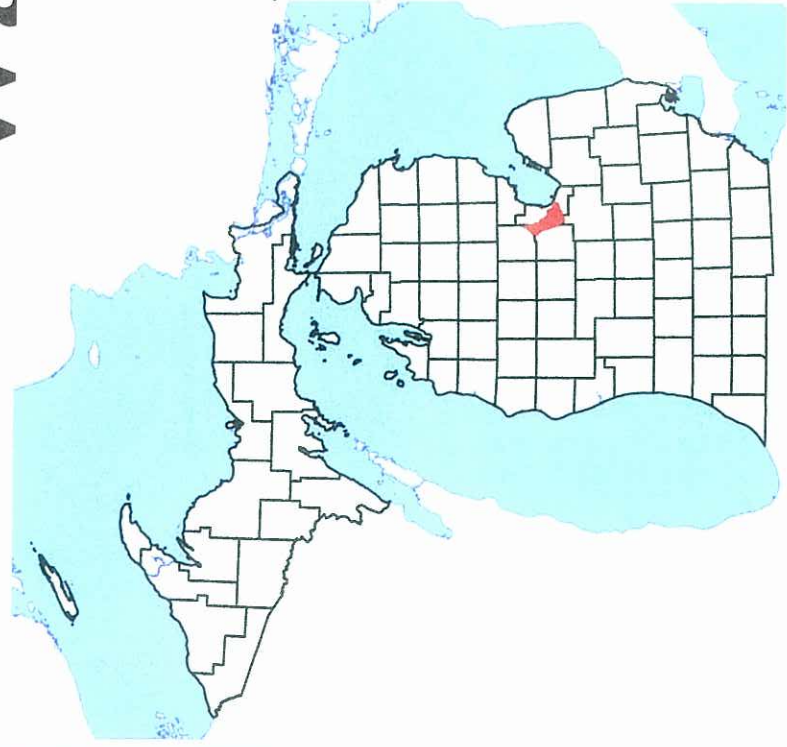


# Appendix B

# Kawkawlin River Watershed



## Status and Trends Pre-settlement to 2005



Department of  
Environmental Quality  
Land and Water Management Division

By: Jeremy Jones  
April 2009



# DATA LIMITATIONS AND DISCLAIMER

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## National Wetlands Inventory (NWI)

- Wetland boundaries determined from Aerial Imagery
- Last updated in 2005
- Obvious limitations to Aerial Photo Interpretation:
  - Errors of Omission (forested and drier-end wetlands)
  - Errors of Comission (misinterpretation of aerials)

The 2005 NWI data was used in this analysis to report status and trends, as this is currently the best data source available. However, this data may not accurately reflect current conditions on the ground.

THE MDEQ-Land and Water Mgmt Division has begun a joint project with Ducks Unlimited, Inc. to update the 1978 NWI using 1998 aerial imagery and 2005 aerial imagery. The project is on going, and this data will be used for all future Wetland Status and Trends analysis.



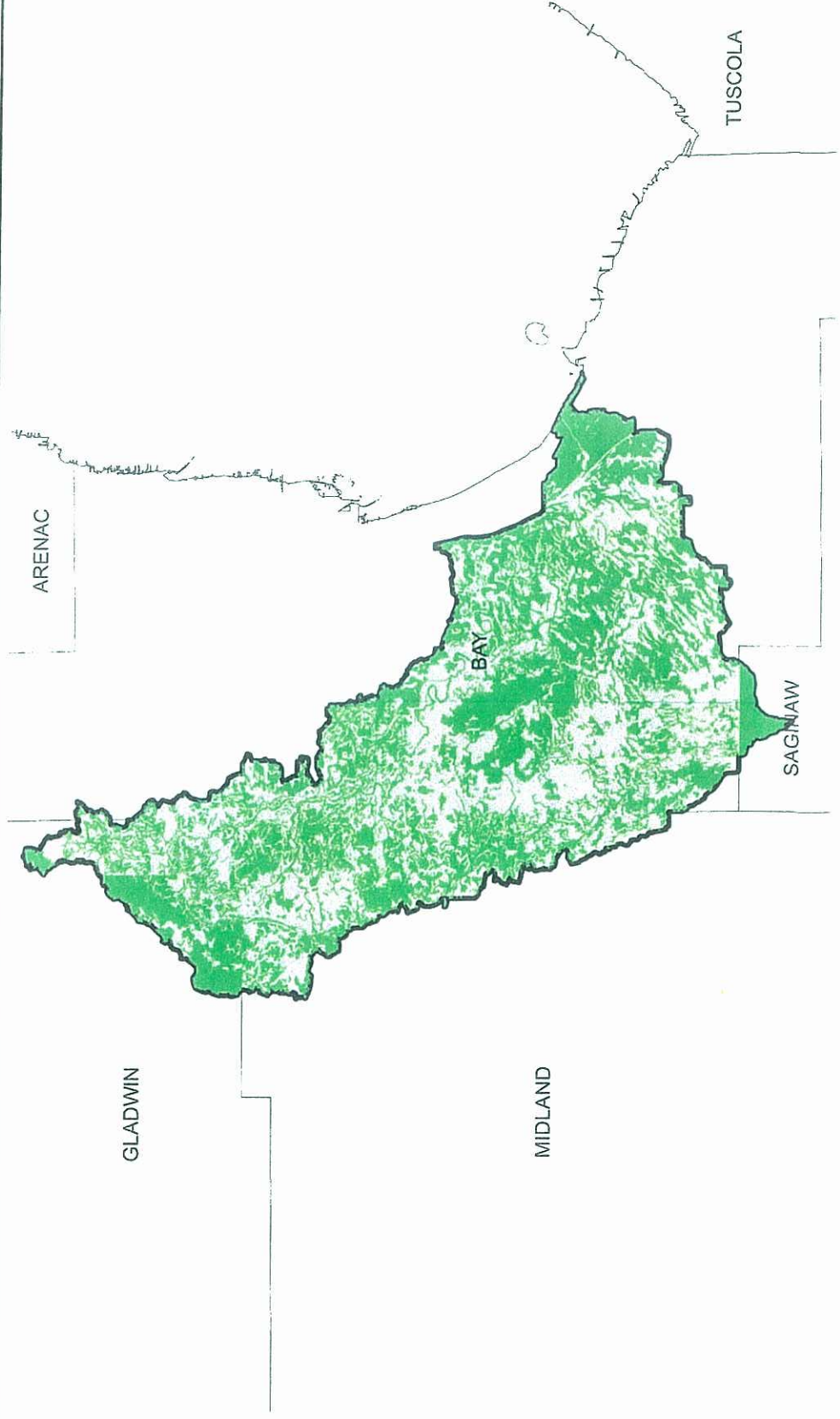
## KAWKAWLIN RIVER: WETLAND RESOURCES STATUS AND TRENDS

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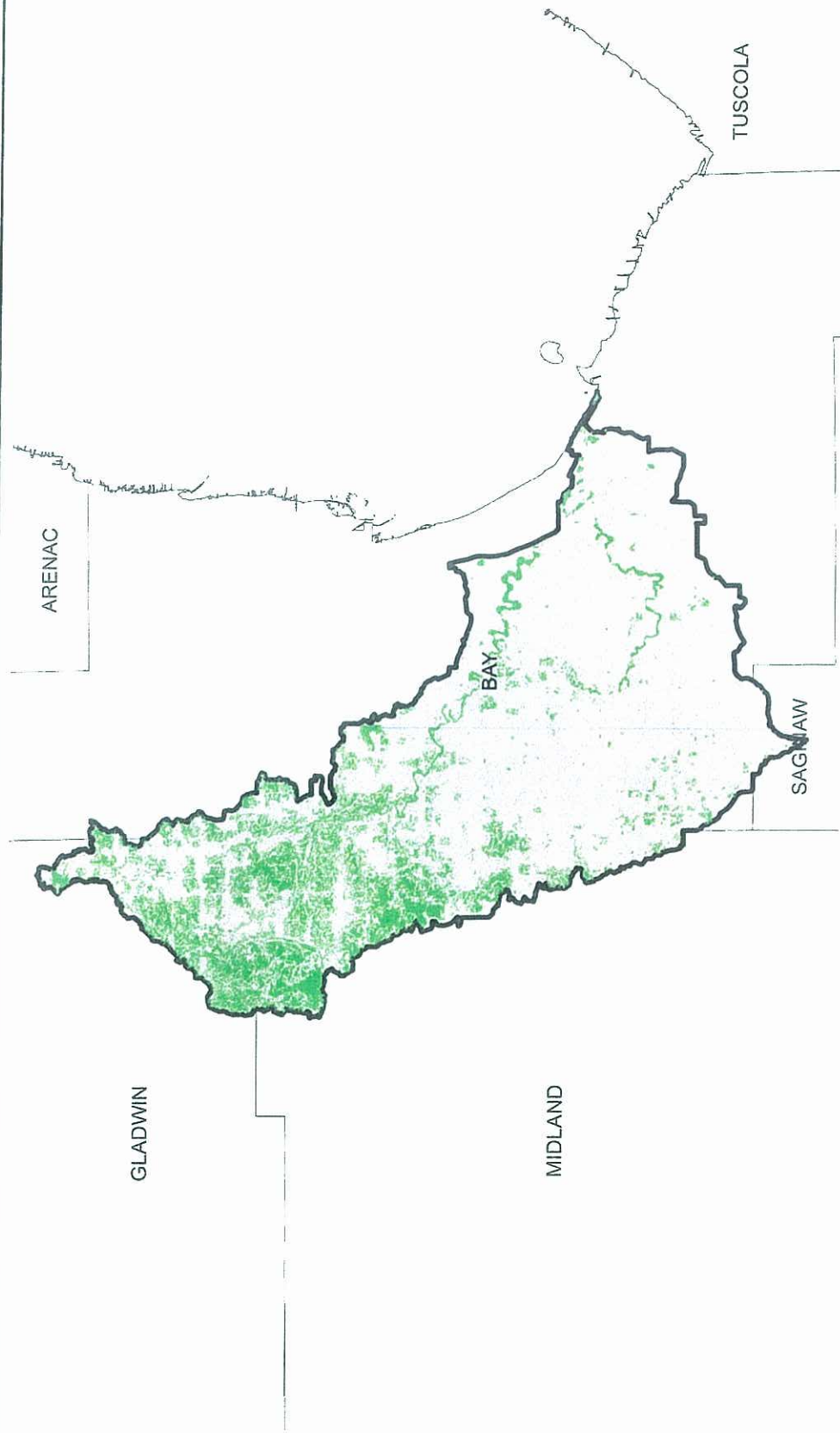
- PRESETTLEMENT WETLAND CONDITION □ 2005 WETLAND CONDITION\*\*\*
- 71,968 total acres of wetland □ 23,264 total acres of wetland
- 1,461 Polygons □ 4,160 Polygons
- Average Size – 49 Acres □ Average Size – 5.5 Acres

**32 % OF ORIGINAL WETLAND ACREAGE REMAINS  
68% LOSS OF TOTAL WETLAND RESOURCE**

# KAWKAWLIN RIVER: PRE-SETTLEMENT WETLANDS

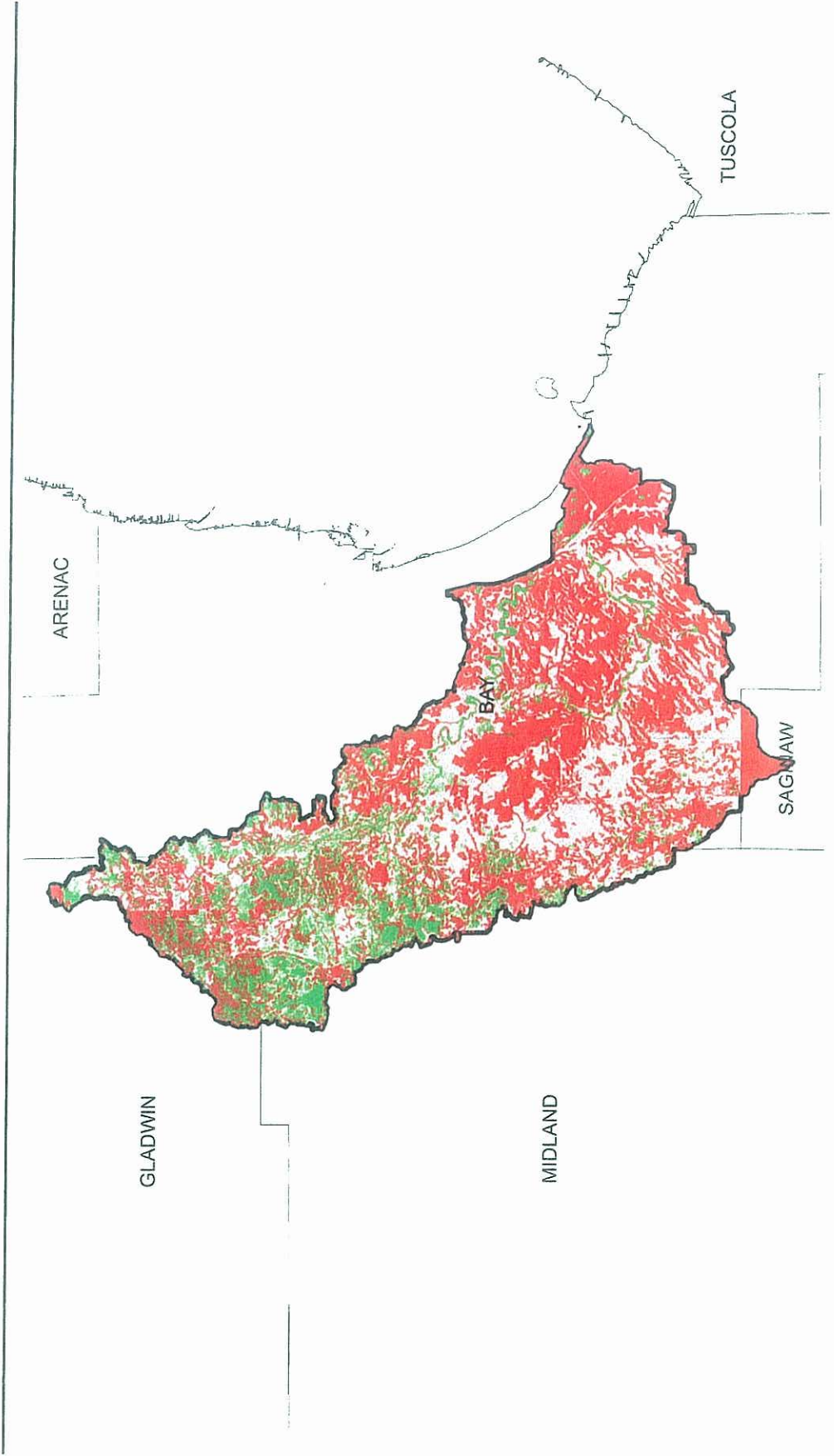


# KAWKAWLIN RIVER: 2005 NWI WETLANDS



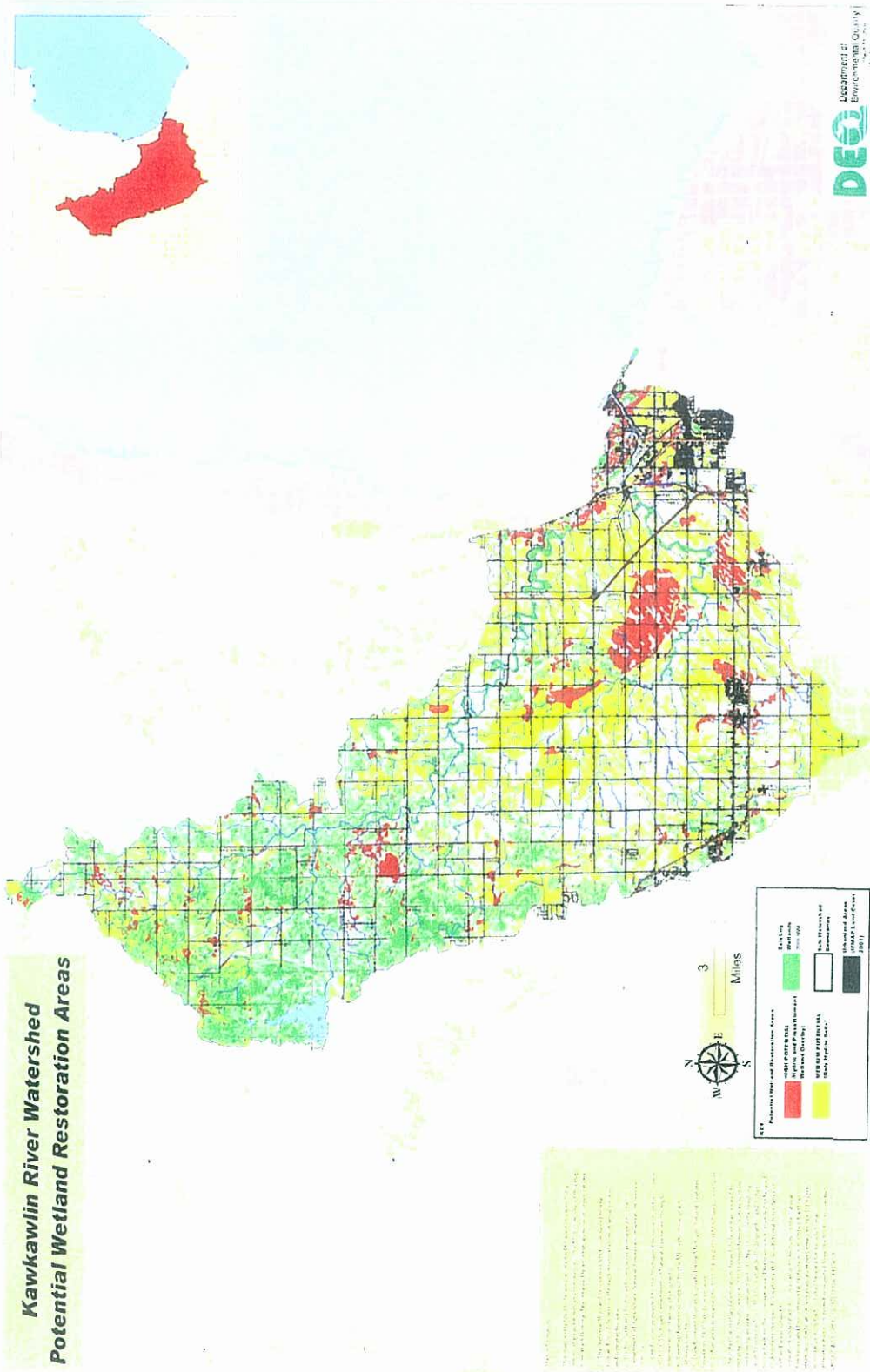


# KAWKAWLIN RIVER: APPROXIMATE AREAS OF WETLAND LOSS



# Kawkawlin River: Wetland Restoration Areas Map

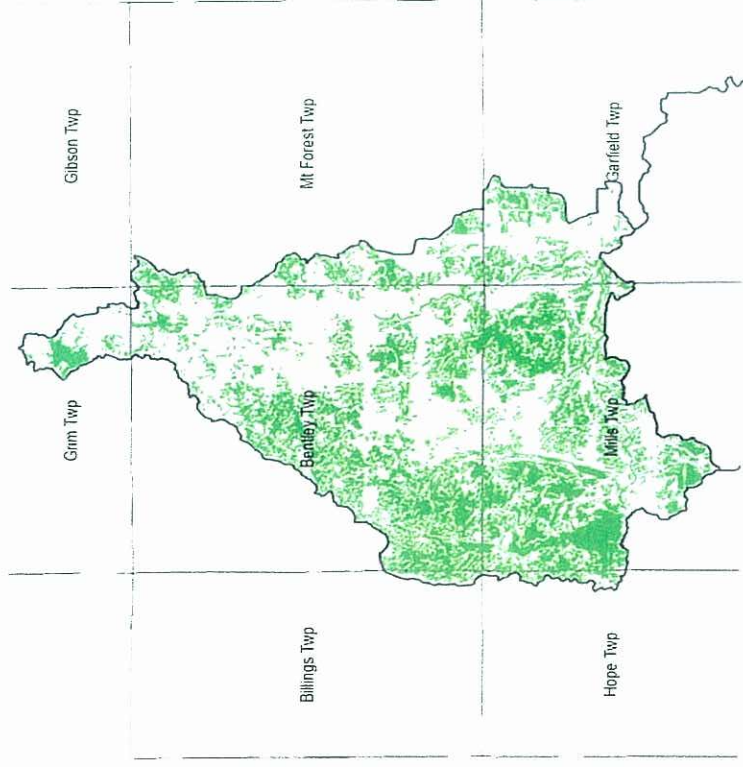
**Kawkawlin River Watershed  
Potential Wetland Restoration Areas**



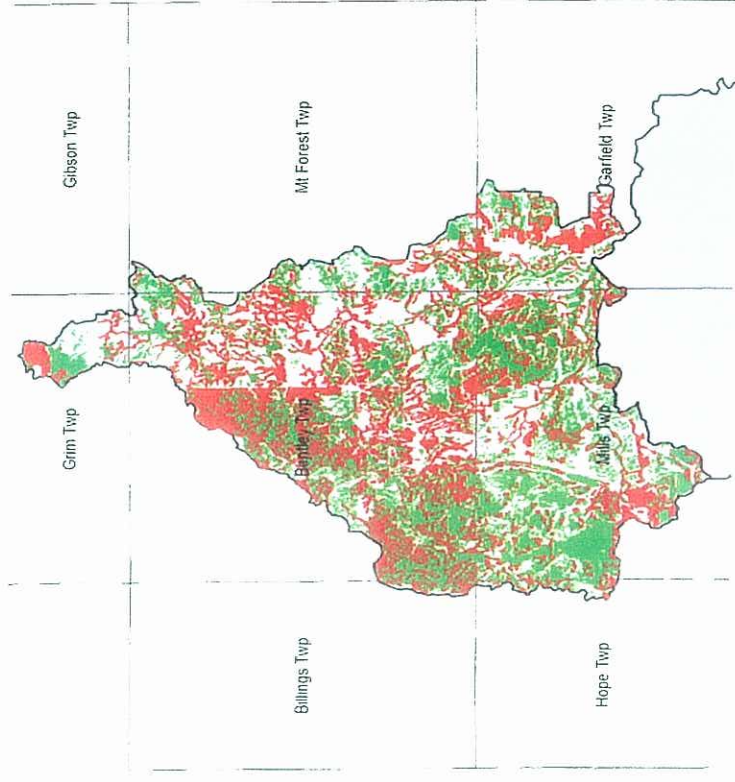


# North Branch Kawkawlin Sub-Watershed No.1

Current Wetlands



Wetland Loss





## KAWKAWLIN RIVER Sub-Watershed No.1: WETLAND RESOURCES STATUS AND TRENDS

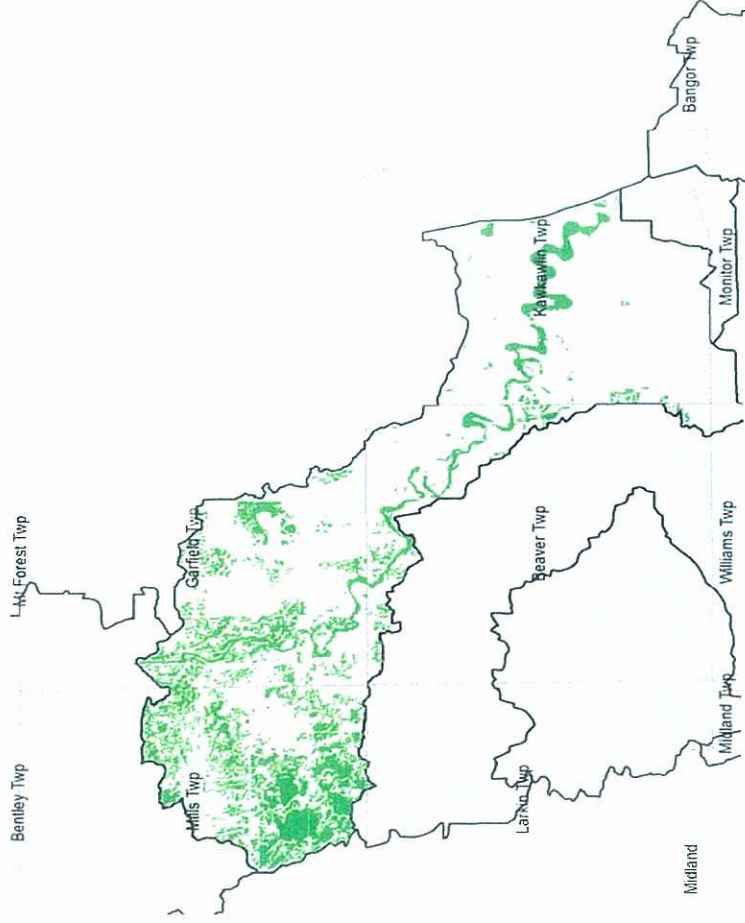
---

- PRESETTLEMENT WETLAND CONDITION □ 2005 WETLAND CONDITION\*\*\*
- 16,336 total acres of wetland □ 11,790 total acres of wetland
- 528 Polygons □ 1,603 Polygons
- Average Size – 31 Acres □ Average Size – 7.4 Acres

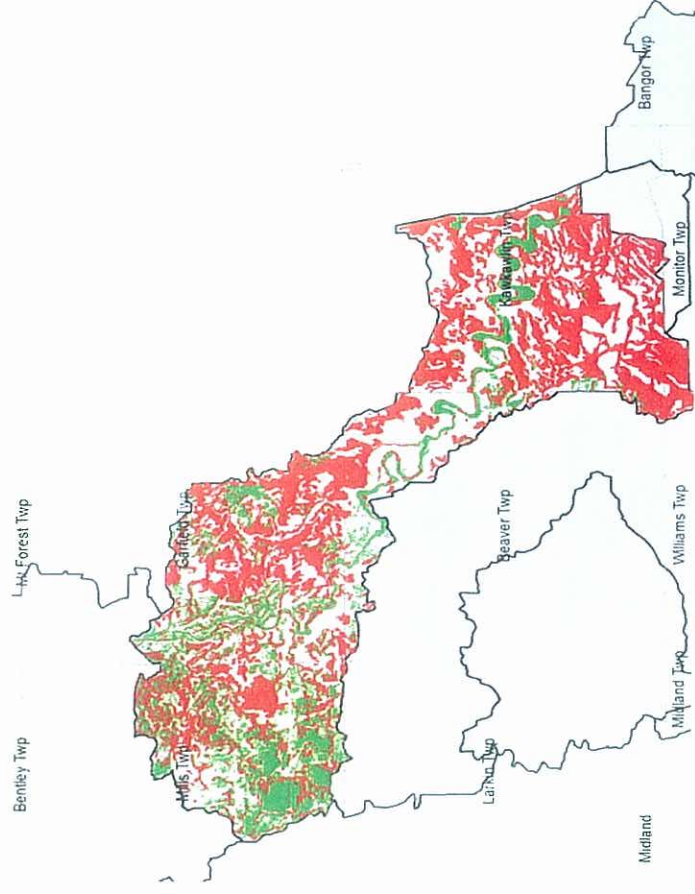
**72 % OF ORIGINAL WETLAND ACREAGE REMAINS  
28 % LOSS OF TOTAL WETLAND RESOURCE**

# North Branch Kawkawlin Sub-Watershed No.2

Current Wetlands



Wetland Loss





## KAWKAWLIN RIVER Sub-Watershed No.2: WETLAND RESOURCES STATUS AND TRENDS

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- PRESETTLEMENT WETLAND CONDITION □ 2005 WETLAND CONDITION\*\*\*
- 16,944 total acres of wetland □ 6,225 total acres of wetland
- 410 Polygons □ 1,061 Polygons
- Average Size – 41 Acres □ Average Size – 5.8 Acres

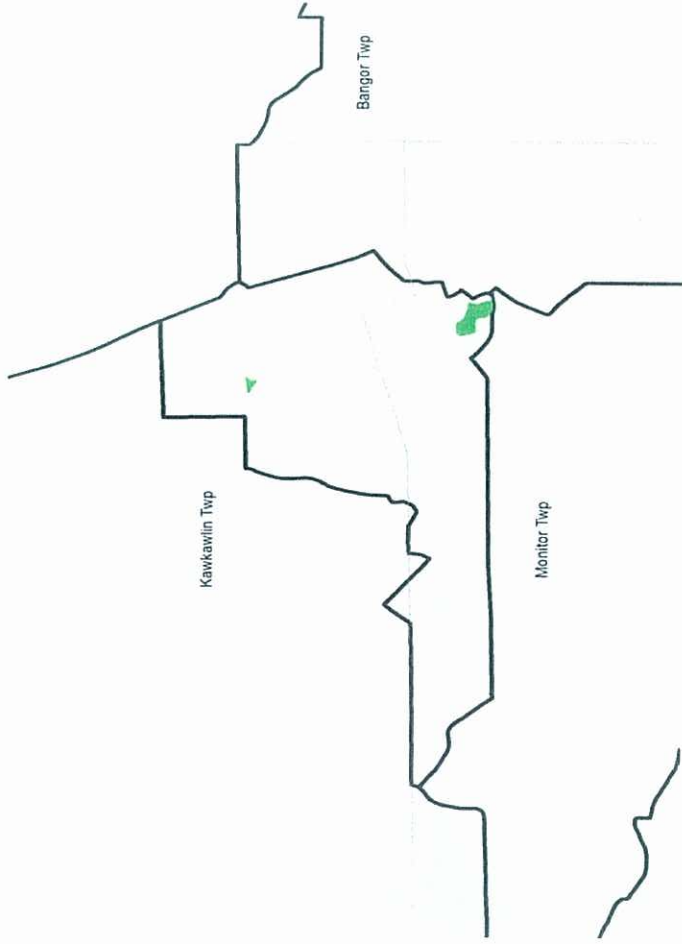
**36 % OF ORIGINAL WETLAND ACREAGE REMAINS  
64 % LOSS OF TOTAL WETLAND RESOURCE**



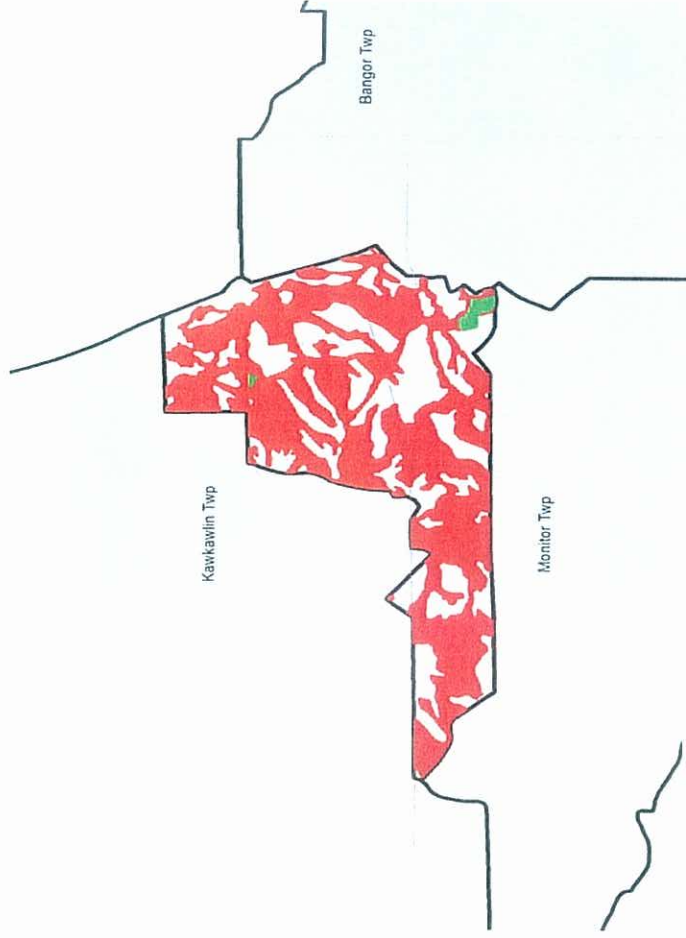
# North Branch Kawkawlin Sub-Watershed No.3

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Current Wetlands



Wetland Loss





## KAWKAWLIN RIVER Sub-Watershed No.3: WETLAND RESOURCES STATUS AND TRENDS

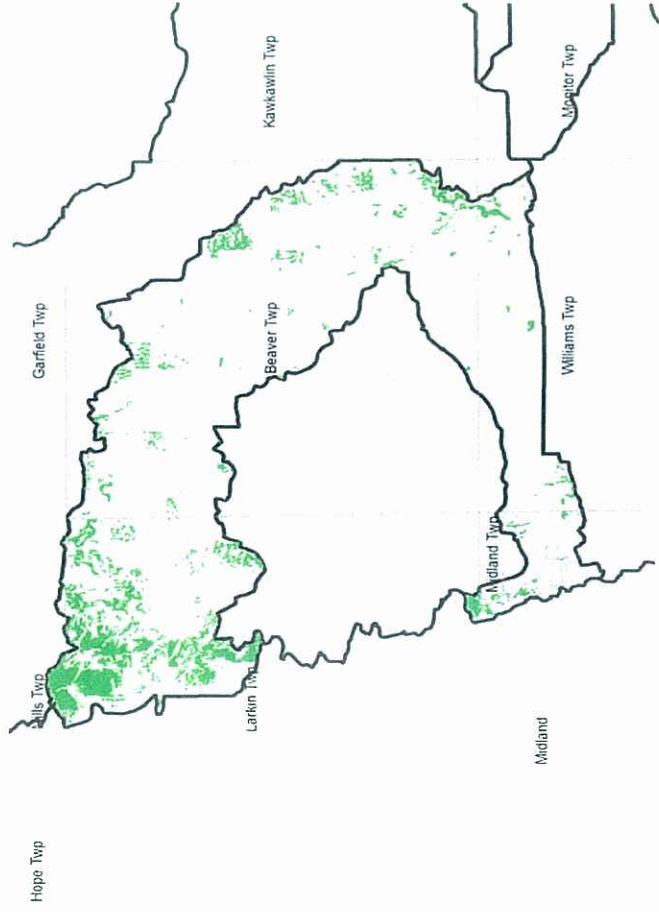
---

- PRESETTLEMENT WETLAND CONDITION □ 2005 WETLAND CONDITION\*\*\*
- 1,394 total acres of wetland □ 22.7 total acres of wetland
- 22 Polygons □ 4 Polygons
- Average Size – 63 Acres □ Average Size – 5.6 Acres

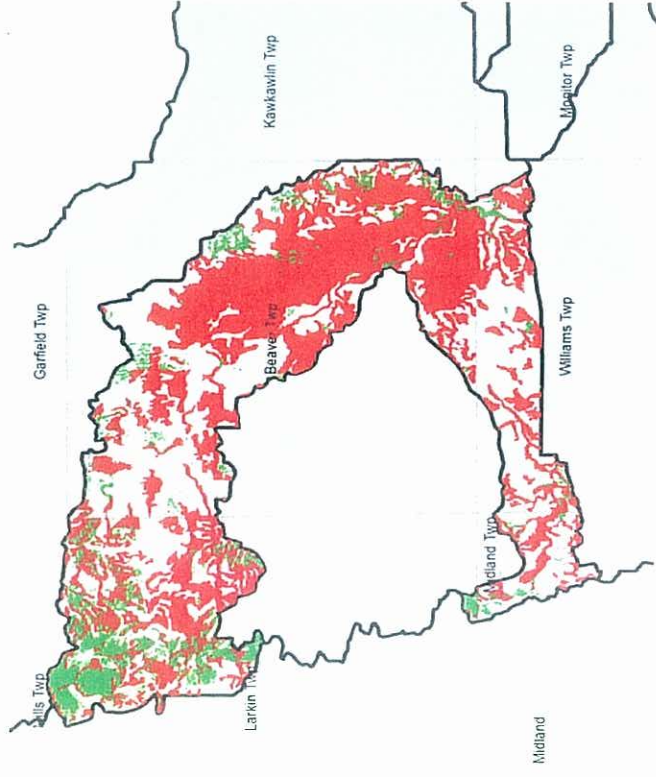
**1 % OF ORIGINAL WETLAND ACREAGE REMAINS  
99 % LOSS OF TOTAL WETLAND RESOURCE**

# Kawkawlin River Sub-Watershed No.4

Current Wetlands



Wetland Loss





## KAWKAWLIN RIVER Sub-Watershed No.4: WETLAND RESOURCES STATUS AND TRENDS

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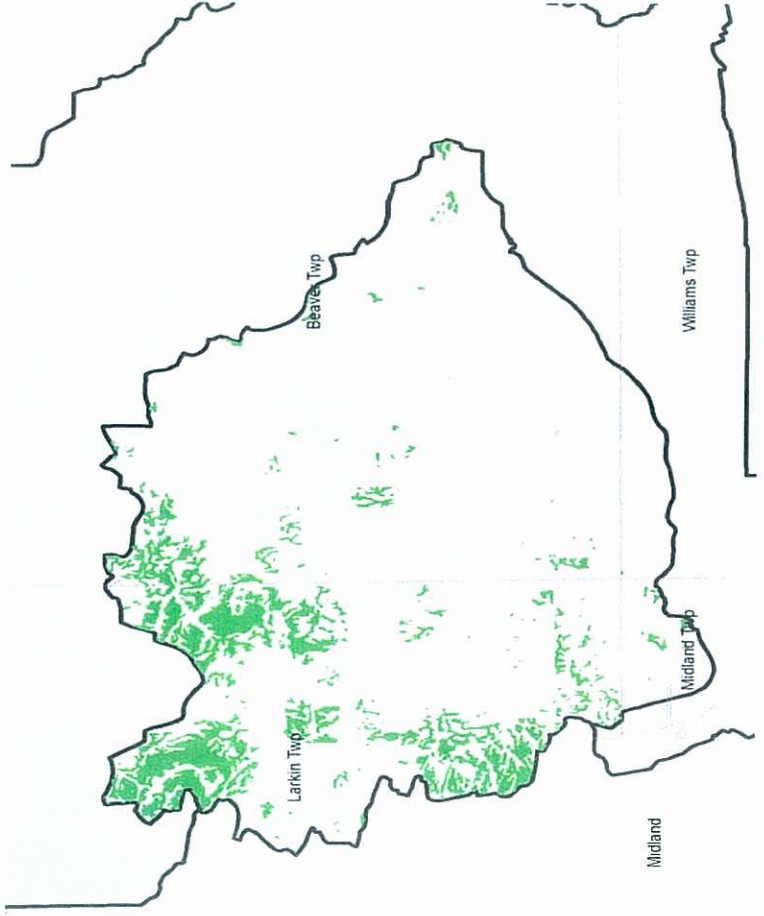
- PRESETTLEMENT WETLAND CONDITION □ 2005 WETLAND CONDITION\*\*\*
- 10,091 total acres of wetland □ 2,087 total acres of wetland
- 232 Polygons □ 645 Polygons
- Average Size – 43 Acres □ Average Size – 3.2 Acres

**20 % OF ORIGINAL WETLAND ACREAGE REMAINS  
80 % LOSS OF TOTAL WETLAND RESOURCE**

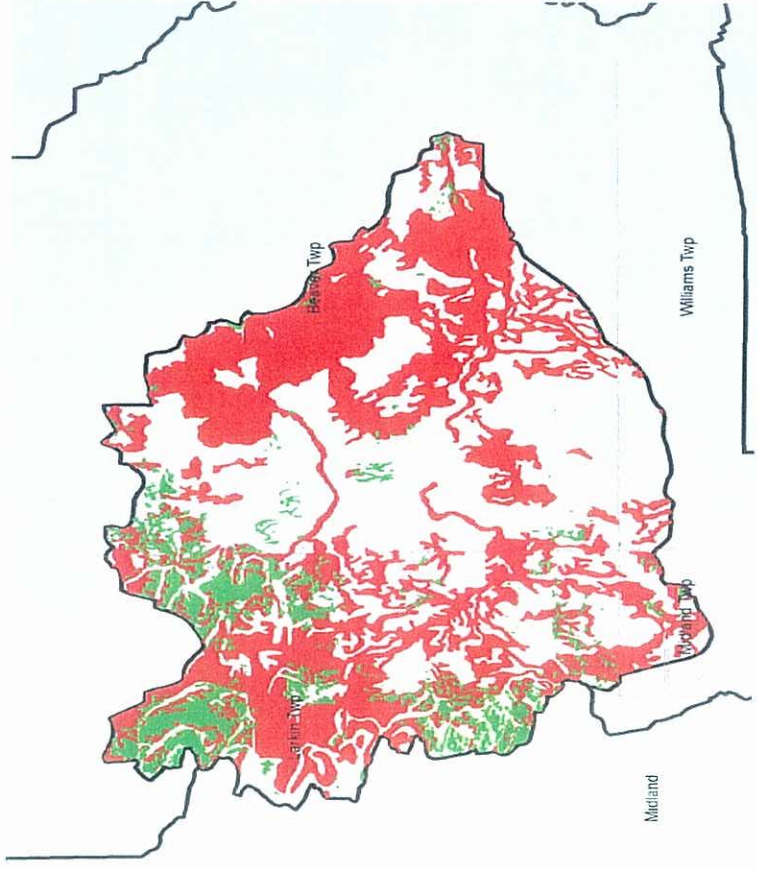



# Waldo Drain Sub-Watershed No.5

Current Wetlands



Wetland Loss





## KAWKAWLIN RIVER Sub-Watershed No.5: WETLAND RESOURCES STATUS AND TRENDS

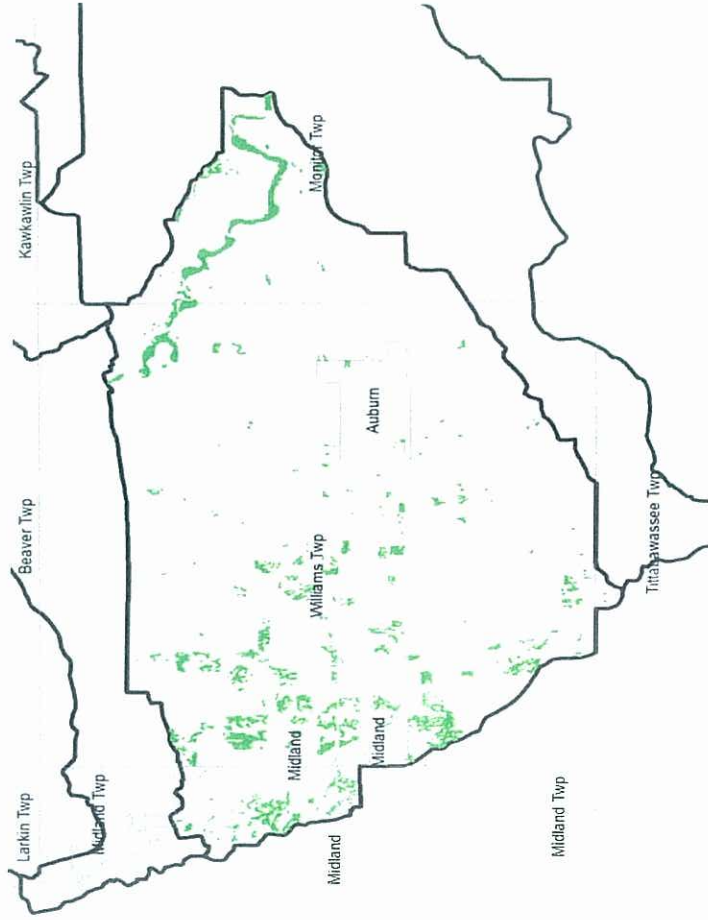
---

- PRESETTLEMENT WETLAND CONDITION □ 2005 WETLAND CONDITION\*\*\*
- 5,452 total acres of wetland □ 1,158 total acres of wetland
- 112 Polygons □ 327 Polygons
- Average Size – 48 Acres □ Average Size – 3.5 Acres

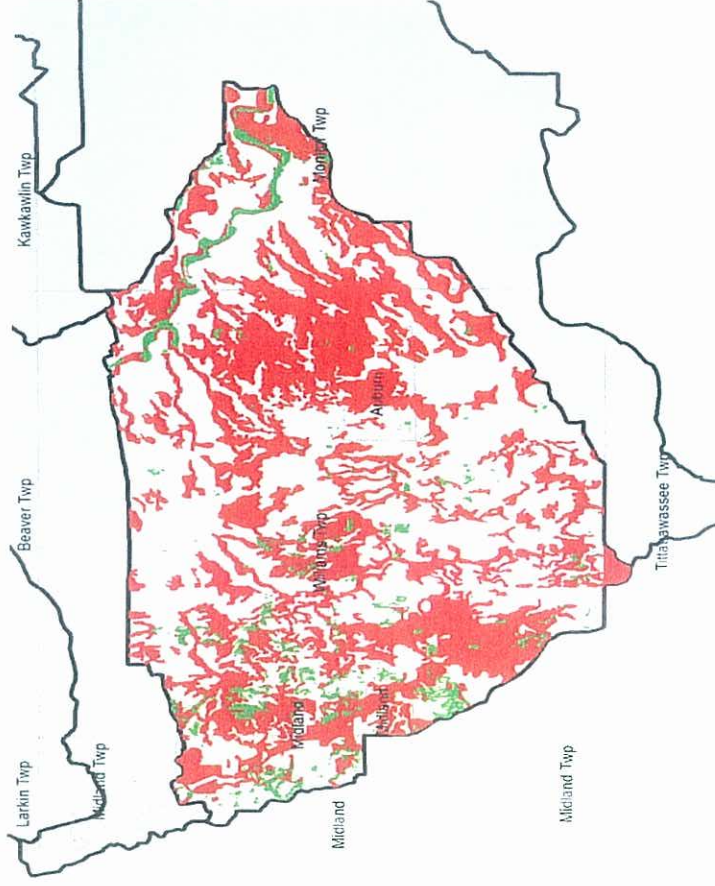
**21 % OF ORIGINAL WETLAND ACREAGE REMAINS  
79 % LOSS OF TOTAL WETLAND RESOURCE**

# Kawkawlin River Sub-Watershed No.6

Current Wetlands



Wetland Loss





## KAWKAWLIN RIVER Sub-Watershed No.6: WETLAND RESOURCES STATUS AND TRENDS

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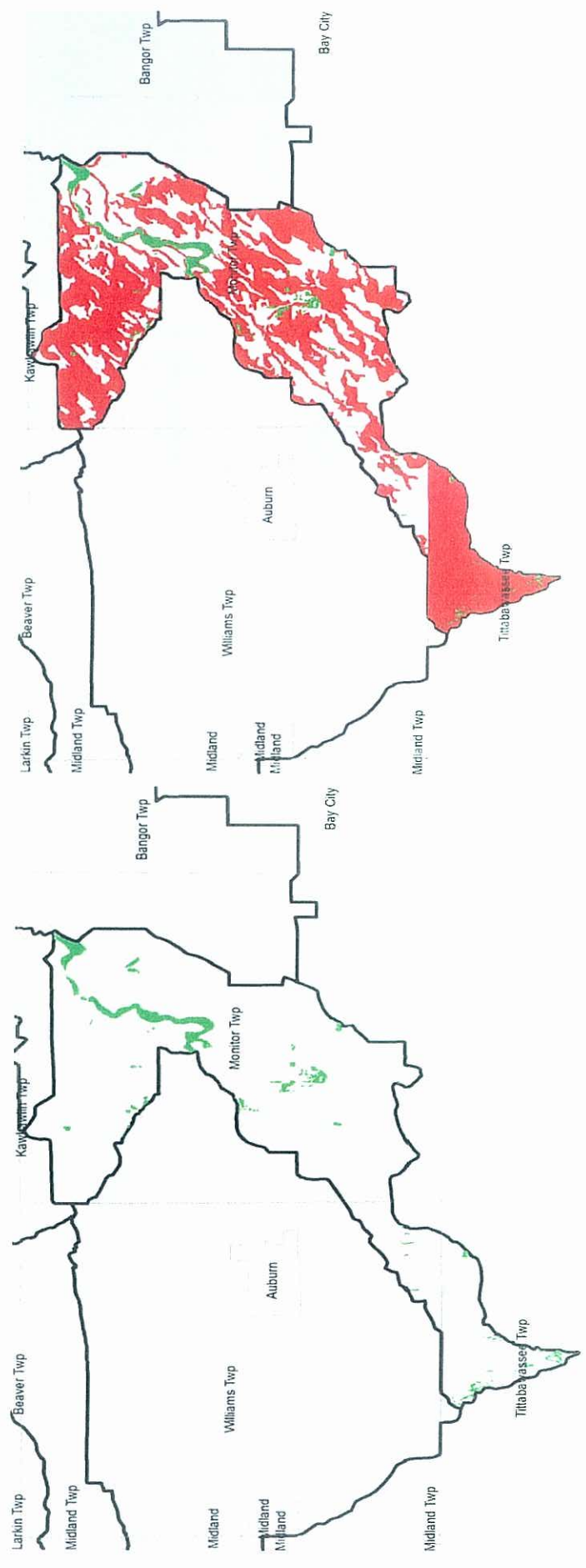
- PRESETTLEMENT WETLAND CONDITION □ 2005 WETLAND CONDITION\*\*\*
- 8,636 total acres of wetland □ 1,060 total acres of wetland
- 139 Polygons □ 434 Polygons
- Average Size – 62 Acres □ Average Size – 2.44 Acres

**12 % OF ORIGINAL WETLAND ACREAGE REMAINS  
88 % LOSS OF TOTAL WETLAND RESOURCE**



# Kawkawlin River Sub-Watershed No.7

Current Wetlands





## KAWKAWLIN RIVER Sub-Watershed No.7: WETLAND RESOURCES STATUS AND TRENDS

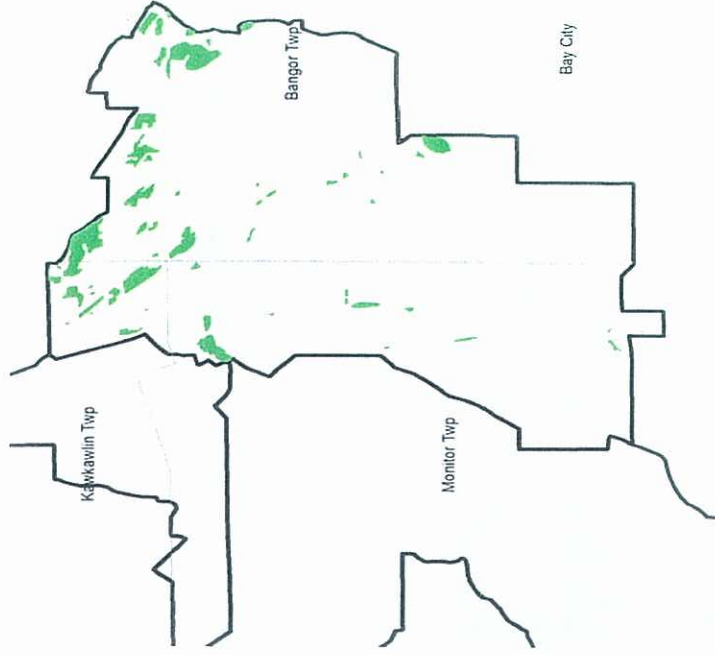
---

- PRESETTLEMENT WETLAND CONDITION □ 2005 WETLAND CONDITION\*\*\*
- 6,933 total acres of wetland □ 472 total acres of wetland
- 66 Polygons □ 114 Polygons
- Average Size – 105 Acres □ Average Size – 4 Acres

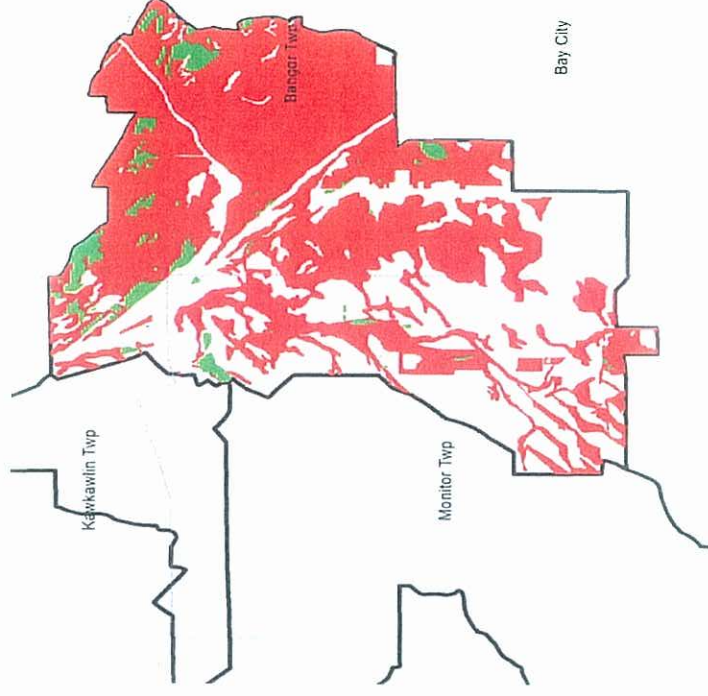
**6 % OF ORIGINAL WETLAND ACREAGE REMAINS**  
**94 % LOSS OF TOTAL WETLAND RESOURCE**

# Kawkawlin River Sub-Watershed No.8

Current Wetlands



Wetland Loss





## KAWKAWLIN RIVER Sub-Watershed No.8: WETLAND RESOURCES STATUS AND TRENDS

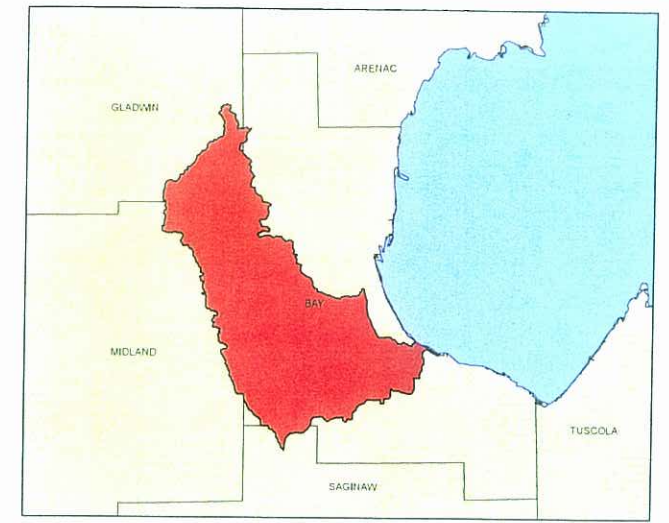
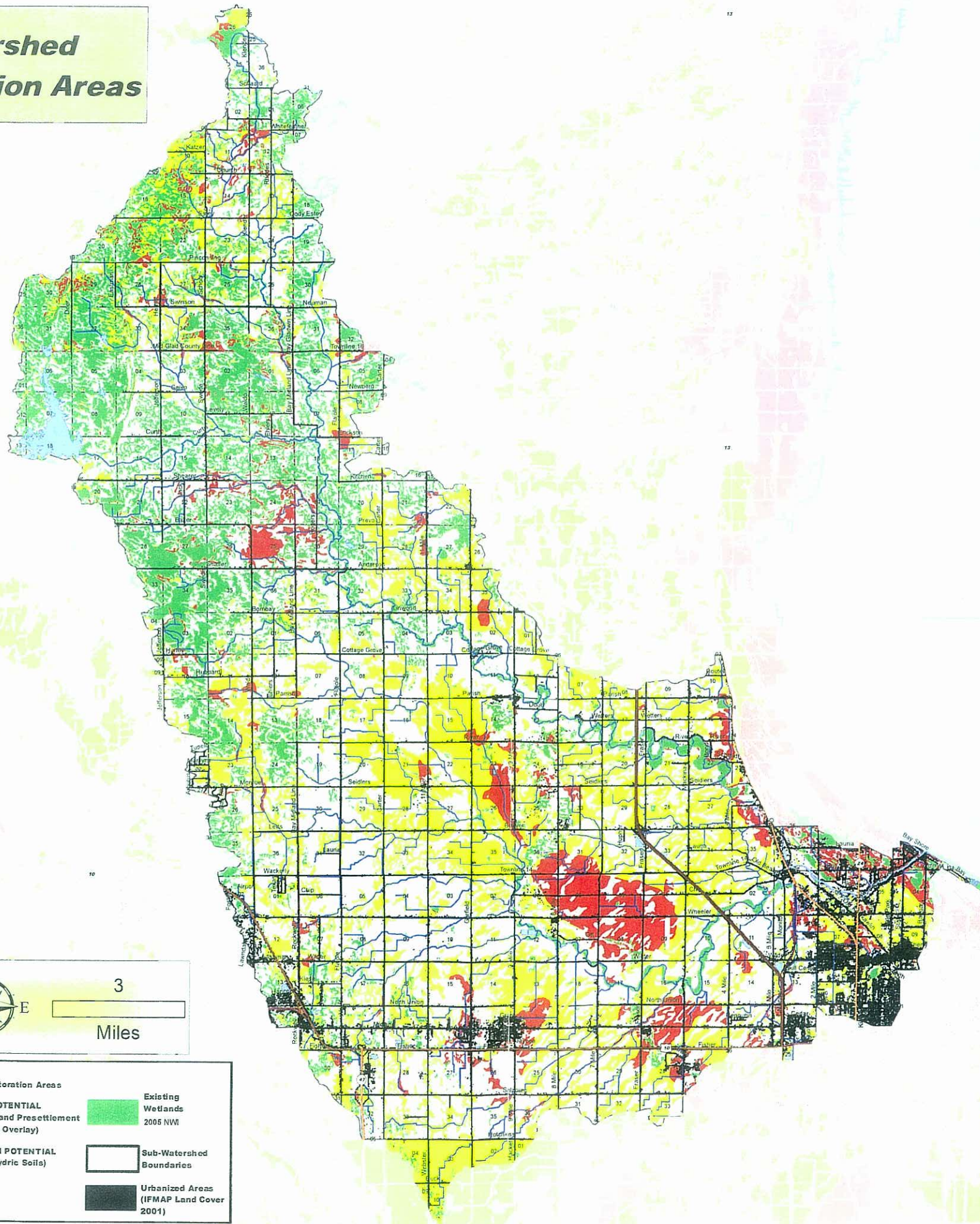
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- PRESETTLEMENT WETLAND CONDITION □ 2005 WETLAND CONDITION\*\*\*
- 5,669 total acres of wetland □ 397 total acres of wetland
- 82 Polygons □ 61 Polygons
- Average Size – 69 Acres □ Average Size – 6.5 Acres

**7 % OF ORIGINAL WETLAND ACREAGE REMAINS  
93 % LOSS OF TOTAL WETLAND RESOURCE**



# Kawkawlin River Watershed Potential Wetland Restoration Areas



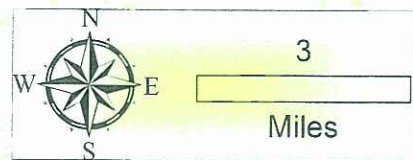
### Map Information:

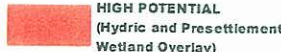




This map is intended to be used as one tool to assist in identifying potential areas for wetland restoration. The MDEQ produced this map from the following data obtained from other agencies or organizations:

1. The National Wetland Inventory (NWI) conducted by the US Fish and Wildlife Service through interpretation of aerial photos and topographic data.
2. Hydraulic Soils and hydraulic soil complexes as mapped by the US Department of Agriculture, Natural Resource Conservation Service (NRCS).
3. Land Cover as mapped by the Michigan Resource Inventory System (MIRIS), Michigan Department of Natural Resources, through interpretation of aerial photographs.
4. Basemap features as mapped by the MI Dept. of Geographic Information (MCGI).
5. Presettlement Wetlands created from Michigan Natural Features Inventory 1800 Land Cover layer.
6. Urban areas as mapped by MI DNR in 2001 IFMAP land cover layer.

The Potential Wetland Restoration Areas GIS layer was created by merging NRCS hydraulic soils w/ MFI Presettlement Wetlands, then performing an erase command in ESRI Arc-INFO on the resulting layer to remove NWI, MIRIS Wetlands, Hydrography, and Urban polygons from the coverage area. This map is not intended to be used to determine the specific locations and jurisdictional boundaries of wetland areas subject to

regulation under Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Only an on-site evaluation performed by the MDEQ in accordance with Part 303 shall be used for jurisdictional determinations. A permit is required from the MDEQ to conduct certain activities in jurisdictional wetlands.



KEY	
	<b>HIGH POTENTIAL</b> (Hydraulic and Presettlement Wetland Overlay)
	<b>MEDIUM POTENTIAL</b> (Only Hydraulic Soils)
	<b>Existing Wetlands</b> 2006 NWI
	<b>Sub-Watershed Boundaries</b>
	<b>Urbanized Areas</b> (IFMAP Land Cover 2001)