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# NATIONAL WETLAND INVENTORY USER REPORT 1:100,000 MAP AREA

**MAP AREA:** CHEBOYGAN SE

**1:100,000 NAME:** PETOSKEY

**STATE:** MICHIGAN



## NORTH CENTRAL REGION



**U.S. Fish and Wildlife Service**

**Federal Building, Fort Snelling Twin Cities, Minnesota 55111**

**USER REPORT  
NATIONAL WETLAND INVENTORY  
U.S. FISH AND WILDLIFE SERVICE  
REGION 3**



PREPARED BY

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### USER CAUTION

Maps for this 1:100,000 scale map were prepared primarily by stereoscopic analysis of high altitude aerial photographs. Wetlands were identified on the photographs based on vegetation, visible hydrology, and geography in accordance with Classification of Wetlands and Deepwater Habitats of the United States, Cowardin, et al., 1979. The aerial photographs reflect conditions during the specific year and season when they were taken. Some small wetlands and those obscured by dense forest cover may not be included on the map document. In addition, there is a margin of error inherent in the use and interpretation of aerial photographs. Thus a detailed on-the-ground and historical analysis of a single site may result in revision of the wetland boundaries established through photographic interpretation.

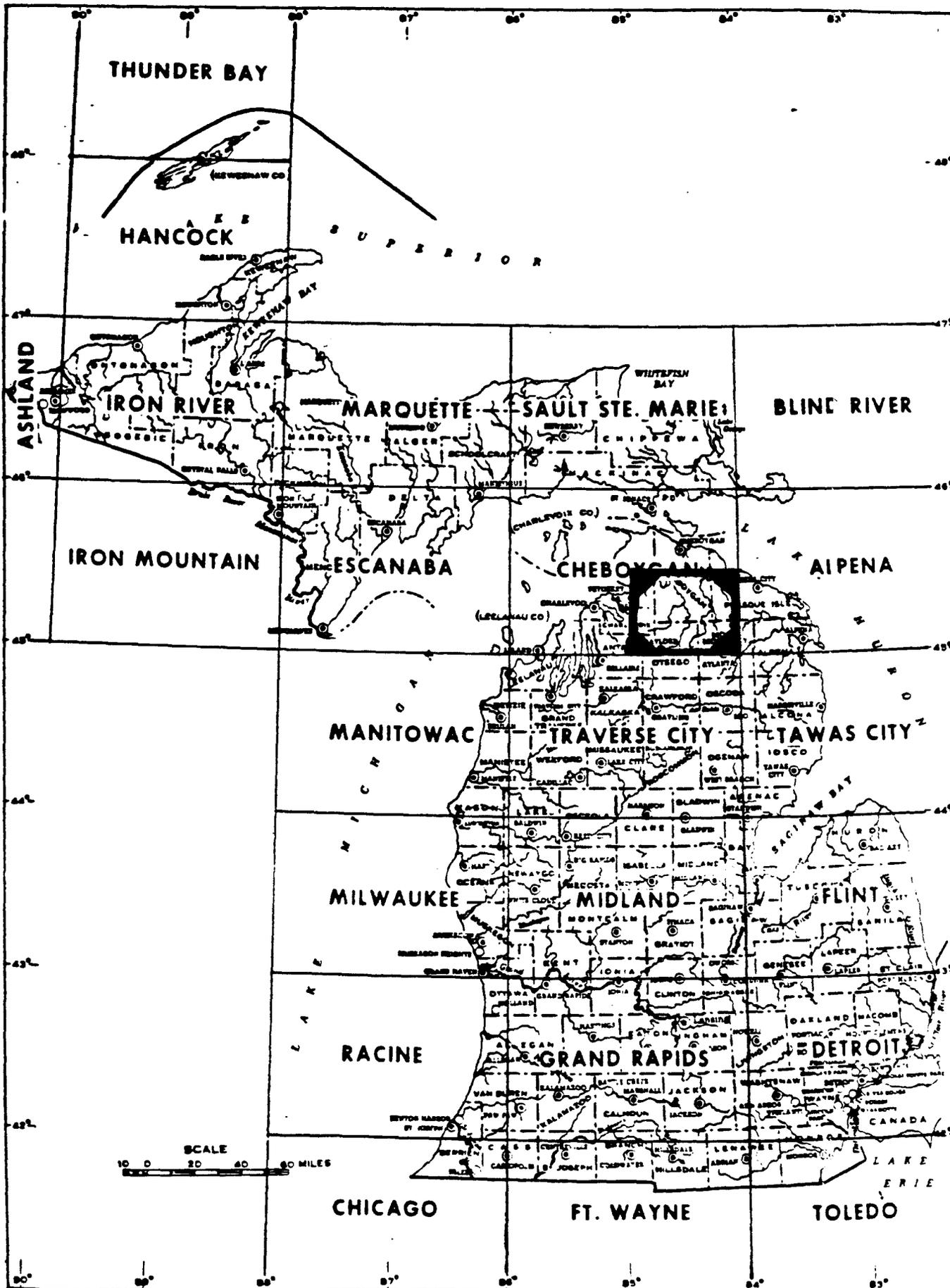
Federal, State, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either design or products of this inventory, to define limits of proprietary jurisdiction of any local, State, or Federal government or to establish the geographical scope of regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, State, or local agencies concerning specific agency regulatory programs and propriety jurisdictions that may affect such activities.

Additional information regarding this map or other National Wetland Inventory activities may be obtained by contacting:

Regional Director, Region 3 (AH/TS)  
Attn: Regional Wetlands Coordinator  
United States Fish and Wildlife Service  
Federal Building, Fort Snelling  
Twin Cities, Minnesota 55111

Michigan Department of Natural Resources  
Land Resources Program  
Box 30028  
Lansing, Michigan 48909

LOCATION OF REPORT  
STATE OF MICHIGAN



Date: December 1983

MAP PREPARATION

Basic Data

Photography Used:

<u>Emulsion</u>	<u>Scale</u>	<u>Date</u>	<u>Percent Coverage</u>
1. Black and white	1:80,000	May 1975	87.5%
2. Black and white	1:80,000	October 1975	12.5%

Field Check Dates

1. April 11 - 12, 1979
2. May 1 - 3, 1979
3. October 13, 1980
4. September 21 - 23, 1981

Contractor(s) for Photo Interpretation

1. Michigan Department of Natural Resources

Collateral Data Used

1. USGS topographic quad sheets
2. USDA Soil Surveys

Mapping Legend: (See Appendix D)

Farmed Wetlands

It is the policy of the Fish and Wildlife Service to not map farmed wetlands in the National Wetlands Inventory unless the wetland is a pothole-like depression, such as those found in the Prairie Pothole Region, intermittently flooded lake bottoms, cranberry bogs, or diked former tidelands in California. Therefore this map area may contain various amounts of non-depression type wetlands which were farmed on the date of the photography and intentionally not included in the inventory. Many of these omitted wetlands commonly occur in floodplains.

## GEOGRAPHY

### A. General Location

Degrees Longitude: 84° 0' to 85° 0' West

Degrees Latitude : 45° 0' to 45° 30' North

Largest Cities : Petosky, Michigan

Cheboygan SE is located near the northern-most part of Michigan's lower peninsula and encompasses portions of Cheboygan, Presque Isle, Otsego, Montmorency, Antrim, Charlevoix and Emmet Counties. The map area touches Lake Huron in the extreme northeast and Lake Michigan in the northwest. This map is included within Cheboygan and Thunder Bay River drainage basins and Lake Huron and Lake Michigan watersheds.

### B. Ecoregion

#### Bailey's Ecoregion Classification and Description (Bailey 1978):

Code: 2113L

#### Humid Temperate Domain (2000)

The entire Cheboygan SE map is in this Domain.

The climate of this Domain has strong seasonal temperatures and precipitation cycles, and a distinctive winter season. The Humid Temperate Domain comprises the humid midlatitude forests of broadleaf deciduous and needleleaf evergreen trees.

#### Warm Continental Division (2100)

All of the Cheboygan SE map lies within this Division.

This Division characteristically has warm summers and cold, snowy winters. The natural vegetation is needleleaf and mixed needleleaf-deciduous forest. The soils of this Division are Spodosols, which are strongly leached but have a top layer of humus. Spodosols are usually acidic and lack calcium, potassium and magnesium. Despite these deficiencies, Spodosols are very suitable for growing the conifers found in this Division.

#### Laurentian Mixed Forest Province (2110)

The entire Cheboygan SE map area is covered by this Province.

The vegetation of this Province is representative of the transitional zone in which it lies, between the boreal and deciduous forest zones. Forests consist either of mixed conifer-deciduous stands or mosaic-like arrangements with pure stands of deciduous forest growing on good soil sites and pure stands of conifers growing on poor soil sites.

Pines (Pinus spp.) are the most representative conifers of the mixed forest stands, with white pine (P. strobus) dominating in the Great

Lakes region. Pines are often a pioneer woody species following forest fires. Eastern hemlock (Tsuga canadensis) and eastern red cedar (Juniperus virginiana) also grow in this Province.

Northern Hardwoods Forest Section (2113L)

This Section includes all of the Cheboygan SE map area.

The principal tree species of this Section are hardwoods.

C. Topography and Land Forms

Hammond's Land Surface Form and Physical Subdivision (Hammond 1965, 1969):

Codes: (III-3) A2b, (III-3) B2b, (III-3) B3b

Interior Physical Division (III) - This Physical Division covers all of the Cheboygan SE map area.

North Central Lake-Swamp-Moraine Plains Subdivision (3) - All of the Cheboygan SE map area lies within this Subdivision.

Smooth Plains Class (A2b) - This Class comprises 1% of the map area in the extreme northeastern corner of the map. Greater than 80% of the land is in gentle slopes. Fifty to 75% of these slopes occur in lowland areas. Local relief ranges from 100 to 300 feet.

Irregular Plains Class (B2b) - This Class covers the western three-fourths of Cheboygan SE, excluding 5% in the extreme north-central part of the map. Fifty to 80% of the land is in gentle slopes. Fifty to 75% of these slopes are found in lowlands. Local relief ranges from 100 to 300 feet.

Plains With High Hills Class (B3b) - This Class covers the eastern-quarter of Cheboygan SE, excluding the extreme northeast corner. The extreme north-central 5% of the map is also covered by this class. Fifty to 75% of these slopes occur in lowlands. Local relief ranges from 300 to 500 feet.

RESOURCES

A. Wetlands

No wetland acreage figure is available for the Cheboygan SE area at the present time.

B. Wildlife and Fish

Many wildlife species which inhabit the Cheboygan SE map area. Small game, including ruffed grouse (Bonasa umbellus), American woodcocks (Philahela minor), eastern cottontails (Sylvilagus floridanus) and

squirrels (Sciurus spp.) are common. Furbearers include beaver (Castor canadensis), raccoon (Procyon lotor), weasel (Mustela spp.), mink (M. vison) and river otter (Lutra canadensis). Other wildlife species of Cheboygan SE include woodchucks (Marmota monax), opossums (Didelphis marsupialis) and porcupines (Erethizon dorsatum). Big game includes white-tailed deer (Odocoileus virginianus) and black bears (Ursus americanus).

Several species of waterfowl inhabit the area, particularly in the vicinities of Crooked, Hardwood and Mullett Lakes. These species include scaups (Aythya spp.), canvasbacks (A. valisineria), redheads (A. americana), ring-necked ducks (A. collaris), mallards (Anas platyrhynchos), black ducks (Anas rubripes), wood ducks (Aix sponsa), goldeneyes (Bucephala clangula), buffleheads (B. albeola), oldsquaws (Clangula hyemalis), Canada geese (Branta canadensis) and whistling swans (Olor columbianus) (Great Lakes Basin Commission 1975b, Parzner 1955, Rounds 1956).

Some wildlife species in the map area are on the Endangered and Threatened list. Kirtland's warblers (Dendroica kirtlandii) have declined because of habitat loss and competition for nest usage by brown-headed cowbirds (Molothrus ater). Bald eagles (Haliaeetus leucocephalus) and peregrine falcons (Falco peregrinus) have decreased in numbers, primarily because of reproductive failure attributed to the use of pesticides. However, Madsen et al. 1982 report that bald eagle production in Michigan showed an overall increase during the period 1973-1981.

Sport fishing opportunities are available in inland lakes and streams. Both sport and commercial fishing opportunities are available in Lake Huron and Lake Michigan.

Common fish species of inland lakes include yellow perch (Perca flavescens), bluegills (Lepomis macrochirus) and other panfish (Lepomis spp., Pomoxis spp.), largemouth bass (Micropterus salmoides), smallmouth bass (M. dolomieu), northern pike (Esox lucius), muskellunge (E. masquinongy) and walleyes (Stizostedion vitreum vitreum).

The most important stream fish of the map area are brook trout (Salvelinus fontinalis) and brown trout (Salmo trutta). Walleyes, smallmouth bass and northern pike are common in impounded backwater areas. Rainbow trout (Salmo gairdneri) and salmon (Oncorhynchus spp.) can be found in Great Lakes tributaries.

Common sport fish of Lake Huron and Lake Michigan include rainbow smelt (Osmerus mordax), walleyes, yellow perch, smallmouth bass, northern pike, panfish, suckers (Catostomus), coho salmon (O. kisutch) and chinook salmon (O. tshawytscha), rainbow and lake trout (Salvelinus namaycush). Commercial species include lake whitefish (Coregonus clupeaformis) lake herring (C. artedii), chubs (Semotilus), alewife (Alosa pseudoharengus) catfish (Ictalurus spp.), rainbow smelt and carp (Cyprinus carpio) (Great Lakes Basin Commission 1975a).

Appendix A

REFERENCES

- Bailey, R. G. 1978. Descriptions of the Ecoregions of the United States. USDA For. Serv. Intermtn. Reg. Ogden, Utah. 77 p.
- Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U. S. Fish and Wildlife Service, Washington, D. C. FWS/OBS-79/31. 103 p.
- Great Lakes Basin Commission. 1975a. Fish: Great Lakes Basin Comm. Great Lakes Basin Framework Study, App. 8. Ann Arbor, Mich. 290 p.
- 1975b. Wildlife: Great Lakes Basin Comm. Great Lakes Basin Framework Study, App. 17. Ann Arbor, Mich. 140 p.
- Hammond, E. H. 1965. 1:17,000,000 scale Physical Subdivisions. 1 map. p. 61. In Gerlach, A. C., ed. 1970. National Atlas of the United States of America. USDI Geol. Surv. Washington, D. C. 417 p.
- 1969. 1:7,500,000 Scale Classes of Land Surface Form. USDI Geol. Surv. 1 map. p. 62-63. In Gerlach, A. C., ed. 1970. National Atlas of the United States of America. USDI Geol. Surv. Washington, D. C. 417 p.
- Madsen, C. R., T. J. Sheldrake, and J. T. Leach, eds. 1982. Bald Eagle Production in the Great Lakes States 1973 - 1981. U. S. Fish and Wildlife Service, Reg. 3. Twin Cities, Minn. p.
- Panzner, E. R. 1955. Wetlands Inventory of Michigan. U. S. Fish and Wildlife Service, Office of River Basin Studies. Minneapolis, Minn. 19 p.
- Rounds, B. W. 1956. Inventory of Permanent Water Habitat Significant to Waterfowl in Michigan. U. S. Fish and Wildlife Service, Office of River Basin Studies. Minneapolis, Minn. 10 p.

ADDITIONAL INFORMATION

The purpose of this report is to provide general information regarding the production of the map and wetlands found within the area of this map. It does not include descriptions of all wetlands found in the area nor complete species information. For additional information, the following references are recommended:

- Hammond, E. H. 1964. Analysis of Properties in Land Form Geography: An Application to Broad-Scale Land Form Mapping. Annals, Assoc. Amer. Geog. v. 54. pp. 11-23.
- Herdendorf, C.E., S.M. Hartley, and M.D. Barnes, eds. 1981. Fish and Wildlife Resources of the Great Lakes Coastal Wetlands Within the United States. Volume four: Lake Huron. U.S. Fish and Wildlife Service, Washington, D.C. FWS/OBS-81/02-v4. 792 p.

Appendix B

SPECIAL MAPPING PROBLEMS

Problem 1: Littoral (L2) zones were not delineated on some lakes.

Resolution: Littoral zones were only delineated when depth information was available.

Problem 2: Cluttered linear wetlands on old beach ridges were grouped into single polygons.

Resolution: Although these polygons may include some upland on high parts of the ridge, they better represent the wetlands than do confusing tangles of linears.

Problem 3: It was often difficult to accurately identify specific water regimes from the 1:80,000 black and white photography.

Resolution: Combined water regimes (Z, W, Y) were used where necessary.

## Appendix C

## WETLAND COMMUNITIES\*

<u>MAP SYMBOLS</u>	<u>LOCAL NAME</u>	<u>DOMINANT VEGETATION</u>	<u>WATER REGIME</u>
PFOY	Swamp	<u>Populus tremuloides</u> <u>Fraxinus spp.</u> <u>Ulmus spp.</u> <u>Acer rubrum</u>	Saturated Seasonal
PFO4B PFOY PFO4Y	Swamp	<u>Thuja occidentalis</u> <u>Tsuga canadensis</u> <u>Larix laricina</u> <u>Picea mariana</u>	Saturated Seasonal
PFO/SSC PFO/SSY	Swamp	<u>Populus tremuloides</u> <u>Betula papyrifera</u> <u>Thuja occidentalis</u> <u>Alnus spp.</u> <u>Cornus spp.</u> <u>Salix spp.</u>	Saturated Seasonal
PSSB	Bog	<u>Chamaedaphne calyculata</u>	Saturated
PSSC PSSY	Swamp	<u>Alnus spp.</u> <u>Salix spp.</u>	Saturated Seasonal
PSS/EMB PSS/EMC PSS/EMY	Swamp	<u>Alnus spp.</u> <u>Salix spp.</u> <u>Carex spp.</u> <u>Juncus spp.</u>	Saturated Seasonal
PEMY	Wet meadow	<u>Carex spp.</u> <u>Scirpus spp.</u> <u>Juncus spp.</u>	Saturated Semi-permanent
PEMF PEMY	Marsh	<u>Typha latifolia</u> <u>Scirpus spp.</u>	Seasonal Semi-permanent
PABH	Pond	<u>Nuphar sp.</u> <u>Lemna sp.</u>	Permanent
POWH	Pond	Open water	Permanent

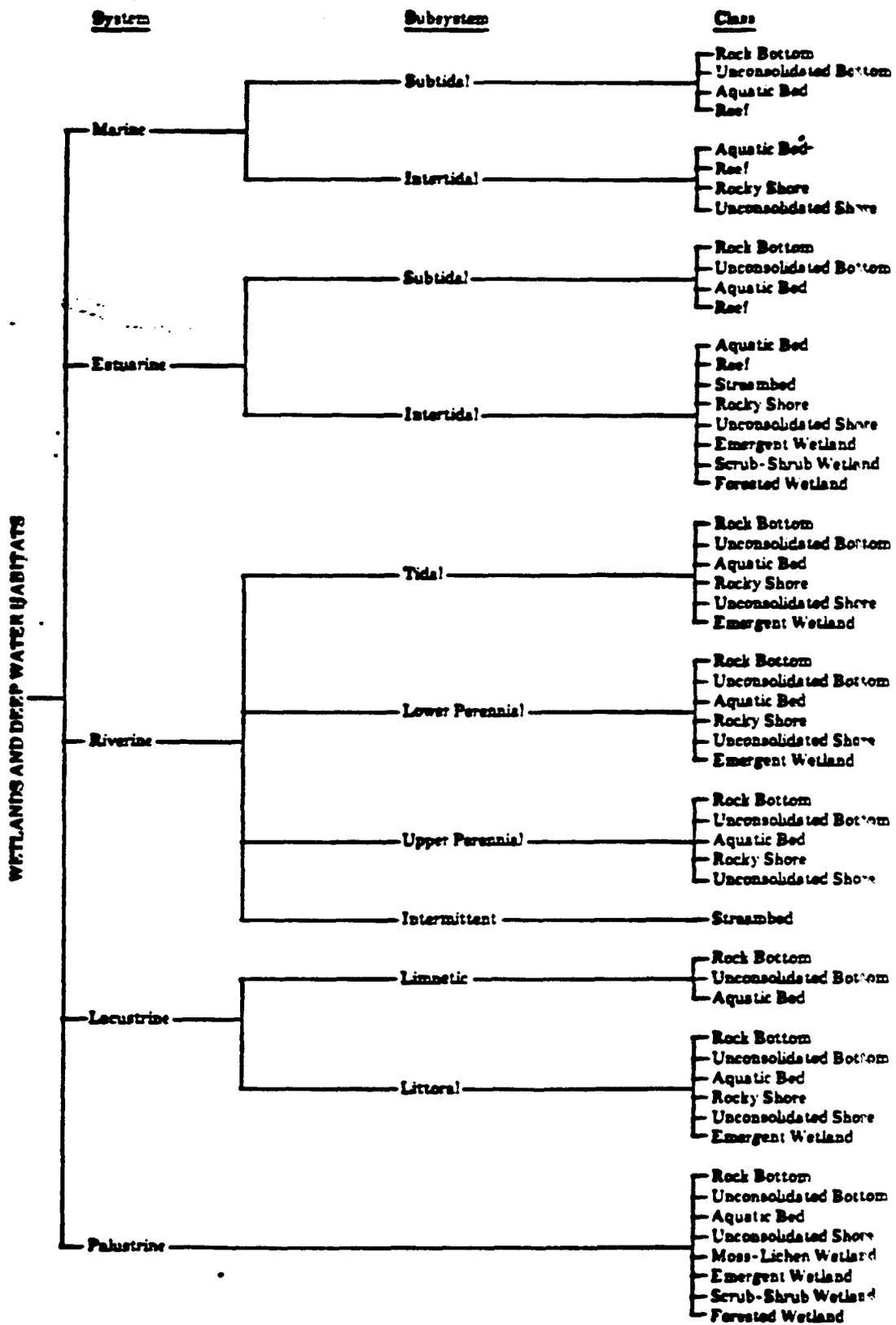
\*Plant species listed here were found in adjacent 1:100,000 areas and therefore may not be representative of species present in the Cheboygan SE map area.

Appendix D

NATIONAL WETLAND INVENTORY  
Information and Legend  
For Map Products

Classification System: The U.S. Fish and Wildlife Service uses the "Classification of Wetlands and Deepwater Habitats of the United States", December, 1979, by L. M. Cowardin, et al., to delineate and identify wetlands. This system is hierarchical and structured around a combination of ecological, biological, hydrological and substrate characteristics which permits universal use across the United States, its territories and possessions. It consists of five systems: Marine, Estuarine, Riverine, Lacustrine (lake) and Palustrine (swamps, bogs, marshes) and proceeds in a hierarchical manner through subsystem, class, and subclass. It also contains provisions to use water regime, water chemistry, soil, and special modifiers to provide additional levels of detail.

Figure 1 is an illustration of the classification system to the class level.



**Fig 1. Classification hierarchy of wetlands and deepwater habitats, showing systems, subsystems, and classes. The Palustrine System does not include deepwater habitats.**

**Use of Wetland Legend:** Wetland data are displayed on overlays or maps by a series of letters and numbers (alpha numerics) with the first letter representing the system and subsequent alpha numerics representing, in a sequential manner, the subordinate levels of detail down to the modifiers. Where classes and subclasses have been mixed, they are separated by a diagonal line.

**Examples**

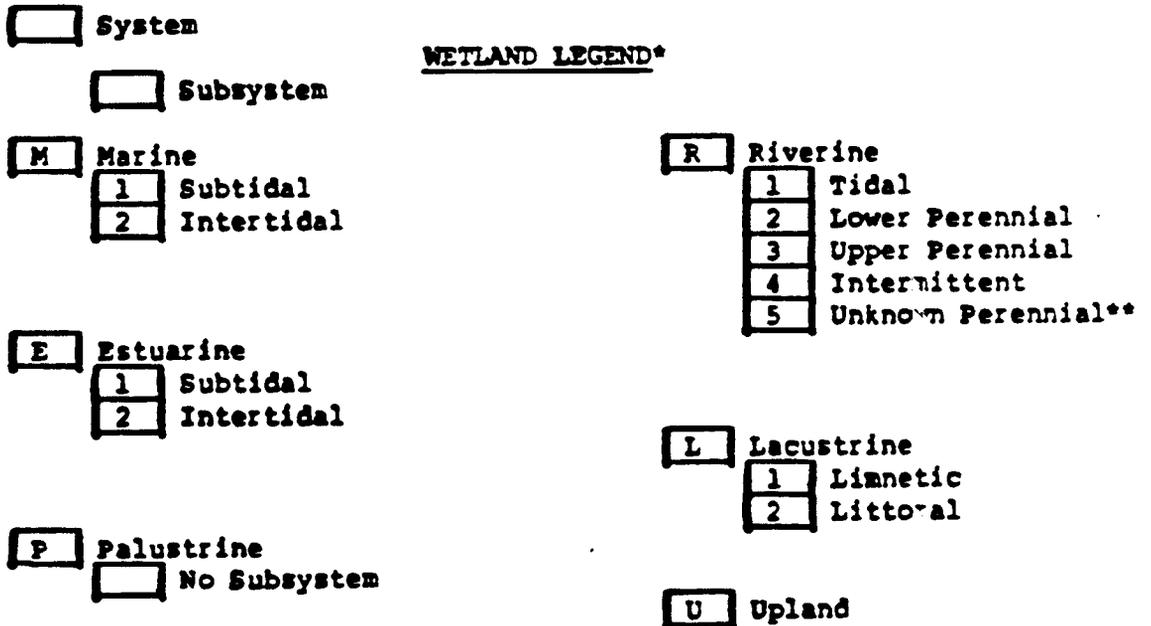
**a. Classification of wetlands to water regime and special modifier:**

<b>System:</b>	Lacustrine
<b>Subsystem:</b>	Limnetic
<b>Class:</b>	Unconsolidated Bottom
<b>Subclass:</b>	Mud
<b>Water Regime:</b>	Intermittently Exposed
<b>Special Modifier:</b>	Diked/Impounded

L 1 UB 3 G h

**b. Mixing of wetland classes and subclasses:**

PFO2/EM1P = Palustrine, Forested, Needle-leaved deciduous (PFO2) mixed with Palustrine, Emergent, Persistent (PEM1) with semipermanent water regime (P).



\*Should be used in conjunction with "Classification of Wetlands and Deepwater Habitats of the United States," by L. M. Cowardin et al.

\*\*Not included in "Classification of Wetlands and Deepwater Habitats of the United States." Created specifically for National Wetland Inventory mapping effort.

Wetland Legend (continued)

Class

Subclass

CLASSES AND SUBCLASSES

- AB** Aquatic Bed
- 1 Algal
  - 2 Aquatic Moss
  - 3 Rooted Vascular
  - 4 Floating Vascular
  - 5 Unknown Submergent\*\*
  - 6 Unknown Surface\*\*

- EM** Emergent
- 1 Persistent
  - 2 Nonpersistent

- FO** Forested
- 1 Broad-Leaved Deciduous
  - 2 Needle-Leaved Deciduous
  - 3 Broad-Leaved Evergreen
  - 4 Needle-Leaved Evergreen
  - 5 Dead
  - 6 Deciduous\*\*
  - 7 Evergreen\*\*

- ML** Moss/Lichen
- 1 Moss
  - 2 Lichen

- OW** Open Water/  
Unknown Bottom\*\*

- RB** Rock Bottom
- 1 Bedrock
  - 2 Rubble

- RF** Reef
- 1 Coral
  - 2 Mollusk
  - 3 Worm

- RS** Rocky Shore
- 1 Bedrock
  - 2 Rubble

- SB** Streambed
- 1 Bedrock
  - 2 Rubble
  - 3 Cobble/Gravel
  - 4 Sand
  - 5 Mud
  - 6 Organic
  - 7 Vegetated

- SS** Scrub/Shrub
- 1 Broad-Leaved Deciduous
  - 2 Needle-Leaved Deciduous
  - 3 Broad-Leaved Evergreen
  - 4 Needle-Leaved Evergreen
  - 5 Dead
  - 6 Deciduous\*\*
  - 7 Evergreen\*\*

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

- US** Unconsolidated  
Shore
- 1 Cobble/Gravel
  - 2 Sand
  - 3 Mud
  - 4 Organic
  - 5 Vegetated

\*\*Not included in "Classification of Wetlands and Deepwater Habitats of the United States." Created specifically for National Wetland Inventory mapping efforts.

## MODIFIERS TO WETLAND CLASSIFICATION

### WATER REGIME MODIFIERS

#### Nontidal

<b>A</b>	Temporary
<b>B</b>	Saturated
<b>C</b>	Seasonal
<b>D</b>	Seasonally Flooded-Well Drained
<b>E</b>	Seasonally Flooded-Saturated
<b>F</b>	Semipermanent
<b>G</b>	Intermittently Exposed
<b>H</b>	Permanent
<b>J</b>	Intermittently Flooded

#### Nontidal Combined

<b>Z</b>	Intermittently Exposed/ Permanent (G,H above)**
<b>W</b>	Intermittently Flooded/ Temporary (A,J above)**
<b>Y</b>	Saturated Semipermanent/ All Seasonals (B,C,D,E F above)**

#### Nontidal and Tidal

<b>U</b>	Unknown**
<b>K</b>	Artificial

#### Tidal

<b>L</b>	Subtidal
<b>M</b>	Irregularly Exposed
<b>N</b>	Regularly Flooded
<b>P</b>	Irregularly Flooded
<b>R</b>	Seasonal - Tidal
<b>S</b>	Temporary - Tidal
<b>T</b>	Semipermanent - Tidal
<b>V</b>	Permanent - Tidal

### WATER CHEMISTRY MODIFIERS

#### Coastal Salinity

<b>1</b>	Hyperhaline
<b>2</b>	Euhaline
<b>3</b>	Mixohaline (Brackish)
<b>4</b>	Polyhaline
<b>5</b>	Mesohaline
<b>6</b>	Oligohaline
<b>0</b>	Fresh

#### Inland Salinity

<b>7</b>	Hypersaline
<b>8</b>	Eusaline
<b>9</b>	Mixosaline
<b>0</b>	Fresh

#### pH Freshwater

<b>a</b>	Acid
<b>t</b>	Circumneutral
<b>l</b>	Alkaline

\*\*Not included in "Classification of Wetlands and Deepwater Habitats of the United States." Created specifically for National Wetland Inventory mapping effort.

## OTHER MODIFIERS

### Special

<b>b</b>	Beaver
<b>d</b>	Partially Drained/ Ditched
<b>f</b>	Farmed
<b>h</b>	Diked/Impounded
<b>r</b>	Artificial
<b>s</b>	Spoil
<b>x</b>	Excavated

### Soils

<b>g</b>	Organic
<b>n</b>	Mineral

Statement to Users: The overlays/maps were prepared primarily by stereoscopic analysis of high altitude aerial photographs. Wetlands were identified on the photographs based on vegetation, visible hydrology, and geography in accordance with "Classification of Wetlands and Deepwater Habitats of the United States." The aerial photographs typically reflect conditions during the specific year and season when they were taken. In addition, there is a margin of error inherent in the use of aerial photographs. Thus, a detailed on-the-ground and historical analysis of a single site may result in a revision of the wetland boundaries established through photographic interpretation. In addition, some small wetlands and those obscured by dense forest cover may not be included on this map. Federal, State, and local regulatory agencies with jurisdictions over wetlands may define and describe wetlands in a different manner than that used in this Inventory. There is no attempt, in either the design or products of this Inventory, to define the limits of proprietary jurisdiction of any Federal, State, or local government or to establish the geographical scope of the regulatory programs and proprietary jurisdictions that may affect such activities.

To Order NWI Topical Wetland Overlays/Maps: A National Wetland Inventory Order Form is required and can be obtained by writing to the address on the letterhead.

