

Introduction

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The *Maumee Area of Concern Stage 2 Watershed Restoration Plan (Stage 2 Watershed Plan)* is a living document to guide and assist the Maumee Area of Concern community in restoration of the beneficial uses of the area's waterways. This living document will be updated as projects develop, funding opportunities arise, and problems are addressed. It will change and grow as needed to guide our region's activities through the next decade and beyond.

Why was this Plan Created?

This *Stage 2 Watershed Plan* was developed to meet a requirement of the Ohio Environmental Protection Agency (Ohio EPA) and Ohio Department of Natural Resource (ODNR) Watershed Coordinator Program¹ and to fulfill a Stage 2 report requirement for the Maumee Area of Concern (AOC). Each major update of this plan will be submitted to Ohio EPA and ODNR for state 319 watershed plan endorsement consideration until all sections are fully state endorsed. The plan was first submitted for endorsement consideration in December 2004. The January 2006 version was submitted for both state endorsement consideration and as a Stage 2 Report.

Also incorporated into the *Stage 2 Watershed Plan* is information used by Ohio EPA's Total Maximum Daily Load (TMDL) for Toussaint Creek and Ohio Department of Natural Resource's Coastal Nonpoint Source Program. All of these programs have the ultimate goal of having area waterways meet Ohio's Water Quality Standards; however, the language, titles, and methods differ for each. The *Stage 2 Watershed Plan* has attempted to address the requirements and/or needs of all of these programs, which made this document challenging to create. The *Stage 2 Watershed Plan* will be extremely useful as a comprehensive, integrated community master plan for improving the water quality of area streams, rivers, and ultimately, Lake Erie.

The Ohio EPA/ODNR Watershed Coordinator Program requires watershed action plans to be submitted by all organizations that receive watershed coordinator grants. These plans are to include topics and issues as outlined in *A Guide to Developing Local Watershed Action Plan in Ohio*,² specifically Appendix 8 as updated in 2003. There are two watershed coordinators working under this grant program in the Maumee AOC. These coordinators are working through the following organizations:

- 1) *Duck and Otter Creeks Partnership, Inc.*
 - Grant began: December 2000
 - Grant ends: December 2006
 - Focusing on Duck Creek and Otter Creek
- 2) *Toledo Metropolitan Area Council of Governments/Maumee RAP*
 - Grant began: October 2001
 - Grant ends: October 2007
 - Focusing on the Maumee AOC, plus the headwaters of the Ottawa River and Swan Creek

The Ohio EPA also has special responsibility for waterways of the Maumee AOC through its Lake Erie Program. Through this program, Ohio EPA assists the Maumee RAP in creating the 3 stages of reports required by the International Joint Commission (IJC) for all Great Lakes RAPs. There are not specific format requirements for these RAP reports; however they should state the local community's approach to meeting each stage.

The report for Stage 2 should provide an outline of the communities' approach to restoring the BUIs, utilizing the delisting targets develop by the State of Ohio as well as:

- An evaluation of remedial measures in place;
- An evaluation of alternative, additional measures to restore beneficial uses;
- Selection of the additional remedial measures;
- A proposed schedule for implementation;
- Identification of person or agencies potentially responsible for implementation;
- Utilizes an ecosystem approach to protection and restoration; and
- The public was adequately consulted.

The Ohio EPA Maumee RAP Coordinator is located in the Ohio EPA Northwest District Office to assist with the restoration and delisting of the Maumee AOC.

These three coordinators work closely to coordinate programs and implement mutually beneficial projects whenever possible. The creation of the *Stage 2 Watershed Plan* is an example of extensive collaboration among Ohio EPA, Toledo Metropolitan Area Council of Governments (TMACOG), Maumee RAP, and the Duck and Otter Creeks Partnership, as well as numerous community stakeholders and partners.

The *Stage 2 Watershed Plan* will serve as a “one-stop shop” for watershed planning and projects. This comprehensive plan includes information and maps regarding the establishment of areas of concern (AOCs) and remedial action plans (RAPs), an environmental background (i.e. hydrology, geology, ecoregions, land use, etc.), and information for six 11-digit hydrologic units, one large river unit, and detailed project lists for each major watershed.

This integrated plan can make any agency, jurisdiction, or organization within the *Stage 2 Watershed Plan* area eligible to apply for numerous funding sources that often have higher rankings for RAP or watershed planning areas, especially Ohio EPA and ODNR grant programs (i.e. 319, Water Resource Restoration Sponsorship Program (WRRSP), Coastal Management Assistance). This plan is not just for the Maumee RAP or the Duck and Otter Creeks Partnership to implement, but it is intended to serve as a summary of actions needed by everyone that lives, works or sets policy to improve water quality in this area.

What is Included in the Plan?

The *Stage 2 Watershed Plan* has been organized based on the watershed referencing standard “Hydrologic Units.” This U.S. Geological Survey (USGS) nomenclature describes drainage areas through a hierarchical system of “Hydrologic Unit Codes” (HUCs). The more digits in the drainage area’s code, the smaller the area. Eight digit HUCs are roughly equivalent to river basins, 11-digit HUCs are equivalent to principle watersheds, and 14-digit HUCs are smaller or sub-watersheds. For instance:

04 = Great Lakes [2 digits]

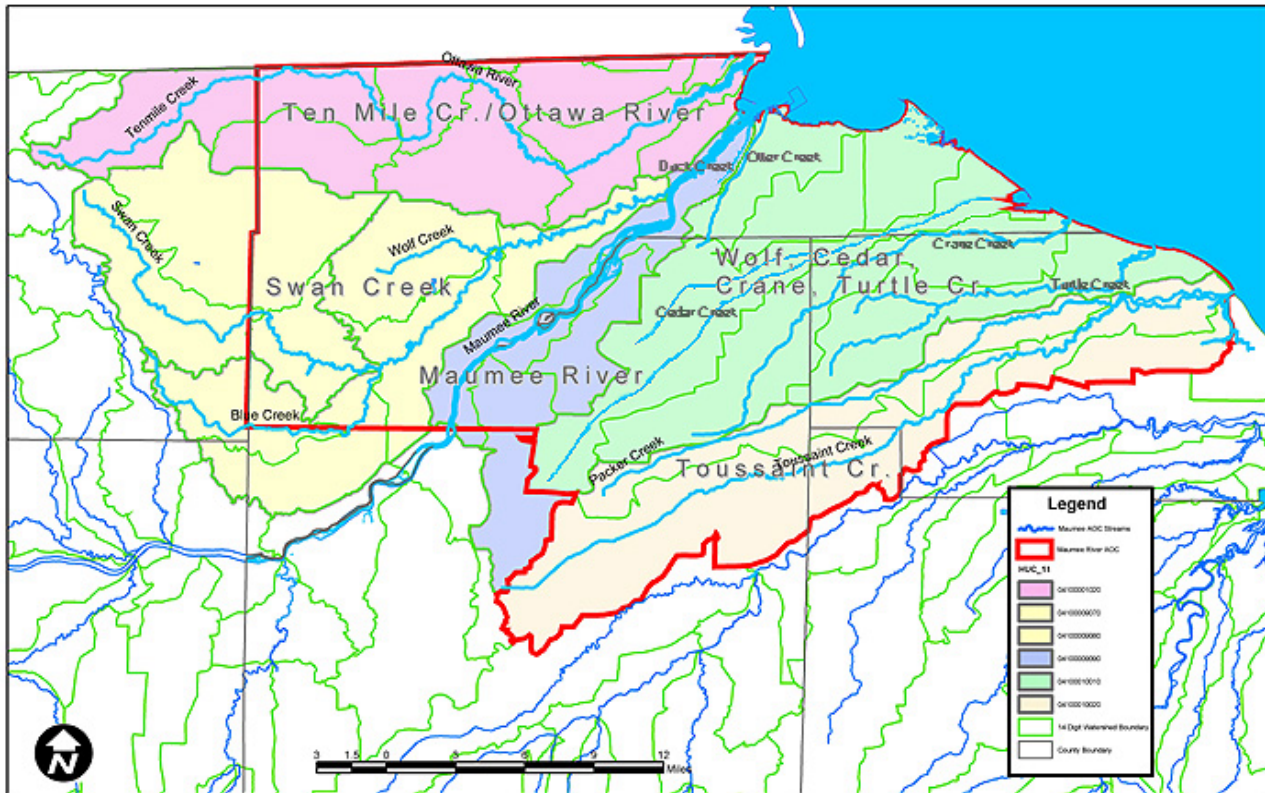
041000 = Western Lake Erie [6 digits]

04100009 = Lower Maumee River [8 digits]

04100009 080 = Swan Creek (above Blue Creek to Maumee River) [11 digits]

04100009 080 040 = Wolf Creek [14 digits]

Maumee Area of Concern plus Headwaters



The *Stage 2 Watershed Plan* focuses on the Maumee AOC, plus the headwaters of the Ottawa River and Swan Creek. Whenever the Maumee AOC is referred to throughout the document, it includes these headwaters unless otherwise noted. Although these areas are not officially within the Maumee AOC they are often addressed by RAP projects.

The formal boundaries of the Maumee AOC extend from the Bowling Green water intake near Waterville along the Maumee River (RM 22.8) downstream to Maumee Bay. This area includes direct drainage into the waters that are within Lucas, Ottawa, and Wood counties. The watersheds include Ottawa River (Ten Mile Creek), Swan Creek, Grassy Creek, Duck Creek, Otter Creek, Wolf Creek, Cedar Creek, Crane Creek, Turtle Creek, Packer Creek, and the Toussaint River. The entire Area of Concern drains ultimately to Lake Erie. The Maumee AOC is comprised of six 11-digit HUCs and one large river unit. For ease of use, this plan has put both Swan Creek HUCs into one chapter and addressed the large river unit with the HUC that it flows through. The map illustrates the Maumee AOC, 11-digit HUC areas, large river unit area, and watershed grouping used throughout this document.

Significant efforts have taken place to address the water quality needs since the establishment of the Maumee AOC in 1985. This plan builds on the problems listed in the *Maumee RAP Stage 1 Report*,³ actions outlined in the *Recommendations Report*,⁴ and activities highlighted in the *Activities and Accomplishment in the Maumee Area of Concern (1991-2001)*.⁵

This document was not intended to be read cover to cover. Volume 1 was designed to be used as an environmental background reference source. Volume 2 was created as a listing of what needs to be done, who might be responsible for doing it, how it might be funded, and the benefit to restoring the water quality.

Volume One of this plan provides a general environmental setting and the conditions of the Maumee AOC by HUC and watershed. Volume 2 is the “living” portion of the plan. It includes Watershed Project Tables by HUC and major watershed as follows:

- HUC 04100001 020
Ten Mile Creek/Ottawa River Watershed Projects Table
- HUC 04100009 070 and 04100009 080
Swan Creek/Blue Creek Watershed Projects Table
- HUC 04100009 090
Maumee River Watershed Projects Table
Grassy Creek Watershed Projects Table
Duck Creek Watershed Projects Table
- HUC 04100010 010
Otter Creek Watershed Projects Table
Wolf Creek/Amlsch Ditch Watershed Projects Table
Cedar Creek Watershed Projects Table
Crane Creek Watershed Projects Table
Turtle Creek Watershed Projects Table
- HUC 04100010 020
Packer Creek Watershed Projects Table
Toussaint Creek/Toussaint River/Rusha Creek Watershed Projects Table

The Watershed Project Tables (WPTs) are the portion of the report that will change and grow, as projects are implemented and goals are attained. These tables have been organized by the Causes and Sources of pollutants and include Projects, Potential Project Partners, Funding Sources, Timeline, Status, Performance/Environmental Measures, HUC/Stream Segment Addressed, and indicate the Beneficial Use Impairment (BUI) that could be effected by the project. Also incorporated into the tables (where applicable) is a reference to the ODNR Coastal Management Measures that may benefit from the implementation of an identified project.

There are differing levels of detail in the WPTs, often depending on how soon a project will be implemented, what source will be funding it, or by the amount of data available for that watershed. The status of projects in the WPTs have been organized and color coded as follows:

- **In Progress:** These projects are currently funded, have a detailed workplan, and are underway. *In progress* projects have the text colored red in the WPTs.
- **Planning:** These projects may have a rough workplan or grant application developed, but are lacking a component(s) to make it implementable (i.e. project coordinator, funding, project site). These are usually shorter range projects. *Planning* projects have the text colored pink in the WPTs.
- **Concept:** These project may be needed or desired, but a plan or method for implementation has not been developed. These are usually longer range projects. *Concept* projects have the text colored blue in the WPTs.
- **Ongoing:** These projects are reoccurring projects that regularly repeat; usually annually. These are commonly public involvement, outreach or educational projects (i.e. cleanups, sampling, monitoring). *Ongoing* projects have the text colored green in the WPTs.
- **Complete:** These projects have been finished. Many past activities have been recorded in previous reports. Some of them have been kept here to explain past steps that are leading/developing to future projects. (i.e. hot spot delineation to risk assessment to remedial design). *Complete* projects have the text colored black in the WPTs.

Why was the Plan Created this Way?

The format was selected for the *Stage 2 Watershed Plan* to help facilitate the clean up and delisting of the Maumee AOC, while still meeting the needs of the other integrated programs.

Delisting of an AOC is based upon restoration of 14 beneficial use impairments (BUIs). According to the *Maumee RAP Stage 1 Investigation Report*, 10 of the 14 beneficial use impairments needed to be addressed in the Maumee AOC. This report did not identify impairments by watershed, only for the entire Maumee AOC, because the only means of delisting in 1990 was through a total restoration of the entire AOC.

Beneficial Use Impairments	
✓ Restrictions on Fish & Wildlife Consumption	✓ Eutrophication or Undesirable Algae
✓ Tainting of Fish & Wildlife Flavor	✓ Restrictions on Drinking Water Consumption, or Taste & Odor
✓ Degradation of Fish & Wildlife Populations	✓ Beach Closings
✓ Fish Tumors or Other Deformities	✓ Degradation of Aesthetics
✓ Bird or Animal Deformities or Reproductive Problems	✓ Degradation of Phytoplankton & Zooplankton Populations
✓ Degradation of Benthos	✓ Added Cost to Agriculture & Industry
✓ Restrictions on Dredging Activities	✓ Loss of Fish & Wildlife Habitat

An incremental approach to delisting was adopted in 2001 by the U.S. Policy Committee and has provided an improved means of measuring RAP progress.⁶ Prior to this recommendation it was difficult to track progress because the emphasis was on total restoration of an AOC. This incremental alternative allows stream segments of an AOC to be delisted as they are restored or a beneficial use impairment to be delisted as established goals are achieved. This provides for a truer representation of the tremendous amount of work being invested in AOCs, as opposed to the measurement of progress based only on whether an entire AOC had been delisted.

With the possibility of incremental delisting and the development of this *Stage 2 Watershed Plan*, the Maumee RAP and Duck and Otter Creeks Partnership with the help of other community partners, has re-evaluated the 1990 BUIs identified in the *Maumee RAP Stage 1 Report*. This re-evaluation was conducted based on data and information available in the late 1980s/early 1990s and resulted in BUI summary tables for each watershed in the Maumee AOC (see Volume 1 – HUC/Watershed chapters). From these new tables the Maumee RAP will be able to better determine progress toward restoration of a watershed and/or a beneficial use.

Another interim step that was adopted by the US Policy Committee in 2001 was the possibility of redesignating a watershed or stream segment as being in a Recovery Stage. This Recovery Stage option can be utilized post-implementation when the area is responding to actions taken. This was adopted as a means to report that no further active intervention is needed, and that a period of recovery is required to fully achieve the delisting target.⁷

With the new flexibility of incremental delisting and the possibility of an Area of Recovery designation, Ohio created *Delisting Targets for Ohio Areas of Concern (June 2005)* to outline the minimum delisting targets acceptable under State of Ohio regulations and policies, and to provide Ohio's RAPs with a baseline from which to develop targets and milestones that may be specific to their AOC. BUI summary tables have been created based on the criteria outlined in *Delisting Targets for Ohio Areas of Concern* and the data available for each watershed (see Volume 1 – HUC/Watershed chapters).

Who Created this Plan?

The creation of the *Stage 2 Watershed Plan* involved numerous community members, including members or staff of the Ohio EPA, TMACOG, Maumee RAP, Duck and Otter Creeks Partnership, Toledo Area Metroparks, The University of Toledo, local businesses, government agencies, and citizens. Numerous opportunities were provided for other governmental agencies, academia, businesses, non-profit organizations, and citizens to review and comment on this report, including two formal review periods for a targeted audience in September 2005 and for potential users in November 2005.

The staff for the Maumee RAP (Ohio EPA and TMACOG) and Duck and Otter Creeks Partnership facilitated the creation of the *Stage 2 Watershed Plan*. They will also be responsible for maintaining this as a living document that includes updating completed projects and adding any new projects being planned or implemented.

The Development Team utilized the publications and knowledge of many organizations, agencies, and personnel that have been working for decades on water quality issues in the Maumee AOC. Although volumes of environmental background information were available, Volume 1 of the *Stage 2 Watershed Plan* primarily created utilized only a few documents,⁸ especially the *Areawide Water Quality Management Plan (208 Plan)*.⁹ Additional historical, cultural, and environmental information not presented within this report is available within the other referenced documents.

Special thanks to the dedicated Development Team, who put their hearts and souls into the research, facilitation, and creation of this plan from February 2004 to January 2006.

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References

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- ² *A Guide to Developing Local Watershed Action Plan in Ohio*, Ohio EPA, June 1997 and *Appendix 8 updated*, Ohio EPA, 2003.
- ³ *Maumee River Remedial Action Plan Stage I Investigation Report*, TMACOG, October 1990.
- ⁴ *Maumee River Basin Area of Concern Remedial Action Plan Recommendations for Implementation Vol. 4*, TMACOG, July 1991.
- ⁵ *Activities and Accomplishments in the Maumee Area of Concern (1991-2001)*, Maumee RAP, April 2002.
- ⁶ *Restoring United States Great Lakes Areas of Concern: Delisting Principles and Guidelines*, Adopted by the U.S. Policy Committee, December 2001, pp 4-5.
- ⁷ *Restoring United States Great Lakes Areas of Concern: Delisting Principles and Guidelines*, Adopted by the U.S. Policy Committee, December 2001, p 5.
- ⁸ *Maumee River Remedial Action Plan Stage I Investigation Report*, TMACOG, October 1990; *Maumee River Basin Area of Concern Remedial Action Plan Recommendations for Implementation Vol. 4*, TMACOG, July 1991; *Areawide Water Quality Management Plan (208 Plan)*, TMACOG, 2004.
- ⁹ *Areawide Water Quality Management Plan (208 Plan)*, TMACOG, 2004.