

**WETLAND INVENTORY  
OF  
TWO SUB-BASINS IN THE  
PORTAGE RIVER WATERSHED  
By  
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Wetlands in the Portage River Watershed have experienced dramatic changes during the past 180 years. Historically, the Portage River carried much of the water in northeastern Jackson County and southeastern Ingham County to the Grand River north of Jackson after filtering through extensive complex of wetlands. A variety of wildlife flourished in undisturbed marshes along the Portage. First to affect the watershed were early settlers who harvested marsh hay. Further changes occurred when the Portage River was straighten and deepened in 1921-22 and renamed the Portage River Drain. With most of the wetlands drained, farmers were able to grow onions, lettuce, peppermint, sod and a variety of other specialty crops on the rich muck soils.

In recent times a combination of factors have reduced farming along the Portage. Fallen trees, sediment, and other debris now clog not only the drain, but also the Grand River in many locations causing widespread flooding, especially in the spring (Hubbell, Roth & Clark, Inc. 1999). A US Army Corps Engineer 1972 study concluded that cleaning the Grand and Portage Rivers was prohibitive because the cost far exceeded agricultural benefits. Now much of the farmland along the lower portions of the Portage River Drain now is abandoned because of flooding, late spring and early fall frosts, crop depredation by wildlife, and depressed crop prices.

Restoring and preserving these former wetlands is a viable alternative to farming.

There are several reasons for restoring and/or preserving wetlands. Some of the most important functions of wetlands are that they:

- Prevent floods by temporarily storing and retaining water, allowing the water to be slowly released, evaporate or percolate into the ground, and recharging groundwater.
- Help prevent the movement of sediment into lakes and streams by filtering out water borne sediment.
- Offer opportunities to watch and enjoy a wide variety of wildlife.
- Improve water quality by filtering pollutants out of water.
- Provide habitat for a wide diversity of plants, amphibians, reptiles, fish, birds and mammals.
- Support approximately 50% of Michigan's Endangered or Threatened species.

### OBJECTIVES

- Identify and prioritize candidate agricultural areas for wetland restoration and/or preservation in the lower regions of the Portage River Watershed.
- Contact landowners that may benefit from government programs that provide financial assistance for restoring wetlands e.g., Wetland Reserve Program, Partners for Fish and Wildlife.

## PROCEDURE

Hydric soils (Table 1) identified in the Soil Survey of Jackson County (USDA 1981) were used to locate potential wetlands in two sub-basins, Portage River Lower Branch and Portage River Middle Branch 3. Soils with minor inclusions of hydric soils were not inventoried (Table 1). USDA 1993-94 black and white aerial photographs (scale 1 in. = 1/8 mi. = 660 ft.) and USDA 2001 aerial, color slides were also helpful. Upland soils, roads, dikes and other elevated barriers were used to determine the boundary of a wetland e.g. each field was considered a separate wetland if a dike separated it from adjacent drained fields, or when a road bisected a wetland complex, each side was considered a separate wetland. Large wetlands were split into separate units because 1) it is easier to restore a small wetland owned by only one landowner than dealing with several property owners, and 2) a landowner may wish to restore only some of his wetlands.

Wetland status was categorized as being **destroyed**, degraded but candidates for **restoration**, or relatively undisturbed and should be **preserved**. Hydric soil areas were considered degraded if there was evidence of drainage ditches, agricultural activity, or drainage tile. Field visits were made to more than 1/2 of the sites to confirm their classification.

Data sheets (Table 2) were completed for each wetland and they are on file at the Jackson County Conservation District. Ronald Parker entered data for each site into a geographic information system (ArcView) for digital presentation and data analysis. A copy of the data is available on a CD-ROM disk at the Jackson County Drain Commissioner Office and Jackson County Conservation District.

Each wetland was evaluated for its potential restoration based on 7 characteristics (e.g. size, present land use, etc.). Points were assigned to each of the 7 characteristics based on a modification of the 2001 Wetland Reserve Program Michigan Ranking System (USDA NRCS 2001). The scale of points for each site feature is as follows:

- A. Wetland size, 1 point per acre (maximum pts. 20)
- B. Present land use
  - 50% tilled within last 4 yrs. 15 pts.
  - 50% pastured or hayed within last 4 yrs. 10 pts.
- C. Unique saturated area - fens, bogs, organic soils
  - At least 51% converted muck land 10 pts.
- D. Landscape significance
  - >40 acres of emergent wetland types within 1/2 mi. 10 pts.
  - >40 acres of emergent wetland types within 1 mi. 6 pts.
  - >40 acres of any wetland types within 1/2 mi. 4 pts.
- E. Within floodplain 30 pts.
- F. Degraded by ditches, tile 20 pts.
- G. Number of landowners
  - 1 10 pts.
  - 2 or 3 5 pts.

A **restoration score** was then calculated based the sum of the points.

## RESULTS AND DISCUSSION

Table 3 summarizes the results of this inventory. Two sub-basins, Portage River Lower Branch and Portage River Middle Branch 3 were completely inventoried for wetlands. We found 335 wetlands in those two sub-basins. Incidental to the work in the two sub-basins, 7 additional wetlands are described from three adjacent sub-basins. Figure 1 and Figure 2 show the location of wetlands in the sub-basins with complete coverage.

This inventory does not include wetlands located in the four soils that had a minor inclusion of hydric soils (Table 1). For example in Brady Sandy Loam, the hydric soil (Gilford) is a minor inclusion and can not be identified on the soil maps. Typically, these hydric soil inclusions are small, seasonally flooded depression which are easily drained, tilled and/or farmed. Laws generally do not regulate wetlands less than 5 acres in Michigan so it is likely that this inventory underestimated the number and acreage of wetlands less than 5 acres.

Data for individual wetlands are reported Table 4, Table 5, and Layout Maps 1-61. In Table 4, wetlands are arranged sequential based on their wetland identification number. Information includes restoration score, status (restorable, preserve, or destroyed), location, size, sub-basin, and layout map for each wetland. Individual wetlands are identified on Layout Maps covering one-square mile. Figure 3 provides an index to the 61 Layout Maps if the township, range, and section of a wetland are known. In Table 5, wetlands are ranked according to their restoration score.

### **The following discussion is confined to the two sub-basins with completed coverage (Table 3).**

At least 17 areas covering 120 acres were once wetlands based on hydric soil locations and now are destroyed. Most were filled leaving no trace that once a wetland was located at that site. Several of these destroyed wetlands are located on State of Michigan (Prison) property. As stated above, soils with minor hydric soil inclusions were not identified so the amount of destroyed wetlands is underestimated.

We were able to identify 198 wetlands (5,032 acres) that appeared to be in a relative natural state and therefore should be preserved. Some of these may be affected by ditches located some distance from the wetland boundary or by undetected drain tile. Seven of these wetlands totaling 719 acres are being preserved that once were degraded but have been or soon will be restored through either the Wetland Reserve Program (WRP) or the U.S. Fish & Wildlife Service Partners for Fish & Wildlife Program. Wetlands are also being preserved at 447 acres owned entirely by the State of Michigan, Dept. of Natural Resources and the ownership of an additional 299 acres is shared with one or more other landowners. The Michigan Audubon Society protects 541 acres and an unknown number of private landowners that wish to preserve their wetlands. In addition, various state and federal wetland laws require a permit to drain or fill wetlands larger than 5 acres.

At least 34% of the 5,032 acres of that are recommended for preservation are being protected now.

We found 120 wetlands (6,412 acres) had been degraded and have potential for restoration. Restoration scores ranged from 0 to 115 points. Those with the highest score are the best candidates for restoration (Table 5). The Portage River Drain, smaller drainage ditches and drain tile most often changed hydrology. The State of Michigan (Prison) is the sole owner of the largest block of degraded wetlands (1,022+ acres) with high potential for restoration. The State of Michigan prison shares ownership with one or more landowners of an additional 906 acres of wetlands. In 2002, two landowners applied to restore 1,134 acres as part of the WRP. WRP funds are available to restore that acreage and if accepted into the program, will further add to the wetlands that are preserved.

## RECOMMENDATIONS

The recommendations presented here to restore and preserve wetlands are general and apply to the watershed as a whole rather than for specific sites. This inventory identified potential restoration sites and was not intended to make recommendations for a specific site. Those will depend on in-depth analysis of the conditions at each site and the landowner's wishes.

- Landowners should be informed of benefits of wetlands and the problems caused by wetland degradation.
- Landowners should be encouraged to participate in restoration and preservation of wetlands.
- Land Conservancies or Trusts have proliferated across Michigan, but none is specific for Jackson County. A Jackson County land conservancy should be formed that would hold conservation easements on special interest lands (e.g. wetlands, farmland, forestland, etc.), to permanently prevent future development, while leaving the land in private ownership.
- Landowners should be informed about opportunities to participate in wetlands programs and assistance that various agencies provide e.g. USDA Wetland Reserve Program, US Fish & Wildlife Service Partners for Fish & Wildlife, Ducks Unlimited MARSH program.
- Designating the Portage River Watershed a Conservation Enhancement Program (CREP) area would increase payments for restoration, enhancement, preservation, and other conservation practices.
- Wetlands in additional sub-basins should be inventoried for restoration potential. Only two of 37 sub-basins have been surveyed. Priority should be given to inventory sub-basins with cropland subject to flooding e.g. Unnamed Tributary, Orchard Creek, Cahaogen Creek, etc.
- Local units of government adopting ordinances regulating wetlands smaller than 5 acres would help protect areas most susceptible to degradation.
- Wetland Mitigation – Michigan Wetland Protection law authorizes the MDEQ to require actions to mitigate the loss of wetland area and function. Landowners with restorable wetlands can sell development easements for those wetlands to developers needing mitigation.
- Wetland Mitigation Banking – A wetland mitigation bank is a site where wetlands are restored, created, or in exceptional circumstances, preserved expressly for the purpose of providing an off-site alternative to compensate for authorized wetland loss. MDEQ may authorize the use of credits from an established mitigation bank. Landowners with wetlands that qualify for banking may sell credits to developers.
- Implementing conservation management practices (USDA 2001) such as those listed below will significantly help with restoring and enhancing wetlands degraded by past activities.

- **Conservation Cover** – Planting herbaceous cover in uplands surrounding wetlands will improve and protect water quality by reducing the amount of sediment and other pollutants, and provide wildlife habitat where it is not feasible or desirable to establish woody vegetation. Planting native, warm-season grasses will provide long-term vegetative cover, but are slower to establish than introduced species. Native plants are usually better adapted to our local conditions, are more resistant to diseases and insect problems, and provide better nesting and winter cover than introduced species. Introduced grasses and legumes (cool-season) will live for 10-30 years, grow fairly fast and are usually easier to establish than native grasses. Introduced species should be used only when there are no alternative native species and the introduced species are not invasive.
- **Riparian Forest Buffers** – Areas with trees and shrubs adjacent to water and up-gradient from watercourses and wetlands will filter out pollutants, create shade, and provide wildlife habitat.
- **Tree and Shrub Establishment** – Establishing woody plants by planting or seeding will provide erosion control and provide wildlife habitat.
- **Wetland Enhancement** – Enhancement includes the modification or rehabilitation of an existing or degraded wetland, where specific functions or values are modified for the purpose of favoring a specific wetland functions or values. Examples include managing hydrology for waterfowl or amphibian use, or managing plant community composition to favor native plants.
- **Wetland Restoration** – A rehabilitation of drained or degraded wetland where the soils, hydrology, vegetative community, and biological habitat are returned to the natural conditions to the greatest extent possible.
- **Wetland Wildlife Habitat Management** – Retaining, developing or managing habitat for waterfowl, fur-bearers, or other wetland associated flora and fauna.

#### REFERENCES

- Hubbell, Roth & Clark, Inc. 1999. Portage River Inter-County Drain Drainage District evaluation and corridor study. 54 pp.
- US Army Corps Engineer. 1972. Grand River Basin Michigan comprehensive water resources study, main report. 190 pp. Vol. I-XI.
- USDA. Soil Cons. Serv. 1981. Soil survey of Jackson County, Michigan. 178 pp.
- USDA NRCS. 2001. Conservation practice standards field office technical guide, Section IV, Vol. I., Lansing, MI

Table 1. Hydric soils inventoried for wetlands.

Map Symbol Name	Inclusion
Hydric Soils Inventoried	
17 Barry Loam	
18 Gilford-Colwood Complex	
20 Houghton Muck	
22 Cohoctah Fine Sandy Loam	
30 Edwards Muck	
37 Palms Muck	
39A Ypsi-Wauseon Complex	Wauseon
40 Lenawee Silt Loam	
45 Martisco Muck	
46 Sebewa Loam	
47 Histosols & Aquents, Poned	
48 Napoleon Muck	
63 Henrietta Muck	
Hydric Soils Not Inventoried	
16A Brady sandy Loam	Gilford
43A Dixboro Very Fine Sandy Loam	Colwood
62A Del Rey Silt Loam	Lenawee
65A Capac Loam	Barry

Table 2. Data Sheet For Wetland Site Inventory

Site Number: \_\_\_\_\_ Map \_\_\_\_\_ Total Points \_\_\_\_\_ Preserve Restore Destroyed  
 Date: \_\_\_\_\_ Field Checked \_\_\_\_\_ Observer: \_\_\_\_\_

Location: Sub-basin: \_\_\_\_\_  
 Township Name \_\_\_\_\_ Twp. \_\_\_\_\_ Range \_\_\_\_\_ Sec. \_\_\_\_\_  
 Township Name \_\_\_\_\_ Twp. \_\_\_\_\_ Range \_\_\_\_\_ Sec. \_\_\_\_\_  
 Latitude \_\_\_\_\_ Longitude \_\_\_\_\_

Owner(Principal Ones):

Name: \_\_\_\_\_ Farm Number \_\_\_\_\_ Tract Number \_\_\_\_\_  
 Addresses: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Name: \_\_\_\_\_ Farm Number \_\_\_\_\_ Tract Number \_\_\_\_\_  
 Addresses: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Name: \_\_\_\_\_ Farm Number \_\_\_\_\_ Tract Number \_\_\_\_\_  
 Addresses: \_\_\_\_\_  
 Phone: \_\_\_\_\_

- A. Wetland size \_\_\_\_\_ acres, 1 point per acre (maximum pts. 20) \_\_\_\_\_
- B. Present land use (PC, FW)
  - 50% tilled within last 4 yrs. 15 pts. \_\_\_\_\_
  - 50% pastured or hayed within last 4 yrs. 10 pts. \_\_\_\_\_
- C. Unique saturated area - fens, bogs, organic soils
  - At least 51% converted muck land \_\_\_\_\_ 10 pts. \_\_\_\_\_
- D. Landscape significance
  - >40 acres of emergent wetland types within ½ mi. 10 pts. \_\_\_\_\_
  - >40 acres of emergent wetland types within 1 mi. 6 pts. \_\_\_\_\_
  - >40 acres of any wetland types within ½ mi. 4 pts. \_\_\_\_\_
- E. Within floodplain 30 pts. \_\_\_\_\_
- F. Degraded by ditches, tile 20 pts. \_\_\_\_\_
- G. Number of landowners
  - 1 10 pts. \_\_\_\_\_
  - 2 or 3 5 pts. \_\_\_\_\_
  - >3 0 pts. \_\_\_\_\_

Total Points

Table 3. Categories of wetlands inventoried in sub-basins of the Portage River Watershed.

Sub-Basin Name/Number	<u>Destroyed</u>		<u>Restorable</u>		<u>Preserve</u>		<u>Total</u>	
	No.	Acres	No.	Acres	No.	Acres	No.	Acres
Portage River Lower Branch, 1319	13	74	60	3,720	101	2,038	174	5,832
Portage River Middle Branch 3, 1286	4	46	60	2,692	97	2,994	161	5,732
Total	17	120	120	6,412	198	5,032	335	11,564
Orchard Creek, 1294			2	87	1	14	incomplete	
Grand River Upstream, 1278	2	5					incomplete	
Huttenlocker & Crittenden Drain, 1353					2	18	incomplete	

