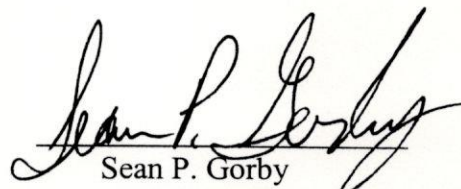


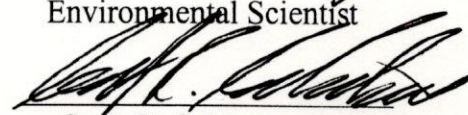
WETLAND DELINEATION REPORT  
FOR THE  
SALAMONE PROPERTY

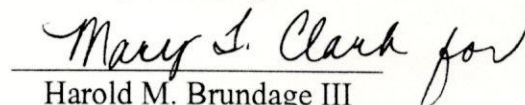
New Castle County, Delaware

For

Paul Salamone  
320 Highway Drive  
Radnor, PA 19080

  
Sean P. Gorby  
Environmental Scientist

  
Scott R. Salvatore  
Project Manager

  
Harold M. Brundage III  
President

By

Environmental Research and Consulting, Inc.  
112 Commons Court  
Chadds Ford, PA 19317

October 25, 2002

**TABLE OF CONTENTS**

1.0 INTRODUCTION .....1  
1.1 Site Description.....1  
2.0 DEFINITIONS AND DELINEATION METHODOLOGY .....1  
2.1 Definition of Jurisdictional Limits.....1  
2.1.1 The U.S. Army Corps of Engineers .....1  
2.1.2 Delaware Department of Natural Resources and Environmental Control...3  
2.1.3 New Castle County .....4  
2.2 Wetland Delineation Methodology .....4  
3.0 VEGETATION .....6  
3.1 National Wetlands Inventory-Designated Wetlands.....6  
3.2 Field Investigation .....6  
3.2.1 Wetland Cover Type and Jurisdictional Waters .....8  
3.2.2 Non-Wetland Cover Types .....8  
4.0 SOILS .....8  
5.0 HYDROLOGY .....10  
6.0 CONCLUSION.....10  
7.0 REFERENCES .....11

APPENDIX A – DATA SHEETS  
APPENDIX B - PHOTOGRAPHS

**LIST OF FIGURES**

Figure 1. Location of the Salamone property, New Castle County, Delaware .....2  
Figure 2. National Wetland Inventory map showing the Salamone property, New Castle  
County, Delaware .....7  
Figure 3. Soil Survey map showing the Salamone property, New Castle County, Delaware.....9

## **1.0 INTRODUCTION**

Environmental Research and Consulting, Inc. (ERC) was retained by Paul Salamone to delineate wetlands on the Salamone property, located at 1115 Capital Trail, Newark, New Castle County, Delaware. The results of, and basis for, the delineation are presented in this report. The field investigation of the site was conducted on October 17, 2002. The 1987 Army Corps of *Engineers' Wetland Delineation Manual* (U.S. Army Environmental Laboratory, 1987), which considers vegetation, soils, and hydrology, was used to delineate wetlands. Wetland boundaries were flagged by ERC and surveyed by Ramesh C. Batta Associates. This Wetland Delineation Report was prepared pursuant to requirements of the New Castle County Unified Development Code (UDC).

### *1.1 Site Description*

The Salamone property is depicted on the Newark East, Delaware USGS quadrangle (Fig. 1). The site consists of a 1.8-acre triangular shaped, undeveloped forested plot on the north side of Capital Trail, Newark, Delaware. A small stream enters the northern end of the property and flows southeast along the eastern property boundary to the southeast corner of the property and exits through a culvert under Capital Trail.

Surface runoff from most of the Salamone property flows east to a small, unnamed tributary of White Clay Creek that eventually joins White Clay Creek south of the site. There is a small section of the southwest corner of the property that slopes south and drains to Capital Trail.

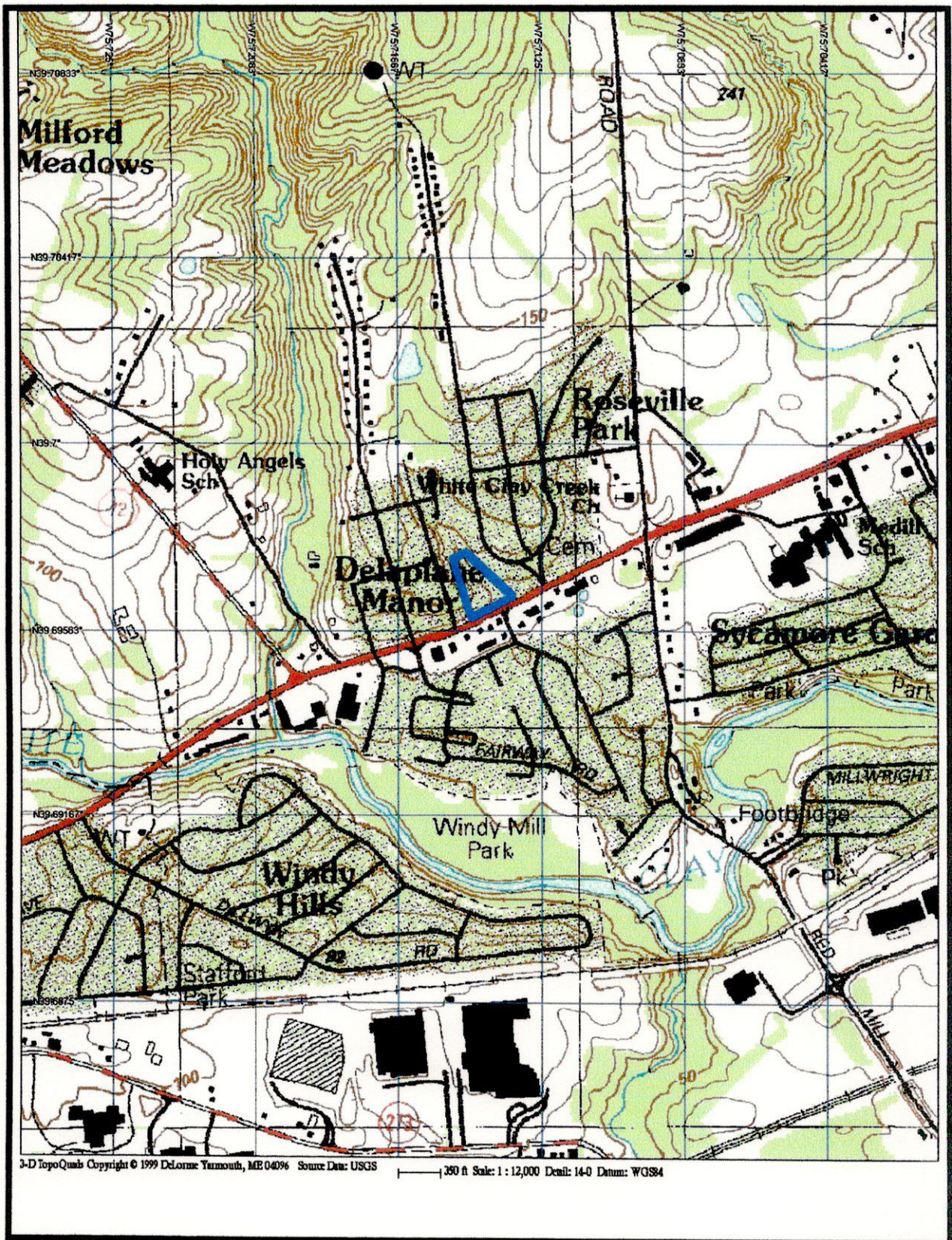
## **2.0 DEFINITIONS AND DELINEATION METHODOLOGY**

### *2.1 Definition of Jurisdictional Limits*

#### 2.1.1 U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers formerly took jurisdiction over all wetlands, lakes, streams, impoundments, and intermittent drainage ways that could in any way be linked to interstate or foreign commerce. However, in January 2001 the U.S. Supreme Court issued a ruling in the Solid Waste Agencies of Northern Cook County (SWANCC) case, which limits the extent of federal jurisdiction over waters and wetlands to the following:

1. Presently navigable waters – waters that act as a channel for commerce,
2. Waters that were navigable in the past,
3. Waters that could be made navigable with “reasonable improvements”,



0 1400 ft  
SCALE

Figure 1. Location of the Salamone property, New Castle County, Delaware. Source: USGS, 1993.

4. Primary and secondary tributaries to such waters,
5. Waters and wetlands that are adjacent to navigable waters.

To the extent that a non-tidal water or wetland falls into one of the above categories, the Corps' jurisdictional limits are as follows:

In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark, or

When adjacent wetlands are present, the jurisdiction extends beyond the ordinary high water mark to the limit of the adjacent wetlands, or

When the Water of the United States consists only of wetlands, the jurisdiction extends to the limit of the wetland.

Based on the SWANCC decision, isolated waters and isolated wetlands are no longer subject to U.S. Army Corps of Engineers' jurisdiction. Preliminary guidance from the Corps indicates that the absence of a surface connection to a flowing tributary or stream is the primary consideration for determining that a water or wetland as isolated.

Wetlands are defined in 33 CFR 328.3 (b) as:

"Those areas that are inundated or saturated by surface water or groundwater 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".

The ordinary high water mark is defined in 33 CFR 328.3 (e) as:

"That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas".

The "ordinary high water mark" is generally interpreted to be the area inundated by a 2-year storm, which is approximately the top of the channel bank in streams.

#### 2.1.2 Delaware Department of Natural Resources and Environmental Control

The Delaware Department of Natural Resources and Environmental Control (DNREC) takes jurisdiction over "wetlands" and "subaqueous lands" (Title 7, Delaware Code, Chapters 66 and 72).

"Wetlands" are defined in Chapter 66, Section 6603, of the Delaware Code as:

"Those lands above the mean low water elevations subject to tidal action in the state...including those areas which have been connected to tidal waters whose surface is at or below an elevation of two feet above local mean high water, and those lands not currently used for agricultural purposes containing 400 acres or more of contiguous nontidal swamp, bog, muck or marsh, exclusive of narrow stream valleys, which contribute significantly to ground water recharge and which requires intensive artificial drainage.."

"Subaqueous lands" refers to submerged lands and tidelands, which are defined in Chapter 72, Section 7202 of the Delaware Code:

"Submerged lands means lands lying below the line of mean low tide in the beds of all tidal waters within the boundaries of this State, together with the beds of navigable rivers, streams, lakes, bays, and inlets within the boundaries of the State as established by law".

"Tidelands means lands lying between the lines of mean high water and the line of mean low water".

The State of Delaware determines if wetlands and/or other bodies of water are under its jurisdiction on a case-by-case basis. Determination of whether the wetlands/waters on the Salamone property are under the jurisdiction of the State of Delaware was beyond the scope of the current investigation.

### 2.1.3 New Castle County

New Castle County reviews all land development proposals within the County to determine whether wetland impacts have been minimized to the extent possible during site design. Any filling of wetlands must comply with relevant U.S. Army Corps of Engineers regulations. The New Castle County Unified Development Code (UDC) also requires that certain setbacks be maintained from wetlands, rivers, and streams.

## 2.2 *Wetland Delineation Methodology*

The U.S. Army Corps of Engineers and New Castle County require that the 1987 Army Corps of Engineers' *Wetland Delineation Manual* (U.S. Army Environmental Laboratory, 1987) be used to delineate wetlands. Under the 1987 Corps methodology the following three criteria are diagnostic of wetlands: 1) the land is dominated by hydrophytes; 2) the substrate consists of undrained hydric soils; and 3) the substrate is saturated with groundwater or flooded for a specified period during the growing season each year.

Wetlands are defined in Section 404 of the Clean Water Act as "Those areas that are inundated or saturated by surface water or groundwater 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" (U.S. Army Environmental Laboratory, 1987).

A hydrophyte is any plant that is especially adapted, either physiologically or morphologically, to deal with oxygen depleted soil conditions for at least part of the growing season. Since most plant species tolerate a range of growing conditions, individual species may not necessarily be restricted to either wetland or upland communities. The U.S. Fish and Wildlife Service (Reed, 1988) has developed a classification scheme that assigns species to wetland indicator classes according to the following rules:

Plant Affinity for Wetland Conditions

Classification	Percent Occurrence in Wetlands
Obligate (OBL)	>99
Facultative Wet (FACW)	67 – 99
Facultative (FAC)	34 – 66
Facultative Upland (FACU)	1 – 33
Upland (UPL)	< 1
Not Listed (NL)	0

Under the 1987 Corps methodology, a plant community is considered hydrophytic if greater than 50 percent of the dominant plants are designated as OBL, FACW, or FAC. If a plant community is dominated by FAC species, non-dominant species must be considered. The plant community will then be considered hydrophytic if more than 50 percent of all species present are wetter than FAC.

Hydric soils are soils that are saturated in a major part of the root zone for a significant period during the growing season. Soils are considered hydric when they are 1) somewhat poorly drained soils that have a seasonally high water table less than 0.5 feet from the surface or 2) poorly drained or very poorly drained soils that have a seasonally high water table less than 1.0 or 1.5 feet from the surface, depending on soil permeability. This high water table must be present for a week or more during the growing season (USDA-SCS, 1987a). Soils that are ponded or flooded for long or very long duration during the growing season are also classified as hydric. All organic soils (histisols) or mineral soils with a histic epipedon are hydric soils.

In the field, mineral soils are examined with a Munsell Soil Color Chart. Soils are considered hydric when they are gleyed or when the top of the B horizon has a chroma of 2 or less, if mottling is present, or a chroma of 1 or less in the absence of mottling. Low chroma numbers indicate a greater degree of soil reduction as a result of anaerobic soil

conditions. Soils are generally examined to a depth of 20 inches. These criteria allow most soils to be classified as either hydric or non-hydric. Exceptions are those soils that are sandy, alluvial, or are deeply colored as a result of their parent materials. These soils must be evaluated more carefully under the procedures outlined in U.S. Army Environmental Laboratory (1987).

The Soil Conservation Service has developed a list of Hydric Soils of the United States (USDA-SCS, 1987a). Unlisted soils series are generally considered to be non-hydric. However, some phases of unlisted soil series may contain hydric inclusions and thus may be associated with wetlands. These cases must be individually verified in the field.

Wetland hydrology may be indicated by visual observation of saturation or inundation; however, it may not be evident due to the seasonality of a high water table. Indirect indicators of wetland hydrology include drainage patterns, buttressed trunks, watermarks on vegetation, surface scouring, water-stained leaves, sediment deposits, drift lines, and historic records.

### **3.0 VEGETATION**

#### *3.1 National Wetlands Inventory-Designated Wetlands*

The U.S. Fish and Wildlife Service's National Wetlands Inventory (NWI) does map wetlands within the subject property. The NWI classified the wetland as a Permanent Upper Perennial Open Water Riverine system (R3OWH) (Fig. 2) (U.S. FWS, 1981). Field investigation identified jurisdictional waters of the United States (i.e., the tributary of White Clay Creek) within the site boundaries. Due to the reliance on aerial photography at a scale of 1:80,000 and lack of ground truthing, NWI maps are not intended to provide definitive locations of regulated wetlands.

#### *3.2 Field Investigation*

Jurisdictional waters of the United States and one non-wetland cover types were identified within the subject property. Vegetation, soils, and hydrologic conditions recorded at representative observation points are given in Table A-1.

Delineated upland/wetland boundaries on the site are shown on the attached print. The locations of sampling stations, and the locations and directions of photographs are also indicated on the print.

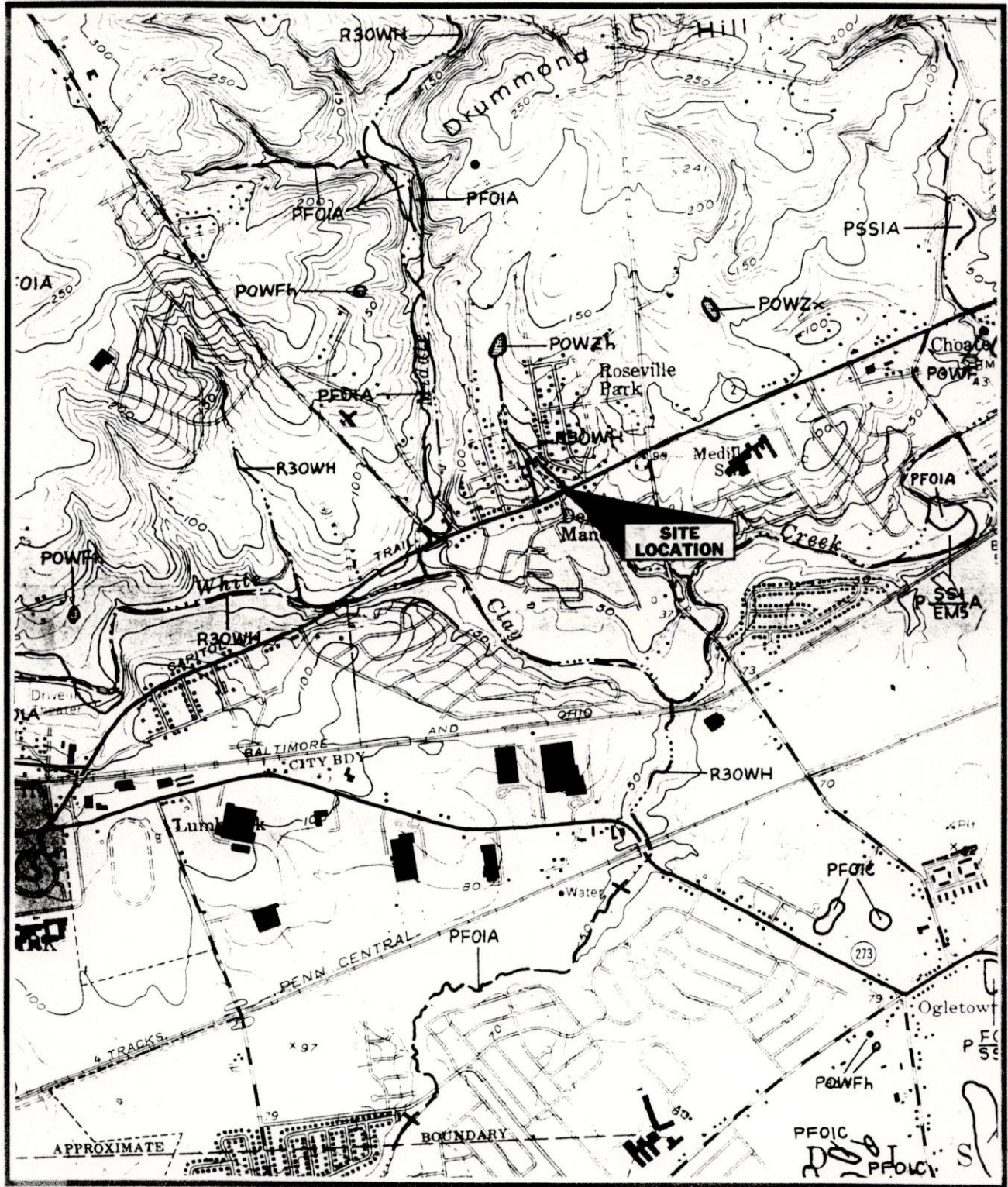


Figure 2. National Wetland Inventory map showing the Salamone property, New Castle County, Delaware. Source: U.S. FWS, 1981.

### 3.2.1 Wetland Cover Type

**Jurisdictional Waters of the United States.** The unnamed tributary of the White Clay Creek was classified as jurisdictional waters of the United States. Although no plants were identified within the bed of the stream the following species were identified within the jurisdictional wetland limits. The herbaceous community was very sparse and contained only Norway maple seedlings (*Acer platinoides*, NL). The vine strata was dominated by English ivy (*Hedera helix*, FAC), greenbrier (*Smilax rotundifolia*, FAC), and poison ivy (*Toxicodendron radicans*, FAC). The shrub community contained amur bush honeysuckle (*Lonicera maackii*, NL), American holly (*Ilex opaca*, FACU+), and eastern hemlock (*Tsuga canadensis*, FACU). The only tree species identified within this cover type was eastern hemlock. (Table A-1, sampling station 3).

### 3.2.2 Non-Wetland Cover Types

**Forested Upland.** The majority of the Salamone property consisted of forested uplands. The tree layer of these uplands consisted primarily of eastern hemlock and tulip poplar (*Liriodendron tulipifera*, FACU). The dominant shrubs were multiflora rose (*Rosa multiflora*, FACU), tulip poplar saplings, Norway maple saplings, American holly, sassafras saplings (*Sassafras albidum*, FACU-), spicebush (*Lindera benzoin*, FACW-), and amur bush honeysuckle. English ivy, greenbrier, and poison ivy were the only vines present in the community. The herbaceous community was sparse and contained amur bush honeysuckle seedlings, sphagnum moss (*Sphagnum palustre*, NL), and multiflora rose seedlings. (Table A-1, sampling stations 1 and 2).

## 4.0 SOILS

The Soil Survey of New Castle County, Delaware (Matthews and Lavoie, 1970) maps the Elsinboro-Delanco-Urban Land Association on the site (Fig. 3). This soil association consists of level to gently sloping, well-drained and moderately well drained, medium-textured soils that are relatively undisturbed to severely disturbed. The soils of this association were formed in old alluvium on stream terraces from Newark to Prices Corner on both sides of Delaware Route 2. The Soil Survey maps the site as containing Elsinboro silt loam (EnB2) and Hatboro silt loam (HA). The Hydric Soil List for New Castle County classifies Hatboro silt loam as being a hydric soil (USDA-SCS, 1987b). The field investigation confirmed that the soils within the site were consistent with the Elsinboro and Hatboro mapping units.

**Elsinboro Silt Loam.** Elsinboro soils are deep well-drained soils that occur on terraces, benches, and low bluffs above the floodplains and along some of the major streams in the northern part of New Castle County, particularly along the boundary between the Piedmont Plateau and the Coastal Plain. These soils developed in old alluvium that washed mainly

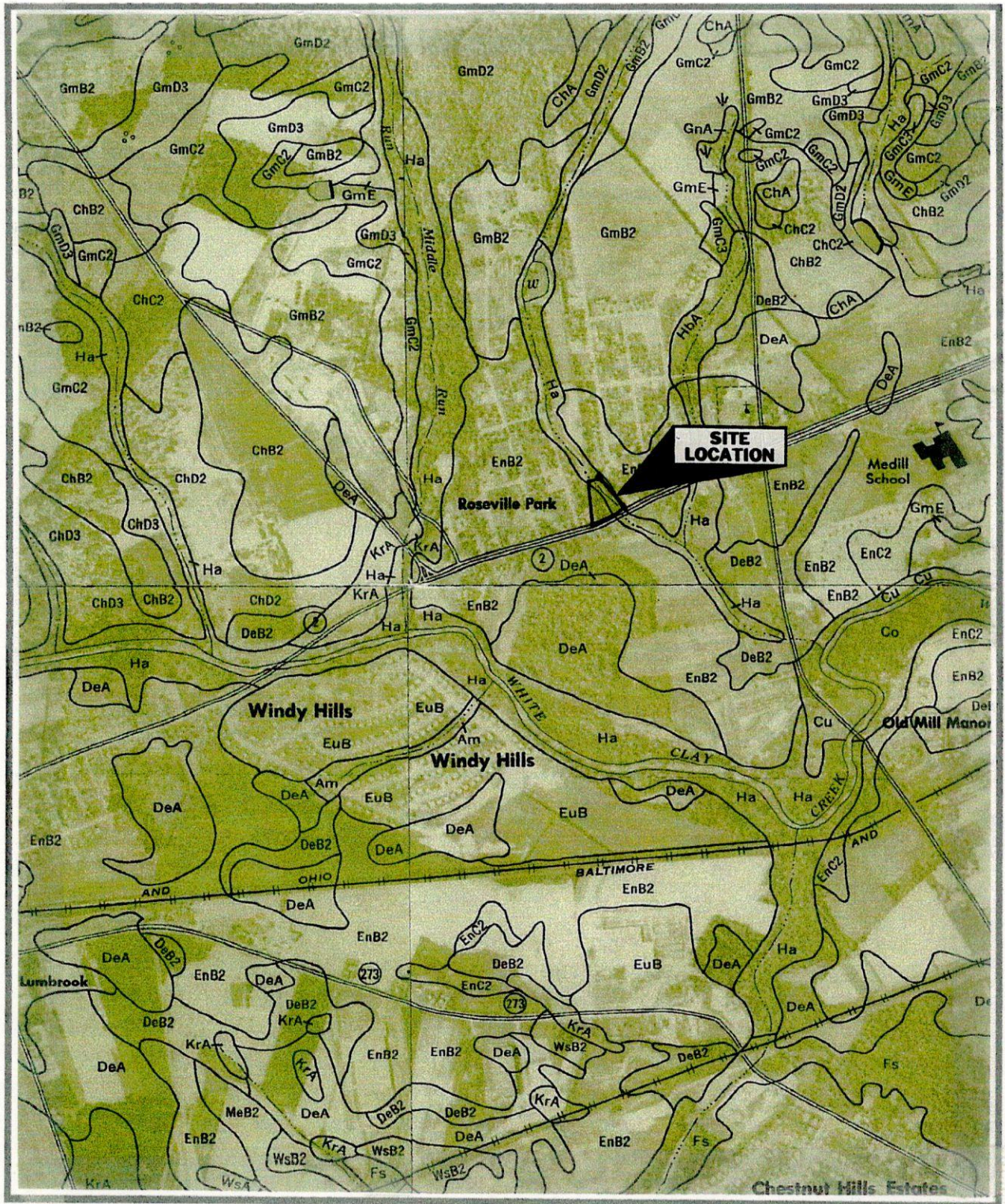


Figure 3. Soil Survey map showing the Salamone property, New Castle County, Delaware. Source: USDA-SCS, 1974.

from areas of crystalline micaceous rocks. These soils have high available moisture capacity.

**Hatboro Series.** The Hatboro series consists of deep, wet soils that occur on the Piedmont Plateau in the northern part of the county. These soils occur on floodplains and on uplands. On uplands, they lie around the head of drains, along drainageways that do not have channels, and at the foot of slopes. They developed in materials that washed from areas of micaceous rocks, and they contain a considerable amount of fine mica.

## **5.0 HYDROLOGY**

The unnamed tributary of the White Clay Creek was the only hydrologic feature within the Salamone property. The majority of the subject property slopes to the east, which drains most of the runoff to this stream. Because of the gradient of the property, runoff is not resident on the parcel for long periods of time.

## **6.0 CONCLUSION**

Environmental Research and Consulting, Inc. delineated jurisdictional waters of the United States associated with an unnamed tributary of White Clay Creek along the eastern property edge within the Salamone property. The majority of the site consisted of forested uplands.

The wetland line delineated by ERC accurately depicts the limits of wetlands on the subject site based on existing site conditions. This line does not, however, establish the legal limit of regulatory jurisdiction until it has been formally verified by the U.S. Army Corps of Engineers. Formal verification of the wetland line, known as a Jurisdictional Determination, may be obtained by submitting this wetland report and a plan showing the surveyed upland/wetland boundary to the U.S. Army Corps of Engineers, Philadelphia District. Jurisdictional Determinations are valid for a period of five years.

The U.S. Army Corps of Engineers regulates the placement of fill material into wetlands and other Waters of the United States through Section 404 of the Clean Water Act of 1972, as amended. New Castle County requires that all land development and land disturbance plans filed with the Department of Land Use include a wetland report with a surveyed wetland line. Where the site design proposes filling of wetlands, a statement must accompany the plan stating that the work will be in compliance with the relevant Army Corps permit(s).

## **7.0 REFERENCES**

- Kollmorgen Corporation. 2000. Munsell soil color chart. Manbeth Division of Kollmorgen Corporation.
- Matthews, E. D. and O. L. Lavoie. 1970. Soil survey of New Castle County, Delaware. USDA-Soil Conservation Service. Washington, D.C. 97 p. and 58 plates.
- Reed, P. B. 1988. Wetland plant list (Northeastern Region). Biol. Rep. 88(26.1). U.S. Department of the Interior, U.S. Fish and Wildlife Service, Washington, D.C. 111 p.
- Tiner, R. W. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service, Region 5, Newton Corner, MA. 77 p.
- U.S. Army Environmental Laboratory. 1987. Corps of Engineers wetland delineation manual. Technical Report Y-87-1. Final Report. Waterways Experiment Station. Vicksburg, MS. 169 p.
- USDA-SCS (U.S. Soil Conservation Service). 1982. National list of scientific plant names, Volume 1. SCS-TP-159. Washington D.C. 416 p.
- USDA-SCS (U.S. Soil Conservation Service). 1987a. Hydric soils of the United States.
- USDA-SCS (U.S. Soil Conservation Service). 1987b. Hydric soils list - New Castle County, Delaware.
- U.S. FWS (U.S. Fish and Wildlife Service). 1981. National wetlands inventory map overlay of the Wilmington North, Pennsylvania-Delaware and Kennett Square, Pennsylvania-Delaware. 7.5-minute USGS topographic quadrangles. St. Petersburg, Fl. Scale - 1 inch = 2,000 feet.
- USGS (U.S. Geological Survey). 1993. Wilmington North, Pennsylvania-Delaware and Kennett Square, Pennsylvania-Delaware. 7.5-minute USGS topographic quadrangle. Department of the Interior, Washington, D.C. Scale - 1 inch = 2,000 feet.

**APPENDIX A**

**DATA SHEETS**







**Notes:**

- (1) Vegetation level:  
Tree: greater than 10 cm dbh (diameter at breast height)  
Sapling: 1-10 cm dbh  
Shrub: less than 6.1 meters tall  
Herb: ground covers, seedlings, etc.  
Woody Vines: woody vines present in the understory
- (2) Common names according to Reed (1988).
- (3) Indicator status taken from regional indicators (R1IND) in National List of Plant Species that Occur in Wetlands, (Reed, 1988).
- (4) Braun-Blaquet cover scale (with midpoints):  
0 = <1% (none);  
1 = 1-5% (3);  
2 = 6-15% (10.5);  
3 = 16-25% (20.5);  
4 = 26-50% (38);  
5 = 51-75% (63);  
6 = 76-95% (85.5);  
7 = 96-100% (98).  
  
— Cover class visually determined.
- (5) Descriptions based on Munsell Soil Color Charts (Kollmorgen Corp, 2000).
- (6) Unified Soil Classification System (USCS)

**APPENDIX B**

**PHOTOGRAPHS**

### **Key to Photographs**

- A. This photograph looks west along the southern edge of the property. The forested uplands can be seen in the right of this picture. Capital Trail can be seen in the left of the picture.
- B. This photograph looks northwest along the eastern edge of the site. The small unnamed tributary of the White Clay Creek can be seen in the central portion of the picture. The Swift Pools property is to the immediate right of the photograph.
- C. This photograph is typical of most of the forested uplands found on the Salamone property. Much of the hillside is covered by upland forest and in some areas the understory is relatively dense. In other areas, the canopy is primarily closed and little sunlight reaches the forest floor. This picture was taken in the southwest corner of the property. Capital Trail can be seen in the background of this photograph.



A



B



C