



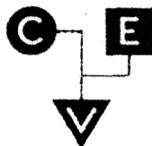
Site Photograph

Wetland Inventory, Survey, and Mapping Report
for the
Barnes Nursery
Huron, Ohio
November, 2001

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ACRONYMS

ACOE	Army Corps of Engineers
DsA	Del Rey silt loam, 0 to 2 percent slopes
FACW	Facultative Wetland Plants
FAC	Facultative Plants
FACU	Facultative Upland Plants
KbA	Kibbie fine sandy loam, 0 to 2 percent slopes
L2EMZ	Lacustrine, Littoral, Emergent, Water Regime – Intermittently flooded
Lc	Lenawee silty clay loam
Mm	Marsh
NI	No Indicator Status
NW	Non-wetland
NWI	National Wetland Inventory Map
OBL	Obligate Wetland Plants
Ohio EPA	Ohio Environmental Protection Agency
ORAM	Ohio Rapid Method Assessment
PEMY	Palustrine emergent, Water Regime –Saturated/ Semi-permanent/Seasonal
PFO1Y	Palustrine Forested, Broad-leaved Deciduous, Water Regime – Saturated/Semi-permanent/Seasonals
PFO1/EMY	Palustrine Forested, Broad-leaved Deciduous, Emergent, Water Regime – Saturated/Semi-permanent/Seasonals
PSS1Y	Palustrine Scrub/Shrub, Broad-leaved Deciduous, Water Regime – Saturated/Semi-permanent/Seasonals
SCS	Soil Conservation Service
SkB	Shinrock silt loam, 2 to 6 percent slopes
TuA	Tuscola fine sandy loam, 0 to 2 percent slopes
UPL	Obligate Upland Plants
US	United States
USGS	United States Geological Survey
WISM	Wetland Inventory, Survey, and Mapping

1.0 INTRODUCTION

This Wetland Inventory, Survey and Mapping (WISM) report has been prepared for the Barnes Nursery Channel Project located the city of Huron, Erie County, Ohio. The parcels examined include the northern portion of the Barnes Nursery property and a section of the John Murray property [the Site]. The Site is located north of Rye Beach Road and east of Cedar Point Road (see Figure 1 in Appendix A).

The purpose of the WISM report is to locate, identify, and inventory all jurisdictional "waters of the United States" and/or "waters of the State" within the Site. The scope of work is to determine whether any portion(s) of the Site meet the criteria established by the United States Army Corps of Engineers (ACOE) for regulation as a jurisdictional "waters of the United States" under Section 404 of the Clean Water Act, as amended or the criteria established by the Ohio Environmental Protection Agency (Ohio EPA) for regulation as jurisdictional "waters of the State of Ohio" under section 3745-32-08 of the Ohio Administrative Code.

2.0 WETLAND AND STREAM IDENTIFICATION CRITERIA

2.1 WETLAND IDENTIFICATION CRITERIA

The wetland identification is based on the criteria set forth by the ACOE in the 1987 edition of the *Corps of Engineers Wetland Delineation Manual* (hereinafter referred to as the Manual). This is the operative guideline subsequent to a congressional enactment of an indefinite suspension of the use of the 1989 Manual.

The Manual defines wetlands as "those 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".

To determine if an area meets this definition of a wetland, the Manual identifies three diagnostic characteristics of wetlands:

- 1) Vegetation. The prevalent vegetation consists of macrophytes (plants) that are typically adapted to areas having hydrologic and soil conditions described above.

- 2) Soil. Soils are present and have been classified as hydric, or they possess characteristics that are associated with reducing (anaerobic) conditions.
- 3) Hydrology. The area is inundated either permanently or periodically at mean water depths ≤ 6.6 feet, or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation.

When all three of these diagnostic characteristics are present at the same location, a wetland exists. Any wetland that is adjacent or hydrologically connected to a navigable water or its tributaries may be under the jurisdiction of the ACOE. Wetlands that are not adjacent or hydrologically connected to a navigable water (isolated wetlands) are regulated by the Ohio EPA. The filling of a jurisdictional wetland is subject to federal and/or state regulations and permitting.

2.2 STREAM IDENTIFICATION CRITERIA

Streams fall into one of three classifications: 1) ephemeral, 2) intermittent, or 3) perennial. The identification of a stream is based upon criteria commonly applied by the ACOE and Ohio EPA. These include, but are not limited to:

- physical appearance of a well-defined stream bed and bank on two sides
 - a) presence of channel sinuosity
 - b) undercutting of shrub or tree roots
 - c) presence of debris jams (twigs, logs, and/or small rocks)
- presence of sediment deposition
 - water flow (perennial, intermittent or ephemeral)
 - water source (stormwater or groundwater)
 - notation of the stream as such on the United States Geological Survey (USGS) Map or local soil survey map

3.0 WETLAND IDENTIFICATION METHODOLOGY

An accurate WISM involves an office review of background resource materials from various sources followed by field investigation and survey. The information from the preliminary resource materials is not sufficient to serve as a final wetland determination but serves as an aid to guide and interpret the field investigation.

Section 3.1 describes the background information that is reviewed prior to performing the wetland inventory fieldwork. Section 3.2 describes the field investigation procedures used to identify and inventory the wetlands.

3.1 PRELIMINARY RESOURCE MATERIALS

Prior to the site visit, it is helpful to review relevant data that can help to identify possible wetland and non-wetland areas. Data sources include:

- **United States Geological Survey Topographic Map**

The USGS Map provides a general description of the site's topography, proximity to water bodies, and other basic information.

United States Soil Conservation Service (SCS), Soil Survey of Erie County, Ohio

The soil survey provides an indication of soil types likely to be found at a given site.

United States Department of Agriculture, Hydric Soils of the United States

This document identifies the various soil types that are considered hydric. A hydric soil is defined as a 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 (water-loving) vegetation.

United States Department of Interior, National Wetlands Inventory (NWI) Map

The NWI Map provides an indication of general wetland conditions likely to be in the area. The accuracy of the NWI Map is not such that it can be relied on in place of independent field observations for determining the actual presence, type, or size of any wetlands in the area. The absence of a wetland indication on the NWI Map may merely indicate the absence of data and, therefore, cannot be relied upon as the basis of a conclusion that a jurisdictional wetland is not present.

3.2 FIELD INVESTIGATION

The wetland inventory is performed using the general principles of the Routine Level On-Site Determination as defined in the Manual. Sample points are located on each side of a presumed wetland edge based upon observed changes in the vegetation, soil, and surface hydrology.

A sample point is established and then examined to determine if any or all of the three diagnostic characteristics of a wetland exist at the point. The dominant vegetation is determined by identifying trees within a thirty-foot radius, saplings and shrubs within a twenty-foot radius, and herbaceous plants within a five-foot radius. Using a 1-inch soil auger, soil cores are taken to a maximum depth of 16 inches to examine the soil's color and general characteristics. Indicators of wetland hydrology, such as standing water or soil saturation, are noted. All data are recorded on Routine Wetland Determination Data Forms (see Appendix B).

After determining the wetland boundaries and establishing wetland and non-wetland sample points on the site, the wetland and stream boundaries are surveyed using a Global Positioning System and/or ground surveying. This information is then imported into AutoCAD to generate a scale drawing of the site.

3.2.1 Vegetation

Relative to vegetation, the purpose of the field investigation is to determine the extent to which hydrophytic vegetation dominates the site. As noted, a plant community dominated by hydrophytic vegetation is one diagnostic characteristic of a jurisdictional wetland. Hydrophytic vegetation refers to plants that thrive in moist, anaerobic soil conditions. These species are identified in the 1989 edition of the US Fish and Wildlife Service's *National List of Plant Species that Occur in Wetlands: Northeast (Region 1)* (hereinafter referred to as the National List). The National List provides a plant's "indicator status", which is a ranking as to the likelihood of a particular species occurring in a wetland environment. These categories are:

Obligate wetland plants (OBL) -- almost always occur in wetlands (wetland probability estimated at greater than 99 percent)

Facultative wetland plants (FACW) -- usually occur in wetlands (wetland probability estimated at 67-99 percent)

- **Facultative plants (FAC)** -- are equally likely to occur in wetlands and non-wetlands (wetland probability estimated at 34-66 percent)

Facultative non-wetland plants (FACU) -- normally occur in non-wetland (non-wetland) areas (wetland probability estimated at 1-33 percent)

- **Obligate non-wetland plants (UPL)** -- almost always occur in non-wetland areas (wetland probability estimated at less than 1 percent)
- **No indicator status (NI)**

In each plant community the dominant vegetation is determined by visual estimation of abundance in each of three vegetation categories – tree, sapling/shrub, and herbaceous plants. The wetland indicator status of each dominant species is obtained from the National List. Some of the wetland indicator status notations are followed by a "+" or a "-". These symbols indicate the particular species is at the higher end ("+") or lower end ("-") of the range of probability that that species will be found in a wetland.

3.2.2 Soils

The purpose of the field investigation relative to soils is to determine the extent to which the soils at a particular sample location are hydric. As noted, the presence of hydric soil is one diagnostic characteristic of a jurisdictional wetland.

Most finer-textured, mineral-based soils regularly experiencing cyclic periods of saturation (due to a high and fluctuating water table, for example) will display hydric soil characteristics. Hydric soil characteristics include relatively bright colored mottles (small patches of different color) occurring within a relatively dull-colored matrix (dominant color field). Matrix colors for such soils are typically gray to grayish brown. In contrast, drier mineral-based soils not experiencing cyclic periods of saturation typically display few to no mottles and a relatively bright-colored matrix, brown to yellowish brown in color.

Where practical, soil profiles are examined to a maximum depth of 16 inches below ground surface. The presence of any hydric soil indicators (e.g. saturated soil conditions [indicative of aquic or peraquic moisture regimes], sulfidic material, mottling, and/or iron/manganese oxide concretions) is noted. Selected physical and hydrologic properties of soils observed at each location (including color, texture, and ground water conditions) are compared to those characteristics of the soil series (or series inclusions) identified by the county soil survey as occurring at the sample point's location.

3.2.3 Hydrology

The purpose of the field investigations relative to site hydrology is to ascertain the extent to which wetland hydrology is present. As noted, the presence or evidence of wetland hydrology is one diagnostic characteristic of a jurisdictional wetland.

Since the requirement for wetland hydrology of saturation or inundation is limited to the growing period, an area may not be physically wet at the time of the field investigation. The Manual allows for the determination of wetland hydrology based upon evidence of past saturation or inundation. Wetland hydrology may be indicated by a number of factors, including, but not limited to, open water, wetland drainage patterns, soil saturation, watermarks on trees, drift lines, water-stained leaves, and sediment deposits.

3.2.4 Wetland Classification and Value

Wetlands are classified in a hierarchical system developed by Cowardin (1979). This system recognizes four major hierarchies of classification – Ecological System, Ecological Subsystem, Class, and Subclass. The system also includes several other modifying terms to identify characteristics such as water regime or water chemistry.

The Palustrine Ecological System was developed to group wetlands that are usually isolated on Lake Plains or in poorly drained areas. The Palustrine System is defined as "all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5%. It also includes wetlands lacking such vegetation, but with all of the following four characteristics:

(1) area less than 8 ha (20 acres); (2) active wave-formed or bedrock shoreline features lacking; (3) water depth in the deepest part of basin less than 2 m at low water; and (4) salinity due to ocean-derived salts less than 0.5%..” (Cowardin, 1979). These vegetated wetlands are traditionally called by such names as swamp, marsh, flatlands, bottomland, wet meadows, etc.

The Lacustrine Ecological System includes wetlands that are larger and/or deeper than the wetlands included in the Palustrine System. The Lacustrine System is defined as “wetlands and deepwater habitats with all of the following characteristics: (1) situated in a topographic depression or a dammed river channel; (2) lacking trees, shrubs, persistent emergents, emergent mosses or lichens with greater than 30% areal coverage; and (3) total area exceeds 8 ha (20 acres). Similar wetland and deepwater habitats totaling less than 8 ha are also included in the Lacustrine System if an active wave-formed or bedrock shoreline feature makes up all or part of the boundary, or if the water depth in the deepest part of the basin exceeds 2 m (6.6 feet) at low water. Lacustrine waters may be tidal or nontidal, but oceanderived salinity is always less than 0.5% (Cowardin, 1979).

Wetland value is a measure of the functional role the wetland has in the surrounding ecosystem. The wetland value is established by rating various characteristics of the wetland according to the Ohio EPA's *Ohio Rapid Assessment Method for Wetlands: Version 5.0* (ORAM). Characteristics that influence the determination of a wetland's value include, but are not limited to, the wetland's size, the dominant plant species present, the diversity of plant species present, the presence of forested wetlands, and impacts due to urban or agricultural activities.

4.0 RESULTS

For this project, the background information review and field investigation were completed in accordance with the methods described in **3.0 WETLAND IDENTIFICATION METHODOLOGY**. Section 4.1 details the site's background information that was reviewed prior to performing the wetland inventory fieldwork. Section 4.2 details the results of the field investigation.

4.1 PRELIMINARY RESOURCE MATERIALS

The SCS Map taken from the *Soil Survey of Erie County, Ohio* indicates six soil types occurring within the Site (see Figure 2 in Appendix A):

- 1) Del Rey silt loam, 0 to 2 percent slopes (DsA)
- 2) Kibbie fine sandy loam, 0 to 2 percent slopes (KbA)
- 3) Lenawee silty clay loam (Lc)
- 4) Marsh (Mm)
- 5) Shinrock silt loam, 2 to 6 percent slopes (SkA)
- 6) Tuscola fine sandy loam, 0 to 2 percent slopes (TuA)

The 1987 US Department of Agriculture publication entitled *Hydric Soils of the United States*, as well as the Erie County SCS office publication entitled *Erie County, Ohio, List of Hydric Soils*, recognizes one of the map units, Lenawee, as a hydric soil. Moreover, the Soil Survey indicates that Del Rey and Kibbie can contain hydric soil inclusions in depressions and drainageways. The Marsh soil map unit (Mm) is not recognized as a hydric soil but the underlying soil is typical of hydric soil.

The NWI Map indicates the presence of five wetland types within the site (see Figure 3 in Appendix A):

L2EMZ [Lacustrine, Littoral (L2), Emergent (EM), Water Regime – Intermittently flooded]

PEMY [Palustrine (P) Emergent (EM), Water Regime – Saturated/Semi-permanent/Seasonals]

PFO1Y [Palustrine (P) Forested (FO), Broad-leaved Deciduous (1Y), Water Regime – Saturated/Semi-permanent/Seasonals]

PFO1/EMY [Palustrine (P) Forested (FO), Broad-leaved Deciduous (1Y), Emergent (EM), Water Regime – Saturated/Semi-permanent/Seasonals]

PSS1Y [Palustrine (P) Scrub/Shrub (SS), Broad-leaved Deciduous (1Y), Water Regime – Saturated/Semi-permanent/Seasonals]

4.2 FIELD INVESTIGATION

The southern boundary of a coastal wetland contiguous with Sandusky Bay was identified and flagged across the delineation area (see Figure 4 in Appendix A). Eleven sample points were taken along the boundary. Six of the sample points were in non-wetland areas, while the remaining five were in wetland areas. The delineated area, wetland boundary, and the sample point locations are shown on the Wetland Location Map in Appendix A.

4.2.1 Vegetation

The non-wetland areas of the site are dominated by mixed mesophytic (medium moisture) forest, upland old field, and agricultural (corn) vegetation. The wetland areas of the site are dominated by emergent and emergent/scrub/shrub. The dominant plant species observed at the sample points are noted on the Routine Wetland Determination Data Forms contained in Appendix B.

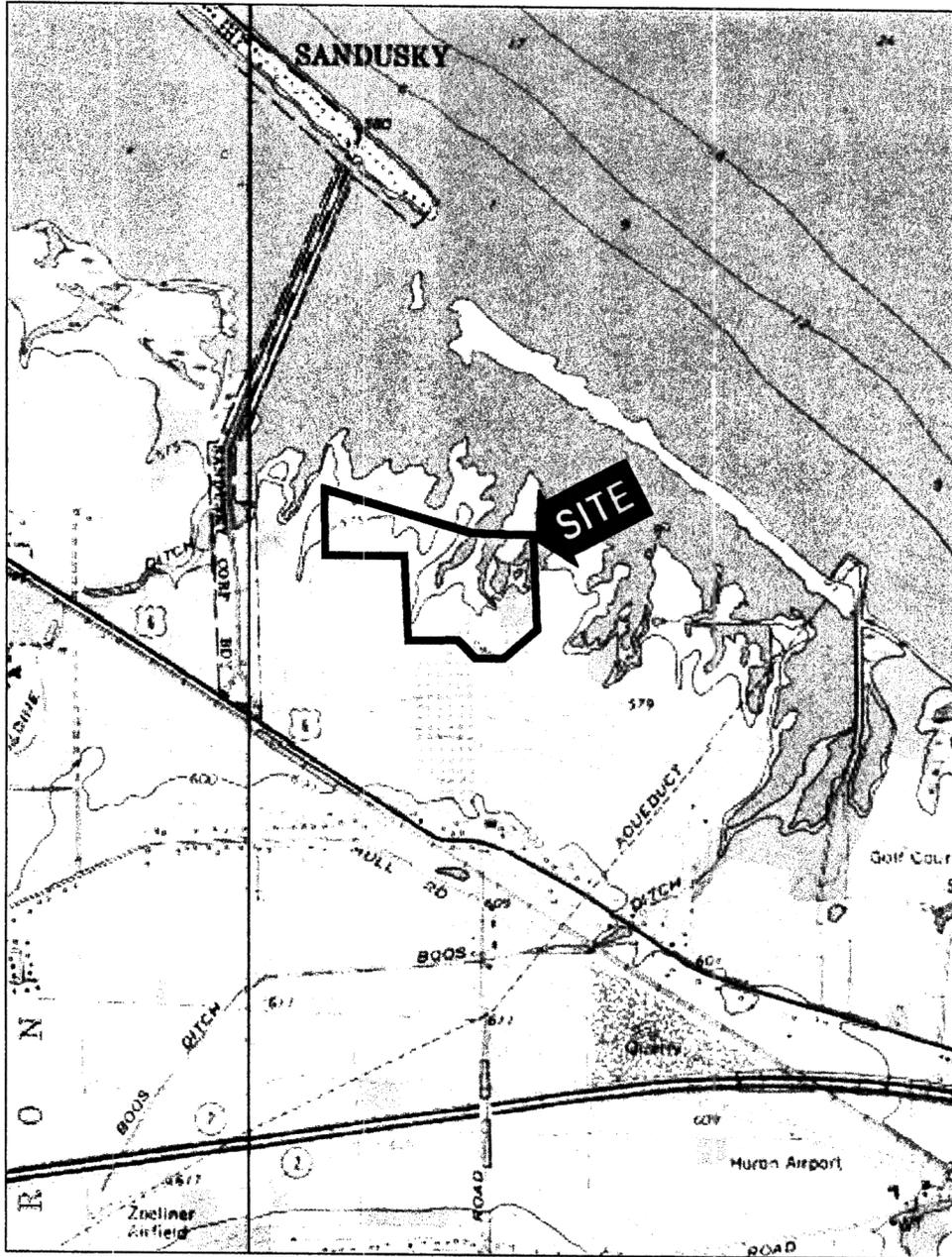
4.2.2 Soils

In general, the soil characteristics and subsurface conditions observed were consistent with the characteristics and conditions mapped in the *Soil Survey of Erie County, Ohio* (soil types as well as their hydric and non-hydric inclusions). In the non-wetland areas of the site, non-hydric soils – displaying characteristic field indicators of high-chroma (bright) matrix colors and dry conditions – were observed. In the wetland areas of the Site, hydric soils - displaying characteristic field indicators of saturated conditions, mottling, relatively low-chroma matrix colors, and/or concretions - were observed. Detailed descriptions of the soil characteristics observed at the sample points are noted on the Routine Wetland Determination Data Forms contained in Appendix B.

4.2.3 Hydrology

No indicators of wetland hydrology were observed at the six non-wetland sample points. Primary wetland hydrology indicators (wetland drainage patterns) and secondary wetland hydrology indicators (i.e. oxidized roots and a plant community dominated by wetland vegetation) were observed at the five wet sample points. Detailed descriptions of the hydrology characteristics

FIGURES



QUADRANGLE LOCATION

HURON QUADRANGLE

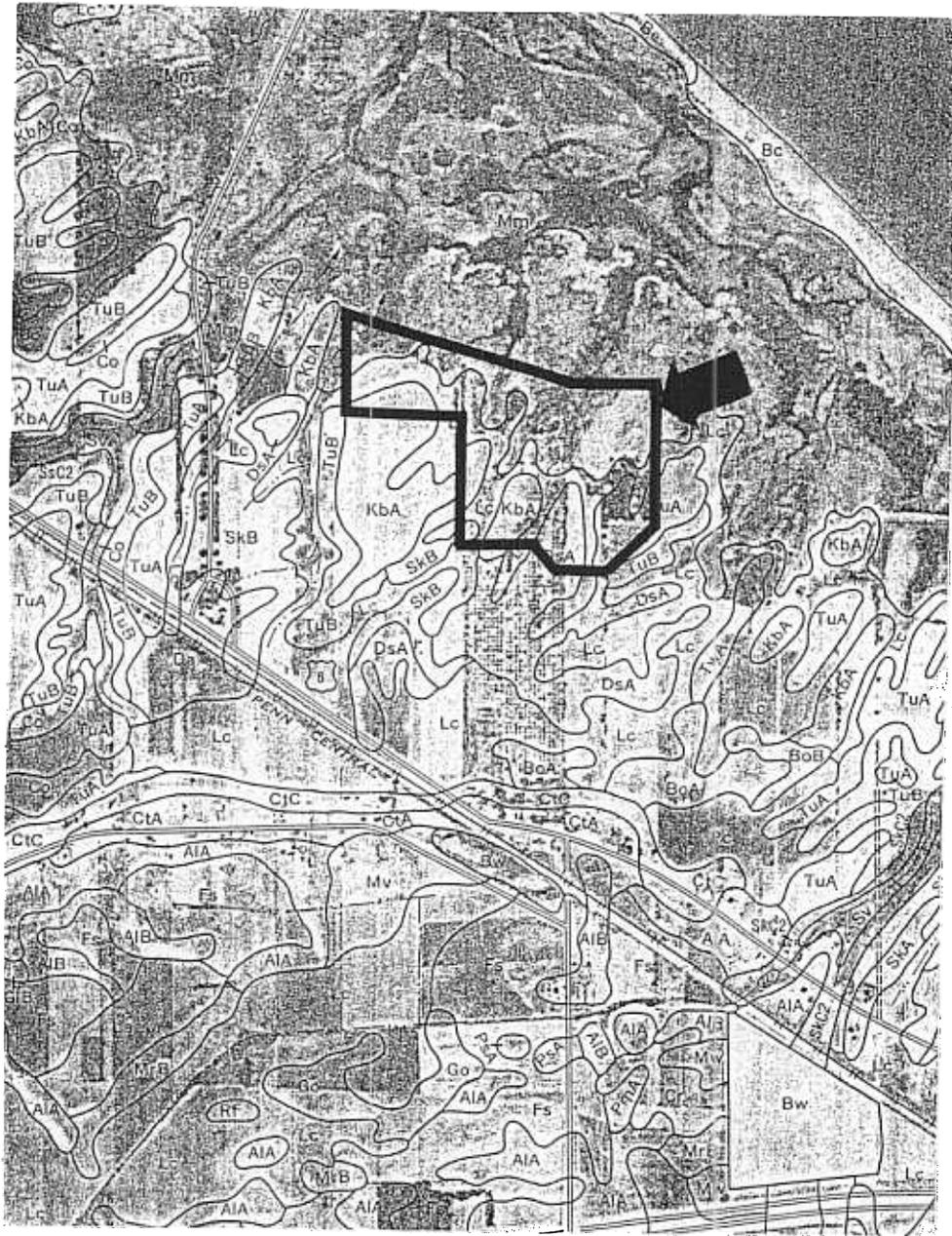
OHIO - ERIE

7.5 MINUTE SERIES (TOPOGRAPHIC)

U.S.G.S. MAP FIGURE 1

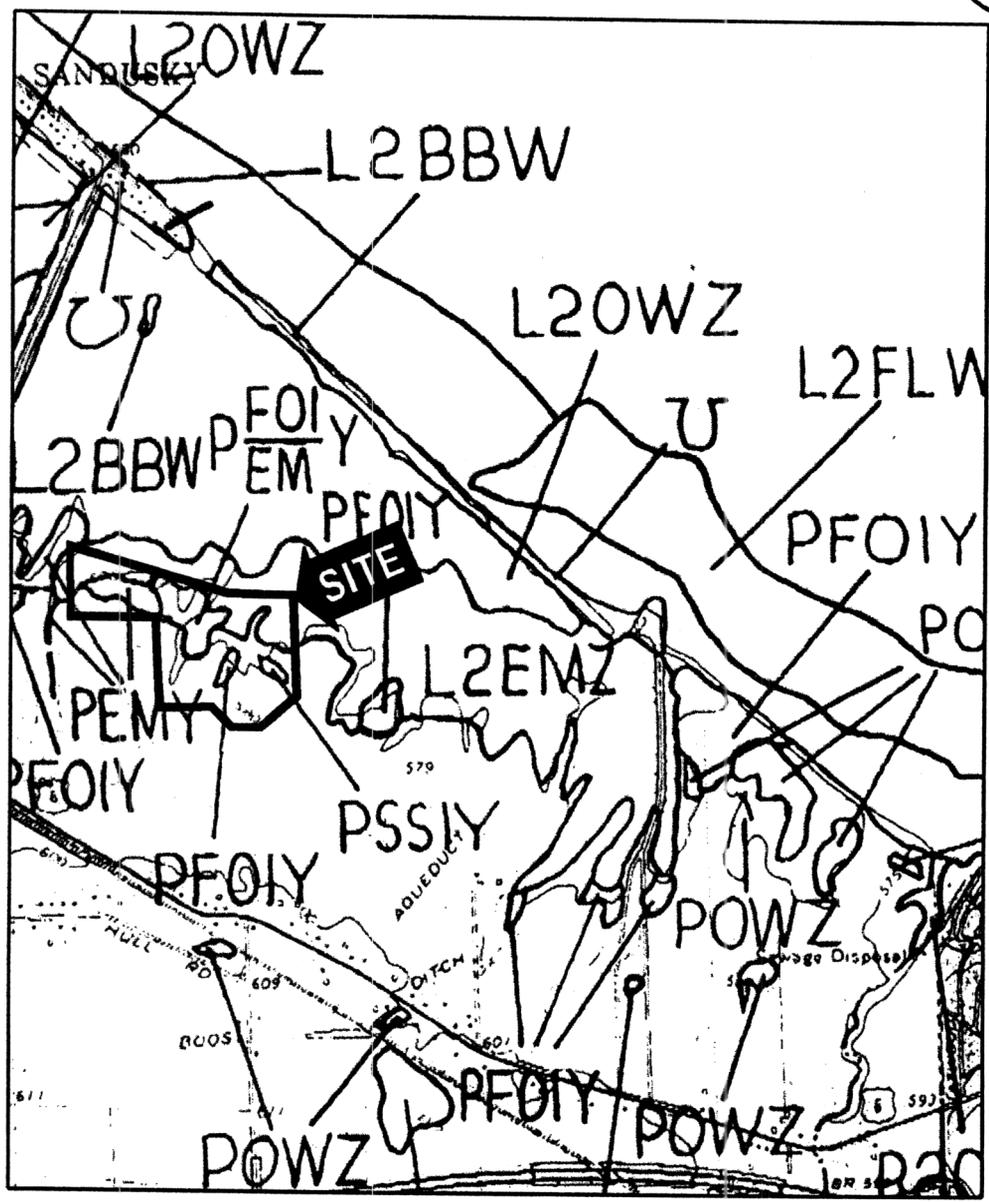
PROJECT: BARNES NURSERY
LOCATION: HURON, OHIO





SOIL TYPES IDENTIFIED ON THE SITE

- DsA** -- Del Rey silt loam, 0 to 2 percent slopes
- KbA** -- Kibbie fine sandy loam, 0 to 2 percent slopes
- Lc** -- Lenawee silty clay loam
- Mm** -- Marsh
- SkB** -- Shinrock silt loam, 2 to 6 percent slopes
- TuA** -- Tuscola fine sandy loam, 0 to 2 percent slopes



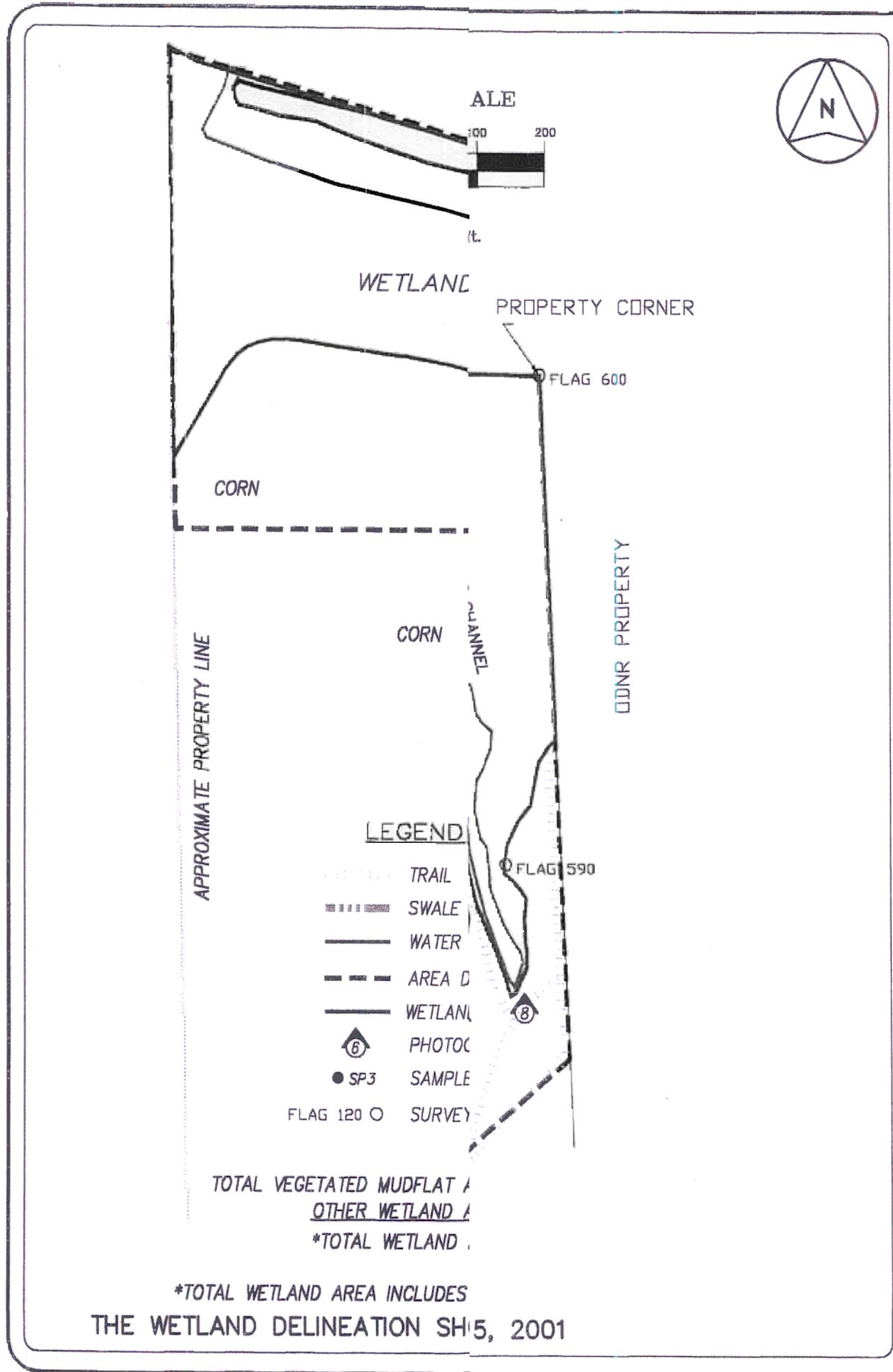
WETLAND TYPES IDENTIFIED ON THE SITE

- L2EMZ** - Lacustrine, Littoral, Emergent, Water Regime - Intermittently Flooded
- PEMY** - Palustrine Emergent, Water Regime - Saturated/Semi-Permanent/Seasonals
- PFO1Y** - Palustrine Forested, Broad-leaved Deciduous, Water Regime - Saturated/Semi-Permanent/Seasonals
- PFO1/EMY** - Palustrine Forested, Broad-leaved Deciduous, Emergent Water Regime - Saturated/Semi-permanent/Seasonals
- PSS1Y** - Palustrine Scrub/Shrub, Broad-leaved Deciduous, Water Regime - Saturated/Semi-Permanent/Seasonals

N.W.I. MAP FIGURE 3

PROJECT: BARNES NURSERY
LOCATION: HURON, OHIO





TOTAL VEGETATED MUDFLAT
 OTHER WETLAND
 *TOTAL WETLAND

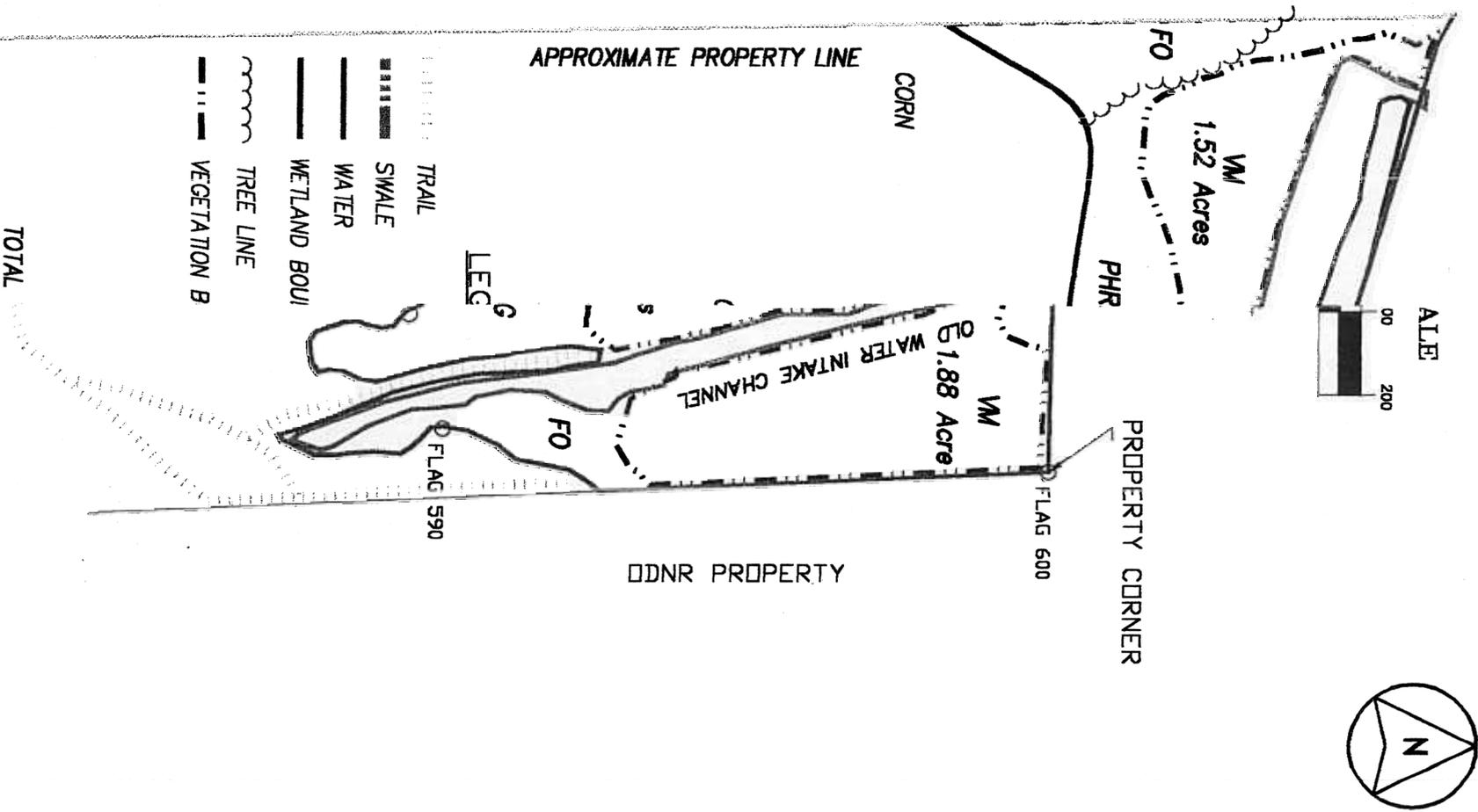
*TOTAL WETLAND AREA INCLUDES
 THE WETLAND DELINEATION SH/5, 2001

APPROVED WETLAND LOCATION MAP FIGURE 4

PROJECT: BARNES NURSERY
 LOCATION: HURON, OHIO



*TOTAL WBD



**CHAGRIN VALLEY
ENGINEERING, LTD.**

PROJECT: BARNES NURSERY
LOCATION: HURON, OHIO

VEGETATION COMMUNITIES

FIGURE 5

**ROUTINE WETLAND
DETERM NATION DATA FORMS**

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DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Barnes Nursery Applicant/Owner: Barnes Investigators: L. Ludwig	Project No.:	Date: 5-Nov-2001 County: Erie State: Ohio Plot ID: SP 1
--	---------------------	--

SOILS

Map Unit Name (Series and Phase): Lenawee silty clay loam Map Symbol: Lc Drainage Class: Very poorly drained	Mapped Hydric Inclusion? Field Observations Confirm Mapped Type? Yes <input type="radio"/> No <input checked="" type="radio"/>
Taxonomy (Subgroup): _____	

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc
0-12	A/B	10YR4/1	10YR5/8	Few Faint	Silty clay loam

Hydric Soil Indicators:

<u>NO</u> Histosol <u>NO</u> Histic Epipedon <u>NO</u> Sulfidic Odor <u>NO</u> Aquic Moisture Regime <u>NO</u> Reducing Conditions <u>YES</u> Gleyed or Low Chroma Colors	<u>NO</u> Concretions <u>NO</u> High Organic Content in Surface Layer in Sandy Soils <u>NO</u> Organic Streaking in Sandy Soils <u>YES</u> Listed on Local Hydric Soils List <u>YES</u> Listed on National Hydric Soils List <u>NO</u> Other (Explain in Remarks)
--	--

Remarks:
 Soil observed. Low-Chroma in the A/B horizon matrix indicates a soil displaying hydric soil characteristics.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	Is the Sampling Point within the Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No
Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	
Hydric Soils Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	

Remarks:
 Conditions at the sample point meet all three wetland criteria.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Barnes Nursery Applicant/Owner: Barnes Investigators: L. Ludwig	Project No:	Date: 5-Nov-2001 County: Erie State: Ohio Plot ID: SF 2
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SOILS

Map Unit Name (Series and Phase): Lenawee silty clay loam Map Symbol: Lc Drainage Class: Very poorly drained Taxonomy (Subgroup):	Mapped Hydric Inclusion? Field Observations Confirm Mapped Type? Yes <input type="radio"/> No <input checked="" type="radio"/>
---	--

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Mottle	Texture, Concretions, Structure, etc
N/A	N/A	N/A	N/A	N/A	N/A	N/A

Hydric Soil Indicators:

<u>NO</u> Histosol <u>NO</u> Histic Epipedon <u>NO</u> Sulfidic Odor <u>NO</u> Aquic Moisture Regime <u>NO</u> Reducing Conditions <u>NO</u> Gleyed or Low Chroma Colors	<u>NO</u> Concretions <u>NO</u> High Organic Content in Surface Layer in Sandy Soils <u>NO</u> Organic Streaking in Sandy Soils <u>YES</u> Listed on Local Hydric Soils List <u>YES</u> Listed on National Hydric Soils List <u>NO</u> Other (Explain in Remarks)
---	--

Remarks:
 Soil horizons mixed due to cropping.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Hydric Soils Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampling Point within the Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
---	--

Remarks:
 Conditions at the sample point do not meet all three wetland criteria.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Barnes Nursery Applicant/Owner: Barnes Investigators: L. Ludwig	Project No:	Date: 5-Nov-2001 County: Erie State: Ohio Plot ID: SP 3
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SOILS

Map Unit Name (Series and Phase): Shinrock silt loam, 2 to 6 percent slopes		Map Symbol: SkB		Drainage Class: Moderately well drained		Mapped Hydric Inclusion?	
Taxonomy (Subgroup):						Field Observations Confirm Mapped Type? Yes <input type="radio"/> No <input checked="" type="radio"/>	
Profile Description							
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast		Texture, Concretions, Structure, etc	
0-3	A	10YR3/1	N/A	N/A	N/A	Silt loam	
3-6	B	10YR4/2	10YR5/6	Few	Distinct	Silty clay loam	
6-12	C	10YR5/6	10YR4/2	Few	Faint	Silty clay loam	
Hydric Soil Indicators:							
<input type="checkbox"/> NO Histosol <input type="checkbox"/> NO Histic Epipedon <input type="checkbox"/> NO Sulfidic Odor <input type="checkbox"/> NO Aquic Moisture Regime <input type="checkbox"/> NO Reducing Conditions <input checked="" type="checkbox"/> YES Gleyed or Low Chroma Colors				<input type="checkbox"/> NO Concretions <input type="checkbox"/> NO High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> NO Organic Streaking in Sandy Soils <input type="checkbox"/> NO Listed on Local Hydric Soils List <input type="checkbox"/> NO Listed on National Hydric Soils List <input type="checkbox"/> NO Other (Explain in Remarks)			
Remarks:							
Soil profile observed. Low-Chroma in the B horizon with mottles indicates a soil with hydric soil characteristics.							

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soils Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	Is the Sampling Point within the Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No
Remarks:	
Conditions at the sample point meet all three wetland criteria.	

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Barnes Nursery Applicant/Owner: Barnes Investigators: L. Ludwig	Project No:	Date: 5-Nov-2001 County: Erie State: Ohio Plot ID: SP 4
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SOILS

Map Unit Name (Series and Phase): Shinrock silt loam, 2 to 6 percent slopes Map Symbol: SkB Drainage Class: Moderately well drained	Mapped Hydric Inclusion? Field Observations Confirm Mapped Type? Yes <input type="radio"/> No <input checked="" type="radio"/>
Taxonomy (Subgroup):	
Profile Description	

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Mottle	Texture, Concretions, Structure, etc
0-4	A	10YR3/2	N/A	N/A	N/A	Silt loam
>4	B	10YR5/6	N/A	N/A	N/A	Silty clay loam

Hydric Soil Indicators: <u>NO</u> Histosol <u>NO</u> Histic Epipedon <u>NO</u> Sulfidic Odor <u>NO</u> Aquic Moisture Regime <u>NO</u> Reducing Conditions <u>NO</u> Gleyed or Low Chroma Colors	<u>NO</u> Concretions <u>NO</u> High Organic Content in Surface Layer in Sandy Soils <u>NO</u> Organic Streaking in Sandy Soils <u>NO</u> Listed on Local Hydric Soils List <u>NO</u> Listed on National Hydric Soils List <u>NO</u> Other (Explain in Remarks)
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Remarks:
 Soil profile observed. High-Chroma in the B horizon matrix indicates a non-hydric soil.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Hydric Soils Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampling Point within the Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
 Conditions at the sample point do not meet all three wetland criteria.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Barnes Nursery Applicant/Owner: Barnes Investigators: L. Ludwig	Project No:	Date: 5-Nov-2001 County: Erie State: Ohio Plot ID: SP 5
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SOILS

Map Unit Name (Series and Phase): Lenawee silty clay loam Map Symbol: Lc Drainage Class: Very poorly drained	Mapped Hydric Inclusion? Field Observations Confirm Mapped Type? Yes <input type="radio"/> No <input checked="" type="radio"/>
Taxonomy (Subgroup):	
Profile Description	

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast		Texture, Concretions, Structure, etc
0-3	A	10YR3/1	N/A	N/A	N/A	Silt loam
3-8	B	10YR3/2	10YR5/6	Few	Faint	Silty clay loam
8-15	C	10YR5/6	N/A	N/A	N/A	Silty clay loam

Hydric Soil Indicators:

<u>NO</u> Histosol <u>NO</u> Histic Epipedon <u>NO</u> Sulfidic Odor <u>NO</u> Aquic Moisture Regime <u>NO</u> Reducing Conditions <u>YES</u> Gleyed or Low Chroma Colors	<u>NO</u> Concretions <u>NO</u> High Organic Content in Surface Layer in Sandy Soils <u>NO</u> Organic Streaking in Sandy Soils <u>YES</u> Listed on Local Hydric Soils List <u>YES</u> Listed on National Hydric Soils List <u>NO</u> Other (Explain in Remarks)
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Remarks:
 Soil profile observed. Low-Chroma in the B horizon matrix with mottles indicates a soil with hydric soil characteristics.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	Is the Sampling Point within the Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No
Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	
Hydric Soils Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	

Remarks:
 Conditions at the sample point meets all three wetland criteria.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Barnes Nursery Applicant/Owner: Barnes Investigators: L. Ludwig	Project No:	Date: 5-Nov-2001 County: Erie State: Ohio Plot ID: SP
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SOILS

Map Unit Name (Series and Phase): Lenawee silty clay loam Map Symbol: Lc Drainage Class: Very poorly drained	Mapped Hydric Inclusion? Field Observations Confirm Mapped Type? Yes <input type="radio"/> No <input checked="" type="radio"/>
Taxonomy (Subgroup):	
Profile Description	

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast		Texture, Concretions, Structure, etc
0-9	A	10YR3/3	N/A	N/A	N/A	Silt loam
>9	B	10YR5/3	N/A	N/A	N/A	Silty clay loam

Hydric Soil Indicators:

<u>NO</u> Histosol <u>NO</u> Histic Epipedon <u>NO</u> Sulfidic Odor <u>NO</u> Aquic Moisture Regime <u>NO</u> Reducing Conditions <u>NO</u> Gleyed or Low Chroma Colors	<u>NO</u> Concretions <u>NO</u> High Organic Content in Surface Layer in Sandy Soils <u>NO</u> Organic Streaking in Sandy Soils <u>YES</u> Listed on Local Hydric Soils List <u>YES</u> Listed on National Hydric Soils List <u>NO</u> Other (Explain in Remarks)
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Remarks:
 Soil profile observed. High-Chroma in the B horizon matrix indicates a non-hydric soil.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampling Point within the Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	
Hydric Soils Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	

Remarks:
 Conditions at the sample point do not meet all three wetland criteria.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Barnes Nursery Applicant/Owner: Barnes Investigators: L. Ludwig	Project No:	Date: 5-Nov-2001 County: Erie State: Ohio Plot ID: SP 7
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SOILS

Map Unit Name (Series and Phase): Kibbie fine sandy loam, 0 to 2 percent slopes	
Map Symbol: KbA	Drainage Class: Somewhat poorly drained
Taxonomy (Subgroup):	Mapped Hydric Inclusion?
Profile Description	Field Observations Confirm Mapped Type? Yes <input type="radio"/> No <input checked="" type="radio"/>

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Mottle N/A	Texture, Concretions, Structure, etc
0-12	A/B	10YR3/1	N/A	N/A	N/A	Silty clay loam

Hydric Soil Indicators:

<u>NO</u> Histosol	<u>NO</u> Concretions
<u>NO</u> Histic Epipedon	<u>NO</u> High Organic Content in Surface Layer in Sandy Soils
<u>NO</u> Sulfidic Odor	<u>NO</u> Organic Streaking in Sandy Soils
<u>NO</u> Aquic Moisture Regime	<u>NO</u> Listed on Local Hydric Soils List
<u>NO</u> Reducing Conditions	<u>NO</u> Listed on National Hydric Soils List
<u>YES</u> Gleyed or Low Chroma Colors	<u>NO</u> Other (Explain in Remarks)

Remarks:
 Soil observed. Low-Chroma in the B horizon matrix indicates a soil with hydric soil characteristics

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	Is the Sampling Point within the Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No
Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	
Hydric Soils Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	

Remarks:
 Conditions at the sample point meet all three wetland criteria.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Barnes Nursery Applicant/Owner: Barnes Investigators: L. Ludwig	Project No:	Date: 5-Nov-2001 County: Erie State: Ohio Plot ID: SP 11
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SOILS

Map Unit Name (Series and Phase): Tuscola fine sandy loam, 0 to 2 percent slopes
Map Symbol: TuA **Drainage Class:** Moderately well drained soils **Mapped Hydric Inclusion?** Kibbie, Galen
Taxonomy (Subgroup): **Field Observations Confirm Mapped Type?** Yes No

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast		Texture, Concretions, Structure, etc
0-3	A	10YR3/1	N/A	N/A	N/A	Silt loam
>3	B	2.5Y5/3	N/A	N/A	N/A	Silty clay loam

Hydric Soil Indicators:

<u>NO</u> Histosol	<u>NO</u> Concretions
<u>NO</u> Histic Epipedon	<u>NO</u> High Organic Content in Surface Layer in Sandy Soils
<u>NO</u> Sulfidic Odor	<u>NO</u> Organic Streaking in Sandy Soils
<u>NO</u> Aquic Moisture Regime	<u>NO</u> Listed on Local Hydric Soils List
<u>NO</u> Reducing Conditions	<u>NO</u> Listed on National Hydric Soils List
<u>NO</u> Gleyed or Low Chroma Colors	<u>NO</u> Other (Explain in Remarks)

Remarks:
 Soil profile observed. High-Chroma in the B horizon matrix indicates a non-hydric soil.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	is the Sampling Point within the Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	
Hydric Soils Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	

Remarks:
 Conditions at the sample point do not meet all three wetland criteria.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Barnes Nursery Applicant/Owner: Barnes Investigators: L. Ludwig	Project No:	Date: 5-Nov-2001 County: Erie State: Ohio Plot ID: SP B
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SOILS

Map Unit Name (Series and Phase): Kibbie fine sandy loam, 0 to 2 percent slopes						
Map Symbol: KbA			Drainage Class: Somewhat poorly drained		Mapped Hydric Inclusion?	
Taxonomy (Subgroup):				Field Observations Confirm Mapped Type? Yes <input type="radio"/> No <input checked="" type="radio"/>		
Profile Description						
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast		Texture, Concretions, Structure, etc
0-3	A	10YR3/2	N/A	N/A	N/A	Silt loam
>3	B	10YR4/3	N/A	N/A	N/A	Silty clay loam

Hydric Soil Indicators:

<u>NO</u> Histosol <u>NO</u> Histic Epipedon <u>NO</u> Sulfidic Odor <u>NO</u> Aquic Moisture Regime <u>NO</u> Reducing Conditions <u>NO</u> Gleyed or Low Chroma Colors	<u>NO</u> Concretions <u>NO</u> High Organic Content in Surface Layer in Sandy Soils <u>NO</u> Organic Streaking in Sandy Soils <u>NO</u> Listed on Local Hydric Soils List <u>NO</u> Listed on National Hydric Soils List <u>NO</u> Other (Explain in Remarks)
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Remarks:
 Soil profile observed. High-Chroma in the B horizon matrix indicates a non-hydric soil.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Hydric Soils Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampling Point within the Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Remarks:
 Conditions at the sample point do not meet all three wetland criteria.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Barnes Nursery Applicant/Owner: Barnes Investigators: L. Ludwig	Project No:	Date: 5-Nov-2001 County: Erie State: Ohio Plot ID: SP 9
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SOILS

Map Unit Name (Series and Phase): Lenawee silty clay loam Map Symbol: Lc Drainage Class: Very poorly drained	Mapped Hydric Inclusion? Field Observations Confirm Mapped Type? Yes <input type="radio"/> No <input checked="" type="radio"/>
Taxonomy (Subgroup):	
Profile Description	

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast		Texture, Concretions, Structure, etc
0-3	A	10YR3/1	N/A	N/A	N/A	Silt loam
>3	B	10YR4/2	10YR5/6	Few	Distinct	Silty clay loam

Hydric Soil Indicators: <u>NO</u> Histosol <u>NO</u> Histic Epipedon <u>NO</u> Sulfidic Odor <u>NO</u> Aquic Moisture Regime <u>NO</u> Reducing Conditions <u>YES</u> Gleyed or Low Chroma Colors	<u>NO</u> Concretions <u>NO</u> High Organic Content in Surface Layer in Sandy Soils <u>NO</u> Organic Streaking in Sandy Soils <u>YES</u> Listed on Local Hydric Soils List <u>YES</u> Listed on National Hydric Soils List <u>NO</u> Other (Explain in Remarks)
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Remarks:
 Soil profile observed. Low-Chroma in the B horizon matrix with mottles indicates a soil with hydric soil characteristics.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	
Wetland Hydrology Present?	
Hydric Soils Present?	

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Barnes Nursery Applicant/Owner: Barnes Investigators: L. Ludwig	Project No:	Date: 5-Nov-2001 County: Erie State: Ohio Plot ID: SP-10
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SOILS

Map Unit Name (Series and Phase): Lenawee silty clay loam		Map Symbol: Lc		Drainage Class: Very poorly drained		Mapped Hydric Inclusion?	
Taxonomy (Subgroup):						Field Observations Confirm Mapped Type? Yes <input type="radio"/> No <input checked="" type="radio"/>	
Profile Description							
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast		Texture, Concretions, Structure, etc	
0-4	A	10YR3/1	N/A	N/A	N/A	Silt loam	
>4	B	10YR4/2	N/A	N/A	N/A	Silt loam	
Hydric Soil Indicators:							
<u>NO</u> Histosol				<u>NO</u> Concretions			
<u>NO</u> Histic Epipedon				<u>NO</u> High Organic Content in Surface Layer in Sandy Soils			
<u>NO</u> Sulfidic Odor				<u>NO</u> Organic Streaking in Sandy Soils			
<u>NO</u> Aquic Moisture Regime				<u>YES</u> Listed on Local Hydric Soils List			
<u>NO</u> Reducing Conditions				<u>YES</u> Listed on National Hydric Soils List			
<u>NO</u> Gleyed or Low Chroma Colors				<u>NO</u> Other (Explain in Remarks)			
Remarks:							
Soil profile observed. Low-Chroma in the B horizon without mottles indicates a non-hydric soil.							

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	is the Sampling Point within the Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	
Hydric Soils Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	
Remarks:	
Conditions at the sample point do not meet all three wetland criteria	

PHOTOJOURNAL

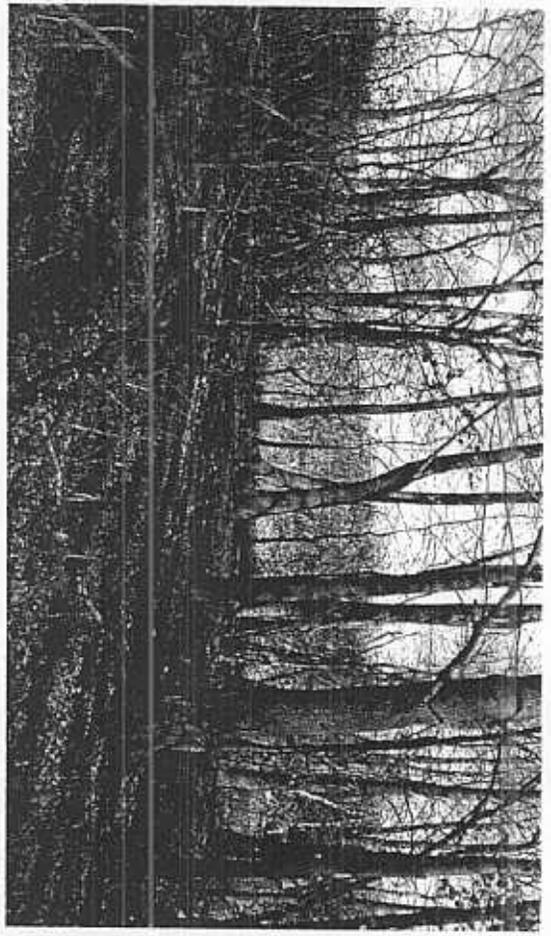


PHOTO 5: View, looking north, of Wetland

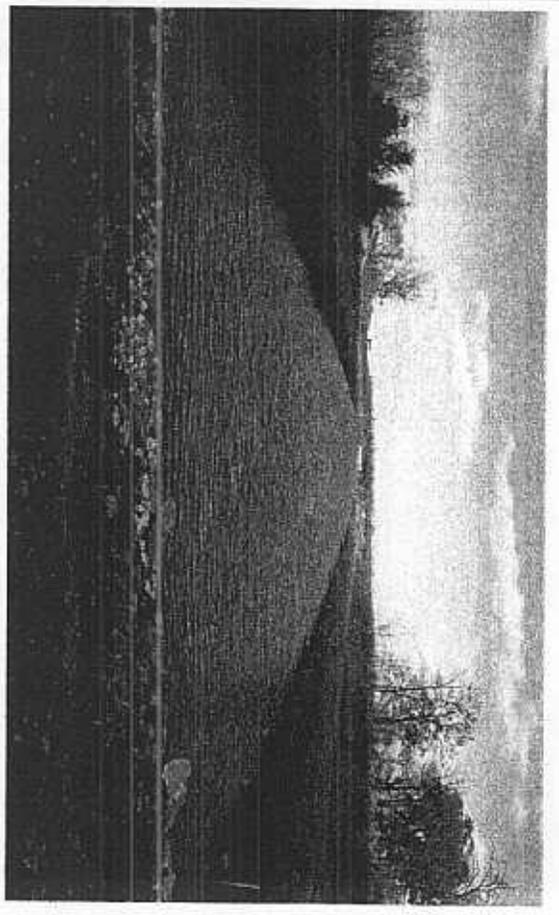


PHOTO 6: View, looking north, of water intake channel



PHOTO 7: View, looking north, of Wetland

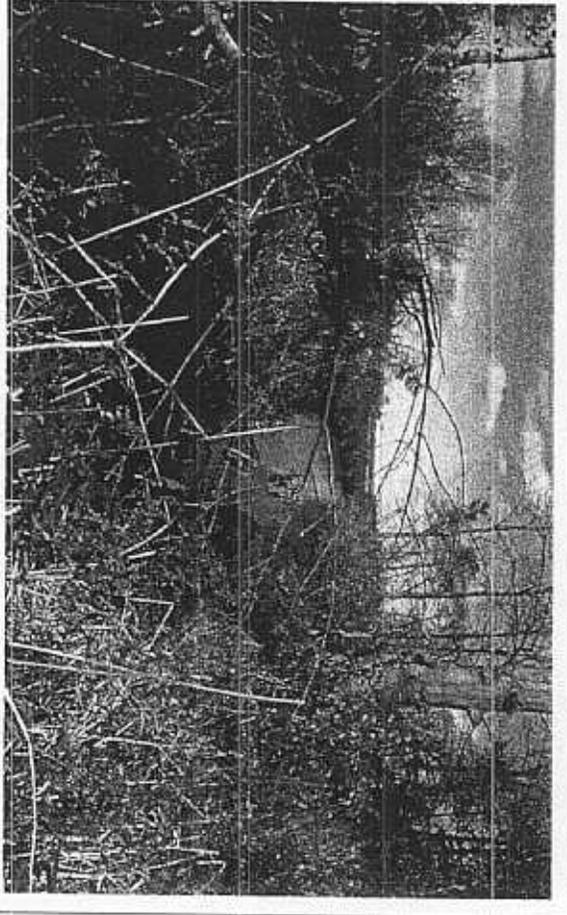


PHOTO 8: View, looking north, of old water intake channel