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Final

Proposed Remedial Action Plan SWMU 25

NAS Oceana
Virginia Beach, Virginia

Prepared for

Department of the Navy

Atlantic Division
Naval Facilities Engineering Command
Norfolk, Virginia

Contract No. N62470-95-D-6007
CTO-0105

September 2003

Prepared by

CH2MHILL

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Contents

Acronyms and Abbreviations

AWQC	Ambient Water Quality Criteria
BTAG	Biological Technical Advisory Group
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CMS	Corrective Measures Study
COPC	Contaminants of Potential Concern
EPA	See USEPA
ERA	Ecological Risk Assessment
HQ	Hazard Quotient
NA	No Action
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
NEPA	National Environmental Policy Act of 1969
NOAA	National Oceanic Atmospheric Administration
PCB	polychlorinated biphenyl
ppb	parts per billion
ppm	parts per million
PRAP	Proposed Remedial Action Plan
RBCs	Risk Based Concentrations
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
USEPA	United States Environmental Protection Agency
VDEQ	Virginia Department of Environmental Quality
VOC	volatile organic compound

SECTION 1

Introduction

The Department of the Navy (Navy) has identified a preferred remedial alternative to address contaminated surface water and sediment at Solid Waste Management Unit (SWMU) 25 located at Naval Air Station (NAS) Oceana, Virginia Beach, Virginia. The Navy's preferred alternative is to take no action at SWMU 25.

This Proposed Remedial Action Plan (PRAP) is based on site-related documents contained in the Navy's Administrative Record. The Administrative Record provides important SWMU background and site-investigation information; it is located at:

Virginia Beach Public Library
4100 Virginia Beach Boulevard
Virginia Beach, VA 23452
(757) 431-3000/3001

Hours of Operation:

October 1–May 31
Monday–Thursday: 10 a.m. to 9 p.m.
Friday and Saturday: 10 a.m. to 5 p.m.
Sunday: 1 p.m. to 5 p.m.

and

June 1–September 30
Monday–Thursday: 10 a.m. to 9 p.m.
Friday and Saturday: 10 a.m. to 5 p.m.
Sunday: Closed

The Navy needs your comments and suggestions. The Navy, the U.S. Environmental Protection Agency (USEPA) Region III, and the Virginia Department of Environmental Quality (VDEQ) encourage the public to review and comment on the actions presented in this PRAP. The public comment period begins on August 24, 2003, and closes on September 22, 2003. Please send your comments, postmarked no later than September 22, 2003, to:

Commander
Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Bldg. N-21)
Norfolk, Virginia 23511-2699
Attention: Public Affairs Officer, Mr. John E. Peters
Phone: (757) 322-8005, FAX: (757) 322-8187
pao@efdlant.navfac.navy.mil

In addition, you are invited to a public meeting at NAS Oceana regarding the investigation of SWMU 25. Navy representatives will report on the status of SWMU 25 and the Navy's preferred alternative. The meeting is scheduled for:

September 10, 2003
7:00 PM - 8:00 PM
NAS Oceana Officers Club
NAS Oceana, Virginia Beach, Virginia

This PRAP describes the Navy's preferred alternative for SWMU 25. The Navy may modify the preferred alternative or select another remedial alternative if public comments or additional data indicate that such a change will result in a more appropriate remedial action. The Navy, in consultation with USEPA and VDEQ, will make a remedy selection for SWMU 25 in a Decision Document after the public comment period has ended and the comments and information submitted during that time have been reviewed and considered.

SWMU 25 was initially investigated following the requirements of the NAS Oceana Resource Conservation and Recovery Act (RCRA) 3008 (h) consent order. However, in July 1998, the Navy and USEPA agreed to conduct future site remediation activities at NAS Oceana following the procedural and substantive requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) program, 42 U.S.C. §9601 et seq., 10 U.S.C. §2701 et seq., and Executive Order 12580 (23 January 1987). The Navy is issuing this PRAP as part of its public participation responsibilities under Sections 113(k) and 117(a) of CERCLA, as amended (commonly known as the "Superfund Program") and the National Environmental Policy Act of 1969 (NEPA). This PRAP focuses on SWMU 25. Other areas of NAS Oceana are addressed by separate PRAPs.

SECTION 2

Site Background

NAS Oceana is located in Virginia Beach, Virginia (Figure 1). The base was established in 1940 as a small auxiliary airfield and since then has grown to more than 16 times its original size to a 6,000-acre master jet base supporting a community of more than 9,100 Navy personnel and 11,000 dependents. The primary mission of NAS Oceana is to provide the personnel, operations, maintenance, and training facilities to ensure the deployment readiness of fighter and attack squadrons on aircraft carriers of the U.S. Atlantic Fleet.

A total of 60 SWMUs were recommended for study in the draft RCRA Consent Order issued by USEPA. After reviewing the results of the Interim RCRA Facility Investigation (RFI), the Navy and USEPA determined that only 19 SWMUs required investigation under the Consent Order; the remainder of the RCRA Facility Assessment (RFA) identified SWMUs that are regulated under other federal and/or state programs. Four of the RFA SWMUs, because of their proximity to one another, were consolidated into two; therefore, 17 SWMUs were included in the RFI under the Consent Order. Subsequent investigation activities have involved a three-phase RFI, the preparation of the Corrective Measures Study (CMS) and associated studies, human health and ecological risk assessments, and corrective action, where applicable. The SWMUs at the NAS Oceana are categorized by considering the additional work required for SWMU closeout. SWMU 25 is categorized as requiring no additional investigation, risk assessment, or remediation. SWMU 25 was identified in the Phase III RFI as having surface-water and sediment contamination that poses no unacceptable human health risks. SWMU 25 was subsequently identified in the Ecological Risk Assessment (ERA) as posing limited ecological risk to the flora and fauna. The investigation results and conclusions are summarized in the proceeding sections. The location of SWMU 25 is shown in Figure 2.

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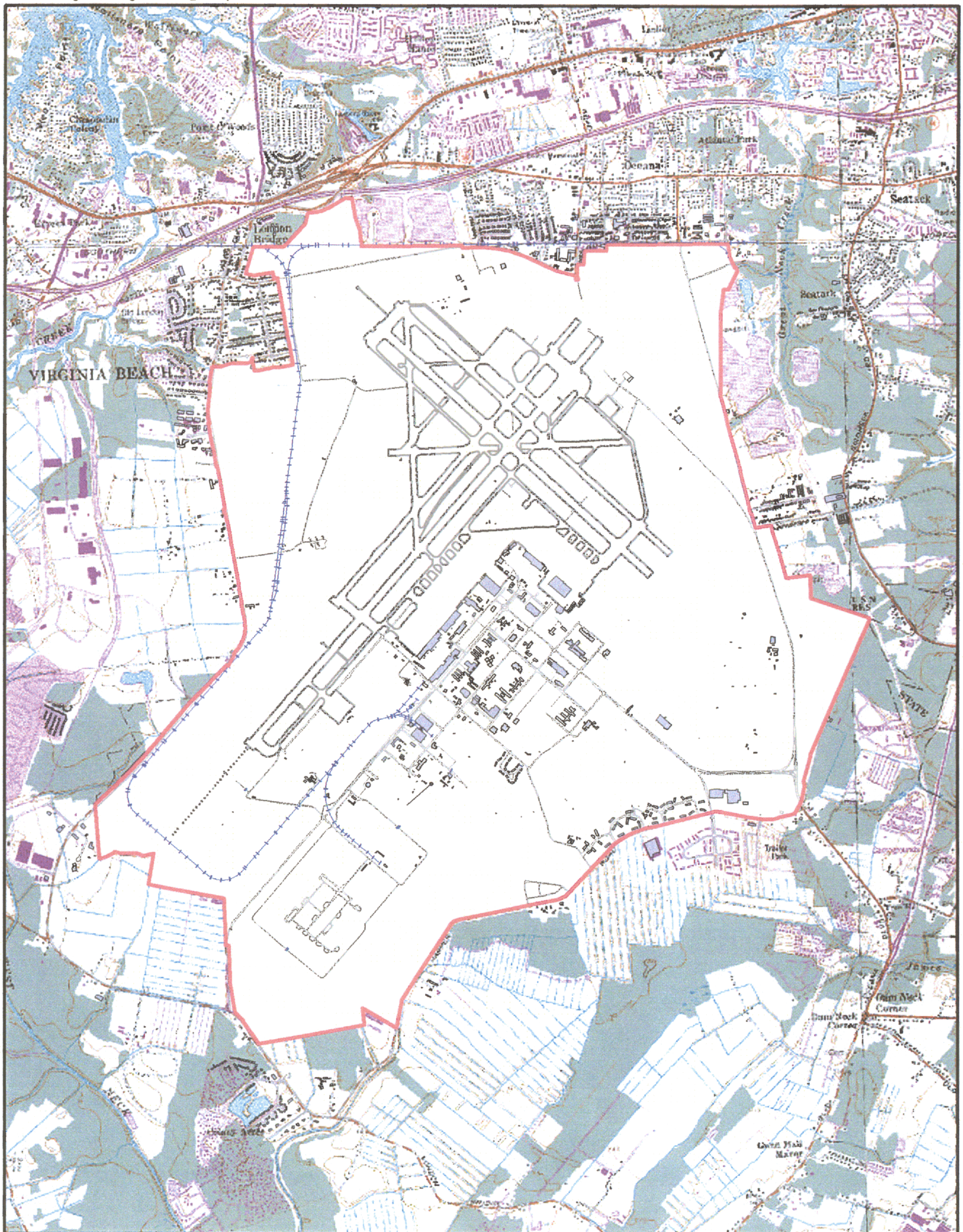

LEGEND

NAS Oceana Boundary Line

Buildings

N

2000 0 2000 4000 Feet

Figure 1
Base Map
NAS Oceana, Virginia Beach, Virginia

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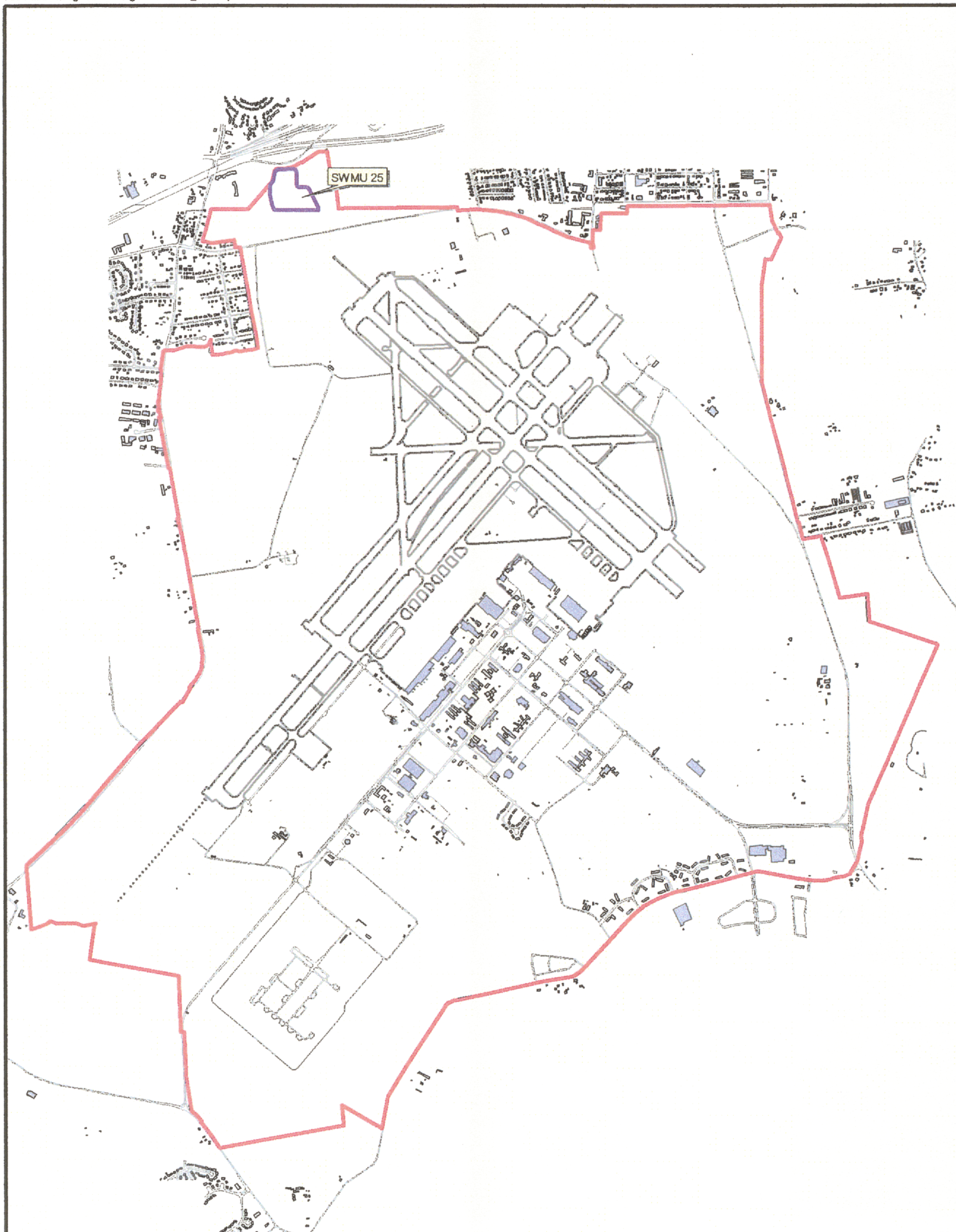

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SWMU Boundary

Buildings

NAS Oceana Boundary Line

N

0 2000 4000 Feet

Figure 2
SWMU Location Map
NAS Oceana, Virginia Beach, Virginia

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SECTION 3

SWMU 25 Background and Investigation History

This section provides a site description, habitat evaluation, summary of previous investigations, nature and extent of contamination, and a summary of human health and ecological site risks for SWMU 25, Inert Landfill.

3.1 Site Description

SWMU 25 is located in the Type II Clear Zone and approximately 2,400 ft north of NAS Oceana Airfield Runway 14/32. The SWMU consists of an area known as the "western pond," a former borrow pit subsequently used as a concrete disposal area. The general area is bounded on the south by the Norfolk and Southern Railroad and land that has been historically farmed; on the west and east by undeveloped land; and on the north by Interstate Highway 264 (formerly Virginia Highway 44). A semi-paved access road crosses the railroad and connects the SWMU to Potters Road. The area south of the railroad consists of fields owned by the Navy but leased to a local farmer.

During the construction of Highway 44 in the 1970s, the SWMU 25 area was used for sand borrow pits and as a disposal area. Over the years, the two borrow pits in this area filled with water, eventually forming ponds. There is no surface water flow between the two ponds. A ditch leads into the eastern side of the western pond.

In 1979, the Navy purchased the land and began using the area near the western pond as a concrete disposal area (e.g., concrete from refurbishing NAS runways). The Navy ceased disposal activities before 1990 and has not used the area since. The Navy has restricted public access as well.

The concrete disposal activities occurred in the southeast corner of the western pond. Approximately 60 percent of the concrete was placed in the pond and the remaining 40 percent forms a debris pile rising 8–16 ft above ground level. The disposal area is roughly circular, with a diameter of about 360 feet.

Navy regulations indicate that runway clear zones shall be graded and cleared of all above-ground objects except airfield lighting. The concrete at SWMU 25 is scheduled to be removed and recycled by a contractor within the next 2 years. The concrete removal will extend to the ground surface adjacent to the pond and to approximately 3 ft below the water surface in the pond, even though the concrete is known to extend several additional feet to the bottom of the pond. Following the concrete recycling project, the area will be restored to a natural uplands habitat.

3.2 Habitat Evaluation

The western pond covers approximately 6 acres and is approximately 25-30 ft deep. A ditch leads into the eastern side of the western pond. There is no outlet from the western pond. There is also no surface water flow between the eastern and western ponds.

The ponds are primarily surrounded by a variety of grasses, scattered eastern red cedar (*Juniperus virginiana*), black cherry (*Prunun serotina*), groundsel tree (*Baccharis halimfolia*), and southern bayberry (*Myrica cerifera*), as well as escaped ornamentals such as crabapple (*Malus*), red mulberry (*Morus rubra*), and Chinese privet (*Ligustrum sinense*).

A variety of birds have been observed around the pond, including great blue herons (*Ardea herodias*), ring-necked ducks (*Aythya collaris*), mallards (*Anas platyrhynchos*), belted kingfishers (*Ceryle alcyon*), and crows (*Corvus brachyrhyncos*). Bluegills and largemouth bass have been observed in the pond.

3.3 Previous Investigations

SWMU 25 was first identified in the 1983 RCRA Facility Assessment (RFA) and subsequently investigated four times. The first investigation was the RCRA Facility Investigation (RFI); its results are published in the December 1993 RFI report. This was followed by the Phase II RFI; its results are published in the February 1995 Phase II RFI report. The Phase II RFI was followed by the Phase III RFI; its results are published in the June 1999 Phase III RFI report. An ERA was conducted after the Phase III RFI; its results are published in the December 2001 ERA Technical Memorandum. The ERA was conducted by evaluating existing data; it did not involve collecting new data.

3.4 Nature and Extent of Contamination

During the site investigations described above, the nature and extent of contamination was identified for SWMU 25. The results of each of these investigations are summarized below.

- **RCRA Facility Assessment**—SWMU 25 was identified in the 1983 RFA because of the presence of concrete rubble and of (apparently residential) old refrigerators and other appliances.
- **Phase I RCRA Facility Investigation**—The Phase I RFI was conducted to characterize the nature and extent of surface water and sediment contamination in the western pond. Two sediment samples and a surface water sample were collected in the pond, and a surface water and a sediment sample were collected in the adjacent ditch. Samples were analyzed for metals, pesticides, polychlorinated biphenyls (PCBs), semivolatile organic compounds (SVOCs), and volatile organic compounds (VOCs). Pesticides and metals were present in the sediment and surface water at concentrations above ecological guidelines. Concentrations of 4,4′-DDE (27 parts per billion (ppb)) and 4,4′-DDT (25 ppb) in the sediment exceeded the National Oceanic Atmospheric Administration (NOAA) sediment guidelines of 15 ppb and 7 ppb, respectively. The inorganics detected in the sediments that exceeded federal guidelines are zinc (723 parts per million (ppm)) and copper (746 ppm). These concentrations exceed the NOAA sediment guidelines of

270 and 390 ppm, respectively. Concentrations of arsenic (1.2 ppb) and nickel (13.7 ppb) in the surface water exceeded the federal ambient water quality criteria (AWQC) of 0.0022 ppb and 13.4 ppb, respectively, for the ingestion of water and fish. The Phase I RFI recommended additional sampling of the pond sediment to determine the extent of contamination.

- **Phase II RCRA Facility Investigation**—The Phase II RFI was conducted to determine the extent of pesticides and metals contamination detected in the Phase I RFI sediment samples. Three sediment samples were collected along the pond's shoreline and analyzed for total organic carbon, pesticides, and metals. Pesticides and metals were detected in these samples. However, the only documented exceedance during the Phase II RFI was pesticide compound 4,4'-DDT (7.5 ppb), which was detected at a concentration slightly above the NOAA guideline of 7.0 ppb.
- **Phase III RCRA Facility Investigation**—The Phase III RFI investigation was conducted to confirm the analytical results from previous investigations and to fill data gaps in order to facilitate developing and implementing remedial actions. The Phase III RFI field activities included sediment sampling and attempting to install a monitoring well.

  The monitoring well was intended to monitor groundwater that may be flowing toward the east-northeast from beneath the inert landfill. However, there was agreement with the U.S. Army Corps of Engineers (providing oversight for EPA) not to install the groundwater-monitoring well at the site during the Phase III RFI because of voids in the subsurface (which prevented the construction of a well), the fact that the area was unstable and unsafe for a heavy drill rig, and that potential contaminants in the groundwater would be detected in the pond's surface water.

  The purpose of the sediment sampling was to determine if pesticide contamination was present at the pond's base, which would indicate a possible contaminant source within the inert landfill, and to confirm the analytical results of the Phase II RFI sediment sampling. No pesticides were detected above the detection limits in any of the sediment samples, indicating that the inert landfill is not likely to be a source of pesticides. Therefore, no action was recommended in the Phase III report.

3.5 Summary of Site Risks

An evaluation of risk to human health was conducted as part of the Phase III RFI. The SWMU was also evaluated for ecological risk because of the presence of complete exposure pathways. The results of these risk assessments are summarized below.

3.5.1 Human Health Risk Assessment

The Navy compared detected concentrations in sediments to EPA Region III Risk Based Concentrations (RBCs) for industrial and residential soil scenarios. The comparison revealed no exceedances of the RBCs in any of the sediment samples collected at SWMU 25 during any of the RFI investigations (Phase I, Phase II, and Phase III). Sample locations are shown on Figure 3. Therefore, exposure to the sediments at SWMU 25 poses no unacceptable risk to human health.

The concentrations detected in the Oceana SWMU 25 surface water data collected in February 1993 were compared to ten times the USEPA Region III RBCs for tap water. Prior to multiplying the tap water RBCs by ten, the noncarcinogenic RBCs were divided by ten to account for exposure to multiple noncarcinogenic constituents. Arsenic was the only constituent that was detected at a concentration that exceeded ten times the tap water RBC and is the only constituent of potential concern. However, the detected concentrations of arsenic would not result in unacceptable carcinogenic risks or noncarcinogenic hazards to potential receptors (recreational adults and children who incidentally ingest the surface water and have dermal contact with the surface water) for the surface water. Use of ten times the tap water RBC as a screening for the surface water is extremely conservative, and actual exposures would be much less than those used to compute the RBCs.

3.5.2 Ecological Risk Assessment

An ERA was conducted in order to evaluate risk to ecological receptors at SWMU 25. Analytical sediment and surface water data collected during the Phase I, II, and III RFIs were compared to the Biological Technical Advisory Group's (BTAG's) screening values for flora and fauna. Screening level food chain models for bioaccumulative chemicals for aquatic receptors were developed, and a list of chemicals of potential concern (COPCs) was determined based upon hazard quotients (HQs) equal to or greater than 1.

The ERA concluded that no analytes exceeded screening values based upon maximum concentrations in surface water for either worms in sediment or plants. Four metals and two pesticides exceeded BTAG screening values for flora and fauna based upon maximum concentrations in sediments; these exceedances where primarily in one sediment sample location. The migration of chemicals from this sample location to the rest of the pond will not occur, because of the low chemical concentrations in the sediment sample. Although this sediment sample location presents an isolated area in the pond adjacent to SWMU 25 where potential risk to ecological receptors may exist, the contamination is limited. The remaining pond data confirmed that the contamination is limited to this isolated area; therefore, no action is recommended at SWMU 25.

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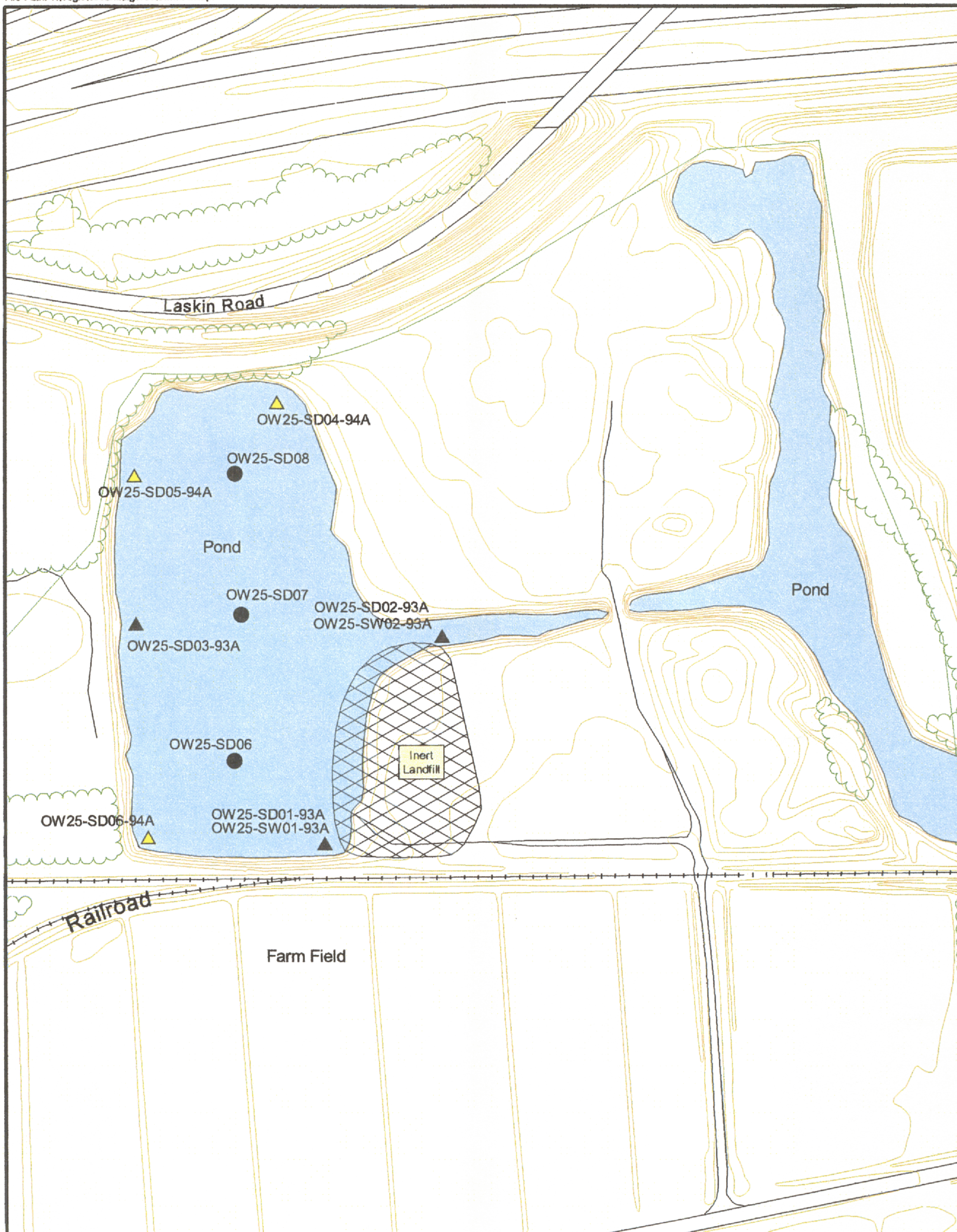

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- Phase III Sediment Sampling Location
- Phase I Sampling Location
- Phase II Sediment Sampling Location
- Approximate Landfill Boundary

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0 100 200 300 Feet

Figure 3
SWMU 25 Sample Locations
NAS Oceana
Virginia Beach, Virginia

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SECTION 4

Preferred Alternative

As previously stated, SWMU 25 was initially investigated following the requirements of the NAS Oceana RCRA 3008 (h) Consent Order; however, the Navy and the USEPA later agreed to conduct future site remediation activities at NAS Oceana following the procedural and substantive requirements of the CERCLA program. This PRAP documents the nature and extent of contamination at SWMU 25, and presented a summary of risks posed by conditions at this SWMU as determined by previous investigations and risk assessments. The results of the RCRA investigation of SWMU 25 are documented in the RFIs and the ERA. The RCRA documents and the risk assessments conducted at this SWMU are functionally equivalent to a CERCLA remedial investigation (RI), as defined in 40 CFR Section 300.430(d). An objective of a CERCLA RI is to assess risks to human health and to the environment and to support the developing, evaluating, and selecting appropriate response alternatives, including the no action-required alternative.

In accordance with 40 CFR Section 300.430(f)(2), the detailed assessment of SWMU 25 risk information relating to both human health and the environment is provided in Section 3.5. This section provides a summary of the investigation information and the rationale used to determine that SWMU 25 poses no unacceptable risk to human health or to the environment. Given this determination and pursuant to 40 CFR Section 300.425(e)(1)(iii), taking remedial measures at SWMU 25 is not appropriate. Hence, the only remedial alternative considered is the no-action alternative; and because this alternative involves taking no action, a feasibility study (FS) as defined in 40 CFR Section 300.430(e) is not required. Therefore, no action is recommended by the Navy as the preferred alternative for SWMU 25. The estimated cost to implement this alternative is $0. In the event contamination posing an unacceptable risk to human health or to the environment is discovered after executing the concrete removal project, the Navy will undertake additional investigation or study to characterize the contamination and associated risk and will take appropriate action under CERCLA if deemed necessary.