Non-Tidal Wetlands Study of the Patuxent River Watershed

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NON-TIDAL WETLANDS STUDY
OF THE PATUXENT RIVER WATERSHED

Report of the Water Resources Administration

submitted to the Maryland Legislature

in response to Senate Joint Resolution No. 18 (1979)

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TABLE OF CONTENTS

I. EXECUTIVE SUMMARY

II. STUDY PURPOSE

III. BACKGROUND OF THE RESOLUTION

IV. DESCRIPTION OF THE PATUXENT RIVER WATERSHED

V. EVALUATION METHODOLOGY AND RESULTS

- A. Methodology
  - 1. Wetland Definition
  - 2. Mapping Methods
    - a. materials
    - b. procedure
  - 3. Characteristic Wetland Types
- B. Results and Tables
- C. Discussion of Results

VI. EXPLANATION OF AVAILABLE REGULATIONS AND MANAGEMENT PROGRAMS AFFECTING PROTECTION OF NON-TIDAL WETLANDS OF THE PATUXENT RIVER WATERSHED

- A. Maryland Scenic Rivers Act
- B. Soil Conservation District Programs
- C. Patuxent River Watershed Act
- D. Water Resources Administration - Watershed Permits Program
- E. Critical Areas Program
- F. Federal Flood Insurance Program
- G. Corps of Engineers 404 Permit Program

VII. POTENTIAL NEW REGULATORY PROGRAMS PROVIDING PROTECTION FOR NON-TIDAL WETLANDS OF THE PATUXENT RIVER WATERSHED

- A. Local Jurisdiction Non-Tidal Wetland Permit Program
- B. Statewide Non-Tidal Wetland Permit Program

VIII. RECOMMENDATIONS FOR PROTECTION OF NON-TIDAL WETLANDS OF THE PATUXENT RIVER WATERSHED

IX. REFERENCES

I. EXECUTIVE SUMMARY

Through concern for the protection of non-tidal wetland resources in Maryland, and more specifically in the Patuxent River Watershed, the Legislature passed Senate Joint Resolution No. 18 (1979). The Resolution mandated the Water Resources Administration (WRA) of the Department of Natural Resources 1) to determine the extent and location of non-tidal wetlands in the Patuxent River Watershed, 2) to provide recommendations and any applicable suggestions for legislation to protect these non-tidal wetlands and 3) to give consideration to protection of these non-tidal wetlands through administration of Water Resources Administration programs.

In response to this mandate, the WRA in conjunction with the Coastal Resources Division, Tidewater Administration, conducted an inventory of non-tidal wetlands in the Patuxent River Watershed and investigated alternative methods for protecting them.

Non-tidal wetlands were defined according to the definition adopted by the National Wetlands Inventory, an ongoing mapping effort of the U. S. Fish and Wildlife Service. Conduct of the Patuxent Wetland Inventory included interpretation of aerial photographs, field investigations, and boundary mapping and typing of wetlands on 29 U. S. Geological Survey quadrangle maps. The predominant non-tidal wetland types in the Patuxent River Watershed are wooded swamps and shrub swamps. Approximately 4,990 acres of non-tidal wetlands were identified and mapped within the 930 square mile Patuxent River Watershed. Non-tidal wetland resources within the watershed comprise less than 1% of available land area. The majority lie within Prince George's and Anne Arundel Counties. About 11% of the 4,990 acres of non-tidal wetlands are exempt from current regulation due to their positions outside of the limits of the 100-year floodplain.

I. EXECUTIVE SUMMARY Continued

Seven existing programs were reviewed for their applicability or capability for regulatory overview of non-tidal wetland alterations. Of these programs the Watershed Permits Program of WRA provides the most effective resource management and regulatory vehicle now available. Said program has an enforcement capability.

Establishment of a non-tidal wetland permit program, expressly for the Patuxent River Watershed, is not practical considering the current extent of regulation through which there is reasonable assurance that the desired resource protection can be determined. Establishment of a non-tidal wetland permit program within the State has merit, especially if administered from the perspective of State overview. Information useful for further consideration of a State-wide non-tidal wetland protection program will be available upon completion of the U. S. Fish and Wildlife Service Inventory. Legislation addressing a State-wide non-tidal wetland protection program should be deferred at least until the referenced federal inventory affecting Maryland's wetlands and current flood-plain mapping by the State are completed.

It is the recommendation of the Water Resources Administration that the existing Watershed Permit Program be used to accomplish the objectives of Senate Joint Resolution No. 18 (1979).

Specific recommendations include that the WRA assume the responsibility for 1) holding an informational meeting within each of the seven affected counties to redefine procedures for coordination on matters affecting protection of these non-tidal wetlands, and 2) that affected counties, Soil Conservation Districts and concerned agencies/organizations be provided with copies of this report and the Patuxent River Non-tidal Wetland Inventory Maps in advance of said meeting.

II. STUDY PURPOSE

This document contains the Water Resources Administration's (WRA) response to Senate Joint Resolution No. 18 (1979) which mandated 1) determination of the extent and location of non-tidal wetlands in the Patuxent River Watershed, 2) recommendations for protection of these non-tidal wetlands, and 3) considerations for protection through administration of other programs.

III. BACKGROUND OF THE RESOLUTION

At least 23,700 wetland acres were reported as destroyed in Maryland during the 25 year period from 1942 to 1967. Losses have been attributed to agricultural drainage, flood control, housing development, industrial development, marinas, dredging, spoil disposal, utility and public works projects, erosion and natural succession (Metzgar, 1973). Because of the fragile nature of wetlands, man's activities often inflict irreversible changes which seriously alter the natural functions of wetlands.

Wetlands and their associated natural resources have played an important role in Maryland's development and aesthetic and recreational diversity. Through their diversity and distribution, wetlands provide essential natural values such as biomass protection, nursery areas for fish, critical habitat for a variety of plant and animal species, reservoirs and/or sinks for nutrients, oxygen production and geochemical cycling, natural capability for flood control, natural capability for water filtration and sediment storage, provision of economic return through fur, fish, wildlife, and timber production, and associated fees for hunting, fishing and trapping privileges.

Public awareness of the impending threat to and values derived from wetland resources led the 1970 Maryland Legislature to respond to the alarming reduction of resources through passage of the Wetlands Law - (Natural Resources Article - Title 9 - Annotated Code of Maryland 1974). The Wetlands Law affects only tidal wetlands which constitute about 80 percent of Maryland's total wetland resources (McCormick & Somes, 1979).

Through Senate Joint Resolution No. 18, the Legislature seeks information relevant to the remaining 20 percent of the State's wetland resources. Non-tidal wetlands of the Patuxent River Watershed were suggested as a microcosm within which to analyse non-tidal wetland resource characteristics and to provide an understanding of our existing or needed regulatory capability for coping with threats upon these remaining non-tidal wetland resources.

IV. DESCRIPTION OF THE PATUXENT RIVER WATERSHED

The Patuxent River is one of nine designated Wild and Scenic Rivers in the State. Its position within both Coastal Plain and Piedmont Regions and its assemblage of varied land uses and associated vulnerability to man's activities makes this river system a logical selection for evaluation.

This 930 square mile watershed lies within Montgomery, Howard, Prince George's, Anne Arundel, Calvert, Charles, and St. Mary's Counties. The watershed within Montgomery, Howard and part of Prince George's Counties features the characteristically rolling topography and predominately agricultural land use of the Piedmont Region. The remaining counties are in the Coastal Plain. Coastal Plain areas in the Patuxent River Watershed of Prince George's and Anne Arundel Counties are predominately forested with local high residential densities and less extensive occurrences of interspersed agriculture and gravel mining. The watershed in Calvert, Charles and St. Mary's Counties features low residential densities with river margin forests and somewhat less intensive agricultural land use than in the upper portion of the watershed.

Most of the non-tidal wetlands identified in the Patuxent River wetland inventory are within the confines of the 100-year floodplain and occur in proximity to perennial watercourses. Wetland types are predominately forested, herbaceous, or shrub areas within forests.

V. EVALUATION METHODOLOGY AND RESULTS

A. Methodology

The Water Resources Administration undertook this inventory as a cooperative effort with the Energy and Coastal Zone Administration. With assistance provided by the Energy and Coastal Zone Administration (now known as the Coastal Resources Division, Tidewater Administration), WRA was able to complete this inventory through use of inhouse capabilities and experience. Generally, development of the inventory procedure entailed investigating previous inventories, (Metzgar, 1973 and St. of Md. 1976), defining the bounds of the inventory area, and considering methodology and final product options.

1. Wetland Definition

Before the mapping of non-tidal wetlands could begin, a non-tidal wetland definition had to be adopted. The U. S. Fish and Wildlife Service (FWS) is presently conducting the National Wetlands Inventory, a nationwide mapping effort of tidal and non-tidal wetlands. As part of that effort, the FWS has developed an updated wetland classification system that is all inclusive and can be applied to the diverse types of wetlands encountered across the country. The WRA adopted this classification system in order to maintain consistency between the Patuxent River inventory and the federal inventory. The product of this study will be forwarded to the National Wetlands Inventory Team for use in their efforts in Maryland. The FWS defines a wetland as an area where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, i.e., moisture-loving plants (Cowardin, et.al., 1977). However, the above definition is very broad and includes many areas which support upland, as well as wetland plant species. Due to time constraints, a more restrictive version of the wetland definition was used; i.e., mapping of only those non-tidal wetlands not subjected to the "Temporarily Flooded" and "Intermittently Flooded" water regimes, as defined in Cowardin, et.al., 1977. A restrictive interpretation of the definition includes all non-tidal wetlands that are frequently flooded and/or saturated during most of the year and are therefore easier to detect on infra-red aerial photography. These non-tidal wetlands are dominated by hydrophytes. The Patuxent River watershed includes areas of "Temporarily" and "Intermittently" flooded wetlands. However, these types can support many upland plant species, and the water table may lie well below the soil surface during most of the year. Hence, detection is difficult, and mapping of these areas would be very time consuming both in terms of technical methodology and acreage to be inventoried. Such areas are also considered to be lower priority wetlands by many authorities; for example, the agreement between the U. S. Soil Conservation Service and U. S. Fish and Wildlife Service excludes detailed review of small watershed alteration projects that include such "Temporarily Flooded" and "Intermittently Flooded" areas.

2. Mapping Methods

a. Materials

The primary source of aerial photographs for the inventory was a March 13, 1974 flight of false color infra-red (IR) photography at a scale of 1:130,000 (Capital Programs Administration of the Department of Natural Resources). Also examined was a spring 1977 flight of like scale IR photography (Department of State Planning). These photographs were used to delineate the wetland boundaries.

Upon completion of the boundary mapping, larger scale photography was examined in order to type the wetlands. For non-tidal wetlands abutting tidal areas, autumn 1971 natural color photography at a scale of 1:12,000 (Wetland Permit Division, Water Resources Administration) was used. For the rest of the watershed, autumn 1971 black and white photography at a scale of 1:20,000 (Agricultural Soil Stabilization and Conservation Service, USDA) was used. To recheck type designations, spring 1978 U2 imagery, optical bar at a scale of approximately 1:30,000 (U. S. Environmental Protection Agency) was examined.

An Old Delft scanning stereoscope was used to view all available photography under variable magnification (1.5x to 4.5x). Pocket stereoscopes (2x) were also used.

All wetland boundaries were mapped on United States Geological Survey (USGS) 7-½ minute quadrangle (quad) maps at a scale of 1:24,000. Twenty-nine quads cover the entire Patuxent Watershed.

b. Procedure

Prior to the examination of aerial photography, the interpreters conducted extensive field verification to become familiar with wetland "signature" on the photographs. Using the scanning stereoscope, the aerial photography was then systematically examined. As part of the photographic interpretation effort, problem areas were field verified. The inventory entailed a ratio of time expenditure of about 1 to 10 relative to field and office effort. The minimum size mapping unit was one acre. This standard was applied because of tree canopy and photography resolution constraints inherent in the mapping of smaller areas.

As wetlands were detected on the aerial photographs, the interpreters traced the boundaries onto mylar sheets which had been placed over the photographs. During this procedure, U.S.D.A. Soil Surveys were consulted to more accurately locate non-tidal wetlands and map the boundaries. Boundaries were based not only on "signatures" on aerial photographs but also on wetland soil distribution as indicated in the Soil Surveys (U.S.D.A., Soil Conservation Service). The mylars were then enlarged to quad scale using a Kargl Reflecting Projector (Keuffel and Esser Co.). This enlargement procedure was done twice due to the discrepancy between the scale of the photography and the quad sheets and the limitations of the projector. During final enlargement, the boundaries were directly traced onto the quad sheets. All boundaries were re-checked for size and location after the transfer.

Wetland acreages were determined with a Modified Acreage Grid (Item #45010, Forestry Suppliers, Inc., Jackson, Miss.). The limits of the 100-year floodplain and 400-acre drainage areas (see Section VI. D. 2 for explanation of relevance) on all tributaries were estimated with the inhouse assistance of WRA Floodplain Management Division personnel.

Once all non-tidal wetlands were mapped, each wetland was typed according to the classification scheme discussed in Section V. A. 1 above. Typing symbols on the quad sheets are consistent with those being used in the National Wetlands Inventory. Figure 1 depicts the legend of the National Wetlands Inventory. Those wetland types that occur in the WRA Patuxent Non-Tidal Wetland Inventory are circled.

3. Characteristic Wetland Types

The following is a brief description of the predominant wetland types of the Patuxent River Watershed. Much of the following description is from Hotchkiss and Stewart (1947).

-----Palustrine broad-leaved deciduous forested or scrub shrub wetlands (map symbols PFOI or PSSI)

These types are the typical wooded and shrub swamps (i.e., wooded wetlands) usually located in the floodplain of the Patuxent River. Most of these wetlands are seasonally flooded and their soils are either saturated or flooded for most of the year. The predominant tree species in the wooded swamps are red maple, green ash, sweet gum, black gum, and pin oak. Some wooded swamps contain large number of dead trees. The predominant shrubs in both wooded and shrub swamps are spicebush, winterberry holly, arrow wood, and smooth alder. Well flooded shrub swamps may be dominated by buttonbush and swamp rose. Depending upon the amount of sunlight that penetrates the canopy of the swamp, the herbaceous flora may be lush and diverse.

-----Palustrine emergent wetland (map smybol PEM)

This type includes marshes dominated by herbaceous vegetation. These marshes are usually associated with wooded swamps and are generally smaller. The predominant plant species are rice cut-grass, smartweeds, tear-thumbs, cattail, arrow arum, and arrowheads.

-----Palustrine open water (map symbol POW)

This type includes the numerous man-made ponds in the watershed.

NATIONAL WETLANDS INVENTORY MAP LEGEND

FIGURE 1

WETLAND SYSTEM AND SUBSYSTEM

☐ System
  ☐ Subsystem

M Marine
  1 Subtidal
  2 Intertidal

E Estuarine
  1 Subtidal
  2 Intertidal

■ Palustrine
  ☐ No Subsystem

R Riverine
  1 Tidal
  2 Lower Perennial
  3 Upper Perennial
  4 Intermittent

L Lacustrine
  1 Limnetic
  2 Littoral

U Upland

WETLAND CLASS AND SUBCLASS

☐ Class
  ☐ Subclass

■ Open Water/Unknown Bottom

RB Rock Bottom
  1 Bedrock
  2 Boulder

UB Unconsolidated Bottom
  1 Cobble/Gravel
  2 Sand
  3 Mud
  4 Organic

SB Streambed
  1 Cobble/Gravel
  2 Sand
  3 Mud
  4 Organic

BB Beach/Bar
  1 Cobble/Gravel
  2 Sand

FL Flat
  1 Cobble/Gravel
  2 Sand
  3 Mud
  4 Organic
  5 Vegetated Pioneer
  6 Vegetated Non-pioneer

RS Rocky Shore
  1 Bedrock
  2 Boulder
  3 Vegetated Non-pioneer

RF Reef
  1 Coral
  2 Mollusc
  3 Worm

■ Aquatic Bed
  1 Submergent Algal
  2 Submergent Vascular
  3 Submergent Moss
  4 Floating - Leaved
  5 Floating
  6 Unknown Submergent
  7 Unknown Surface

■ Emergent
  1 Persistent
  2 Nonpersistent
  3 Narrow-leaved Nonpersistent
  4 Broad-leaved Nonpersistent
  5 Narrow-leaved Persistent
  6 Broad-leaved Persistent

ML Moss/Lichen
  1 Moss
  2 Lichen

■ Scrub/Shrub
  ■ Broad-leaved Deciduous
  2 Needle-leaved Deciduous
  3 Broad-leaved Evergreen
  4 Needle-leaved Evergreen
  5 Dead
  6 Deciduous
  7 Evergreen

■ Forested
  ■ Broad-leaved Deciduous
  ■ Needle-leaved Deciduous
  3 Broad-leaved Evergreen
  4 Needle-leaved Evergreen
  ✓ Dead
  6 Deciduous
  7 Evergreen

TABLE I PATUXENT RIVER WATERSHED NON-TIDAL WETLAND INVENTORY

	TOTAL		TOTAL NOT REGULATED	
USGS Quad Sheet	ACRES	NUMBER	ACRES	NUMBER
Gaithersburg	1	1	1	1
South River	1	1	0	0
Beltsville	2	2	2	2
Ellicott City	3	3	2	2
Damascus	6	5	1	1
Charlotte Hall	7	6	6	5
Hughesville	16	9	6	4
Brandywine	29	15	14	3
Clarksville	30	26	7	7
North Beach	30	21	13	10
Sandy Spring	30	17	17	12
Sykesville	30	28	19	16
Hollywood	39	20	12	10
Solomons Island	46	18	11	8
Woodbine	46	20	13	9
Savage	57	21	15	8
Cove Point	86	22	9	5
Deale	92	22	7	7
Mechanicsville	171	71	19	16
Broomes Island	187	69	23	20
Prince Frederick	191	73	19	16
Upper Marlboro	243	65	9	10
Benedict	306	109	27	16
Lanham	339	119	24	14
Lower Marlboro	430	173	35	21
Bowie	433	124	22	15
Bristol	484	180	31	25
Odenton	495	158	37	32
Laurel	1,160	200	161	55
TOTAL	4,990	1,598	562 (11%)	350 (22%)

TABLE II REGIONAL DISTRIBUTION AND PERCENT OCCURRENCE OF NON-TIDAL WETLANDS IN THE PATUXENT RIVER WATERSHED

	ACRES	PERCENT	NUMBER	PERCENT
Northern Region (Rt. 70 to Laurel)	250	5	144	9
Central Region (Laurel to Rt. 4 at Upper Marlboro)	2894	58	751	47
Southern Region (Rt. 4 to Chesapeake Bay)	1846	37	703	44
Total	4990	100	1598	100

TABLE III REGIONAL DISTRIBUTION AND PERCENT OCCURRENCE OF NON-TIDAL WETLANDS NOT REGULATED IN THE PATUXENT RIVER WATERSHED

	ACRES	PERCENT	NUMBER	PERCENT
Northern Region (Rt. 70 to Laurel)	97	17	65	19
Central Region (Laurel to Rt. 4 at Upper Marlboro)	267	48	138	39
Southern Region (Rt. 4 to Chesapeake Bay)	198	35	147	42
Total	562	100	350	100

Table III clarifies the regional distribution of those non-tidal wetlands which are not regulated. Of the total acreage and number of non-tidal wetlands, 11% (562 acres) and 22% (350), respectively, are not regulated (See Section VI. (D) of this report for explanation of non-tidal wetland protection limitations under current regulation.)

A large portion of these non-tidal wetlands, expecially those in the northern region, are small one or two acre ponds (Palustrine Open Water); approximately 27% of the total area and 38% of the total number of the non-tidal wetlands not regulated are typed as ponds. Those remaining consist of Palustrine forested or scrub-shrub and to a lesser extent Palustrine emergent wetland types. In summary, 449 acres (9%) of the total acreage and 217 (14%) of the total number of non-tidal wetlands which are not small ponds are exempt from current regulatory programs.

This inventory represents the most accurate and up-to-date information on non-tidal wetlands within the Patuxent River Watershed. However, a certain degree of accuracy had to be sacrificed due to the time limit imposed. As previously stated, those non-tidal wetlands along the Patuxent River that are "Temporarily Flooded" and "Intermittently Flooded" (Cowardin, et.al., 1977) were not mapped. Since these areas are extremely difficult to detect on small scale IR aerial photography, extensive field work would be necessary to map such areas. Therefore, the actual acreage and number of all non-tidal wetlands as defined by the National Wetlands Inventory within the Patuxent River Watershed are greater than that indicated in the accompanying tables.

VI. EXPLANATION OF AVAILABLE REGULATORY AND MANAGEMENT PROGRAMS AFFECTING NON-TIDAL WETLANDS IN THE PATUXENT RIVER WATERSHED

There are seven programs with varying degrees of application of capability for regulatory overview of non-tidal wetland alterations. Some have a contributory function but are not expressly directed toward wetland protection.

A. Maryland Scenic Rivers Act. (Annotated Code of Maryland - Natural Resources Article §8-401 et seq.)

As mentioned earlier, the Patuxent River has been declared a Wild and Scenic River under the provisions of the Maryland Wild and Scenic Rivers Act. Consequently, the river itself is protected since Section 406 of the Act provides that:

> "A dam or other structure impeding the natural flow of a scenic and wild river may not be constructed, operated, or maintained in a scenic and wild river, and channelization may not be undertaken unless the Secretary (of the Department of Natural Resources) specifically approves."

For activities occurring along the shorelines of a Wild and Scenic River, the Act provides an advisory role for the State. Under the State's direction and with assistance from affected local governments and a land advisory board, a management Plan is to be developed for each scenic river. The purpose of the Plan is educational in nature, having as its purpose the identification of 1) important natural resources along the river's shoreline, 2) activities which may threaten the outstanding values of the river, 3) existing land use along the river, and 4) existing State and local regulations and conservation programs affecting the river and its shorelines. The Plan is also to include recommendations regarding appropriate conservation techniques which could be used by local governments and landowners to ensure the protection and wise use of the river. These recommendations are generally advisory in nature; however, in the case of Deer Creek in Harford County they resulted in the adoption of local regulations providing setbacks along the creek to protect its values. In the case of the Patuxent River, development of a management Plan is presently not scheduled to be undertaken until F.Y. 1982.

B. Soil Conservation District Programs

Soil Conservation Districts are political subdivisions of the State. Each of the seven counties within the Patuxent River Watershed has a district organized in accordance with the Soil Conservation District Act which was passed by the State Legislature in 1937 (Article 66C, Section 89(d)). Soil Conservation Districts represent local determinations of problems, policies, and procedures in the conservation of soil, water, and related natural resources of the State. They are charged with the job of assisting in the prevention and control of soil erosion and in the promotion of proper land use. Their efforts result in the preservation of natural resources, control of floods, prevention of siltation in dams and reservoirs, preservation

of wildlife, as well as protection and promotion of the public health, safety and welfare. Technical assistance for carrying out a program of soil and water conservation is made available to land owners by the U. S. Department of Agriculture, Soil Conservation Service, through the Soil Conservation Districts.

Before any person clears, grades, transports or otherwise disturbs land, the appropriate Soil Conservation District must receive, review and approve the proposed earth movement (Natural Resources Article §8-1101 et seq.). The normal role of the Soil Conservation Districts in reviewing plans and issuing grading and soil stabilization approvals is, to encourage through established standards, the application of land treatment measures needed to reduce erosion and sedimentation, to minimize adverse site impacts, and to protect environmental values. In practice there exists some variability in the effectiveness of the respective counties' enforcement of Soil Conservation District requirements at the work site. The Water Resources Administration maintains an overview of the effectiveness of the various county enforcement programs. Projects funded or undertaken by the State government are automatically obligated to direct review, approval and enforcement by the WRA.

Of relevance to the Soil Conservation District review of grading and sediment control plans, and projects funded or undertaken by the Soil Conservation Service, is the Soil Conservation Service's Planning Memorandum of May 5, 1975, which sets forth a clear policy regarding the conservation of wetlands. This national policy directs that the Soil Conservation Service is not to provide technical or financial assistance for draining or otherwise altering wetlands in order to convert them to other land uses. The memorandum applies to both tidal and non-tidal wetlands and exempts only seasonally flooded basins and inland fresh meadows (Shaw and Fredine 1956). These exempted wetland types are also excluded from the Patuxent River Non-Tidal Wetland Inventory since they are within "Temporarily Flooded" and Intermittently Flooded" water regimes (as defined by the National Wetlands Inventory). The policy further directs the Soil Conservation Service to assist in restoration of damaged wetlands that are not irrevocably committed to other uses and in establishing wetland habitat, where appropriate.

C. Patuxent River Watershed Act.

Natural Resources Article §8-1301, et seq. creates an inter-jurisdictional governing body to define the Patuxent River Watershed and to pursue adoption of a watershed plan subject to the approval of the Department of Natural Resources. The effect of this statute is to set up a coordinating body among the seven involved counties and the Maryland National Capital Park and Planning Commission to provide effective management and protection of the watershed, primarily through an acquisition program. As oriented, this Act does not afford a useful mechanism by which to effect further protection of presently unregulated non-tidal wetlands within the watershed.

D. Water Resources Administration - Watershed Permits Program

This program provides the most effective resource management and regulation vehicle presently available to provide non-tidal wetland protection. The program functions in concert with all previously mentioned regulatory mechanisms.

There are several elements to the program as authorized under the referenced enabling Natural Resources Articles: 1) A Waterway Construction Permit is required before construction can begin in or along a non-tidal stream or any construction that changes the course, current or cross-section of that stream or its 100-year floodplain (Natural Resources Article §8-803); 2) Waterway Obstruction Permit is required before construction can begin on dams, reservoirs, or small ponds except as the latter is exempted by Natural Resources Article §8-803B; 3) Surface Mining Permit is required before the extraction of minerals other than coal can take place (Natural Resources Article §7-6A-01 et seq., this has particular significance for wetland protection in those active sand and gravel mining areas of Anne Arundel and Prince George's Counties); 4) As part of a comprehensive flood control-watershed management program, maps and regulations are being prepared to assist subdivisions with management of flood hazard areas (Natural Resources Article §8-9A-01 et seq.); 5) The Water Resources Administration has established criteria and review authority by which the counties' enforcement or local sediment control programs are supervised (COMAR 08.05.01.02).

The Water Resources Administration also directly reviews sediment control plans for projects funded or undertaken by any unit of State government (Natural Resources Article §8-1105).

As mentioned in Section V - C, 562 acres and 350 individual non-tidal wetlands within the watershed are not regulated through Watershed Permits of the Water Resources Administration. This lack of regulation originates in two ways.

1) The location of the non-tidal wetland may not be within the 100-year floodplain and, therefore, requirements for a State Waterway Construction or Obstruction Permit(s) cannot be applied under existing statutory authority of Natural Resources Article §8-803. The inventory indicates that 171 acres or 3% of the total non-tidal wetland acreage falls into this category;

2) Rules and Regulations (COMAR 08.05.03.02.B) governing construction in non-tidal waters and floodplains currently exempt agricultural drainage systems affecting less than 2500 acres; activities affecting the course, current or cross-section of waters of the State having 400 acres or less of upstream drainage area; and activities affecting trout streams with less than 100 acres of upstream drainage area. Modification of this regulation to authorize review of projects with smaller contributory drainage areas would appreciably reduce the acreage and numbers of non-tidal wetlands presently unprotected through current regulation. This would provide protection to 387 acres or 8% of the non-tidal wetlands that are not presently protected.

This coordinated network of review, available through the above referenced Watershed Permits Program, has the capability for current regulation of all except 9% or 449 acres of the inventoried non-tidal wetlands in the Patuxent River Watershed. Contrary to the other described programs, the Watershed Permits Program has an enforcement capability.

E. Critical Areas Program

The Critical Areas Program was mandated by the State Land Use Act of 1974 (Article 88C, Section 2(b) (3)) which gives the Department of State Planning the responsibility to identify "...areas of critical State concern, after consultation with and consideration of recommendations submitted to the Secretary (of the Department of State Planning) by the local subdivisions." The legislation further states that "Every county and the City of Baltimore shall make recommendations to the Department (of State Planning) as to the areas within their respective jurisdictions which should be designated as being of critical State concern". The guidelines established for the program identify three types of areas suitable for designation:

1. "Critical Areas Suitable for Preservation are areas where most forms and levels of alteration resulting from human activity may create disturbances which have a high probability of resulting in a significant adverse impact upon the characteristics of the area, and where strict management is necessary to retain the area's inherent characteristics and attributes."

2. "Critical Areas Suitable for Conservation are areas where alterations through various forms and levels of human activities can be accomodated without significant adverse impact upon the inherent characteristics and attributes of the area, if appropriate management practices are followed."

3. "Critical Areas Suitable for Utilization are areas where alterations through human activity can be accomodated and encouraged, although there is potential for significant multi-jurisdictional, environmental, or fiscal impacts, which should be given consideration. Areas which are desirable for some predetermined use and should be maintained in their present state to prevent irreversible committment of the site or its resources are also included in this type of area."

The delineation of an area as a State Critical Area is to be accompanied with the identification of management techniques which ensure that the future use or development of the area will be consistent with its attributes. Recommended management techniques may be carried out by local, state, or federal government, or by private parties. The sources of authority for managing a designated critical area include, but are not limited to, the following:

1. Local planning and land use regulations: including zoning, subdivision, related health, sanitation, environmental, housing and other regulations;

2. Local acquisition, local tax incentives, or management of property owned by local government;

3. State regulatory programs, such as those for the management of state wetlands, floodplains, water quality, air quality, and transportation.

4. State acquisition, state tax incentives, or state management of state-owned land;

5. Federal acquisition or federal management of federally-owned land; and

6. Management by private citizens or organizations.

The thrust of the program is to identify a select number of areas suitable for management under the provisions of the program. Therefore, the program may provide a mechanism for protecting a few non-tidal wetlands of high ecological value but could not be used to provide wide-spread protection for non-tidal wetlands in the Patuxent River Watershed.

F. Federal Flood Insurance Program

All local governments in the Patuxent River Watershed participate in the Federal Flood Insurance Program in which local governments must adopt and administer floodplain management ordinances in order to obtain guaranteed flood insurance. While these ordinances are largely aimed at protecting lives and new construction, they provide some protection to non-tidal wetlands and other environmentally significant areas because they restrict development in floodplain areas to a certain extent. In accordance with the President's Executive Order 11988 - Floodplain Management and Executive Order 11990 - Protection of Wetlands, effort is being directed toward requiring greater consideration in local floodplain ordinances of possible adverse impacts on non-tidal wetlands. Thus, the ordinances enacted under this program can complement the protective measures provided by other programs. However, enactment of such ordinances is not mandatory until detailed determination of the boundaries of the 100-year floodplain is completed. Some of the field work and mapping in the Patuxent River Watershed has been initiated; however, the complete set of Flood Insurance Maps will not be available until 1983.

G. Corps of Engineers 404 Permit Program

In 1972 Congress passed amendments to the Federal Water Pollution Control Act (PL 92-500). Section 404 of these amendments authorized the Corps of Engineers to issue permits for projects involving the discharge or dredged or fill material into the "Waters of the United States".

Justifications for permit denial under this program could be adverse effect upon municipal water supply, wildlife, recreation areas, or fishing areas. In 1977 the Federal Water Pollution Control Act was again amended with major revisions to Section 404.

The Environmental Protection Agency was granted the authority for delegating to existing State regulatory programs, i.e., the WRA Watershed Permits Program, the Corps' permitting responsibilities in certain State waters which traditionally have been considered non-navigable; e.g., non-tidal wetlands. Exemptions from permit requirements are provided for normal farming and silviculture practices.

Maryland has not sought delegation of the 404 program. To do so would encumber the State with additional responsibility, funding and staff requirement problems without giving the State final approval authority which would be retained at the Federal level. The 404 permit program, as presently administered by the Corps of Engineers, theoretically provides a level of regulation comparable to that presently administered through WRA Waterway Construction and Obstruction Permits.

VII. POTENTIAL NEW REGULATORY PROGRAMS FOR PROVIDING PROTECTION OF NON-TIDAL WETLANDS IN THE PATUXENT RIVER WATERSHED

A. Local Jurisdiction Non-Tidal Permit program

Any such program would have to be established by legislation to protect the non-tidal wetlands. Each affected county would have to be capable of regulating the wetlands either independently or through an interjurisdictional governing body. It should be noted that division of authority without sufficient overview may lead to inconsistencies as exemplified by the sediment control programs of the several counties in the watershed.

B. State-wide Non-tidal Wetland Permit Program

Establishment of a permitting program administered at the state level for protection of only those non-tidal wetlands located in the Patuxent River Watershed is not practical, especially since over 90% of the watersheds non-tidal wetland acreage is currently regulated with reasonable assurance of protection. If it is important to totally protect non-tidal wetlands in the Patuxent River Watershed, then protection should be provided to non-tidal wetlands elsewhere, since the non-tidal wetlands of other river systems in the State may predictably have equal or greater values. Specific legislation to protect the non-tidal wetlands in the State would generate sufficient additional work to warrant

establishment of a separate permit program, similar to that presently administered Statewide for tidal wetland protection. The Water Resources Administration's experience with the existing tidal Wetlands Law strongly suggests that a State-wide non-tidal Wetland Law would have to be carefully drafted. The information regarding other states' efforts to legislate protection of non-tidal wetlands has not indicated the degree of success that Maryland and other states have experienced with regard to tidal wetland protection. Legal entanglements and regulatory program effectiveness variably affect the level of protection afforded when programs are administered at the local level (Montanari and Kusler, 1978; U. S. Dept. of Interior, 1976.)

Establishment of a non-tidal wetland permit program within the state has merit, especially if administered from the perspective of state level overview. Information which would be useful for further consideration of a state-wide non-tidal wetland protection program will be available upon completion of the U. S. Fish and Wildlife Service inventory. Until that basic inventory information, along with the mapping of floodplains, has been completed, development of legislation addressing a state-wide non-tidal wetland protection program should be deferred.

VIII. RECOMMENDATION FOR PROTECTION OF NON-TIDAL WETLANDS OF THE PATUXENT RIVER WATERSHED

It is the recommendation of the Water Resources Administration that the Watershed Permit Program continue to be used to accomplish the objectives of Senate Joint Resolution #18 (1979). Under this existing statutory authority the Department of Natural Resources - Water Resources Administration has the regulatory and enforcement capability by way of permit procedures to protect over 90% of the inventoried non-tidal wetlands in the Patuxent River Watershed. Since August, 1978 the Watershed Permit Program has included explicit criteria regarding review of environmental impacts upon aquatic and terrestrial habitat within the 100-year floodplain. The intended purpose of the Resolution can be achieved with minimal if any, additional biologically-trained staff or funds. All affected counties, Soil Conservation Districts, and concerned agencies and organizations should be provided with copies of the Patuxent River Non-Tidal Wetland Inventory maps. The Water Resources Administration should conduct informational meetings within each county at the time of delivery of the maps to re-define procedures for coordination on matters affecting protection of these non-tidal wetlands. These meetings will offer opportunity for an exchange between relevant State and county programs.

IX. REFERENCES

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