Range Sustainability Environmental Program Assessment (RSEPA)
Range Condition Assessment (RCA) Phase III

On-Site Visit
Information Collection and Review Synopsis

Virginia Capes Complex

June 2004

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2-A-4,6-DNT	2-Amino-4,6-dinitrotoluene
2,4-DNT	2,4-Dinitrotoluene
2,6-DNT	2,6-Dinitrotoluene
4-A-2,6-DNT	4-Amino-2,6-dinitrotoluene
ACM	Asbestos-containing Materials
AFB	Air Force Base
APM	Asbestos Program Manager
AST	Aboveground Storage Tank
BDU	Bomb Dummy Unit
CATEX	Categorical Exclusion
CNRMA	Commander, Navy Region, Mid-Atlantic
COMLANTFLT	Commander, Atlantic Fleet
CRE	Comprehensive Range Evaluation
CRMP	Cultural Resources Management Plant
CWA	Clean Water Act
DCBR	Dare County Bombing Range
DEQ	Department of Environmental Quality
DOD	U.S. Department of Defense
DODD	U.S. Department of Defense Directive
DQO	Data Quality Objective
ECAMP	Environmental Compliance Assessment and Management Program
ECE	Environmental Compliance Evaluation
EOD	Explosive Ordnance Disposal
EPCRA	Emergency Planning and Community Right-to-Know Act
EQA	Environmental Quality Assessment
ESA	Endangered Species Act
FAA	U.S. Federal Aviation Administration
FACSFAC	Fleet Area Control and Surveillance Facility
FEIS	Final Environmental Impact Statement
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FRP	Facility Response Plan
HMCM	Hazardous Material Control and Management
HMX	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
HWMP	Hazardous Waste Management Plan
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
JATO	Jet Assisted Take-Off
LANTDIV	Naval Facilities Engineering Command, Atlantic Division
LAT	Large Area Targets
LATR	Large Area Tracking Range
MACT	Maximum Achievable Control Technology
MC	Munitions Constituents
MIDAS	Munitions Items Disposition Action System
MMR	Military Munitions Rule
NAAQS	National Ambient Air Quality Standards
NAS	Naval Air Station
NASA	National Aeronautical Space Agency
NCDENR	North Carolina Department of Environmental and Natural Resources
NEPA	National Environmental Policy Act

NESHAP	National Emission Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NOV	Notice of Violation
OB/OD	Open Burn/Open Detonation
OMB	Office of Management and Budget
OPA90	Oil Pollution Act of 1990
OPAREA	Operating Area
OPNAVINST	Operational Navy Instruction
OPP	Oil Pollution Prevention Regulation of 1973
ORSM	Operational Range Site Model
OSHA	Occupational Safety and Health Agency
P2	Pollution Prevention
PCB	Polychlorinated Biphenyl
POL	Petroleum, Oils, and Lubricants
PWCNORVA	Public Works Center – Norfolk, Virginia
RACM	Regulated Asbestos-containing Material
RCA	Range Condition Assessment
RCRA	Resource Conservation and Recovery Act
RDF	Range Data Folder
RDX	Hexahydro-1,3,5-triniro-1,3,5-triazine
REG	Regional Environmental Group
RSEPA	Range Sustainability Environmental Program Assessment
SAIC	Science Applications International Corporation
SARA	Superfund Amendments and Reauthorization Act
SCP	Spill Contingency Plan
SEPTAR	Seaborne Powered Target
SPCC	Spill Prevention Control and Countermeasures
TACAN	Tactical Air Navigation
TACTS	Tactical Aircrew Training System
TEAM	U.S. Army Corps of Engineers Environmental Assessment and Management
Tetryl	Methyl-2,4,6-trinitrophenylnitramine
TNT	2,4,6-Trinitrotoluene
TRI	Toxics Release Inventory
TRIMS	Target and Range Information Management System
TSCA	Toxic Substances Control Act
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VACAPES	Virginia Capes Complex
VSP-RSM	Visual Sample Plan-Range Sustainment Module

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1. INTRODUCTION

This synopsis documents the Range Sustainability Environmental Program Assessment (RSEPA) Range Condition Assessment (RCA) – Phase III (On-Site Visit Information Collection and Review) that was conducted at two ranges within the Virginia Capes (VACAPES) Complex. The purpose of RCA Phase III is to obtain and evaluate information needed to address the following questions from Decision Point 1 of the RSEPA Policy Implementation Manual (U.S. Navy 2003b) for the two ranges at VACAPES: "Are further steps required to maintain compliance?" and "Is further analysis required to assess risk of off-range release?"

This synopsis assesses the environmental compliance status of land-based ranges or components of ranges in the VACAPES Complex. This synopsis also includes the operational range site model (ORSM) developed for munitions-related military testing and training operations conducted by the Navy at land-based ranges or components of ranges within VACAPES. The land-based components include the Dare County Bombing Range (DCBR) in North Carolina and a firing point and a target drone launch pad located at Dam Neck Annex, which is the land component of the Dam Neck Range. Unless otherwise specified, references to Dam Neck Range include both the firing point and the drone launch area located on Dam Neck Annex.

The environmental compliance section is a summary of the compliance status and major issues found for all possible environmental areas at the two ranges. The ORSM is a summary of operational and environmental conditions and is used to support range planning and management. Predictive modeling is typically conducted to forecast the possibility of a release of munitions constituents (MCs) posing an imminent and substantial threat to human health or the environment. MCs are defined in the RSEPA Policy Implementation Manual (U.S. Navy 2003b) as materials originating from military munitions, including explosive and non-explosive materials, and the emissions, degradation, or breakdown products of such munitions, including the following:

- 1,3-Dinitrobenzene
- 2,4-Dinitrotoluene (2,4-DNT)
- 2,6-Dinitrotoluene (2,6-DNT)
- Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)
- Nitrobenzene
- Nitroglycerin
- 2-Nitrotoluene
- 3-Nitrotoluene
- 4-Nitrotoluene
- 1,3,5-Trinitrobenzene
- Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)
- Perchlorate
- 2,4,6-Trinitrotoluene (TNT)
- Methyl-2,4,6-trinitrophenylnitramine (Tetryl)
- 2-Amino-4,6-dinitrotoluene (2-A-4,6-DNT)
- 4-Amino-2,6-dinitrotoluene (4-A-2,6-DNT).

Because the two ranges do not use live munitions, predictive modeling was not conducted. This document, however, is still able to provide information needed to address both Decision Point 1 questions.

The Technical Team consisting of Navy civilians and personnel from Science Applications International Corporation (SAIC) simultaneously conducted the RCA (Phase II Pre-Site Visit Information Collection) and the RCA Phase III (Onsite Visit Information Collection and Review) for VACAPES from 15 to 17

July 2003. During Phase II and III activities, the Team interviewed key Navy personnel responsible for range and environmental operations and collected range, operational, and environmental information where exercises with munitions are conducted.

The key Navy personnel that the Technical Team interviewed were located at Navy DCBR, Dam Neck Range, and Naval Air Station (NAS) Oceana in Virginia Beach, Virginia. These personnel were affiliated with the following organizations:

- Commander, Atlantic Fleet (COMLANTFLT)
- Commander, Navy Region Mid-Atlantic (CNRMA)
- Fleet Area Control and Surveillance Facility, Virginia Capes (FACSFAC VACAPES)
- NAS Oceana
- Naval Facilities Engineering Command, Atlantic Division (LANTDIV)
- Public Works Center – Norfolk, Virginia (PWCNORVA)

In addition, the Team conducted a tour of VACAPES, Navy DCBR, and Dam Neck Range. The information obtained during RCA Phases II and III is used to complete an environmental compliance assessment, develop the ORSM, and conduct predictive modeling, if necessary. The following sections present information needed to complete this evaluation.

1.1 OVERVIEW OF ENVIRONMENTAL COMPLIANCE

The assessment of environmental compliance serves as a basis for addressing one of the two major questions posed during Decision Point 1 of the RSEPA process. During Phase III, information is collected about the possible impacts of range operations on the environment. Efforts during Phase III are focused on munitions usage on land-based operational ranges. The collected information is reviewed and analyzed for environmental regulatory applicability and compliance deficiencies.

Phase III information collection efforts are not carried out to the same degree of detail as a Navy Environmental Quality Assessment (EQA), which is a Navy internal environmental compliance assessment program audit. Rather, range personnel and environmental managers are interviewed to determine what environmental and range management programs are in place and to what extent these programs addressed environmental regulatory requirements and current and potential environmental and human health risks due to range operations. The environmental compliance and explosives safety management areas addressed during interviews and in this section include:

- Air Quality
- Water Quality
- Hazardous Materials
- Hazardous Waste
- Emergency Planning and Community Right-to-Know Act (EPCRA)
- Pollution Prevention
- Storage Tank Management
- Petroleum, Oils, and Lubricants (POL)
- Natural Resources
- Cultural Resources
- National Environmental Policy Act (NEPA)
- Pesticides Management
- Lead-Based Paint Management
- Asbestos Management
- Polychlorinated Biphenyl (PCB) Management
- Environmental and Explosives Safety Management.

The assessment areas listed above were chosen based upon those environmental compliance and explosives safety management areas found in the Navy's Environmental Compliance Evaluation Program, the U.S. Army Corps of Engineers (USACE) Environmental Assessment and Management (TEAM) Guide (Revised March 2003), and Operational Navy Instruction (OPNAVINST) 5090.1B.

1.2 OVERVIEW OF ORSMS

ORSMs use existing knowledge to describe land-based operational ranges and their environments in both graphical and tabular formats. ORSMs summarize operational and potential release information, migration and exposure pathways, and expected levels and locations of releases. They summarize the links between potential sources of MCs, release mechanisms, exposure pathways, exposure routes, and receptors. ORSMs include range boundaries, topography, vegetation, and hydrology to the extent that is known through available historical information and a range visit.

ORSMs assist in planning studies, interpreting data, and communicating conclusions. They are developed initially during RCA Phase III and if conducted, they are refined during the Comprehensive Range Evaluation (CRE) Phase I (Preliminary Screening), and further refined during CRE Phase II (Verification Analysis).

If a CRE is conducted, ORSMs then are used in the systematic planning process, particularly in the development of data quality objectives (DQOs) and to support the use of tools such as Visual Sample Plan-Range Sustainment Module (VSP-RSM). In other words, ORSMs are tools to assist decision makers in determining the types, locations, and degrees of field analysis that might be needed in the CRE.

1.3 REPORT FORMAT

Section 2 presents a brief description of the VACAPES Complex and mission. Section 3 presents each of the environmental compliance areas assessed and any deficiencies noted as a result of the Phase III information collection process. Section 4 presents the ORSMs. It includes information about historical, current, and planned future military operations at VACAPES and describes where military testing and training operations occur on the two ranges at VACAPES. Section 4 also details the physical environment of VACAPES and describes factors that may affect MC release, fate and transport, and potential receptors. Cultural resources also are presented in Section 4, along with land use and information that could identify and evaluate the applicable scenarios and locations of human and ecological exposure to potential releases of MCs. The conclusions are provided in Section 5.

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2. BACKGROUND FOR VACAPES

The VACAPES Complex, presented in Figure 2-1, spans an area extending approximately from Charleston, South Carolina to just south of Nantucket Island, Massachusetts, and eastward covering more than 200 nautical miles of the Atlantic Ocean. The VACAPES Complex includes the following ranges (U.S. Navy 2000b):

- Harvey Point Range
- Palmetto Point Range
- Stumpy Point Range
- Navy DCBR
- Dam Neck Range
- Oceana Tactical Aircrew Training System (TACTS) Range
- Large Area Tracking Range (LATR)

Of the seven ranges listed above and unlisted warning areas and operating areas that also are part of VACAPES, only Navy DCBR and Dam Neck Range include land-based assets relevant to RSEPA. Dam Neck Range includes a firing line of five-inch guns that are functional but are used only for maintenance training. During the site visit, Navy personnel indicated that the guns had not been fired since the 1980s. Navy DCBR also includes an area where BQM-74E drones are stored, maintained, and launched. Additional information about these land-based assets are provided in the discussion of the operational component of the ORSM (Section 4.2). The Fleet Area Control and Surveillance Facility, Virginia Capes (FACSFAC VACAPES) manages VACAPES Operating Area (OPAREA). FACSFAC VACAPES is located in Virginia Beach, Virginia. On 1 October 1977, FACSFAC VACAPES was commissioned as the designated air traffic control facility for VACAPES OPAREA. Its primary mission was to act as the central scheduling point for all Atlantic Fleet aircraft services, the use of VACAPES, and the joint use of airspace by the U.S. Department of Defense (DOD), Federal Aviation Administration (FAA), and the National Aeronautical Space Agency (NASA). It monitors aircraft movements and coordinates assignments in response to the increased use of military and civilian aircraft on the U.S. east coast. It also monitors the use of offshore warning areas for air, surface, and subsurface units. Radio communications and radar surveillance are used to monitor and mediate high performance military aircraft and commercial air traffic (Global Security 2003a).

Since commissioning, the mission of FACSFAC VACAPES has grown in scope and complexity. Its mission now includes Oceanic Airspace Coordination; scheduling and de-confliction of 17 military training routes; monitoring and assisting in search and rescue operations; acting as naval liaison for the Norfolk area with the FAA; providing range safety surveillance and control for missile firing exercises in assigned operational area; and supplying air intercept control services for Fleet Replacement Training Squadrons (Global Security 2003a).

Figure 2-1. VACAPES Complex Location Map

3. ENVIRONMENTAL COMPLIANCE FOR VACAPES

The assessment of environmental compliance serves as the basis for addressing the first of the two major questions posed during Decision Point 1 of the RSEPA process. During the RCA Phase III, information is collected about the possible impacts of range operations to the environment. Efforts during the RCA Phase III are focused on munitions usage on land-based operational ranges. The collected information is reviewed and analyzed for applicability to environmental regulations and potential compliance deficiencies.

Initially, pertinent information was gathered and reviewed in order to plan the onsite visit. These documents are compiled and organized in the VACAPES Range Data Folder (RDF). Appendix A contains a spreadsheet outlining all documents obtained thus far in the VACAPES RDF. The Technical Team used this information to make an initial assessment of applicability of environmental regulations to the range and its operations. This initial assessment prior to the onsite visit identified data gaps, increased the efficiency of the onsite visit, and minimized disruptions to installation personnel and operations during the onsite visit.

The Technical Team commenced the RCA Phase III for the VACAPES ranges by meeting with the Commanding Officer, range personnel, the Public Affairs Officer, and environmental managers from 15 to 17 July 2003 at different locations within VACAPES. The Technical Team assessed operational range areas (Navy DCBR and Dam Neck Range), along with range support operations and facilities. It should be noted that the RCA conducted at the VACAPES ranges was not carried out to the degree of detail as a Navy Environmental Compliance Evaluation, which is a Navy environmental programs audit. Rather, range personnel and environmental managers were interviewed to determine what environmental and range management programs are in place and to what extent these programs addressed environmental regulatory requirements and current and potential environmental and human health risks due to range operations. The environmental compliance and explosives safety management areas addressed during interviews and in this document include:

- Air Quality
- Water Quality
- Hazardous Materials
- Hazardous Waste
- EPCRA
- Pollution Prevention
- Storage Tank Management
- POL
- Natural Resources
- Cultural Resources
- NEPA
- Pesticides Management
- Lead-Based Paint Management
- Asbestos Management
- PCB Management
- Environmental and Explosives Safety Management.

The assessment areas listed above were chosen based upon those environmental compliance and explosives safety management areas found in the Navy's Environmental Compliance Evaluation Program, TEAM Guide (Revised March 2003), and OPNAVINST 5090.1B. To supplement information gained from interviews, copies of additional documents pertaining to range operations and environmental programs were obtained during the onsite visit and are compiled and organized in the VACAPES RDF. A summary of the documents contained in the RDF is provided in Appendix A.

Technical Team members analyzed the information gained from the VACAPES range visit, interviews, and documents received. The Team documented their findings as individual reports for their assigned environmental media. These individual reports are contained in Appendix B. Section 3.2 summarizes the Team members' individual reports and entails the Team's environmental regulatory applicability and compliance assessment of the VACAPES ranges.

3.1 ENVIRONMENTAL REGULATORY APPLICABILITY AND COMPLIANCE ASSESSMENT

The following sections discuss the environmental and operational areas that were assessed at VACAPES in terms of the environmental compliance and explosives safety management areas listed above.

3.1.1 Air Quality

The Clean Air Act and its amendments apply to ranges, their operations, and support facilities. The majority of air quality regulations apply to stationary emission sources, which in Virginia (Dam Neck Range), are regulated by the Virginia Department of Environmental Quality (DEQ), Office of Air Program Coordination and in North Carolina (DCBR), are regulated by the North Carolina Department of Environmental and Natural Resources, Division of Air Quality. DCBR lies within an air basin that is in attainment for Federal and state ambient air quality standards. This means that DCBR is not subject to the General Conformity Rule and, in general, is not subject to as many regulations as it would be if it were located in a non-attainment air basin. Dam Neck Range is located in an air basin that is a maintenance area for Federal and state ambient air quality standards for ozone.

Dam Neck Range has a Federal Title V Operating Permit but, according to the Air Program Manager, Dam Neck Range is not a major source for any criteria or hazardous air pollutant. Dam Neck Range has this Title V permit due to error in submitting an application for a Title V permit to Virginia DEQ. Because Dam Neck Range is not a major source of any criteria or hazardous air pollutants, it is not required to have a Title V permit. The Air Program Manager with CNRMA Regional Environmental Group (REG) stated that Dam Neck Range will request a Synthetic Minor permit from the Virginia DEQ when the current Title V permit expires in four years. Dam Neck Range has no stationary emission sources on either the firing line or the drone launch pad. Navy DCBR has only two stationary emission sources, and they are the two internal combustion engines associated with a diesel generator and a gasoline generator. Neither engine has a large enough rating capacity to require air permitting. Navy DCBR does not have a Title V permit and is not required to have one, as they have only two stationary emission sources that do not exceed threshold emissions limits for permitting. According to the Air Program Manager for Dam Neck Range, there are no source categories at Dam Neck Range or Navy DCBR that are subject to Clean Air Act Amendments of 1990, Title III, maximum achievable control technology (MACT) Standards.

The Federal General Conformity Rule applies to federal actions generating air pollutants within non-attainment or maintenance air basins for National Ambient Air Quality Standards (NAAQS). Navy DCBR lies within an attainment air basin for NAAQS; therefore, the General Conformity Rule does not apply to Navy DCBR. However, Dam Neck Range is in a maintenance air basin for ozone, which means that Dam Neck Range would be required to perform a General Conformity Rule applicability analysis for all federal actions that generate air pollutants. The CNRMA REG managers are not aware of any air emission calculations performed for the purpose of determining applicability of a federal action under the General Conformity Rule. Drones launched from Dam Neck Range are mobile emission sources that might be considered in a General Conformity applicability analysis. It is recommended that the CNRMA air quality program managers and environmental planners keep this General Conformity applicability analysis requirement in mind if any new federal actions are proposed at Dam Neck Range that will emit air pollutants.

The Federal Asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP) regulation would apply to any structures at Dam Neck Range or Navy DCBR that contain regulated asbestos-containing material (RACM) and the abatement and demolition of those materials. An Asbestos Survey was conducted for buildings at Dam Neck Range, and asbestos-containing materials (ACM) were abated or contained as needed. According to the CNRMA Air Program Manager, it is thought that an Asbestos Survey was conducted for Dam Neck Range. The CNRMA Air Program Manager is uncertain as to who the Asbestos Program Manager (APM) is for Dam Neck Range and who is responsible for Federal Asbestos NESHAP reporting requirements. It is unclear who reports to the Virginia DEQ when asbestos abatement jobs involve the abatement/demolition of RACM. It is recommended that the CNRMA assist Dam Neck Range in designating an APM if this has not already been done, and designate someone at Dam Neck Range or CNRMA Air Program Office as responsible for submitting RACM abatement/demolition notifications to the U.S. Environmental Protection Agency (USEPA) or a designated agency.

The Dam Neck Range 5-inch gun firing operation, which has not fired since the 1980's, and the drones launched from Dam Neck Range do not require open burning or open detonation (OB/OD); therefore, the Emission Standards for the Virginia Open Burning Rule (Rule 4-40) would not apply. Navy DCBR is an inert range using only spotting charges associated with dummy practice bombs; therefore, no OB/OD practices are required.

The ranges appear to be in compliance with all applicable air quality regulations. However, it is recommended that the Air Program Manager with CNRMA REG determine who the APM is for Dam Neck Range and who is responsible for submitting the Federal Asbestos NESHAP notifications to USEPA for the abatement/demolition of RACM.

3.1.2 Water Quality

DCBR is located on a peninsula surrounded by the Alligator River, Albemarle Sound, Croatan Sound, and Pamlico Sound. However, the actual target range is located in the interior of the peninsula and does not adjoin any of these major bodies of water. Four major streams drain the Dare County Peninsula: Milltail Creek, Whipping Creek, Callaghan Creek, and Long Shoal River. However, none of these streams flow through the Navy target at DCBR. According to the North Carolina Department of Environment and Natural Resources' Division of Coastal Management, Navy DCBR consists primarily of pocosin and freshwater marsh, which are both wetland community types. Any new actions or proposed projects at Navy DCBR would require an impact assessment to potential jurisdictional wetlands or U.S. waters, per Section 404 of the Clean Water Act (CWA) and North Carolina's Coastal Zone Management Act. In June 2003, DCBR proposed replacing an existing sheet metal simulated runway target with a new one. In a June 2003 document to the Wilmington, North Carolina, District Office of the USACE, the Navy issued the following statement, "The proposed project [simulated runway replacement] does not impact jurisdictional waters or wetlands." Navy DCBR appears to be taking the impacts of their actions into account with respect to wetlands since the National Environmental Policy Act (NEPA) documentation and a USACE review were prepared in June 2003 for the replacement of a simulated runway target on the range.

The Safe Drinking Water Act applies to and regulates drinking water sources and public water systems for the purpose of ensuring safe drinking water. There are no sources of drinking water at Navy DCBR and there is no sole source aquifer at Navy DCBR that requires protection under the Safe Drinking Water Act. DCBR obtains all drinking water by bottled water brought in by truck. There also is no source of potable water at Dam Neck Range. The City of Virginia Beach supplies Dam Neck Range with potable water via lines from their drinking water treatment plant. With regard to wastewater discharge, Navy DCBR is on a sanitary septic system, and Dam Neck Range discharges its domestic and industrial wastewater to the Hampton Roads Sanitation District, which is a publicly owned treatment works.

Dam Neck Range is paved and adjoins beaches along the Atlantic Ocean. Dam Neck Range has a Stormwater Pollution Prevention Plan that requires monitoring of stormwater run-off from primarily paved areas. However, Dam Neck Range's Stormwater Pollution Prevention Plan does not address stormwater run-off from paved range areas. The CNRMA, water program managers state that the Virginia DEQ water quality regulators have not required Dam Neck Range to monitor stormwater run-off from range impervious surfaces. It does not appear that this lack of monitoring of stormwater would be of great concern to the migration of MCs to nearby beaches considering that the Dam Neck Range firing line is not in operation. However, Jet Assisted Take-off (JATO) rockets that are used to launch BQM-74E drones are stored in a magazine and handled and used at the Dam Neck Range drone launch area. The JATO rockets used to launch BQM-74Es at Dam Neck Range are series MK-117, which are nitrocellulose-based. Currently, there are no USEPA set concentration limits associated with, or health concerns from exposure to, nitrocellulose in water. However, in September 1987, USEPA published a Public Health Advisory regarding "the health effects, analytical methodology and treatment technologies that would be useful in dealing with Nitrocellulose contamination of drinking water." USEPA Health Advisories describe non-regulated concentrations of drinking water contaminants at which adverse health effects would not be anticipated to occur over specific exposure durations. It is advised that the CNRMA water quality program managers be aware that JATO rockets used by Dam Neck Range's VC-6 squadron may contain constituents that either are or will be regulated in the future and warrant monitoring in stormwater runoff from drone launch area impervious surfaces.

3.1.3 Hazardous Materials

Dam Neck Range participates in a Hazard Communication Program under the Hazardous Material Control and Management (HMCM) Program. Dam Neck Range meets Occupational Safety and Health Agency (OSHA) hazardous material regulatory requirements for the ranges by having an Authorized Users List. Air Force personnel and contractors from Seymour Johnson Air Force Base (AFB) manage hazardous material regulatory requirements for DCBR. In addition, a CNRMA representative at NAS Oceana conducts hazardous material management monthly inspections at DCBR.

Based upon the information gained during Navy DCBR interviews and the site visit, the Technical Team identified an underground storage tank (UST) used to fuel range vehicles leaked gasoline. The UST was removed and replaced by an aboveground storage tank (AST). Groundwater currently is monitored for the presence of fuel-related contaminants. Based on this isolated fuel spill that was limited to a small area at Navy DCBR, it is not likely that any fuel spills will go off range.

Since range support areas are normally assessed under the Navy's existing EQA Program, this RCA focused on any hazardous materials management related to the ranges themselves. Therefore, the RSEPA Technical Team did not inquire about hazardous material management Notices of Violation (NOVs) for range support operations/facilities.

The Navy DCBR and Dam Neck Range have not received any hazardous material management NOVs as of the date of the RCA site visit in July 2003. With the possible exception of EPCRA reporting, which is addressed in Section 3.1.5, Navy DCBR and Dam Neck Range appear to be in compliance with hazardous material management regulations.

3.1.4 Solid and Hazardous Waste

The Resource Conservation and Recovery Act (RCRA) of 1976 applies to the VACAPES ranges, since hazardous wastes are present on the operational range areas, such as the DCBR satellite accumulation point. The satellite accumulation point is used for the temporary storage of spent mercury light bulbs before they are sent to Air Force property for proper disposal. Very limited quantities of the following solid waste items are generated during normal operations at DCBR: mercury vapor light bulbs, batteries, as well as limited amounts of paint, oil, and grease. These items are transported over roads on Navy

DCBR to the Air Force property, where personnel from Seymour Johnson AFB assume responsibility for proper disposal. However, since the Navy is the generator, the Navy is ultimately responsible for proper disposal.

The Military Munitions Rule (MMR), under RCRA, defines when conventional and chemical military munitions become solid wastes and when they are potentially subject to hazardous waste regulations. The MMR also establishes procedures and management standards for waste military munitions. Air Force personnel and contractors from Seymour Johnson AFB conduct biennial range clearance (including disposal of residue) and manage hazardous waste requirements for the Navy DCBR. In addition, a representative from CNRMA REG at NAS Oceana conducts monthly inspections for DCBR and Dam Neck Range compliance with MMR and RCRA. The MMR applies to operational ranges when energetics are used, such as Navy DCBR's use of spotting charges and Dam Neck Range VC-6's use of drone JATO rockets. From review of information and interviews with Navy personnel, it appears that the VACAPES ranges are in compliance with MMR and there are no known areas where military munitions were discarded historically (i.e., abandoned without following proper disposal procedures).

The Navy recently released the *Operational Range Clearance Policy for Navy Ranges* (U.S. Navy 2004), which includes new requirements for activities such as the removal, disposal, and recycling of UXO, range scrap, and debris. Generally, existing DCBR procedures appear to comply with the operational range clearance policy, but the DCBR Range Manager should ensure that range-specific scrap management policies and procedures comply with the operational range clearance policy.

CNRMA REG's Hazardous Material Program manages solid waste, hazardous waste, and MMR requirements at Dam Neck Range. Dam Neck Range meets RCRA hazardous waste regulatory requirements by having a Hazardous Waste Management Plan (HWMP), which applies to Dam Neck Range and the facilities located at the range.

The Navy DCBR and Dam Neck Range have not received any hazardous waste management NOVs as of the RCA site visit in July 2003 and currently appear to be in compliance with hazardous waste management regulations.

3.1.5 Emergency Planning and Community Right-to-Know Act

The primary purpose of the EPCRA of 1986, otherwise known as Superfund Amendments and Reauthorization Act (SARA) Title III, is to inform communities and citizens of chemical hazards in their areas. Sections 311 and 312 of EPCRA require businesses to report the locations and quantities of chemicals stored onsite to state and local governments in order to help communities prepare to respond to chemical spills and similar emergencies. Section 313 of EPCRA requires USEPA and the states to annually collect data on releases and transfers of certain toxic chemicals from industrial facilities, and make the data available to the public in the Toxics Release Inventory (TRI). Hazardous materials under EPCRA also would be subject to state regulations.

Prior to 1998, naval installations only had to assess the storage, use, transfer, and potential release of hazardous materials for Section 313 reporting for the facility side of the installation. However, according to a DOD Deputy Under Secretary of Defense for Environmental Security policy dated March 1998, EPCRA Section 313 reporting was extended to the use of military munitions on operational ranges. In accordance with the DOD guidance of March 2000 on EPCRA Compliance for Ranges, training, intended use, and onsite explosive ordnance disposal (EOD) activities are included under EPCRA reporting beginning with 2001 calendar year, reports due 1 July 2002. Facilities must meet two initial criteria before they are required to conduct a toxic release threshold determination for their range. The criteria are that military munitions must have been used on the range in the past calendar year and that the facility must have 10 or more full-time employees (or meet the full-time equivalent hours of 20,000 hours per year). Navy DCBR meets the full-time equivalent hours of 20,000 hours per year and, even though inert

practice bombs are used, some of these practice bombs have spotting charges with chemical constituents and other munitions include lead-ball ammunition that are reportable under Section 313.

According to Targets and Ranges Information Management System (TRIMS) data for DCBR, the following Bomb Dummy Unit (BDU) practice bombs were dropped at Navy DCBR in 2002: BDU-33, BDU-45, BDU-46, BDU-48, BDU-50 and BDU-56. Not all of these BDUs have spotting charges and of those BDUs with spotting charges, not all contain TRI reportable chemicals. The chemical composition of BDU can be determined through the combined use of Munitions Items Disposition Action System (MIDAS) Database (MIDAS 2004) and the ORDATA Online (ORDATA 2004). It should be noted that according to the ORDATA Online, BDU-33 can use spotting charges, such as CXU 2/B, which contains titanium tetrachloride. Titanium Tetrachloride is a TRI listed chemical with a reporting threshold of 1% by weight. Therefore, CNRMA EPCRA managers are advised to determine if any BDU dropped at Navy DCBR contain any Section 313 reportable chemicals and, if so, conduct a Section 313 toxic release threshold determination for munitions related activities at Navy DCBR. Note that even if it is determined that there are no chemicals in any practice bombs used at Navy DCBR that are on the Section 313 TRI list, other munitions include lead-ball ammunition and CNRMA needs to document this determination.

With regard to Dam Neck Range and Section 313 compliance, the 5-inch gun firing line at Dam Neck Range is operational, but has not been fired for years, so this range area is not required to complete EPCRA Section 313 analysis and reporting for munitions. It is advisable, though, that the CNRMA EPCRA managers document why the 5-inch gun firing line is not subject to the EPCRA Section 313 toxic release threshold determination.

The VC-6 Squadron's BQM-74E drone launch area at Dam Neck Range uses JATO rockets to launch the drones. The drones themselves do not contain munitions; however, the JATO rockets used to launch the BQM drones (MK-117) contain nitrocellulose as the energetic propellant. Rockets, in general, are considered munitions under EPCRA; however, nitrocellulose is not reportable under EPCRA Section 313. Therefore, Dam Neck Range is not required to perform an EPCRA Section 313 toxic threshold release determination for the JATO rockets as long as the JATO rockets used by the VC-6 squadron do not contain any of the chemical constituents listed in EPCRA Section 313. However, the CNRMA EPCRA managers are strongly advised to document whether this operation is or is not subject to EPCRA Section 313 reporting due to the type and quantity of chemical constituents used in these JATO rockets.

Sections 311, 312, and 313 of EPCRA apply to Navy DCBR and Dam Neck Range support facilities that store, handle, and may potentially release hazardous and toxic chemicals. A few examples include diesel stored in an AST that is associated with a generator at Navy DCBR, gasoline at the Gas Station at Dam Neck Range, and the use of paints at both Dam Neck Range and Navy DCBR. There is no record of a Section 313 toxic release threshold determination for Dam Neck Range or Navy DCBR. It is advised that the CNRMA EPCRA Program Manager document all determinations made as to whether and why Navy DCBR and Dam Neck Range are or are not required to submit a Form R report for each reporting year.

Considering that 1 July 2002 was the first deadline to submit any Form R reports for munitions-related activities, it is possible that both Navy DCBR and Dam Neck Range could be out of compliance for submitting Form R reports in 2002 and 2003. The Technical Team strongly advises that all determinations with regard to Navy DCBR and Dam Neck Range EPCRA reporting requirements be documented and that any required Form R reports be submitted.

3.1.6 Pollution Prevention

NAS Oceana, which is the parent command for Navy DCBR and is located approximately 180 miles North of Navy DCBR, has a Pollution Prevention (P2) Plan. The plan, however, apparently does not specifically address P2 practices at Navy DCBR. P2 opportunities at the ranges are few since there are

few waste streams produced at the ranges. Most P2 opportunities are related to the recycling of scrap metal from range targets, and the recycling of POL drained from targets prior to placement on the ranges.

The Dam Neck Range has a P2 plan, but it does not specifically address P2 for range operations. Dam Neck Range's 5-inch gunline is no longer used for firing munitions; therefore, recycling of munition casings is not an option. Reuse, which is an element of P2, is practiced by the VC-6 Squadron who reuse drones. However, JATO rocket components are not recovered after being consumed during the launch and dropped in the ocean near the launch pad.

NAS Oceana's P2 plan does not appear to actively extend to Navy DCBR since there is no formal procedure in place for the recycling of scrap metal at Navy DCBR. For example, in the past, Navy DCBR's Range Manager and his men loaded used MK-76 practice bombs and fragments into a pickup truck and hauled them to NAS Oceana landfill where the load was rejected. No information was provided regarding the final disposition of these used practice bombs and fragments. Currently, there is no formal method of collection and transport of scrap metal for recycling. In the past, Air Force contractors have transported target carcasses and other range-related debris from the range that could be recycled. From interviews with DCBR Range Management personnel, it appears that Navy DCBR would like to develop an agreement with Seymour Johnson AFB and use their contractors for the collection and transport of accumulated scrap metal for recycling.

With respect to Navy facilities at Dam Neck Range and NAS Oceana, the Navy Regional P2 program appears compliant based upon the presence of a P2 Plan for Dam Neck Range and NAS Oceana. Because the RSEPA RCA focuses primarily on the ranges and because there are few P2 opportunities on the ranges, the P2 programs at Dam Neck Range and NAS Oceana were not assessed. The only deficiency noted is the lack of a formal plan to recycle scrap metal at Navy DCBR.

3.1.7 Storage Tank Management

The CNRMA REG manages storage tank and POL regulatory requirements on Dam Neck Range and Navy DCBR operational ranges. The current Tank Management Plan, as required under OPNAVINST 5090.1B, extends to the operational range areas. An UST was removed from Navy DCBR and the area where the tank was formerly located is undergoing in-situ remediation and long-term monitoring. Two ASTs exist on Navy DCBR. Therefore, no Federal or state UST regulations apply to Navy DCBR. There are no tanks located at the Dam Neck Range 5-inch gunline or drone launch area.

The CNRMA REG is responsible for overseeing the Spill Prevention Control and Countermeasures (SPCC) Plan for Dam Neck Range and Navy DCBR. DCBR, however, is being removed from the SPCC Plan because the aggregate capacity at the range is below the federally required threshold. Under the SPCC Plan, Dam Neck Range may be impacted by new secondary containment requirements of tanks, where any 55 gallon container or larger, containing petroleum products, is affected.

Based upon the information gained during the interviews, there have been no off-range releases from USTs or ASTs in the past. Regarding the restoration activities associated with the UST removed from Navy DCBR, the site will be monitored under a long-term monitoring process, so there is little potential for a future off-range release.

In regard to all regulations that apply to storage tanks and Navy DCBR and Dam Neck Range, no known NOVs have been issued as of the RCA site visit in July 2003. Overall, OPNAVINST 5090.1B, Oil Pollution Prevention Regulation of 1973 (OPP), Oil Pollution Act of 1990 (OPA90), and OSHA regulatory requirements are met for the range areas and no deficiencies have been noted.

3.1.8 Petroleum, Oils, and Lubricants

CWA, OPP, and OPA90 are the key environmental regulations related to POLs. OPA90 applies when fuel transfer occurs in areas of navigable waters. OPA90 defines navigable waters as "wetlands adjacent

to waters" or "all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, and wetlands where the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce" on waters as defined in OPA90. Further study is required to determine if the wetlands and water within Navy DCBR constitute navigable waters or could affect interstate commerce on waters defined in OPA90. A Spill Contingency Plan (SCP) or a Facility Response Plan (FRP) may be required for Navy DCBR in order to satisfy regulatory requirements under CWA and OPA90.

The Navy DCBR manager mentioned that they had one small fuel oil spill on dry soil. The spill was contained and the soil was removed and remediated. The Range manager does not have onsite spill prevention kits or a means to dam up canals that are alongside the road leading into the range area. He does have some heavy equipment that could be used to create an earthen berm to stop or slow the spread of an oil spill. Any targets used on the ranges, such as old vehicles, tanks or planes, are drained of oil prior to placement on the ranges.

As of the RCA site visit in July 2003, no NOVs have been issued for Navy DCBR and Dam Neck Range in regard to regulations applicable to POL. Dam Neck Range appears to be in compliance due to presence of SPCC and SCP Plans. It is recommended that Navy DCBR develop a spill response plan and have appropriate spill kits available for use at the range.

3.1.9 Natural Resources

Seymour Johnson AFB, as the host agency for the Navy DCBR, is responsible for the day-to-day management and compliance with natural resources requirements. The Navy reviews and complies with natural resource management planning as tenants of the DCBR. Navy compliance with regard to natural resource management is evaluated through the Navy Environmental Compliance Evaluation (ECE) program.

The Air Force prepared an Integrated Natural Resources Management Plan (INRMP) for the DCBR (dated 14 March 2000), with the cooperation and concurrence of the U.S. Fish and Wildlife Service (USFWS) and the North Carolina Wildlife Resources Commission. The INRMP describes the management protocols developed by Seymour Johnson AFB to meet applicable natural resource regulations.

The 1995 Ecosystem Survey of Dare County Air Force Range (U.S. Air Force 2000) is the most current and comprehensive survey of natural communities for DCBR to date. In this survey, vegetation is used to classify natural communities (eight types of communities were identified in the survey). In addition, according to the North Carolina Department of Environment and Natural Resources, Navy DCBR consists primarily of pocosin and freshwater marsh, which are wetland community types that may constitute jurisdictional wetlands. For any project undertaken, Navy DCBR needs to take these possible jurisdictional wetlands into account. Navy DCBR has generated a categorical exclusion (CATEX) for the replacement of an existing sheet metal simulated runway target and submitted a project review form to USACE stating that "the proposed project does not impact jurisdictional waters or wetlands" (U.S. Air Force 2003).

No federally listed threatened or endangered species are known to exist on Navy DCBR; however a 1993 census identified several groups of woodpeckers (one of which was the federally listed red-cockaded woodpecker) and habitat in the Navy portion of the range (i.e., north of the Air Force impact area and south of the Navy impact area). Other species of concern near and possibly on the impact area include the black bear (which has no legal protection status on DCBR, but is designated as significantly rare by the State) and the American alligator (formerly endangered), which has been sighted in canals throughout the range and the red wolf (federally endangered), which was released for reintroduction at the DCBR in 1987.

Since the 5-inch gunline at Dam Neck Range is inactive and the area has unsuitable habitat covered by impervious surfaces, the endangered species act is not likely to significantly impact operations. If the guns were to be fired, endangered species that may be on the shoreline (such as various species of sea turtles) may cause a change in the operational tempo if spotted in the area.

Regulations associated with the control of invasive species (such as the common reed [*Phragmites australis*]), outdoor recreation (including hunting), coastal zone consistency and forestry apply to the DCBR area surrounding the impact areas, and the Navy is obligated to comply with these regulations. Regulations associated with marine mammals apply to the range areas over water, but not to the land-based portion of the DCBR, Dam Neck Range firing line, and VC-6 launch area. Regulations associated with the Bald Eagle Protection Act are not specifically applicable to the Navy DCBR and Dam Neck Range because no known sightings of bald eagles have been documented in these areas. Navy DCBR and Dam Neck Range appear compliant with natural resource regulations.

3.1.10 Cultural Resources

Since Navy DCBR is leased from the Air Force, they are ultimately responsible for cultural resource management at this range. According to the Cultural Resources Management Plan (CRMP), there are no resources eligible for listing in the National Register, no indication of any future eligibility of any sites or locations, and no Native American burial or sacred areas on the range. The CRMP describes the management protocols developed to meet the various cultural resource regulations noted above. Responsibility for implementation of the CRMP is assigned to the Cultural Resources Manager of the Air Combat Command's 4th Fighter Wing Civil Engineer Squadron.

No CRMP or Integrated CRMP (ICRMP) has been prepared for Dam Neck Range, which normally describes the management protocols developed to meet cultural resource regulations. Potential impacts on cultural resources are treated on a case-by-case basis to comply with Section 106 of the National Historic Preservation Area (NHPA). Archeological sites and a cemetery are located at Dam Neck Range, but none appear to be located within the 5-inch gun firing line or VC-6 drone launch area. There are no federally recognized Native American tribes in Virginia, although some public outreach to non-recognized groups is conducted as part of Navy community relations activities.

There have been no known NOVs issued for either Dam Neck Range or Navy DCBR with regard to cultural resource regulatory requirements. DCBR appears to be currently in compliance with cultural resource regulations. Dam Neck Range, however, is currently not compliant with DOD Instruction 4715.3, since the Navy has not prepared an ICRMP.

3.1.11 National Environmental Policy Act

According to Navy Region Environmental Planning personnel, NEPA responsibilities for the region are divided. Navy Region Environmental Planning personnel complete the site approvals and CATEXs, and the Navy REG completes Environmental Assessments and Environmental Impact Statements. Since the same basic operations of jet pilot training of dropping inert ordnance have been ongoing at DCBR since the 1940's, no NEPA documentation exists for these on-going operations. In addition, operations have been consistent at Dam Neck Range since it was established in the early 1940's. Any major changes in operations at either Navy DCBR or Dam Neck Range would invoke the NEPA process. The potential increase in tempo of operations at DCBR due to the introduction of F/A-18EF squadrons on the East Coast was addressed in the "Final Environmental Impact Statement, Realignment of F/A-18 Aircraft and Operational Functions from NAS Cecil Field, Florida, to Other East Coast Installations."

The range operations at Dam Neck Range and Navy DCBR appear to be in compliance with the requirements of the statutes, regulations, and instructions that govern NEPA actions. The DCBR recently generated a CATEX for the replacement of a simulated runway target (U.S. Air Force 2003). Dam Neck

Range appears to lack NEPA documentation. Environmental Planners state that operations have been ongoing since early 1940s and that no NEPA documentation has been required, so no deficiencies have been noted.

3.1.12 Pesticide Management

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), 7 U.S. Code (USC) 136-136y; Endangered Species Act (ESA) of 1973 (16 USC 1531-1547, et al. last amended in October 1988); and Executive Order 12088, Federal Compliance with Pollution Standards (13 October 1978) are regulations that would apply if pesticides were stored, mixed, or applied on the range. No pesticides are stored, mixed or applied at Navy DCBR or Dam Neck Range so these regulations are not applicable. However, the DCBR manager requested that the Navy Regional Natural Resources manager apply herbicides to control Phragmites australis, a non-native potentially invasive reed, that is "filling up on the sides of the road." On either side of all roads in Navy DCBR are small canals formed from the removal of soil to form the elevated roads. Water pools in these canals and phragmites grow. Up until the time of the interview with the DCBR manager, no spraying for phragmites had been conducted. The DCBR manager has, in coordination with the Air Force and North Carolina Forest Service, conducted controlled burns to control phragmites and the overgrowth of canals and to maintain Navy DCBR.

Navy DCBR and Dam Neck Range have not received any NOVs for pesticide management. They appear to be in compliance with pesticide management regulations.

3.1.13 Lead-Based Paint Management

According to the REG Hazardous Waste Program Manager, they oversee compliance with RCRA lead-based paint disposal requirements at Dam Neck Range and Seymour Johnson AFB oversees compliance with applicable lead-based paint regulations at DCBR.

The Toxic Substances Control Act (TSCA), with respect to the regulation of lead-based paint, could apply to the renovation of the few buildings that are located at Navy DCBR, such as the control towers or the gun turret housing at Dam Neck Range's 5-inch gunline if they contained lead-based paint. According to the Range manager, buildings have been surveyed for lead-based paint and there are no structures that contain lead-based paint; therefore, TSCA does not apply to Navy DCBR structures. It is unknown as to whether the gun turrets at Dam Neck Range's 5-inch gunline were painted with lead-based paint. It is not possible to make an applicability assessment with respect to the range buildings without knowing if the buildings contain lead-based paint.

Due to the focus of the RCA on the VACAPES ranges and since lead-based paint is not a major compliance issue for the ranges, which have very few structures, no deficiencies have been noted.

3.1.14 Asbestos Management

Asbestos is well recognized as a health hazard and is highly regulated. OSHA regulates the construction, repair, containment and removal of ACM to protect workers from exposure of asbestos in the workplace. The Clean Air Act's Asbestos NESHAP applies to asbestos abatement practices. The Hazardous Materials Transportation Act (49 CFR 172-177, amended in 1978, to regulate the transport of asbestos materials) requires that asbestos must be loaded, handled, and unloaded in a manner that will minimize occupational exposure to airborne asbestos. Asbestos-containing wastes, which are transported for disposal to a landfill or other disposal facility, must meet all applicable RCRA hazardous waste disposal requirements. Asbestos NESHAP and OSHA would apply to the abatement of ACM in any buildings at Navy DCBR and Dam Neck Range and the few buildings located on operational range areas. The Hazardous Materials Transportation Act would apply to the transport of ACM abated from buildings and RCRA would apply to hazardous waste manifesting of ACM to a landfill licensed to receive ACM. With

regard to applicability of asbestos management regulations and the ranges, the Federal TSCA and the Asbestos Hazard Emergency Response Act do not apply since there are no schools on the VACAPES ranges.

For DCBR, the Air Force is responsible for designating an APM and developing an asbestos management plan. RCA Technical Team members were informed that all structures at Navy DCBR were surveyed for ACM. Two findings were provided from the 1999 Environmental Compliance Assessment and Management Program (ECAMP). The first related ECAMP finding indicates that "Asbestos containing material were removed from the east tower during renovation. No documentation available to indicate proper removal, transportation and disposal." This finding was closed on 2 August 1999. The second related ECAMP finding indicates that "Asbestos containing material were removed from the west tower during renovation. No documentation available to indicate proper removal, transportation and disposal." This finding was closed on 27 October 1999.

The CNRMA REG Air Program Manager believes an Asbestos Survey has been conducted for buildings at Dam Neck Range and ACM are abated or contained, as needed. The Air Program Manager is uncertain as to who the APM is for Dam Neck Range and who is responsible for Federal Asbestos NESHAP reporting requirements. It is unclear as to who is reporting to the Nevada Bureau of Air Pollution Control when asbestos abatement jobs contain "regulated asbestos containing material." The CNRMA REG Air Program Manager identified this as a concern that needs to be addressed.

3.1.15 PCB Management

TSCA (40 Code of Federal Regulations [CFR] 761) currently regulates polychlorinated biphenyls (PCBs). TSCA generally bans the use, manufacture, processing, and distribution in commerce of PCBs. Regulations issued under TSCA regulate the marking, storage, and disposal of items containing PCBs and require generator identification numbers and the manifesting of PCB wastes. RCRA (40 CFR 260-270) applies to the disposal of items containing PCBs in certain instances. According to the CNRMA REG Hazardous Waste Manager, there is no equipment containing PCBs at Dam Neck Range; therefore, these ranges are currently not subject to the PCB regulating statutes listed above. According to the Navy DCBR Manager, no equipment on the range contains PCBs. There are two transformers, one new and one old. The new one has been inspected and it does not contain any PCBs. However, the older one has no plate indicating the date of equipment and whether it does or does not contain PCBs. The Technical Team recommends that if the older transformer does not contain PCBs, it be labeled appropriately. No equipment on Dam Neck Range contains PCBs.

Due to the focus of the RCA on the VACAPES ranges and due to the lack of presence of equipment containing PCBs on the ranges, no deficiencies were noted for the VACAPES ranges. The Technical Team suggests that the old transformer at Navy DCBR be labeled stating if it contains PCBs.

3.1.16 Environmental and Explosives Safety Management

DOD Directive (DODD) 4715.11, Environmental and Explosives Safety Management on Department of Defense Active and Inactive Ranges Within the United States applies to Navy DCBR and Dam Neck Range. In general, the Directive requires range managers to ensure the future sustainability of military ranges. The Directive includes requirements to ensure range sustainability related to explosives safety measures, unexploded ordnance (UXO) hazard notifications and education, assessment of environmental impacts of range operations, and working with the community to promote compatible land use around ranges.

Two deficiencies were noted with regard to compliance with DODD 4715.11. There are no procedures to assess the environmental impacts of munitions use on DOD ranges (DODD 4715.11, paragraph 5.5.14). The RSEPA RCA program will help to satisfy this requirement. Also, there is no established program in

place to educate on- and off-base personnel or personnel authorized to enter the range (i.e., forestry service personnel and hunters) regarding hazards posed by explosives on the ranges (DODD 4715.11, paragraphs 5.5.12 and 5.5.1.2, respectively). Navy DCBR personnel do, however, work with a number of organizations. They meet quarterly with the DCBR Advisory Committee, which is attended by some hunters. In addition, Navy DCBR works with Seymour Johnson AFB, and Navy DCBR works with North Carolina Forest Service with regard to range land management. Navy DCBR has a Fire Management Plan with North Carolina Forest Service.

Encroachment due to urban or residential development has not been an issue for Navy DCBR compared to other Navy facilities in more populated areas of the country, but it is something that must continue to be managed. For example, jets must modify their flight speed and altitude as they approach or leave the DCBR due to noise complaints from residents on the North Carolina Coast. At Dam Neck Range, the 5-inch gunline has not been in operation since the 1980s due to the difficulty in clearing the adjacent ocean of recreational and commercial boaters. The VC-6 drone operation does not have any known encroachment issues.

3.2 RSEPA COMPLIANCE STATUS SUMMARY

Section 3.1 outlined the compliance assessment performed for VACAPES ranges and support facilities. All significant deficiencies found by team members during the RCA, which are items not in compliance with Federal, State, or local environmental laws or regulations, or DOD/Navy requirements are outlined in Table 3-1. The environmental compliance deficiencies are classified according to compliance categories found in Chapter 1 of OPNAVINST 5090.1B. The OPNAVINST 5090.1B compliance categories are defined as follows:

- ***Minor Deficiency–***Mostly administrative in nature. May involve temporary or occasional instances of noncompliance with environmental statutes.
- ***Major Deficiency–***Requires action, but not necessarily immediately. This category identifies conditions that usually represent violations of environmental statutes and may result in a notice of violation. Major findings may pose a future threat to human health, safety, the environment, or the ability to accomplish the mission.
- ***Significant Deficiency–***Requires immediate action. These deficiencies pose, or have a high likelihood of posing, a direct and immediate threat to human health, safety, the environment, or the mission of the range.

Each deficiency listed in Tables 3-1 and 3-2 also is classified according to Office of Management and Budget (OMB) compliance categories. These compliance categories are defined as follows:

- ***Class I–***Class I projects are those in which ranges are currently out of compliance with established regulatory deadlines.
- ***Class II–***Class II projects are those in which ranges will be out of compliance at a specific, impending published deadline, if action is not taken. If not accomplished by the deadline, projects become Class I.
- ***Class III–***Class III projects are those needed to meet DOD, Assistant Secretary of the Navy (Installations and Environment), Chief of Naval Operations, and/or claimant goals related to environmental protection, P2, cost effectiveness, environmental quality, or enhancement initiatives. These requirements are not mandated by law, but demonstrate Federal leadership and goodwill.

Table 3-1. Summary of RSEPA Compliance Status for Range

Area of Compliance	Statute/Regulation or Defense Requirement	Describe Potential Compliance Deficiency (Specify Location)	Categorize Each Deficiency			OMB Compliance Category
			Significant	Major	Minor	
Solid and Hazardous Waste	Navy Operational Range Clearance Policy	Existing procedures may not comply with requirements specified in new policy.	X			Class III
		No program for educating Naval residents (Dam Neck Range) and Navy DCBR workers about UXO safety hazards (DODD 4715.11, paragraph 5.5.12)	X			Class I
EPCRA	SARA Title III, Section 313 reporting and OPNAVINST 5090.1B, Chapter 4.	No documentation for Dam Neck Range and Navy DCBR regarding employee threshold and munitions use criteria for conducting a toxic release threshold determination.	X			Class I
		No documentation on toxic release threshold determination and if munitions contain any TRI chemicals.	X			Class I
		If toxic chemicals exceed toxic release threshold quantities, Section 313 Form R was not prepared or submitted.	X			Class I

Table 3-2. Summary of RSEPA Compliance Status for Range Support Facilities

Area of Compliance	Statute/Regulation or Defense Requirement	Describe Potential Compliance Deficiency (Specify Location)	Categorize Each Deficiency			OMB Compliance Category
			Significant	Major	Minor	
Air Quality	Federal Asbestos NESHAP	No known responsible person for submitting RACM abatement notifications to USEPA for Dam Neck Range.		X		Class II
Asbestos Management	OPNAV 5100.23E	No known APM for Dam Neck Range.		X		Class II
	Federal Asbestos NESHAP	No known responsible person for submitting RACM abatement notifications to USEPA for Dam Neck Range.		X		Class II
Cultural Resources	DODD 4715.3	ICRMP has not been prepared for Dam Neck Range Installation.			X	Class III
Pollution Prevention	Pollution Prevention Act of 1990 & E.O. 12856	No formal plan or procedure for the recycling of scrap metal at Navy DCBR.			X	Class III

3.3 CONCLUSIONS

The conclusions for the assessment of environmental compliance are presented for the operational range areas and support facilities below.

3.3.1 Operational Range Areas

There are few environmental regulations that have specific reporting and compliance requirements of military ranges. Two exceptions are the MMR and EPCRA. Based upon information gained during interviews with Navy CNRMA REG program managers and review of environmental documents received in the RDF, VACAPES ranges appear to be in compliance with MMR; however, there is a question of compliance with regard to EPCRA. Under the recently required Section 313 of SARA Title III EPCRA TRI, the RCA Technical Team advises the CNRMA EPCRA Manager to document whether Navy DCBR and Dam Neck Range exceed any TRI reportable quantity thresholds. It is very important that determinations regarding the applicability of EPCRA Section 313 to Dam Neck Range and Navy DCBR be documented, along with toxic release threshold calculations, if it is determined that any munitions contain TRI listed chemicals. If any of the ranges exceed TRI chemical thresholds, a Form R report must be submitted by 1 July for the previous calendar year.

The Navy recently released the Operational Range Clearance Policy for Navy Ranges (U.S. Navy 2004), which includes new requirements for activities such as the removal, disposal, and recycling of UXO, range scrap, and debris. Generally, existing VACAPES procedures appear to comply with the operational range clearance policy, but the Range Manager should ensure that range-specific scrap management policies and procedures comply with the operational range clearance policy.

An additional requirement that pertains specifically to operational range areas is required by DODD 4715.11, which requires DOD ranges to implement procedures to ensure range sustainability through range explosives safety measures and assess environmental impacts due to range munitions use. Many requirements under DODD 4715.11 are being met through range management plans; however, the following two deficiencies were noted: addressing environmental impacts from range operations and educating on- and off-base personnel regarding explosives hazards.

3.3.2 Dam Neck Range and Navy DCBR Range Support Operations and Facilities

Additional environmental regulations were reviewed that apply to clean air; clean water; hazardous materials and waste management; storage tank and POL management; environmental planning; PCBs, lead-based paint and asbestos management; and natural and cultural resources management. Regulations in these environmental areas apply most directly to Dam Neck Range and Navy DCBR support operations and facilities; however, they can apply to the operational range areas, as well.

Based upon information gained thus far, both Dam Neck Range and Navy DCBR operations/facilities and operational range areas appear to be in compliance with most requirements, with the exception of the deficiencies noted in Table 3-1 of this report. Noted environmental regulatory and Navy requirement deficiencies are: the APM is not known for either Dam Neck Range or Navy DCBR, the person responsible for reporting asbestos abatement USEPA notifications is not known, an ICRMP was not prepared for Dam Neck Range, and a formal plan or procedures have not been developed for the recycling of scrap metal. The RCA Technical Team advises that Dam Neck Range and Navy DCBR bring these issues into compliance.

It is important to reiterate that the primary focus of the RSEPA RCA is to evaluate the compliance of ranges, as the Navy already has an EQA Program in place to identify compliance deficiencies at Navy installations. The Navy EQA Program is required to audit, on a routine basis, Navy shore station environmental programs for compliance with applicable environmental regulations and Navy

requirements. It should be noted that Seymour Johnson AFB, as range owners, annually inspect Navy DCBR via the Air Force's ECAMP. Air Force environmental managers at the DCBR report their findings to Navy DCBR for the Navy to address. It is expected by the RCA Technical Team that the status of the deficiencies noted in this report will be evaluated during the next scheduled EQA for Dam Neck Range and Navy DCBR.

4. OPERATIONAL RANGE SITE MODEL (ORSM)

Section 4 presents the ORSM for land-based ranges and components of ranges within the VACAPES Complex. Section 4.1 describes the areas where munitions are handled, stored, used for testing and training at the VACAPES ranges. Section 4.2 describes the operational component of the ORSM. The environmental and land use components are described in Sections 4.3 and 4.4, respectively. The completed ORSMs for both ranges within VACAPES are described in Section 4.5.

4.1 DEFINITION OF RANGES

The purpose of defining ranges in RSEPA is to identify areas where MCs could migrate to off-range areas and potentially pose risks to human health or ecological receptors. Therefore, RSEPA focuses on land-based ranges and components of ranges on land where munitions testing and training operations are conducted. ORSMs are used to determine where munitions operations occur on land, what the environmental conditions are in and around those areas, and what the land uses are in and around these areas that could pose risks to humans or ecological receptors being exposed to residues of the munitions operations.

ORSMs are used to determine where predictive modeling is needed to assess the risk of off-range releases of MCs. The MCs listed previously typically are not found in small-arms ammunition or inert weapons. Consequently, RSEPA typically excludes these areas from predictive modeling. Furthermore, because airborne emissions are assessed as a function of EPCRA TRI reporting, RSEPA typically excludes air emissions from predictive modeling.

The Technical Team looked for locations where munitions are handled, stored, or used for testing and training at VACAPES ranges. Table 4-1 summarizes the results of the assessment of munitions-related activities found within VACAPES.

4.2 OPERATIONAL COMPONENT

This section summarizes information about land-based military operations, particularly where operations utilizing munitions are conducted, since RSEPA Decision Point 1 is concerned with releases of MCs to off-range areas. Sections 4.2.1, 4.2.2, and 4.2.3 describe past, current, and planned future uses of both VACAPES ranges, respectively.

The majority of the information that is presented in this report reflects current range use. Current and future uses of ranges are more relevant than are past uses to the primary purpose of RSEPA, which is sustainment of operational ranges. In addition, limited information about past and future range use is available.

4.2.1 Historical Military Operations

VACAPES OPAREA is a surface and subsurface operating area located in Maryland, Virginia, and North Carolina and their adjacent coastal waters. In previous operations, military aircraft flying over international waters off the U.S. east coast required that the airspace be set aside as a warning area for military operations. This method of air traffic control meant that any and all civilian/commercial aircraft were required to vacate the area, and if approaching, to be re-routed by air traffic control in order to avoid any conflict between military and non-military flight paths and operations. This method was found to be a very inefficient way of managing airspace.

As a way to better manage the airspace along the U.S east coast, the Fleet Area Control and Surveillance Facility, Virginia Capes (FACSFAC VACAPES) was established on 1 October 1977. FACSFAC

Table 4-1. Summary of Munitions-Related Activities Occurring at VACAPES

Munition-Related Activity *	Primary Source	Location
Munitions Handling and Storage	*Transfer Points* – Areas where munitions shipments occur	None
	Storage Magazines/Ammunition Supply Points – Areas where munitions storage and/or issuance occurs	None
Weapons Testing and Training	*Firing Points* – Areas where weapons systems are placed for testing and training, including mobile systems (e.g., truck-mounted systems)	Two locations at Dam Neck Range could apply. A 5-inch gunline is operational, but has not been used since the 1980s and it does not appear likely that it will be used in the foreseeable future due to the difficulty in prohibiting casual access onto the range by public and commercial vessels. A second area is where drones used as targets for air-to-air and surface-to-air training at sea are launched.
	Impact/Target Areas – Areas targeted by weapons systems	Navy DCBR includes inert munitions and strafing targets.
	Demolition Ranges – Areas where explosives are used during training, testing, or munitions disposal	None
	Buffer – The area on ranges extending beyond impact areas to provide safety zones to contain ricochets, blasts, and fragmentation from exploding munitions	None
Troop Training	*Combat Range* – Areas used for combat maneuvers	None
	Bivouac and Encampment Areas – Troop living areas (bivouacs are short-term areas, encampments are long-term, more permanent installations)	None
Defensive Positions	*Minefields* – Areas containing buried or surface placed anti-personnel or anti-tank mines	None
	Gun Emplacements – Areas where defensive weapons (e.g., anti-aircraft guns) are located	The 5-inch gunline at Dam Neck Range is operational, but has not been used since the 1980s and it does not appear likely that it will be used in the foreseeable future due to the difficulty in prohibiting casual access onto the range by public and commercial vessels.
Sanctioned Ordnance Disposal	*Mass Burial/Landfills with Munitions* – Areas where large quantities of ordnance were disposed of by burial	None
	Open Burn/Open Detonation (OB/OD) – Areas where ordnance was consolidated and disposed of by either burning or detonation	None
	Bomb Jettison Area – Areas where bombers jettison bombs prior to landing	None

* Excluding small-arms testing and training

VACAPES is located in Virginia Beach, Virginia, and was commissioned to monitor aircraft movements and coordinate assignments as well as the use of offshore warning areas for air, surface, and subsurface units. The control of this large airspace was done using radar surveillance and radio communications to separate high performance military aircraft and a high volume of commercial air traffic transiting numerous jet routes. FACSFAC VACAPES eventually became the central scheduling point for all Atlantic Fleet aircraft services, for the use of VACAPES, and for the joint use of airspace by DOD, the Federal Aviation Administration, and the National Aeronautics and Space Agency.

The use of these ranges has fluctuated over the years, and the Navy has attempted to document the use of range complexes by using the Navy Pacific Air Command's Target and Range Information Management System (TRIMS). Reports from TRIMS identified operations conducted by all branches of the U.S. military and forces from Japan, Australia, and Canada. The variability in operation tempo is related to U.S. military training goals, the geopolitical climate, and the status of active U.S. and international military activities. Appendix D presents the Navy's TRIMS reports for the Navy DCBR (TRIMS 2003). The numbers of sorties, which are defined as "a single training event by one aircraft, one ship, or one submarine which utilizes a range" (U.S. Navy 2000a), were recorded for DCBR between 2001 and 2004. Munitions usage was also recorded for Navy DCBR between 2001 and 2004. Munitions usage and the number of training events that have occurred at Navy DCBR have not dramatically changed in the past four years. The total number of sorties and munitions used at Navy DCBR are depicted in Figure 4-1.

4.2.2 Current Military Operations

The VACAPES Complex consists of several targets, instrumented, warning, and operating areas. Table 4-2 shows the offshore, nearshore, and onshore ranges, along with the warning areas that are directly associated with VACAPES. Figure 4-2 shows several of these operational areas, including the airspace for Dam Neck Range and Navy DCBR. Navy Dare County Bombing Range

Most of the land that makes up Air Force side of DCBR was owned by West Virginia Pulp and Paper Company (now Westvaco) in the 1950s and early 1960s. The land was later sold to First Colony Farms. In 1965, the Air Force leased the land from First Colony Farms and established their range on the land. The Air Force acquired fee title to the land in 1979 (U.S. Air Force 2000). Exclusive federal jurisdiction was given to the Air Force in 1978 and the land became a joint Air Force/Navy range with the primary users being Seymour Johnson AFB and NAS Oceana.

DCBR covers 46,621 acres of marshland, forest, and open land. Only 4,546 acres of this land is used to test air-to-ground inert weapons delivery on multiple target types. The range, however, does not allow the use of high explosive munitions (U.S. Air Force 2000). The Air Force operates one impact area of 2,468 acres with associated facilities located near the middle of the southern side of the range. The Navy operates another impact area of 2,078 acres as a tenant. This area is located near the middle of the northern side of the range (U.S. Air Force 2000). The Navy DCBR training facilities house multiple types of range targets for several different military scenarios. These scenarios include: a Navy loft, Short Bull, Navy East Conventional Bull, Minimum Altitude/Lay-down Target, Strafing Target, Laser Target, Large Area Targets (LAT), and three Instrumental Multi-spectral Cues.

4.2.2.1 Dam Neck Range

Dam Neck Range is located on over 1,100 acres of highlands, marshes, coastal beaches, and sand dunes and includes over 3 miles of Virginia beachfront. The gunline and launch area, however, are extremely small and do not account for the majority of the area covered by the range. It is a special surface and airspace area. The range extends from the inland eastward to the three NMI territorial limit and is located approximately five NMI east of the NAS Oceana Tactical Air Navigation (TACAN), Channel 113, bearing 110°.

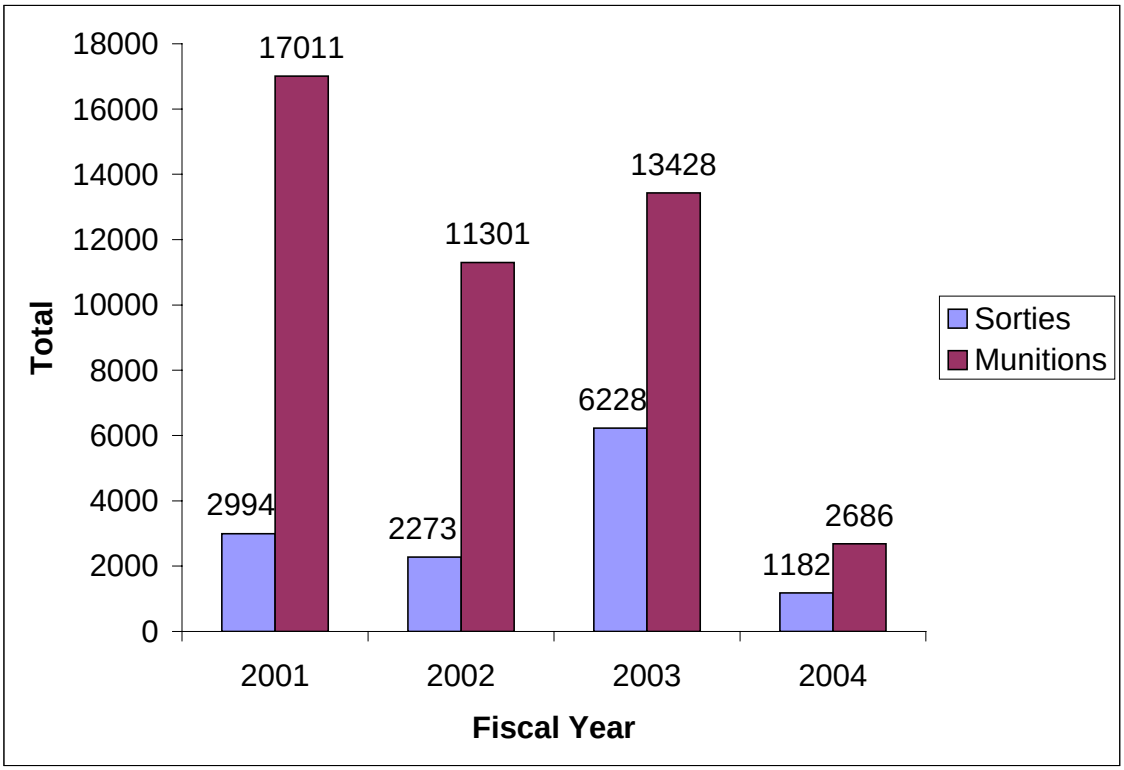


Figure 4-1. Sorties Executed and Munitions Used at Navy DCBR

Table 4-2. Summary of Ranges, Operational Areas, and Warning Areas at VACAPES

Offshore	Nearshore
Stumpy Point Range Palmetto Point Range	Dam Neck Range Large Area Tracking Range (LATR)
Warning Areas, Airspace	**Onshore**
Oceana Tactical Aircrew Combat Training System (TACTS) Range Warning Area 72 Warning Area 50 Warning Area 110 Warning Area 386 Warning Area 387 Hatteras ATCAA Pamlico Military Operating Area (MOA)	Dam Neck Range Drone Launch Pad Dam Neck Range Gunline Harvey Point Range Navy DCBR

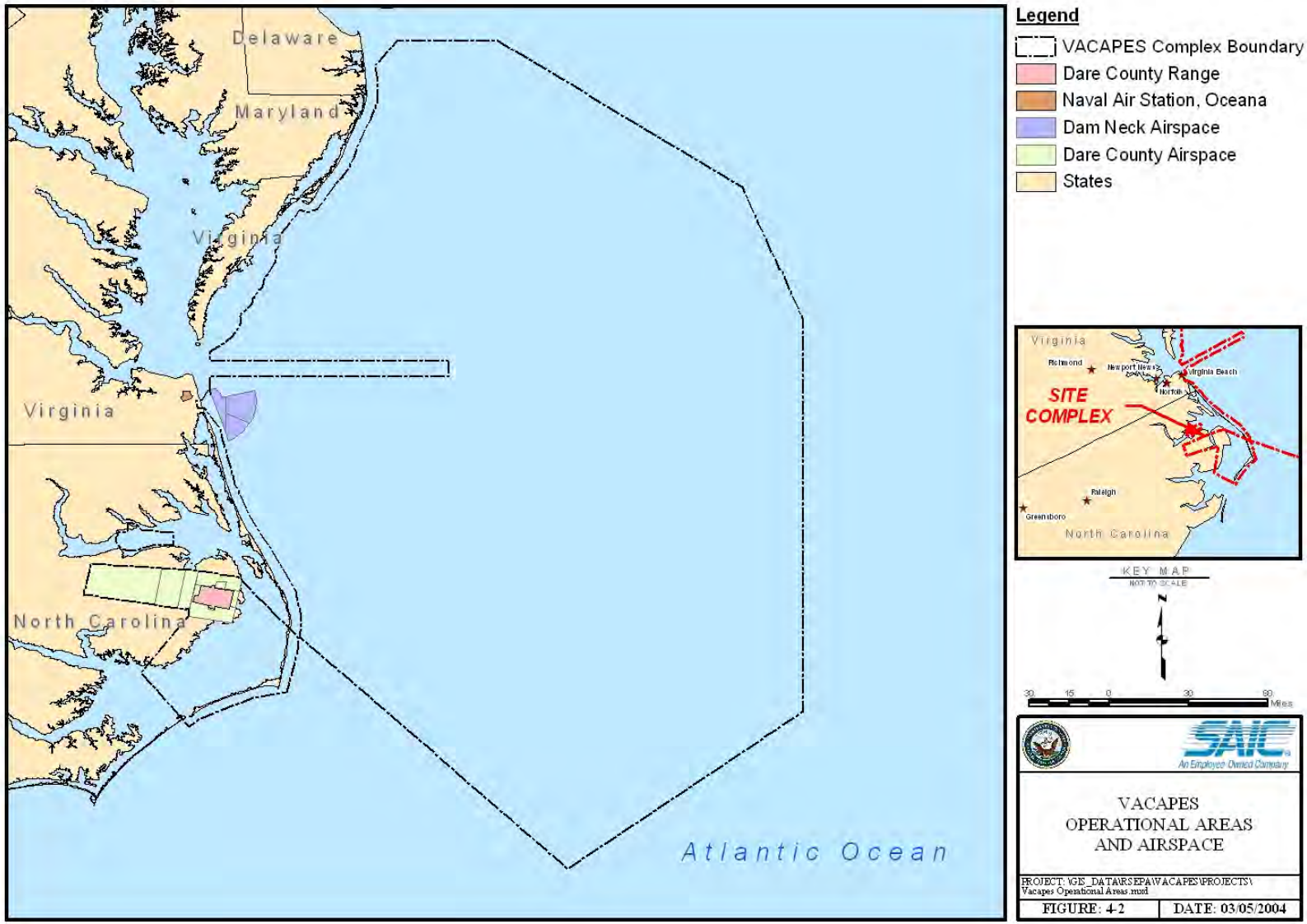


Figure 4-2. VACAPES Operational Areas and Airspace

The primary use of the Dam Neck Range occurs at sea and is air-to-air exercises using live ordnance and air-to-surface exercises using MK-76 or MK-106 practice bombs and inert 2.75-inch folding fin aerial rockets. There are two types of targets that are used on the range to detonate the weapons. The VC-6 Squadron's BQM-74E powered drones are remotely controlled subsonic air-to-air and surface-to-air targets. JATO rockets are used to launch the drones and the control of the drones is accomplished with the use of Portable Radio Tracking and Control System or Integrated Target Control System. The second target used at the facility is the QST-33/35 highly maneuverable, remote controlled, fiberglass boats used as moving targets for inert rocket and/or practice bombs. The QST-33 Seaborne Powered Target (SEPTAR) is 18-feet long, while the QST-35 is 55-feet long. The control over the targets is maintained with either the Portable Radio Tracking and Control System, Integrated Target Control System, or Control Target Transmitter System (U.S. Navy 2000b).

4.2.2.2 Summary of Land-Based Ranges and Components of Ranges

RSEPA is concerned with land-based ranges where munitions larger than small-arms ammunition are used. Table 4-3 describes military operations on land-based ranges at VACAPES.

4.2.3 Future Military Operations

The information regarding future military operations is limited. An INRMP was written in 1998 by the Air Force for DCBR and, at that time, there were no anticipated changes in training operations at DCBR. In 2003, Seymour Johnson AFB issued a request for NEPA CATEX for construction of a simulated aircraft runway within the existing Air Force's bombing range (U.S. Air Force 2003). Although this simulated runway would be a different target, it is not known how it would impact the operational tempo of the Air Force at DCBR. Future operations for Navy operations at DCBR and Dam Neck Range have not been identified to date.

4.3 ENVIRONMENTAL AND CULTURAL COMPONENTS OF VACAPES ORSM

The following sections present an evaluation of the environmental components of the ORSM for the Navy DCBR and Dam Neck Range. In order to ensure the long-term sustainability of VACAPES as a training range complex, the Navy must define what environmental conditions are at the range complexes and determine if the resources are being managed in an environmentally sound manner. Information was collected for both ranges regarding predominant soil types; topography; vegetation; aquifer characteristics; and potential or known sensitive, threatened, or endangered flora or fauna from existing documentation.

4.3.1 Predominant Soil Types

The following sections discuss the types of soil found at Navy DCBR and Dam Neck Range.

4.3.1.1 Navy Dare County Bombing Range

Soils at DCBR were formed by wetland community development. This development is based on the Quarternary deposits of surficial organic materials of varying thickness overlying undifferentiated and complexly interbedded layers of sand, silt, clay, and mollusk shells (U.S. Air Force 2000). A 1992 U.S. Department of Agriculture Soil Conservation Service Soil Survey for Dare County found that the area was comprised of seven soil types. These soil types are hydric, support hydrophytic vegetation, and include Belhaven muck, Cape Fear loam, Hobonny muck, Hyde loam, Ponzer muck, Pungo muck, and Roper muck (U.S. Air Force 2000).

Table 4-3. Land-Based Ranges at VACAPES

Range	Description	Status of ORSM and Predictive Modeling
Dam Neck Range	Located in Virginia along the beach five nautical miles east of NAS Oceana. Live target drones (BQM-74E) for surface-to-air and air-to-air exercises are remotely fired from the beach at the drone launch area. An inactive 5-inch gunline runs along the beach front. Air-to-surface exercises also are allowed with inert ordnance, but only in the offshore areas of the range.	Include in ORSM, but exclude from predictive modeling because live munitions are not used. If required, emissions from JATO bottles used to launch drones should be assessed as a function of EPCRA TRI reporting.
Large Area Tracking Range (LATR)	Encompasses a radial area roughly 500 nautical miles from the LATR Ground Interrogation Station (GIS) on Bodie Island, North Carolina. Primarily used for tracking and exercise data support for up to 124 exercise participants. No specific targets.	Exclude, as munitions are not used.
Navy Dare County Bombing Range	Located near Manteo, North Carolina and is a joint US Navy and US Air Force weapons range. The Navy operates the northern portion and the Air Force (Seymour Johnson AFB) operates the southern portion. Air-to-ground exercises are allowed with inert ordnance and ordnance which uses marking charges. Strafing exercises also are allowed. Targets consist of two conventional bull targets, a strafing target, a laser target, and several other types of targets.	Include in ORSM, but exclude from predictive modeling because only use inert munitions and munitions that use marking charges.

The predominant soil type found in the DCBR is Pungo muck. It is distributed throughout the entire southeastern portion of the range. Several strips of Pungo muck exist in other areas of DCBR. One area extends northward, lying east of the Navy impact area and continuing to the northern border of the range, and the other extends westward through the Air Force impact area to the western border of the range. Figure 4-3 shows the location of Pungo muck within Navy DCBR. Mineral soils also have been discovered in the northwestern and southwestern portions of the range. These sections of the range are not found to contain a very significant depth of organic material and consist of Hyde and Cape Fear loam soils (U.S. Air Force 2000).

4.3.1.2 Dam Neck Range

Dam Neck Range is located on over 1,100 acres of highlands, marshes, and sand dunes. The majority of Dam Neck Range, including the land-based components of the range, is covered by asphalt. The remaining portion of the range is made up of over 3 miles of Virginia Beach shoreline, where the predominant soil type is sand.

4.3.2 Predominant Topography

The following sections discuss the topography of Navy DCBR and Dam Neck Range.

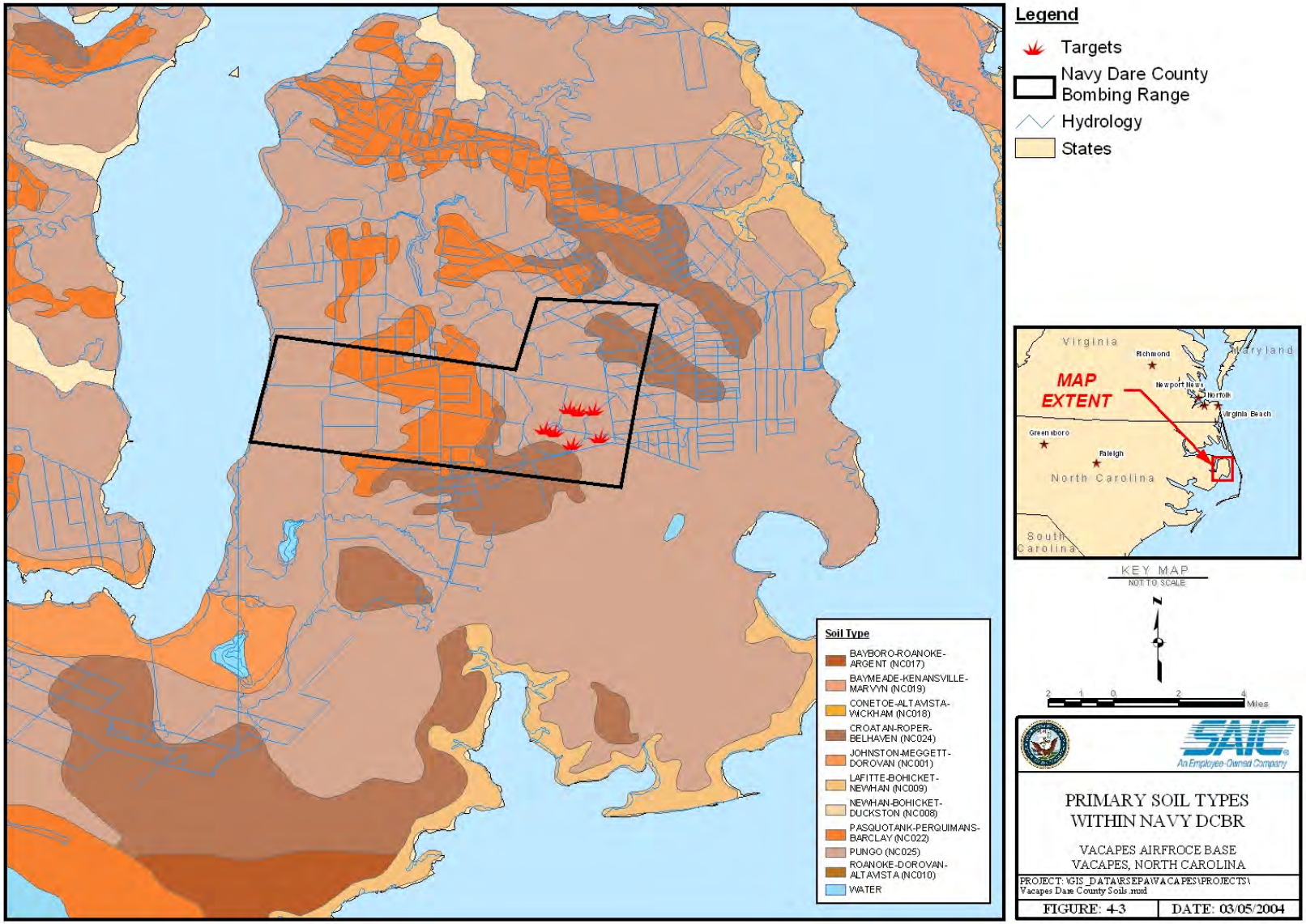


Figure 4-3. Primary Soil Types Within Navy DCBR

4.3.2.1 Navy Dare County Bombing Range

The Dare County mainland is the product of progressive wetland community development. The predominant overlying geologic formation in the area is composed mainly of the Pamlico Terrace, which is low, flat, and in certain areas, a gently sloping plain. This plain lies east of the Suffolk Scarp, which is a prehistoric Atlantic Ocean Shoreline.

4.3.2.2 Dam Neck Range

Dam Neck Range is located on over 1,100 acres of highlands, marshes, and sand dunes. The topography in the vicinity of the land-based components of the range is flat with the exception of sand dunes and a berm made between the beach and areas where military operations occur.

4.3.3 Predominant Vegetation

The following sections discuss the predominant vegetation found at Navy DCBR and Dam Neck Range.

4.3.3.1 Navy Dare County Bombing Range

The vegetation mapped at DCBR is very diverse and typical for an area that is the product of progressive wetland community development. The majority of the vegetation found in the uncleared areas of the range is forest. This area consists of low and high pocosin, bay and swamp forest, and natural lake shoreline (U.S. Air Force 2000). These vegetation types are discussed below and are shown in Figure 4-4:

- ***Low Pocosin and High Pocosin***—These vegetation types are generally located in the center of peatlands and include Pond Pine Woodland, Peatland Atlantic White Cedar Forest, and underlying shrubs. Peatland Atlantic White Cedar Forest species that have been disturbed within the last 10 years also are included with this vegetation type.
- ***Bay and Swamp Forest***—Bay forest is usually associated with the outer edges of pond pine woodland. This vegetation type is characterized by an evergreen hardwood forest and an average canopy height of 25 feet. Vegetation in bay forest includes red bay, loblolly bay, and sweet bay with some understory shrubby vegetation. Swamp forest is relatively uncommon with peatland and is usually found around streams. Trees in this forest type typically grow to 45 feet. Vegetation in swamp forest includes non-riverine swamp forest and non-riverine swamp forest species that have been disturbed within the past 10 years. Swamp red bay, swamp blackgum, and red maple are typical types of trees found in swamp forest areas.
- ***Natural Lake Shoreline***—This area is characterized by periodic human disturbance. It includes vegetation such as herbs, shrubs, and grasses.

4.3.3.2 Dam Neck Range

The majority of the land-based portion of Dam Neck Range is covered by asphalt. This makes the area an unsuitable habitat for a variety of plant species. The beachfront portion of Dam Neck Range would be the only area at the range where vegetation would exist.

4.3.4 Surface Water and Groundwater

The following sections discuss the surface water and groundwater at Navy DCBR and Dam Neck Range.

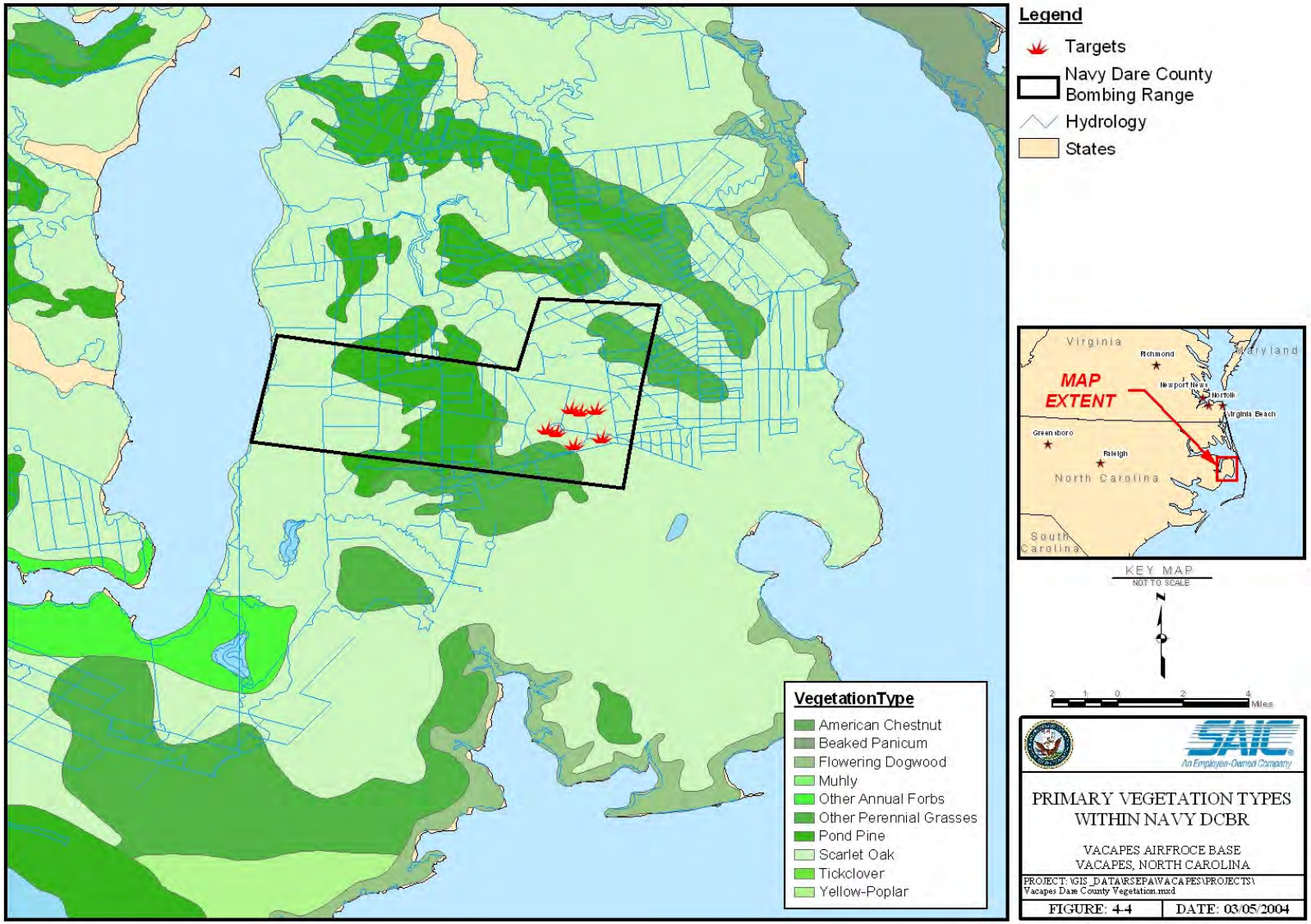


Figure 4-4. Primary Vegetation Types at Navy DCBR

4.3.4.1 Navy Dare County Bombing Range

The ecosystems found within Dare County and DCBR consist of swamps, bogs, marshes, and pocosin habitats (U.S. Air Force 2000). Although the range is not adjacent to any major body of water, the western boundary of the range lies within a mile of the Alligator River and the eastern boundary lies within a mile of Stumpy Point Bay. Stumpy Point Bay connects to the Pamlico Sound. The Albermarle and Croatan Sounds also surround the DCBR.

The two major sources of surface water in the DCBR are Whipping Creek and Whipping Creek Lake. Both are located in the Pasquotank River Basin, which covers approximately 3,635 square miles. The Pasquotank River flows from the Great Dismal Swamp to the Albermarle Sound, traveling northeast to southeast. These two sources are protected by the North Carolina Department of Environment and Natural Resources for recreation, fishing, aquatic life, and wildlife purposes. The department also considers these waters to be Outstanding Resource Waters, meaning that they hold significant state or national importance for recreation or ecological reasons resulting in special measures of protection. There are currently no bodies of water on the DCBR that are designated National Wild and Scenic Rivers. (U.S. Air Force 2000).

The upper aquifer and the limestone aquifer are the two principal aquifers that supply the groundwater resources on the DCBR (U.S. Air Force 2000). Sedimentary deposits that form these two groundwater aquifers cover underlying bedrock in Dare County. The upper aquifer yields the most water and provides a source to the overlying streams and estuaries. Groundwater is very near the surface during most of the year across the system (U.S. Air Force 2000).

4.3.4.2 Dam Neck Range

Because of the proximity of the land-based components of Dam Neck Range to the Atlantic Ocean, surface water hydrology and groundwater hydrogeology are predominantly ocean water. No information was available to determine the depth to the shallowest fresh groundwater.

4.3.5 Sensitive Ecosystems

The following sections discuss the sensitive ecosystems found within Navy DCBR and Dam Neck Range. These sections also address human impacts to sensitive ecosystems at these ranges.

4.3.5.1 Navy Dare County Bombing Range Known Threatened and Endangered Species

Surveys conducted on DCBR revealed that this area of remote and relatively undisturbed land is home to a number of endangered and threatened species. The forest and pocosin lands that make up the range are a very suitable environment for many species of mammal, reptile, bird, and amphibian (U.S. Air Force 2000).

USFWS currently lists 15 Federally protected plant and animal species that are known to be in Dare County (U.S. Air Force 2000), which are listed on Table 4-4. The North Carolina Division of Parks and Recreation Natural Heritage Program lists 19 Federally protected plant and animal species that have been recorded in Dare County (U.S. Air Force 2000), which are listed on Table 4-5.

Ecological surveys conducted on the installation revealed that 25 of 65 natural communities could be deemed sensitive ecosystems (U.S. Air Force 2000) and critically impaired because of their vulnerability to potential destruction (U.S. Air Force 2000). These areas combined account for at least 23,000 acres of habitat that is impaired and vulnerable to potential destruction, thus requiring top priority protection.

Table 4-4. Federally Protected Plant and Animal Species Identified by U.S. Fish and Wildlife Service

Scientific Name	Common Name	Federal Status
Amaranthus pumilus	Seabeach amaranth	Threatened
Canis rufus	Red wolf	Endangered
Caretta caretta	Loggerhead turtle	Threatened
Charadrius melodus	Piping plover	Threatened
Chelonia mydas	Green sea turtles	Threatened
Dermochelys coriacea	Leatherback sea turtle	Endangered
Falco peregrinus	Peregrine falcon	Endangered
Haliaeetus leucocephalus	Bald eagle	Threatened
Laterallus jamaicensis	Black rail	Species of Concern
Lepidochelys kempi	Kemp's ridley sea turtle	Endangered
Picoides borealis	Red-cockaded woodpecker	Endangered
Sterna dougallii	Roseate tern	Endangered
Trichechus manatus	Manatee	Endangered
Trichostema sp.	Dune blue curls	Species of Concern
Ursus americanus	Black Bear	Species of Concern

Table 4-5. Federally Protected Plant and Animal Species Identified by the North Carolina Division of Parks and Recreation Natural Heritage Program

Scientific Name	Common Name	Federal Status
Alligator mississippiensis	American alligator	Threatened (S/A)
Amaranthus pumilus	Seabeach amaranth	Threatened
Anhinga anhinga	Anhinga	Significantly reduced
Canis rufus	Red wolf	Experimental
Caretta caretta	Loggerhead turtle	Threatened
Charadrius melodus	Piping plover	Threatened
Chelonia mydas	Green sea turtles	Threatened
Corynorhinus rafinesquii	Rafinesque's big-eared bat	Species of Concern**
Dermochelys coriacea	Leatherback sea turtle	Endangered *
Eretomochelys imbricata	Hawksbill sea turtle	Endangered
Falco peregrinus anatum	Peregrine falcon	Endangered
Haliaeetus leucocephalus	Bald eagle	Threatened
Laterallus jamaicensis	Black Rail	Species of Concern
Lepidochelys kempi	Kemp's ridley sea turtle	Endangered
Picoides borealis	Red-cockaded woodpecker	Endangered
Sterna dougallii	Roseate tern	Endangered
Trichechus manatus	Manatee	Endangered
Trichostema sp.	Dune blue curls	Species of Concern
Ursus americanus	Black Bear	Species of Concern

* Historic Record = The species was last observed more than 50 years ago

** Obscure Record = The date and/or location of observation is uncertain

These include natural communities, many of which are found at DCBR. The 25 sensitive ecosystem communities are listed below:

- Basic Mesic Forest (Coastal Plain Subtype)
- Coastal Fringe Sandhill
- Basic Mesic Forest (Piedmont Subtype)
- Coastal Plain Marl Outcrop
- Coastal Fringe Evergreen Forest
- Diabase Glade
- Non-Riverine Swamp Forest
- Floodplain Pool
- Non-Riverine Wet Hardwood Forest
- Granitic Flatrock
- Peatland Atlantic White Cedar Forest
- Piedmont/Mountain Swamp Forest
- Pine Savanna
- Small Depression Pocosin
- Small Depression Pond
- Ultramafic Outcrop Barren
- Tidal Freshwater Marsh (Freshwater Variant)
- Upland Depression Swamp Forest
- Interdune Pond
- Maritime Deciduous Forest
- Maritime Dry Grassland
- Maritime Evergreen Forest
- Maritime Shrub Swamp
- Maritime Swamp Forest
- Maritime Wet Grassland.

For DCBR, the American alligator is the only rare reptile documented to inhabit the range. Sporadic surveys of the alligators have occurred at Whipping Creek and Whipping Creek Lake, the canals around the Air Force's and the Navy's impact areas. Twenty-five to 35 alligators were counted during a 1993 survey and 46 to 60 alligators were counted during a 1994 survey. Whipping Creek Lake had the highest density of alligators, while low densities of alligators were noted within the ranges. Due to the limited scope and inconsistent methodology of the alligator surveys at DCBR, data gaps exist and there are some discrepancies between reports. Although DCBR could benefit from further surveys, the research that has been completed indicates that military operations will not impact the alligators since the majority of the alligator population is not located within the impact areas (U.S. Air Force 2000).

4.3.5.2 Dam Neck Range Known Threatened and Endangered Species

The majority of the land-based portion of Dam Neck Range is covered by asphalt. This makes the area an unsuitable habitat for a variety of plant and animal species. The beach front portion of Dam Neck Range would be the only area at the range where plant and animal species are likely to exist. Various species of sea turtles may frequent the beach front.

4.3.5.3 Human Impacts on Sensitive Ecosystems on Dare County Bombing Range

In the 1950s and 1960s, well before the Air Force and Navy began use of the Dare County lands, canals were dug spanning 180 miles. These canals ranged from 16 to 25 feet wide and 6 to 8 feet deep. The initial action was quite damaging to the land's original natural hydrology. The canals are currently used to control the flow of water to areas for the purpose of fire prevention. There also is an effort on the part of the military to study and evaluate the possibility of trying to restore the land's original hydrology. Until military studies begin, the North Carolina Department of Environment and Natural Resources (NCDENR) had given these canals the same environmental classification as Whipping Creek and Whipping Creek Lake.

In 1995, an Ecosystem Survey was conducted for the Dare County Bombing Range in which eight natural community types, 46 subdivisions of those communities, and 12 subdivisions of disturbed natural communities were identified (U.S. Air Force 2000). Within Dare County and DCBR, there were at least 23,000 acres of habitat that was considered top priority for protection. These natural communities were listed in Section 4.3.5.1.

Five "Natural Heritage Priority Areas" were also designated. They included: U.S. 264 Lower Pocosin Natural Area, Faircloth Road Pond Pine Pocosin Natural Area, Pine Road Swamp Natural Area, Taylor Road Natural Area, and the Alligator River Swamp Natural Area.

Along with the vast types of sensitive ecosystems, there also are a fair number of sensitive species inhabiting DCBR and the surrounding Alligator River National Wildlife Refuge. The refuge supports 145 species of resident and migratory birds. Many of these resident and migratory species use the land for foraging and nesting habitat, including raptors, shorebirds, warblers, and numerous waterfowl. Due to the types of habitat that support the shorebirds and waterfowl, these species are not found to inhabit the range itself; however the warbler, woodpecker duck, egret, heron, nuthatches, and gnatcatcher do inhabit areas surrounding the range. The range also is home to many mammalian species such as black bears, bobcats, river otters, white-tailed deer, and minks.

4.3.5.4 Human Impacts on Sensitive Ecosystems on Dam Neck Range

Dam Neck Range is currently unused by the public. Recreational and commercial boating does occur within the waters off the coast of the land-based portions of the range.

4.3.6 Cultural Resources

This section summarizes the cultural resources found at Navy DCBR and Dam Neck Range.

4.3.6.1 Navy Dare County Bombing Range

Because the Navy leases their portion of DCBR from the Air Force, the Air Force is ultimately responsible for cultural resource management at this range. During 1994 and 1995, a cultural resource study was conducted for the DCBR to locate any possible historical resources of significance and provide for their protection and preservation. The resulting CRMP stated that there are no resources eligible for listing on the National Register, no indication of any future eligibility of any sites or locations, and no Native American burial or sacred areas on the range. The plan was submitted to Seymour Johnson AFB and was then submitted and approved by the State Historic Preservation Officer (U.S. Air Force 2000).

4.3.6.2 Dam Neck Range

Dam Neck Range is positioned in an area of Virginia that is engulfed with much cultural history. The Dam Neck Range gunline is positioned near the shore where the first Jamestown settlers landed, Civil War battles were fought, and where German submarines sank American shipping vessels during World War II. The name "Dam Neck" became firmly established in 1881 when it was given to a life-saving station built where the Bachelor Officer Quarters are now located. The Coast Guard purchased the life-saving station in 1930 and used it as a signal station until the Navy bought the land during World War II (Global Security 2003b).

Neither a CRMP nor an Integrated CRMP has been prepared for Dam Neck Range, which normally describes the management protocols developed to meet cultural resource regulations. Archeological sites and a cemetery are located at Dam Neck Range, but none appear to be located within the 5-inch gun firing line or the drone launch area. There are no federally-recognized Native American tribes in Virginia, although some public outreach to non-recognized groups is conducted as part of Navy community relations activities.

4.4 LAND USE COMPONENT

The following sections describe land use on and around Navy DCBR and the land-based components of the Dam Neck Range.

4.4.1 Navy Dare County Bombing Range

Most of the Dare County mainland area is made up of expansive swamp forests and vast impenetrable pocosins. Forestry has been an important enterprise for most of its history, although there were some farming activities in the late 1700s and early 1800s (U.S. Air Force 2000). Most of the mainland wilderness has been acquired for permanent protection as the Alligator River National Wildlife Refuge.

4.4.1.1 Military Use

The primary military land use of the area involves flight operations, aircraft maintenance, support facilities, training and administrative uses, housing, community support, and recreational uses (U.S. Navy 2003a). The military-owned range can be categorized by one of three uses: semi-improved grounds, unimproved grounds, and land under facilities. Semi-improved grounds are those that receive periodic maintenance for operational and aesthetic purposes. Such grounds are the two target areas comprised of 4,546 acres, areas of transportation, weapons ranges, and areas of commercial use. Unimproved grounds are those that require no upkeep and consist mainly of natural lands with no government or public facilities on them. This type of land makes up the majority of the DCBR. Finally, land under facilities describes all grounds that have been directly affected by anthropogenic construction. Such areas consist of buildings, roads, parking areas, and airfields (U.S. Air Force 2000).

4.4.1.2 Public Use

The Dare County land is used for timber, fire and water management, and landfills. Due to the remote location of DCBR, much of the land remains unused by the public. While there are no formal recreational opportunities on the DCBR land, people do participate in activities pertaining to ecotourism and wildlife. Of the existing activities available to the public, hunting of whitetailed deer is the most attended. Since 1978, the DCBR has been leased as a Gaming Land by the state of North Carolina, resulting in annual revenue of $30,000 for Seymour Johnson AFB. Other outdoor activities are expected to increase due to public interest in several endangered and threatened species known to inhabit the range. Such expected activities include nature walking, bird watching, canoeing, and kayaking (U.S. Air Force 2000). Due to public access to many areas of the range, the Dare County Sheriff, North Carolina State Troopers, USFWS, and the North Carolina Wildlife Resources Commission provide civilian law enforcement (U.S. Air Force 2000).

Land surrounding DCBR includes a variety of residential, commercial, industrial, and agricultural uses. West of the DCBR is a small municipal airport that serves helicopters and small fixed-wing planes for general aviation traffic. Aircraft conducting instrument flight rules approaches may interact with the northeastern portion of the DCBR restricted airspace, requiring permission to enter the airspace, cease of all military operations, and the absence of military planes (U.S. Navy 2003a).

4.4.2 Dam Neck Range

Dam Neck Range is located on over 1,100 acres of highlands, marshes, coastal beaches, and sand dunes and includes over 3 miles of Virginia beachfront. The gunline and launch area, however, are extremely small and do not account for the majority of the area covered by the range. Dam Neck Range is host to 12 tenant commands and over 5,600 instructors, students, and support personnel live or work at the range. Dam Neck Range operates on an educational premise, graduating over 17,000 students from one of over 200 courses of instruction. Many of these courses are taught via the Video Tele-training network, as well as military tactical training premise (Global Security 2003b).

4.4.2.1 Military Use

A 5-inch gunline is located on Gunline Street at Dam Neck Range. These guns are located within a few hundred feet of the Atlantic Ocean. Navy personnel interviewed during the range visit indicated that the guns had not been fired since the 1980s due to the difficulty of clearing recreational and commercial vessels in the safety zone. Furthermore, they indicated that the difficulty in clearing vessels from the safety zone is likely to worsen; therefore, it appears that the guns will not be used for live fire training in the future. The guns, however, are currently used for maintenance training. A target drone launch pad is located at the Dam Neck Range on Regulus Avenue. BQM-74E target drones are launched from the pad.

4.4.2.2 Public Use

Dam Neck Range is currently unused by the public. Recreational and commercial boating does occur within the waters off the coast of the range.

4.5 OPERATIONAL RANGE SITE MODELS

Prior sections presented the three components of the VACAPES ORSMs: operational, environmental, and land use. This section integrates these three components into the ORSMs for the Navy portion of Navy DCBR and the land-based components of the Dam Neck Range.

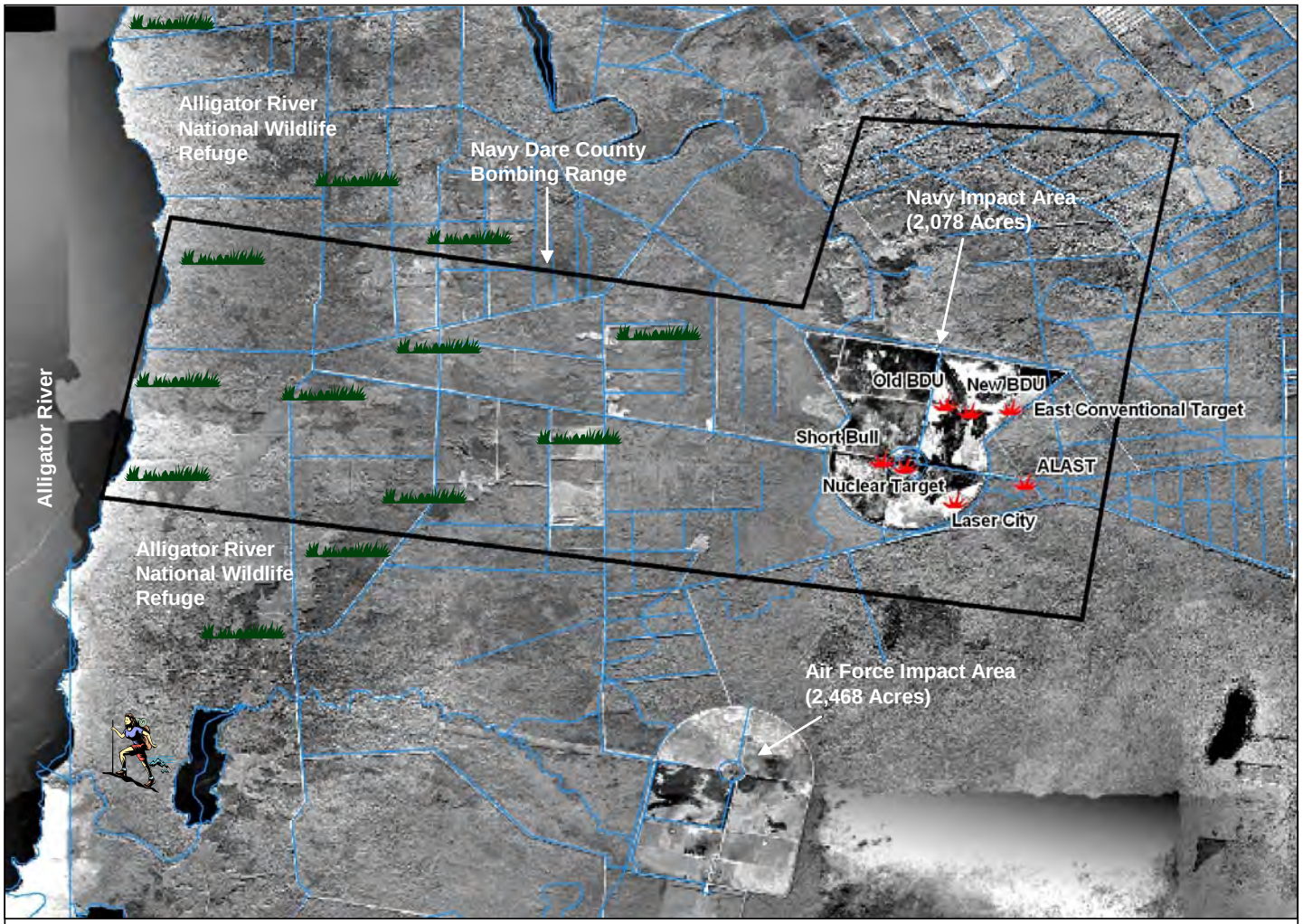
4.5.1 ORSM for Navy DCBR

DCBR is divided into two independent operating areas; one operated and maintained by the U.S. Air Force and the other by the U.S. Navy. Figure 4-5 illustrates only the ORSM for Navy DCBR; however, it does show the location of the Air Force impact area in relation to the Navy impact area. The following sections summarize and depict the source areas, receptors, and potential transport pathways in terms of the operational, environmental, and land use components**.**

- ***Operational***—Navy DCBR is located in North Carolina and is a joint Navy and Air Force inert weapons training range. The Navy operates the northern portion and the Air Force (Seymour Johnson AFB) operates the southern portion. Air-to-ground exercises are allowed with inert ordnance and ordnance which uses marking charges. Strafing exercises also are allowed. Targets consist of two conventional bull targets, a strafing target, a laser target, and several other types of targets.
- ***Environmental***—Navy DCBR is located on a peninsula surrounded by the Alligator River, Albemarle Sound, Croatan Sound, and the Pamlico Sound. The target range, however, is located in the interior of the peninsula and does not adjoin any of these water bodies. Four major streams drain the peninsula; however, none of these streams flow through the target range. The range was formed by wetland community development and the ecosystems found within the range consist of swamps, bogs, marshes, and pocosin habitat. The predominant soils found in DCBR are a hydric soil known as "Pungo muck." The topography of Navy DCBR is low, flat, and in certain areas, gently sloping. Two aquifers supply the groundwater resources at Navy DCBR and the groundwater is very near the surface during most of the year.

  At least 15 Federally protected plant and animal species are known to occur in Dare County. Only one rare species, the American alligator, inhabits the range, including the canals around the Navy's impact area. Alligator surveys, however, have shown that military operations will not impact the rare species since the majority of the population is not located within the impact areas.

  A cultural resources study was conducted for DCBR, however, no cultural resources were identified that were eligible for listing on the National Register.



Source: GlobeXplorer (2004)

Figure 4-5. Operational Range Site Model for Navy Dare County Bombing Range

- ***Land Use***—Navy DCBR consists of over 46,000 acres, however, both the Navy and Air Force only use approximately 2,000 acres apiece as impact areas. While there are no formal recreational opportunities on DCBR land, people do participate in activities pertaining to ecotourism and wildlife. Land surrounding Navy DCBR includes a variety of residential, commercial, industrial, and agricultural uses.

4.5.2 ORSM for Dam Neck Range

Dam Neck Range is an air-to-air and air-to-surface range and an extensive portion of the range is based over the water. Figures 4-6 and 4-7 illustrate the ORSM for the Dam Neck Range 5-inch gunline and the drone launch area, respectively. The following sections summarize and depict the source areas, receptors, and potential transport pathways in terms of the operational, environmental, and land use components.

- ***Operational***—Dam Neck Range is located in Virginia along the beach. Live targets for air-to-air exercises are remotely fired from the beach at the drone launch area. An inactive 5-inch gunline runs along the beach front on a paved area. Firing was done over the beach into the ocean. Air-to-surface exercises also are allowed with inert ordnance.
- ***Environmental***—Dam Neck Range is located on over 1,100 acres of highlands, marshes, and sand dunes. The range includes over 3 miles of beachfront. The land-based, non-beach portion of the range is paved, making the area an unsuitable habitat for a variety of plant and animal species. Various species of sea turtles may inhabit the beaches at Dam Neck Range.

  Archeological sites and a cemetery are located at Dam Neck Range but they are not located near the gunline or the drone launch area.
- ***Land Use***— Dam Neck Range is currently unused by the public. Recreational and commercial boating does occur within the waters off the coast of the range.

Source: GlobeXplorer (2004)

Figure 4-6. Operational Range Site Model for the Dam Neck Range 5-Inch Gunline

Source: GlobeXplorer (2004)

Figure 4-7. Operational Range Site Model for the Dam Neck Range Drone Launch Area

5. CONCLUSIONS

The conclusions presented in this synopsis complete the requirement for RCA Phase III and discuss information necessary to answer Decision Point 1 questions (U.S. Navy 2003b) for VACAPES: "Are further steps required to maintain compliance?" and "Is further analysis required to assess risk of off-range release?"

- To maintain compliance with environmental regulations, VACAPES Ranges need to (1) determine the applicability of EPCRA Section 313 to Navy DCBR and Dam Neck Range and conduct the necessary calculations, if applicable, (2) address environmental impacts from range operations and educate on- and off-base personnel regarding explosives hazards, and (3) ensure that range-specific scrap management policies and procedures comply with the operational range clearance policy.
- Based on the current and planned continued use and the ORSMs for Navy DCBR and Dam Neck Range, further analysis is not required to assess the risk of off-range releases. None of the munitions used at Navy DCBR include any MCs as defined in RSEPA. The 5-inch gunline, though operational, has not been fired since the 1980s and plans do not exist to fire it in the foreseeable future; therefore, releases of MCs are not a concern. Finally, MCs as defined by RSEPA are neither contained in nor used to launch BQM-74Es; therefore, releases of MCs are not a concern.

These conclusions will be incorporated into the Decision Point 1 Recommendations Report.

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