



Ecological Baseline Survey

Between March and August 2000, the Army Corps conducted an ecological baseline survey as a part of the environmental investigations being done at the Former Nansemond Ordnance Depot (FNOD) site under the formerly used defense site (FUDS) program. The purpose of the study was to identify (1) plant communities and animal species; (2) state and federally listed rare, threatened, or endangered species; and (3), habitat types on site. AH Environmental, the Army Corps contractor, conducted field surveys for plants, small mammals, breeding birds, amphibians, and reptiles. Aerial photographs were taken in July 2000 to assist in mapping the various plant communities and animal species that exist at the site.

Findings on Animal Life

Much of the site is in a developed state or has undergone significant alteration from past human activities associated with operations at the site. In general, vertebrate fauna (animal life) at the site consists of common and widely distributed species that would be expected in ecologically altered landscapes. Twenty-two species of amphibians and reptiles, 12 species of mammals, and 76 bird species were identified during field surveys.

Finding Endangered Species

The only rare, threatened, or endangered species noted on the site was the bald eagle. The diamond-backed terrapin, a species of concern with the U.S. Fish and Wildlife Service, is thought to occur in Streeter Creek, a brackish tidal marsh, and the adjoining James River. Several of the avian (bird) species nesting on the site are listed as species of concern by the federal interagency Partners in Flight Program.

Findings on Habitat

The type and extent of plant communities observed at the site were dictated largely by past

human activity, topographic setting (in areas bordering the Nansemond and James Rivers), and tidal action and salinity. Nine natural habitat types exist at the site. The mixed hardwood pine community along with the forested wetlands support the largest number of amphibian and reptiles on the site. The early successional habitat supports the highest diversity of small mammals and birds, with a number of the bird species consistently found along the edges of the successional habitats.

What's Next?

Information gathered from this survey will be used in an ecological risk assessment to determine impacts from the former depot on the environment and ecosystem.

Food webs have been identified – one in wetlands and ponds, and one in terrestrial habitats. This information will allow scientists to target the species that are most useful for ecotoxicological evaluations. Several of the amphibians, small mammals, and birds identified at the site would be excellent models for determining the uptake and movement of environmental contaminants.

GLOSSARY

- **Avian:** Birds
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- **Fauna:** Animal life, especially the animals characteristic of a region, period, or special environment.
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- **Habitat:** A place or environment where a plant or animal naturally or normally lives and grows
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- **Vertebrate:** Any species having a spinal column
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- **Terrestrial:** Living on or in or growing from land

Upland and Wetland Habitats Found at The Former Depot

Upland Habitats

Early successional scrub/shrub and mixed woodland

This type of habitat is common in areas that received heavy and protracted disturbance from operations associated with the depot and subsequent property uses. Many of these areas support buildings and were likely landscaped with grass and an occasional tree or clusters of trees. Today, these areas support a mosaic of open scrub/shrub communities, interspersed with relatively mature trees or clusters of trees.

Evergreen (pine) dominated forest

Mature and medium-aged, evergreen-dominated forests were observed on upland terraces of the site.

Mixed hardwood and evergreen (pine) forest

Mature and medium-aged, mixed forests were identified primarily on side-slopes and ridges that had received the least disturbance from past human activity. These areas likely come closest to representing the original plant community composition present before to development and operation of the site.

Hardwood forest

The hardwood forest habitats on the site are along the Tidewater Community College (TCC) Lake and Horseshoe Pond. Characteristic tree species along the lake include cherrybark oak, red maple, southern red oak, and sweetgum in the overstory, with sassafras, black gum, loblolly pine, and flowering dogwood as understory trees.

Developed Lands

Developed areas consist mostly of the occupied buildings, lawns, and parking lots associated with TCC, and the commercial and state businesses on the site. Abandoned structures in overgrown areas are also included in this habitat.

Wetland Habitats

Nontidal, palustrine forested, seasonally to semipermanently saturated wetlands

Nontidal, palustrine forested wetlands were identified at scattered locations, generally associated with small unnamed drainage ways feeding the TCC Lake. Characteristic tree species include cherrybark oak, American elm, red maple, and bald cypress in the overstory, with sweet bay, green ash, alder, high-bush blueberry, and water loosestrife as understory trees and shrubs.

Nontidal, seasonally to permanently flooded freshwater ponds

A number of freshwater ponds occur throughout the site. The majority of these are man-made (either through excavation or impoundment), although several near the southwestern boundary of the study area may occur in natural depressions. The largest is TCC Lake, which by historical accounts, was a tidally influenced tributary to the James River before construction of a causeway at its mouth. In general, the ponds are not vegetated, except for floating aquatic duckweeds and eastern mosquito fern. Many of the ponds were observed to support small areas of fringing wetlands. Predominant species noted in these wetlands include willow, buttonbush, smartweeds, rice cutgrass, soft rush, Virginia button-weed and blunt spikerush.

Intertidal, estuarine emergent wetlands (brackish marsh)

Tidal wetlands were observed along the shores of the Nansemond and James Rivers and in association with Streeter Creek. Although they are scattered throughout the shoreline of the site, tidal wetlands are best developed along Streeter Creek and on a bar at the western corner of the study area. These wetlands are strongly controlled by the tides and ocean-derived salts. They are dominated by emergents with a scattering of shrub species. Plant species noted in these brackish marshes included groundsel tree, marsh elder, big cordgrass, smooth cordgrass, saltmeadow hay, salt grass, glasswort, seashore mallow, seaside goldenrod, sea lavender, saltmarsh bulrush, and sea oxeye.

Ephemeral pools

Shallow depressions, such as woodland vernal pools and road ruts, often hold water long enough for amphibians to breed, pass through the larval period, and reach metamorphosis. There are two vernal pools in the section south of the Steamout Pond Area that contain a diversity of amphibians and reptiles. The larger of these pools contain small sweetgum trees. No duckweed or emergent vegetation was observed in the vernal pools.

Open water

Open water pertains primarily to the James River adjacent to the site on its north side and the Nansemond River on its west. These river areas were not surveyed; however, the species expected would be similar to those occupying Streeter Creek, a tidally influenced tributary of the James River.

Bird Species Found at The Former Depot

Acadian flycatcher
 American crow
 American goldfinch
 American kestrel
 American robin
 Bald eagle
 Baltimore oriole
 Barn swallow
 Belted kingfisher
 Black skimmer
 Blue grosbeak
 Blue jay
 Blue-gray gnatcatcher
 Brown pelican
 Brown thrasher
 Brown-headed cowbird
 Carolina chickadee
 Carolina wren
 Chimney swift
 Chuck-will's-widow
 Clapper rail
 Common grackle

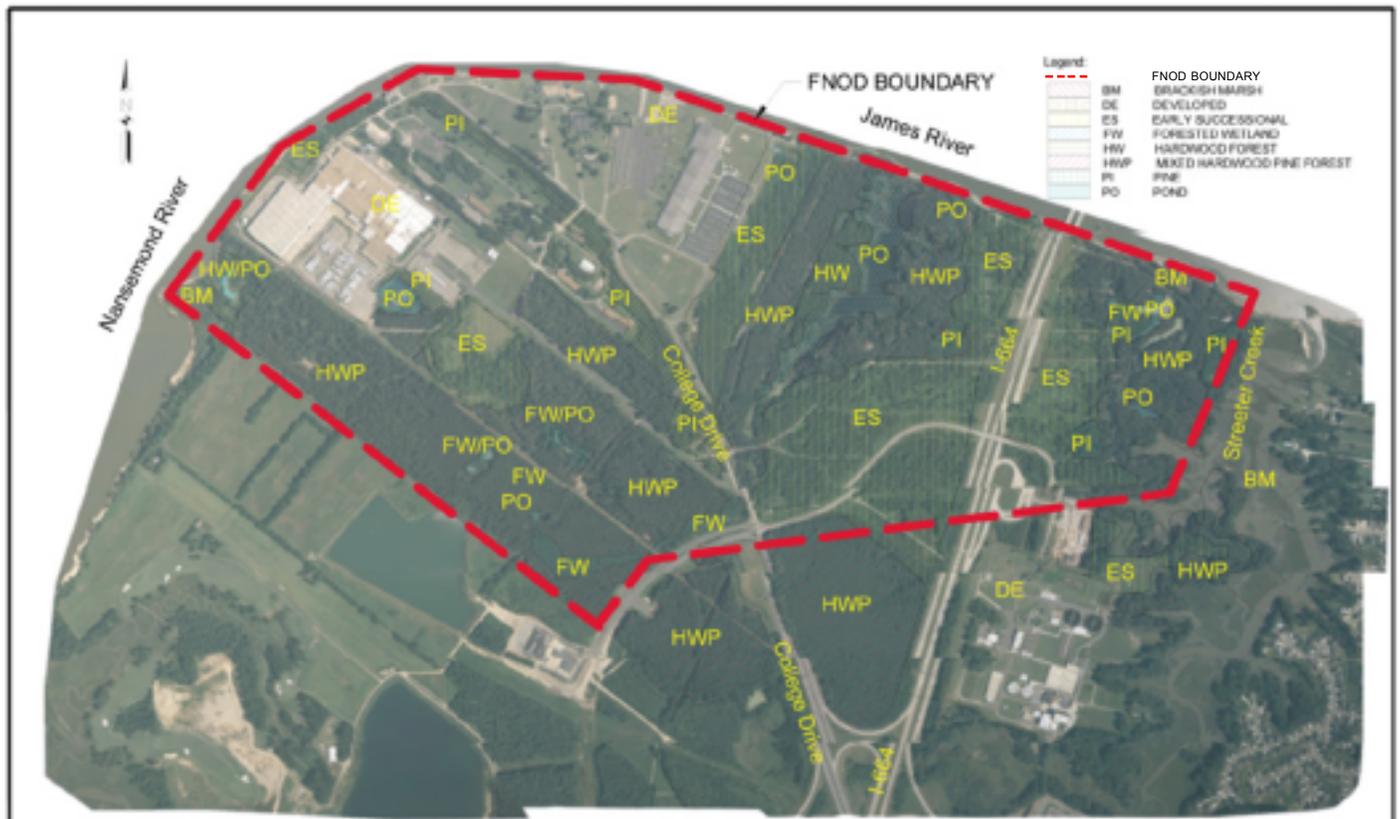
Common loon
 Common tern
 Common yellowthroat
 Cooper's hawk
 Double-crested cormorant
 Downy woodpecker
 Eastern bluebird
 Eastern kingbird
 Eastern screech owl
 Eastern towhee
 Eastern wood-pewee
 European starling
 Fish crow
 Forster's tern
 Great black-backed gull
 Great blue heron
 Great crested flycatcher
 Great egret
 Green heron
 Hairy woodpecker
 Herring gull
 House finch

House sparrow
 Indigo bunting
 Killdeer
 Laughing gull
 Mourning dove
 Northern bobwhite
 Northern cardinal
 Northern flicker
 Northern mockingbird
 Northern rough-winged swallow
 Orchard oriole
 Osprey
 Pileated woodpecker
 Pine warbler
 Prothonotary warbler
 Red-bellied woodpecker
 Red-eyed vireo
 Red-tailed hawk
 Red-winged blackbird
 Rock dove
 Royal tern

Ruby-throated hummingbird
 Scarlet tanager
 Snowy egret
 Summer tanager
 Tree swallow
 Tufted titmouse
 Turkey vulture
 White-eyed vireo
 Wood duck
 Yellow-billed cuckoo
 Yellow-breasted chat



Carolina Chickadee



FNOD Habitat and Wetlands Map - Baseline Ecological Survey and Inventory

Animal Species Verified or Expected at The Former Depot

Frogs

Brimley's chorus frog = E
American bullfrog = V
Cope's gray treefrog = V
Eastern narrow-mouthed toad = V
Eastern spadefoot = V
Fowler's toad = E
Green frog = V
Green treefrog = V
Little grass frog = E
Northern spring peeper = V
Oak toad = E
Pine woods treefrog = E
Southern cricket frog = E
Southern leopard frog = V
Southern toad = V
Squirrel treefrog = E

Snakes

Black ratsnake = E
Canebrake rattlesnake = E
Eastern cottonmouth = E
Eastern earthsnake = E
Eastern gartersnake = E
Eastern hog-nosed snake = E
Eastern kingsnake = E
Eastern milksnake = E
Eastern ribbon snake = V
Eastern worms snake = V
Northern black racer = V
Northern brownsnake = E
Northern copperhead = E
Northern red-bellied snake = E
Northern watersnake = V
Red-bellied watersnake = E
Rough earthsnake = E
Rough greensnake = E
Scarlet snake = E
Southern ring-necked snake = V

Turtles

Common snapping turtle = V
Eastern box turtle = V
Eastern mud turtle = V
Eastern musk turtle = E
Eastern painted turtle = V
Loggerhead sea turtle = E
North diamond-backed terrapin = V
Red-eared slider** = E
Red-bellied cooter = V
Spotted turtle = E
Yellow-bellied slider = E

Lizards

Broad-headed skink = E
Eastern slender glass lizard = E
Five-lined skink = E
Ground skink = V
Northern fence lizard = E
Six-lined racerunner = E
Southeastern five-lined skink = V

Salamanders

Atlantic coastal slimy salamander = E
Mabee's salamander = E
Marbled salamander = E
Red-spotted newt = E
Red-backed salamander = E
Spotted salamander = E
Two-toed amphiuma = E

** Introduced species or subspecies

E = Expected based on distribution maps
(*Mitchell & Reay, 1999 for amphibians and reptiles, and Webster et al., 1985 for mammals*).

V = Verified by observation or capture.

Mammals

Beaver = E
Big brown bat = E
Black rat** = E
Cotton mouse = E
Eastern chipmunk = E
Eastern cottontail = V
Eastern harvest mouse = V
Eastern mole = E
Golden mouse = V
Gray fox = V
Gray squirrel = V
Hispid cotton rat = V
House mouse** = V
Least shrew = V
Little brown myotis = E
Long-tailed weasel = E
Marsh rice rat = E
Meadow vole = E
Muskrat = E
Norway rat** = E
Raccoon = V
Porcupine = E
Red bat = V
Red fox = V
Short-tailed shrew = V
Southeastern shrew = E
Southern flying squirrel = V
Southern short-tailed shrew = E
Star-nosed mole = E
Striped skunk = E
White-footed mouse = V
White-tailed Deer = V
Woodchuck = V
Woodland vole = E

Information Repository

Information about the Former Nansemond Ordnance Depot project is available for public review at the Information Repository:

Tidewater Community College Library
Information Desk
7000 College Drive
Portsmouth, VA

Library Hours:

8 a.m. to 9 p.m. Monday through Thursday
8 a.m. to 4:30 p.m. on Friday
8:30 a.m. to 12:30 p.m. on Saturday

Contact Information

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