

Paw Paw River Watershed Management Plan

*“A Guide for the Protection and Improvement of
Water Quality”*



August 2008

Paw Paw River Watershed Management Plan

This plan was written by:
Southwestern Michigan Planning Commission (SWMPC)
185 E. Main Street, Ste 701
Benton Harbor, MI 49022
269-925-1137
www.swmpc.org



This Nonpoint Source Pollution Control project has been funded in part through the Michigan Nonpoint Source Program by the United States Environmental Protection Agency under assistance agreement # C9975464-05 to the Southwest Michigan Planning Commission for the Paw Paw River Watershed Planning Project. The contents of the document do not necessarily reflect the views and policies of the EPA, nor does the mention of trade names or commercial products constitute endorsement or recommendation for use.

Table of Contents

1	Introduction	1-1
2	Watershed Description	2-1
2.1	Geography	2-1
2.2	Climate	2-5
2.3	Geology, Hydrology and Soils	2-5
2.4	Land Cover	2-7
2.5	Dams and Barriers	2-10
3	Community Profile	3-1
3.1	History of Region	3-1
3.2	Governmental Units	3-2
3.3	Demographics	3-5
3.4	Future Growth and Development	3-8
4	Resource Management	4-1
4.1	Land Use and Water Quality	4-1
	<i>Roads and Water Quality</i>	<i>4-2</i>
4.2	Regulatory Authority and Water Resources	4-3
	<i>Water Bodies (rivers, drains, streams, lakes)</i>	<i>4-3</i>
	<i>Wetlands</i>	<i>4-4</i>
	<i>Floodplains</i>	<i>4-4</i>
	<i>Groundwater</i>	<i>4-5</i>
4.3	Local Water Quality Protection Policies	4-5
4.4	Private Land Management	4-9
5	Natural Features	5-1
5.1	Protected Lands	5-1
5.2	Generalized Hydrologic Cycle	5-2
5.3	Rivers/Streams	5-3
5.4	Lakes	5-7
5.5	Wetlands	5-10
5.6	Floodplains	5-12
5.7	Groundwater	5-13
5.8	Forests	5-15
5.9	Savanna and Prairie Remnants	5-16
5.10	Rare Features	5-17
6	Plan Development Process	6-1
6.1	Public Input	6-1
	<i>Stakeholder Concerns</i>	<i>6-2</i>
6.2	Previous Studies/Reports	6-2
6.3	Volunteer Inventory	6-2
6.4	Watershed Research and Modeling	6-3
	<i>MDEQ Landscape Level Wetland Functional Assessment</i>	<i>6-3</i>
	<i>TNC Prioritization of Forested Floodplain</i>	<i>6-3</i>
	<i>TNC Agricultural Assessment</i>	<i>6-3</i>
	<i>SWAT Model</i>	<i>6-3</i>
	<i>Build Out Model</i>	<i>6-4</i>
	<i>SWMLC Conservation Priority Model</i>	<i>6-4</i>
	<i>SWMPC Models</i>	<i>6-4</i>

7	Water Quality Summary	7-1
7.1	Designated Uses.....	7-1
7.2	General Water Quality Statement.....	7-1
7.3	Individual Water Body Assessment.....	7-2
8	Prioritization - Areas, Pollutants, Sources	8-1
8.1	Protection Areas.....	8-1
	<i>Protection Area Pollutants and Sources</i>	8-2
8.2	Agricultural Management Areas.....	8-3
	<i>Agricultural Management Area Pollutants and Sources</i>	8-4
8.3	Urban Management Areas.....	8-5
	<i>Urban Management Area Pollutants and Sources</i>	8-5
8.4	Problem Sites.....	8-6
9	Goals and Objectives	9-1
9.1	Goals for Designated Uses.....	9-1
9.2	Goals for Desired Uses.....	9-1
10	Implementation Strategies	10-1
10.1	Action Plan by Priority Area.....	10-1
	<i>Protection Area Tasks</i>	10-1
	<i>Agricultural Area Tasks</i>	10-2
	<i>Urban Area Tasks</i>	10-2
10.2	Information and Education.....	10-3
10.3	Planning and Studies.....	10-3
10.4	Current Efforts.....	10-4
11	Evaluation	11-1
11.1	Knowledge and Awareness.....	11-1
11.2	Documenting Implementation.....	11-1
11.3	Monitoring Water Quality.....	11-2
11.4	Estimating Pollutant Load Reductions.....	11-2
11.5	Evaluating the Watershed Management Plan.....	11-4
	Appendix 1. Land Cover by Subwatershed	1
	Appendix 2. NPDES permits in the Paw Paw River Watershed	4
	Appendix 3. Protection and Management Options for Private Lands	7
	Appendix 4. Water Quality Statement by Water Body	9
	Paw Paw Mainstem.....	9
	Coldwater Tributaries.....	10
	Warmwater Tributaries.....	21
	Lakes.....	27
	Appendix 5. Rare Species in the Paw Paw River Watershed	29
	Appendix 6. Steering Committee Participants	32
	Appendix 7. Stakeholder Concerns	34
	Appendix 8. Paw Paw River Watershed Related Studies	36
	Appendix 9. Common Pollutants, Sources and Water Quality Standards	43
	Appendix 10. Education Plan: Black & Paw Paw River Watersheds	47
	Appendix 11. Existing Efforts	62
	Appendix 12. Pollutant Load Estimates and Reductions	65

List of Figures

Figure 1. Paw Paw River Watershed.....	2-2
Figure 2. Subwatersheds of the Paw Paw River	2-3
Figure 3. Hydric Soils	2-6
Figure 4. Land Cover in the Paw Paw River Watershed (percent).....	2-8
Figure 5. Paw Paw River Watershed Land Cover (2000).....	2-9
Figure 6. Governmental Units in Paw Paw River Watershed	3-3
Figure 8. Median Household Income (1999)	3-8
Figure 9. Composite Future Land Use	4-2
Figure 10. Road System.....	4-3
Figure 11. Future Land Use Protection Overlay Districts	4-9
Figure 12. Conservation and Recreation Lands	5-1
Figure 13. Impacts of Impervious Surfaces	5-3
Figure 14. Water Bodies in the Paw Paw River Watershed (West).....	5-4
Figure 15. Water Bodies in the Paw Paw River Watershed (East).....	5-5
Figure 16. Wetlands in the Paw Paw River Watershed	5-11
Figure 17. Floodplain Forest Priority Areas	5-12
Figure 18. Effects of Impervious Cover	5-14
Figure 19. Forested Areas in the Paw Paw River Watershed	5-16
Figure 20. Preservation Area Model Results.....	6-5
Figure 21. Agricultural Area Model Results	6-6
Figure 22. Urban/Developing Area Model Results	6-7
Figure 23. Protection Areas.....	8-1
Figure 24. Agricultural Management Areas	8-3
Figure 25. Urban Management Areas	8-5
Figure 26. Problem Sites.....	8-7

List of Tables

Table 1. Paw Paw River Subwatersheds	2-4
Table 2. Paw Paw River Watershed Land Cover (2000).....	2-8
Table 3. Generalized Land Cover by Subwatershed (2000).....	2-10
Table 4. Watershed Area, River Length and Water Acreage by Governmental Unit... 3-3	
Table 5. Race by Census Block (2000).....	3-6
Table 6. Poverty, Employment, Education and Language by Block Group (2000).....	3-7
Table 7. Zoning, Master Plans and NFIP Participation by Governmental Unit	4-8
Table 8. Streams in the Paw Paw River Watershed.....	5-6
Table 9. Lakes in the Paw Paw River Watershed	5-7
Table 10. Common Groundwater Contaminant Sources.....	5-14
Table 11. Known Groundwater Contamination Areas	5-15
Table 12. Definitions of Designated Uses	7-1
Table 13. Water Bodies at a Glance.....	7-3
Table 14. TMDLs Scheduled for Paw Paw River Watershed	7-5
Table 15. Paw Paw River Watershed Desired Uses	9-1
Table 16. Paw Paw River Watershed Action Plan.....	10-5
Table 17. General Urban BMP Treatment Efficiencies.....	11-4