

# Maumee AOC Stage 2 Watershed Restoration Plan

## TABLE OF CONTENTS

---

### VOLUME 1

- I. Preface**
  - a. A Binational Great Lakes Program
  - b. A Process: Remedial Action Plans
  - c. An Organization: Maumee RAP
  - d. Community Partnerships
  
- II. Introduction**
  - a. Why was this Plan Created?
  - b. What is Included in the Plan?
  - c. Why was the Plan Created this Way?
  - d. Who Created this Plan?
  
- III. Natural Resources**
  - a. Rivers and Watersheds
  - b. Ecoregions
  - c. Geology
  - d. Soils
  - e. Wetlands
  - f. Public and Protected Lands
  - g. Fisheries and Wildlife
  - h. Rare, Threatened, and Endangered Species
  - i. Exotic Species
  
- IV. Pollutant Causes and Sources**
  - a. Land Use and Population Changes
  - b. Urban Runoff
  - c. Rural and Agricultural Runoff
  - d. Habitat Modifications and Flow Alterations
  - e. Nutrients
  - f. Pesticides
  - g. Sediment
  - h. Toxic Substances
  - i. Bacteria
  
- V. Measuring and Managing Water Quality**
  - a. Parameters of Measurement
  - b. Water Quality Assessments
  - c. Contact and Consumption Advisories
  - d. Storm Water Management
  - e. Total Maximum Daily Load Program
  - f. Coastal Nonpoint Pollution Control Program
  - g. Public Drinking Water Supply

- VI. Improving Water Quality**
  - a. Addressing Rural and Agricultural Issues
  - b. Rural and Agricultural: Agency Responsibilities
  - c. Rural and Agricultural: Project Implementation & BMPs
  - d. Rural and Agricultural: Cost Sharing and Technical Assistance Programs
  - e. Addressing Urban and Storm Water Issues
  - f. Urban and Storm Water: Agency Responsibilities
  - g. Urban and Storm Water: Project Implementation & BMPs
  - h. Urban and Storm Water: Cost Sharing and Technical Assistance Programs
  
- VII. Ottawa River/Ten Mile Creek (HUC 04100001 020)**
  - a. Background & Water Quality Data for the Ottawa River/Ten Mile Creek Watershed
  - b. Land Use of the Ottawa River/Ten Mile Creek Watershed
  - c. Status of Beneficial Use Impairments
  - d. Watershed Maps (General, 14-digit HUCs, River Mile)
  - e. Watershed Projects Tables in Volume 2
  
- VIII. Swan Creek (HUC 04100009 070 and 04100009 080)**
  - a. Background & Water Quality Data for the Swan Creek Watershed
  - b. Land Use of the Swan Creek Watershed
  - c. Status of Beneficial Use Impairments
  - d. Watershed Maps (General, 14-digit HUCs, River Mile)
  - e. Watershed Projects Tables in Volume 2
  
- IX. Maumee River (HUC 04100009 090)**
  - a. Background & Water Quality Data for the Lower Maumee River Watershed
  - b. Land Use of the Lower Maumee River Watershed
  - c. Status of Beneficial Use Impairments
  - d. Watershed Maps (General, 14-digit HUCs, River Mile)
  - e. Watershed Projects Tables in Volume 2
  
- X. Lake Erie Tributaries (HUC 04100010 010)**
  - a. Background & Water Quality Data for the Lake Erie Tributary Watersheds
  - b. Land Use of the Lake Erie Tributary Watersheds
  - c. Status of Beneficial Use Impairments
  - d. Watershed Maps (General, 14-digit HUCs, River Mile)
  - e. Watershed Projects Tables in Volume 2
  
- XI. Toussaint River (HUC 04100010 020)**
  - a. Background & Water Quality Data for the Toussaint River Watershed
  - b. Land Use of the Toussaint River Watershed
  - c. Status of Beneficial Use Impairments
  - d. Watershed Maps (General, 14-digit HUCs, River Mile)
  - e. Watershed Projects Tables in Volume 2
  
- XII. Appendix A - Acronyms and Abbreviations**

- XIII. Appendix B – Maumee RAP Documents**
  - a. Maumee RAP Operating Procedures
  - b. Maumee RAP Graphics and Publication Standards
  - c. Ohio EPA/TMACOG/Maumee RAP Relationship Report
  - d. 2006 Maumee RAP Committee Members
  
- XIV. Appendix C – Duck and Otter Creeks Partnership, Inc. Documents**
  - a. Duck and Otter Creeks Partnership Charter
  - b. Duck and Otter Creeks Partnership, Inc. Bylaws
  - c. Duck and Otter Creeks Partnership, Inc. Leadership and Membership

## VOLUME 2

### **Introduction and Summary**

- VII. Ottawa River/Ten Mile Creek Watershed** (HUC 04100001 020)
  - a. Ten Mile Creek/Ottawa River Watershed Projects Table
  - b. Silver Creek and Shantee Creek Watershed Projects Table – NOT AVAILABLE
  
- VIII. Swan Creek** (HUC 04100009 070 and 04100009 080)
  - a. Swan Creek/Blue Creek Watershed Projects Table
  - b. Ai Creek Watershed Projects Table – NOT AVAILABLE
  
- IX. Maumee River** (HUC 04100009 090)
  - a. Maumee River Watershed Projects Table
  - b. Grassy Creek Watershed Projects Table
  - c. Duck Creek Watershed Projects Table
  
- X. Lake Erie Tributaries** (HUC 04100010 010)
  - a. Otter Creek Watershed Projects Table
  - b. Wolf Creek/Berger Ditch Watershed Projects Table
  - c. Cedar Creek Watershed Projects Table
  - d. Crane Creek Watershed Projects Table
  - e. Turtle Creek Watershed Projects Table
  
- XI. Toussaint River** (HUC 04100010 020)
  - a. Packer Creek Watershed Projects Table
  - b. Toussaint Creek/Toussaint River/Rusha Creek Watershed Projects Table

# Maumee AOC Stage 2 Watershed Restoration Plan

## INDEX OF MAPS AND TABLES

---

### VOLUME 1

- I. Preface**
- a. Map of Areas of Concern in the Great Lakes (*by Environment Canada*)
  - b. Map of Maumee AOC with six 11-digit HUCs
- II. Introduction**
- a. Map of Maumee Area of Concern plus Headwaters
  - b. Graphic of Beneficial Use Impairments (*by Great Lakes Commission for USEPA*)
- III. Natural Resources**
- a. Table of Major Watersheds in the Maumee AOC
  - b. Map of Ecoregions of Northwest Ohio
  - c. Map of Great Black Swamp
  - d. Map of Oak Openings Region
  - e. Graphic of Natural and Geological Features of Northwest Ohio (*by TMACOG*)
  - f. Map of Maumee AOC Glacial Geology
  - g. Map of Soils by Particle Size
  - h. Map of Soils by Drainage Classification
  - i. Map of Soils by Hydric Classification
  - j. Map of Wetlands in the Maumee AOC
  - k. Map of Public and Protected Lands in the Maumee AOC
  - l. Map of Walleye Spawning Locations
  - m. Map of Significant Bird Habitat
  - n. Table of Endangered Animals in Ohio
  - o. Table of Endangered Plants in Lucas, Wood, and Ottawa counties
  - p. Map of Rare Species Concentration
  - q. Table of Common Exotic Species
- IV. Pollutant Causes & Sources**
- a. Table of Watershed Impervious Area Changes in the Maumee AOC
  - b. Map of 1984 Land Use of the Maumee AOC
  - c. Map of 2003 Land Use of the Maumee AOC
  - d. Table of Categories of Primary Storm Water Contaminants
  - e. Table of Water Quality Requirements for Use
  - f. Table of Jurisdiction Population Changes 1990-2000
  - g. Table of Impacts from Increases in Impervious Surfaces
  - h. Table of CSOs and SSOs in the Maumee AOC
  - i. Table of Sediment and Nutrient Trend Summary
  - j. Table of Dams and Structures in the Maumee AOC
  - k. Table of Annex III Phosphorus Reduction Targets
  - l. Table of Agricultural Phosphorus Reduction Targets through 1997
  - m. Map of Great Lakes Legacy Act Proposed Project Area
  - n. Table of Dumps, Landfills, and Brownfields in the Maumee AOC
  - o. Table of Petroleum Corrective Action General Permits in the Maumee AOC
  - p. Table of Non-Contact Cooling Water General Permits in the Maumee AOC

- q. Table of Industrial and Public Permits in the Maumee AOC
- r. Map of Maumee AOC with Package Plants and Sewered Areas *(by TMACOG)*
- s. Map of Lucas County Parcels with On-site Sewage Treatment *(by TMACOG)*

**V. Measuring and Managing WQ**

- a. Map of Categories of Assessment Units *(by Ohio EPA)*
- b. Map of Aquatic Life Use Status of Assessment Units *(by Ohio EPA)*
- c. Map of Agricultural Runoff Water Quality Impacts *(by TMACOG)*
- d. Map of Urban Runoff Water Quality Impacts *(by TMACOG)*
- e. Map of On-site Sewage Systems Water Quality Impacts *(by TMACOG)*
- f. Map of Channelization Water Quality Impacts *(by TMACOG)*
- g. Table of Ohio's Fish Consumption Advisories for Maumee AOC Waterbodies
- h. Table of Ohio's Turtle Consumption Advisories for Maumee AOC Waterbodies
- i. Table of Ohio's Contact Advisories for Maumee AOC Waterbodies
- j. Table of Public Beaches in the Maumee AOC
- k. Table of Designated Storm Water NPDES Permits
- l. Map of Toledo, Ohio Urbanized Area
- m. Map of Surface Intakes for Public Drinking Water Supplies
- n. Map of Public Drinking Water Supply from Ground Water Sources
- o. Table of Private Well Study

**VI. Improving WQ**

- a. Table of Acres Placed in Conservation Practices since 1997
- b. Graphic of Two-Stage Channel

**VII. Ottawa River/Ten Mile Creek Watershed (HUC 04100001 020)**

- a. Table of Watershed Use Attainment Data for Upper Reach
- b. Table of DELT Data for Upper Reach
- c. Table of Watershed Use Attainment Data for Middle Reach
- d. Table of DELT Data for Middle Reach
- e. Table of Watershed Use Attainment Data for Lower Reach
- f. Table of DELT Data for Lower Reach
- g. Table of Cause and Sources of Watershed Impairments
- h. Map of 2003 Land Use in the Watershed
- i. Table of Beneficial Use Impairments in 1990
- j. Table of Beneficial Use Impairments in 2005
- k. Map of 11-Digit HUC with Jurisdictions
- l. Map of 11-Digit HUC with 14-Digit HUC Boundary
- m. Map of 11-Digit HUC with River Miles

**VIII. Swan Creek (HUC 04100009 070 and 04100009 080)**

- a. Table of Watershed Use Attainment Data for Upper Reach
- b. Table of DELT Data for Upper Reach
- c. Table of Watershed Use Attainment Data for Middle Reach
- d. Table of DELT Data for Middle Reach
- e. Table of Watershed Use Attainment Data for Lower Reach
- f. Table of DELT Data for Lower Reach
- g. Table of Cause and Sources of Watershed Impairments
- h. Map of 2003 Land Use in the Watershed

- i. Table of Beneficial Use Impairments in 1990
- j. Table of Beneficial Use Impairments in 2005
- k. Map of 11-Digit HUC with Jurisdictions
- l. Map of 11-Digit HUC with 14-Digit HUC Boundary
- m. Map of 11-Digit HUC with River Miles

**IX. Maumee River (HUC 04100009 090)**

- a. Graphic of the Maumee River Watershed
- b. Table of Watershed Use Attainment Data for Lower Maumee River
- c. Table of DELT Data for Lower Maumee River
- d. Table of Maumee River Assessment
- e. Table of Watershed Use Attainment Data for Duck Creek
- f. Table of DELT Data for Duck Creek
- g. Table of Watershed Use Attainment Data for Grassy Creek
- h. Table of DELT Data for Grassy Creek
- i. Table of Cause and Sources of Watershed Impairments
- j. Map of 2003 Land Use in the Watershed
- k. Table of Beneficial Use Impairments in 1990
- l. Table of Beneficial Use Impairments in 2005
- m. Map of 11-Digit HUC with Jurisdictions
- n. Map of 11-Digit HUC with 14-Digit HUC Boundary
- o. Map of 11-Digit HUC with River Miles

**X. Lake Erie Tributaries (HUC 04100010 010)**

- a. Table of Watershed Use Attainment Data for Otter Creek
- b. Table of DELT Data for Otter Creek
- c. Table of Watershed Use Attainment Data for Wolf Creek
- d. Table of DELT Data for Wolf Creek
- e. Table of Watershed Use Attainment Data for Cedar Creek
- f. Table of DELT Data for Cedar Creek
- g. Table of Watershed Use Attainment Data for Crane Creek
- h. Table of DELT Data for Crane Creek
- i. Table of Watershed Use Attainment Data for Turtle Creek
- j. Table of DELT Data for Turtle Creek
- k. Table of Cause and Sources of Watershed Impairments
- l. Map of 2003 Land Use in the Watershed
- m. Table of Beneficial Use Impairments in 1990
- n. Table of Beneficial Use Impairments in 2005
- o. Map of 11-Digit HUC with Jurisdictions
- p. Map of 11-Digit HUC with 14-Digit HUC Boundary
- q. Map of 11-Digit HUC with River Miles

**XI. Toussaint River (HUC 04100010 020)**

- a. Table of Watershed Use Attainment Data for Toussaint River
- b. Table of DELT Data for Toussaint River
- n. Table of Cause and Sources of Watershed Impairments
- c. Map of 2003 Land Use in the Watershed
- d. Map of Toussaint Improvement Program Conservation Areas

- e. Table of Beneficial Use Impairments in 1990
- f. Table of Beneficial Use Impairments in 2005
- g. Map of 11-Digit HUC with Jurisdictions
- h. Map of 11-Digit HUC with 14-Digit HUC Boundary
- i. Map of 11-Digit HUC with River Miles

## VOLUME 2

- XII. Ottawa River/Ten Mile Creek Watershed** (HUC 04100001 020)
  - a. Ten Mile Creek/Ottawa River Watershed Projects Table
  - b. Silver Creek and Shantee Creek Watershed Projects Table – NOT AVAILABLE
  
- XIII. Swan Creek** (HUC 04100009 070 and 04100009 080)
  - a. Swan Creek/Blue Creek Watershed Projects Table
  - b. Ai Creek Watershed Projects Table – NOT AVAILABLE
  
- XIV. Maumee River** (HUC 04100009 090)
  - a. Maumee River Watershed Projects Table
  - b. Grassy Creek Watershed Projects Table
  - c. Duck Creek Watershed Projects Table
  
- XV. Lake Erie Tributaries** (HUC 04100010 010)
  - a. Otter Creek Watershed Projects Table
  - b. Wolf Creek/Berger Ditch Watershed Projects Table
  - c. Cedar Creek Watershed Projects Table
  - d. Crane Creek Watershed Projects Table
  - e. Turtle Creek Watershed Projects Table
  
- XVI. Toussaint River** (HUC 04100010 020)
  - a. Packer Creek Watershed Projects Table
  - b. Toussaint Creek/Toussaint River/Rusha Creek Watershed Projects Table