

# Wetland and Forest Stand Delineation Report

for

Installation Restoration Program Sites  
Naval Surface Warfare Center  
Dahlgren Division,  
White Oak Detachment  
Silver Spring, Maryland



Engineering Field Activity Chesapeake  
Naval Facilities Engineering Command  
Northern Division Contract Number N62472-90-D-1298  
Contract Task Order 180

August 1995



Section: 01.02  
Site 20903-5640 (White Oak)  
Doc. #: w/0066

00014

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C-49-8-5-292

August 30, 1995

Project Number 2295

Mr. David Mills  
Engineering Field Activity, Chesapeake  
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Washington Navy Yard, Building 212  
Washington, DC 20374-5018

Reference: CLEAN Contract No. N62472-90-D-1298  
Contract Task Order No. 0180

Subject: Naval Surface Warfare Center - White Oak  
Silver Spring, Maryland  
Wetland and Forest Stand Delineation Report

Dear Mr. Mills:

Attached for your use are two (2) copies of the revised report cover sheet, two (2) copies of the signature page, and two (2) copies of an additional figure required to finalize the Wetland and Forest Stand Delineation Report for the Installation Restoration Program Sites at the Naval Surface Warfare Center, Dahlgren Division, White Oak Detachment. With the insertion of these pages, the report is finalized.

Following completion of the design activities for Site 2 (Apple Orchard Landfill) and Site 3 (Pistol Range Landfill), wetland mitigation plans will be developed as necessary. It is not believed that a detailed Forest Conservation Plan will be needed for completion of the proposed remedial activities at the Base.

Please feel free to contact me at 412-921-8616 if you have any questions regarding this or any other matter.

Very truly yours,

Donald G. Olmstead, P.E.  
Project Manager

DGO/SAN/pm  
Attachments

cc: Mr. Roger Boucher, NORTHDIV (w/o attachments)  
Mr. Bill Spicer, NSWOWOJET  
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C-49-7-5-44

July 12, 1995

Project Number 2295

Mr. David Mills  
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Reference: CLEAN Contract No. N62472-90-D-1298  
Contract Task Order No. 0180

Subject: Naval Surface Warfare Center - White Oak  
Silver Spring, Maryland  
Draft Design Wetland and Forest Stand Delineation Report  
Draft Environmental Permits Report/Discussion of ARARs

Dear Mr. Mills:

Enclosed for your review and comment are two (2) copies of the draft Wetland and Forest Stand Delineation Report for the Installation Restoration Program Sites at the Naval Surface Warfare Center, Dahlgren Division, White Oak Detachment (NSWCWODET). The Delineation has been performed in accordance with the cost impact letter negotiated between the government and Halliburton NUS on December 15, 1994.

The wetland and forest stand delineations were performed at the seven IRP sites at NSWCWODET. Of these sites, four were determined to have wetlands. However, it is anticipated that future remedial actions at NSWCWODET will result in wetland impacts at only the two landfill sites (Site 2 - Apple Orchard Landfill and Site 3 - Pistol Range Landfill). The forest stand Delineation identifies forested areas on or in the immediate vicinity of six of the seven sites. The need for a detailed Forest Conservation Plan will be determined following completion of the final remedial design for these sites. This plan would develop methods to preserve trees during construction activities.

C-49-7-5-44  
July 12, 1995  
Page 2

Halliburton NUS requests receipt of all comments on the draft Wetland and Forest Delineation report by July 28, 1995. Comments received will be incorporated into the final Wetland and Forest Stand Delineation Report to be submitted on August 4, 1995. Please feel free to contact me with your thoughts and/or comments regarding this report at 412-921-8616.

Very Truly Yours,



Donald G. Olmstead, P.E.  
Project Manager

DGO/SAN/thw

Enclosures

cc: Mr. Roger Boucher, NORTHDIV (w/o enclosures)  
Mr. Dorn Carlson, NSWCWODET  
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Mr. John Trepanowski, Halliburton NUS  
Mr. Daryl Hutson, Halliburton NUS

069518/P

**WETLAND AND FOREST STAND  
DELINEATION REPORT  
FOR**

**INSTALLATION RESTORATION PROGRAM SITES  
NAVAL SURFACE WARFARE CENTER  
DAHLGREN DIVISION, WHITE OAK DETACHMENT  
SILVER SPRING, MARYLAND**

**COMPREHENSIVE LONG-TERM  
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT**

**Submitted to:  
Engineering Field Activity Chesapeake  
Environmental Branch Code 18  
Naval Facilities Engineering Command  
Washington Navy Yard, Building 212  
Washington, D.C. 20374-2121**

**Submitted by:  
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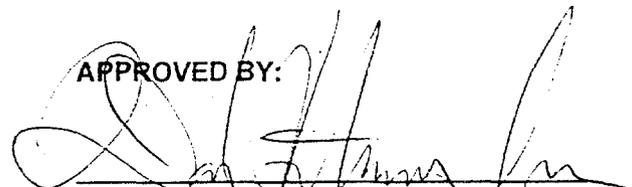
**CONTRACT NUMBER N62472-90-D-1298  
CONTRACT TASK ORDER 180**

**AUGUST 1995**

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## EXECUTIVE SUMMARY

The following report summarizes the findings of a wetland delineation and forest stand delineation of seven Installation Restoration Sites on the Naval Surface Warfare Center, Dahlgren Division, White Oak Detachment in Silver Spring, Maryland. The work was performed as part of Contract Task Order (CTO) No. 180, under CLEAN Contract Number N62472-90-E-1298.

The wetland delineation identified and characterized wetlands and other waters of the United States under jurisdiction of the Federal Clean Water Act and the Maryland Nontidal Wetlands Protection Act. Procedures followed the Corps of Engineers Wetlands Delineation Manual (1987). Wetland boundaries were staked in the field and plotted onto drawings of each site by a land surveyor.

Wetlands and other waters of the United States occur on (or immediately adjacent to) Sites 2, 3, 4, and 9. No such areas occur on Sites 7, 8, or 11. Wetlands on Site 2 comprise a complex of unnamed intermittent and perennial streams in a forested stream valley south of the landfill cover. Wetlands on Site 3 are limited to the channel of an unnamed perennial stream in a stream valley west of the landfill cover. Wetlands on Site 9 comprise an unnamed intermittent stream channel originating near the northeast corner of the site. The stream appears to become perennial as it flows southward close to the eastern boundary of Site 9. Except for very small areas, wetlands associated with the streams on Sites 2, 3, and 9 are confined to within the deeply cut channel embankments.

The forest stand delineation identified and characterized forested areas regulated under the Maryland Forest Conservation Act. Procedures followed the Forest Conservation Manual (1991) developed by the Metropolitan Washington Council of Governments. Forested areas occur on (or in the immediate vicinity of) Sites 2, 3, 4, 7, 8, and 9. Types of forest on the sites include Mixed Deciduous Forest (dominated by tulip poplar, upland oaks, and red maple), Oak-Hickory Forest (dominated by upland oaks with a dense understory of mountain laurel), Successional Hardwood Forest (dominated by black cherry, red maple, and black locust), and Virginia Pine Forest. Site 11 comprises lawns and paved areas surrounding the main complex of buildings near New Hampshire Avenue. Where forest remains on the sites, it generally has a well-developed structure and is in good condition. No forest on the sites has been subject to recent large-scale harvesting operations or to other mechanical disturbance. No gypsy moth damage or other large-scale canopy tree mortality is evident.

## 1.0 INTRODUCTION

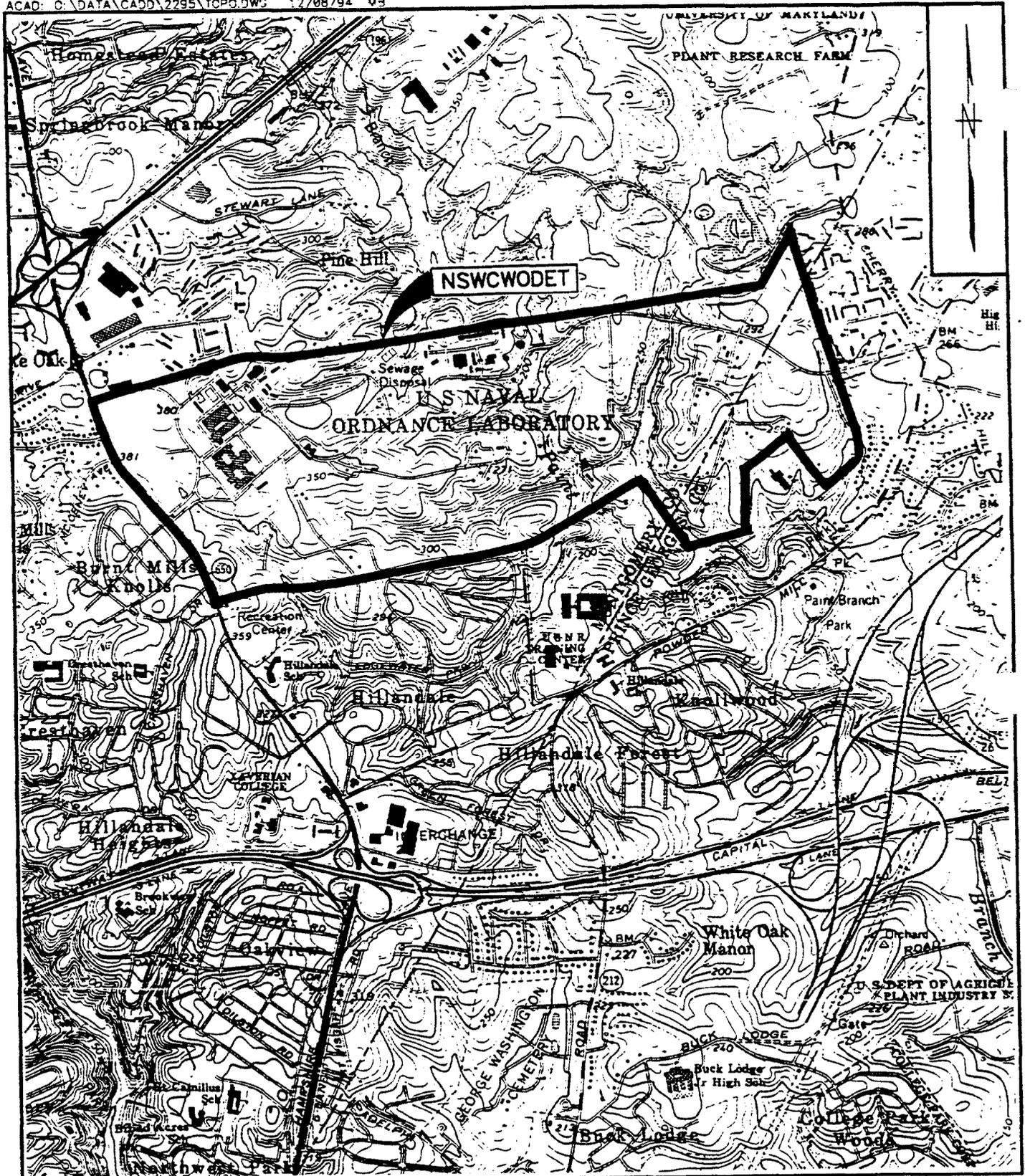
This report presents the findings of a wetland delineation and forest stand delineation of seven Installation Restoration Program (IRP) sites on the Naval Surface Warfare Center, Dahlgren Division, White Oak Detachment (NSWCWODET) in Silver Spring, Maryland (Figure 1-1). The work was performed as part of Contract Task Order (CTO) No. 180, under CLEAN Contract Number N62472-90-D-1298.

The delineations address specific regulatory requirements for remediation of the sites. The wetland delineation followed procedures in the 1987 version of the Corps of Engineers Wetlands Delineation Manual to identify areas under jurisdiction of Section 404 of the Federal Clean Water Act (CWA; 33 USC 1251 et seq.) and the Maryland Nontidal Wetlands Protection Act (Natural Resources Article 8-1201 et seq). The forest stand delineation followed procedures in the 1991 version of the Forest Conservation Manual to delineate and characterize forested areas addressed in the Maryland Forest Conservation Act (Natural Resources Article 5-1601 et seq).

The IRP sites addressed by the delineations include:

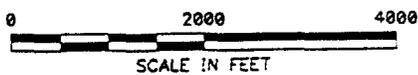
- Apple Orchard Landfill (Site 2)
- Pistol Range Landfill (Site 3)
- Chemical Burial Site (Site 4)
- Ordnance Burn Area (Site 7)
- Abandoned Chemical Disposal Pit (Site 8)
- Industrial Wastewater Disposal Area 300 (Site 9)
- Industrial Wastewater Disposal Area 100 (Site 11)

The purpose and objectives of the delineations are stated in Section 1.1, below. A general description of each of the seven IRP sites is provided in Section 1.2. Available background information reviewed to support the wetland delineation and forest stand delineations is summarized in Chapter 2. Chapter 3 outlines the methodology used to complete each investigation. Chapter 4 presents the results of the wetland delineation. Chapter 5 presents the results of the forest stand delineation. Field data sheets for the wetland delineation are presented in Appendix A and for the forest stand delineation are presented in Appendix B. Lists of plants and wildlife species observed on the IRP sites during the delineations are presented in Appendices C and D, respectively. Drawings showing the wetland and forest stand delineations are presented in Appendix E.



SOURCE: USGS 7.5' TOPOGRAPHIC SERIES, BELTSVILLE, MD. QUADRANGLE

**FACILITY LOCATION MAP**  
**NSWC WHITE OAK**



**FIGURE 1-1**



## **1.1 PURPOSE AND OBJECTIVES**

The primary objective of the wetland delineation and forest stand delineation is to provide baseline data on sensitive ecological resources subject to impacts from remedial activities at each IRP site.

### **1.1.1 Wetland Delineation**

The objective of the wetland delineation is to identify, map, and characterize wetlands (and other waters of the United States) on or adjacent to each IRP site. Wetlands are defined under the Clean Water Act and the Maryland Nontidal Wetlands Protection Act as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328, 40 CFR 230). The delineation will be used during the design of remedial activities to minimize impacts to wetlands. The delineation will also serve as the basis for quantifying any unavoidable encroachments into areas regulated under the Clean Water Act and Maryland Nontidal Wetlands Protection Act and for determining what mitigation efforts may be necessary.

### **1.1.2 Forest Stand Delineation**

The objective of the forest stand delineation is to identify, map, and characterize all areas on or adjacent to the IRP sites that meet the definition of "forest" under the Maryland Forest Conservation Act. Forest is defined under the act as "a biological community dominated by trees and other woody plants covering a land area of 10,000 square feet or greater. Forest includes (1) areas that have at least 100 trees per acre with at least 50 percent of those having a two inch or greater diameter at 4.5 feet above the ground and larger and (2) forest areas that have been cut but not cleared" (Metropolitan Washington Council of Governments, 1991). Data from the forest stand delineation will be used as a basis for minimizing impacts to forest vegetation during remediation of the IRP sites.

## **1.2 SITE DESCRIPTION**

The NWSCWODET is located approximately five miles north of Washington, DC in Silver Spring, Maryland. Most of the installation is located in Montgomery County, although a small eastern portion lies within Prince Georges County. All of the IRP sites lie within Montgomery County. The facility occupies 732 acres.

The campus-like installation is characterized by rolling and hilly land containing mostly older buildings, spacious lawns, mature shade trees, and large areas of mostly deciduous forest. Approximately 12 percent of its land area is developed, including a cluster of laboratories and administrative buildings in the western area facing New Hampshire Avenue and areas of test facilities scattered throughout the remaining land. Approximately 54 percent of the land is forested, and the remaining 34 percent encompasses a 9-hole golf course, lawns, and vegetated test areas. Paint Branch Creek, a nontidal tributary to the Anacostia River, crosses the installation through a deeply cut stream valley. Several tributaries to Paint Branch Creek flow through narrow stream valleys throughout the installation (NSWCDD, 1994).

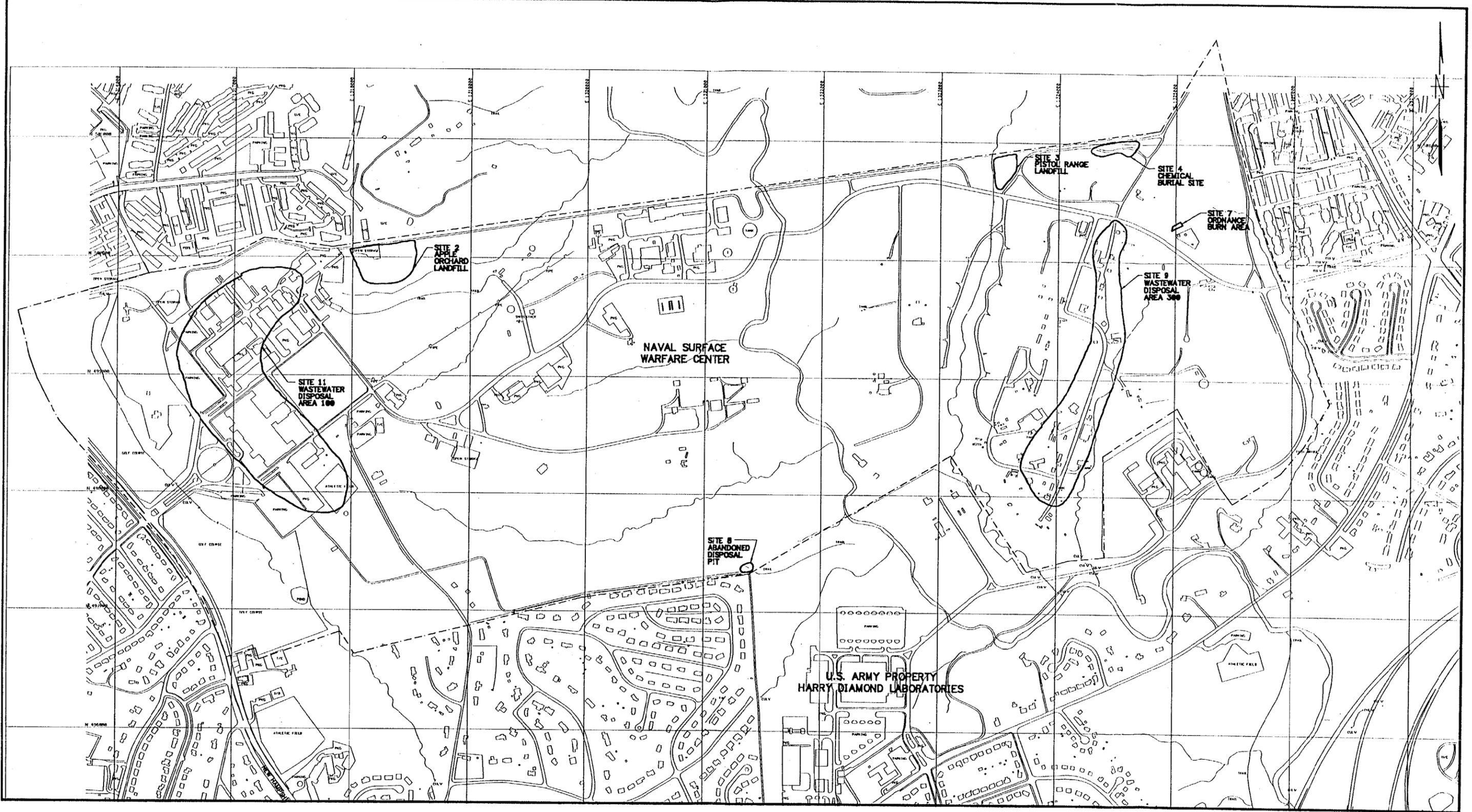
The focus of activities at the installation has been testing and evaluation of weapons systems for ships and submarines. Mine warfare has been a key area of study, as well as development of explosives for specialized applications such as the lunar lander. The installation has also been involved in the development of swimmers weapons, torpedo propulsion systems, and hydroacoustics. Facilities on the installation include multiple laboratory buildings and related structures, including wind tunnels and an immersion tank. Support activities have included construction of models of various crafts. The installation also produced dummy ordnance referred to as "shapes" for drop testing. No full-scale deployment or weapons production activities have taken place on the installation (HNUS, 1994).

The NSWCWODET provides an island of green space surrounded by an older suburban area that has become heavily developed with single family residences, apartments, and commercial establishments. In addition to the developed lands abutting the installation, an area immediately north of the installation is occupied by a sand and gravel quarry. An area immediately south of the installation is occupied by the US Army Harry Diamond Laboratory and the US Naval Reserve Training Center.

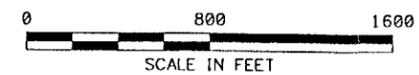
Each of the individual IRP Sites is described below, based upon site reconnaissance by HNUS in February 1994 and on information contained in the Remedial Investigation Report for the sites (Malcolm Pirnie, 1992) and the Implementation Plan for Remediation Action (HNUS, 1994). See Figure 1-2.

### **1.2.1 Site 2 - Apple Orchard Landfill**

The Apple Orchard Landfill is an abandoned landfill located south of Perimeter Road adjacent to the northwest installation boundary. The former landfill has been covered and is located on a low hill north of a narrow stream valley. Running water emerges from a series of storm drains southwest of the landfill and flow together to form an unnamed headwater stream that flows easterly through the center of the swale. The landfill was operated from 1948 to 1982. The landfill received domestic refuse, wastes reportedly



**IRP SITES**  
**NSWC WHITE OAK**  
**SILVER SPRING, MARYLAND**



**FIGURE 1-2**



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containing oil with polychlorinated biphenyls (PCBs), solvents, paint residue, acids, and miscellaneous compounds. Although not yet completely designed, remediation of Site 2 will likely involve sediment excavation and offsite disposal, and construction of a synthetic/soil cap over the landfill surface. Encroachment into the stream valley south of the landfill may be necessary for placement of a cap.

#### **1.2.2 Site 3 - Pistol Range Landfill**

The Pistol Range Landfill is an abandoned landfill located north of Dahlgren Road and south of the northeast boundary of the NSWCWODET. The former landfill has been covered and is situated on a hill east of a stream valley carrying an unnamed tributary to Paint Branch. The landfill was operated from the late 1940s to the mid 1970s. It received solid wastes, solvents, oils (possibly containing PCBs), sodium nitrate, and miscellaneous metal objects. Several metallic bomb "shapes" used in surface testing are scattered in the woods in the stream valley. Although not yet completely designed, remediation of Site 3 will likely involve construction of a synthetic/soil cap over the landfill surface. Encroachment into the stream valley west of the landfill may be necessary.

#### **1.2.3 Site 4 - Chemical Burial Site**

The Chemical Burial Site is located south of Perimeter Road approximately 400 yards northeast of the Pistol Range Landfill. The former burial site was used for chemical disposal between the mid 1950s and the early 1970s and has been covered. Chemicals buried at the site reportedly included acids, explosive compounds, kerosene, chlorinated solvents, and numerous unidentified laboratory compounds. Although not yet completely designed, remediation of Site 4 will likely involve excavation of contaminated soils and buried waste materials, and offsite disposal of treatment residues, and waste materials. Minor encroachment into wooded areas south of the covered burial site may be necessary but are unlikely.

#### **1.2.4 Site 7 - Ordnance Burn Area**

The Ordnance Burn Area is located on the north side of Dahlgren Road, approximately 1500 feet east of the Pistol Range Landfill. The former burn area supports a small structure and mowed lawn vegetation surrounded by a chain link fence. Areas to the west, north, and east support pine forest, except for a broad but shallow swale to the north, which supports deciduous forest. Remediation of Site 7 is not planned until a future phase.

### **1.2.5 Site 8 - Abandoned Chemical Disposal Pit**

The Abandoned Chemical Disposal Pit is located near the southern boundary of the NSWCWODET at a terminus of the southern perimeter road. The pit was reportedly 10 by 10 by 12 feet prior to cover. The covered pit is located in mature deciduous forest and has no distinguishing surface features. The area is visible from several single-family houses located south of the installation fence. There are no streams in the immediate vicinity of the pit. Wastes disposed of in the pit included acids, mercury, solvents, and numerous unidentified waste chemicals. Although not yet completely designed, remediation of Site 8 will likely involve excavation and offsite disposal of contaminated soils and buried waste materials.

### **1.2.6 Site 9 - Industrial Wastewater Disposal Area 300**

The Industrial Wastewater Disposal Area 300 comprises a series of leaching wells scattered throughout a developed area extending from Dahlgren Road southward to the southeastern installation boundary. Most of the developed area comprises a broad ridge supporting small, widely spaced buildings and narrow paved roads separated by patches of deciduous forest. Stream valleys border the ridge to the east and west. The stream to the east is intermittent, originating in a wooded area within Industrial Wastewater Area 300, and the stream to the west is perennial, originating north of the NSWC (the same stream that flows to the west of the Pistol Range Landfill).

Wastewater disposed of in the leaching wells reportedly contained TNT, RDX, and several other explosives-related compounds. Although not yet completely designed, remediation of Site 9 will likely involve excavation of contaminated soils and buried waste materials in the immediate vicinity of a limited number of leaching wells, onsite thermal treatment of soils, onsite disposal of treatment residuals, and offsite disposal of buried waste materials.

### **1.2.7 Site 11 - Industrial Wastewater Disposal Area 100**

The Industrial Wastewater Disposal Area 100 comprises a series of leaching wells scattered throughout a developed area of approximately 16 acres in the western part of the NSWCWODET near the main entrance. This is the main developed area on the installation, encompassing most of the administration buildings and many laboratories and warehouses. Most of this area includes buildings, parking lots, and lawns. Wastewater disposed of in the leaching wells reportedly contained dissolved metals, acids, chlorinated and

nonchlorinated solvents, alcohols, lead, and organic explosive compounds. Although not yet completely designed, remediation of Site 11 will likely involve excavation and offsite disposal of contaminated soils and buried waste materials in the immediate vicinity of a limited number of leaching wells.

## **2.0 BACKGROUND INFORMATION**

Available background information relevant to wetlands and forest vegetation on the IRP sites include a Remedial Investigation performed in 1992 (Malcolm Pirnie, 1992) and an October 1994 draft of the Integrated Natural Resources Conservation Plan (NSWCDD, 1994). The latter document presents data for the NSWCWODET from National Wetland Inventory (NWI) maps, soil surveys, and a sitewide timber inventory.

### **2.1 WETLAND INFORMATION**

A basewide wetland mapping initiative included in the Natural Resources Conservation Plan identified approximately 13 acres of wetlands and other waters of the United States on the NSWCWODET. All of these wetlands are narrow strips associated with streams running through swales and stream valleys. The plan notes that while its information is useful for general planning purposes, site specific wetland studies are necessary prior to land disturbing actions (NSWCDD, 1994).

### **2.2 SOIL INFORMATION**

The Natural Resources Conservation Plan includes soil survey data for the entire NSWCWODET assimilated from individual soil surveys for Montgomery and Prince Georges Counties. The scale of the maps (approximately 1 inch equals 1300 feet) is not detailed enough to show small or narrow inclusions of differing soil types, and thus site specific soils investigation is necessary to support any wetlands delineation. The soils map suggests a general pattern over the NSWCWODET of moderately well drained to poorly drained soils in the bottoms of narrow stream valleys and moderately well drained to well drained soils in the intervening highlands (NSWCDD, 1994).

### **2.3 VEGETATION INFORMATION**

The Natural Resources Conservation Plan (NSWCDD, 1994) does not include a comprehensive vegetation map for the NSWCWODET, but it does include a map and quantitative characterization of 30 timber compartments (stands) encompassing the forested areas throughout the installation. The Remedial Investigation written for the IRP sites in 1992 (Malcolm Pirnie, 1992) identified 5 plant community types occurring on the seven IRP sites (Section 2.3.2). Because neither of these vegetation categorization approaches adequately breaks out plant community types to support a wetland delineation, HNUS

developed a more suitable breakout of plant community types based on its preliminary reconnaissance of the IRP sites (Section 2.3.3).

### **2.3.1 Forest Compartments (Natural Resources Conservation Plan)**

Forest Compartment types identified for the NSWCWODET in the Natural Resources Conservation Plan include (NSWCDD, 1994):

- **Hardwood:** Containing 70 percent or more hardwood trees. Generally dominated by tulip poplar and upland oaks.
- **Pine:** Containing 70 percent or more conifer trees. Generally dominated by Virginia pine.
- **Mixed:** Containing neither 70 percent hardwoods nor 70 percent pines. Generally dominated by tulip poplar, upland oaks, and Virginia pine.

The Forest Compartment designations do not differentiate between hardwood forests dominated by upland species and hardwood forests dominated by bottomland species, such as red maple and American sycamore. The map thus can not be used to identify areas of hydrophytic (wetland) vegetation. But the map has been used a Preliminary Forest Stand Map for identifying sample points for use in the forest stand delineation (MWCOG, 1991).

### **2.3.2 Plant Communities (Remedial Investigation)**

The Remedial Investigation written for the IRP sites in 1992 (Malcolm Pirnie, 1992) identified five plant community types on the IRP sites, used as a basis for performing an ecological risk assessment:

- **Developed Areas.** Pavements and lawns surrounding buildings and other structures. Lawns comprise Kentucky bluegrass, fescues, Bermuda grass, Korean lespedeza, Zoysia grass, and crown vetch, with a variety of common broadleaf weeds. Scattered ornamental trees include maples, oaks, elms, tulip poplars, and flowering dogwoods.
- **Scrub-Shrub Vegetation.** Vegetation intermediate between old field and forested vegetation. Characterized by saplings of Virginia pine, sweetgum, eastern redcedar, and

black locust and by an understory of Japanese honeysuckle, brambles, poison ivy, sumacs, Virginia creeper, wild grape, asters, goldenrods, wild onions, and wild strawberry.

- **Pine Forest.** Characterized by a canopy of loblolly and Virginia pine with an understory of white and red oak, black gum, and sweet gum saplings and Japanese honeysuckle, trumpet creeper, poison ivy, Virginia creeper, highbush blueberry, and spotted wintergreen in the shrub and groundcover strata.
- **Mixed Deciduous Forest.** Characterized by a canopy of oaks, tulip poplar, hickory, maple, and pine; a shrub stratum of spicebush, witch hazel, pawpaw, wild hydrangea, sweet pepperbush, and sumacs; and a groundcover of lilies, ladie's slippers, bloodroot, wood poppy, larkspur, spring beauty, trillium, and various violets and mints.
- **Oak-Hickory Forest.** Characterized by a canopy of northern red, blackjack, white, and bur oaks, pitch pine, tulip poplar, sweet gum, shagbark hickory, and mockernut hickory; a shrub stratum of eastern redbud, flowering dogwood, spicebush, American hazel, rhododendron, and mountain laurel; and a groundcover stratum of birdfoot violet, goat's rue, climbing bittersweet, wild geranium, big merrybells, Solomon's zozzag, greenbrier, and moccasin flower.

### **2.3.3 Plant Communities (Field Reconnaissance by HNUS to Support the Wetland and Forest Delineations)**

Field reconnaissance performed by HNUS as a part of the field data collection effort for the wetland and forest stand delineations revealed that plant community types on the IRP sites fall into the scheme developed for the RI, with some minor exceptions. The following list of plant community types was developed by HNUS for the purposes of identifying plant communities on the IRP sites as part of the wetland and forest stand delineations. Completing the standard data sheets for each delineation requires listing plant communities in which field data is collected.

- **Plant Community Type 1 - Developed Areas:** Same as described in the RI. Comprises all of Site 11. Most of the leaching wells in Site 9 are located in developed areas.
- **Plant Community Type 2 - Old Field Vegetation:** A sparse to dense cover of grasses and forbs occurs on the landfill covers in Sites 2 and 3 and on the soil covering the chemical

burial pit on Site 4. Some areas of bare soil exist within this type of vegetation, and dense growth of tree and shrub seedlings is present in places. These areas would be "Scrub-Shrub Vegetation" under the plant community classification scheme used in the RI, but differ substantially from areas of successional hardwood forest, described below.

- **Plant Community Type 3 - Successional Hardwood Forest:** Dominated by saplings and small trees of black locust, black cherry, Virginia pine, and red maple. Variably dense understory of common greenbrier, Japanese honeysuckle, poison ivy, and old field grasses and forbs. Present on the steep side slopes of the landfill covers on Sites 2 and 3 and in the woodlands fringing Site 7. These areas would be "Scrub-Shrub Vegetation" under the plant community classification scheme used in the RI, but differ substantially from areas of old field vegetation, described above.
- **Plant Community Type 4 - Mixed Deciduous Forest:** Same as described in the RI. Occurs on Sites 2, 3, 8, and 9, except that the forest south of the landfill cover on Site 2 is nearly completely dominated in the canopy by tulip poplar. Other areas of Mixed Deciduous Forest on the IRP sites are dominated by a mix of tulip poplar, oaks, and pine, as described for the RI.
- **Plant Community Type 5 - Oak-Hickory Forest:** Same as described in the RI, except that hickories are only minor associates. Most areas of this vegetation on the IRP sites are dominated in the canopy almost exclusively by upland red and white oak species with a dense understory of mountain laurel.
- **Plant Community Type 5 - Virginia Pine Forest:** Corresponds to the "Pine Forest" described in the RI, but the only pine species on the IRP sites is Virginia pine (Pitch pine was observed on Site 4, but as a minor associate in Oak-Hickory Forest).
- **Plant Community Type 6 - Bottomland Hardwood Forest:** Very small, narrow areas adjacent to stream channels on Sites 2, 3, and 9 support forest cover characterized by a canopy of red maple and American sycamore, a shrub stratum of spicebush, and a groundcover of wetland ferns. Not identified as a separate plant community in the RI (grouped with Mixed Deciduous Forest). Although not extensive on any of the IRP sites, these areas are distinguished from surrounding vegetation by meeting the definition of hydrophytic vegetation (vegetation indicative of wetlands).

## 3.0 FIELD METHODOLOGY

Section 3.1 outlines procedures used for the wetland delineation. Section 3.2 outlines procedures used for the forest stand delineation.

### 3.1 WETLAND DELINEATION

Section 3.1.1 outlines general wetland delineation procedures. Section 3.1.2 details the field protocol used to delineate wetlands on Site 16. Section 3.1.3 states how delineated wetland boundaries were staked and surveyed to produce a wetland delineation map.

#### 3.1.1 Wetland Delineation Background

The wetland delineation utilized the three parameter approach based on vegetation, soils, and hydrology developed in the Corps of Engineers Wetlands Delineation Manual (COE Manual;) (Environmental Laboratory, 1987). With the exception of certain "problem area" situations and other specific exceptions identified in the COE Manual, any area delineated as a wetland had to display positive evidence of three characteristics:

- hydrophytic vegetation
- hydric soils
- wetland hydrology

**Hydrophytic Vegetation** is defined in the COE Manual as the sum total of macrophytic plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content. Most common plant species in the United States have been assigned an indicator status based on empirical observation of their relative occurrence in wetlands and uplands. These include:

**OBL** Obligate Wetland: plant species that occur almost always (estimated probability greater than 99 percent) in wetlands under natural conditions; however they may occur rarely (estimated probability less than 1 percent) in nonwetlands.

**FACW** Facultative Wetland: plant species that occur usually (estimated probability 67 to 99 percent) in wetlands, but also occur (estimated probability 1 to 33 percent) in nonwetlands.

FAC Facultative: plant species with a similar likelihood (estimated probability 33 to 67 percent) of occurring in both wetlands and nonwetlands.

FACU Facultative Upland: plant species that occur sometimes (estimated probability 1 to 33 percent) in wetlands, but occur more often (estimated probability 67 to 99 percent) in nonwetlands.

UPL Upland: plant species that occur rarely (estimated probability less than 1 percent) in wetlands, but occur almost always (estimated probability greater than 99 percent) in nonwetlands under natural conditions.

For some plant species, the indicator status was modified by adding "+" or "-". A "+" means that the plant species is slightly more likely to occur in wetlands than suggested by its indicator status alone. A "-" means that the plant species is slightly less likely to occur in wetlands than suggested by its indicator status alone.

To document that an area supports hydrophytic vegetation, more than 50 percent of the dominant plant species in each vegetational stratum had to have an indicator status of OBL, FACW or FAC (excluding FAC-). The COE Manual suggests the use of 4 strata: Trees, Saplings and Shrubs, Herbs, and Woody Vines. However, the COE (COE, 1992) has approved the use of a 5-stratum approach developed in another wetland delineation manual (FICWD, 1989). Under this approach, the following strata are recognized:

Trees: Woody plants greater than 5 inches in diameter at breast height

Saplings: Woody plants less than 5 inches in diameter at breast height and greater than 20 feet in height

Shrubs: Woody plants greater than 3.0 feet in height and less than 20 feet in height

Herbs: Plants less than 3.0 feet in height

Woody Vines: Woody vines climbing on trees in a forested area

Vegetation in wetlands may display one or more morphological adaptations that assist in survival under saturated soil conditions. The COE Manual lists several such morphological adaptations, including buttressed (swollen) tree trunks, unusually shallow root systems, adventitious roots, and others. The

hydrophytic vegetation parameter may be met if two or more dominant species display one or more of these adaptations, even if the vegetation is composed primarily of FACU or UPL species.

**Hydric Soil** is defined in the COE Manual as soil that is saturated, flooded or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation. The National Technical Committee for Hydric Soils has developed a list of soil series (soils having similar profile characteristics) that meet the definition of hydric soil (NTCHS, 1991). If soil profile data collected in a specific area can be matched to a recognized soil series, then its status as hydric can be determined by checking the list.

Otherwise, a determination can be made based on the presence of one or more field indicators of hydric soil listed in the COE Manual. The most readily observable indicator is soil color. Soil colors are expressed in terms of hue, value, and chroma using a Munsell Soil Color Chart. Typically, soil colors with a chroma of 1 (regardless of hue and value) are indicative of hydric soils. Soils with a chroma of 2 that are also mottled (spotted) are generally hydric as well. Other readily observable indicators of hydric soils include a predominantly organic soil profile (histosols or mineral soils with histic epipedons), sulfidic material (rotten egg smell), or iron and manganese concretions (black or dark brown specks).

**Wetland Hydrology** is defined in the COE Manual as the sum total of wetness characteristics in areas that are inundated or have saturated soils for a sufficient duration to support hydrophytic vegetation. Areas generally must be inundated or saturated for at least 5 percent of the growing season (in some cases 12.5 percent) during typical rainfall years for wetland hydrology as defined in the COE Manual to be present. The presence of wetland hydrology is usually determined through direct or indirect evidence of seasonal saturation or inundation. The COE Manual lists several other indicators of wetland hydrology that indirectly suggest that an area has wetland hydrology even though it may be dry at the time of observation. These include the presence of:

**Watermarks:** lines on trees or other upright structures that represent the maximum static water level reached during an inundation event

**Drift lines:** accumulations of debris along a contour that represents the height of an inundation event

**Sediment deposits:** thin layers of mud or fine debris coating vegetation or the soil surface

Drainage patterns:        deposited debris or scoured leaf litter indicative of water flow patterns

Other indicators of wetland hydrology are commonly recognized by wetland scientists even though they are not recognized in the COE Manual. These include blackened leaf litter on the soil surface and the presence of oxidized rhizospheres (thin rust colored soil zone surrounding living plant roots). Although the presence of these indicators cannot be used as the sole basis for the determination of wetland hydrology, their presence can be noted as supplementary supporting information (COE, 1992).

Field indicators of wetland hydrology, especially observation of inundation or saturation, must be viewed in context of recent rainfall occurrences and seasonal water table fluctuations. For example, the presence of saturation during a seasonally wet time period or immediately following heavy rainfall cannot be used to conclude that wetland hydrology is present, and the absence of saturation during a seasonally dry period or following a drought cannot be used to conclude that wetland hydrology is absent. It may be necessary to revisit the site at a later time to determine whether the wetland hydrology parameter is met.

### **3.1.2        Wetland Delineation Field Protocol**

Preliminary reconnaissance of the 7 IRP sites revealed that repetitious data collection in every plant community following rigorously defined transects; as outlined in Part IV, Section D, Subsection 2 of the COE Manual for sites over 5 acres in size; was not necessary to accurately determine the location of wetland boundaries. Instead, representative locations were selected on the upland and wetland sides of the suspected wetland boundary to confirm its accuracy with respect to delineation criteria in the COE Manual.

Observations at each selected representative location were completed using a data form developed by the COE for use with the COE Manual (COE, 1992). First, dominant plant species were recorded for lands surrounding each location (generally a 30-foot radius circle, but not crossing the wetland boundary) together with their Indicator Status for Region 1 (which includes Maryland) according to Reed, 1988. Other plant species that were not dominant were recorded separately, using the other (right-hand) column on the data form for listing plant species. Second, a hole was dug with a soil auger and the soil profile (including the different thicknesses, textures, colors and consistencies of the soil and the depths at which they occurred) were noted to a depth of approximately 15 - 20 inches (or augur refusal due to compacted soils). Third, any hydrologic indicators present in the area were noted (e.g. drainage patterns, water stained leaves, oxidized root channels in the upper 12 inches of soil, depth to surface water).

### **3.1.3 Wetland Boundary Staking, Survey, and Mapping**

Each wetland occurrence delineated on each IRP site was labelled with a letter. Wooden stakes were driven into the ground at roughly 50-foot intervals along the boundary (closer if necessary to show turns in the boundary). Each stake was labeled with the number of the IRP Site, a unique letter for each wetland occurrence, and a sequential number. For example, the stake labeled "2-A-3" is the third sequential stake on the boundary marking Wetland A on IRP Site 2 (the Apple Orchard Landfill).

Each representative location selected for recording vegetation, soils, and hydrology data was also staked. Stakes were labeled "DP" followed by the number of the IRP Site, the letter of the wetland occurrence and a sequential number. For example, the stake labelled "DP 2-A-2" is the second location used for recording data concerning Wetland A on IRP Site 2. The coordinates of each stake were surveyed by a professional land surveyor and transferred to plan-view topographic base drawings.

## **3.2 FOREST STAND DELINEATION**

The procedures for the forest stand delineation (FSD) followed Chapter 2 of the Forest Conservation Manual (MWCOG, 1991). Areas on each IRP site meeting the definition of "forest" under the Maryland Forest Conservation Act were initially identified following initial site reconnaissance and review of available data (see Chapter 2, above). Random tenth-acre circular sample locations (quadrants) were then established in each forested area for collection of forest stand data and forest structure data. At least one quadrant was established for each acre of forest under investigation.

### **3.2.1 Forest Stand Data Collection Procedure**

Live trees within each sample plot were tallied by species and by diameter class (diameter at breast height, DBH, estimated at a height of roughly 4.5 feet above ground). Diameter classes followed an addendum to the Forest Conservation Manual issued by the Maryland Department of Natural Resources, as follows:

- 1.0 - 5.9 inches (saplings)
- 6.0 - 9.9 inches (canopy trees)
- 10.9 - 17.9 inches (canopy trees)
- 18.0 - 29.9 inches (canopy trees)
- Over 30.0 inches (specimen canopy trees)

For trees that forked below 4.5 feet above ground, diameter class was assigned based on the largest live trunk. Dead trees were counted separately, by size and by species. Tree counts were recorded using the Field Sampling Data Sheet provided in the Forest Conservation Manual.

Dominant understory plants within each tenth-acre sample plot were determined subjectively (based on visual observation of cover within the quadrant) and recorded in the appropriate box on the data sheet. Any herbaceous plants and woody plants of under 1.0 inch DBH (shrubs and tree seedlings) were considered to be "understory".

### **3.2.2 Forest Structure Data Collection**

Techniques for forest structure data collection followed Appendix D of the Forest Conservation Manual. An observation tube was constructed using a 2-inch diameter cardboard tube. Strings were attached at one end to form 4 equal quadrants. Observation points for each tenth-acre sample plot comprised the center point and four points separated by 90 degrees on the plot circumference (i.e., 5 individual readings per sample point, averaged to yield a composite reading for each sample point). Parameters measured included:

- Percent Canopy Coverage: Looking up through the tube when held vertically, the percent area through which tree canopy was visible was recorded.
- Percent Herbaceous Groundcover: Looking down through the tube when held vertically, the percent area through which foliage could be seen was recorded.
- Percent Cover by Downed Woody Debris: Looking down through the tube when held vertically, the percent area covered by downed limbs, logs, sticks, loose root segments or other woody debris was recorded. Limbs or sticks were only considered to be downed woody debris if greater than 1 inch in diameter.
- Percent Cover by Invasive or Exotic Species: Looking down through the tube when held vertically, the percent area covered by exotic or invasive plants (as listed in Appendix H of the Forest Conservation Manual) was recorded.

Data was recorded using the Forest Structure Data Sheet provided in the Forest Conservation Manual. To further support the forest structure analysis, shrub stems within a circular hundredth-acre plot (23.6-foot

diameter) surrounding each data point were tallied by species and recorded in the appropriate box on the data sheet. Any woody plant less than 1.0 inch DBH, whether a shrub or a tree seedling, was counted as a "shrub". Each individual stem at ground level was tallied as a separate shrub, even if the stems originated from a common rootstock.

### **3.2.3 General Floral and Faunal Observations**

A running list was compiled of wildlife and plant species (all types, woody or herbaceous) observed on each IRP site in the course of collecting data required for the FSD. The principal groups of wildlife observed include mammals, birds, reptiles, and amphibians. In addition to direct sightings, signs such as tracks, burrows, dens, nests, skins, feathers, and scat (droppings) were noted.

### **3.2.4 Delineation and Characterization of Stands**

Areas of forest on each IRP site were mapped into individual stands on the basis of the collected forest stand and forest structure data. Each stand was characterized in terms of the following parameters:

- **Plant Community:** Each stand was assigned to one of the plant community types described in Section 2.3.3.
- **Dominant Canopy Species:** Species were listed in descending order of dominance, based primarily on canopy stem counts for each species in the sample plots for the subject stand (Note: only trees with a DBH of at least 6 inches were considered to be canopy). Uniformity of occurrence in the sample plots was also considered.
- **Average Number of Canopy Species per Tenth Acre Plot:** The number of tree species in each plot was counted and the results averaged for all plots in the stand.
- **Predominant Canopy Size Class:** The diameter class representing the majority of the basal area of canopy trees in sample plots for the subject stand was recorded.
- **Canopy Density Per Acre:** Tallies of canopy (at least 6 inches DBH) trees per tenth-acre plot were averaged for all plots in the stand and multiplied by 10.

- Sapling Density Per Acre: Tallies of saplings (1 - 5.9 inches DBH) per tenth-acre plot were averaged for all plots in the stand and multiplied by 10.
- Basal Area Per Acre: Basal area for each tenth-acre plot was calculated by totalling the cross-sectional area at breast height (4.5 feet from the ground) of each tree over 1 inch DBH in the plot. The midpoint of each diameter class was used to calculate the cross-sectional area of each tree in that diameter class. All trees over 1.0 inch DBH were counted. Values were averaged for all plots in the stand and multiplied by 10.
- Number of Dead Trees per Acre: The number of dead trees in each tenth-acre plot was averaged for all plots in the stand and multiplied by 10. All dead trees over 1.0 inch DBH were counted.
- Dominant Understory Species: Those species with the greatest frequency of occurrence as dominant in the sample plots in the stand were listed. Dominance within each sample plot was determined subjectively, based on percent cover.
- Shrub Density Per Acre: The tallies of shrubs in each hundredth-acre plot in the stand were averaged and multiplied by 100.
- Percent canopy cover: The percentage observation data for canopy cover were averaged for the 5 observation points to give one composite value for each sample plot. These values were then averaged for each plot in the stand.
- Percent herbaceous cover: The percentage observation data for herbaceous groundcover were averaged for the 5 observation points to give one composite value for each sample plot. These values were then averaged for each plot in the stand.
- Percent downed woody material: The percentage observation data for downed woody debris cover were averaged for the 5 observation points to give one composite value for each sample plot. These values were then averaged for each plot in the stand.
- Percent exotic or invasive species: The percentage observation data for cover by exotic or invasive species were averaged for the 5 observation points to give one composite value for each sample plot. These values were then averaged for each plot in the stand.

- Forest Structure Value: Forest Structure Values between 0 and 21 points were calculated for each stand using the method in the Forest Conservation Manual.

Descriptive narratives of each forest stand were prepared on the basis of these parameters, following the model in Chapter 2 of the Forest Conservation Manual. The narratives are presented in Chapter 5.

### **3.2.5            Procedures for Sites 9 and 11**

Site 11 is entirely developed, lacking areas meeting the definition of forest. Site 9 includes large areas of forest, but the leaching wells that will be the subject of the proposed remediation are located on lawns or in small remnants of heavily disturbed forest surrounded by developed lands. Remediation of these sites is thus not subject to the Forest Conservation Act, and characterization of vegetation on these sites can not be performed using procedures in the Forest Conservation Manual. However, landscape trees and forest remnants potentially affected by remediation of these sites were still characterized qualitatively in narratives presented in Chapter 5.

## 4.0 WETLAND DELINEATION RESULTS

Wetlands and other waters of the United States regulated under the Federal Clean Water Act were identified on Sites 2, 3, 4, and 9. The wetlands on Sites 2, 3, and 9 comprise stream channels flowing through deeply cut embankments. Under the wetland classification system developed by the US Fish and Wildlife Service (Cowardin *et al*; 1979), these areas would be classified as Riverine Upper Perennial or Riverine Intermittent wetlands with unconsolidated bottoms (R3UB or R4UB, respectively). Narrow areas of Palustrine Forested, Broadleaved Deciduous (PFO1) wetlands border the streams in places on Sites 2 and 9. The only wetland adjacent to Site 4 is an isolated depression of under 500 square feet that may be of man-made origin. It would be classified as a Palustrine Open Water wetland (POW).

Field data sheets completed for the wetland delineation are presented in Appendix A. Wetland boundaries are shown on the drawings of each Site in Attachment A.

### 4.1 SITE 2 - APPLE ORCHARD LANDFILL

Wetlands on Site 2 comprise a system of intermittent and upper perennial headwater streams that converge in the wooded valley south of the landfill to form a small stream which flows in an easterly direction, ultimately exiting the northern installation boundary and flowing into Paint Branch. The landfill cover does not contain any wetlands. Except for a small area of forested wetlands near the confluence of the streams, wetlands do not extend out of the deeply cut banks of the streams. Although all of the streams comprise an integrated unit of headwater streams, each stream was staked as an individual wetland as follows:

- **Wetland 2-A (R3UB; 0.04 acres):** Flows for 110 feet from a storm drain on the slope west of Site 2 into Wetland B. May also be fed by groundwater. Long-term hydrological monitoring could prove that flow is intermittent rather than perennial.
- **Wetland 2-B (R3UB; 0.06 acres):** Flows for 140 feet from a storm drain on the slope west of Site 2 into Wetland E. Along the way, it picks up flow from Wetland A. The size of the storm drain and width of the stream channel suggest that flow is year-round, although flow may become reduced to near zero during exceptionally dry episodes.
- **Wetland 2-C (R4UB, 0.17 acres):** Narrow intermittent or ephemeral stream originating north of the installation boundary and flowing southward along the western edge of the

landfill cover for 400 feet. Its flow combines with that of Wetlands B and D to create Wetland E. At the time of the February 1995 delineation, only the lower stream actually flowed; the upper reach was dry. The lower reach is likely dry during dry times of the year, and the upper reach likely flows for only brief periods following heavy rainfall events. (Note: the USFWS system for classifying wetlands does not distinguish between intermittent and ephemeral streams.)

- **Wetland 2-D (R4UB, 0.04 acres):** Narrow intermittent or ephemeral stream emerging from a storm drain on the wooded slope south of Site 2 and flowing for 120 feet to join with flows from Wetlands B and C to form Wetland E. Unlike the storm drains feeding Wetlands A and B, which release water into natural channels, this storm drain appears to have been designed to release to an upland slope. The flow has created a very deep and narrow gully, over 15 feet deep in places. There was flow at the time of the delineation (February 1995), but this likely dries up during annual dry periods.
- **Wetland 2-E (R3UB, 0.31 acres):** Perennial stream carrying the combined flow of Wetlands A, B, C, and D. Flows west through a wooded valley south of the landfill cover for 770 feet and then exits Site 2. The stream ultimately exits the northern installation boundary and flows into Paint Branch.
- Wetlands are within its embankments, flanked by narrow zones of sandy alluvium and exposed rock. However, no wetlands extend outside of the embankments.

#### 4.2 SITE 3 - PISTOL RANGE LANDFILL

A single wetland, **Wetland 3-A (R3SB, 0.08 acres)**, was delineated on Site 3. It comprises a perennial stream flowing through the stream valley west of the landfill cover. The stream originates north of the installation boundary and ultimately flows into Paint Branch south of the installation. There are no wetlands on the landfill cover. The stream channel is bounded by sharply defined banks. Nowhere do wetlands extend outside of the banks. The roughly 100-foot wide floodplain west of the stream lacks wetlands.

#### 4.3 SITE 4 - CHEMICAL BURIAL SITE

The only wetland delineated adjacent to Site 4 is a small, isolated pool of water in the woods immediately east of the site (**Wetland 4-A, POW, 0.01 acres**). The cover over the former burial site lacks wetlands. The

wetland appears to be of man-made origin and is hydrologically isolated from other surface water. It may have resulted when the road immediately north of the burial site was constructed across a shallow, dry swale, causing overland flow through the swale to become ponded. The pool of water was approximately 6 inches deep at the time of the delineation (February 1995). It likely becomes dry during drier seasons. The pool is completely shaded by trees growing on the surrounding uplands. It appears to be too small and isolated to be of significant ecological or hydrological value.

#### **4.4 SITE 7 - ORDNANCE BURN AREA**

No wetlands were delineated at Site 7. Although there is a pronounced swale north of the fenced area, the swale supports upland vegetation, and there is no evidence of hydric soils or wetland hydrology. There is no stream channel. The tulip poplar and sassafras trees (both FACU) in the swale suggest a more mesic environment than that of the adjoining Virginia Pine-dominated land, but these species do not typically grow in wetlands.

#### **4.5 SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT**

No wetlands were delineated on Site 8. Vegetation on the site is dominated primarily by FACU species such as tulip poplar, American beech, flowering dogwood, and Christmas fern and by FAC species such as red maple and black gum. Forest vegetation in parts of the site are dominated by upland oaks such as northern red oak (FACU-) and chestnut oak (UPL). No evidence of hydric soils or wetland hydrology was noted anywhere. There are no streams, swales, or depressions in this mostly level site.

#### **4.6 SITE 9 - INDUSTRIAL WASTEWATER DISPOSAL AREA 300**

Wetlands on Site 9 are limited to a narrow stream (**Wetland 9-A, part R4UB and part R3UB, 0.74 acres**) originating near the northwest corner of the site and flowing southward down a steep gradient close to the site's eastern boundary. The stream flows into Paint Branch to the south of Site 9, outside of the installation fence. The uppermost part of the stream appears to be intermittent (R4UB), but the lower part appears to be perennial (R3UB). The stream flows through a narrow topographic swale bounded by steep embankments. Wetlands do not generally extend out of the embankments, except for a narrow fringe of forested wetlands (PFO1) bordering the stream just before it exits the installation boundary fence to the south of Site 9.

The developed areas within Site 9 occupy a low ridge that lacks wetlands. Several shallow drainage swales constructed along the side of roadways carry ephemeral runoff for brief periods following heavy rainfall, but are not wetlands or other waters of the United States. These swales are concreted. All of the leaching wells within Site 9 that will require remediation are located in these developed areas, but one leaching well is located within 100 feet of the stream delineated as Wetland 9-A.

#### **4.7 SITE 11 - INDUSTRIAL WASTEWATER DISPOSAL AREA 100**

No wetlands were delineated within Site 11. All of Site 11 comprises buildings, paved areas, and well drained manicured lawns that do not contain wetlands. An isolated man-made rectangular depression, measuring roughly 12 by 85 feet (1,020 square feet), in a lawn east of the main complex of buildings contained ponded water and supported cattails at the time of the delineation, but was determined not to be a wetland.

## 5.0 FOREST STAND DELINEATION RESULTS

Areas meeting the definition of forest under the Maryland Forest Conservation Act occur on Sites 2, 3, 4, 7, 8, and 9. Site 11 is entirely developed, lacking areas meeting the definition of forest. Site 9 includes large areas of forest, but the leaching wells that are the subject of the proposed remediation are located on lawns or in small remnants of heavily disturbed forest surrounded by developed lands.

Except for small remnant patches of forest on Site 9, the condition of forest vegetation on and surrounding the IRP sites is generally good. No forest stands on the IRP sites have been subject to recent timber harvest activity. Although occasional trees in the canopy are dead, there are no areas of significant canopy mortality. Stands dominated by oaks do not appear to have suffered gypsy moth infestations. No stands appear to have suffered heavy wind damage. Most stands have a well developed understory that has not experienced significant mechanical disturbance by humans or wildlife.

Field data sheets completed for the forest stand delineation are presented in Appendix B. Forest stand boundaries are shown on the drawings of each Site in Attachment A.

### 5.1 SITE 2 - APPLE ORCHARD LANDFILL

The landfill cover supports old field vegetation with Successional Hardwood Forest on the short but very steep side slopes of the landfill cover. The cover is abutted to the south and west by Mixed Deciduous Forest (Stands 2-1 and 2-2), to the east by Virginia Pine Forest (Stand 2-3), and to the north by private lands supporting residential development and Virginia Pine Forest. Stands are quantitatively characterized in Table 5-1.

#### **Stand 2-1: Mixed Deciduous Forest west of landfill cover (0.94 acres)**

Stand 2-1 comprises the wooded area west of the landfill cover and north of the stream that flows south of the landfill cover (Wetlands 2-B and 2-E).

**Stand Condition:** Stand 2-1 is dominated by tulip poplar (mostly between 10 and 30 inches DBH) and red maple (under 18 inches DBH). Red maple is more prevalent in the lower areas adjacent to the stream channels (Wetlands 2-A, 2-B and 2-C), and tulip poplar is more prevalent in the higher lands closer to the landfill cover. No specimen trees occur in the stand. The understory is dominated throughout by widely

TABLE 5-1

**FOREST STAND SUMMARY SHEET  
NAVAL SURFACE WARFARE CENTER, DAHLGREN DIVISION, WHITE OAK DETACHMENT**

Property Name: NSWC White Oak Site 2

Prepared by: Peyton Doub  
Jim MacConnell

Date: 5/19/95

| Stand Variable                               | Stand # Acreage<br>2-1                             | Stand # Acreage<br>2-2                             | Stand # Acreage<br>2-3 |
|--|--|--|------------------------|
| Plant Community type                         | Mixed Deciduous Forest                             | Mixed Deciduous Forest                             | Pine Forest            |
| Size class of dominant trees                 | 6-9.9", 10-17.9", and 18-29.9" DBH                 | 6-9.9", 10-17.9", and 18-19.9" DBH                 | 6-9.9 and 10-17.9" DBH |
| Number of trees/acre ( $\geq$ 6" DBH)        | 130  | 112  | 160                    |
| Number of tree species/plot ( $\geq$ 6" DBH) | 2.0  | 3.4  | 3.3                    |
| Basal area (SF/ACRE)                         | 146  | 217  | 121                    |
| Number of dead trees/acre                    | 0.0  | 2.0  | 33                     |
| List of common understory species            | Spicebush, Japanese Honeysuckle, Flowering Dogwood | Spicebush, Japanese Honeysuckle, Flowering Dogwood |                        |
| Number of shrubs (1/100 acre plot)           | 0.0  | 2.0  | 0.3                    |
| % Canopy coverage                            | 100.0  | 90.8   | 95.3                   |
| % Herbaceous cover                           | 45.0   | 27.4   | 23.3                   |
| % Downed woody material                      | 2.5  | 2.6  | 15.3                   |
| % Exotic or invasive species                 | 33.5   | 12.6   | 11.0                   |
| Forest structure value                       |  |  |                        |

scattered flowering dogwood saplings and spicebush shrubs. The ground is densely covered in places by Japanese honeysuckle, an invasive exotic vine. The Forest Structure Value calculated using the method in the Forest Conservation Manual was good, reflecting a closed canopy and large canopy tree size. However, Stand 2-1 also is characterized by a sparse understory and paucity of dead trees and downed woody debris. Although there is a high extent of herbaceous cover, most of it is Japanese honeysuckle, an exotic invasive species.

**Environmental Features:** Stand 2-1 contains two intermittent stream channels (Wetlands 2-A and 2-C) and abuts the perennial stream to the south, which separates Stand 2-1 from 2-2. Stand 2-1 functions as a wooded screen separating the landfill cover from unrelated base activities to the west. The northern part of Stand 2-1 is visible from a privately-owned apartment complex immediately north of the installation fence.

**Stand 2-2: Mixed Deciduous Forest south of landfill cover (2.75 acres)**

Stand 2-2 comprises the wooded area south of the stream which flows immediately south of the landfill cover (Wetlands 2-B and 2-E). Only that part of this wooded area within roughly 200 feet of the stream was considered in the delineation. Wooded lands more than 200 feet south of the stream are not potentially subject to disturbance during the remediation of Site 2.

**Stand Condition:** Stand 2-2 is dominated by tulip poplar (mostly between 10 and 30 inches DBH). Other canopy species include red maple, upland red oak species, white oak, and Virginia pine. Most areas in the stand are dominated in the canopy exclusively by tulip poplar. Red maple and oaks are increasingly prevalent closer to the stream. The understory is dominated throughout by widely scattered flowering dogwood saplings and spicebush shrubs. Japanese honeysuckle, an invasive exotic vine, is present on the ground through much of the stand, but is less prevalent than in Stand 2-1. The Forest Structure Value calculated using the method in the Forest Conservation Manual was good, reflecting a closed canopy and large canopy tree size and negative aspects including a sparse understory and paucity of dead trees and downed woody debris. Although there is a high extent of herbaceous cover, most of it is Japanese honeysuckle, an exotic invasive species.

Three trees meeting the definition of a specimen tree under the Forest Conservation Act were identified in Stand 2-1. These include a 47-inch DBH tulip poplar in the western part of the stand, and a 37-inch DBH white oak and a 33-inch DBH red maple in the eastern part of the stand (near the southeastern corner of the landfill cover). All of the specimen trees occur within 50 feet of the stream south of the landfill. All are

single trunked and appear to be healthy and vigorous with a form typical of trees that have grown in a forest setting.

**Environmental Features:** The northern edge of Stand 2-2, separating it from the landfill cover to the north, is a perennial stream channel (Wetland 2-E). Stand 2-2 abuts similar woodlands to its south. Unlike Stands 2-1 and 2-3, no part of Stand 2-2 is visible to lands off of the installation.

**Stand 2-3: Virginia Pine Forest east of landfill cover (1.09 acres)**

Stand 2-3 comprises wooded lands immediately east of the landfill cover and north of the stream which flows immediately south of the landfill cover (Wetland 2-E). Only that part of this wooded area within roughly 200 feet of the landfill cover was considered in the delineation. Wooded lands more than 200 feet east of the landfill cover are not potentially subject to disturbance during the remediation of Site 2.

**Stand Condition:** Stand 2-3 is dominated by Virginia pine (mostly between 6 and 9.9 inches DBH but some up to 18 inches DBH) and tulip poplar (mostly between 6 and 18 inches DBH). A few tulip poplars exceed 18 inches DBH, but tulip poplars in Stand 2-3 do not attain the large sizes found in Stand 2-2, and there are no specimen trees of any species. Tulip poplar is more prevalent closer to the stream, and Virginia pine is more prevalent in the northern part of the stand. Widely scattered red maples are also present in the canopy. The understory is characterized by widely scattered hardwood saplings (mostly flowering dogwood, black cherry, and red maple) and by Japanese honeysuckle, an invasive exotic vine.

Although Stand 2-3 received a high Forest Structure Value calculation using the method recommended in the Forest Conservation Manual, this is largely a reflection of the high number of dead standing Virginia pines and woody debris from recently fallen Virginia pines. The canopy likely comprised nearly pure Virginia pine a decade earlier. These Virginia pines are presently becoming overwhelmed by hardwoods, especially tulip poplar, through the natural successional process. If left undisturbed, Stand 2-3 will likely transform to Mixed Deciduous Forest dominated by tulip poplar within the next decade. Succession has proceeded more rapidly in the moister soils near the stream in the southern part of the stand and more slowly in the more xeric soils in the northern part of the stand.

**Environmental Features:** The southern edge of Stand 2-3 is the same perennial stream channel that separates the landfill cover from Stand 2-2 (Wetland 2-E). The northern part of Stand 2-3 is visible from private land north of the installation fence, but unlike the private land north of Stand 2-1, the private land north of Stand 2-3 is undeveloped and forested.

The landfill cover supports old field vegetation with narrow strips of Successional Hardwood Forest on short but very steep berm slopes on the cover and on the steep western slope to the cover. The stream valley at the bottom of the western side slope supports old field vegetation intermixed with small clumps of hardwood saplings, primarily tulip poplar. Areas of Oak-Hickory Forest separating the landfill cover from Dahlgren Road (to the south) have been delineated as Stand 3-1, and Mixed Deciduous Forest on a slope roughly 50 feet west of the stream has been delineated as Stand 3-2. Stands are quantitatively characterized in Table 5-2.

**Stand 3-1: Oak-Hickory Forest between landfill cover and Dahlgren Road (0.48 acres)**

Stand 3-1 comprises two patches of Oak-Hickory Forest between the landfill cover and Dahlgren Road, to the south. Slopes within this forested area are steep, appearing to be remnants of a steep slope that was regraded to create the landfill.

**Stand Condition:** Stand 3-1 is dominated by upland oak species (including scarlet oak, black oak, white oak, and northern red oak) between 6 and 18 inches DBH. There are no specimen trees. The oak canopy is undergrown by a dense understory of 5 to 10 foot tall mountain laurel but very little herbaceous groundcover. The Forest Structure Value calculated using the method in the Forest Conservation Manual is good, reflecting primarily the high degree of canopy closure, well developed understory, and diversity of oak species in the canopy.

**Environmental Features:** Much of Stand 3-1 slopes steeply from the landfill cover to Dahlgren Road. Lands across Dahlgren Road from Stand 3-1 are wooded lands on the perimeter of Industrial Wastewater Disposal Area 300 (Site 9). Stand 3-1 is not readily visible from lands off of the installation but does contribute to the aesthetic quality of Dahlgren Road, the principal roadway serving the eastern part of the installation.

**Stand 3-2: Mixed Deciduous Forest on slope west of stream on west side of landfill cover (0.32 acres)**

An unnamed perennial stream flows southward along the west side of the landfill cover. A roughly 50-foot wide floodplain on the west side of the stream, opposite from the landfill cover, has been cleared of forest cover by previous underground utility construction and presently supports old field vegetation and clusters of woody shrubs and saplings. The slope to the west of the floodplain supports Mixed Deciduous Forest

**TABLE 5-2**

**FOREST STAND SUMMARY SHEET  
NAVAL SURFACE WARFARE CENTER, DAHLGREN DIVISION, WHITE OAK DETACHMENT**

Property Name: NSWC White Oak Site 3

Prepared by: Peyton Doub  
Jim MacConnell

Date: 5/18/95

| Stand Variable                            | Stand # Acreage<br>3-1 | Stand # Acreage<br>3-2                        |
|---|------------------------|---|
| Plant Community type                      | Oak-Hickory Forest     | Mixed Deciduous Forest                        |
| Size class of dominant trees              | 6-9.9 and 10-17.9" DBH | 10-17.9" DBH and 18-29.9" DBH                 |
| Number of trees/acre<br>(≥ 6" DBH)        | 290                    | 120   |
| Number of tree species/plot<br>(≥ 6" DBH) | 6                      | 6.5   |
| Basal area (SF/ACRE)                      | 198                    | 152   |
| Number of dead trees/acre                 | 30                     | 5   |
| List of common understory species         | Mountain Laurel        | Flowering Dogwood,<br>Black Cherry, Red Maple |
| Number of shrubs (1/100 acre plot)        | 25.0                   | 2.0   |
| % Canopy coverage                         | 84.0                   | 87.0  |
| % Herbaceous cover                        | 5.0                    | 11.0  |
| % Downed woody material                   | 0                      | 7.0   |
| % Exotic or invasive species              | 0                      | 1.0   |
| Forest structure value                    | 15                     | 13  |

comprising Stand 3-2. Only that part of this wooded area within roughly 100 feet of the floodplain was considered in the delineation. Wooded lands further to the west are not potentially subject to disturbance during the remediation of Site 3.

**Stand Condition:** Stand 3-2 is dominated by tulip poplar, red maple, and upland oaks (including black oak, northern red oak, and white oak). Most canopy trees are between 10 and 18 inches DBH, although several tulip poplars exceed 18 inches DBH. There are no specimen trees. The understory comprises occasional flowering dogwood saplings and seedlings of black cherry and red maple. Herbaceous groundcover is sparse, including occasional greenbrier and wine raspberry. The Forest Structure Value calculated using the method in the Forest Conservation Manual is good, reflecting primarily the high degree of canopy closure, large size of many of the tulip poplars, and diversity of species in the canopy.

**Environmental Features:** Stand 3-2 occupies a gradual slope leading eastward to an open (unforested) floodplain bordering a perennial stream. Stand 3-2 is bordered by forested installation lands to the west and to the south, across Dahlgren Road. Stand 3-2 abuts private lands north of the installation fence, but these lands presently support a quarry rather than residential development. Like Stand 3-1, Stand 3-2 contributes to the aesthetic quality of Dahlgren Road, the principal roadway serving the eastern part of the installation.

### **5.3 SITE 4 - CHEMICAL BURIAL SITE**

The former burial area supports old field vegetation but is bordered to the south, east, and west by Oak-Hickory Forest. Although this forest land will not likely be disturbed by remediation of Site 4, it was delineated and characterized as Stand 4-1. Site 4 is bordered to the north by the installation fence. Lands north of the fence are presently used for a quarry. Stand 4-1 is quantitatively characterized in Table 5-3.

#### **Stand 4-1: Oak-Hickory Forest south of Site 4 (0.58 acres)**

Stand 4-1 comprises that part of a large area of Oak Hickory Forest within 100 feet of the south, east, and west sides of the former burial area comprising Site 4.

**Stand Condition:** Stand 4-1 is dominated by upland oak species (including black oak, southern red oak, and northern red oak) between 6 and 18 inches DBH. Occasional Virginia pine and pitch pine occur in the canopy. There are no specimen trees. The oak canopy is undergrown by a dense understory of 5 to 10 foot tall mountain laurel and occasional flowering dogwood saplings but very little herbaceous groundcover. The Forest Structure Value calculated using the method in the Forest Conservation Manual is good,

**TABLE 5-3**

**FOREST STAND SUMMARY SHEET  
NAVAL SURFACE WARFARE CENTER, DAHLGREN DIVISION, WHITE OAK DETACHMENT**

Property Name: NSWC White Oak Site 4

Prepared by: Peyton Doub  
Bill Spicer

Date: 5/19/95

| Stand Variable                               | Stand # Acreage<br>4-1  |
|--|-------------------------|
| Plant Community type                         | Oak-Hickory Forest      |
| Size class of dominant trees                 | 6-9.9" and 10-17.9" DBH |
| Number of trees/acre ( $\geq$ 6" DBH)        | 170                     |
| Number of tree species/plot ( $\geq$ 6" DBH) | 4,3                     |
| Basal area (SF/ACRE)                         | 117                     |
| Number of dead trees/acre                    | 3                       |
| List of common understory species            | Mountain Laurel         |
| Number of shrubs (1/100 acre plot)           | 10.7                    |
| % Canopy coverage                            | 72                      |
| % Herbaceous cover                           | 0                       |
| % Downed woody material                      | 1                       |
| % Exotic or invasive species                 | 0                       |
| Forest structure value                       | 11                      |

reflecting primarily the high degree of canopy closure, well developed understory, and diversity of oak species in the canopy.

**Environmental Features:** Stand 4-1 contains a small, isolated wetland (Wetland 4-A) just to the east of the former burial area. Stand 4-1 is visible from private lands north of the installation fence, but these presently support a quarry rather than residential development.

#### 5.4 SITE 7 - ORDNANCE BURN AREA

The former burn area is fenced and comprises structures and mowed grass, lacking forest cover. Although ground-disturbing activities associated with remediation of Site 7 will not likely affect areas outside of the fenced area, forest cover within 100 feet of the west, northwest, and north sides of the fenced area have been delineated as Stands 7-1, 7-2, and 7-3. Virginia Pine Forest located roughly 50 feet east of the fenced area is not subject to impact during remediation and thus has not been characterized. Stands are quantitatively characterized in Table 5-4.

##### **Stand 7-1: Mixed Deciduous Forest northwest of Site 7 (0.95 acres)**

Stand 7-1 comprises part of a large area of Mixed Deciduous Forest northwest of the fenced former burn area.

**Stand Condition:** Stand 7-1 is dominated by black cherry, southern red oak, red maple, Virginia pine, and willow oak. There are several dead black locusts in the canopy. Most trees are between 6 and 18 inches DBH, and there are no specimen trees. The prevalence in the canopy of black cherry and dead black locust, both early successional tree species, suggests that the stand is intermediate in composition between Successional Hardwood Forest and Mixed Deciduous Forest. As recently as ten years earlier, Stand 7-1 was likely Early Successional Forest dominated by black cherry and black locust.

The understory comprises occasional American holly and black cherry seedlings and sparse herbaceous coverage by common greenbrier and Japanese honeysuckle. The Forest Structure Value calculated using the method in the Forest Conservation Manual is good, reflecting primarily the high degree of canopy closure, large number of dead trees (black locust), and diversity of species in the canopy.

**Environmental Features:** There are no streams, wetlands, floodplains, or steep slopes in Stand 7-1. A low swale leading northwestward from the fenced former burn area lacks a stream channel and lacks the hydric

TABLE 5-4

**FOREST STAND SUMMARY SHEET**  
**NAVAL SURFACE WARFARE CENTER, DAHLGREN DIVISION, WHITE OAK DETACHMENT**

Property Name: NSWC White Oak Site 7

Prepared by: Peyton Doub  
Jim MacConnell

Date: 5/19/95

| Stand Variable                               | Stand # Acreage<br>7-1                                | Stand # Acreage<br>7-2 | Stand # Acreage<br>7-3                                |
|--|---|------------------------|---|
| Plant Community type                         | Mixed Deciduous Forest                                | Pine Forest            | Successional Hardwood Forest                          |
| Size class of dominant trees                 | 6-9.9" and 10-17.9" DBH                               | 1-5.9" and 6-9.9" DBH  | 6-9.9" and 10-17.9" DBH                               |
| Number of trees/acre ( $\geq 6"$ DBH)        | 180   | 40                     | 135   |
| Number of tree species/plot ( $\geq 6"$ DBH) | 7.5   | 1                      | 4.0   |
| Basal area (SF/ACRE)                         | 118   | 71                     | 94  |
| Number of dead trees/acre                    | 25  | 0                      | 45  |
| List of common understory species            | Common Greenbrier, Japanese Honeysuckle, Black Cherry | Highbush Blueberry     | Japanese Honeysuckle, Common Greenbrier, Black Cherry |
| Number of shrubs (1/100 acre plot)           | 0.5   | 3.0                    | 0.0   |
| % Canopy coverage                            | 95.5  | 52.0                   | 73.0  |
| % Herbaceous cover                           | 22.5  | 4.0                    | 51.0  |
| % Downed woody material                      | 9.5   | 0.0                    | 0.0   |
| % Exotic or invasive species                 | 10.0  | 0.0                    | 26.5  |
| Forest structure value                       | 13  | 2                      | 12  |

soils and vegetation characteristic of wetlands. Forest within 100 feet of the fenced former burn area is not visible from lands outside of the installation.

**Stand 7-2: Virginia Pine Forest west of Site 7 (0.17 acres)**

Stand 7-2 is a small, narrow strip of Virginia Pine Forest immediately west of the fenced former burn area.

**Stand Condition:** Stand 7-2 comprises a dense, uniform stand of Virginia pine saplings, most under 6 inches DBH but with a few tree-size Virginia pines up to 10 inches DBH in size. There are no other tree or sapling species in the stand, but a sparse understory of highbush blueberry has developed. Herbaceous groundcover is nearly absent, prevented by dense shade and a thick mat of pine needles. Stand 7-2 is in an early stage of succession, and likely was open field as recently as 15 years ago. Forest structure is very poor, reflecting the uniform species composition and small size of the trees, sparse understory, and absence of dead trees and downed woody debris.

**Environmental Features:** There are no streams, wetlands, floodplains, or steep slopes in Stand 7-2. Stand 7-2 is not visible from lands outside of the installation.

**Stand 7-3: Successional Hardwood Forest northwest of Site 7 (1.03 acres)**

Stand 7-3 comprises part of a large area of Successional Hardwood Forest north of the fenced former burn area.

**Stand Condition:** Stand 7-3 is dominated by black cherry, Virginia pine, red maple, and black locust. There are several dead black locusts and Virginia pines in the canopy. Most trees are between 6 and 18 inches DBH, and there are no specimen trees. The understory comprises dense undergrowth of common greenbrier and Japanese honeysuckle. The Forest Structure Value calculated using the method in the Forest Conservation Manual is good, reflecting primarily the high degree of canopy closure, large number of dead trees (black locust), and diversity of species in the canopy.

**Environmental Features:** There are no streams, wetlands, floodplains, or steep slopes in Stand 7-3.

## 5.5 SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT

The former disposal pit is located in an area of Mixed Deciduous Forest close to the southern installation fence. Only that forest land within roughly 250 feet of the former pit location is subject to disturbance during remediation of Site 8 and has been designated as Stand 8-1. Stand 8-1 is, however, contiguous to more than 100 acres of forest land in the southcentral part of the installation. Stand 8-1 is quantitatively characterized in Table 5-5.

### **Stand 8-1: Mixed Deciduous Forest surrounding Site 8 (0.95 acres)**

Stand 8-1 comprises Mixed Deciduous Forest within roughly 250 feet of the former location of the disposal pit.

**Stand Condition:** Stand 8-1 is dominated by tulip poplar and upland oak species (including white oak, chestnut oak, northern red oak, and southern red oak). Most trees are between 10 and 18 inches DBH, although some trees over 18 inches DBH occur near the pit. There are no specimen trees within 250 feet of the pit. The understory comprises occasional flowering dogwood saplings and seedlings and saplings of oaks, American beech, and American holly. Herbaceous groundcover is sparse, including occasional greenbrier and Japanese honeysuckle. The Forest Structure Value calculated using the method in the Forest Conservation Manual is good.

**Environmental Features:** Stand 8-1 lacks streams, wetlands, floodplains, and steep slopes but is highly visible from a row of single family homes immediately south of the installation fence. The back yards of several houses come within 500 feet of Site 8 and would have clear views of any vegetation disturbance at the site. The forest vegetation comprising Stand 8-1 contributes to the aesthetic setting of these homes and likely contributes to their property values.

## 5.6 SITE 9 - INDUSTRIAL WASTEWATER DISPOSAL AREA 300

Site 9 comprises a mosaic of remnant forest patches and lawns and parking lots surrounding several small buildings and other structures. Most of Site 9 occupies a broad ridge, and the forest remnants on the ridge generally comprise Oak Hickory Forest dominated by upland oaks (including scarlet oak, black oak, northern red oak, and white oak) with a dense understory of the woody shrub, mountain laurel. Forest areas on the east and west sides of Site 9 comprise Mixed Deciduous Forest dominated by tulip poplar and upland oaks.

TABLE 5-5

FOREST STAND SUMMARY SHEET  
 NAVAL SURFACE WARFARE CENTER, DAHLGREN DIVISION, WHITE OAK DETACHMENT

Property Name: NSWC White Oak Site 8

Prepared by: Peyton Doub  
 Bill Spicer

Date: 5/19/95

| Stand Variable                               | Stand # Acreage<br>8-1  |
|--|-------------------------|
| Plant Community type                         | Mixed Deciduous Forest  |
| Size class of dominant trees                 | 6-9.9" and 10-17.9" DBH |
| Number of trees/acre ( $\geq$ 6" DBH)        | 115                     |
| Number of tree species/plot ( $\geq$ 6" DBH) | 4.5                     |
| Basal area (SF/ACRE)                         | 13.7                    |
| Number of dead trees/acre                    | 0                       |
| List of common understory species            | Common Greenbrier       |
| Number of shrubs (1/100 acre plot)           | 5.0                     |
| % Canopy coverage                            | 67.0                    |
| % Herbaceous cover                           | 1.0                     |
| % Downed woody material                      | 3.5                     |
| % Exotic or invasive species                 | 1.0                     |
| Forest structure value                       | 9                       |

Most of the leaching wells are located on lawns and will not potentially require disturbance of forested lands during remediation. Three wells are located in remnant patches of forest that have been heavily disturbed by past activities. One well is located on a lawn close to a line of tulip poplar and red maple trees on the embankment to a small perennial stream (Wetland 9-A).

Vegetation potentially affected by remediation of each leaching well on Site 9 is discussed in Table 5-6.

#### **5.7 SITE 11 - INDUSTRIAL WASTEWATER DISPOSAL AREA 100**

Site 11 is entirely developed, lacking areas meeting the definition of forest. The lawns surrounding the buildings and paved areas on Site 11 support a variety of deciduous shade trees, including willow oaks, northern red oak, sweet gum, American sycamore, American elm, and eastern cottonwood. Many of the willow oaks and other shade trees on the lawns west of the main building complex are over 30 inches DBH. Most of the shade trees on Site 11 appear to be healthy, vigorous, and well maintained as ornamental landscape features.

TABLE 5-6

VEGETATION SURROUNDING LEACHING WELLS ON SITE 9  
 (INDUSTRIAL WASTEWATER AREA 300)  
 NAVAL SURFACE WARFARE CENTER, DAHLGREN DIVISION, WHITE OAK DETACHMENT

| Leaching Well | Location  | Vegetation Notes   |
|---------------|---|--|
| 1             | Remnant patch of heavily disturbed Mixed Deciduous Forest. Canopy dominated by white oak, scarlet oak, and Virginia pine. Natural understory disturbed; presently is a dense mass of common greenbrier. | None.  |
| 2             | Old Field Vegetation on steep, man-made slope. No trees over 6 inches DBH on the slope.   | None.  |
| 3             | Lawn, not close to any forest.  | None.  |
| 4             | Lawn, not close to any forest.  | None.  |
| 5             | Lawn, not close to any forest.  | None.  |
| 6             | Lawn, within 25 feet of Mixed Deciduous Forest and stream channel (at the edge of the forest) that has been delineated as a wetland (Wetland 9-A).  | The only natural vegetation between the leaching well and the stream channel is a line of hardwood trees on the stream bank. One of these trees is a 34-inch DBH tulip poplar specimen tree. |
| 8             | Lawn, roughly 50 feet from Mixed Deciduous Forest dominated by tulip poplar, white oak, and northern red oak.   | Stream channel, delineated as a wetland (Wetland 9-A), flows along edge of the Mixed Deciduous Forest, within 50 feet of the leaching well.  |
| 9             | Lawn, roughly 50 feet south of intact Mixed Deciduous Forest dominated by black oak, white oak, tulip poplar, and Virginia pine.  | None.  |
| 10            | Lawn, not close to any forest.  | None.  |
| 11            | Lawn, not close to any forest.  | Isolated 34-inch DBH black oak specimen tree roughly 75 feet northeast of the well.  |
| 12            | Heavily disturbed remnant patch of Oak-Hickory Forest. Dominated in canopy by scarlet oak and black oak. Very sparse understory. Soil surface rutted and compacted, with scattered concrete debris.     | None.  |
| 13            | Narrow (roughly 30 feet wide) strip of Mixed Deciduous Forest between developed area to east and utility right-of-way to west. Dominated by scarlet oak and tulip poplar.                               | Broad area of intact Mixed Deciduous Forest on slope west of the utility right-of-way.   |

**TABLE 5-6  
 VEGETATION SURROUNDING LEACHING WELLS ON SITE 9  
 (INDUSTRIAL WASTEWATER AREA 300)  
 NAVAL SURFACE WARFARE CENTER, DAHLGREN DIVISION, WHITE OAK DETACHMENT  
 PAGE 2**

| Leaching Well | Location  | Vegetation Notes  |
|---------------|---|---|
| 14            | Old Field Vegetation on steep, man-made slope. No trees over 6 inches DBH on the slope.   | None.   |
| 15            | Lawn, roughly 25 feet south of intact Oak-Hickory Forest dominated by northern red, scarlet, and black oaks with a dense understory of mountain laurel. | Roughly 0.03-acre remnant patch of Oak-Hickory forest immediately north of the well. Understory cleared out of the remnant and replaced by mowed grass. |
| 16            | Lawn, more than 50 feet from nearest forest.  | None.   |
| 17            | Lawn, more than 50 feet from nearest forest.  | None.   |
| 18            | Lawn, more than 50 feet from nearest forest.  | None.   |
| 19            | Lawn, roughly 25 feet north of Mixed Deciduous Forest dominated by white oak, northern red oak, black oak, and Virginia pine.                           | Dry swale at edge of the Mixed Deciduous Forest leads southward to small stream, delineated as a wetland (Wetland 9-A).                                 |

## 6.0 CONCLUSIONS AND RECOMMENDATIONS

A field investigation was completed at the Naval Surface Warfare Center, Dahlgren Division, White Oak Detachment (NSWCWODET) in Silver Spring, Maryland, in order to delineate wetlands and forest stands at seven Installation Restoration Sites. The work was performed as part of Contract Task Order (CTO) No. 180, under CLEAN Contract Number N62472-90-D-1298.

### 6.1 WETLAND DELINEATION

The wetland delineation identified and characterized wetlands and other waters of the United States under jurisdiction of the Federal Clean Water Act and the Maryland Nontidal Wetlands Protection Act. Procedures followed the Corps of Engineers Wetlands Delineation Manual (1987). Wetlands and other waters of the United States occur on (or immediately adjacent to) the following sites:

- Site 2 - Apple Orchard Landfill - 0.64 acres. Wetlands comprise a complex of unnamed intermittent and perennial streams in a forested stream valley south of the landfill. Except for very small areas, wetlands are confined to the deeply cut channel embankments.
- Site 3 - Pistol Range Landfill - 0.08 acres. Wetlands comprise an unnamed perennial stream in a valley west of the landfill. Except for very small areas, wetlands are confined to the deeply cut channel embankments.
- Site 4 - Chemical Burial Site - 0.01 acres. Wetlands consists of a small, isolated pool of water in the woods immediately east of the site.
- Site 9 - Industrial Wastewater Disposal Area 300 - 0.74 acres. Wetlands comprise an unnamed intermittent stream channel originating near the northeast corner of the site. The stream appears to become perennial as it flows southward near the eastern boundary of the site. Except for very small areas, wetlands are confined to the deeply cut channel embankments.

Wetlands and other waters of the United States were not identified at Site 7 (Ordnance Burn Area), Site 8 (Abandoned Chemical Disposal Pit), and Site 11 (Industrial Wastewater Disposal Area 100) at NSWCWODET.

**FOREST STAND DELINEATION**

The forest stand delineation identified and characterized forested areas regulated under the Maryland Forest Conservation Act. Procedures followed the Forest Conservation Manual (1991) developed by the Metropolitan Washington Council of Governments.

Forested areas occur on (or in the immediate vicinity of) of the following sites:

- Site 2 - Apple Orchard Landfill - 4.78 acres. The landfill cover supports old field vegetation with Successional Hardwood Forest on the short but very steep slopes of the landfill. The landfill is abutted by Mixed Deciduous and Virginia Pine Forests, and residential development.
- Site 3 - Pistol Range Landfill - 0.8 acres. The landfill cover supports old field vegetation with narrow strips of Successional Hardwood Forest on short but very steep berm slopes on the cover and on the steep western slope. The stream valley west of the site supports old field vegetation intermixed with small clumps of hardwood saplings. Areas of Oak-Hickory Forest are located south of the site across Dahlgren Road and Mixed Deciduous Forest on a slope approximately 50 feet west of the stream.
- Site 4 - Chemical Burial Site - 0.58 acres. The site supports old field vegetation but is bordered by Oak-Hickory Forest to the south, east and west. Lands north of the site are presently used for quarry.
- Site 7 - Ordnance Burn Area - 2.15 acres. No forest cover was identified at the site, however it is bordered by Mixed Deciduous, Virginia Pine and Successional Hardwood Forest.
- Site 8 - Abandoned Chemical Disposal Pit - 0.95 acres. The site is located in an area of Mixed Deciduous Forest, contiguous to more than 100 acres of forest land.
- Site 9 - Industrial Wastewater Disposal Area 300. Site 9 comprises a mosaic of remnant forest patches, lawns and parking lots surrounding small buildings and structures. Forest remnants comprise Oak Hickory and Mixed Deciduous Forest.

Forest stands were not identified on Site 11 - Industrial Waste Disposal Area 100. Site 11 comprises lawns and paved areas surrounding the main complex of buildings near New Hampshire Avenue. The site lacks areas meeting the definition of forest.

Where forest remains at NSWCWOJET, it generally has a well-developed structure and is in good condition. No forest on the sites has been subject to recent large-scale harvesting operations or to other mechanical disturbance. No gypsy moth damage or other large-scale canopy tree mortality is evident.

### **6.3 PERMITTING REQUIREMENTS**

As it is anticipated that remedial activities at Sites 2 and 3 will impact wetlands, the wetlands delineation shall be forwarded to the Maryland Department of Natural Resources (MDNR) in request of a Jurisdictional Determination (JD). Upon receipt of a JD and the completion of the remedial design activities, Joint Applications to the Baltimore District of the US Army Corps of Engineers (COE) and the MDNR for wetland encroachments will be submitted as needed. The degree of mitigation required at each site will be specified in each permit.

The forest stand delineation will also be submitted to MDNR for verification. Dependent upon the final remedial design, a detailed Forest Conservation Plan (FCP) maybe prepared. The plan would develop methods to preserve trees during construction activities. The need for a FCP will be determined following discussions with the MDNR and their review of the forest stand delineation.

## 7.0 REFERENCES

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**APPENDIX A**

**WETLAND DELINEATION FIELD DATA SHEETS**

**APPENDIX A**  
**WETLAND DELINEATION FIELD DATA SHEETS**

The following field data sheets present vegetation, soil, and hydrology data for representative locations in each IRP site potentially containing wetlands. This data was used as the basis for delineating the wetland boundaries shown on the drawings in Attachment A.

**List of Abbreviations Commonly Used on the Data Sheets**

Stratum Abbreviations

- T (Trees): Woody plants greater than 5 inches in diameter at breast height
- SA (Saplings): Woody plants less than 5 inches in diameter at breast height and greater than 20 feet in height
- SH (Shrubs): Woody plants greater than 3.0 feet in height and less than 20 feet in height
- H (Herbs): Plants less than 3.0 feet in height
- V (Woody Vines): Woody vines climbing on trees in a forested area

Indicator Status Abbreviations

- OBL (Obligate Wetland): Plant species that occur almost always (estimated probability greater than 99 percent) in wetlands under natural conditions; however they may occur rarely (estimated probability less than 1 percent) in nonwetlands.
- FACW (Facultative Wetland): Plant species that occur usually (estimated probability 67 to 99 percent) in wetlands, but also occur (estimated probability 1 to 33 percent) in nonwetlands.
- FAC (Facultative): Plant species with a similar likelihood (estimated probability 33 to 67 percent) of occurring in both wetlands and nonwetlands.

FACU (Facultative Upland): Plant species that occur sometimes (estimated probability 1 to 33 percent) in wetlands, but occur more often (estimated probability 67 to 99 percent) in nonwetlands.

UPL (Upland): Plant species that occur rarely (estimated probability less than 1 percent) in wetlands, but occur almost always (estimated probability greater than 99 percent) in nonwetlands under natural conditions.

**Wetland Delineation Field Data Sheets**

**Site 2 - Apple Orchard Landfill**

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|   |  |
|---|--|
| <b>Project/Site:</b> <u>NSWC WHITE OAK, SITE 2</u><br><b>Applicant/Owner:</b> <u>U.S. NAVY</u><br><b>Investigators:</b> <u>J. PEYTON DOUB AND JIM MCCONNELL</u>   | <b>Date:</b> <u>2/3/95</u><br><b>County:</b> <u>MONTGOMERY</u><br><b>State:</b> <u>MARYLAND</u>  |
| <b>Do Normal Circumstances exist on the site?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No<br><b>Is the site significantly disturbed (Atypical Situation)?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No<br><b>Is the area a potential Problem Area?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No<br><small>(If needed, explain on reverse)</small> | <b>Community ID:</b> <u>2</u><br><b>Transect ID:</b> <u>N/A</u><br><b>Plot ID:</b> <u>DP 2-1</u> |

**VEGETATION**

| Dominant Plant Species  | Stratum | Indicator | Other Plant Species   | Stratum | Indicator |
|---|---------|-----------|-----------------------|---------|-----------|
| CYNODON DACTYLON  | H       | FACU      | CAREX SP.             | H       | FACW      |
| FESTUCA ARUNIDINACEA  | H       | FACU      | ERIGERON ANNUUS       | H       | FACU      |
| AMBROSIA ARTEMISII FOLIA  | H       | FACU      | ANDROPOGON VIRGINICUS | H       | FACU      |
|   |         |           |                       |         |           |
|   |         |           |                       |         |           |
|   |         |           |                       |         |           |
|   |         |           |                       |         |           |
|   |         |           |                       |         |           |
|   |         |           |                       |         |           |
| <b>Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).</b> <span style="float: right;">0</span>   |         |           |                       |         |           |
| <b>Remarks:</b> RUDERAL VEGETATION ON LANDFILL COVER, THE TALL FESCUE (FESTUCA ARUNIDINACEA) MAY HAVE BEEN SEEDED TO STABILIZE THE COVER WHEN THE LANDFILL WAS ABANDONED. |         |           |                       |         |           |

**HYDROLOGY**

|   |  |
|---|--|
| <input checked="" type="checkbox"/> Recorded Data (Described in Remarks):<br><u>        </u> Stream, Lake, or Tide Gauge<br><input checked="" type="checkbox"/> Aerial Photographs<br><input type="checkbox"/> Other Conservation Plan<br><input type="checkbox"/> No Recorded Data Available | <b>Wetland Hydrology Indicators:</b><br><b>Primary Indicators:</b><br><input type="checkbox"/> Inundated<br><input type="checkbox"/> Saturated in Upper 12 inches<br><input type="checkbox"/> Water Marks<br><input type="checkbox"/> Drift Lines<br><input type="checkbox"/> Sediment Deposits<br><input type="checkbox"/> Drainage Patterns in Wetlands<br><br><b>Secondary Indicators (2 or more required):</b><br><input type="checkbox"/> Oxidized Root Channels in Upper 12 inches<br><input type="checkbox"/> Water-Stained Leaves<br><input type="checkbox"/> Local Soil Survey Data<br><input type="checkbox"/> FAC-Neutral Test<br><input type="checkbox"/> Other (Explain in Remarks) |
| <b>Field Observations:</b><br>Depth of Surface Water: <u>0</u> (in.)<br>Depth to Free Water in Pit: <u>N/A</u> (in.)<br>Depth to Saturated Soil: <u>N/A</u> (in.)   |  |
| SOIL PIT NOT DUG DUE TO POTENTIAL UNEXPLODED ORDINANCE  |  |
| <b>Remarks:</b> NO EVIDENCE OF WETLAND HYDROLOGY.   |  |



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|  |                           |
|--|---------------------------|
| Project/Site: <u>NSWC WHITE OAK, SITE 2</u>  | Date: <u>2/3/95</u>       |
| Applicant/Owner: <u>U.S. NAVY</u>  | County: <u>MONTGOMERY</u> |
| Investigators: <u>J. PEYTON DOUB AND JIM MCCONNELL</u>   | State: <u>MARYLAND</u>    |
| Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No                               | Community ID: <u>6</u>    |
| Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No                | Transect ID: <u>N/A</u>   |
| Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No<br>(If needed, explain on reverse) | Plot ID: <u>DP 2-2</u>    |

**VEGETATION**

| Dominant Plant Species   | Stratum | Indicator | Other Plant Species | Stratum | Indicator |
|--|---------|-----------|---------------------|---------|-----------|
| ACER RUBRUM  | C       | FAC       | LINDERA BENZOIN     | H       | FACW      |
| SALIX NIGRA  | C       | FACW+     |                     |         |           |
| ACER RUBRUM  | SA      | FAC       |                     |         |           |
| LINDERA BENZOIN  | SH      | FACW-     |                     |         |           |
| SMILAX ROTUNDIFOLIA  | H       | FAC       |                     |         |           |
|  |         |           |                     |         |           |
|  |         |           |                     |         |           |
|  |         |           |                     |         |           |
|  |         |           |                     |         |           |
|  |         |           |                     |         |           |
| Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).  |         | 100       |                     |         |           |
| Remarks: <b>NARROW FRINGE OF BOTTOMLAND HARDWOOD FOREST BORDERING LOWER PART OF INTERMITTENT STREAM WEST OF LANDFILL COVER (WETLAND 2-C). UPPER PART OF STREAM NOT BORDERED BY HYDROPHYTIC VEGETATION.</b> |         |           |                     |         |           |

**HYDROLOGY**

|   |  |
|---|--|
| <input checked="" type="checkbox"/> Recorded Data (Described in Remarks):<br><u>        </u> Stream, Lake, or Tide Gauge<br><input checked="" type="checkbox"/> Aerial Photographs<br><u>        </u> Other Conservation Plan<br><u>        </u> No Recorded Data Available | <b>Wetland Hydrology Indicators:</b><br><b>Primary Indicators:</b><br><input type="checkbox"/> Inundated<br><input type="checkbox"/> Saturated in Upper 12 inches<br><input type="checkbox"/> Water Marks<br><input type="checkbox"/> Drift Lines<br><input type="checkbox"/> Sediment Deposits<br><input checked="" type="checkbox"/> Drainage Patterns in Wetlands<br><br><b>Secondary Indicators (2 or more required):</b><br><input type="checkbox"/> Oxidized Root Channels in Upper 12 inches<br><input type="checkbox"/> Water-Stained Leaves<br><input type="checkbox"/> Local Soil Survey Data<br><input checked="" type="checkbox"/> FAC-Neutral Test<br><input type="checkbox"/> Other (Explain in Remarks) |
| <b>Field Observations:</b><br>Depth of Surface Water: <u>0</u> (in.)<br>Depth to Free Water in Pit: <u>N/A</u> (in.)<br>Depth to Saturated Soil: <u>N/A</u> (in.)<br><br><b>SOIL PIT NOT DUG DUE TO POTENTIAL UNEXPLODED ORDINANCE</b>                                      |  |
| Remarks: <b>A BRAIDED NETWORK OF NARROW SCoured CHANNELS IN THIS AREA CREATED BY INTERMITTENT SURFACE FLOW. NO DEFINITIVE EVIDENCE OF WETLAND HYDROLOGY, HOWEVER.</b>   |  |



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WETLAND DELINEATION DATA FORM, PAGE 1  
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|  |                           |
|--|---------------------------|
| Project/Site: <u>NSWC WHITE OAK, SITE 2</u>  | Date: <u>2/3/95</u>       |
| Applicant/Owner: <u>U.S. NAVY</u>  | County: <u>MONTGOMERY</u> |
| Investigators: <u>J. PEYTON DOUB AND JIM MCCONNELL</u>   | State: <u>MARYLAND</u>    |
| Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No                               | Community ID: <u>4</u>    |
| Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No                | Transect ID: <u>N/A</u>   |
| Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No<br>(If needed, explain on reverse) | Plot ID: <u>DP 2-3</u>    |

**VEGETATION**

| Dominant Plant Species  | Stratum | Indicator | Other Plant Species | Stratum | Indicator |
|---|---------|-----------|---------------------|---------|-----------|
| LIRIODENDRON TULIPIFERA   | C       | FACU      | ILEX OPACA          | SH      | FACU +    |
| LIRIODENDRON TULIPIFERA   | C       | FACU      |                     |         |           |
| LONICERA JAPONICA   | H       | FAC-      |                     |         |           |
|   |         |           |                     |         |           |
|   |         |           |                     |         |           |
|   |         |           |                     |         |           |
|   |         |           |                     |         |           |
|   |         |           |                     |         |           |
|   |         |           |                     |         |           |
|   |         |           |                     |         |           |
| Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). |         |           | 0                   |         |           |
| Remarks: TULIP POPLAR FOREST  |         |           |                     |         |           |

**HYDROLOGY**

|  |  |
|--|--|
| <input checked="" type="checkbox"/> Recorded Data (Described in Remarks):<br>Stream, Lake, or Tide Gauge<br><input checked="" type="checkbox"/> Aerial Photographs<br>Other Conservation Plan<br><input type="checkbox"/> No Recorded Data Available | <b>Wetland Hydrology Indicators:</b><br><b>Primary Indicators:</b><br><input type="checkbox"/> Inundated<br><input type="checkbox"/> Saturated in Upper 12 inches<br><input type="checkbox"/> Water Marks<br><input type="checkbox"/> Drift Lines<br><input type="checkbox"/> Sediment Deposits<br><input type="checkbox"/> Drainage Patterns in Wetlands<br><br><b>Secondary Indicators (2 or more required):</b><br><br><input type="checkbox"/> Oxidized Root Channels in Upper 12 inches<br><input type="checkbox"/> Water-Stained Leaves<br><input type="checkbox"/> Local Soil Survey Data<br><input type="checkbox"/> FAC-Neutral Test<br><input type="checkbox"/> Other (Explain in Remarks) |
| <b>Field Observations:</b><br>Depth of Surface Water: <u>0</u> (in.)<br>Depth to Free Water in Pit: <u>N/A</u> (in.)<br>Depth to Saturated Soil: <u>N/A</u> (in.)  |  |
| SOIL PIT NOT DUG DUE TO POTENTIAL OCCURENCE OF UNEXPLODED ORDINANCE.   |  |
| Remarks: NO EVIDENCE OF WETLAND HYDROLOGY.   |  |



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WETLAND DELINEATION DATA FORM, PAGE 1  
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|  |                           |
|--|---------------------------|
| Project/Site: <u>NSWC WHITE OAK, SITE</u>  | Date: <u>2/3/95</u>       |
| Applicant/Owner: <u>U.S. NAVY</u>  | County: <u>MONTGOMERY</u> |
| Investigators: <u>J. PEYTON DOUB AND JIM MCCONNELL</u>   | State: <u>MARYLAND</u>    |
| Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No                               | Community ID: <u>4</u>    |
| Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No                | Transect ID: <u>N/A</u>   |
| Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No<br>(If needed, explain on reverse) | Plot ID: <u>DP 2-4</u>    |

**VEGETATION**

| Dominant Plant Species  | Stratum | Indicator | Other Plant Species | Stratum | Indicator |
|---|---------|-----------|---------------------|---------|-----------|
| ACER RUBRUM   | C       | FAC       | SMILAX ROTUNDIFOLIA | H       | FAC       |
| LIRIODENDRON TULIPIFERA   | C       | FACU      | PRUNUS SEROTINA     | SA      | FACU      |
| ACER RUBRUM   | SA      | FAC       |                     |         |           |
| LINDERA BENZOIN   | SH      | FACW-     |                     |         |           |
| ALLIUM CANDEWSE   | H       | FACU      |                     |         |           |
| LONICERA JAPONICA   | H       | FAC-      |                     |         |           |
|   |         |           |                     |         |           |
|   |         |           |                     |         |           |
|   |         |           |                     |         |           |
|   |         |           |                     |         |           |
| Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC).              |         |           | 50                  |         |           |
| Remarks: <u>ECOTONE BETWEEN TULIP POPLAR FOREST AND BOTTOMLAND HARDWOOD FOREST.</u> |         |           |                     |         |           |

**HYDROLOGY**

|   |  |
|---|--|
| <input checked="" type="checkbox"/> Recorded Data (Described in Remarks):<br><u>        </u> Stream, Lake, or Tide Gauge<br><input checked="" type="checkbox"/> Aerial Photographs<br><u>        </u> Other Conservation Plan<br><u>        </u> No Recorded Data Available | <b>Wetland Hydrology Indicators:</b><br><b>Primary Indicators:</b><br><input type="checkbox"/> Inundated<br><input type="checkbox"/> Saturated in Upper 12 inches<br><input type="checkbox"/> Water Marks<br><input type="checkbox"/> Drift Lines<br><input type="checkbox"/> Sediment Deposits<br><input type="checkbox"/> Drainage Patterns in Wetlands<br><br><b>Secondary Indicators (2 or more required):</b><br><input type="checkbox"/> Oxidized Root Channels in Upper 12 inches<br><input type="checkbox"/> Water-Stained Leaves<br><input type="checkbox"/> Local Soil Survey Data<br><input type="checkbox"/> FAC-Neutral Test<br><input type="checkbox"/> Other (Explain in Remarks) |
| <b>Field Observations:</b><br>Depth of Surface Water: <u>0</u> (in.)<br>Depth to Free Water in Pit: <u>N/A</u> (in.)<br>Depth to Saturated Soil: <u>N/A</u> (in.)   |  |
| SOIL PIT NOT DUG DUE TO POTENTIAL OCCURRENCE OF UNEXPLODED ORDNANCE.  |  |
| Remarks: <u>NO EVIDENCE OF WETLAND HYDROLOGY.</u>   |  |







**WETLAND DELINEATION FIELD DATA SHEETS**  
**SITE 3 - PISTOL RANGE LANDFILL**

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WETLAND DELINEATION DATA FORM, PAGE 1  
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|  |                           |
|--|---------------------------|
| Project/Site: <u>NSWC WHITE OAK, SITE 3</u>  | Date: <u>2/2/95</u>       |
| Applicant/Owner: <u>U.S. NAVY</u>  | County: <u>MONTGOMERY</u> |
| Investigators: <u>J. PEYTON DOUB AND JIM MCCONNELL</u>   | State: <u>MARYLAND</u>    |
| Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No                               | Community ID: <u>6</u>    |
| Is the site significantly disturbed (Atypical Situation)? Yes <input type="radio"/> No <input checked="" type="radio"/>                | Transect ID: <u>N/A</u>   |
| Is the area a potential Problem Area? Yes <input type="radio"/> No <input checked="" type="radio"/><br>(If needed, explain on reverse) | Plot ID: <u>DP 3-1</u>    |

**VEGETATION**

| Dominant Plant Species   | Stratum | Indicator | Other Plant Species   | Stratum | Indicator |
|--|---------|-----------|-----------------------|---------|-----------|
| ACER RUBRUM  | C       | FAC       | PLATANUS OCCIDENTALIS | SA      | FACW-     |
| POPULUS DELTOIDES  | C       | FAC       | ROBINIA PSEUDOACACIA  | SA      | FACU-     |
| LIRIODENDRON TULIPIPERA  | SA      | FACU      | LONICERA JAPONICA     | H       | FAC-      |
| PLATANUS OCCIDENTALIS  | SH      | FACW-     | FESTUCA ARUNDWACEA    | H       | FACU      |
| AMBROSIA ARTEMISII FOLIA   | H       | FACU      |                       |         |           |
| RUBUS ALLEGHENIENSIS   | H       | FACU-     |                       |         |           |
|  |         |           |                       |         |           |
|  |         |           |                       |         |           |
|  |         |           |                       |         |           |
|  |         |           |                       |         |           |
| Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC). |         | 50        |                       |         |           |
| Remarks: <u>BOTTOMLAND HARDWARD FOREST</u>                             |         |           |                       |         |           |

**HYDROLOGY**

|  |  |
|--|--|
| <input checked="" type="checkbox"/> Recorded Data (Described in Remarks):<br>Stream, Lake, or Tide Gauge<br><input checked="" type="checkbox"/> Aerial Photographs<br>Other Conservation Plan<br><input type="checkbox"/> No Recorded Data Available | <b>Wetland Hydrology Indicators:</b><br><b>Primary Indicators:</b><br><input type="checkbox"/> Inundated<br><input type="checkbox"/> Saturated in Upper 12 inches<br><input type="checkbox"/> Water Marks<br><input type="checkbox"/> Drift Lines<br><input type="checkbox"/> Sediment Deposits<br><input type="checkbox"/> Drainage Patterns in Wetlands<br><br><b>Secondary Indicators (2 or more required):</b><br><input type="checkbox"/> Oxidized Root Channels in Upper 12 inches<br><input type="checkbox"/> Water-Stained Leaves<br><input type="checkbox"/> Local Soil Survey Data<br><input type="checkbox"/> FAC-Neutral Test<br><input type="checkbox"/> Other (Explain in Remarks) |
| <b>Field Observations:</b><br>Depth of Surface Water: _____ (in.)<br>Depth to Free Water in Pit: _____ (in.)<br>Depth to Saturated Soil: _____ (in.)   |  |
| SOIL PIT NOT DUG DUE TO POSSIBLE OCCURRENCE OF UNEXPLODED ORDINANCE.   |  |
| Remarks: <u>NO EVIDENCE OF WETLAND HYDROLOGY.</u>  |  |







**WETLAND DELINEATION FIELD DATA SHEETS**  
**SITE 4 - CHEMICAL BURIAL SITE**



**NSWC WHITE OAK  
WETLAND DELINEATION DATA FORM, PAGE 2  
1987 MANUAL**

**Soil**

|   |                |   |   |                                     |  |
|---|----------------|---|---|-------------------------------------|--|
| <b>Map Unit Name</b><br>(Series and Phase): <u>CROOM GRAVELLY LOAM</u>  |                | <b>Drainage Class:</b><br>Field Observations <u>WELL DRAINED</u>  |   |                                     |  |
| Taxonomy (subgroup): _____  |                | Confirmed Mapped Type? Yes <input type="checkbox"/> No <input type="checkbox"/>   |   |                                     |  |
| <b>Profile Description:</b>   |                |   |   |                                     |  |
| <b>Depth</b><br>(inches)  | <b>Horizon</b> | <b>Matrix Color</b><br>(Munsell Moist)  | <b>Mottle Colors</b><br>(Munsell Moist) | <b>Mottle</b><br>Abundance/Contrast | <b>Texture Concretions,</b><br>Structure, etc. |
| <u>0-1</u>  | <u>A</u>       | <u>10 YR 3/2</u>  | <u>NONE</u>                             | <u>N/A</u>                          | <u>LOAM</u>                                    |
| <u>1-12</u>   | <u>E OR B</u>  | <u>10 YR 5/6</u>  | <u>NONE</u>                             | <u>N/A</u>                          | <u>COURSE SANDY</u><br><u>LOAM WH GRAVEL</u>   |
|   |                |   |   |                                     |  |
|   |                |   |   |                                     |  |
|   |                |   |   |                                     |  |
|   |                |   |   |                                     |  |
| <b>Hydric Soil Indicators:</b>  |                |   |   |                                     |  |
| <input type="checkbox"/> Histosol<br><input type="checkbox"/> Histic Epipedon<br><input type="checkbox"/> Sulfidic Odor<br><input type="checkbox"/> Aquic Moisture Regime<br><input type="checkbox"/> Reducing Conditions<br><input type="checkbox"/> Glayed or Low-Chroma Colors |                | <input type="checkbox"/> Concretions<br><input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soil<br><input type="checkbox"/> Organic Streaking in Sandy Soils<br><input type="checkbox"/> Listed on Local Hydric Soils List<br><input type="checkbox"/> Listed on National Hydric Soils List<br><input type="checkbox"/> Other (Explain in Remarks) |   |                                     |  |
| Remarks: <u>NO FIELD INDICATORS OF HYDRIC SOIL.</u>   |                |   |   |                                     |  |

**WETLAND DETERMINATION**

|  |                                 |          |          |    |                            |     |          |    |                        |     |          |    |   |  |     |          |    |
|--|---------------------------------|----------|----------|----|----------------------------|-----|----------|----|------------------------|-----|----------|----|---|--|-----|----------|----|
| <table style="width: 100%;"> <tr> <td style="width: 30%;">Hydrophytic Vegetation Present?</td> <td style="width: 10%;">Yes</td> <td style="width: 10%;">(Circle)</td> <td style="width: 10%; text-align: center;">No</td> </tr> <tr> <td>Wetland Hydrology Present?</td> <td>Yes</td> <td>(Circle)</td> <td style="text-align: center;">No</td> </tr> <tr> <td>Hydric Soils Presents?</td> <td>Yes</td> <td>(Circle)</td> <td style="text-align: center;">No</td> </tr> </table> | Hydrophytic Vegetation Present? | Yes      | (Circle) | No | Wetland Hydrology Present? | Yes | (Circle) | No | Hydric Soils Presents? | Yes | (Circle) | No | <table style="width: 100%;"> <tr> <td style="width: 30%;">Is this Sampling Point Within a Wetland?</td> <td style="width: 10%;">Yes</td> <td style="width: 10%;">(Circle)</td> <td style="width: 10%; text-align: center;">No</td> </tr> </table> | Is this Sampling Point Within a Wetland? | Yes | (Circle) | No |
| Hydrophytic Vegetation Present?  | Yes                             | (Circle) | No       |    |                            |     |          |    |                        |     |          |    |   |  |     |          |    |
| Wetland Hydrology Present?   | Yes                             | (Circle) | No       |    |                            |     |          |    |                        |     |          |    |   |  |     |          |    |
| Hydric Soils Presents?   | Yes                             | (Circle) | No       |    |                            |     |          |    |                        |     |          |    |   |  |     |          |    |
| Is this Sampling Point Within a Wetland?   | Yes                             | (Circle) | No       |    |                            |     |          |    |                        |     |          |    |   |  |     |          |    |
| Remarks: <u>UPLAND</u>   |                                 |          |          |    |                            |     |          |    |                        |     |          |    |   |  |     |          |    |

**NSWC WHITE OAK  
WETLAND DELINEATION DATA FORM, PAGE 1  
1987 MANUAL**

|  |                           |
|--|---------------------------|
| Project/Site: <u>NSWC WHITE OAK, SITE 4</u>  | Date: <u>2/3/95</u>       |
| Applicant/Owner: <u>U.S. NAVY</u>  | County: <u>MONTGOMERY</u> |
| Investigators: <u>J. PEYTON DOUB AND JIM MCCONNELL</u>   | State: <u>MARYLAND</u>    |
| Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No                               | Community ID: <u>5</u>    |
| Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No                | Transect ID: <u>N/A</u>   |
| Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No<br>(If needed, explain on reverse) | Plot ID: <u>DP 4-2</u>    |

**VEGETATION**

| Dominant Plant Species  | Stratum   | Indicator    | Other Plant Species            | Stratum  | Indicator   |
|---|-----------|--------------|--------------------------------|----------|-------------|
| <u>QVERCUS VELUTINA</u>   | <u>C</u>  | <u>UPL</u>   | <u>PINUS VIRGINIANA</u>        | <u>C</u> | <u>UPL</u>  |
| <u>QVERCUS COCCINEA</u>   | <u>C</u>  | <u>UPL</u>   | <u>LIRIODENDRON TULIPIFERA</u> | <u>C</u> | <u>FACU</u> |
| <u>QVERCUS FALCATA</u>  | <u>SA</u> | <u>FACU-</u> |                                |          |             |
| <u>PINUS VIRGINIANA</u>   | <u>SA</u> | <u>UPL</u>   |                                |          |             |
| <u>SASSIFRAS ALBIDUM</u>  | <u>SA</u> | <u>FACU-</u> |                                |          |             |
| <u>KALMIA LATIFOLIA</u>   | <u>SH</u> | <u>FACU</u>  |                                |          |             |
|   |           |              |                                |          |             |
|   |           |              |                                |          |             |
|   |           |              |                                |          |             |
|   |           |              |                                |          |             |
| Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC). <u>0</u> |           |              |                                |          |             |
| Remarks: <u>UPLAND OAK FOREST</u>   |           |              |                                |          |             |

**HYDROLOGY**

|   |  |
|---|--|
| <input checked="" type="checkbox"/> Recorded Data (Described in Remarks):<br><u>        </u> Stream, Lake, or Tide Gauge<br><input checked="" type="checkbox"/> Aerial Photographs<br><u>        </u> Other Conservation Plan<br><u>        </u> No Recorded Data Available | <b>Wetland Hydrology Indicators:</b><br><b>Primary Indicators:</b><br><input type="checkbox"/> Inundated<br><input type="checkbox"/> Saturated in Upper 12 inches<br><input type="checkbox"/> Water Marks<br><input type="checkbox"/> Drift Lines<br><input type="checkbox"/> Sediment Deposits<br><input type="checkbox"/> Drainage Patterns in Wetlands<br><br><b>Secondary Indicators (2 or more required):</b><br><input type="checkbox"/> Oxidized Root Channels in Upper 12 inches<br><input type="checkbox"/> Water-Stained Leaves<br><input type="checkbox"/> Local Soil Survey Data<br><input type="checkbox"/> FAC-Neutral Test<br><input type="checkbox"/> Other (Explain in Remarks) |
| <b>Field Observations:</b><br>Depth of Surface Water: <u>0</u> (in.)<br>Depth to Free Water in Pit: <u>DRY TO 12</u> (in.)<br>Depth to Saturated Soil: <u>DRY TO 12</u> (in.)   |  |
| Remarks: <u>NO EVIDENCE OF WETLAND HYDROLOGY.</u>   |  |

**NSWC WHITE OAK  
WETLAND DELINEATION DATA FORM, PAGE 2  
1987 MANUAL**

**Soil**

|   |                |   |  |                                      |   |
|---|----------------|---|--|--------------------------------------|---|
| <b>Map Unit Name</b><br>(Series and Phase): <u>CROOM GRAVELLY LOAM</u>  |                | <b>Drainage Class:</b><br>Field Observations <u>WELL DRAINED</u>  |  |                                      |   |
| Taxonomy (subgroup): _____  |                | Confirmed Mapped Type? Yes No   |  |                                      |   |
| <b>Profile Description:</b>   |                |   |  |                                      |   |
| <b>Depth<br/>(inches)</b>   | <b>Horizon</b> | <b>Matrix Color<br/>(Munsell Moist)</b>   | <b>Mottle Colors<br/>(Munsell Moist)</b> | <b>Mottle<br/>Abundance/Contrast</b> | <b>Texture Concretions,<br/>Structure, etc,</b> |
| 0-1   | A              | 10 YR 2/1   | NONE                                     | N/A                                  | LOAM  |
| 1-12+   | B              | 10 YR 6/6   | NONE                                     | N/A                                  | SANDY CLAY LOAM                                 |
|   |                |   |  |                                      |   |
|   |                |   |  |                                      |   |
|   |                |   |  |                                      |   |
|   |                |   |  |                                      |   |
| <b>Hydric Soil Indicators:</b>  |                |   |  |                                      |   |
| <input type="checkbox"/> Histosol<br><input type="checkbox"/> Histic Epipedon<br><input type="checkbox"/> Sulfidic Odor<br><input type="checkbox"/> Aquic Moisture Regime<br><input type="checkbox"/> Reducing Conditions<br><input type="checkbox"/> Gleyed or Low-Chroma Colors |                | <input type="checkbox"/> Concretions<br><input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soil<br><input type="checkbox"/> Organic Streaking in Sandy Soils<br><input type="checkbox"/> Listed on Local Hydric Soils List<br><input type="checkbox"/> Listed on National Hydric Soils List<br><input type="checkbox"/> Other (Explain in Remarks) |  |                                      |   |
| Remarks: <u>NO FIELD INDICATORS OF HYDRIC SOILS.</u>  |                |   |  |                                      |   |

**WETLAND DETERMINATION**

|  |   |
|--|---|
| Hydrophytic Vegetation Present?      Yes <input checked="" type="radio"/> No<br>Wetland Hydrology Present?            Yes <input checked="" type="radio"/> No<br>Hydric Soils Presents?                  Yes <input checked="" type="radio"/> No | (Circle)<br>Is this Sampling Point Within a Wetland?      Yes <input checked="" type="radio"/> No |
| Remarks: <u>UPLAND</u>   |   |





**WETLAND DELINEATION FIELD DATA SHEETS**  
**SITE 7 - ORDNANCE BURN AREA**

**NSWC WHITE OAK  
WETLAND DELINEATION DATA FORM, PAGE 1  
1987 MANUAL**

|  |  |
|--|--|
| <b>Project/Site:</b> <u>NSWC WHITE OAK, SITE 7</u><br><b>Applicant/Owner:</b> <u>U.S. NAVY</u><br><b>Investigators:</b> <u>J. PEYTON DOUB AND JIM MCCONNELL</u>  | <b>Date:</b> <u>3/14/95</u><br><b>County:</b> <u>MONTGOMERY</u><br><b>State:</b> <u>MARYLAND</u> |
| <b>Do Normal Circumstances exist on the site?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No<br><b>Is the site significantly disturbed (Atypical Situation)?</b> Yes <input type="radio"/> <input checked="" type="radio"/> No<br><b>Is the area a potential Problem Area?</b> Yes <input type="radio"/> <input checked="" type="radio"/> No<br>(If needed, explain on reverse) | <b>Community ID:</b> <u>4</u><br><b>Transect ID:</b> <u>N/A</u><br><b>Plot ID:</b> <u>DP 7-1</u> |

**VEGETATION**

| Dominant Plant Species  | Stratum | Indicator | Other Plant Species  | Stratum | Indicator |
|---|---------|-----------|----------------------|---------|-----------|
| ACER RUBRUM   | C       | FAC       | DIOSPYROS VIRGINIANA | C       | FAC-      |
| PRUNUS SEOTINA  | C       | FACU      | LONICERA JAPONICA    | H       | FAC-      |
| DIOSPYROS VIRGINIANA  | SA      | FAC-      |                      |         |           |
| PRUNUS SEROTINA   | SA      | FACU      |                      |         |           |
| PRUNUS SEROTINA   | SH      | FACU      |                      |         |           |
| SMILAX ROTUNDIFOLIA   | H       | FAC       |                      |         |           |
|   |         |           |                      |         |           |
|   |         |           |                      |         |           |
|   |         |           |                      |         |           |
| Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). <span style="float: right;">33</span> |         |           |                      |         |           |
| Remarks:  |         |           |                      |         |           |

**HYDROLOGY**

|   |  |
|---|--|
| <b>Recorded Data (Described in Remarks):</b><br><input type="checkbox"/> Stream, Lake, or Tide Gauge<br><input checked="" type="checkbox"/> Aerial Photographs<br><input type="checkbox"/> Other Conservation Plan<br><input type="checkbox"/> No Recorded Data Available | <b>Wetland Hydrology Indicators:</b><br><b>Primary Indicators:</b><br><input type="checkbox"/> Inundated<br><input type="checkbox"/> Saturated in Upper 12 inches<br><input type="checkbox"/> Water Marks<br><input type="checkbox"/> Drift Lines<br><input type="checkbox"/> Sediment Deposits<br><input type="checkbox"/> Drainage Patterns in Wetlands<br><br><b>Secondary Indicators (2 or more required):</b><br><input type="checkbox"/> Oxidized Root Channels in Upper 12 inches<br><input type="checkbox"/> Water-Stained Leaves<br><input type="checkbox"/> Local Soil Survey Data<br><input type="checkbox"/> FAC-Neutral Test<br><input type="checkbox"/> Other (Explain in Remarks) |
| <b>Field Observations:</b><br>Depth of Surface Water: <u>0</u> (in.)<br>Depth to Free Water in Pit: <u>DRY TO 18</u> (in.)<br>Depth to Saturated Soil: <u>DRY TO 18</u> (in.)   |  |
| Remarks: <span style="float: right;">NO EVIDENCE OF WETLAND HYDROLOGY.</span>   |  |

**NSWC WHITE OAK  
WETLAND DELINEATION DATA FORM, PAGE 2  
1987 MANUAL**

**Soil**

|  |         |  |                                  |                              |   |
|--|---------|--|----------------------------------|------------------------------|---|
| Map Unit Name<br>(Series and Phase): <u>BELTSVILLE SILT LOAM</u> |         | Drainage Class: <u>MODERATELY</u>  |                                  |                              |   |
| Taxonomy (subgroup): _____                                       |         | Field Observations <u>WELL DRAINED</u>                                       |                                  |                              |   |
| Profile Description:   |         | Confirmed Mapped Type? Yes No  |                                  |                              |   |
| Depth<br>(inches)  | Horizon | Matrix Color<br>(Munsell Moist)  | Mottle Colors<br>(Munsell Moist) | Mottle<br>Abundance/Contrast | Texture Concretions,<br>Structure, etc. |
| 0-1  | A       | 10 YR 3/2  | NONE                             | N/A                          | LOAM                                    |
| 1-10   | E       | 10 YR 6/6  | NONE                             | N/A                          | SANDY LOAM                              |
| 10-18  | B       | 10 YR 5/8  | NONE                             | N/A                          | SANDY CLAY LOAM                         |
|  |         |  |                                  |                              |   |
|  |         |  |                                  |                              |   |
| Hydric Soil Indicators:  |         |  |                                  |                              |   |
| <input type="checkbox"/> Histosol                                |         | <input type="checkbox"/> Concretions   |                                  |                              |   |
| <input type="checkbox"/> Histic Epipedon                         |         | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soil |                                  |                              |   |
| <input type="checkbox"/> Sulfidic Odor                           |         | <input type="checkbox"/> Organic Streaking in Sandy Soils                    |                                  |                              |   |
| <input type="checkbox"/> Aquic Moisture Regime                   |         | <input type="checkbox"/> Listed on Local Hydric Soils List                   |                                  |                              |   |
| <input type="checkbox"/> Reducing Conditions                     |         | <input type="checkbox"/> Listed on National Hydric Soils List                |                                  |                              |   |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors             |         | <input type="checkbox"/> Other (Explain in Remarks)                          |                                  |                              |   |
| Remarks: <u>NO FIELD INDICATORS OF HYDRIC SOILS.</u>             |         |  |                                  |                              |   |

**WETLAND DETERMINATION**

|   |   |
|---|---|
| Hydrophytic Vegetation Present?      Yes      (Circle) <u>No</u><br>Wetland Hydrology Present?            Yes      (Circle) <u>No</u><br>Hydric Soils Present?                    Yes      (Circle) <u>No</u> | Is this Sampling Point Within a Wetland?      Yes      (Circle) <u>No</u> |
| Remarks: <u>UPLAND</u>  |   |





**WETLAND DELINEATION FIELD DATA SHEETS**  
**SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT**

**NSWC WHITE OAK  
WETLAND DELINEATION DATA FORM, PAGE 1  
1987 MANUAL**

|  |                           |
|--|---------------------------|
| Project/Site: <u>NSWC WHITE OAK, SITE 8</u>  | Date: <u>3/14/95</u>      |
| Applicant/Owner: <u>U.S. NAVY</u>  | County: <u>MONTGOMERY</u> |
| Investigators: <u>J. PEYTON DOUB AND JIM MCCONNELL</u>   | State: <u>MARYLAND</u>    |
| Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No                               | Community ID: <u>4</u>    |
| Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No                | Transect ID: <u>N/A</u>   |
| Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No<br>(If needed, explain on reverse) | Plot ID: <u>DP 8-1</u>    |

**VEGETATION**

| Dominant Plant Species   | Stratum   | Indicator    | Other Plant Species      | Stratum  | Indicator    |
|--|-----------|--------------|--------------------------|----------|--------------|
| <u>LIRIODENDRON TULIPIFERA</u>   | <u>C</u>  | <u>FACU</u>  | <u>QUERCUS RUBRA</u>     | <u>C</u> | <u>FACU-</u> |
| <u>FAGUS GRANDIFOLIA</u>   | <u>SA</u> | <u>FACU</u>  | <u>QUERCUS PRINSU</u>    | <u>C</u> | <u>UPL</u>   |
| <u>ACER RUBRUM</u>   | <u>SA</u> | <u>FAC</u>   | <u>FAGUS GRANDIFOLIA</u> | <u>C</u> | <u>FACU</u>  |
| <u>NYSSA SYLVATICA</u>   | <u>SA</u> | <u>FAC</u>   | <u>VINCA MINOR</u>       | <u>H</u> | <u>UPL</u>   |
| <u>LIRIODENDRON TULIPIFERA</u>   | <u>SA</u> | <u>FACU</u>  | <u>GLECOMA HEDERACEA</u> | <u>H</u> | <u>FACU</u>  |
| <u>CORNUS FLORIDA</u>  | <u>SH</u> | <u>FACU-</u> |                          |          |              |
| <u>ASPIDUM ACROSTICHOIDES</u>  | <u>H</u>  | <u>UPL</u>   |                          |          |              |
|  |           |              |                          |          |              |
|  |           |              |                          |          |              |
| Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC). |           | <u>29</u>    |                          |          |              |
| Remarks:   |           |              |                          |          |              |

**HYDROLOGY**

|   |  |
|---|--|
| <p>Recorded Data (Described in Remarks):</p> <p><input type="checkbox"/> Stream, Lake, or Tide Gauge</p> <p><input checked="" type="checkbox"/> Aerial Photographs</p> <p><input type="checkbox"/> Other Conservation Plan</p> <p><input type="checkbox"/> No Recorded Data Available</p> | <p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><input type="checkbox"/> Inundated</p> <p><input type="checkbox"/> Saturated in Upper 12 inches</p> <p><input type="checkbox"/> Water Marks</p> <p><input type="checkbox"/> Drift Lines</p> <p><input type="checkbox"/> Sediment Deposits</p> <p><input type="checkbox"/> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><input type="checkbox"/> Oxidized Root Channels in Upper 12 inches</p> <p><input type="checkbox"/> Water-Stained Leaves</p> <p><input type="checkbox"/> Local Soil Survey Data</p> <p><input type="checkbox"/> FAC-Neutral Test</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> |
| <p>Field Observations:</p> <p>Depth of Surface Water: <u>0</u> (in.)</p> <p>Depth to Free Water in Pit: <u>DRY TO 8</u> (in.)</p> <p>Depth to Saturated Soil: <u>DRY TO 8</u> (in.)</p>   |  |
| Remarks: <u>NO EVIDENCE OF WETLAND HYDROLOGY.</u>   |  |

**NSWC WHITE OAK  
WETLAND DELINEATION DATA FORM, PAGE 2  
1987 MANUAL**

**Soil**

| Map Unit Name<br>(Series and Phase): <u>CROOM GRAVELLY LOAM</u>   |          | Drainage Class:<br>Field Observations <u>WELL DRAINED</u> |   |                              |   |
|---|----------|---|---|------------------------------|---|
| Taxonomy (subgroup): _____  |          | Confirmed Mapped Type? Yes No                             |   |                              |   |
| <b>Profile Description:</b>   |          |   |   |                              |   |
| Depth<br>(inches)   | Horizon  | Matrix Color<br>(Munsell Moist)                           | Mottle Colors<br>(Munsell Moist)  | Mottle<br>Abundance/Contrast | Texture Concretions,<br>Structure, etc. |
| <u>0-2</u>  | <u>A</u> | <u>10 YR 4/2</u>  | <u>NONE</u>   | <u>N/A</u>                   | <u>LOAM</u>                             |
| <u>2-6</u>  | <u>B</u> | <u>10 YR 6/4</u>  | <u>NONE</u>   | <u>N/A</u>                   | <u>SILTY CLAY LOAM</u>                  |
| <u>6-8</u>  | <u>B</u> | <u>10 YR 6/4</u>  | <u>NONE</u>   | <u>N/A</u>                   | <u>SILTY CLAY LOAM</u>                  |
| _____   | _____    | _____   | _____   | _____                        | <u>WITH GRAVEL</u>                      |
| AUGER REFUSAL AT 8 INCHES DUE TO GRAVEL   |          |   |   |                              |   |
| Hydric Soil Indicators:   |          |   |   |                              |   |
| <input type="checkbox"/> Histosol<br><input type="checkbox"/> Histic Epipedon<br><input type="checkbox"/> Sulfidic Odor<br><input type="checkbox"/> Aquic Moisture Regime<br><input type="checkbox"/> Reducing Conditions<br><input type="checkbox"/> Gleyed or Low-Chroma Colors |          |   | <input type="checkbox"/> Concretions<br><input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soil<br><input type="checkbox"/> Organic Streaking in Sandy Soils<br><input type="checkbox"/> Listed on Local Hydric Soils List<br><input type="checkbox"/> Listed on National Hydric Soils List<br><input type="checkbox"/> Other (Explain in Remarks) |                              |   |
| Remarks: <u>NO FIELD INDICATORS OF HYDRIC SOILS.</u>  |          |   |   |                              |   |

**WETLAND DETERMINATION**

|  |   |
|--|---|
| Hydrophytic Vegetation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> (Circle)<br>Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/> (Circle)<br>Hydric Soils Presents? Yes <input type="radio"/> No <input checked="" type="radio"/> (Circle) | Is this Sampling Point Within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/> (Circle) |
| Remarks: <u>UPLAND</u>   |   |

**WETLAND DELINEATION FIELD DATA SHEETS**  
**SITE 9 - INDUSTRIAL WASTEWATER DISPOSAL AREA 300**

**NSWC WHITE OAK  
WETLAND DELINEATION DATA FORM, PAGE 1  
1987 MANUAL**

|  |                           |
|--|---------------------------|
| Project/Site: <u>NSWC WHITE OAK, SITE 9</u>  | Date: <u>2/22/95</u>      |
| Applicant/Owner: <u>U.S. NAVY</u>  | County: <u>MONTGOMERY</u> |
| Investigators: <u>J. PEYTON DOUB AND JIM MCCONNELL</u>   | State: <u>MARYLAND</u>    |
| Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No                               | Community ID: <u>6</u>    |
| Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No                | Transect ID: <u>N/A</u>   |
| Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No<br>(If needed, explain on reverse) | Plot ID: <u>DP 9-1</u>    |

**VEGETATION**

| Dominant Plant Species   | Stratum | Indicator | Other Plant Species     | Stratum | Indicator |
|--|---------|-----------|-------------------------|---------|-----------|
| LIRIODENDRON TULIPIFERA  | C       | FACU      | LIRIODENDRON TULIPIFERA | SA      | FACU      |
| ACER RUBRUM  | C       | FAC       | FAGUS GRANDIFOLIA       | SA      | FACU      |
| PLATANUS OCCIDENTALIS  | C       | FACW-     | FRAXINUS PENNSYLVANICA  | C       | FACW      |
| LINDERA BENZOIN  | SH      | FACW-     |                         |         |           |
| SMILAX ROTUNDIFOLIA  | H       | FAC       |                         |         |           |
|  |         |           |                         |         |           |
|  |         |           |                         |         |           |
|  |         |           |                         |         |           |
| Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC). |         | 80        |                         |         |           |
| Remarks:   |         |           |                         |         |           |

**HYDROLOGY**

|   |  |
|---|--|
| <input checked="" type="checkbox"/> Recorded Data (Described in Remarks):<br><u>        </u> Stream, Lake, or Tide Gauge<br><input checked="" type="checkbox"/> Aerial Photographs<br><u>        </u> Other Conservation Plan<br><u>        </u> No Recorded Data Available | <b>Wetland Hydrology Indicators:</b><br><b>Primary Indicators:</b><br><input type="checkbox"/> Inundated<br><input checked="" type="checkbox"/> Saturated in Upper 12 inches<br><input type="checkbox"/> Water Marks<br><input type="checkbox"/> Drift Lines<br><input type="checkbox"/> Sediment Deposits<br><input checked="" type="checkbox"/> Drainage Patterns in Wetlands<br><br><b>Secondary Indicators (2 or more required):</b><br><br><input type="checkbox"/> Oxidized Root Channels in Upper 12 inches<br><input checked="" type="checkbox"/> Water-Stained Leaves<br><input type="checkbox"/> Local Soil Survey Data<br><input checked="" type="checkbox"/> FAC-Neutral Test<br><input type="checkbox"/> Other (Explain in Remarks) |
| <b>Field Observations:</b><br>Depth of Surface Water: <u>0</u> (in.)<br>Depth to Free Water in Pit: <u>0</u> (in.)<br>Depth to Saturated Soil: <u>0</u> (in.)   |  |
| Remarks: <u>SATURATED AT THE SURFACE</u>  |  |

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**Soil**

|   |                |   |  |                                      |   |
|---|----------------|---|--|--------------------------------------|---|
| <b>Map Unit Name</b><br>(Series and Phase): <u>CROOM GRAVELLY LOAM</u>      |                | <b>Drainage Class:</b><br>Field Observations <u>WELL DRAINED</u>                |  |                                      |   |
| Taxonomy (subgroup): _____  |                | Confirmed Mapped Type? Yes <input type="checkbox"/> No <input type="checkbox"/> |  |                                      |   |
| <b>Profile Description:</b>   |                |   |  |                                      |   |
| <b>Depth<br/>(inches)</b>   | <b>Horizon</b> | <b>Matrix Color<br/>(Munsell Moist)</b>   | <b>Mottle Colors<br/>(Munsell Moist)</b> | <b>Mottle<br/>Abundance/Contrast</b> | <b>Texture Concretions,<br/>Structure, etc.</b> |
| 0-1   | A              | 10 YR 3/2   | NONE                                     | N/A                                  | LOAM  |
| 1-12 +  | E OR B         | 10 YR 5/2   | 10 YR 6/6                                | 20%/BRIGHT                           | COURSE SANDY<br>LOAM WITH GRAVEL                |
|   |                |   |  |                                      |   |
|   |                |   |  |                                      |   |
|   |                |   |  |                                      |   |
|   |                |   |  |                                      |   |
| <b>Hydric Soil Indicators:</b>  |                |   |  |                                      |   |
| <input type="checkbox"/> Histosol   |                | <input type="checkbox"/> Concretions  |  |                                      |   |
| <input type="checkbox"/> Histic Epipedon                                    |                | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soil    |  |                                      |   |
| <input type="checkbox"/> Sulfidic Odor                                      |                | <input type="checkbox"/> Organic Streaking in Sandy Soils                       |  |                                      |   |
| <input type="checkbox"/> Aquic Moisture Regime                              |                | <input type="checkbox"/> Listed on Local Hydric Soils List                      |  |                                      |   |
| <input type="checkbox"/> Reducing Conditions                                |                | <input type="checkbox"/> Listed on National Hydric Soils List                   |  |                                      |   |
| <input checked="" type="checkbox"/> Glayed or Low-Chroma Colors             |                | <input type="checkbox"/> Other (Explain in Remarks)                             |  |                                      |   |
| <b>Remarks:</b> INCLUSION OF HYDRIC SOILS NOT DETECTED IN SOIL SURVEY MAPS. |                |   |  |                                      |   |

**WETLAND DETERMINATION**

|   |                                 |                                      |                                      |                          |                            |          |                                      |                          |                        |          |                                      |                          |  |  |          |                                      |                          |
|---|---------------------------------|--------------------------------------|--------------------------------------|--------------------------|----------------------------|----------|--------------------------------------|--------------------------|------------------------|----------|--------------------------------------|--------------------------|--|--|----------|--------------------------------------|--------------------------|
| <table style="width: 100%;"> <tr> <td style="width: 60%;">Hydrophytic Vegetation Present?</td> <td style="width: 10%; text-align: center;">(Circle)</td> <td style="width: 10%; text-align: center;"><input checked="" type="radio"/> Yes</td> <td style="width: 10%; text-align: center;"><input type="radio"/> No</td> </tr> <tr> <td>Wetland Hydrology Present?</td> <td style="text-align: center;">(Circle)</td> <td style="text-align: center;"><input checked="" type="radio"/> Yes</td> <td style="text-align: center;"><input type="radio"/> No</td> </tr> <tr> <td>Hydric Soils Presents?</td> <td style="text-align: center;">(Circle)</td> <td style="text-align: center;"><input checked="" type="radio"/> Yes</td> <td style="text-align: center;"><input type="radio"/> No</td> </tr> </table> | Hydrophytic Vegetation Present? | (Circle)                             | <input checked="" type="radio"/> Yes | <input type="radio"/> No | Wetland Hydrology Present? | (Circle) | <input checked="" type="radio"/> Yes | <input type="radio"/> No | Hydric Soils Presents? | (Circle) | <input checked="" type="radio"/> Yes | <input type="radio"/> No | <table style="width: 100%;"> <tr> <td style="width: 60%;">Is this Sampling Point Within a Wetland?</td> <td style="width: 10%; text-align: center;">(Circle)</td> <td style="width: 10%; text-align: center;"><input checked="" type="radio"/> Yes</td> <td style="width: 10%; text-align: center;"><input type="radio"/> No</td> </tr> </table> | Is this Sampling Point Within a Wetland? | (Circle) | <input checked="" type="radio"/> Yes | <input type="radio"/> No |
| Hydrophytic Vegetation Present?   | (Circle)                        | <input checked="" type="radio"/> Yes | <input type="radio"/> No             |                          |                            |          |                                      |                          |                        |          |                                      |                          |  |  |          |                                      |                          |
| Wetland Hydrology Present?  | (Circle)                        | <input checked="" type="radio"/> Yes | <input type="radio"/> No             |                          |                            |          |                                      |                          |                        |          |                                      |                          |  |  |          |                                      |                          |
| Hydric Soils Presents?  | (Circle)                        | <input checked="" type="radio"/> Yes | <input type="radio"/> No             |                          |                            |          |                                      |                          |                        |          |                                      |                          |  |  |          |                                      |                          |
| Is this Sampling Point Within a Wetland?  | (Circle)                        | <input checked="" type="radio"/> Yes | <input type="radio"/> No             |                          |                            |          |                                      |                          |                        |          |                                      |                          |  |  |          |                                      |                          |
| <b>Remarks:</b> PALUSTRINE FORESTED WETLAND, BROAD-LEAVED DECIDUOUS (PF01). THE ADJOINING STREAM CHANNEL AND ITS ASSOCIATED WETLANDS NOT DETECTED ON WETLANDS MAP IN NATURAL RESOURCES CONSERVATION PLAN.   |                                 |                                      |                                      |                          |                            |          |                                      |                          |                        |          |                                      |                          |  |  |          |                                      |                          |

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|   |                           |
|---|---------------------------|
| Project/Site: <u>NSWC WHITE OAK, SITE 9</u>   | Date: <u>2/22/95</u>      |
| Applicant/Owner: <u>U.S. NAVY</u>   | County: <u>MONTGOMERY</u> |
| Investigators: <u>J. PEYTON DOUB AND JIM MCCONNELL</u>  | State: <u>MARYLAND</u>    |
| Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No                | Community ID: <u>4</u>    |
| Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No | Transect ID: <u>N/A</u>   |
| Is the area a potential Problem Area?<br>(If needed, explain on reverse)  | Plot ID: <u>DP 9-2</u>    |

**VEGETATION**

| Dominant Plant Species   | Stratum | Indicator | Other Plant Species | Stratum | Indicator |
|--|---------|-----------|---------------------|---------|-----------|
| QUERCUS RUBRA  | C       | FACU-     |                     |         |           |
| QUERCUS ALBA   | C       | FACU-     |                     |         |           |
| NYSSA SYLVATICA  | C       | FAC       |                     |         |           |
| QUERCUS COCCINEA   | C       | UPL       |                     |         |           |
| ILEX OPACA   | SA      | FACU+     |                     |         |           |
| CORNUS FLORIDA   | SA      | FACU-     |                     |         |           |
| ILEX OPACA   | SH      | FACU+     |                     |         |           |
| CORNUS FLORICA   | SH      | FACU-     |                     |         |           |
| Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC). |         |           | 12                  |         |           |
| Remarks:   |         |           |                     |         |           |

**HYDROLOGY**

|   |  |
|---|--|
| <p><input checked="" type="checkbox"/> Recorded Data (Described in Remarks):</p> <p style="padding-left: 20px;"><input type="checkbox"/> Stream, Lake, or Tide Gauge</p> <p style="padding-left: 20px;"><input checked="" type="checkbox"/> Aerial Photographs</p> <p style="padding-left: 20px;"><input type="checkbox"/> Other Conservation Plan</p> <p style="padding-left: 20px;"><input type="checkbox"/> No Recorded Data Available</p> <hr/> <p>Field Observations:</p> <p>Depth of Surface Water: <u>0</u> (in.)</p> <p>Depth to Free Water in Pit: <u>DRY TO 12</u> (in.)</p> <p>Depth to Saturated Soil: <u>DRY TO 12</u> (in.)</p> | <p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><input type="checkbox"/> Inundated</p> <p><input type="checkbox"/> Saturated in Upper 12 inches</p> <p><input type="checkbox"/> Water Marks</p> <p><input type="checkbox"/> Drift Lines</p> <p><input type="checkbox"/> Sediment Deposits</p> <p><input type="checkbox"/> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><input type="checkbox"/> Oxidized Root Channels in Upper 12 inches</p> <p><input type="checkbox"/> Water-Stained Leaves</p> <p><input type="checkbox"/> Local Soil Survey Data</p> <p><input type="checkbox"/> FAC-Neutral Test</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> |
| Remarks: <u>NO EVIDENCE OF WETLAND HYDROLOGY.</u>   |  |

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**Soil**

|   |               |   |                                  |                              |   |
|---|---------------|---|----------------------------------|------------------------------|---|
| Map Unit Name<br>(Series and Phase): <u>CROOM GRAVELLY LOAM</u> |               | Drainage Class:<br>Field Observations <u>WELL DRAINED</u>                       |                                  |                              |   |
| Taxonomy (subgroup): _____                                      |               | Confirmed Mapped Type? Yes <input type="checkbox"/> No <input type="checkbox"/> |                                  |                              |   |
| Profile Description:  |               |   |                                  |                              |   |
| Depth<br>(inches)   | Horizon       | Matrix Color<br>(Munsell Moist)   | Mottle Colors<br>(Munsell Moist) | Mottle<br>Abundance/Contrast | Texture Concretions,<br>Structure, etc. |
| <u>0-1</u>  | <u>A</u>      | <u>10 YR 3/2</u>  | <u>NONE</u>                      | <u>N/A</u>                   | <u>LOAM</u>                             |
| <u>1-12 +</u>   | <u>E OR B</u> | <u>10 YR 4/4</u>  | <u>NONE</u>                      | <u>N/A</u>                   | <u>SANDY LOAM</u>                       |
|   |               |   |                                  |                              |   |
|   |               |   |                                  |                              |   |
|   |               |   |                                  |                              |   |
|   |               |   |                                  |                              |   |
| Hydric Soil Indicators:   |               |   |                                  |                              |   |
| <input type="checkbox"/> Histosol                               |               | <input type="checkbox"/> Concretions  |                                  |                              |   |
| <input type="checkbox"/> Histic Epipedon                        |               | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soil    |                                  |                              |   |
| <input type="checkbox"/> Sulfidic Odor                          |               | <input type="checkbox"/> Organic Streaking in Sandy Soils                       |                                  |                              |   |
| <input type="checkbox"/> Aquic Moisture Regime                  |               | <input type="checkbox"/> Listed on Local Hydric Soils List                      |                                  |                              |   |
| <input type="checkbox"/> Reducing Conditions                    |               | <input type="checkbox"/> Listed on National Hydric Soils List                   |                                  |                              |   |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors            |               | <input type="checkbox"/> Other (Explain in Remarks)                             |                                  |                              |   |
| Remarks: <u>NO FIELD INDICATORS OF HYDRIC SOILS.</u>            |               |   |                                  |                              |   |

**WETLAND DETERMINATION**

|  |                                 |          |                                     |                          |                            |     |          |                                     |                       |     |          |                          |  |  |     |          |                                     |
|--|---------------------------------|----------|-------------------------------------|--------------------------|----------------------------|-----|----------|-------------------------------------|-----------------------|-----|----------|--------------------------|--|--|-----|----------|-------------------------------------|
| <table style="width: 100%;"> <tr> <td style="width: 30%;">Hydrophytic Vegetation Present?</td> <td style="width: 10%;">Yes</td> <td style="width: 10%;">(Circle)</td> <td style="width: 10%; text-align: center;"><input type="radio"/> No</td> </tr> <tr> <td>Wetland Hydrology Present?</td> <td>Yes</td> <td>(Circle)</td> <td style="text-align: center;"><input checked="" type="radio"/> No</td> </tr> <tr> <td>Hydric Soils Present?</td> <td>Yes</td> <td>(Circle)</td> <td style="text-align: center;"><input type="radio"/> No</td> </tr> </table> | Hydrophytic Vegetation Present? | Yes      | (Circle)                            | <input type="radio"/> No | Wetland Hydrology Present? | Yes | (Circle) | <input checked="" type="radio"/> No | Hydric Soils Present? | Yes | (Circle) | <input type="radio"/> No | <table style="width: 100%;"> <tr> <td style="width: 70%;">Is this Sampling Point Within a Wetland?</td> <td style="width: 10%;">Yes</td> <td style="width: 10%;">(Circle)</td> <td style="width: 10%; text-align: center;"><input checked="" type="radio"/> No</td> </tr> </table> | Is this Sampling Point Within a Wetland? | Yes | (Circle) | <input checked="" type="radio"/> No |
| Hydrophytic Vegetation Present?  | Yes                             | (Circle) | <input type="radio"/> No            |                          |                            |     |          |                                     |                       |     |          |                          |  |  |     |          |                                     |
| Wetland Hydrology Present?   | Yes                             | (Circle) | <input checked="" type="radio"/> No |                          |                            |     |          |                                     |                       |     |          |                          |  |  |     |          |                                     |
| Hydric Soils Present?  | Yes                             | (Circle) | <input type="radio"/> No            |                          |                            |     |          |                                     |                       |     |          |                          |  |  |     |          |                                     |
| Is this Sampling Point Within a Wetland?   | Yes                             | (Circle) | <input checked="" type="radio"/> No |                          |                            |     |          |                                     |                       |     |          |                          |  |  |     |          |                                     |
| Remarks: <u>UPLAND</u>   |                                 |          |                                     |                          |                            |     |          |                                     |                       |     |          |                          |  |  |     |          |                                     |



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**Soil**

|   |                |   |   |                                     |  |
|---|----------------|---|---|-------------------------------------|--|
| <b>Map Unit Name</b><br>(Series and Phase): <u>CROOM GRAVELLY LOAM</u>      |                | <b>Drainage Class:</b><br>Field Observations <u>WELL DRAINED</u>                |   |                                     |  |
| Taxonomy (subgroup): _____  |                | Confirmed Mapped Type? Yes <input type="checkbox"/> No <input type="checkbox"/> |   |                                     |  |
| <b>Profile Description:</b>   |                |   |   |                                     |  |
| <b>Depth</b><br>(inches)  | <b>Horizon</b> | <b>Matrix Color</b><br>(Munsell Moist)  | <b>Mottle Colors</b><br>(Munsell Moist) | <b>Mottle</b><br>Abundance/Contrast | <b>Texture Concretions,</b><br>Structure, etc, |
| 0-1   | A              | 10 YR 3/2   | NONE                                    | N/A                                 | LOAM   |
| 1-12 +  | E OR B         | 10 YR 6/2   | 10 YR 6/6                               | 20% BRIGHT                          | SANDY LOAM                                     |
|   |                |   |   |                                     |  |
|   |                |   |   |                                     |  |
|   |                |   |   |                                     |  |
|   |                |   |   |                                     |  |
| <b>Hydric Soil Indicators:</b>  |                |   |   |                                     |  |
| <input type="checkbox"/> Histosol   |                | <input type="checkbox"/> Concretions  |   |                                     |  |
| <input type="checkbox"/> Histic Epipedon                                    |                | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soil    |   |                                     |  |
| <input type="checkbox"/> Sulfidic Odor                                      |                | <input type="checkbox"/> Organic Streaking in Sandy Soils                       |   |                                     |  |
| <input type="checkbox"/> Aquic Moisture Regime                              |                | <input type="checkbox"/> Listed on Local Hydric Soils List                      |   |                                     |  |
| <input type="checkbox"/> Reducing Conditions                                |                | <input type="checkbox"/> Listed on National Hydric Soils List                   |   |                                     |  |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors             |                | <input type="checkbox"/> Other (Explain in Remarks)                             |   |                                     |  |
| <b>Remarks:</b> INCLUSION OF HYDRIC SOILS NOT DETECTED IN SOIL SURVEY MAPS. |                |   |   |                                     |  |

**WETLAND DETERMINATION**

|  |                                      |          |    |  |  |  |                                      |  |    |  |                            |          |  |    |  |  |                                      |  |    |  |                        |          |  |    |  |  |                                      |  |    |  |   |  |          |  |  |  |  |                                      |  |    |  |
|--|--------------------------------------|----------|----|--|--|--|--------------------------------------|--|----|--|----------------------------|----------|--|----|--|--|--------------------------------------|--|----|--|------------------------|----------|--|----|--|--|--------------------------------------|--|----|--|---|--|----------|--|--|--|--|--------------------------------------|--|----|--|
| <table style="width: 100%;"> <tr> <td style="width: 60%;">Hydrophytic Vegetation Present?</td> <td style="text-align: center;">(Circle)</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> <tr> <td></td> <td style="text-align: center;"><input checked="" type="radio"/> Yes</td> <td></td> <td style="text-align: center;">No</td> <td></td> </tr> <tr> <td>Wetland Hydrology Present?</td> <td style="text-align: center;">(Circle)</td> <td></td> <td style="text-align: center;">No</td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;"><input checked="" type="radio"/> Yes</td> <td></td> <td style="text-align: center;">No</td> <td></td> </tr> <tr> <td>Hydric Soils Presents?</td> <td style="text-align: center;">(Circle)</td> <td></td> <td style="text-align: center;">No</td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;"><input checked="" type="radio"/> Yes</td> <td></td> <td style="text-align: center;">No</td> <td></td> </tr> </table> | Hydrophytic Vegetation Present?      | (Circle) |    |  |  |  | <input checked="" type="radio"/> Yes |  | No |  | Wetland Hydrology Present? | (Circle) |  | No |  |  | <input checked="" type="radio"/> Yes |  | No |  | Hydric Soils Presents? | (Circle) |  | No |  |  | <input checked="" type="radio"/> Yes |  | No |  | <table style="width: 100%;"> <tr> <td style="width: 60%;">Is this Sampling Point Within a Wetland?</td> <td style="text-align: center;">(Circle)</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> <tr> <td></td> <td style="text-align: center;"><input checked="" type="radio"/> Yes</td> <td></td> <td style="text-align: center;">No</td> <td></td> </tr> </table> | Is this Sampling Point Within a Wetland? | (Circle) |  |  |  |  | <input checked="" type="radio"/> Yes |  | No |  |
| Hydrophytic Vegetation Present?  | (Circle)                             |          |    |  |  |  |                                      |  |    |  |                            |          |  |    |  |  |                                      |  |    |  |                        |          |  |    |  |  |                                      |  |    |  |   |  |          |  |  |  |  |                                      |  |    |  |
|  | <input checked="" type="radio"/> Yes |          | No |  |  |  |                                      |  |    |  |                            |          |  |    |  |  |                                      |  |    |  |                        |          |  |    |  |  |                                      |  |    |  |   |  |          |  |  |  |  |                                      |  |    |  |
| Wetland Hydrology Present?   | (Circle)                             |          | No |  |  |  |                                      |  |    |  |                            |          |  |    |  |  |                                      |  |    |  |                        |          |  |    |  |  |                                      |  |    |  |   |  |          |  |  |  |  |                                      |  |    |  |
|  | <input checked="" type="radio"/> Yes |          | No |  |  |  |                                      |  |    |  |                            |          |  |    |  |  |                                      |  |    |  |                        |          |  |    |  |  |                                      |  |    |  |   |  |          |  |  |  |  |                                      |  |    |  |
| Hydric Soils Presents?   | (Circle)                             |          | No |  |  |  |                                      |  |    |  |                            |          |  |    |  |  |                                      |  |    |  |                        |          |  |    |  |  |                                      |  |    |  |   |  |          |  |  |  |  |                                      |  |    |  |
|  | <input checked="" type="radio"/> Yes |          | No |  |  |  |                                      |  |    |  |                            |          |  |    |  |  |                                      |  |    |  |                        |          |  |    |  |  |                                      |  |    |  |   |  |          |  |  |  |  |                                      |  |    |  |
| Is this Sampling Point Within a Wetland?   | (Circle)                             |          |    |  |  |  |                                      |  |    |  |                            |          |  |    |  |  |                                      |  |    |  |                        |          |  |    |  |  |                                      |  |    |  |   |  |          |  |  |  |  |                                      |  |    |  |
|  | <input checked="" type="radio"/> Yes |          | No |  |  |  |                                      |  |    |  |                            |          |  |    |  |  |                                      |  |    |  |                        |          |  |    |  |  |                                      |  |    |  |   |  |          |  |  |  |  |                                      |  |    |  |
| <b>Remarks:</b> SMALL AREA OF PALUSTRINE EMERGENT WETLANDS, NARROW-LEAVED PERSISTENT (PEM 5) BORDERING RIVERINE INTERMITTENT UNCONSOLIDATED BOTTOM (R4UB) WETLANDS IN STREAM CHANNEL.  |                                      |          |    |  |  |  |                                      |  |    |  |                            |          |  |    |  |  |                                      |  |    |  |                        |          |  |    |  |  |                                      |  |    |  |   |  |          |  |  |  |  |                                      |  |    |  |



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**Soil**

|  |                |  |   |                                  |   |
|--|----------------|--|---|----------------------------------|---|
| <b>Map Unit Name</b><br>(Series and Phase): <u>BELTSVILLE SILT LOAM</u>    |                | <b>Drainage Class:</b> <u>MODERATELY</u>                                     | <b>Field Observations</b> <u>WELL DRAINED</u> |                                  |   |
| <b>Taxonomy (subgroup):</b> _____  |                | <b>Confirmed Mapped Type?</b> Yes No   |   |                                  |   |
| <b>Profile Description:</b>  |                |  |   |                                  |   |
| <b>Depth (inches)</b>  | <b>Horizon</b> | <b>Matrix Color (Munsell Moist)</b>  | <b>Mottle Colors (Munsell Moist)</b>          | <b>Mottle Abundance/Contrast</b> | <b>Texture Concretions, Structure, etc.</b> |
| <u>0-6</u>   | <u>A</u>       | <u>10 YR 3/2</u>   | <u>NONE</u>                                   | <u>N/A</u>                       | <u>GRAVELLY LOAM</u>                        |
| <u>6-12+</u>   | <u>B</u>       | <u>10 YR 5/2-3</u>   | <u>10 YR 6/6</u>                              | <u>30% /INDISTINCT</u>           | <u>SANDY CLAY LOAM</u>                      |
|  |                |  |   |                                  |   |
|  |                |  |   |                                  |   |
|  |                |  |   |                                  |   |
|  |                |  |   |                                  |   |
| <b>Hydric Soil Indicators:</b>   |                |  |   |                                  |   |
| <input type="checkbox"/> Histosol  |                | <input type="checkbox"/> Concretions   |   |                                  |   |
| <input type="checkbox"/> Histic Epipedon                                   |                | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soil |   |                                  |   |
| <input type="checkbox"/> Sulfidic Odor                                     |                | <input type="checkbox"/> Organic Streaking in Sandy Soils                    |   |                                  |   |
| <input type="checkbox"/> Aquic Moisture Regime                             |                | <input type="checkbox"/> Listed on Local Hydric Soils List                   |   |                                  |   |
| <input type="checkbox"/> Reducing Conditions                               |                | <input type="checkbox"/> Listed on National Hydric Soils List                |   |                                  |   |
| <input checked="" type="checkbox"/> Glayed or Low-Chroma Colors            |                | <input type="checkbox"/> Other (Explain in Remarks)                          |   |                                  |   |
| <b>Remarks:</b> INCLUSION OF HYDRIC SOIL NOT DETECTED IN SOIL SURVEY MAPS. |                |  |   |                                  |   |

**WETLAND DETERMINATION**

|  |   |   |                            |   |                        |   |   |  |   |
|--|---|---|----------------------------|---|------------------------|---|---|--|---|
| <table style="width: 100%;"> <tr> <td style="width: 60%;">Hydrophytic Vegetation Present?</td> <td style="text-align: center;">(Circle)<br/><input checked="" type="radio"/> Yes    <input type="radio"/> No</td> </tr> <tr> <td>Wetland Hydrology Present?</td> <td style="text-align: center;"><input checked="" type="radio"/> Yes    <input type="radio"/> No</td> </tr> <tr> <td>Hydric Soils Presents?</td> <td style="text-align: center;"><input checked="" type="radio"/> Yes    <input type="radio"/> No</td> </tr> </table> | Hydrophytic Vegetation Present?   | (Circle)<br><input checked="" type="radio"/> Yes <input type="radio"/> No | Wetland Hydrology Present? | <input checked="" type="radio"/> Yes <input type="radio"/> No | Hydric Soils Presents? | <input checked="" type="radio"/> Yes <input type="radio"/> No | <table style="width: 100%;"> <tr> <td style="width: 60%;">Is this Sampling Point Within a Wetland?</td> <td style="text-align: center;">(Circle)<br/><input checked="" type="radio"/> Yes    <input type="radio"/> No</td> </tr> </table> | Is this Sampling Point Within a Wetland? | (Circle)<br><input checked="" type="radio"/> Yes <input type="radio"/> No |
| Hydrophytic Vegetation Present?  | (Circle)<br><input checked="" type="radio"/> Yes <input type="radio"/> No |   |                            |   |                        |   |   |  |   |
| Wetland Hydrology Present?   | <input checked="" type="radio"/> Yes <input type="radio"/> No             |   |                            |   |                        |   |   |  |   |
| Hydric Soils Presents?   | <input checked="" type="radio"/> Yes <input type="radio"/> No             |   |                            |   |                        |   |   |  |   |
| Is this Sampling Point Within a Wetland?   | (Circle)<br><input checked="" type="radio"/> Yes <input type="radio"/> No |   |                            |   |                        |   |   |  |   |
| <b>Remarks:</b> RIVERINE INTERMITTENT WETLAND, UNCONSOLIDATED BOTTOM (R4UB). NOT DETECTED ON WETLANDS MAP IN NATURAL RESOURCES CONSERVATION PLAN.  |   |   |                            |   |                        |   |   |  |   |



**NSWC WHITE OAK  
WETLAND DELINEATION DATA FORM, PAGE 2  
1987 MANUAL**

Soil

|  |         |  |                                  |                              |   |
|--|---------|--|----------------------------------|------------------------------|---|
| Map Unit Name<br>(Series and Phase):   |         | BELTSVILLE SILT LOAM   |                                  | Drainage Class:              | MODERATELY                              |
| Taxonomy (subgroup):   |         |  |                                  | Field Observations           | WELL DRAINED                            |
|  |         |  |                                  | Confirmed Mapped Type?       | Yes    No                               |
| <b>Profile Description:</b>  |         |  |                                  |                              |   |
| Depth<br>(inches)  | Horizon | Matrix Color<br>(Munsell Moist)  | Mottle Colors<br>(Munsell Moist) | Mottle<br>Abundance/Contrast | Texture Concretions,<br>Structure, etc, |
| 0-6  | A       | 10 YR 3/2  | NONE                             | N/A                          | GRAVELLY LOAM                           |
| 6-12 +   | B       | 10 YR 5/3  | 10 YR 5/6                        | 20%/INDISTINCT               | SANDY CLAY LOAM                         |
|  |         |  |                                  |                              |   |
|  |         |  |                                  |                              |   |
|  |         |  |                                  |                              |   |
|  |         |  |                                  |                              |   |
| <b>Hydric Soil Indicators:</b>   |         |  |                                  |                              |   |
| <input type="checkbox"/> Histosol  |         | <input type="checkbox"/> Concretions   |                                  |                              |   |
| <input type="checkbox"/> Histic Epipedon   |         | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soil |                                  |                              |   |
| <input type="checkbox"/> Sulfidic Odor   |         | <input type="checkbox"/> Organic Streaking in Sandy Soils                    |                                  |                              |   |
| <input type="checkbox"/> Aquic Moisture Regime   |         | <input type="checkbox"/> Listed on Local Hydric Soils List                   |                                  |                              |   |
| <input type="checkbox"/> Reducing Conditions   |         | <input type="checkbox"/> Listed on National Hydric Soils List                |                                  |                              |   |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors   |         | <input type="checkbox"/> Other (Explain in Remarks)                          |                                  |                              |   |
| Remarks:            NO FIELD INDICATORS OF HYDRIC SOIL. LIKELY AN INCLUSION OF SOMEWHAT POORLY DRAINED SOILS NOT DETECTED IN SOIL SURVEY MAPS. |         |  |                                  |                              |   |

**WETLAND DETERMINATION**

|  |   |
|--|---|
| Hydrophytic Vegetation Present?            Yes <input checked="" type="radio"/> No<br>Wetland Hydrology Present?                 Yes <input checked="" type="radio"/> No<br>Hydric Soils Presents?                         Yes <input checked="" type="radio"/> No | (Circle)<br>Is this Sampling Point Within a Wetland?    Yes <input checked="" type="radio"/> No |
| Remarks:            UPLAND   |   |

**APPENDIX B**

**FOREST STAND DELINEATION FIELD DATA SHEETS**

**APPENDIX B**  
**FOREST STAND DELINEATION FIELD DATA SHEETS**

The following field data sheets present forest stand and forest structure data for random locations within forested areas on the IRP sites.

**FOREST STAND DELINEATION FIELD DATA SHEETS**

**SITE 2 - APPLE ORCHARD LANDFILL**

# Field Sampling Data Sheet

Property: NSWC White Oak Site 2

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 2-1

Plot #: 1

Date: 5/15/95

| Tree Species                   | Size Class of Trees Within the Sample Plot                                 |                            |                              |                              |                          |
|--------------------------------|--|----------------------------|------------------------------|------------------------------|--------------------------|
|                                | Number of Trees 1-5.9" dbh   | Number of Trees 6-9.9" dbh | Number of Trees 10-17.9" dbh | Number of Trees 18-29.9" dbh | Number of Trees >30" dbh |
| Tulip Poplar                   | 1  |                            |                              | 1                            |                          |
| Red Maple                      | 10   | 7                          | 2                            |                              |                          |
| Flowering Dogwood              | 3  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
| Number of trees per size class | 14   | 7                          | 2                            | 1                            |                          |
| List of understory species     | Spicebush, Flowering Dogwood, Poison Ivy, Japanese Honeysuckle, Wild Onion |                            |                              |                              |                          |
| Basal area                     | 8.7 SF   |                            |                              |                              |                          |
| Number of dead trees per plot  | 5 Red Maples (1-5.9")  |                            |                              |                              |                          |

# Forest Structure Data Sheet

Property: NSWC White Oak Site 2

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 2-1

Plot #: 1

Date: 5/15/95

| Forest Structure Variable               | Sample point 1 | Sample point 2 | Sample point 3 | Sample point 4 | Sample point 5 | % yes |
|---|----------------|----------------|----------------|----------------|----------------|-------|
| Canopy coverage                         | 100            | 100            | 100            | 100            | 100            | 100   |
| Herbaceous ground cover                 | 10             | 30             | 70             | 30             | 10             | 30    |
| Downed woody debris                     | 20             | 0              | 0              | 0              | 0              | 5     |
| Invasive plant cover                    | 0              | 0              | 30             | 30             | 0              | 12    |
| Number of shrub species<br>(1/100 acre) |                |                |                |                |                |       |

4

## Field Sampling Data Sheet

Property: NSWC White Oak Site 2

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 2-1

Plot #: 2

Date: 5/15/95

| Tree Species                   | Size Class of Trees Within the Sample Plot                         |                            |                              |                              |                          |
|--------------------------------|--|----------------------------|------------------------------|------------------------------|--------------------------|
|                                | Number of Trees 1-5.9" dbh   | Number of Trees 6-9.9" dbh | Number of Trees 10-17.9" dbh | Number of Trees 18-29.9" dbh | Number of Trees >30" dbh |
| Tulip Poplar                   | 3  | 3                          | 6                            | 3                            |                          |
| Red Maple                      | 7  | 2                          | 2                            |                              |                          |
| Flowering Dogwood              | 3  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
| Number of trees per size class | 13   | 5                          | 8                            | 3                            |                          |
| List of understory species     | Flowering Dogwood, American Holly, Spicebush, Japanese Honeysuckle |                            |                              |                              |                          |
| Basal area                     | 20.6 SF  |                            |                              |                              |                          |
| Number of dead trees per plot  | None   |                            |                              |                              |                          |

## Forest Structure Data Sheet

Property: NSWC White Oak Site 2

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 2-1

Plot #: 2

Date: 5/15/95

| Forest Structure Variable               | Sample point 1 | Sample point 2 | Sample point 3 | Sample point 4 | Sample point 5 | % yes |
|---|----------------|----------------|----------------|----------------|----------------|-------|
| Canopy coverage                         | 100            | 100            | 100            | 100            | 100            | 100   |
| Herbaceous ground cover                 | 75             | 50             | 50             | 50             | 75             | 60    |
| Downed woody debris                     | 0              | 0              | 0              | 0              | 0              | 0     |
| Invasive plant cover                    | 75             | 50             | 50             | 50             | 50             | 55    |
| Number of shrub species<br>(1/100 acre) | None           |                |                |                |                |       |

## Field Sampling Data Sheet

Property: NSWC White Oak Site 2

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 2-2

Plot #: 1

Date: 5/15/95

| Tree Species                   | Size Class of Trees Within the Sample Plot                                 |                            |                              |                              |                          |
|--------------------------------|--|----------------------------|------------------------------|------------------------------|--------------------------|
|                                | Number of Trees 1-5.9" dbh   | Number of Trees 6-9.9" dbh | Number of Trees 10-17.9" dbh | Number of Trees 18-29.9" dbh | Number of Trees >30" dbh |
| Tulip Poplar                   |  | 3                          | 4                            | 4                            |                          |
| Red Maple                      | 5  |                            |                              |                              |                          |
| Flowering Dogwood              | 4  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
| Number of trees per size class | 9  | 3                          | 4                            | 4                            |                          |
| List of understory species     | Spicebush, Canadian Dwarf Cinquefoil, Wine Raspberry, Japanese Honeysuckle |                            |                              |                              |                          |
| Basal area                     | 18.5 SF  |                            |                              |                              |                          |
| Number of dead trees per plot  | 1 unidentifiable (1-5.9")  |                            |                              |                              |                          |

## Forest Structure Data Sheet

Property: NSWC White Oak Site 2

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 2-2

Plot #: 1

Date: 5/15/95

| Forest Structure Variable               | Sample point 1                            | Sample point 2 | Sample point 3 | Sample point 4 | Sample point 5 | % yes |
|---|---|----------------|----------------|----------------|----------------|-------|
| Canopy coverage                         | 100                                       | 100            | 100            | 100            | 100            | 100   |
| Herbaceous ground cover                 | 80  | 25             | 0              | 50             | 0              | 31    |
| Downed woody debris                     | 0   | 0              | 0              | 0              | 25             | 5     |
| Invasive plant cover                    | 40  | 20             | 0              | 20             | 0              | 16    |
| Number of shrub species<br>(1/100 acre) | Spicebush - 3, Chinese Matrimony Bush - 3 |                |                |                |                |       |

## Field Sampling Data Sheet

Property: NSWC White Oak Site 2

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 2-2

Plot #: 2

Date: 5/15/95

| Tree Species                   | Size Class of Trees Within the Sample Plot                                       |                            |                              |                              |                          |
|--------------------------------|--|----------------------------|------------------------------|------------------------------|--------------------------|
|                                | Number of Trees 1-5.9" dbh   | Number of Trees 6-9.9" dbh | Number of Trees 10-17.9" dbh | Number of Trees 18-29.9" dbh | Number of Trees >30" dbh |
| Tulip Poplar                   | 2  |                            | 5                            | 2                            |                          |
| Red Maple                      | 4  |                            |                              | 1                            |                          |
| Mockernut Hickory              |  |                            | 1                            |                              |                          |
| Flowering Dogwood              | 7  |                            |                              |                              |                          |
| Sassafras                      | 1  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
| Number of trees per size class | 14   |                            | 6                            | 3                            |                          |
| List of understory species     | Spicebush, Flowering Dogweed, Sassafras, Japanese Honeysuckle, Common Greenbrier |                            |                              |                              |                          |
| Basal area                     | 16.8 SF  |                            |                              |                              |                          |
| Number of dead trees per plot  | 1 Tulip Poplar (1-5.9")  |                            |                              |                              |                          |

## Forest Structure Data Sheet

Property: NSWC White Oak Site 2

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 2-2

Plot #: 2

Date: 5/15/95

| Forest Structure Variable               | Sample point 1                     | Sample point 2 | Sample point 3 | Sample point 4 | Sample point 5 | % yes |
|---|------------------------------------|----------------|----------------|----------------|----------------|-------|
| Canopy coverage                         | 100                                | 90             | 100            | 80             | 80             | 90    |
| Herbaceous ground cover                 | 70                                 | 25             | 5              | 20             | 50             | 34    |
| Downed woody debris                     | 0                                  | 0              | 20             | 0              | 0              | 4     |
| Invasive plant cover                    | 70                                 | 0              | 5              | 5              | 50             | 26    |
| Number of shrub species<br>(1/100 acre) | Coralberry - 1, dead Spicebush - 1 |                |                |                |                |       |

## Field Sampling Data Sheet

Property: NSWC White Oak Site 2

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 2-2

Plot #: 3

Date: 5/15/95

| Tree Species                   | Size Class of Trees Within the Sample Plot                            |                            |                              |                              |                          |
|--------------------------------|---|----------------------------|------------------------------|------------------------------|--------------------------|
|                                | Number of Trees 1-5.9" dbh  | Number of Trees 6-9.9" dbh | Number of Trees 10-17.9" dbh | Number of Trees 18-29.9" dbh | Number of Trees >30" dbh |
| White Oak                      |   |                            | 1                            | 1                            | 1                        |
| Tulip Poplar                   | 1   | 2                          | 1                            | 2                            |                          |
| Black Gum                      | 1   | 1                          |                              |                              |                          |
| Flowering Dogwood              | 4   |                            |                              |                              |                          |
| American Beech                 | 2   |                            |                              |                              |                          |
| Red Maple                      | 5   | 1                          |                              |                              |                          |
|                                |   |                            |                              |                              |                          |
|                                |   |                            |                              |                              |                          |
|                                |   |                            |                              |                              |                          |
| Number of trees per size class | 13  | 4                          | 2                            | 3                            | 1                        |
| List of understory species     | Flowering Dogwood, Spicebush, Japanese Honeysuckle, Common Greenbrier |                            |                              |                              |                          |
| Basal area                     | 43.7 SF   |                            |                              |                              |                          |
| Number of Dead Trees per plot  | 1 Flowering Dogwood (1-5.9")  |                            |                              |                              |                          |

## Forest Structure Data Sheet

Property: NSWC White Oak Site 2

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 2-2

Plot #: 3

Date: 5/15/95

| Forest Structure Variable               | Sample point 1        | Sample point 2 | Sample point 3 | Sample point 4 | Sample point 5 | % yes |
|---|-----------------------|----------------|----------------|----------------|----------------|-------|
| Canopy coverage                         | 70                    | 50             | 100            | 90             | 80             | 78    |
| Herbaceous ground cover                 | 50                    | 10             | 10             | 10             | 10             | 18    |
| Downed woody debris                     | 0                     | 0              | 0              | 0              | 0              | 0     |
| Invasive plant cover                    | 0                     | 10             | 10             | 0              | 5              | 5     |
| Number of shrub species<br>(1/100 acre) | Flowering Dogwood - 2 |                |                |                |                |       |

## Field Sampling Data Sheet

Property: NSWC White Oak Site 2

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 2-2

Plot #: 4

Date: 5/15/95

| Tree Species                   | Size Class of Trees Within the Sample Plot                |                            |                              |                              |                          |
|--------------------------------|---|----------------------------|------------------------------|------------------------------|--------------------------|
|                                | Number of Trees 1-5.9" dbh                                | Number of Trees 6-9.9" dbh | Number of Trees 10-17.9" dbh | Number of Trees 18-29.9" dbh | Number of Trees >30" dbh |
| Red Maple                      | 3   | 1                          | 2                            | 1                            |                          |
| Scarlet Oak                    |   |                            |                              | 1                            |                          |
| White Oak                      |   |                            |                              | 1                            |                          |
| Virginia Pine                  |   | 1                          | 2                            |                              |                          |
| Southern Red Oak               |   |                            | 1                            |                              |                          |
| Tulip Poplar                   |   |                            | 1                            |                              |                          |
| Black Oak                      | 1   | 1                          |                              |                              |                          |
| Flowering Dogwood              | 5   |                            |                              |                              |                          |
| Sassafras                      | 1   |                            |                              |                              |                          |
| Number of trees per size class | 10  | 3                          | 6                            | 3                            |                          |
| List of understory species     | Spicebush, Highbrush Blueberry, Canadian Dwarf Cinquefoil |                            |                              |                              |                          |
| Basal area                     | 17.5 SF   |                            |                              |                              |                          |
| Number of dead trees per plot  | 1 unidentifiable (6-9.9")                                 |                            |                              |                              |                          |

## Forest Structure Data Sheet

Property: NSWC White Oak Site 2

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 2-2

Plot #: 4

Date: 5/15/95

| Forest Structure Variable               | Sample point 1 | Sample point 2 | Sample point 3 | Sample point 4 | Sample point 5 | % yes |
|---|----------------|----------------|----------------|----------------|----------------|-------|
| Canopy coverage                         | 50             | 100            | 90             | 100            | 100            | 88    |
| Herbaceous ground cover                 | 50             | 5              | 0              | 10             | 100            | 33    |
| Downed woody debris                     | 0              | 0              | 0              | 0              | 0              | 0     |
| Invasive plant cover                    | 0              | 0              | 0              | 0              | 0              | 0     |
| Number of shrub species<br>(1/100 acre) |                |                |                |                |                |       |

## Field Sampling Data Sheet

Property: NSWC White Oak Site 2

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 2-2

Plot #: 5

Date: 5/15/95

| Tree Species                      | Size Class of Trees Within the Sample Plot                           |                                   |                                     |                                     |                                 |
|-----------------------------------|--|-----------------------------------|-------------------------------------|-------------------------------------|---------------------------------|
|                                   | Number of<br>Trees 1-<br>5.9" dbh                                    | Number of<br>Trees 6-<br>9.9" dbh | Number of<br>Trees 10-<br>17.9" dbh | Number of<br>Trees 18-<br>29.9" dbh | Number of<br>Trees<br>> 30" dbh |
| Tulip Poplar                      | 2  | 5                                 | 8                                   |                                     |                                 |
| Red Maple                         | 2  | 1                                 |                                     |                                     |                                 |
| Flowering Dogwood                 | 8  |                                   |                                     |                                     |                                 |
| American Beech                    | 6  |                                   |                                     |                                     |                                 |
| White Oak                         | 2  |                                   |                                     |                                     |                                 |
| Northern Red Oak                  | 1  |                                   |                                     |                                     |                                 |
| Mockernut Hickory                 | 1  |                                   |                                     |                                     |                                 |
|                                   |  |                                   |                                     |                                     |                                 |
|                                   |  |                                   |                                     |                                     |                                 |
| Number of trees per<br>size class | 22   | 6                                 | 8                                   |                                     |                                 |
| List of understory<br>species     | Flowering Dogwood, Japanese Honeysuckle, Poison Ivy, Black<br>Cherry |                                   |                                     |                                     |                                 |
| Basal area                        | 12.1 SF  |                                   |                                     |                                     |                                 |
| Number of dead<br>trees per plot  | None   |                                   |                                     |                                     |                                 |

## Forest Structure Data Sheet

Property: NSWC White Oak Site 2

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 2-2

Plot #: 5

Date: 5/15/95

| Forest Structure Variable            | Sample point 1   | Sample point 2 | Sample point 3 | Sample point 4 | Sample point 5 | % yes |
|--------------------------------------|--|----------------|----------------|----------------|----------------|-------|
| Canopy coverage                      | 100  | 100            | 100            | 100            | 90             | 98    |
| Herbaceous ground cover              | 10   | 40             | 25             | 20             | 10             | 21    |
| Downed woody debris                  | 0  | 0              | 10             | 0              | 10             | 4     |
| Invasive plant cover                 | 10   | 40             | 10             | 10             | 10             | 16    |
| Number of shrub species (1/100 acre) | Flowering Dogwood - 1, dead Hickory - 1, dead unidentifiable - 1 |                |                |                |                |       |

## Field Sampling Data Sheet

Property: NSWC White Oak Site 2

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 2-3

Plot #: 1

Date: 5/15/95

| Tree Species                   | Size Class of Trees Within the Sample Plot  |                            |                              |                              |                          |
|--------------------------------|---|----------------------------|------------------------------|------------------------------|--------------------------|
|                                | Number of Trees 1-5.9" dbh  | Number of Trees 6-9.9" dbh | Number of Trees 10-17.9" dbh | Number of Trees 18-29.9" dbh | Number of Trees >30" dbh |
| Tulip Poplar                   | 1   | 3                          | 1                            |                              |                          |
| Virginia Pine                  |   |                            | 1                            |                              |                          |
| Red Maple                      | 4   | 4                          |                              |                              |                          |
| American Beech                 | 1   | 1                          |                              |                              |                          |
| Flowering Dogwood              | 18  |                            |                              |                              |                          |
| Northern Red Oak               | 1   |                            |                              |                              |                          |
|                                |   |                            |                              |                              |                          |
|                                |   |                            |                              |                              |                          |
|                                |   |                            |                              |                              |                          |
| Number of trees per size class | 25  | 8                          | 2                            |                              |                          |
| List of understory species     | Poison Ivy, Black Cherry, Japanese Honeysuckle, Flowering Dogwood                                     |                            |                              |                              |                          |
| Basal area                     | 6.6 SF  |                            |                              |                              |                          |
| Number of dead trees per plot  | 5 Virginia Pine (10-17.9"), 1 Virginia Pine (6-9.9"), 1 Red Maple (1-5.9"), 2 unidentifiable (1-5.9") |                            |                              |                              |                          |

## Forest Structure Data Sheet

Property: NSWC White Oak Site 2

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 2-3

Plot #: 1

Date: 5/15/95

| Forest Structure Variable               | Sample point 1 | Sample point 2 | Sample point 3 | Sample point 4 | Sample point 5 | % yes |
|---|----------------|----------------|----------------|----------------|----------------|-------|
| Canopy coverage                         | 100            | 100            | 100            | 100            | 90             | 98    |
| Herbaceous ground cover                 | 10             | 50             | 0              | 10             | 25             | 19    |
| Downed woody debris                     | 0              | 0              | 100            | 0              | 5              | 21    |
| Invasive plant cover                    | 0              | 0              | 0              | 0              | 10             | 2     |
| Number of shrub species<br>(1/100 acre) | 1 Dead shrub   |                |                |                |                |       |

## Field Sampling Data Sheet

Property: NSWC White Oak Site 2

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 2-3

Plot #: 2

Date: 5/15/95

| Tree Species                   | Size Class of Trees Within the Sample Plot                                    |                            |                              |                              |                          |
|--------------------------------|---|----------------------------|------------------------------|------------------------------|--------------------------|
|                                | Number of Trees 1-5.9" dbh  | Number of Trees 6-9.9" dbh | Number of Trees 10-17.9" dbh | Number of Trees 18-29.9" dbh | Number of Trees >30" dbh |
| Virginia Pine                  |   | 6                          | 5                            |                              |                          |
| Tulip Poplar                   | 3   | 2                          |                              | 1                            |                          |
| Black Cherry                   |   |                            | 1                            |                              |                          |
| Red Maple                      | 13  | 1                          |                              |                              |                          |
| Green Ash                      | 1   |                            |                              |                              |                          |
| Southern Red Oak               | 2   |                            |                              |                              |                          |
| Flowering Dogwood              | 10  |                            |                              |                              |                          |
|                                |   |                            |                              |                              |                          |
|                                |   |                            |                              |                              |                          |
| Number of trees per size class | 29  | 9                          | 6                            | 1                            |                          |
| List of understory species     | American Beech, Red Maple, American Holly, Japanese Honeysuckle, Black Cherry |                            |                              |                              |                          |
| Basal area                     | 14.6 SF   |                            |                              |                              |                          |
| Number of dead trees per plot  | 6 Flowering Dogwood (1-5.9")  |                            |                              |                              |                          |

## Forest Structure Data Sheet

Property: NSWC White Oak Site 2

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 2-3

Plot #: 2

Date: 5/15/95

| Forest Structure Variable               | Sample point 1 | Sample point 2 | Sample point 3 | Sample point 4 | Sample point 5 | % yes |
|---|----------------|----------------|----------------|----------------|----------------|-------|
| Canopy coverage                         | 100            | 100            | 100            | 100            | 80             | 96    |
| Herbaceous ground cover                 | 75             | 5              | 30             | 25             | 15             | 30    |
| Downed woody debris                     | 0              | 10             | 30             | 25             | 0              | 13    |
| Invasive plant cover                    | 50             | 0              | 10             | 0              | 15             | 15    |
| Number of shrub species<br>(1/100 acre) | None           |                |                |                |                |       |

## Field Sampling Data Sheet

Property: NSWC White Oak Site 2

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 2-3

Plot #: 3

Date: 5/15/95

| Tree Species                   | Size Class of Trees Within the Sample Plot                               |                            |                              |                              |                          |
|--------------------------------|--|----------------------------|------------------------------|------------------------------|--------------------------|
|                                | Number of Trees 1-5.9" dbh   | Number of Trees 6-9.9" dbh | Number of Trees 10-17.9" dbh | Number of Trees 18-29.9" dbh | Number of Trees >30" dbh |
| Tulip Poplar                   | 1  | 2                          | 3                            | 1                            |                          |
| Virginia Pine                  | 1  | 15                         | 1                            |                              |                          |
| Red Maple                      | 15   |                            |                              |                              |                          |
| Flowering Dogwood              | 7  |                            |                              |                              |                          |
| Black Oak                      | 1  |                            |                              |                              |                          |
| Eastern Redcedar               | 1  |                            |                              |                              |                          |
| Sweet Cherry                   | 1  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
| Number of trees per size class | 27   | 17                         | 4                            | 1                            |                          |
| List of understory species     | Flowering Dogweed, Red Maple, Black Cherry, Japanese Honeysuckle         |                            |                              |                              |                          |
| Basal area                     | 15.0 SF  |                            |                              |                              |                          |
| Number of dead trees per plot  | 1 Virginia Pine (6-9.9"), 1 Virginia Pine (1-5.9"), 3 Persimmon (6-9.9") |                            |                              |                              |                          |

## Forest Structure Data Sheet

Property: NSWC White Oak Site 2

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 2-3

Plot #: 3

Date: 5/15/95

| Forest Structure Variable               | Sample point 1      | Sample point 2 | Sample point 3 | Sample point 4 | Sample point 5 | % yes |
|---|---------------------|----------------|----------------|----------------|----------------|-------|
| Canopy coverage                         | 100                 | 100            | 90             | 100            | 70             | 92    |
| Herbaceous ground cover                 | 70                  | 50             | 50             | 70             | 0              | 48    |
| Downed woody debris                     | 0                   | 20             | 0              | 0              | 40             | 12    |
| Invasive plant cover                    | 20                  | 20             | 20             | 20             | 0              | 16    |
| Number of shrub species<br>(1/100 acre) | Flowering Dogwood 1 |                |                |                |                |       |

**Forest Stand Delineation Field Data Sheets**

**Site 3 - Pistol Range Landfill**

## Field Sampling Data Sheet

Property: NSWC White Oak Site 3

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 3-1

Plot #: 1

Date: 5/18/95

| Tree Species                   | Size Class of Trees Within the Sample Plot |                            |                              |                              |                          |
|--------------------------------|--|----------------------------|------------------------------|------------------------------|--------------------------|
|                                | Number of Trees 1-5.9" dbh                 | Number of Trees 6-9.9" dbh | Number of Trees 10-17.9" dbh | Number of Trees 18-29.9" dbh | Number of Trees >30" dbh |
| Scarlet Oak                    |  | 5                          | 10                           |                              |                          |
| White Oak                      | 4  | 3                          | 1                            |                              |                          |
| Black Oak                      | 1  | 5                          | 1                            |                              |                          |
| Northern Red Oak               |  | 2                          |                              |                              |                          |
| Black Gum                      | 5  | 1                          |                              |                              |                          |
| Virginia Pine                  | 1  | 1                          |                              |                              |                          |
| Red Maple                      | 2  |                            |                              |                              |                          |
| Sassafras                      | 2  |                            |                              |                              |                          |
| American Chestnut              | 1  |                            |                              |                              |                          |
| Number of trees per size class | 16   | 17                         | 12                           |                              |                          |
| List of understory species     | Mountain Laurel                            |                            |                              |                              |                          |
| Basal area                     | 19.8 SF                                    |                            |                              |                              |                          |
| Number of dead trees per plot  | 1 oak (6-9.9"), 3 oaks (1-5.9")            |                            |                              |                              |                          |

## Forest Structure Data Sheet

Property: NSWC White Oak Site 3

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 3-1

Plot #: 1

Date: 5/18/95

| Forest Structure Variable               | Sample point 1       | Sample point 2 | Sample point 3 | Sample point 4 | Sample point 5 | % yes |
|---|----------------------|----------------|----------------|----------------|----------------|-------|
| Canopy coverage                         | 100                  | 90             | 80             | 90             | 60             | 84    |
| Herbaceous ground cover                 | 5                    | 5              | 0              | 15             | 0              | 5     |
| Downed woody debris                     | 0                    | 0              | 0              | 0              | 0              | 0     |
| Invasive plant cover                    | 0                    | 0              | 0              | 0              | 0              | 0     |
| Number of shrub species<br>(1/100 acre) | Mountain Laurel - 25 |                |                |                |                |       |

## Field Sampling Data Sheet

Property: NSWC White Oak Site 3

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 3-2

Plot #: 2

Date: 5/18/95

| Tree Species                   | Size Class of Trees Within the Sample Plot                 |                            |                              |                              |                          |
|--------------------------------|--|----------------------------|------------------------------|------------------------------|--------------------------|
|                                | Number of Trees 1-5.9" dbh                                 | Number of Trees 6-9.9" dbh | Number of Trees 10-17.9" dbh | Number of Trees 18-29.9" dbh | Number of Trees >30" dbh |
| Tulip Poplar                   |  |                            | 2                            | 1                            |                          |
| Red Maple                      | 3  |                            | 3                            |                              |                          |
| Black Oak                      |  |                            | 3                            |                              |                          |
| Pignut Hickory                 |  |                            | 1                            |                              |                          |
| Northern Red Oak               |  | 1                          | 1                            |                              |                          |
| Chestnut Oak                   |  | 1                          |                              |                              |                          |
| White Oak                      | 1  |                            |                              |                              |                          |
| Flowering Dogwood              | 1  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
| Number of trees per size class | 5  | 2                          | 10                           | 1                            |                          |
| List of understory species     | Flowering Dogwood, Black Cherry, Wine Raspberry, Red Maple |                            |                              |                              |                          |
| Basal area                     | 14.9 SF  |                            |                              |                              |                          |
| Number of dead trees per plot  | None   |                            |                              |                              |                          |

## Forest Structure Data Sheet

Property: NSWC White Oak Site 3

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 3-2

Plot #: 2

Date: 5/18/95

| Forest Structure Variable               | Sample point 1                    | Sample point 2 | Sample point 3 | Sample point 4 | Sample point 5 | % yes |
|---|-----------------------------------|----------------|----------------|----------------|----------------|-------|
| Canopy coverage                         | 100                               | 100            | 100            | 90             | 100            | 98    |
| Herbaceous ground cover                 | 0                                 | 0              | 0              | 10             | 10             | 6     |
| Downed woody debris                     | 0                                 | 0              | 0              | 50             | 0              | 10    |
| Invasive plant cover                    | 0                                 | 0              | 0              | 0              | 0              | 0     |
| Number of shrub species<br>(1/100 acre) | Red Maple - 1, American Beech - 1 |                |                |                |                |       |

Forest Stand Delineation Field Data Sheets

Site 4 - Chemical Burial Site

## Field Sampling Data Sheet

Property: NSWC White Oak Site 4

Prepared by: Peyton Doub  
Bill Spicer

Stand #: 4-1

Plot #: 1

Date: 3/21/95

| Tree Species                   | Size Class of Trees Within the Sample Plot |                            |                              |                              |                          |
|--------------------------------|--|----------------------------|------------------------------|------------------------------|--------------------------|
|                                | Number of Trees 1-5.9" dbh                 | Number of Trees 6-9.9" dbh | Number of Trees 10-17.9" dbh | Number of Trees 18-29.9" dbh | Number of Trees >30" dbh |
| Black Oak                      | 2  | 5                          | 4                            |                              |                          |
| Virginia Pine                  | 7  | 7                          | 2                            |                              |                          |
| White Oak                      |  | 1                          |                              |                              |                          |
| Pitch Pine                     |  | 1                          |                              |                              |                          |
| Black Gum                      | 6  |                            |                              |                              |                          |
| Flowering Dogwood              | 2  |                            |                              |                              |                          |
| Tulip Poplar                   | 1  |                            |                              |                              |                          |
| Sassafras                      | 1  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
| Number of trees per size class | 19   | 14                         | 6                            |                              |                          |
| List of understory species     | Mountain Laurel, Flowering Dogwood         |                            |                              |                              |                          |
| Basal area                     | 12.6 SF                                    |                            |                              |                              |                          |
| Number of dead trees per plot  | 1 Southern Red Oak (1-5.9")                |                            |                              |                              |                          |

## Forest Structure Data Sheet

Property: NSWC White Oak Site 4

Prepared by: Peyton Doub  
Bill Spicer

Stand #: 4-1

Plot #: 1

Date: 3/21/95

| Forest Structure Variable               | Sample point 1      | Sample point 2 | Sample point 3 | Sample point 4 | Sample point 5 | % yes |
|---|---------------------|----------------|----------------|----------------|----------------|-------|
| Canopy coverage                         | 85                  | 95             | 75             | 60             | 80             | 79    |
| Herbaceous ground cover                 | 0                   | 0              | 0              | 0              | 0              | 0     |
| Downed woody debris                     | 0                   | 5              | 5              | 5              | 0              | 3     |
| Invasive plant cover                    | 0                   | 0              | 0              | 0              | 0              | 0     |
| Number of shrub species<br>(1/100 acre) | Mountain Laurel - 3 |                |                |                |                |       |

## Field Sampling Data Sheet

Property: NSWC White Oak Site 4

Prepared by: Peyton Doub  
Bill Spicer

Stand #: 4-1

Plot #: 2

Date: 3/21/95

| Tree Species                   | Size Class of Trees Within the Sample Plot |                            |                              |                              |                          |
|--------------------------------|--|----------------------------|------------------------------|------------------------------|--------------------------|
|                                | Number of Trees 1-5.9" dbh                 | Number of Trees 6-9.9" dbh | Number of Trees 10-17.9" dbh | Number of Trees 18-29.9" dbh | Number of Trees >30" dbh |
| Northern Red Oak               |  | 2                          | 3                            |                              |                          |
| Southern Red Oak               |  | 3                          | 2                            |                              |                          |
| Black Oak                      | 1  | 6                          | 1                            |                              |                          |
| Tulip Poplar                   | 1  | 1                          |                              |                              |                          |
| Red Maple                      | 2  | 1                          |                              |                              |                          |
| Black Gum                      | 8  |                            |                              |                              |                          |
| Mountain Laurel                | 6  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
| Number of trees per size class | 18   | 13                         | 6                            |                              |                          |
| List of understory species     | Mountain Laurel, Black Gum                 |                            |                              |                              |                          |
| Basal area                     | 12.1 SF                                    |                            |                              |                              |                          |
| Number of dead trees per plot  | None                                       |                            |                              |                              |                          |

## Forest Structure Data Sheet

Property: NSWC White Oak Site 4

Prepared by: Peyton Doub  
Bill Spicer

Stand #: 4-1

Plot #: 2

Date: 3/21/95

| Forest Structure Variable               | Sample point 1                     | Sample point 2 | Sample point 3 | Sample point 4 | Sample point 5 | % yes |
|---|------------------------------------|----------------|----------------|----------------|----------------|-------|
| Canopy coverage                         | 70                                 | 60             | 75             | 85             | 60             | 70    |
| Herbaceous ground cover                 | 0                                  | 0              | 0              | 0              | 0              | 0     |
| Downed woody debris                     | 0                                  | 0              | 0              | 0              | 0              | 0     |
| Invasive plant cover                    | 0                                  | 0              | 0              | 0              | 0              | 0     |
| Number of shrub species<br>(1/100 acre) | Mountain Laurel - 3, Black Gum - 1 |                |                |                |                |       |

## Field Sampling Data Sheet

Property: NSW White Oak Site 4

Prepared by: Peyton Doub  
Bill Spicer

Stand #: 4-1

Plot #: 3

Date: 3/21/95

| Tree Species                   | Size Class of Trees Within the Sample Plot |                            |                              |                              |                          |
|--------------------------------|--|----------------------------|------------------------------|------------------------------|--------------------------|
|                                | Number of Trees 1-5.9" dbh                 | Number of Trees 6-9.9" dbh | Number of Trees 10-17.9" dbh | Number of Trees 18-29.9" dbh | Number of Trees >30" dbh |
| Southern Red Oak               |  | 2                          | 3                            |                              |                          |
| Scarlet Oak                    | 1  | 2                          | 1                            |                              |                          |
| Black Oak                      |  | 1                          | 2                            |                              |                          |
| Virginia Pine                  | 3  | 1                          |                              |                              |                          |
| Black Gum                      | 11   |                            |                              |                              |                          |
| Mountain Laurel                | 5  |                            |                              |                              |                          |
| Red Maple                      | 5  |                            |                              |                              |                          |
| Tulip Poplar                   | 1  |                            |                              |                              |                          |
| Pignut Hickory                 | 1  |                            |                              |                              |                          |
| Number of trees per size class | 27   | 6                          | 6                            |                              |                          |
| List of understory species     | Mountain Laurel, Oak Seedlings, Black Gum  |                            |                              |                              |                          |
| Basal area                     | 10.3 SF                                    |                            |                              |                              |                          |
| Number of dead trees per plot  | None                                       |                            |                              |                              |                          |

## Forest Structure Data Sheet

Property: NSWC White Oak Site 4

Prepared by: Peyton Doub  
Bill Spicer

Stand #: 4-1

Plot #: 3

Date: 3/21/95

| Forest Structure Variable               | Sample point 1     | Sample point 2 | Sample point 3 | Sample point 4 | Sample point 5 | % yes |
|---|--------------------|----------------|----------------|----------------|----------------|-------|
| Canopy coverage                         | 60                 | 75             | 60             | 70             | 70             | 67    |
| Herbaceous ground cover                 | 0                  | 0              | 0              | 0              | 0              | 0     |
| Downed woody debris                     | 0                  | 0              | 0              | 0              | 0              | 0     |
| Invasive plant cover                    | 0                  | 0              | 0              | 0              | 0              | 0     |
| Number of shrub species<br>(1/100 acre) | Oak Seedlings - 25 |                |                |                |                |       |

**Forest Stand Delineation Field Data Sheets**

**Site 7 - Ordnance Burn Area**

## Field Sampling Data Sheet

Property: NSWC White Oak Site 7

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 7-1

Plot #: 1

Date: 5/15/95

| Tree Species                   | Size Class of Trees Within the Sample Plot                                    |                            |                              |                              |                          |
|--------------------------------|---|----------------------------|------------------------------|------------------------------|--------------------------|
|                                | Number of Trees 1-5.9" dbh  | Number of Trees 6-9.9" dbh | Number of Trees 10-17.9" dbh | Number of Trees 18-29.9" dbh | Number of Trees >30" dbh |
| Southern Red Oak               | 1   | 2                          | 2                            | 1                            |                          |
| Black Cherry                   | 2   | 3                          | 2                            |                              |                          |
| Red Maple                      | 6   | 3                          |                              |                              |                          |
| Black Oak                      | 1   | 2                          |                              |                              |                          |
| Tulip Poplar                   |   | 1                          |                              |                              |                          |
| Sassafras                      |   | 1                          |                              |                              |                          |
| American Holly                 | 3   |                            |                              |                              |                          |
| Black Locust                   |   | 1                          |                              |                              |                          |
| Willow Oak                     |   | 1                          |                              |                              |                          |
| Mockernut Hickory              | 1   |                            |                              |                              |                          |
| Number of trees per size class | 14  | 14                         | 4                            | 1                            |                          |
| List of understory species     | American Holly, Black Cherry, Common Greenbrier, Japanese Honeysuckle         |                            |                              |                              |                          |
| Basal area                     | 13.2 SF   |                            |                              |                              |                          |
| Number of dead trees per plot  | 3 Black Locust (6-9.9"), 1 Black Locust (1-5.9"), 1 Southern Red Oak (1-5.9") |                            |                              |                              |                          |

## Forest Structure Data Sheet

Property: NSWC White Oak Site 7

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 7-1

Plot #: 1

Date: 5/15/95

| Forest Structure Variable               | Sample point 1     | Sample point 2 | Sample point 3 | Sample point 4 | Sample point 5 | % yes |
|---|--------------------|----------------|----------------|----------------|----------------|-------|
| Canopy coverage                         | 90                 | 90             | 100            | 100            | 100            | 96    |
| Herbaceous ground cover                 | 10                 | 0              | 50             | 10             | 0              | 14    |
| Downed woody debris                     | 0                  | 20             | 0              | 0              | 0              | 4     |
| Invasive plant cover                    | 0                  | 0              | 30             | 0              | 0              | 6     |
| Number of shrub species<br>(1/100 acre) | American Holly - 1 |                |                |                |                |       |

## Field Sampling Data Sheet

Property: NSWC White Oak Site 7

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 7-1

Plot #: 2

Date: 5/15/95

| Tree Species                   | Size Class of Trees Within the Sample Plot   |                            |                              |                              |                           |
|--------------------------------|--|----------------------------|------------------------------|------------------------------|---------------------------|
|                                | Number of Trees 1-5.9" dbh   | Number of Trees 6-9.9" dbh | Number of Trees 10-17.9" dbh | Number of Trees 18-29.9" dbh | Number of Trees > 30" dbh |
| Virginia Pine                  |  | 2                          | 2                            |                              |                           |
| Black Cherry                   | 3  | 4                          | 1                            |                              |                           |
| Southern Red Oak               |  | 2                          | 1                            |                              |                           |
| Willow Oak                     |  | 1                          | 1                            |                              |                           |
| Red Maple                      | 5  | 1                          |                              |                              |                           |
| Sweet Cherry                   |  | 1                          |                              |                              |                           |
| American Elm                   | 1  |                            |                              |                              |                           |
| Flowering Dogwood              | 2  |                            |                              |                              |                           |
| Black Gum                      |  | 1                          |                              |                              |                           |
| Tulip Poplar                   | 1  |                            |                              |                              |                           |
| Northern Red Oak               | 1  |                            |                              |                              |                           |
| American Holly                 | 1  |                            |                              |                              |                           |
| Number of trees per size class | 14   | 12                         | 5                            |                              |                           |
| List of understory species     | Black Cherry, Japanese Honeysuckle, Common Greenbrier, Highbush Blueberry, Flowering Dogwood |                            |                              |                              |                           |
| Basal area                     | 10.5 SF  |                            |                              |                              |                           |
| Number of dead trees per plot  | 2 Black Locust (6-9.9"), 2 Black Locust (1-5.9"), 7 unidentifiable (1-5.9')                  |                            |                              |                              |                           |

## Forest Structure Data Sheet

Property: NSWC White Oak Site 7

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 7-1

Plot #: 2

Date: 5/15/95

| Forest Structure Variable               | Sample point 1 | Sample point 2 | Sample point 3 | Sample point 4 | Sample point 5 | % yes |
|---|----------------|----------------|----------------|----------------|----------------|-------|
| Canopy coverage                         | 75             | 100            | 100            | 100            | 100            | 95    |
| Herbaceous ground cover                 | 25             | 50             | 0              | 75             | 5              | 31    |
| Downed woody debris                     | 25             | 0              | 0              | 0              | 50             | 15    |
| Invasive plant cover                    | 15             | 30             | 0              | 25             | 0              | 14    |
| Number of shrub species<br>(1/100 acre) | None           |                |                |                |                |       |

# Field Sampling Data Sheet

Property: NSWC White Oak Site 7

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 7-2

Plot #: 1

Date: 5/15/95

| Tree Species                   | Size Class of Trees Within the Sample Plot |                            |                              |                              |                          |
|--------------------------------|--|----------------------------|------------------------------|------------------------------|--------------------------|
|                                | Number of Trees 1-5.9" dbh                 | Number of Trees 6-9.9" dbh | Number of Trees 10-17.9" dbh | Number of Trees 18-29.9" dbh | Number of Trees >30" dbh |
| Virginia Pine                  | 85   | 4                          |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
| Number of trees per size class | 85   | 4                          |                              |                              |                          |
| List of understory species     | Highbush Blueberry                         |                            |                              |                              |                          |
| Basal area                     | 7.1 SF                                     |                            |                              |                              |                          |
| Number of dead trees per plot  | None                                       |                            |                              |                              |                          |

## Forest Structure Data Sheet

Property: NSWC White Oak Site 7

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 7-2

Plot #: 1

Date: 5/15/95

| Forest Structure Variable               | Sample point 1         | Sample point 2 | Sample point 3 | Sample point 4 | Sample point 5 | % yes |
|---|------------------------|----------------|----------------|----------------|----------------|-------|
| Canopy coverage*                        | 50                     | 50             | 90             | 70             | 0              | 52    |
| Herbaceous ground cover                 | 10                     | 5              | 0              | 5              | 0              | 4     |
| Downed woody debris                     | 0                      | 0              | 0              | 0              | 0              | 0     |
| Invasive plant cover                    | 0                      | 0              | 0              | 0              | 0              | 0     |
| Number of shrub species<br>(1/100 acre) | Highbush Blueberry - 3 |                |                |                |                |       |

\* No canopy coverage from trees over 7 inches dbh

## Field Sampling Data Sheet

Property: NSWC White Oak Site 7

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 7-3

Plot #: 1

Date: 5/15/95

| Tree Species                   | Size Class of Trees Within the Sample Plot            |                            |                              |                              |                          |
|--------------------------------|---|----------------------------|------------------------------|------------------------------|--------------------------|
|                                | Number of Trees 1-5.9" dbh                            | Number of Trees 6-9.9" dbh | Number of Trees 10-17.9" dbh | Number of Trees 18-29.9" dbh | Number of Trees >30" dbh |
| Black Cherry                   | 4   | 6                          | 2                            |                              |                          |
| Southern Red Oak               |   |                            | 1                            |                              |                          |
| Virginia Pine                  |   | 5                          |                              |                              |                          |
| Red Maple                      | 28  | 3                          |                              |                              |                          |
| Black Locust                   | 1   |                            |                              |                              |                          |
| Black Gum                      | 2   |                            |                              |                              |                          |
|                                |   |                            |                              |                              |                          |
|                                |   |                            |                              |                              |                          |
|                                |   |                            |                              |                              |                          |
| Number of trees per size class | 35  | 14                         | 3                            |                              |                          |
| List of understory species     | Black Cherry, Japanese Honeysuckle, Common Greenbrier |                            |                              |                              |                          |
| Basal area                     | 10.4 SF   |                            |                              |                              |                          |
| Number of dead trees per plot  | 2 Virginia Pine (1-5.9"), 3 unidentifiable (1-5.9")   |                            |                              |                              |                          |

## Forest Structure Data Sheet

Property: NSWC White Oak Site 7

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 7-3

Plot #: 1

Date: 5/15/95

| Forest Structure Variable               | Sample point 1 | Sample point 2 | Sample point 3 | Sample point 4 | Sample point 5 | % yes |
|---|----------------|----------------|----------------|----------------|----------------|-------|
| Canopy coverage                         | 80             | 50             | 100            | 80             | 80             | 78    |
| Herbaceous ground cover                 | 50             | 100            | 30             | 0              | 5              | 37    |
| Downed woody debris                     | 0              | 0              | 0              | 0              | 0              | 0     |
| Invasive plant cover                    | 50             | 50             | 20             | 0              | 0              | 24    |
| Number of shrub species<br>(1/100 acre) | None           |                |                |                |                |       |

## Field Sampling Data Sheet

Property: NSWC White Oak Site 7

Prepared by: Peyton Doub

Stand #: 7-3

Plot #: 2

Date: 5/15/95

| Tree Species                   | Size Class of Trees Within the Sample Plot                                  |                            |                              |                              |                          |
|--------------------------------|---|----------------------------|------------------------------|------------------------------|--------------------------|
|                                | Number of Trees 1-5.9" dbh  | Number of Trees 6-9.9" dbh | Number of Trees 10-17.9" dbh | Number of Trees 18-29.9" dbh | Number of Trees >30" dbh |
| Black Cherry                   | 7   | 3                          | 3                            |                              |                          |
| Black Locust                   |   | 1                          | 1                            |                              |                          |
| Red Maple                      |   |                            | 1                            |                              |                          |
| Persimmon                      |   |                            | 1                            |                              |                          |
| Black Gum                      | 1   |                            |                              |                              |                          |
|                                |   |                            |                              |                              |                          |
|                                |   |                            |                              |                              |                          |
|                                |   |                            |                              |                              |                          |
|                                |   |                            |                              |                              |                          |
| Number of trees per size class | 8   | 4                          | 6                            |                              |                          |
| List of understory species     | Black Cherry, Japanese Honeysuckle, Common Greenbrier                       |                            |                              |                              |                          |
| Basal area                     | 8.3 SF  |                            |                              |                              |                          |
| Number of dead trees per plot  | 2 Black Locust (1-5.9"), 7 Black Locust (6-9.9"), 2 Black Locust (10-17.9") |                            |                              |                              |                          |

## Forest Structure Data Sheet

Property: NSWC White Oak Site 7

Prepared by: Peyton Doub  
Jim MacConnell

Stand #: 7-3

Plot #: 2

Date: 5/15/95

| Forest Structure Variable               | Sample point 1 | Sample point 2 | Sample point 3 | Sample point 4 | Sample point 5 | % yes |
|---|----------------|----------------|----------------|----------------|----------------|-------|
| Canopy coverage                         | 100            | 90             | 0              | 100            | 50             | 68    |
| Herbaceous ground cover                 | 5              | 90             | 80             | 10             | 50             | 65    |
| Downed woody debris                     | 0              | 0              | 0              | 0              | 0              | 0     |
| Invasive plant cover                    | 0              | 90             | 20             | 10             | 25             | 29    |
| Number of shrub species<br>(1/100 acre) | None           |                |                |                |                |       |

**Forest Stand Delineation Field Data Sheets**

**Site 8 - Abandoned Chemical Disposal Pit**

## Field Sampling Data Sheet

Property: NSWC White Oak Site 8

Prepared by: Peyton Doub  
Bill Spicer

Stand #: 8-1

Plot #: 1

Date: 3/21/95

| Tree Species                   | Size Class of Trees Within the Sample Plot |                            |                              |                              |                          |
|--------------------------------|--|----------------------------|------------------------------|------------------------------|--------------------------|
|                                | Number of Trees 1-5.9" dbh                 | Number of Trees 6-9.9" dbh | Number of Trees 10-17.9" dbh | Number of Trees 18-29.9" dbh | Number of Trees >30" dbh |
| Tulip Poplar                   | 4  |                            | 3                            | 1                            |                          |
| Southern Red Oak               |  |                            |                              | 1                            |                          |
| White Oak                      | 1  | 1                          | 2                            |                              |                          |
| Black Gum                      | 4  |                            | 1                            |                              |                          |
| Northern Red Oak               |  | 1                          | 2                            |                              |                          |
| unknown oak                    | 1  |                            |                              |                              |                          |
| Pignut Hickory                 | 3  | 1                          |                              |                              |                          |
| Sassafras                      | 1  |                            |                              |                              |                          |
| Flowering Dogwood              | 5  |                            |                              |                              |                          |
| American Sycamore              | 1  |                            |                              |                              |                          |
| Black Oak                      | 2  |                            |                              |                              |                          |
| American Holly                 | 1  |                            |                              |                              |                          |
| American Beech                 | 1  |                            |                              |                              |                          |
| Number of trees per size class | 24   | 3                          | 8                            | 2                            |                          |
| List of understory species     | Common Greenbrier, Flowering Dogwood       |                            |                              |                              |                          |
| Basal area                     | 17.5 SF                                    |                            |                              |                              |                          |
| Number of dead trees per plot  | None                                       |                            |                              |                              |                          |

## Forest Structure Data Sheet

Property: NSWC White Oak Site 8

Prepared by: Peyton Doub  
Bill Spicer

Stand #: 8-1

Plot #: 1

Date: 3/21/95

| Forest Structure Variable               | Sample point 1  | Sample point 2 | Sample point 3 | Sample point 4 | Sample point 5 | % yes |
|---|---|----------------|----------------|----------------|----------------|-------|
| Canopy coverage                         | 70  | 60             | 80             | 60             | 80             | 70    |
| Herbaceous ground cover                 | 0   | 0              | 0              | 0              | 0              | 0     |
| Downed woody debris                     | 0   | 5              | 10             | 0              | 0              | 3     |
| Invasive plant cover                    | 0   | 0              | 0              | 0              | 0              | 0     |
| Number of shrub species<br>(1/100 acre) | American Holly - 1, unidentifiable - 1, American Beech - 1,<br>Flowering Dogwood - 3, Oak - 1 |                |                |                |                |       |

## Field Sampling Data Sheet

Property: NSWC White Oak Site 8

Prepared by: Peyton Doub  
Bill Spicer

Stand #: 8-1

Plot #: 2

Date: 3/21/95

| Tree Species                   | Size Class of Trees Within the Sample Plot     |                            |                              |                              |                          |
|--------------------------------|--|----------------------------|------------------------------|------------------------------|--------------------------|
|                                | Number of Trees 1-5.9" dbh                     | Number of Trees 6-9.9" dbh | Number of Trees 10-17.9" dbh | Number of Trees 18-29.9" dbh | Number of Trees >30" dbh |
| Tulip Poplar                   | 7  | 1                          | 5                            |                              |                          |
| Chestnut Oak                   |  | 2                          | 1                            |                              |                          |
| Northern Red Oak               |  |                            | 1                            |                              |                          |
| Flowering Dogwood              | 5  |                            |                              |                              |                          |
| Hercules Club                  | 5  |                            |                              |                              |                          |
| American Sycamore              | 3  |                            |                              |                              |                          |
| American Holly                 | 1  |                            |                              |                              |                          |
| American Beech                 | 1  |                            |                              |                              |                          |
|                                |  |                            |                              |                              |                          |
| Number of trees per size class | 21   | 3                          | 7                            |                              |                          |
| List of understory species     | Japanese Honeysuckle, Common Greenbrier, Sedge |                            |                              |                              |                          |
| Basal area                     | 9.9 SF   |                            |                              |                              |                          |
| Number of dead trees per plot  | None   |                            |                              |                              |                          |

## Forest Structure Data Sheet

Property: NSWC White Oak Site 8

Prepared by: Peyton Doub  
Bill Spicer

Stand #: 8-1

Plot #: 8-2

Date: 3/21/95

| Forest Structure Variable               | Sample point 1    | Sample point 2 | Sample point 3 | Sample point 4 | Sample point 5 | % yes |
|---|-------------------|----------------|----------------|----------------|----------------|-------|
| Canopy coverage                         | 70.               | 50             | 60             | 70             | 70             | 64    |
| Herbaceous ground cover                 | 5                 | 5              | 0              | 0              | 0              | 2     |
| Downed woody debris                     | 10                | 0              | 5              | 5              | 0              | 4     |
| Invasive plant cover                    | 5                 | 5              | 0              | 0              | 0              | 2     |
| Number of shrub species<br>(1/100 acre) | Hercules Club - 3 |                |                |                |                |       |

**APPENDIX C**

**LIST OF PLANT SPECIES OBSERVED ON THE IRP SITES**

**APPENDIX C**  
**LIST OF PLANT SPECIES OBSERVED ON THE IRP SITES**

The following tables list plant species observed on the seven IRP sites while performing the wetland and forest stand delineations. They do not represent a complete census. The field data sheets in Appendices A and B provide additional data concerning plant species present on the sites. Additional data is available in the remedial Investigation report completed for the sites in 1992.

TABLE C-1

**PLANT SPECIES OBSERVED ON SITE 2 - APPLE ORCHARD, WHITE OAK, MD  
DURING 1995 WETLAND AND FOREST STAND DELINEATION**

| Scientific Name                | Common Name            |
|--------------------------------|------------------------|
| <i>Acer rubrum</i>             | Red maple              |
| <i>Achillea millefolium</i>    | Yarrow                 |
| <i>Allium sp.</i>              | Wild onion             |
| <i>Andropogon virginicus</i>   | Broomsedge             |
| <i>Carex sp.</i>               | Sedge                  |
| <i>Carya glabra</i>            | Pignut hickory         |
| <i>Cornus florida</i>          | Flowering dogwood      |
| <i>Digitaria sanguinalis</i>   | Crabgrass              |
| <i>Diospyros virginiana</i>    | Common persimmon       |
| <i>Erigeron annuus</i>         | Daisy fleabane         |
| <i>Fagus grandifolia</i>       | American beech         |
| <i>Festuca arundinacea</i>     | Fescue                 |
| <i>Fraxinus pennsylvanica</i>  | Green ash              |
| <i>Galium sp.</i>              | Bedstraw               |
| <i>Gymnocarpium dryopteris</i> | Oak fern               |
| <i>Houstonia caerulea</i>      | Bluet                  |
| <i>Ilex opaca</i>              | American holly         |
| <i>Leiophyllum buxifolium</i>  | Sandmyrtle             |
| <i>Lindera benzoin</i>         | Spicebush              |
| <i>Liriodendron tulipifera</i> | Tulip poplar           |
| <i>Lonicera japonica</i>       | Japanese honeysuckle   |
| <i>Lycium chinense</i>         | Chinese matrimony vine |
| <i>Medeola virginiana</i>      | Indian cucumber-root   |
| <i>Medicago lupulina</i>       | Black medick           |
| <i>Morus rubra</i>             | Red mulberry           |

TABLE C-1

PLANT SPECIES OBSERVED ON SITE 2 - APPLE ORCHARD, WHITE OAK, MD  
 DURING 1995 WETLAND AND FOREST STAND DELINEATION  
 PAGE 2 OF 3

| Scientific Name                    | Common Name            |
|------------------------------------|------------------------|
| <i>Nyssa sylvatica</i>             | Black gum              |
| <i>Parthenocissus quinquefolia</i> | Virginia creeper       |
| <i>Paulownia tomentosa</i>         | Royal paulownia        |
| <i>Polystichum acrostichoides</i>  | Christmas fern         |
| <i>Populus deltoides</i>           | Eastern cottonwood     |
| <i>Potentilla canadensis</i>       | Dwarf cinquefoil       |
| <i>Prunus serotina</i>             | Black cherry           |
| <i>Prunus avium</i>                | Sweet cherry           |
| <i>Quercus velutina</i>            | Black oak              |
| <i>Quercus falcata</i>             | Southern red oak       |
| <i>Quercus alba</i>                | White oak              |
| <i>Quercus rubra</i>               | Northern red oak       |
| <i>Rosa multiflora</i>             | Multiflora rose        |
| <i>Rubus allegheniensis</i>        | Blackberry             |
| <i>Rubus phoenicolasius</i>        | Wine raspberry         |
| <i>Salix nigra</i>                 | Black willow           |
| <i>Sassafras albidum</i>           | Sassafras              |
| <i>Smilax rotundifolia</i>         | Common greenbrier      |
| <i>Solanum dulcamara</i>           | Bittersweet nightshade |
| <i>Sphagnum sp.</i>                | Sphagnum moss          |
| <i>Streptopus amplexifolius</i>    | Twisted stalk          |
| <i>Symphoricarpos orbiculatus</i>  | Coralberry             |
| <i>Thelypteris palustris</i>       | Marsh fern             |
| <i>Toxicodendron radicans</i>      | Poison ivy             |

**TABLE C-1**

**PLANT SPECIES OBSERVED ON SITE 2 - APPLE ORCHARD, WHITE OAK, MD  
DURING 1995 WETLAND AND FOREST STAND DELINEATION  
PAGE 3 OF 3**

| Scientific Name             | Common Name               |
|-----------------------------|---------------------------|
| <i>Vaccinium corymbosum</i> | Common highbush blueberry |
| <i>Viburnum dentatum</i>    | Southern arrowwood        |
| <i>Vinca minor</i>          | Periwinkle                |
| <i>Viola sp.</i>            | Violet species            |
| <i>Vitis sp.</i>            | Grape                     |

TABLE C-2

**PLANT SPECIES OBSERVED ON SITE 3 - PISTOL RANGE LANDFILL, WHITE OAK, MD  
DURING 1995 WETLAND AND FOREST STAND DELINEATION**

| Scientific Name                | Common Name            |
|--------------------------------|------------------------|
| <i>Acer negundo</i>            | Boxelder               |
| <i>Acer rubrum</i>             | Red maple              |
| <i>Ailanthus altissima</i>     | Ailanthus              |
| <i>Apocynum cannabinum</i>     | Indian hemp            |
| <i>Aralia spinosa</i>          | Hercules club          |
| <i>Barbarea vulgaris</i>       | Winter cress           |
| <i>Betula nigra</i>            | River birch            |
| <i>Carex sp.</i>               | Sedge                  |
| <i>Carpinus caroliniana</i>    | Ironwood               |
| <i>Carya tomentosa</i>         | Mockernut hickory      |
| <i>Carya glabra</i>            | Pignut hickory         |
| <i>Castanea dentata</i>        | American chestnut      |
| <i>Commelina virginica</i>     | Common dayflower       |
| <i>Cornus florida</i>          | Flowering dogwood      |
| <i>Digitaria sanguinalis</i>   | Crabgrass              |
| <i>Eupatorium perfoliatum</i>  | Boneset                |
| <i>Fagus grandifolia</i>       | American beech         |
| <i>Festuca arundinacea</i>     | Fescue                 |
| <i>Fraxinus pennsylvanica</i>  | Green ash              |
| <i>Gymnocarpium dryopteris</i> | Oak fern               |
| <i>Ilex opaca</i>              | American holly         |
| <i>Kalmia latifolia</i>        | Mountain laurel        |
| <i>Liriodendron tulipifera</i> | Tulip poplar           |
| <i>Lonicera japonica</i>       | Japanese honeysuckle   |
| <i>Lycium chinense</i>         | Chinese matrimony vine |

TABLE C-2

PLANT SPECIES OBSERVED ON SITE 3 - PISTOL RANGE LANDFILL, WHITE OAK, MD  
 DURING 1995 WETLAND AND FOREST STAND DELINEATION  
 PAGE 2 OF 3

| Scientific Name                    | Common Name          |
|------------------------------------|----------------------|
| <i>Medeola virginiana</i>          | Indian cucumber-root |
| <i>Medicago lupulina</i>           | Black medick         |
| <i>Nyssa sylvatica</i>             | Black gum            |
| <i>Onoclea sensibilis</i>          | Sensitive fern       |
| <i>Osmunda cinnamomea</i>          | Cinnamon fern        |
| <i>Parthenocissus quinquefolia</i> | Virginia creeper     |
| <i>Paulownia tomentosa</i>         | Royal paulownia      |
| <i>Pinus virginiana</i>            | Virginia pine        |
| <i>Platanus occidentalis</i>       | American sycamore    |
| <i>Polystichum acrostichoides</i>  | Christmas fern       |
| <i>Populus deltoides</i>           | Eastern cottonwood   |
| <i>Potentilla canadensis</i>       | Dwarf cinquefoil     |
| <i>Prunus avium</i>                | Sweet cherry         |
| <i>Prunus serotina</i>             | Black cherry         |
| <i>Pteridium aquilinum</i>         | Bracken fern         |
| <i>Quercus velutina</i>            | Black oak            |
| <i>Quercus coccinea</i>            | Scarlet oak          |
| <i>Quercus prinus</i>              | Chestnut oak         |
| <i>Quercus rubra</i>               | Northern red oak     |
| <i>Quercus alba</i>                | White oak            |
| <i>Rhus glabra</i>                 | Smooth sumac         |
| <i>Robinia pseudoacacia</i>        | Black locust         |
| <i>Rubus allegheniensis</i>        | Blackberry           |
| <i>Rubus phoenicolasius</i>        | Wine raspberry       |

**TABLE C-2**

**PLANT SPECIES OBSERVED ON SITE 3 - PISTOL RANGE LANDFILL, WHITE OAK, MD  
DURING 1995 WETLAND AND FOREST STAND DELINEATION  
PAGE 3 OF 3**

| Scientific Name                   | Common Name               |
|-----------------------------------|---------------------------|
| <i>Rumex crispus</i>              | Curled dock               |
| <i>Sanguinaria canadensis</i>     | Bloodroot                 |
| <i>Sassafras albidum</i>          | Sassafras                 |
| <i>Smilax rotundifolia</i>        | Common greenbrier         |
| <i>Streptopus amplexifolius</i>   | Twisted stalk             |
| <i>Thelypteris noveboracensis</i> | New York fern             |
| <i>Toxicodendron radicans</i>     | Poison ivy                |
| <i>Ulmus americana</i>            | American elm              |
| <i>Vaccinium corymbosum</i>       | Common highbush blueberry |
| <i>Viburnum dentatum</i>          | Southern arrowwood        |
| <i>Viola sp.</i>                  | Violet species            |

TABLE C-3

PLANT SPECIES OBSERVED ON SITE 4 - CHEMICAL BURIAL SITE, WHITE OAK, MD  
DURING 1995 WETLAND AND FOREST STAND DELINEATION

| Scientific Name                | Common Name       |
|--------------------------------|-------------------|
| <i>Acer rubrum</i>             | Red maple         |
| <i>Carya sp.</i>               | Hickory species   |
| <i>Cornus florida</i>          | Flowering dogwood |
| <i>Kalmia latifolia</i>        | Mountain laurel   |
| <i>Liriodendron tulipifera</i> | Tulip poplar      |
| <i>Nyssa sylvatica</i>         | Black gum         |
| <i>Panicum virgatum</i>        | Switchgrass       |
| <i>Pinus rigida</i>            | Pitch pine        |
| <i>Pinus virginiana</i>        | Virginia pine     |
| <i>Populus alba</i>            | White poplar      |
| <i>Quercus falcata</i>         | Southern red oak  |
| <i>Quercus velutina</i>        | Black oak         |
| <i>Quercus rubra</i>           | Northern red oak  |
| <i>Quercus alba</i>            | White oak         |
| <i>Rubus allegheniensis</i>    | Blackberry        |
| <i>Sassafras albidum</i>       | Sassafras         |

TABLE C-4

**PLANT SPECIES OBSERVED ON SITE 7 - ORDNANCE BURN AREA, WHITE OAK, MD  
DURING 1995 WETLAND AND FOREST STAND DELINEATION**

| Scientific Name                    | Common Name          |
|------------------------------------|----------------------|
| <i>Acer rubrum</i>                 | Red maple            |
| <i>Carya tomentosa</i>             | Mockernut hickory    |
| <i>Cornus florida</i>              | Flowering dogwood    |
| <i>Diospyros virginiana</i>        | Common persimmon     |
| <i>Galium sp.</i>                  | Bedstraw             |
| <i>Gaultheria procumbens</i>       | Wintergreen          |
| <i>Ilex opaca</i>                  | American holly       |
| <i>Liriodendron tulipifera</i>     | Tulip poplar         |
| <i>Lonicera japonica</i>           | Japanese honeysuckle |
| <i>Nyssa sylvatica</i>             | Black gum            |
| <i>Onoclea sensibilis</i>          | Sensitive fern       |
| <i>Parthenocissus quinquefolia</i> | Virginia creeper     |
| <i>Pinus virginiana</i>            | Virginia pine        |
| <i>Prunus avium</i>                | Sweet cherry         |
| <i>Prunus serotina</i>             | Black cherry         |
| <i>Quercus falcata</i>             | Southern red oak     |
| <i>Quercus phellos</i>             | Willow oak           |
| <i>Quercus velutina</i>            | Black oak            |
| <i>Quercus rubra</i>               | Northern red oak     |
| <i>Robinia pseudoacacia</i>        | Black locust         |
| <i>Rubus allegheniensis</i>        | Blackberry           |
| <i>Sassafras albidum</i>           | Sassafras            |
| <i>Smilax rotundifolia</i>         | Common greenbrier    |
| <i>Sphagnum sp.</i>                | Sphagnum moss        |

**TABLE C-4**

**PLANT SPECIES OBSERVED ON SITE 7 - ORDNANCE BURN AREA, WHITE OAK, MD  
DURING 1995 WETLAND AND FOREST STAND DELINEATION  
PAGE 2 OF 2**

| Scientific Name                 | Common Name               |
|---------------------------------|---------------------------|
| <i>Streptopus amplexifolius</i> | Twisted stalk             |
| <i>Toxicodendron radicans</i>   | Poison ivy                |
| <i>Ulmus americana</i>          | American elm              |
| <i>Vaccinium corymbosum</i>     | Common highbush blueberry |

TABLE C-5

PLANT SPECIES OBSERVED ON SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT, WHITE OAK, MD  
DURING 1995 WETLAND AND FOREST STAND DELINEATION

| Scientific Name                | Common Name          |
|--------------------------------|----------------------|
| <i>Aralia spinosa</i>          | Hercules club        |
| <i>Carex sp.</i>               | Sedge                |
| <i>Carya sp.</i>               | Hickory species      |
| <i>Castanea dentata</i>        | American chestnut    |
| <i>Cornus florida</i>          | Flowering dogwood    |
| <i>Cynodon dactylon</i>        | Burmuda grass        |
| <i>Fagus grandifolia</i>       | American beech       |
| <i>Glechoma hederacea</i>      | Ground ivy           |
| <i>Liriodendron tulipifera</i> | Tulip poplar         |
| <i>Lonicera japonica</i>       | Japanese honeysuckle |
| <i>Medicago lupulina</i>       | Black medick         |
| <i>Nyssa sylvatica</i>         | Black gum            |
| <i>Platanus occidentalis</i>   | American sycamore    |
| <i>Quercus rubra</i>           | Northern red oak     |
| <i>Quercus prinus</i>          | Chestnut oak         |
| <i>Quercus falcata</i>         | Southern red oak     |
| <i>Quercus phellos</i>         | Willow oak           |
| <i>Smilax rotundifolia</i>     | Common greenbrier    |

TABLE C-6

PLANT SPECIES OBSERVED ON SITE 9 - INDUSTRIAL WASTEWATER DISPOSAL  
AREA 300 DURING 1995 WETLAND AND FOREST STAND DELINEATION

| Scientific Name                | Common Name       |
|--------------------------------|-------------------|
| <i>Acer rubrum</i>             | Red maple         |
| <i>Carex</i> sp.               | Sedge             |
| <i>Carya glabra</i>            | Pignut hickory    |
| <i>Cornus florida</i>          | Flowering dogwood |
| <i>Fraxinus pennsylvanica</i>  | Green ash         |
| <i>Ilex opaca</i>              | American holly    |
| <i>Kalmia latifolia</i>        | Mountain laurel   |
| <i>Lindea benzoin</i>          | Spicebush         |
| <i>Liquidambar styraciflua</i> | Sweet gum         |
| <i>Nyssa sylvatica</i>         | Black gum         |
| <i>Onoclea sensibilis</i>      | Sensitive fern    |
| <i>Picea abies</i>             | Norway spruce     |
| <i>Pinus virginiana</i>        | Virginia pine     |
| <i>Plantanus occidentalis</i>  | American sycamore |
| <i>Prunus serotina</i>         | Black cherry      |
| <i>Quercus alba</i>            | White oak         |
| <i>Quercus falcata</i>         | Southern red oak  |
| <i>Quercus phellos</i>         | Willow oak        |
| <i>Quercus coccinea</i>        | Scarlet oak       |
| <i>Quercus rubra</i>           | Northern red oak  |
| <i>Rubus allegheniensis</i>    | Blackberry        |
| <i>Smilax rotundifolia</i>     | Common greenbrier |

TABLE C-7

PLANT SPECIES OBSERVED ON SITE 11 - INDUSTRIAL WASTEWATER DISPOSAL  
AREA 100 DURING 1995 WETLAND AND FOREST STAND DELINEATION

| Scientific Name                | Common Name        |
|--------------------------------|--------------------|
| <i>Liquidambar styraciflua</i> | Sweet gum          |
| <i>Picea abies</i>             | Norway spruce      |
| <i>Pinus virginiana</i>        | Virginia pine      |
| <i>Plantanus occidentalis</i>  | American sycamore  |
| <i>Populus deltoides</i>       | Eastern cottonwood |
| <i>Prunus serotina</i>         | Black cherry       |
| <i>Quercus phellos</i>         | Willow oak         |
| <i>Quercus palustris</i>       | Pin oak            |
| <i>Quercus rubra</i>           | Northern red oak   |
| <i>Tilia americana</i>         | American linden    |
| <i>Ulmus americana</i>         | American elm       |

**APPENDIX D**

**LIST OF WILDLIFE SPECIES OBSERVED ON THE IRP SITES**

**APPENDIX D**  
**LIST OF WILDLIFE SPECIES OBSERVED ON THE IRP SITES**

The following tables list wildlife species observed on the seven IRP sites while performing the wetland and forest stand delineation. They do not represent a complete census of all wildlife potentially occurring on the sites. Additional wildlife data is available in the Remedial Investigation report completed for the IRP sites in 1992.

TABLE D-1

**WILDLIFE SPECIES OBSERVED ON SITE 2 - APPLE ORCHARD  
DURING 1995 WETLAND AND FOREST STAND DELINEATION  
NAVAL SURFACE WARFARE CENTER, DAHLGREN DIVISION, WHITE OAK DETACHMENT**

| Scientific Name                 | Common Name              |
|---------------------------------|--------------------------|
| <b>Mammals</b>                  |                          |
| <i>Marmota monax</i>            | Woodchuck                |
| <i>Odocoileus virginianus</i>   | White-tailed deer        |
| <i>Procyon lotor</i>            | Raccoon                  |
| <i>Sylvilagus floridanus</i>    | Eastern cottontail       |
| <b>Birds</b>                    |                          |
| <i>Bombycilla cedrorum</i>      | Cedar waxwing            |
| <i>Cardinalis cardinalis</i>    | Northern cardinal        |
| <i>Carpodacus mexicanus</i>     | House finch              |
| <i>Corvus brachyrhynchos</i>    | Common crow              |
| <i>Dendroica striata</i>        | Blackpoll warbler        |
| <i>Dryocopus pileatus</i>       | Pileated woodpecker      |
| <i>Geothlypis trichas</i>       | Common yellowthroat      |
| <i>Melanerpes carolinus</i>     | Red-bellied woodpecker   |
| <i>Melospiza melodia</i>        | Song sparrow             |
| <i>Myiarchus crinitus</i>       | Great crested flycatcher |
| <i>Parus carolinensis</i>       | Carolina chickadee       |
| <i>Parus bicolor</i>            | Tufted titmouse          |
| <i>Passerina cyanea</i>         | Indigo bunting           |
| <i>Picoides pubescens</i>       | Downy woodpecker         |
| <i>Pipilo erythrophthalmus</i>  | Rufous-sided towhee      |
| <i>Piranga olivacea</i>         | Scarlet tanager          |
| <i>Quiscalus quiscula</i>       | Common grackle           |
| <i>Seiurus aurocapillus</i>     | Ovenbird                 |
| <i>Sturnus vulgaris</i>         | European starling        |
| <i>Thryothorus ludovicianus</i> | Carolina wren            |
| <i>Vireo olivaceus</i>          | Red-eyed vireo           |
| <b>Amphibians</b>               |                          |
| <i>Bufo americanus</i>          | American toad            |

TABLE D-2

**WILDLIFE SPECIES OBSERVED ON SITE 3 - PISTOL RANGE LANDFILL  
DURING 1995 WETLAND AND FOREST STAND DELINEATION  
NAVAL SURFACE WARFARE CENTER, DAHLGREN DIVISION, WHITE OAK DETACHMENT**

| Scientific Name                  | Common Name          |
|----------------------------------|----------------------|
| <b>Mammals</b>                   |                      |
| <i>Marmota monax</i>             | Woodchuck            |
| <i>Odocoileus virginianus</i>    | White-tailed deer    |
| <b>Birds</b>                     |                      |
| <i>Buteo jamaicensis</i>         | Red-tailed hawk      |
| <i>Carpodacus mexicanus</i>      | House finch          |
| <i>Chaetura pelagica</i>         | Chimney swift        |
| <i>Coccyzus erythrophthalmus</i> | Black-billed cuckoo  |
| <i>Corvus brachyrhynchos</i>     | Common crow          |
| <i>Dumetella carolinensis</i>    | Gray catbird         |
| <i>Hylocichla mustelina</i>      | Wood thrush          |
| <i>Melospiza melodia</i>         | Song sparrow         |
| <i>Mimus polyglottos</i>         | Northern mockingbird |
| <i>Parus bicolor</i>             | Tufted titmouse      |
| <i>Passer domesticus</i>         | House sparrow        |
| <i>Pipilo erythrophthalmus</i>   | Rufous-sided towhee  |
| <i>Piranga olivacea</i>          | Scarlet tanager      |
| <i>Setophaga ruticilla</i>       | American redstart    |
| <i>Sialia sialis</i>             | Eastern bluebird     |
| <i>Spizella pusilla</i>          | Field sparrow        |
| <i>Sturnus vulgaris</i>          | European starling    |
| <i>Turdus migratorius</i>        | American robin       |
| <i>Vireo griseus</i>             | White-eyed vireo     |
| <i>Vireo olivaceus</i>           | Red-eyed vireo       |
| <i>Zenaida macroura</i>          | Mourning dove        |
| <b>Reptiles</b>                  |                      |
| <i>Terrapene carolina</i>        | Eastern box turtle   |

TABLE D-3

**WILDLIFE SPECIES OBSERVED ON SITE 4 - CHEMICAL BURIAL SITE  
DURING 1995 WETLAND AND FOREST STAND DELINEATION  
NAVAL SURFACE WARFARE CENTER, DAHLGREN DIVISION, WHITE OAK DETACHMENT**

| Scientific Name                | Common Name           |
|--------------------------------|-----------------------|
| <b>Mammals</b>                 |                       |
| <i>Marmota monax</i>           | Woodchuck             |
| <i>Sciurus carolinensis</i>    | Eastern gray squirrel |
| <b>Birds</b>                   |                       |
| <i>Bombycilla cedrorum</i>     | Cedar waxwing         |
| <i>Cardinalis cardinalis</i>   | Northern cardinal     |
| <i>Carpodacus mexicanus</i>    | House finch           |
| <i>Colaptes auratus</i>        | Northern flicker      |
| <i>Contopus virens</i>         | Eastern wood-pewee    |
| <i>Dendroica striata</i>       | Blackpoll warbler     |
| <i>Dumetella carolinensis</i>  | Gray catbird          |
| <i>Geothlypis trichas</i>      | Common yellowthroat   |
| <i>Parus bicolor</i>           | Tufted titmouse       |
| <i>Parus carolinensis</i>      | Carolina chickadee    |
| <i>Passerina cyanea</i>        | Indigo bunting        |
| <i>Pipilo erythrophthalmus</i> | Rufous-sided towhee   |
| <i>Piranga olivacea</i>        | Scarlet tanager       |
| <i>Polioptila caerulea</i>     | Blue-gray gnatcatcher |
| <i>Spizella pusilla</i>        | Field sparrow         |
| <i>Sturnus vulgaris</i>        | European starling     |
| <i>Turdus migratorius</i>      | American robin        |
| <i>Tyrannus tyrannus</i>       | Eastern kingbird      |
| <b>Amphibians</b>              |                       |
| <i>Hyla chrysoscelis</i>       | Gray treefrog         |

TABLE D-4

WILDLIFE SPECIES OBSERVED ON SITE 7 - ORDNANCE BURN AREA  
 DURING 1995 WETLAND AND FOREST STAND DELINEATION  
 NAVAL SURFACE WARFARE CENTER, DAHLGREN DIVISION, WHITE OAK DETACHMENT

| Scientific Name                | Common Name           |
|--------------------------------|-----------------------|
| <i>Mammals</i>                 |                       |
| <i>Sylvilagus floridanus</i>   | Eastern cottontail    |
| <i>Birds</i>                   |                       |
| <i>Catharus ustulatus</i>      | Swainson's thrush     |
| <i>Corvus brachyrhynchos</i>   | Common crow           |
| <i>Cyanocitta cristata</i>     | Blue jay              |
| <i>Dendroica coronata</i>      | Yellow-rumped warbler |
| <i>Icterus spurius</i>         | Orchard oriole        |
| <i>Parus bicolor</i>           | Tufted titmouse       |
| <i>Pipilo erythrophthalmus</i> | Rufous-sided towhee   |
| <i>Piranga olivacea</i>        | Scarlet tanager       |
| <i>Polioptila caerulea</i>     | Blue-gray gnatcatcher |
| <i>Setophaga ruticilla</i>     | American redstart     |
| <i>Sialia sialis</i>           | Eastern bluebird      |
| <i>Spizella passerina</i>      | Chipping sparrow      |
| <i>Tyrannus tyrannus</i>       | Eastern kingbird      |
| <i>Zenaida macroura</i>        | Mourning dove         |

TABLE D-5

**WILDLIFE SPECIES OBSERVED ON SITE 8 - ABANDONED CHEMICAL DISPOSAL PIT  
DURING 1995 WETLAND AND FOREST STAND DELINEATION  
NAVAL SURFACE WARFARE CENTER, DAHLGREN DIVISION, WHITE OAK DETACHMENT**

| Scientific Name               | Common Name            |
|-------------------------------|------------------------|
| <b><i>Mammals</i></b>         |                        |
| <i>Odocoileus virginianus</i> | White-tailed deer      |
| <b><i>Birds</i></b>           |                        |
| <i>Bombycilla cedrorum</i>    | Cedar waxwing          |
| <i>Contopus virens</i>        | Eastern wood-pewee     |
| <i>Corvus brachyrhynchos</i>  | Common crow            |
| <i>Dendroica striata</i>      | Blackpoll warbler      |
| <i>Hylocichla mustelina</i>   | Wood thrush            |
| <i>Melanerpes carolinus</i>   | Red-bellied woodpecker |
| <i>Parus bicolor</i>          | Tufted titmouse        |
| <i>Parus carolinensis</i>     | Carolina chickadee     |
| <i>Piranga olivacea</i>       | Scarlet tanager        |
| <i>Polioptila caerulea</i>    | Blue-gray gnatcatcher  |
| <i>Quiscalus quiscula</i>     | Common grackle         |
| <i>Sturnus vulgaris</i>       | European starling      |
| <i>Turdus migratorius</i>     | American robin         |
| <i>Vireo olivaceus</i>        | Red-eyed vireo         |

TABLE D-6

WILDLIFE SPECIES OBSERVED ON SITE 9 - INDUSTRIAL WASTEWATER DISPOSAL AREA 300  
 DURING 1995 WETLAND AND FOREST STAND DELINEATION  
 NAVAL SURFACE WARFARE CENTER, DAHLGREN DIVISION, WHITE OAK DETACHMENT

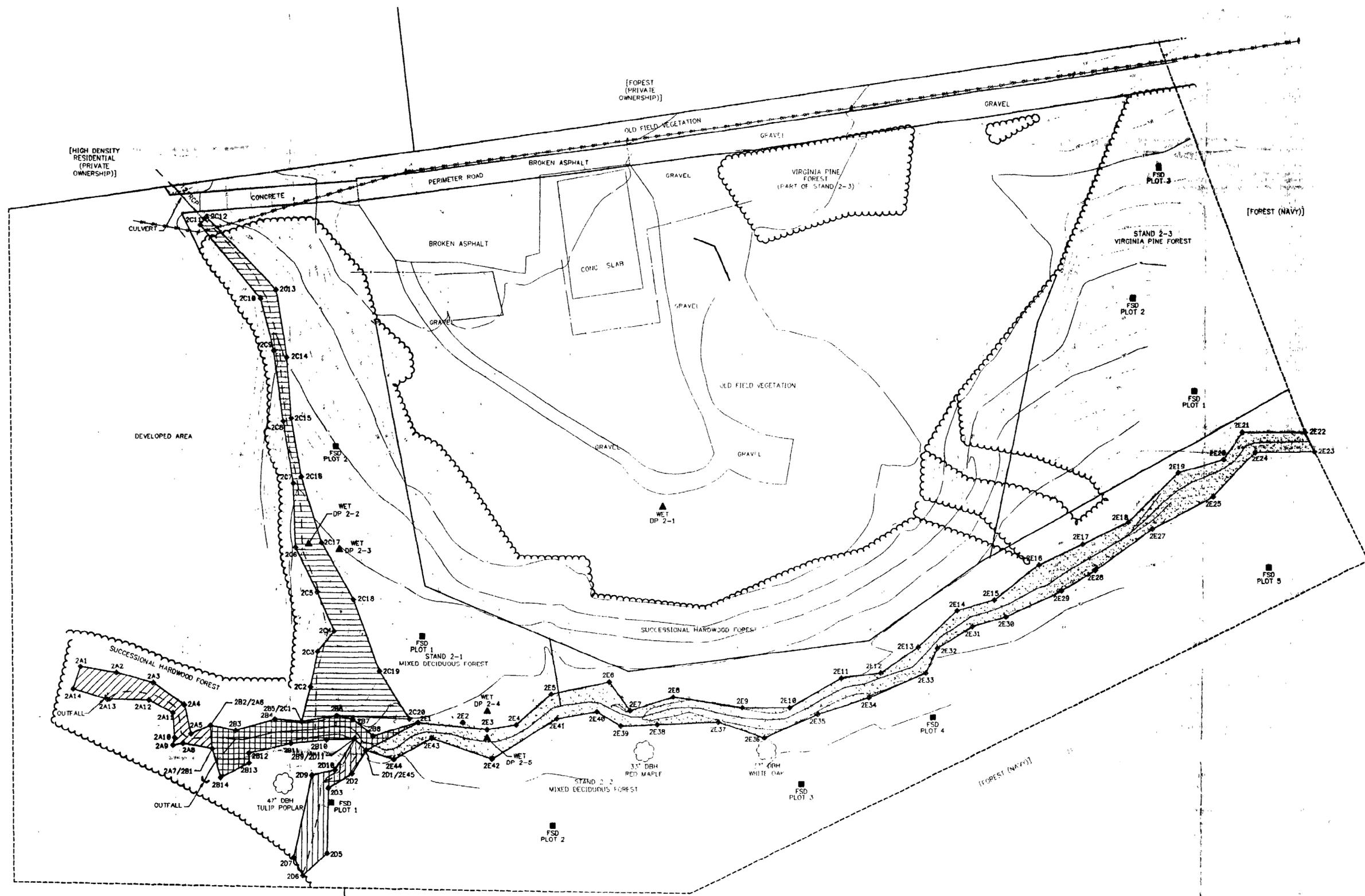
| Scientific Name                  | Common Name             |
|----------------------------------|-------------------------|
| <i>Mammals</i>                   |                         |
| <i>Marmota monax</i>             | Woodchuck               |
| <i>Sciurus carolinensis</i>      | Eastern gray squirrel   |
| <i>Sylvilagus floridanus</i>     | Eastern cottontail      |
| <i>Birds</i>                     |                         |
| <i>Cardinalis cardinalis</i>     | Northern cardinal       |
| <i>Carduelis tristis</i>         | American goldfinch      |
| <i>Carpodacus mexicanus</i>      | House finch             |
| <i>Cathartes aura</i>            | Turkey vulture          |
| <i>Chaetura pelagica</i>         | Chimney swift           |
| <i>Coccyzus erythrophthalmus</i> | Black-billed cuckoo     |
| <i>Colaptes auratus</i>          | Northern flicker        |
| <i>Contopus virens</i>           | Eastern wood-pewee      |
| <i>Corvus brachyrhynchos</i>     | Common crow             |
| <i>Dendroica striata</i>         | Blackpoll warbler       |
| <i>Hirundo rustica</i>           | Barn swallow            |
| <i>Melanerpes carolinus</i>      | Red-bellied woodpecker  |
| <i>Mimus polyglottos</i>         | Northern mockingbird    |
| <i>Passer domesticus</i>         | House sparrow           |
| <i>Polioptila caerulea</i>       | Blue-gray gnatcatcher   |
| <i>Sitta carolinensis</i>        | White-breasted nuthatch |
| <i>Spizella passerina</i>        | Chipping sparrow        |
| <i>Sturnus vulgaris</i>          | European starling       |
| <i>Turdus migratorius</i>        | American robin          |
| <i>Tyrannus tyrannus</i>         | Eastern kingbird        |
| <i>Vireo olivaceus</i>           | Red-eyed vireo          |
| <i>Zenaida macroura</i>          | Mourning dove           |

**TABLE D-7**  
**WILDLIFE SPECIES OBSERVED ON SITE 11 -**  
**INDUSTRIAL WASTEWATER DISPOSAL AREA 100**  
**DURING 1995 WETLAND AND FOREST STAND DELINEATION**  
**NAVAL SURFACE WARFARE CENTER, DAHLGREN DIVISION, WHITE OAK DETACHMENT**

| Scientific Name               | Common Name              |
|-------------------------------|--------------------------|
| <b>Mammals</b>                |                          |
| <i>Marmota monax</i>          | Woodchuck                |
| <i>Sciurus carolinensis</i>   | Eastern gray squirrel    |
| <b>Birds</b>                  |                          |
| <i>Branta canadensis</i>      | Canada goose             |
| <i>Cardinalis cardinalis</i>  | Northern cardinal        |
| <i>Carpodacus mexicanus</i>   | House finch              |
| <i>Charadrius vociferus</i>   | Killdeer                 |
| <i>Corvus brachyrhynchos</i>  | Common crow              |
| <i>Cyanocitta cristata</i>    | Blue jay                 |
| <i>Dendroica striata</i>      | Blackpoll warbler        |
| <i>Dumetella carolinensis</i> | Gray catbird             |
| <i>Hirundo rustica</i>        | Barn swallow             |
| <i>Icterus galbula</i>        | Northern oriole          |
| <i>Icterus spurius</i>        | Orchard oriole           |
| <i>Melanerpes carolinus</i>   | Red-bellied woodpecker   |
| <i>Melospiza melodia</i>      | Song sparrow             |
| <i>Mimus polyglottos</i>      | Northern mockingbird     |
| <i>Myiarchus crinitus</i>     | Great crested flycatcher |
| <i>Parus bicolor</i>          | Tufted titmouse          |
| <i>Sialia sialis</i>          | Eastern bluebird         |
| <i>Spizella passerina</i>     | Chipping sparrow         |
| <i>Sturnus vulgaris</i>       | European starling        |
| <i>Turdus migratorius</i>     | American robin           |
| <i>Tyrannus tyrannus</i>      | Eastern kingbird         |
| <b>Amphibians</b>             |                          |
| <i>unidentified species</i>   | Frog sp.                 |

**APPENDIX E**

**WETLAND AND FOREST STAND DELINEATION FIGURES AND DRAWINGS**



- LEGEND**
- WETLAND 2A (PEM/R4)
  - WETLAND 2B (R3SB)
  - WETLAND 2C (R4SB, PFO FRINGE SOUTH OF 2C6 AND 2C17)
  - WETLAND 2D (R4SB)
  - WETLAND 2E (R3SB)
  - PERENNIAL STREAM
  - INTERMITTENT STREAM
  - FOREST STAND PLOT
  - WETLAND PLOT

|  |  |  |  |
|--|--|--|--|
| DEPARTMENT OF THE NAVY<br>WASHINGTON, NAVY YARD  |  | NAVAL FACILITIES ENGINEERING COMMAND<br>WASHINGTON, DC |  |
| ENGINEERING FIELD ACTIVITY, CHESAPEAKE   |  | PREP BY DATE APPRVD                                    |  |
| WETLAND/FOREST STAND DELINEATION MAP - SITE 2<br>NSWC WHITE OAK<br>SILVER SPRING, MARYLAND |  | REV. DESCRIPTION                                       |  |
| SEAL AREA  |  | HORIZONTAL FOR COMMANDER, NAVFAC                       |  |
| SAT TO   |  | DATE   |  |
| CODE ID NO. 80091  |  | SCALE AS SHOWN   |  |
| SPEC NO. 84 - NA   |  | CONSTN CONTR NO. NA                                    |  |
| NAVFAC DRAWING NO. NA  |  | SHEET 1 OF 1   |  |
| SIZE: DIS. SH. NO.   |  | DATE   |  |

00014 A B B X



**LEGEND**

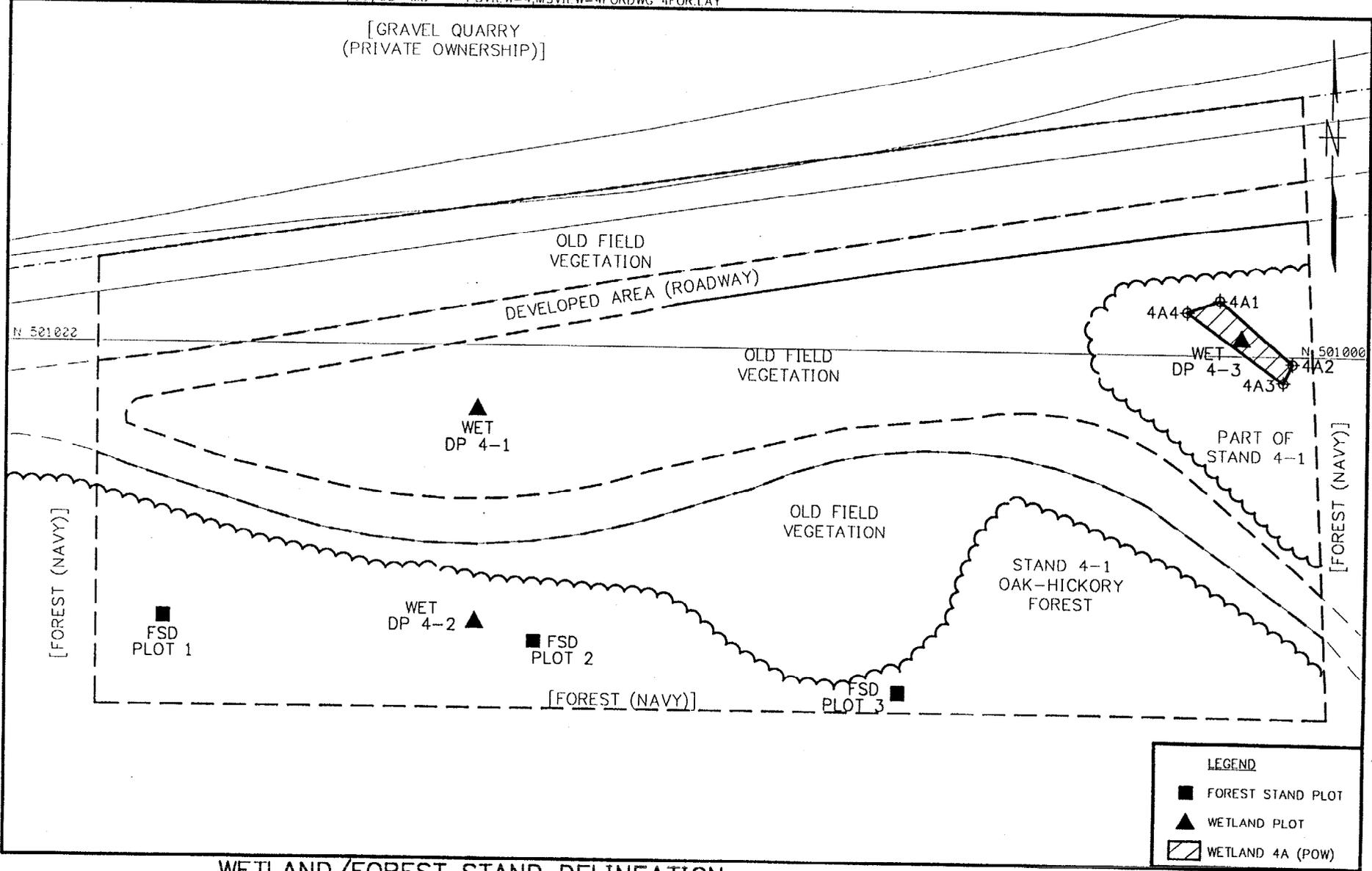
- ▨ WETLAND 9-A (R45B)
- LEACHING WELL/BORING LOCATION

SCALE IN FEET

0 50 100

|  |   |   |  |
|--|---|---|--|
| DEPARTMENT OF THE NAVY<br>ENGINEERING FIELD ACTIVITY, CHESAPEAKE<br>WASHINGTON NAVY YARD<br>WASHINGTON, DC | NAVY FACILITIES ENGINEERING COMMAND<br>WASHINGTON, DC | WETLAND DELINEATION - SITE 9<br>NSWC WHITE OAK<br>SILVER SPRING, MARYLAND   | PREP BY DATE APPROV<br>_____<br>_____  |
| SCALE AREA<br>_____  | SAT TO DATE<br>_____                                  | CODE I.D. NO. 80091<br>SCALE AS SHOWN<br>SPEC. NO. 84 - NA<br>CONSTR. CONTR. NO. NA<br>NAVFAC DRAWING NO. NA<br>SHEET 1 OF 1<br>SIZE (DIS. SH. NO.) | SUBMITTED BY: _____<br>DESIGNED BY: _____<br>DRAWN BY: _____<br>CHECKED BY: _____<br>IN CHARGE: _____<br>DATE: _____ |

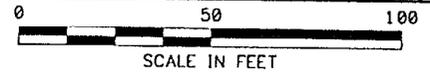


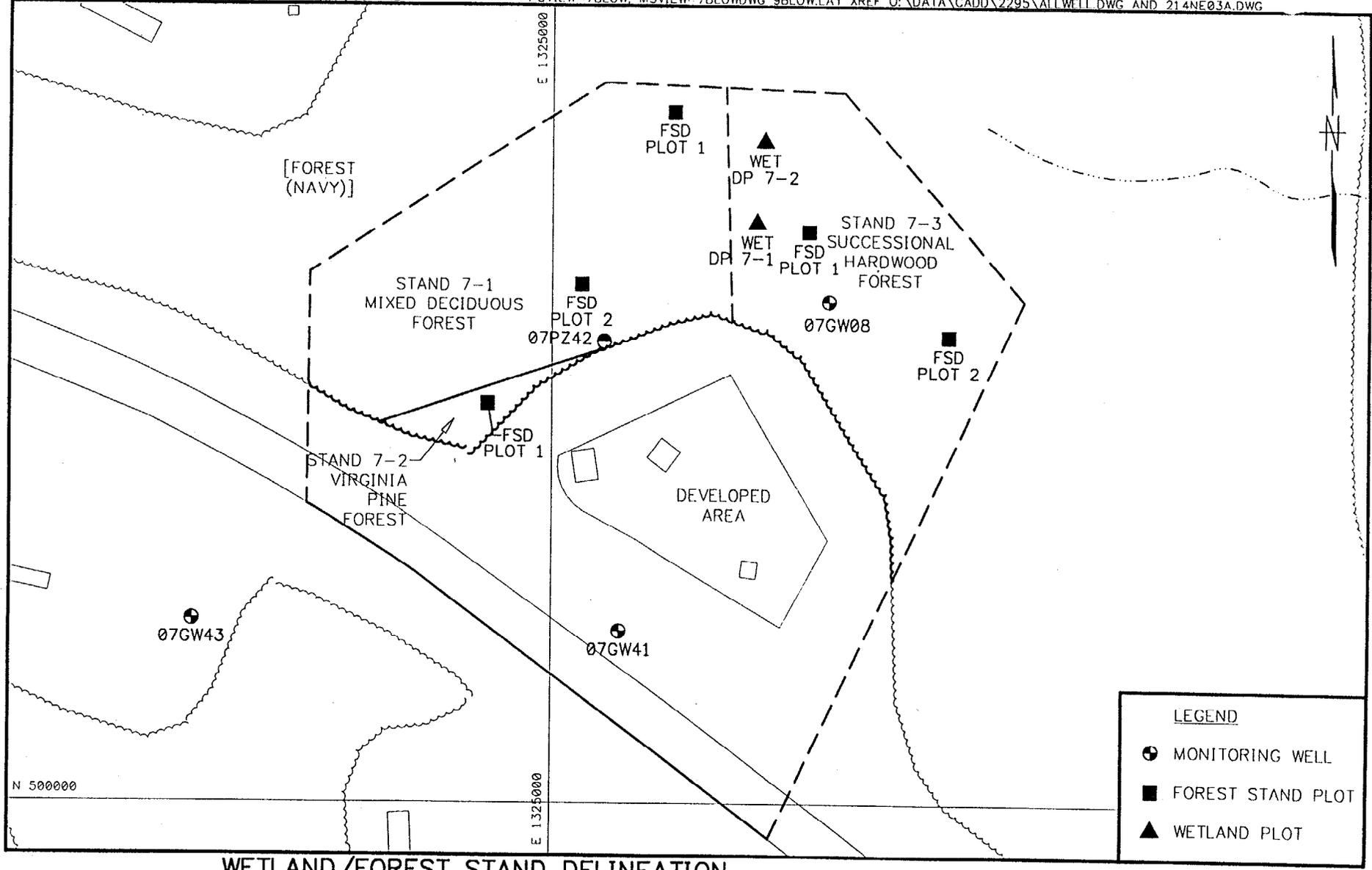


WETLAND/FOREST STAND DELINEATION

SITE 4

NSWC, WHITE OAK, SILVER SPRING, MARYLAND

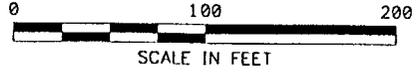


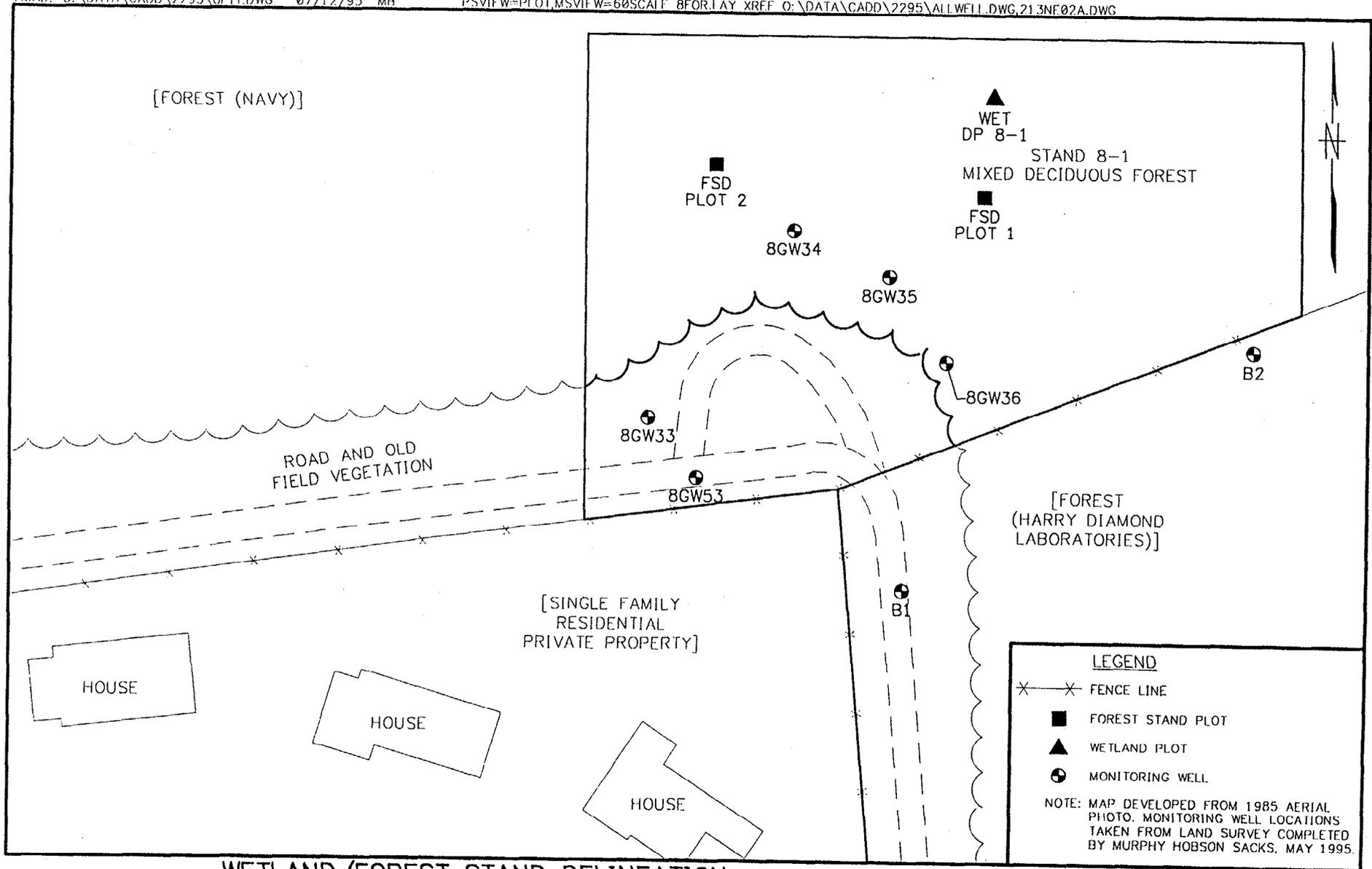


**WETLAND/FOREST STAND DELINEATION**

**SITE 7**

**NSWC WHITE OAK**

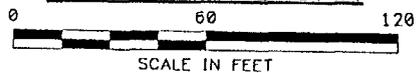


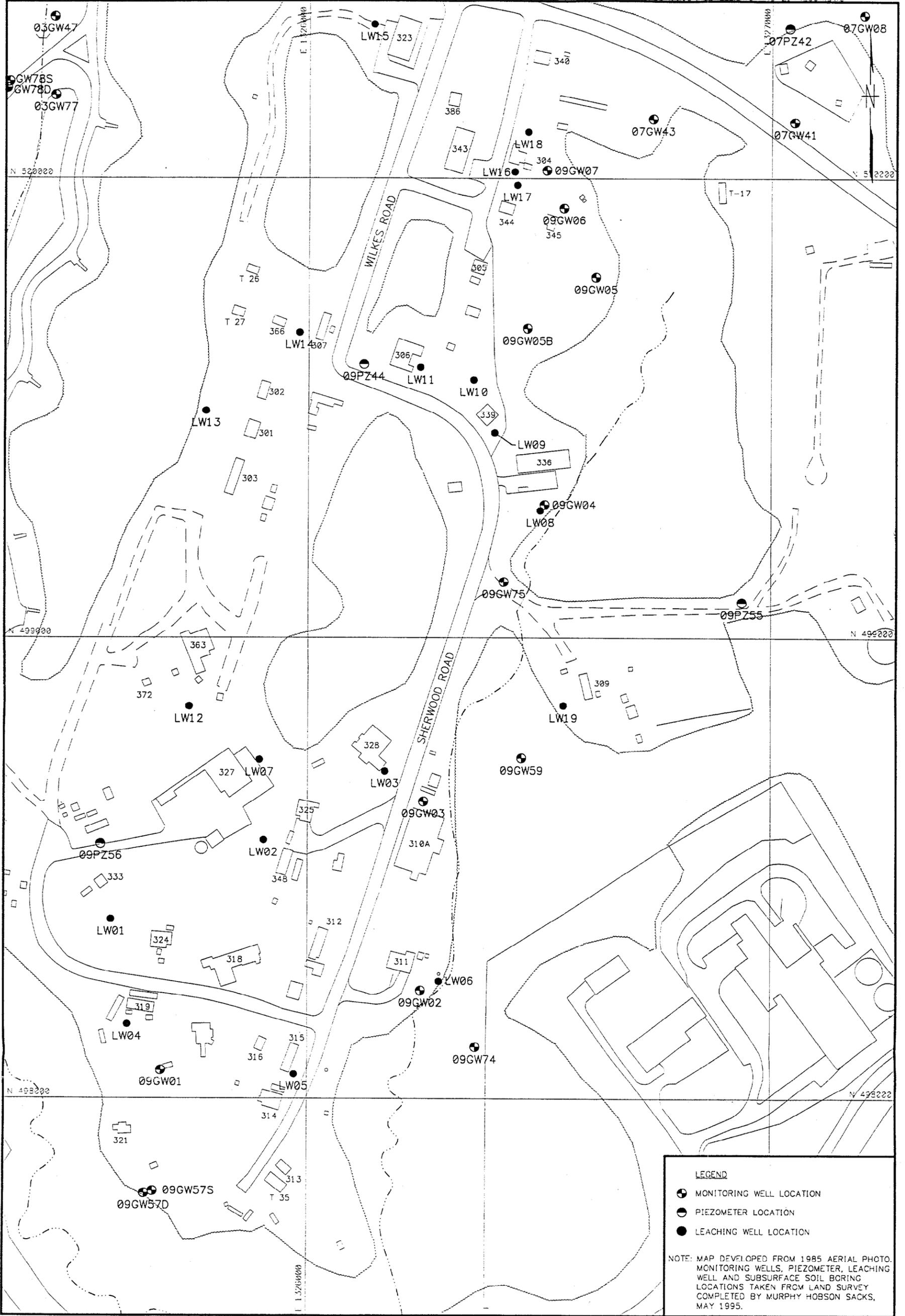


WETLAND/FOREST STAND DELINEATION

SITE 8

NSWC WHITE OAK





**FOREST STAND DELINEATION  
SITE 9  
LEACH WELL LOCATIONS  
NSWC WHITE OAK**

