBW14-DS09	NBW14-DS10	NBW14-DS11	NBW14-DS12	NBW14-DS13	NBW14-DS14	NBW14-DS15
Sample ID	NBW14-DS01-00	NBW14-DS02-00	NBW14-DS03-00	NBW14-DS04-00	NBW14-DS05-00	NBW14-DS06-00	NBW14-DS07-00	NBW14-DS08-00	NBW14-DS09-00	NBW14-DS10-00	NBW14-DS11-00	NBW14-DS12-00	NBW14-DS13-00	NBW14-DS14-00	NBW14-DS15-00
Sample Date	09/30/99	09/30/99	09/30/99	09/30/99	09/30/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99
Chemical Name															
Phenol	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	110 L	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
Pyrene	6,800 J	150 J	570 L	4,400	650 J	330 J	1,300 L	560 L	510 L	1,200 J	4,800	240 J	1,700 J	1,600 J	270 J
bis(2-Chloroethoxy)methane	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
bis(2-Chloroethyl)ether	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
bis(2-Ethylhexyl)phthalate	3,600 U	110 J	95 L	850 J	830	98 J	2,600 L	230 L	120 L	300 J	180 J	110 J	900 J	990 J	130 J
n-Nitroso-di-n-propylamine	3,600 U	370 U	370 UL	1,800 U	730 U	370 U	360 UL	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
n-Nitrosodiphenylamine	3,600 U	370 U	44 L	1,800 U	730 U	370 U	38 L	360 UL	370 UL	1,500 U	730 U	370 U	1,800 U	1,900 U	360 U
Pesticide/Polychlorinated Biphenyls (UG/KG)															
4,4'-DDD	120	15 U	4.1 J	47 K	18 U	2.1 J	14 K	30 J	15 J	14 J	18 U	3.4 J	14 J	23 J	3.6 U
4,4'-DDE	150	15 U	7.5 U	65 K	18 U	3.7 U	11 K	53	20 J	34	18 U	4.1 J	18 U	14 J	3.6 U
4,4'-DDT	13 J	15 U	7.5 U	18 U	18 U	2.1 J	18 U	9.8 J	7.8 J	39	13 J	3.7 U	18 U	19 U	2.4 J
Aldrin	33	7.6 U	3.9 U	9.2 U	9.4 U	1.3 J	18 K	1.9 U	1.9 U	1.9 U	9.4 U	2.4 J	9.3 U	9.6 U	1.8 U
Aroclor-1016	180 U	150 U	75 U	180 U	180 U	37 U	180 U	36 U	37 U	38 U	180 U	37 U	180 U	190 U	36 U
Aroclor-1221	360 U	300 U	150 U	360 U	370 U	75 U	370 U	74 U	75 U	77 U	370 U	74 U	360 U	380 U	73 U
Aroclor-1232	180 U	150 U	75 U	180 U	180 U	37 U	180 U	36 U	37 U	38 U	180 U	37 U	180 U	190 U	36 U
Aroclor-1242	180 U	150 U	75 U	180 U	180 U	37 U	180 U	36 U	37 U	38 U	180 U	37 U	210 J	190 U	36 U
Aroclor-1248	180 U	150 U	75 U	180 U	180 U	37 U	180 U	77 J	37 U	38 U	180 U	37 U	180 U	190 U	36 U
Aroclor-1254	180 U	150 U	75 U	180 U	180 U	37 U	180 U	36 U	37 U	38 U	180 U	37 U	180 U	190 U	36 U
Aroclor-1260	180 U	150 U	75 U	180 U	180 U	100	530 K	220	160	160	1,900	37 U	730	410	170
Dieldrin	48 J	15 U	15 J	21 K	29 K	7.5 J	30 K	13 J	3.7 U	28	38 J	14 J	18 U	19 U	5.1 J
Endosulfan I	9.2 U	7.6 U	3.9 U	9.2 U	9.4 U	1.9 U	9.4 U	1.9 U	1.9 U	1.9 U	9.4 U	1.9 U	9.3 U	9.6 U	1.8 U
Endosulfan II	18 U	15 U	7.5 U	18 U	18 U	2.8 J	14 K	5.1	3.5 J	4.4	49	1.9 J	20 J	19 U	4.7 J
Endosulfan sulfate	18 U	15 U	7.5 U	18 U	18 U	4.3 J	13 K	2.7 J	2 J	3.8 U	18 U	3.7 U	18 U	19 U	1.8 J
Endrin	18 U	15 U	7.5 U	18 U	18 U	4.4 J	33 K	11	8.5	7.1 J	85	3.6 J	16 J	15 J	1.8 J
Endrin aldehyde	18 U	12 J	7.5 U	18 U	18 U	3.7 U	35 K	4.4 J	3.4 J	5 J	45 J	9.9 J	28 J	14 J	5.8 J
Endrin ketone	18 U	15 U	7.5 U	45 K	15 K	5.5 J	18 U	3.6 U	3.7 U	2.1 J	18 U	2 J	18 U	19 U	3.6 U
Heptachlor	9.2 U	7.6 U	3.9 U	9.2 U	9.4 U	1.9 U	9.4 U	1.9 U	1.9 U	1.9 U	9.4 U	1.9 U	9.3 U	9.6 U	1.8 U
Heptachlor epoxide	9.2 U	7.6 U	3.9 U	9.2 U	9.4 U	1.9 U	9.4 U	1.9 U	1.9 U	1.9 U	9.4 U	1.2 J	9.3 U	9.6 U	1.8 U
Methoxychlor	92 U	76 U	39 U	120 K	90 K	17 J	94 U	19 U	19 U	19 U	94 U	19 U	93 U	96 U	18 U
Toxaphene	920 U	760 U	390 U	920 U	940 U	190 U	940 U	190 U	190 U	190 U	940 U	190 U	930 U	960 U	180 U
alpha-BHC	9.2 U	7.6 U	3.9 U	9.2 U	9.4 U	1.9 U	9.4 U	1.9 U	1.9 U	1.9 U	9.4 U	1.9 U	9.3 U	9.6 U	1.8 U
alpha-Chlordane	8.1 J	7.6 U	3.9 U	9.2 U	8.3 K	1.8 J	18 K	4	3.4	4.5	32	2.3 J	15 J	18	1.3 J
beta-BHC	9.2 U	7.6 U	3.9 U	9.2 U	9.4 U	1.9 U	9.4 U	1.9 U	1.9 U	1.9 U	9.4 U	1.9 U	9.3 U	9.6 U	1.8 U
delta-BHC	9.2 U	7.6 U	3.9 U	9.2 U	9.4 U	1.9 U	9.4 U	1.9 U	1.9 U	1.9 U	9.4 U	1.9 U	9.3 U	9.6 U	1.8 U
gamma-BHC (Lindane)	9.2 U	7.6 U	3.9 U	9.2 U	9.4 U	1.9 U	9.4 U	1.9 U	1.9 U	1.9 U	9.4 U	1.9 U	9.3 U	9.6 U	1.8 U
gamma-Chlordane	8.9 J	7.6 U	3.9 U	9.2 U	7.7 K	1.1 J	12 K	4.2 J	4.4 J	4.8 J	11 J	1.3 J	23 J	29	1.5 J
Dioxin/Furans (UG/KG)															
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-Heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8,9-Heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,7,8-Pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDD (dioxin)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-Tetrachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Table A-2
Surface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS01	NBW14-DS02	NBW14-DS03	NBW14-DS04	NBW14-DS05	NBW14-DS06	NBW14-DS07	NBW14-DS08	NBW14-DS09	NBW14-DS10	NBW14-DS11	NBW14-DS12	NBW14-DS13	NBW14-DS14	NBW14-DS15
Sample ID	NBW14-DS01-00	NBW14-DS02-00	NBW14-DS03-00	NBW14-DS04-00	NBW14-DS05-00	NBW14-DS06-00	NBW14-DS07-00	NBW14-DS08-00	NBW14-DS09-00	NBW14-DS10-00	NBW14-DS11-00	NBW14-DS12-00	NBW14-DS13-00	NBW14-DS14-00	NBW14-DS15-00
Sample Date	09/30/99	09/30/99	09/30/99	09/30/99	09/30/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99
Chemical Name															
Total Metals (MG/KG)															
Aluminum	2,470 L	4,050 L	3,850 L	5,270 L	5,140 L	5,250 L	5,490 L	5,110 L	3,300 L	5,210	3,450	3,970	3,310	3,320	5,110
Antimony	0.94 J	3.5 J	1.6 J	1.8 J	7.1 J	2.1 J	42	2.6 J	0.74 J	2.3 J	3.3 J	1.3 J	1.9 J	2.3 J	3.1 J
Arsenic	5.3	27.9	22.5	11.2	11.1	14.1	9.9	7.1	3.9	10.2	14.7	24.2	6.7	12.1	11.7
Barium	33.5 J	67.9	53.7	77.7	213	63.5	264	54.4	69.1	100	53.1	48.9	56	56.6	128
Beryllium	0.29 B	0.24 B	0.52 B	0.33 B	0.36 B	0.35 B	0.24 B	0.32 B	0.16 B	0.67 B	0.27 B	0.27 B	0.22 B	0.25 B	0.61 B
Cadmium	0.92 B	0.91 B	1.2 B	0.97 B	7.9	0.85 B	9.8	3.7	1.6 B	15 J	1.6 J	0.93 J	2.7 J	1.6 J	1.5 J
Calcium	25,800	16,700	16,400	22,900	26,000	26,400	27,000	16,200	8,290	16,600	38,000	23,800	33,700	20,200	33,100
Chromium	8.2	11.8	26	15.5	56.7	15	63.8	16.9	8	36.9 J	17.5 J	12.5 J	17.9 J	22.7 J	16.1 J
Cobalt	2.6 B	3.4 J	5.7 J	3.3 J	7.5 J	4.2 J	6.4 J	3.3 J	1.2 B	9.8 J	3.6	3.8 J	4.8 J	3.7 J	4.3 J
Copper	20.1	91.7	47.8	78.2	558	57.9	9,070	50.8	21.2	193	144	26.5	61.9	59.8	108
Cyanide	57.5	2.8 U	2.8 U	2.7 U	2.8 U	2.8 U	2.8 U	2.7 U	2.8 U	2.9 U	3.1	2.8 U	2.7 U	2.8 U	2.7 U
Iron	7,760 L	12,600 L	12,900 L	12,500 L	22,900 L	11,300 L	18,700 L	11,400 L	6,530 L	18,300	13,800	10,700	9,810	10,200	13,400
Lead	70.4	315	210	107	415	132	695	159	163	208 J	126 J	84.2 J	123 J	136 J	134 J
Magnesium	996 B	2,450	4,710	3,610	1,580	11,600	3,100	1,500	513 J	4,060 J	2,460 J	2,060 J	1,400 J	1,480 J	6,890 J
Manganese	110	118	104	137	231	93.5	1,300	127	54.2	136	147	91.7	152	155	326
Mercury	0.17 B	0.086 B	2.7	0.88	0.37	0.11 B	1.1	0.25	0.066 B	0.53	0.11	0.11 J	0.15	0.27	0.15
Nickel	8.5 J	8.3 J	12.8	11.9	63.9	11.2	66.5	11	5 J	60.5 J	20 J	9 J	52.5 J	30.8 J	26.5 J
Potassium	488 J	351 B	449 B	608 J	679 J	438 B	763 J	687 J	332 B	831 J	444 J	599 J	760 J	810 J	786 J
Selenium	0.52 U	0.54 U	0.66 J	0.52 U	0.53 U	0.59	0.53 U	0.53 U	0.54 U	0.78 B	0.68 B	0.53 U	0.52 U	0.58 B	0.99 B
Silver	0.48 UJ	0.49 UJ	0.5 UJ	0.48 UJ	1.2 J	0.49 UJ	4.7	0.76 J	0.49 UJ	0.92 J	0.49 U	0.49 U	0.48 U	0.5 U	0.75 J
Sodium	444 J	243 J	331 J	1,040 J	565 J	261 J	474 J	455 J	539 J	284 J	436 J	351 J	439 J	415 J	594 J
Thallium	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Vanadium	14.7	19.7	15.7	27.4	39.9	16.1	38.8	26.3	19.1	27.1	24.1	17.9	137	108	26.5
Zinc	91.2	183	143	164	737	162	1,970	167	157	409	239	110	206	209	420
Wet Chemistry (MG/KG)															
% Solids	92.1	89	88.3	92.4	90.4	89	90.6	91	89.3	87.3	90.2	90	91.9	88.2	91.9

NA - Not analyzed
B - Analyte not detected above associated blank
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K - Reported value may be biased high
L - Reported value may be biased low

U - Analyte not detected

Table A-2
Surface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS16	NBW14-DS17	NBW14-DS18		NBW14-DS19	NBW14-DS20	NBW14-DS21	NBW14-DS22	NBW14-DS23	NBW14-DS24		NBW14-DS25		NBW14-DS26		NBW14-DS27
Sample ID	NBW14-DS16-00	NBW14-DS17-00	NBW14-DS18-00	NBW14-DS18P-00	NBW14-DS19-00	NBW14-DS20-00	NBW14-DS21-00	NBW14-DS22-00	NBW14-DS23-00	NBW14-DS24-00	NBW14-DS24-P-00	NBW14-DS25-00	NBW14-DS25-P-00	NBW14-DS26-00	NBW14-DS26-P-00	NBW14-DS27-00
Sample Date	10/01/99	10/01/99	10/01/99	10/01/99	09/18/00	09/19/00	09/11/00	09/11/00	09/11/00	09/11/00	09/11/00	09/15/00	09/15/00	09/11/00	09/11/00	09/12/00
Chemical Name																
Volatile Organic Compounds (UG/KG)																
1,1,1-Trichloroethane	NA	NA	NA	NA	11 U	11 U	11 U	11 U	1.28 J	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
1,1,2,2-Tetrachloroethane	NA	NA	NA	NA	11 UR	11 UR	11 U	11 UR	11 UR	12 U	11 UJ	12 U	11 U	10 UR	11 U	11 UJ
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	NA	NA	NA	NA	11 U	11 U	11 U	11 UJ	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
1,1,2-Trichloroethane	NA	NA	NA	NA	11 U	11 UR	11 U	11 U	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
1,1-Dichloroethane	NA	NA	NA	NA	11 U	11 U	11 U	11 UJ	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
1,1-Dichloroethene	NA	NA	NA	NA	11 U	11 U	11 U	11 UJ	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
1,2,4-Trichlorobenzene	NA	NA	NA	NA	11 UR	11 UR	11 U	11 UR	11 UJ	12 U	11 UJ	12 U	11 U	10 UR	11 U	11 UJ
1,2-Dibromo-3-chloropropane	NA	NA	NA	NA	11 UR	11 UR	11 U	11 UR	11 UJ	12 U	11 UJ	12 U	11 U	10 UR	11 U	11 UJ
1,2-Dibromoethane	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
1,2-Dichlorobenzene	NA	NA	NA	NA	11 UR	11 UR	11 U	11 UR	11 UJ	12 U	11 UJ	12 U	11 U	10 UR	11 U	11 UJ
1,2-Dichloroethane	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
1,2-Dichloropropane	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
1,3-Dichlorobenzene	NA	NA	NA	NA	11 UR	11 UR	11 U	11 UR	11 UJ	12 U	11 UJ	12 U	11 U	10 UR	11 U	11 UJ
1,4-Dichlorobenzene	NA	NA	NA	NA	11 UR	11 UR	11 U	11 UR	11 UJ	12 U	11 UJ	12 U	11 U	10 UR	11 U	11 UJ
2-Butanone	NA	NA	NA	NA	4.62 J	11 U	11 U	11 UJ	3.74 J	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
2-Hexanone	NA	NA	NA	NA	11 UR	11 UR	11 U	11 U	11 UR	12 UJ	11 UJ	12 U	11 U	10 UR	11 U	11 UJ
4-Methyl-2-pentanone	NA	NA	NA	NA	11 UR	11 UR	11 U	11 UR	11 UR	12 UJ	11 UJ	12 U	11 U	10 UR	11 U	11 UJ
Acetone	NA	NA	NA	NA	6.11 J	11 U	11 U	11 UJ	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
Benzene	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
Bromodichloromethane	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
Bromoform	NA	NA	NA	NA	11 U	11 UR	11 U	11 U	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
Bromomethane	NA	NA	NA	NA	11 U	11 U	11 U	11 UJ	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
Carbon disulfide	NA	NA	NA	NA	11 U	11 U	11 U	11 UJ	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
Carbon tetrachloride	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
Chlorobenzene	NA	NA	NA	NA	11 U	11 UR	11 U	11 UR	11 UR	12 UJ	11 UJ	12 U	11 U	10 UR	11 U	11 UJ
Chloroethane	NA	NA	NA	NA	11 U	11 U	11 U	11 UJ	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
Chloroform	NA	NA	NA	NA	11 U	11 U	11 U	11 UJ	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
Chloromethane	NA	NA	NA	NA	11 U	11 U	11 U	11 UJ	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
Cumene	NA	NA	NA	NA	11 UR	11 UR	11 U	11 UR	11 UJ	12 UJ	11 UJ	12 U	11 U	10 UR	11 U	11 UJ
Cyclohexane	NA	NA	NA	NA	11 U	11 U	11 U	11 U	2.25 J	12 U	11 UJ	12 U	11 U	1.32 J	11 U	11 UJ
Dibromochloromethane	NA	NA	NA	NA	11 U	11 U	11 U	11 UJ	11 UJ	12 UJ	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
Dichlorodifluoromethane(Freon-12)	NA	NA	NA	NA	11 U	11 U	11 UJ	11 UJ	11 UJ	12 UJ	11 UJ	12 U	11 U	10 UJ	11 UJ	11 UJ
Ethylbenzene	NA	NA	NA	NA	11 UR	11 UR	11 U	11 UR	11 UR	12 UJ	11 UJ	12 U	11 U	10 UR	11 U	1.61 J
Methyl acetate	NA	NA	NA	NA	11 U	11 U	11 U	11 UJ	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
Methyl-tert-butyl ether (MTBE)	NA	NA	NA	NA	11 U	11 U	11 U	11 UJ	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
Methylcyclohexane	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
Methylene chloride	NA	NA	NA	NA	29.2 J	10.5 B	3.15 B	10.7 B	78.5 J	2.21 B	2.4 B	1.19 B	1.27 B	24.5 B	1.5 B	8.88 B
Styrene	NA	NA	NA	NA	11 UR	11 UR	11 U	11 UR	11 UR	12 UJ	11 UJ	12 U	11 U	10 UR	11 U	11 UJ
Tetrachloroethene	NA	NA	NA	NA	11 UR	11 U	11 U	11 UR	11 UR	12 U	11 UJ	12 U	11 U	10 UR	11 U	2.25 J
Toluene	NA	NA	NA	NA	3.13 J	3.18 J	10.3 J	19.5 J	12.4 J	12 UJ	1.36 J	2.44 J	11 U	86.7 J	11 U	13.0 J
Trichloroethene	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
Trichlorofluoromethane(Freon-11)	NA	NA	NA	NA	1.59 J	11 U	11 U	1.46 J	11 UJ	12 U	11 UJ	12 U	11 U	4.53 J	11 U	11 UJ
Vinyl chloride	NA	NA	NA	NA	11 U	11 U	11 U	11 UJ	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
Xylene, total	NA	NA	NA	NA	11 UR	11 UR	11 U	4.71 J	11 UR	12 UJ	11 UJ	12 U	11 U	10 UR	11 U	6.83 J
cis-1,2-Dichloroethene	NA	NA	NA	NA	11 U	11 U	11 U	11 UJ	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
cis-1,3-Dichloropropene	NA	NA	NA	NA	11 U	11 U	11 U	11 UJ	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
trans-1,2-Dichloroethene	NA	NA	NA	NA	11 U	11 U	11 U	11 UJ	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ
trans-1,3-Dichloropropene	NA	NA	NA	NA	11 UR	11 U	11 U	11 U	11 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 UJ

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Table A-2
Surface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS16	NBW14-DS17	NBW14-DS18		NBW14-DS19	NBW14-DS20	NBW14-DS21	NBW14-DS22	NBW14-DS23	NBW14-DS24		NBW14-DS25		NBW14-DS26		NBW14-DS27
Sample ID	NBW14-DS16-00	NBW14-DS17-00	NBW14-DS18-00	NBW14-DS18P-00	NBW14-DS19-00	NBW14-DS20-00	NBW14-DS21-00	NBW14-DS22-00	NBW14-DS23-00	NBW14-DS24-00	NBW14-DS24-P-00	NBW14-DS25-00	NBW14-DS25-P-00	NBW14-DS26-00	NBW14-DS26-P-00	NBW14-DS27-00
Sample Date	10/01/99	10/01/99	10/01/99	10/01/99	09/18/00	09/19/00	09/11/00	09/11/00	09/11/00	09/11/00	09/11/00	09/15/00	09/15/00	09/11/00	09/11/00	09/12/00
Chemical Name																
Semi-volatile Organic Compounds (UG/KG)																
1,1-Biphenyl	NA	NA	NA	NA	360 U	360 U	380 U	360 U	50 J	350 U	360 U	380 U	360 U	48.3 J	43.6 J	360 U
1,2,4-Trichlorobenzene	360 U	360 U	740 U	770 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	360 U	360 U	740 U	770 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	360 U	360 U	740 U	770 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	360 U	360 U	740 U	770 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane)	360 U	360 U	740 U	770 U	360 U	360 U	380 UJ	360 UJ	370 U	350 U	360 UJ	380 U	360 U	340 UJ	360 UJ	360 UJ
2,4,5-Trichlorophenol	900 U	910 U	1,900 U	1,900 U	910 U	900 U	940 U	910 U	920 U	890 U	910 U	960 U	910 U	860 U	900 U	910 U
2,4,6-Trichlorophenol	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
2,4-Dichlorophenol	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
2,4-Dimethylphenol	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
2,4-Dinitrophenol	900 U	910 U	1,900 U	1,900 U	910 U	900 U	940 U	910 U	920 UJ	890 UJ	910 U	960 U	910 U	860 U	900 U	910 U
2,4-Dinitrotoluene	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
2,6-Dinitrotoluene	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
2-Chloronaphthalene	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
2-Chlorophenol	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
2-Methylnaphthalene	100 J	68 J	740 U	770 U	104 J	71.7 J	69.2 J	115 J	210 J	100 J	83.5 J	380 U	360 U	247 J	NA	NA
2-Methylphenol	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
2-Nitroaniline	900 U	910 U	1,900 U	1,900 U	910 U	900 U	940 U	910 U	920 U	890 U	910 U	960 U	910 U	860 U	900 U	910 U
2-Nitrophenol	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
3,3'-Dichlorobenzidine	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 UJ	380 U	360 U	340 U	360 U	360 U
3-Nitroaniline	900 U	910 U	1,900 U	1,900 U	910 U	900 U	940 U	910 U	920 U	890 U	910 U	960 U	910 U	860 U	900 U	910 U
4,6-Dinitro-2-methylphenol	900 U	910 U	1,900 U	1,900 U	910 U	900 U	940 U	910 U	920 U	890 U	910 U	960 U	910 U	860 U	900 U	910 U
4-Bromophenyl-phenylether	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
4-Chloro-3-methylphenol	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
4-Chloroaniline	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
4-Chlorophenyl-phenylether	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
4-Methylphenol	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
4-Nitroaniline	900 U	910 U	1,900 U	1,900 U	910 UJ	900 UJ	940 UJ	910 UJ	920 UJ	890 UJ	910 U	960 UJ	910 U	860 UJ	900 UJ	910 UJ
4-Nitrophenol	900 U	910 U	1,900 U	1,900 U	910 U	900 U	940 U	910 U	920 U	890 U	910 U	960 U	910 U	860 U	900 U	910 U
Acenaphthene	360 U	68 J	740 U	770 U	38.2 J	360 U	380 U	360 U	63 J	350 U	87.4 J	380 U	360 U	44.6 J	44.9 J	360 U
Acenaphthylene	360 U	140 J	740 U	770 U	51.7 J	360 U	41.7 J	58.1 J	370 U	350 U	360 U	380 U	61.0 J	43.5 J	46.2 J	360 U
Acetophenone	NA	NA	NA	NA	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
Anthracene	64 J	230 J	99 J	770 U	122 J	64.1 J	74.7 J	156 J	95 J	45 J	128 J	380 U	121 J	90.6 J	86.7 J	58.8 J
Atrazine	NA	NA	NA	NA	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
Benzaldehyde	NA	NA	NA	NA	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
Benzo(a)anthracene	130 J	660	820	160 J	513	101 J	150 J	161 J	170 J	97 J	362 J	102 J	183 J	150 J	145 J	118 J
Benzo(a)pyrene	120 J	750	450 J	140 J	323 J	146 J	169 J	153 J	140 J	79 J	338 J	147 J	265 J	112 J	132 J	96.9 J
Benzo(b)fluoranthene	280 J	2,100	1,000	310 J	823 J	395 J	422 J	281 J	370	190 J	422	479 J	458	279 J	280 J	307 J
Benzo(g,h,i)perylene	92 J	410	180 J	770 U	165 J	165 J	114 J	102 J	120 J	350 U	151 J	161 J	211 J	70.9 J	97.6 J	70.3 J
Benzo(k)fluoranthene	190 J	810	860	180 J	882 J	423 J	387 J	225 J	290 J	120 J	385	513 J	339 J	214 J	173 J	280 J
Butylbenzylphthalate	360 U	360 U	98 J	770 U	1,031	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
Caprolactam	NA	NA	NA	NA	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
Carbazole	360 U	120 J	740 U	770 U	54.6 J	360 UJ	380 U	360 U	370 U	350 U	74.7 J	380 UJ	50.2 J	340 U	360 U	360 U
Chrysene	240 J	1,200	1,000	200 J	898	228 J	245 J	423	330 J	170 J	437	268 J	337 J	263 J	274 J	184 J
Di-n-butylphthalate	360 U	360 U	740 U	770 U	360 U	360 U	401	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
Di-n-octylphthalate	360 U	360 U	170 J	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
Dibenz(a,h)anthracene	37 J	170 J	740 U	770 U	54.8 J	65.1 J	71.3 J	75.4 J	56 J	350 U	99.3 J	49.9 J	49.8 J	64.6 J	59.2 J	360 U
Dibenzofuran	68 J	61 J	740 U	770 U	68.0 J	52.4 J	41.5 J	60.4 J	120 J	51 J	59.4 J	380 U	360 U	119 J	97.2 J	62.3 J
Diethylphthalate	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
Dimethyl phthalate	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
Fluoranthene	270 J	1,200	1,700	470 J	2,714	190 J	266 J	230 J	370	210 J	975	136 J	321 J	287 J	283 J	197 J
Fluorene	360 U	37 J	740 U	770 U	37.4 J	360 U	380 U	360 U	370 U	350 U	59.5 J	380 U	360 U	39.8 J	360 U	360 U
Hexachlorobenzene	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
Hexachlorobutadiene	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
Hexachlorocyclopentadiene	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
Hexachloroethane	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
Indeno(1,2,3-cd)pyrene	100 J	550	240 J	770 U	193 J	140 J	153 J	127 J	130 J	66 J	198 J	132 J	203 J	105 J	116 J	84.6 J
Isophorone	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
Naphthalene	95 J	95 J	740 U	770 U	80.2 J	360 U	67.8 J	120 J	180 J	76 J	114 J	380 U	360 U	234 J	191 J	93.7 J
Nitrobenzene	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
Pentachlorophenol	900 U	910 U	1,900 U	1,900 U	910 U	900 U	940 U	910 U	920 UJ	890 UJ	910 U	960 U	910 U	860 U	900 U	910 U
Phenanthrene	250 J	530	180 J	220 J	765	208 J	209 J	245 J	420	220 J	586	77.3 J	189 J	403	341 J	218 J

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B - Analyte not detected above associated blank
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K - Reported value may be biased high
L - Reported value may be biased low

U - Analyte not detected

Table A-2
Surface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS16	NBW14-DS17	NBW14-DS18		NBW14-DS19	NBW14-DS20	NBW14-DS21	NBW14-DS22	NBW14-DS23	NBW14-DS24		NBW14-DS25		NBW14-DS26		NBW14-DS27
Sample ID	NBW14-DS16-00	NBW14-DS17-00	NBW14-DS18-00	NBW14-DS18P-00	NBW14-DS19-00	NBW14-DS20-00	NBW14-DS21-00	NBW14-DS22-00	NBW14-DS23-00	NBW14-DS24-00	NBW14-DS24-P-00	NBW14-DS25-00	NBW14-DS25-P-00	NBW14-DS26-00	NBW14-DS26-P-00	NBW14-DS27-00
Sample Date	10/01/99	10/01/99	10/01/99	10/01/99	09/18/00	09/19/00	09/11/00	09/11/00	09/11/00	09/11/00	09/11/00	09/15/00	09/15/00	09/11/00	09/11/00	09/12/00
Chemical Name																
Phenol	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
Pyrene	180 J	770	1,300	270 J	2,893	213 J	285 J	237 J	350 J	220 J	846	173 J	373	263 J	283 J	194 J
bis(2-Chloroethoxy)methane	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
bis(2-Chloroethyl)ether	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
bis(2-Ethylhexyl)phthalate	73 J	130 J	160 J	130 J	122 J	360 U	96.1 J	382	130 J	80 J	103 J	380 U	343 J	46.3 J	37.1 J	116 J
n-Nitroso-di-n-propylamine	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	370 U	350 U	360 U	380 U	360 U	340 U	360 U	360 U
n-Nitrosodiphenylamine	360 U	360 U	740 U	770 U	360 U	360 U	380 U	360 U	49 J	350 U	360 U	380 U	360 U	197 J	360 U	360 U
Pesticide/Polychlorinated Biphenyls (UG/KG)																
4,4'-DDD	3 J	18 U	2.3 J	7.9 J	3.6 U	2.9 J	3.8 U	2.7 J	3.7 UJ	1.1 J	2.6 J	3.8 U	3.6 U	3.4 U	2.4 J	3.6 U
4,4'-DDE	3.6 U	18 U	6 J	21	3.4 J	2 J	17 J	4.1 J	3.7 UJ	1.3 J	2.2 J	6.2 J	1.4 J	4.3	5.2	1.3 J
4,4'-DDT	2.2 J	9.7 J	2 J	7.7 U	15 J	7.5	3.8 U	6.8 J	5.6 J	2.7 J	4.5 J	3.7 J	3.6 U	5	5.4 J	3.5 J
Aldrin	1.8 J	9.3 U	1.9 U	3.9 U	1.9 U	1.8 U	2.8	1.9 U	1.9 UJ	1.8 U	1.9 U	2 U	1.9 U	1.8 U	1.8 U	1.9 U
Aroclor-1016	36 U	180 U	37 U	77 U	36 U	36 U	38 U	36 U	37 UJ	35 U	36 U	38 U	36 U	34 U	36 U	36 U
Aroclor-1221	73 U	370 U	75 U	160 U	74 U	73 U	76 U	74 U	74 UJ	72 U	74 U	78 U	74 U	70 U	73 U	74 U
Aroclor-1232	36 U	180 U	37 U	77 U	36 U	36 U	38 U	36 U	37 UJ	35 U	36 U	38 U	36 U	34 U	36 U	36 U
Aroclor-1242	36 U	180 U	37 U	77 U	36 U	36 U	38 U	36 U	37 UJ	35 U	36 U	38 U	36 U	34 U	36 U	36 U
Aroclor-1248	36 U	180 U	37 U	77 U	36 U	36 U	38 U	36 U	37 UJ	35 U	36 U	38 U	36 U	34 U	36 U	36 U
Aroclor-1254	36 U	180 U	37 U	77 U	36 U	36 U	38 U	36 U	37 UJ	35 U	36 U	44 J	36 U	34 U	36 U	36 U
Aroclor-1260	36 U	180 U	37 U	77 U	36 U	36 U	38 U	36 U	37 UJ	35 U	36 U	38 U	36 U	34 U	36 U	36 U
Dieldrin	15	18 U	5.1	24	4.9	4.9 J	47 J	12 J	8.7 J	6	7.9 J	4	3.6 U	6.3	8.8	3.5
Endosulfan I	1.8 U	9.3 U	1.9 U	3.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 UJ	1.8 U	1.9 J	2 U	0.45 J	1.8 U	1.8 U	1.9 J
Endosulfan II	3.6 U	18 U	3.7 U	7.7 U	3.6 U	3.6 U	3.8 J	3.6 U	3.7 UJ	3.5 U	3.6 U	3.8 U	3.6 U	3.4 J	3.6 U	3.6 U
Endosulfan sulfate	3.6 U	18 U	3.7 U	7.7 U	1.3 J	1.8 J	14 J	2 J	3.7 UJ	3.5 U	2.6 J	1.8 J	3.6 U	1.2 J	2.4 J	1.4 J
Endrin	3.6 U	11 J	3.7 U	7.7 U	3.6 U	3.6 U	11 J	3.6 J	3.7 UJ	3.5 U	4.9 J	3.8 U	3.6 U	1.2 J	4.1 J	3.2 J
Endrin aldehyde	3.6 U	18 U	3.7 U	7.7 U	1.9 J	2.9 J	32 J	3 J	1.4 J	1.2 J	1.8 J	7.6	1.7 J	5.2 J	4.1 J	1.1 J
Endrin ketone	2.7 J	18 U	3.7 U	7.7 U	4.3 J	2.8 J	3.8 J	3.6 U	3.8 J	1.6 J	4.1 J	1.2 J	3.6 U	2.1 J	3.7 J	3.6 U
Heptachlor	1.8 U	9.3 U	1.9 U	3.9 U	1.3 J	1.8 U	16 J	1.3 J	1.9 UJ	1.8 U	1.9 U	2 U	1.9 U	1.3 J	2.1 J	1.9 U
Heptachlor epoxide	1.8 U	9.3 U	1.9 U	3.9 U	9	1.8 U	1.9 U	1.9 U	1.9 UJ	1.8 U	1.9 U	2 U	1.9 U	1.8 U	1.8 U	1.9 U
Methoxychlor	14 J	93 U	19 U	39 U	19 U	18 U	23 J	19 U	19 UJ	9.2 J	19 U	20 U	19 U	18 U	18 U	19 U
Toxaphene	180 U	930 U	190 U	390 U	190 U	180 U	190 U	190 U	190 UJ	180 U	190 U	200 U	190 U	180 U	180 U	190 U
alpha-BHC	1.8 U	9.3 U	1.9 U	3.9 U	1.9 U	1.8 U	15 J	0.7 J	1.9 UJ	1.8 U	1.9 U	2 U	1.9 U	1.8	0.98 J	1.9
alpha-Chlordane	1.8 U	18 J	0.96 J	3.2 J	16 J	1.8 U	1.9 U	1.9 U	1.8 J	1.8 U	1.9 U	0.83 J	0.91 J	1.8 U	1.8 U	0.94 J
beta-BHC	1.8 U	9.3 U	1.9 U	3.9 U	1.9 U	1.8 U	7 J	0.87 B	1.9 UJ	1.8 U	1.8 B	2 U	1.9 U	1.4 B	1.8 U	1.9 U
delta-BHC	1.8 U	9.3 U	1.9 U	3.9 U	1.9 U	1.8 U	1.9 U	1.9 J	1.9 UJ	1.8 U	1.8 J	2 U	1.9 U	1.8 J	1.8	1.9 J
gamma-BHC (Lindane)	1.8 U	9.3 U	1.9 U	3.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 UJ	0.075 J	1.9 U	2 U	1.9 U	1.8 U	2.1 J	1.9 U
gamma-Chlordane	1.8 U	31	1.5 J	3.9 J	13	1.6 J	1.6 J	1.2 J	1.6 J	0.32 J	0.82 J	2 U	1.5 J	1.7 J	1.6 J	1.4 J
Dioxin/Furans (UG/KG)																
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-Heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8,9-Heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,7,8-Pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDD (dioxin)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-Tetrachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
L - Reported value may be biased low

U - Analyte not detected

Table A-2
Surface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS16	NBW14-DS17	NBW14-DS18		NBW14-DS19	NBW14-DS20	NBW14-DS21	NBW14-DS22	NBW14-DS23	NBW14-DS24		NBW14-DS25		NBW14-DS26		NBW14-DS27
Sample ID	NBW14-DS16-00	NBW14-DS17-00	NBW14-DS18-00	NBW14-DS18P-00	NBW14-DS19-00	NBW14-DS20-00	NBW14-DS21-00	NBW14-DS22-00	NBW14-DS23-00	NBW14-DS24-00	NBW14-DS24-P-00	NBW14-DS25-00	NBW14-DS25-P-00	NBW14-DS26-00	NBW14-DS26-P-00	NBW14-DS27-00
Sample Date	10/01/99	10/01/99	10/01/99	10/01/99	09/18/00	09/19/00	09/11/00	09/11/00	09/11/00	09/11/00	09/11/00	09/15/00	09/15/00	09/11/00	09/11/00	09/12/00
Chemical Name																
Total Metals (MG/KG)																
Aluminum	2,810	3,910	9,120	7,080 L	3,170 L	3,430 L	4,190	3,970	3,220 L	3,700 L	3,970	2,780 L	2,150 L	3,160	3,600	4,160
Antimony	0.9 J	1.9 J	46.8 J	19.2 J	0.82 L	0.39 UL	5.8 L	1.1 B	0.94 B	1 B	0.87 B	2.7 L	0.85 L	1.1 B	0.89 B	0.4 UL
Arsenic	11.4	15.5	19.2	12.3 J	13.3	11.6	38.2 K	19.4 K	16.8 L	10.7 L	11.3 K	25.3	25.7	14.4 K	13.9 K	9.6 K
Barium	38.3 J	57	114	187 J	61.5	48	155	63.5	65.5	52.8	49	49.2	32.2 J	59	51.4	50.4
Beryllium	0.28 B	0.34 B	0.36 B	0.31 B	0.33 B	0.29 B	0.22 L	0.28 L	0.36 B	0.22 B	0.35 L	0.47 J	0.55 J	0.38 L	0.38 L	0.26 L
Cadmium	0.69 UJ	1.8 J	4 J	9.2	0.55 J	0.085 B	1 J	0.38 B	0.48 B	0.18 B	0.34 B	0.42 B	0.58 J	0.33 B	0.32 B	0.59 B
Calcium	14,200	91,100	113,000	65,500	75,500 J	24,200 J	18,300 J	29,800 J	58,000	21,800	15,300 J	130,000 J	210,000 J	19,800 J	14,400 J	26,300 J
Chromium	7.4 J	73.6 J	35.2 J	40.8 J	13.7	8.4	20.6	9.7	11.1	9.6	8.8	17.8	24.5	8.9	12.1	10.1
Cobalt	3.1 J	5.1 J	6.8 J	12 J	2.8 J	2.6 J	3.5 J	2.3 J	3.5 J	2.6 J	2.7 J	4 J	5.2 J	3.1 J	3 J	2.3 J
Copper	16	78.9	437	5,060	50.3 J	26.1 J	106	32	31.5 L	21.5 L	19	45.7 J	66.3 J	26.5	24.6	28
Cyanide	2.7 U	2.7 U	2.8 U	2.9 U	0.044 UL	0.043 UL	0.045 L	0.043 UL	0.046 B	0.078 B	0.052 L	0.044 UL	0.043 UL	0.061 L	0.043 UL	0.042 UL
Iron	9,160	14,300	27,300	65,200 L	12,400	9,380	17,200	9,550	13,700 L	10,000	10,600	18,200	24,600	10,400	11,200	10,500
Lead	35.3 J	180 J	2,670 J	694	66.4 J	35.5	247	62.1	67.5	44.7	40.5	59.8	50.9	58.8	56	48.6
Magnesium	2,730 J	3,210 J	2,520 J	2,190	3,820	2,460	2,190 J	7,070 J	5,450	4,830	2,880 J	2,070	2,030	6,860 J	4,240 J	9,840 J
Manganese	65.7	152	389	673 J	130 L	84.5 L	220	78.5	168 L	84.9 L	80.5	219 L	312 L	76.4	80.7	84
Mercury	0.048 U	0.1 J	0.05 U	0.28	0.087 B	0.058 B	0.2 L	0.12 L	0.091 B	0.097 B	0.08 L	0.074 B	0.055 B	0.099 L	0.11 L	0.096 L
Nickel	5.9 J	22.3 J	34.5 J	101	11	6.6 J	14.5	7.1 J	8.6 J	6.6 J	6.6 J	9.8	12.7	7.8	8.7	7.7 J
Potassium	375 J	763 J	590 J	775 J	506 J	446 J	679 J	422 J	1,030 J	447 J	458 J	627 J	689 J	422 J	454 J	650 J
Selenium	0.97 B	0.53 U	0.54 U	0.56 U	1.1 U	1.2	1.2 UL	1 UL	1.1 U	1 U	1 UL	1.1 U	1.1 U	1.1 L	1.1 UL	1.1 UL
Silver	0.48 U	0.48 U	2.1 J	14.7	0.13 J	0.12 U	0.14 UL	0.12 UL	0.13 U	0.12 U	0.13 UL	0.14 U	0.13 U	0.12 UL	0.13 UL	0.13 UL
Sodium	188 J	838 J	1,760 J	1,540	926 J	455 B	473 J	229 B	736 J	321 B	204 B	1,580	2,400	167 B	171 B	243 J
Thallium	1.1 U	1.1 U	1.1 U	2.9 B	3.1	3.2 L	8 K	4 K	6.2 L	5.8 L	4.3 K	5 L	4 L	5 K	4.7 K	4.7 K
Vanadium	15.6	30.4	83.2	71.5 J	21.5	14.5	24.1	17.1	21.7	15.8	15.2	34.8	44.8	13.5	14.7	13.8
Zinc	45.3	365	682	1,400	106 J	47.9 J	332 K	79.5 K	67.1 L	56.4 L	52 K	146 J	167 J	66.4 K	59.8 K	75.4 K
Wet Chemistry (MG/KG)																
% Solids	92.3	91.2	89.5	86.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
L - Reported value may be biased low
U - Analyte not detected

Table A-2
Surface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS28	NBW14-DS29	NBW14-DS30	NBW14-DS31	NBW14-DS32	NBW14-DS33	NBW14-DS34	NBW14-DS35	NBW14-DS36	NBW14-DS37	NBW14-DS38	NBW14-DS40	NBW14-DS41	NBW14-DS42	NBW14-DS43
Sample ID	NBW14-DS28-00	NBW14-DS29-00	NBW14-DS30-00	NBW14-DS31-00	NBW14-DS32-00	NBW14-DS33-00	NBW14-DS34-00	NBW14-DS35-00	NBW14-DS36-00	NBW14-DS37-00	NBW14-DS38-00	NBW14-DS40-00	NBW14-DS41-00	NBW14-DS42-00	NBW14-DS43-00
Sample Date	09/12/00	09/11/00	09/12/00	09/20/00	09/12/00	09/12/00	09/12/00	09/12/00	09/20/00	09/12/00	09/19/00	08/21/01	08/21/01	08/21/01	08/21/01
Chemical Name															
Volatile Organic Compounds (UG/KG)															
1,1,1-Trichloroethane	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
1,1,2,2-Tetrachloroethane	11 UJ	11 UR	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
1,1,2-Trichloroethane	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
1,1-Dichloroethane	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
1,1-Dichloroethene	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
1,2,4-Trichlorobenzene	11 UJ	11 UR	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
1,2-Dibromo-3-chloropropane	11 UJ	11 UR	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
1,2-Dibromoethane	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
1,2-Dichlorobenzene	11 UJ	11 UR	11 U	11 U	11 UJ	270	1.21 J	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
1,2-Dichloroethane	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
1,2-Dichloropropane	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
1,3-Dichlorobenzene	11 UJ	11 UR	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
1,4-Dichlorobenzene	11 UJ	11 UR	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
2-Butanone	11 UJ	11 U	11 U	11 U	3.86 B	36.5	2.27 B	4.92 B	11 U	2.24 B	11 U	11 U	11 U	11 U	11 U
2-Hexanone	11 UJ	11 UR	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
4-Methyl-2-pentanone	11 UJ	11 UR	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Acetone	11 UJ	11 U	4.6 B	11 U	6.48 B	269 J	10.6 B	7.1 B	11 U	5.52 B	11 U	3 B	3 B	3 B	3 B
Benzene	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Bromodichloromethane	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Bromoform	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Bromomethane	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Carbon disulfide	11 UJ	11 U	11 U	11 U	11 UJ	5.72 J	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Carbon tetrachloride	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Chlorobenzene	11 UJ	11 UR	11 U	11 U	11 UJ	151	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Chloroethane	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Chloroform	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Chloromethane	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Cumene	11 UJ	11 UR	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Cyclohexane	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Dibromochloromethane	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Dichlorodifluoromethane(Freon-12)	11 UJ	11 U	11 U	11 U	11 UJ	33 UJ	11 UJ	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Ethylbenzene	11 UJ	11 UR	11 U	1.26 J	11 UJ	33 U	1.35 J	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Methyl acetate	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Methyl-tert-butyl ether (MTBE)	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Methylcyclohexane	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Methylene chloride	12.6 B	21 J	1.11 B	13.4 B	3.08 B	20.6 J	2.35 B	1.68 B	1.63 B	3.74 B	11 U	2 B	2 B	2 B	2 B
Styrene	11 UJ	11 UR	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Tetrachloroethene	11 UJ	11 UR	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Toluene	11.6 J	50.4 J	11 U	5.7 J	3.43 J	17.3 J	3.49 J	1.42 J	11 U	1.4 J	11 U	11 U	11 U	11 U	11 U
Trichloroethene	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Trichlorofluoromethane(Freon-11)	11 UJ	4.03 J	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Vinyl chloride	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Xylene, total	11 UJ	11 UR	11 U	8.18 J	11 UJ	33 U	7.61 J	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
cis-1,2-Dichloroethene	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
cis-1,3-Dichloropropene	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
trans-1,2-Dichloroethene	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
trans-1,3-Dichloropropene	11 UJ	11 U	11 U	11 U	11 UJ	33 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
L - Reported value may be biased low

U - Analyte not detected

Table A-2
Surface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS28	NBW14-DS29	NBW14-DS30	NBW14-DS31	NBW14-DS32	NBW14-DS33	NBW14-DS34	NBW14-DS35	NBW14-DS36	NBW14-DS37	NBW14-DS38	NBW14-DS40	NBW14-DS41	NBW14-DS42	NBW14-DS43
Sample ID	NBW14-DS28-00	NBW14-DS29-00	NBW14-DS30-00	NBW14-DS31-00	NBW14-DS32-00	NBW14-DS33-00	NBW14-DS34-00	NBW14-DS35-00	NBW14-DS36-00	NBW14-DS37-00	NBW14-DS38-00	NBW14-DS40-00	NBW14-DS41-00	NBW14-DS42-00	NBW14-DS43-00
Sample Date	09/12/00	09/11/00	09/12/00	09/20/00	09/12/00	09/12/00	09/12/00	09/12/00	09/20/00	09/12/00	09/19/00	08/21/01	08/21/01	08/21/01	08/21/01
Chemical Name															
Semi-volatile Organic Compounds (UG/KG)															
1,1-Biphenyl	370 U	44.7 J	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	57.0 J	370 U	360 U	360 U	360 U	370 U
1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane)	370 UJ	360 UJ	1,100 U	360 U	350 UJ	430 UJ	380 UJ	350 U	350 U	370 UJ	370 U	360 U	360 U	360 U	370 U
2,4,5-Trichlorophenol	920 U	900 U	2,700 U	910 U	890 U	1,100 U	940 U	890 U	880 U	930 U	920 U	910 U	900 U	900 U	920 U
2,4,6-Trichlorophenol	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
2,4-Dichlorophenol	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
2,4-Dimethylphenol	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
2,4-Dinitrophenol	920 U	900 U	2,700 U	910 U	890 U	1,100 U	940 U	890 U	880 U	930 U	920 U	910 UJ	900 UJ	900 UJ	920 UJ
2,4-Dinitrotoluene	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
2,6-Dinitrotoluene	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
2-Chloronaphthalene	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
2-Chlorophenol	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
2-Methylnaphthalene	NA	NA	1,100 U	360 U	NA	NA	NA	350 U	350 U	NA	370 U	67 J	360 U	360 U	370 U
2-Methylphenol	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
2-Nitroaniline	920 U	900 U	2,700 U	910 U	890 U	1,100 U	940 U	890 U	880 U	930 U	920 U	910 U	900 U	900 U	920 U
2-Nitrophenol	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
3,3'-Dichlorobenzidine	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
3-Nitroaniline	920 U	900 U	2,700 U	910 U	890 U	1,100 U	940 U	890 U	880 U	930 U	920 U	910 U	900 U	900 U	920 U
4,6-Dinitro-2-methylphenol	920 U	900 U	2,700 U	910 U	890 U	1,100 U	940 U	890 U	880 U	930 U	920 U	910 U	900 U	900 U	920 U
4-Bromophenyl-phenylether	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
4-Chloro-3-methylphenol	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
4-Chloroaniline	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
4-Chlorophenyl-phenylether	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
4-Methylphenol	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
4-Nitroaniline	920 UJ	900 UJ	2,700 UJ	910 UJ	890 UJ	1,100 UJ	940 UJ	890 UJ	880 UJ	930 UJ	920 UJ	910 U	900 U	900 U	920 U
4-Nitrophenol	920 U	900 U	2,700 U	910 U	890 U	1,100 U	940 U	890 U	880 U	930 U	920 U	910 U	900 U	900 U	920 U
Acenaphthene	45.9 J	50.7 J	1,100 U	360 U	350 U	430 U	41.9 J	350 U	350 U	87.7 J	370 U	60 J	360 U	360 U	370 U
Acenaphthylene	60.2 J	43.0 J	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	56.1 J	370 U	69 J	360 U	360 U	370 U
Acetophenone	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
Anthracene	144 J	98.0 J	1,100 U	360 U	350 U	430 U	115 J	350 U	51.4 J	166 J	370 U	230 J	360 U	360 U	370 U
Atrazine	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 UJ	360 UJ	360 UJ	370 UJ
Benzaldehyde	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
Benzo(a)anthracene	305 J	171 J	318 J	360 U	51.1 J	430 U	307 J	350 U	188 J	275 J	370 U	590	360 U	45 J	370 U
Benzo(a)pyrene	376	150 J	380 J	44.1 J	61.3 J	430 U	251 J	350 U	196 J	206 J	370 U	670	360 U	40 J	370 U
Benzo(b)fluoranthene	787 J	321 J	426 J	65.0 J	142 J	430 U	568 J	350 U	412 J	483	370 U	690	360 U	37 J	370 U
Benzo(g,h,i)perylene	231 J	92.2 J	269 J	50.9 J	36.8 J	430 U	138 J	350 U	110 J	143 J	370 U	460	360 U	360 U	370 U
Benzo(k)fluoranthene	717 J	202 J	397 J	38.1 J	160 J	430 U	518 J	350 U	354 J	338 J	370 U	950	360 U	54 J	370 U
Butylbenzylphthalate	370 U	360 U	1,100 U	360 U	350 U	94.7 J	60.2 J	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
Caprolactam	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
Carbazole	51.5 J	360 U	1,100 U	360 UJ	350 U	430 U	58.1 J	350 U	350 UJ	39.8 J	370 UJ	100 J	360 U	360 U	370 U
Chrysene	410	302 J	498 J	48.2 J	81.5 J	430 U	382	350 U	218 J	461	370 U	790	360 U	50 J	370 U
Di-n-butylphthalate	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
Di-n-octylphthalate	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
Dibenz(a,h)anthracene	135 J	66.8 J	1,100 U	360 U	350 U	430 U	70.2 J	350 U	58.4 J	108 J	370 U	230 J	360 U	360 U	370 U
Dibenzofuran	62.7 J	104 J	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	146 J	370 U	61 J	360 U	360 U	370 U
Diethylphthalate	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
Dimethyl phthalate	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
Fluoranthene	631	360	661 J	360 U	84.9 J	430 U	773	350 U	253 J	541	370 U	1,600	360 U	83 J	370 U
Fluorene	38.0 J	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	59.1 J	370 U	100 J	360 U	360 U	370 U
Hexachlorobenzene	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
Hexachlorobutadiene	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
Hexachlorocyclopentadiene	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 UJ	360 UJ	360 UJ	370 UJ
Hexachloroethane	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
Indeno(1,2,3-cd)pyrene	286 J	128 J	257 J	39.7 J	47.6 J	430 U	133 J	350 U	122 J	188 J	370 U	580	360 U	360 U	370 U
Isophorone	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
Naphthalene	86.7 J	190 J	1,100 U	360 U	350 U	86.9 J	48.8 J	350 U	350 U	231 J	370 U	81 J	360 U	360 U	370 U
Nitrobenzene	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
Pentachlorophenol	920 U	900 U	2,700 U	910 U	890 U	1,100 U	940 U	890 U	880 U	930 U	920 U	910 U	900 U	900 U	920 U
Phenanthrene	516	409	185 J	360 U	67.2 J	430 U	389	350 U	149 J	545	370 U	840	360 U	38 J	370 U

NA - Not analyzed
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J - Reported value is estimated
K - Reported value may be biased high
L - Reported value may be biased low

U - Analyte not detected

Table A-2
Surface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS28	NBW14-DS29	NBW14-DS30	NBW14-DS31	NBW14-DS32	NBW14-DS33	NBW14-DS34	NBW14-DS35	NBW14-DS36	NBW14-DS37	NBW14-DS38	NBW14-DS40	NBW14-DS41	NBW14-DS42	NBW14-DS43
Sample ID	NBW14-DS28-00	NBW14-DS29-00	NBW14-DS30-00	NBW14-DS31-00	NBW14-DS32-00	NBW14-DS33-00	NBW14-DS34-00	NBW14-DS35-00	NBW14-DS36-00	NBW14-DS37-00	NBW14-DS38-00	NBW14-DS40-00	NBW14-DS41-00	NBW14-DS42-00	NBW14-DS43-00
Sample Date	09/12/00	09/11/00	09/12/00	09/20/00	09/12/00	09/12/00	09/12/00	09/12/00	09/20/00	09/12/00	09/19/00	08/21/01	08/21/01	08/21/01	08/21/01
Chemical Name															
Phenol	370 U	360 U	1,100 U	360 U	350 U	224 J	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
Pyrene	678 J	308 J	473 J	61.1 J	64.1 J	430 U	763 J	350 U	338 J	471 J	370 U	1,400	360 U	79 J	370 U
bis(2-Chloroethoxy)methane	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
bis(2-Chloroethyl)ether	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
bis(2-Ethylhexyl)phthalate	87.3 J	61.4 J	122 B	360 U	42.1 J	530	175 J	350 U	75.9 J	181 J	370 U	290 B	110 B	230 B	130 B
n-Nitroso-di-n-propylamine	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
n-Nitrosodiphenylamine	370 U	360 U	1,100 U	360 U	350 U	430 U	380 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	370 U
Pesticide/Polychlorinated Biphenyls (UG/KG)															
4,4'-DDD	12 J	5.2 J	5.7 J	2.2 J	3.5 U	4.3 U	45	3.5 U	2 J	3.7 U	3.7 U	3.6 U	3.6 U	3.6 U	3.7 U
4,4'-DDE	5.7	2.5 J	3 J	8.5 J	2.5 J	6.9 J	63 J	3.5 U	2 J	2.1 J	3.7 U	3.6 U	3.6 U	3.6 U	3.7 U
4,4'-DDT	6.3 J	4.2 J	3.6 U	2.3 J	3.5 U	2.2 U	3.6 J	3.5 U	6.6 J	5.7 J	3.7 U	3.6 U	3.6 U	3.6 U	3.7 U
Aldrin	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U	2.2 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U	0.95 J	1.9 U	1.8 U	1.9 U
Aroclor-1016	37 U	36 U	36 U	36 U	35 U	43 U	38 U	35 U	35 U	37 U	37 U	36 U	36 U	36 U	37 U
Aroclor-1221	74 U	73 U	73 U	74 U	72 U	88 U	76 U	72 U	71 U	75 U	74 U	73 U	73 U	73 U	74 U
Aroclor-1232	37 U	36 U	36 U	36 U	35 U	43 U	38 U	35 U	35 U	37 U	37 U	36 U	36 U	36 U	37 U
Aroclor-1242	37 U	36 U	36 U	36 U	35 U	43 U	38 U	35 U	35 U	37 U	37 U	36 U	36 U	36 U	37 U
Aroclor-1248	37 U	36 U	36 U	36 U	35 U	43 U	190	35 U	35 U	37 U	37 U	36 U	36 U	36 U	37 U
Aroclor-1254	37 U	36 U	36 U	210	35 U	590	38 U	35 U	35 U	37 U	37 U	350 J	36 U	36 U	37 U
Aroclor-1260	37 U	36 U	150 J	36 U	35 U	43 U	38 U	35 U	35 U	37 U	37 U	190	7.9 J	36 U	37 U
Dieldrin	7.4 J	10	2 J	6 J	2.1 J	8.2	3.3 J	3.5 U	7.3 J	8.7 J	3.7 U	3.6 U	3.6 U	3.6	3.7 U
Endosulfan I	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U	1.6 J	1.9 U	1.8 U	1.8 U	0.86 J	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U
Endosulfan II	3.7 U	3.6 U	3.6 U	3.6 U	3.5 U	4.3	3.8 U	3.5 U	3.5 U	3.7 U	3.7 U	3.6 U	3.6 U	3.6 U	3.7 U
Endosulfan sulfate	2 J	3.6 U	3.6 U	1.8 J	3.5 U	7.8	3.1 J	3.5 U	1.5 J	1.9 J	3.7 U	3.6 U	3.6 U	3.6 U	3.7 U
Endrin	3.7	2.2	3.2 J	3.6 U	3.5 U	4.3 U	3.8 U	3.5 U	3.5 U	3.7	3.7 U	3.6 U	3.6 U	3.6 U	3.7 U
Endrin aldehyde	3.7 U	0.78 J	3.6 U	4.7	1.7 J	11	3.8 U	3.5 U	1.3 J	1.1 J	3.7 U	3.6 U	3.6 U	3.6 U	3.7 U
Endrin ketone	3.7 U	1.3 J	3.6 U	3.6 U	3.5	3.2 J	3.8 U	3.5 U	3.5 U	6.5 J	3.7 U	3.6 U	3.6 U	3.6 U	3.7 U
Heptachlor	1.9	1.8 U	2.8 J	1.9 U	1.8 U	2.2 U	1.9 U	1.8 U	1.8 U	1.9 J	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U
Heptachlor epoxide	1.9	1.8 U	1.8 U	1.9 U	1.8 U	2.2 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U
Methoxychlor	19 U	18 U	18 U	19 U	18 U	22 U	19 U	18 U	18 U	19 U	19 U	19 U	19 U	18 U	19 U
Toxaphene	190 U	180 U	180 U	190 U	180 U	220 U	190 U	180 U	180 U	190 U	190 U	190 U	190 U	180 U	190 U
alpha-BHC	0.84 J	1.4 J	0.56 J	1.9 U	1.8 J	1.8 J	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U
alpha-Chlordane	3.8	1.8 U	2.6 J	1.9 U	1.8 U	2.2 U	1.6 J	1.8 U	2.9 J	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U
beta-BHC	1.4 J	1.8 U	1.8 U	1.9 U	1.8	3.2 J	1.7	1.8 U	1.8 U	1.7 J	1.9 U	1.9 U	1.9 U	4	1.9 U
delta-BHC	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U	2.2 U	1.9 U	1.8 U	1.8 U	1.9 J	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U
gamma-BHC (Lindane)	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U	2.2 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U
gamma-Chlordane	2.6 J	0.55 J	5.7 J	1.9 U	0.89 J	2.2 U	1.9 U	1.8 U	3 J	0.89 J	1.9 U	1.9 U	1.9 U	1.7 J	1.9 U
Dioxin/Furans (UG/KG)															
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-Heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8,9-Heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,7,8-Pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDD (dioxin)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-Tetrachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
L - Reported value may be biased low

U - Analyte not detected

Table A-2
Surface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS28	NBW14-DS29	NBW14-DS30	NBW14-DS31	NBW14-DS32	NBW14-DS33	NBW14-DS34	NBW14-DS35	NBW14-DS36	NBW14-DS37	NBW14-DS38	NBW14-DS40	NBW14-DS41	NBW14-DS42	NBW14-DS43
Sample ID	NBW14-DS28-00	NBW14-DS29-00	NBW14-DS30-00	NBW14-DS31-00	NBW14-DS32-00	NBW14-DS33-00	NBW14-DS34-00	NBW14-DS35-00	NBW14-DS36-00	NBW14-DS37-00	NBW14-DS38-00	NBW14-DS40-00	NBW14-DS41-00	NBW14-DS42-00	NBW14-DS43-00
Sample Date	09/12/00	09/11/00	09/12/00	09/20/00	09/12/00	09/12/00	09/12/00	09/12/00	09/20/00	09/12/00	09/19/00	08/21/01	08/21/01	08/21/01	08/21/01
Chemical Name															
Total Metals (MG/KG)															
Aluminum	3,500	3,070	3,390 L	2,480 L	5,300	22,400	12,100	9,700 L	2,990 L	3,780	1,130 L	7,300 L	1,270 L	5,190 L	1,300 L
Antimony	1.6 B	0.94 B	3.2 L	0.62 L	1.8 B	107 L	18.1 L	1.1 B	0.4 UL	1.2 B	0.4 UL	31.7 L	0.7 B	2.1 B	0.516 UL
Arsenic	15.2 K	12 K	16.7 K	36.8	13 K	7.2 K	8.9 K	1.5 J	9.9	11.8 K	15.2	10.4 J	15.2 J	9 J	17.5 J
Barium	55	54.2	67	43.4 J	60.4	888	234	151	38.5 J	46.7	18.4 J	200	19.6 J	74.5	15.9 K
Beryllium	0.29 L	0.4 L	0.44 L	0.24 B	0.28 L	0.28 L	0.44 L	0.48 L	0.38 B	0.35 L	0.31 B	0.84 J	0.67 J	0.44 B	0.61 J
Cadmium	1.3	0.26 B	6.6	0.19 B	0.57 B	20.3	9	0.37 B	1.1	0.26 B	0.064 U	13.7	0.09 B	1.6	0.29 B
Calcium	122,000 J	9,250 J	42,500	181,000 J	23,300 J	40,300 J	37,000 J	6,240	80,900 J	27,000 J	281,000 J	40,400	1,810	90,700	202,000
Chromium	16.3	8.1	26.2	13.3	11.6	182	43.5	18	16.2	8.4	12.9	66.7	16	19.2	19.2
Cobalt	3.1 J	2.8 J	5.3 J	2 J	3.6 J	14.7	7.9 J	8.2 J	3.2 J	2.9 J	2.4 J	10 J	3.2 J	4.1 J	4.2 K
Copper	50	29.1	139	15.4 J	52.3	2,240	1,170	32.1	50.4 J	22.1	0.99 J	1,210	0.7 L	74.8	0.165 UL
Cyanide	0.37 L	0.051 L	0.076 L	0.044 UL	0.042 UL	0.58 L	0.13 L	0.041 UL	0.042 UL	0.058 L	0.043 UL	0.25 J	0.06 J	0.07 J	0.08 J
Iron	13,800	10,300	24,500	12,000	15,100	135,000	49,300	18,100	15,700	11,900	15,000	22,200 L	18,300 L	24,200 L	27,600 L
Lead	77.6	49.2	151 K	54.2	58.1	12,000	1,180	33.9 K	121	41.7	4.5	634	4.8	100	4.7 K
Magnesium	4,230 J	3,160 J	2,390	2,840	3,780 J	7,390 J	3,940 J	6,280	1,390	10,900 J	1,950	2,860	1,310	2,850	1,590
Manganese	168	57.1	206	241 L	151	2,780	809	414	210 L	73.4	244 L	356 K	210 K	325 K	237 K
Mercury	0.12 L	0.082 L	0.17	0.076 B	0.066 L	0.64 L	1.1 L	0.068 J	0.12 B	0.076 L	0.045 U	0.78	0.046 U	0.15	0.043 U
Nickel	14.6	7.4 J	40.4	7.9 J	9.7	292	91.9	16.5	10.8	7.5 J	3.4 J	111	4.9 J	18.5	5 K
Potassium	678 J	306 J	647 J	438 J	1,160 J	1,220 J	3,990 J	7,110	793 J	406 J	465 J	971 J	590 J	3,060	710 K
Selenium	1 UL	1.5 L	1 U	1.1 U	1.2 L	2.2 L	1.1 UL	1.1 U	1 U	1.4 L	1.1 U	0.92 J	0.742 U	0.77 U	0.764 UL
Silver	0.32 UL	0.13 UL	0.39 UL	0.13 U	0.13 UL	15 L	7.4 L	0.13 UL	0.17 J	0.13 UL	0.13 U	4.4	0.14 U	0.93 J	0.145 U
Sodium	1,410	125 B	501 J	2,140	378 J	3,130	1,640	278 J	1,140	156 B	2,990	3,710	1,770	939 J	2,010 K
Thallium	4.1 K	5 K	8.5	3.5 L	7.5 K	41.6 K	18.9 K	10.1	3.9 L	5.2 K	2.1 L	0.751 UL	0.702 UL	0.728 UL	0.723 UL
Vanadium	30.8	13.4	133	33.3	25.6	159	69.9	37.5	31.6	13.4	27	135	37.1	37.3	30.6
Zinc	135 K	41.8 K	273	64.8 J	106 K	3,030 K	1,790 K	108	287 J	47.2 K	12.6 J	2,420 J	20.1 J	201 J	24.3 K
Wet Chemistry (MG/KG)															
% Solids	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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J - Reported value is estimated
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L - Reported value may be biased low

U - Analyte not detected

Table A-2
Surface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS44	NBW14-DS45	NBW14-DS46	NBW14-DS47		NBW14-DS48	NBW14-DS49		NBW14-DS51	NBW14-DS52	NBW14-DS53	NBW14-DS54	
Sample ID	NBW14-DS44-00	NBW14-DS45-00	NBW14-DS46-00	NBW14-DS47-00	NBW14-DS47-P-00	NBW14-DS48-00	NBW14-DS49-00	NBW14-DS49-P-00	NBW14-DS51-00	NBW14-DS52-00	NBW14-DS53-00	NBW14-DS54-00	NBW14-DS54-P-00
Sample Date	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01
Chemical Name													
Volatile Organic Compounds (UG/KG)													
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
1,1,2,2-Tetrachloroethane	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
1,1,2-Trichloroethane	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
1,1-Dichloroethane	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
1,1-Dichloroethene	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
1,2-Dibromo-3-chloropropane	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
1,2-Dibromoethane	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
1,2-Dichlorobenzene	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
1,2-Dichloroethane	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
1,2-Dichloropropane	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
1,4-Dichlorobenzene	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
2-Butanone	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
2-Hexanone	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
4-Methyl-2-pentanone	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Acetone	NA	NA	NA	NA	NA	NA	4 B	3 B	3 B	11 B	3 B	2 B	3 B
Benzene	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Bromodichloromethane	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Bromoform	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Bromomethane	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Carbon disulfide	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Carbon tetrachloride	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Chlorobenzene	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Chloroethane	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Chloroform	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Chloromethane	NA	NA	NA	NA	NA	NA	1 J	11 U	11 U	12 U	12 U	11 U	11 U
Cumene	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Cyclohexane	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Dibromochloromethane	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Dichlorodifluoromethane(Freon-12)	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Ethylbenzene	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Methyl acetate	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Methyl-tert-butyl ether (MTBE)	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Methylcyclohexane	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Methylene chloride	NA	NA	NA	NA	NA	NA	2 B	2 B	1 B	1 B	2 B	1 B	1 B
Styrene	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Tetrachloroethene	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Toluene	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Trichloroethene	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Trichlorofluoromethane(Freon-11)	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Vinyl chloride	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
Xylene, total	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
cis-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U
trans-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	12 U	12 U	11 U	11 U

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L - Reported value may be biased low

U - Analyte not detected

Table A-2
Surface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS44	NBW14-DS45	NBW14-DS46	NBW14-DS47		NBW14-DS48	NBW14-DS49		NBW14-DS51	NBW14-DS52	NBW14-DS53	NBW14-DS54	
Sample ID	NBW14-DS44-00	NBW14-DS45-00	NBW14-DS46-00	NBW14-DS47-00	NBW14-DS47-P-00	NBW14-DS48-00	NBW14-DS49-00	NBW14-DS49-P-00	NBW14-DS51-00	NBW14-DS52-00	NBW14-DS53-00	NBW14-DS54-00	NBW14-DS54-P-00
Sample Date	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01
Chemical Name													
Semi-volatile Organic Compounds (UG/KG)													
1,1-Biphenyl	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane)	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
2,4,5-Trichlorophenol	NA	NA	NA	NA	NA	NA	900 U	920 U	910 U	970 U	970 U	890 U	890 U
2,4,6-Trichlorophenol	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
2,4-Dichlorophenol	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
2,4-Dimethylphenol	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
2,4-Dinitrophenol	NA	NA	NA	NA	NA	NA	900 UJ	920 UJ	910 UJ	970 UJ	970 UJ	890 UJ	890 UJ
2,4-Dinitrotoluene	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
2,6-Dinitrotoluene	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
2-Chloronaphthalene	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
2-Chlorophenol	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
2-Methylphenol	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
2-Nitroaniline	NA	NA	NA	NA	NA	NA	900 U	920 U	910 U	970 U	970 U	890 U	890 U
2-Nitrophenol	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
3,3'-Dichlorobenzidine	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
3-Nitroaniline	NA	NA	NA	NA	NA	NA	900 U	920 U	910 U	970 U	970 U	890 U	890 U
4,6-Dinitro-2-methylphenol	NA	NA	NA	NA	NA	NA	900 U	920 U	910 U	970 U	970 U	890 U	890 U
4-Bromophenyl-phenylether	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
4-Chloro-3-methylphenol	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
4-Chloroaniline	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
4-Chlorophenyl-phenylether	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
4-Methylphenol	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
4-Nitroaniline	NA	NA	NA	NA	NA	NA	900 U	920 U	910 U	970 U	970 U	890 U	890 U
4-Nitrophenol	NA	NA	NA	NA	NA	NA	900 U	920 U	910 U	970 U	970 U	890 U	890 U
Acenaphthene	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
Acenaphthylene	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
Acetophenone	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
Anthracene	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
Atrazine	NA	NA	NA	NA	NA	NA	360 UJ	370 UJ	360 UJ	380 UJ	380 UJ	350 UJ	350 UJ
Benzaldehyde	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	360 U	51 J	43 J	70 J	380 U	350 U	350 U
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	360 U	51 J	48 J	61 J	380 U	350 U	350 U
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	39 J	70 J	81 J	75 J	380 U	36 J	41 J
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	360 U	370 U	55 J	42 J	380 U	350 U	16 J
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	360 U	76 J	61 J	60 J	380 U	47 J	350 U
Butylbenzylphthalate	NA	NA	NA	NA	NA	NA	360 U	44 J	360 U	380 U	380 U	350 U	350 U
Caprolactam	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
Carbazole	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
Chrysene	NA	NA	NA	NA	NA	NA	36 J	64 J	68 J	100 J	380 U	350 U	350 U
Di-n-butylphthalate	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	5,600	380 U	350 U	350 U
Di-n-octylphthalate	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
Dibenzofuran	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
Diethylphthalate	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	7,900	380 U	350 U	350 U
Dimethyl phthalate	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
Fluoranthene	NA	NA	NA	NA	NA	NA	50 J	77 J	70 J	120 J	380 U	350 U	350 U
Fluorene	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
Hexachlorobenzene	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
Hexachlorobutadiene	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
Hexachlorocyclopentadiene	NA	NA	NA	NA	NA	NA	360 UJ	370 UJ	360 UJ	380 UJ	380 UJ	350 UJ	350 UJ
Hexachloroethane	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	360 U	44 J	63 J	45 J	380 U	350 U	350 U
Isophorone	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
Naphthalene	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
Nitrobenzene	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
Pentachlorophenol	940 U	920 U	920 U	970 U	1,000 U	920 U	900 U	920 U	910 U	970 U	970 U	890 U	890 U
Phenanthrene	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	70 J	380 U	350 U	350 U

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
L - Reported value may be biased low

U - Analyte not detected

Table A-2
Surface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS44	NBW14-DS45	NBW14-DS46	NBW14-DS47		NBW14-DS48	NBW14-DS49		NBW14-DS51	NBW14-DS52	NBW14-DS53	NBW14-DS54	
Sample ID	NBW14-DS44-00	NBW14-DS45-00	NBW14-DS46-00	NBW14-DS47-00	NBW14-DS47-P-00	NBW14-DS48-00	NBW14-DS49-00	NBW14-DS49-P-00	NBW14-DS51-00	NBW14-DS52-00	NBW14-DS53-00	NBW14-DS54-00	NBW14-DS54-P-00
Sample Date	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01
Chemical Name													
Phenol	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	76 J	380 U	350 U	350 U
Pyrene	NA	NA	NA	NA	NA	NA	63 J	89 J	74 J	150 J	380 U	350 U	350 U
bis(2-Chloroethoxy)methane	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
bis(2-Chloroethyl)ether	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
bis(2-Ethylhexyl)phthalate	NA	NA	NA	NA	NA	NA	140 B	130 B	230 B	1,200	55 B	750	460
n-Nitroso-di-n-propylamine	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
n-Nitrosodiphenylamine	NA	NA	NA	NA	NA	NA	360 U	370 U	360 U	380 U	380 U	350 U	350 U
Pesticide/Polychlorinated Biphenyls (UG/KG)													
4,4'-DDD	NA	NA	NA	NA	NA	NA	3.6 U	3.6 U	5.7 J	3.8 U	3.8 U	3.6 U	3.5 U
4,4'-DDE	NA	NA	NA	NA	NA	NA	5.1	2.2 J	6.5	1.3 J	4	1.6 J	2.2 J
4,4'-DDT	NA	NA	NA	NA	NA	NA	3.6 U	3.6 U	9.3	3.8 U	2.2 J	2 J	3.5 U
Aldrin	NA	NA	NA	NA	NA	NA	1.9 U	1.9 U	1.9 U	2 U	2 U	1.8 U	1.8 U
Aroclor-1016	NA	NA	NA	NA	NA	NA	36 U	36 U	36 U	38 U	38 U	36 U	35 U
Aroclor-1221	NA	NA	NA	NA	NA	NA	73 U	74 U	74 U	78 U	78 U	72 U	72 U
Aroclor-1232	NA	NA	NA	NA	NA	NA	36 U	36 U	36 U	38 U	38 U	36 U	35 U
Aroclor-1242	NA	NA	NA	NA	NA	NA	36 U	36 U	36 U	38 U	38 U	36 U	35 U
Aroclor-1248	NA	NA	NA	NA	NA	NA	36 U	36 U	36 U	38 U	38 U	36 U	35 U
Aroclor-1254	NA	NA	NA	NA	NA	NA	36 U	36 U	36 U	38 U	38 U	36 U	35 U
Aroclor-1260	NA	NA	NA	NA	NA	NA	34 J	47 J	36 U	33 J	38 U	36 U	35 U
Dieldrin	NA	NA	NA	NA	NA	NA	3.6 U	3.6 U	10	3.8 U	3.8 U	3.6 U	3.5 U
Endosulfan I	NA	NA	NA	NA	NA	NA	1.9 U	1.9 U	1.9 U	2 U	2 U	1.8 U	1.8 U
Endosulfan II	NA	NA	NA	NA	NA	NA	3.6 U	3.6 U	3.6 U	3.8 U	3.8 U	3.6 U	3.5 U
Endosulfan sulfate	NA	NA	NA	NA	NA	NA	3.6 U	3.6 U	3.6 U	3.8 U	3.8 U	3.6 U	3.5 U
Endrin	NA	NA	NA	NA	NA	NA	3.6 U	3.6 U	3.6 U	3.8 U	3.8 U	3.6 U	3.5 U
Endrin aldehyde	NA	NA	NA	NA	NA	NA	3.6 U	3.6 U	1.8 J	3.8 U	3.8 U	3.6 U	3.5 U
Endrin ketone	NA	NA	NA	NA	NA	NA	3.6 U	3.6 U	3.6 U	3.8 U	3.8 U	3.6 U	3.5 U
Heptachlor	NA	NA	NA	NA	NA	NA	1.9 U	1.9 U	1.4 J	2 U	2 U	1.8 U	1.8 U
Heptachlor epoxide	NA	NA	NA	NA	NA	NA	1.9 U	1.9 U	11	2 U	2 U	1.8 U	1.8 U
Methoxychlor	NA	NA	NA	NA	NA	NA	19 U	19 U	19 U	20 U	20 U	18 U	18 U
Toxaphene	NA	NA	NA	NA	NA	NA	190 U	190 U	190 U	200 U	200 U	180 U	180 U
alpha-BHC	NA	NA	NA	NA	NA	NA	1.9 U	1.9 U	1.9 U	2 U	2 U	1.8 U	1.8 U
alpha-Chlordane	NA	NA	NA	NA	NA	NA	1.1 J	1.3 J	63 J	2 U	0.66 J	7.6	1.8 U
beta-BHC	NA	NA	NA	NA	NA	NA	1.9 U	1.8 J	1.9 U	3.1 J	1.8 J	1.8 U	1.8 U
delta-BHC	NA	NA	NA	NA	NA	NA	1.9 U	1.9 U	1.9 U	2 U	2 U	1.8 U	1.8 U
gamma-BHC (Lindane)	NA	NA	NA	NA	NA	NA	1.9 U	1.9 U	1.9 U	2 U	2 U	1.8 U	1.8 U
gamma-Chlordane	NA	NA	NA	NA	NA	NA	0.96 J	0.91 J	51	0.79 J	2 U	1.8 U	1.8 U
Dioxin/Furans (UG/KG)													
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.0753	0.151	0.106	0.542	0.461	0.0771	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.0157	0.0219	0.0121	0.098	0.0745	0.0113	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.00115 J	0.00174 J	0.00103 J	0.00675	0.00539	0.00135 J	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.00356	0.00175 J	0.0012 J	0.0134	0.0102	0.00182 J	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzofuran	0.00594	0.00271	0.00226 J	0.0289	0.0188	0.00283	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.0053	0.00499	0.00322	0.0264	0.0221	0.00348	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzofuran	0.00604	0.00263	0.00207 J	0.0275	0.0182	0.00285	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.00441	0.00304	0.00211 J	0.0188	0.014	0.00244 J	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzofuran	9.60E-04 J	6.22E-04 J	4.72E-04 J	0.00464	0.00346	9.36E-04 J	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.00829	0.00226 J	0.00186 K	0.0208	0.015	0.00324	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzofuran	0.00544	0.00181 J	0.00156 J	0.0199	0.0132	0.00253 J	NA	NA	NA	NA	NA	NA	NA
2,3,4,6,7,8-Hexachlorodibenzofuran	0.006	0.00287	0.00219 J	0.0242	0.017	0.00269 J	NA	NA	NA	NA	NA	NA	NA
2,3,4,7,8-Pentachlorodibenzofuran	0.0105	0.0037	0.00272	0.0284	0.02	0.00421	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDD (dioxin)	0.00187	9.12E-04	6.23E-04	0.00412	0.00306	8.70E-04	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-Tetrachlorodibenzofuran	0.00429	0.00159	0.00103	0.0132	0.00883	0.00159	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzo-p-dioxin	0.18	0.355	0.362	2.1	1.77	0.18	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzofuran	0.039	0.0741	0.0362	0.229	0.183	0.03	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzo-p-dioxin	0.0608	0.0494	0.0367	0.383	0.318	0.029	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzofuran	0.072	0.0411	0.0275	0.292	0.201	0.0297	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzo-p-dioxin	1.64	2.7	2.28	5.42 J	4.9	2.21	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzofuran	0.0356	0.0843	0.0335	0.158	0.14	0.0238	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzo-p-dioxin	0.0798	0.0215	0.0166	0.291	0.213	0.0236	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzofuran	0.133	0.0359	0.0291	0.347	0.243	0.0425	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzo-p-dioxin	0.064	0.0122	0.0105	0.165	0.138	0.0163	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzofuran	0.142	0.033	0.00849	0.256	0.22	0.042	NA	NA	NA	NA	NA	NA	NA

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
L - Reported value may be biased low

U - Analyte not detected

Table A-2
Surface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS44	NBW14-DS45	NBW14-DS46	NBW14-DS47		NBW14-DS48	NBW14-DS49		NBW14-DS51	NBW14-DS52	NBW14-DS53	NBW14-DS54	
Sample ID	NBW14-DS44-00	NBW14-DS45-00	NBW14-DS46-00	NBW14-DS47-00	NBW14-DS47-P-00	NBW14-DS48-00	NBW14-DS49-00	NBW14-DS49-P-00	NBW14-DS51-00	NBW14-DS52-00	NBW14-DS53-00	NBW14-DS54-00	NBW14-DS54-P-00
Sample Date	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01
Chemical Name													
Total Metals (MG/KG)													
Aluminum	NA	NA	NA	NA	NA	NA	2,610 L	2,950 L	2,650 L	20,500 L	1,920 L	1,390 L	1,450 L
Antimony	NA	NA	NA	NA	NA	NA	1.2 B	0.55 B	0.7 B	53 L	0.84 B	0.61 B	0.52 B
Arsenic	NA	NA	NA	NA	NA	NA	8.7 J	10.2 J	9.6 J	13.2 J	14.4 J	17.8 J	17.2 J
Barium	NA	NA	NA	NA	NA	NA	29.2 J	24.5 J	31.6 J	428	19.3 K	16.6 K	16 K
Beryllium	NA	NA	NA	NA	NA	NA	0.32 B	0.36 B	0.58 J	0.43 B	0.34 B	0.52 B	0.39 B
Cadmium	NA	NA	NA	NA	NA	NA	0.85 J	0.69 J	0.64 J	22.6	0.36 B	0.082 U	0.13 B
Calcium	NA	NA	NA	NA	NA	NA	54,500	69,000	57,800	25,800	163,000	172,000	176,000
Chromium	NA	NA	NA	NA	NA	NA	14.3	16.1	24.9	97.7	15.1	15	14
Cobalt	NA	NA	NA	NA	NA	NA	2.5 J	2.8 J	4.5 J	19.7	2.5 K	3 K	2.6 K
Copper	NA	NA	NA	NA	NA	NA	22.7	18.8	33.5	2,740	3.5 J	0.95 L	1.1 J
Cyanide	NA	NA	NA	NA	NA	NA	0.04 J	0.05 J	0.11 J	0.26 J	0.06 J	0.08 J	0.07 J
Iron	NA	NA	NA	NA	NA	NA	14,500 L	15,500 L	18,000 L	97,000 L	17,600 L	18,200 L	20,300 L
Lead	NA	NA	NA	NA	NA	NA	64.5	66.3	95.4	2,720	15.7 K	7.3 K	7.8 K
Magnesium	NA	NA	NA	NA	NA	NA	1,140	1,330	1,380	5,690	1,450	1,320	1,340
Manganese	NA	NA	NA	NA	NA	NA	155 K	171 K	233 K	1,350 K	199 K	201 K	252 K
Mercury	NA	NA	NA	NA	NA	NA	0.09 J	0.07 J	0.16	0.71	0.058 U	0.042 U	0.06 J
Nickel	NA	NA	NA	NA	NA	NA	10.2	9.4	8.5	749	4.9 K	5.5 K	5.1 K
Potassium	NA	NA	NA	NA	NA	NA	948 J	950 J	926 J	2,730	713 K	564 K	544 K
Selenium	NA	NA	NA	NA	NA	NA	0.792 U	0.802 U	0.762 U	1 J	0.861 UL	0.761 UL	0.763 UL
Silver	NA	NA	NA	NA	NA	NA	0.37 J	0.152 U	0.144 U	9.9	0.163 U	0.144 U	0.144 U
Sodium	NA	NA	NA	NA	NA	NA	573 J	773 J	937 J	5,780	1,450 K	1,720 K	1,720 K
Thallium	NA	NA	NA	NA	NA	NA	0.749 UL	0.758 UL	0.72 UL	0.812 UL	0.815 UL	0.72 UL	0.721 UL
Vanadium	NA	NA	NA	NA	NA	NA	22.5	27.8	33.5	183	31.1	35.4	33.7
Zinc	NA	NA	NA	NA	NA	NA	92.8 J	143 J	354 J	3,500 J	22 K	19.9 K	19.4 K
Wet Chemistry (MG/KG)													
% Solids	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA - Not analyzed
B - Analyte not detected above associated blank
J - Reported value is estimated
K - Reported value may be biased high
L - Reported value may be biased low
U - Analyte not detected

Table A-3
Subsurface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS01	NBW14-DS02	NBW14-DS03	NBW14-DS04	NBW14-DS05		NBW14-DS06	NBW14-DS07	NBW14-DS08	NBW14-DS09	NBW14-DS10	NBW14-DS11	NBW14-DS12	NBW14-DS13
Sample ID	NBW14-DS01-02	NBW14-DS02-02	NBW14-DS03-02	NBW14-DS04-02	NBW14-DS05-02	NBW14-DS05P-02	NBW14-DS06-02	NBW14-DS07-02	NBW14-DS08-02	NBW14-DS09-02	NBW14-DS10P-02	NBW14-DS11-02	NBW14-DS12-02	NBW14-DS13-02
Sample Date	09/30/99	09/30/99	09/30/99	09/30/99	09/30/99	09/30/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99
Chemical Name														
Volatile Organic Compounds (UG/KG)														
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cumene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane(Freon-12)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butyl ether (MTBE)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane(Freon-11)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylene, total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA - Not analyzed
B - Analyte not detected above associated blank
D - Result came from a diluted sample
J - Reported value is estimated
K - Reported value may be biased high

L - Reported value may be biased low
U - Analyte not detected

Table A-3
Subsurface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS01	NBW14-DS02	NBW14-DS03	NBW14-DS04	NBW14-DS05		NBW14-DS06	NBW14-DS07	NBW14-DS08	NBW14-DS09	NBW14-DS10	NBW14-DS11	NBW14-DS12	NBW14-DS13
Sample ID	NBW14-DS01-02	NBW14-DS02-02	NBW14-DS03-02	NBW14-DS04-02	NBW14-DS05-02	NBW14-DS05P-02	NBW14-DS06-02	NBW14-DS07-02	NBW14-DS08-02	NBW14-DS09-02	NBW14-DS10P-02	NBW14-DS11-02	NBW14-DS12-02	NBW14-DS13-02
Sample Date	09/30/99	09/30/99	09/30/99	09/30/99	09/30/99	09/30/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99
Chemical Name														
Semi-volatile Organic Compounds (UG/KG)														
1,1-Biphenyl	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	46 J	760 U	730 U
1,2-Dichlorobenzene	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	120 J	730 U
1,3-Dichlorobenzene	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
1,4-Dichlorobenzene	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
2,2'-Oxybis(1-chloropropane)	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
2,4,5-Trichlorophenol	3,000 U	4,800 U	1,800 U	3,800 U	1,900 UR	4,600 UR	1,800 UR	900 UL	880 U	900 U	890 U	940 U	1,900 U	1,800 UR
2,4,6-Trichlorophenol	1,200 U	1,900 U	730 U	1,500 U	740 UR	1,800 UR	720 UR	360 UL	350 U	360 U	350 U	370 U	760 U	730 UR
2,4-Dichlorophenol	1,200 U	1,900 U	730 U	1,500 U	740 UR	1,800 UR	720 UR	360 UL	350 U	360 U	350 U	370 U	760 U	730 UR
2,4-Dimethylphenol	1,200 U	1,900 U	730 U	1,500 U	740 UR	1,800 UR	720 UR	360 UL	350 U	360 U	350 U	370 U	760 U	730 UR
2,4-Dinitrophenol	3,000 U	4,800 U	1,800 U	3,800 U	1,900 UR	4,600 UR	1,800 UR	900 UL	880 U	900 U	890 U	940 U	1,900 U	1,800 UR
2,4-Dinitrotoluene	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
2,6-Dinitrotoluene	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
2-Chloronaphthalene	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
2-Chlorophenol	1,200 U	1,900 U	730 U	1,500 U	740 UR	1,800 UR	720 UR	360 UL	350 U	360 U	350 U	370 U	760 U	730 UR
2-Methylnaphthalene	200 J	2,700	300 J	170 J	150 J	320 J	720 U	49 L	350 U	360 U	350 U	96 J	290 J	730 U
2-Methylphenol	1,200 U	1,900 U	730 U	1,500 U	740 UR	1,800 UR	720 UR	360 UL	350 U	360 U	350 U	370 U	760 U	730 UR
2-Nitroaniline	3,000 U	4,800 U	1,800 U	3,800 U	1,900 U	4,600 U	1,800 U	900 UL	880 U	900 U	890 U	940 U	1,900 U	1,800 U
2-Nitrophenol	1,200 U	1,900 U	730 U	1,500 U	740 UR	1,800 UR	720 UR	360 UL	350 U	360 U	350 U	370 U	760 U	730 UR
3,3'-Dichlorobenzidine	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
3-Nitroaniline	3,000 U	4,800 U	1,800 U	3,800 U	1,900 U	4,600 U	1,800 U	900 UL	880 U	900 U	890 U	940 U	1,900 U	1,800 U
4,6-Dinitro-2-methylphenol	3,000 U	4,800 U	1,800 U	3,800 U	1,900 UR	4,600 UR	1,800 UR	900 UL	880 U	900 U	890 U	940 U	1,900 U	1,800 UR
4-Bromophenyl-phenylether	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
4-Chloro-3-methylphenol	1,200 U	1,900 U	730 U	1,500 U	740 UR	1,800 UR	720 UR	360 UL	350 U	360 U	350 U	370 U	760 U	730 UR
4-Chloroaniline	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
4-Chlorophenyl-phenylether	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
4-Methylphenol	1,200 U	200 J	730 U	640 J	120 L	1,800 UR	720 UR	360 UL	110 J	360 U	350 U	370 U	760 U	730 UR
4-Nitroaniline	3,000 U	4,800 U	1,800 U	3,800 U	1,900 U	4,600 U	1,800 U	900 UL	880 U	900 U	890 U	940 U	1,900 U	1,800 U
4-Nitrophenol	3,000 U	4,800 U	1,800 U	3,800 U	1,900 UR	4,600 UR	1,800 UR	900 UL	880 U	900 U	890 U	940 U	1,900 U	1,800 UR
Acenaphthene	440 J	950 J	110 J	640 J	700 J	1,500 J	720 U	53 L	350 U	360 U	350 U	370 U	1,300	730 U
Acenaphthylene	1,200 U	1,900 U	730 U	1,500 U	81 J	1,800 U	970	69 L	350 U	38 J	350 U	51 J	720 J	730 U
Acetophenone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	1,200 U	1,900 U	160 J	900 J	580 J	1,400 J	1,100	55 L	51 J	360 U	350 U	63 J	1,600	730 U
Atrazine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	1,200 U	1,500 J	250 J	2,600	1,600	2,900	1,800	130 L	87 J	130 J	350 U	270 J	2,100	190 J
Benzo(a)pyrene	1,200 U	1,300 J	230 J	2,100	870	1,800	1,500	180 L	79 J	140 J	350 U	170 J	2,900	130 J
Benzo(b)fluoranthene	1,200 U	1,600 J	590 J	3,700	2,100	2,700	5,500	280 L	64 J	210 J	350 U	290 J	5,700	230 J
Benzo(g,h,i)perylene	1,200 U	650 J	180 J	620 J	340 J	1,100 J	1,100	42 L	40 J	110 J	350 U	130 J	1,500	110 J
Benzo(k)fluoranthene	1,200 U	2,400	290 J	2,800	1,800	2,400	4,000	170 L	76 J	190 J	350 U	220 J	2,400	230 J
Butylbenzylphthalate	190 J	1,900 U	730 U	1,300 J	740 U	1,800 U	180 J	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
Caprolactam	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	1,200 U	1,900 U	730 U	760 J	710 J	1,400 J	1,200	360 UL	350 U	360 U	350 U	370 U	750 J	730 UR
Chrysene	1,200 U	2,200	460 J	2,900	1,600	3,000	3,600	190 L	120 J	210 J	350 U	400	4,500	280 J
Di-n-butylphthalate	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	140 L	350 U	360 U	350 U	370 U	760 U	730 U
Di-n-octylphthalate	1,200 U	1,900 U	730 U	300 J	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
Dibenz(a,h)anthracene	1,200 U	280 J	83 J	320 J	190 J	590 J	360 J	360 UL	350 U	42 J	350 U	40 J	750 J	730 U
Dibenzofuran	140 J	320 J	200 J	310 J	410 J	890 J	81 J	360 UL	350 U	360 U	350 U	370 U	750 J	730 U
Diethylphthalate	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
Dimethyl phthalate	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
Fluoranthene	290 J	5,200	610 J	6,300	4,700	8,000	5,200	300 L	320 J	230 J	350 U	540	7,400	550 J
Fluorene	300 J	1,600 J	84 J	580 J	690 J	1,400 J	720 U	360 UL	350 U	360 U	350 U	370 U	980	730 U
Hexachlorobenzene	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
Hexachlorobutadiene	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
Hexachlorocyclopentadiene	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
Hexachloroethane	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
Indeno(1,2,3-cd)pyrene	1,200 U	890 J	220 J	890 J	500 J	1,600 J	1,500	71 L	41 J	110 J	350 U	140 J	2,400	110 J
Isophorone	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
Naphthalene	360 J	1,000 J	320 J	210 J	320 J	1,000 J	720 U	44 L	38 J	360 U	350 U	100 J	2,000	730 U
Nitrobenzene	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U

NA - Not analyzed
B - Analyte not detected above associated blank
D - Result came from a diluted sample
J - Reported value is estimated
K - Reported value may be biased high

L - Reported value may be biased low
U - Analyte not detected

Table A-3
Subsurface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS01	NBW14-DS02	NBW14-DS03	NBW14-DS04	NBW14-DS05		NBW14-DS06	NBW14-DS07	NBW14-DS08	NBW14-DS09	NBW14-DS10	NBW14-DS11	NBW14-DS12	NBW14-DS13
Sample ID	NBW14-DS01-02	NBW14-DS02-02	NBW14-DS03-02	NBW14-DS04-02	NBW14-DS05-02	NBW14-DS05P-02	NBW14-DS06-02	NBW14-DS07-02	NBW14-DS08-02	NBW14-DS09-02	NBW14-DS10P-02	NBW14-DS11-02	NBW14-DS12-02	NBW14-DS13-02
Sample Date	09/30/99	09/30/99	09/30/99	09/30/99	09/30/99	09/30/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99
Chemical Name														
Pentachlorophenol	3,000 U	4,800 U	1,800 U	3,800 U	1,900 UR	4,600 UR	1,800 UR	900 UL	880 U	900 U	890 U	940 U	1,900 U	1,800 UR
Phenanthrene	470 J	4,400	640 J	3,800	3,400	7,200	630 J	150 L	180 J	100 J	350 U	240 J	3,800	310 J
Phenol	1,200 U	1,900 U	730 U	2,800	220 L	310 L	720 UR	41 L	53 J	360 U	350 U	67 J	760 U	730 UR
Pyrene	150 J	3,300	390 J	4,600	3,100	5,100	3,000	250 L	230 J	170 J	350 U	530	5,900	380 J
bis(2-Chloroethoxy)methane	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
bis(2-Chloroethyl)ether	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
bis(2-Ethylhexyl)phthalate	3,600	6,300	730 U	6,100	470 J	500 J	230 J	320 L	310 J	80 J	82 J	580	780	630 J
n-Nitroso-di-n-propylamine	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
n-Nitrosodiphenylamine	1,200 U	1,900 U	730 U	1,500 U	740 U	1,800 U	720 U	360 UL	350 U	360 U	350 U	370 U	760 U	730 U
Pesticide/Polychlorinated Biphenyls (UG/KG)														
4,4'-DDD	5.9 U	21 J	4 K	14 K	18 U	20 J	11 K	19 J	15 J	11	7.7 J	19 U	14 J	15 J
4,4'-DDE	3.7 J	22 J	8.6 K	13 K	65 K	42	11 K	29 U	6.7	6.2 J	15	19 U	19 U	14 J
4,4'-DDT	5.9 U	19 U	7.3 U	19 U	18 U	14 U	14 U	70 J	1.7 J	1.9 J	14 J	150 J	10 J	18 U
Aldrin	14 J	9.9 U	3.8 U	9.7 U	9.5 U	7.5 U	7.4 U	15 U	3.3 J	1.8	1.8 U	9.7 U	9.7 U	9.4 U
Aroclor-1016	59 U	190 U	73 U	190 U	180 U	140 U	140 U	290 U	35 U	36 U	35 U	190 U	190 U	180 U
Aroclor-1221	120 U	390 U	150 U	380 U	370 U	290 U	290 U	580 U	71 U	72 U	72 U	380 U	380 U	370 U
Aroclor-1232	59 U	190 U	73 U	190 U	180 U	140 U	140 U	290 U	35 U	36 U	35 U	190 U	190 U	180 U
Aroclor-1242	500	570	73 U	190 U	180 U	140 U	140 U	290 U	35 U	36 U	35 U	190 U	190 U	210
Aroclor-1248	59 U	190 U	73 U	190 U	180 U	140 U	670 K	290 U	150	36 U	35 U	190 U	190 U	180 U
Aroclor-1254	59 U	370	73 U	160 K	180 U	140 U	140 U	290 U	35 U	36 U	35 U	190 U	190 U	180 U
Aroclor-1260	59 U	230 J	73 U	190 U	180 U	210 J	840 K	1,800 J	200	36 U	60	4,100	2,500	610
Dieldrin	5.9 U	19 U	12 K	33 K	18 U	18 J	33 K	29 U	3.5 U	6.5	27	19	24 J	18 U
Endosulfan I	3 U	9.9 U	3.8 U	9.7 U	9.5 U	7.5 U	7.4 U	15 U	1.8 U	1.8 U	1.8 U	9.7 U	9.7 U	9.4 U
Endosulfan II	5.9 U	19 U	7.3 U	19 U	18 U	14 U	24 K	49 J	4.7 J	3.6 U	3.5 U	110 J	68	15 J
Endosulfan sulfate	5.9 U	19 U	7.3 U	19 U	18 U	14 U	7.7 K	29 U	3.5 U	3.6 U	3.5 U	19 U	14 J	18 U
Endrin	5.9 U	19 U	7.3 U	19 U	18 U	14 U	34 K	14 J	8.2 J	3.6 U	3 J	17 J	130 J	12 J
Endrin aldehyde	5.9 U	19 U	7.3 U	19 U	18 U	14 U	25 K	77	7.7	3.6 U	3.5 U	120 J	76 J	18 J
Endrin ketone	5.9 U	19 U	18 K	19 U	51 K	14 U	14 U	29 U	3.5 U	3.6 U	3.5 U	19 U	19 U	18 U
Heptachlor	3 U	9.9 U	3.8 U	9.7 U	9.5 U	7.5 U	7.4 U	15 U	1.8 U	1.8 U	1.8 U	9.7 U	9.7 U	9.4 U
Heptachlor epoxide	3 U	9.9 U	3.8 U	9.7 U	9.5 U	7.5 U	7.4 U	15 U	1.8 U	1.8 U	1.8 U	9.7 U	9.7 U	9.4 U
Methoxychlor	30 U	99 U	73 K	97 U	160 K	40 J	74 U	150 U	18 U	18 U	18 U	97 U	97 U	94 U
Toxaphene	300 U	990 U	380 U	970 U	950 U	750 U	740 U	1,500 U	180 U	180 U	180 U	970 U	970 U	940 U
alpha-BHC	3 U	9.9 U	3.8 U	9.7 U	9.5 U	7.5 U	7.4 U	15 U	1.8 U	1.8 U	1.8 U	9.7 U	9.7 U	9.4 U
alpha-Chlordane	2.3 J	8.3 J	3.8 U	9.7 U	9.5 U	7.5 U	13 K	15 U	2.6	1.3 J	1.7 J	6.7	52	9.4 U
beta-BHC	3 U	9.9 U	3.8 U	9.7 U	9.5 U	7.5 U	7.4 U	15 U	1.8 U	1.8 U	1.8 U	9.7 U	9.7 U	9.4 U
delta-BHC	3 U	9.9 U	3.8 U	9.7 U	9.5 U	7.5 U	7.4 U	15 U	1.8 U	1.8 U	1.8 U	9.7 U	9.7 U	9.4 U
gamma-BHC (Lindane)	3 U	9.9 U	3.8 U	9.7 U	9.5 U	7.5 U	7.4 U	15 U	1.8 U	1.8 U	1.8 U	9.7 U	9.7 U	9.4 U
gamma-Chlordane	3 U	9.9 U	3.8 U	9.7 U	9.5 U	7.5 U	11 K	15 U	0.95 J	2.6	1.9 J	9.7 U	14 J	9.4 U

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Table A-3
Subsurface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS01	NBW14-DS02	NBW14-DS03	NBW14-DS04	NBW14-DS05		NBW14-DS06	NBW14-DS07	NBW14-DS08	NBW14-DS09	NBW14-DS10	NBW14-DS11	NBW14-DS12	NBW14-DS13
Sample ID	NBW14-DS01-02	NBW14-DS02-02	NBW14-DS03-02	NBW14-DS04-02	NBW14-DS05-02	NBW14-DS05P-02	NBW14-DS06-02	NBW14-DS07-02	NBW14-DS08-02	NBW14-DS09-02	NBW14-DS10P-02	NBW14-DS11-02	NBW14-DS12-02	NBW14-DS13-02
Sample Date	09/30/99	09/30/99	09/30/99	09/30/99	09/30/99	09/30/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99
Chemical Name														
Dioxin/Furans (UG/KG)														
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-Heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8,9-Heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,7,8-Pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDD (dioxin)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-Tetrachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals (MG/KG)														
Aluminum	16,800 L	7,080 L	4,420 L	21,800 L	52,100 L	7,880 L	46,800 L	4,430 L	9,330 L	5,100 L	3,880	50,900	7,730	12,700
Antimony	14.2 J	41.3	2.2 J	23.1 J	22.8	7.6 J	9.8 J	0.71 J	115	0.39 U	0.39 UJ	49.3 J	14.9 J	49.5 J
Arsenic	80.8	16 J	16.6	9.5 J	9.3	6.2	16.5	4.7	18.7	3.2	3.2	7.7	13.8	11.3
Barium	985	293 J	52.3	391 J	333	197	223	23.9 J	333	147	19.4 J	278	158	372
Beryllium	2.4	0.6 B	0.34 B	0.023 U	0.34 B	0.28 B	0.35 B	0.2 B	1.1	0.21 B	0.16 B	0.18 B	0.23 B	0.22 B
Cadmium	2.3 B	15.8	6.8	5.9	8.4	3.7	10.4	0.69 U	20.5	0.69 U	0.69 UJ	4.4 J	5.5 J	32.5 J
Calcium	14,100	64,300	14,900	22,300	30,400	34,600	48,700	10,300	25,300	1,290	2,950	19,600	18,600	18,700
Chromium	32.1	89.5 J	53	187 J	134	21.2	59	9.7	62.5	5.1	5.7 J	44.9 J	36.4 J	115 J
Cobalt	8.8 J	16.4 J	6.3 J	13.5 J	9.1 J	3.7 J	8.4 J	2.1 B	8.4 J	0.57 B	1.2 J	11 J	7.6 J	16.3
Copper	77.7	1,510	85.7	1,260	568	243	401	6.9	861	11.8	13	694	633	961
Cyanide	4.5 U	2.9 U	2.8 U	2.9 U	2.8 U	2.7 U	2.7 U	2.7 U	9.7	2.7 U	2.7 U	2.8 U	2.9 U	2.8 U
Iron	17,200 L	47,700 L	17,900 L	76,900 L	40,100 L	12,600 L	24,300 L	9,250 L	32,700 L	3,970 L	5,060	40,100	35,400	46,800
Lead	70.3	933 J	462	903 J	884	429	471	20.1	1,830	311	19 J	1,220 J	578 J	1,240 J
Magnesium	3,410	10,700	4,130	3,380	3,710	2,640	3,580	656 J	3,850	433 J	633 J	2,750 J	1,760 J	2,960 J
Manganese	158	592 J	105	671 J	716	358	789	69.7	1,140	24	31	600	445	681
Mercury	0.22 B	0.88	2.7	2.8	2.2	0.7	0.52	0.048 U	3.1	0.18 B	0.048 U	0.39	1	0.29
Nickel	32	166	18.7	163	171	20.5	71.2	2.9 J	77.6	3.1 J	5.4 J	155 J	126 J	166 J
Potassium	3,360	1,070 J	515 J	1,070 J	1,080 J	900 J	856 J	507 J	1,050 J	331 B	320 J	516 J	712 J	778 J
Selenium	2.8	0.61 J	0.88 J	0.65 J	0.58 J	0.53 U	0.53 U	0.52 U	0.51 U	0.52 U	0.52 U	0.55 U	1 B	1.4 B
Silver	2.5 J	4.5	1.1 J	54.7	6.7	1.1 J	1.6 J	0.48 UJ	37	0.48 UJ	0.47 U	7.5	36.2	9 J
Sodium	940 J	1,060 J	320 J	2,810	2,760	1,290	694 J	310 J	2,940	585 J	159 J	850 J	987 J	1,820
Thallium	2.9 B	1.9 B	1.1 U	3 B	1.1 U	1.1 U	1.1 U	1.1 U	2.3 B	1.1 U	1.1 U	1.1 U	1.2 U	1.4
Vanadium	175	122 J	17.1	2,430 J	63.4	35.5	55.8	16.4	188	9.1 J	8.5 J	14.9	40.2	49.8
Zinc	85.2	2,420	259	1,800	2,930	452	1,110	24.4	3,850	56	35	1,350	1,110	2,100
Wet Chemistry (MG/KG)														
% Solids	56	85.7	90.3	87.5	89.5	91.1	91.4	92.4	94.8	92.6	93.2	88.1	87.3	90.4

NA - Not analyzed
B - Analyte not detected above associated blank
D - Result came from a diluted sample
J - Reported value is estimated
K - Reported value may be biased high

L - Reported value may be biased low
U - Analyte not detected

Table A-3
Subsurface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS14		NBW14-DS15	NBW14-DS16	NBW14-DS17	NBW14-DS18	NBW14-DS19	NBW14-DS20	NBW14-DS21	NBW14-DS24	NBW14-DS26	NBW14-DS27	NBW14-DS28	NBW14-DS29	NBW14-DS30	NBW14-DS31	NBW14-DS32	NBW14-DS33
Sample ID	NBW14-DS14-02	NBW14-DS14P-02	NBW14-DS15-02	NBW14-DS16-02	NBW14-DS17-02	NBW14-DS18-02	NBW14-DS19-06	NBW14-DS20-03	NBW14-DS21-05	NBW14-DS24-05	NBW14-DS26-06	NBW14-DS27-04	NBW14-DS28-03	NBW14-DS29-08	NBW14-DS30-03	NBW14-DS31-04	NBW14-DS32-04	NBW14-DS33-03
Sample Date	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	09/18/00	09/19/00	09/12/00	09/11/00	09/11/00	09/12/00	09/12/00	09/12/00	09/12/00	09/20/00	09/12/00	09/12/00
Chemical Name																		
Volatile Organic Compounds (UG/KG)																		
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
1,1,2,2-Tetrachloroethane	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 UJ	11 U	12 U	12 U	12 U	12 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
1,1,2-Trichloroethane	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
1,1-Dichloroethane	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
1,1-Dichloroethene	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
1,2-Dibromo-3-chloropropane	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
1,2-Dibromoethane	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
1,2-Dichloroethane	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
1,2-Dichloropropane	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
2-Butanone	NA	NA	NA	NA	NA	NA	11 UJ	4.58 J	61.3	21.0 J	14.5 J	59.0	4.45 B	4.72 B	12 U	12 U	21.9 B	10.8 B
2-Hexanone	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 UJ	11 U	12 U	12 U	12 U	12 U
4-Methyl-2-pentanone	NA	NA	NA	NA	NA	NA	11 UJ	12 U	12.7	12 U	11 U	29 U	12 UJ	11 U	12 U	12 U	12 U	12 U
Acetone	NA	NA	NA	NA	NA	NA	31.4 J	40.5 J	210 J	134 J	89.1 J	292 J	5.31 B	16.1 B	5.11 B	26.0 J	56.5 J	44.2 B
Benzene	NA	NA	NA	NA	NA	NA	11 UJ	12 U	1.51 J	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
Bromodichloromethane	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
Bromoform	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
Bromomethane	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
Carbon disulfide	NA	NA	NA	NA	NA	NA	1.57 J	12 U	8.76 J	2.96 J	1.46 J	6.3 J	12 U	1.89 J	1.26 J	12 U	12 U	12 U
Carbon tetrachloride	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
Chlorobenzene	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 UJ	11 U	12 U	12 U	12 U	12 U
Chloroethane	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
Chloroform	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
Chloromethane	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
Cumene	NA	NA	NA	NA	NA	NA	12.9 J	12 U	11 U	12 U	14.0	29 U	12 U	11 U	12 U	12 U	12 U	12 U
Cyclohexane	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	1.51 J	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
Dibromochloromethane	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
Dichlorodifluoromethane(Freon-12)	NA	NA	NA	NA	NA	NA	11 UJ	12 UJ	11 U	12 UJ	11 UJ	29 UJ	12 U	11 U	12 U	12 U	12 U	12 U
Ethylbenzene	NA	NA	NA	NA	NA	NA	3.39 J	12 U	11 U	12 U	3.57 J	29 U	12 UJ	11 U	12 U	12 U	12 U	12 U
Methyl acetate	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
Methyl-tert-butyl ether (MTBE)	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
Methylcyclohexane	NA	NA	NA	NA	NA	NA	14.1	12 U	11 U	12 U	7.41 J	2.92 J	12 U	11 U	12 U	12 U	12 U	12 U
Methylene chloride	NA	NA	NA	NA	NA	NA	2.3 B	3.25 B	17.9	1.87 B	2.01 B	16.1 B	4.39 B	1.6 B	2.19 B	2.03 B	5.83 B	3.27 B
Styrene	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 UJ	11 U	12 U	12 U	12 U	12 U
Tetrachloroethene	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 UJ	11 U	12 U	12 U	12 U	12 U
Toluene	NA	NA	NA	NA	NA	NA	6.68 J	1.43 J	3.19 J	12 U	19.5	38.3	11.2 J	2.44 J	1.42 J	12 U	3.78 J	3.79 J
Trichloroethene	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
Trichlorofluoromethane(Freon-11)	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
Vinyl chloride	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
Xylene, total	NA	NA	NA	NA	NA	NA	41.6 J	3.1 J	11 U	12 U	63.3	29 U	12 UJ	11 U	12 U	12 U	12 U	12 U
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
cis-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U
trans-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	11 UJ	12 U	11 U	12 U	11 U	29 U	12 U	11 U	12 U	12 U	12 U	12 U

NA - Not analyzed
B - Analyte not detected above associated blank
D - Result came from a diluted sample
J - Reported value is estimated
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Table A-3
Subsurface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS14		NBW14-DS15	NBW14-DS16	NBW14-DS17	NBW14-DS18	NBW14-DS19	NBW14-DS20	NBW14-DS21	NBW14-DS24	NBW14-DS26	NBW14-DS27	NBW14-DS28	NBW14-DS29	NBW14-DS30	NBW14-DS31	NBW14-DS32	NBW14-DS33
Sample ID	NBW14-DS14-02	NBW14-DS14P-02	NBW14-DS15-02	NBW14-DS16-02	NBW14-DS17-02	NBW14-DS18-02	NBW14-DS19-06	NBW14-DS20-03	NBW14-DS21-05	NBW14-DS24-05	NBW14-DS26-06	NBW14-DS27-04	NBW14-DS28-03	NBW14-DS29-08	NBW14-DS30-03	NBW14-DS31-04	NBW14-DS32-04	NBW14-DS33-03
Sample Date	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	09/18/00	09/19/00	09/12/00	09/11/00	09/11/00	09/12/00	09/12/00	09/12/00	09/12/00	09/20/00	09/12/00	09/12/00
Chemical Name																		
Semi-volatile Organic Compounds (UG/KG)																		
1,1-Biphenyl	NA	NA	NA	NA	NA	NA	60.7 J	390 U	370 U	800 U	55.5 J	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
1,2,4-Trichlorobenzene	760 U	1,500 U	750 U	360 U	370 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	760 U	1,500 U	750 U	360 U	370 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	760 U	1,500 U	750 U	360 U	370 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	760 U	1,500 U	750 U	360 U	370 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane)	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 UJ	380 UJ	380 UJ	420 U	56,000 U	390 U	410 U	390 UJ	410 U
2,4,5-Trichlorophenol	1,900 U	3,900 U	1,900 U	900 U	930 U	970 U	910 U	990 U	930 U	2,000 U	950 U	950 U	1,000 U	140,000 U	980 U	1,000 U	990 U	1,000 U
2,4,6-Trichlorophenol	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
2,4-Dichlorophenol	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
2,4-Dimethylphenol	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
2,4-Dinitrophenol	1,900 U	3,900 U	1,900 U	900 U	930 U	970 U	910 U	990 U	930 U	2,000 U	950 U	950 U	1,000 U	140,000 U	980 U	1,000 U	990 U	1,000 U
2,4-Dinitrotoluene	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
2,6-Dinitrotoluene	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
2-Chloronaphthalene	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
2-Chlorophenol	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
2-Methylnaphthalene	4,600	5,100	750 U	120 J	370 U	380 U	601	390 U	206 J	124 J	NA	NA	420 U	18,410 J	390 U	410 U	NA	79.9 J
2-Methylphenol	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
2-Nitroaniline	1,900 U	3,900 U	1,900 U	900 U	930 U	970 U	910 U	990 U	930 U	2,000 U	950 U	950 U	1,000 U	140,000 U	980 U	1,000 U	990 U	1,000 U
2-Nitrophenol	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
3,3'-Dichlorobenzidine	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
3-Nitroaniline	1,900 U	3,900 U	1,900 U	900 U	930 U	970 U	910 U	990 U	930 U	2,000 U	950 U	950 U	1,000 U	140,000 U	980 U	1,000 U	990 U	1,000 U
4,6-Dinitro-2-methylphenol	1,900 U	3,900 U	1,900 U	900 U	930 U	970 U	910 U	990 U	930 U	2,000 U	950 U	950 U	1,000 U	140,000 U	980 U	1,000 U	990 U	1,000 U
4-Bromophenyl-phenylether	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
4-Chloro-3-methylphenol	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
4-Chloroaniline	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
4-Chlorophenyl-phenylether	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
4-Methylphenol	760 U	1,500 U	750 U	360 U	370 U	170 J	360 U	390 U	370 U	800 U	380 U	175 J	420 U	56,000 U	390 U	410 U	390 U	410 U
4-Nitroaniline	1,900 U	3,900 U	1,900 U	900 U	930 U	970 U	910 UJ	990 UJ	930 UJ	2,000 UJ	950 UJ	950 UJ	1,000 U	140,000 U	980 UJ	1,000 UJ	990 UJ	1,000 UJ
4-Nitrophenol	1,900 U	3,900 U	1,900 U	900 U	930 U	970 U	910 U	990 U	930 U	2,000 U	950 U	950 U	1,000 U	140,000 U	980 U	1,000 U	990 U	1,000 U
Acenaphthene	4,700	8,300	750 U	310 J	370 U	380 U	64.3 J	390 U	329 J	436 J	116 J	101 J	420 U	41,040 J	147 J	410 U	390 U	45.3 J
Acenaphthylene	160 J	280 J	750 U	360 U	370 U	380 U	360 U	390 U	370 U	97.8 J	56.7 J	53.9 J	420 U	56,000 U	44.2 J	410 U	390 U	410 U
Acetophenone	NA	NA	NA	NA	NA	NA	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
Anthracene	1,500	3,100	750 U	54 J	61 J	380 U	360 U	390 U	230 J	622 J	109 J	380 U	420 U	92,830	87.3 J	410 U	390 U	410 U
Atrazine	NA	NA	NA	NA	NA	NA	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
Benzaldehyde	NA	NA	NA	NA	NA	NA	360 U	390 U	370 U	800 U	380 U	142 J	420 U	56,000 U	390 U	410 U	390 U	142 J
Benzo(a)anthracene	1,800	3,100	650 J	120 J	240 J	380 U	43.3 J	82.5 J	250 J	1,889	310 J	380 U	66.3 J	137,500	181 J	298 J	390 U	48.0 J
Benzo(a)pyrene	830	1,500	550 J	100 J	190 J	47 J	360 U	80.0 J	201 J	1,870	517	380 U	82.7 J	114,900	223 J	109 J	390 U	410 U
Benzo(b)fluoranthene	1,800	2,500	760	240 J	360 J	380 U	360 U	123 J	230 J	1,931	1,346 J	55.4 J	96.8 J	138,400	508 J	220 J	390 U	50.7 J
Benzo(g,h,i)perylene	320 J	490 J	220 J	74 J	110 J	380 U	360 U	70.3 J	84.8 J	909	144 J	380 U	86.3 J	63,020	159 J	49.9 J	390 U	410 U
Benzo(k)fluoranthene	990	1,800	650 J	180 J	300 J	380 U	360 U	133 J	239 J	1,952	1,221 J	50.5 J	101 J	62,230	528 J	189 J	390 U	43.2 J
Butylbenzylphthalate	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	111 J	800 U	380 U	47.7 J	420 U	56,000 U	65.2 J	410 U	390 U	47.0 J
Caprolactam	NA	NA	NA	NA	NA	NA	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
Carbazole	1,200	2,500	750 U	360 U	370 U	380 U	360 UJ	390 UJ	123 J	391 J	80.5 J	380 U	420 U	49,290 J	42.1 J	410 UJ	390 U	410 U
Chrysene	2,300	3,800	750	210 J	320 J	380 U	57.3 J	88.9 J	360 J	2,068	577	51.3 J	96.1 J	130,800	309 J	444	390 U	110 J
Di-n-butylphthalate	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
Di-n-octylphthalate	760 U	220 J	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
Dibenz(a,h)anthracene	120 J	200 J	79 J	360 U	370 U	380 U	360 U	390 U	43.3 J	468 J	74.7 J	380 U	420 U	17,220 J	76.6 J	410 U	390 U	410 U
Dibenzofuran	2,400	5,300	750 U	98 J	370 U	380 U	64.2 J	390 U	142 J	166 J	52.4 J	380 U	420 U	34,110 J	390 U	410 U	390 U	410 U
Diethylphthalate	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
Dimethyl phthalate	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
Fluoranthene	14,000	20,000	1,400	320 J	600	79 J	101 J	148 J	1,093	4,908	831	184 J	157 J	307,900	502 J	2,117	390 U	164 J
Fluorene	3,900	7,800	750 U	130 J	370 U	380 U	98.3 J	390 U	249 J	270 J	73.1 J	57.0 J	420 U	55,800 J	58.7 J	410 U	390 U	410 U
Hexachlorobenzene	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
Hexachlorobutadiene	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 UJ	390 U	410 U	390 U	410 U
Hexachlorocyclopentadiene	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
Hexachloroethane	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
Indeno(1,2,3-cd)pyrene	420 J	700 J	270 J	86 J	130 J	380 U	360 U	46.6 J	87.0 J	1,015	221 J	380 U	65.6 J	62,630	163 J	410 U	390 U	410 U
Isophorone	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
Naphthalene	9,800	4,700	750 U	180 J	370 U	380 U	252 J	390 U	488	283 J	189 J	141 J	420 U	51,750 J	390 U	410 U	390 U	77.2 J
Nitrobenzene	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U

NA - Not analyzed
B - Analyte not detected above associated blank
D - Result came from a diluted sample
J - Reported value is estimated
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Table A-3
Subsurface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS14		NBW14-DS15	NBW14-DS16	NBW14-DS17	NBW14-DS18	NBW14-DS19	NBW14-DS20	NBW14-DS21	NBW14-DS24	NBW14-DS26	NBW14-DS27	NBW14-DS28	NBW14-DS29	NBW14-DS30	NBW14-DS31	NBW14-DS32	NBW14-DS33
Sample ID	NBW14-DS14-02	NBW14-DS14P-02	NBW14-DS15-02	NBW14-DS16-02	NBW14-DS17-02	NBW14-DS18-02	NBW14-DS19-06	NBW14-DS20-03	NBW14-DS21-05	NBW14-DS24-05	NBW14-DS26-06	NBW14-DS27-04	NBW14-DS28-03	NBW14-DS29-08	NBW14-DS30-03	NBW14-DS31-04	NBW14-DS32-04	NBW14-DS33-03
Sample Date	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	09/18/00	09/19/00	09/12/00	09/11/00	09/11/00	09/12/00	09/12/00	09/12/00	09/12/00	09/20/00	09/12/00	09/12/00
Chemical Name																		
Pentachlorophenol	1,900 U	3,900 U	1,900 U	900 U	930 U	970 U	910 U	990 U	930 U	2,000 U	950 U	950 U	1,000 U	140,000 U	980 U	1,000 U	990 U	1,000 U
Phenanthrene	18,000	30,000	270 J	290 J	210 J	78 J	268 J	131 J	1,019	2,815	350 J	270 J	104 J	350,600	120 J	99.0 J	43.6 J	133 J
Phenol	760 U	1,500 U	750 U	360 U	370 U	110 J	360 U	390 U	370 U	84.1 J	380 U	384	420 U	56,000 U	390 U	410 U	390 U	410 U
Pyrene	5,800	9,300	850	220 J	370	67 J	106 J	199 J	779 J	4,689 J	832 J	202 J	131 J	265,900	340 J	1,768	390 U	102 J
bis(2-Chloroethoxy)methane	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
bis(2-Chloroethyl)ether	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
bis(2-Ethylhexyl)phthalate	990	1,000 J	180 J	100 J	140 J	480	360 U	390 U	465 B	393 J	253 J	515	56.8 B	56,000 U	137 B	55.7 J	207 J	1,651 B
n-Nitroso-di-n-propylamine	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
n-Nitrosodiphenylamine	760 U	1,500 U	750 U	360 U	370 U	380 U	360 U	390 U	370 U	800 U	380 U	380 U	420 U	56,000 U	390 U	410 U	390 U	410 U
Pesticide/Polychlorinated Biphenyls (UG/KG)																		
4,4'-DDD	21 J	30 J	4.8 J	2.4 J	10	10 J	3 J	9.5	8.3 J	7	12	3.8 U	1.9 J	17	2.7 J	20	4.9	16 J
4,4'-DDE	19 J	17 J	26	3.6 U	6.9	21	8	7.7	12	14 J	11 J	17 J	2 J	12 J	2.5 J	17	5.9	9.6 J
4,4'-DDT	19 J	20 J	3.8 U	2.9 J	2.5 J	3.8 U	4.9 J	3.9 U	3.7 U	4 U	3.8 U	2 J	4.2 U	7.4 U	3.9 U	4.7	3.9 U	4.1 UL
Aldrin	7.3 J	3.8 J	0.99 J	1.1 J	1.9 U	3.8 J	1.9 U	2 U	1.9 U	2 U	2 U	2 U	2.2 U	3.6 J	2 U	2.1 U	2 U	2.1 UL
Aroclor-1016	76 U	77 U	38 U	36 U	37 U	38 U	150	39 U	37 U	40 U	38 U	38 U	42 U	74 U	39 U	41 U	39 U	41 UL
Aroclor-1221	150 U	160 U	77 U	73 U	75 U	78 U	74 U	80 U	75 U	81 U	77 U	77 U	85 U	150 U	79 U	83 U	80 U	84 UL
Aroclor-1232	76 U	77 U	38 U	36 U	37 U	38 U	36 U	39 U	37 U	40 U	38 U	38 U	42 U	74 U	39 U	41 U	39 U	41 UL
Aroclor-1242	76 U	77 U	210	36 U	37 U	38 U	36 U	39 U	37 U	40 U	38 U	38 U	42 U	74 U	39 U	41 U	39 U	530 J
Aroclor-1248	76 U	77 U	38 U	36 U	37 U	270	36 U	39 U	37 U	390 J	38 U	38 U	42 U	74 U	39 U	41 U	39 U	41 UL
Aroclor-1254	76 U	77 U	38 U	36 U	37 U	38 U	130	39 U	37 U	110 U	38 U	320	42 U	74 U	39 U	41 U	39 U	41 UL
Aroclor-1260	530	530	160	36 U	37 U	38 U	36 U	39 U	170	40 U	38 U	38 U	42 U	74 U	100 J	41 U	39 U	77 J
Dieldrin	7.6 U	7.7 U	3.8 U	7.4 J	3.7 U	33	3.6 U	2.3 J	4 J	3.5 U	3.8 J	4.9 J	4.2 U	16 J	2.3 J	4.1 U	3.9 U	3.4 J
Endosulfan I	3.9 U	3.9 U	1.9 U	1.8 U	1.9 U	2 U	1.9 U	2 U	1.9 U	2 U	2 U	2	2.2 U	2.1 J	2 U	2.1 U	0.39 J	0.73 J
Endosulfan II	16	16	3.7 J	2.4 J	3.7 U	3.8 U	3.6 U	3.9 U	3.7 U	2 U	3.8 U	3.8	4.2 U	7.4 U	3.9 U	4.1 U	3.9 U	4.1 UL
Endosulfan sulfate	8.9 J	7.7 U	2.1 J	3.6 U	3.7 U	3.8 U	5.6 J	3.9 U	3.7 U	2.8 J	2.2 J	3.7 J	4.2 U	2.8 J	3.9 U	1.9 J	3.9	4.1 UL
Endrin	25 J	23 J	9.9	3.6 U	3.7 U	3.8 J	3.6 U	3.9 U	4.1 J	4 U	2.8 J	3.8 U	4.2 U	7.4 U	3.3 J	4.1 U	3.9 U	5.8 J
Endrin aldehyde	21 J	12 J	3 J	2.4 J	2 J	3.8 U	2.5 J	3.9 U	3.7 U	4 U	1.2 J	6.1 J	4.2 U	5.8 J	3.9 U	1.7 J	3.9 U	1.1 J
Endrin ketone	7.6 U	7.7 U	3.8 U	3.9 J	3.7 U	3.8 U	3.6 U	3.9 U	3.7 U	4 U	3.8 U	3.8	4.2 U	744	3.9 U	4.1 U	3.9 U	4.1 UL
Heptachlor	3.9 U	3.9 U	1.9 U	1.8 U	1.9 U	2 U	1.9 U	2 U	2 J	2 U	2 U	2	2.2 U	10 J	2 U	2.1 U	2 U	2.1 UL
Heptachlor epoxide	3.9 U	3.9 U	1.9 U	1.8 U	1.9 U	2 U	1.9 U	2 U	1.9 U	2 U	2 U	2 U	2.2 U	3.6 J	2 U	2.1 U	2 U	0.93 J
Methoxychlor	39 U	20 J	19 U	16 J	19 U	20 U	19 U	20 U	19 U	20 U	20 U	20 U	22 U	180	20 U	21 U	20 U	21 UL
Toxaphene	390 U	390 U	190 U	180 U	190 U	200 U	190 U	200 U	190 U	200 U	200 U	200 U	220 U	380 U	200 U	210 U	200 U	210 UL
alpha-BHC	3.9 U	3.9 U	1.9 U	1.8 U	1.9 U	2 U	1.9 U	2 U	0.93 J	2 U	2 J	2 J	2.2 U	3.8 U	2 U	2.1 U	2 U	0.74 J
alpha-Chlordane	31	44	3.7	3.2	0.99 J	3.3	1.9 U	0.92 J	3.4 J	4 U	2 U	2 U	2.2 U	3.8 U	0.74 J	2 J	22 J	2.1 UL
beta-BHC	3.9 U	3.9 U	1.9 U	1.8 U	1.9 U	2 U	1.9 U	2 U	1.9 U	2 U	2	8.3 J	2.2 U	3.8 U	2.5	2.1 U	1.7 J	5.9 J
delta-BHC	3.9 U	3.9 U	1.9 U	1.8 U	1.9 U	2 U	1.9 U	2 U	1.9 U	2 U	2 U	2	2.2 U	3.8 U	2 U	2.1 U	2 U	2.1 UL
gamma-BHC (Lindane)	3.9 U	3.9 U	1.9 U	1.8 U	1.9 U	2 U	1.9 U	2 U	1.9 U	2 U	2 J	2 J	2.2 U	3.8 U	2 U	2.1 U	0.65 J	2.1 UL
gamma-Chlordane	36	52	1.7 J	4.1	0.97 J	2 U	1.9 U	1.5 J	10	1.7 J	4.9	2 U	2.2 U	180 D	3.1 J	3.9 J	21	1.8 J

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Table A-3
Subsurface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS14		NBW14-DS15	NBW14-DS16	NBW14-DS17	NBW14-DS18	NBW14-DS19	NBW14-DS20	NBW14-DS21	NBW14-DS24	NBW14-DS26	NBW14-DS27	NBW14-DS28	NBW14-DS29	NBW14-DS30	NBW14-DS31	NBW14-DS32	NBW14-DS33
Sample ID	NBW14-DS14-02	NBW14-DS14P-02	NBW14-DS15-02	NBW14-DS16-02	NBW14-DS17-02	NBW14-DS18-02	NBW14-DS19-06	NBW14-DS20-03	NBW14-DS21-05	NBW14-DS24-05	NBW14-DS26-06	NBW14-DS27-04	NBW14-DS28-03	NBW14-DS29-08	NBW14-DS30-03	NBW14-DS31-04	NBW14-DS32-04	NBW14-DS33-03
Sample Date	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	09/18/00	09/19/00	09/12/00	09/11/00	09/11/00	09/12/00	09/12/00	09/12/00	09/12/00	09/20/00	09/12/00	09/12/00
Chemical Name																		
Dioxin/Furans (UG/KG)																		
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-Heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8,9-Heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,7,8-Pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDD (dioxin)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-Tetrachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals (MG/KG)																		
Aluminum	4,660	6,960	7,320	4,270	4,610	13,800	6,670 L	3,860 L	32,500 L	15,700	5,380	18,700	1,300 L	5,170 L	21,900 L	4,580 L	17,000	18,900 L
Antimony	8.9 J	7.8 J	221 J	1.3 J	7 J	76.1 J	50.6 L	0.52 L	14.6 L	53.5 L	4.3 L	153 L	0.88 B	2.6 B	44.7 L	0.46 UL	49.3 L	55.4 L
Arsenic	7.9	15.3	9.8	41.8	29.1	9.9	10.9	3.7	8 K	12.5 K	9 K	12 K	5.4 K	5.1 K	8.9 K	6.9	12.1 K	17 K
Barium	129	126	160	46.7	45.9	410	192	26.6 J	155	409	78.1	461	19.2 J	75.9	389	49.6	457	582
Beryllium	0.32 B	0.38 B	0.39 B	0.37 B	0.72 B	0.2 B	0.42 B	0.25 B	0.17 L	0.26 L	0.31 L	0.4 L	0.15 L	1.8	0.33 L	0.31 B	0.36 L	0.25 L
Cadmium	5.9 J	3.7 J	7.4 J	1.7 J	3.9 J	39.1 J	17.6	0.2 B	3.3	22	5.4	22.4	0.3 B	1.6	17.2	1.2 J	16.4	11.7
Calcium	19,000	22,800	32,300	50,600	104,000	19,200	21,200 J	14,300 J	30,900	25,500 J	35,000 J	24,600 J	54,300	33,900	21,000	41,500 J	39,900 J	33,700
Chromium	30.4 J	35.5 J	35 J	14 J	30 J	79.5 J	75.7	7.7	37.7	68.3	23.8	128	9.7	32.7	39.6	20.3	83.9	125
Cobalt	6.3 J	5.6 J	8 J	4.8 J	8.6 J	14.6	13.3	1.8 J	4.1 J	9.2 J	4.6 J	14.4	1.7 J	11.1	8.7 J	2.1 J	9.5 J	14
Copper	294	271	673	55	90.2	993	793 J	10.7 J	614	976	174	2,750	8.9	232	1,720	31.2 J	1,480	1,520
Cyanide	2.9 U	2.9 U	2.9 U	2.7 U	2.8 U	2.9 U	0.12 L	0.046 UL	0.18 L	0.34 L	0.15 L	0.58 L	0.048 UL	0.06 L	0.26 L	0.048 UL	0.57 L	0.51 L
Iron	19,900	21,400	37,800	14,900	41,100	46,100	92,100	7,600	23,500	79,800	23,100	126,000	9,190	16,200	54,700	10,300	108,000	144,000
Lead	385 J	328 J	682 J	71.8 J	105 J	2,350 J	804	49.2	445 K	1,330	261	4,880	23.4 K	277 K	2,270 K	68.9	2,260	1,560 K
Magnesium	1,770 J	1,780 J	2,340 J	13,000 J	2,420 J	5,020 J	2,390	792 J	11,700	3,270 J	2,790 J	5,910 J	978 J	1,440	1,980	1,190 J	2,780 J	2,900
Manganese	329	298	492	186	433	823	906 L	73.8 L	1,090	1,010	278	1,420	123	206	594	109 L	1,220	1,040
Mercury	1.8	0.55	0.74	0.12	0.2	0.72	0.59	0.15	0.58	0.7 L	0.21 L	0.54 L	0.086 J	0.09	0.4	0.12 B	1.4 L	1
Nickel	56.5 J	74.9 J	68.4 J	10.3 J	33.4 J	247 J	107	4.5 J	41.3	103	25.1	314	4.3 J	143	81.8	11.6	164	216
Potassium	765 J	858 J	977 J	1,020 J	728 J	1,090 J	763 J	435 J	732 J	1,220 J	908 J	1,620 J	281 J	552 J	1,170	539 J	948 J	1,190 J
Selenium	0.55 U	0.82 B	0.55 U	0.52 U	0.71 B	1 B	4.1	1.2 U	1.1 U	1.3 L	1.1 UL	1.5 L	1.2 U	1.1 U	1.8 K	1.2 U	3.7 L	2.9 K
Silver	3	2.1 J	5.2	0.48 U	0.63 J	10.8	13.8	0.14 U	7.6 L	20.9 L	1.6 UL	17.6 L	0.14 UL	0.49 L	14.7 L	0.33 J	15.4 L	24.6 L
Sodium	926 J	673 J	1,380 J	422 J	910 J	2,800 J	1,650	383 B	1,390	3,040	1,150	4,240	601 J	1,000 J	2,420	621 B	3,100	2,600
Thallium	1.2 U	1.2 U	1.2 J	1.1 U	1.5 J	1.7 J	32.6	3.8 L	9.8	32.4 K	11 K	40.4 K	3.7	6.8	23.4	3.2 L	38.6 K	45.4
Vanadium	119	90.6	47.5	22.1	71.4	84.3	149	22.1	56.1	173	44.4	191	18.7	330	38.3	24.2	111	161
Zinc	682	596	944	137	499	3,710	1,600 J	39.6 J	1,130	1,600 K	395 K	3,020 K	38.6	1,330	2,210	112 J	3,250 K	2,620
Wet Chemistry (MG/KG)																		
% Solids	87.3	86.1	87.5	91.9	89.6	85.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA - Not analyzed
B - Analyte not detected above associated blank
D - Result came from a diluted sample
J - Reported value is estimated
K - Reported value may be biased high

L - Reported value may be biased low
U - Analyte not detected

Table A-3
Subsurface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS34	NBW14-DS35	NBW14-DS36	NBW14-DS37	NBW14-DS38	NBW14-DS40	NBW14-DS41	NBW14-DS42	NBW14-DS43	NBW14-DS44	NBW14-DS45	NBW14-DS46	NBW14-DS47	NBW14-DS48	NBW14-DS49	NBW14-DS51	NBW14-DS53	NBW14-DS54
Sample ID	NBW14-DS34-05	NBW14-DS35-05	NBW14-DS36-04	NBW14-DS37-06	NBW14-DS38-03	NBW14-DS40-07	NBW14-DS41-05	NBW14-DS42-06	NBW14-DS43-07	NBW14-DS44-08	NBW14-DS45-05	NBW14-DS46-06	NBW14-DS47-04	NBW14-DS48-06	NBW14-DS49-06	NBW14-DS51-07	NBW14-DS53-07	NBW14-DS54-05
Sample Date	09/12/00	09/12/00	09/20/00	09/12/00	09/19/00	08/21/01	08/21/01	08/21/01	08/21/01	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01	08/21/01	08/21/01	08/21/01	08/21/01
Chemical Name																		
Volatile Organic Compounds (UG/KG)																		
1,1,1-Trichloroethane	12 U	11 U	13 U	12 UJ	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
1,1,2,2-Tetrachloroethane	12 U	11 U	13 UR	12 UR	12 U	11 UL	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	12 U	11 U	13 U	12 UJ	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
1,1,2-Trichloroethane	12 U	11 U	13 U	12 UJ	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
1,1-Dichloroethane	12 U	11 U	13 U	12 UJ	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
1,1-Dichloroethene	12 U	11 U	13 U	12 UJ	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
1,2-Dibromo-3-chloropropane	12 U	11 U	13 UR	12 UR	12 U	11 UL	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
1,2-Dibromoethane	12 U	11 U	13 U	12 UJ	12 U	11 UL	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
1,2-Dichloroethane	12 U	11 U	13 U	12 UJ	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
1,2-Dichloropropane	12 U	11 U	13 U	12 UJ	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
2-Butanone	32.7 J	11 U	5.41 J	69.7 J	7.02 J	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
2-Hexanone	12 U	11 U	13 UR	12 UR	12 U	11 UL	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
4-Methyl-2-pentanone	12 U	11 U	13 UR	12 UR	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Acetone	238 J	3.84 B	39.4 B	236 J	39.6 J	6 B	3 B	4 B	3 B	NA	NA	NA	NA	NA	4 B	3 B	4 B	3 B
Benzene	12 U	11 U	1.35 J	43.0	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Bromodichloromethane	12 U	11 U	13 U	12 UJ	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Bromoform	12 U	11 U	13 U	12 UJ	12 U	11 UL	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Bromomethane	12 U	11 U	13 U	12 UJ	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Carbon disulfide	2.15 J	11 U	2.84 J	12.6 J	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Carbon tetrachloride	12 U	11 U	13 U	12 UJ	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Chlorobenzene	12 U	11 U	13 UR	12 UR	12 U	11 UL	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Chloroethane	12 U	11 U	13 U	12 UJ	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Chloroform	12 U	11 U	13 U	12 UJ	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Chloromethane	12 U	11 U	13 U	12 UJ	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	1 J
Cumene	12 U	11 U	13 UR	12 UR	12 U	11 UL	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Cyclohexane	12 U	11 U	13 U	24.2	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Dibromochloromethane	12 U	11 U	13 U	12 UJ	12 U	11 UL	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Dichlorodifluoromethane(Freon-12)	12 UJ	11 UJ	13 U	12 UJ	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Ethylbenzene	12 U	11 U	13 UR	6.05 J	12 U	11 UL	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Methyl acetate	12 U	11 U	13 U	12 UJ	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Methyl-tert-butyl ether (MTBE)	12 U	11 U	13 U	12 UJ	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Methylcyclohexane	12 U	11 U	13 U	37.2	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Methylene chloride	8.68 B	2.15 B	17.8 J	28.2 J	12 U	5 B	2 B	2 B	1 B	NA	NA	NA	NA	NA	1 B	1 B	2 B	2 B
Styrene	12 U	11 U	13 UR	12 UR	12 U	11 UL	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Tetrachloroethene	12 U	11 U	13 U	12 UR	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Toluene	8.31 J	11 U	3.29 J	124 J	12 U	2 B	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Trichloroethene	12 U	11 U	13 U	12 UJ	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Trichlorofluoromethane(Freon-11)	12 U	11 U	13 U	4.38 UJ	12 U	1 K	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Vinyl chloride	12 U	11 U	13 U	12 UJ	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
Xylene, total	12 U	11 U	4.65 J	61.4 UJ	12 U	11 UL	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
cis-1,2-Dichloroethene	12 U	11 U	13 U	12 UJ	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
cis-1,3-Dichloropropene	12 U	11 U	13 U	12 UJ	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
trans-1,2-Dichloroethene	12 U	11 U	13 U	12 UJ	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U
trans-1,3-Dichloropropene	12 U	11 U	13 U	12 UJ	12 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	11 U	11 U	12 U	11 U

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Table A-3
Subsurface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS34	NBW14-DS35	NBW14-DS36	NBW14-DS37	NBW14-DS38	NBW14-DS40	NBW14-DS41	NBW14-DS42	NBW14-DS43	NBW14-DS44	NBW14-DS45	NBW14-DS46	NBW14-DS47	NBW14-DS48	NBW14-DS49	NBW14-DS51	NBW14-DS53	NBW14-DS54
Sample ID	NBW14-DS34-05	NBW14-DS35-05	NBW14-DS36-04	NBW14-DS37-06	NBW14-DS38-03	NBW14-DS40-07	NBW14-DS41-05	NBW14-DS42-06	NBW14-DS43-07	NBW14-DS44-08	NBW14-DS45-05	NBW14-DS46-06	NBW14-DS47-04	NBW14-DS48-06	NBW14-DS49-06	NBW14-DS51-07	NBW14-DS53-07	NBW14-DS54-05
Sample Date	09/12/00	09/12/00	09/20/00	09/12/00	09/19/00	08/21/01	08/21/01	08/21/01	08/21/01	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01	08/21/01	08/21/01	08/21/01	08/21/01
Chemical Name																		
Semi-volatile Organic Compounds (UG/KG)																		
1,1-Biphenyl	400 U	360 U	420 U	135 J	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane)	400 UJ	360 UJ	420 U	410 UJ	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
2,4,5-Trichlorophenol	1,000 U	900 U	1,000 U	1,000 U	1,000 U	1,800 U	920 U	910 U	920 U	NA	NA	NA	NA	NA	900 U	900 U	970 U	900 U
2,4,6-Trichlorophenol	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
2,4-Dichlorophenol	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
2,4-Dimethylphenol	400 U	360 U	63.7 J	160 J	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
2,4-Dinitrophenol	1,000 U	900 U	1,000 U	1,000 U	1,000 U	1,800 UJ	920 UJ	910 UJ	920 UJ	NA	NA	NA	NA	NA	900 UJ	900 UJ	970 UJ	900 UJ
2,4-Dinitrotoluene	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
2,6-Dinitrotoluene	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
2-Chloronaphthalene	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
2-Chlorophenol	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
2-Methylnaphthalene	NA	NA	420 U	NA	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
2-Methylphenol	400 U	360 U	420 U	44.2 J	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
2-Nitroaniline	1,000 U	900 U	1,000 U	1,000 U	1,000 U	1,800 U	920 U	910 U	920 U	NA	NA	NA	NA	NA	900 U	900 U	970 U	900 U
2-Nitrophenol	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
3,3'-Dichlorobenzidine	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
3-Nitroaniline	1,000 U	900 U	1,000 U	1,000 U	1,000 U	1,800 U	920 U	910 U	920 U	NA	NA	NA	NA	NA	900 U	900 U	970 U	900 U
4,6-Dinitro-2-methylphenol	1,000 U	900 U	1,000 U	1,000 U	1,000 U	1,800 U	920 U	910 U	920 U	NA	NA	NA	NA	NA	900 U	900 U	970 U	900 U
4-Bromophenyl-phenylether	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
4-Chloro-3-methylphenol	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
4-Chloroaniline	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
4-Chlorophenyl-phenylether	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
4-Methylphenol	400 U	360 U	420 U	516	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
4-Nitroaniline	1,000 UJ	900 UJ	1,000 UJ	1,000 UJ	1,000 UJ	1,800 U	920 U	910 U	920 U	NA	NA	NA	NA	NA	900 U	900 U	970 U	900 U
4-Nitrophenol	1,000 U	900 U	1,000 U	1,000 U	1,000 U	1,800 U	920 U	910 U	920 U	NA	NA	NA	NA	NA	900 U	900 U	970 U	900 U
Acenaphthene	400 U	360 U	420 U	109 J	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Acenaphthylene	400 U	360 U	420 U	129 J	60.4 J	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Acetophenone	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Anthracene	95.7 J	360 U	420 U	89.4 J	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Atrazine	400 U	360 U	420 U	410 U	410 U	710 UJ	370 UJ	360 UJ	370 UJ	NA	NA	NA	NA	NA	360 UJ	360 UJ	380 UJ	360 UJ
Benzaldehyde	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Benzo(a)anthracene	299 J	360 U	54.7 J	268 J	131 J	710 U	370 U	120 J	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Benzo(a)pyrene	245 J	360 U	51.5 J	238 J	169 J	710 U	370 U	120 J	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Benzo(b)fluoranthene	262 J	360 U	69.4 J	426 J	328 J	710 U	370 U	110 J	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Benzo(g,h,i)perylene	116 J	360 U	420 U	245 J	175 J	710 U	370 U	80 J	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Benzo(k)fluoranthene	225 J	360 U	50.9 J	488 J	361 J	710 U	370 U	130 J	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Butylbenzylphthalate	400 U	360 U	420 U	66 J	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Caprolactam	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Carbazole	41.4 J	360 U	420 UJ	410 U	410 UJ	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Chrysene	276 J	360 U	88.8 J	402 J	253 J	100 J	370 U	120 J	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Di-n-butylphthalate	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Di-n-octylphthalate	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Dibenz(a,h)anthracene	71.1 J	360 U	420 U	41.8 J	410 U	710 U	370 U	42 J	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Dibenzofuran	400 U	360 U	420 U	333 J	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Diethylphthalate	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Dimethyl phthalate	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Fluoranthene	531	360 U	117 J	629	162 J	100 J	370 U	180 J	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Fluorene	49.8 J	360 U	420 U	136 J	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Hexachlorobenzene	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Hexachlorobutadiene	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Hexachlorocyclopentadiene	400 U	360 U	420 U	410 U	410 U	710 UJ	370 UJ	360 UJ	370 UJ	NA	NA	NA	NA	NA	360 UJ	360 UJ	380 UJ	360 UJ
Hexachloroethane	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Indeno(1,2,3-cd)pyrene	138 J	360 U	420 U	108 J	123 J	710 U	370 U	90 J	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Isophorone	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Naphthalene	400 U	360 U	420 U	1,246	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Nitrobenzene	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U

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Table A-3
Subsurface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS34	NBW14-DS35	NBW14-DS36	NBW14-DS37	NBW14-DS38	NBW14-DS40	NBW14-DS41	NBW14-DS42	NBW14-DS43	NBW14-DS44	NBW14-DS45	NBW14-DS46	NBW14-DS47	NBW14-DS48	NBW14-DS49	NBW14-DS51	NBW14-DS53	NBW14-DS54
Sample ID	NBW14-DS34-05	NBW14-DS35-05	NBW14-DS36-04	NBW14-DS37-06	NBW14-DS38-03	NBW14-DS40-07	NBW14-DS41-05	NBW14-DS42-06	NBW14-DS43-07	NBW14-DS44-08	NBW14-DS45-05	NBW14-DS46-06	NBW14-DS47-04	NBW14-DS48-06	NBW14-DS49-06	NBW14-DS51-07	NBW14-DS53-07	NBW14-DS54-05
Sample Date	09/12/00	09/12/00	09/20/00	09/12/00	09/19/00	08/21/01	08/21/01	08/21/01	08/21/01	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01	08/21/01	08/21/01	08/21/01	08/21/01
Chemical Name																		
Pentachlorophenol	1,000 U	900 U	1,000 U	1,000 U	1,000 U	1,800 U	920 U	910 U	920 U	990 U	940 U	950 U	920 U	930 U	900 U	900 U	970 U	900 U
Phenanthrene	410	360 U	92.4 J	1,393	80.8 J	140 J	370 U	99 J	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Phenol	400 U	360 U	420 U	285 J	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Pyrene	596 J	360 U	136 J	561	248 J	130 J	370 U	230 J	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
bis(2-Chloroethoxy)methane	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
bis(2-Chloroethyl)ether	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
bis(2-Ethylhexyl)phthalate	52.5 J	360 U	506	434	410 U	170 B	320 B	140 B	950	NA	NA	NA	NA	NA	140 B	99 B	440 B	430
n-Nitroso-di-n-propylamine	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
n-Nitrosodiphenylamine	400 U	360 U	420 U	410 U	410 U	710 U	370 U	360 U	370 U	NA	NA	NA	NA	NA	360 U	360 U	380 U	360 U
Pesticide/Polychlorinated Biphenyls (UG/KG)																		
4,4'-DDD	2.4 J	3.6 U	8.5	34	5.5 J	1.7 L	3.7 U	3.6 U	3.7 U	NA	NA	NA	NA	NA	3.6 U	3.6 U	3.8 U	3.6 U
4,4'-DDE	1.5 J	3.6 U	2.4 J	13 J	7.7 J	3.6 UL	3.7 U	11	3.7 U	NA	NA	NA	NA	NA	3.6 U	3.6 U	3.8 U	3.6 U
4,4'-DDT	4 U	3.6 U	4.2 U	4.1 U	6.8 J	3.6 UL	3.7 U	3.6 U	3.7 U	NA	NA	NA	NA	NA	3.6 U	3.6 U	3.8 U	3.6 U
Aldrin	2 U	1.8 U	2.2 U	2.1 U	1.1 J	1.8 UL	1.9 U	1.9 U	1.9 U	NA	NA	NA	NA	NA	1.9 U	1.8 U	2 U	1.8 U
Aroclor-1016	40 U	36 U	42 U	41 U	41 U	36 UL	37 U	36 U	37 U	NA	NA	NA	NA	NA	36 U	36 U	38 U	36 U
Aroclor-1221	81 U	73 U	85 U	84 U	84 U	72 UL	74 U	74 U	74 U	NA	NA	NA	NA	NA	73 U	73 U	78 U	73 U
Aroclor-1232	40 U	36 U	42 U	41 U	41 U	36 UL	37 U	36 U	37 U	NA	NA	NA	NA	NA	36 U	36 U	38 U	36 U
Aroclor-1242	40 U	36 U	42 U	41 U	41 U	36 UL	37 U	36 U	37 U	NA	NA	NA	NA	NA	36 U	36 U	38 U	36 U
Aroclor-1248	40 U	36 U	42 U	250 J	41 U	36 UL	37 U	36 U	37 U	NA	NA	NA	NA	NA	36 U	36 U	38 U	36 U
Aroclor-1254	40 U	36 U	42 U	180	41 U	36 UL	37 U	36 U	37 U	NA	NA	NA	NA	NA	36 U	36 U	38 U	36 U
Aroclor-1260	40 U	36 U	42 U	41 U	41 U	36 UL	37 U	74	37 U	NA	NA	NA	NA	NA	36 U	36 U	38 U	36 U
Dieldrin	4 U	3.6 U	4.2 U	4.1 J	76	3.6 UL	3.7 U	3.6 U	3.7 U	NA	NA	NA	NA	NA	3.6 U	3.6 U	3.8 U	3.6 U
Endosulfan I	2 U	1.8 U	2.2 U	2.1	2.1 U	1.8 UL	1.9 U	1.9 U	1.9 U	NA	NA	NA	NA	NA	1.9 U	1.8 U	2 U	1.8 U
Endosulfan II	4 U	3.6 U	4.2 U	4.1 U	4.1 U	3.6 UL	3.7 U	3.6 U	3.7 U	NA	NA	NA	NA	NA	3.6 U	3.6 U	3.8 U	3.6 U
Endosulfan sulfate	4 U	3.6 U	4.2 U	4 J	4.1 U	3.6 UL	3.7 U	3.6 U	3.7 U	NA	NA	NA	NA	NA	3.6 U	3.6 U	3.8 U	3.6 U
Endrin	4 U	3.6 U	4.2 U	4.1 U	4.1 U	3.6 UL	3.7 U	3.6 U	3.7 U	NA	NA	NA	NA	NA	3.6 U	3.6 U	3.8 U	3.6 U
Endrin aldehyde	0.7 J	3.6 U	4.2 U	1.9 J	1.2 J	3.6 UL	3.7 U	3.6 U	3.7 U	NA	NA	NA	NA	NA	3.6 U	3.6 U	3.8 U	3.6 U
Endrin ketone	4 U	3.6 U	4.2 U	4.1 U	4.1 U	3.6 UL	3.7 U	3.6 U	3.7 U	NA	NA	NA	NA	NA	3.6 U	3.6 U	3.8 U	3.6 U
Heptachlor	2 U	1.8 U	2.2 U	0.97 J	2.1 U	1.8 UL	1.9 U	1.9 U	1.9 U	NA	NA	NA	NA	NA	1.9 U	1.8 U	2 U	1.8 U
Heptachlor epoxide	2 U	1.8 U	2.2 U	2.1 U	2.1 U	1.8 UL	1.9 U	1.9 U	1.9 U	NA	NA	NA	NA	NA	1.9 U	1.8 U	2 U	1.8 U
Methoxychlor	20 U	18 U	22 U	21 U	21 U	18 UL	19 U	19 U	19 U	NA	NA	NA	NA	NA	19 U	18 U	20 U	18 U
Toxaphene	200 U	180 U	220 U	210 U	210 U	180 UL	190 U	190 U	190 U	NA	NA	NA	NA	NA	190 U	180 U	200 U	180 U
alpha-BHC	2 U	1.8 U	2.2 U	2.1 U	2.1 U	1.8 UL	1.9 U	1.9 U	1.9 U	NA	NA	NA	NA	NA	1.9 U	1.8 U	2 U	1.8 U
alpha-Chlordane	2 U	1.8 U	2.2 U	2.1 U	2.9 J	3.4 L	1.9 U	1.3 J	1.9 U	NA	NA	NA	NA	NA	1.9 U	1.8 U	2 U	1.8 U
beta-BHC	2 U	1.8 J	1.3 J	4.3 J	2.1 U	1.8 UL	1.9 U	3.6 J	1.9 U	NA	NA	NA	NA	NA	1.9 U	1.8 U	2 U	1.8 U
delta-BHC	2 U	1.8 U	2.2 U	2.1 U	2.1 U	1.8 UL	1.9 U	1.9 U	1.9 U	NA	NA	NA	NA	NA	1.9 U	1.8 U	2 U	1.8 U
gamma-BHC (Lindane)	2 U	1.8 U	0.82 J	2.1 U	2.1 U	1.8 UL	1.9 U	1.9 U	1.9 U	NA	NA	NA	NA	NA	1.9 U	1.8 U	2 U	1.8 U
gamma-Chlordane	2 U	1.8 U	0.78 J	2.1 U	2.1 U	5.9 L	1.9 U	1.3 J	1.9 U	NA	NA	NA	NA	NA	1.9 U	1.8 U	2 U	1.8 U

NA - Not analyzed
B - Analyte not detected above associated blank
D - Result came from a diluted sample
J - Reported value is estimated
K - Reported value may be biased high

L - Reported value may be biased low
U - Analyte not detected

Table A-3
Subsurface Soil Raw Data with Detects Highlighted
SWMU 14 RI
Naval Station Norfolk

Station ID	NBW14-DS34	NBW14-DS35	NBW14-DS36	NBW14-DS37	NBW14-DS38	NBW14-DS40	NBW14-DS41	NBW14-DS42	NBW14-DS43	NBW14-DS44	NBW14-DS45	NBW14-DS46	NBW14-DS47	NBW14-DS48	NBW14-DS49	NBW14-DS51	NBW14-DS53	NBW14-DS54
Sample ID	NBW14-DS34-05	NBW14-DS35-05	NBW14-DS36-04	NBW14-DS37-06	NBW14-DS38-03	NBW14-DS40-07	NBW14-DS41-05	NBW14-DS42-06	NBW14-DS43-07	NBW14-DS44-08	NBW14-DS45-05	NBW14-DS46-06	NBW14-DS47-04	NBW14-DS48-06	NBW14-DS49-06	NBW14-DS51-07	NBW14-DS53-07	NBW14-DS54-05
Sample Date	09/12/00	09/12/00	09/20/00	09/12/00	09/19/00	08/21/01	08/21/01	08/21/01	08/21/01	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01	08/21/01	08/21/01	08/21/01	08/21/01
Chemical Name																		
Dioxin/Furans (UG/KG)																		
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.143	0.139	0.514	0.447	0.445	NA	NA	NA	NA
1,2,3,4,6,7,8-Heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0081	0.0462	0.295	0.0879	0.0391	NA	NA	NA	NA
1,2,3,4,7,8,9-Heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.24E-04 J	0.00449	0.0279	0.0073	0.00309	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00126 J	0.00712	0.0246	0.0125	0.00471	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00184 J	0.0157	0.0778	0.0245 J	0.00875	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00346	0.012	0.0495	0.0296	0.0124	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00186 J	0.0156	0.0678	0.0253 J	0.00877	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00231 J	0.00864	0.0328	0.018	0.00776	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.98E-04 J	0.0041	0.0197	0.00637	0.00219 J	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00161 J	0.0117	0.0354	0.0196	0.0066	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00159 J	0.0141	0.0481	0.0197	0.00728	NA	NA	NA	NA
2,3,4,6,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00219 J	0.0154	0.0824	0.0276	0.00951	NA	NA	NA	NA
2,3,4,7,8-Pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00318	0.0191	0.0827	0.0302	0.0105	NA	NA	NA	NA
2,3,7,8-TCDD (dioxin)	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.07E-04	0.00336	0.00816	0.00458	0.00186	NA	NA	NA	NA
2,3,7,8-Tetrachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00164	0.0134	0.0496	0.0156	0.00714	NA	NA	NA	NA
Total heptachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.33	0.435	1.4	1.16	1.02	NA	NA	NA	NA
Total heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0217	0.0798	0.501	0.173	0.0907	NA	NA	NA	NA
Total hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0514	0.193	0.691	0.387	0.164	NA	NA	NA	NA
Total hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0233	0.153	0.713	0.261	0.0982	NA	NA	NA	NA
Total octachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.55	1.92	3.24	3.39	5.61 J	NA	NA	NA	NA
Total octachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0167	0.0313	0.228	0.0904	0.0513	NA	NA	NA	NA
Total pentachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.027	0.213	0.762	0.394	0.126	NA	NA	NA	NA
Total pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0353	0.231	0.886	0.36	0.123	NA	NA	NA	NA
Total tetrachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0165	0.195	0.711	0.363	0.103	NA	NA	NA	NA
Total tetrachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0393	0.322	1.04	0.418	0.162	NA	NA	NA	NA
Total Metals (MG/KG)																		
Aluminum	4,480	1,800	5,180 L	29,400	2,600 L	2,410 L	2,000 L	3,080 L	1,080 L	NA	NA	NA	NA	NA	1,340 L	1,360 L	2,860 L	1,120 L
Antimony	0.88 B	0.78 B	0.83 L	40.5 L	0.54 L	0.6 B	0.85 B	0.62 B	0.54 B	NA	NA	NA	NA	NA	0.62 B	0.532 UL	0.545 UL	0.83 B
Arsenic	6 K	14.2 K	3.5	10 K	12.2	5.8 L	23.7 J	18.7 J	19.7 J	NA	NA	NA	NA	NA	18.1 J	15.2 J	23.3 J	15.9 J
Barium	60.1	11.9 J	52	330	36.9 J	28.2 J	21.5 K	37.1 K	16 K	NA	NA	NA	NA	NA	15.3 K	14.8 K	21.5 K	17.1 K
Beryllium	0.29 L	0.62 L	0.24 B	0.41 L	0.36 B	0.34 B	0.63 J	0.44 B	0.29 B	NA	NA	NA	NA	NA	0.29 B	0.36 B	0.46 B	0.3 B
Cadmium	0.87 J	0.25 B	1.2	11.2	0.6 J	0.42 B	0.18 B	0.65 K	0.09 B	NA	NA	NA	NA	NA	0.11 B	0.085 U	0.18 B	0.1 B
Calcium	2,980 J	110,000 J	5,260 J	53,700 J	96,600 J	2,960	165,000	104,000	245,000	NA	NA	NA	NA	NA	195,000	179,000	216,000	198,000
Chromium	11.5	18.7	10	75.3	13	5.1	20.2	16.1	14.1	NA	NA	NA	NA	NA	16.7	16.4	21.1	15.1
Cobalt	3.2 J	3.4 J	1.8 J	7.6 J	3.4 J	1.4 J	4.1 K	3.4 K	2.7 K	NA	NA	NA	NA	NA	2 K	2.7 K	2.2 K	1.6 K
Copper	25.2	1.8 B	29.6 J	1,960	33.9 J	10.6	6	14.1	0.173 UL	NA	NA	NA	NA	NA	0.166 UL	0.3 L	0.174 UL	0.162 UL
Cyanide	0.047 UL	0.078 L	0.094 L	0.31 L	0.049 UL	0.11 J	0.06 J	0.07 J	0.12 J	NA	NA	NA	NA	NA	0.12 J	0.07 J	0.1 J	0.08 J
Iron	13,000	18,800	8,860	57,000	12,800	4,510 L	24,200 L	18,400 L	19,500 L	NA	NA	NA	NA	NA	17,800 L	17,000 L	37,500 L	17,200 L
Lead	61.3	5.1	79.9	1,810	77.6	43.6	14.1 K	39.3 K	3.6 K	NA	NA	NA	NA	NA	3.8 K	4.1 K	4.8 K	3.8 K
Magnesium	1,530 J	957 J	1,220	3,220 J	4,970	1,120	1,370	1,870	2,030	NA	NA	NA	NA	NA	1,440	1,420	1,690	1,590
Manganese	88.2	183	82.3 L	761	159 L	89.4 K	348 K	239 K	400 K	NA	NA	NA	NA	NA	182 K	184 K	539 K	208 K
Mercury	0.11 L	0.047 UL	0.063 B	0.58 L	0.068 B	0.06 J	0.048 U	0.05 J	0.043 U	NA	NA	NA	NA	NA	0.04 U	0.049 U	0.058 U	0.042 U
Nickel	9.7	5.3 J	7.1 J	156	10.8	4.1 J	6.9 K	6.8 K	3.8 K	NA	NA	NA	NA	NA	3.6 K	4 K	4.4 K	3 K
Potassium	734 J	538 J	508 J	1,140 J	668 J	754 J	810 K	938 K	654 K	NA	NA	NA	NA	NA	803 K	697 K	643 K	590 K
Selenium	1.1 UL	1.2 L	1.2 U	1.5 L	1.2 U	0.776 U	0.817 UL	0.756 UL	0.8 UL	NA	NA	NA	NA	NA	0.768 UL	0.787 UL	0.807 UL	0.75 UL
Silver	0.22 L	0.12 UL	3.5	12.7 L	0.19 J	0.147 U	0.155 U	0.143 U	0.151 U	NA	NA	NA	NA	NA	0.145 U	0.149 U	0.153 U	0.142 U
Sodium	394 J	1,220	506 B	2,930	1,120 J	632 J	1,530 K	876 K	2,110 K	NA	NA	NA	NA	NA	1,820 K	1,670 K	2,020 K	1,920 K
Thallium	6.9 K	5 K	3.7 L	19.6 K	1.9 L	0.734 UL	0.773 UL	0.715 UL	0.757 UL	NA	NA	NA	NA	NA	0.726 UL	0.744 UL	0.763 UL	0.71 UL
Vanadium	16.2	45.5	14.2	108	32.3	17.8	48.3	33.7	27.2	NA	NA	NA	NA	NA	30.5	33.3	54.3	32.9
Zinc	247 K	20.3 K	104 J	1,760 K	100 J	83.8 J	40.4 K	50.1 K	12.6 K	NA	NA	NA	NA	NA	12.7 K	14.3 K	14.8 K	11.5 K
Wet Chemistry (MG/KG)																		
% Solids	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA - Not analyzed
B - Analyte not detected above associated blank
D - Result came from a diluted sample
J - Reported value is estimated
K - Reported value may be biased high

L - Reported value may be biased low
U - Analyte not detected

Table A-4
Groundwater Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-MW01S	NBW14-MW02S	NBW14-MW03S	NBW14-MW04S	NBW14-MW05S		NBW14-MW06S	NBW14-MW07S				NBW14-MW08S		NBW14-MW09S
Sample ID	NBW14-MW01S-R01	NBW14-MW02S-R01	NBW14-MW03S-R01	NBW14-MW04S-R01	NBW14-MW05S-R01	NBW14-MW05S-R03	NBW14-MW06S-R01	NBW14-MW07S-R01	NBW14-MW07S-P-R01	NBW14-MW07S-R02	NBW14-MW07S-R03	NBW14-MW08S-R01	NBW14-MW08S-R03	NBW14-MW09S-R01
Sample Date	01/05/00	01/07/00	01/07/00	01/07/00	01/07/00	12/16/02	01/05/00	01/05/00	01/05/00	09/27/00	12/16/02	01/04/00	12/16/02	09/26/00
Chemical Name														
Volatile Organic Compounds (UG/L)														
1,1,1-Trichloroethane	1 U	1 U	1 U	10 U	5 U	0.5 U	1 U	1 U	1 U	1 U	0.5 U	1 U	0.5 U	1 U
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	10 U	5 U	0.5 U	1 U	1 U	1 U	1 U	0.5 U	1 U	0.5 U	1 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	NA	NA	NA	NA	NA	0.5 U	NA	NA	NA	NA	0.5 U	NA	0.5 U	NA
1,1,2-Trichloroethane	1 U	1 U	1 U	10 U	5 U	0.5 U	1 U	1 U	1 U	1 U	0.5 U	1 U	0.5 U	0.209 J
1,1-Dichloroethane	1 U	0.23 J	7.6	10 U	5 U	0.5 U	1 U	1 U	1 U	1 U	0.14 J	1 U	0.5 U	0.413 J
1,1-Dichloroethene	1 U	1 U	0.14 J	10 U	5 U	0.5 U	1 U	1 U	1 U	0.153 J	0.5 U	1 U	0.5 U	1 U
1,2,3-Trichlorobenzene	NA	NA	NA	NA	NA	0.5 U	NA	NA	NA	NA	0.5 U	NA	0.5 U	NA
1,2,4-Trichlorobenzene	1 U	1 U	1 U	10 U	5 U	0.5 U	1 U	1 U	1 U	1 U	0.5 U	1 U	0.5 U	1 U
1,2-Dibromo-3-chloropropane	1 U	1 UR	1 UR	10 UR	5 UR	0.5 U	1 UR	1 UR	1 UR	1 U	0.5 U	1 UR	0.5 U	1 U
1,2-Dibromoethane	1 U	1 U	1 U	10 U	5 U	0.5 U	1 U	1 U	1 U	1 U	0.5 U	1 U	0.5 U	1 U
1,2-Dichlorobenzene	1.3	0.19 J	15	4.3 J	0.88 J	0.41 J	0.15 J	1 U	1 U	1 U	0.5 U	1 U	0.5 U	1.25 B
1,2-Dichloroethane	1 U	1 U	1 U	10 U	5 U	0.5 U	1 U	1 U	1 U	1 U	0.5 U	1 U	0.5 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	10 U	5 U	0.5 U	1 U	1 U	1 U	1 U	0.5 U	1 U	0.5 U	0.191 J
1,3-Dichlorobenzene	0.29 J	1 U	14	1.6 J	5 U	0.5 U	1 U	1 U	1 U	1 U	0.5 U	1 U	0.5 U	1 U
1,4-Dichlorobenzene	17	1 U	23	8.4 J	5 U	0.5 U	1 U	1 U	1 U	0.202 J	0.23 J	1 U	0.5 U	0.282 J
2-Butanone	5 U	5 UR	5 UR	50 UR	25 UR	1.5 B	5 UR	6.1 J	5 UR	76.3 J	31	5 UR	0.99 B	5 UR
2-Hexanone	5 U	5 U	5 U	50 U	25 U	4.4 B	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	5 U	5 U	5 U	29 J	56	0.46 B	5 U	10	9.9	78.2	42 B	5 U	5 U	3.29 J
Acetone	4.7 J	4.1 J	5 UR	50 UR	25 UR	6.5 B	2.2	13 J	11 J	160 J	49	5 UR	2.9 B	13.0 J
Benzene	25	0.49 J	0.38 J	1.4 J	5	8.1	1.3	0.35 J	0.36 J	1.67	2	1 U	0.5 U	7.33
Bromochloromethane	1 U	1 U	1 U	10 U	5 U	0.5 U	1 U	1 U	1 U	1 U	0.5 U	1 U	0.5 U	1 U
Bromodichloromethane	1 U	1 U	1 U	10 U	5 U	0.5 U	1 U	1 U	1 U	1 U	0.5 U	1 U	0.5 U	1 U
Bromoform	1 U	1 U	1 U	10 U	5 U	0.5 U	1 U	1 U	1 U	1 U	0.5 U	1 U	0.5 U	1 U
Bromomethane	1 U	1 U	1 U	10 U	5 U	0.5 U	1 U	1 U	1 U	1 U	0.5 U	1 U	0.5 U	1 U
Carbon disulfide	1 U	1 U	1 U	10 U	5 U	0.12 J	1 U	0.27 J	1 U	1.04	2.4	1 U	0.5 U	1 U
Carbon tetrachloride	1 U	1 U	1 U	10 U	5 U	0.5 U	1 U	1 U	1 U	1 U	0.5 U	1 U	0.5 U	1 U
Chlorobenzene	15	1 U	1 U	130	38	89	0.43 J	1 U	1 U	0.392 J	0.36 J	1 U	0.23 J	2.91
Chloroethane	1 U	1 U	10	10 U	5 U	0.5 U	1 U	1 U	1 U	1 U	0.5 U	1 U	0.5 U	1 U
Chloroform	1 U	1 U	1 U	10 U	5 U	0.5 U	1 U	1 U	1 U	1 U	0.5 U	1 U	0.5 U	1 U
Chloromethane	1 U	1 U	1 U	10 U	5 U	0.5 U	1 U	1 U	1 U	1 U	0.5 U	1 U	0.5 U	1 U
Cumene	NA	NA	NA	NA	NA	2.5	NA	NA	NA	NA	0.39 J	NA	0.5 U	NA
Cyclohexane	NA	NA	NA	NA	NA	0.77	NA	NA	NA	NA	0.5 U	NA	0.5 U	NA
Dibromochloromethane	1 U	1 U	1 U	10 U	5 U	0.5 U	1 U	1 U	1 U	1 U	0.5 U	1 U	0.5 U	1 U
Dichlorodifluoromethane(Freon-12)	NA	NA	NA	NA	NA	0.5 U	NA	NA	NA	NA	0.5 U	NA	0.5 U	NA
Ethylbenzene	12	0.15 J	1 U	2 J	14	14	0.2 J	0.2 J	0.2 J	1.2	1.3	1 U	0.5 U	0.453 J
Methyl acetate	NA	NA	NA	NA	NA	0.5 U	NA	NA	NA	NA	0.5 U	NA	0.5 U	NA
Methyl-tert-butyl ether (MTBE)	NA	NA	NA	NA	NA	0.5 U	NA	NA	NA	NA	0.5 U	NA	0.5 U	NA
Methylcyclohexane	NA	NA	NA	NA	NA	1.2	NA	NA	NA	NA	0.5 U	NA	0.5 U	NA
Methylene chloride	2 U	2 U	2 U	20 U	10 U	0.22 B	0.32 J	2 U	2 U	0.627 B	0.26 B	2 U	0.16 B	0.919 J
Styrene	1 U	1 U	1 U	10 U	5 U	0.92	1 U	1 U	1 U	1 U	0.5 U	1 U	0.5 U	1 U
Tetrachloroethene	1 U	1 U	1 U	10 U	5 U	0.5 U	1 U	1 U	1 U	1 U	0.5 U	1 U	0.5 U	1 U
Toluene	2	1.6	1 U	1.3 J	48	7.4	0.4 J	1.3	1.4	7.01	7.4 B	1 U	0.29 B	0.648 J
Trichloroethene	1 U	1 U	0.21 J	10 U	5 U	0.12 J	1 U	1 U	1 U	0.446 B	0.58	1 U	0.5 U	1 U
Trichlorofluoromethane(Freon-11)	NA	NA	NA	NA	NA	0.5 U	NA	NA	NA	NA	0.5 U	NA	0.5 U	NA
Vinyl chloride	1 U	1 U	17	10 U	1.3 J	1.1	0.2 J	0.31 J	0.32 J	1 U	2.5	1 U	0.5 U	0.337 J
Xylene, total	24	0.4 J	1 U	2.1 J	86	60	0.95 J	1.6	1.7	9.61	9.9	1 U	0.5 U	1.45
cis-1,2-Dichloroethene	0.32 J	1 U	3.8	10 U	1.8 J	0.55	0.21 J	0.34 J	0.37 J	2.07	3.6	1 U	0.5 U	0.561 J
cis-1,3-Dichloropropene	1 U	1 U	1 U	10 U	5 U	0.5 U	1 U	1 U	1 U	1 U	0.5 U	1 U	0.5 U	1 U
trans-1,2-Dichloroethene	1 U	1 U	7.6	10 U	5 U	0.29 J	1 U	1 U	1 U	0.151 J	0.15 J	1 U	0.5 U	1 U
trans-1,3-Dichloropropene	1 U	1 U	1 U	10 U	5 U	0.5 U	1 U	1 U	1 U	1 U	0.5 U	1 U	0.5 U	1 U

Table A-4
Groundwater Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-MW11S	NBW14-MW12S	NBW14-MW13S		NBW14-MW14S	NBW14-MW15S		NBW14-MW16S		NBW14-MW17S	NBW14-MW18S	NBW14-MW19S		
Sample ID	NBW14-MW11S-R01	NBW14-MW12S-R01	NBW14-MW13S-R01	NBW14-MW13S-P-R01	NBW14-MW14S-R01	NBW14-MW15S-R01	NBW14-MW15S-R03	NBW14-MW16S-R01	NBW14-MW16S-P-R01	NBW14-MW17S-R01	NBW14-MW18S-R01	NBW14-MW19S-R01	NBW14-MW19S-R03	NBW14-MW19SP-R03
Sample Date	09/27/00	09/27/00	09/26/00	09/26/00	09/27/00	09/27/00	12/16/02	08/24/01	08/24/01	08/24/01	08/24/01	08/24/01	12/16/02	12/16/02
Chemical Name														
Volatile Organic Compounds (UG/L)														
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	NA	NA	NA	NA	NA	NA	0.5 U	NA	NA	NA	NA	NA	0.5 U	0.5 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1 U	1 U	1 U	0.3 J	1 U	0.5 U	0.5 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
1,2,3-Trichlorobenzene	NA	NA	NA	NA	NA	NA	0.5 U	NA	NA	NA	NA	NA	0.5 U	0.5 U
1,2,4-Trichlorobenzene	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1 U	1 U	1 U	1 U	0.2 B	0.5 U	0.5 U
1,2-Dibromo-3-chloropropane	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
1,2-Dibromoethane	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
1,2-Dichlorobenzene	1 U	1 U	1.13	1.05	1.46 J	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
1,2-Dichloroethane	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	0.246 J	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
1,4-Dichlorobenzene	1 U	1 U	0.181 J	0.269 J	0.669 J	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
2-Butanone	5 UR	5 UR	5 UR	5 UR	10 UR	5 UR	0.92 B	5 UR	5 UR	5 UR	5 UR	5 UR	1.4 B	1.6 B
2-Hexanone	5 U	5 U	5 U	5 U	10 U	5 U	5 U	5 U	5 U	5 U	5 UR	5 U	5 U	5 U
4-Methyl-2-pentanone	5 U	5 U	5 U	5 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	8.19 J	16.7 J	32.9 J	26.3 J	17.5 J	17.1 J	2.2 B	5 UR	5 UR	5 UR	5 UR	5 UR	4.1 B	3.7 B
Benzene	0.928 J	0.167 J	6.54	7.41	1.88 J	0.979 J	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
Bromochloromethane	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
Bromodichloromethane	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
Bromoform	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.17 B	0.23 B
Bromomethane	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
Carbon disulfide	1 U	0.0944 B	1 U	1 U	2 U	0.129 B	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
Carbon tetrachloride	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
Chlorobenzene	1 U	0.238 J	1.99	2.48	34.8	1 U	0.5 U	1 U	1 U	1 U	3	1 U	0.5 U	0.5 U
Chloroethane	1 U	1 U	1.01	1.02	2 U	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
Chloroform	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1	1	3	0.8 J	4	0.5 U	0.5 U
Chloromethane	2.17	1 U	1 U	1 U	2 U	1 U	0.1 J	0.2 J	1 U	1 U	1 U	0.2 J	0.5 U	0.5 U
Cumene	NA	NA	NA	NA	NA	NA	0.5 U	NA	NA	NA	NA	NA	0.5 U	0.5 U
Cyclohexane	NA	NA	NA	NA	NA	NA	0.5 U	NA	NA	NA	NA	NA	0.5 U	0.5 U
Dibromochloromethane	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
Dichlorodifluoromethane(Freon-12)	NA	NA	NA	NA	NA	NA	0.14 J	NA	NA	NA	NA	NA	0.5 U	0.5 U
Ethylbenzene	1 U	1 U	0.251 J	0.236 J	0.782 J	2.65	0.14 J	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
Methyl acetate	NA	NA	NA	NA	NA	NA	0.5 U	NA	NA	NA	NA	NA	0.5 U	0.5 U
Methyl-tert-butyl ether (MTBE)	NA	NA	NA	NA	NA	NA	0.5 U	NA	NA	NA	NA	NA	0.14 J	0.15 J
Methylcyclohexane	NA	NA	NA	NA	NA	NA	0.5 U	NA	NA	NA	NA	NA	0.5 U	0.5 U
Methylene chloride	2 U	2 U	2 U	2 U	1.15 B	2 U	0.24 B	2 U	2 U	1 B	2 U	2 U	0.16 B	0.5 U
Styrene	1 U	1 U	1 U	1 U	0.329 J	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
Tetrachloroethene	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
Toluene	1 U	1 U	0.228 J	0.283 J	0.31 B	3.31	0.45 B	1 U	1 U	1 U	1 U	1 U	0.34 B	0.3 B
Trichloroethene	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1 U	1 U	0.4 J	1 U	1 U	0.5 U	0.5 U
Trichlorofluoromethane(Freon-11)	NA	NA	NA	NA	NA	NA	0.5 U	NA	NA	NA	NA	NA	0.5 U	0.5 U
Vinyl chloride	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
Xylene, total	0.122 J	1 U	3.15	2.93	0.998 J	7.88	0.18 B	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	1 U	1 U	0.136 B	1 U	2 U	1 U	0.5 U	0.2 J	0.2 J	1 U	1 U	1 U	0.5 U	0.5 U
cis-1,3-Dichloropropene	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U
trans-1,3-Dichloropropene	1 U	1 U	1 U	1 U	2 U	1 U	0.5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U

Table A-4
Groundwater Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-MW01S	NBW14-MW02S	NBW14-MW03S	NBW14-MW04S	NBW14-MW05S		NBW14-MW06S	NBW14-MW07S				NBW14-MW08S		NBW14-MW09S
Sample ID	NBW14-MW01S-R01	NBW14-MW02S-R01	NBW14-MW03S-R01	NBW14-MW04S-R01	NBW14-MW05S-R01	NBW14-MW05S-R03	NBW14-MW06S-R01	NBW14-MW07S-R01	NBW14-MW07S-P-R01	NBW14-MW07S-R02	NBW14-MW07S-R03	NBW14-MW08S-R01	NBW14-MW08S-R03	NBW14-MW09S-R01
Sample Date	01/05/00	01/07/00	01/07/00	01/07/00	01/07/00	12/16/02	01/05/00	01/05/00	01/05/00	09/27/00	12/16/02	01/04/00	12/16/02	09/26/00
Chemical Name														
Semivolatile Organic Compounds (UG/L)														
1,1-Biphenyl	NA	NA	NA	NA	NA	1.5 J	NA	NA	NA	220 U	38 U	NA	5 U	10 U
1,2,4,5-Tetrachlorobenzene	NA	NA	NA	NA	NA	5.6 U	NA	NA	NA	NA	38 U	NA	5 U	NA
2,2'-Oxybis(1-chloropropane)	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
2,4,5-Trichlorophenol	25 U	25 U	25 U	2.7 J	25 U	22 U	25 U	250 U	250 U	540 U	9.3 J	25 U	20 U	25 U
2,4,6-Trichlorophenol	10 U	10 U	10 U	4.1 J	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
2,4-Dichlorophenol	10 U	10 U	10 U	5.5 J	19	4.7 J	4.4 J	100 U	100 U	220 U	38 U	10 U	5 U	10 U
2,4-Dimethylphenol	6.1 J	10 U	7.5 J	3.8 J	65	58	52	390	390	290	400	10 U	5 U	27
2,4-Dinitrophenol	25 U	25 U	25 U	25 U	25 U	22 U	25 U	250 U	250 U	540 U	150 U	25 U	20 U	25 U
2,4-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
2,6-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
2-Chloronaphthalene	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
2-Chlorophenol	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
2-Methylnaphthalene	130	1.1 J	48	41	25	26	3.2 J	100 U	100 U	220 U	38 U	10 U	5 U	1 J
2-Methylphenol	2.1 J	10 U	2.8 J	10 U	260	250	80	220	220	130 J	210	10 U	5 U	2 J
2-Nitroaniline	25 U	25 U	25 U	25 U	25 U	22 U	25 U	250 U	250 U	540 U	150 U	25 U	20 U	25 U
2-Nitrophenol	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
3,3'-Dichlorobenzidine	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
3-Nitroaniline	25 U	25 U	25 U	25 U	25 U	22 U	25 U	250 U	250 U	540 U	150 U	25 U	20 U	25 U
4,6-Dinitro-2-methylphenol	25 U	25 U	25 U	25 U	25 U	22 U	25 U	250 U	250 U	540 U	150 U	25 U	20 U	25 U
4-Bromophenyl-phenylether	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
4-Chloro-3-methylphenol	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
4-Chloroaniline	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
4-Chlorophenyl-phenylether	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
4-Methylphenol	10 U	1.3 J	2 J	11	9.8 J	5.6 U	8.7 J	2,600	2,500	1,700	2,000	10 U	5 U	48
4-Nitroaniline	25 U	25 U	25 U	25 U	25 U	22 U	25 U	250 U	250 U	540 UJ	150 U	25 U	20 U	25 U
4-Nitrophenol	25 U	25 U	25 U	25 U	25 U	22 U	25 U	250 U	250 U	540 U	150 U	25 U	20 U	25 U
Acenaphthene	110	2.9 J	15	5.2 J	4.1 J	3.7 J	2.9 J	100 U	100 U	220 U	38 U	10 U	5 U	3 J
Acenaphthylene	1.6 J	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Acetophenone	NA	NA	NA	NA	NA	5.6 U	NA	NA	NA	220 U	38 U	NA	5 U	10 U
Anthracene	4.2 J	10 U	10 U	10 U	1.9 J	1.2 J	1 J	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Atrazine	NA	NA	NA	NA	NA	5.6 UJ	NA	NA	NA	220 U	38 UJ	NA	5 UJ	10 U
Benzaldehyde	NA	NA	NA	NA	NA	5.6 U	NA	NA	NA	220 U	38 U	NA	5 U	10 U
Benzo(a)anthracene	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Benzo(a)pyrene	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Benzo(b)fluoranthene	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Benzo(g,h,i)perylene	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Benzo(k)fluoranthene	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Butylbenzylphthalate	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Caprolactam	NA	NA	NA	NA	NA	5.6 U	NA	NA	NA	220 U	38 U	NA	5 U	10 U
Carbazole	50	10 U	5.1 J	2.9 J	1.5 J	NA	10 U	100 U	100 U	220 U	NA	10 U	NA	10 U
Chrysene	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Di-n-butylphthalate	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Di-n-octylphthalate	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Dibenzofuran	52	10 U	5.8 J	2.8 J	1.4 J	1.4 J	1 J	100 U	100 U	220 U	38 U	10 U	5 U	1 J
Diethylphthalate	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Dimethyl phthalate	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Fluoranthene	2.1 J	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Fluorene	48	1.1 J	6.4 J	2.7 J	2.3 J	2.3 J	1.1 J	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Hexachlorobenzene	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Hexachlorobutadiene	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U

Table A-4
Groundwater Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-MW11S	NBW14-MW12S	NBW14-MW13S		NBW14-MW14S	NBW14-MW15S		NBW14-MW16S		NBW14-MW17S	NBW14-MW18S	NBW14-MW19S		
Sample ID	NBW14-MW11S-R01	NBW14-MW12S-R01	NBW14-MW13S-R01	NBW14-MW13S-P-R01	NBW14-MW14S-R01	NBW14-MW15S-R01	NBW14-MW15S-R03	NBW14-MW16S-R01	NBW14-MW16S-P-R01	NBW14-MW17S-R01	NBW14-MW18S-R01	NBW14-MW19S-R01	NBW14-MW19S-R03	NBW14-MW19SP-R03
Sample Date	09/27/00	09/27/00	09/26/00	09/26/00	09/27/00	09/27/00	12/16/02	08/24/01	08/24/01	08/24/01	08/24/01	08/24/01	12/16/02	12/16/02
Chemical Name														
Semivolatile Organic Compounds (UG/L)														
1,1-Biphenyl	10 U	10 U	10 U	10 U	10 U	34	2.7 J	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
1,2,4,5-Tetrachlorobenzene	NA	NA	NA	NA	NA	NA	5 U	NA	NA	NA	NA	NA	5.6 U	5.3 U
2,2'-Oxybis(1-chloropropane)	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
2,4,5-Trichlorophenol	25 U	25 U	25 U	25 U	26 U	25 U	20 U	28 U	27 U	25 U	25 U	28 U	22 U	21 U
2,4,6-Trichlorophenol	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
2,4-Dichlorophenol	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
2,4-Dimethylphenol	10 U	10 U	10 U	10 U	10 U	82 J	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
2,4-Dinitrophenol	25 UJ	25 UJ	25 UJ	25 UJ	26 UJ	25 UJ	20 U	28 UJ	27 U	25 UJ	25 UJ	28 UJ	22 U	21 U
2,4-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 UJ	10 U	10 U	11 U	5.6 U	5.3 U
2,6-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
2-Chloronaphthalene	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
2-Chlorophenol	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
2-Methylnaphthalene	10 U	10 U	32	39	18	120 J	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
2-Methylphenol	10 U	10 U	10 U	10 U	10 U	38	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
2-Nitroaniline	25 U	25 U	25 U	25 U	26 U	25 U	20 U	28 U	27 U	25 U	25 U	28 U	22 U	21 U
2-Nitrophenol	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
3,3'-Dichlorobenzidine	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
3-Nitroaniline	25 U	25 U	25 U	25 U	26 U	25 U	20 U	28 U	27 U	25 U	25 U	28 U	22 U	21 U
4,6-Dinitro-2-methylphenol	25 U	25 U	25 U	25 U	26 U	25 U	20 U	28 UJ	27 UJ	25 UJ	25 UJ	28 UJ	22 U	21 U
4-Bromophenyl-phenylether	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
4-Chloro-3-methylphenol	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
4-Chloroaniline	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
4-Chlorophenyl-phenylether	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
4-Methylphenol	4 J	10 U	1 J	10 U	10 U	90 J	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
4-Nitroaniline	25 U	25 U	25 U	25 U	26 U	25 U	20 U	28 U	27 U	25 U	25 U	28 U	22 U	21 U
4-Nitrophenol	25 U	25 U	25 U	25 U	26 U	25 U	20 U	28 U	27 U	25 U	25 U	28 U	22 U	21 U
Acenaphthene	1 J	10 U	41	39	58	220 J	31	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Acenaphthylene	10 U	10 U	1 J	10 U	1 J	11	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Acetophenone	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Anthracene	10 U	10 U	2 J	2 J	3 J	13	1 J	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Atrazine	10 U	10 U	10 U	10 U	10 U	10 U	5 UJ	11 UJ	11 UJ	10 UJ	10 UJ	11 UJ	5.6 UJ	5.3 UJ
Benzaldehyde	10 U	10 U	1 J	10 U	10 U	2 J	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Benzo(a)anthracene	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Benzo(a)pyrene	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Benzo(b)fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Benzo(g,h,i)perylene	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Benzo(k)fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Butylbenzylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Caprolactam	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Carbazole	10 U	10 U	5 J	8 J	4 J	86 J	NA	11 U	11 U	10 U	10 U	11 U	NA	NA
Chrysene	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Di-n-butylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Di-n-octylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Dibenzofuran	10 U	10 U	17	13	21	90 J	13	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Diethylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Dimethyl phthalate	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	3 J	10 U	11 U	5.6 U	5.3 U
Fluoranthene	10 U	10 U	10 U	1 J	2 J	17	1.6 J	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Fluorene	10 U	10 U	15	15	19	91 J	12	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Hexachlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Hexachlorobutadiene	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U

Table A-4
Groundwater Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-MW01S	NBW14-MW02S	NBW14-MW03S	NBW14-MW04S	NBW14-MW05S		NBW14-MW06S	NBW14-MW07S				NBW14-MW08S		NBW14-MW09S
Sample ID	NBW14-MW01S-R01	NBW14-MW02S-R01	NBW14-MW03S-R01	NBW14-MW04S-R01	NBW14-MW05S-R01	NBW14-MW05S-R03	NBW14-MW06S-R01	NBW14-MW07S-R01	NBW14-MW07S-P-R01	NBW14-MW07S-R02	NBW14-MW07S-R03	NBW14-MW08S-R01	NBW14-MW08S-R03	NBW14-MW09S-R01
Sample Date	01/05/00	01/07/00	01/07/00	01/07/00	01/07/00	12/16/02	01/05/00	01/05/00	01/05/00	09/27/00	12/16/02	01/04/00	12/16/02	09/26/00
Chemical Name														
Hexachlorocyclopentadiene	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Hexachloroethane	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Isophorone	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Naphthalene	550	3.5 J	130	66	25	38	7.8 J	15 J	15 J	220 U	23 J	10 U	5 U	6 J
Nitrobenzene	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Pentachlorophenol	25 U	25 U	25 U	14 J	25 U	5.6 U	25 U	250 U	250 U	540 U	38 U	25 U	5 U	25 U
Phenanthrene	41	1.7 J	5.7 J	3.3 J	2 J	2.3 J	1.9 J	100 U	100 U	220 U	38 U	10 U	5 U	10 U
Phenol	1.5 J	1.1 J	10 U	10 U	49	5.6 U	290	920	880	400	270	10 U	5 U	11
Pyrene	1 J	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
bis(2-Chloroethoxy)methane	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
bis(2-Chloroethyl)ether	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	10 U
bis(2-Ethylhexyl)phthalate	10 U	10 U	10 U	2.9 J	10 U	2.7 J	10 U	100 U	100 U	220 U	38 U	10 U	5 U	1 B
n-Nitroso-di-n-propylamine	10 U	10 U	10 U	10 U	10 U	5.6 U	10 U	100 U	100 U	220 U	45	10 U	5 U	10 U
n-Nitrosodiphenylamine	12	10 U	10 U	1.1 J	10 U	5.6 U	10 U	100 U	100 U	220 U	38 U	10 U	5 U	1 J
Pesticide/Polychlorinated Biphenyls (UG/L)														
4,4'-DDD	0.15	0.1 U	0.1 U	0.1 U	0.1 U	0.021 UJ	0.1 U	0.1 U	0.1 U	0.1 UJ	0.02 U	0.1 U	0.022 U	0.1 UJ
4,4'-DDE	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.021 J	0.1 U	0.1 U	0.1 U	0.028 J	0.042 K	0.1 U	0.022 U	0.1 UJ
4,4'-DDT	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.011 J	0.1 U	0.1 U	0.1 U	0.1 UJ	0.043 K	0.1 U	0.022 U	0.1 UJ
Aldrin	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.01 UJ	0.05 U	0.05 U	0.05 U	0.051 UJ	0.01 U	0.05 U	0.011 U	0.05 UJ
Aroclor-1016	1 U	1 U	1 U	1 U	1 U	0.21 UJ	1 U	1 U	1 U	1 UJ	0.2 U	1 U	0.22 U	1 UJ
Aroclor-1221	2 U	2 U	2 U	2 U	2 U	0.41 UJ	2 U	2 U	2 U	2.1 UJ	0.4 U	2 U	0.44 U	2 UJ
Aroclor-1232	1 U	1 U	1 U	1 U	1 U	0.21 UJ	1 U	1 U	1 U	1 UJ	0.2 U	1 U	0.22 U	1 UJ
Aroclor-1242	1 U	1 U	1 U	1 U	1 U	0.21 UJ	1 U	1 U	1 U	1 UJ	0.2 U	1 U	0.22 U	1 UJ
Aroclor-1248	1 U	1 U	1 U	1 U	1 U	0.21 UJ	1 U	1 U	1 U	1 UJ	0.2 U	1 U	0.22 U	1 UJ
Aroclor-1254	1 U	1 U	1 U	1 U	1 U	0.21 UJ	1 U	1 U	1 U	1 UJ	0.2 U	1 U	0.22 U	1 UJ
Aroclor-1260	1 U	1 U	1 U	1 U	1 U	0.21 UJ	1 U	1 U	1 U	1 UJ	0.2 U	1 U	0.22 U	1 UJ
Dieldrin	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.021 UJ	0.1 U	0.1 U	0.1 U	0.1 UJ	0.037 K	0.1 U	0.022 U	0.1 UJ
Endosulfan I	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.01 UJ	0.05 U	0.05 U	0.05 U	0.051 UJ	0.01 U	0.05 U	0.011 U	0.05 UJ
Endosulfan II	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.021 UJ	0.1 U	0.1 U	0.1 U	0.1 UJ	0.01 K	0.1 U	0.022 U	0.1 UJ
Endosulfan sulfate	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.021 UJ	0.1 U	0.1 U	0.1 U	0.1 UJ	0.02 U	0.1 U	0.022 U	0.1 UJ
Endrin	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.015 J	0.1 U	0.1 U	0.1 U	0.1 UJ	0.02 U	0.1 U	0.022 U	0.1 UJ
Endrin aldehyde	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.021 UJ	0.1 U	0.1 U	0.1 U	0.1 UJ	0.04 K	0.1 U	0.022 U	0.1 UJ
Endrin ketone	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.021 UJ	0.1 U	0.1 U	0.1 U	0.1 UJ	0.041 K	0.1 U	0.022 U	0.1 UJ
Heptachlor	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.01 UJ	0.05 U	0.05 U	0.05 U	0.051 UJ	0.01 U	0.05 U	0.011 U	0.05 UJ
Heptachlor epoxide	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.01 UJ	0.05 U	0.05 U	0.05 U	0.051 UJ	0.027 K	0.05 U	0.011 U	0.05 UJ
Methoxychlor	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.1 UJ	0.5 U	0.5 U	0.5 U	0.51 UJ	0.1 U	0.5 U	0.11 U	0.5 UJ
Toxaphene	5 U	5 U	5 U	5 U	5 U	1 UJ	5 U	5 U	5 U	5.1 UJ	1 U	5 U	1.1 U	5 UJ
alpha-BHC	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.01 UJ	0.05 U	0.05 U	0.05 U	0.051 UJ	0.047 K	0.05 U	0.011 U	0.05 UJ
alpha-Chlordane	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0099 J	0.05 U	0.05 U	0.05 U	0.051 UJ	0.034 K	0.05 U	0.011 U	0.05 UJ
beta-BHC	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.01 UJ	0.05 U	0.05 U	0.05 U	0.051 UJ	0.12 K	0.05 U	0.011 U	0.05 UJ
delta-BHC	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0065 J	0.05 U	0.05 U	0.05 U	0.051 UJ	0.051 K	0.05 U	0.011 U	0.05 UJ
gamma-BHC (Lindane)	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.01 UJ	0.05 U	0.05 U	0.05 U	0.051 UJ	0.01 U	0.05 U	0.011 U	0.05 UJ
gamma-Chlordane	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.01 UJ	0.05 U	0.05 U	0.05 U	0.051 UJ	0.014 K	0.05 U	0.011 U	0.05 UJ
Total Metals (UG/L)														
Aluminum	38.6 B	55.6 B	48 B	96.2 B	92.4 B	86.6 B	42.6 B	117 B	129 B	84.9 B	150 B	14.8 U	56.7 U	62.3 J
Antimony	1.4 U	1.4 U	1.4 U	1.6 J	1.4 U	1.2 U	1.4 U	1.4 U	1.4 U	1.9 U	1.2 U	1.6 J	1.2 U	1.9 U
Arsenic	3.8 J	3.5 J	2.9 U	2.9 U	21.2	13.9	14	23.2	27.1	18.4	16.4	2.9 U	3 U	13.3
Barium	160 J	1,510	2,060	941	94.4 J	160 J	27 J	76.8 J	80.9 J	135 J	101 J	19.8 J	30.3 J	22.2 J
Beryllium	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.2 U	0.15 U	0.15 U	0.15 U	0.12 B	0.33 J	0.15 U	0.2 U	0.1 U
Cadmium	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	0.37 J	3.4 U	3.4 U	3.4 U	0.3 U	0.3 U	3.4 U	0.3 U	0.3 U
Calcium	26,700	84,000	57,000	136,000	14,500	13,700	22,900	70,800	74,200	33,100	14,400	172,000	114,000	11,100
Chromium	2.8 B	2.2 U	3.8 B	2.2 U	5 B	2.2 J	2.2 U	2.2 U	2.2 U	2.8 L	3.6 J	2.2 U	0.8 U	1.2 L
Cobalt	2.9 U	2.9 U	2.9 U	3.7 B	2.9 U	0.7 U	2.9 U	2.9 U	2.9 U	2.3 B	1.8 J	2.9 U	0.7 U	0.95 B
Copper	1.2 L	1.2 L	0.8 UL	1.5 L	4.1 L	1.5 U	1.8 L	1.6 L	3.3 L	1.2 U	1.5 U	0.8 UL	1.5 U	2.6 J
Cyanide	10 U	10 U	10 U	10 U	12	10.9	11	147	145	136	161	10 U	0.5 U	45.5
Iron	7,950	18,400	18,900	38,300	329	123	209	182	215	114	188	4.7 B	12.5 U	109
Lead	1.6 U	2.9 B	1.6 U	1.6 U	13.2	2.5 L	1.6 U	1.9 B	1.9 B	2 U	1.5 L	1.6 U	1.2 UL	2 U

Table A-4
Groundwater Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-MW11S	NBW14-MW12S	NBW14-MW13S		NBW14-MW14S	NBW14-MW15S		NBW14-MW16S		NBW14-MW17S	NBW14-MW18S	NBW14-MW19S		
Sample ID	NBW14-MW11S-R01	NBW14-MW12S-R01	NBW14-MW13S-R01	NBW14-MW13S-P-R01	NBW14-MW14S-R01	NBW14-MW15S-R01	NBW14-MW15S-R03	NBW14-MW16S-R01	NBW14-MW16S-P-R01	NBW14-MW17S-R01	NBW14-MW18S-R01	NBW14-MW19S-R01	NBW14-MW19S-R03	NBW14-MW19SP-R03
Sample Date	09/27/00	09/27/00	09/26/00	09/26/00	09/27/00	09/27/00	12/16/02	08/24/01	08/24/01	08/24/01	08/24/01	08/24/01	12/16/02	12/16/02
Chemical Name														
Hexachlorocyclopentadiene	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Hexachloroethane	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Isophorone	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Naphthalene	1 J	10 U	49	62	14	1,900	130	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Nitrobenzene	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Pentachlorophenol	25 U	25 U	25 U	25 U	26 U	25 U	5 U	28 U	27 U	25 U	25 U	28 U	5.6 U	5.3 U
Phenanthrene	2 J	10 U	11	12	13	140 J	12	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Phenol	10 U	10 U	10 U	10 U	10 U	51	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Pyrene	10 U	10 U	10 U	10 U	10 U	10	0.93 J	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
bis(2-Chloroethoxy)methane	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
bis(2-Chloroethyl)ether	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
bis(2-Ethylhexyl)phthalate	10 U	2 B	2 B	1 B	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	1.1 J
n-Nitroso-di-n-propylamine	10 U	10 U	10 U	10 U	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
n-Nitrosodiphenylamine	10 U	10 U	10 U	4 J	10 U	10 U	5 U	11 U	11 U	10 U	10 U	11 U	5.6 U	5.3 U
Pesticide/Polychlorinated Biphenyls (UG/L)														
4,4'-DDD	0.1 UJ	0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.02 U	0.12 U	0.11 UL	0.11 U	0.11 U	0.11 U	0.022 U	0.022 U
4,4'-DDE	0.1 UJ	0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.02 U	0.12 U	0.11 UL	0.11 U	0.11 U	0.11 U	0.022 U	0.022 U
4,4'-DDT	0.1 UJ	0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.018 L	0.013 J	0.12 U	0.11 UL	0.11 U	0.11 U	0.11 U	0.022 U	0.022 U
Aldrin	0.05 UJ	0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.0062 L	0.01 U	0.059 U	0.053 UL	0.056 U	0.053 U	0.056 U	0.011 U	0.011 U
Aroclor-1016	1 UJ	1 U	1 UJ	1 U	1 UJ	1 UJ	0.2 U	1.2 U	1.1 UL	1.1 U	1.1 U	1.1 U	0.22 U	0.22 U
Aroclor-1221	2 UJ	2 U	2 UJ	2 U	2 UJ	2 UJ	0.4 U	2.4 U	2.1 UL	2.2 U	2.1 U	2.2 U	0.43 U	0.44 U
Aroclor-1232	1 UJ	1 U	1 UJ	1 U	1 UJ	1 UJ	0.2 U	1.2 U	1.1 UL	1.1 U	1.1 U	1.1 U	0.22 U	0.22 U
Aroclor-1242	1 UJ	1 U	1 UJ	1 U	1 UJ	1 UJ	0.2 U	1.2 U	1.1 UL	1.1 U	1.1 U	1.1 U	0.22 U	0.22 U
Aroclor-1248	1 UJ	1 U	1 UJ	1 U	1 UJ	1 UJ	0.2 U	1.2 U	1.1 UL	1.1 U	1.1 U	1.1 U	0.22 U	0.22 U
Aroclor-1254	1 UJ	1 U	1 UJ	1 U	1 UJ	1 UJ	0.2 U	1.2 U	1.1 UL	1.1 U	1.1 U	1.1 U	0.22 U	0.22 U
Aroclor-1260	1 UJ	1 U	1 UJ	1 U	1 UJ	1 UJ	0.2 U	1.2 U	1.1 UL	1.1 U	1.1 U	1.1 U	0.22 U	0.22 U
Dieldrin	0.1 UJ	0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.0053 L	0.02 U	0.12 U	0.11 UL	0.11 U	0.11 U	0.11 U	0.022 U	0.022 U
Endosulfan I	0.05 UJ	0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.0034 L	0.01 U	0.059 U	0.053 UL	0.056 U	0.053 U	0.056 U	0.011 U	0.011 U
Endosulfan II	0.1 UJ	0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.02 U	0.12 U	0.11 UL	0.11 U	0.11 U	0.11 U	0.022 U	0.022 U
Endosulfan sulfate	0.1 UJ	0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.0088 L	0.02 U	0.12 U	0.11 UL	0.11 U	0.11 U	0.11 U	0.022 U	0.022 U
Endrin	0.1 UJ	0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.02 U	0.12 U	0.11 UL	0.11 U	0.11 U	0.11 U	0.022 U	0.022 U
Endrin aldehyde	0.1 UJ	0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.0089 L	0.02 U	0.12 U	0.11 UL	0.11 U	0.11 U	0.11 U	0.022 U	0.022 U
Endrin ketone	0.1 UJ	0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.02 U	0.12 U	0.11 UL	0.11 U	0.11 U	0.11 U	0.022 U	0.022 U
Heptachlor	0.05 UJ	0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.01 U	0.059 U	0.053 UL	0.056 U	0.053 U	0.056 U	0.011 U	0.011 U
Heptachlor epoxide	0.05 UJ	0.012 J	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.01 U	0.059 U	0.053 UL	0.056 U	0.053 U	0.056 U	0.011 U	0.011 U
Methoxychlor	0.5 UJ	0.5 U	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ	0.1 U	0.59 U	0.53 UL	0.56 U	0.53 U	0.56 U	0.11 U	0.11 U
Toxaphene	5 UJ	5 U	5 UJ	5 U	5 UJ	5 UJ	1 U	5.9 U	5.3 UL	5.6 U	5.3 U	5.6 U	1.1 U	1.1 U
alpha-BHC	0.05 UJ	0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.0057 J	0.059 U	0.053 UL	0.056 U	0.053 U	0.056 U	0.011 U	0.011 U
alpha-Chlordane	0.05 UJ	0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.01 U	0.059 U	0.053 UL	0.056 U	0.053 U	0.056 U	0.011 U	0.011 U
beta-BHC	0.05 UJ	0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.049 J	0.059 U	0.053 UL	0.056 U	0.053 U	0.056 U	0.011 U	0.011 U
delta-BHC	0.05 UJ	0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.0093 J	0.059 U	0.053 UL	0.056 U	0.053 U	0.056 U	0.011 U	0.011 U
gamma-BHC (Lindane)	0.05 UJ	0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.075 L	0.01 U	0.059 U	0.053 UL	0.056 U	0.053 U	0.056 U	0.011 U	0.011 U
gamma-Chlordane	0.05 UJ	0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.0057 J	0.059 U	0.053 UL	0.056 U	0.053 U	0.056 U	0.011 U	0.011 U
Total Metals (UG/L)														
Aluminum	34.9 U	34.9 U	77.3 J	94.1 B	54 B	56.2 B	56.7 U	46 B	43.6 U	67.5 B	76.3 B	140 B	56.7 U	56.7 U
Antimony	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.2 U	1.7 UL	1.7 UL	1.7 UL	1.7 UL	1.7 UL	1.2 U	1.2 U
Arsenic	4.1 B	9.2 B	8.4 B	5.5 B	18.4	6.4 B	7.3 J	2.7 B	3.5 B	7.7 B	17.5 B	16.6 B	12.2	13.5
Barium	169 J	29.2 J	470	482	568	269	297	62.8 J	62.6 J	80.8 J	162 J	89.9 J	75.6 J	73.2 J
Beryllium	0.22 B	0.1 U	0.1 U	0.2 B	0.24 B	0.1 U	0.2 U	0.4 U	0.4 U	0.4 U	0.42 B	0.41 B	0.2 U	0.2 U
Cadmium	0.3 U	0.3 U	0.34 B	0.3 U	0.58 B	0.3 U	0.3 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.3 U	0.3 U
Calcium	159,000	15,800	21,800	21,700	80,300	137,000	114,000	69,100	70,000	58,200	174,000	132,000	131,000	129,000
Chromium	1.2 L	1 L	1.4 L	1.4 L	3.2 L	0.5 UL	0.8 U	1 J	1 U	1 U	1 U	1.5 J	0.8 U	0.8 U
Cobalt	1.3 B	1.1 B	1 B	0.87 B	0.71 B	0.5 U	0.7 U	0.7 U	0.7 U	0.7 U	2.2 B	0.7 U	0.7 U	0.7 U
Copper	1.2 U	1.2 U	4.9 J	2.7 J	1.2 U	1.2 U	1.5 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.5 U	1.5 U
Cyanide	1.9 L	1.1 L	1 L	1.3 L	2 L	2.2 L	0.61 B	NA	NA	NA	NA	NA	0.5 U	0.5 U
Iron	3,430	952	6,580	6,680	7,850	3,170	4,850	10.6 U	10.6 U	113 B	510	673	5,250	5,090
Lead	2 U	2 U	5.2	6.2	2 U	2 U	1.2 UL	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.2 UL	1.2 UL

Table A-4
Groundwater Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-MW01S	NBW14-MW02S	NBW14-MW03S	NBW14-MW04S	NBW14-MW05S		NBW14-MW06S	NBW14-MW07S				NBW14-MW08S		NBW14-MW09S
Sample ID	NBW14-MW01S-R01	NBW14-MW02S-R01	NBW14-MW03S-R01	NBW14-MW04S-R01	NBW14-MW05S-R01	NBW14-MW05S-R03	NBW14-MW06S-R01	NBW14-MW07S-R01	NBW14-MW07S-P-R01	NBW14-MW07S-R02	NBW14-MW07S-R03	NBW14-MW08S-R01	NBW14-MW08S-R03	NBW14-MW09S-R01
Sample Date	01/05/00	01/07/00	01/07/00	01/07/00	01/07/00	12/16/02	01/05/00	01/05/00	01/05/00	09/27/00	12/16/02	01/04/00	12/16/02	09/26/00
Chemical Name														
Magnesium	50,500	236,000	266,000	331,000	27,500	28,200	10,000	580 J	585 J	1,070 J	1,380 J	28,000	39,700	22,000
Manganese	59.1	480	691	842	20	31.1	8.2 J	2.5 B	3 B	2.5 J	2.9 J	78.3	113	15.9
Mercury	0.04 B	0.024 U	0.024 U	0.028 B	0.025 B	0.1 U	0.058 B	0.024 U	0.043 B	0.1 U	0.1 U	0.024 U	0.1 U	0.1 U
Nickel	8.8 J	6.9 U	6.9 U	6.9 U	9.8 J	7 J	6.9 U	30.8 J	26.3 J	25.2 J	20.8 J	6.9 U	1.9 J	7 J
Potassium	74,700	164,000	192,000	183,000	134,000	194,000 J	60,900	103,000	109,000	217,000 J	156,000 J	11,700	32,700 J	104,000 J
Selenium	3 U	3 U	3 U	3 U	3 U	3 UL	3.1 J	4.4 J	5.7	5 U	3 UL	3 U	3 UL	5 U
Silver	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	0.8 U	2.4 U	2.4 U	2.4 U	0.6 U	0.8 U	2.4 U	0.8 U	0.6 U
Sodium	710,000	3,870,000	4,600,000	4,490,000	1,410,000	1,390,000	731,000	1,650,000	1,710,000	2,080,000	1,470,000	67,400	310,000	657,000
Thallium	3.8 U	7.5 J	9.3 J	6.2 J	3.8 U	2.4 UL	4.9 J	5.1 J	3.9 J	4.9 U	2.4 UL	5.2 J	2.4 UL	4.9 U
Vanadium	4.2 B	3.2 B	4.4 B	4.3 B	72.4	45.3 J	11.8 B	81	81.2	79.9	117	2.1 U	0.7 U	2.8 B
Zinc	9.7 B	34.8 B	10.8 B	80.8	13.6 B	6.1 L	16.7 B	10 B	19.1 B	0.9 UL	6.3 L	6.5 B	1.1 UL	0.9 UL
Dissolved Metals (UG/L)														
Aluminum	21.7 B	21.6 B	25 B	15.3 B	41.7 B	75.2 B	45.2 B	91.8 B	97 B	126 B	124 B	28.7 B	71.7 B	60.5 B
Antimony	1.4 U	2 J	1.4 U	1.4 U	2.6 J	1.2 U	3.4 J	2 J	2.8 J	2.9 L	1.2 U	1.4 U	1.2 U	3.8 L
Arsenic	6 J	2.9 J	2.9 U	2.9 U	21.2	17.4	11.6	23.2	24.2	22.5 B	18.1	4.4 J	3 U	15.8
Barium	158 J	1,670	2,090	945	92.8 J	178 J	24.8 J	75.1 J	79.7 J	117 J	110 J	20.5 J	31.9 J	24 J
Beryllium	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.2 U	0.15 U	0.15 U	0.15 U	0.14 B	0.2 U	0.15 U	0.32 B	0.1 U
Cadmium	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	0.3 U	3.4 U	3.4 U	3.4 U	0.3 U	0.3 U	3.4 U	0.3 U	0.3 U
Calcium	25,800	81,800	55,400	138,000	14,200	16,200	20,500	70,500	75,400	27,800	17,600	175,000	123,000	12,000
Chromium	2.5 B	2.2 U	3.6 B	2.7 B	4.3 B	2.1 J	2.2 U	3.1 B	2.2 B	3.5 B	4 J	2.2 U	0.8 U	3.3 B
Cobalt	2.9 U	4.3 B	2.9 U	3.7 B	2.9 U	1 J	2.9 U	5.4 B	2.9 U	2.4 B	2 J	2.9 U	0.7 U	0.91 B
Copper	0.8 UL	0.8 UL	2.4 L	0.8 UL	1.6 L	1.5 U	23.2 L	6.6 L	5.3 L	1.9 J	1.5 U	0.8 U	1.5 U	5.2 J
Cyanide	NA	NA	NA	NA	NA	NA	NA	NA	NA	124 L	NA	NA	NA	50 L
Iron	7,480	22,000	13,700	35,100	269	109	153	135	135	199	126	40.6 B	12.5 U	113
Lead	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.2 U	1.6 U	1.6 U	1.6 U	2 U	1.2 U	1.6 U	1.2 U	2 U
Magnesium	50,100	220,000	252,000	371,000	27,900	34,200	9,760	566 J	619 J	975 J	1,530 J	29,000	42,700	22,800
Manganese	55.9	514	595	864	19.3	36.6	8.6 J	3.9 B	4.1 B	3.5 B	2 J	78.1	118	16.5
Mercury	0.024 U	0.024 U	0.024 U	0.047 B	0.024 U	0.1 U	0.035 B	0.043 B	0.024 U	0.1 J	0.1 U	0.04 B	0.1 U	0.1 U
Nickel	6.9 U	6.9 U	6.9 U	6.9 U	8.2 J	8.5 J	7.9 J	32.5 J	27.7 J	25 J	23.4 J	6.9 U	2.2 J	11.5 J
Potassium	74,700	167,000	184,000	201,000	130,000	216,000 J	57,000	101,000	106,000	207,000 J	169,000 J	11,700	34,900 J	112,000 J
Selenium	3 U	3 U	3 U	6 U	3 U	3 UL	3 U	4.6 J	3.2 J	5 U	3 UL	3 U	3.3 B	5 U
Silver	2.4 U	2.4 U	2.9 B	2.4 U	2.4 U	0.8 U	2.4 U	2.4 U	2.4 U	0.6 U	0.8 U	2.4 U	0.8 U	0.6 U
Sodium	670,000	3,720,000	4,430,000	4,880,000	1,410,000	1,550,000	696,000	1,650,000	1,720,000	1,870,000	1,550,000	68,000	324,000	665,000
Thallium	4.8 J	9.4 J	5.7 J	8.8 J	6.7 J	2.4 UL	5.8 J	4.4 J	5.9 J	4.9 U	3.9 L	5.9 J	2.4 UL	4.9 U
Vanadium	3.2 B	5.1 B	2.1 U	6.6 B	50.5	33.5 J	8.4 B	75	81.9	79.1	120	2.1 U	0.7 U	3.1 J
Zinc	8.3 B	6.1 B	5.2 B	5.3 B	13 B	1.1 UL	12.9 B	7 B	10.3 B	2.7 L	5.7 L	2.4 B	1.1 UL	39.7
Wet Chemistry (MG/L)														
Amenable cyanide	NA	NA	NA	NA	NA	0.01 U	NA	NA	NA	NA	0.01 U	NA	0.01 U	NA
Total dissolved solids (TDS)	NA	NA	NA	NA	NA	4,760	NA	NA	NA	NA	8,050	NA	1,450	NA

Notes:
U - Not detected
J - Analyte present. Reported value is estimated
B - Possible blank contamination.
NA - Not analyzed.
L - Reported value is biased low.
K - Reported value is biased high.
R - Unreliable result

Table A-4
Groundwater Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-MW11S	NBW14-MW12S	NBW14-MW13S		NBW14-MW14S	NBW14-MW15S		NBW14-MW16S		NBW14-MW17S	NBW14-MW18S	NBW14-MW19S		
Sample ID	NBW14-MW11S-R01	NBW14-MW12S-R01	NBW14-MW13S-R01	NBW14-MW13S-P-R01	NBW14-MW14S-R01	NBW14-MW15S-R01	NBW14-MW15S-R03	NBW14-MW16S-R01	NBW14-MW16S-P-R01	NBW14-MW17S-R01	NBW14-MW18S-R01	NBW14-MW19S-R01	NBW14-MW19S-R03	NBW14-MW19SP-R03
Sample Date	09/27/00	09/27/00	09/26/00	09/26/00	09/27/00	09/27/00	12/16/02	08/24/01	08/24/01	08/24/01	08/24/01	08/24/01	12/16/02	12/16/02
Chemical Name														
Magnesium	190,000	23,500	42,400	42,800	178,000	171,000	75,700	46,700	47,200	61,800	113,000	94,500	124,000	121,000
Manganese	321	147	54.2	54.5	208	184	188	235	236	354	564	983	926	905
Mercury	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	2.2 J	2.9 J	5.8 J	5.5 J	3.3 J	1 J	1 J	2.3 J	1.6 J	1.4 U	4 J	1.8 J	1 U	1 U
Potassium	274,000 J	47,000 J	106,000 J	108,000 J	169,000 J	134,000 J	48,300 J	32,400 J	32,500 J	50,700 J	76,200 J	69,600 J	103,000 J	98,700 J
Selenium	5 U	5 U	5 U	5 U	5 U	5 U	3 UL	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	3 UL	3 UL
Silver	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.8 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.8 U	0.8 U
Sodium	3,490,000	583,000	642,000	653,000	1,610,000	1,560,000	450,000	225,000	226,000	233,000	922,000	624,000	796,000	765,000
Thallium	4.9 U	4.9 U	9.2 B	4.9 U	4.9 U	7.9 B	2.4 UL	6.7 B	5.2 B	5.4 B	7.7 B	5 B	2.4 UL	2.4 UL
Vanadium	1.5 B	4.2 J	3 B	3 J	1.9 B	3.8 J	1.7 J	0.79 B	0.6 U	1.1 B	1.3 B	0.6 U	0.7 U	0.7 U
Zinc	0.9 UL	0.9 UL	79.4	77.6	0.9 UL	0.9 UL	1.1 UL	0.7 UL	0.7 UL	3.5 L	1.7 L	3.5 L	1.1 UL	1.1 UL
Dissolved Metals (UG/L)														
Aluminum	69.8 B	178 B	34.9 U	34.9 U	34.9 U	135 B	56.7 U	34 B	32.6 B	31.7 B	28.5 B	35.3 B	56.7 U	59.4 B
Antimony	1.9 UL	1.9 UL	2 L	1.9 UL	1.9 UL	3.3 L	2.9 J	3.3 B	2.5 U	4 B	2.8 B	3.1 B	1.2 U	1.2 U
Arsenic	5.1 B	11.7 B	4.3 B	3.7 B	18.4 B	9.6 B	6.8 J	2.8 U	2.8 U	3.9 J	9.6 J	9.1 J	12	13.4
Barium	178 J	29.8 J	430	412	553	271	322	56.6 J	57.9 J	72.3 J	134 J	91.7 J	81.3 J	79.2 J
Beryllium	0.1 U	0.14 B	0.1 U	0.1 U	0.1 U	0.1 U	0.2 U	0.2 B	0.19 B	0.27 B	0.33 B	0.43 B	0.2 U	0.2 U
Cadmium	0.3 U	0.3 B	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.3 U	0.3 U
Calcium	158,000	15,900	18,800	18,300	79,500	146,000	130,000	71,500	72,700	52,800	172,000	128,000	147,000	139,000
Chromium	0.67 B	1.5 B	0.81 B	1.2 B	1.7 B	3.5 B	0.8 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.8 U	0.8 U
Cobalt	0.86 B	1.4 B	1.1 B	0.88 B	1.2 B	1.2 B	0.7 U	0.81 B	0.6 U	0.6 U	1.4 B	0.99 B	0.7 U	0.7 U
Copper	1.3 J	2.3 J	1.2 U	1.2 U	1.4 J	3.7 J	1.5 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	1.5 U	1.5 U
Cyanide	1.9 L	1.2 L	0.8 UL	1 L	1.3 UL	1.8 L	NA	NA	NA	NA	NA	NA	NA	NA
Iron	3,700	1,440	5,500	5,420	7,950	4,150	5,660	12.4 U	12.4 U	12.4 U	371	312	5,810	5,760
Lead	2 U	2 U	11.7	2 U	2 U	2.1 B	1.2 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.2 U	1.2 U
Magnesium	181,000	22,900	37,600	36,600	175,000	173,000	73,000	44,700	45,300	63,300	104,000	97,400	135,000	132,000
Manganese	321	148	45.5	44.5	209	206	215	230	231	347	493	970	999	957
Mercury	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	2.6 B	4.3 B	4.4 B	5.1 B	2.7 B	4.4 B	1.2 J	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	1 U	1 J
Potassium	266,000 J	46,200 J	95,800 J	93,600 J	164,000 J	144,000 J	45,500 J	34,300 J	34,700 J	56,400 J	75,500 J	81,500 J	109,000 J	107,000 J
Selenium	5 U	5.2	5 U	5 U	5 U	5 U	3 B	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	4.4 B	3 UL
Silver	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.8 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.8 U	0.8 U
Sodium	3,380,000	578,000	611,000	606,000	1,640,000	1,700,000	406,000	242,000 J	246,000 J	316,000 J	990,000 J	741,000 J	805,000	809,000
Thallium	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	2.4 UL	3.5 U	3.5 U	3.5 U	3.5 U	5.6 B	3 K	2.6 K
Vanadium	1.6 B	5.2 J	2.1 B	1.9 B	2.2 B	7 J	1.8 J	0.57 J	0.58 J	0.74 J	0.5 U	0.5 U	0.7 U	0.7 U
Zinc	0.9 UL	1.3 B	30	22.2 L	0.9 UL	17.7 L	1.1 UL	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	1.1 UL	1.1 UL
Wet Chemistry (MG/L)														
Amenable cyanide	NA	NA	NA	NA	NA	NA	0.01 U	NA	NA	NA	NA	NA	0.01 U	0.01 U
Total dissolved solids (TDS)	NA	NA	NA	NA	NA	NA	2,010	NA	NA	NA	NA	NA	3,470	3,490

Notes:
U - Not detected
J - Analyte present. Reported value is estimated
B - Possible blank contamination.
NA - Not analyzed.
L - Reported value is biased low.
K - Reported value is biased high.
R - Unreliable result

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-DS01		NBW14-DS01A	NBW14-DS02		NBW14-DS02A	NBW14-DS03		NBW14-DS03A	NBW14-DS04		NBW14-DS04A	NBW14-DS05			NBW14-DS05A	NBW14-DS06	
Sample ID	NBW14-DS01-00	NBW14-DS01-02	NBW14-DS01A	NBW14-DS02-00	NBW14-DS02-02	NBW14-DS02A	NBW14-DS03-00	NBW14-DS03-02	NBW14-DS03A	NBW14-DS04-00	NBW14-DS04-02	NBW14-DS04A	NBW14-DS05-00	NBW14-DS05-02	NBW14-DS05P-02	NBW14-DS05A	NBW14-DS06-00	NBW14-DS06
Sample Date	09/30/99	09/30/99	07/16/98	09/30/99	09/30/99	07/16/98	09/30/99	09/30/99	07/16/98	09/30/99	09/30/99	07/16/98	09/30/99	09/30/99	09/30/99	07/16/98	10/01/99	10/01/99
Chemical Name																		
Volatile Organic Compounds (UG/KG)																		
1,1,1-Trichloroethane	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
1,1-Dichloroethane	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
1,1-Dichloroethene	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
1,2-Dibromo-3-chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
1,2-Dichloroethene (total)	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
1,2-Dichloropropane	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
2-Butanone	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
2-Hexanone	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
4-Methyl-2-pentanone	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
Acetone	NA	NA	130 J	NA	NA	48 B	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
Benzene	NA	NA	3 J	NA	NA	12 UJ	NA	NA	12 U	NA	NA	3 J	NA	NA	NA	11 U	NA	NA
Bromodichloromethane	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
Bromoform	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
Bromomethane	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
Carbon disulfide	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
Carbon tetrachloride	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
Chlorobenzene	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
Chloroethane	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
Chloroform	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
Chloromethane	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
Cumene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
Dichlorodifluoromethane(Freon-12)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
Methyl acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butyl ether (MTBE)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	NA	NA	26 J	NA	NA	20 B	NA	NA	8 B	NA	NA	17	NA	NA	NA	13	NA	NA
Styrene	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
Tetrachloroethene	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
Toluene	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	1 J	NA	NA
Trichloroethene	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
Trichlorofluoromethane(Freon-11)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
Xylene, total	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	12 UJ	NA	NA	12 UJ	NA	NA	12 U	NA	NA	13 U	NA	NA	NA	11 U	NA	NA
Semivolatile Organic Compounds (UG/KG)																		
1,1-Biphenyl	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 UJ	730 U	740 U	1,800 U	350 UJ	370 U	720
1,2-Dichlorobenzene	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 U	1,800 U	350 U	370 U	720
1,3-Dichlorobenzene	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 U	1,800 U	350 U	370 U	720
1,4-Dichlorobenzene	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 U	1,800 U	350 U	370 U	720
2,2'-Oxybis(1-chloropropane)	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 U	1,800 U	350 U	370 U	720
2,4,5-Trichlorophenol	9,000 U	3,000 U	880 U	930 U	4,800 U	900 U	940 UL	1,800 U	900 U	4,500 U	3,800 U	1,900 U	1,800 U	1,900 UR	4,600 UR	870 U	930 U	1,800
2,4,6-Trichlorophenol	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 UR	1,800 UR	350 U	370 U	720
2,4-Dichlorophenol	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 UR	1,800 UR	350 U	370 U	720
2,4-Dimethylphenol	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 UR	1,800 UR	350 U	370 U	720
2,4-Dinitrophenol	9,000 U	3,000 U	880 U	930 U	4,800 U	900 U	940 UL	1,800 U	900 U	4,500 U	3,800 U	1,900 U	1,800 U	1,900 UR	4,600 UR	870 U	930 U	1,800

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID		NBW14-DS06A	NBW14-DS07		NBW14-DS07A	NBW14-DS08		NBW14-DS08A	NBW14-DS09		NBW14-DS10			NBW14-DS11		NBW14-DS12	
Sample ID	02	NBW14-DS06A	NBW14-DS07-00	NBW14-DS07-02	NBW14-DS07A	NBW14-DS08-00	NBW14-DS08-02	NBW14-DS08A	NBW14-DS09-00	NBW14-DS09-02	NBW14-DS10-00	NBW14-DS10-02	NBW14-DS10P-02	NBW14-DS11-00	NBW14-DS11-02	NBW14-DS12-00	NBW14-DS12-02
Sample Date		07/16/98	10/01/99	10/01/99	07/16/98	10/01/99	10/01/99	07/16/98	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99
Chemical Name																	
Volatile Organic Compounds (UG/KG)																	
1,1,1-Trichloroethane		11 U	NA	NA	12 U	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane		11 UJ	NA	NA	12 U	NA	NA	11 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane		11 U	NA	NA	12 U	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane		11 U	NA	NA	12 U	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		11 U	NA	NA	12 U	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane		11 U	NA	NA	12 U	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene (total)		11 U	NA	NA	12 U	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane		11 U	NA	NA	12 U	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone		11 U	NA	NA	12 U	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone		11 UJ	NA	NA	12 U	NA	NA	11 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone		11 U	NA	NA	12 U	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone		33	NA	NA	47 J	NA	NA	50 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene		11 U	NA	NA	12 U	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane		11 U	NA	NA	12 U	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform		11 U	NA	NA	12 U	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane		11 U	NA	NA	12 U	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide		5 J	NA	NA	12 U	NA	NA	9 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		11 U	NA	NA	12 U	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		11 UJ	NA	NA	12 U	NA	NA	11 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane		11 U	NA	NA	12 U	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		11 U	NA	NA	12 U	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane		11 U	NA	NA	12 U	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cumene		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane		11 U	NA	NA	12 U	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane(Freon-12)		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene		11 UJ	NA	NA	12 U	NA	NA	11 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butyl ether (MTBE)		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride		18	NA	NA	27	NA	NA	14	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene		11 UJ	NA	NA	12 U	NA	NA	11 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene		11 UJ	NA	NA	12 U	NA	NA	11 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene		2 J	NA	NA	12 U	NA	NA	2 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene		11 U	NA	NA	12 U	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane(Freon-11)		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		11 U	NA	NA	12 U	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylene, total		11 UJ	NA	NA	12 U	NA	NA	11 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene		11 U	NA	NA	12 U	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene		11 U	NA	NA	12 U	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds (UG/KG)																	
1,1-Biphenyl		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	U	740 UJ	360 UL	360 UL	1,800 UJ	360 UL	350 U	760 UJ	370 UL	360 U	1,500 U	350 U	350 U	730 U	46 J	370 U	760 U
1,2-Dichlorobenzene	U	740 U	360 UL	360 UL	1,800 U	360 UL	350 U	760 U	370 UL	360 U	1,500 U	350 U	350 U	730 U	370 U	370 U	120 J
1,3-Dichlorobenzene	U	740 U	360 UL	360 UL	1,800 U	360 UL	350 U	760 U	370 UL	360 U	1,500 U	350 U	350 U	730 U	370 U	370 U	760 U
1,4-Dichlorobenzene	U	740 U	360 UL	360 UL	1,800 U	360 UL	350 U	760 U	370 UL	360 U	1,500 U	350 U	350 U	730 U	370 U	370 U	760 U
2,2'-Oxybis(1-chloropropane)	U	740 U	360 UL	360 UL	1,800 U	360 UL	350 U	760 U	370 UL	360 U	1,500 U	350 U	350 U	730 U	370 U	370 U	760 U
2,4,5-Trichlorophenol	UR	1,900 U	920 UL	900 UL	4,500 U	910 UL	880 U	1,900 U	930 UL	900 U	3,800 U	890 U	890 U	1,800 U	940 U	920 U	1,900 U
2,4,6-Trichlorophenol	UR	740 U	360 UL	360 UL	1,800 U	360 UL	350 U	760 U	370 UL	360 U	1,500 U	350 U	350 U	730 U	370 U	370 U	760 U
2,4-Dichlorophenol	UR	740 U	360 UL	360 UL	1,800 U	360 UL	350 U	760 U	370 UL	360 U	1,500 U	350 U	350 U	730 U	370 U	370 U	760 U
2,4-Dimethylphenol	UR	740 U	360 UL	360 UL	1,800 U	360 UL	350 U	760 U	370 UL	360 U	1,500 U	350 U	350 U	730 U	370 U	370 U	760 U
2,4-Dinitrophenol	UR	1,900 U	920 UL	900 UL	4,500 U	910 UL	880 U	1,900 U	930 UL	900 U	3,800 U	890 U	890 U	1,800 U	940 U	920 U	1,900 U

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-DS13		NBW14-DS14			NBW14-DS15		NBW14-DS16		NBW14-DS17		NBW14-DS18			NBW14-DS19		NBW1
Sample ID	NBW14-DS13-00	NBW14-DS13-02	NBW14-DS14-00	NBW14-DS14-02	NBW14-DS14P-02	NBW14-DS15-00	NBW14-DS15-02	NBW14-DS16-00	NBW14-DS16-02	NBW14-DS17-00	NBW14-DS17-02	NBW14-DS18-00	NBW14-DS18-02	NBW14-DS18P-00	NBW14-DS19-00	NBW14-DS19-06	NBW14-DS20-03
Sample Date	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	09/18/00	09/18/00	09/19/00
Chemical Name																	
Volatile Organic Compounds (UG/KG)																	
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
1,1,2,2-Tetrachloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 UR	11 UJ	12 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
1,1,2-Trichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
1,1-Dichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
1,1-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
1,2-Dibromo-3-chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 UR	11 UJ	12 U
1,2-Dibromoethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
1,2-Dichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.62 J	11 UJ	4.58 J
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 UR	11 UJ	12 U
4-Methyl-2-pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 UR	11 UJ	12 U
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.11 J	31.4 J	40.5 J
Benzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
Bromodichloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
Bromoform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
Carbon disulfide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	1.57 J	12 U
Carbon tetrachloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
Chlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
Chloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
Cumene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 UR	12.9 J	12 U
Cyclohexane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
Dibromochloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
Dichlorodifluoromethane(Freon-12)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 UJ
Ethylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 UR	3.39 J	12 U
Methyl acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
Methyl-tert-butyl ether (MTBE)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
Methylcyclohexane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	14.1	12 U
Methylene chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	29.2 J	2.3 B	3.25 B
Styrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 UR	11 UJ	12 U
Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 UR	11 UJ	12 U
Toluene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.13 J	6.68 J	1.43 J
Trichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
Trichlorofluoromethane(Freon-11)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.59 J	11 UJ	12 U
Vinyl chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
Xylene, total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 UR	41.6 J	3.1 J
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
cis-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 UJ	12 U
trans-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 UR	11 UJ	12 U
Semivolatile Organic Compounds (UG/KG)																	
1,1-Biphenyl	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	360 U	60.7 J	390 U
1,2,4-Trichlorobenzene	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	NA	NA	NA
1,2-Dichlorobenzene	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	NA	NA	NA
1,3-Dichlorobenzene	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	NA	NA	NA
1,4-Dichlorobenzene	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	NA	NA	NA
2,2'-Oxybis(1-chloropropane)	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
2,4,5-Trichlorophenol	4,500 U	1,800 UR	4,700 U	1,900 U	3,900 U	900 U	1,900 U	900 U	900 U	910 U	930 U	1,900 U	970 U	1,900 U	910 U	910 U	990 U
2,4,6-Trichlorophenol	1,800 U	730 UR	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
2,4-Dichlorophenol	1,800 U	730 UR	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
2,4-Dimethylphenol	1,800 U	730 UR	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
2,4-Dinitrophenol	4,500 U	1,800 UR	4,700 U	1,900 U	3,900 U	900 U	1,900 U	900 U	900 U	910 U	930 U	1,900 U	970 U	1,900 U	910 U	910 U	990 U

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	4-DS20	NBW14-DS21		NBW14-DS22	NBW14-DS23	NBW14-DS24			NBW14-DS25		NBW14-DS26			NBW14-DS27		NBW14-DS28	
Sample ID	NBW14-DS20-00	NBW14-DS21-00	NBW14-DS21-05	NBW14-DS22-00	NBW14-DS23-00	NBW14-DS24-00	NBW14-DS24-05	NBW14-DS24-P-00	NBW14-DS25-00	NBW14-DS25-P-00	NBW14-DS26-00	NBW14-DS26-06	NBW14-DS26-P-00	NBW14-DS27-00	NBW14-DS27-04	NBW14-DS28-00	NBW14-DS28-03
Sample Date	09/19/00	09/11/00	09/12/00	09/11/00	09/11/00	09/11/00	09/11/00	09/11/00	09/15/00	09/15/00	09/11/00	09/11/00	09/11/00	09/12/00	09/12/00	09/12/00	09/12/00
Chemical Name																	
Volatile Organic Compounds (UG/KG)																	
1,1,1-Trichloroethane	11 U	11 U	11 U	11 U	1.28 J	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
1,1,2,2-Tetrachloroethane	11 UR	11 U	11 U	11 UR	11 UR	12 U	12 U	11 UJ	12 U	11 U	10 UR	11 U	11 U	11 UJ	29 U	11 UJ	12 UJ
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	11 U	11 U	11 U	11 UJ	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
1,1,2-Trichloroethane	11 UR	11 U	11 U	11 U	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
1,1-Dichloroethane	11 U	11 U	11 U	11 UJ	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
1,1-Dichloroethene	11 U	11 U	11 U	11 UJ	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
1,2-Dibromo-3-chloropropane	11 UR	11 U	11 U	11 UR	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UR	11 U	11 U	11 UJ	29 U	11 UJ	12 U
1,2-Dibromoethane	11 U	11 U	11 U	11 U	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
1,2-Dichloroethane	11 U	11 U	11 U	11 U	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	11 U	11 U	11 U	11 U	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
2-Butanone	11 U	11 U	61.3	11 UJ	3.74 J	12 U	21.0 J	11 UJ	12 U	11 U	10 UJ	14.5 J	11 U	11 UJ	59.0	11 UJ	4.45 B
2-Hexanone	11 UR	11 U	11 U	11 U	11 UR	12 UJ	12 U	11 UJ	12 U	11 U	10 UR	11 U	11 U	11 UJ	29 U	11 UJ	12 UJ
4-Methyl-2-pentanone	11 UR	11 U	12.7	11 UR	11 UR	12 UJ	12 U	11 UJ	12 U	11 U	10 UR	11 U	11 U	11 UJ	29 U	11 UJ	12 UJ
Acetone	11 U	11 U	210 J	11 UJ	11 UJ	12 U	134 J	11 UJ	12 U	11 U	10 UJ	89.1 J	11 U	11 UJ	292 J	11 UJ	5.31 B
Benzene	11 U	11 U	1.51 J	11 U	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
Bromodichloromethane	11 U	11 U	11 U	11 U	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
Bromoform	11 UR	11 U	11 U	11 U	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
Bromomethane	11 U	11 U	11 U	11 UJ	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
Carbon disulfide	11 U	11 U	8.76 J	11 UJ	11 UJ	12 U	2.96 J	11 UJ	12 U	11 U	10 UJ	1.46 J	11 U	11 UJ	6.3 J	11 UJ	12 U
Carbon tetrachloride	11 U	11 U	11 U	11 U	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
Chlorobenzene	11 UR	11 U	11 U	11 UR	11 UR	12 UJ	12 U	11 UJ	12 U	11 U	10 UR	11 U	11 U	11 UJ	29 U	11 UJ	12 UJ
Chloroethane	11 U	11 U	11 U	11 UJ	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
Chloroform	11 U	11 U	11 U	11 UJ	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
Chloromethane	11 U	11 U	11 U	11 UJ	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
Cumene	11 UR	11 U	11 U	11 UR	11 UJ	12 UJ	12 U	11 UJ	12 U	11 U	10 UR	14.0	11 U	11 UJ	29 U	11 UJ	12 U
Cyclohexane	11 U	11 U	11 U	11 U	2.25 J	12 U	1.51 J	11 UJ	12 U	11 U	1.32 J	11 U	11 U	11 UJ	29 U	11 UJ	12 U
Dibromochloromethane	11 U	11 U	11 U	11 UJ	11 UJ	12 UJ	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
Dichlorodifluoromethane(Freon-12)	11 U	11 UJ	11 U	11 UJ	11 UJ	12 UJ	12 UJ	11 UJ	12 U	11 U	10 UJ	11 UJ	11 UJ	11 UJ	29 UJ	11 UJ	12 U
Ethylbenzene	11 UR	11 U	11 U	11 UR	11 UR	12 UJ	12 U	11 UJ	12 U	11 U	10 UR	3.57 J	11 U	1.61 J	29 U	11 UJ	12 UJ
Methyl acetate	11 U	11 U	11 U	11 UJ	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
Methyl-tert-butyl ether (MTBE)	11 U	11 U	11 U	11 UJ	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
Methylcyclohexane	11 U	11 U	11 U	11 U	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	7.41 J	11 U	11 UJ	2.92 J	11 UJ	12 U
Methylene chloride	10.5 B	3.15 B	17.9	10.7 B	78.5 J	2.21 B	1.87 B	2.4 B	1.19 B	1.27 B	24.5 B	2.01 B	1.5 B	8.88 B	16.1 B	12.6 B	4.39 B
Styrene	11 UR	11 U	11 U	11 UR	11 UR	12 UJ	12 U	11 UJ	12 U	11 U	10 UR	11 U	11 U	11 UJ	29 U	11 UJ	12 UJ
Tetrachloroethene	11 U	11 U	11 U	11 UR	11 UR	12 U	12 U	11 UJ	12 U	11 U	10 UR	11 U	11 U	2.25 J	29 U	11 UJ	12 UJ
Toluene	3.18 J	10.3 J	3.19 J	19.5 J	12.4 J	12 UJ	12 U	1.36 J	2.44 J	11 U	86.7 J	19.5	11 U	13.0 J	38.3	11.6 J	11.2 J
Trichloroethene	11 U	11 U	11 U	11 U	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
Trichlorofluoromethane(Freon-11)	11 U	11 U	11 U	1.46 J	11 UJ	12 U	12 U	11 UJ	12 U	11 U	4.53 J	11 U	11 U	11 UJ	29 U	11 UJ	12 U
Vinyl chloride	11 U	11 U	11 U	11 UJ	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
Xylene, total	11 UR	11 U	11 U	4.71 J	11 UR	12 UJ	12 U	11 UJ	12 U	11 U	10 UR	63.3	11 U	6.83 J	29 U	11 UJ	12 UJ
cis-1,2-Dichloroethene	11 U	11 U	11 U	11 UJ	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
cis-1,3-Dichloropropene	11 U	11 U	11 U	11 UJ	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
trans-1,2-Dichloroethene	11 U	11 U	11 U	11 UJ	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
trans-1,3-Dichloropropene	11 U	11 U	11 U	11 U	11 UJ	12 U	12 U	11 UJ	12 U	11 U	10 UJ	11 U	11 U	11 UJ	29 U	11 UJ	12 U
Semivolatile Organic Compounds (UG/KG)																	
1,1-Biphenyl	360 U	380 U	370 U	360 U	50 J	350 U	800 U	360 U	380 U	360 U	48.3 J	55.5 J	43.6 J	360 U	380 U	370 U	420 U
1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane)	360 U	380 UJ	370 U	360 UJ	370 U	350 U	800 UJ	360 UJ	380 U	360 U	340 UJ	380 UJ	360 UJ	360 UJ	380 UJ	370 UJ	420 U
2,4,5-Trichlorophenol	900 U	940 U	930 U	910 U	920 U	890 U	2,000 U	910 U	960 U	910 U	860 U	950 U	900 U	910 U	950 U	920 U	1,000 U
2,4,6-Trichlorophenol	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
2,4-Dichlorophenol	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
2,4-Dimethylphenol	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
2,4-Dinitrophenol	900 U	940 U	930 U	910 U	920 UJ	890 UJ	2,000 U	910 U	960 U	910 U	860 U	950 U	900 U	910 U	950 U	920 U	1,000 U

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-DS29		NBW14-DS30		NBW14-DS31		NBW14-DS32		NBW14-DS33		NBW14-DS34		NBW14-DS35		NBW14-DS36		NBW1
Sample ID	NBW14-DS29-00	NBW14-DS29-08	NBW14-DS30-00	NBW14-DS30-03	NBW14-DS31-00	NBW14-DS31-04	NBW14-DS32-00	NBW14-DS32-04	NBW14-DS33-00	NBW14-DS33-03	NBW14-DS34-00	NBW14-DS34-05	NBW14-DS35-00	NBW14-DS35-05	NBW14-DS36-00	NBW14-DS36-04	NBW14-DS37-00
Sample Date	09/11/00	09/12/00	09/12/00	09/12/00	09/20/00	09/20/00	09/12/00	09/12/00	09/12/00	09/12/00	09/12/00	09/12/00	09/12/00	09/12/00	09/20/00	09/20/00	09/12/00
Chemical Name																	
Volatile Organic Compounds (UG/KG)																	
1,1,1-Trichloroethane	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
1,1,2,2-Tetrachloroethane	11 UR	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 UR	11 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
1,1,2-Trichloroethane	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
1,1-Dichloroethane	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
1,1-Dichloroethene	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
1,2-Dibromo-3-chloropropane	11 UR	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 UR	11 U
1,2-Dibromoethane	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
1,2-Dichloroethane	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
2-Butanone	11 U	4.72 B	11 U	12 U	11 U	12 U	3.86 B	21.9 B	36.5	10.8 B	2.27 B	32.7 J	4.92 B	11 U	11 U	5.41 J	2.24 B
2-Hexanone	11 UR	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 UR	11 U
4-Methyl-2-pentanone	11 UR	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 UR	11 U
Acetone	11 U	16.1 B	4.6 B	5.11 B	11 U	26.0 J	6.48 B	56.5 J	269 J	44.2 B	10.6 B	238 J	7.1 B	3.84 B	11 U	39.4 B	5.52 B
Benzene	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	1.35 J	11 U
Bromodichloromethane	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
Bromoform	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
Bromomethane	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
Carbon disulfide	11 U	1.89 J	11 U	1.26 J	11 U	12 U	11 UJ	12 U	5.72 J	12 U	11 U	2.15 J	11 U	11 U	11 U	2.84 J	11 U
Carbon tetrachloride	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
Chlorobenzene	11 UR	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	151	12 U	11 U	12 U	11 U	11 U	11 U	13 UR	11 U
Chloroethane	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
Chloroform	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
Chloromethane	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
Cumene	11 UR	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 UR	11 U
Cyclohexane	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
Dibromochloromethane	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
Dichlorodifluoromethane(Freon-12)	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 UJ	12 U	11 UJ	12 UJ	11 U	11 UJ	11 U	13 U	11 U
Ethylbenzene	11 UR	11 U	11 U	12 U	1.26 J	12 U	11 UJ	12 U	33 U	12 U	1.35 J	12 U	11 U	11 U	11 U	13 UR	11 U
Methyl acetate	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
Methyl-tert-butyl ether (MTBE)	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
Methylcyclohexane	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
Methylene chloride	21 J	1.6 B	1.11 B	2.19 B	13.4 B	2.03 B	3.08 B	5.83 B	20.6 J	3.27 B	2.35 B	8.68 B	1.68 B	2.15 B	1.63 B	17.8 J	3.74 B
Styrene	11 UR	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 UR	11 U
Tetrachloroethene	11 UR	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
Toluene	50.4 J	2.44 J	11 U	1.42 J	5.7 J	12 U	3.43 J	3.78 J	17.3 J	3.79 J	3.49 J	8.31 J	1.42 J	11 U	11 U	3.29 J	1.4 J
Trichloroethene	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
Trichlorofluoromethane(Freon-11)	4.03 J	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
Vinyl chloride	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
Xylene, total	11 UR	11 U	11 U	12 U	8.18 J	12 U	11 UJ	12 U	33 U	12 U	7.61 J	12 U	11 U	11 U	11 U	4.65 J	11 U
cis-1,2-Dichloroethene	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
cis-1,3-Dichloropropene	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
trans-1,2-Dichloroethene	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
trans-1,3-Dichloropropene	11 U	11 U	11 U	12 U	11 U	12 U	11 UJ	12 U	33 U	12 U	11 U	12 U	11 U	11 U	11 U	13 U	11 U
Semivolatile Organic Compounds (UG/KG)																	
1,1-Biphenyl	44.7 J	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	57.0 J
1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane)	360 UJ	56,000 U	1,100 U	390 U	360 U	410 U	350 UJ	390 UJ	430 UJ	410 U	380 UJ	400 UJ	350 U	360 UJ	350 U	420 U	370 UJ
2,4,5-Trichlorophenol	900 U	140,000 U	2,700 U	980 U	910 U	1,000 U	890 U	990 U	1,100 U	1,000 U	940 U	1,000 U	890 U	900 U	880 U	1,000 U	930 U
2,4,6-Trichlorophenol	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
2,4-Dichlorophenol	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
2,4-Dimethylphenol	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	63.7 J	370 U
2,4-Dinitrophenol	900 U	140,000 U	2,700 U	980 U	910 U	1,000 U	890 U	990 U	1,100 U	1,000 U	940 U	1,000 U	890 U	900 U	880 U	1,000 U	930 U

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	4-DS37	NBW14-DS38		NBW14-DS40		NBW14-DS41		NBW14-DS42		NBW14-DS43		NBW14-DS44		NBW14-DS45		NBW14-DS46	
Sample ID	NBW14-DS37-06	NBW14-DS38-00	NBW14-DS38-03	NBW14-DS40-00	NBW14-DS40-07	NBW14-DS41-00	NBW14-DS41-05	NBW14-DS42-00	NBW14-DS42-06	NBW14-DS43-00	NBW14-DS43-07	NBW14-DS44-00	NBW14-DS44-08	NBW14-DS45-00	NBW14-DS45-05	NBW14-DS46-00	NBW14-DS46-06
Sample Date	09/12/00	09/19/00	09/19/00	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01
Chemical Name																	
Volatile Organic Compounds (UG/KG)																	
1,1,1-Trichloroethane	12 UJ	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	12 UR	11 U	12 U	11 U	11 UL	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	12 UJ	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	12 UJ	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	12 UJ	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	12 UJ	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	12 UR	11 U	12 U	11 U	11 UL	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	12 UJ	11 U	12 U	11 U	11 UL	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	12 UJ	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	12 UJ	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
2-Butanone	69.7 J	11 U	7.02 J	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
2-Hexanone	12 UR	11 U	12 U	11 U	11 UL	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	12 UR	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Acetone	236 J	11 U	39.6 J	3 B	6 B	3 B	3 B	3 B	4 B	3 B	3 B	NA	NA	NA	NA	NA	NA
Benzene	43.0	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Bromodichloromethane	12 UJ	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Bromoform	12 UJ	11 U	12 U	11 U	11 UL	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Bromomethane	12 UJ	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Carbon disulfide	12.6 J	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	12 UJ	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Chlorobenzene	12 UR	11 U	12 U	11 U	11 UL	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Chloroethane	12 UJ	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Chloroform	12 UJ	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Chloromethane	12 UJ	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Cumene	12 UR	11 U	12 U	11 U	11 UL	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Cyclohexane	24.2	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Dibromochloromethane	12 UJ	11 U	12 U	11 U	11 UL	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane(Freon-12)	12 UJ	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Ethylbenzene	6.05 J	11 U	12 U	11 U	11 UL	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Methyl acetate	12 UJ	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Methyl-tert-butyl ether (MTBE)	12 UJ	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Methylcyclohexane	37.2	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Methylene chloride	28.2 J	11 U	12 U	2 B	5 B	2 B	2 B	2 B	2 B	2 B	1 B	NA	NA	NA	NA	NA	NA
Styrene	12 UR	11 U	12 U	11 U	11 UL	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Tetrachloroethene	12 UR	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Toluene	124 J	11 U	12 U	11 U	2 B	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Trichloroethene	12 UJ	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane(Freon-11)	4.38 UJ	11 U	12 U	11 U	1 K	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Vinyl chloride	12 UJ	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Xylene, total	61.4 UJ	11 U	12 U	11 U	11 UL	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	12 UJ	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	12 UJ	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	12 UJ	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	12 UJ	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds (UG/KG)																	
1,1-Biphenyl	135 J	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane)	410 UJ	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	1,000 U	920 U	1,000 U	910 U	1,800 U	900 U	920 U	900 U	910 U	920 U	920 U	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	160 J	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	1,000 U	920 U	1,000 U	910 UJ	1,800 UJ	900 UJ	920 UJ	900 UJ	910 UJ	920 UJ	920 UJ	NA	NA	NA	NA	NA	NA

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-DS47			NBW14-DS48		NBW14-DS49			NBW14-DS51		NBW14-DS52	NBW14-DS53		NBW14-DS54		
Sample ID	NBW14-DS47-00	NBW14-DS47-04	NBW14-DS47-P-00	NBW14-DS48-00	NBW14-DS48-06	NBW14-DS49-00	NBW14-DS49-06	NBW14-DS49-P-00	NBW14-DS51-00	NBW14-DS51-07	NBW14-DS52-00	NBW14-DS53-00	NBW14-DS53-07	NBW14-DS54-00	NBW14-DS54-05	NBW14-DS54-P-00
Sample Date	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01
Chemical Name																
Volatile Organic Compounds (UG/KG)																
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
1,1,2,2-Tetrachloroethane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
1,1,2-Trichloro-1,2,2-trifluoroethane(Freon-113)	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
1,1,2-Trichloroethane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
1,1-Dichloroethane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
1,1-Dichloroethene	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
1,2-Dibromo-3-chloropropane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
1,2-Dibromoethane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
1,2-Dichloroethane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
2-Butanone	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
2-Hexanone	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
4-Methyl-2-pentanone	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Acetone	NA	NA	NA	NA	NA	4 B	4 B	3 B	3 B	3 B	11 B	3 B	4 B	2 B	3 B	3 B
Benzene	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Bromodichloromethane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Bromoform	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Bromomethane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Carbon disulfide	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Carbon tetrachloride	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Chlorobenzene	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Chloroethane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Chloroform	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Chloromethane	NA	NA	NA	NA	NA	1 J	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	1 J	11 U
Cumene	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Cyclohexane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Dibromochloromethane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Dichlorodifluoromethane(Freon-12)	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Ethylbenzene	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Methyl acetate	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Methyl-tert-butyl ether (MTBE)	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Methylcyclohexane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Methylene chloride	NA	NA	NA	NA	NA	2 B	1 B	2 B	1 B	1 B	1 B	2 B	2 B	1 B	2 B	1 B
Styrene	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Tetrachloroethene	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Toluene	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Trichloroethene	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Trichlorofluoromethane(Freon-11)	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Vinyl chloride	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Xylene, total	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
cis-1,3-Dichloropropene	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
trans-1,3-Dichloropropene	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 U	12 U	12 U	12 U	11 U	11 U	11 U
Semivolatile Organic Compounds (UG/KG)																
1,1-Biphenyl	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane)	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
2,4,5-Trichlorophenol	NA	NA	NA	NA	NA	900 U	900 U	920 U	910 U	900 U	970 U	970 U	970 U	890 U	900 U	890 U
2,4,6-Trichlorophenol	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
2,4-Dichlorophenol	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
2,4-Dimethylphenol	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
2,4-Dinitrophenol	NA	NA	NA	NA	NA	900 UJ	900 UJ	920 UJ	910 UJ	900 UJ	970 UJ	970 UJ	970 UJ	890 UJ	900 UJ	890 UJ

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-DS01		NBW14-DS01A	NBW14-DS02		NBW14-DS02A	NBW14-DS03		NBW14-DS03A	NBW14-DS04		NBW14-DS04A	NBW14-DS05			NBW14-DS05A	NBW14-DS06	
Sample ID	NBW14-DS01-00	NBW14-DS01-02	NBW14-DS01A	NBW14-DS02-00	NBW14-DS02-02	NBW14-DS02A	NBW14-DS03-00	NBW14-DS03-02	NBW14-DS03A	NBW14-DS04-00	NBW14-DS04-02	NBW14-DS04A	NBW14-DS05-00	NBW14-DS05-02	NBW14-DS05P-02	NBW14-DS05A	NBW14-DS06-00	NBW14-DS06
Sample Date	09/30/99	09/30/99	07/16/98	09/30/99	09/30/99	07/16/98	09/30/99	09/30/99	07/16/98	09/30/99	09/30/99	07/16/98	09/30/99	09/30/99	09/30/99	07/16/98	10/01/99	10/01/99
Chemical Name																		
2,4-Dinitrotoluene	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 U	1,800 U	350 U	370 U	720
2,6-Dinitrotoluene	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 U	1,800 U	350 U	370 U	720
2-Chloronaphthalene	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 U	1,800 U	350 U	370 U	720
2-Chlorophenol	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 UR	1,800 UR	350 U	370 U	720
2-Methylnaphthalene	3,600 U	200 J	350 U	82 J	2,700	360 U	260 L	300 J	360 U	400 J	170 J	760 U	79 J	150 J	320 J	350 U	94 J	720
2-Methylphenol	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 UR	1,800 UR	350 U	370 U	720
2-Nitroaniline	9,000 U	3,000 U	880 U	930 U	4,800 U	900 U	940 UL	1,800 U	900 U	4,500 U	3,800 U	1,900 U	1,800 U	1,900 U	4,600 U	870 U	930 U	1,800
2-Nitrophenol	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 UR	1,800 UR	350 U	370 U	720
3,3'-Dichlorobenzidine	3,600 U	1,200 U	350 UJ	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 U	1,800 U	350 U	370 U	720
3-Nitroaniline	9,000 U	3,000 U	880 U	930 U	4,800 U	900 U	940 UL	1,800 U	900 U	4,500 U	3,800 U	1,900 U	1,800 U	1,900 U	4,600 U	870 U	930 U	1,800
4,6-Dinitro-2-methylphenol	9,000 U	3,000 U	880 U	930 U	4,800 U	900 U	940 UL	1,800 U	900 U	4,500 U	3,800 U	1,900 U	1,800 U	1,900 UR	4,600 UR	870 U	930 U	1,800
4-Bromophenyl-phenylether	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 U	1,800 U	350 U	370 U	720
4-Chloro-3-methylphenol	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 UR	1,800 UR	350 U	370 U	720
4-Chloroaniline	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 U	1,800 U	350 U	370 U	720
4-Chlorophenyl-phenylether	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 U	1,800 U	350 U	370 U	720
4-Methylphenol	3,600 U	1,200 U	350 U	370 U	200 J	360 U	370 UL	730 U	360 U	1,800 U	640 J	760 U	730 U	120 L	1,800 UR	350 U	370 U	720
4-Nitroaniline	9,000 U	3,000 U	880 U	930 U	4,800 U	900 U	940 UL	1,800 U	900 U	4,500 U	3,800 U	1,900 U	1,800 U	1,900 U	4,600 U	870 U	930 U	1,800
4-Nitrophenol	9,000 U	3,000 U	880 U	930 U	4,800 U	900 U	940 UL	1,800 U	900 U	4,500 U	3,800 U	1,900 U	1,800 U	1,900 UR	4,600 UR	870 U	930 U	1,800
Acenaphthene	1,200 J	440 J	350 U	370 U	950 J	360 U	120 L	110 J	360 U	750 J	640 J	760 U	730 U	700 J	1,500 J	350 U	58 J	720
Acenaphthylene	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	120 L	730 U	360 U	1,800 U	1,500 U	760 U	110 J	81 J	1,800 U	350 U	80 J	970
Acetophenone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	1,600 J	1,200 U	83 J	44 J	1,900 U	360 U	320 L	160 J	360 U	1,000 J	900 J	760 U	140 J	580 J	1,400 J	350 U	160 J	1,100
Atrazine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	3,000 J	1,200 U	420 J	100 J	1,500 J	360 U	330 L	250 J	63 J	2,800	2,600	140 J	310 J	1,600	2,900	350 U	230 J	1,800
Benzo(a)pyrene	2,400 J	1,200 U	320 J	73 J	1,300 J	360 U	360 L	230 J	56 J	2,200	2,100	150 J	270 J	870	1,800	350 U	180 J	1,500
Benzo(b)fluoranthene	2,600 J	1,200 U	630	160 J	1,600 J	360 U	1,100 L	590 J	89 J	2,700	3,700	210 J	790	2,100	2,700	350 U	690	5,500
Benzo(g,h,i)perylene	740 J	1,200 U	240 J	70 J	650 J	360 U	78 L	180 J	53 J	1,100 J	620 J	120 J	140 J	340 J	1,100 J	350 U	110 J	1,100
Benzo(k)fluoranthene	2,100 J	1,200 U	250 J	110 J	2,400	360 U	730 L	290 J	360 U	2,400	2,800	83 J	620 J	1,800	2,400	350 U	460	4,000
Butylbenzylphthalate	3,600 U	190 J	320 J	370 U	1,900 U	360 U	370 UL	730 U	360 U	5,100	1,300 J	760 U	89 J	740 U	1,800 U	350 U	370 U	180
Caprolactam	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	580 J	1,200 U	46 J	370 U	1,900 U	360 U	130 UL	730 U	360 U	630 J	760 J	760 U	100 J	710 J	1,400 J	350 U	80 J	1,200
Chrysene	3,300 J	1,200 U	520 J	190 J	2,200	360 U	710 L	460 J	70 J	2,900	2,900	160 J	490 J	1,600	3,000	350 U	440	3,600
Di-n-butylphthalate	3,600 U	1,200 U	62 J	370 U	1,900 U	57 J	370 UL	730 U	61 J	1,800 U	1,500 U	760 U	100 J	740 U	1,800 U	350 U	370 U	720
Di-n-octylphthalate	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	300 J	760 U	730 U	740 U	1,800 U	350 U	370 U	720
Dibenz(a,h)anthracene	3,600 U	1,200 U	78 J	370 U	280 J	360 U	58 L	83 J	360 U	430 J	320 J	760 U	730 U	190 J	590 J	350 U	60 J	360
Dibenzofuran	550 J	140 J	350 U	56 J	320 J	360 U	210 L	200 J	360 U	410 J	310 J	760 U	730 U	410 J	890 J	350 U	84 J	81
Diethylphthalate	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 U	1,800 U	350 U	370 U	720
Dimethyl phthalate	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 U	1,800 U	350 U	370 U	720
Fluoranthene	10,000	290 J	630	160 J	5,200	360 U	890 L	610 J	110 J	6,600	6,300	280 J	930	4,700	8,000	350 U	640	5,200
Fluorene	1,200 J	300 J	350 U	370 U	1,600 J	360 U	110 L	84 J	360 U	680 J	580 J	760 U	730 U	690 J	1,400 J	350 U	50 J	720
Hexachlorobenzene	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 U	1,800 U	350 U	370 U	720
Hexachlorobutadiene	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 U	1,800 U	350 U	370 U	720
Hexachlorocyclopentadiene	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 U	1,800 U	350 U	370 U	720
Hexachloroethane	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 U	1,800 U	350 U	370 U	720
Indeno(1,2,3-cd)pyrene	1,200 J	1,200 U	240 J	89 J	890 J	360 U	200 L	220 J	49 J	1,600 J	890 J	110 J	180 J	500 J	1,600 J	350 U	160 J	1,500
Isophorone	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 U	1,800 U	350 U	370 U	720
Naphthalene	3,600 U	360 J	350 U	78 J	1,000 J	360 U	300 L	320 J	360 U	500 J	210 J	760 U	80 J	320 J	1,000 J	350 U	84 J	720
Nitrobenzene	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 U	1,800 U	350 U	370 U	720
Pentachlorophenol	9,000 U	3,000 U	880 U	930 U	4,800 U	900 U	940 UL	1,800 U	900 U	4,500 U	3,800 U	NA	1,800 U	1,900 UR	4,600 UR	870 U	930 U	1,800
Phenanthrene	9,700	470 J	250 J	200 J	4,400	360 U	600 L	640 J	60 J	5,200	3,800	160 J	410 J	3,400	7,200	350 U	360 J	630
Phenol	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	2,800	760 U	730 U	220 L	310 L	350 U	370 U	720
Pyrene	6,800 J	150 J	820 J	150 J	3,300	360 U	570 L	390 J	110 J	4,400	4,600	260 J	650 J	3,100	5,100	350 U	330 J	3,000
bis(2-Chloroethoxy)methane	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 U	1,800 U	350 U	370 U	720
bis(2-Chloroethyl)ether	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	370 UL	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 U	1,800 U	350 U	370 U	720
bis(2-Ethylhexyl)phthalate	3,600 U	3,600	6,200 J	110 J	6,300	230 B	95 L	730 U	210 B	850 J	6,100	500 J	830	470 J	500 J	200 J	98 J	230
n-Nitroso-di-n-propylamine	3,600 U	1,200 U	350 U	370 U	1,900 U	360 UJ	370 UL	730 U	360 U	1,800 U	1,500 U	760 UJ	730 U	740 U	1,800 U	350 UJ	370 U	720
n-Nitrosodiphenylamine	3,600 U	1,200 U	350 U	370 U	1,900 U	360 U	44 L	730 U	360 U	1,800 U	1,500 U	760 U	730 U	740 U	1,800 U	350 U	370 U	720
Pesticide/Polychlorinated Biphenyls (UG/KG)																		

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID		NBW14-DS06A		NBW14-DS07		NBW14-DS07A		NBW14-DS08		NBW14-DS08A		NBW14-DS09		NBW14-DS10				NBW14-DS11		NBW14-DS12	
Sample ID	02	NBW14-DS06A		NBW14-DS07-00	NBW14-DS07-02	NBW14-DS07A		NBW14-DS08-00	NBW14-DS08-02	NBW14-DS08A		NBW14-DS09-00	NBW14-DS09-02	NBW14-DS10-00		NBW14-DS10-02	NBW14-DS10P-02	NBW14-DS11-00		NBW14-DS11-02	NBW14-DS12-00	NBW14-DS12-02
Sample Date		07/16/98		10/01/99	10/01/99	07/16/98		10/01/99	10/01/99	07/16/98		10/01/99	10/01/99	10/01/99		10/01/99	10/01/99	10/01/99		10/01/99	10/01/99	10/01/99
Chemical Name																						
2,4-Dinitrotoluene	U	740	U	360	UL 360	UL 1,800	U	360	UL 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
2,6-Dinitrotoluene	U	740	U	360	UL 360	UL 1,800	U	360	UL 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
2-Chloronaphthalene	U	740	U	360	UL 360	UL 1,800	U	360	UL 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
2-Chlorophenol	UR	740	U	360	UL 360	UL 1,800	U	360	UL 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
2-Methylnaphthalene	U	740	U	250	L 49	L 410	J	190	L 350	U 760	U	61	L 360	U 1,500	U	350	U 350	U 120	J	96	J 62	J 290	J
2-Methylphenol	UR	740	U	360	UL 360	UL 1,800	U	360	UL 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
2-Nitroaniline	U	1,900	U	920	UL 900	UL 4,500	U	910	UL 880	U 1,900	U	930	UL 900	U 3,800	U	890	U 890	U 1,800	U	940	U 920	U 1,900	U
2-Nitrophenol	UR	740	U	360	UL 360	UL 1,800	U	360	UL 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
3,3'-Dichlorobenzidine	U	740	U	360	UL 360	UL 1,800	U	360	UL 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
3-Nitroaniline	U	1,900	U	920	UL 900	UL 4,500	U	910	UL 880	U 1,900	U	930	UL 900	U 3,800	U	890	U 890	U 1,800	U	940	U 920	U 1,900	U
4,6-Dinitro-2-methylphenol	UR	1,900	U	920	UL 900	UL 4,500	U	910	UL 880	U 1,900	U	930	UL 900	U 3,800	U	890	U 890	U 1,800	U	940	U 920	U 1,900	U
4-Bromophenyl-phenylether	U	740	U	360	UL 360	UL 1,800	U	360	UL 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
4-Chloro-3-methylphenol	UR	740	U	360	UL 360	UL 1,800	U	360	UL 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
4-Chloroaniline	U	740	U	360	UL 360	UL 1,800	U	360	UL 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
4-Chlorophenyl-phenylether	U	740	U	360	UL 360	UL 1,800	U	360	UL 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
4-Methylphenol	UR	740	U	360	UL 360	UL 1,800	U	360	UL 110	J 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
4-Nitroaniline	U	1,900	U	920	UL 900	UL 4,500	U	910	UL 880	U 1,900	U	930	UL 900	U 3,800	U	890	U 890	U 1,800	U	940	U 920	U 1,900	U
4-Nitrophenol	UR	1,900	U	920	UL 900	UL 4,500	U	910	UL 880	U 1,900	U	930	UL 900	U 3,800	U	890	U 890	U 1,800	U	940	U 920	U 1,900	U
Acenaphthene	U	740	U	160	L 53	L 1,800	U	100	L 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 100	J	370	U 370	U 1,300	
Acenaphthylene		740	U	230	L 69	L 1,800	U	85	L 350	U 760	U	160	L 38	J 1,500	U	350	U 350	U 320	J	51	J 370	U 720	J
Acetophenone		NA		NA	NA	NA		NA	NA	NA		NA	NA	NA		NA	NA	NA		NA	NA	NA	
Anthracene		740	U	370	L 55	L 1,800	U	200	L 51	J 760	U	110	L 360	U 160	J	350	U 350	U 570	J	63	J 61	J 1,600	
Atrazine		NA		NA	NA	NA		NA	NA	NA		NA	NA	NA		NA	NA	NA		NA	NA	NA	
Benzaldehyde		NA		NA	NA	NA		NA	NA	NA		NA	NA	NA		NA	NA	NA		NA	NA	NA	
Benzo(a)anthracene		93	J	570	L 130	L 430	J	390	L 87	J 110	J	420	L 130	J 540	J	350	U 350	U 910		270	J 130	J 2,100	
Benzo(a)pyrene		96	J	910	L 180	L 410	J	410	L 79	J 130	J	450	L 140	J 460	J	350	U 350	U 760		170	J 140	J 2,900	
Benzo(b)fluoranthene		150	J	2,400	L 280	L 900	J	910	L 64	J 260	J	630	L 210	J 780	J	46	J 350	U 3,000		290	J 270	J 5,700	
Benzo(g,h,i)perylene		85	J	240	L 42	L 330	J	110	L 40	J 160	J	94	L 110	J 450	J	46	J 350	U 660	J	130	J 160	J 1,500	
Benzo(k)fluoranthene		740	U	360	UL 170	L 380	J	480	L 76	J 80	J	530	L 190	J 780	J	43	J 350	U 1,600		220	J 180	J 2,400	
Butylbenzylphthalate	J	740	U	370	L 360	UL 1,800	U	360	UL 350	U 96	J	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
Caprolactam		NA		NA	NA	NA		NA	NA	NA		NA	NA	NA		NA	NA	NA		NA	NA	NA	
Carbazole		740	U	160	L 360	UL 1,800	U	84	L 350	U 760	U	47	L 360	U 1,500	U	350	U 350	U 510	J	370	U 370	U 750	J
Chrysene		110	J	970	L 190	L 770	J	530	L 120	J 180	J	480	L 210	J 970	J	44	J 350	U 3,600		400	250	J 4,500	
Di-n-butylphthalate	U	740	U	120	L 140	L 1,800	U	530	L 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 56	J 760	U
Di-n-octylphthalate	U	740	U	360	UL 360	UL 1,800	U	360	UL 350	U 87	J	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
Dibenz(a,h)anthracene	J	740	U	160	L 360	UL 1,800	U	64	L 350	U 760	U	57	L 42	J 1,500	U	350	U 350	U 340	J	40	J 57	J 750	J
Dibenzofuran	J	740	U	170	L 360	UL 240	J	130	L 350	U 760	U	40	L 360	U 1,500	U	350	U 350	U 130	J	370	U 42	J 750	J
Diethylphthalate	U	740	U	360	UL 360	UL 1,800	U	360	UL 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
Dimethyl phthalate	U	620	J	360	UL 360	UL 1,800	U	360	UL 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
Fluoranthene		190	J	1,300	L 300	L 680	J	830	L 320	J 240	J	720	L 230	J 1,400	J	78	J 350	U 6,800		540	260	J 7,400	
Fluorene	U	740	U	160	L 360	UL 1,800	U	120	L 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 93	J	370	U 370	U 980	
Hexachlorobenzene	U	740	U	360	UL 360	UL 1,800	U	360	UL 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
Hexachlorobutadiene	U	740	U	360	UL 360	UL 1,800	U	360	UL 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
Hexachlorocyclopentadiene	U	740	U	360	UL 360	UL 1,800	U	360	UL 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
Hexachloroethane	U	740	U	360	UL 360	UL 1,800	U	360	UL 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
Indeno(1,2,3-cd)pyrene		77	J	430	L 71	L 310	J	180	L 41	J 150	J	170	L 110	J 530	J	39	J 350	U 1,100		140	J 170	J 2,400	
Isophorone	U	740	U	360	UL 360	UL 1,800	U	360	UL 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
Naphthalene	U	740	U	260	L 44	L 420	J	180	L 38	J 760	U	59	L 360	U 1,500	U	350	U 350	U 110	J	100	J 63	J 2,000	
Nitrobenzene	U	740	U	360	UL 360	UL 1,800	U	360	UL 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
Pentachlorophenol	UR	NA		920	UL 900	UL NA		910	UL 880	U NA		930	UL 900	U 3,800	U	890	U 890	U 1,800	U	940	U 920	U 1,900	U
Phenanthrene	J	120	J	800	L 150	L 820	J	700	L 180	J 130	J	300	L 100	J 500	J	48	J 350	U 3,200		240	J 190	J 3,800	
Phenol	UR	740	U	110	L 41	L 1,800	U	360	UL 53	J 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	67	J 370	U 760	U
Pyrene		170	J	1,300	L 250	L 660	J	560	L 230	J 330	J	510	L 170	J 1,200	J	66	J 350	U 4,800		530	240	J 5,900	
bis(2-Chloroethoxy)methane	U	740	U	360	UL 360	UL 1,800	U	360	UL 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
bis(2-Chloroethyl)ether	U	740	U	360	UL 360	UL 1,800	U	360	UL 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
bis(2-Ethylhexyl)phthalate	J	130	J	2,600	L 320	L 9,900		230	L 310	J 6,200	J	120	L 80	J 300	J	120	J 82	J 180	J	580	110	J 780	
n-Nitroso-di-n-propylamine	U	740	UJ	360	UL 360	UL 1,800	UJ	360	UL 350	U 760	UJ	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
n-Nitrosodiphenylamine	U	740	U	38	L 360	UL 1,800	U	360	UL 350	U 760	U	370	UL 360	U 1,500	U	350	U 350	U 730	U	370	U 370	U 760	U
Pesticide/Polychlorinated Biphenyls (UG/KG)																						

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-DS13		NBW14-DS14			NBW14-DS15		NBW14-DS16		NBW14-DS17		NBW14-DS18			NBW14-DS19		NBW1
Sample ID	NBW14-DS13-00	NBW14-DS13-02	NBW14-DS14-00	NBW14-DS14-02	NBW14-DS14P-02	NBW14-DS15-00	NBW14-DS15-02	NBW14-DS16-00	NBW14-DS16-02	NBW14-DS17-00	NBW14-DS17-02	NBW14-DS18-00	NBW14-DS18-02	NBW14-DS18P-00	NBW14-DS19-00	NBW14-DS19-06	NBW14-DS20-03
Sample Date	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	09/18/00	09/18/00	09/19/00
Chemical Name																	
2,4-Dinitrotoluene	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
2,6-Dinitrotoluene	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
2-Chloronaphthalene	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
2-Chlorophenol	1,800 U	730 UR	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
2-Methylnaphthalene	1,800 U	730 U	1,900 U	4,600	5,100	93 J	750 U	100 J	120 J	68 J	370 U	740 U	380 U	770 U	104 J	601	390 U
2-Methylphenol	1,800 U	730 UR	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
2-Nitroaniline	4,500 U	1,800 U	4,700 U	1,900 U	3,900 U	900 U	1,900 U	900 U	900 U	910 U	930 U	1,900 U	970 U	1,900 U	910 U	910 U	990 U
2-Nitrophenol	1,800 U	730 UR	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
3,3'-Dichlorobenzidine	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
3-Nitroaniline	4,500 U	1,800 U	4,700 U	1,900 U	3,900 U	900 U	1,900 U	900 U	900 U	910 U	930 U	1,900 U	970 U	1,900 U	910 U	910 U	990 U
4,6-Dinitro-2-methylphenol	4,500 U	1,800 UR	4,700 U	1,900 U	3,900 U	900 U	1,900 U	900 U	900 U	910 U	930 U	1,900 U	970 U	1,900 U	910 U	910 U	990 U
4-Bromophenyl-phenylether	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
4-Chloro-3-methylphenol	1,800 U	730 UR	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
4-Chloroaniline	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
4-Chlorophenyl-phenylether	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
4-Methylphenol	1,800 U	730 UR	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	170 J	770 U	360 U	360 U	390 U
4-Nitroaniline	4,500 U	1,800 U	4,700 U	1,900 U	3,900 U	900 U	1,900 U	900 U	900 U	910 U	930 U	1,900 U	970 U	1,900 U	910 UJ	910 UJ	990 UJ
4-Nitrophenol	4,500 U	1,800 UR	4,700 U	1,900 U	3,900 U	900 U	1,900 U	900 U	900 U	910 U	930 U	1,900 U	970 U	1,900 U	910 U	910 U	990 U
Acenaphthene	280 J	730 U	230 J	4,700	8,300	360 U	750 U	360 U	310 J	68 J	370 U	740 U	380 U	770 U	38.2 J	64.3 J	390 U
Acenaphthylene	1,800 U	730 U	1,900 U	160 J	280 J	43 J	750 U	360 U	360 U	140 J	370 U	740 U	380 U	770 U	51.7 J	360 U	390 U
Acetophenone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	360 U	360 U	390 U
Anthracene	430 J	730 U	240 J	1,500	3,100	79 J	750 U	64 J	54 J	230 J	61 J	99 J	380 U	770 U	122 J	360 U	390 U
Atrazine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	360 U	360 U	390 U
Benzaldehyde	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	360 U	360 U	390 U
Benzo(a)anthracene	600 J	190 J	1,000 J	1,800	3,100	180 J	650 J	130 J	120 J	660	240 J	820	380 U	160 J	513	43.3 J	82.5 J
Benzo(a)pyrene	450 J	130 J	860 J	830	1,500	160 J	550 J	120 J	100 J	750	190 J	450 J	47 J	140 J	323 J	360 U	80.0 J
Benzo(b)fluoranthene	640 J	230 J	1,100 J	1,800	2,500	390	760	280 J	240 J	2,100	360 J	1,000	380 U	310 J	823 J	360 U	123 J
Benzo(g,h,i)perylene	240 J	110 J	360 J	320 J	490 J	150 J	220 J	92 J	74 J	410	110 J	180 J	380 U	770 U	165 J	360 U	70.3 J
Benzo(k)fluoranthene	570 J	230 J	1,100 J	990	1,800	270 J	650 J	190 J	180 J	810	300 J	860	380 U	180 J	882 J	360 U	133 J
Butylbenzylphthalate	1,800 U	730 U	1,900 U	760 U	1,500 U	46 J	750 U	360 U	360 U	360 U	370 U	98 J	380 U	770 U	1,031	360 U	390 U
Caprolactam	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	360 U	360 U	390 U
Carbazole	1,800 U	730 UR	300 J	1,200	2,500	42 J	750 U	360 U	360 U	120 J	370 U	740 U	380 U	770 U	54.6 J	360 UJ	390 UJ
Chrysene	810 J	280 J	1,400 J	2,300	3,800	320 J	750	240 J	210 J	1,200	320 J	1,000	380 U	200 J	898	57.3 J	88.9 J
Di-n-butylphthalate	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
Di-n-octylphthalate	1,800 U	730 U	1,900 U	760 U	220 J	360 U	750 U	360 U	360 U	360 U	370 U	170 J	380 U	770 U	360 U	360 U	390 U
Dibenz(a,h)anthracene	1,800 U	730 U	1,900 U	120 J	200 J	64 J	79 J	37 J	360 U	170 J	370 U	740 U	380 U	770 U	54.8 J	360 U	390 U
Dibenzofuran	200 J	730 U	1,900 U	2,400	5,300	59 J	750 U	68 J	98 J	61 J	370 U	740 U	380 U	770 U	68.0 J	64.2 J	390 U
Diethylphthalate	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
Dimethyl phthalate	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
Fluoranthene	2,900	550 J	2,400	14,000	20,000	360	1,400	270 J	320 J	1,200	600	1,700	79 J	470 J	2,714	101 J	148 J
Fluorene	440 J	730 U	440 J	3,900	7,800	360 U	750 U	360 U	130 J	37 J	370 U	740 U	380 U	770 U	37.4 J	98.3 J	390 U
Hexachlorobenzene	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
Hexachlorobutadiene	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
Hexachlorocyclopentadiene	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
Hexachloroethane	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
Indeno(1,2,3-cd)pyrene	280 J	110 J	460 J	420 J	700 J	180 J	270 J	100 J	86 J	550	130 J	240 J	380 U	770 U	193 J	360 U	46.6 J
Isophorone	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
Naphthalene	1,800 U	730 U	1,900 U	9,800	4,700	78 J	750 U	95 J	180 J	95 J	370 U	740 U	380 U	770 U	80.2 J	252 J	390 U
Nitrobenzene	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
Pentachlorophenol	4,500 U	1,800 UR	4,700 U	1,900 U	3,900 U	900 U	1,900 U	900 U	900 U	910 U	930 U	1,900 U	970 U	1,900 U	910 U	910 U	990 U
Phenanthrene	2,700	310 J	1,100 J	18,000	30,000	240 J	270 J	250 J	290 J	530	210 J	180 J	78 J	220 J	765	268 J	131 J
Phenol	1,800 U	730 UR	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	110 J	770 U	360 U	360 U	390 U
Pyrene	1,700 J	380 J	1,600 J	5,800	9,300	270 J	850	180 J	220 J	770	370	1,300	67 J	270 J	2,893	106 J	199 J
bis(2-Chloroethoxy)methane	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
bis(2-Chloroethyl)ether	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
bis(2-Ethylhexyl)phthalate	900 J	630 J	990 J	990	1,000 J	130 J	180 J	73 J	100 J	130 J	140 J	160 J	480	130 J	122 J	360 U	390 U
n-Nitroso-di-n-propylamine	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
n-Nitrosodiphenylamine	1,800 U	730 U	1,900 U	760 U	1,500 U	360 U	750 U	360 U	360 U	360 U	370 U	740 U	380 U	770 U	360 U	360 U	390 U
Pesticide/Polychlorinated Biphenyls (UG/KG)																	

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	4-DS20	NBW14-DS21		NBW14-DS22	NBW14-DS23	NBW14-DS24			NBW14-DS25		NBW14-DS26			NBW14-DS27		NBW14-DS28	
Sample ID	NBW14-DS20-00	NBW14-DS21-00	NBW14-DS21-05	NBW14-DS22-00	NBW14-DS23-00	NBW14-DS24-00	NBW14-DS24-05	NBW14-DS24-P-00	NBW14-DS25-00	NBW14-DS25-P-00	NBW14-DS26-00	NBW14-DS26-06	NBW14-DS26-P-00	NBW14-DS27-00	NBW14-DS27-04	NBW14-DS28-00	NBW14-DS28-03
Sample Date	09/19/00	09/11/00	09/12/00	09/11/00	09/11/00	09/11/00	09/11/00	09/11/00	09/15/00	09/15/00	09/11/00	09/11/00	09/11/00	09/12/00	09/12/00	09/12/00	09/12/00
Chemical Name																	
2,4-Dinitrotoluene	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
2,6-Dinitrotoluene	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
2-Chloronaphthalene	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
2-Chlorophenol	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
2-Methylnaphthalene	71.7 J	69.2 J	206 J	115 J	210 J	100 J	124 J	83.5 J	380 U	360 U	247 J	NA	NA	NA	NA	NA	420 U
2-Methylphenol	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
2-Nitroaniline	900 U	940 U	930 U	910 U	920 U	890 U	2,000 U	910 U	960 U	910 U	860 U	950 U	900 U	910 U	950 U	920 U	1,000 U
2-Nitrophenol	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
3,3'-Dichlorobenzidine	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 UJ	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
3-Nitroaniline	900 U	940 U	930 U	910 U	920 U	890 U	2,000 U	910 U	960 U	910 U	860 U	950 U	900 U	910 U	950 U	920 U	1,000 U
4,6-Dinitro-2-methylphenol	900 U	940 U	930 U	910 U	920 U	890 U	2,000 U	910 U	960 U	910 U	860 U	950 U	900 U	910 U	950 U	920 U	1,000 U
4-Bromophenyl-phenylether	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
4-Chloro-3-methylphenol	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
4-Chloroaniline	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
4-Chlorophenyl-phenylether	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
4-Methylphenol	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	175 J	370 U	420 U
4-Nitroaniline	900 UJ	940 UJ	930 UJ	910 UJ	920 UJ	890 UJ	2,000 UJ	910 U	960 UJ	910 U	860 UJ	950 UJ	900 UJ	910 UJ	950 UJ	920 UJ	1,000 U
4-Nitrophenol	900 U	940 U	930 U	910 U	920 U	890 U	2,000 U	910 U	960 U	910 U	860 U	950 U	900 U	910 U	950 U	920 U	1,000 U
Acenaphthene	360 U	380 U	329 J	360 U	63 J	350 U	436 J	87.4 J	380 U	360 U	44.6 J	116 J	44.9 J	360 U	101 J	45.9 J	420 U
Acenaphthylene	360 U	41.7 J	370 U	58.1 J	370 U	350 U	97.8 J	360 U	380 U	61.0 J	43.5 J	56.7 J	46.2 J	360 U	53.9 J	60.2 J	420 U
Acetophenone	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
Anthracene	64.1 J	74.7 J	230 J	156 J	95 J	45 J	622 J	128 J	380 U	121 J	90.6 J	109 J	86.7 J	58.8 J	380 U	144 J	420 U
Atrazine	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
Benzaldehyde	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	142 J	370 U	420 U
Benzo(a)anthracene	101 J	150 J	250 J	161 J	170 J	97 J	1,889	362 J	102 J	183 J	150 J	310 J	145 J	118 J	380 U	305 J	66.3 J
Benzo(a)pyrene	146 J	169 J	201 J	153 J	140 J	79 J	1,870	338 J	147 J	265 J	112 J	517	132 J	96.9 J	380 U	376	82.7 J
Benzo(b)fluoranthene	395 J	422 J	230 J	281 J	370	190 J	1,931	422	479 J	458	279 J	1,346 J	280 J	307 J	55.4 J	787 J	96.8 J
Benzo(g,h,i)perylene	165 J	114 J	84.8 J	102 J	120 J	350 U	909	151 J	161 J	211 J	70.9 J	144 J	97.6 J	70.3 J	380 U	231 J	86.3 J
Benzo(k)fluoranthene	423 J	387 J	239 J	225 J	290 J	120 J	1,952	385	513 J	339 J	214 J	1,221 J	173 J	280 J	50.5 J	717 J	101 J
Butylbenzylphthalate	360 U	380 U	111 J	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	47.7 J	370 U	420 U
Caprolactam	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
Carbazole	360 UJ	380 U	123 J	360 U	370 U	350 U	391 J	74.7 J	380 UJ	50.2 J	340 U	80.5 J	360 U	360 U	380 U	51.5 J	420 U
Chrysene	228 J	245 J	360 J	423	330 J	170 J	2,068	437	268 J	337 J	263 J	577	274 J	184 J	51.3 J	410	96.1 J
Di-n-butylphthalate	360 U	401	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
Di-n-octylphthalate	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
Dibenz(a,h)anthracene	65.1 J	71.3 J	43.3 J	75.4 J	56 J	350 U	468 J	99.3 J	49.9 J	49.8 J	64.6 J	74.7 J	59.2 J	360 U	380 U	135 J	420 U
Dibenzofuran	52.4 J	41.5 J	142 J	60.4 J	120 J	51 J	166 J	59.4 J	380 U	360 U	119 J	52.4 J	97.2 J	62.3 J	380 U	62.7 J	420 U
Diethylphthalate	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
Dimethyl phthalate	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
Fluoranthene	190 J	266 J	1,093	230 J	370	210 J	4,908	975	136 J	321 J	287 J	831	283 J	197 J	184 J	631	157 J
Fluorene	360 U	380 U	249 J	360 U	370 U	350 U	270 J	59.5 J	380 U	360 U	39.8 J	73.1 J	360 U	360 U	57.0 J	38.0 J	420 U
Hexachlorobenzene	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
Hexachlorobutadiene	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
Hexachlorocyclopentadiene	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
Hexachloroethane	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
Indeno(1,2,3-cd)pyrene	140 J	153 J	87.0 J	127 J	130 J	66 J	1,015	198 J	132 J	203 J	105 J	221 J	116 J	84.6 J	380 U	286 J	65.6 J
Isophorone	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
Naphthalene	360 U	67.8 J	488	120 J	180 J	76 J	283 J	114 J	380 U	360 U	234 J	189 J	191 J	93.7 J	141 J	86.7 J	420 U
Nitrobenzene	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
Pentachlorophenol	900 U	940 U	930 U	910 U	920 UJ	890 UJ	2,000 U	910 U	960 U	910 U	860 U	950 U	900 U	910 U	950 U	920 U	1,000 U
Phenanthrene	208 J	209 J	1,019	245 J	420	220 J	2,815	586	77.3 J	189 J	403	350 J	341 J	218 J	270 J	516	104 J
Phenol	360 U	380 U	370 U	360 U	370 U	350 U	84.1 J	360 U	380 U	360 U	340 U	380 U	360 U	360 U	384	370 U	420 U
Pyrene	213 J	285 J	779 J	237 J	350 J	220 J	4,689 J	846	173 J	373	263 J	832 J	283 J	194 J	202 J	678 J	131 J
bis(2-Chloroethoxy)methane	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
bis(2-Chloroethyl)ether	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
bis(2-Ethylhexyl)phthalate	360 U	96.1 J	465 B	382	130 J	80 J	393 J	103 J	380 U	343 J	46.3 J	253 J	37.1 J	116 J	515	87.3 J	56.8 B
n-Nitroso-di-n-propylamine	360 U	380 U	370 U	360 U	370 U	350 U	800 U	360 U	380 U	360 U	340 U	380 U	360 U	360 U	380 U	370 U	420 U
n-Nitrosodiphenylamine	360 U	380 U	370 U	360 U	49 J	350 U	800 U	360 U	380 U	360 U	197 J	380 U	360 U	360 U	380 U	370 U	420 U
Pesticide/Polychlorinated Biphenyls (UG/KG)																	

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-DS29		NBW14-DS30		NBW14-DS31		NBW14-DS32		NBW14-DS33		NBW14-DS34		NBW14-DS35		NBW14-DS36		NBW1
Sample ID	NBW14-DS29-00	NBW14-DS29-08	NBW14-DS30-00	NBW14-DS30-03	NBW14-DS31-00	NBW14-DS31-04	NBW14-DS32-00	NBW14-DS32-04	NBW14-DS33-00	NBW14-DS33-03	NBW14-DS34-00	NBW14-DS34-05	NBW14-DS35-00	NBW14-DS35-05	NBW14-DS36-00	NBW14-DS36-04	NBW14-DS37-00
Sample Date	09/11/00	09/12/00	09/12/00	09/12/00	09/20/00	09/20/00	09/12/00	09/12/00	09/12/00	09/12/00	09/12/00	09/12/00	09/12/00	09/12/00	09/20/00	09/20/00	09/12/00
Chemical Name																	
2,4-Dinitrotoluene	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
2,6-Dinitrotoluene	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
2-Chloronaphthalene	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
2-Chlorophenol	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
2-Methylnaphthalene	NA	18,410 J	1,100 U	390 U	360 U	410 U	NA	NA	NA	79.9 J	NA	NA	350 U	NA	350 U	420 U	NA
2-Methylphenol	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
2-Nitroaniline	900 U	140,000 U	2,700 U	980 U	910 U	1,000 U	890 U	990 U	1,100 U	1,000 U	940 U	1,000 U	890 U	900 U	880 U	1,000 U	930 U
2-Nitrophenol	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
3,3'-Dichlorobenzidine	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
3-Nitroaniline	900 U	140,000 U	2,700 U	980 U	910 U	1,000 U	890 U	990 U	1,100 U	1,000 U	940 U	1,000 U	890 U	900 U	880 U	1,000 U	930 U
4,6-Dinitro-2-methylphenol	900 U	140,000 U	2,700 U	980 U	910 U	1,000 U	890 U	990 U	1,100 U	1,000 U	940 U	1,000 U	890 U	900 U	880 U	1,000 U	930 U
4-Bromophenyl-phenylether	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
4-Chloro-3-methylphenol	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
4-Chloroaniline	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
4-Chlorophenyl-phenylether	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
4-Methylphenol	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
4-Nitroaniline	900 UJ	140,000 U	2,700 UJ	980 UJ	910 UJ	1,000 UJ	890 UJ	990 UJ	1,100 UJ	1,000 UJ	940 UJ	1,000 UJ	890 UJ	900 UJ	880 UJ	1,000 UJ	930 UJ
4-Nitrophenol	900 U	140,000 U	2,700 U	980 U	910 U	1,000 U	890 U	990 U	1,100 U	1,000 U	940 U	1,000 U	890 U	900 U	880 U	1,000 U	930 U
Acenaphthene	50.7 J	41,040 J	1,100 U	147 J	360 U	410 U	350 U	390 U	430 U	45.3 J	41.9 J	400 U	350 U	360 U	350 U	420 U	87.7 J
Acenaphthylene	43.0 J	56,000 U	1,100 U	44.2 J	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	56.1 J
Acetophenone	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
Anthracene	98.0 J	92,830	1,100 U	87.3 J	360 U	410 U	350 U	390 U	430 U	410 U	115 J	95.7 J	350 U	360 U	51.4 J	420 U	166 J
Atrazine	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
Benzaldehyde	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	142 J	380 U	400 U	350 U	360 U	350 U	420 U	370 U
Benzo(a)anthracene	171 J	137,500	318 J	181 J	360 U	298 J	51.1 J	390 U	430 U	48.0 J	307 J	299 J	350 U	360 U	188 J	54.7 J	275 J
Benzo(a)pyrene	150 J	114,900	380 J	223 J	44.1 J	109 J	61.3 J	390 U	430 U	410 U	251 J	245 J	350 U	360 U	196 J	51.5 J	206 J
Benzo(b)fluoranthene	321 J	138,400	426 J	508 J	65.0 J	220 J	142 J	390 U	430 U	50.7 J	568 J	262 J	350 U	360 U	412 J	69.4 J	483
Benzo(g,h,i)perylene	92.2 J	63,020	269 J	159 J	50.9 J	49.9 J	36.8 J	390 U	430 U	410 U	138 J	116 J	350 U	360 U	110 J	420 U	143 J
Benzo(k)fluoranthene	202 J	62,230	397 J	528 J	38.1 J	189 J	160 J	390 U	430 U	43.2 J	518 J	225 J	350 U	360 U	354 J	50.9 J	338 J
Butylbenzylphthalate	360 U	56,000 U	1,100 U	65.2 J	360 U	410 U	350 U	390 U	94.7 J	47.0 J	60.2 J	400 U	350 U	360 U	350 U	420 U	370 U
Caprolactam	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
Carbazole	360 U	49,290 J	1,100 U	42.1 J	360 UJ	410 UJ	350 U	390 U	430 U	410 U	58.1 J	41.4 J	350 U	360 U	350 UJ	420 UJ	39.8 J
Chrysene	302 J	130,800	498 J	309 J	48.2 J	444	81.5 J	390 U	430 U	110 J	382	276 J	350 U	360 U	218 J	88.8 J	461
Di-n-butylphthalate	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
Di-n-octylphthalate	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
Dibenz(a,h)anthracene	66.8 J	17,220 J	1,100 U	76.6 J	360 U	410 U	350 U	390 U	430 U	410 U	70.2 J	71.1 J	350 U	360 U	58.4 J	420 U	108 J
Dibenzofuran	104 J	34,110 J	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	146 J
Diethylphthalate	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
Dimethyl phthalate	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
Fluoranthene	360	307,900	661 J	502 J	360 U	2,117	84.9 J	390 U	430 U	164 J	773	531	350 U	360 U	253 J	117 J	541
Fluorene	360 U	55,800 J	1,100 U	58.7 J	360 U	410 U	350 U	390 U	430 U	410 U	380 U	49.8 J	350 U	360 U	350 U	420 U	59.1 J
Hexachlorobenzene	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
Hexachlorobutadiene	360 U	56,000 UJ	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
Hexachlorocyclopentadiene	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
Hexachloroethane	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
Indeno(1,2,3-cd)pyrene	128 J	62,630	257 J	163 J	39.7 J	410 U	47.6 J	390 U	430 U	410 U	133 J	138 J	350 U	360 U	122 J	420 U	188 J
Isophorone	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
Naphthalene	190 J	51,750 J	1,100 U	390 U	360 U	410 U	350 U	390 U	86.9 J	77.2 J	48.8 J	400 U	350 U	360 U	350 U	420 U	231 J
Nitrobenzene	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
Pentachlorophenol	900 U	140,000 U	2,700 U	980 U	910 U	1,000 U	890 U	990 U	1,100 U	1,000 U	940 U	1,000 U	890 U	900 U	880 U	1,000 U	930 U
Phenanthrene	409	350,600	185 J	120 J	360 U	99.0 J	67.2 J	43.6 J	430 U	133 J	389	410	350 U	360 U	149 J	92.4 J	545
Phenol	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	224 J	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
Pyrene	308 J	265,900	473 J	340 J	61.1 J	1,768	64.1 J	390 U	430 U	102 J	763 J	596 J	350 U	360 U	338 J	136 J	471 J
bis(2-Chloroethoxy)methane	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
bis(2-Chloroethyl)ether	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
bis(2-Ethylhexyl)phthalate	61.4 J	56,000 U	122 B	137 B	360 U	55.7 J	42.1 J	207 J	530	1,651 B	175 J	52.5 J	350 U	360 U	75.9 J	506	181 J
n-Nitroso-di-n-propylamine	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
n-Nitrosodiphenylamine	360 U	56,000 U	1,100 U	390 U	360 U	410 U	350 U	390 U	430 U	410 U	380 U	400 U	350 U	360 U	350 U	420 U	370 U
Pesticide/Polychlorinated Biphenyls (UG/KG)																	

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	4-DS37	NBW14-DS38		NBW14-DS40		NBW14-DS41		NBW14-DS42		NBW14-DS43		NBW14-DS44		NBW14-DS45		NBW14-DS46	
Sample ID	NBW14-DS37-06	NBW14-DS38-00	NBW14-DS38-03	NBW14-DS40-00	NBW14-DS40-07	NBW14-DS41-00	NBW14-DS41-05	NBW14-DS42-00	NBW14-DS42-06	NBW14-DS43-00	NBW14-DS43-07	NBW14-DS44-00	NBW14-DS44-08	NBW14-DS45-00	NBW14-DS45-05	NBW14-DS46-00	NBW14-DS46-06
Sample Date	09/12/00	09/19/00	09/19/00	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01
Chemical Name																	
2,4-Dinitrotoluene	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
2-Chlorophenol	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	NA	370 U	410 U	67 J	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
2-Methylphenol	44.2 J	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
2-Nitroaniline	1,000 U	920 U	1,000 U	910 U	1,800 U	900 U	920 U	900 U	910 U	920 U	920 U	NA	NA	NA	NA	NA	NA
2-Nitrophenol	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
3-Nitroaniline	1,000 U	920 U	1,000 U	910 U	1,800 U	900 U	920 U	900 U	910 U	920 U	920 U	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	1,000 U	920 U	1,000 U	910 U	1,800 U	900 U	920 U	900 U	910 U	920 U	920 U	NA	NA	NA	NA	NA	NA
4-Bromophenyl-phenylether	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
4-Chloroaniline	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
4-Chlorophenyl-phenylether	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
4-Methylphenol	516	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
4-Nitroaniline	1,000 UJ	920 UJ	1,000 UJ	910 U	1,800 U	900 U	920 U	900 U	910 U	920 U	920 U	NA	NA	NA	NA	NA	NA
4-Nitrophenol	1,000 U	920 U	1,000 U	910 U	1,800 U	900 U	920 U	900 U	910 U	920 U	920 U	NA	NA	NA	NA	NA	NA
Acenaphthene	109 J	370 U	410 U	60 J	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
Acenaphthylene	129 J	370 U	60.4 J	69 J	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
Acetophenone	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
Anthracene	89.4 J	370 U	410 U	230 J	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
Atrazine	410 U	370 U	410 U	360 UJ	710 UJ	360 UJ	370 UJ	360 UJ	360 UJ	370 UJ	370 UJ	NA	NA	NA	NA	NA	NA
Benzaldehyde	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	268 J	370 U	131 J	590	710 U	360 U	370 U	45 J	120 J	370 U	370 U	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	238 J	370 U	169 J	670	710 U	360 U	370 U	40 J	120 J	370 U	370 U	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	426 J	370 U	328 J	690	710 U	360 U	370 U	37 J	110 J	370 U	370 U	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	245 J	370 U	175 J	460	710 U	360 U	370 U	360 U	80 J	370 U	370 U	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	488 J	370 U	361 J	950	710 U	360 U	370 U	54 J	130 J	370 U	370 U	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	66 J	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
Caprolactam	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
Carbazole	410 U	370 UJ	410 UJ	100 J	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
Chrysene	402 J	370 U	253 J	790	100 J	360 U	370 U	50 J	120 J	370 U	370 U	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	41.8 J	370 U	410 U	230 J	710 U	360 U	370 U	360 U	42 J	370 U	370 U	NA	NA	NA	NA	NA	NA
Dibenzofuran	333 J	370 U	410 U	61 J	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
Diethylphthalate	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
Fluoranthene	629	370 U	162 J	1,600	100 J	360 U	370 U	83 J	180 J	370 U	370 U	NA	NA	NA	NA	NA	NA
Fluorene	136 J	370 U	410 U	100 J	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	410 U	370 U	410 U	360 UJ	710 UJ	360 UJ	370 UJ	360 UJ	360 UJ	370 UJ	370 UJ	NA	NA	NA	NA	NA	NA
Hexachloroethane	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	108 J	370 U	123 J	580	710 U	360 U	370 U	360 U	90 J	370 U	370 U	NA	NA	NA	NA	NA	NA
Isophorone	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
Naphthalene	1,246	370 U	410 U	81 J	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
Nitrobenzene	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
Pentachlorophenol	1,000 U	920 U	1,000 U	910 U	1,800 U	900 U	920 U	900 U	910 U	920 U	920 U	940 U	990 U	920 U	940 U	920 U	950 U
Phenanthrene	1,393	370 U	80.8 J	840	140 J	360 U	370 U	38 J	99 J	370 U	370 U	NA	NA	NA	NA	NA	NA
Phenol	285 J	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
Pyrene	561	370 U	248 J	1,400	130 J	360 U	370 U	79 J	230 J	370 U	370 U	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	434	370 U	410 U	290 B	170 B	110 B	320 B	230 B	140 B	130 B	950	NA	NA	NA	NA	NA	NA
n-Nitroso-di-n-propylamine	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
n-Nitrosodiphenylamine	410 U	370 U	410 U	360 U	710 U	360 U	370 U	360 U	360 U	370 U	370 U	NA	NA	NA	NA	NA	NA
Pesticide/Polychlorinated Biphenyls (UG/KG)																	

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-DS47			NBW14-DS48		NBW14-DS49			NBW14-DS51		NBW14-DS52	NBW14-DS53		NBW14-DS54		
Sample ID	NBW14-DS47-00	NBW14-DS47-04	NBW14-DS47-P-00	NBW14-DS48-00	NBW14-DS48-06	NBW14-DS49-00	NBW14-DS49-06	NBW14-DS49-P-00	NBW14-DS51-00	NBW14-DS51-07	NBW14-DS52-00	NBW14-DS53-00	NBW14-DS53-07	NBW14-DS54-00	NBW14-DS54-05	NBW14-DS54-P-00
Sample Date	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01
Chemical Name																
2,4-Dinitrotoluene	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
2,6-Dinitrotoluene	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
2-Chloronaphthalene	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
2-Chlorophenol	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
2-Methylnaphthalene	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
2-Methylphenol	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
2-Nitroaniline	NA	NA	NA	NA	NA	900 U	900 U	920 U	910 U	900 U	970 U	970 U	970 U	890 U	900 U	890 U
2-Nitrophenol	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
3,3'-Dichlorobenzidine	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
3-Nitroaniline	NA	NA	NA	NA	NA	900 U	900 U	920 U	910 U	900 U	970 U	970 U	970 U	890 U	900 U	890 U
4,6-Dinitro-2-methylphenol	NA	NA	NA	NA	NA	900 U	900 U	920 U	910 U	900 U	970 U	970 U	970 U	890 U	900 U	890 U
4-Bromophenyl-phenylether	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
4-Chloro-3-methylphenol	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
4-Chloroaniline	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
4-Chlorophenyl-phenylether	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
4-Methylphenol	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
4-Nitroaniline	NA	NA	NA	NA	NA	900 U	900 U	920 U	910 U	900 U	970 U	970 U	970 U	890 U	900 U	890 U
4-Nitrophenol	NA	NA	NA	NA	NA	900 U	900 U	920 U	910 U	900 U	970 U	970 U	970 U	890 U	900 U	890 U
Acenaphthene	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
Acenaphthylene	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
Acetophenone	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
Anthracene	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
Atrazine	NA	NA	NA	NA	NA	360 UJ	360 UJ	370 UJ	360 UJ	360 UJ	380 UJ	380 UJ	380 UJ	350 UJ	360 UJ	350 UJ
Benzaldehyde	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
Benzo(a)anthracene	NA	NA	NA	NA	NA	360 U	360 U	51 J	43 J	360 U	70 J	380 U	380 U	350 U	360 U	350 U
Benzo(a)pyrene	NA	NA	NA	NA	NA	360 U	360 U	51 J	48 J	360 U	61 J	380 U	380 U	350 U	360 U	350 U
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	39 J	360 U	70 J	81 J	360 U	75 J	380 U	380 U	36 J	360 U	41 J
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	360 U	360 U	370 U	55 J	360 U	42 J	380 U	380 U	350 U	360 U	16 J
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	360 U	360 U	76 J	61 J	360 U	60 J	380 U	380 U	47 J	360 U	350 U
Butylbenzylphthalate	NA	NA	NA	NA	NA	360 U	360 U	44 J	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
Caprolactam	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
Carbazole	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
Chrysene	NA	NA	NA	NA	NA	36 J	360 U	64 J	68 J	360 U	100 J	380 U	380 U	350 U	360 U	350 U
Di-n-butylphthalate	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	5,600	380 U	380 U	350 U	360 U	350 U
Di-n-octylphthalate	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
Dibenzofuran	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
Diethylphthalate	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	7,900	380 U	380 U	350 U	360 U	350 U
Dimethyl phthalate	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
Fluoranthene	NA	NA	NA	NA	NA	50 J	360 U	77 J	70 J	360 U	120 J	380 U	380 U	350 U	360 U	350 U
Fluorene	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
Hexachlorobenzene	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
Hexachlorobutadiene	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
Hexachlorocyclopentadiene	NA	NA	NA	NA	NA	360 UJ	360 UJ	370 UJ	360 UJ	360 UJ	380 UJ	380 UJ	380 UJ	350 UJ	360 UJ	350 UJ
Hexachloroethane	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	360 U	360 U	44 J	63 J	360 U	45 J	380 U	380 U	350 U	360 U	350 U
Isophorone	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
Naphthalene	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
Nitrobenzene	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
Pentachlorophenol	970 U	920 U	1,000 U	920 U	930 U	900 U	900 U	920 U	910 U	900 U	970 U	970 U	970 U	890 U	900 U	890 U
Phenanthrene	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	70 J	380 U	380 U	350 U	360 U	350 U
Phenol	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	76 J	380 U	380 U	350 U	360 U	350 U
Pyrene	NA	NA	NA	NA	NA	63 J	360 U	89 J	74 J	360 U	150 J	380 U	380 U	350 U	360 U	350 U
bis(2-Chloroethoxy)methane	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
bis(2-Chloroethyl)ether	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
bis(2-Ethylhexyl)phthalate	NA	NA	NA	NA	NA	140 B	140 B	130 B	230 B	99 B	1,200	55 B	440 B	750	430	460
n-Nitroso-di-n-propylamine	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
n-Nitrosodiphenylamine	NA	NA	NA	NA	NA	360 U	360 U	370 U	360 U	360 U	380 U	380 U	380 U	350 U	360 U	350 U
Pesticide/Polychlorinated Biphenyls (UG/KG)																

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-DS01		NBW14-DS01A	NBW14-DS02		NBW14-DS02A	NBW14-DS03		NBW14-DS03A	NBW14-DS04		NBW14-DS04A	NBW14-DS05			NBW14-DS05A	NBW14-DS06	
Sample ID	NBW14-DS01-00	NBW14-DS01-02	NBW14-DS01A	NBW14-DS02-00	NBW14-DS02-02	NBW14-DS02A	NBW14-DS03-00	NBW14-DS03-02	NBW14-DS03A	NBW14-DS04-00	NBW14-DS04-02	NBW14-DS04A	NBW14-DS05-00	NBW14-DS05-02	NBW14-DS05P-02	NBW14-DS05A	NBW14-DS06-00	NBW14-DS06
Sample Date	09/30/99	09/30/99	07/16/98	09/30/99	09/30/99	07/16/98	09/30/99	09/30/99	07/16/98	09/30/99	09/30/99	07/16/98	09/30/99	09/30/99	09/30/99	07/16/98	10/01/99	10/01/99
Chemical Name																		
4,4'-DDD	120	5.9 U	3.5 UJ	15 U	21 J	3.6 U	4.1 J	4 K	3.6 U	47 K	14 K	5.1	18 U	18 U	20 J	3.5 UJ	2.1 J	11
4,4'-DDE	150	3.7 J	3.5 UJ	15 U	22 J	3.6 U	7.5 U	8.6 K	3.6 U	65 K	13 K	3.8 U	18 U	65 K	42	3.5 UJ	3.7 U	11
4,4'-DDT	13 J	5.9 U	3.5 UJ	15 U	19 U	3.6 U	7.5 U	7.3 U	3.6 U	18 U	19 U	3.8 U	18 U	18 U	14 U	3.5 UJ	2.1 J	14
Aldrin	33	14 J	1.8 UJ	7.6 U	9.9 U	1.8 U	3.9 U	3.8 U	4.9	9.2 U	9.7 U	1.9 U	9.4 U	9.5 U	7.5 U	1.8 UJ	1.3 J	7.4
Aroclor-1016	180 U	59 U	35 UJ	150 U	190 U	36 U	75 U	73 U	36 U	180 U	190 U	38 U	180 U	180 U	140 U	35 UJ	37 U	140
Aroclor-1221	360 U	120 U	71 UJ	300 U	390 U	73 U	150 U	150 U	73 U	360 U	380 U	76 U	370 U	370 U	290 U	72 UJ	75 U	290
Aroclor-1232	180 U	59 U	35 UJ	150 U	190 U	36 U	75 U	73 U	36 U	180 U	190 U	38 U	180 U	180 U	140 U	35 UJ	37 U	140
Aroclor-1242	180 U	500	35 UJ	150 U	570	36 U	75 U	73 U	36 U	180 U	190 U	38 U	180 U	180 U	140 U	35 UJ	37 U	140
Aroclor-1248	180 U	59 U	160 J	150 U	190 U	36 U	75 U	73 U	36 U	180 U	190 U	38 U	180 U	180 U	140 U	35 UJ	37 U	670
Aroclor-1254	180 U	59 U	250 J	150 U	370	110	75 U	73 U	36 U	180 U	160 K	38 U	180 U	180 U	140 U	35 UJ	37 U	140
Aroclor-1260	180 U	59 U	35 UJ	150 U	230 J	36 U	75 U	73 U	36 U	180 U	190 U	38	180 U	180 U	210 J	35 UJ	100	840
Dieldrin	48 J	5.9 U	3.5 UJ	15 U	19 U	3.6 U	15 J	12 K	28	21 K	33 K	3.8 U	29 K	18 U	18 J	3.5 UJ	7.5 J	33
Endosulfan I	9.2 U	3 U	1.8 UJ	7.6 U	9.9 U	1.8 U	3.9 U	3.8 U	1.8 U	9.2 U	9.7 U	1.9 U	9.4 U	9.5 U	7.5 U	1.8 UJ	1.9 U	7.4
Endosulfan II	18 U	5.9 U	5.4 J	15 U	19 U	3.6 U	7.5 U	7.3 U	3.6 U	18 U	19 U	3.8 U	18 U	18 U	14 U	3.5 UJ	2.8 J	24
Endosulfan sulfate	18 U	5.9 U	3.5 UJ	15 U	19 U	3.6 U	7.5 U	7.3 U	3.6 U	18 U	19 U	3.8 U	18 U	18 U	14 U	3.5 UJ	4.3 J	7.7
Endrin	18 U	5.9 U	3.5 UJ	15 U	19 U	3.6 U	7.5 U	7.3 U	3.6 U	18 U	19 U	3.8 U	18 U	18 U	14 U	3.5 UJ	4.4 J	34
Endrin aldehyde	18 U	5.9 U	3.5 UJ	12 J	19 U	3.6 U	7.5 U	7.3 U	3.6 U	18 U	19 U	3.8 U	18 U	18 U	14 U	3.5 UJ	3.7 U	25
Endrin ketone	18 U	5.9 U	3.5 UJ	15 U	19 U	3.6 U	7.5 U	18 K	3.6 U	45 K	19 U	3.8 U	15 K	51 K	14 U	3.5 UJ	5.5 J	14
Heptachlor	9.2 U	3 U	1.8 UJ	7.6 U	9.9 U	1.8 U	3.9 U	3.8 U	1.8 U	9.2 U	9.7 U	1.9 U	9.4 U	9.5 U	7.5 U	1.8 UJ	1.9 U	7.4
Heptachlor epoxide	9.2 U	3 U	1.8 UJ	7.6 U	9.9 U	1.8 U	3.9 U	3.8 U	1.8 U	9.2 U	9.7 U	1.9 U	9.4 U	9.5 U	7.5 U	1.8 UJ	1.9 U	7.4
Methoxychlor	92 U	30 U	18 UJ	76 U	99 U	18 U	39 U	73 K	18 U	120 K	97 U	19 U	90 K	160 K	40 J	18 UJ	17 J	74
Toxaphene	920 U	300 U	180 UJ	760 U	990 U	180 U	390 U	380 U	180 U	920 U	970 U	190 U	940 U	950 U	750 U	180 UJ	190 U	740
alpha-BHC	9.2 U	3 U	1.8 UJ	7.6 U	9.9 U	1.8 U	3.9 U	3.8 U	1.8 U	9.2 U	9.7 U	1.9 U	9.4 U	9.5 U	7.5 U	1.8 UJ	1.9 U	7.4
alpha-Chlordane	8.1 J	2.3 J	1.8 UJ	7.6 U	8.3 J	1.8 U	3.9 U	3.8 U	2.6	9.2 U	9.7 U	1.9 U	8.3 K	9.5 U	7.5 U	1.8 UJ	1.8 J	13
beta-BHC	9.2 U	3 U	1.8 UJ	7.6 U	9.9 U	1.8 U	3.9 U	3.8 U	1.8 U	9.2 U	9.7 U	1.9 U	9.4 U	9.5 U	7.5 U	1.8 UJ	1.9 U	7.4
delta-BHC	9.2 U	3 U	1.8 UJ	7.6 U	9.9 U	1.8 U	3.9 U	3.8 U	1.8 U	9.2 U	9.7 U	1.9 U	9.4 U	9.5 U	7.5 U	1.8 UJ	1.9 U	7.4
gamma-BHC (Lindane)	9.2 U	3 U	1.8 UJ	7.6 U	9.9 U	1.8 U	3.9 U	3.8 U	1.8 U	9.2 U	9.7 U	1.9 U	9.4 U	9.5 U	7.5 U	1.8 UJ	1.9 U	7.4
gamma-Chlordane	8.9 J	3 U	2.3 J	7.6 U	9.9 U	1.8 U	3.9 U	3.8 U	3.1	9.2 U	9.7 U	3.3 J	7.7 K	9.5 U	7.5 U	1.8 UJ	1.1 J	11
Dioxin/Furans (UG/KG)																		
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-Heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8,9-Heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,7,8-Pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDD (dioxin)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-Tetrachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID		NBW14-DS06A	NBW14-DS07		NBW14-DS07A	NBW14-DS08		NBW14-DS08A	NBW14-DS09		NBW14-DS10			NBW14-DS11		NBW14-DS12	
Sample ID	02	NBW14-DS06A	NBW14-DS07-00	NBW14-DS07-02	NBW14-DS07A	NBW14-DS08-00	NBW14-DS08-02	NBW14-DS08A	NBW14-DS09-00	NBW14-DS09-02	NBW14-DS10-00	NBW14-DS10-02	NBW14-DS10P-02	NBW14-DS11-00	NBW14-DS11-02	NBW14-DS12-00	NBW14-DS12-02
Sample Date		07/16/98	10/01/99	10/01/99	07/16/98	10/01/99	10/01/99	07/16/98	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99
Chemical Name																	
4,4'-DDD	K	3.7 U	14 K	19 J	3.5 U	30 J	15 J	15	15 J	11	14 J	9.1	7.7 J	18 U	19 U	3.4 J	14 J
4,4'-DDE	K	6.4 J	11 K	29 U	3.5 U	53	6.7	14 J	20 J	6.2 J	34	12	15	18 U	19 U	4.1 J	19 U
4,4'-DDT	U	3.8 J	18 U	70 J	3.5 U	9.8 J	1.7 J	3.8 U	7.8 J	1.9 J	39	12	14 J	13 J	150 J	3.7 U	10 J
Aldrin	U	1.9 U	18 K	15 U	2 J	1.9 U	3.3 J	2 U	1.9 U	1.8	1.9 U	1.7 J	1.8 U	9.4 U	9.7 U	2.4 J	9.7 U
Aroclor-1016	U	37 U	180 U	290 U	35 U	36 U	35 U	38 U	37 U	36 U	38 U	35 U	35 U	180 U	190 U	37 U	190 U
Aroclor-1221	U	75 U	370 U	580 U	72 U	74 U	71 U	78 U	75 U	72 U	77 U	72 U	72 U	370 U	380 U	74 U	380 U
Aroclor-1232	U	37 U	180 U	290 U	35 U	36 U	35 U	38 U	37 U	36 U	38 U	35 U	35 U	180 U	190 U	37 U	190 U
Aroclor-1242	U	37 U	180 U	290 U	35 U	36 U	35 U	38 U	37 U	36 U	38 U	35 U	35 U	180 U	190 U	37 U	190 U
Aroclor-1248	K	37 U	180 U	290 U	35 U	77 J	150	480 D	37 U	36 U	38 U	35 U	35 U	180 U	190 U	37 U	190 U
Aroclor-1254	U	37 U	180 U	290 U	35 U	36 U	35 U	38 U	37 U	36 U	38 U	35 U	35 U	180 U	190 U	37 U	190 U
Aroclor-1260	K	49	530 K	1,800 J	35 U	220	200	38 U	160	36 U	160	35 U	60	1,900	4,100	37 U	2,500
Dieldrin	K	9.8	30 K	29 U	9.7 J	13 J	3.5 U	3.8 U	3.7 U	6.5	28	28	27	38 J	19	14 J	24 J
Endosulfan I	U	1.9 U	9.4 U	15 U	1.8 U	1.9 U	1.8 U	2 U	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	9.4 U	9.7 U	1.9 U	9.7 U
Endosulfan II	K	3.7 U	14 K	49 J	4.2	5.1	4.7 J	7.2 J	3.5 J	3.6 U	4.4	3.5 U	3.5 U	49	110 J	1.9 J	68
Endosulfan sulfate	K	3.7 U	13 K	29 U	3.5 U	2.7 J	3.5 U	3.8 U	2 J	3.6 U	3.8 U	3.5 U	3.5 U	18 U	19 U	3.7 U	14 J
Endrin	K	3.7 U	33 K	14 J	3.5 U	11	8.2 J	3.8 U	8.5	3.6 U	7.1 J	2 J	3 J	85	17 J	3.6 J	130 J
Endrin aldehyde	K	3.7 U	35 K	77	3.5 U	4.4 J	7.7	3.8 U	3.4 J	3.6 U	5 J	3.5 U	3.5 U	45 J	120 J	9.9 J	76 J
Endrin ketone	U	3.7 U	18 U	29 U	3.5 U	3.6 U	3.5 U	3.8 U	3.7 U	3.6 U	2.1 J	3.5 U	3.5 U	18 U	19 U	2 J	19 U
Heptachlor	U	1.9 U	9.4 U	15 U	1.8 U	1.9 U	1.8 U	2 U	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	9.4 U	9.7 U	1.9 U	9.7 U
Heptachlor epoxide	U	1.9 U	9.4 U	15 U	1.8 U	1.9 U	1.8 U	2 U	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	9.4 U	9.7 U	1.2 J	9.7 U
Methoxychlor	U	19 U	94 U	150 U	18 U	19 U	18 U	20 U	19 U	18 U	19 U	18 U	18 U	94 U	97 U	19 U	97 U
Toxaphene	U	190 U	940 U	1,500 U	180 U	190 U	180 U	200 U	190 U	180 U	190 U	180 U	180 U	940 U	970 U	190 U	970 U
alpha-BHC	U	1.9 U	9.4 U	15 U	1.8 U	1.9 U	1.8 U	2 U	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	9.4 U	9.7 U	1.9 U	9.7 U
alpha-Chlordane	K	1.9 U	18 K	15 U	1.8 U	4	2.6	59	3.4	1.3 J	4.5	1.8 U	1.7 J	32	6.7	2.3 J	52
beta-BHC	U	1.9 U	9.4 U	15 U	1.8 U	1.9 U	1.8 U	2 U	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	9.4 U	9.7 U	1.9 U	9.7 U
delta-BHC	U	1.9 U	9.4 U	15 U	1.8 U	1.9 U	1.8 U	2 U	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	9.4 U	9.7 U	1.9 U	9.7 U
gamma-BHC (Lindane)	U	1.9 U	9.4 U	15 U	1.8 U	1.9 U	1.8 U	2 U	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	9.4 U	9.7 U	1.9 U	9.7 U
gamma-Chlordane	K	1.9 U	12 K	15 U	1.8 U	4.2 J	0.95 J	62	4.4 J	2.6	4.8 J	1.2 J	1.9 J	11 J	9.7 U	1.3 J	14 J
Dioxin/Furans (UG/KG)																	
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-Heptachlorodibenzofuran		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8,9-Heptachlorodibenzofuran		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzofuran		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzofuran		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzofuran		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzo-p-dioxin		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzofuran		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6,7,8-Hexachlorodibenzofuran		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,7,8-Pentachlorodibenzofuran		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDD (dioxin)		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-Tetrachlorodibenzofuran		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzo-p-dioxin		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzofuran		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzo-p-dioxin		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzofuran		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzo-p-dioxin		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzofuran		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzo-p-dioxin		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzofuran		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzo-p-dioxin		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzofuran		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-DS13		NBW14-DS14			NBW14-DS15		NBW14-DS16		NBW14-DS17		NBW14-DS18			NBW14-DS19		NBW1
Sample ID	NBW14-DS13-00	NBW14-DS13-02	NBW14-DS14-00	NBW14-DS14-02	NBW14-DS14P-02	NBW14-DS15-00	NBW14-DS15-02	NBW14-DS16-00	NBW14-DS16-02	NBW14-DS17-00	NBW14-DS17-02	NBW14-DS18-00	NBW14-DS18-02	NBW14-DS18P-00	NBW14-DS19-00	NBW14-DS19-06	NBW14-DS20-03
Sample Date	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	09/18/00	09/18/00	09/19/00
Chemical Name																	
4,4'-DDD	14 J	15 J	23 J	21 J	30 J	3.6 U	4.8 J	3 J	2.4 J	18 U	10	2.3 J	10 J	7.9 J	3.6 U	3 J	9.5
4,4'-DDE	18 U	14 J	14 J	19 J	17 J	3.6 U	26	3.6 U	3.6 U	18 U	6.9	6 J	21	21	3.4 J	8	7.7
4,4'-DDT	18 U	18 U	19 U	19 J	20 J	2.4 J	3.8 U	2.2 J	2.9 J	9.7 J	2.5 J	2 J	3.8 U	7.7 U	15 J	4.9 J	3.9 U
Aldrin	9.3 U	9.4 U	9.6 U	7.3 J	3.8 J	1.8 U	0.99 J	1.8 J	1.1 J	9.3 U	1.9 U	1.9 U	3.8 J	3.9 U	1.9 U	1.9 U	2 U
Aroclor-1016	180 U	180 U	190 U	76 U	77 U	36 U	38 U	36 U	36 U	180 U	37 U	37 U	38 U	77 U	36 U	150	39 U
Aroclor-1221	360 U	370 U	380 U	150 U	160 U	73 U	77 U	73 U	73 U	370 U	75 U	75 U	78 U	160 U	74 U	74 U	80 U
Aroclor-1232	180 U	180 U	190 U	76 U	77 U	36 U	38 U	36 U	36 U	180 U	37 U	37 U	38 U	77 U	36 U	36 U	39 U
Aroclor-1242	210 J	210	190 U	76 U	77 U	36 U	210	36 U	36 U	180 U	37 U	37 U	38 U	77 U	36 U	36 U	39 U
Aroclor-1248	180 U	180 U	190 U	76 U	77 U	36 U	38 U	36 U	36 U	180 U	37 U	37 U	270	77 U	36 U	36 U	39 U
Aroclor-1254	180 U	180 U	190 U	76 U	77 U	36 U	38 U	36 U	36 U	180 U	37 U	37 U	38 U	77 U	36 U	130	39 U
Aroclor-1260	730	610	410	530	530	170	160	36 U	36 U	180 U	37 U	37 U	38 U	77 U	36 U	36 U	39 U
Dieldrin	18 U	18 U	19 U	7.6 U	7.7 U	5.1 J	3.8 U	15	7.4 J	18 U	3.7 U	5.1	33	24	4.9	3.6 U	2.3 J
Endosulfan I	9.3 U	9.4 U	9.6 U	3.9 U	3.9 U	1.8 U	1.9 U	1.8 U	1.8 U	9.3 U	1.9 U	1.9 U	2 U	3.9 U	1.9 U	1.9 U	2 U
Endosulfan II	20 J	15 J	19 U	16	16	4.7 J	3.7 J	3.6 U	2.4 J	18 U	3.7 U	3.7 U	3.8 U	7.7 U	3.6 U	3.6 U	3.9 U
Endosulfan sulfate	18 U	18 U	19 U	8.9 J	7.7 U	1.8 J	2.1 J	3.6 U	3.6 U	18 U	3.7 U	3.7 U	3.8 U	7.7 U	1.3 J	5.6 J	3.9 U
Endrin	16 J	12 J	15 J	25 J	23 J	1.8 J	9.9	3.6 U	3.6 U	11 J	3.7 U	3.7 U	3.8 J	7.7 U	3.6 U	3.6 U	3.9 U
Endrin aldehyde	28 J	18 J	14 J	21 J	12 J	5.8 J	3 J	3.6 U	2.4 J	18 U	2 J	3.7 U	3.8 U	7.7 U	1.9 J	2.5 J	3.9 U
Endrin ketone	18 U	18 U	19 U	7.6 U	7.7 U	3.6 U	3.8 U	2.7 J	3.9 J	18 U	3.7 U	3.7 U	3.8 U	7.7 U	4.3 J	3.6 U	3.9 U
Heptachlor	9.3 U	9.4 U	9.6 U	3.9 U	3.9 U	1.8 U	1.9 U	1.8 U	1.8 U	9.3 U	1.9 U	1.9 U	2 U	3.9 U	1.3 J	1.9 U	2 U
Heptachlor epoxide	9.3 U	9.4 U	9.6 U	3.9 U	3.9 U	1.8 U	1.9 U	1.8 U	1.8 U	9.3 U	1.9 U	1.9 U	2 U	3.9 U	9	1.9 U	2 U
Methoxychlor	93 U	94 U	96 U	39 U	20 J	18 U	19 U	14 J	16 J	93 U	19 U	19 U	20 U	39 U	19 U	19 U	20 U
Toxaphene	930 U	940 U	960 U	390 U	390 U	180 U	190 U	180 U	180 U	930 U	190 U	190 U	200 U	390 U	190 U	190 U	200 U
alpha-BHC	9.3 U	9.4 U	9.6 U	3.9 U	3.9 U	1.8 U	1.9 U	1.8 U	1.8 U	9.3 U	1.9 U	1.9 U	2 U	3.9 U	1.9 U	1.9 U	2 U
alpha-Chlordane	15 J	9.4 U	18	31	44	1.3 J	3.7	1.8 U	3.2	18 J	0.99 J	0.96 J	3.3	3.2 J	16 J	1.9 U	0.92 J
beta-BHC	9.3 U	9.4 U	9.6 U	3.9 U	3.9 U	1.8 U	1.9 U	1.8 U	1.8 U	9.3 U	1.9 U	1.9 U	2 U	3.9 U	1.9 U	1.9 U	2 U
delta-BHC	9.3 U	9.4 U	9.6 U	3.9 U	3.9 U	1.8 U	1.9 U	1.8 U	1.8 U	9.3 U	1.9 U	1.9 U	2 U	3.9 U	1.9 U	1.9 U	2 U
gamma-BHC (Lindane)	9.3 U	9.4 U	9.6 U	3.9 U	3.9 U	1.8 U	1.9 U	1.8 U	1.8 U	9.3 U	1.9 U	1.9 U	2 U	3.9 U	1.9 U	1.9 U	2 U
gamma-Chlordane	23 J	9.4 U	29	36	52	1.5 J	1.7 J	1.8 U	4.1	31	0.97 J	1.5 J	2 U	3.9 J	13	1.9 U	1.5 J
Dioxin/Furans (UG/KG)																	
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-Heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8,9-Heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,7,8-Pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDD (dioxin)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-Tetrachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	4-DS20	NBW14-DS21		NBW14-DS22	NBW14-DS23	NBW14-DS24			NBW14-DS25		NBW14-DS26			NBW14-DS27		NBW14-DS28	
Sample ID	NBW14-DS20-00	NBW14-DS21-00	NBW14-DS21-05	NBW14-DS22-00	NBW14-DS23-00	NBW14-DS24-00	NBW14-DS24-05	NBW14-DS24-P-00	NBW14-DS25-00	NBW14-DS25-P-00	NBW14-DS26-00	NBW14-DS26-06	NBW14-DS26-P-00	NBW14-DS27-00	NBW14-DS27-04	NBW14-DS28-00	NBW14-DS28-03
Sample Date	09/19/00	09/11/00	09/12/00	09/11/00	09/11/00	09/11/00	09/11/00	09/11/00	09/15/00	09/15/00	09/11/00	09/11/00	09/11/00	09/12/00	09/12/00	09/12/00	09/12/00
Chemical Name																	
4,4'-DDD	2.9 J	3.8 U	8.3 J	2.7 J	3.7 UJ	1.1 J	7	2.6 J	3.8 U	3.6 U	3.4 U	12	2.4 J	3.6 U	3.8 U	12 J	1.9 J
4,4'-DDE	2 J	17 J	12	4.1 J	3.7 UJ	1.3 J	14 J	2.2 J	6.2 J	1.4 J	4.3	11 J	5.2	1.3 J	17 J	5.7	2 J
4,4'-DDT	7.5	3.8 U	3.7 U	6.8 J	5.6 J	2.7 J	4 U	4.5 J	3.7 J	3.6 U	5	3.8 U	5.4 J	3.5 J	2 J	6.3 J	4.2 U
Aldrin	1.8 U	2.8	1.9 U	1.9 U	1.9 UJ	1.8 U	2 U	1.9 U	2 U	1.9 U	1.8 U	2 U	1.8 U	1.9 U	2 U	1.9 U	2.2 U
Aroclor-1016	36 U	38 U	37 U	36 U	37 UJ	35 U	40 U	36 U	38 U	36 U	34 U	38 U	36 U	36 U	38 U	37 U	42 U
Aroclor-1221	73 U	76 U	75 U	74 U	74 UJ	72 U	81 U	74 U	78 U	74 U	70 U	77 U	73 U	74 U	77 U	74 U	85 U
Aroclor-1232	36 U	38 U	37 U	36 U	37 UJ	35 U	40 U	36 U	38 U	36 U	34 U	38 U	36 U	36 U	38 U	37 U	42 U
Aroclor-1242	36 U	38 U	37 U	36 U	37 UJ	35 U	40 U	36 U	38 U	36 U	34 U	38 U	36 U	36 U	38 U	37 U	42 U
Aroclor-1248	36 U	38 U	37 U	36 U	37 UJ	35 U	390 J	36 U	38 U	36 U	34 U	38 U	36 U	36 U	38 U	37 U	42 U
Aroclor-1254	36 U	38 U	37 U	36 U	37 UJ	35 U	110 U	36 U	44 J	36 U	34 U	38 U	36 U	36 U	320	37 U	42 U
Aroclor-1260	36 U	38 U	170	36 U	37 UJ	35 U	40 U	36 U	38 U	36 U	34 U	38 U	36 U	36 U	38 U	37 U	42 U
Dieldrin	4.9 J	47 J	4 J	12 J	8.7 J	6	3.5 U	7.9 J	4	3.6 U	6.3	3.8 J	8.8	3.5	4.9 J	7.4 J	4.2 U
Endosulfan I	1.8 U	1.9 U	1.9 U	1.9 U	1.9 UJ	1.8 U	2 U	1.9 J	2 U	0.45 J	1.8 U	2 U	1.8 U	1.9 J	2	1.9 U	2.2 U
Endosulfan II	3.6 U	3.8 J	3.7 U	3.6 U	3.7 UJ	3.5 U	2 U	3.6 U	3.8 U	3.6 U	3.4 J	3.8 U	3.6 U	3.6 U	3.8	3.7 U	4.2 U
Endosulfan sulfate	1.8 J	14 J	3.7 U	2 J	3.7 UJ	3.5 U	2.8 J	2.6 J	1.8 J	3.6 U	1.2 J	2.2 J	2.4 J	1.4 J	3.7 J	2 J	4.2 U
Endrin	3.6 U	11 J	4.1 J	3.6 J	3.7 UJ	3.5 U	4 U	4.9 J	3.8 U	3.6 U	1.2 J	2.8 J	4.1 J	3.2 J	3.8 U	3.7	4.2 U
Endrin aldehyde	2.9 J	32 J	3.7 U	3 J	1.4 J	1.2 J	4 U	1.8 J	7.6	1.7 J	5.2 J	1.2 J	4.1 J	1.1 J	6.1 J	3.7 U	4.2 U
Endrin ketone	2.8 J	3.8 J	3.7 U	3.6 U	3.8 J	1.6 J	4 U	4.1 J	1.2 J	3.6 U	2.1 J	3.8 U	3.7 J	3.6 U	3.8	3.7 U	4.2 U
Heptachlor	1.8 U	16 J	2 J	1.3 J	1.9 UJ	1.8 U	2 U	1.9 U	2 U	1.9 U	1.3 J	2 U	2.1 J	1.9 U	2	1.9	2.2 U
Heptachlor epoxide	1.8 U	1.9 U	1.9 U	1.9 U	1.9 UJ	1.8 U	2 U	1.9 U	2 U	1.9 U	1.8 U	2 U	1.8 U	1.9 U	2 U	1.9	2.2 U
Methoxychlor	18 U	23 J	19 U	19 U	19 UJ	9.2 J	20 U	19 U	20 U	19 U	18 U	20 U	18 U	19 U	20 U	19 U	22 U
Toxaphene	180 U	190 U	190 U	190 U	190 UJ	180 U	200 U	190 U	200 U	190 U	180 U	200 U	180 U	190 U	200 U	190 U	220 U
alpha-BHC	1.8 U	15 J	0.93 J	0.7 J	1.9 UJ	1.8 U	2 U	1.9 U	2 U	1.9 U	1.8	2 J	0.98 J	1.9	2 J	0.84 J	2.2 U
alpha-Chlordane	1.8 U	1.9 U	3.4 J	1.9 U	1.8 J	1.8 U	4 U	1.9 U	0.83 J	0.91 J	1.8 U	2 U	1.8 U	0.94 J	2 U	3.8	2.2 U
beta-BHC	1.8 U	7 J	1.9 U	0.87 B	1.9 UJ	1.8 U	2 U	1.8 B	2 U	1.9 U	1.4 B	2	1.8 U	1.9 U	8.3 J	1.4 J	2.2 U
delta-BHC	1.8 U	1.9 U	1.9 U	1.9 J	1.9 UJ	1.8 U	2 U	1.8 J	2 U	1.9 U	1.8 J	2 U	1.8	1.9 J	2	1.9 U	2.2 U
gamma-BHC (Lindane)	1.8 U	1.9 U	1.9 U	1.9 U	1.9 UJ	0.075 J	2 U	1.9 U	2 U	1.9 U	1.8 U	2 J	2.1 J	1.9 U	2 J	1.9 U	2.2 U
gamma-Chlordane	1.6 J	1.6 J	10	1.2 J	1.6 J	0.32 J	1.7 J	0.82 J	2 U	1.5 J	1.7 J	4.9	1.6 J	1.4 J	2 U	2.6 J	2.2 U
Dioxin/Furans (UG/KG)																	
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-Heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8,9-Heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,7,8-Pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDD (dioxin)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-Tetrachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-DS29		NBW14-DS30		NBW14-DS31		NBW14-DS32		NBW14-DS33		NBW14-DS34		NBW14-DS35		NBW14-DS36		NBW1
Sample ID	NBW14-DS29-00	NBW14-DS29-08	NBW14-DS30-00	NBW14-DS30-03	NBW14-DS31-00	NBW14-DS31-04	NBW14-DS32-00	NBW14-DS32-04	NBW14-DS33-00	NBW14-DS33-03	NBW14-DS34-00	NBW14-DS34-05	NBW14-DS35-00	NBW14-DS35-05	NBW14-DS36-00	NBW14-DS36-04	NBW14-DS37-00
Sample Date	09/11/00	09/12/00	09/12/00	09/12/00	09/20/00	09/20/00	09/12/00	09/12/00	09/12/00	09/12/00	09/12/00	09/12/00	09/12/00	09/12/00	09/20/00	09/20/00	09/12/00
Chemical Name																	
4,4'-DDD	5.2 J	17	5.7 J	2.7 J	2.2 J	20	3.5 U	4.9	4.3 U	16 J	45	2.4 J	3.5 U	3.6 U	2 J	8.5	3.7 U
4,4'-DDE	2.5 J	12 J	3 J	2.5 J	8.5 J	17	2.5 J	5.9	6.9 J	9.6 J	63 J	1.5 J	3.5 U	3.6 U	2 J	2.4 J	2.1 J
4,4'-DDT	4.2 J	7.4 U	3.6 U	3.9 U	2.3 J	4.7	3.5 U	3.9 U	2.2 U	4.1 UL	3.6 J	4 U	3.5 U	3.6 U	6.6 J	4.2 U	5.7 J
Aldrin	1.8 U	3.6 J	1.8 U	2 U	1.9 U	2.1 U	1.8 U	2 U	2.2 U	2.1 UL	1.9 U	2 U	1.8 U	1.8 U	1.8 U	2.2 U	1.9 U
Aroclor-1016	36 U	74 U	36 U	39 U	36 U	41 U	35 U	39 U	43 U	41 UL	38 U	40 U	35 U	36 U	35 U	42 U	37 U
Aroclor-1221	73 U	150 U	73 U	79 U	74 U	83 U	72 U	80 U	88 U	84 UL	76 U	81 U	72 U	73 U	71 U	85 U	75 U
Aroclor-1232	36 U	74 U	36 U	39 U	36 U	41 U	35 U	39 U	43 U	41 UL	38 U	40 U	35 U	36 U	35 U	42 U	37 U
Aroclor-1242	36 U	74 U	36 U	39 U	36 U	41 U	35 U	39 U	43 U	530 J	38 U	40 U	35 U	36 U	35 U	42 U	37 U
Aroclor-1248	36 U	74 U	36 U	39 U	36 U	41 U	35 U	39 U	43 U	41 UL	190	40 U	35 U	36 U	35 U	42 U	37 U
Aroclor-1254	36 U	74 U	36 U	39 U	210	41 U	35 U	39 U	590	41 UL	38 U	40 U	35 U	36 U	35 U	42 U	37 U
Aroclor-1260	36 U	74 U	150 J	100 J	36 U	41 U	35 U	39 U	43 U	77 J	38 U	40 U	35 U	36 U	35 U	42 U	37 U
Dieldrin	10	16 J	2 J	2.3 J	6 J	4.1 U	2.1 J	3.9 U	8.2	3.4 J	3.3 J	4 U	3.5 U	3.6 U	7.3 J	4.2 U	8.7 J
Endosulfan I	1.8 U	2.1 J	1.8 U	2 U	1.9 U	2.1 U	1.8 U	0.39 J	1.6 J	0.73 J	1.9 U	2 U	1.8 U	1.8 U	1.8 U	2.2 U	0.86 J
Endosulfan II	3.6 U	7.4 U	3.6 U	3.9 U	3.6 U	4.1 U	3.5 U	3.9 U	4.3	4.1 UL	3.8 U	4 U	3.5 U	3.6 U	3.5 U	4.2 U	3.7 U
Endosulfan sulfate	3.6 U	2.8 J	3.6 U	3.9 U	1.8 J	1.9 J	3.5 U	3.9	7.8	4.1 UL	3.1 J	4 U	3.5 U	3.6 U	1.5 J	4.2 U	1.9 J
Endrin	2.2	7.4 U	3.2 J	3.3 J	3.6 U	4.1 U	3.5 U	3.9 U	4.3 U	5.8 J	3.8 U	4 U	3.5 U	3.6 U	3.5 U	4.2 U	3.7
Endrin aldehyde	0.78 J	5.8 J	3.6 U	3.9 U	4.7	1.7 J	1.7 J	3.9 U	11	1.1 J	3.8 U	0.7 J	3.5 U	3.6 U	1.3 J	4.2 U	1.1 J
Endrin ketone	1.3 J	744	3.6 U	3.9 U	3.6 U	4.1 U	3.5	3.9 U	3.2 J	4.1 UL	3.8 U	4 U	3.5 U	3.6 U	3.5 U	4.2 U	6.5 J
Heptachlor	1.8 U	10 J	2.8 J	2 U	1.9 U	2.1 U	1.8 U	2 U	2.2 U	2.1 UL	1.9 U	2 U	1.8 U	1.8 U	1.8 U	2.2 U	1.9 J
Heptachlor epoxide	1.8 U	3.6 J	1.8 U	2 U	1.9 U	2.1 U	1.8 U	2 U	2.2 U	0.93 J	1.9 U	2 U	1.8 U	1.8 U	1.8 U	2.2 U	1.9 U
Methoxychlor	18 U	180	18 U	20 U	19 U	21 U	18 U	20 U	22 U	21 UL	19 U	20 U	18 U	18 U	18 U	22 U	19 U
Toxaphene	180 U	380 U	180 U	200 U	190 U	210 U	180 U	200 U	220 U	210 UL	190 U	200 U	180 U	180 U	180 U	220 U	190 U
alpha-BHC	1.4 J	3.8 U	0.56 J	2 U	1.9 U	2.1 U	1.8 J	2 U	1.8 J	0.74 J	1.9 U	2 U	1.8 U	1.8 U	1.8 U	2.2 U	1.9 U
alpha-Chlordane	1.8 U	3.8 U	2.6 J	0.74 J	1.9 U	2 J	1.8 U	22 J	2.2 U	2.1 UL	1.6 J	2 U	1.8 U	1.8 U	2.9 J	2.2 U	1.9 U
beta-BHC	1.8 U	3.8 U	1.8 U	2.5	1.9 U	2.1 U	1.8	1.7 J	3.2 J	5.9 J	1.7	2 U	1.8 U	1.8 J	1.8 U	1.3 J	1.7 J
delta-BHC	1.8 U	3.8 U	1.8 U	2 U	1.9 U	2.1 U	1.8 U	2 U	2.2 U	2.1 UL	1.9 U	2 U	1.8 U	1.8 U	1.8 U	2.2 U	1.9 J
gamma-BHC (Lindane)	1.8 U	3.8 U	1.8 U	2 U	1.9 U	2.1 U	1.8 U	0.65 J	2.2 U	2.1 UL	1.9 U	2 U	1.8 U	1.8 U	1.8 U	0.82 J	1.9 U
gamma-Chlordane	0.55 J	180 D	5.7 J	3.1 J	1.9 U	3.9 J	0.89 J	21	2.2 U	1.8 J	1.9 U	2 U	1.8 U	1.8 U	3 J	0.78 J	0.89 J
Dioxin/Furans (UG/KG)																	
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-Heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8,9-Heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,7,8-Pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDD (dioxin)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-Tetrachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	4-DS37	NBW14-DS38		NBW14-DS40		NBW14-DS41		NBW14-DS42		NBW14-DS43		NBW14-DS44		NBW14-DS45		NBW14-DS46	
Sample ID	NBW14-DS37-06	NBW14-DS38-00	NBW14-DS38-03	NBW14-DS40-00	NBW14-DS40-07	NBW14-DS41-00	NBW14-DS41-05	NBW14-DS42-00	NBW14-DS42-06	NBW14-DS43-00	NBW14-DS43-07	NBW14-DS44-00	NBW14-DS44-08	NBW14-DS45-00	NBW14-DS45-05	NBW14-DS46-00	NBW14-DS46-06
Sample Date	09/12/00	09/19/00	09/19/00	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01
Chemical Name																	
4,4'-DDD	34	3.7 U	5.5 J	3.6 U	1.7 L	3.6 U	3.7 U	3.6 U	3.6 U	3.7 U	3.7 U	NA	NA	NA	NA	NA	NA
4,4'-DDE	13 J	3.7 U	7.7 J	3.6 U	3.6 UL	3.6 U	3.7 U	3.6 U	11	3.7 U	3.7 U	NA	NA	NA	NA	NA	NA
4,4'-DDT	4.1 U	3.7 U	6.8 J	3.6 U	3.6 UL	3.6 U	3.7 U	3.6 U	3.6 U	3.7 U	3.7 U	NA	NA	NA	NA	NA	NA
Aldrin	2.1 U	1.9 U	1.1 J	0.95 J	1.8 UL	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	NA	NA	NA	NA	NA	NA
Aroclor-1016	41 U	37 U	41 U	36 U	36 UL	36 U	37 U	36 U	36 U	37 U	37 U	NA	NA	NA	NA	NA	NA
Aroclor-1221	84 U	74 U	84 U	73 U	72 UL	73 U	74 U	73 U	74 U	74 U	74 U	NA	NA	NA	NA	NA	NA
Aroclor-1232	41 U	37 U	41 U	36 U	36 UL	36 U	37 U	36 U	36 U	37 U	37 U	NA	NA	NA	NA	NA	NA
Aroclor-1242	41 U	37 U	41 U	36 U	36 UL	36 U	37 U	36 U	36 U	37 U	37 U	NA	NA	NA	NA	NA	NA
Aroclor-1248	250 J	37 U	41 U	36 U	36 UL	36 U	37 U	36 U	36 U	37 U	37 U	NA	NA	NA	NA	NA	NA
Aroclor-1254	180	37 U	41 U	350 J	36 UL	36 U	37 U	36 U	36 U	37 U	37 U	NA	NA	NA	NA	NA	NA
Aroclor-1260	41 U	37 U	41 U	190	36 UL	7.9 J	37 U	36 U	74	37 U	37 U	NA	NA	NA	NA	NA	NA
Dieldrin	4.1 J	3.7 U	76	3.6 U	3.6 UL	3.6 U	3.7 U	3.6	3.6 U	3.7 U	3.7 U	NA	NA	NA	NA	NA	NA
Endosulfan I	2.1	1.9 U	2.1 U	1.9 U	1.8 UL	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	NA	NA	NA	NA	NA	NA
Endosulfan II	4.1 U	3.7 U	4.1 U	3.6 U	3.6 UL	3.6 U	3.7 U	3.6 U	3.6 U	3.7 U	3.7 U	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	4 J	3.7 U	4.1 U	3.6 U	3.6 UL	3.6 U	3.7 U	3.6 U	3.6 U	3.7 U	3.7 U	NA	NA	NA	NA	NA	NA
Endrin	4.1 U	3.7 U	4.1 U	3.6 U	3.6 UL	3.6 U	3.7 U	3.6 U	3.6 U	3.7 U	3.7 U	NA	NA	NA	NA	NA	NA
Endrin aldehyde	1.9 J	3.7 U	1.2 J	3.6 U	3.6 UL	3.6 U	3.7 U	3.6 U	3.6 U	3.7 U	3.7 U	NA	NA	NA	NA	NA	NA
Endrin ketone	4.1 U	3.7 U	4.1 U	3.6 U	3.6 UL	3.6 U	3.7 U	3.6 U	3.6 U	3.7 U	3.7 U	NA	NA	NA	NA	NA	NA
Heptachlor	0.97 J	1.9 U	2.1 U	1.9 U	1.8 UL	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	2.1 U	1.9 U	2.1 U	1.9 U	1.8 UL	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	NA	NA	NA	NA	NA	NA
Methoxychlor	21 U	19 U	21 U	19 U	18 UL	19 U	19 U	18 U	19 U	19 U	19 U	NA	NA	NA	NA	NA	NA
Toxaphene	210 U	190 U	210 U	190 U	180 UL	190 U	190 U	180 U	190 U	190 U	190 U	NA	NA	NA	NA	NA	NA
alpha-BHC	2.1 U	1.9 U	2.1 U	1.9 U	1.8 UL	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	NA	NA	NA	NA	NA	NA
alpha-Chlordane	2.1 U	1.9 U	2.9 J	1.9 U	3.4 L	1.9 U	1.9 U	1.8 U	1.3 J	1.9 U	1.9 U	NA	NA	NA	NA	NA	NA
beta-BHC	4.3 J	1.9 U	2.1 U	1.9 U	1.8 UL	1.9 U	1.9 U	4	3.6 J	1.9 U	1.9 U	NA	NA	NA	NA	NA	NA
delta-BHC	2.1 U	1.9 U	2.1 U	1.9 U	1.8 UL	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	NA	NA	NA	NA	NA	NA
gamma-BHC (Lindane)	2.1 U	1.9 U	2.1 U	1.9 U	1.8 UL	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	NA	NA	NA	NA	NA	NA
gamma-Chlordane	2.1 U	1.9 U	2.1 U	1.9 U	5.9 L	1.9 U	1.9 U	1.7 J	1.3 J	1.9 U	1.9 U	NA	NA	NA	NA	NA	NA
Dioxin/Furans (UG/KG)																	
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0753	0.143	0.151	0.139	0.106	0.514
1,2,3,4,6,7,8-Heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0157	0.0081	0.0219	0.0462	0.0121	0.295
1,2,3,4,7,8,9-Heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00115 J	7.24E-04 J	0.00174 J	0.00449	0.00103 J	0.0279
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00356	0.00126 J	0.00175 J	0.00712	0.0012 J	0.0246
1,2,3,4,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00594	0.00184 J	0.00271	0.0157	0.00226 J	0.0778
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0053	0.00346	0.00499	0.012	0.00322	0.0495
1,2,3,6,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00604	0.00186 J	0.00263	0.0156	0.00207 J	0.0678
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00441	0.00231 J	0.00304	0.00864	0.00211 J	0.0328
1,2,3,7,8,9-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.60E-04 J	4.98E-04 J	6.22E-04 J	0.0041	4.72E-04 J	0.0197
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00829	0.00161 J	0.00226 J	0.0117	0.00186 K	0.0354
1,2,3,7,8-Pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00544	0.00159 J	0.00181 J	0.0141	0.00156 J	0.0481
2,3,4,6,7,8-Hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.006	0.00219 J	0.00287	0.0154	0.00219 J	0.0824
2,3,4,7,8-Pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0105	0.00318	0.0037	0.0191	0.00272	0.0827
2,3,7,8-TCDD (dioxin)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00187	5.07E-04	9.12E-04	0.00336	6.23E-04	0.00816
2,3,7,8-Tetrachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00429	0.00164	0.00159	0.0134	0.00103	0.0496
Total heptachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.18	0.33	0.355	0.435	0.362	1.4
Total heptachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.039	0.0217	0.0741	0.0798	0.0362	0.501
Total hexachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0608	0.0514	0.0494	0.193	0.0367	0.691
Total hexachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.072	0.0233	0.0411	0.153	0.0275	0.713
Total octachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.64	1.55	2.7	1.92	2.28	3.24
Total octachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0356	0.0167	0.0843	0.0313	0.0335	0.228
Total pentachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0798	0.027	0.0215	0.213	0.0166	0.762
Total pentachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.133	0.0353	0.0359	0.231	0.0291	0.886
Total tetrachlorodibenzo-p-dioxin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.064	0.0165	0.0122	0.195	0.0105	0.711
Total tetrachlorodibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.142	0.0393	0.033	0.322	0.00849	1.04

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-DS47			NBW14-DS48		NBW14-DS49			NBW14-DS51		NBW14-DS52	NBW14-DS53		NBW14-DS54		
Sample ID	NBW14-DS47-00	NBW14-DS47-04	NBW14-DS47-P-00	NBW14-DS48-00	NBW14-DS48-06	NBW14-DS49-00	NBW14-DS49-06	NBW14-DS49-P-00	NBW14-DS51-00	NBW14-DS51-07	NBW14-DS52-00	NBW14-DS53-00	NBW14-DS53-07	NBW14-DS54-00	NBW14-DS54-05	NBW14-DS54-P-00
Sample Date	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01
Chemical Name																
4,4'-DDD	NA	NA	NA	NA	NA	3.6 U	3.6 U	3.6 U	5.7 J	3.6 U	3.8 U	3.8 U	3.8 U	3.6 U	3.6 U	3.5 U
4,4'-DDE	NA	NA	NA	NA	NA	5.1	3.6 U	2.2 J	6.5	3.6 U	1.3 J	4	3.8 U	1.6 J	3.6 U	2.2 J
4,4'-DDT	NA	NA	NA	NA	NA	3.6 U	3.6 U	3.6 U	9.3	3.6 U	3.8 U	2.2 J	3.8 U	2 J	3.6 U	3.5 U
Aldrin	NA	NA	NA	NA	NA	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	2 U	2 U	2 U	1.8 U	1.8 U	1.8 U
Aroclor-1016	NA	NA	NA	NA	NA	36 U	36 U	36 U	36 U	36 U	38 U	38 U	38 U	36 U	36 U	35 U
Aroclor-1221	NA	NA	NA	NA	NA	73 U	73 U	74 U	74 U	73 U	78 U	78 U	78 U	72 U	73 U	72 U
Aroclor-1232	NA	NA	NA	NA	NA	36 U	36 U	36 U	36 U	36 U	38 U	38 U	38 U	36 U	36 U	35 U
Aroclor-1242	NA	NA	NA	NA	NA	36 U	36 U	36 U	36 U	36 U	38 U	38 U	38 U	36 U	36 U	35 U
Aroclor-1248	NA	NA	NA	NA	NA	36 U	36 U	36 U	36 U	36 U	38 U	38 U	38 U	36 U	36 U	35 U
Aroclor-1254	NA	NA	NA	NA	NA	36 U	36 U	36 U	36 U	36 U	38 U	38 U	38 U	36 U	36 U	35 U
Aroclor-1260	NA	NA	NA	NA	NA	34 J	36 U	47 J	36 U	36 U	33 J	38 U	38 U	36 U	36 U	35 U
Dieldrin	NA	NA	NA	NA	NA	3.6 U	3.6 U	3.6 U	10	3.6 U	3.8 U	3.8 U	3.8 U	3.6 U	3.6 U	3.5 U
Endosulfan I	NA	NA	NA	NA	NA	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	2 U	2 U	2 U	1.8 U	1.8 U	1.8 U
Endosulfan II	NA	NA	NA	NA	NA	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.8 U	3.8 U	3.8 U	3.6 U	3.6 U	3.5 U
Endosulfan sulfate	NA	NA	NA	NA	NA	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.8 U	3.8 U	3.8 U	3.6 U	3.6 U	3.5 U
Endrin	NA	NA	NA	NA	NA	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.8 U	3.8 U	3.8 U	3.6 U	3.6 U	3.5 U
Endrin aldehyde	NA	NA	NA	NA	NA	3.6 U	3.6 U	3.6 U	1.8 J	3.6 U	3.8 U	3.8 U	3.8 U	3.6 U	3.6 U	3.5 U
Endrin ketone	NA	NA	NA	NA	NA	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.8 U	3.8 U	3.8 U	3.6 U	3.6 U	3.5 U
Heptachlor	NA	NA	NA	NA	NA	1.9 U	1.9 U	1.9 U	1.4 J	1.8 U	2 U	2 U	2 U	1.8 U	1.8 U	1.8 U
Heptachlor epoxide	NA	NA	NA	NA	NA	1.9 U	1.9 U	1.9 U	11	1.8 U	2 U	2 U	2 U	1.8 U	1.8 U	1.8 U
Methoxychlor	NA	NA	NA	NA	NA	19 U	19 U	19 U	19 U	18 U	20 U	20 U	20 U	18 U	18 U	18 U
Toxaphene	NA	NA	NA	NA	NA	190 U	190 U	190 U	190 U	180 U	200 U	200 U	200 U	180 U	180 U	180 U
alpha-BHC	NA	NA	NA	NA	NA	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	2 U	2 U	2 U	1.8 U	1.8 U	1.8 U
alpha-Chlordane	NA	NA	NA	NA	NA	1.1 J	1.9 U	1.3 J	63 J	1.8 U	2 U	0.66 J	2 U	7.6	1.8 U	1.8 U
beta-BHC	NA	NA	NA	NA	NA	1.9 U	1.9 U	1.8 J	1.9 U	1.8 U	3.1 J	1.8 J	2 U	1.8 U	1.8 U	1.8 U
delta-BHC	NA	NA	NA	NA	NA	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	2 U	2 U	2 U	1.8 U	1.8 U	1.8 U
gamma-BHC (Lindane)	NA	NA	NA	NA	NA	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	2 U	2 U	2 U	1.8 U	1.8 U	1.8 U
gamma-Chlordane	NA	NA	NA	NA	NA	0.96 J	1.9 U	0.91 J	51	1.8 U	0.79 J	2 U	2 U	1.8 U	1.8 U	1.8 U
Dioxin/Furans (UG/KG)																
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.542	0.447	0.461	0.0771	0.445	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.098	0.0879	0.0745	0.0113	0.0391	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.00675	0.0073	0.00539	0.00135 J	0.00309	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.0134	0.0125	0.0102	0.00182 J	0.00471	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzofuran	0.0289	0.0245 J	0.0188	0.00283	0.00875	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.0264	0.0296	0.0221	0.00348	0.0124	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzofuran	0.0275	0.0253 J	0.0182	0.00285	0.00877	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.0188	0.018	0.014	0.00244 J	0.00776	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzofuran	0.00464	0.00637	0.00346	9.36E-04 J	0.00219 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.0208	0.0196	0.015	0.00324	0.0066	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzofuran	0.0199	0.0197	0.0132	0.00253 J	0.00728	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6,7,8-Hexachlorodibenzofuran	0.0242	0.0276	0.017	0.00269 J	0.00951	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,7,8-Pentachlorodibenzofuran	0.0284	0.0302	0.02	0.00421	0.0105	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-TCDD (dioxin)	0.00412	0.00458	0.00306	8.70E-04	0.00186	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,7,8-Tetrachlorodibenzofuran	0.0132	0.0156	0.00883	0.00159	0.00714	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzo-p-dioxin	2.1	1.16	1.77	0.18	1.02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total heptachlorodibenzofuran	0.229	0.173	0.183	0.03	0.0907	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzo-p-dioxin	0.383	0.387	0.318	0.029	0.164	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total hexachlorodibenzofuran	0.292	0.261	0.201	0.0297	0.0982	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzo-p-dioxin	5.42 J	3.39	4.9	2.21	5.61 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total octachlorodibenzofuran	0.158	0.0904	0.14	0.0238	0.0513	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzo-p-dioxin	0.291	0.394	0.213	0.0236	0.126	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total pentachlorodibenzofuran	0.347	0.36	0.243	0.0425	0.123	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzo-p-dioxin	0.165	0.363	0.138	0.0163	0.103	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total tetrachlorodibenzofuran	0.256	0.418	0.22	0.042	0.162	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-DS01		NBW14-DS01A	NBW14-DS02		NBW14-DS02A	NBW14-DS03		NBW14-DS03A	NBW14-DS04		NBW14-DS04A	NBW14-DS05			NBW14-DS05A	NBW14-DS06	
Sample ID	NBW14-DS01-00	NBW14-DS01-02	NBW14-DS01A	NBW14-DS02-00	NBW14-DS02-02	NBW14-DS02A	NBW14-DS03-00	NBW14-DS03-02	NBW14-DS03A	NBW14-DS04-00	NBW14-DS04-02	NBW14-DS04A	NBW14-DS05-00	NBW14-DS05-02	NBW14-DS05P-02	NBW14-DS05A	NBW14-DS06-00	NBW14-DS06
Sample Date	09/30/99	09/30/99	07/16/98	09/30/99	09/30/99	07/16/98	09/30/99	09/30/99	07/16/98	09/30/99	09/30/99	07/16/98	09/30/99	09/30/99	09/30/99	07/16/98	10/01/99	10/01/99
Chemical Name																		
Total Metals (MG/KG)																		
Aluminum	2,470 L	16,800 L	7,500	4,050 L	7,080 L	12,600	3,850 L	4,420 L	3,250	5,270 L	21,800 L	2,960	5,140 L	52,100 L	7,880 L	1,470	5,250 L	46,800
Antimony	0.94 J	14.2 J	13.2 L	3.5 J	41.3	0.6 L	1.6 J	2.2 J	0.32 UL	1.8 J	23.1 J	2.8 B	7.1 J	22.8	7.6 J	NA	2.1 J	9.8
Arsenic	5.3	80.8	11.3	27.9	16 J	5.4	22.5	16.6	1.7	11.2	9.5 J	9	11.1	9.3	6.2	15.9	14.1	16.5
Barium	33.5 J	985	131 J	67.9	293 J	67.7 J	53.7	52.3	19.6 J	77.7	391 J	36.5	213	333	197	16.1 J	63.5	223
Beryllium	0.29 B	2.4	0.58 J	0.24 B	0.6 B	0.56 J	0.52 B	0.34 B	0.15 U	0.33 B	0.023 U	1.1	0.36 B	0.34 B	0.28 B	0.51 J	0.35 B	0.35
Cadmium	0.92 B	2.3 B	2.3	0.91 B	15.8	0.13 U	1.2 B	6.8	0.58 K	0.97 B	5.9	0.1 U	7.9	8.4	3.7	0.12 U	0.85 B	10.4
Calcium	25,800	14,100	123,000	16,700	64,300	4,290	16,400	14,900	4,590	22,900	22,300	70,700	26,000	30,400	34,600	162,000	26,400	48,700
Chromium	8.2	32.1	48.2	11.8	89.5 J	22.4	26	53	10.3	15.5	187 J	49	56.7	134	21.2	16.6	15	59
Cobalt	2.6 B	8.8 J	7.4 J	3.4 J	16.4 J	6.3 J	5.7 J	6.3 J	2 J	3.3 J	13.5 J	7.9 J	7.5 J	9.1 J	3.7 J	3.4 J	4.2 J	8.4
Copper	20.1	77.7	198	91.7	1,510	12	47.8	85.7	6.7	78.2	1,260	361	558	568	243	1 U	57.9	401
Cyanide	57.5	4.5 U	NA	2.8 U	2.9 U	NA	2.8 U	2.8 U	NA	2.7 U	2.9 U	NA	2.8 U	2.8 U	2.7 U	NA	2.8 U	2.7
Iron	7,760 L	17,200 L	23,100	12,600 L	47,700 L	19,200	12,900 L	17,900 L	5,090	12,500 L	76,900 L	27,100	22,900 L	40,100 L	12,600 L	31,900	11,300 L	24,300
Lead	70.4	70.3	232	315	933 J	27	210	462	36.3	107	903 J	311	415	884	429	5.4 K	132	471
Magnesium	996 B	3,410	2,310	2,450	10,700	2,780	4,710	4,130	1,390	3,610	3,380	2,680	1,580	3,710	2,640	1,540	11,600	3,580
Manganese	110	158	291	118	592 J	166	104	105	50.7	137	671 J	215	231	716	358	291	93.5	789
Mercury	0.17 B	0.22 B	0.23	0.086 B	0.88	0.11 J	2.7	2.7	0.06 J	0.88	2.8	0.37	0.37	2.2	0.7	0.05 UL	0.11 B	0.52
Nickel	8.5 J	32	137	8.3 J	166	11.9 K	12.8	18.7	3.5 K	11.9	163	18.4	63.9	171	20.5	4.5 J	11.2	71.2
Potassium	488 J	3,360	1,270	351 B	1,070 J	1,650	449 B	515 J	606 J	608 J	1,070 J	571 J	679 J	1,080 J	900 J	406 J	438 B	856
Selenium	0.52 U	2.8	0.56 U	0.54 U	0.61 J	0.67 K	0.66 J	0.88 J	0.48 U	0.52 U	0.65 J	0.48 UL	0.53 U	0.58 J	0.53 U	0.61 U	0.59	0.53
Silver	0.48 UJ	2.5 J	4 K	0.49 UJ	4.5	3.4 K	0.5 UJ	1.1 J	1.3 B	0.48 UJ	54.7	5.7	1.2 J	6.7	1.1 J	4.8	0.49 UJ	1.6
Sodium	444 J	940 J	1,050	243 J	1,060 J	337 J	331 J	320 J	98 J	1,040 J	2,810	703 J	565 J	2,760	1,290	1,460	261 J	694
Thallium	1.1 U	2.9 B	0.54 U	1.1 U	1.9 B	1.4 B	1.1 U	1.1 U	0.47 B	1.1 U	3 B	0.92 J	1.1 U	1.1 U	1.1 U	0.58 U	1.1 U	1.1
Vanadium	14.7	175	38.6	19.7	122 J	37.2	15.7	17.1	9.6	27.4	2,430 J	28.1	39.9	63.4	35.5	44.4	16.1	55.8
Zinc	91.2	85.2	361	183	2,420	54.8	143	259	31.2	164	1,800	553	737	2,930	452	18 B	162	1,110
Wet Chemistry (MG/KG)																		
% Solids	92.1	56	NA	89	85.7	NA	88.3	90.3	NA	92.4	87.5	NA	90.4	89.5	91.1	NA	89	91.4

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID		NBW14-DS06A	NBW14-DS07		NBW14-DS07A	NBW14-DS08		NBW14-DS08A	NBW14-DS09		NBW14-DS10			NBW14-DS11		NBW14-DS12	
Sample ID	02	NBW14-DS06A	NBW14-DS07-00	NBW14-DS07-02	NBW14-DS07A	NBW14-DS08-00	NBW14-DS08-02	NBW14-DS08A	NBW14-DS09-00	NBW14-DS09-02	NBW14-DS10-00	NBW14-DS10-02	NBW14-DS10P-02	NBW14-DS11-00	NBW14-DS11-02	NBW14-DS12-00	NBW14-DS12-02
Sample Date		07/16/98	10/01/99	10/01/99	07/16/98	10/01/99	10/01/99	07/16/98	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99
Chemical Name																	
Total Metals (MG/KG)																	
Aluminum	L	3,860	5,490 L	4,430 L	1,310	5,110 L	9,330 L	10,000	3,300 L	5,100 L	5,210	2,140	3,880	3,450	50,900	3,970	7,730
Antimony	J	1 B	42	0.71 J	0.62 B	2.6 J	115	9.6 J	0.74 J	0.39 U	2.3 J	0.39 UJ	0.39 UJ	3.3 J	49.3 J	1.3 J	14.9 J
Arsenic		8	9.9	4.7	10.1	7.1	18.7	2.7	3.9	3.2	10.2	2.3	3.2	14.7	7.7	24.2	13.8
Barium		34.5 J	264	23.9 J	18.2 J	54.4	333	210	69.1	147	100	11.1 J	19.4 J	53.1	278	48.9	158
Beryllium	B	0.53 J	0.24 B	0.2 B	0.42 J	0.32 B	1.1	0.57 J	0.16 B	0.21 B	0.67 B	0.083 B	0.16 B	0.27 B	0.18 B	0.27 B	0.23 B
Cadmium		0.36 J	9.8	0.69 U	0.11 U	3.7	20.5	2.8	1.6 B	0.69 U	15 J	0.68 UJ	0.69 UJ	1.6 J	4.4 J	0.93 J	5.5 J
Calcium		78,100	27,000	10,300	169,000	16,200	25,300	28,600	8,290	1,290	16,600	641	2,950	38,000	19,600	23,800	18,600
Chromium		19.6	63.8	9.7	10.9	16.9	62.5	64.6	8	5.1	36.9 J	3.9 J	5.7 J	17.5 J	44.9 J	12.5 J	36.4 J
Cobalt	J	3.5 J	6.4 J	2.1 B	3.6 J	3.3 J	8.4 J	5.5 J	1.2 B	0.57 B	9.8 J	0.68 J	1.2 J	3.6	11 J	3.8 J	7.6 J
Copper		68.5	9,070	6.9	4.4 J	50.8	861	568	21.2	11.8	193	3.8 J	13	144	694	26.5	633
Cyanide	U	NA	2.8 U	2.7 U	NA	2.7 U	9.7	NA	2.8 U	2.7 U	2.9 U	2.7 U	2.7 U	3.1	2.8 U	2.8 U	2.9 U
Iron	L	12,700	18,700 L	9,250 L	15,100	11,400 L	32,700 L	29,400	6,530 L	3,970 L	18,300	3,100	5,060	13,800	40,100	10,700	35,400
Lead		81	695	20.1	6.6	159	1,830	391	163	311	208 J	7.3 J	19 J	126 J	1,220 J	84.2 J	578 J
Magnesium		2,450	3,100	656 J	1,450	1,500	3,850	6,790	513 J	433 J	4,060 J	364 J	633 J	2,460 J	2,750 J	2,060 J	1,760 J
Manganese		139	1,300	69.7	191	127	1,140	1,330	54.2	24	136	16.6	31	147	600	91.7	445
Mercury		0.15	1.1	0.048 U	0.05 U	0.25	3.1	0.46	0.066 B	0.18 B	0.53	0.048 U	0.048 U	0.11	0.39	0.11 J	1
Nickel		11.9 K	66.5	2.9 J	4 K	11	77.6	27.4	5 J	3.1 J	60.5 J	1.4 UJ	5.4 J	20 J	155 J	9 J	126 J
Potassium	J	653 J	763 J	507 J	390 J	687 J	1,050 J	1,240	332 B	331 B	831 J	290 J	320 J	444 J	516 J	599 J	712 J
Selenium	U	0.6 UL	0.53 U	0.52 U	0.52 UL	0.53 U	0.51 U	0.89 K	0.54 U	0.52 U	0.78 B	0.51 U	0.52 U	0.68 B	0.55 U	0.53 U	1 B
Silver	J	3	4.7	0.48 UJ	2.8	0.76 J	37	7.5	0.49 UJ	0.48 UJ	0.92 J	0.47 U	0.47 U	0.49 U	7.5	0.49 U	36.2
Sodium	J	762 J	474 J	310 J	1,520	455 J	2,940	1,120	539 J	585 J	284 J	130 J	159 J	436 J	850 J	351 J	987 J
Thallium	U	0.76 J	1.1 U	1.1 U	0.51 U	1.1 U	2.3 B	2.1	1.1 U	1.1 U	1.2	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U
Vanadium		29.2	38.8	16.4	23.7	26.3	188	112	19.1	9.1 J	27.1	4.6 J	8.5 J	24.1	14.9	17.9	40.2
Zinc		185	1,970	24.4	17.7	167	3,850	529	157	56	409	11	35	239	1,350	110	1,110
Wet Chemistry (MG/KG)																	
% Solids		NA	90.6	92.4	NA	91	94.8	NA	89.3	92.6	87.3	93.6	93.2	90.2	88.1	90	87.3

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-DS13		NBW14-DS14			NBW14-DS15		NBW14-DS16		NBW14-DS17		NBW14-DS18			NBW14-DS19		NBW1
Sample ID	NBW14-DS13-00	NBW14-DS13-02	NBW14-DS14-00	NBW14-DS14-02	NBW14-DS14P-02	NBW14-DS15-00	NBW14-DS15-02	NBW14-DS16-00	NBW14-DS16-02	NBW14-DS17-00	NBW14-DS17-02	NBW14-DS18-00	NBW14-DS18-02	NBW14-DS18P-00	NBW14-DS19-00	NBW14-DS19-06	NBW14-DS20-03
Sample Date	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	10/01/99	09/18/00	09/18/00	09/19/00
Chemical Name																	
Total Metals (MG/KG)																	
Aluminum	3,310	12,700	3,320	4,660	6,960	5,110	7,320	2,810	4,270	3,910	4,610	9,120	13,800	7,080 L	3,170 L	6,670 L	3,860 L
Antimony	1.9 J	49.5 J	2.3 J	8.9 J	7.8 J	3.1 J	221 J	0.9 J	1.3 J	1.9 J	7 J	46.8 J	76.1 J	19.2 J	0.82 L	50.6 L	0.52 L
Arsenic	6.7	11.3	12.1	7.9	15.3	11.7	9.8	11.4	41.8	15.5	29.1	19.2	9.9	12.3 J	13.3	10.9	3.7
Barium	56	372	56.6	129	126	128	160	38.3 J	46.7	57	45.9	114	410	187 J	61.5	192	26.6 J
Beryllium	0.22 B	0.22 B	0.25 B	0.32 B	0.38 B	0.61 B	0.39 B	0.28 B	0.37 B	0.34 B	0.72 B	0.36 B	0.2 B	0.31 B	0.33 B	0.42 B	0.25 B
Cadmium	2.7 J	32.5 J	1.6 J	5.9 J	3.7 J	1.5 J	7.4 J	0.69 UJ	1.7 J	1.8 J	3.9 J	4 J	39.1 J	9.2	0.55 J	17.6	0.2 B
Calcium	33,700	18,700	20,200	19,000	22,800	33,100	32,300	14,200	50,600	91,100	104,000	113,000	19,200	65,500	75,500 J	21,200 J	14,300 J
Chromium	17.9 J	115 J	22.7 J	30.4 J	35.5 J	16.1 J	35 J	7.4 J	14 J	73.6 J	30 J	35.2 J	79.5 J	40.8 J	13.7	75.7	7.7
Cobalt	4.8 J	16.3	3.7 J	6.3 J	5.6 J	4.3 J	8 J	3.1 J	4.8 J	5.1 J	8.6 J	6.8 J	14.6	12 J	2.8 J	13.3	1.8 J
Copper	61.9	961	59.8	294	271	108	673	16	55	78.9	90.2	437	993	5,060	50.3 J	793 J	10.7 J
Cyanide	2.7 U	2.8 U	2.8 U	2.9 U	2.9 U	2.7 U	2.9 U	2.7 U	2.7 U	2.7 U	2.8 U	2.8 U	2.9 U	2.9 U	0.044 UL	0.12 L	0.046 UL
Iron	9,810	46,800	10,200	19,900	21,400	13,400	37,800	9,160	14,900	14,300	41,100	27,300	46,100	65,200 L	12,400	92,100	7,600
Lead	123 J	1,240 J	136 J	385 J	328 J	134 J	682 J	35.3 J	71.8 J	180 J	105 J	2,670 J	2,350 J	694	66.4 J	804	49.2
Magnesium	1,400 J	2,960 J	1,480 J	1,770 J	1,780 J	6,890 J	2,340 J	2,730 J	13,000 J	3,210 J	2,420 J	2,520 J	5,020 J	2,190	3,820	2,390	792 J
Manganese	152	681	155	329	298	326	492	65.7	186	152	433	389	823	673 J	130 L	906 L	73.8 L
Mercury	0.15	0.29	0.27	1.8	0.55	0.15	0.74	0.048 U	0.12	0.1 J	0.2	0.05 U	0.72	0.28	0.087 B	0.59	0.15
Nickel	52.5 J	166 J	30.8 J	56.5 J	74.9 J	26.5 J	68.4 J	5.9 J	10.3 J	22.3 J	33.4 J	34.5 J	247 J	101	11	107	4.5 J
Potassium	760 J	778 J	810 J	765 J	858 J	786 J	977 J	375 J	1,020 J	763 J	728 J	590 J	1,090 J	775 J	506 J	763 J	435 J
Selenium	0.52 U	1.4 B	0.58 B	0.55 U	0.82 B	0.99 B	0.55 U	0.97 B	0.52 U	0.53 U	0.71 B	0.54 U	1 B	0.56 U	1.1 U	4.1	1.2 U
Silver	0.48 U	9 J	0.5 U	3	2.1 J	0.75 J	5.2	0.48 U	0.48 U	0.48 U	0.63 J	2.1 J	10.8	14.7	0.13 J	13.8	0.14 U
Sodium	439 J	1,820	415 J	926 J	673 J	594 J	1,380 J	188 J	422 J	838 J	910 J	1,760 J	2,800 J	1,540	926 J	1,650	383 B
Thallium	1.1 U	1.4	1.1 U	1.2 U	1.2 U	1.1 U	1.2 J	1.1 U	1.1 U	1.1 U	1.5 J	1.1 U	1.7 J	2.9 B	3.1	32.6	3.8 L
Vanadium	137	49.8	108	119	90.6	26.5	47.5	15.6	22.1	30.4	71.4	83.2	84.3	71.5 J	21.5	149	22.1
Zinc	206	2,100	209	682	596	420	944	45.3	137	365	499	682	3,710	1,400	106 J	1,600 J	39.6 J
Wet Chemistry (MG/KG)																	
% Solids	91.9	90.4	88.2	87.3	86.1	91.9	87.5	92.3	91.9	91.2	89.6	89.5	85.9	86.2	NA	NA	NA

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	4-DS20	NBW14-DS21		NBW14-DS22	NBW14-DS23	NBW14-DS24			NBW14-DS25		NBW14-DS26			NBW14-DS27		NBW14-DS28	
Sample ID	NBW14-DS20-00	NBW14-DS21-00	NBW14-DS21-05	NBW14-DS22-00	NBW14-DS23-00	NBW14-DS24-00	NBW14-DS24-05	NBW14-DS24-P-00	NBW14-DS25-00	NBW14-DS25-P-00	NBW14-DS26-00	NBW14-DS26-06	NBW14-DS26-P-00	NBW14-DS27-00	NBW14-DS27-04	NBW14-DS28-00	NBW14-DS28-03
Sample Date	09/19/00	09/11/00	09/12/00	09/11/00	09/11/00	09/11/00	09/11/00	09/11/00	09/15/00	09/15/00	09/11/00	09/11/00	09/11/00	09/12/00	09/12/00	09/12/00	09/12/00
Chemical Name																	
Total Metals (MG/KG)																	
Aluminum	3,430 L	4,190	32,500 L	3,970	3,220 L	3,700 L	15,700	3,970	2,780 L	2,150 L	3,160	5,380	3,600	4,160	18,700	3,500	1,300 L
Antimony	0.39 UL	5.8 L	14.6 L	1.1 B	0.94 B	1 B	53.5 L	0.87 B	2.7 L	0.85 L	1.1 B	4.3 L	0.89 B	0.4 UL	153 L	1.6 B	0.88 B
Arsenic	11.6	38.2 K	8 K	19.4 K	16.8 L	10.7 L	12.5 K	11.3 K	25.3	25.7	14.4 K	9 K	13.9 K	9.6 K	12 K	15.2 K	5.4 K
Barium	48	155	155	63.5	65.5	52.8	409	49	49.2	32.2 J	59	78.1	51.4	50.4	461	55	19.2 J
Beryllium	0.29 B	0.22 L	0.17 L	0.28 L	0.36 B	0.22 B	0.26 L	0.35 L	0.47 J	0.55 J	0.38 L	0.31 L	0.38 L	0.26 L	0.4 L	0.29 L	0.15 L
Cadmium	0.085 B	1 J	3.3	0.38 B	0.48 B	0.18 B	22	0.34 B	0.42 B	0.58 J	0.33 B	5.4	0.32 B	0.59 B	22.4	1.3	0.3 B
Calcium	24,200 J	18,300 J	30,900	29,800 J	58,000	21,800	25,500 J	15,300 J	130,000 J	210,000 J	19,800 J	35,000 J	14,400 J	26,300 J	24,600 J	122,000 J	54,300
Chromium	8.4	20.6	37.7	9.7	11.1	9.6	68.3	8.8	17.8	24.5	8.9	23.8	12.1	10.1	128	16.3	9.7
Cobalt	2.6 J	3.5 J	4.1 J	2.3 J	3.5 J	2.6 J	9.2 J	2.7 J	4 J	5.2 J	3.1 J	4.6 J	3 J	2.3 J	14.4	3.1 J	1.7 J
Copper	26.1 J	106	614	32	31.5 L	21.5 L	976	19	45.7 J	66.3 J	26.5	174	24.6	28	2,750	50	8.9
Cyanide	0.043 UL	0.045 L	0.18 L	0.043 UL	0.046 B	0.078 B	0.34 L	0.052 L	0.044 UL	0.043 UL	0.061 L	0.15 L	0.043 UL	0.042 UL	0.58 L	0.37 L	0.048 UL
Iron	9,380	17,200	23,500	9,550	13,700 L	10,000	79,800	10,600	18,200	24,600	10,400	23,100	11,200	10,500	126,000	13,800	9,190
Lead	35.5	247	445 K	62.1	67.5	44.7	1,330	40.5	59.8	50.9	58.8	261	56	48.6	4,880	77.6	23.4 K
Magnesium	2,460	2,190 J	11,700	7,070 J	5,450	4,830	3,270 J	2,880 J	2,070	2,030	6,860 J	2,790 J	4,240 J	9,840 J	5,910 J	4,230 J	978 J
Manganese	84.5 L	220	1,090	78.5	168 L	84.9 L	1,010	80.5	219 L	312 L	76.4	278	80.7	84	1,420	168	123
Mercury	0.058 B	0.2 L	0.58	0.12 L	0.091 B	0.097 B	0.7 L	0.08 L	0.074 B	0.055 B	0.099 L	0.21 L	0.11 L	0.096 L	0.54 L	0.12 L	0.086 J
Nickel	6.6 J	14.5	41.3	7.1 J	8.6 J	6.6 J	103	6.6 J	9.8	12.7	7.8	25.1	8.7	7.7 J	314	14.6	4.3 J
Potassium	446 J	679 J	732 J	422 J	1,030 J	447 J	1,220 J	458 J	627 J	689 J	422 J	908 J	454 J	650 J	1,620 J	678 J	281 J
Selenium	1.2	1.2 UL	1.1 U	1 UL	1.1 U	1 U	1.3 L	1 UL	1.1 U	1.1 U	1.1 L	1.1 UL	1.1 UL	1.1 UL	1.5 L	1 UL	1.2 U
Silver	0.12 U	0.14 UL	7.6 L	0.12 UL	0.13 U	0.12 U	20.9 L	0.13 UL	0.14 U	0.13 U	0.12 UL	1.6 UL	0.13 UL	0.13 UL	17.6 L	0.32 UL	0.14 UL
Sodium	455 B	473 J	1,390	229 B	736 J	321 B	3,040	204 B	1,580	2,400	167 B	1,150	171 B	243 J	4,240	1,410	601 J
Thallium	3.2 L	8 K	9.8	4 K	6.2 L	5.8 L	32.4 K	4.3 K	5 L	4 L	5 K	11 K	4.7 K	4.7 K	40.4 K	4.1 K	3.7
Vanadium	14.5	24.1	56.1	17.1	21.7	15.8	173	15.2	34.8	44.8	13.5	44.4	14.7	13.8	191	30.8	18.7
Zinc	47.9 J	332 K	1,130	79.5 K	67.1 L	56.4 L	1,600 K	52 K	146 J	167 J	66.4 K	395 K	59.8 K	75.4 K	3,020 K	135 K	38.6
Wet Chemistry (MG/KG)																	
% Solids	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-DS29		NBW14-DS30		NBW14-DS31		NBW14-DS32		NBW14-DS33		NBW14-DS34		NBW14-DS35		NBW14-DS36		NBW1
Sample ID	NBW14-DS29-00	NBW14-DS29-08	NBW14-DS30-00	NBW14-DS30-03	NBW14-DS31-00	NBW14-DS31-04	NBW14-DS32-00	NBW14-DS32-04	NBW14-DS33-00	NBW14-DS33-03	NBW14-DS34-00	NBW14-DS34-05	NBW14-DS35-00	NBW14-DS35-05	NBW14-DS36-00	NBW14-DS36-04	NBW14-DS37-00
Sample Date	09/11/00	09/12/00	09/12/00	09/12/00	09/20/00	09/20/00	09/12/00	09/12/00	09/12/00	09/12/00	09/12/00	09/12/00	09/12/00	09/12/00	09/20/00	09/20/00	09/12/00
Chemical Name																	
Total Metals (MG/KG)																	
Aluminum	3,070	5,170 L	3,390 L	21,900 L	2,480 L	4,580 L	5,300	17,000	22,400	18,900 L	12,100	4,480	9,700 L	1,800	2,990 L	5,180 L	3,780
Antimony	0.94 B	2.6 B	3.2 L	44.7 L	0.62 L	0.46 UL	1.8 B	49.3 L	107 L	55.4 L	18.1 L	0.88 B	1.1 B	0.78 B	0.4 UL	0.83 L	1.2 B
Arsenic	12 K	5.1 K	16.7 K	8.9 K	36.8	6.9	13 K	12.1 K	7.2 K	17 K	8.9 K	6 K	1.5 J	14.2 K	9.9	3.5	11.8 K
Barium	54.2	75.9	67	389	43.4 J	49.6	60.4	457	888	582	234	60.1	151	11.9 J	38.5 J	52	46.7
Beryllium	0.4 L	1.8	0.44 L	0.33 L	0.24 B	0.31 B	0.28 L	0.36 L	0.28 L	0.25 L	0.44 L	0.29 L	0.48 L	0.62 L	0.38 B	0.24 B	0.35 L
Cadmium	0.26 B	1.6	6.6	17.2	0.19 B	1.2 J	0.57 B	16.4	20.3	11.7	9	0.87 J	0.37 B	0.25 B	1.1	1.2	0.26 B
Calcium	9,250 J	33,900	42,500	21,000	181,000 J	41,500 J	23,300 J	39,900 J	40,300 J	33,700	37,000 J	2,980 J	6,240	110,000 J	80,900 J	5,260 J	27,000 J
Chromium	8.1	32.7	26.2	39.6	13.3	20.3	11.6	83.9	182	125	43.5	11.5	18	18.7	16.2	10	8.4
Cobalt	2.8 J	11.1	5.3 J	8.7 J	2 J	2.1 J	3.6 J	9.5 J	14.7	14	7.9 J	3.2 J	8.2 J	3.4 J	3.2 J	1.8 J	2.9 J
Copper	29.1	232	139	1,720	15.4 J	31.2 J	52.3	1,480	2,240	1,520	1,170	25.2	32.1	1.8 B	50.4 J	29.6 J	22.1
Cyanide	0.051 L	0.06 L	0.076 L	0.26 L	0.044 UL	0.048 UL	0.042 UL	0.57 L	0.58 L	0.51 L	0.13 L	0.047 UL	0.041 UL	0.078 L	0.042 UL	0.094 L	0.058 L
Iron	10,300	16,200	24,500	54,700	12,000	10,300	15,100	108,000	135,000	144,000	49,300	13,000	18,100	18,800	15,700	8,860	11,900
Lead	49.2	277 K	151 K	2,270 K	54.2	68.9	58.1	2,260	12,000	1,560 K	1,180	61.3	33.9 K	5.1	121	79.9	41.7
Magnesium	3,160 J	1,440	2,390	1,980	2,840	1,190 J	3,780 J	2,780 J	7,390 J	2,900	3,940 J	1,530 J	6,280	957 J	1,390	1,220	10,900 J
Manganese	57.1	206	206	594	241 L	109 L	151	1,220	2,780	1,040	809	88.2	414	183	210 L	82.3 L	73.4
Mercury	0.082 L	0.09	0.17	0.4	0.076 B	0.12 B	0.066 L	1.4 L	0.64 L	1	1.1 L	0.11 L	0.068 J	0.047 UL	0.12 B	0.063 B	0.076 L
Nickel	7.4 J	143	40.4	81.8	7.9 J	11.6	9.7	164	292	216	91.9	9.7	16.5	5.3 J	10.8	7.1 J	7.5 J
Potassium	306 J	552 J	647 J	1,170	438 J	539 J	1,160 J	948 J	1,220 J	1,190 J	3,990 J	734 J	7,110	538 J	793 J	508 J	406 J
Selenium	1.5 L	1.1 U	1 U	1.8 K	1.1 U	1.2 U	1.2 L	3.7 L	2.2 L	2.9 K	1.1 UL	1.1 UL	1.1 U	1.2 L	1 U	1.2 U	1.4 L
Silver	0.13 UL	0.49 L	0.39 UL	14.7 L	0.13 U	0.33 J	0.13 UL	15.4 L	15 L	24.6 L	7.4 L	0.22 L	0.13 UL	0.12 UL	0.17 J	3.5	0.13 UL
Sodium	125 B	1,000 J	501 J	2,420	2,140	621 B	378 J	3,100	3,130	2,600	1,640	394 J	278 J	1,220	1,140	506 B	156 B
Thallium	5 K	6.8	8.5	23.4	3.5 L	3.2 L	7.5 K	38.6 K	41.6 K	45.4	18.9 K	6.9 K	10.1	5 K	3.9 L	3.7 L	5.2 K
Vanadium	13.4	330	133	38.3	33.3	24.2	25.6	111	159	161	69.9	16.2	37.5	45.5	31.6	14.2	13.4
Zinc	41.8 K	1,330	273	2,210	64.8 J	112 J	106 K	3,250 K	3,030 K	2,620	1,790 K	247 K	108	20.3 K	287 J	104 J	47.2 K
Wet Chemistry (MG/KG)																	
% Solids	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	4-DS37	NBW14-DS38		NBW14-DS40		NBW14-DS41		NBW14-DS42		NBW14-DS43		NBW14-DS44		NBW14-DS45		NBW14-DS46	
Sample ID	NBW14-DS37-06	NBW14-DS38-00	NBW14-DS38-03	NBW14-DS40-00	NBW14-DS40-07	NBW14-DS41-00	NBW14-DS41-05	NBW14-DS42-00	NBW14-DS42-06	NBW14-DS43-00	NBW14-DS43-07	NBW14-DS44-00	NBW14-DS44-08	NBW14-DS45-00	NBW14-DS45-05	NBW14-DS46-00	NBW14-DS46-06
Sample Date	09/12/00	09/19/00	09/19/00	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01
Chemical Name																	
Total Metals (MG/KG)																	
Aluminum	29,400	1,130 L	2,600 L	7,300 L	2,410 L	1,270 L	2,000 L	5,190 L	3,080 L	1,300 L	1,080 L	NA	NA	NA	NA	NA	NA
Antimony	40.5 L	0.4 UL	0.54 L	31.7 L	0.6 B	0.7 B	0.85 B	2.1 B	0.62 B	0.516 UL	0.54 B	NA	NA	NA	NA	NA	NA
Arsenic	10 K	15.2	12.2	10.4 J	5.8 L	15.2 J	23.7 J	9 J	18.7 J	17.5 J	19.7 J	NA	NA	NA	NA	NA	NA
Barium	330	18.4 J	36.9 J	200	28.2 J	19.6 J	21.5 K	74.5	37.1 K	15.9 K	16 K	NA	NA	NA	NA	NA	NA
Beryllium	0.41 L	0.31 B	0.36 B	0.84 J	0.34 B	0.67 J	0.63 J	0.44 B	0.44 B	0.61 J	0.29 B	NA	NA	NA	NA	NA	NA
Cadmium	11.2	0.064 U	0.6 J	13.7	0.42 B	0.09 B	0.18 B	1.6	0.65 K	0.29 B	0.09 B	NA	NA	NA	NA	NA	NA
Calcium	53,700 J	281,000 J	96,600 J	40,400	2,960	1,810	165,000	90,700	104,000	202,000	245,000	NA	NA	NA	NA	NA	NA
Chromium	75.3	12.9	13	66.7	5.1	16	20.2	19.2	16.1	19.2	14.1	NA	NA	NA	NA	NA	NA
Cobalt	7.6 J	2.4 J	3.4 J	10 J	1.4 J	3.2 J	4.1 K	4.1 J	3.4 K	4.2 K	2.7 K	NA	NA	NA	NA	NA	NA
Copper	1,960	0.99 J	33.9 J	1,210	10.6	0.7 L	6	74.8	14.1	0.165 UL	0.173 UL	NA	NA	NA	NA	NA	NA
Cyanide	0.31 L	0.043 UL	0.049 UL	0.25 J	0.11 J	0.06 J	0.06 J	0.07 J	0.07 J	0.08 J	0.12 J	NA	NA	NA	NA	NA	NA
Iron	57,000	15,000	12,800	22,200 L	4,510 L	18,300 L	24,200 L	24,200 L	18,400 L	27,600 L	19,500 L	NA	NA	NA	NA	NA	NA
Lead	1,810	4.5	77.6	634	43.6	4.8	14.1 K	100	39.3 K	4.7 K	3.6 K	NA	NA	NA	NA	NA	NA
Magnesium	3,220 J	1,950	4,970	2,860	1,120	1,310	1,370	2,850	1,870	1,590	2,030	NA	NA	NA	NA	NA	NA
Manganese	761	244 L	159 L	356 K	89.4 K	210 K	348 K	325 K	239 K	237 K	400 K	NA	NA	NA	NA	NA	NA
Mercury	0.58 L	0.045 U	0.068 B	0.78	0.06 J	0.046 U	0.048 U	0.15	0.05 J	0.043 U	0.043 U	NA	NA	NA	NA	NA	NA
Nickel	156	3.4 J	10.8	111	4.1 J	4.9 J	6.9 K	18.5	6.8 K	5 K	3.8 K	NA	NA	NA	NA	NA	NA
Potassium	1,140 J	465 J	668 J	971 J	754 J	590 J	810 K	3,060	938 K	710 K	654 K	NA	NA	NA	NA	NA	NA
Selenium	1.5 L	1.1 U	1.2 U	0.92 J	0.776 U	0.742 U	0.817 UL	0.77 U	0.756 UL	0.764 UL	0.8 UL	NA	NA	NA	NA	NA	NA
Silver	12.7 L	0.13 U	0.19 J	4.4	0.147 U	0.14 U	0.155 U	0.93 J	0.143 U	0.145 U	0.151 U	NA	NA	NA	NA	NA	NA
Sodium	2,930	2,990	1,120 J	3,710	632 J	1,770	1,530 K	939 J	876 K	2,010 K	2,110 K	NA	NA	NA	NA	NA	NA
Thallium	19.6 K	2.1 L	1.9 L	0.751 UL	0.734 UL	0.702 UL	0.773 UL	0.728 UL	0.715 UL	0.723 UL	0.757 UL	NA	NA	NA	NA	NA	NA
Vanadium	108	27	32.3	135	17.8	37.1	48.3	37.3	33.7	30.6	27.2	NA	NA	NA	NA	NA	NA
Zinc	1,760 K	12.6 J	100 J	2,420 J	83.8 J	20.1 J	40.4 K	201 J	50.1 K	24.3 K	12.6 K	NA	NA	NA	NA	NA	NA
Wet Chemistry (MG/KG)																	
% Solids	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table A-5
Soil Analytical Results
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-DS47			NBW14-DS48		NBW14-DS49			NBW14-DS51		NBW14-DS52	NBW14-DS53		NBW14-DS54		
Sample ID	NBW14-DS47-00	NBW14-DS47-04	NBW14-DS47-P-00	NBW14-DS48-00	NBW14-DS48-06	NBW14-DS49-00	NBW14-DS49-06	NBW14-DS49-P-00	NBW14-DS51-00	NBW14-DS51-07	NBW14-DS52-00	NBW14-DS53-00	NBW14-DS53-07	NBW14-DS54-00	NBW14-DS54-05	NBW14-DS54-P-00
Sample Date	08/20/01	08/20/01	08/20/01	08/20/01	08/20/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01	08/21/01
Chemical Name																
Total Metals (MG/KG)																
Aluminum	NA	NA	NA	NA	NA	2,610 L	1,340 L	2,950 L	2,650 L	1,360 L	20,500 L	1,920 L	2,860 L	1,390 L	1,120 L	1,450 L
Antimony	NA	NA	NA	NA	NA	1.2 B	0.62 B	0.55 B	0.7 B	0.532 UL	53 L	0.84 B	0.545 UL	0.61 B	0.83 B	0.52 B
Arsenic	NA	NA	NA	NA	NA	8.7 J	18.1 J	10.2 J	9.6 J	15.2 J	13.2 J	14.4 J	23.3 J	17.8 J	15.9 J	17.2 J
Barium	NA	NA	NA	NA	NA	29.2 J	15.3 K	24.5 J	31.6 J	14.8 K	428	19.3 K	21.5 K	16.6 K	17.1 K	16 K
Beryllium	NA	NA	NA	NA	NA	0.32 B	0.29 B	0.36 B	0.58 J	0.36 B	0.43 B	0.34 B	0.46 B	0.52 B	0.3 B	0.39 B
Cadmium	NA	NA	NA	NA	NA	0.85 J	0.11 B	0.69 J	0.64 J	0.085 U	22.6	0.36 B	0.18 B	0.082 U	0.1 B	0.13 B
Calcium	NA	NA	NA	NA	NA	54,500	195,000	69,000	57,800	179,000	25,800	163,000	216,000	172,000	198,000	176,000
Chromium	NA	NA	NA	NA	NA	14.3	16.7	16.1	24.9	16.4	97.7	15.1	21.1	15	15.1	14
Cobalt	NA	NA	NA	NA	NA	2.5 J	2 K	2.8 J	4.5 J	2.7 K	19.7	2.5 K	2.2 K	3 K	1.6 K	2.6 K
Copper	NA	NA	NA	NA	NA	22.7	0.166 UL	18.8	33.5	0.3 L	2,740	3.5 J	0.174 UL	0.95 L	0.162 UL	1.1 J
Cyanide	NA	NA	NA	NA	NA	0.04 J	0.12 J	0.05 J	0.11 J	0.07 J	0.26 J	0.06 J	0.1 J	0.08 J	0.08 J	0.07 J
Iron	NA	NA	NA	NA	NA	14,500 L	17,800 L	15,500 L	18,000 L	17,000 L	97,000 L	17,600 L	37,500 L	18,200 L	17,200 L	20,300 L
Lead	NA	NA	NA	NA	NA	64.5	3.8 K	66.3	95.4	4.1 K	2,720	15.7 K	4.8 K	7.3 K	3.8 K	7.8 K
Magnesium	NA	NA	NA	NA	NA	1,140	1,440	1,330	1,380	1,420	5,690	1,450	1,690	1,320	1,590	1,340
Manganese	NA	NA	NA	NA	NA	155 K	182 K	171 K	233 K	184 K	1,350 K	199 K	539 K	201 K	208 K	252 K
Mercury	NA	NA	NA	NA	NA	0.09 J	0.04 U	0.07 J	0.16	0.049 U	0.71	0.058 U	0.058 U	0.042 U	0.042 U	0.06 J
Nickel	NA	NA	NA	NA	NA	10.2	3.6 K	9.4	8.5	4 K	749	4.9 K	4.4 K	5.5 K	3 K	5.1 K
Potassium	NA	NA	NA	NA	NA	948 J	803 K	950 J	926 J	697 K	2,730	713 K	643 K	564 K	590 K	544 K
Selenium	NA	NA	NA	NA	NA	0.792 U	0.768 UL	0.802 U	0.762 U	0.787 UL	1 J	0.861 UL	0.807 UL	0.761 UL	0.75 UL	0.763 UL
Silver	NA	NA	NA	NA	NA	0.37 J	0.145 U	0.152 U	0.144 U	0.149 U	9.9	0.163 U	0.153 U	0.144 U	0.142 U	0.144 U
Sodium	NA	NA	NA	NA	NA	573 J	1,820 K	773 J	937 J	1,670 K	5,780	1,450 K	2,020 K	1,720 K	1,920 K	1,720 K
Thallium	NA	NA	NA	NA	NA	0.749 UL	0.726 UL	0.758 UL	0.72 UL	0.744 UL	0.812 UL	0.815 UL	0.763 UL	0.72 UL	0.71 UL	0.721 UL
Vanadium	NA	NA	NA	NA	NA	22.5	30.5	27.8	33.5	33.3	183	31.1	54.3	35.4	32.9	33.7
Zinc	NA	NA	NA	NA	NA	92.8 J	12.7 K	143 J	354 J	14.3 K	3,500 J	22 K	14.8 K	19.9 K	11.5 K	19.4 K
Wet Chemistry (MG/KG)																
% Solids	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table A-6
Surface Soil Analytical Results
SMWU 14 Remedial Investigation
Naval Station Norfolk
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Station ID	NBW14-SO09		NBW14-SO10	NBW14-SO11	NBW14-SO12	NBW14-SS01	NBW14-SS02	NBW14-SS03		NBW14-SS04	NBW14-SS05	NBW14-SS06	NBW14-SS07	NBW14-SS08
Sample ID	NBW14-SS09	NBW14-SS09-P	NBW14-SS10	NBW14-SS11	NBW14-SS12	NBW14-SS01	NBW14-SS02	NBW14-SS03	NBW14-SS03P	NBW14-SS04	NBW14-SS05	NBW14-SS06	NBW14-SS07	NBW14-SS08
Sample Date	12/17/02	12/17/02	12/17/02	12/17/02	12/17/02	07/16/98	07/16/98	07/16/98	07/16/98	07/16/98	07/16/98	07/16/98	07/16/98	07/16/98
Chemical Name														
Volatile Organic Compounds (UG/KG)														
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 U
1,1,2,2-Tetrachloroethane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 UJ
1,1,2-Trichloroethane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 U
1,1-Dichloroethane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 U
1,1-Dichloroethene	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 U
1,2-Dichloroethane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 U
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 U
1,2-Dichloropropane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 U
2-Butanone	NA	NA	NA	NA	NA	11 UJ	11 UJ	11 U	11 UJ	11 UJ	11 U	11 U	11 UJ	11 U
2-Hexanone	NA	NA	NA	NA	NA	11 UJ	11 UJ	11 U	11 UJ	11 UJ	11 U	11 U	11 UJ	11 UJ
4-Methyl-2-pentanone	NA	NA	NA	NA	NA	11 UJ	11 UJ	11 U	11 UJ	11 UJ	11 U	11 U	11 UJ	11 U
Acetone	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 U
Benzene	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	2 J	11 U	5 J	11 U
Bromodichloromethane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 U
Bromoform	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 U
Bromomethane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 U
Carbon disulfide	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	24 J	11 U	12	61 J	9 J
Carbon tetrachloride	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 U
Chlorobenzene	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 UJ
Chloroethane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 U
Chloroform	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 U
Chloromethane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 U
Dibromochloromethane	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 U
Ethylbenzene	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 UJ
Methylene chloride	NA	NA	NA	NA	NA	11 B	4 B	12	8 B	46 J	21 B	10 J	71 J	8 J
Styrene	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 UJ
Tetrachloroethene	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 UJ
Toluene	NA	NA	NA	NA	NA	2 J	11 U	1 J	11 U	7 J	11 U	11 U	7 J	4 J
Trichloroethene	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 U
Vinyl chloride	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 U
Xylene, total	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 UJ
cis-1,3-Dichloropropene	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 U
trans-1,3-Dichloropropene	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 UJ	11 U
Semivolatile Organic Compounds (UG/KG)														
1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	350 U	380 U	350 UJ	340 U	1,700 UJ	350 UJ	1,700 UJ	1,800 UJ	340 UJ
1,2-Dichlorobenzene	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
1,4-Dichlorobenzene	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
2,2'-Oxybis(1-chloropropane)	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
2,4,5-Trichlorophenol	NA	NA	NA	NA	NA	890 U	950 U	880 U	850 U	4,200 U	890 U	4,300 U	4,500 U	860 U
2,4,6-Trichlorophenol	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
2,4-Dichlorophenol	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
2,4-Dimethylphenol	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
2,4-Dinitrophenol	NA	NA	NA	NA	NA	890 U	950 U	880 U	850 U	4,200 U	890 U	4,300 U	4,500 U	860 U
2,4-Dinitrotoluene	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
2,6-Dinitrotoluene	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
2-Chloronaphthalene	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
2-Chlorophenol	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
2-Methylnaphthalene	NA	NA	NA	NA	NA	280 J	380 U	240 J	340 U	360 J	520	430 J	650 J	610
2-Methylphenol	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
2-Nitroaniline	NA	NA	NA	NA	NA	890 U	950 U	880 U	850 U	4,200 U	890 U	4,300 U	4,500 U	860 U
2-Nitrophenol	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
3,3'-Dichlorobenzidine	NA	NA	NA	NA	NA	350 U	380 U	350 UJ	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
3-Nitroaniline	NA	NA	NA	NA	NA	890 U	950 U	880 U	850 U	4,200 U	890 U	4,300 U	4,500 U	860 U
4,6-Dinitro-2-methylphenol	NA	NA	NA	NA	NA	890 U	950 U	880 U	850 U	4,200 U	890 U	4,300 U	4,500 U	860 U
4-Bromophenyl-phenylether	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
4-Chloro-3-methylphenol	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
4-Chloroaniline	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
4-Chlorophenyl-phenylether	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
4-Methylphenol	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
4-Nitroaniline	NA	NA	NA	NA	NA	890 U	950 U	880 U	850 U	4,200 U	890 U	4,300 U	4,500 U	860 U
4-Nitrophenol	NA	NA	NA	NA	NA	890 U	950 U	880 U	850 U	4,200 U	890 U	4,300 U	4,500 U	860 U
Acenaphthene	NA	NA	NA	NA	NA	93 J	380 U	48 J	340 U	1,700 U	100 J	1,700 U	1,800 U	100 J
Acenaphthylene	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
Anthracene	NA	NA	NA	NA	NA	130 J	57 J	79 J	340 U	3,100	140 J	1,700 U	190 J	140 J
Benzo(a)anthracene	NA	NA	NA	NA	NA	180 J	240 J	470 J	64 J	5,400	240 J	250 J	300 J	250 J

Table A-6
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Station ID	NBW14-SO09		NBW14-SO10	NBW14-SO11	NBW14-SO12	NBW14-SS01	NBW14-SS02	NBW14-SS03		NBW14-SS04	NBW14-SS05	NBW14-SS06	NBW14-SS07	NBW14-SS08
Sample ID	NBW14-SS09	NBW14-SS09-P	NBW14-SS10	NBW14-SS11	NBW14-SS12	NBW14-SS01	NBW14-SS02	NBW14-SS03	NBW14-SS03P	NBW14-SS04	NBW14-SS05	NBW14-SS06	NBW14-SS07	NBW14-SS08
Sample Date	12/17/02	12/17/02	12/17/02	12/17/02	12/17/02	07/16/98	07/16/98	07/16/98	07/16/98	07/16/98	07/16/98	07/16/98	07/16/98	07/16/98
Chemical Name														
Benzo(a)pyrene	NA	NA	NA	NA	NA	140 J	220 J	310 J	58 J	2,300	170 J	220 J	190 J	140 J
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	380	330 J	700 J	80 J	3,900	470	410 J	570 J	400
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	160 J	210 J	180 J	51 J	780 J	140 J	210 J	230 J	130 J
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	120 J	130 J	300 J	340 U	1,400 J	130 J	180 J	1,800 U	110 J
Butylbenzylphthalate	NA	NA	NA	NA	NA	350 U	380 U	620 J	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
Carbazole	NA	NA	NA	NA	NA	350 U	380 U	37 J	340 U	1,700 U	47 J	1,700 U	1,800 U	43 J
Chrysene	NA	NA	NA	NA	NA	390	290 J	930 J	82 J	6,000	480	490 J	560 J	420
Di-n-butylphthalate	NA	NA	NA	NA	NA	53 J	1,300	770	53 J	1,700 U	52 J	1,700 U	1,800 U	35 J
Di-n-octylphthalate	NA	NA	NA	NA	NA	350 U	380 U	350 UJ	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	68 J	63 J	350 UJ	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
Dibenzofuran	NA	NA	NA	NA	NA	190 J	380 U	120 J	340 U	210 J	280 J	210 J	320 J	260 J
Diethylphthalate	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
Dimethyl phthalate	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
Fluoranthene	NA	NA	NA	NA	NA	400	450	890	120 J	17,000	420	530 J	530 J	430
Fluorene	NA	NA	NA	NA	NA	90 J	380 U	55 J	340 U	220 J	97 J	1,700 U	1,800 U	110 J
Hexachlorobenzene	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
Hexachlorobutadiene	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
Hexachlorocyclopentadiene	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
Hexachloroethane	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	140 J	180 J	170 J	45 J	1,700 U	130 J	1,700 U	180 J	110 J
Isophorone	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
Naphthalene	NA	NA	NA	NA	NA	270 J	61 J	180 J	340 U	320 J	410	350 J	550 J	450
Nitrobenzene	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
Pentachlorophenol	NA	NA	NA	NA	NA	NA	NA	880 UJ	850 U	NA	890 U	NA	NA	860 U
Phenanthrene	NA	NA	NA	NA	NA	570	280 J	450	89 J	1,500 J	760	710 J	950 J	800
Phenol	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
Pyrene	NA	NA	NA	NA	NA	390	490	1,800 J	140 J	12,000	530	430 J	510 J	430
bis(2-Chloroethoxy)methane	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
bis(2-Chloroethyl)ether	NA	NA	NA	NA	NA	350 U	380 U	350 U	340 U	1,700 U	350 U	1,700 U	1,800 U	340 U
bis(2-Ethylhexyl)phthalate	NA	NA	NA	NA	NA	190 B	300 B	390 B	200 B	480 J	180 J	22,000	1,300 J	83 J
n-Nitroso-di-n-propylamine	NA	NA	NA	NA	NA	350 U	380 U	350 UJ	340 U	1,700 UJ	350 UJ	1,700 UJ	1,800 UJ	340 UJ
n-Nitrosodiphenylamine	NA	NA	NA	NA	NA	51 J	380 U	77 J	340 U	1,700 U	110 J	1,700 U	1,800 U	340 U
Pesticide/Polychlorinated Biphenyls (UG/KG)														
4,4'-DDD	NA	NA	NA	NA	NA	3.5 U	3.7 UJ	4.7 J	3.4 UL	3.4 U	3.5 UL	4.2	3.6 U	3.4 U
4,4'-DDE	NA	NA	NA	NA	NA	3.5 U	7.4 J	3.5 UJ	3.4 UL	3.4 U	3.5 UL	3.4 U	3.6 U	3.4 U
4,4'-DDT	NA	NA	NA	NA	NA	3.5 U	3.7 UJ	4.9 J	3.4 UL	3.4 U	4.3 J	3.4 U	3.6 U	3.4 U
Aldrin	NA	NA	NA	NA	NA	1.8 U	15 J	1.8 UJ	2.8 L	1.7 U	1.8 UL	1.7 U	1.8 U	1.8 U
Aroclor-1016	NA	NA	NA	NA	NA	35 U	37 UJ	35 UJ	34 UL	34 U	35 UL	34 U	36 U	34 U
Aroclor-1221	NA	NA	NA	NA	NA	72 U	76 UJ	72 UJ	69 UL	68 U	70 UL	69 U	73 U	70 U
Aroclor-1232	NA	NA	NA	NA	NA	35 U	37 UJ	35 UJ	34 UL	34 U	35 UL	34 U	36 U	34 U
Aroclor-1242	NA	NA	NA	NA	NA	35 U	37 UJ	35 UJ	34 UL	34 U	35 UL	34 U	36 U	34 U
Aroclor-1248	NA	NA	NA	NA	NA	35 U	37 UJ	35 UJ	34 UL	34 U	35 UL	34 U	36 U	34 U
Aroclor-1254	NA	NA	NA	NA	NA	35 U	37 UJ	35 UJ	34 UL	34 U	35 UL	34 U	36 U	34 U
Aroclor-1260	NA	NA	NA	NA	NA	35 U	18 J	23 J	34 UL	34 U	35 UL	34 U	36 U	34 U
Dieldrin	NA	NA	NA	NA	NA	11 J	32 J	3.5 UJ	10 L	10 J	5.7 J	7.9 J	13 J	9.5 J
Endosulfan I	NA	NA	NA	NA	NA	1.8 U	1.9 UJ	1.8 UJ	1.7 UL	1.7 U	1.8 UL	1.7 U	1.8 U	1.8 U
Endosulfan II	NA	NA	NA	NA	NA	3.5 U	3.7 UJ	3.5 UJ	3.4 UL	4.9 J	3.5 UL	3.5 J	6.8 J	6.8 J
Endosulfan sulfate	NA	NA	NA	NA	NA	3.5 U	3.7 UJ	3.5 UJ	3.4 UL	3.4 U	3.5 UL	3.4 U	3.6 U	3.4 U
Endrin	NA	NA	NA	NA	NA	3.5 U	3.7 UJ	3.5 UJ	3.4 UL	3.4 U	3.5 UL	3.4 U	3.6 U	3.4 U
Endrin aldehyde	NA	NA	NA	NA	NA	3.5 U	3.7 UJ	3.5 UJ	3.4 UL	3.4 U	3.5 UL	3.4 U	3.6 U	3.4 U
Endrin ketone	NA	NA	NA	NA	NA	3.5 U	3.7 UJ	3.5 UJ	3.4 UL	3.4 U	3.5 UL	3.4 U	3.6 U	3.4 U
Heptachlor	NA	NA	NA	NA	NA	1.8 U	1.9 UJ	1.8 UJ	1.7 UL	1.7 U	1.8 UL	1.7 U	1.8 U	1.8 U
Heptachlor epoxide	NA	NA	NA	NA	NA	1.8 U	1.9 UJ	1.8 UJ	1.7 UL	1.7 U	1.8 UL	1.7 U	1.8 U	2.1
Methoxychlor	NA	NA	NA	NA	NA	18 U	19 UJ	18 UJ	17 UL	17 U	18 UL	17 U	18 U	18 U
Toxaphene	NA	NA	NA	NA	NA	180 U	190 UJ	180 UJ	170 UL	170 U	180 UL	170 U	180 U	180 U
alpha-BHC	NA	NA	NA	NA	NA	1.8 U	1.9 UJ	1.8 UJ	1.7 UL	1.7 U	1.8 UL	1.7 U	1.8 U	1.8 U
alpha-Chlordane	NA	NA	NA	NA	NA	1.8 U	5.4 J	1.8 UJ	1.7 UL	1.7 U	1.8 UL	1.7 U	1.8 U	1.8 U
beta-BHC	NA	NA	NA	NA	NA	1.8 U	1.9 UJ	1.8 UJ	1.7 UL	1.7 U	1.8 UL	1.7 U	1.8 U	1.8 U
delta-BHC	NA	NA	NA	NA	NA	1.8 U	1.9 UJ	1.8 UJ	1.7 UL	1.7 U	1.8 UL	1.7 U	1.8 U	1.8 U
gamma-BHC (Lindane)	NA	NA	NA	NA	NA	1.8 U	1.9 UJ	1.8 UJ	1.7 UL	1.7 U	1.8 UL	1.7 U	1.8 U	1.8 U
gamma-Chlordane	NA	NA	NA	NA	NA	1.8 U	5.2 J	1.8 UJ	1.7 UL	1.7 U	1.8 UL	1.7 U	1.8 U	1.8 U
Total Metals (MG/KG)														
Aluminum	NA	NA	NA	NA	NA	5,210	3,740	3,980	4,830	2,300	3,110	3,220	3,130	3,400
Antimony	NA	NA	NA	NA	NA	0.63 L	0.82 L	1.3 L	1.6 L	0.87 B	1.1 L	0.85 B	0.54 B	1.6 B
Arsenic	NA	NA	NA	NA	NA	13.2	16.9	11.2	2.8	10.8	11.6	12	16	13.5
Barium	NA	NA	NA	NA	NA	57.5 J	85.1 J	69.1 J	44.8 J	107	83.3	63.8	59.9	54.9
Beryllium	NA	NA	NA	NA	NA	0.34 J	0.52 J	0.5 J	0.17 J	0.61 J	0.59 J	0.36 J	0.51 J	0.52 J

Table A-6
Surface Soil Analytical Results
SMWU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-SO09		NBW14-SO10	NBW14-SO11	NBW14-SO12	NBW14-SS01	NBW14-SS02	NBW14-SS03		NBW14-SS04	NBW14-SS05	NBW14-SS06	NBW14-SS07	NBW14-SS08
Sample ID	NBW14-SS09	NBW14-SS09-P	NBW14-SS10	NBW14-SS11	NBW14-SS12	NBW14-SS01	NBW14-SS02	NBW14-SS03	NBW14-SS03P	NBW14-SS04	NBW14-SS05	NBW14-SS06	NBW14-SS07	NBW14-SS08
Sample Date	12/17/02	12/17/02	12/17/02	12/17/02	12/17/02	07/16/98	07/16/98	07/16/98	07/16/98	07/16/98	07/16/98	07/16/98	07/16/98	07/16/98
Chemical Name														
Cadmium	NA	NA	NA	NA	NA	0.11 U	0.11 U	2.8	0.74 K	0.49 U	0.11 U	0.1 U	0.11 U	0.11 U
Calcium	NA	NA	NA	NA	NA	17,000	15,000	26,100	5,570	9,740	40,000	18,700	21,800	14,800
Chromium	NA	NA	NA	NA	NA	10.9	12.7	22.2	10.1	8.6	14.1	8.9	10.7	11.1
Cobalt	NA	NA	NA	NA	NA	3.2 J	4.2 J	4.7 J	2.8 J	6.8 J	4.2 J	3.2 J	3.1 J	4 J
Copper	NA	NA	NA	NA	NA	285	28	197	22.6	35.5	33.7	21.5	30.1	29
Iron	NA	NA	NA	NA	NA	10,700	11,600	14,500	7,690	41,000	12,700	9,720	11,700	19,900
Lead	82.2	65.5	2,280	11.4	65.9	42.1	56.9	154	50.1	60.8	56.7 K	42.9	47.5	56
Magnesium	NA	NA	NA	NA	NA	6,530	7,110	2,020	1,090	3,790	5,590	6,190	8,670	4,510
Manganese	NA	NA	NA	NA	NA	62.1	68.5	188	62.1	147	118	65	70.8	137
Mercury	NA	NA	NA	NA	NA	0.07 J	0.09 J	0.17	0.08 J	0.07 J	0.05 UL	0.06 J	0.07 J	0.08 J
Nickel	NA	NA	NA	NA	NA	12 K	10 K	28.9	7 K	16.9	8.6	8.1 K	16.9	11.8 K
Potassium	NA	NA	NA	NA	NA	497 J	561 J	865	733 J	298 J	678 J	432 J	346 J	466 J
Selenium	NA	NA	NA	NA	NA	0.53 U	1.5 K	0.49 U	0.54 U	1.4 K	0.54 U	0.5 UL	1 K	0.55 UL
Silver	NA	NA	NA	NA	NA	2.1 K	2.4 K	3.2 K	2.3 K	8.6	1.6 J	1.8	2.1	4.3
Sodium	NA	NA	NA	NA	NA	172 J	207 J	321 J	328 J	93.8 B	357 J	371 J	115 J	141 J
Thallium	NA	NA	NA	NA	NA	1.8 B	0.61 B	0.47 U	0.52 U	3.4	0.52 U	0.85 J	0.52 U	1.7 J
Vanadium	NA	NA	NA	NA	NA	16.1	16.4	28.4	13.8	13.3	20.2	13.4	15.8	18.6
Zinc	NA	NA	NA	NA	NA	66.3	42.3	382	68.7	75.2	95.3 B	46.4	54.5	99.9

Notes:
NA - Not analyzed
J - Analyte present. Reported result may not be accurate or precise.
K - Reported analyte is biased High.
L - Reported result is biased low
B- possible blank contamination
U - not detected.
R - unreliable result

Table A-7
Sediment Analytical Data
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-SD01		NBW14-SD02	NBW14-SD03	NBW14-SD04	NBW14-SD05
Sample ID	NBW14-SD01	NBW14-SD01-P	NBW14-SD02	NBW14-SD03	NBW14-SD04	NBW14-SD05
Sample Date	12/19/02	12/19/02	12/19/02	12/19/02	12/19/02	12/19/02
Chemical Name						
Semivolatile Organic Compounds (UG/KG)						
1,1-Biphenyl	420 U	430 U	460 U	390 U	660 U	450 U
2,2'-Oxybis(1-chloropropane)	420 U	430 U	460 U	390 U	660 U	450 U
2,4,5-Trichlorophenol	1,100 U	1,100 U	1,200 U	990 U	1,700 U	1,100 U
2,4,6-Trichlorophenol	420 U	430 U	460 U	390 U	660 U	450 U
2,4-Dichlorophenol	420 U	430 U	460 U	390 U	660 U	450 U
2,4-Dimethylphenol	420 U	430 U	460 U	390 U	660 U	450 U
2,4-Dinitrophenol	1,100 U	1,100 U	1,200 U	990 U	1,700 U	1,100 U
2,4-Dinitrotoluene	420 U	430 U	460 U	390 U	660 U	450 U
2,6-Dinitrotoluene	420 U	430 U	460 U	390 U	660 U	450 U
2-Chloronaphthalene	420 U	430 U	460 U	390 U	660 U	450 U
2-Chlorophenol	420 U	430 U	460 U	390 U	660 U	450 U
2-Methylnaphthalene	420 U	430 U	460 U	390 U	660 U	450 U
2-Methylphenol	420 U	430 U	460 U	390 U	660 U	450 U
2-Nitroaniline	1,100 U	1,100 U	1,200 U	990 U	1,700 U	1,100 U
2-Nitrophenol	420 U	430 U	460 U	390 U	660 U	450 U
3,3'-Dichlorobenzidine	420 U	430 U	460 U	390 U	660 U	450 U
3-Nitroaniline	1,100 U	1,100 U	1,200 U	990 U	1,700 U	1,100 U
4,6-Dinitro-2-methylphenol	1,100 U	1,100 U	1,200 U	990 U	1,700 U	1,100 U
4-Bromophenyl-phenylether	420 U	430 U	460 U	390 U	660 U	450 U
4-Chloro-3-methylphenol	420 U	430 U	460 U	390 U	660 U	450 U
4-Chloroaniline	420 U	430 U	460 U	390 U	660 U	450 U
4-Chlorophenyl-phenylether	420 U	430 U	460 U	390 U	660 U	450 U
4-Methylphenol	420 U	430 U	460 U	390 U	660 U	450 U
4-Nitroaniline	1,100 U	1,100 U	1,200 U	990 U	1,700 U	1,100 U
4-Nitrophenol	1,100 U	1,100 U	1,200 U	990 U	1,700 U	1,100 U
Acenaphthene	420 U	430 U	31 J	390 U	24 J	450 U
Acenaphthylene	59 J	430 U	19 J	390 U	61 J	450 U
Acetophenone	14 B	430 U	18 B	13 B	31 B	16 B
Anthracene	53 J	430 U	95 J	26 J	130 J	450 U
Atrazine	420 U	430 U	460 U	390 U	660 U	450 U
Benzaldehyde	9 B	430 U	11 B	9 B	31 B	450 U
Benzo(a)anthracene	97 J	15 J	220 J	91 J	280 J	450 U
Benzo(a)pyrene	140 J	20 J	200 J	85 J	330 J	450 U
Benzo(b)fluoranthene	200 J	34 J	290 J	130 J	540 J	450 U
Benzo(g,h,i)perylene	160 J	430 U	110 J	51 J	200 J	450 U
Benzo(k)fluoranthene	120 J	30 J	190 J	130 J	350 J	450 U
Butylbenzylphthalate	420 U	430 U	460 U	390 U	660 U	450 U
Caprolactam	420 U	430 U	460 U	390 U	660 U	450 U
Carbazole	41 J	430 U	35 J	21 J	54 J	450 U
Chrysene	130 J	30 J	280 J	120 J	380 J	14 J
Di-n-butylphthalate	420 U	430 U	460 U	390 U	660 U	450 U
Di-n-octylphthalate	27 J	430 U	460 U	390 U	660 U	450 U
Dibenz(a,h)anthracene	50 J	430 U	48 J	22 J	79 J	450 U
Dibenzofuran	420 U	430 U	14 J	390 U	21 J	450 U
Diethylphthalate	420 U	430 U	460 U	390 U	660 U	450 U
Dimethyl phthalate	420 U	430 U	460 U	390 U	660 U	450 U
Fluoranthene	220 J	38 J	470	230 J	540 J	18 J
Fluorene	420 U	430 U	25 J	390 U	24 J	450 U
Hexachlorobenzene	420 U	430 U	460 U	390 U	660 U	450 U
Hexachlorobutadiene	420 U	430 U	460 U	390 U	660 U	450 U
Hexachlorocyclopentadiene	420 U	430 U	460 U	390 U	660 U	450 U
Hexachloroethane	420 U	430 U	460 U	390 U	660 U	450 U
Indeno(1,2,3-cd)pyrene	170 J	19 J	120 J	58 J	240 J	450 U
Isophorone	420 U	430 U	460 U	390 U	660 U	450 U
Naphthalene	11 J	430 U	460 U	390 U	15 J	450 U
Nitrobenzene	420 U	430 U	460 U	390 U	660 U	450 U
Pentachlorophenol	1,100 U	1,100 U	1,200 U	990 U	1,700 U	1,100 U
Phenanthrene	110 J	19 J	270 J	110 J	240 J	450 U
Phenol	420 U	430 U	460 U	390 U	660 U	450 U
Pyrene	190 J	41 J	500	210 J	710	21 J
bis(2-Chloroethoxy)methane	420 U	430 U	460 U	390 U	660 U	450 U
bis(2-Chloroethyl)ether	420 U	430 U	460 U	390 U	660 U	450 U
bis(2-Ethylhexyl)phthalate	240 J	82 B	120 B	42 B	550 J	60 B
n-Nitroso-di-n-propylamine	420 U	430 U	460 U	390 U	660 U	450 U
n-Nitrosodiphenylamine	420 U	430 U	460 U	390 U	660 U	450 U

Table A-7
Sediment Analytical Data
SWMU 14 Remedial Investigation
Naval Station Norfolk
Norfolk, Virginia

Station ID	NBW14-SD01		NBW14-SD02	NBW14-SD03	NBW14-SD04	NBW14-SD05
Sample ID	NBW14-SD01	NBW14-SD01-P	NBW14-SD02	NBW14-SD03	NBW14-SD04	NBW14-SD05
Sample Date	12/19/02	12/19/02	12/19/02	12/19/02	12/19/02	12/19/02
Chemical Name						
Pesticide/Polychlorinated Biphenyls (UG/KG)						
4,4'-DDD	3.4 J	3.9 J	3.6 J	3.9 U	11	4.5 U
4,4'-DDE	3.5 J	2.7 J	3.3 J	2.6 J	7.2 J	4.5 U
4,4'-DDT	10 J	13	5.4 B	4.3 B	7.3 B	8.2
Aldrin	2.2 U	2.2 U	2.4 U	2 U	3.4 U	2.3 U
Aroclor-1016	42 U	43 U	46 U	39 U	66 U	45 U
Aroclor-1221	85 U	88 U	93 U	80 U	130 U	91 U
Aroclor-1232	42 U	43 U	46 U	39 U	66 U	45 U
Aroclor-1242	42 U	43 U	46 U	39 U	66 U	45 U
Aroclor-1248	42 U	43 U	46 U	39 U	66 U	45 U
Aroclor-1254	42 U	43 U	46 U	39 U	66 U	45 U
Aroclor-1260	42 U	43 U	60 J	14 J	120	45 U
Dieldrin	4.2 U	4.3 U	4.6 U	3.9 U	6.6 U	4.5 U
Endosulfan I	2.2 U	2.2 U	2.4 U	2 U	3.4 U	2.3 U
Endosulfan II	4.2 U	4.3 U	4.6 U	3.9 U	6.6 U	4.5 U
Endosulfan sulfate	4.2 U	4.3 U	4.6 U	3.9 U	6.6 U	4.5 U
Endrin	4.2 U	4.3 U	4.6 U	3.9 U	6.6 U	4.5 U
Endrin aldehyde	4.2 U	4.3 U	4.6 U	3.9 U	6.6 U	4.5 U
Endrin ketone	4.2 U	4.3 U	4.6 U	3.9 U	6.6 U	4.5 U
Heptachlor	2.2 U	2.2 U	2.4 U	2 U	1.8 J	2.3 U
Heptachlor epoxide	2.2 U	2.2 U	2.4 U	2 U	3.4 U	2.3 U
Methoxychlor	22 U	22 U	24 U	20 U	34 U	23 U
Toxaphene	220 U	220 U	240 U	200 U	340 U	230 U
alpha-BHC	2.2 U	2.2 U	2.4 U	2 U	3.4 U	2.3 U
alpha-Chlordane	13	8.5 J	7.7 J	1 J	24 J	2.3 U
beta-BHC	2.2 U	2.2 U	9.2 J	2 U	3.4 U	2.3 U
delta-BHC	2.2 U	2.2 U	2.4 U	2 U	3.4 U	2.3 U
gamma-BHC (Lindane)	2.2 U	2.2 U	2.4 U	2 U	3.4 U	1.2 J
gamma-Chlordane	13	9.3	8.9 J	2 U	30	2.3 U
Total Metals (MG/KG)						
Aluminum	1,290	1,100	2,250	1,170	13,800	1,660
Antimony	0.29	1.3	0.32	0.28	0.92	0.32
Arsenic	12.9	11.2	2.8	2.1	20.4	17.4
Barium	15.4	19.2	14.5	8	56.6	18.4
Beryllium	0.26	0.16	0.25	0.1	0.96	0.21
Cadmium	0.13	0.069	0.27	0.072	2.5	0.081
Calcium	229,000	179,000	13,800	43,300	28,800	315,000
Chromium	12.4	19.3	10.6	4.8	47.9	14.8
Cobalt	1.5	8.7	2.1	0.87	9.1	1.6
Copper	12.6	9.2	10.4	16.1	67.4	4
Cyanide	0.13	0.031	0.035	0.03	0.19	0.06
Iron	11,300	13,000	6,280	4,480	35,700	11,300
Lead	13.5	38	17.6	7	101	6.7
Magnesium	2,170	2,110	1,890	1,410	6,510	2,550
Manganese	151	177	54.8	65.6	253	163
Mercury	0.055	0.048	0.063	0.057	0.34	0.068
Nickel	5.1	3.6	4	2.4	27.5	3.2
Potassium	599	536	652	420	3,070	815
Selenium	0.72	0.69	0.8	0.69	1.2	0.81
Silver	0.19	0.18	0.21	0.18	0.69	0.22
Sodium	3,900	4,270	2,510	2,210	6,330	5,380
Thallium	0.58	0.55	0.64	0.55	0.96	0.65
Vanadium	26.3	24.6	15.7	7.7	79.7	29.3
Zinc	63	56.2	62.3	24.8	286	23.3
Wet Chemistry (MG/KG)						
Total organic carbon (TOC)	28,400 J	79,600 J	51,900 J	7,210 J	44,500 J	53,900 J
pH	8.47	8.11	8.06	8.47	8.49	7.93

Notes:
U - Not detected
J - Analyte present. Reported result may not be accurate or precise.
B - Possible blank contamination

Appendix B
ARAR Tables

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Tables

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B-6 Virginia Action-Specific ARARs

Table B-1
Federal Chemical-Specific ARARs
SWMU 14 EE/CA, NSN, Norfolk, Virginia

Requirement	Prerequisite	Citation	ARAR Determination	Comment
Toxicity Characteristic Leaching Procedure (TCLP) regulatory levels	Hazardous waste treatment, storage, or disposal	40 CFR, Section 261.24	Applicable	Available data indicate soil is nonhazardous. Characterization testing prior to hypothetical disposal would verify non-hazardous (or hazardous) nature of materials if removed from the site. However, it is not anticipated that any materials will be removed (i.e., Alternative 4 is not recommended). Rather, Alternatives 2 and 3 both involve reusing excavated soil onsite for fill and grading, per Virginia Solid Waste Management Regulations [i.e., 9VAC [20] 80 150(E)(2)(a)(4)] and EPA Faxback 11671 (USEPA, 1992).**
Definition of RCRA Hazardous Waste	Waste soil	40 CFR Sections 261.21, 261.22(a)(1); 261.23; 261.24(a)(1); and 261.100	Relevant and Appropriate	Available data indicate soil is nonhazardous. Characterization testing prior to hypothetical disposal would verify non-hazardous (or hazardous) nature of materials if removed from the site. However, it is not anticipated that any materials will be removed (i.e., Alternative 4 is not recommended). Rather, Alternatives 2 and 3 both involve reusing excavated soil onsite for fill and grading, per Virginia Solid Waste Management Regulations [i.e., 9VAC [20] 80 150(E)(2)(a)(4)].

Table B-2
Federal Location-Specific ARARs
SWMU 14 EE/CA, NSN, Norfolk, Virginia

Location	Requirement	Prerequisite	Citation	ARAR Determination	Comment
Coastal Zone	Coastal Zone and Management Act: Requires that activities conducted within a coastal zone be consistent with an approved state management program.	Applies to sites located within a coastal zone.	16 USC §1451 et seq.	Relevant and Appropriate	SWMU 14 is located within the coastal zone. Activities will be conducted in accordance with an approved state management program.

Table B-3
Federal Action-Specific ARARs
SWMU 14 EE/CA, NSN, Norfolk, Virginia

None

Table B-4
Virginia Chemical-Specific ARARs
SWMU 14 EE/CA, NSN, Norfolk, Virginia

Requirement	Prerequisite	Citation	ARAR Determination	Comment
Virginia Hazardous Waste Management Regulation: Definition of RCRA Hazardous Waste	Waste soil	9 VAC 20-60 et al	Relevant and Appropriate	Available data indicate soil is nonhazardous. Characterization testing prior to hypothetical disposal would verify non-hazardous (or hazardous) nature of materials if removed from the site. However, it is not anticipated that any materials will be removed (i.e., Alternative 4 is not recommended). Rather, Alternatives 2 and 3 both involve reusing excavated soil onsite for fill and grading, per Virginia Solid Waste Management Regulations [i.e., 9VAC [20] 80 150(E)(2)(a)(4)].

Table B-5
Virginia Location-Specific ARARs
SWMU 14 EE/CA, NSN, Norfolk, Virginia

Location	Requirement	Prerequisite	Citation	ARAR Determination	Comment
None					

Table B-6
Virginia Action-Specific ARARs
SWMU 14 EE/CA, NSN, Norfolk, Virginia

Action	Requirement	Prerequisite	Citation	ARAR Determination	Comment
Discharge of Treated Water to Surface Waters, and certain storm water discharges	Virginia Pollutant Discharge Elimination System (VPDES) Permit Regulation: Regulated point-source discharges through VPDES permitting program. Permit requirements include compliance with corresponding water quality standards, establishment of a discharge monitoring system, and completion of regular discharge monitoring records.	Applicable to discharge of treated water to surface water, and to storm water dis-charges from certain facilities, including landfills.	9 VAC 25-31-10 to 940	Applicable	The facility has several VPDES permits. Construction activities will conform to 9 VAC 25-180-10 et seq for stormwater discharges from construction activities.

Table B-6
Virginia Action-Specific ARARs
SWMU 14 EE/CA, NSN, Norfolk, Virginia

Action	Requirement	Prerequisite	Citation	ARAR Determination	Comment
Hazardous Waste Staging Transport, and Disposal	Virginia Hazardous Waste Management Regulations (VHWMRs). These regulations and laws define the requirements for the management of hazardous wastes. Any disposal facility must be properly permitted and in compliance with all operational and monitoring requirements of the permit and regulations.	Wastes must meet definition of hazardous waste.	9 VAC 20-60-420 to 500	Relevant and Appropriate	Available data indicate soil is nonhazardous. Characterization testing prior to hypothetical disposal would verify non-hazardous (or hazardous) nature of materials if removed from the site. However, it is not anticipated that any materials will be removed (i.e., Alternative 4 is not recommended). Rather, Alternatives 2 and 3 both involve reusing excavated soil onsite for fill and grading, per Virginia Solid Waste Management Regulations [i.e., 9VAC [20] 80 150(E)(2)(a)(4)].
Solid Waste Staging Transport, and Disposal	Virginia Solid Waste Management Regulations (VSWMRs). These regulations and laws define the requirements for the management of solid wastes. Any disposal facility must be properly permitted and in compliance with all operational and monitoring requirements of the permit and regulations.	Wastes must meet definition of solid waste.	9 VAC 20-80 et al	Relevant and Appropriate	Would be applicable to management and staging, transportation, and offsite disposal of any material classified as a solid waste. However, it is not anticipated that any materials will be removed (i.e., Alternative 4 is not recommended). Rather, Alternatives 2 and 3 both involve reusing excavated soil onsite for fill and grading, per Virginia Solid Waste Management Regulations [i.e., 9VAC [20] 80 150(E)(2)(a)(4)].
Discharge to air	Virginia Air Pollution Control Regulations. Virginia Ambient Air Quality Standards - standards for ambient air quality to protect public health and welfare (including standards for particulate matter and lead).	Contamination of air affecting public health and welfare.	9 VAC 5-30-10 to 180	Applicable	Applicable for all site activities that may generate air discharges such a fugitive dust.
Discharge of visible emissions and fugitive dust	Virginia Air Pollution Control Regulations. Fugitive dust/emissions may not be discharged to the atmosphere at amounts in excess of standards.	Any source of fugitive dust/ emissions.	9 VAC 5-50-60 to 120	Applicable	Applicable for any activities that generate fugitive dust.

Table B-6
Virginia Action-Specific ARARs
SWMU 14 EE/CA, NSN, Norfolk, Virginia

Action	Requirement	Prerequisite	Citation	ARAR Determination	Comment
Stormwater Management	Virginia Stormwater Management Regulations and Virginia Erosion and Sediment Control Regulations. Regulates stormwater management and erosion/sedimentation control practice.	Land disturbing activities.	*Stormwater Management Act*, VA Code Ann. §§ 10.1-603.1 to 603.15 (1998); *Stormwater Management Regulations*, 4 VAC 3-20-10 to 251 Erosion and Sediment Control Law, Va. Code Ann .§§ 10.1-560 to 571 (1998); Erosion and Sediment Control Regulations, 4 VAC 50-30-10 to 110	Applicable	Applicable for any site activities involving surface water runoff and erosion. The NTCRA will include erosion and sediment control for stormwater.

Notes and Abbreviations

* Statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader.

** USEPA, 1992. EPA Faxback 11671, Document 9441.1992(16). Sylvia K. Lowrance, Director, Office of Solid Waste. June 11, 1992.

ARARs - Applicable or relevant and appropriate requirements

USC - United States Code CFR - Code of Federal Regulations

CFR - Code of Federal Regulations

NTCRA - Non-time critical removal action

TBC - To Be Considered

VAC - Virginia Administrative Code

Appendix C
Cost Estimates and Conceptual Design

Appendix C – Conceptual Design

Stormwater

Stormwater management was evaluated for Alternatives 2 (Soil Cover) and 3 (Asphalt Cover) in accordance with the *Virginia Storm Water Management Handbook* (1999) to determine the requirements for post-development storm water quantity and quality control. It is assumed that the receiving body of water, Willoughby Bay, would have a total drainage area of at least 100 times greater than the contributing drainage area of the approximately 13 acres project site. Therefore, the receiving channel would be considered adequate for storm water quantity, for both Alternative 2 and 3.

For Alternative 2, there would be no significant change to the land cover condition, which is presently vegetated. Therefore no storm water quality treatment would be anticipated for this alternative. The performance-based water quality calculations were completed for Alternative 3 and indicated that the post development impervious area would be approximately 90% of the project site area. Subsequently, storm water quality treatment would be required.

Alternative 3 includes eight standard 3.11A Bioretention Filters (Figure C-1) as storm water quality treatment facilities. The bioretention facilities will be designed to treat a minimum of 1 inch of runoff from impervious surfaces to qualify for a 65% pollutant removal efficiency, which is the highest possible. Initial calculations show that a minimum of 77% of the proposed impervious surface area of new parking and roads must be treated to achieve compliance. The facilities are designed with geofabric liners and underdrains to preclude runoff from infiltrating into the underlying landfill material.

Erosion and Sediment Control

Erosion and sediment controls for Alternatives 2 (Figure C-2) and 3 (Figure C-3) were evaluated in accordance with the *Virginia Erosion and Sediment Control Handbook* (1992). Figure C-4 shows standard details for erosion and sediment controls. A sediment basin would be required for disturbed contributing drainage areas of greater than 3 acres. For disturbed contributing drainage areas between 1 and 3 acres, a simpler sediment trap may be used.

For Alternative 2, it is assumed that the work would be phased so that the areas of disturbance at one time would be less than 3 acres. Thus, diversions directing runoff to sediment traps can be included. Super silt fence would be utilized since the disturbed drainage areas may exceed 1 acre. If the contractor phases the work to minimize the amount of disturbance to be less than 2 acres at a time, the diversions and sediment traps may not be needed. After the placement of soil cover and topsoil, permanent seeding would be the primary form of erosion and sediment control.

For Alternative 3, a two-phase erosion and sediment control plan with a narrative would be required. The first phase would include construction entrances, perimeter controls of silt fence, and diversions to direct the runoff to sediment traps. The sediment traps would be located in the areas of the permanent storm water management facilities. These sediment traps can be converted to the permanent features towards the end of construction. The third sediment trap would be removed near the end of construction. The second phase would consist of inlet protection, conversion of the temporary sediment traps to the permanent storm water features, and erosion control rip-rap outlet protection.

Soil Cover

A soil cover consists of 6 inches of topsoil vegetative layer and 18 inches of fill soil infiltration layer as shown in Figure 4-1. Key functions of this soil cover include: (1) serving as a barrier to prevent contact with underlying materials; (2) performing an infiltration control; and (3) sustaining surface vegetation. Regular maintenance would be anticipated to keep the soil cover at an operational condition.

Asphalt Pavement Cover (Parking Lot)

By its nature, an asphalt cover provides two primary functions. Firstly, it functions as a barrier to prevent human contact with underlying materials. Secondly, it provides a certain degree of infiltration protection. An asphalt cover must be properly designed and maintained through its service life to meet or exceed the functions required for this site.

Pavement-Transportation Computer Assisted Structural Engineering (PCASE) software guided the conceptual asphalt cover thickness design. PCASE Version 2.08 conforms to Unified Facilities Criteria 3-250-01FA *Pavement Design for Roads, Streets, Walks, and Open Storage Areas*. An actual pavement design (to be performed separately) may vary somewhat; however, the conceptual design defines the major components of the asphalt cover system (Figure 4-2).

Subgrade Conditions

Boring logs from the RI showed that site soil consists of silts (ML), silty sand (SM), fine to medium sands (SP), and clayey or sandy gravels (GP). It is assumed that the existing subgrade has a California Bearing Ratio (CBR) of 7.5 or higher. For the fill area, a minimum CBR of 7.5 shall also be obtained after proper compaction.

Preliminary Design Traffic

As shown on Figure C-5, Conceptual Example Parking Layout, 1,497 spaces (19 gained[1]) can likely be accommodated according to the conceptual design presented herein. The site layout in an actual design (to be performed separately) can be optimized to determine if additional parking stalls can be provided.

[1] A preliminary parking layout provided by the NSN Planning Department showed 1,478 planned spaces (Figure C-7). CH2M HILL's conceptual design of the parking lot layout is shown in Figure C-5.

It is assumed that the daily traffic of SWMU 14 parking would be composed of 65% passenger cars (1,478 × 0.65= 961) and 35% sport utility vehicles (1,478 × 0.35 = 517). Two 2-axle trucks and two 3-axle trucks for daily deliveries are also assumed. The assumed annual passes of each vehicle are shown in Table C-1.

Table C-1 Annual Traffic Passes

Vehicle Type	Applications	
	Daily Passes[a]	Annual Passes[d]
Passenger cars (65%)	7,686[b]	2,805,390
Small SUVs (15%)	2,365[b]	863,225
Large SUVs (10%)	1,774[b]	647,510
Two-axle trucks, 34-kips (2 per day)	4[c]	1,460
Three-axle trucks , 48-kips (2 per day)	4[c]	1,460

[a] Includes round-trip (both in and out parking lot).
[b] Assume an average of 4 trip per vehicle per day.
[c] Assume an average of 1 trip per vehicle per day.
[d] Based on 365 days of use annually.

In the program, a design traffic of 20-year is calculated by using the inputs of annual passes with an assumed annual traffic growth of 2%.

Preliminary Thickness Design

Using PCASE, three thickness sections (Table C-2) are able to carry the design traffic. Because the maximum lift thickness of a given aggregate layer is usually 6 inches, Section 2 is recommended for the ease of construction (i.e. one lift for each layer). The asphalt pavement section selected as the conceptual design section consists of 3 inches of asphalt concrete surface layer, 6 inches of graded base course, and 6 inches of graded aggregate sub-base. As noted previously, the preliminary thickness of asphalt pavement may be decreased as more design information becomes available during the final design.

Table C-2 Design Thickness

Pavement Layer	Thickness (inches)		
	Section 1	Section 2	Section 3
Asphalt Concrete Surface Course	3	3	3
Graded Aggregate Base Course[a]	5	6	4
Graded Aggregate Subbase Course[b]	7	6	8

[a] Aggregates of base course shall have a minimum CBR of 50;
[b] Aggregates of sub-base course shall have a minimum CBR of 20

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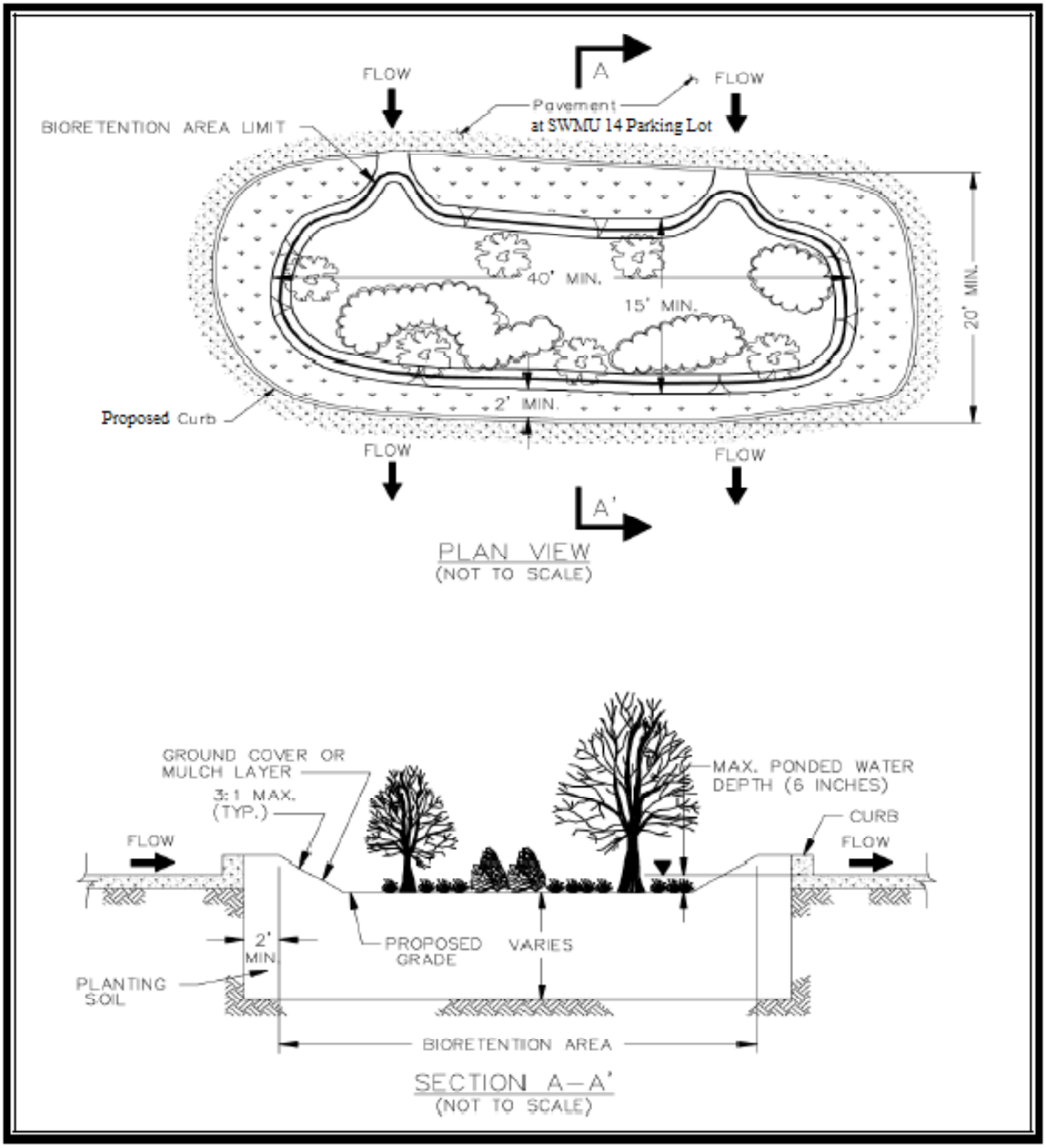

Figure C-1
Stormwater Management Bioretention Basin Detail
SWMU 14 EE/CA
Naval Station Norfolk
Norfolk, Virginia

CH2MHILL

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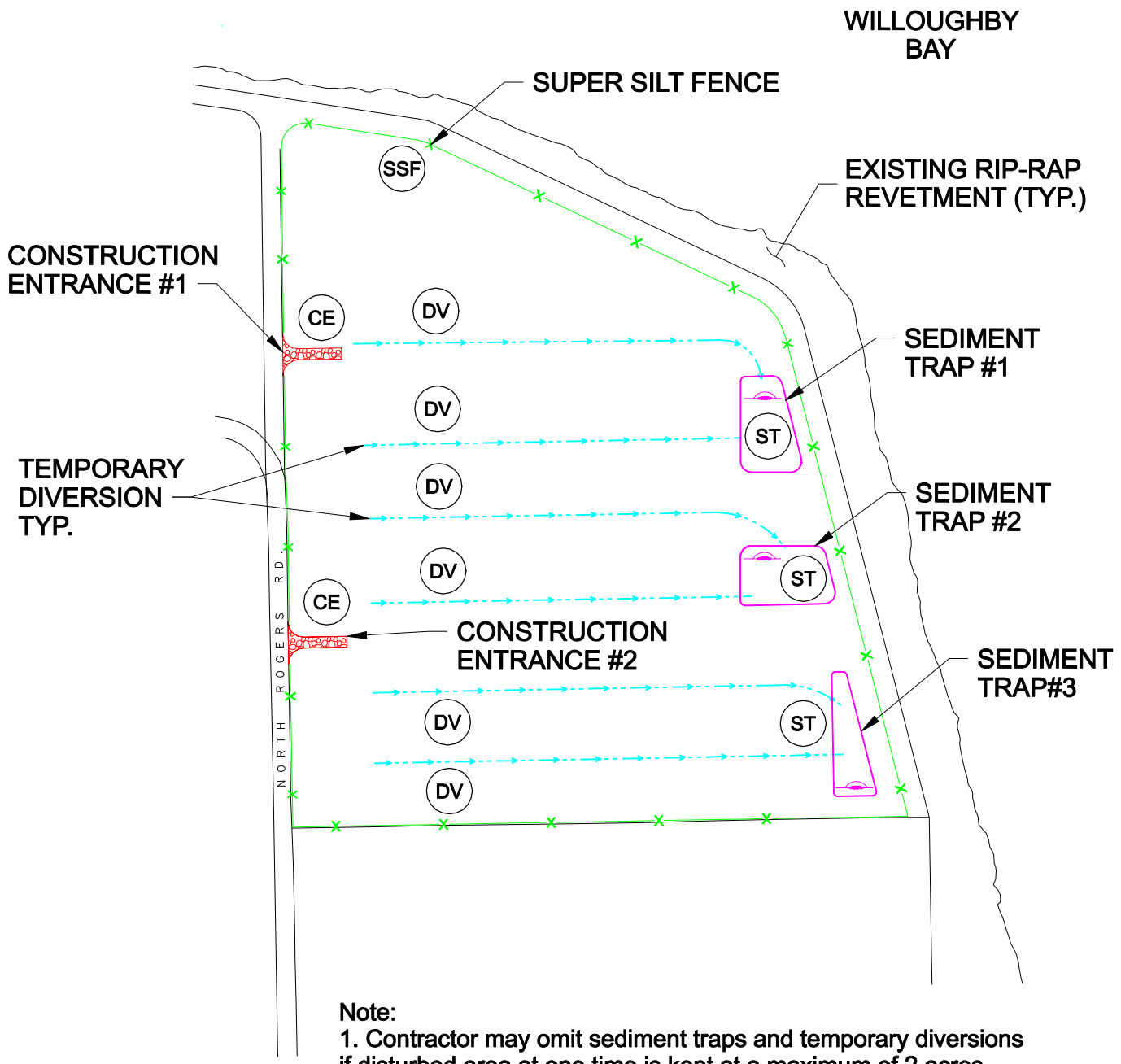

Note:
1. Contractor may omit sediment traps and temporary diversions if disturbed area at one time is kept at a maximum of 2 acres.

Legend

- CE Construction Entrance (Phase I & II)
- DV Diversion (Phase I)
- SSF Super Silt Fence (Phase I)
- ST Sediment Traps (Phase I)

N

0 200 400 600

Scale In Feet

Figure C-2

Erosion & Sediment Controls for Alternative 2, Soil Cap
SWMU 14 EE/CA
Naval Station Norfolk
Norfolk, Virginia

CH2MHILL

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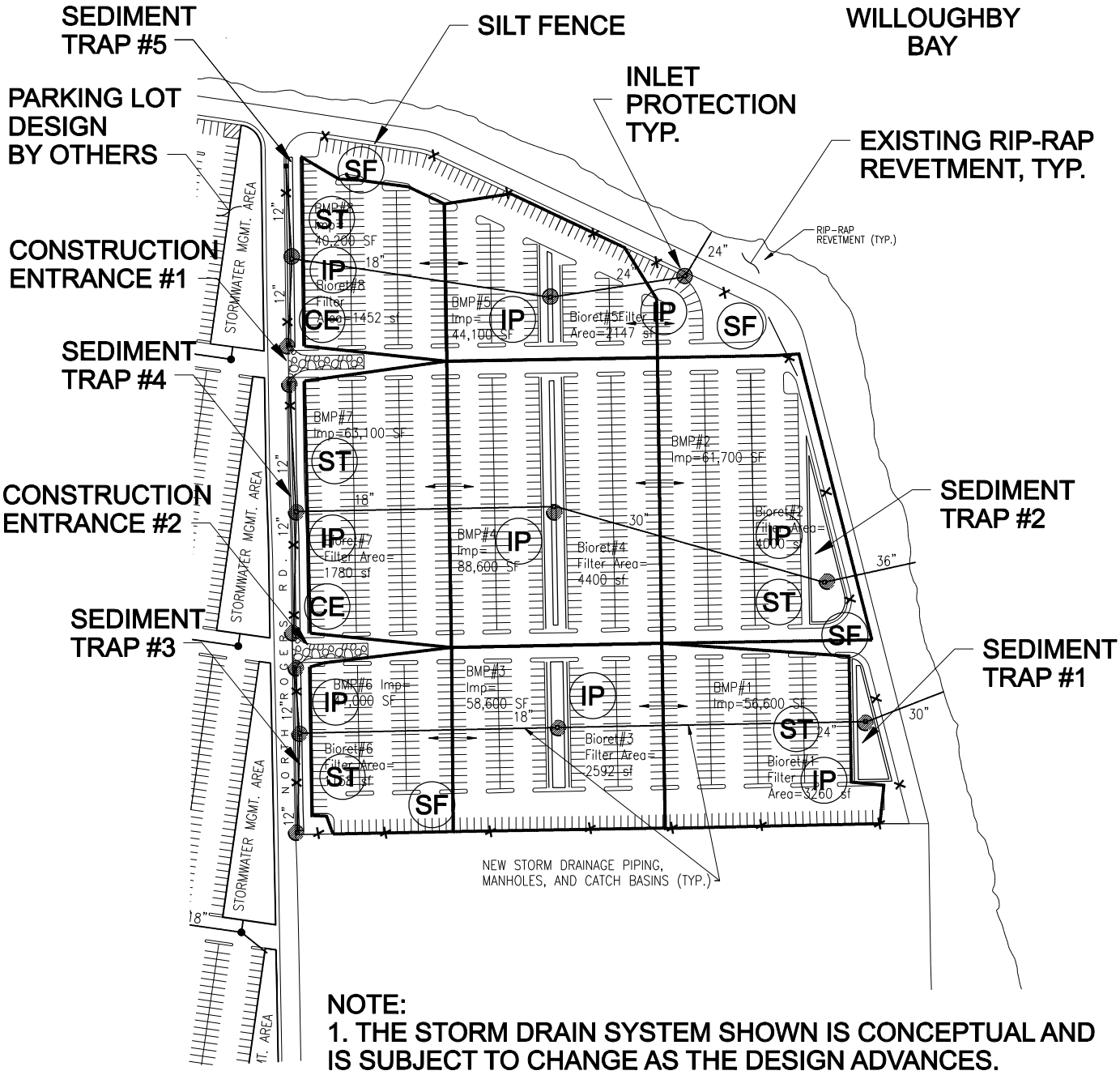

NOTE:
1. THE STORM DRAIN SYSTEM SHOWN IS CONCEPTUAL AND IS SUBJECT TO CHANGE AS THE DESIGN ADVANCES.

Legend

CE	Construction Entrance (Phase I & II)	
SF	Silt Fence (Phase I)	
DV	Diversion (Phase I)	
ST	Sediment Traps (Phase I)	
IP	Inlet Protection (Phase II)	

N

0 200 400 600

Scale In Feet

Figure C-3
Erosion & Sediment Controls for Alternative 3, Asphalt Cover
SWMU 14 EE/CA
Naval Station Norfolk
Norfolk, Virginia

CH2MHILL

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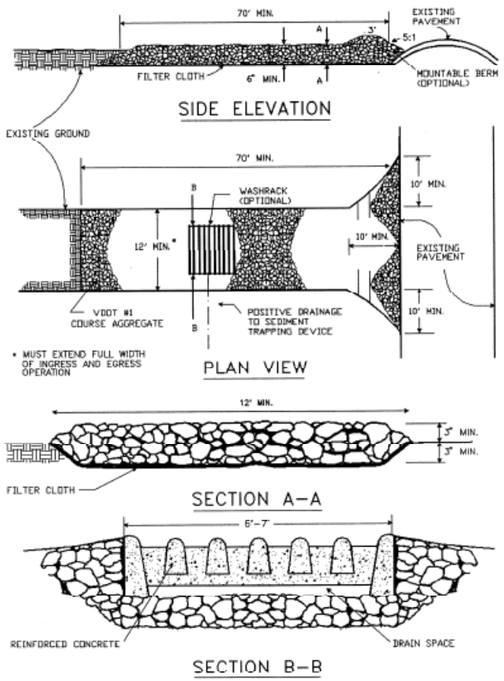
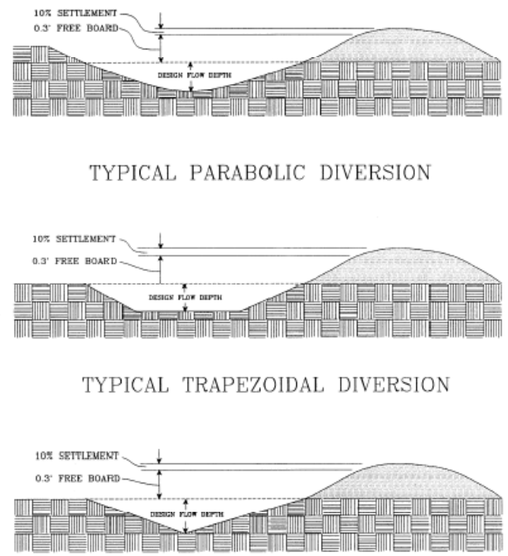
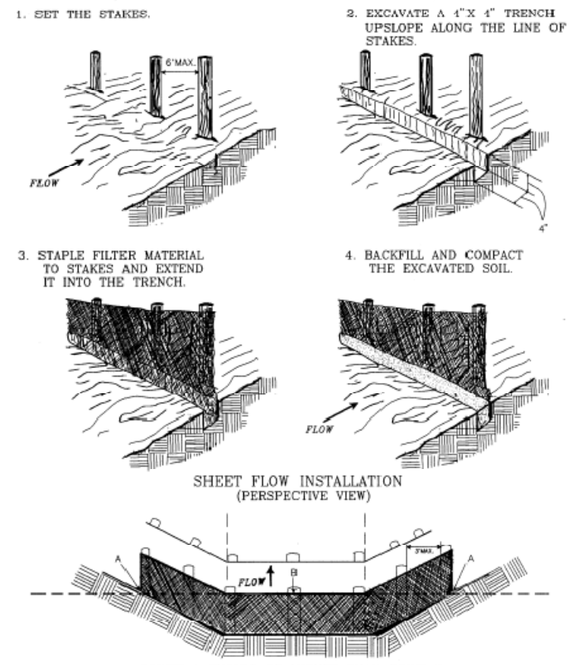
STONE CONSTRUCTION ENTRANCE



DIVERSIONS

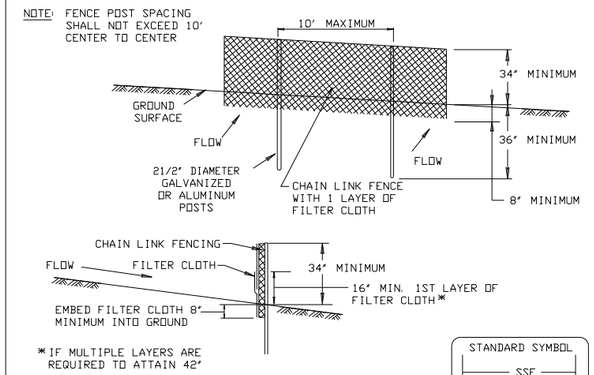


CONSTRUCTION OF A SILT FENCE (WITHOUT WIRE SUPPORT)



DETAIL 33 - SUPER SILT FENCE

NOTE: FENCE POST SPACING SHALL NOT EXCEED 10' CENTER TO CENTER



Construction Specifications

1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.

2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.

3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.

4. Filter cloth shall be embedded a minimum of 8" into the ground.

5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.

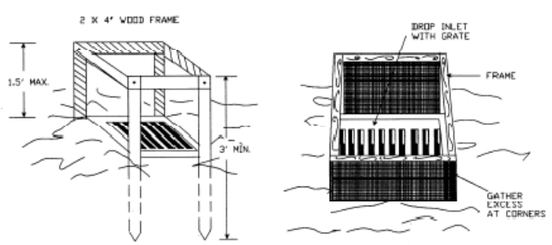
6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height

7. Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:

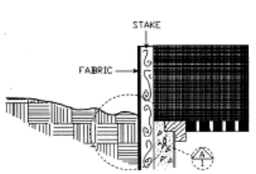
Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal/ft²/minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE H - 26 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

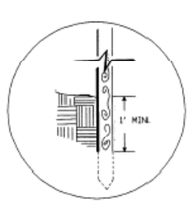
SILT FENCE DROP INLET PROTECTION



PERSPECTIVE VIEWS



ELEVATION OF STAKE AND FABRIC ORIENTATION

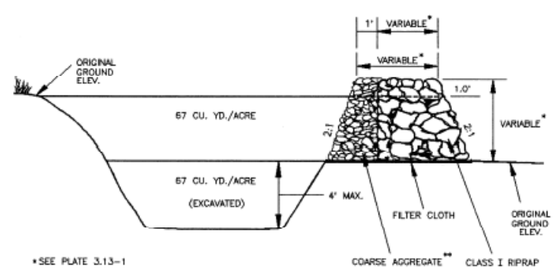


DETAIL A

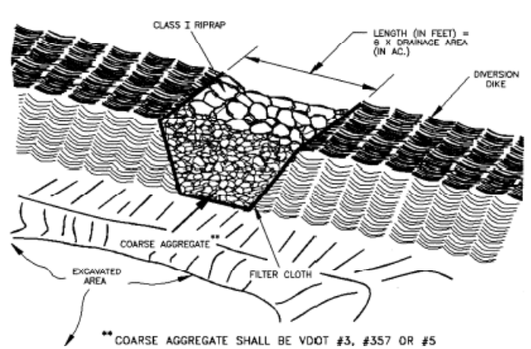
SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (SLOPE NO GREATER THAN 5%) WHERE THE INLET SHEET OR OVERLAND FLOWS (NOT EXCEEDING 1 C.F.S.) ARE TYPICAL. THE METHOD SHALL NOT APPLY TO INLETS RECEIVING CONCENTRATED FLOWS, SUCH AS IN STREET OR HIGHWAY MEDIANS.

TEMPORARY SEDIMENT TRAP



CROSS SECTION OF OUTLET



OUTLET (PERSPECTIVE VIEW)

Figure C-4
Erosion & Sediment Control Details
SWMU 14 EE/CA
Naval Station Norfolk
Norfolk, Virginia

CH2MHILL

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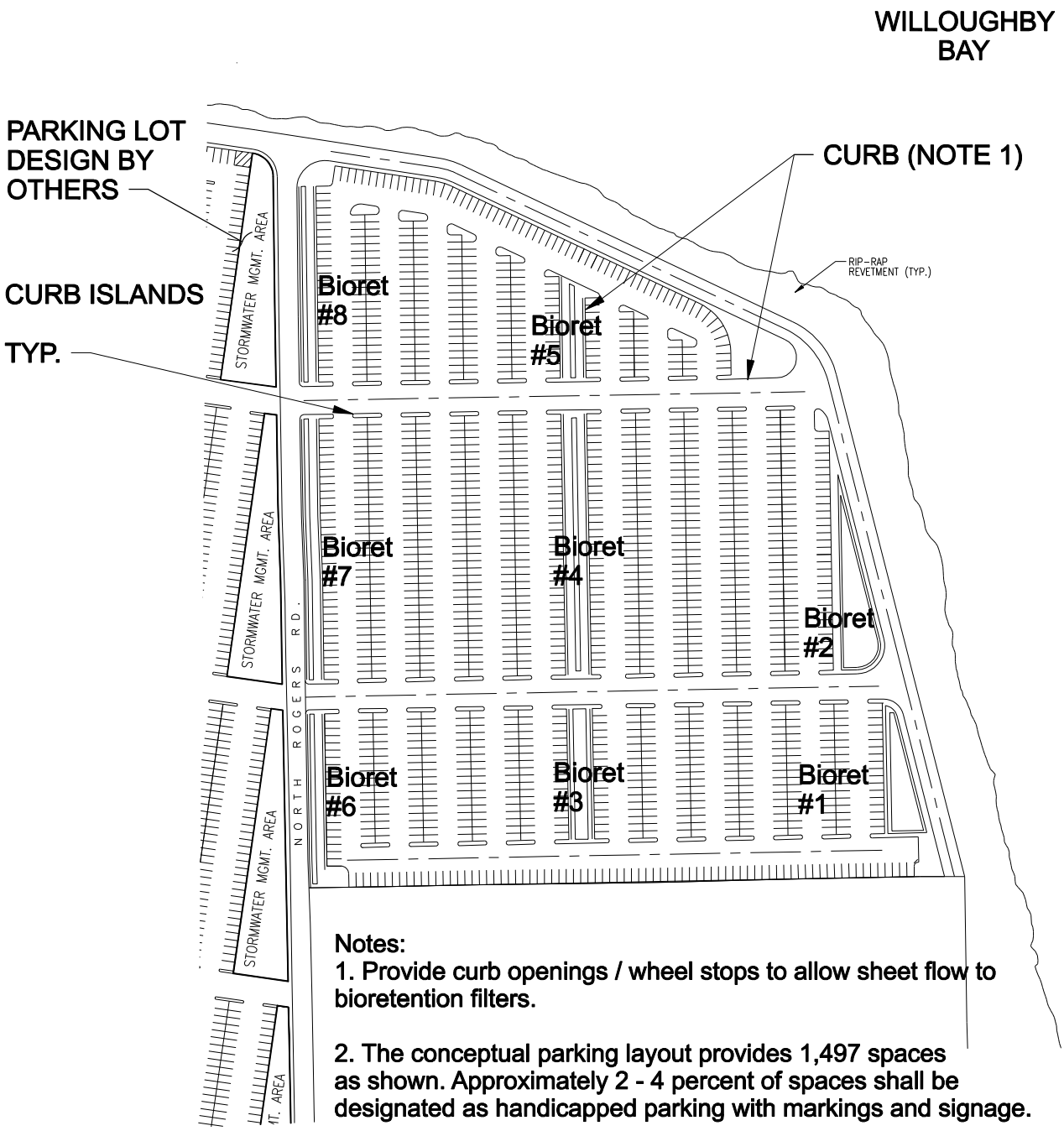


Notes:

1. Provide curb openings / wheel stops to allow sheet flow to bioretention filters.

2. The conceptual parking layout provides 1,497 spaces as shown. Approximately 2 - 4 percent of spaces shall be designated as handicapped parking with markings and signage.

3. The sizes of bioretention basins are preliminary and are subjected to change as the design advances.

4. No grass areas. Only impervious pavement and concrete. Bioretention areas will be lined to prevent infiltration through the cover. Water will be piped out of bioretention areas.

N

0 200 400 600

Scale In Feet

Figure C-5
Conceptual Example Parking Lot Layout
SWMU 14 EE/CA
Naval Station Norfolk
Norfolk, Virginia

CH2MHILL

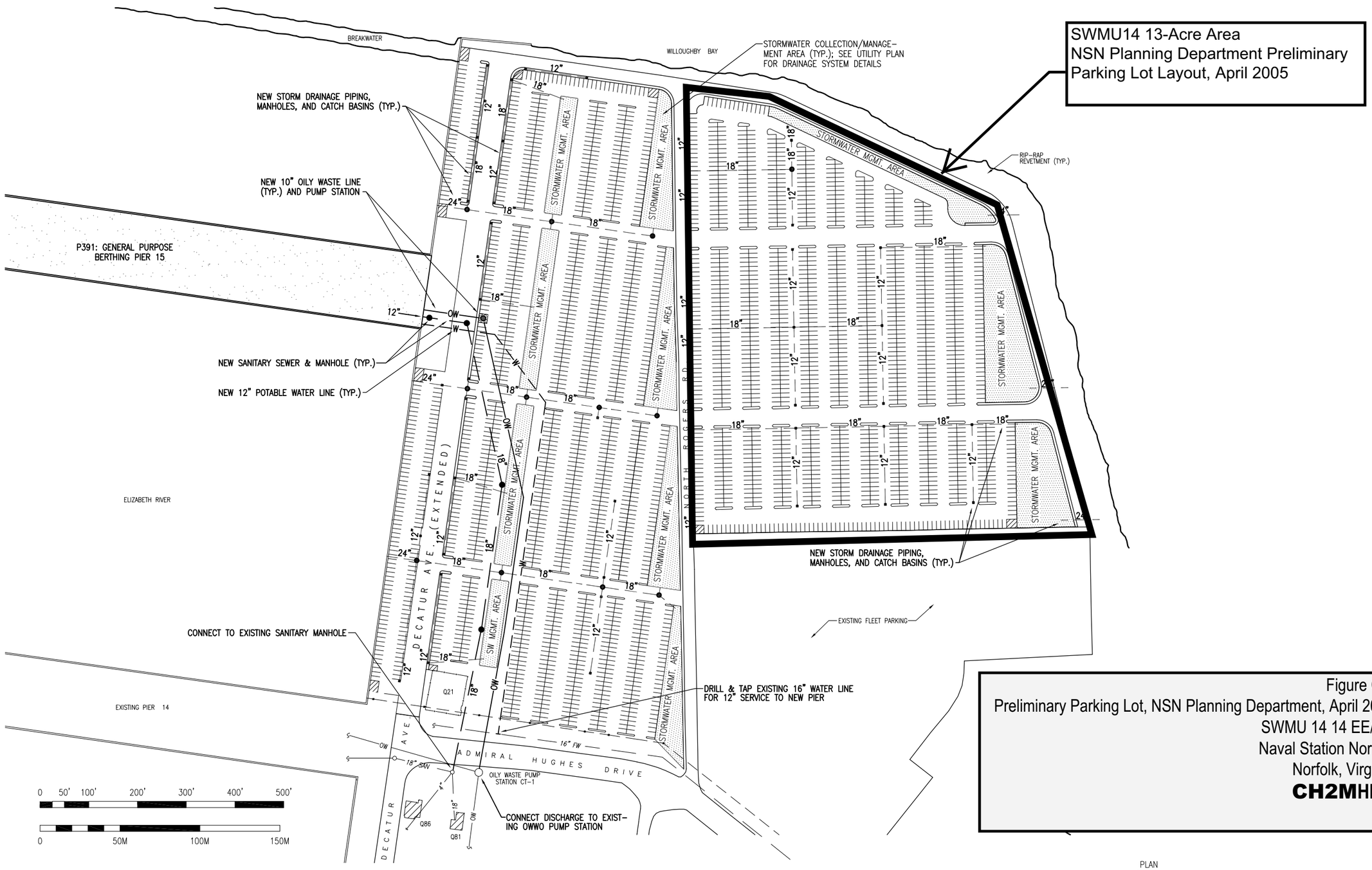


Figure C-6
Preliminary Parking Lot, NSN Planning Department, April 2005
SWMU 14 14 EE/CA
Naval Station Norfolk
Norfolk, Virginia
CH2MHILL

SITE UTILITY PLAN: PIER 15 SHORESIDE

SCALE: GRAPHIC

DATE	DESCRIPTION	STM	APPR

NAVFAC

SEAL

SUBMITTED BY
FIRM MEMBER DATE
APPROVED
ACTIVITY - SATISFACTORY TO DATE
APPROVED
FOR COMMANDER NAVFAC DATE

DES	JMS	DR	JMS
CHK		QC	

DESIGNER
REVIEWED BY
QC
PROJECT MANAGER J. WINKLER
FIRE PROTECTION
BRANCH MANAGER
DESIGN DIRECTOR

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
SEWELLS POINT / YORKTOWN IPT
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION ~ NORFOLK, VIRGINIA
NAVAL STATION NORFOLK, VA.
P391: CONSTRUCT GENERAL PURPOSE BERTHING PIER 15
SITE UTILITY PLAN: PIER 15 SHORESIDE

CODE ID. NO. 80091 SIZE D
SCALE: GRAPHIC
MAXIMO NO.
JOB ORDER NO. P391
SPEC. NO. N.A.
CONSTR. CONTR. NO. N.A.
NAVFAC DRAWING NO. N.A.
SHEET 4 OF 6
SK-104
DRAWFORM REVISION: 01 AUGUST 2004

REVDATE FILE NAME: C:\Land Projects 2005\PIER 15 1391\dwg\pier15-C-101.dwg LAYOUT NAME: UTILITY PLAN PLOTTED: Thursday, April 28, 2005 - 1:07pm

Bioretention Calculations / Backup

10-24-07
HL

Norfolk Navy Parking lot
over Landfill
SWMU 14

Worksheet 1
Page 1 of 3

STEP 1 **Determine the applicable area (A) and the post-developed impervious cover (I_{post}).**

Applicable area (A)* = 13.57 acres

Post-development impervious cover:

structures =_____acres

parking lot =_____acres

roadway =_____acres

12.23

other:

_____=_____acres

_____=_____acres

Total = 12.23 acres

I_{post} = (total post-development impervious cover ÷ A) × 100 = 90.1 %

* The area subject to the criteria may vary from locality to locality. Therefore, consult the locality for proper determination of this value.

STEP 2 **Determine the average land cover condition ($I_{watershed}$) or the existing impervious cover ($I_{existing}$).**

Average land cover condition ($I_{watershed}$):
If the locality has determined land cover conditions for individual watersheds within its jurisdiction, use the watershed specific value determined by the locality as $I_{watershed}$.

$I_{watershed}$ = 42 %

Otherwise, use the Chesapeake Bay default value:

$I_{watershed}$ = 16%

Worksheet 1
Page 2 of 3

Existing impervious cover ($I_{existing}$):

Determine the existing impervious cover of the development site if present.

Existing impervious cover:

structures =_____acres

parking lot =_____acres } 2.046

roadway =_____acres

other:

conc. pad = .379 acres

_____=_____acres

Total = 2.42 acres

$I_{existing}$ = (total existing impervious cover ÷ A*) × 100 = 17.87%

* The area should be the same as used in STEP 1.

STEP 3 **Determine the appropriate development situation.**

The site information determined in STEP 1 and STEP 2 provide enough information to determine the appropriate development situation under which the performance criteria will apply. Check (✔) the appropriate development situation as follows:

_____ **Situation 1**: This consists of land development where the existing percent impervious cover ($I_{existing}$) is less than or equal to the average land cover condition ($I_{watershed}$) and the proposed improvements will create a total percent impervious cover (I_{post}) which is less than or equal to the average land cover condition ($I_{watershed}$).

I_{post} _____% ≤ $I_{watershed}$ _____%

Worksheet 1
Page 3 of 3

X **Situation 2**: This consists of land development where the existing percent impervious cover ($I_{existing}$) is less than or equal to the average land cover condition ($I_{watershed}$) and the proposed improvements will create a total percent impervious cover (I_{post}) which is greater than the average land cover condition ($I_{watershed}$).

$I_{existing}$ 17.37 % ≤ $I_{watershed}$ 42 %; **and**

I_{post} 90.13 % > $I_{watershed}$ 42 %

_____ **Situation 3**: This consists of land development where the existing percent impervious cover ($I_{existing}$) is greater than the average land cover condition ($I_{watershed}$).

$I_{existing}$ _____ % > $I_{watershed}$ _____ %

_____ **Situation 4**: This consists of land development where the existing percent impervious cover ($I_{existing}$) is served by an existing stormwater management BMP(s) that addresses water quality.

If the proposed development meets the criteria for development Situation 1, than the low density development is considered to be the BMP and no pollutant removal is required. The calculation procedure for Situation 1 stops here. If the proposed development meets the criteria for development Situations 2, 3, or 4, then proceed to STEP 4 on the appropriate worksheet.

Worksheet 2 : Situation 2

Page 1 of 4

Summary of Situation 2 criteria: from calculation procedure **STEP 1** thru **STEP 3**, Worksheet 1:

Applicable area (A)* = 13.57 acres

I_{post} = (total post-development impervious cover ÷ A) × 100 = 90.13 %

$I_{watershed}$ = 42 % **or** $I_{watershed}$ = 16%

$I_{existing}$ = (total existing impervious cover ÷ A*) × 100 = 17.39 %

$I_{existing}$ 17.39 % ≤ $I_{watershed}$ 42 %; **and**

I_{post} 90.13 % > $I_{watershed}$ 42 %

STEP 4 **Determine the relative pre-development pollutant load (L_{pre}).**

$L_{pre(watershed)} = [0.05 + (0.009 \times I_{watershed})] \times A \times 2.28$ **(Equation 5-16)**

where: $L_{pre(watershed)}$ = relative pre-development total phosphorous load (pounds per year)
$I_{watershed}$ = average land cover condition for specific watershed or locality **or** the Chesapeake Bay default value of 16% (percent expressed in whole numbers)
A = applicable area (acres)

$L_{pre(watershed)} = [0.05 + (0.009 \times 42)] \times 13.57 \times 2.28$

= 13.24 pounds per year

Worksheet 2 : Situation 2

Page 2 of 4

STEP 5 **Determine the relative post-development pollutant load (L_{post}).**

$$L_{post} = [0.05 + (0.009 \times I_{post})] \times A \times 2.28 \quad \textbf{(Equation 5-21)}$$

where:
- L_{post} = relative post-development total phosphorous load (pounds per year)
- I_{post} = post-development percent impervious cover (percent expressed in whole numbers)
- A = applicable area (acres)

L_{post} = [0.05 + (0.009 × 90.1)] × 13.57 × 2.28

= 26.64 pounds per year

STEP 6 **Determine the relative pollutant removal requirement (RR).**

$$RR = L_{post} - L_{pre(watershed)}$$

RR = 26.64 - 13.24

= 13.4 pounds per year

STEP 7 **Identify best management practice (BMP) for the site.**

1. Determine the required pollutant removal efficiency for the site:

$$EFF = (RR \div L_{post}) \times 100 \quad \textbf{(Equation 5-22)}$$

where:
- EFF = required pollutant removal efficiency (percent expressed in whole numbers)
- RR = pollutant removal requirement (pounds per year)
- L_{post} = relative post-development total phosphorous load (pounds per year)

EFF = (13.4 ÷ 26.64) × 100

= 50.3 %

Worksheet 2 : Situation 2

Page 3 of 4

2. Select BMP(s) from **Table 5-15** and locate on the site:

BMP 1: thru 8 are Bioretention filters std 3.11A treating 1" runoff @ 65% removal

BMP ~~2~~: _____

BMP ~~3~~: _____

3. Determine the pollutant load entering the proposed BMP(s):

$L_{BMP} = [0.05 + (0.009 \times I_{BMP})] \times A \times 2.28$ **(Equation 5-23)**

where:
- L_{BMP} = relative post-development total phosphorous load entering proposed BMP (pounds per year)
- I_{BMP} = post-development percent impervious cover of BMP drainage area (percent expressed in whole numbers)
- A = drainage area of proposed BMP (acres)

$L_{BMP1} = [0.05 + (0.009 \times$ 86 $)] \times$ 1.50 $\times 2.28$

= 2.84 pounds per year

$L_{BMP2} = [0.05 + (0.009 \times$ 86 $)] \times$ 1.91 $\times 2.28$

= 3.60 pounds per year

$L_{BMP3} = [0.05 + (0.009 \times$ 91 $)] \times$ 1.48 $\times 2.28$

= 2.93 pounds per year

	I_{Bmp}	A_{Bmp}	lbs/yr
L_{BMP4} =	89	2.29	= 4.43
L_{BMP5} =	92	1.10	= 2.20
L_{BMP6} =	90	1.05	= 2.05
L_{BMP7} =	89	1.63	= 3.16
L_{BMP8} =	87	1.06	= 2.01

23.22 lbs/yr

BMPs Recieve Post-Dev Pollutant

Worksheet 2 : Situation 2

4. Calculate the pollutant load removed by the proposed BMP(s): All are 65% efficient

$L_{removed} = Eff_{BMP} \times L_{BMP}$ **(Equation 5-24)**

where: $L_{removed}$ = Post-development pollutant load removed by proposed BMP (pounds per year)
Eff_{BMP} = pollutant removal efficiency of BMP (expressed in decimal form)
L_{BMP} = relative post-development total phosphorous load entering proposed BMP (pounds per year)

Total $L_{removed/BMP1}$ = 23.22 × 0.65 = 15.10 pounds per year

$L_{removed/BMP2}$ = _____ × _____ = _____ pounds per year

$L_{removed/BMP3}$ = _____ × _____ = _____ pounds per year

5. Calculate the total pollutant load removed by the BMP(s): See step 4

$L_{removed/total} = L_{removed/BMP1} + L_{removed/BMP2} + L_{removed/BMP3} + \ldots$ **(Equation 5-25)**

where: $L_{removed/total}$ = **total** pollutant load removed by proposed BMPs
$L_{removed/BMP1}$ = pollutant load removed by proposed BMP No. 1
$L_{removed/BMP2}$ = pollutant load removed by proposed BMP No. 2
$L_{removed/BMP3}$ = pollutant load removed by proposed BMP No. 3

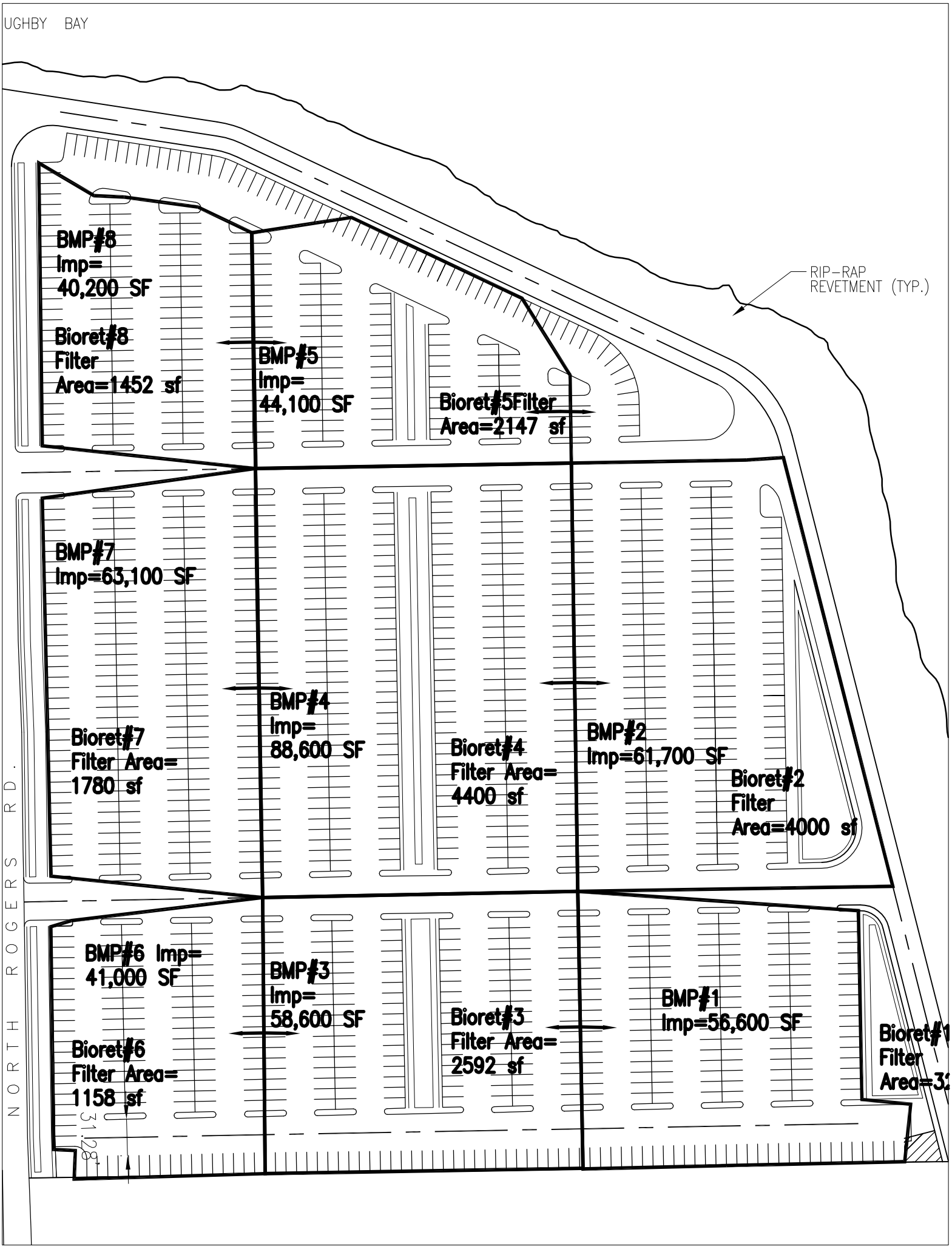
$L_{removed/total}$ = _____ + _____ + _____ + . . .

= _____ pounds per year

6. Verify compliance:

$L_{removed/total} \geq$ **RR**

15.10 ≥ 13.40 = ok


UGHBY BAY
RIP-RAP
REVETMENT (TYP.)
BMP#8
Imp=
40,200 SF
Bioret#8
Filter
Area=1452 sf
BMP#5
Imp=
44,100 SF
Bioret#5Filter
Area=2147 sf
BMP#7
Imp=63,100 SF
Bioret#7
Filter Area=
1780 sf
BMP#4
Imp=
88,600 SF
Bioret#4
Filter Area=
4400 sf
BMP#2
Imp=61,700 SF
Bioret#2
Filter
Area=4000 sf
BMP#6 Imp=
41,000 SF
Bioret#6
Filter Area=
1158 sf
BMP#3
Imp=
58,600 SF
Bioret#3
Filter Area=
2592 sf
BMP#1
Imp=56,600 SF
Bioret#1
Filter
Area=3
NORTH ROGERS RD.
31.28

SWMU 14

Tentative BMP calculation per VSWMH - performance method						
Site Area	13.57	Ac				
Proposed Impervious Area	12.23	Ac				
Post Developed % Impervious	90.13%					
"Green Space" pervious area	1.34	Ac				
	58370	SF				
Navy Assumed % impervious for pre-developed P Loading	42					
Pre- Dev P Loading	13.24	lbs / yr				
tentative % impervious for post-developed P Loading	90.13					
Post- Dev P Loading	26.64	lbs / yr				
Removal required	13.40	lbs / yr				
Removal % Efficiency required	50.3%					
Selected BMP	std 3.11A Bioretention Filter w/ Underdrain					
BMP P removal Efficiency	65%					
Minimum Proportion of Impervious Area that must be treated	77.4%					
Minimum Impervious Area to treat to meet P Removal Requirement	9.46	Ac				
Maximum Impervious Area to allow to go untreated	2.77	Ac				
Bioretention	Approx Treated Imperv Area (Ac)	Approx Drainage Area to BMP	Impervious %	Post Dev Pollutant Lbs/yr	BMP efficiency	Polluntant Removed Lbs/yr
#1 Lower Bay	1.30	1.50	86%	2.84	65%	1.84
#2 Middle Bay	1.65	1.91	86%	3.60	65%	2.34
#3 Lower Center	1.35	1.48	91%	2.93	65%	1.90
#4 Middle Center	2.03	2.29	89%	4.43	65%	2.88
#5 Upper Center Rd	1.01	1.10	92%	2.20	65%	1.43
#6 Lower N. Rogers Rd	0.94	1.05	90%	2.05	65%	1.33
#7 Middle N. Rogers Rd	1.45	1.63	89%	3.16	65%	2.05
#8 Upper N. Rogers Rd	0.92	1.06	87%	2.01	65%	1.31
Total	**10.65**	**12.02**		**23.22**		**15.10**

Miscellaneous calcs																		
Middle	bio	<park	park>	bio	<park	park>	bio	total	scales									
	15.5	180	120	26	120	180	20	661.5	700	-38.5	can filter strips be reduced							
						6 r 3 a												
Lower	bio	<park	park>	bio	<park	park>	bio	total	scales									
	15.5	180	120	26	120	282	27	770.5	780	-9.5	can filter strips be reduced							
		6 r 3 a	4 r 2 a		4 r 2 a	9 r 5 a												
across bottom	**56**																	
Lower		rows																
		6	4		4	9					**approx total parking**							
		space/row									**1463**							
		18	18		18	18												
		total																
		108	72		72	162		**414**										
		rows																
Middle		6	4		4	6												
		space/row																
		36	36		36	36												
		total																
		216	144		144	216		**720**										
upper	r1	r2	r3	r4	r5	r6	r7	r8	r9	r10	r11	r12	r13	r14	r15	r16	r17	
	27	25	24	24	23	21	20	18	17	15	14	11	10	8	7	5	4	**273**

Bioretention Sizing		
Bioret #1 = Lower Bayside	147	ft Length
Average Filter Width	22.2	ft
Filter Surface Area	3260	SF
Approximate Dry Storage Volume	4803.5	
Approx Impervious Area treated	56,600	SF
	1.299	Ac
1" Runoff Volume from Impervious Area	4717	CF
5% of Treated Area	2830	SF
Drainage Area	65500	SF
	1.504	Ac
Impervious %	86%	

Bioretention Sizing		
Bioret #2 = Middle Bayside	214	ft Length
Average Filter Width	18.7	ft
Filter Surface Area	4000	SF
Approximate Dry Storage Volume	6247	
Approx Impervious Area treated	71,700	SF
	1.646	Ac
1" Runoff Volume from Impervious Area	5975	CF
5% of Treated Area	3585	SF
Drainage Area	83200	SF
	1.910	Ac
Impervious %	86%	

Bioretention Sizing

Bioret #3 = Lower Center - double sided	162	ft Length
Average Filter Width	16	ft
Filter Surface Area	2592	SF
Approximate Dry Storage Volume	5022	
Approx Impervious Area treated	58,600	SF
	1.345	Ac
1" Runoff Volume from Impervious Area	4883	CF
5% of Treated Area	2930	SF
Drainage Area	64400	SF
	1.478	Ac
Impervious %	91%	

Bioretention Sizing

Bioret #4 = Middle Center - double sided	314	ft Length
Average Filter Width	9	ft
Filter Surface Area	2826	SF
Approximate Dry Storage Volume	7536	
Approx Impervious Area treated	88,600	SF
	2.034	Ac
1" Runoff Volume from Impervious Area	7383	CF
5% of Treated Area	4430	SF
Drainage Area	99600	SF
	2.287	Ac
Impervious %	89%	

Bioretention Sizing		
Bioret #5 = Upper Center - double sided	113	ft Length
Average Filter Width	19	ft
Filter Surface Area	2147	SF
Approximate Dry Storage Volume	3842	
Approx Impervious Area treated	44,100	SF
	1.012	Ac
1" Runoff Volume from Impervious Area	3675	CF
5% of Treated Area	2205	SF
Drainage Area	48000	SF
	1.102	Ac
Impervious %	92%	

Bioretention Sizing		
Bioret #6 = Lower N.Rogers Buffer	220	ft Length
Average Filter Width	6	ft
Filter Surface Area	1320	SF
Approximate Dry Storage Volume	3630	
Approx Impervious Area treated	41000	SF
	0.941	Ac
1" Runoff Volume from Impervious Area	3417	CF
5% of Treated Area	2050	SF
Drainage Area	45600	SF
	1.047	Ac
Impervious %	90%	

Bioretention Sizing

Bioret #7 = Middle N.Rogers Buffer	324	ft Length
Average Filter Width	6	ft
Filter Surface Area	1944	SF
Approximate Dry Storage Volume	5346	
Approx Impervious Area treated	63100	SF
	1.449	Ac
1" Runoff Volume from Impervious Area	5258	CF
5% of Treated Area	3155	SF
Drainage Area	71000	SF
	1.630	Ac
Impervious %	89%	

Bioretention Sizing

Bioret #8 = Upper N.Rogers Buffer	242	ft Length
Average Filter Width	4	ft
Filter Surface Area	968	SF
Approximate Dry Storage Volume	3509	
Approx Impervious Area treated	40200	SF
	0.923	Ac
1" Runoff Volume from Impervious Area	3350	CF
5% of Treated Area	2010	SF
Drainage Area	46200	SF
	1.061	Ac
Impervious %	87%	

SWMU 14

Quick & rough storm pipe sizing						
Bioretention	Approx Treated Imperv Area (Ac)	Approx Drainage Area to BMP	Impervious %	Rational C Factor	Approx 10yr Q	Approx Pipe Size
#6 Lower N. Rogers Rd	0.94	1.05	90%	0.84	6.2	18"
#3 Lower Center	1.35	1.48	91%	0.85	14.9	24"
#1 Lower Bay	1.30	1.50	86%	0.82	23.5	30"
#7 Middle N. Rogers Rd	1.45	1.63	89%	0.83	9.5	18"
#4 Middle Center	2.03	2.29	89%	0.83	22.9	30"
#2 Middle Bay	1.65	1.91	86%	0.82	33.8	36"
#8 Upper N. Rogers Rd	0.92	1.06	87%	0.82	6.1	18"
#5 Upper Center Rd	1.01	1.10	92%	0.85	12.7	24"
Total		**12.02**				
parking spaces	1497					

TABLE C-1
Cost Estimate for Alternative 2: Soil Cover
SWMU 14 EE/CA
Naval Station Norfolk
Norfolk, Virginia

Line Item	Cost Item	Unit	Quantity	Unit Cost	Cost	Comments/Notes
Preliminary						
1	Clearing and Grubbing	acre	0.5	$ 4,525.00	$ 2,262.50	Assume only 0.5 acre cumulative out of 13.2 acres. Site is relatively flat and mostly grass. RS Means (Site) 31 11 10.10 0160.
2	Stripping/Mowing (leave in place)	yd^3	10,648	$ 0.75	$ 7,986.00	Assume 0.5' stripping/mowing for the entire 13.2 acres site. RS Means (Site) 31 14 13.23 0020.
3	Field Office	lump sum	1	$ 9,700.00	$ 9,700.00	RS Means (Site) 01 52 13.20 0020.
4	Maintenance of Traffic	lump sum	1	$ 10,000.00	$ 10,000.00	Allowance.
5	Safety Fence	linear ft	972	$ 40.00	$ 38,880.00	Material and installation. Assume 1/3 of the silt fence quantity. Recent similar project.
6	Demolish-to-Rubble Existing Concrete Pad in Q-50 Satellite Accumulation Area *	ft^2	16,500	$ 3.96	$ 65,340.00	Assume the pad size is 150x110x0.5ft and wire mesh reinforced. Demo and leave in place to be covered. RS Means (Site) 02 41 16.17 0420.
Temporary Erosion and Sediment Control Items						
7	Construction Entrance Temporary Road	yd^2	233	$ 10.53	$ 2,457.00	Material and installation. Two at 75x14ft; RS Means (Site) 01 55 23.50 0100.
8	Excavation of Sediment Traps	yd^3	3,315	$ 7.98	$ 26,453.70	Assume an excavation depth of 4ft. RS Means (Site & Con) G1030 120 1000.
9	Backfill of Sediment Traps	yd^3	870	$ 0.79	$ 687.30	Placement only (material [and loading and hauling of material] covered in Line 12). Assume a depth of 4'. RS Means (Site) 31 23 23.14 2020.
10	Temporary Diversion	linear ft	3,190	$ 6.00	$ 19,140.00	Recent similar projects.
11	Super Silt Fence	linear ft	2,915	$ 10.49	$ 30,578.35	Material and installation. RS Means (Site & Con) 32 31 13.40 1200.
Grading (**If Necessary** ***-- Natural Grade Unknown At This Time)***						
12	Common Fill - Material **	yd^3	43,696	$ 18.38	$ 803,138.61	Material, loading, and hauling. RS Means (Site) 31 23 23.15 4080 and 31 23 23.18 0540. Assumed 8" fill over the 13.2 acres for appropriate post-construction grade. Site is currently assumed flat. (i.e., current grade is unknown -- natural grade may be sufficient). Topographic survey to be performed. Includes backfill for Line Items 9 and 16. Soil excavated onsite (Line Item 8) will be used as fill onsite (subtracted out of original potential max imported common fill), per 9VAC [20] 80 150(E)(2)(a)(4). Grading material is not a component of the soil cover system.
13	Common Fill - Grading	yd^3	14,197	$ 4.91	$ 69,708.91	Placement/grading only (material [and loading and hauling of material] covered in Line 12). RS Means (Site) G1030 210 2750.
14	Removal of Trees - 10" to 18" Caliper	each	3	$ 256.00	$ 768.00	Aerial photos show 3 trees onsite. RS Means (Site) 31 13 13.20 3150.
Soil Cover Items						
15	Top Soil for Vegetative Layer (6 inches)	yd^3	10,648	$ 32.28	$ 343,717.44	Material, loading, and hauling. 6inch topsoil for 13.2 acres. RS Means (Site) 31 23 23.15 7080 and 31 23 23.18 0540.
16	Grading Fill for Infiltration Layer (18 inches)	yd^3	31,944	$ 4.91	$ 156,845.04	Placement/grading only (material [and loading and hauling of material] covered in Line 12). RS Means (Site) G1030 210 2750.
17	Grading of Topsoil	yd^3	10,648	$ 4.91	$ 52,281.68	Placement/grading only (material [and loading and hauling of material] covered in Line 15). RS Means (Site) G1030 210 2750.
18	Seeding Cover	Acre	13.2	$ 1,777.25	$ 23,459.67	Material and placement. RS Means (Site) 32 92 19.14 0200.
19	Post-Installation Topo Survey	Acre	13.2	$ 328.60	$ 4,337.52	RS Means (Site) 02 21 13.09 0020.
20	[reserved]					
Subtotal					***$ 1,667,741.72***	
21	Contingency (20%)				$ 333,548.34	RS Means (Site) 01 21 16 16.50 0020.
22	***Subtotal***				***$ 2,001,290.06***	
23	General Conditions (10%)				$ 200,129.01	RS Means (Site), Page vi, General Conditions.
24	Mobilization/Demobilization (1%)				$ 20,012.90	Recent similar projects.
25	***Subtotal***				***$ 2,221,431.97***	
26	Contractor OH/P (10%)				$ 222,143.20	RS Means (Site) 01 31 13.80 0150.
27	***Subtotal***				***$ 2,443,575.16***	
28	Performance Bond (0.4%)				$ 9,774.30	RS Means (Site) 01 31 13.90 0300.
29	***TOTAL***				***$ 2,453,349.46***	
30	Design Costs (6%)				$ 147,200.97	RS Means (Site) 01 11 31.30 0900
31	Construction Oversight (4%)				$ 98,133.98	RS Means (Site) 01 11 31.20 0350.
	TOTAL COST OF ALTERNATIVE 2 **(does not include Present Value of LUCs and O&M, below)**				**$ 2,699,000**	*-30%* = ***$1,889,000*** / *+50%* = ***$4,049,000***
	Land-Use Controls & Operation and Maintenance	**Present Value Cost for LUCs and O&M**			**$ 627,000**	30 years. 3% discount rate. $32,000 per year for cover maintenance (vegetation, soil cover, and drainage features) and quarterly inspections.

References and Source Notes

- Base costs used are 2007 dollars.
- RS Means (Site): RS Means, *Site Work and Landscape Cost Data*, 26th Annual Edition, 2007.
- RS Means (Con): RS Means, *Heavy Construction Cost Data*, 21st Annual Edition, 2007.
- Recent similar projects include construction projects in Baltimore, MD; NAB Little Creek in Virginia Beach, VA; and NSN in Norfolk, VA.
- EPA Office of Solid Waste Faxback 11671, June 11,1992.
- Virginia Adminsitrative Code (VAC)
- OMB Circular A-94, Revised January 2007, "Discount Rates for Cost Effectiveness, Lease Purchase, and Related Analysis"

Assumptions and Exclusions

1. Any excavated material is assumed nonhazardous (per previous investigations) and will be re-covered and/or used as backfill and grading material onsite, per Virginia Solid Waste Management Regulations [i.e., 9VAC [20] 80 150(E)(2)(a)(4)] and EPA Faxback 11671 (EPA Office of Solid Waste Director Lowrance, June 1992)..
2. Excludes any special handling and disposal of any excavated materials. No materials will be removed from the site or disposed offsite. All excavated material will stay onsite as allowed by Virginia Solid Waste Management Regulations [i.e., 9VAC [20] 80 150(E)(2)(a)(4)] and EPA Faxback 11671 (EPA Office of Solid Waste Director Lowrance, June 1992).
3. Sediment traps and temporary diversion may not be required if the contractor elects to disturb the site by <3 acres at a time per 4VAC [5] 50 30 40(6)(b).
4. Assume no temporary support of excavation is needed for sediment traps.
5. Excludes all utilities and/or utility relocation.
6. Excludes new fencing, gates, and/or security systems.
7. Mobilization/Demobilization includes survey stakeout and utility clearance.

***** Cost associated with concrete pad demo ($65,300 subtotal x assumed multipliers = $102,000 Total Cost) can be eliminated if the concrete pad can be left in place and covered as-is, versus demolishing to rubble and covering.
****** Cost associated with potential grading (up to 8" fill) ($873K subtotal x assumed multipliers = $1.4M Total Cost) can be eliminated depending on topography to be realized at the site after topographic survey. Grading fill is not a soil cover component.

TABLE C-2
Cost Estimate for Alternative 3: Asphalt Cover (Parking Lot)
SWMU 14 EE/CA
Naval Station Norfolk
Norfolk, Virginia

Line Item	Cost Item	Unit	Quantity	Unit Cost	Cost	Comments/Notes
Preliminary						
1	Clearing and Grubbing	acre	0.5	$ 4,525.00	$ 2,262.50	Assume only 0.5 acre cumulative out of 13.2 acres. Site is relatively flat and mostly grass. RS Means (Site) 31 11 10.10 0160.
2	Stripping/Mowing (leave in place)	yd^3	10,648	$ 0.75	$ 7,986.00	Assume 0.5' stripping/mowing for the entire 13.2 acres site. RS Means (Site) 31 14 13.23 0020.
3	Field Office	lump sum	1	$ 9,700.00	$ 9,700.00	RS Means (Site) 01 52 13.20 0020.
4	Maintenance of Traffic	lump sum	1	$ 10,000.00	$ 10,000.00	Allowance.
5	Safety Fence	linear ft	972	$ 40.00	$ 38,880.00	Material and installation. Assume 1/3 of the silt fence quantity. Recent similar project.
6	Demolish-to-Rubble Existing Concrete Pad in Q-50 Satellite Accumulation Area *	ft^2	16,500	$ 3.96	$ 65,340.00	Assume the pad size is 150x110x0.5ft and wire mesh reinforced. Demo and leave in place to be covered. RS Means (Site) 02 41 16.17 0420.
Temporary Erosion and Sediment Control Items						
7	Construction Entrance Temporary Road	yd^2	233	$ 10.53	$ 2,457.00	Material and installation. Two at 75x14ft; RS Means (Site) 01 55 23.50 0100.
8	Excavation of Sediment Traps	yd^3	3,000	$ 7.98	$ 23,940.00	Assume an excavation depth of 4ft. RS Means (Site & Con) G1030 120 1000.
9	Backfill of Sediment Traps	yd^3	870	$ 0.79	$ 687.30	Placement only (material [and loading and hauling of material] covered in Line 12). Assume a depth of 4'. RS Means (Site) 31 23 23.14 2020.
10	Temporary Diversion	linear ft	3,190	$ 6.00	$ 19,140.00	Recent similar project.
11	Silt Fence	linear ft	2,915	$ 0.63	$ 1,836.45	Material and installation; RS Means (Site & Con) 31 25 13.10 1000.
Grading (*If Necessary *-- Natural Grade Unknown At This Time)						
12	*Common Fill - Material (TBD)* **	*yd^3*	*6,067*	$ 18.38	$ 111,517.59	Material, loading, and hauling. RS Means (Site) 31 23 23.15 4080 and 31 23 23.18 0540. Assumed 8" fill over the 13.2 acres for appropriate post-construction grade. Site is currently assumed flat. (i.e., current grade is unknown -- natural grade may be sufficient). Topographic survey to be performed. Includes backfill for Line Items 9 and 16. Soil excavated onsite (Line Item 8) will be used as fill onsite (subtracted out of original potential max imported common fill), per 9VAC [20] 80 150(E)(2)(a)(4). Grading material is not a component of the soil cover system.
13	*Common Fill - Grading*	*yd^3*	*14,197*	$ 4.91	$ 69,708.91	Placement/grading only (material [and loading and hauling of material] covered in Line 12). RS Means (Site) G1030 210 2750.
14	Removal of Trees - 10" to 18" Caliper	each	3	$ 256.00	$ 768.00	Aerial photos show 3 trees onsite. RS Means (Site) 31 13 13.20 3150.
Drainage						
15	Storm Drain Inlets (Catch Basins)	each	15	$ 3,050.00	$ 45,750.00	Material and installation. RS Means (Con) G3030 210 4620.
16	[reserved]					
17	Trench Excavation for Pipe Installation (and fill and compact)	linear ft	2,950	$ 5.15	$ 15,192.50	Excavation, backfill, and compaction. Assume an average of 18" pipe size with an average of 3.5' cover. RS Means (Site) G1030 805 1340.
18	12" Reinforced Concrete Pipe Class 4	linear ft	740	$ 22.57	$ 16,701.80	Material and installation. RS Means (Con) 33 41 13.60 2510.
19	18" Reinforced Concrete Pipe Class 4	linear ft	990	$ 29.78	$ 29,482.20	Material and installation. RS Means (Con) 33 41 13.60 2514.
20	24" Reinforced Concrete Pipe Class 4	linear ft	630	$ 40.60	$ 25,578.00	Material and installation. RS Means (Con) 33 41 13.60 2518.
21	36" Reinforced Concrete Pipe Class 4	linear ft	590	$ 101.25	$ 59,737.50	Material and installation. RS Means (Con) 33 41 13.60 2524.
22	Bioretention Fine	yd^3	3,000	$ 1.41	$ 4,230.00	Grading. RS Means (Site) 31 23 23.17 0020.
23	[reserved]					
24	Bioretention Planting (Trees)	each	70	$ 180.00	$ 12,600.00	Material and placement. Recent similar project.
25	Bioretention Planting (Shrub)	each	210	$ 28.00	$ 5,880.00	Material and placement. Recent similar project.
26	Bioretention Excavation (sediment trap conversion + additional locations)	yd^3	6,000	$ 7.98	$ 47,880.00	RS Means (Site) G1030 120 1000.
27	Bioretention Installation	each	8	$ 25,000.00	$ 200,000.00	Recent similar project.
28	Riprap Outlet Protection	ton	70	$ 35.18	$ 2,462.60	Material and installation. Size by VESCH. Two areas of 5x6x1.25ft. RS Means (Con) 31 37 13.10 0350.
29	[reserved]					
30	[reserved]					
31	[reserved]					
Paving Items						
32	3" Asphalt Concrete Surface Course	yd^2	59,048	$ 8.93	$ 527,298.64	Includes material and placement. 12.2 acres to be paved. RS Means (Con) 32 12 16.13 0460.
33	Hauling	yd^3	4,921	$ 6.30	$ 31,000.20	Hauling asphalt; 10 mile round trip. RS Means (Con) 31 23 23.18 1120.
34	6" Graded Aggregate Base Course	yd^2	59,048	$ 7.06	$ 416,878.88	Includes material and placement. RS Means (Con) 32 11 23.23 0100.
35	Hauling	yd^3	9,841	$ 6.30	$ 62,000.40	Hauling base course; 10 mile round trip. RS Means (Con) 31 23 23.18 1120.
36	6" Graded Aggregate Sub-base Course	yd^2	59,048	$ 8.21	$ 484,784.08	Includes material and placement. RS Means (Con) 32 11 23.23 0302.
37	Hauling	yd^3	9,841	$ 6.30	$ 62,000.40	Hauling sub-base course; 10 mile round trip. RS Means (Con) 31 23 23.18 1120.
38	White Pavement Paint	stall	1,497	$ 8.05	$ 12,050.85	Material and application. RS Means (Site & Con) 32 17 23.14 0800
39	Handicap Symbol White Pavement Paint	stall	30	$ 44.60	$ 1,338.00	Material and application. Assume 2% of stalls; RS Means (Site & Con) 32 17 23.14 1200.
40	Curb ***	linear ft	10,000	$ 18.80	$ 188,000.00	Material and installation. RS Means (Site & Con) 32 16 13.13 0430.
41	Post-Installation Topo Survey	acre	13.2	$ 328.60	$ 4,337.52	RS Means (Site) 02 21 13.09 0020.
42	[reserved]					
Subtotal					***$ 2,619,407.31***	
43	Contingency (20%)				$ 523,881.46	RS Means (Site) 01 21 16 16.50 0020.
44	***Subtotal***				***$ 3,143,288.78***	
45	General Conditions (10%)				$ 314,328.88	RS Means (Site), Page vi, General Conditions.
46	Mobilization/Demobilization (1%)				$ 31,432.89	Recent similar projects.
47	***Subtotal***				***$ 3,489,050.54***	
48	Contractor OH/P (10%)				$ 348,905.05	RS Means (Site) 01 31 13.80 0150.
49	***Subtotal***				***$ 3,837,955.60***	
50	Performance Bond (0.4%)				$ 15,351.82	RS Means (Site) 01 31 13.90 0300.

TABLE C-2
Cost Estimate for Alternative 3: Asphalt Cover (Parking Lot)
SWMU 14 EE/CA
Naval Station Norfolk
Norfolk, Virginia

Line Item	Cost Item	Unit	Quantity	Unit Cost	Cost	Comments/Notes
51	***TOTAL***				***$ 3,853,307.42***	
52	Design Costs (6%)				$ 231,198.45	RS Means (Site) 01 11 31.30 0900.
53	Construction Oversight (4%)				$ 154,132.30	RS Means (Site) 01 11 31.20 0350.
	TOTAL COST OF ALTERNATIVE 3 **(does not include Present Value of LUCs and O&M, below)**			**	**$ 4,239,000**	*-30% =* ***$2,967,000*** *+50% =* ***$6,359,000***
	Land-Use Controls & Operation and Maintenance			**Present Value Cost for LUCs and O&M**	**$ 1,074,000**	30 years. 3% discount rate. $31,000 per year for general maintenance and quarterly inspections. Re-paving 1/3 of parking lot ever 10 years. Re-painting entire parking lot every 10 years.

References and Source Notes

- Base costs used are 2007 dollars.
- RS Means (Site): RS Means, Site Work and Landscape Cost Data, 26th Annual Edition, 2007.
- RS Means (Con): RS Means, *Heavy Construction Cost Data* , 21st Edition, 2007.
- Recent similar projects include construction projects in Baltimore, MD; NAB Little Creek in Virginia Beach, VA; and NSN in Norfolk, VA.
- EPA Office of Solid Waste Faxback 11671, June 11,1992.
- Virginia Adminsitrative Code (VAC)
- OMB Circular A-94, Revised January 2007, "Discount Rates for Cost Effectiveness, Lease Purchase, and Related Analysis"

Assumptions and Exclusions

1. Any excavated material is assumed nonhazardous (per previous investigations) and will be re-covered and/or used as backfill and grading material onsite, per Virginia Solid Waste Management Regulations [i.e., 9VAC [20] 80 150(E)(2)(a)(4)] and EPA Faxback 11671 (EPA Office of Solid Waste Director Lowrance, June 1992)..
2. Excludes any special handling and disposal of any excavated material. No materials will be removed from the site or disposed offsite. All excavated material will stay onsite as allowed by Virginia Solid Waste Management Regulations [i.e., 9VAC [20] 80 150(E)(2)(a)(4)] and EPA Faxback 11671 (EPA Office of Solid Waste Director Lowrance, June 1992).
3. Line Item 16 includes SWM forebay area.
4. Assume no temporary support of excavation is needed for the installation of storm drain pipes.
5. Excludes all utility costs except storm sewer. Utility relocation is not included.
6. Excludes new fencing, gates, traffic signs, parking light foundations, and security systems.
7. Mobilization/Demobilization includes survey stakeout and utility clearance.

***** Cost associated with concrete pad demo ($65,300 subtotal x assumed multipliers = $102,000 Total Cost) can be eliminated if the concrete pad can be left in place and covered as-is, versus demolishing to rubble and covering.
****** Cost associated with potential grading (up to 8" fill) ($181K subtotal x assumed multipliers = $293KM Total Cost) can be eliminated depending on topography to be realized at the site after topographic survey. Grading fill is not an asphalt cover component.
******* Cost associated with curbing ($188K subtotal x assumed multipliers = $294K Total Cost) can be reduced by using wheel stops instead of curbing. At $40 per wheel stop for 1,497 stalls (based on current conceptual layout), the total cost would be approximately $94K ($60K subtotal x assumed multipliers).

Attachment B
Public Notice and Responsiveness Summary

The following notice was placed in *The Virginian Pilot* newspaper on January 25, 2008. No comments were received from the public during the public comment period. As a result, a public meeting was not held.

Public Notices

NAVFAC
Naval Facilities Engineering Command

NOTICE OF THE NAVY'S INVITATION FOR PUBLIC COMMENT ON THE ENGINEERING EVALUATION/COST ANALYSIS FOR SOLID WASTE MANAGEMENT UNIT 14 NAVAL STATION NORFOLK NORFOLK, VIRGINIA

The Department of the Navy (DoN) invites public comment on the Engineering Evaluation/Cost Analysis (EE/CA) for the Solid Waste Management Unit (SWMU) 14, Q-50 Satellite Accumulation Area, which is collocated with and subsumes Installation Restoration Site 9, Q-Area Landfill. This area is associated with historical filling operations to expand the shoreline at Willoughby Bay, including construction debris landfill operations (Site 9), and temporary storage of hazardous and nonhazardous waste (SWMU 14) on a concrete pad. The EE/CA presents and evaluates alternatives for a non-time critical removal action (NTCRA) to mitigate potential unacceptable human health risk from exposure to contaminated surface soil, subsurface soil, and subsurface debris. In accordance with 40 CFR Section 300.415, an EE/CA is required when a NTCRA is planned for a site. The goals of an EE/CA are to identify the objectives of the removal action and to analyze the effectiveness, implementability, and cost of various alternatives that may satisfy these objectives. An EE/CA documents the removal action alternatives and selection process.

The EE/CA is based upon findings of previous site-related documents contained in the DoN's Administrative Record for NSN. The Administrative Record is located at:

Naval Facilities Engineering Command, Atlantic Division
6506 Hampton Boulevard
Norfolk, VA 23508-1278
(757) 322-8005

The EE/CA will be available from January 25, 2008, through February 25, 2008, for public review and comment at the following location:

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

Provide written comments on the EE/CA from January 25, 2008, through February 25, 2008. Send all written comments on or before (post-marked by) February 25, 2008, to the following address:

Mrs. Terri Davis
Attn: Public Affairs Officer
Naval Station Norfolk
1530 Gilbert Street, Suite 2000
Norfolk, Virginia 23511-2722
(757) 322-2576

VP January 25, 2008 18213505