Grand Lake St. Marys
Adaptive Management Plan

Moving Forward

May 2017

Moving Forward

The Strategic Plan (SP) was formulated in 2011 to provide a framework and timeline for restoration of the Grand Lake St. Marys (GLSM) ecosystem utilizing nutrient management, control and removal projects and economic management tools to implement solutions for current and future lake improvements and revitalization. The SP was integrated with ongoing efforts by the Ohio Environmental Protection Agency (OEPA), Ohio Department of Natural Resources (ODNR) and the GLSM Lake Restoration Commission (LRC) as part of a Consolidated Action Plan (CAP) which established an interrelated framework of objectives to synergistically pursue the ecologic and economic restoration of GLSM through the utilization of Adaptive Management (AM) protocols, the attributes of which were captured and developed in a Conceptual Ecosystem Revitalization Model (CERM).

Since implementation many successes have been realized as a result of the concerted efforts of State, Local, Federal agencies and local stakeholders. The cumulative effect of these efforts has yielded benefits to both the environmental and economic conditions of the lake. Fifteen Critical Response Actions were undertaken between 2011 and 2016.

- **Developed the GLSM Consolidated Action Plan (CAP):** The LRC developed the CAP in January 2011 in an effort to coordinate a unified agency and organizational approach to the environmental and economic revitalization of the GLSM region.
- **Establishment of the Lake Facilities Authority (LFA):** In 2013 the LFA for Grand Lake St. Marys (GLSM) was legislatively established to provide a funding source and managing authority for improvements through establishment of local taxes, etc.
- **Establish Lake Manager Position:** In 2012 a Lake Manager position was established and filled reporting directly to the Grand Lake St. Marys Restoration Commission to oversee, manage and coordinate progress of the Strategic Plan implementation.
- **Communications Plan:** A communications plan was developed by the Convention and Visitors Bureau in conjunction with the lake manager and associated partner organizations.
- **Fund Raising Program:** A fund raising program was initiated and pursued by the Lake Manager. From 2012 to 2016 these efforts yielded $915,000 in private donations.
- **Water Quality Monitoring Stations:** Ongoing testing of water quality in the contributing drainages to GLSM and in the lake itself has been and continues to be conducted by several organizations.
- **Chemical Alum Treatments:** Chemical Alum treatments were administered via contract by the State of Ohio through ODNR for experimental test coves and the larger lake

area in 2011 and 2012. Smaller more localized alum applications were also issued and found to be effective through Treatment Train Systems implemented and applied within Prairie Creek.

- **Dredge Sediment Depositions:** Since 2011 ODNR has dredged 1,866,200 cubic yards of material from the lake.

- **Treatment Train Establishment:** Two Treatment Trains (TT) Systems have been established and are operational on Prairie and Coldwater with Beaver Creek TT operation in 2017. Monitored removal efficiencies show 31% and 71% for nitrogen and phosphorus respectively.

- **Rough Fish Removal:** ODNR has recently authorized permits to a commercial fisherman to assist with rough fish removal and Wright State University is working to identify and monitor the carp population to enable targeting of the fish.

- **Aeration and Circulation:** Linear Aeration systems have been installed in many channels and these implements seem to have improved water quality to some extent.

- **Implementation and New Participation in multiple Best Management Practices (BMPs) Plans and Projects:** Applications include cover crops, tillage transects, development and implementation of numerous Nutrient Management Plans, milkhouse waste containment, the implementation of filter strips and innovative manure containment, treatment and application technologies, septic system corrections and improvements, and a fertilizer and chemical lawn application soil testing program.

- **Establishment of Ag Solutions:** In March 2016, the Mercer County Commissioners funded a full-time Ag Solutions Coordinator to research alternative methods of manure management, nutrient concentration, solid-liquid separation and practices that can improve water quality.

- **Development of the Beaver Creek and Chickasaw Creek Nine Element Watershed Plans:** Ag Solutions, along with Mercer SWCD, spear headed the development of these plans which are critical and required in applying for 319 funding for future water quality improvements.

Success Builds Success

The continual efforts of the LRC have shown significant results in the environmental conditions and economic climate since the establishment of the Strategic Plan in 2011. These success are an outward representation of the effects of investment into the restoration of GLSM and the proof of concept for how coordinated support between Federal, State and Local agencies in conjunction with local stakeholders yields jobs and economic growth.

Local **Economy**

- Sales Tax Revenue has been steadily climbing year after year with 2016 being a record year for Mercer County Sales Tax Revenue
- Mercer County has consistently had the lowest unemployment rate in the State of Ohio since 2011

Business **Development**

- Mercer County was named a top 15 MicroPolitan County for 2015 and a top 10 MicroPolitan County for 2016 in the US
- Approximately $132,000,000 invested in new businesses primarily focused on the manufacturing, industrial, and food processing industries
- Approximately 2,700 new jobs created as a result of the development projects

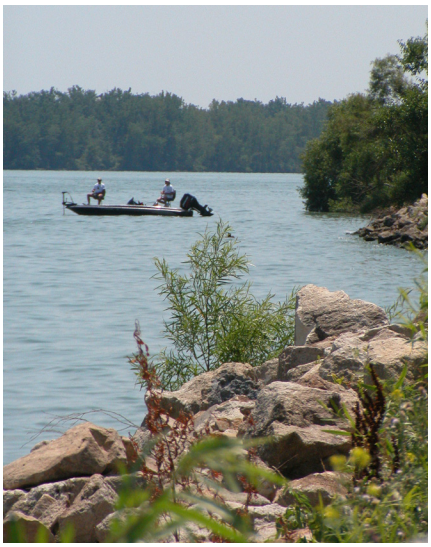
Tourism/Recreation

- Tourism related income increased by 75%
- Local jobs supported by tourism dollars has increased by over 1,500

Tourism Income
75%
Increase

Local Jobs
1500
Increase


Photo Credit: Jeff Poulter



Carrying the Momentum

The work undertaken by the 2011 Strategic Plan created a strong foundation for continued growth in the region. These success will be fleeting without continued evaluation and adaption. Building on these recognized success, adapted Critical Implementation Priorities have been established to carry the momentum of the program into the future.

Treatment Trains and Littoral Wetland Systems

Purpose: Treatment Trains demonstrate significant benefits in achieving nutrient reduction goals.

Action: Establishment of Treatment Trains and littoral wetland systems on each drainage stream contributing to the lake.

Rough Fish Removal

Purpose: The carp population in Grand Lake St. Marys impacts ecosystem processes and creates self-perpetuating and expanding issues with eutrophication

Action: Removal of underwater obstructions in defined areas is warranted to facilitate the continued implementation of this program.

Improve Water Contact Sports Recreational Capacity of Lake

Purpose: Grand Lake as a destination for water contact recreation has been impacted by water quality concerns.

Action: Establish a designated beach area for swimming and base of operations for water contact sports, through creation of enhanced facilities; shoreline beach augmentation, recreational equipment, localized augmented water quality improvements, and improved access.

Watershed Best Management Practices

Purpose: Watershed inputs to the lake influence the water quality of the system. Significant progress has been made to decrease nutrient loading from the contributing watersheds.

Action: Implement recommendations of 9 Element Plans for Beaver and Chickasaw Creek and continue to maintain nutrient management plans for all livestock farms meeting the distressed watershed rule requirements.

In-Lake Features Development

Purpose: The shape, orientation and depth of GLSM creates long fetch lengths that can lead to increased erosion on its periphery.

Action Strategically develop in lake features i.e. islands and near shore bars to protect littoral wetlands and shoreline features. Restore/reshape shoreline areas to provide resistance to wave erosion.


Photo Credit: Jeff Ponsler

Management of Channel Water

Purpose: Numerous channels that serve residential communities are found on GLSM. Management of water quality in channels provides a recognized outlet for community interface with lake management and can resolve perceived threats to public health.

Action: Expand opportunities for channel water management by providing landowner education, assistance and pre-approved management options for implementation.

Natural/Man-Made Infrastructure Management

Purpose: Since the development of SP 2011 significant amounts of infrastructure have been developed to address and/or support the reduction of nutrients in the system. This infrastructure requires coordinated operation and maintenance to provide maximum benefit to the system.

Action: Develop an operational plan and budget to assure the maximum benefit potential of the existing and proposed infrastructure projects can be realized.

Monitoring, documentation and modeling of scientific data

Purpose: Effective decision making relies on developing and analyzing data for both the individual Critical Response Actions as well as the response of the system as a whole.

Action: Establish a defined monitoring program to collect long term data and engage academia to provide insight and understanding of the data. Establish a predictive response model for the system to aid in decision making.

Beneficial Use of Organic Waste

Purpose:: Provide alternative use for organic waste and high phosphorus dredge material in the watershed which will limit inputs into the system as a non-point source discharge.

Action: Create economic incentive package to attract private development and investment. Continue to research/demonstrate different technologies through pilot projects focused on both agricultural wastes and dredge material.

GRAND LAKE ST. MARYS RESTORATION COMMISSION

Contact Info:

Thomas A. Knapke
11327 Bobwhite Lane
St. Marys, Ohio 45885

The goal of the GLSM Restoration Commission is to:

Provide a holistic blueprint for the sustainable environmental and economic renewal of Grand Lake St. Marys and its contributing watersheds through an approach that will motivate and coordinate stakeholders to increase the ecological and economic effectiveness of restoration activities. These efforts will also help lake communities realize their potential to improve and protect the natural and economic resources of the region.

Commission Members

Board of Auglaize County Commissioners
Board of Mercer County Commissioners
City of Celina
City of St. Marys
Grand Lake St. Marys State Park
Greater Grand Lake Visitors Center
Lake Development Corporation
Lake Facilities Authority
Lake Improvement Association
Mercer County Civic Foundation
St. Marys Community Foundation
Wright State University Lake Campus

Prepared By:

KCI