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CPC Planning Bulletin

CHESTER COUNTY PLANNING COMMISSION

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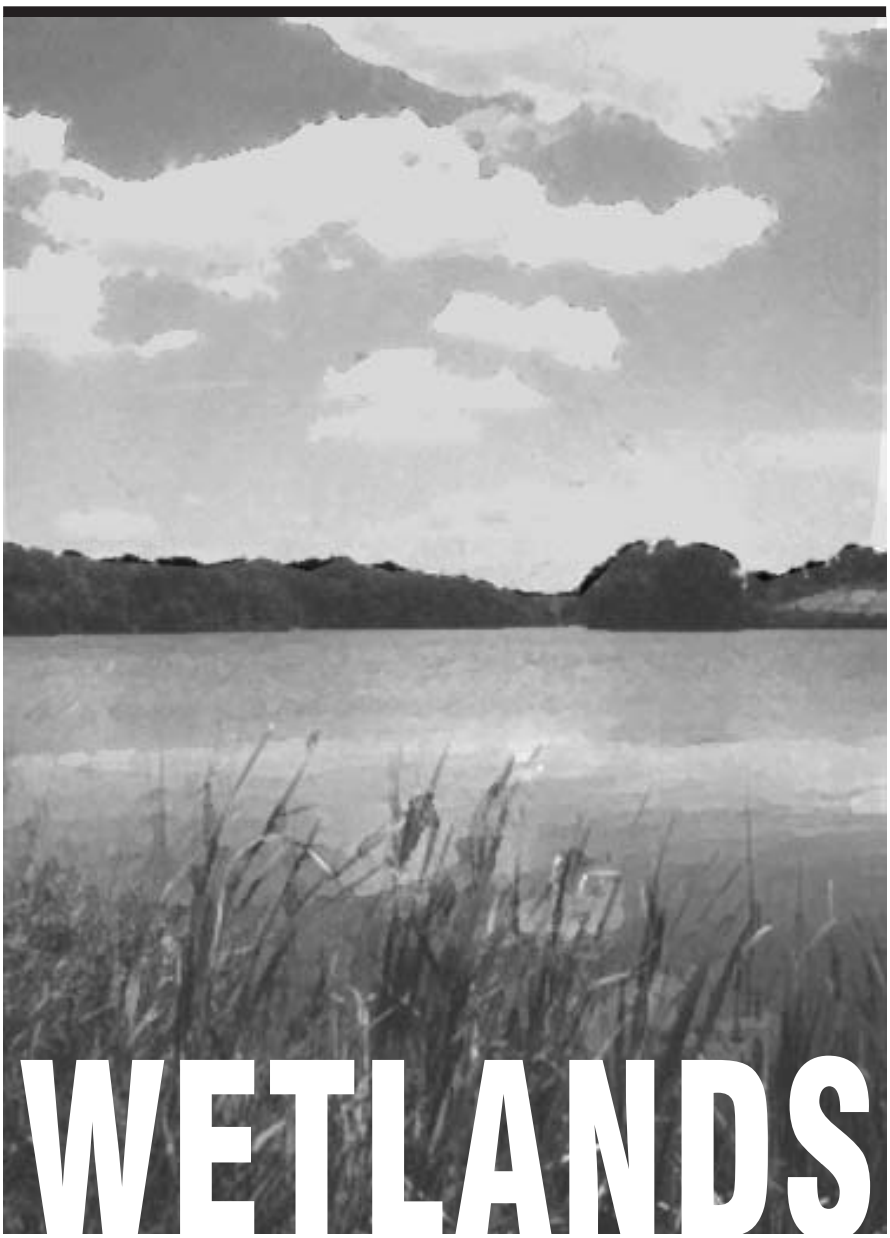


WETLANDS

"Plans to protect air and water, wilderness and wildlife are in fact plans to protect man."

Stuart Udall

BOARD OF COUNTY COMMISSIONERS

Karen L. Martynick, Chairman
Colin A. Hanna
Andrew E. Dinniman

Table of Contents

Introduction

Wetlands provide a vital link between the water and land. Diverse in form and function, wetlands include marshes, swamps, bogs, fens, mosses, muskegs, mires, and vernal and ephemeral pools (Horne and Goldman, 1994) that are generally found in flat vegetated areas, in depressions in the landscape, and between dry land and water along the edges of streams, rivers, lakes, and coastlines (EPA, 2001). Found in every climatic zone and county in the United States, chances are that a wetland exists right in your neighborhood, or very close to it. However, due to the seasonal and physical characteristics of wetlands being so varied, they may be difficult to identify. While some may be consistently wet, others may appear to be completely dry for the greater part of the year.

Wetlands are lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface. The single feature that most wetlands share is soil or substrate that is permanently or regularly flooded or remains saturated for extended periods of time during the growing season. Due to regional and local differences in soils, topography, climate, hydrology, water chemistry, vegetation, and other factors, including human disturbance, wetlands tend to vary widely.

Wetlands are ecotones, the transitional zone between land and water, and they combine characteristics of both environments besides having some unique characteristics of their own (Horne and Goldman, 1994). The habitat consists of permanent or seasonal shallow water dominated by large aquatic plants and is broken into diverse microhabitats. Since waterlogged soils, otherwise known as hydric soils, are usually anoxic, or lacking oxygen, this changes the availability of oxygen to plants and the chemical state and biological availability of nutrients and toxicants in soils (Horne and Goldman, 1994). As a result, the vegetation found in wetlands have specially adapted systems for survival in a wet environment, and are known as hydrophytic vegetation.

While the perception of what a wetland looks like may vary, one consistency is that many wetlands have been altered by human activities such as farming, ranching, and the building of roads, dams, and towns (DER, 1990; EPA, 2001). Previously regarded as wastelands inundated with mosquitoes, flies, unpleasant odors, and disease, people perceived wetlands as places to shun or, better yet, do away with. As a result of this misconception, more than half of the wetlands within Pennsylvania have been destroyed, having been drained and either converted to farmland, filled for housing developments and industrial facilities, or used to dispose of household and industrial wastes (DER, 1990; DEP, 2001). With the increase in environmental awareness the ecological functions of wetlands were understood and their importance recognized. Wetlands were found to help regulate water levels within watersheds, improve water quality, reduce flood and storm damages, provide important fish and wildlife habitat, and support hunting, fishing, and other recreational activities (DER, 1990; EPA 2001). This understanding brought about a change in attitude towards wetlands, with most now realizing that they are valuable natural resources worthy of protection.

Pennsylvania in 1780 had over 1,000,000 acres of wetlands, while today, less than 404,000 wetland acres remain, covering less than 2 percent of the state's total land area (Alliance for the Chesapeake Bay, 1997). Since 1990 Pennsylvania has been able to increase its wetland acreage by almost 4,000 acres (DEP, 2001). Wetlands provide resources to the nearly 70 percent of threatened and endangered species of wildlife in Pennsylvania (Alliance for the Chesapeake Bay, 1997). They provide corridors for food, cover, and nesting places for many species of birds, aquatic mammals, and reptiles, with all game species being dependent on wetlands for survival. People too enjoy wetlands for recreational sports and hobbies such as hiking

and bird watching. Wetlands also add beauty to roadways creating scenic corridors and increase property values by keeping nearby waterways clean and adding a touch of nature. In view of their natural beauty and assets to both the environment and public, the Chester County Planning Commission (CCPC) through the comprehensive plan, ***Landscapes***, and the Chester County Water Resources Authority (CCWRA) through the integrated water resources plan, *Watersheds*, are taking steps to encourage the protection and pursuit of opportunities to create and/or re-establish wetlands.

Wetland Classification

Wetlands are divided into four major groups based upon the dominant large vegetation, water source, and the presence or absence of peat (Horne and Goldman, 1994). These groups are marshes, swamps, fens, and bogs. Marshes are characterized by emergent aquatic plants, but not trees, and are fed by ground and river waters. Swamps too are fed by ground and river waters, however, swamps are dominated by trees. Fens are likely alkaline in nature, contain both mosses and aquatic plants, and are fed by mineral-rich groundwater. Bogs are characteristically acidic, have very low species diversity, contain an abundance of peat-building Sphagnum moss, and are dependent upon mineral-poor rainwater. Of the four, bogs, fens, and many marshes are underlain by thick peat deposits, oft times forming peat mats. Swamps are typically poor in peat deposits since they are generally washed away during flooding or oxidized in the dry season.

Wetlands are also separated into functional categories based on the presence or absence of a dry period (Horne and Goldman, 1994). The two possible functional classifications are seasonal and permanent wetlands. Bogs and fens are constantly wet, but marshes and swamps may be flooded permanently or only seasonally. Seasonal wetlands are distinguished by a dry period where all or most of the area reverts to terrestrial status. These wetlands are typically quite productive during the wet season, with algae, aquatic grasses, some plants, insect larvae, and other small organisms that can tolerate the rigorous environment often flourishing and providing a temporary home and food supply for migratory birds. Permanent wetlands are those typically found in river deltas, margins of ponds and lakes, tidal estuaries, and flat areas in the mountains. These are usually less productive wetlands typified by large, long-lived trees and tall reeds capable of withstanding the permanently waterlogged conditions. Permanent wetlands provide breeding grounds for a number of birds, mammals, fish, and reptiles.

Wetlands are further broken down into system types, which have been thoroughly discussed in scientific literature and have well recognized concepts. The U.S. Fish and Wildlife Service (FWS) has classified wetlands into five recognized systems: Marine, Estuarine, Palustrine, Riverine, and Lacustrine (Cowardin et al., 1979). In Chester County there are no examples of either Marine or Estuarine wetlands since these systems are found near coastal waters. The dominant system type in Chester County is the Palustrine wetland according to the Army Corps of Engineers (USACE) and the National Wetlands Inventory (NWI) Maps. These wetlands are nontidal and dominated by trees, shrubs, persistent emergents, and emergent mosses and lichens. Included in this system are the small and shallow, permanent or intermittent bodies of water known as ponds. Palustrine wetlands are often forested, such as the Red Maple Swamps and Green Ash Swamps that are both common in Chester County. Riverine wetlands are all the creeks, streams, and rivers that are under two meters deep throughout the county that are both perennial and intermittent. The Riverine system classification includes only the actual water bodies, while the adjacent areas capable of supporting persistent emergents are classified as Palustrine. Lacustrine wetlands are those portions of lakes which are under two meters deep but are not shallow enough to support the growth of persistent emergents.

Examples of Lacustrine wetlands in Chester County can be seen at portions of Marsh Creek Reservoir, Coatesville Reservoir, Pickering Creek Reservoir, West Chester Reservoir, and at Struble Lake.

Within each system, wetlands are further broken down into class, and within each class are subclasses (Cowardin, et al., 1979). The recognized classes are forested, scrub-shrub, and emergent wetlands. Forested wetlands comprise nearly 221,000 acres of the Pennsylvania wetlands (DEP, 2001). These are wet areas dominated by large woody trees that are over twenty feet in height. Scrub-shrub wetlands are predominately small trees less than twenty feet in height and shrubs such as spicebush and highbush blueberry. Scrub-shrub wetlands comprise 139,000 acres in Pennsylvania (DEP, 2001). Emergent wetlands are vegetated by grasses, sedges, rushes, and other herbaceous plants; this class encompasses about 14 percent of Pennsylvania's wetlands (DEP, 2001).

Wetland Function

Wetlands are valuable to communities because they improve water quality, regulate water supply, control floodwaters, control erosion, support fish and wildlife, provide natural resource products, provide a setting for outdoor recreation, provide educational opportunities, and help preserve the natural beauty of the community.

Water Quality Improvement

Wetlands improve water quality by removing suspended and dissolved chemicals and materials as the water passes through them (EPA, 2001). As water flows through a wetland, it passes slowly causing suspended sediments to drop to the bottom or be blocked by wetland plants. These same sediments if permitted to build up would clog waterways and affect fish and amphibian egg development. Many fish and amphibian species are particularly susceptible to sediment deposits since it can cover and prevent eggs from hatching, fill in spawning sites, and eliminate much of the insect life that they feed on (EPA, 2001). The removal of chemicals and other pollutants from the water serves the crucial function of preventing waters from becoming polluted. Bacteria in wetland soils take up many nutrients, transforming them into forms more easily used by plants. The ability of wetlands to absorb and break down pollution to treat waste and stormwater has promoted the creation of artificial wetlands to treat wastewater. These sites, however, are limited since scientists still do not know just how much can actually be absorbed by wetlands. By performing this filtering function, wetlands could potentially save us a great deal of money compared to conventional treatment facilities.

Water Supply

Many Americans depend on groundwater for drinking. In addition to improving water quality through filtering, some wetlands maintain stream flow during dry periods, and many replenish groundwater. Groundwater may discharge into or out of the wetland. Wetland plants and soils have the capability to absorb large quantities of water, and this water may later be released either to replenish groundwater supplies or to be slowly released to replenish or maintain surface water supplies (DER, 1990).

Flood Protection

Wetlands help control flooding by storing water during times of heavy rainfall, snowmelt, or high water discharge from adjacent streams (DER, 1990). Trees, root mats, and other wetland vegetation also slow the speed of floodwaters and distribute them more slowly over the floodplain (EPA, 2001). Some water may also be evaporated or taken up by the wetland plants. This combination of temporary water storage, absorption, and braking action lowers flood heights and reduces erosion. The offsetting of the greatly increased rate and volume of surface- water runoff due to their increased impervious surfaces particularly benefits urban areas having wetlands within or downstream of their city limits.

Wetlands can minimize the costs of disaster relief and property repair by controlling floodwaters. Preserving and restoring wetlands, together with other water retention methods, can often provide the level of flood control otherwise provided by expensive dredge operations and levees. Wetlands undoubtedly help protect the public from flood damage and may reduce the need for public expenditures on flood control structures or extensive drainage systems.

Shoreline Erosion

Wetlands at the margins of lakes, rivers, bays, and the ocean protect shorelines and stream banks against erosion (EPA, 2001). Wetland plants perform two functions in helping control erosion. The plant roots anchor the soils along riverbanks and lakeshores, holding the soils in place while the stems and leaves of the plants dissipate the wave and current energy hitting the shoreline. The ability of wetlands to control erosion is so valuable that some communities are working to preserve their wetlands to avoid future expenditures on sediment control traps, while other communities are looking to replace their shoreline wetlands for the same purposes.

Fish and Wildlife Habitat

As was previously mentioned, wetlands support a variety of different animals and plants, of which 70 percent of Pennsylvania's threatened and endangered species are dependent. Considered one of the earth's most productive ecosystems, on par with rainforests and coral reefs, wetlands provide an abundant food supply for wildlife (EPA, 2001). Invertebrates, such as crabs, clams, shrimp, and others and some vertebrates, such as fish and other small lower feeding organisms, rely on the detrius, or broken down organic plant material for food. In turn, these creatures then support the upper levels of the food chain by providing food for larger animals. In addition to being a food source, wetlands, due to the shallow waters and slow current, provide breeding grounds and shelter for more than 100 species of fish, including most of the important commercial game fish breeds (DER, 1990).

Many animals and plants, like wood ducks, muskrat, cattails, and swamp rose, are only capable of living in inland wetlands. In Pennsylvania, over 140 species of water-fowl and non-game birds roost or winter in wetland areas due to the ample food supply and cover (DER, 1990). Wetlands are also ideal breeding sites for many U.S. bird populations, including ducks, geese, woodpeckers, hawks, wading birds, and many song-birds-which feed, nest, and raise their young in wetlands. In addition, migratory waterfowl use coastal and inland wetlands as resting, feeding, breeding, or nesting grounds for at least part of the year. While a number of animals rely solely on wetlands for survival, there are also a number of organisms for which wetlands supply important food, water, or shelter. Animals, such as the striped bass, peregrine falcon, otter, black bear, raccoon, and deer, are provided for by wetlands.

Natural Products for Our Economy

Wetlands are capable of providing a variety of products, a number of which have become commercially important. Fish and shellfish, blueberries, cranberries, timber, wild rice, as well as some soil and plant derived medicines are harvested from wetlands. In Pennsylvania, one of

the largest harvests to come from wetlands is peat, the mining of which is strictly regulated by the Pennsylvania Department of Environmental Protection (DEP).

Recreation and Aesthetics

Wetlands are also recognized as valuable scenic, recreational, and educational resources. Found aesthetically appealing due to the open space and attractive landscape they provide, wetlands have been the topic of countless works of art. Painters and writers continue to capture the beauty of wetlands on canvas and paper, or through cameras, and video and sound recorders. Wetlands can also provide education through hiking, boating, and other recreational activities which explore this natural resource.

Preliminary Wetlands Identification

There are three essential characteristics that must be found for an area to be considered a wetland. The presence of hydrophytic vegetation, hydric soils, and wetland hydrology are the technical criteria for identifying a wetland, and must be met (Federal Interagency Committee for Wetland Delineation, 1989). Field indicators and other information provide direct and indirect evidence for determining if each of the three criteria is met. However, wetland delineation is a complicated process that should only be undertaken by professionals that are familiar with the procedure, understand wetland hydrology, and are competent in wetland plant and soil identification.

Listed below are tools that can by utilized for preliminary wetlands identification. While these steps may help you determine if a wetland is present or not, a professional familiar with wetland ecology should always be consulted for an accurate identification.

National Wildlife Inventory Maps

The NWI of the FWS produces information on the characteristics, extent, and status of the Nation's wetlands and deepwater habitats. Maps produced by the NWI can be used to do preliminary analysis of a site. The NWI maps show wetland areas superimposed over USGS 1:250,000 topographic maps. Wetlands are identified and classified based on vegetation, visible hydrology, and geography, as interpreted from high-altitude photographs. Where field checking of a site was performed it is indicated. Wetlands are classified on the maps, so that the user can see exactly what type of wetland is shown, be it a pond, marsh, or forested area. The classification system is fairly complex, and is difficult to follow without *Classification of Wetlands and Deep Water Habitats of the U.S.*, also a publication of the FWS.

While the maps are described as having a 95 percent confidence interval, the maps should not be used as an absolute indicator. In addition, the following disclaimer is written on the maps: "Regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory." As an example, the 1987 USACE Wetlands Delineation Manual notes two principal factors that contribute to the difference between the manual and the wetlands identified in the NWI maps. These are that the NWI maps include all categories of special aquatic sites and the NWI maps require that one out of the three positive indicators for wetlands be present, while the USACE manual requires that all parameters be present for a positive wetlands identification (Environmental Laboratory, 1987). NWI maps are available for Chester County, and can be obtained by either calling the USGS at 1-888-ASK-USGS or visiting the FWS Web site at www.fws.gov.

Hydric Soils

Hydric soils are those that are saturated, flooded, or ponded for a sufficient period of time during the growing season to develop anaerobic conditions in the upper soil layer (Federal Interagency Committee for Wetland Delineation, 1989). These soils are those that usually support hydrophytic vegetation, another sign of wetlands. While the presence of hydric soils is a good indicator that wetlands may be present, it is not an absolute indicator since hydrophytic plants and wetland hydrology must also be present. The U.S. Soil Conservation Service has compiled a list of hydric soils, for which a list of Chester and Delaware Counties is included in Appendix I.

Hydrophytic Vegetation

Hydrophytic vegetation is the plant life growing in water, soil, or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content. Of the 7,000 vascular plants found growing in U.S. wetlands, only about 27 percent are obligate wetland species, and nearly always occur under natural conditions (Federal Interagency Committee for Wetland Delineation, 1989). The FWS in cooperation with the National and Regional Interagency Review Panels has published the "National List of Plant Species That Occur in Wetlands." The list separates vegetation into four "wetland indicator status" groups based on a plant species' frequency of occurrence in wetlands. The four groups are:

1) Obligate Wetland Plants (OBL)–Occur almost always in wetlands under natural conditions.

2) Facultative Wetland Plants (FACW)–Usually occur in wetlands, but occasionally are found in nonwetland areas.

3) Facultative Plants (FAC)–Equally likely to occur in wetland and nonwetland areas.

4) Facultative Upland Plants (FACU)–Usually occur in nonwetlands, but are occasionally found in wetland areas.

Plants not found on this list are considered to be Obligate Upland Plants (UPL), and are rarely ever found in wetland conditions. Appendix II of this Planning Bulletin contains a partial listing of the wetland plants of Pennsylvania taken from the list made available by the FWS.

Wetland Hydrology

The driving force behind wetland formation is the permanent or periodic water inundation, or soil saturation. Water present for a week or more during the growing season creates anaerobic soil conditions, which alters the soil types that develop and the plants capable of growing there (Federal Interagency Committee for Wetland Delineation, 1989). The water may come from a variety of sources, including but not limited to precipitation, overbank flooding, surface water runoff, snow melt, ground water discharge, and tidal flooding. The frequency and duration of the inundation and soil saturation will also vary. In addition, an area that is saturated for a week during the growing season, especially in the early growing season, is not necessarily a wetland. In the vast majority of cases, however, an area that meets the National Technical Committee for Hydric Soils (NTCHS) criteria for a hydric soil is a wetland. It is these factors that make the identification of wetland hydrology the least exact and most difficult criteria to establish while also reinforcing the importance of having a professional trained in wetland identification perform the site evaluation.

Regulations

Federal Legislation

The Clean Water Act (CWA)

The CWA is a 1977 amendment to the Federal Water Pollution Control Act of 1972, which set the basic structure for regulating discharges of pollutants to waters of the United States. Section 404 of the Act (33 U.S.C. § 1344) prohibits the discharge of "dredged" or "fill" material into the waters of the United States, including wetlands, without a permit authorized by the Secretary of the Army, acting through the USACE. According to the Act:

> Any discharge of dredged or fill material into the navigable waters incidental to any activity having as its purpose bringing an area of the navigable waters into a use to which it was not previously subject, where the flow or circulation of navigable waters may be impaired or the reach of such waters be reduced, shall be required to have a permit under this section.

The River and Harbor Act

The River and Harbor Act of 1899 regulates navigable waters of the U.S., which includes the length of the Schuylkill River located in Chester County. This Act prohibits the creation of any obstructions to the navigable capacity of any waters of the United States without specific approval from the Chief Engineer of the USACE. Section 9 of the Act requires a U.S. Coast Guard permit to construct a dam or dike in navigable waters. Section 10 requires a USACE permit to construct in or excavate from navigable waters. A Section 10 permit is also required for work performed outside the limits of navigable waters that affects the course, location, or condition of the navigable water.

The Farm Bill—"Swampbuster" Provision

Under the Swampbuster provision of the 1985 and 1990 Farm Bills, all agricultural producers are required to protect the wetlands on the land they own or operate if they want to be eligible for USDA farm program benefits.

Farmers who produce an agricultural good on a wetland converted by drainage, leveling, or any other means after December 23, 1985 or convert a wetland for the purpose of or to make agricultural commodity production possible after November 28, 1990, become ineligible for all U.S. Department of Agriculture (USDA) subsidies and other federal assistance programs. According to this Provision (16 U.S.C § 3821b):

> ...any person who in any crop year beginning after November 28, 1990, converts a wetland by draining, dredging, filling, leveling, or any other means for the purpose, or to have the effect, of making the production of an agricultural commodity possible on such converted wetland shall be ineligible for those payments, loans, or programs…for that crop year and all subsequent crop years.

State Legislation

Dam Safety and Encroachment Act

In Pennsylvania, wetlands are further regulated by the Dam Safety and Encroachment Act of 1978 (25 Pa. Code § 105). This Act requires that:

> A person may not construct, operate, maintain, modify, enlarge or abandon a dam, water obstruction or encroachment without first obtaining a written permit from the Department.

In considering permit applications, DEP will not grant application unless it can be shown that the project will not have a significant adverse impact on the wetland, adverse environmental impacts on the wetland will be avoided or reduced to the maximum extent possible, and that there is no practicable alternative to the proposed project that would not involve a wetland or that would have less adverse impact on the wetland, and that would not have other significant adverse impacts on the environment. Proposed activities or facilities that DEP feels will have a significant environmental impact require an environmental assessment, and, based on the assessment results, may require further alternatives to diminish or preclude harmful impacts. In addition, wetlands of significant environmental or ecological importance as defined in 25 Pa. Code § 105.17 receive special protection. These wetlands are those classified as exceptional value and meet one of the following conditions:

1) Serve as habitat for fauna or flora listed as "threatened" or "endangered" under the Endangered Species Act of 1973.

2) Hydrologically connected to, or located within 1/2-mile of those, wetlands serving threatened or endangered species and maintain the habitat of those species.

3) Located in or along the floodplain of the reach of a wild trout stream or exceptional value waters under Chapter 93 and the floodplain of streams tributary thereto. Wetlands within the corridor of a watercourse or body of water that has been designated as a National wild or scenic river in accordance with the Wild and Scenic Rivers Act or designated as wild or scenic under the Pennsylvania Scenic Rivers Act.

4) Wetlands located along an existing public or private drinking water supply, including both surface water and groundwater sources that maintain the quality or quantity of the drinking water supply.

5) Wetlands located in areas designated by the DEP as "natural" or "wild" areas within state forest or park lands, areas designated as federal wilderness areas under the Wilderness Act or the Federal Eastern Wilderness Act of 1975, or wetlands located in areas designated as National natural landmarks by the Secretary of the Interior under the Historic Sites Act of 1935.

When a wetland does meet one of the above criteria to be classified as exceptional value, DEP will not issue a permit for a dam, water obstruction, or encroachment in or within a wetland unless all of the following from 25 Pa. Code § 105.18a are met:

1) Based on the environmental assessment determined in accordance with 25 Pa. Code § 105.14(b) and 105.15, there will be no adverse impact on the wetland.

2) The project is water-dependent.

3) There is no practicable alternative to the proposed project that would not involve a wetland or that would have less effect on the wetland, and not have other significant adverse effects on the environment.

4) The project will not cause or contribute to a violation of an applicable state water quality standard.

5) The project will not cause or contribute to pollution of groundwater or surface water resources or diminution of resources sufficient to interfere with their uses.

6) The cumulative effect of this project and other projects will not result in the impairment of the Commonwealth's exceptional value wetland resources.

7) The applicant shall replace affected wetlands in accordance with 25 Pa. Code § 105.20a.

Agencies Involved with Wetlands Regulation

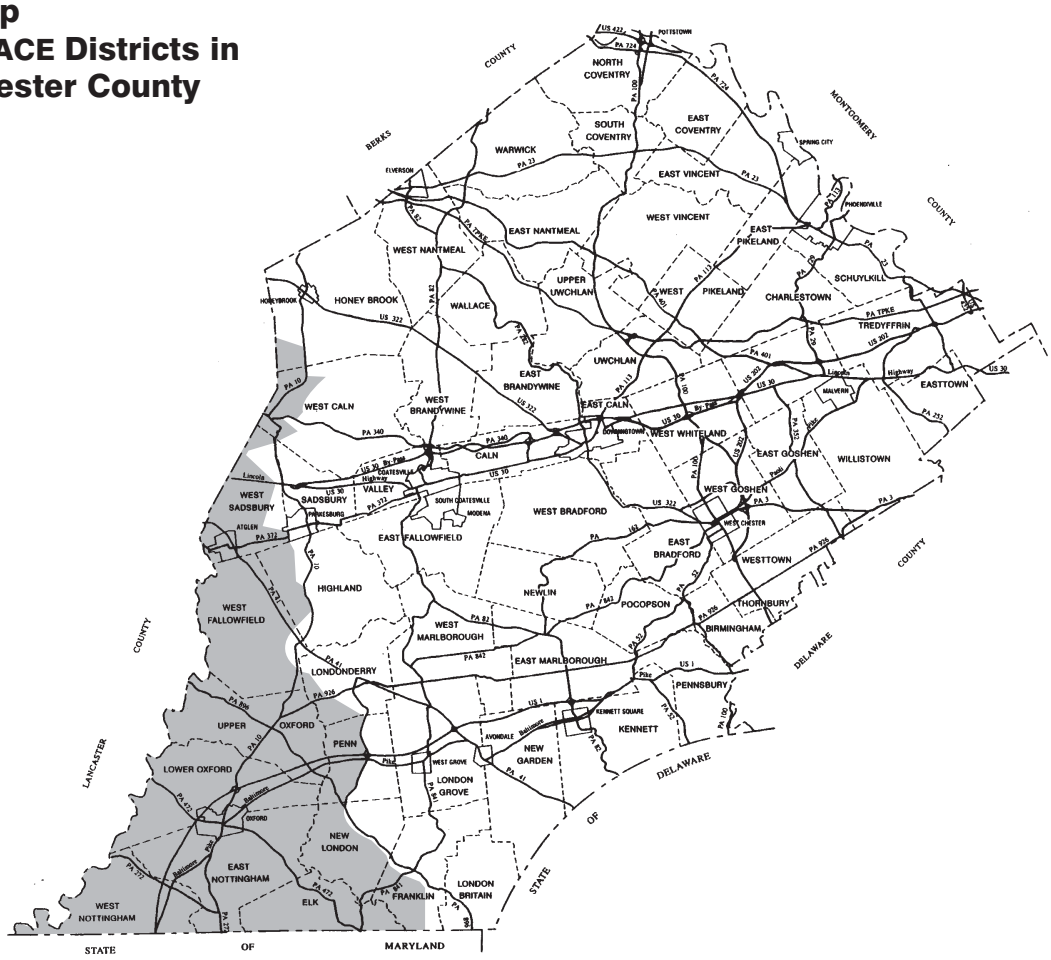
U.S. Army Corps of Engineers

A permit from the USACE is required to fill in wetlands. The USACE also enforces Section 404 of the CWA (33 U.S.C. § 1344) by investigating violations and requiring remedies. Most of Chester County is under the jurisdiction of the Philadelphia District Office of the USACE, although the Octoraro and Elk Creek basins are under the jurisdiction of the Baltimore District Office.

Philadelphia District
U.S. Army Corps of Engineers
Attn: Regulatory Branch
Wannamaker Building, Room 600
100 Penn Square East
Philadelphia, PA 19107-3390
Tel: 215-656-6728

Baltimore District
U.S. Army Corps of Engineers
P.O. 1715
Baltimore, MD 21203-1715
Tel: 410-962-7608

Map
USACE Districts in Chester County



Philadelphia District—includes those areas of the County that drain to the Delaware and Schuylkill River Basins.

Baltimore District—includes those areas of the County that drain to the Susquehanna River Basin and the Chesapeake Bay.

U.S. Environmental Protection Agency (EPA)

The EPA reviews and comments on USACE permits, and has the authority to veto permits issued by the USACE, although this rarely occurs. EPA also shares enforcement powers with the USACE. Chester County is under the jurisdiction of the EPA Region III office in Philadelphia. For more information, contact:

U.S. Environmental Protection Agency
Region III
Marine and Wetlands Policy Section
841 Chestnut Street
Philadelphia, PA 19107-4414
Telephone: 215-597-7828

U.S. Fish and Wildlife Service

Like EPA, the FWS also reviews and comments on permits issued by the USACE. The FWS also advises the USACE on mitigation in instances where filling in wetlands is permitted as being in the public interest or in the case of violations. For more information, contact:

U.S. Fish and Wildlife Service
State College Field Office
Suite 322
315 South Allen Street
State College, PA 16801
Telephone: 814-234-4090

Pennsylvania Department of Environmental Protection

A DEP permit is required prior to filling in, excavating, or dewatering wetlands and adjacent areas in Pennsylvania. Information on the DEP permitting program is available through:

Pennsylvania Department of Environmental Protection
Bureau of Watershed Management
Division of Waterways, Wetlands, & Erosion Control
P.O. Box 8775
Harrisburg, PA 17105-8775
Telephone: 717-787-6827

In addition to requiring its own permits under 25 Pa. Code § 105 of the Pennsylvania Dam Safety and Encroachment Act, DEP is involved in USACE permits through the CWA. To satisfy Section 401 of the CWA, applications submitted to the USACE must contain water quality certification from DEP stating that work done in the wetlands will not cause a violation of state water quality standards. Information on obtaining a water quality certificate is available from the DEP Regional Office in Conshohocken:

Southeast Regional Office
Suite 6010 Lee Park
555 North Lane
Conshohocken, PA 19428-2233
Telephone: 610-832-6000

Southeast Region Water Management Program

James H.W. Newbold, P.E., Water Management Program Manager
Telephone: 610-832-6131

Permitting Process / Permits

Site Delineation

For any proposed project in an area suspected to contain wetlands, the USACE should be contacted before beginning any work. Upon notification, the USACE may determine that the proposed project site does not contain wetlands, in which case the wetland regulations will not apply. However, if the USACE makes a preliminary determination that the area does indeed contain wetlands, delineation will need to be performed by a professional consultant. A survey will be performed of the site, from which a map of the area will be made and sent to the USACE for review. To determine the accuracy of the delineation performed by the consultant, the USACE may perform their own field investigation to verify the reported findings.

Permitting

After surveying and identifying the areas where wetlands are present on the property, the permitting process begins. To allow an applicant to apply for simultaneous permits, the USACE and DEP developed a joint application that encompasses the Federal Section 9, Section 10, and Section 404 permits, and the DEP Water Obstruction and Encroachment (Section 105) permit. A copy of this application is included in Appendix III of this Planning Bulletin.

Nationwide General Permits

Nationwide General Permits (NWPs) are very similar to State Program General Permits in applicability and purpose. They are issued to the general public every five years and are applicable anywhere (with some special limitations) in the United States. All NWPs have restrictions based on criteria such as activity, project size, area impacted, and construction method. Some of the NWPs currently in effect include bank stabilization, boat ramps, utility line crossings, and minor road crossings.

In the December 13, 1996, issue of the Federal Register, the USACE announced their decision to replace NWP 26, which authorized discharges of dredged or fill material into the headwaters and isolated waters of the United States, with activity-specific NWPs (USACE, 2000a; Federal Register, 2002). Consequently, in June 2000 the USACE issued five new NWPs (39, 41, 42, 43, and 44) and modified six existing NWPs (3, 7, 12, 14, 27, and 40) to replace NWP 26, which expired on June 5, 2000 (USACE, 2000a; Jones and Stokes, 2000; Federal Register, 2002). This brought the count of NWPs to 44 different categories of activities authorized under this permit program. The five new and six modified NWPs authorized many of the same activities as NWP 26, however, they were now activity-specific, with terms and conditions to ensure that the activities resulted in minimal adverse effects on the aquatic environment. While some of the activities required notification to the USACE before implementation, others required submittal of a wetland delineation if the project was proposed to be constructed within a wetland. They established a maximum acreage limit for all activity-based NWPs of one-half acre and required pre-construction notification to the District Engineer for activities that would result in a loss of greater than one-tenth acre of waters of the United States (USACE, 2000a; Stokes and Jones, 2000). The five new and six modified NWPs were intended by the USACE to substantially increase protection of the aquatic environment, while efficiently authorizing activities with minimal adverse effects on the aquatic environment.

On January 15, 2002, the USACE reissued all existing NWPs and General Conditions regulating certain development activities affecting wetlands and other waters of the United States (Manko, Gold & Katcher, 2002). This action by the USACE is based on the varying expiration dates of the existing NWPs. While some are scheduled to expire on February 11, 2002, others will expire on March 18, 2002. Reissuing all NWPs and General Conditions on the same date reduces the potential for future confusion over the different expiration dates since they are all

scheduled to expire at the same time. As of the publication date for this bulletin, all current NWPs became effective March 18, 2002 and will expire in five years on March 18, 2007. In reissuing the NWPs, the USACE made a number of modifications to the existing permits while retaining the one half acre limit in all activity-based NWPs, as well as the one-tenth acre pre-construction notification requirement (Manko, Gold & Katcher, 2002).

An activity is authorized under an NWP only if that activity and the permittee satisfy all terms and conditions of the NWP. Activities that do not qualify for authorization under an NWP may still be authorized by an individual or state program general permit. The USACE will consider unauthorized any activity requiring USACE authorization if that activity is under construction or completed and does not comply with all of the terms and conditions of an NWP, regional general permit, or an individual permit. The USACE will evaluate unauthorized activities for enforcement action under 33 CFR § 326. When an unauthorized activity is found, the USACE typically pursues voluntary restoration or other remedial measures, and the District Engineer may elect to suspend enforcement proceedings if the permittee modifies their project to comply with an NWP or a regional general permit. The District Engineer can then elect to terminate an enforcement proceeding with an after-the-fact authorization under an NWP, if all terms and conditions of the NWP have been satisfied, either before or after the activity has been accomplished. For repeated or flagrant violations, penalties and fines may be used.

Pennsylvania State Program General Permits

In addition to the NWPs, there are regulated structures and activities that may qualify for permitting under one of the Pennsylvania State Program General Permits (PASPGP). PASPGP 2, 5, 6, 7, 8, 9, 10, and 15 allow for construction activities in wetlands. Specific limits and restrictions on use are contained in the instructions for each PASPGP, and applicants need only to register their intent to construct the project in accordance with conditions of the PASPGP. More information on Pennsylvania State Program General Permits can be obtained by either contacting the DEP Regional Office in Conshohocken at 610-832-6000 or on the DEP homepage at www.dep.state.pa.us.

Individual Permits

Activities not covered by a Nationwide or a State Program General Permit require an individual permit. These activities will most likely have impacts to extensive or exceptionally high value wetlands. Individual permits involve significantly more agency and public review processing procedures, and will typically require 6 to 24 months to process depending on the complexity of the action and whether or not an Environmental Impact Statement is required by the USACE. Processing such permits involves evaluation of individual, project specific applications in what can be considered three steps: pre-application consultation (for major projects), formal project review, and decision making. This type of permit is difficult to obtain because the project in question must receive rigorous public interest review.

The pre-application consultation involves meetings between an applicant, USACE district staff, interested resource agencies (federal, state, or local), and sometimes the interested public. This process is beneficial to the applicant since these meetings provide for informal discussions about the pros and cons of a proposal before an applicant makes irreversible commitments of resources. Designed to provide the applicant with an evaluation of the possibility of some of the more obvious alternatives available to accomplish the project purpose and discuss measures for reducing the impacts of the project, the process informs the applicant of factors the USACE must consider in the decision making process.

After the pre-application consultations, the formal project review begins. The USACE project manager prepares a public notice, evaluates the impacts of the project and all comments received, negotiates necessary modifications of the project if required, and drafts or oversees

drafting of appropriate documentation to support a recommended permit decision (USACE, 2000b). The permit decision document includes a discussion of the environmental impacts of the project, the findings of the public interest review process, and any special evaluation required by the type of activity such as compliance determinations with the Section 404(b)(1) Guidelines.

Public interest is of great importance to the USACE in the project evaluation process. The public benefits and detriments of all factors relevant to each case are carefully evaluated and balanced. To be considered in the public interest, the public benefits of the project must exceed its costs to the public (USACE, 2000b). According to the pamphlet, "Are You Planning Work in a Waterway or Wetland?" published by the USACE Philadelphia District, the following aspects of the project are reviewed in making this determination: conservation, economics, aesthetics, general cultural values, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, consideration of property rights, and, in general, the needs and welfare of the people.

Any application that is found contrary to the public interest will not be granted a permit. In addition, unless a project is generally found to have a positive public impact, and there are no applicable alternatives, a project will not be granted a permit. When wetlands of higher quality are located in areas where a project is proposed, a permit will most likely not be granted, except under certain circumstances. For example, a highway project might be considered to be without an alternative if there are very few road alignments that are possible. Also, the USACE will not deny a permit if it is necessary to allow access to a property. In the cases where an individual permit is granted, the applicant will likely be required to mitigate the impacts of the project on wetlands. Mitigation usually takes the form of either replacing each acre of wetlands destroyed by creating an acre of wetlands at another location, or enhancing the quality of the existing wetlands.

Enforcement of Legislation

The USACE and EPA together enforce Section 404 of the CWA. When an individual is found to be involved in unauthorized activities or permit violation, the USACE will determine what remedy is required. The individual may be required to remove the fill, mitigate for the wetlands lost, or donate monies to a nature conservancy. When mitigation is required, the violator is usually required to create two acres of wetlands for every one-acre of wetlands that were destroyed. If an individual refuses to comply with these requirements, they are subject to fines of up to $25,000 per day of violation and imprisonment for up to one year, or both, and must also restore the area.

Role of Municipalities

At a minimum, municipalities should take actions to insure compliance with federal and state regulations. Municipalities may also choose to implement more stringent standards to insure protection of wetland areas. It should not be assumed that state or federal agencies can protect every wetland. Many ecologically productive small wetlands may not be protected under the state or federal protection programs. Also, some landowners may not be aware that a wetland is protected at the state or federal level and unknowingly violate these rules. Local officials often have more direct contact with landowners than state and federal employees, and therefore can be very effective in providing landowners with the information they need. Municipalities in Pennsylvania have the regulatory tools to effectively protect wetlands. These include the municipal plan, zoning and subdivision regulations, health ordinances and flood hazard regulations. In addition to these regulatory tools, municipalities can also promote pub-

lic education, improved stormwater management, open space preservation, and the management and restoration of natural areas to protect wetlands.

Compliance with Federal and State Regulations

Compliance with existing standards is most easily assured by identifying projects that may contain wetlands during the subdivision and land development review processes. It is recommended that municipalities obtain NWI Maps, as described earlier. These maps and the list of hydric soils contained in Appendix I can be used to do a preliminary evaluation of whether a site contains wetlands.

If it is suspected that wetlands are located on a site, the municipality should inform the applicant, in writing, as soon as possible. A copy of the letter should be sent to both the USACE and DEP. Notification of the applicant and the regulatory agencies should be sufficient to insure compliance with existing wetlands regulations.

This review process may require a significant amount of work on the part of a municipality. Municipalities unable to perform this type of review are advised to remind developers of wetlands regulations. This can be done simply by including the following question on subdivision and zoning applications: "Will this project propose encroachments, obstructions, or dams that will affect wetlands?" An applicant's response to this question will provide a written record that the municipality has brought the issue to the attention of the applicant.

Municipal Standards

Municipalities may also choose to adopt their own ordinances in order to assure protection of wetlands. Appendix IV includes excerpts from the Zoning Ordinance of the Township of Franklin, Chester County, PA. This ordinance goes beyond the requirements of federal regulations by regulating activities in a "transitional area" defined as extending 75 feet from the wetland boundary or the limit of hydric soils, whichever is less. Limiting activities in this transitional area provides a buffer between wetlands and surrounding areas, insuring that water quality and plant and animal life in the wetlands are protected.

Land Use Planning

The wetlands of Chester County are a critical resource that provide important wildlife habitat and play a key role in flood protection, surface water management, groundwater recharge, and ground and surface water quality. The natural characteristics of wetlands are frequently vulnerable to development activities that may disrupt ecological relationships resulting in the degradation of the habitat.

Addressing land use and other topics relative to the protection of wetlands is essential. Local officials, developers, and residents should be aware of wetlands in their area and actively address land use and other topics relative to the protection of these important resources. The municipality needs to understand the dynamics of their wetlands and choose what level of involvement to assume in wetland management. While federal and state governments provide for wetland protection, municipalities can utilize opportunities within the Municipal Planning Code (MPC) to further protect and enhance the quality of their wetlands.

Measures which municipalities can take to protect wetlands for their hydrologic and ecological functions and to manage and restore wetlands are:

- Recognize the importance of wetlands within the Comprehensive Plan's regional goals and policies.
- Identify Exceptional Value Wetlands in the Comprehensive Plan and document their intended preservation.

- Establish networks of fifty-foot buffers to protect wetland quality.
- Support Conservation (Low Impact) Development Designs around wetlands to aid effective stormwater management plans that will reduce stormwater impacts and flooding. (See Tool #4 of the CCPC Community Planning Handbook–Volume 1)
- Support land preservation for protecting natural resources.
- Use resources such as the Chester County Natural Areas Inventory, National Wetlands Inventory maps, and the Federal Emergency Management Agency floodplain maps as guides in the preparation of plans and ordinances.
- Maintain up to date Act 537 Sewage Facilities Plans that recognize and require preservation of wetlands.
- Use zoning to guide development away from environmentally sensitive wetlands. (See Tool #23 of the CCPC Community Planning Handbook–Volume 1)
- Use Integrated Resource Planning to increase public involvement, enhance recreational and cultural resources, protect natural resources, improve water quality, reduce stormwater runoff and flooding, protect watershed balances, and plan for future water needs.

Conclusion

Wetlands are important not only for their natural beauty and environmental importance, but for all the community benefits they offer. In Chester County a number of governmental and non-profit organizations have been working to preserve and protect this important natural resource. For more information on what can be done to protect and restore wetlands, a partial list of organizations involved in wetlands has been included in Appendix V. Individuals that suspect a project area includes wetlands must address the regulations before beginning work. Addressing wetlands issues in the early stage of project planning is not only good for the environment, but also the best way to avoid unnecessary and expensive delays in the building process.

List of Acronyms

CCPC	Chester County Planning Commission
CCWRA	Chester County Water Resources Authority
CWA	Clean Water Act
DEP	Pennsylvania Department of Environmental Protection
EPA	Environmental Protection Agency
FAC	Facultative Plants
FACU	Facultative Upland Plants
FACW	Facultative Wetland Plants
FWS	United States Fish and Wildlife Service
MPC	Municipal Planning Code
NTCHS	National Technical Committee for Hydric Soils
NWI	National Wetlands Inventory
NWP	Nationwide General Permits
OBL	Obligate Wetlands Plants
UPL	Obligate Upland Plants
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USGS	United States Geological Survey

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Appendix I

Hydric Soils–Chester and Delaware Counties, Pennsylvania (Interim List)

Map Units with Major Components Consisting of Hydric Soils:

Bo	Bowmansville silt loam
CaA	Calvert silt loam, 0 to 3 percent slopes
CaB	Calvert silt loam, 3 to 8 percent slopes
CaB2	Calvert silt loam, 3 to 8 percent slopes, moderately eroded
CrA	Crotan silt loam, 0 to 3 percent slopes
CrB	Crotan silt loam, 3 to 8 percent slopes
Gu	Guthrie silt loam
Mn	Melvin silt loam
OtA	Othello silt loam
Tm	Tidal Marsh
WaA	Watchung silt loam, 0 to 3 percent slopes
WaB2	Watchung silt loam, 3 to 8 percent slopes, moderately eroded
WcB	Watchung vert stony silt loam, 0 to 8 percent slopes
We	Wehadkee silt loam
WoA	Worsham silt loam, 0 to 3 percent slopes
WoB	Worsham silt loam, 3 to 8 percent slopes
WoB2	Worsham silt loam, 3 to 8 percent slopes, moderately eroded
WoC2	Worsham silt loam, 8 to 15 percent slopes, moderately eroded
WsB	Worsham very stony silt loam, 0 to 8 percent slopes

Map Units with Inclusions of Hydric Soils

AgA	Aldino silt loam, 0 to 3 percent slopes
AgB2	Aldino silt loam, 3 to 8 percent slopes, moderately eroded
AsB2	Aldino very stony silt loam, 0 to 8 percent slopes, moderately eroded
BdA	Bedford silt loam, 0 to 3 percent slopes
BdB	Bedford silt loam, 3 to 8 percent slopes
BdB2	Bedford silt loam, 3 to 8 percent slopes, moderately eroded
BeA	Beltsville silt loam, 0 to 3 percent slopes
BeB2	Beltsville silt loam, 3 to 8 percent slopes, moderately eroded
ByA	Butlertown silt loam, 0 to 3 percent slopes
ByB2	Butlertown silt loam, 3 to 8 percent slopes, moderately eroded
Ch	Chewacla silt loam
Cn	Congaree silt loam

CoA	Conowingo silt loam, 0 to 3 percent slopes
CoB2	Conowingo silt loam, 3 to 8 percent slopes, moderately eroded
GnA	Glenville silt loam, 0 to 3 percent slopes
GnB	Glenville silt loam, 3 to 8 percent slopes
GnB2	Glenville silt loam, 3 to 8 percent slopes, moderately eroded
GnC2	Glenville silt loam, 8 to 15 percent slopes, moderately eroded
GsB	Glenville very stony silt loam, 0 to 8 percent slopes
LaA	Lawrence silt loam, 0 to 3 percent slopes
LaB	Lawrence silt loam, 3 to 8 percent slopes
LeB	Lehigh silt loam, 3 to 8 percent slopes
LeB2	Lehigh silt loam, 3 to 8 percent slopes, moderately eroded
LeC3	Lehigh silt loam, 8 to 15 percent slopes, severely eroded
LhB	Lehigh very stony silt loam, 0 to 8 percent slopes
LhD	Lehigh very stony silt loam, 8 to 15 percent slopes, severely eroded
Ls	Lindside silt loam
MoB2	Montalto channery silt loam, 3 to 8 percent slopes, moderately eroded
MoC2	Montalto channery silt loam, 8 to 15 percent slopes, moderately eroded
MoC3	Montalto channery silt loam, 8 to 15 percent slopes, severely eroded
MrB	Montalto very stony silt loam, 0 to 8 percent slopes
MrD	Montalto very stony silt loam, 8 to 25 percent slopes
MsB	Mount Lucas very stony silt loam, 0 to 8 percent slopes
RdA	Readington silt loam, 0 to 3 percent slopes
RdB	Readington silt loam, 3 to 8 percent slopes
RdB2	Readington silt loam, 3 to 8 percent slopes, moderately eroded
Ro	Rowland silt loam
Rp	Rowland silt loam, dark surface
WnA	Woodstown loam, 0 to 3 percent slopes
WoC2	Worsham silt loam, 8 to 15 percent slopes, moderately eroded
W	Water

Appendix II

Wetland Plants

The following obligate wetland plant species are always found in wetlands under natural (not planted) conditions (frequency greater than 99%), but may persist in nonwetlands if planted there by man or in wetlands that have been drained, filled, or otherwise transformed into nonwetlands.

Common Name:

Alder, Hazel
Alder, Seaside
Alkaligrass, Seashore
Alkaligrass, Torrey
Alkaligrass, Weeping
Angelica, Purplestem
Arrowgrass, Marsh
Arrowgrass, Seaside
Arrowhead, Awlleaf
Arrowhead, Broadleaf
Arrowhead, Engelmann
Arrowhead, Grassy
Arrowhead, Shortbeaked
Arrowhead, Wooded
Arum, Arrow
Ash, Pumpkin
Aster, Rough
Aster, Swamp
Avens, Water
Beaked-Rush, Brown
Beaked-Rush, Capillary
Beaked-Rush, Horned
Beaked-Rush, Slender
Beggarsticks, Nodding
Bellflower, Bedstraw
Birch, Low
Bittercress, Cuckoo
Buckthorn, Alder-Leaved
Bladderwort, Common
Bladderwort, Flatleaved

Common Name:

Bladderwort, Floating
Bladderwort, Hidden-Flower
Bladderwort, Horned
Bladderwort, Humped
Bladderwort, Lavender
Bladderwort, Lesser
Bladderwort, Little Floating
Bladderwort, Zigzag
Bogmoss
Bog-Mat
Brookline, American
Bugleweed, American
Bugleweed, European
Bugleweed, Virginia
Bulrush, Black
Bulrush, Green
Bulrush, Hardstem
Bulrush, Leafy
Bulrush, Olney's
Bulrush, Panicled
Bulrush, Reddish
Bulrush, River
Bulrush, Roughseed
Bulrush, Slender
Bulrush, Torrey
Bulrush, Weak
Bulrush, Woodland
Burreed, American
Burreed, Branching
Burreed, Floating

Common Name:

Burreed, Giant
Burreed, Greenfruit
Burreed, Narrow-Leaved
Burreed, Small
Bush, Button
Buttercup, Celeryleaf
Buttercup, Ivy
Buttercup, Pennsylvania
Buttercup, Water
Calla, Wild
Cardinal Flower, Dortman
Cattail, Common
Cattail, Narrow-Leaved
Celery, Wild
Chain-Fern, Virginia
Chestnut, Water
Cinquefoil, Bushy
Cinquefoil, Marsh
Club, Golden
Clubmoss, Inundated
Coontail
Cottongrass, Rough
Cottonsedge, Slender
Cowbane
Cranberry, Large
Cranberry, Small
Cress, Spring
Cress, Water
Cupscale, American
Current, American Red
Cutgrass, Rice
Dayflower, Marsh
Decumaria Vine/Climbing Hydrangea

Common Name:

Ditch-Stonecrop
Dock, Great Water
Dock, Swap
Duckweed, Big
Duckweed, Lesser
Duckweed, Minute
Duckweed, Star
Duckweed, Valdivia
Featherfoil
Fern, Log
Fern, Mosquito
Fern, Royal
Fimbristylis, Saltmarsh
Flag, Slender Blue
Flag, Sweet
Flatsedge, Fern
Flatsedge, Yellow
Floating Heart, Little
Fog-Fruit
Forget-Me-Not, Smaller
Foxtail, Short-Awn
Foxtail, Water
Frog's Bit
Gentiam, Catesby's
Globeflower, American
Goldenrod, Bog
Goldenrod, Roughleaf
Grass, Northern Yellow Eye
Hedge-Hyssop, Golden
Hedge-Hyssop, Clammy
Heliotrope, Seaside
Honeysuckle, Swamp
Honeysuckle, Swampfly

Common Name:

Hornwort, Pimpled
Horsetail, Water
Lady's Slipper, Small White
Ladies' Tresses, Hooded
Laurel, Bog
Leatherleaf
Lipocarpha, American
Lobelia, Ontario
Loosestrife, Earth
Loosestrife, Honeywort
Loosestrife, Spotted
Loosestrife, Water
Lotus, American
Lovegrass, Teal
Ludwigia, Globe-Fruited
Ludwigia, Many-Fruited
Lythrum, Hyssop
Mannagrass
Mannagrass, American
Mannagrass, Blunt
Mannagrass, Eastern
Mannagrass, Fowl
Mannagrass, Northern
Mannagrass, Pale
Mannagrass, Rattlesnake
Mannagrass, Sharpscale
Mannagrass, Slender
Mannagrass, Slender
Marigold, Large-Flowered Bur
Marigold, Marsh
Marigold, Water
Meadow Beauty, Common
Meadow Beauty, Maryland

Common Name:

Mermaid Weed
Mermaid Weed, Cutleaf
Mermaid Weed, Marsh
Mircrantemlin
Milkweed, Red
Mock-Bishopweed
Monkey-Flower, Sharp-Winged
Monkey-Flower, Square-Stemmed
Mountain Holly, Common
MudPlantain, Roundleaf
Mudwort, Awlleaf
Naiad, Brittle
Naiad, Slender
Naiad, Southern
Naiad, Thread-like
Nettle, Smooth Hedge
Orchid, Yellow Fringeless
Panicum, Velvet
Parrot's Feather
Pennywort, Floating
Pennywort, Marsh
Pennywort, Water
Pepper, Mild Water
Pigmyweed, Common
Pimpernel, Moistbank
Pimpernel, Water
Pimpernel, Swamp
Pink, Swamp
Pipewort, Seven-Angled
Pipewort, Tenangle
Pitcherplant
Pod Grass
Pogonia, Rose

Common Name:

Pondweed, Alpine
Pondweed, Blunt-Leaved
Pondweed, Clasping-Leaved
Pondweed, Curly
Pondweed, Fineleaf
Pondweed, Flatstem
Pondweed, Floatingleaf
Pondweed, Fries
Pondweed, Hill's
Pondweed, Illinois
Pondweed, Largeleaf
Pondweed, Leafy
Pondweed, Long-Leaved
Pondweed, Narrowleaf
Pondweed, Oakes
Pondweed, Ribbonleaf
Pondweed, Richardson
Pondweed, Robbins
Pondweed, Sago
Pondweed, Small
Pondweed, Snailseed
Pondweed, Spiral
Pondweed, Spotted
Pondweed, Tennessee
Pondweed, Tuckerman's
Pondweed, Variable
Pondweed, Vasey's
Pondweed, Waterthread
Pondweed, Whitestem
Purslane, Marsh
Quillwort, Braun's
Quillwort, Riverbank
Razorsedge, Whorled

Common Name:

Redgrass, Hairyseed
Rice, Wild
Riverweed, Hornleaf
Rose, Swamp
Rosemallow, Halberd-leaved
Rosemallow, Swamp
Rosemary, Downy Bog
Rush
Rush, Alpine
Rush, Bayonet
Rush, Bog
Rush, Canada
Rush, Jointed
Rush, Narrow-Panicled
Rush, Pennsylvania
Rush, Small-Headed
Rush, Tapertip
Rush, Weak
Rush, Whitebeaked
Saltmarsh-Mallow, Virginia
Sawgrass, Smooth
Saxifrage, Lettuce
Saxifrage, Pennsylvania
Solomon's Seal, Three-Leaved
Sedge, Bailey's
Sedge, Barratt's
Sedge, Coast
Sedge, Collin's
Sedge, Cordroot
Sedge, Emory
Sedge, Fox
Sedge, Frank's
Sedge, Fringed

Common Name:

Sedge, Green
Sedge, Inflated
Sedge, Lesser Panicled
Sedge, Longhair
Sedge, Northern Bog
Sedge, Rotten Log
Sedge, Sawbeak
Sedge, Small Yellow
Sedge, Three-Way
Sedge, Water
Sedge, Wiegand's
Sedge, Wingseed
Sedge, Yellow
Shield, Water
Silverweed
Skullcap, Common
Skunkcabbage, Common
Smartweed, Water
Snowbell, American
Spatterdock
Spearwort
Spearwort, Low
Speedwell, Marsh
Speedwell, Water
Spikerush, Beaked
Spikerush, Blunt
Spikerush, Bright-Green
Spikerush, Creeping
Spikerush, Fewflowered
Spikerush, Large-Tubercled
Spikerush, Needle
Spikerush, Northern Jointed
Spikerush, Ovate

Common Name:

Spikerush, Robbin's
Spikerush, Small's
Spikerush, Squarestem
Spikerush, Three-ribbed
Stargrass, Water
St. Johnwort, Clasping-Leaved
St. Johnwort, Creeping
St. Johnwort, Marsh
St. Johnwort, Northern
St. Johnwort, Pale
St. Johnwort, Purple
Suckbean
Sumac, Poison
Sunflower, Tickseed
Sweetgale
Sweetspire, Virginia
Tail, Lizard's
Tail, Mare's
Tea, Labrador
Thistle, Swamp
Tooth Cup
Tristetum, Swamp
Turtlehead, White
Violet, Lanceleaf
Violet, Northern White
Virurnum, Possumhaw
Watercress, Coastal
Watercress, Mountain
Waterhemlock, Poison
Waterhemlock, Spotted
Waterlily, White
Watermeal
Watermilfoil, Eurasian

Common Name:	Common Name:
Watermilfoil, Low	Water-Crowfoot, Yellow :
Watermilfoil, Slender	Water-Meal
Watermilfoil, Variableleaf Waterparsnip	Water-Mint
Waterplantain, Common	Water-Purslane
Waterplantain, Subcordate	Willow, Autumn
WaterPrimrose, Perennial	Willow, Big
Waterprimrose, Uraguay	Willow, Coastal Plain
Watermilfoil, Farwell's	Willow, Erect
Waterstarwort, Green	Willow, Meadow
Waterstarwort, Larger	Willow, Hoary
Waterstarwort, Pond	Willow, Sandbar
Waterweed, Canadian	Willow, Silky
Waterweed, Western	Willow, Water
Waterwillow	Willowweed, Purpleleaf
Waterwort, American	Winterberry, Smooth
Waterwort, Least	Woundwort
Water-Crowfoot, White	Xyris, Common

The following facultative wetland plant species are usually found in wetlands (67–99% frequency), but are occasionally found in nonwetlands.

Common Name:	Common Name:
Alder, European	Aster, New York
Alder, Speckled	Bartonia, Yellow
Adder's Mouth, White	Beggarsticks, Devils
Adder's Tongue	Beggarsticks, Small
Amemone, Canada	Beggarsticks, Swamp
Arrow-Wood	Betony, Roughnettle
Ash, Green	Birch, River
Ash, Black	Blackberry, Swamp
Aster, New England	Bloodleaf, Rootstock
Aster, Flattop	Blueberry, Highbush
Aster, Whitefield	Blue Eyed Grass, Eastern
Aster, Calico	Blue Eyed Grass, Stout
Aster, Willow-Leaved	Bluegrass, Grove

Common Name:

Bluegrass, Rough
Bluegrass, Marsh
Bluegrass, Fowl
Bluegrass, Woodland
Bluejoint
Bluestem, Bushy
Boltonia, Marsh
Boneset
Brome, Fringed
Brome, Earleaf
Bugbane, Tassel-Rue False
Bulrush, Blackscale
Burnet, American
Buttercup, Suralpine
Cardinal Flower
Cedar, Northern White
Chain-Fern, Netted
Chervil, Spreading
Chokecherry, Red
Chokecherry, Purple
Chokecherry, Shrubby
Circaea, Alpine
Clearweed
Cloudberry
Clubmoss, Carolina
Clubmoss, Shining
Coralroot, Northern
Coreopsis, Rose
Cornflower, Tall
Cottowood, Swamp
Cranberry, Highbush
Cress, Purple
Crowberry, Black

Common Name:

Currant, Black
Currant, Skunk
Currant, Prickly
Dayflower, Virginia
Dichanthelium, Velvet
Dock, Pale
Dogwood, Red-Osier
Dogwood, Silky
Elder, American
Featherbells
Fern, Cinnamon
Fern, Hartford
Fern, Massachusetts
Fern, Marsh
Flatsedge, Fragrant
Flatsedge, Thin-Leaved
Flax, Rigid
Foxtail, Mouse
Gentiam, Soapwort
Germander, Canada
Glademallow
Goldenrod, Late
Goobergrass, Annual
Goosefoot, Red
Goosefoot, Oakleaf
Grape, Riverbank
Grapefern, Lance-Leafed
Grass, Black
Grass-Pink
Greendragon
Hale-Berry
Heathgrass, Common
Hemlock, Poison

Common Name:

Hemlock Parsley, Appalachian
Horsetail, Marsh
Horsetail, Variegated
Horsetail, Scouringrush
Horsetail, Swamp
Indigo, Dull-Leaf
Inkberry, Shining
Inkberry
Ironweed, New York
Jack-In-The-Pulpit, Indian
Joepyweed, Hoarscale
Joepyweed, Purplestem
Joepyweed, Spotted
Jungle-Rice
Kill-Cow
Knawel
Knotgrass
Lady's Slipper, Showy
Ladies' Tresses, Nodding
Ladies' Tresses, Wideleaf
Lettuce, Canada
Leucothoe, Sweetbells
Listeria, Atlantic
Listeria, Smalls
Lobelia, Nuttall's
Lobelia, Downy
Lobelia, Bigblue
Loosestrife, Purple
Loosestrife, Fringed
Lougewort, Swamp
Lovegrass, Sandbar
Lythrum, Winged
Mairgrass, Tufted

Common Name:

Maple, Silver
Marshmallow
Marsh Pink, Slender
Meadowrue, Purple
Meadowrue, Tall
Milkwort, Yellow
Milkwort, Cross-Leaved
Millet, Water
Millet, Wild
Mint, Field
Mint, Small-Leaved
Miterwort Naked
Morning-Glory, Small White
Mountain-Mint, Blunt
Mountain-Mint, Slender
Muhly, Mexican
Nettle, False
Nettle, Hyssop Hedge
Nettle, Smooth Hedge
Nine-Bark
Oak, Swamp White
Oak, Pin
Orchid, Large Purple Fringed
Orchid, Crested Fringed
Orchid, Yellow Fringed
Orchid, Tubercled
Orchid, Small Purple Fringed
Orchid, Tall Leafy White
Orchid, Purple Fringless
Orchid, Northern Green
Orchid, Prairie Fringed
Panicum, Warty
Panicum, Redtop

Common Name:

Panicum, Fall
Paspalum, Florida
Paspalum, Bull
Peavine, Veiny
Petunia, Wild
Phlox, Meadow
Poke, Indian
Polemonium, Vanbrunt
Poplar, Balsam
Potatobean, American
Queen-of-the-Prairie
Ragwort, Golden
Rasberry, Red
Redtop
Reed, Common
Rhododendron, Canadian
Rocket, Purple
Rosemary, Whorled-Leaved
Rush, Shore
Rush, Diffuse
Rush, Short-Fruited
Rush, Soft
Rush, Needlepod
Rush, Thread
Rush, Torrey
Rush, Forked
Rush, Baltic
Rush, Turnflower
Rush, Toad
Saltbush, Fathen
Sedge, Garber
Sedge, Gray's
Sedge, Cattail

Common Name:

Sedge, Yellow-Fruited
Sedge, Soft Leaved
Sedge, Golden
Sedge, Bush
Sedge, Brome-Like
Sedge, Greenish-White
Sedge, Brownsih
Sedge, Meadow
Sedge, Atlantic
Seedbok
Skullcap, Nyssop
Skullcap, Blue
Sneezeweed
Snowberry, Creeping
Solomon's Seal, Star-Flowered
Spicebush
Spikemoss, Meadow
Spikerush, Matted
Spikerush, Flat-Stemmed
Spikerush, Engelmann's
Spiraea, Narrowleaf Meadowsweet
Spiraea, Hardhack
Spruce, Black
Spruce, Red
Spruce, Glade
Squashberry
St. Johnswort, Greater
Starwort, Terrestrial
Stitchwort, Long-Leaved
Sunflower, Giant
Sunflower, Tickseed
Sawtooth Sunflower
Sunflower, Narrow-Leaved

Common Name:	Common Name:
Swamp-Shadebush	White-Lettuce, Glaucous
Sweetbay	Whitegrass
Sweetgrass, Common	Wildbean, Pink
Sycamore	Wildrye, Riverbank
Tamarack	Wildrye, Virginia
Tears, Job's	Willow, Pussy
Trillium, Nodding	Willow, White
Valerian, Large-Flowered	Willow, Weeping
Vervain, Blue	Willow, Shining
Vetchling	Willow, Pebs
Violet, Leconte's	Willow, Heart-Leaved
Violet, American Dog	Willow, Peachleaf
Violet, Arrow-Leaved	Winterberry
Violet, Marsh Blue	Withe-Rod
Violet, Kidney-Leaved	Woodfern, Clinton
Violet, Cream	Woodreed, Stout
Wedge Nettle, Smooth	Woodreed, Drooping
Wedge Nettle, Nyssop	Woolgrass

Source: Adapted from Wetlands Plants of the State of Pennsylvania, United States Department of Agriculture, Soil Conservation Service, 1986.

Appendix III

Joint Application for Pennsylvania Water Obstruction and Encroachment Permit and U.S. Army Corps of Engineers Section 404 Permit

3930-PM-WM0036A Rev. 11/2001

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
and
DEPARTMENT OF ARMY CORPS OF ENGINEERS
(Baltimore, Philadelphia, and Pittsburgh Districts)

Coordination #

JOINT APPLICATION FOR PENNSYLVANIA WATER OBSTRUCTION AND ENCROACHMENT PERMIT AND U.S. ARMY CORPS OF ENGINEERS SECTION 404 PERMIT

Before completing this form, please read the step-by-step instructions and Section F Application Completeness Checklist provided with this Joint Permit package.

AGENCY USE ONLY	
Application ID# (Assigned by DEP) _____	RECEIVED DATE _____ CHECK NO. _____
Program Application No. _____	REQUIRED APP. FEE _____ AMOUNT $_____

SECTION A. APPLICATION TYPE:

STANDARD ☐ SMALL PROJECTS ☐

SECTION B. APPLICANT IDENTIFIER

Applicant Name

SECTION C. PROJECT LOCATION DATA

Name of stream and/or body of water.

Corps District where project will occur.

☐ Baltimore ☐ Philadelphia ☐ Pittsburgh

Name of the U.S.G.S. 7 1/2 Minute Quadrangle Map where project is located: _____

Indicate location of project on this map by measuring (in inches) from the lower right corner:

North (up) _____ inches; West (to the left) _____ inches; Latitude _____ ; Longitude _____

Project type, purpose and need: _____

SECTION D. PROJECT STATUS

HAS ANY PORTION OF PROPOSED PROJECT BEEN COMPLETED? ☐ yes ☐ no _____date completed

If yes, attach description of those portions of the project that have been completed and identify dates of completion.

SECTION E. OTHER APPROVALS

LIST APPROVALS, CERTIFICATIONS, DENIALS OR NOTICES OF VIOLATION RECEIVED FROM FEDERAL, INTERSTATE, STATE OR LOCAL AGENCIES FOR STRUCTURES, CONSTRUCTION, DISCHARGES OR OTHER ACTIVITIES DESCRIBED IN THIS APPLICATION.

SECTION F. APPLICATION COMPLETENESS CHECKLIST

(Applicant must place an entry - Y = Yes, N = No, N/A = Not Applicable - in each left side column space. See Section 105.13 for additional details. If you are applying under the Small Projects Application format, place an entry in only those comments prefixed by an asterisk (*).

REQUIREMENT	Applicant Entry	DEP Use Only
a. GIF and permit application properly signed, sealed and witnessed	*	
b. Application Fee enclosed (see Section G.)	*	
c. Copies and proof of receipt - Act 14 notification - Acts 67/68/127	*	
d. Cultural Resource Notice - Copy and Proof of Receipt	*	
e. Completed and approved Supplement No. 1 Form (PNDI search)	*	
f. Plans (site plan including cross sections and profiles for Subsections 151, 191, 231, 261)	*	
g. Location map		
h. Project description narrative	*	
i. Color photographs with map showing location taken	*	
j. Environmental Assessment form	*	
k. Erosion and Sediment Control Plan and approval letter		
l. Hydrologic and hydraulic analysis		
m. Stormwater Management Analysis w/consistency letter		
n. Floodplain Management Analysis w/consistency letter		
o. Risk Assessment		
p. Professional engineer's seal and certification		
q. Alternative analysis		
r. Mitigation plan		

SECTION G. DETERMINATION OF APPLICATION FEES (DEP FEES ONLY)

Types of Water Obstructions and Encroachments	Number of Units	Fee Per Unit	Subtotal Amount
Stream enclosures		$ 350.00	$
Channel changes		$ 300.00	$
Commercial dredging		$ 300.00	$
Peat extraction		$ 750.00	$
Fills, levees, floodwalls		$ 350.00	$
Bridges and other water obstructions and encroachments		$ 200.00	$
Small projects ($100 fee regardless of number of units)		$ 100.00	$
Qualifies for General Permit (fee waived)		$0.00	N/A
Make Check Payable to: Commonwealth of Pennsylvania		**TOTAL FEE**	**$**

List each type and number of water obstructions and encroachments that are included in this application and indicate subtotal and total fee amounts.

FAILURE TO PROVIDE ALL OF THE REQUESTED INFORMATION WILL DELAY THE PROCESSING OF THE APPLICATION AND MAY RESULT IN THE APPLICATION BEING PLACED **ON HOLD** WITH **NO ACTION**, OR IT MAY BE CONSIDERED WITHDRAWN AND THE FILE CLOSED.

SECTION H. ADJOINING PROPERTY OWNERS

Please list the name and address of all property owners whose land adjoins the project property.

NAME	ADDRESS

SECTION I. CERTIFICATION AND SIGNATURE

If Privately Owned, all owners (such as husband and wife) must sign. One or more members authorized to sign on behalf of an entire partnership must sign. For a Corporation, the president, vice president or other responsible official is required to sign. For Political Subdivision, signatures of the chief officer or other responsible official empowered to sign is required with the seal affixed and attested by the clerk. For Commonwealth departments, boards, commissions, receivers, trustees and authorities, a department head, bureau director, executive director, chairman, commissioner or other responsible official is required to sign. Signatures other than above must be accompanied by a power of attorney or other notarized legal documentation indicating authorization to sign on behalf of the applicant.

Application is hereby made for a permit to authorize the activities described herein. I certify I am familiar with the information contained in this application, and to the best of my knowledge and belief, such information is true, complete and accurate. I further certify I possess the authority to undertake the proposed activities.

I certify that the project proposed in this application complies with and will be conducted in a manner that is consistent with the approved Coastal Zone Management program of the Commonwealth of Pennsylvania. (Only portions of Erie, Bucks, Philadelphia, Delaware Counties are in the Coastal Zone).

I grant permission to the agencies responsible for authorization of this work, or their duly authorized representative, to enter the project site for inspection purposes during working hours. I will abide by the conditions of the permit or license if issued and will not begin work without the appropriate authorization.

By: _____
(PRINT NAME)

_____
(SIGNATURE) (DATE) SEAL

_____
(TITLE)

WITNESS: _____

Appendix IV

Sample Zoning Ordinance

The following sections are excerpted from the Zoning Ordinance of the Township of Franklin, Chester County, PA (November 8, 2001)

Article XXIV
Natural Resource Protection Standards

Section

2400 Purpose and Authority

The following natural resource protection standards are established to protect the public health, safety, and welfare by minimizing adverse environmental impacts and are specifically authorized by Section 604 of the Pennsylvania Municipalities Code (Act 247, as amended). These standards are intended to meet the following purposes.

A. Promote and implement Sections 603(c)(7), 603 (g)(2), 604(1), and 604(3) of the Pennsylvania Municipalities Code (Act 247, as amended) providing for the protection and preservation of environmentally sensitive areas, prime agricultural land, and natural resources through municipal zoning ordinances.

B. Define and delineate selected natural resources within the Township and establish resource protection standards to assist the Township in reducing the impact proposed uses will have on the environment.

C. Conserve and protect valuable natural resources within the Township in accordance with the following goals and objectives of the Franklin Township Comprehensive Plan (1991) and the Franklin Township Open Space and Recreation Plan (1992), as amended:

1. Environment and Open Space Goals and Objectives:

   Identify, protect and conserve environmental features, including ground water recharge areas, within the Township. Maintain the quality of life while minimizing impacts to the natural environment in accordance with Article 1, Section 27 of the Constitution of the Commonwealth of Pennsylvania. Remediate any environmental disturbances to the maximum extent feasible.

   a. Specify criteria for environmental site analysis to be performed for any development.

   b. Promote the conservation of stream valleys, floodplains, and wetlands. Adopt a “no net loss” wetlands policy which supplements state and federal regulations.

   c. Outline ordinance provisions requiring a buffer area between development and environmentally sensitive wetlands and floodplains.

   d. Outline ordinance provisions which minimize the disturbance of steep slopes, require mitigation for development of steep slopes or prohibit development of steep slopes under certain conditions. Enforce and enhance Township regulations governing all sources of soil erosion.

   e. Develop recommendations to protect ground water supplies from depletion. Encourage sewage systems using best available technology to recharge the water table without contamination.

f. Encourage the maintenance, enhancement, and expansion of woodland and hedgerow areas. Outline ordinance provisions which would prohibit unnecessary removal of trees or vegetative cover, require tree replacement under certain circumstances, and require tree protection during construction.

g. Maintain air quality within the Township.

h. Encourage the protection of wildlife habitat.

2. Agriculture Goals and Objectives:

Preserve agricultural lands of the Township. Promote sustainable agricultural uses of prime agricultural soils within the Township.

a. Identify and encourage the preservation of highly productive soils for agricultural use in accordance with the Farmland Preservation Act.

b. Encourage Best Management Practices (BMP) relevant to farming in order to minimize negative environmental impacts.

D. Implement the local land use management recommendations of the White Clay Creek Wild and Scenic Rivers Study Management Plan (1998) which identified the White Clay Creek and its tributaries as an "outstandingly remarkable watershed resource."

2401 Applicability and General Provisions

A. It shall be a violation of this Ordinance to regrade, fill, pipe, divert, channel, build upon, or otherwise alter or disturb a natural resource protected by this Section prior to the submission, review, and approval of:

- Applications for zoning or building permits;
- Conditional use or special exception approvals;
- Zoning variances; or
- Submission of plans for subdivision or land development.

1. Where disturbance of a natural resource is permitted, it shall not take place until it has been determined that such disturbance is consistent with the provisions of this Article and other applicable ordinance provisions.

2. Restrictions to the disturbance of resources shall apply before, during, and after construction on a site.

B. In the event that the provisions of this Section and the provisions of other applicable Township ordinance standards are in conflict, the more restrictive provisions shall apply.

C. In the event that two or more natural resource areas identified in this Section overlap, the resources with the most restrictive standard (the least amount of permitted alteration, regrading, clearing, or building) shall apply to the area of overlap.

D. Plan information required by Section 2403 shall be verified as correct by the Township Engineer or other qualified professional as determined by the Township Engineer.

2402 Protection Standards

C. Wetlands

1. Definition

a. **Wetlands**–Wetlands are those areas 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, including swamps, marshes, bogs, ponds, lakes, and similar areas. Wetlands include all lands regulated as wetlands by the Pennsylvania Department of Environmental Protection or the U.S. Army Corps of Engineers. In the event there is a conflict between the definitions of these agencies, the more restrictive definition shall apply.

b. **Mitigation**–An action undertaken to accomplish one or more of the following. If the impact cannot be eliminated by subsections 1–3 below, the impact shall be compensated for by the project or by providing substitute resources or environments.

1) Avoid and minimize impacts by limiting the degree or magnitude of the actions and its implementation.

2) Rectify the impact by repairing, rehabilitating, or restoring the impacted environment.

3) Reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action.

2. Resource Protection Standards

a. Any applicant proposing a use, activity, or improvement which would entail the regrading or placement of fill in wetlands shall provide the Township with proof that the Pennsylvania Department of Environmental Protection (Bureau of Dams and Waterway Safety and Bureau of Water Quality Management) and the U.S. Army Corps of Engineers have been contacted to determine the applicability of state and federal wetland regulations. The applicant shall concurrently provide to the Township a copy of the application and any other wetlands information submitted DEP and the U.S. Army Corps of Engineers.

b. Wetlands shall not be regraded, filled, piped, diverted, channeled, built upon, or otherwise altered or disturbed except where state or federal permits have been obtained.

c. Existing wetlands shall not be used for stormwater management except where the wetlands are highly degraded and a mitigation program is provided.

3. Delineation

The applicant shall delineate the limits of wetlands on the site in accordance with Section

2403.A. In addition, the following information shall be provided:

a. A full wetland delineation report conducted by a qualified wetland biologist, soil scientist, or environmental professional of demonstrated qualifications shall be submitted to the Township. If there is a question as to the accuracy of the wetland delineation report, the Township may hire a qualified consultant to review the delineation and recommend revisions at the applicant's expense.

b. Such a professional shall certify that the methods used correctly reflect the currently accepted technical concepts, including identification and analysis of wetland vegetation, hydric soils, and hydrologic indicators. Methods used in the delineation report shall be acceptable to the Township Engineer or other qualified consultant hired by the Township.

c. The wetland report shall include a determination of whether wetlands are present on the site and a full delineation, area measurement (in square feet), and description of any wetlands determined to be present.

D. Wetland Margins

1. Definitions

a. **Wetland Margins**–A wetland margin is the transitional area extending from the outer limit of a wetland. Where hydric soils are present, the wetland margin shall extend to the limit of the hydric soils or to seventy-five (75) feet, whichever is less. Regardless of the presence of hydric soils, the wetland margin shall always extend at least a minimum width of twenty-five (25) feet from the edge of the wetland boundary.

b. **Hydric Soils**–Any soil inventoried or described as hydric or as a soil with hydric inclusions according to the Soil Survey of Chester and Delaware Counties, Pennsylvania (most current data available) or other information provided by the U.S. Soil Conservation Service (SCS). In Franklin Township, hydric soils shall include, but are not limited to:

Hydric Soils	**Soils with Hydric Inclusions**
Wehadkee Silt Loam (We)	Chewacla (Ch)
Worsham Silt Loam (WoA, WoB, WoB2, WoC2)	Congaree (Cn)
	Glenville Silt Loam (GnA, GnB, GnB2, GnC2)
	Glenville Very Stony Silt Loam (GsB)

Where site conditions indicate that the location of hydric soils or the hydric inclusions differ from locations indicated by the SCS, the burden shall be upon the applicant to verify such location(s) to the satisfaction of the Board of Supervisors, otherwise the SCS information shall be presumed to be accurate. Where the applicant seeks reclassification of hydric soils and their location, such reclassification shall be undertaken by a Certified Soil Scientist or other similarly qualified professional.

2. Resource Protection Standards

a. Except as noted below, no more than twenty (20) percent of a wetland margin shall be regraded, filled, built upon, or otherwise altered or disturbed.

b. The following uses or activities shall be permitted in the wetland margin and shall, except as noted in subsection 1), not be counted towards the twenty (20) percent disturbance allowance:

1) Regulated activities permitted by the Commonwealth (i.e. permitted stream or wetland crossing, maximum disturbance permitted—five (5) percent which shall count towards the twenty (20) percent disturbance allowance);

2) Provision for unpaved trail access;

3) Selective removal of hazardous or invasive alien vegetative species;

4) Vegetation management in accordance with an approved landscape plan or open space management plan; or

5) A soil or stream conservation project approved by the Chester County Conservation District.

c. Timber harvesting shall only be permitted within the twenty (20) percent disturbance allowance and shall be restricted to selective cutting. Clearcutting or grubbing of trees is prohibited within the wetland margin. Permitted timber harvesting shall be undertaken in accordance with a timber harvesting plan consistent with the requirements of Section 2402.F.

3. Delineation

The applicant shall delineate the limits of the wetland margins on the site in accordance with Section 2403.A.

Appendix V

Additional Sources for Information on Wetlands

Alliance for the Chesapeake Bay
600 N. Second Street
Suite 300B
Harrisburg, PA 17101
Phone (717) 236-8825
www.acb-online.org/index.htm

Brandywine Conservancy Environmental Management Center
P.O. Box 141
Chadds Ford, PA 19317
Phone (610) 388-2700
www.brandywineconservancy.org

Chesapeake Bay Foundation
Pennsylvania State Office
The Old Water Works Building
614 North Front Street, Suite G
Harrisburg, PA 17101
Phone (717) 234-5550
www.cbf.org

Chester County Conservation District
601 Westtown Road, Suite 240
P.O. Box 2747
West Chester, PA 19380-0990
Phone (610) 696-5126
www.chesco.org/conservation.html

Chester County Planning Commission
601 Westtown Road, Suite 270
P.O. Box 2747
West Chester, PA 19380-0990
Phone (610) 344-6285
www.chesco.org/planning

Chester County Water Resources Authority
601 Westtown Road, Suite 260
P.O. Box 2747
West Chester, PA 19380-0990
Phone (610) 344-5400
www.chesco.org/water

Delaware River Basin Commission
25 State Police Drive
P.O. Box 7360
West Trenton, New Jersey 08628-0360
Phone (609) 883-9500
www.state.nj.us/drbc

Department of Conservation and Natural Resources
7th Floor, Rachel Carson State Office Building
P.O. Box 8767
Harrisburg, PA 17105-8767
Phone (717) 787-2869
www.dcnr.state.pa.us

Department of Environmental Protection
South East Regional Office
Suite 6010 Lee Park
555 North Lane
Conshohocken, PA 19428-2233
Phone (610) 832-6028
www.dep.state.pa.us

Federal Emergency Management Agency
One Independence Mall
Sixth Floor
615 Chestnut Street
Philadelphia, PA 19106-4404
Phone (215) 931-5614
www.fema.gov

Pennsylvania Fish and Boat Commission
1601 Elmerton Avenue
P.O. Box 67000
Harrisburg, PA 17106-7000
Phone (717) 705-7800
www.fish.state.pa.us

Pennsylvania Game Commission
Southeast Region
448 Snyder Road
Reading, PA 19605
Phone (877) 877-9470
sites.state.pa.us/PA_Exec/PGC/index.htm

Pennsylvania Organization for Watersheds and Rivers
P.O. Box 765
25 North Front Street
Harrisburg, PA 17108-0765
Phone (717) 234-7910
www.pawatersheds.org

The Nature Conservancy
1100 E. Hector Street
Suite 470
Conshohocken, PA 19428
Phone (610) 834-1323
www.nature.org

Susquehanna River Basin Commission
1721 N. Front Street
Harrisburg, PA 17102
Phone (717) 238-0423
www.srbc.net

U.S. Army Corps of Engineers
Baltimore District
10 South Howard Street
Baltimore, MD 21201
Phone (410) 962-7608
www.nab.usace.army.mil

U.S. Army Corps of Engineers
Philadelphia District
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390
Phone (215) 656-6516
www.nap.usace.army.mil

U.S. Environmental Protection Agency
Region 3
1650 Arch Street
Philadelphia, PA 19103-2029
Phone (800) 438-2474
www.epa.gov/region03

U.S. Fish and Wildlife Service
State College Field Office
Suite 322
315 South Allen Street
State College, PA 16801
Phone (814) 234-4090
www.fws.gov

U.S. Geological Survey
National Wetlands Research Center
700 Cajundome Boulevard
Lafayette, Louisiana 70506
Phone (337) 266-8500
www.nwrc.usgs.gov

Wetland Science Institute
USDA/NRCS
Patuxent Wildlife Research Center
Building #109
12311 Beech Forest Road
Laurel, MD 20708
Phone (301) 497-5938
www.pwrc.usgs.gov/wli

Chester County Planning Commission
Board Members

W. Joseph Duckworth, *Chairman*

George Asimos, Jr., *Vice Chairman*

Robert S. Hankin

Patricia S. Imperato

Nancy Mohr

John C. Washington, III

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Christina Duff	Project Planner
Diana M. Gent	Graphics Supervisor
Christopher B. Bittle	Graphics

External Reviewer

Daniel J. Greig	Chester County Conservation District

MAY 2002