June 2020

Lake St. Clair Watershed Implementation Priorities Plan

SEMCOG | SOUTHEAST MICHIGAN COUNCIL OF GOVERNMENTS

SEMCOG. . . Developing Regional Solutions

Mission

SEMCOG, the Southeast Michigan Council of Governments, is the only organization in Southeast Michigan that brings together all governments to develop regional solutions for both now and in the future. SEMCOG:

- Promotes informed decision making to improve Southeast Michigan and its local governments by providing insightful data analysis and direct assistance to member governments;
- Promotes the efficient use of tax dollars for infrastructure investment and governmental effectiveness;
- Develops regional solutions that go beyond the boundaries of individual local governments; and
- Advocates on behalf of Southeast Michigan in Lansing and Washington

Lake St. Clair Watershed Implementation Priorities Plan

Abstract

The Lake St. Clair Watershed Implementation Priorities Plan (WIPP) guides implementation of the St. Clair River and Lake St. Clair Comprehensive Management Plan. The WIPP is a strategy that includes 60 active projects with approximately $70 million in investments. The report describes ecological and environmental benefits in both the coastal and watershed areas of Lake St. Clair that can be realized through implementation of the projects. WIPP projects address ecological restoration through implementation of stormwater management, green infrastructure, nonpoint source pollution and fish passage improvements.

Preparation of this document may be financed in part through grants from and in cooperation with the Michigan Department of Transportation with the assistance of the U.S. Department of Transportation's Federal Highway Administration and Federal Transit Administration; the Michigan Department of Natural Resources with the assistance of the U.S. Environmental Protection Agency; the Michigan Department of Technology, Management and Budget; and local membership contributions.

SEMCOG
Southeast Michigan Council of Governments
Information Center
1001 Woodward Avenue, Suite 1400
Detroit, MI 48226-1904
313-961-4266 • fax 313-961-4869
www.semcog.org • infocenter@semcog.org

Acknowledgements

This report is prepared on behalf of the Lake St. Clair and St. Clair River Protection and Restoration Partnership and its resource partners.

Lake St. Clair and St. Clair River Protection and Restoration Partnership

- Chesterfield Township
- Clay Township
- Clinton River Watershed Council
- Community Foundation of St. Clair County
- City of Grosse Pointe Farms
- Harrison Township
- Huron Clinton Metroparks
- Ira Township
- Lake St. Clair CISMA
- Macomb County Board of Commissioners
- Macomb County Public Works Office
- City of Marysville
- Oakland County Water Resources Office
- Oakland University
- Michigan Departments of Environmental Quality and Natural Resources, Office of the Great Lakes
- Michigan Nature Association
- Michigan Sea Grant College Program
- Natural Resources Conservation Service
- Shelby Township
- St. Clair County Administrator
- St. Clair County Health Department
- St. Clair County Drain Office
- Friends of the St. Clair River
- SEMCOG
- Six Rivers Land Conservancy
- Washington Township

Resource Partners

- U.S. Army Corps of Engineers
- Ducks Unlimited
- Great Lakes Commission
- U.S. Environmental Protection Agency
- U.S Geological Survey
- Michigan Department of Transportation

Table of Contents

List of Data Displays

Tables

Figures

Chapter1: Introduction

The Lake St. Clair Watershed Implementation Priorities Plan (WIPP) identifies those implementation projects that will lead to improving watershed and natural resource quality in Southeast Michigan. The region's wetlands, woodlands, open spaces, lakes, rivers, tributaries, and drains play an important role in protecting the environment, strengthening economic opportunities for businesses and enhancing local tourism. Clean water and natural resources strengthen the growing blue economy in the region.

The region's Blue Economy priorities established in the *Water Resources Plan for Southeast Michigan* are:

- Supporting economic development, innovation and water dependent industries;
- Expanding water placemaking efforts;
- Increasing access to water resources; and
- Enhancing water recreation opportunities.

The implementation priorities outlined in this WIPP work towards addressing these priorities and projects specifically address habitat restoration, stormwater management, invasive species control and recreational enhancements. This WIPP represents a strategic revision similar to the former Strategic Implementation Plan (SIP). Like the SIP, this WIPP continues to identify and inventory priorities from the 2004 St. Clair River and the Lake St. Clair Comprehensive Management Plan (MP), but in a simplified approach that does not require federal agency approval.

Priority projects included in this WIPP reflect the following Planning Priorities from the MP:

- Conserve and restore habitat.
- Manage stormwater runoff through retrofits.
- Identify and reduce sources of bacteria.
- Use of technology to protect and restore Lake St. Clair.
- Enhance public use of Lake St. Clair.

Conservation Target Categories (CTC) provide project detail on specific environmental benefits to the Lake St. Clair Watershed. These categories are:

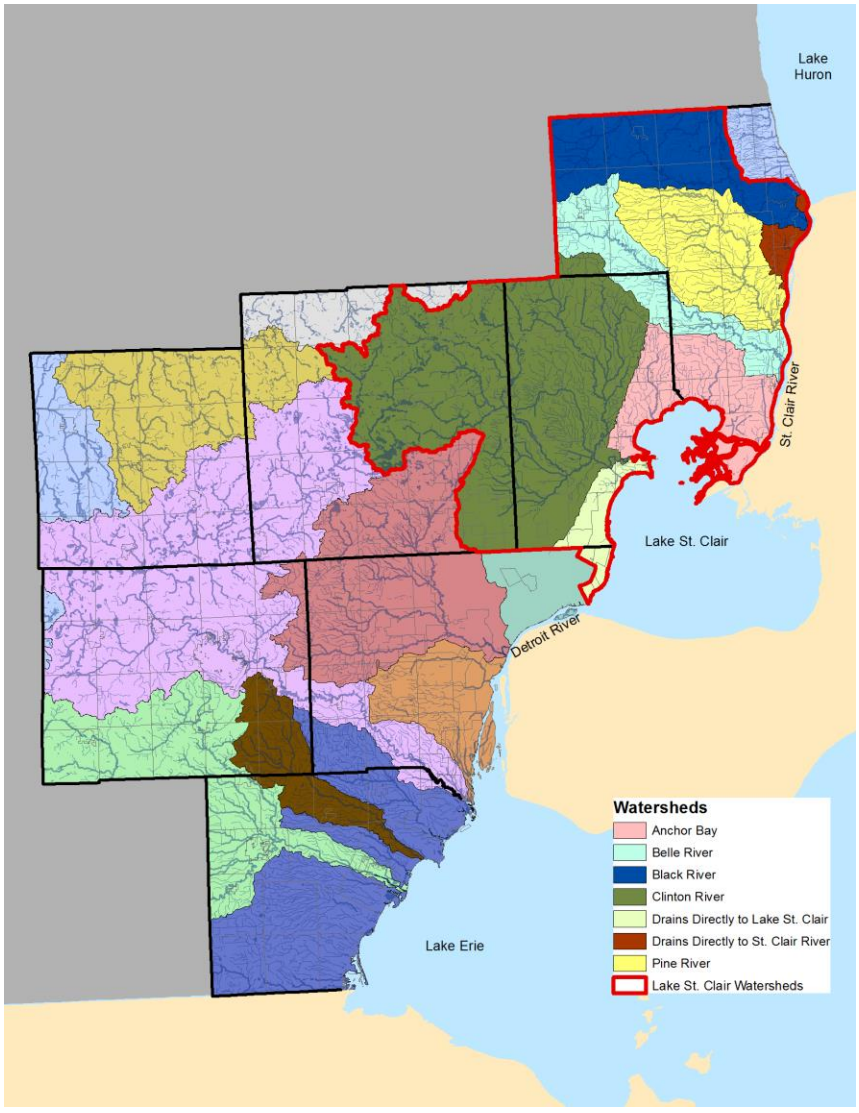
- Increase biological integrity.
- Improve biodiversity.
- Reduce shoreline hardening.
- Restore hydrologic regime.
- Improve connectivity.

This WIPP was developed through a coordinated and collaborative process and is intended to gather support and market priority implementation projects to funding agencies. Project implementation is anticipated through a variety of local, state and federal funding mechanisms.

Location

Lake St. Clair, its watersheds, and subwatersheds, located in Macomb, Oakland, St. Clair, and Wayne Counties, are tributary to the St. Clair-Detroit River System that connects Lake Huron to Lake Erie (Figure 1). The Lake St. Clair Watershed consists of the St. Clair River, the Lake St. Clair coastal area (shoreline and nearshore area and 1,000 feet inland from the water), and the tributaries to the St. Clair River and Lake St. Clair in Oakland, Macomb and St. Clair Counties. Lake St. Clair is a vital binational resource that provides an array of benefits to millions of U.S. and Canadian residents. The lake is heavily used for fishing, boating, swimming, hunting in addition to being a source for drinking water, and provides movement of freight and people. Lake St. Clair is among the most biologically diverse ecosystems in the Great Lakes and provides critical habitat for fish and wildlife particularly in the St. Clair River delta, the largest fresh water coastal marsh complex in the Great Lakes. This high-quality ecosystem has made Lake St. Clair a world-class sport fishery for Bass, Muskellunge Northern Pike, and Sturgeon. One-third of all fish and half of all sport fish caught in the Great Lakes are caught in Lake St. Clair.

Figure 1
Lake St. Clair Watershed, Southeast Michigan



Chapter 2: Historical Challenges and New Opportunities

Over the last decade, restoration projects along the coastal areas and in the tributaries have achieved significant environmental benefits. The location and type of these restoration projects are shown in **Figure 2**. During this time, EPA Great Lakes Restoration Initiative (GLRI) funding was used to work towards eliminating Beneficial Use Impairments (BUIs) in Great Lakes Areas of Concern (AOC). GLRI funding was used to implement 9 restoration projects within the St. Clair River AOC and its delta. Together, these combined projects contributed to eliminating the Fish and Wildlife Habitat BUI. GLRI funds were also used in the Clinton River AOC to implement 11 ecological restoration projects that will eventually lead to removal of its Fish and Wildlife Habitat BUI. These projects, plus others (totaling 28), are making significant progress in restoring coastal and tributary water and natural resources.

Environmental benefits achieved from implementation of these 28 projects include:

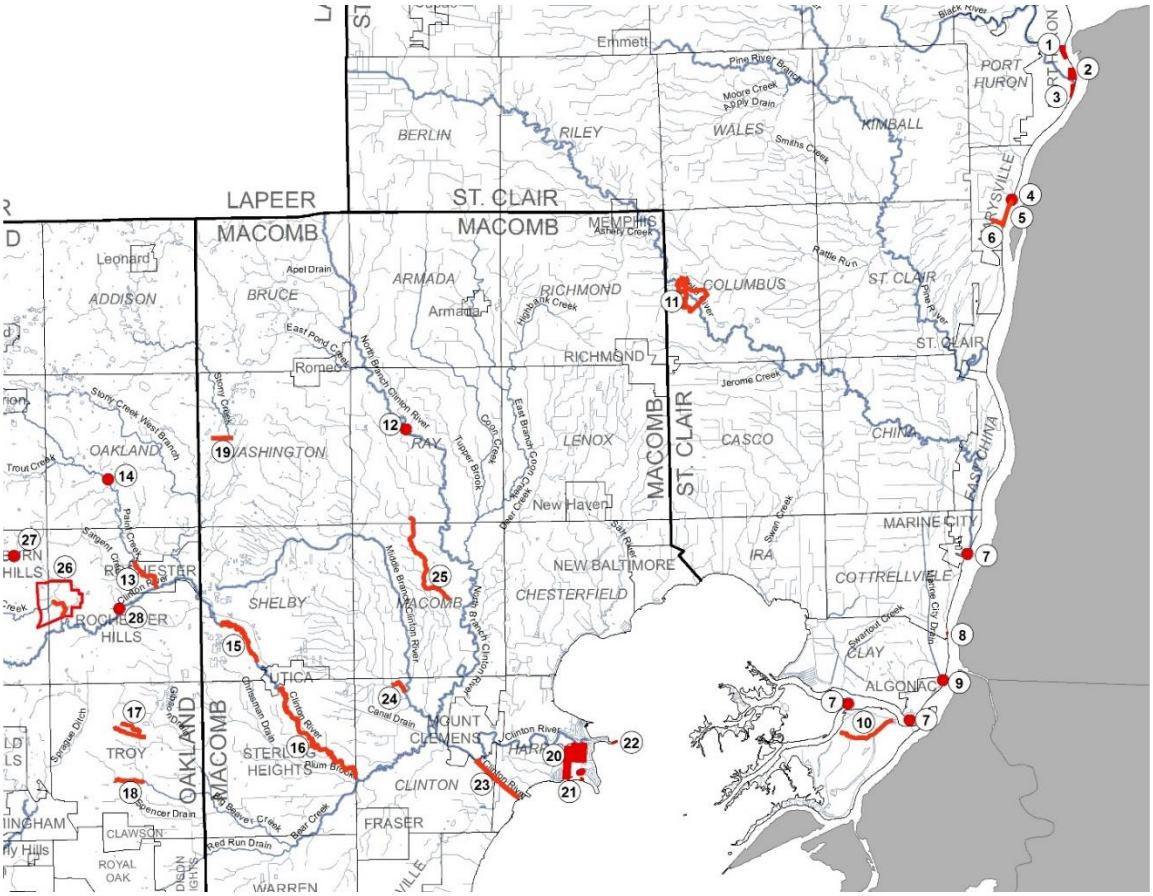
- 84 Miles of Fish Habitat and Riparian Restoration,
- 26 Acres of Aquatic Habitat Restoration,
- 26 Acres of Enhancing Greenway Development
- 519 Acres of Wetland Restoration,
- 2,980 Feet of Shoreline Softening
- 9 Acres of Green Stormwater Infrastructure
- 1.2 Mile of Enhancing Access to Natural Resources

While progress continues on improving the quality of Lake St. Clair, there are a number of challenges that are common across the entire watershed. The St. Clair Detroit River System (SCDRS) contains four Areas of Concern (AOCs) – the St. Clair River, Clinton River, Detroit River and Rouge River. Current and future water resource priorities of these four AOCs include:

<table>
<tr>
<td><u>Clinton River</u>
• Eliminate combined and sanitary overflows,
• Reduce nonpoint source pollution
• Remediate contaminated sediments,
• Improve spill notification and response,
• Restore habitat and
• Remove illicit connections and correct failing septic systems.</td>
<td><u>Detroit River</u>
• Restore habitat,
• Continue Detroit River Keeper,
• Improve public education,
• Build partnerships and
• Support continued monitoring.</td>
</tr>
<tr>
<td colspan="2"><u>St. Clair River</u>
• Remove all BUIs and its status as AOC,
• Protect drinking water intakes from spills in the river,
• Secure funding to implement watershed management plans,
• Continue region-wide collaboration on the Municipal Separate Stormwater System plans and
• Raise awareness and participation in St. Clair River protection efforts.</td>
</tr>
<tr>
<td colspan="2"><u>Rouge River</u>
• Continue stormwater reduction efforts through:
◦ Green stormwater infrastructure
◦ Correcting illicit connections
◦ Monitoring water and habitat quality
◦ Public stewardship education, and
◦ Increasing recreational use of the resource</td>
</tr>
</table>

Figure 2

Lake St. Clair Restoration Projects (Completed)



1) Wolcott Mill Dam Removal
2) Paint Creek Fish Passage Restoration
3) Paint Creek Dam Removal and Habitat Restoration
4) Clinton River in Shelby Township Restoration
5) Clinton River Corridor
6) Sylvan Glen Golf Course Restoration
7) Restoring Fish Passage in the Lane Drain
8) Inwood Road/Stoney Creek Stormwater Improvement
9) Lake St. Clair Marsh Restoration Projeoct
10) Lake St. Clair Metropark Parking Lot Reconstructio Phase I&II
11) Harley Ensign Coastal Wetland Restoration
12) Clinton River Spillway Coastal Habitat Restoration
13) Partridge Creek/Gloede Drain Habitat Restoration
14) McBride Drain Habitat Restoration
15) Galloway Creek Fish Passage Restoration
16) Restoration of Galloway Wetland
17) Avon Creek Restoration, Phase I-IV
18) Restoring Fish Passage in the Lane Drain
19) Inwood Road/Stoney Creek Stormwater Improvements
20) Lake St. Clair Marsh Restoration Project
21) Lake St. Clair Metropark Parking Lot Reconstruction Phase I&II
22) Harley Ensign Coastal Wetland Restoration
23) Clinton River Spillway Coastal Habitat Restoration
24) Partridge Creek/Gloede Drain Habitat Restoration
25) McBride Drain Habitat Restoration
26) Galloway Creek Fish Passage Restoration
27) Restoration of Galloway Wetland
28) Avon Creek Restoration, Phase I-IV

Some of the common challenges across the Lake St. Clair Watershed include balancing restoration with economic development opportunities in coastal areas, addressing runoff from impervious surfaces, reducing nonpoint source pollution, and managing invasive species.

Coastal development: Up to 85 percent of the immediate coastline has been developed, creating challenges to shoreline softening, wetland restoration, invasive species management, and public access to the rivers.

Projects addressing this challenge include: Brandenburg Park naturalized Shoreline Restoration, Ruedisale Point Park Naturalized Shoreline Restoration, and Harrison Township Waterfront Park Shoreline/Shallows Restoration.

Impervious surfaces: Higher levels of impervious cover lead to a decline in the quality of local water resources, loss of native vegetation and a reduction in quality habitat.

Projects addressing this concern include: An Ecosystem Restoration Approach to Improving Water Quality at OU (Oakland University), Five Year Plan to Retrofit All Parking Lots at both Macomb Community College Campuses, Grosse Pointes Lake Shore Drive Coastal Wetland Restoration, Water Quality Improvements and Green Infrastructure in Lake St. Clair Direct Drainage.

Point and nonpoint Source Pollution: Pollution from land areas and direct discharges can lead to a decline in local water resource quality. Excessive nutrients, sediment, bacteria and other pollutants destroy habitat, such as fish spawning and nursery sites in addition to other aquatic habitat. The excessive levels of phosphorus being discharged to Lake Erie from the Maumee, and Detroit River systems is contributing to HABs (hazardous Algal Blooms) in the western basin and hypoxic (dead zones) in the central basin.

Projects addressing this concern include: Lake St. Clair Metropark Beach Redesign and Restoration, Lake St. Clair Metropark – Parking Lot Retrofit Phase 3 & 4, Red Run Drain Contaminated Sediment Removal, and Pine River Watershed Management Plan Development.

Invasive species: Over the last 30 years, Lake St. Clair and its watershed has seen a significant increase in invasive species, such as Phragmites australis (Common reed). Phragmites can eventually dominate ecosystems that it invades – creating a dense monoculture, reducing both plant and animal biodiversity. It is estimated that Phragmites has invaded and infested approximately 12,000 acres in the immediate area around Lake St. Clair.

Projects addressing this concern include: Anchor Bay Woods Preserve and Expansion, Invasive Species Control at Oakland University, European frog-bit Control at Metroparks, and the actions of the LSC CISMA members dedicated to managing the spread of invasive species. Similar to other Great Lakes Basin areas, protecting and restoring the Lake St. Clair Watershed includes implementing projects in both the Inland Watershed Areas, and Coastal Nearshore Areas.

Coastal and Nearshore Challenges and Opportunities

The coastal area of Lake St. Clair comprises wetlands on the eastern side of Anchor Bay, shoreline/shallows, and direct drainage publically owned and natural waterways. These areas support coastal wildlife (up to 70 species of fish, 90 species of birds, and 38 species of amphibians and reptiles). These wetlands are some of the most biologically diverse ecosystems in Michigan and are crucial to the health and economic prosperity of the Great Lakes basin as a whole. Coastal wetlands serve as spawning and nesting habitat for a variety of animals; filter and improve water quality; assist in preventing erosion along exposed shoreline; offer recreational and tourism opportunities; and offer additional stormwater holding capacity.

Approximately 20,000 acres of Great Lakes coastal wetlands remain around Lake St. Clair. The coastal area on the western side of Lake St. Clair is more urban in character, with approximately 85 percent of the shoreline hardened. Restoring and reconnecting natural areas along the coast improves landscape resiliency to disease, drought, and storms – protecting coastal communities from the high-energy wave action and flooding. **Figure 3** uses both active projects and completed from the WIPP to visualize progress made toward reconnecting coastal habitat (upon completion of all projects.) Additionally, these wetland restoration opportunities increase natural habitat for enhanced wildlife viability. Coastal wetlands can be reestablished in strategic areas to protect the inland urbanized areas. In addition, these coastal waterways that replenish Lake St. Clair, serve as spawning and nursery areas for young of the year fish, amphibians and reptiles during the spring and early summer.

Increasing access to coastal Lake St. Clair is a major benefit for the region. Connecting residents to the coastline, helps build the blue economy, while educating the public about the importance of watershed conservation and restoration. In recent years, Lake St. Clair has experienced rising water levels, increased flooding on shorelines and nearby trails, decreased water quality such as beach closures, all of which impact citizen access and perceptions about the coastline. These challenges prevent citizens from connecting, interacting and enjoying their local water resources. If not addressed, this could decrease the amount of public support for funding dedicated to access and conservation in the future. Many communities are responding to their resident's desire for more access to the region's natural areas and to the economic benefits of having more access. Local governments are increasingly pursuing opportunities to acquire park land for conservation or restoration of high value habitat with access to blueways, greenways, paddling launches, shoreline and for general waterfront access. Both Macomb and St. Clair counties have heavily invested in Blue-Green plans that include identifying water trails and opportunities for more waterfront and water-related access and acquisitions. Coupling acquisition of additional public land for water access with water quality protection and restoration efforts increases public awareness and engagement with the resource providing motivation at the individual level for people to care about and participate in water resource protection.

Recreational opportunities are on the rise along coastal areas to connect the public with Lake St. Clair. These opportunities include naturalizing shorelines at existing and new parks. Many new parks are focused on conservation and restoration of riparian and upland wooded areas. Restored natural areas enhance eco-tourism and recreational activities along Lake St. Clair. Other coastal recreational opportunities include the

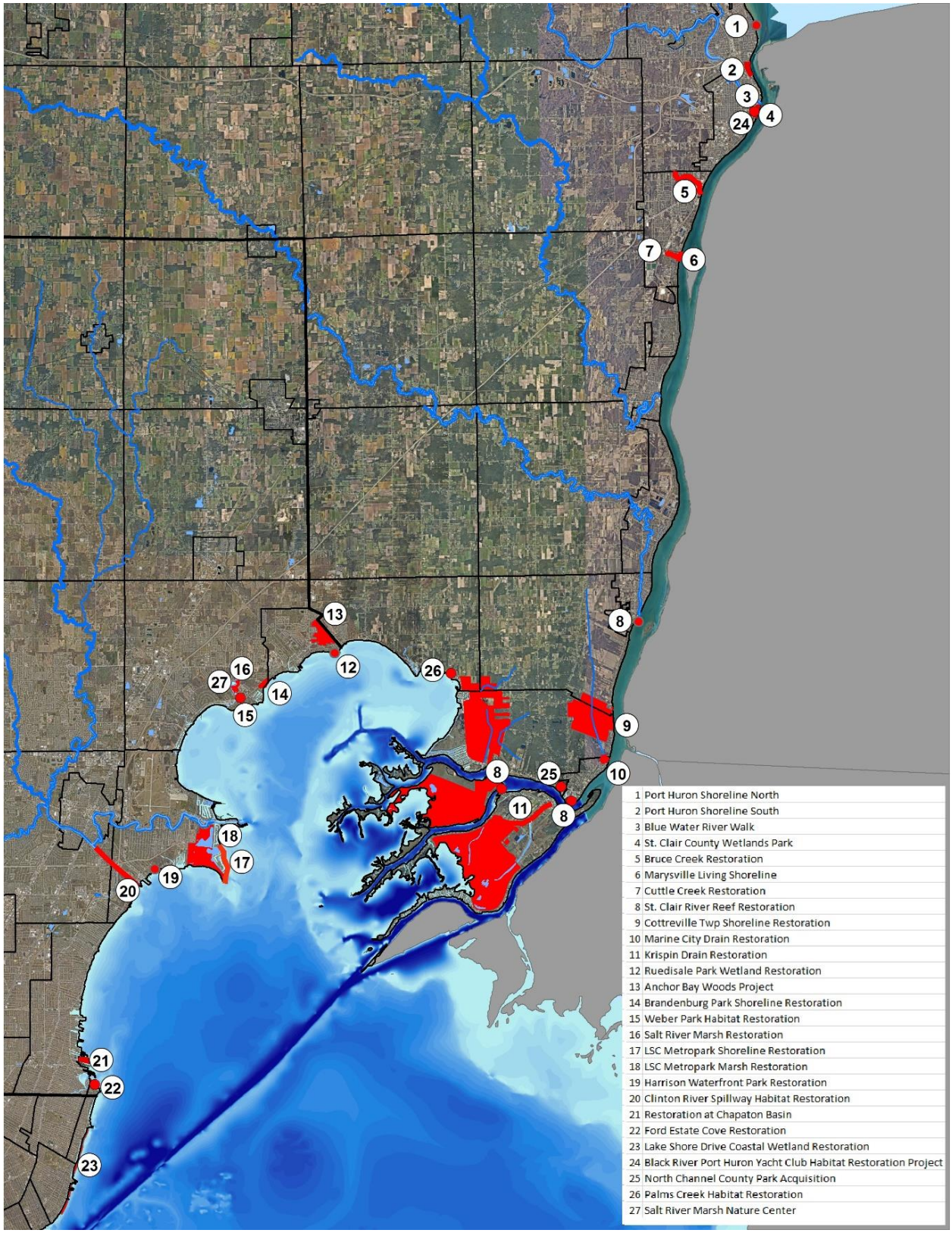
Lake St. Clair Coastal Paddling Trail, Bridge-to-Bay Bicycle Trail, Salt River Paddling Trail, and the Krispin Paddling Trail.

Significant portions of the existing coastal marsh and inland areas are overrun with Phragmites australis and other invasive species. Approximately 3,500 acres of invasive species have been treated since 2009. However, a large expanse of invasive species, including Phragmites, still remain. The coastal areas are a primary source for invasive species migration downstream. Enhancing and restoring the coastal experience can include a variety of projects along the coastal area. Examples include:

- Restore coastal shoreline/shallows to soften, enlarge and reconnect habitat, and increase biological integrity and biodiversity;
- Restore shoreline and adjacent uplands along coastal waterways to reestablish wildlife corridors, and greenway trails for enhanced public access opportunities;
- Expand treatments of invasive species within the coastal natural areas to improve biodiversity and prevent their spread;
- Restore coastal wetlands to buffer and protect adjacent upland areas from increasing wet weather volumes associated with extreme storms;
- Improve aquatic and terrestrial recreational opportunities such as park development, kayaking, paddle boarding, passive greenway, hiking/biking, and other recreational activities; and
- Implement public education and outreach events, such as festivals, seminars, workshops, clean-up events, and teaching events that teach children and adults about environmental benefits of the coastal areas and the importance of maintaining or expanding their natural resources.

Figure 3

Reconnecting Habitat Areas around Lake St. Clair



Inland Watersheds Challenges and Opportunities

Tributaries are intended to deliver billions of gallons of clean, filtered water (from riparian wetlands) to replenish the Great Lakes daily. Their overall ecological condition significantly impacts the quality of the lakes. The tributaries that feed the SCDRS consist of thousands of square miles of inland riparian corridors and tributaries in Macomb, Oakland, and St. Clair Counties that discharge into the waterway. Their wetlands have been so severely altered or eliminated do to development, that their filtering function to cleanse the water has been eliminated. Goals for the watersheds include reestablishing wetlands, where feasible, using built green infrastructure facilities where needed to filter runoff before entering the drainage system and reestablishing access to water. **Figure 4** uses both active projects and completed from the WIPP to visualize progress made toward reconnecting natural habitat and improving wildlife production within the upland watershed.

The watersheds do support a thriving fishery – 61 species of fish in the Clinton River, a major tributary to Lake St. Clair. The watershed has a significant amount of natural green infrastructure comprised of woodlands, wetlands, and open space – at various functioning levels due to a general decline in the health of natural resources from over development and high loadings of point source and nonpoint source pollution – both historically and existing today.

Developing access to inland riparian areas for recreational activities is an important benefit for the region. Connecting residents to riparian rivers and streams help build the blue economy, while educating the public about the importance of watershed conservation, restoration and the interconnectedness of water resource quality to land use. Many communities within the watershed are responding to their resident's desire for more access to the region's natural areas and to the economic benefits of having more access. Local governments, in pursuit of Blue Economic opportunities are increasingly acquiring park land for conservation or restoration of high value habitat with access to blueways, greenways, paddling launches, shoreline and for general waterfront access. Both Macomb and St. Clair counties have heavily invested in Blue-Green plans that include identifying water trails and opportunities for more water-related access and acquisitions. Coupling acquisition of additional public land for water access with water quality protection and restoration efforts increases public awareness and engagement with the resource providing motivation at the individual level for people to care about and participate in water resource protection.

Recreational opportunities in these watersheds are increasing and include mountain biking, hiking, kayaking, and horseback riding in the natural areas of larger parks. Regional, non-motorized trails provide opportunities for healthy recreation and travel between parks and communities (such as the Macomb Orchard Trail and Avoca Trail), are a continued priority of the region.

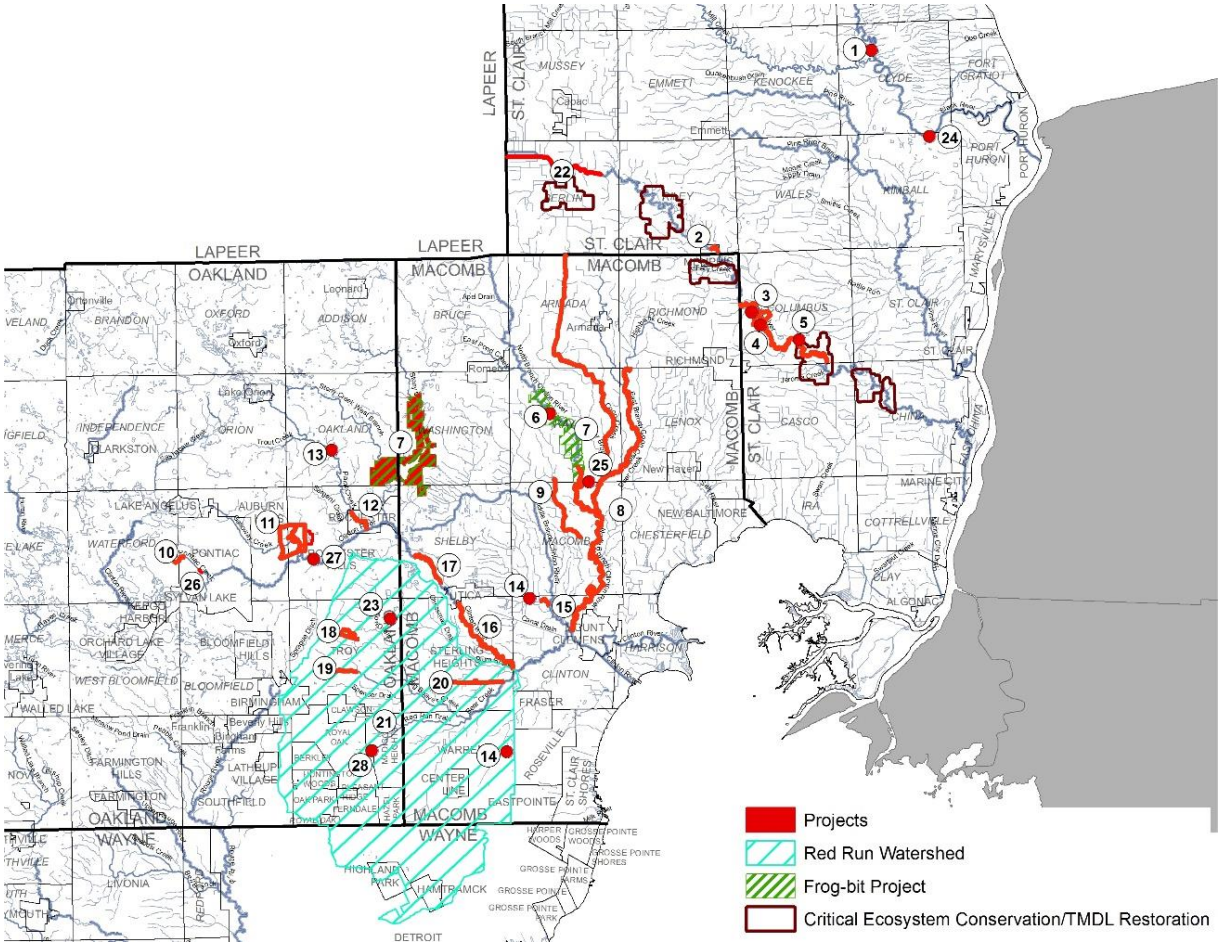
Invasive species such as Phragmites australis, Black swallow-wort, Japanese knotweed, European frog-bit, Flowering rush, and Red Swamp Crayfish are a major challenge in these watersheds. These terrestrial/aquatic species negatively impact the local, county, regional economy, and natural resources. Treatment is applied strategically by the Lake St. Clair Cooperative Invasive Species Management Area (CISMA) and the Oakland County CISMA, in partnership with local county and state governments and nonprofit organizations. Inland watershed priority projects that work toward enhancing and restoring the Lake St Clair Watershed include:

- Ecological restoration along riparian shorelines and corridors to enlarge and reconnect habitat for purposes of increasing biological integrity and biodiversity;
- Restoration of riparian shorelines, corridors and adjacent uplands to improve biological integrity and biodiversity to reestablish wildlife corridors and enhance opportunities for public access;

- Ecological restoration of riparian wetlands and floodplains for improved water quality and runoff retention to reduce localized flooding;
- Hydrologic regime improvements through culvert or bridge upgrades;
- Acquisition of coastal shoreline/nearshore areas for conservation of coastal wetlands, nearshore and shoreline shallows fish and wildlife habitat
- Acquisition and development of larger parks and regional trails for improved recreational opportunities such as bicycling, hiking, habitat conservation, passive recreation, mountain biking, launch for canoes and kayaks, hunting, and equestrian activities. Potential Benefits of Lake St. Clair Projects link specific ecological or recreational benefits to various types of projects. This is to provide assistance to partners during project development (Table 1).

Figure 4

Reconnecting Habitat in Lake St. Clair Watershed



1. Wingford Dam Removal and Restoration
2. Belle River Restoration at Memphis City Park
3. Expansion of Columbus County Park
4. Belle River Restoration at Columbus County Park
5. Belle River Restoration in Columbus Township
6. Wolcott Mill Dam Removal and Restoration
7. Metropark's Frog-bit Control Project
8. N. Branch Clinton River Riparian Acquisition, Restoration and Greenway Development
9. McBride Drain Restoration
10. Mainland Project Wetland and Stream Restoration
11. Galloway Creek Fish Passage and Ecosystem Restoration at OU.
12. Paint Creek Fish Passage Restoration
13. Paint Creek Dam Removal and Restoratio
14. Macomb Community College Parking Lots SW Mgmt. Retrofits
15. Partridge Creek and Gloede Drain Habitat Restoration
16. Clinton River Corridor
17. Clinton River Restoration in Shelby Township
18. Sylvan Glen Golf Course Restoration
19. Restoring Fish in the Lane Drain
20. Sterling Relief Daylighting and Green Infrastructure Retrofit
21. Red Run Water Quality Improvement and Habitat Restoration
22. Protect Critical Ecosystems/TMDL Restoration
23. Turtle Woods Preserve (Public Access)
24. Woodsong County Park Stabilization/Paddling Launch
25. Macomb Township Nature Park
26. Augusta Drain Green Infrastructure Pocket Park
27. Innovation Hills Accessible Kayak Launch
28 George W. Kuhn Drain Facility and Green Infrastructure

Table 1

Benefits of Projects in Lake St. Clair Watershed (Coastal and Tributary Areas)

Project Type	Planning Priorities and Conservation Target Categories									
	Conserve / Restore Habitat	Stormwater Mgmnt through Retrofits	Reducing Bacterial Sources	Using Technology for Protecting/ Restoring	Enhance Public Use	Increase Biointegrity	Increase Biodiversity	Reduce Shoreline Hardening	Restore hydrologic regime	Improve Connectivity
Acquisition of Wetlands	X			X	X	X	X			X
Acquisition of shoreline/ nearshore areas	X			X	X	X	X			
Acquisition of Natural Area/ Uplands	X			X	X	X	X			X
Restoration of Natural Area	X			X	X	X	X	X	X	X
Restoration of Riparian/ Shoreline Wetlands	X	X	X	X	X	X	X	X	X	X
Restoration of Shoreline and Nearshore Areas	X	X	X	X	X	X	X	X	X	X
Treatment of Invasive species	X	X	X	X	X	X	X	X	X	X

Chapter 3: The Projects

There are 81 active projects in the WIPP that will bring ecological protection and restoration at an approximate cost of $139 million. These projects protect, restore or improve the quality and quantity of wetlands, woodlands, riparian corridors, Southeast Michigan's water resources – for such purposes as, enhanced boating, paddling, hiking and biking opportunities, reduced stormwater runoff, enhanced and reconnected fish and wildlife habitat, jobs and economy, and human health benefits. While approximately 85 percent of the Lake St. Clair shoreline is already developed with residential and commercial impervious surfaces such as seawalls (along the water), the majority of the coastal lands to be restored is open space and coastal parkland that coastal communities have set aside for public access.

These projects are put forward by local, county, and state agencies; region park agencies; and local universities; nonprofit organizations such as land conservancies and watershed groups; and private foundations and regional agencies such as the Great Lakes Commission and SEMCOG.

Implementation of the active projects will result in restoration of approximately 150 acres of wetlands, more than 40 miles of corridor, 58.5 acres of green stormwater infrastructure, and approximately 26 miles of fish passage.

Complete implementation of the WIPP would contribute to achieving the metrics of other planning/implementation efforts that set numerical goals for the protecting and restoring the Great Lakes Basin. These include the Great Lakes Restoration Initiative Plan III (394,000 acres by 2020 of coastal wetland, nearshore, or other habitat), and the St. Clair Detroit River System (SCDRS) Partnership (2,200 acres of restored coastal wetlands and 25 acres of Coastal shoreline softened by 2023). Sites of Benefit from Active Projects in Coastal and Watershed Lake St. Clair (Figure 5) shows the sites of proposed benefit to the natural resource.

Table 2, Proposed Lake St. Clair Active Project Titles, serves as the legend for **Figure 5**. The list contains the titles of the active projects in the WIPP (61 projects) that can be mapped at this time, and their project numbers (#). A complete list of priority active projects can be found in Appendix D. All active projects were evaluated for consistency with Management Plan Priorities and Conservation Target Categories (Appendix B). Projects that improve public access are identified both in the list and on the map.

Table 2

Proposed Lake St. Clair Active Project Titles

#	Active Project Titles
1	Augusta Drain Green Infrastructure Pocket Park, Pontiac
2	Anchor Bay Woods Preserve and Expansion
3	An Ecosystem Restoration Approach to Improving Water Quality at OU (Pioneer Dr. Tributary)
4	Belle River Stabilization and Shoreline Habitat Restoration at Memphis City Park (Access)
4	Belle River Shoreline Restoration in Columbus Township (Access)
5	Black River Port Huron Yacht Club Habitat Restoration Project

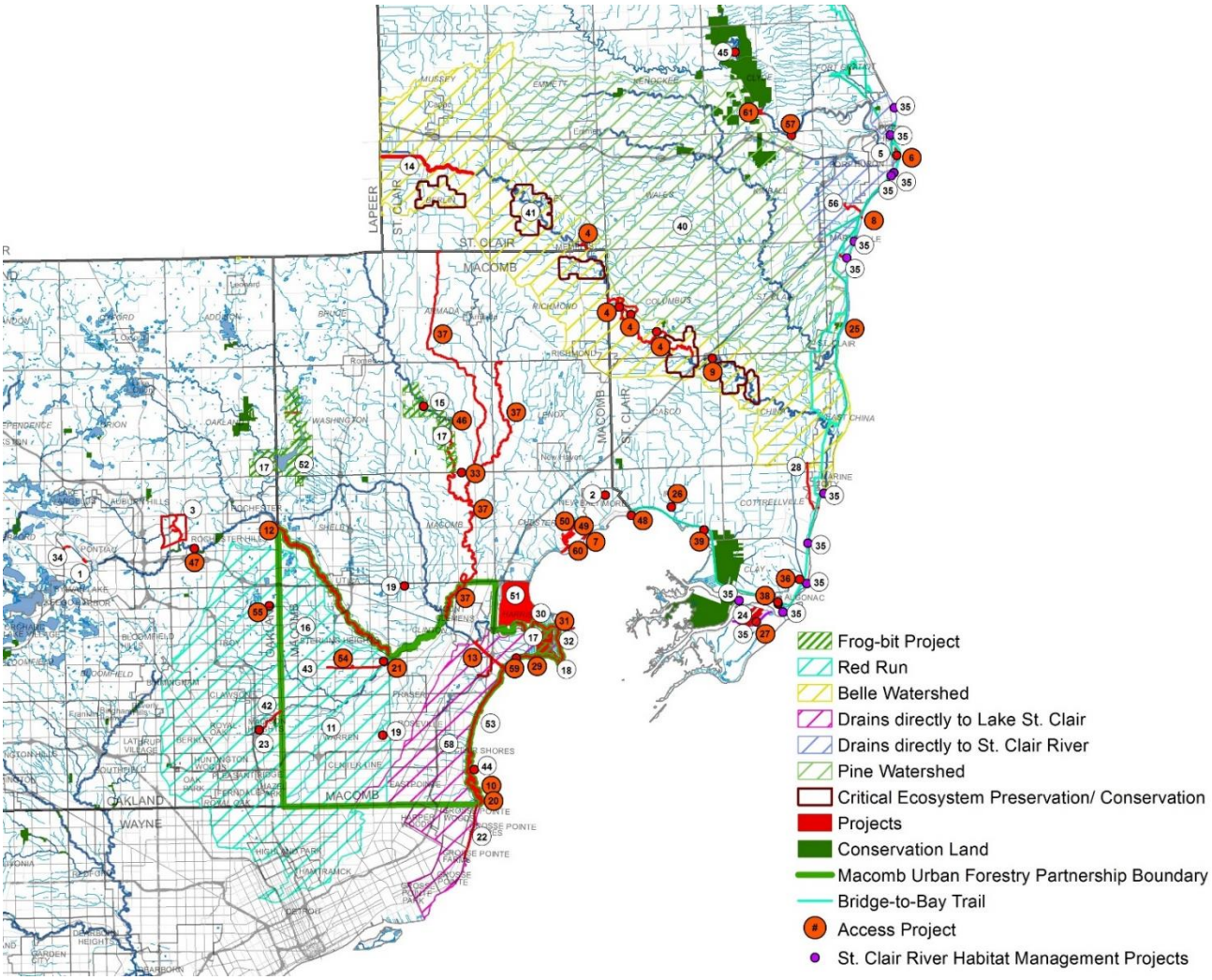
#	Active Project Titles
6	Blue Water River Walk Shoreline Stabilization (Access)
6	Blue Water River Walk Fishing Pier Extension (Access)
7	Brandenburg Park Naturalized Shoreline Restoration (Access)
8	Bunce Creek Fish Passage Restoration
9	Casco Township Park Launch and Trailhead (Access)
10	Chapaton Basin Outfall Shoreline Restoration (Access)
11	Clinton River and Lake St. Clair Green Macomb – Urban Forestry Programming for Infrastructure Assessment
12	Clinton River at Yates Cider Mill Fish Habitat Restoration (Access)
13	Clinton River Spillway Master Plan (Access)
4	Columbus County Park Acquisition (Access)
4	Columbus County Park Shoreline Restoration (Access)
14	Create TMDL Implementation Plan for Belle River Watershed
15	Dam Analysis for Removal with Ecological Restoration
16	Develop Healthy Urban Waters Initiative in Red Run Drain
17	European frog-bit Control at
18	Fishery Assessment at Metroparks – Post Ecological Restoration Monitoring
19	Five Year Plan to Retrofit all parking lots at both MCC Campus'
20	Ford Estate Cove & Wetland Restoration Program (Access)
21	Freedom Hill/Red Run Drain Area Riparian Restoration (Access)
3	Galloway Creek Ecosystem Restoration at Oakland University's Katke-Cousins Golf Course
3	Galloway Creek North Tributary Restoration Project
22	Grosse Pointes/Lake Shore Drive Coastal Wetland Restoration
23	George W. Kuhn Drain Facility Green Infrastructure Demonstration and Education Center
24	Harsens Island Conservation & Recreation Area
25	Implementing St. Clair County Non-motorized Trail Plan (Access)
3	Invasive Species Control at Oakland University

#	Active Project Titles
26	Ira Township Water Works Paddling Launch (Access)
27	Krispin Greenway Trailhead and Paddle Launch (Access)
28	Lester Bammel Drain Restoration
29	Lake St. Clair Metropark Beach Redesign and Restoration (Access)
30	Lake St. Clair Metropark – Parking Lot Retrofit Phase 3 & 4
31	Lake St. Clair Metropark Shoreline Restoration (Access)
32	Lake St. Clair Stormwater Quality Maintenance Yard Project
33	Macomb Township Nature Park (Access)
34	Mainland Drain Project Wetland and Stream Restoration
35	Maintenance and Monitoring of St. Clair River AOC Habitat Restoration Sites
36	Marine City Dredge Cut Accessible Canoe and Kayak Launch (Access)
37	North Branch Clinton River and Coon Creek Floodplain Acquisition, Wetland Restoration and Greenway Vision Development (Access)
37	North Branch Greenway Vision – Clinton Township Projects (Access)
37	North Branch Greenway Vision – Macomb Township Projects(Access)
37	North Branch Greenway Vision – Ray/Armada/Lenox Townships Projects (Access)
37	North Branch HMS Model via USACE to Use as Scenario Modelling
38	North Channel County Park Acquisition (Access)
39	Palms Creek Habitat Restoration Project (Access)
40	Pine River Watershed Management Plan Development
41	Protect Critical Ecosystem in the Belle River Watershed
42	Red Run Drain Contaminated Sediment Removal
42	Red Run Drain Sediment Removal
43	Red Run Flow reduction through Public/Private Partnerships
44	Reducing CSO's from Martin District
45	Removing Wingford Dam with Restoration of Fish Habitat
46	Revegetation of Wolcott Mill Golf Course (Access)

#	Active Project Titles
47	Rochester Hills Accessible Kayak Launch at Innovation Hills (Access)
48	Ruedisale Point Park Coastal Restoration (Access)
49	Salt River Marsh Coastal Restoration (Access)
50	Salt River Marsh Nature Center (Access)
51	Selfridge Air National Guard Base (P4 Projects)
51	Selfridge Air National Guard Base (REPI Key Property Acquisitions)
52	Source Water Protection from Landfill Leachate
53	St. Clair Shores Floating Vegetation Study/ Design and Remediation
54	Sterling Relief Daylighting and Green Infrastructure Retrofit (Access)
55	Turtle Woods Preserve (Access)
56	Updating Lake Huron Direct and St. Clair Direct Watershed Management Plans
57	Wadhams Road Black River Non-motorized Access Site Acquisition (Access)
58	Water Quality Improvement and Green Infrastructure in Lake St. Clair Direct Drainage
59	Waterfront Park Shoreline Restoration (Access)
60	Webber Paddle Park Shoreline Restoration (Access)
3	Wetland Restoration at Oakland University
61	Woodsong County Park Shoreline Stabilization and Paddling Launch

Figure 5

Sites of Benefit from Active Projects in Coastal and Watershed Lake St. Clair



Chapter 4: Partnerships in Lake St. Clair Watershed

In the late 1990s, the Lake St. Clair/St. Clair River Protection and Restoration Partnership was established by local governments in Macomb, Oakland, and St. Clair Counties. The partnership serves as a mechanism for local and county agencies to work collaboratively with state and federal agencies on Lake St. Clair Watershed priorities. Examples include launching the Anchor Bay Watershed Management Plan, identifying opportunities for watershed monitoring programs, improving septage disposal opportunities in Macomb and St. Clair Counties, and establishing the Lake St. Clair Cooperative Invasive Species Management Area. Today, the partnership has 34 members. Membership is established through a voluntary partnership agreement (Appendix A); partners agree to work for the protection and restoration of the Lake St. Clair Watershed.

Responsibilities of the Partnership

In 2004, the U.S. Army Corps of Engineers and Great Lakes Commission completed the St. Clair River and Lake St. Clair Comprehensive Management Plan (MP). The MP included 110 recommendations for protecting, restoring, and enhancing the Lake St. Clair Watershed. Priorities were developed separate from the plan. The 2007 Water Resources Development Act (WRDA) authorized $20 million for projects that were consistent with the MP. The law also recognized the partnership as the Lake St. Clair Coordinating Council, for developing the priorities for implementing the MP with Army Corps and U.S. EPA. To this day, Army Corps and U.S. EPA remain the partnership's top federal agencies to seek advice and assistance on funding issues.

Purpose of the Watershed Implementation Priorities Plan

A Strategic Implementation Plan (SIP) that inventoried, described, and estimated costs for the priority projects of the MP, was federally mandated. Initially, the SIP (first developed in 2011) was intended to guide the use of federal earmarks to fund implementation. Now, since earmarks have been eliminated, the WIPP serves as an inventory of priorities for which funding is sought through various state and federal opportunities. The role of the partnership is to work to align the funding priorities among its local, county, state, and federal partners and assist in marketing these priorities to funding agencies.

As qualifying for Army Corps funding takes significant time and resources, only a very few projects from the 2011 and 2015 SIP update were either eligible or interested in pursuing Army Corps funding. Therefore, the corps decided to step back from its plan development role, permitting SEMCOG to take over.

WIPP projects are consistent with the five Planning Priorities and five Conservation Target Categories previously described; benefits are described by quantitative ecological or biological outcomes. More information on the Planning Priorities and Conservation Target Categories can be found in Appendix B.

Lake St. Clair Cooperative Invasive Species Management Area

A significant role of the partnership has been to facilitate activities that manage and reduce the presence of invasive species, most notably Phragmites. From 2009-2014, partnership members treated approximately 2,500 acres of Phragmites in the Anchor Bay area where high-quality coastal wetlands are located. In 2015,

municipal and organizational members from the partnership formed the Lake St. Clair Cooperative Invasive Species Management Area (CISMA). The CISMA is a simple partnership structure of government agencies, nonprofits, property owners, and educational institutions. The CISMA also has a specific geographic area in which it operates. The Michigan Department of Natural Resources (DNR) has established 21 CISMAs that geographically cover the state (Appendix C). The DNR partners with and financially supports CISMA partnerships in implementing the Terrestrial and Aquatic Invasive Species Management Plans for the State of Michigan in their local areas.

Five CISMAs operate within the region (**Figure 6**). These are:

- Lake St. Clair CISMA (Macomb and St. Clair County)
- Oakland County CISMA
- Detroit River Western Lake Erie CWMA (Wayne and Monroe)
- Jackson, Lenawee and Washtenaw CISMA, and
- GiLLS (Genesee Livingston Lapeer Shiawassee) CISMA.

These CISMAs could benefit from coordinating on certain issues:

- Sharing of information, BMPs and technical expertise,
- Outreach to local governments,
- Regional mapping of treatment progress,
- Coordinating with MDOT, and
- Developing a joint Public Education and Outreach Plan.

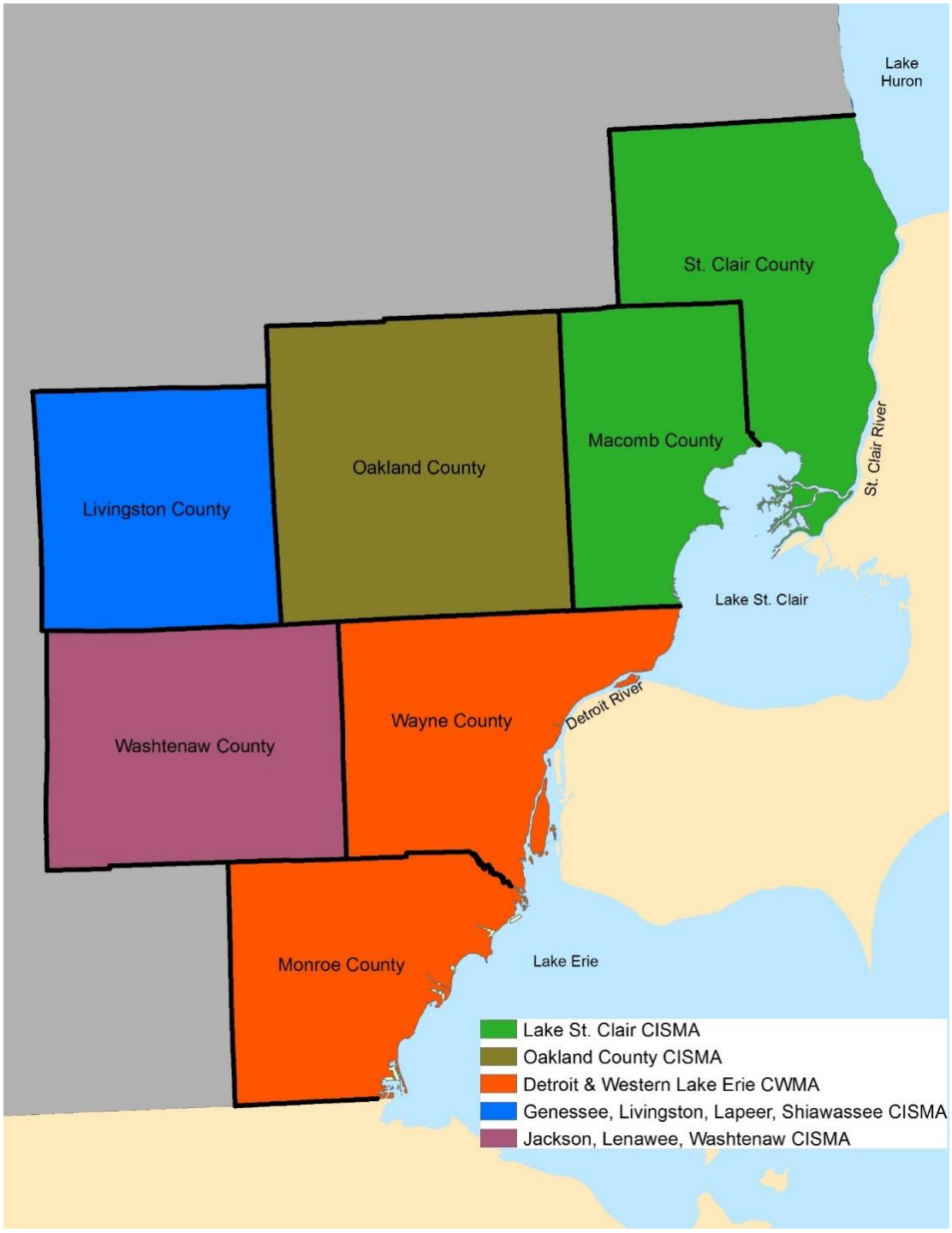
The LSC CISMA boundaries consist of the Lake St. Clair Watershed in Macomb and St. Clair Counties. Currently, the partners focus on five priority invasive species that receive the most resources – Phragmites australis, swallow-wort (Black and Pale), knotweed (Japanese, Giant, and Bohemian), European frog-bit, and Flowering rush. The CISMA is also beginning to focus on Red Swamp Crayfish, a watch-list species. The CISMA Partnership has a coordinator and 25 members, established by Memorandum of Understanding.

The CISMA develops and implements its annual work program through its coordinator, guided by its Invasive Species Management Plan (the Plan). The Plan includes strategies and outcomes for growing the CISMA, improving treatment BMPs, developing the early detection and response program, and implementing public information and outreach activities.

The CISMA was established within the management structure of the Lake St. Clair/St. Clair River Partnership. Projects in the new WIPP with invasive species infestation, can be directed to the CISMA for potential treatment in the next funding cycle. Before further restoration begins, the infestation should be managed, monitored and controlled throughout the restoration process. In addition, the CISMA operates management programs such as an Early Detection and Response (EDR) program. The EDR maps invasive species population distributions at priority sites, and tracks the advance of invasives from the DNR Watch List (species that may not have been discovered here yet, but could have significant impacts if allowed to enter and propagate). A Public Education and Outreach (PEO) program educates the public and offers opportunities to participate in CISMA activities. PEO activities include information sessions, training workshops, and boat wash and inspections at boating access sites.

Figure 7 shows acreage of invasive species mapped, acreage of invasives on priority sites ready for treatment, and total acreage of invasives treated since 2016. Since its inception in 2015, the Lake St. Clair CISMA has treated approximately 3,000 acres of invasive infestation.

Figure 6
Location of CISMAs in Southeast Michigan



Chapter 5: Submitting and Evaluating Projects

The WIPP process, to the extent possible, encourages conservation over restoration in order to conserve the last remaining natural areas in the Lake St. Clair Watershed. These areas can then be used in a complementary restoration effort that reconnects habitat areas around the Lake St. Clair Watershed for both ecological and economic purposes.

The WIPP contains an inventory of priority projects to implement the St. Clair River and Lake St. Clair Comprehensive Management Plan. The inventory of projects will provide an assessment of the ecological or biological benefits of the projects to the Lake St. Clair resource. Preliminary planning with basic project components, project partners, as well as an estimated cost, are included. A project may need additional planning and design before construction can begin. The projects also meet the following criteria:

- Readiness
  - The project can be initiated in the next 12 months.
- Feasibility
  - The project scope is clear and understandable.
  - Project partners needed for implementation have been identified and committed.
  - The project real estate is in control of project partners, or could be reasonably obtained.
  - Project benefit versus cost appears favorable.
- Sustainability
  - Project outcomes can reasonably be achieved and sustained

Evaluating Benefits

The WIPP offers the opportunity to sponsors of natural resource projects, to provide more detailed outcomes on the benefits of the project to improving the Great Lakes resource. Projects contained in this document have a strong connection with the Planning Priorities and Conservation Target Categories (Appendix B) listed below.

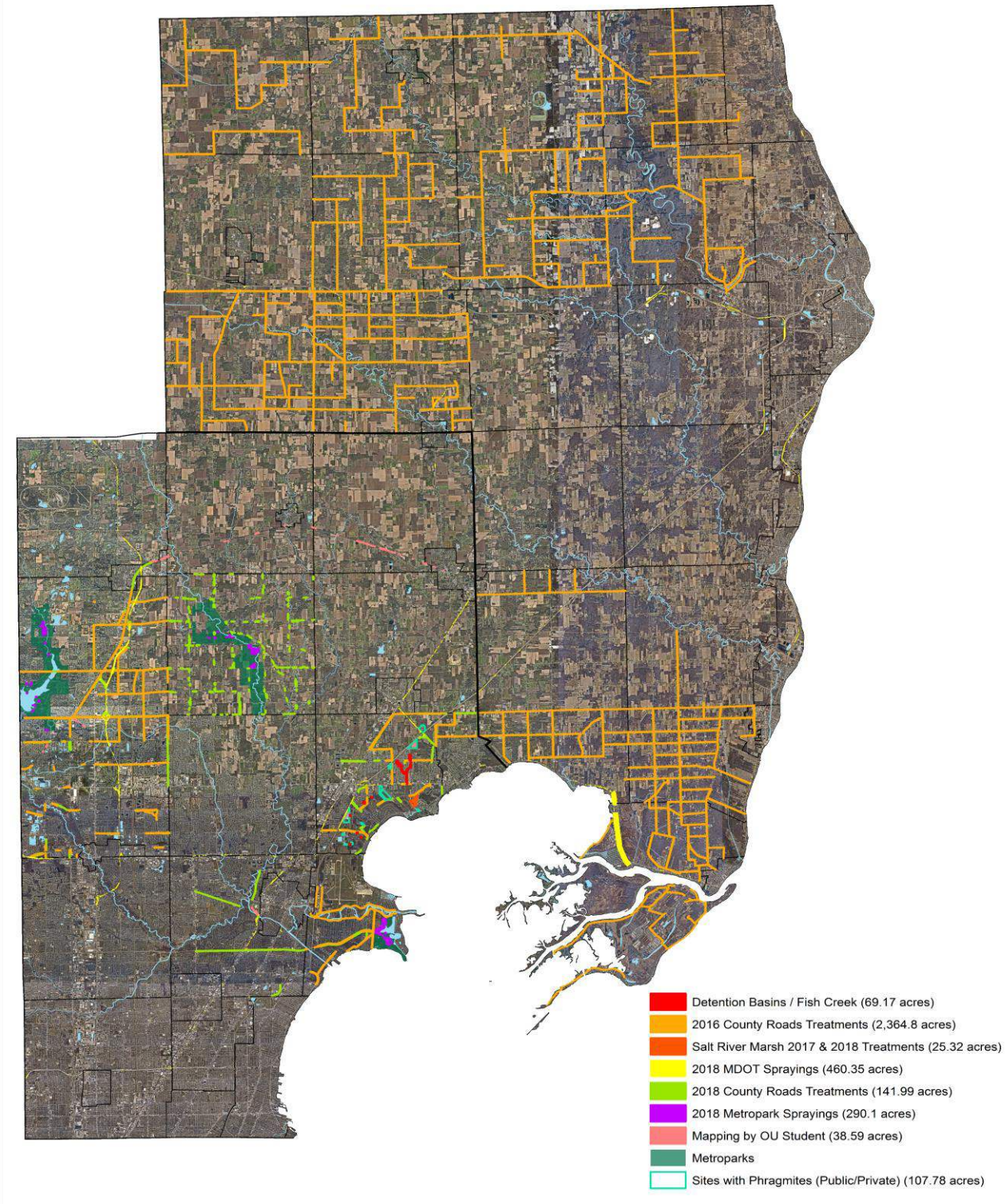
The Planning Priorities include the following five resource categories from the Management Plan:

- Conserve and restore habitat,
- Stormwater management through retrofits,
- Identify and reduce sources of bacteria,
- Use of technology in protecting and restoring Lake St. Clair, and
- Enhance public use of Lake St. Clair Watershed.

The five Conservation Target Categories are based on measurable targets now being developed by the Upper Midwest Great Lakes Landscape Coastal Collaboratives (UMGLLCC). Consistency with the following five resource categories provides additional information about the size and extent of the benefit or improvement to the resource:

- *Increase biological integrity*: An indicator of a site's health and ecologic and functional complexity supporting a diverse group of biological organisms.
- *Improve biodiversity*: An indicator of the diversity of biological organisms a site can support indicating healthy, resilient and adaptive Great Lakes habitats.
- *Reduce shoreline hardening*: Restoring a hardened shoreline to a stable naturalized shoreline.
- *Restore hydrologic regime*: The natural drainage regime works best when it is in a natural state.
- *Improve connectivity*: Maintaining hydrologically and ecologically connected wetlands is the foundation for maintaining functional and healthy Great Lakes.

Figure 7
Lake St. Clair CISMA Regional EDR Map



Chapter 6: Implementing the Priorities

Relationship of Projects to Great Lakes Regional Plans

The contents and philosophy of the WIPP for Lake St. Clair Watershed is directly related and embedded in the community of federal Great Lakes Regional Plans. The Lake St. Clair Watershed consists of Lake St. Clair proper (and all tributaries), two Areas of Concern (AOC) – the St. Clair River and Clinton River (and their RAPs) – and is directly adjacent to the Detroit River AOC.

The WIPP contains priorities for implementing the St. Clair River and Lake St. Clair Comprehensive Management Plan (2004). The management plan contains 110 recommendations for protecting, restoring and enhancing Lake St. Clair, but no priorities. The WIPP is a product of the Lake St Clair/St. Clair River Protection and Restoration Partnership – including U.S. ACOE, Great Lakes Commission, and U.S. EPA as its major federal partners. Projects in the WIPP are linked directly to the Clinton River Remedial Action Plan and St. Clair River Remedial Action Plan (contributing directly to their delisting) and the MS4 sub-watershed plans within those AOCs – established under the federal Stormwater Permit. In addition, the WIPP is consistent with both the Lake Erie Michigan Domestic Action Plan that includes an aspirational goal of 20 percent Phosphorus reduction by 2020 and a goal of a 40 percent Phosphorus reduction by 2025, and the St. Clair-Detroit River Wildlife Action Plan proposing an increase of riparian complexity and connectivity through softened shorelines by increasing native riparian vegetation.

In addition, all of the projects in the WIPP directly address the four Great Lakes Restoration Initiative (GLRI) action categories:

- Cleaning up Great Lakes Areas of Concern,
- Preventing and Controlling Invasive species,
- Reducing Runoff that contributes to Algal Blooms, and
- Restoring Habitat to Protect Native Species, and contribute to achieving their measurable targets in the GLRI Action Plan II.

Responsibility for restoring the SCDRS corridor falls under the aegis of the Lake Erie Lakewide Action and Management Plan. A list of coastal ecological restoration projects have been developed for funding consideration under the Lake Erie Lakewide Action Management Plan (LAMP).

Taking the Projects to Market

To assist project sponsors in marketing their projects to funding agencies, the partnership will sponsor meetings directly with multiple state and federal funding agencies. At these meetings, selected project sponsors will present their projects for review and discussion with the funders. Follow-ups for more information between funder and sponsor can be arranged as necessary.

Funding Opportunities

The implementation priorities are projects that are intended to help build the Blue Economy in Southeast Michigan. Most of the projects are for habitat restoration that will be directly enjoyed by local residents

and tourists, both local, regional and beyond. Many of these sites will make direct contributions to revenue receipts at area businesses, positively impacting local economic conditions.

There has been a gradual shift by federal resource agencies to use GLRI funds, not just in AOC areas, but in ecological restoration of coastal projects outside of AOCs. Examples include the Salt River Marsh Coastal Restoration, Brandenburg Park Naturalized Shoreline Restoration, and Ruedisale Park Naturalized Shoreline Restoration. State and federal agencies are forming collaboratives – such as the St. Clair Detroit River System and the Upper Midwest Great Lakes Landscape Coastal Collaboratives – that are helping to drive this change of focused funding on coastal projects.

The partnership is now exploring GLRI funding opportunities available through the Lake Erie LAMP. Approximately 16 federal agencies receive GLRI funds from EPA to help capitalize their internal programs. These agencies include U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration, U.S. Geological Survey, U.S. Park Service, U.S. Forest Service, and the U.S.D.A. Natural Resource Conservation Service. The agencies provide significant and flexible funding opportunities for implementing the active projects in the WIPP.

Chapter 7: Updating the WIPP

There are 60 new or existing priorities that are included in the WIPP (Appendix E). Approximately 90 percent are ecological restoration projects that will have numerous outcomes such as habitat restoration or conservation to help build Southeast Michigan's Blue Economy, improve water quality, and enhance recreational opportunities for local residents and tourists.

The WIPP is considered an iterative document and can be updated as often as once a year or as little as every five years. The partnership will determine the timing for WIPP updating. An agreed-upon outcome of the strategy is that it should support local needs and maximize the number of projects funded. In order to do that, information about each project will be provided in the implementation strategy – promotional meetings with our congressional supporters and federal and state programming staff and staff of land conservancies to assist them in identifying projects that have significant protection and restoration benefits. Projects that pass the upfront filters of readiness, feasibility, and sustainability will be arranged within the inventory in four lists that are located in this document at the following locations:

- Chapter 3: *Project Titles* is a listing of all the new or existing Active Projects in the WIPP.
- Appendix D: *Projects in Implementation* are those projects that have funding and are underway. These projects are presented in alphabetical order with information on location of project, Quantitative Outcomes, consistency with Planning Priorities, and cost.
- Appendix E: *Completed Projects* are those projects which are considered completed with final cost information. At this time, this listing will consist of project title, sponsor, and end cost.
- *Active Projects Consistent with the Plan Priorities and/or Conservation Target Categories:* This standalone list accompanies the document to ensure the project list is not obsolete and can receive projects at the behest of the Partnership . These projects are a priority of the sponsor for which funding is being sought. Projects are listed alphabetically in this spreadsheet and include such information as title; watershed in which project is located; quantitative outcomes; consistency with measureable benefits indicators such as Planning Priorities and Conservation Target Categories; other important project components; and cost.

Appendix A: Partnership Agreement

PARTNERSHIP AGREEMENT
FOR THE
LAKE ST. CLAIR/ST. CLAIR RIVER PROTECTION AND
RESTORATION PARTNERSHIP

PURPOSE:

The purpose of this partnering agreement is to establish the Partnership identified in Section 3089 of the Water Resources Development Act of 2007 (P.L. 110-114); the U.S. Army Corps of Engineers "shall establish and lead a partnership of appropriate Federal agencies (including the Environmental Protection Agency) and the State of Michigan (including political subdivisions of the State),

A) to promote cooperation among the Federal, State and local governments, and other involved parties in the management of the St. Clair River and Lake St. Clair watersheds, and
B) to develop and implement projects consistent with the management plan."

Developing these collaborative working relationships will enable the leveraging of resources for the restoration and protection of the St. Clair River and Lake St. Clair. These leveraged resources will be used to enhance the Partnership's ability to secure funding, including funds allowed by law through the Water Resources Development Act of 2007, the Great Lakes Restoration Initiative and other sources of assistance.

MISSION:

The mission of the Partnership is to realize a healthy St Clair River and Lake St. Clair watershed by protecting, restoring and enhancing the natural resources of the system through cooperative management among governments, associations, business, educational institutions and individuals residing in the watersheds.

PARTNERSHIP:

The Lake St. Clair/St. Clair River Protection and Restoration Partnership is a collaboration consisting of representatives of local, county, regional, state and federal agencies, non-governmental organizations, associations, and academic institutions.

PRIORITY AREAS:

The Partners intend to implement the recommendations of the Management Plan that address such issue areas as: Environmental Health of the Watershed, Habitat and Biodiversity, Human Health, Land Use, Fisheries, Recreational Boating and Commercial Navigation, and Monitoring. Initial implementation activities will focus on five priority planning areas of the Management Plan. Once formed, the Partnership will review the priority planning areas on an annual basis. Based on consensus, the priority areas will be revised and updated as needed. The priority planning areas are:

- *Conserve and restore habitat*: Improving the quality of the St. Clair River, Lake St. Clair and their watersheds will require the presence of quality natural habitat for fish and wildlife. This will result in expanding habitat quantity and diversity, which has been reduced by urbanization and development. Further, protecting natural habitat creates opportunities for enhanced eco-tourism, educational and recreational activities that also generate employment opportunities as part of the new Blue Economy.
- *Stormwater management through modifications*: Runoff from Southeast Michigan's existing impervious surfaces and agricultural sources contribute large pollutant loading of nutrients to Southeast Michigan's waterways including the St. Clair watersheds.
- *Identify and reduce sources of bacteria*: Bacteria from the intestines of humans or animals (such as E *coli*) are a recognized public health concern that often result in beach closings or the issuance of a TMDL (Total Maximum Daily Load) for a water body (i.e. lake, river, creek, drain, etc.). A TMDL for E *coli* brings increased federal or state regulation resulting in further local regulatory programming and expenses that will be borne by the communities that use the water body.
- *Use of technology in protecting and restoring the St. Clair River and Lake St. Clair*: Technology such as monitoring, modeling and observing systems provides a significant amount of information that can improve decision-making in the protection and restoration of the St. Clair River and Lake St. Clair.
- *Enhance public use of the St. Clair Watershed*: New recreation and ecotourism opportunities that generate interest of the local residents and tourists from afar in the St. Clair River and Lake St. Clair and its watershed will be part of this changing economic pattern. This shift to a blue economy will be characterized by increased access to the St. Clair River, Lake St. Clair and its tributaries for recreational opportunities. A public that has access to, and uses the resource, will engage in its protection.

BENEFITS TO THE PARTNERS

The Partners agree that the following represents benefits to the members and the resource:

1. Scarce fiscal resources are focused on projects with greatest value added on protecting and restoring the St. Clair watersheds;
2. The probability of securing funding and successful project implementation are enhanced;
3. There is a culture of collaboration and inclusiveness on what is best for the watershed;
4. Partners play a role in determining plan and project priorities;
5. The Partnership serves as a one-stop-shop for identifying and managing priorities of the Management Plan;
6. The Partnership will provide input to funders and Congressional delegates on implementation funding capabilities;
7. Assist in meeting goals of the Great Lakes Water Quality Agreement, including water safe for drinking and swimming, while providing abundant fish and wildlife safe for consumption.

INTENT OF SIGNATORY PARTIES

By signing this Agreement parties voluntarily intend to participate in the partnership process and work to implement the Management Plan's priorities and stated outcomes of the Strategic Implementation Plan through the following activities:

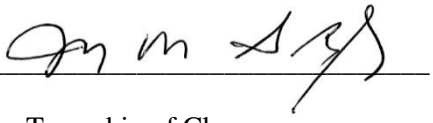
- Participating in planning and implementation activities,
- Assisting in developing and implementing the Strategic Implementation Plan,
- Providing technical expertise when appropriate,
- Promoting the Partnership to others within the community or organization, and
- Supporting projects that benefit the St. Clair River and Lake St. Clair watersheds.

NON-BINDING DOCUMENT

It is understood and agreed by the undersigned that nothing in this Partnership Agreement obligates any signatory to: expend resources either now or in the future, enter into any contract, assistance agreement, interagency agreement, or to incur other financial obligations. This Agreement does not limit, or in any way restrict, the statutory or contractual obligations of the signatories in carrying out their private and/or public responsibilities.

THE PARTNERING AGREEMENT

Progress in achieving the intent and purpose of the Partnering Agreement will be reviewed annually. Further, the Partnership Agreement will be reviewed and updated every five years to ensure it reflects current members and priorities of the Partnership. Any party may terminate their participation in the Agreement through written notice to the Partnership.

Name/Title  Date : June 22, 2011

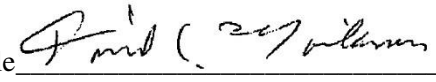
Representing: Township of Clay

Name/Title  Date: June 29, 2011

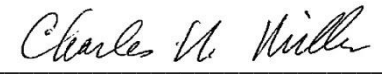
Representing: St. Clair County Environmental Health Division

Name/Title  Date: July 1, 2011

Representing: Macomb County Board of Commissioners

Name/Title  Date: July 7, 2011

Representing: Huron Clinton Metropolitan Authority

Name/Title  Date: July 11, 2011

Representing: Harsen's Island/St. Clair Flats Association

Name/Title  Date: July 11, 2011

Representing: Oakland County Water Resources Commissioner

Name/Title  Date: July 11, 2011

Representing: St. Clair County Community Foundation

Name/Title  Date: July 12, 2011

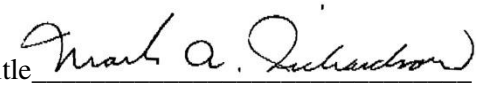
Representing: St. Clair River Binational Public Advisory Council

Name/Title  Date: July 19, 2011

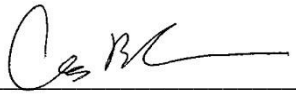
Representing: Macomb County Public Work Commissioner

Name/Title  Date: July 19, 2011

Representing: Clinton River Watershed Council

Name/Title  Date July 19, 2011

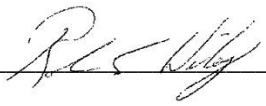
Representing: Clinton River Public Advisory Council

Name/Title  Date: July 20, 2011

Representing: Six Rivers Regional Land Conservancy

Name/Title  Date: July 20, 2011

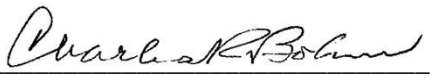
Representing: Eastern Michigan University

Name/Title  Date: July 20, 2011

Representing: St. Clair County Drain Commissioner

Name/Title  Date: August 8, 2011

Representing: Domtar, Inc.

Name/Title  Date: August 10, 2011

Representing: Township of Ray

Name/Title  Date: August 11, 2011

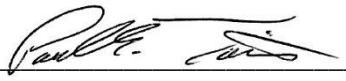
Representing: Township of Chesterfield

Name/Title  Date: August 12, 2011

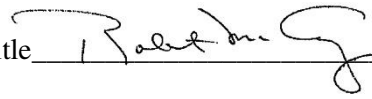
Representing: City of Rochester Hills

Name/Title  Date: August 12, 2011

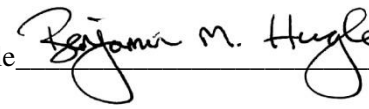
Representing: St. Clair County Parks and Recreation Commission

Name/Title  Date: August 15, 2011

Representing: Southeast Michigan Council of Governments

Name/Title  Date: August 16, 2011

Representing: Township of Ira

Name/Title  Date: August 17, 2011

Representing: City of St. Clair Shores

Name/Title_____ Date: August 19, 2011

Representing: City of Mount Clemens

Name/Title_____ Date: August 22, 2011

Representing: U.S.G.S. Great Lakes Science Center

Name/Title_____ Date: August 25, 2011

Representing: Michigan Department of Natural Resources

Name/Title_____ Date: August 25, 2011

Representing: Office of Great Lakes -- DEQ

Name/Title_____ Date: September 1, 2011

Representing: Army Corps of Engineers – Detroit District

Name/Title_____ Date: September 1, 2011

Representing: Oakland University

Name/Title_____ Date: July 19, 2011

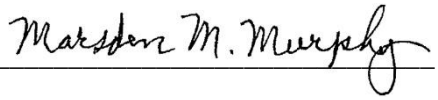
Representing: Macomb County Planning & Economic Development

Name/Title_____ Date: July 18, 2011

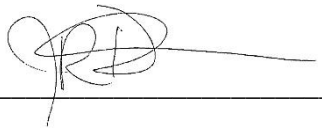
Representing: Cottrellville Township

Name/Title_____ Date: July 20, 2011

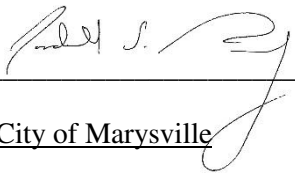
Representing: U.S.G.S. Michigan Water Science Center

Name/Title  Date: September 14, 2011

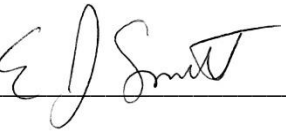
Representing: St. Clair County Metropolitan Planning Commission

Name/Title  Date: September 27, 2011

Representing Michigan Sea Grant

Name/Title  Date: October 11, 2011

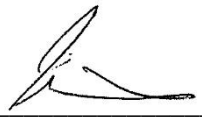
Representing: City of Marysville

Name/Title  Date: October 26, 2011

Representing: Macomb County Prosecutor's Office

Name/Title  Date: October 28, 2011

Representing: Macomb County Health Department

Name/Title  Date: February 27, 2012

Representing: Harrison Township

Appendix B: Planning Priorities and Conservation Target Categories

Conservation Target Categories

These five Conservation Target Categories are based on measurable targets now being developed by the Upper Midwest Great Lakes Landscape Coastal Collaboratives (UMGLLCC). Its Coastal Conservation Working Group (CCWG) is a collaborative of state and federal government agencies and nonprofits dedicated to establishing new methods and tools for restoring and tracking improvements to Great Lakes coastal landscapes. The CCWG has developed a process for evaluating coastal areas (wetlands and shorelines) for restoration. It includes establishing measurable targets, indicators, and goals. These new conservation target categories apply to both coastal and tributary areas of Lake St. Clair Watershed. Their purpose is to further highlight and assess the level of benefit (of a project) to the resource.

Increase biological integrity: An indicator of a site's health and ecological functional complexity supporting a diverse group of biological organisms. What is the benefit of the project to improving the biological framework or complexity that could lead to an improved biodiversity on the site?

Improve biodiversity: An indicator of the diversity of biological organisms a site can support, indicating healthy, resilient, and adaptive Great Lakes habitats. How is the project expected to improve biodiversity?

Reduce shoreline hardening: Restoring a hardened shoreline to a stable naturalized shoreline with native vegetation and fish, amphibian, and reptile habitation structures along shoreline/shallows in riverine, or coastal area. What will be the benefit of the project for improving habitat beneficial to wildlife that lives along the shoreline and shallows of water bodies?

Restore hydrologic regime: The natural drainage regime works best when it is in a natural state. The human engineered landscape includes dams, culverts, dredging, and channelization. *A healthy hydrologic regime* is essential for promoting a healthy and resilient Great Lakes Watershed. What is the benefit of the project for restoring naturalized hydrologic regime with native vegetation, at least locally?

Improve connectivity: Maintaining hydrologically and ecologically connected wetlands is the foundation for maintaining functional and healthy Great Lakes. Maintaining hydrological connection is important both for filtering and delivery of clean water to the lakes, as well as retention of stormwater to avoid property damage. Ecological connectivity is important for strong resilient landscapes to disease and drought as well as for fish and wildlife production. What is the benefit of the project for improving biological and hydrological connectivity?

Management Plan Priorities

In developing the original Strategic Implementation Plan, it was recognized that a set of Management Plan priorities was necessary to filter project submissions based on benefit to Lake St. Clair and its watershed. These Management Plan priorities were developed by the Lake St. Clair and St. Clair River Protection and Restoration Partnership. They were developed based on a review of the issues and recommendations of the St. Clair River and Lake St. Clair Comprehensive Management Plan and the collective technical and institutional knowledge of the partnership.

A guiding principle used in selecting the Management Plan priorities is that, "*The plan priorities need to recognize the value of the water and natural resources in enhancing the public use of Lake St. Clair and its watershed*."

Conserve and restore habitat

Rationale: Improving the quality of Lake St. Clair and its watershed will require the presence of quality natural habitat for fish and wildlife. Protecting natural habitat creates opportunities for enhanced eco-tourism and recreational activities that generate employment opportunities as part of the new Blue Economy. Finally, the benefits of reduced pollutant loadings will be marginalized if there is insufficient quality habitat to support wildlife. The reduced land values and reverted properties are providing an opportunity for additional conservation.

Example projects: These projects will focus on protecting and restoring high value habitat sites for improved recreational and eco-tourism opportunities, restoring fish and wildlife habitat in area streams and rivers, dam removal and restoration, and restoration of wetlands. Examples of these projects include:

- Invasive species removal.
- Protection through acquisition of wetland remnants.
- Restoration of wetland and upland habitat protection, and restoration of publicly owned or natural tributaries for fish and wildlife habitat.
- Protection and restoration of coastal and island habitat areas.
- Protection and restoration of natural areas within the St. Clair River Delta and surrounding areas.

Stormwater management through retrofits

Rationale: Runoff from Southeast Michigan's existing impervious surfaces exceed one trillion gallons annually – delivering three million pounds of phosphorus and 500 million pounds of sediment to the region's waterways. The volume and water quality impacts include:

- Reduced water quality,
- Less groundwater recharge,
- Increased flooding and property damage,
- Decreased recreational opportunities, and
- Loss of fisheries and habitat.

Much of the stormwater management activity is focused on reducing runoff from future development. But, future development will be limited; thus, the most benefit in reducing pollutant impacts from runoff would be realized from retrofitting existing land uses with green infrastructure. At this point, there is little financial support from existing federal or state programs for green infrastructure retrofits.

Nutrients from rural sources, such as runoff from farm fields, contribute large pollutant loadings to Southeast Michigan's waterways including the Lake St. Clair Watershed. Within Lake St. Clair, nutrients have been identified as a problem in the Clinton River subwatersheds, the Salt River, Marsac Creek, Swan Creek, Beaubien Creek, and Swartout Creek of Anchor Bay. The county drains and natural waterways of Anchor Bay often originate in rural townships where farm fields contribute significant nutrient loadings.

Example projects:

- Green infrastructure and low impact development projects.
- Green infrastructure in road right-of-ways.
- Native vegetation buffer projects in rural subwatersheds.

Identify and reduce sources of bacteria

Rationale: Bacteria from the intestines of humans or animals (such as E *coli*) are a recognized public health concern that often result in beach closings due to high bacteria levels that exceed water quality standards or the issuance of a TMDL (Total Maximum Daily Load) for a water body (i.e., lake, river, creek, drain, etc.) Beach closings can lead to lost revenue for area businesses and missed opportunities for public use and public awareness of the natural resource value of the lake.

A TMDL for E *coli* brings increased federal or state regulation resulting in further local regulatory programming and expenses that will be borne by the communities that use the water body. Water bodies in the Lake St. Clair Watershed with TMDLs for pathogens include the Clinton River and its tributaries, Crapau Creek, Vandervenne Drain, Salt River, Memorial Beach, MetroBeach, St. Clair River, Marsac Creek, and Swartout Creek. There is a public expectation that beach closings and TMDLs will be reduced, and the public's use of Lake St. Clair improved through economic and eco-tourism activities.

Monitoring would be an eligible item under this plan priority but only for project assessment, not for broad based identification of environmental trends.

Example projects:

- IDEP projects.
- On site disposal system remediation projects.
- Wildlife control projects.
- Collaborate with conservation districts in rural watersheds to make improvements to confined feed operations, etc.

Use of technology in protecting and restoring Lake St. Clair

Rationale: Technology such as monitoring, modeling, and observing systems provides a significant amount of information that can improve decision-making in protecting and restoring the St. Clair River and Lake St. Clair. Some of this technology is now being used in the watershed.

Monitoring that can detect the presence of a chemical hotspot or spill and provide concentration information that could assist in tracing the chemical back to its origin is an important technology for protecting public health. A significant amount of environmental monitoring goes on each year in Southeast Michigan's waterways −including the Clinton, Lake St. Clair, and St. Clair Rivers by county health departments and drain and public works offices.

Modeling that generates a graphic representation of the waterbody along with an accurate simulation of flow speed and direction, wind speed and direction, to project the path of a spill or hotspot plume and or trace the plume back to its source would have significant water quality and public health benefits.

Observing systems that measure flow speed and direction, wind speed and direction, precipitation, water temperature, Ph, salinity, turbidity – contribute the information necessary to model an aquatic scenario or undertake numerous planning and engineering projects.

Example projects:

- Hotspot assessment.
- Source water protection.
- Post project assessment.
- Comprehensive (trend identification).
- Projecting beach closings due to pathogen bacteria.
- Emerging chemicals (pharmaceuticals, fire retardents, pesticides, chlorinated paraffins).
- Identification of aquatic sites for habitat protection and restoration.
- Boating safety.
- Commercial navigation.
- Integrating real time modeling with real-time monitoring.

Enhance public use of Lake St. Clair Watershed

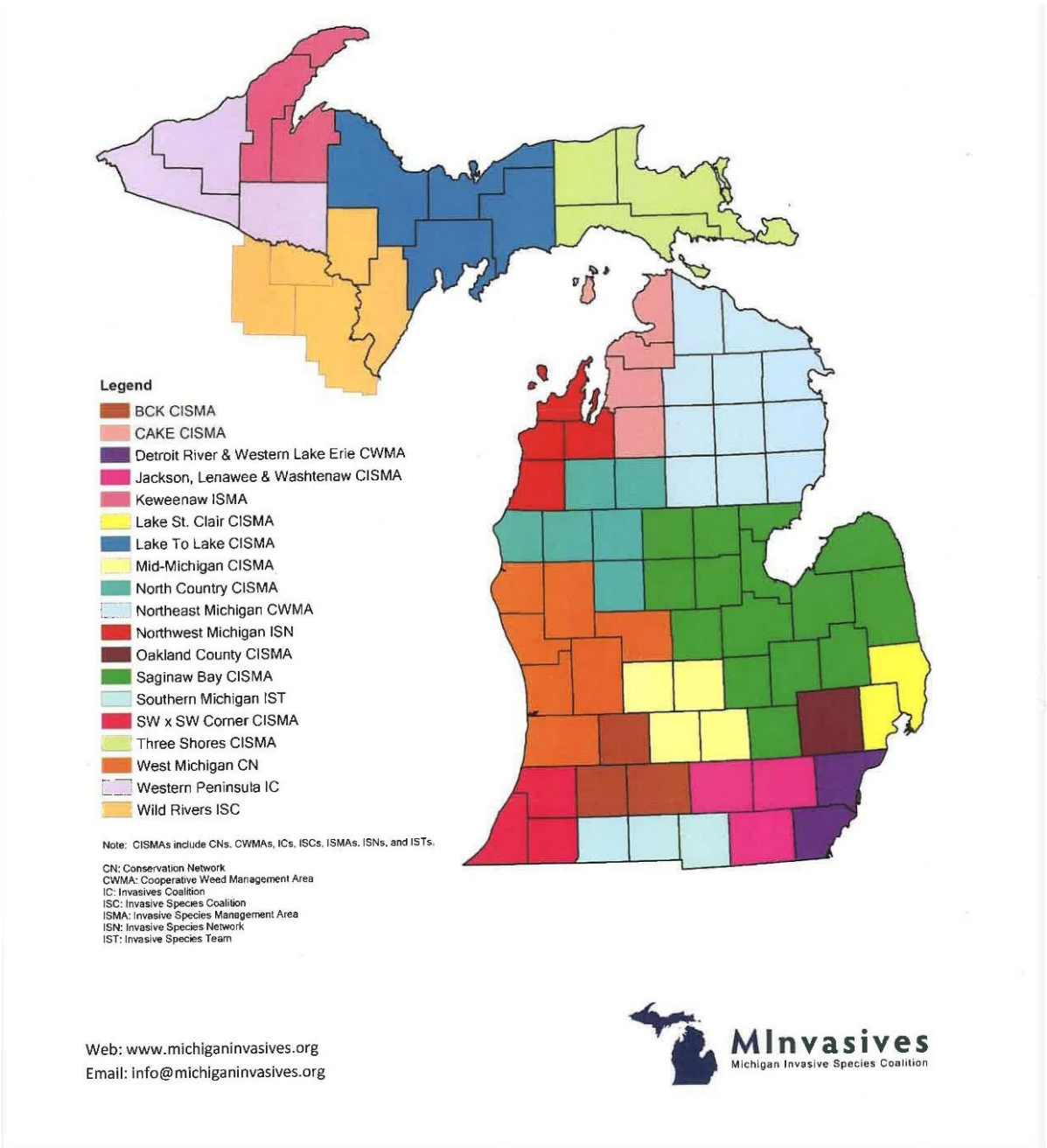
Rationale: Southeast Michigan is currently undergoing the largest restructuring of its economy since the great depression. Business, local government, and other stakeholders are collaborating to position the region to take advantage of the Blue Economy. The Blue Economy will use the water resources and coastal assets of the region in economic opportunities to generate new commercial and employment opportunities.

New recreation and ecotourism opportunities that generate interest of the local residents and tourists from afar in Lake St. Clair and its watershed will be part of this changing economic pattern. This shift to a blue economy will be characterized by increased access to Lake St. Clair and its tributaries for recreational opportunities. A public that has access to, and uses the resource will engage in its protection. Conservation of high value habitat areas are also beneficial as both local and regional ecotourism assets. These protected conservation areas have other benefits, including stabilizing property values as the lake and its watershed become more of an economic development magnet, and serve as sites to do public education and outreach, creating support for further investment.

Example projects:

- Water-based recreation and ecotourism opportunities in Lake St. Clair and its tributaries.
- Establishment of blueway corridors.
- Purchase land for public access.

Appendix C: Map of Michigan CISMAs



Appendix D: Complete Active Projects List

#	**Active Project Titles**
1	Augusta Drain Green Infrastructure Pocket Park, Pontiac
2	*Addressing Emerging Pollutants in the Clinton River and Lake St. Clair*
3	Anchor Bay Woods Preserve and Expansion
4	An Ecosystem Restoration Approach to Improving Water Quality at OU (Pioneer Dr. Tributary)
5	Belle River Stabilization and Shoreline Habitat Restoration at Memphis City Park (Access)
6	Belle River Shoreline Restoration in Columbus Township (Access)
7	Black River Port Huron Yacht Club Habitat Restoration Project
8	Blue Water River Walk Shoreline Stabilization (Access)
9	Blue Water River Walk Fishing Pier Extension (Access)
10	Brandenburg Park Naturalized Shoreline Restoration (Access)
11	Bunce Creek Fish Passage Restoration
12	Casco Township Park Launch and Trailhead (Access)
13	Chapaton Basin Outfall Shoreline Restoration (Access)
14	Clinton River and Lake St. Clair Green Macomb – Urban Forestry Programming for Infrastructure Assessment
15	Clinton River at Yates Cider Mill Fish Habitat Restoration (Access)
16	Clinton River Spillway Master Plan (Access)
17	*Clinton River Watershed/Subwatershed Management Plans Update*
18	Columbus County Park Acquisition (Access)
19	Columbus County Park Shoreline Restoration (Access)
20	*Contaminant Source ID and Assessment in Clinton River AOC*
21	*Complete management actions for Fish and Wildlife Consumption BUI for the St. Clair River AOC*
22	Create TMDL Implementation Plan for Belle River Watershed

#	**Active Project Titles**
23	Dam Analysis for Removal with Ecological Restoration
24	*Develop an Invasive Species Management Program*
25	Develop Healthy Urban Waters Initiative in Red Run Drain
26	*Develop Sustainable large woody debris management system for Blueway Trails*
27	European frog-bit Control at
28	*Expanded Illicit Discharge Elimination Program (IDEP)*
29	Fishery Assessment at Metroparks – Post Ecological Restoration Monitoring
30	Five Year Plan to Retrofit all parking lots at both MCC Campus'
31	Ford Estate Cove & Wetland Restoration Program (Access)
32	Freedom Hill/Red Run Drain Area Riparian Restoration (Access)
33	Galloway Creek Ecosystem Restoration at Oakland University's Katke-Cousins Golf Course
34	Galloway Creek North Tributary Restoration Project
35	Grosse Pointes/Lake Shore Drive Coastal Wetland Restoration
36	George W. Kuhn Drain Facility Green Infrastructure Demonstration and Education Center
37	Harsens Island Conservation & Recreation Area
38	*Implementing Green Streets in the Lake St. Clair Watershed*
39	Implementing St. Clair County Non-motorized Trail Plan (Access)
40	Invasive Species Control at Oakland University
41	Ira Township Water Works Paddling Launch (Access)
42	Krispin Greenway Trailhead and Paddle Launch (Access)
43	Lester Bammel Drain Restoration
44	Lake St. Clair Metropark Beach Redesign and Restoration (Access)
45	Lake St. Clair Metropark – Parking Lot Retrofit Phase 3 & 4
46	Lake St. Clair Metropark Shoreline Restoration (Access)
47	Lake St. Clair Stormwater Quality Maintenance Yard Project

#	**Active Project Titles**
48	Macomb Township Nature Park (Access)
49	Mainland Drain Project Wetland and Stream Restoration
50	Maintenance and Monitoring of St. Clair River AOC Habitat Restoration Sites
51	Marine City Dredge Cut Accessible Canoe and Kayak Launch (Access)
52	North Branch Clinton River and Coon Creek Floodplain Acquisition, Wetland Restoration and Greenway Vision Development (Access)
53A	North Branch Greenway Vision – Clinton Township Projects (Access)
53B	North Branch Greenway Vision – Macomb Township Projects(Access)
53C	North Branch Greenway Vision – Ray/Armada/Lenox Townships Projects (Access)
53D	North Branch HMS Model via USACE to Use as Scenario Modelling
54	North Channel County Park Acquisition (Access)
55	Palms Creek Habitat Restoration Project (Access)
56	Pine River Watershed Management Plan Development
57	Protect Critical Ecosystem in the Belle River Watershed
58	Red Run Drain Contaminated Sediment Removal
59	Red Run Drain Sediment Removal
60	Red Run Flow reduction through Public/Private Partnerships
61	Reducing CSO's from Martin District
62	Removing Wingford Dam with Restoration of Fish Habitat
63	Revegetation of Wolcott Mill Golf Course (Access)
64	Rochester Hills Accessible Kayak Launch at Innovation Hills (Access)
65	Ruedisale Point Park Coastal Restoration (Access)
66	Salt River Marsh Coastal Restoration (Access)
67	Salt River Marsh Nature Center (Access)
68	Selfridge Air National Guard Base (P4 Projects)

#	**Active Project Titles**
69	Selfridge Air National Guard Base (REPI Key Property Acquisitions)
70	Source Water Protection from Landfill Leachate
71	*St. Clair River AOC Life After Delisting Plan*
72	St. Clair Shores Floating Vegetation Study/ Design and Remediation
73	Sterling Relief Daylighting and Green Infrastructure Retrofit (Access)
74	Turtle Woods Preserve (Access)
75	Updating Lake Huron Direct and St. Clair Direct Watershed Management Plans
76	Wadhams Road Black River Non-motorized Access Site Acquisition (Access)
77	Water Quality Improvement and Green Infrastructure in Lake St. Clair Direct Drainage
78	Waterfront Park Shoreline Restoration (Access)
79	Webber Paddle Park Shoreline Restoration (Access)
80	Wetland Restoration at Oakland University
81	Woodsong County Park Shoreline Stabilization and Paddling Launch

Appendix E: Projects in Implementation

Projects in Implementation									
			Management Plan Priorities Addressed						
Projects	**Watershed**	**Quantitative Outcomes**	**Conserve and restore habitat**	**Stormwater management /retrofits**	**Reduce sources of bacteria**	**Use of technology in protecting Lake St. Clair**	**Enhance public use of Lake St. Clair**	**Other Aspects of Management Plan Addressed by Project**	**Estimated Cost**
#194 Black Creek Marsh Land Acquisition Sponsor: Huron Clinton Metroparks Contact: Tyler Mitchell tyler.mitchell@metroparks.org	Clinton River	• 113 acres of marsh protected	X				X		$400,000
#286 Clinton River and Lake St. Clair Green Infrastructure Assessment, Design and Implementation Sponsor: Macomb County Public Works Office	Clinton River/Lake St. Clair	• Green Infrastructure assessment sediment loading reductions, habitat restoration BUI removal in the Clinton River Area of Concern – stormwater runoff volume and pollutant loading reduction, air pollutant reduction, replanting trees in urban areas, etc.	X	X			X	Pollution prevent, Public education and outreach, planning and assessment	$1,000,000
#336 Eliminating E-coli Sources and Beach Closures	Lake St. Clair/Lake St. Clair	Eliminate approximately 1,000,000 gallons per year of pollution impact,	X		X		X	Stormwater management, Public	$748,000

Projects in Implementation									
			Management Plan Priorities Addressed						
Projects	**Watershed**	**Quantitative Outcomes**	**Conserve and restore habitat**	**Stormwater management /retrofits**	**Reduce sources of bacteria**	**Use of technology in protecting Lake St. Clair**	**Enhance public use of Lake St. Clair**	**Other Aspects of Management Plan Addressed by Project**	**Estimated Cost**
Sponsor: Macomb County Public Works Office Contact: Jeff Bednar jeff.bednar@macombgov.edu	Direct Drainage	reduction of beach closure, improve perception of LSC water quality						Education and outreach	
#59 Illicit Discharge Elimination Program (IDEP) Sponsor: Macomb County Public Works Office Contact: Jeff Bednar jeff.bednar@macombgov.org	Clinton River/Lake St. Clair Direct Drainage	• Improvement in water quality of surface waters and reductions in beach closures			X				$800,000
#192 Phragmites Control through biofuel production *Sponsor:* Oakland University *Contact*: Don Newlin newlin@oakland.edu	Clinton River	Phragmites removal in select wetland areas of the Clinton River watershed. Feasibility study for scaling-up biofuel production – Peer review publication on alternative to control using glyphosate or toxic chemical	X				X	Pollution prevention, Toxics	$50,000

Projects in Implementation									
			Management Plan Priorities Addressed						
Projects	**Watershed**	**Quantitative Outcomes**	**Conserve and restore habitat**	**Stormwater management /retrofits**	**Reduce sources of bacteria**	**Use of technology in protecting Lake St. Clair**	**Enhance public use of Lake St. Clair**	**Other Aspects of Management Plan Addressed by Project**	**Estimated Cost**
#65 Safe Guarding Our Drinking Water Real-Time Monitoring *Sponsor*: SEMCOG *Contact*: Kelly Karll karll@semcog.org	Huron to Erie Corridor	• On-going sentinel program using real time monitoring at 14 drinking water plants from Port Huron down to Monroe • All 14 WTP are participating in the program				X	X		$375,000

Appendix F: Completed Projects

Projects and Sponsor	Outcomes	Year Completed	Cost
St. Clair River Living Shoreline *Sponsor*: City of Marysville/Office of the Great Lakes *Contact*: Randy Fernandez rfernandez@cityofmarysvillemi.com	Shoreline and shallows along St. Clair River just south of Chrysler Park Beach was enhanced by removing 1,800 feet of failing seawall and replacing it with rock, native trees and wildflowers, providing habitat for a variety of fish and wildlife.	2012	$1,500,000
Paint Creek Dam Removal and Habitat Restoration *Sponsor*: Clinton River Watershed Council/ Office of the Great Lakes *Contact:* Eric Diesing eric@crwc.org	Complete removal of dam structure allowing for upstream connectivity 2,000 feet of stream restoration including habitat structure and bank stabilization	2012	$725,000
Blue Water River Walk *Sponsor:* Community Foundation of SCC *Contact:* Mark Brochu mbrochu@stclaircounty.org	0.8 of a mile of shoreline restored just south of confluence with Black River 0.75 acres of fish spawning habitat, 2.25 acres of riparian and nearshore nursery habitat, and submerged woody debris. And Native shrubs and wildflowers planted along shore providing food and cover for wildlife.	2013	$2,250,000
Blue Water River Walk Interpretive Features Sponsor: St. Clair County Parks and Recreation Commission/Friends Of the St. Clair River *Contact*: Kirsten Lyons bluewaterriverwalk@gmail.com	Provided interpretive panels (Signage) explaining the the restoration of the river and function of the wetlands	2017	$325,722
Port Huron Shoreline Restoration – North *Sponsor:* City of Port Huron EPA and OGL *Contact:* Amanda Huddas huddasa@porthuron.org	Planting native wildflowers along shoreline 8,800 ft^2 of Cobbles placed in shallows substrate for fish spawning along 300 ft of shoreline	2013	$944,500

Projects and Sponsor	Outcomes	Year Completed	Cost
Wolcott Mill dam removal and shoreline stabilization *Sponsor: Huron Clinton Metroparks* *Contact:* Tyler Mitchell tyler.mitchell@metroparks.com	Removed dam, restored habitat, reduced soil erosion and sedimentation and improved recreational opportunity	2013	$125,000
Paint Creek Fish Passage Restoration *Sponsor: City of Rochester* *Contact*: Tim Pollizzi pollizzit@rochesterhills.org	15 miles of fish passage restored, 5,000 linear feet of stream channel restored/enhanced, 300 feet of slope failure restored, 2 fish barriers removed.	2013	$750,000
Inwood Road /Stoney Creek Stormwater Improvements *Sponsor:* Huron Clinton Metroparks *Contact:* Tyler Mitchell tyler.mitchell@metroparks.com	Improved water quality of the Stoney Creek, reduced stormwater runoff, reduced sedimentation, and improved fish and macroinvertebrate habitat.	2014	Local funding
Restoration of Fish Spawning Habitat in the St. Clair River *Sponsor:* U.S. Geological Survey/USEPA Contact Rose Ellison *ellison.rosanne@epa.gov*	Construction of 6.3 acres of fish spawning reefs predominantly for Lake Sturgeon use within southern and central St. Clair River at Harts Light (3.8 Ac), Point Aux Chenes(1.5 Ac) and Middle Channel (1 Ac)	2014	$4,390,000
Lake St. Clair Parking Lot Retrofit Phase 1&2 *Sponsor: Huron Clinton Metroparks* *Contact:* Tyler Mitchell tyler.mitchell@metroparks.com	Reduction of 8 acres of impervious surface Use of native vegetative BMPs to reduce untreated runoff Improved water quality for swimming, and aesthetics	2014	$1,500,000
Port Huron Shoreline Restoration – South *Sponsor: City of Port Huron, EPA, OGL* *Contact:* Amanda Huddas huddasa@porthuron.org	Located in upper St. Clair River, shoreline site was treated for invasive species and shrubs 480 feet of coastal restoration including removal and, planting new trees on shore and anchored whole tree trunks in shoreline/ shallows for fish habitat/ Added vegetative cover for young fish	2015	$500,000

Projects and Sponsor	Outcomes	Year Completed	Cost
Update of Oakland County Stormwater Design Standards *Sponsor: Oakland County Water Resources Office* Contact: Jim Wineka winekaj@oakgov.com	Update stormwater design standards to reduce sediment, nutrient loadings, concentrations of soluable reactive phosphorus, and potentially reduce harmful algal blooms	2015	$150,000
Water Quality Assessment of North Branch Clinton River *Sponsor: Huron Clinton Metroparks* *Contact*: Tyler Mitchell tyler.mitchell@metroparks.com	To assess impacts of land uses within Wolcott Mill Metropark	2015	$20,000 (locally funded)
Columbus County Park Expansion *Sponsor*: St. Clair County Parks and Recreation Commission *Contact*: Mark Brochu mbrochu@stclaircounty.org	26 acre expansion parcel to Columbus County Park purchased with funding from MNRTF	2016	$79,902
Cottrellville Township/St. Clair River Shoreline Restoration. *Sponsor: Cottrellville* TWP/ EPA, OGL *Contact:* Mary Agnes Simons supervisor@cott-township.org	Remove ~ 400 feet failing seawall Restore 1 acres of shoreline/shallows to natural state with cobbles, woody structures, nesting boxes and native vegetation, and rock breakwalls to create calm areas for fish.	2016	$2,500,000
Lake Level Control Structures Flow Monitoring Clinton River *Sponsor:* Oakland County Water Resources Office *Contact*: Joel Kohn kohnj@oakgov.com	Reduce peak flow and manage low flow in the Main Branch of the Clinton River	2016	$300,000
Marine City Drain Habitat Restoration *Sponsor:* St. Clair County Drain Office/EPA, OGL *Contact:* Bob Wiley rwiley@stclaircounty.org	Located at the confluence of Marine City Creek Drain and the St. Clair River, 1,000 feet of creek channel and invasive species restoration (5 acres) 0.25 acres of river habitat 63 feet of shoreline restored and construction of inwater rock breakwalls, cobble substrates and woody	2016	$865,875

Projects and Sponsor	Outcomes	Year Completed	Cost
	structures benefiting fish and wildlife.		
St. Clair County Wetland Park *St. Clair County Parks and Recreation Commission/OGL* *Sponsor:* St. Clair County PARCs *Contact:* Mark Brochu mbrochu@stclaircounty.org	Located immediately south of Blue Water River Walk, A 2.75 acre brownfield was restored and converted to two wetland ponds providing habitat for reptiles, amphibians and migrating waterfowl.	2016	1,039,500
Sterling Heights Household Hazardous Waste Outreach *Sponsor:* Macomb County Health Department *Contact:* Stacey McFarlane stacey.mcfarlane@macombgov.org	10.5 tons of household hazardous waste removed from waste stream each year.	2016	$25,000
Lake St. Clair Metropark Marsh Restoration Phases I-II *Sponsor: Huron Clinton Metroparks* *Contact*: Tyler Mitchell tyler.mitchell@metroparks.com	500 acres of marsh protected and restored	2017	$1,000,000
Cuttle Creek Fish Habitat Restoration *Sponsor: City of Marysville/ EPA, OGL* *Contact*: Randy Fernandez rfernandez@cityofmarysvillemi.com	Restored 3,000 feet of creek using natural channel design, Outcomes included: including benthic habitat riffle and pools, 1.1 acres of backwater wetlands, 6.5 acres of forest, 0.3 acres of open water, 6.1 acres of riparian habitat including floodplain valley, shoreline and shallows, etc. Restored fish passage throughout entire 3,000 feet of project	2017	$2,753,855
Harsens Island Blueway System Krispin Drain Restoration *Sponsor:* Clay Township/EPA, OGL *Contact:* Artie Bryson supervisor@claytownship.org	The Krispin Drain runs through Harsens Island and out to Lake St. Clair. Decades of sediment and invasive species had severely degraded the habitat of drain. Three miles of strategic dredging to reshape the drain along with treatment and removal of Phragmites.	2018	$4,000,000

Projects and Sponsor	Outcomes	Year Completed	Cost
	Drain is now St. Clair Counties newest blueways paddling route		
Sylvan Glen Restoration *Sponsor: City of Troy/OGL* *Contact*: Bill Huotari cityengineer@troymi.gov	3,500 feet of channel reconstruction/restoration, Restored hydrologic connectivity to over 10 wetland areas ~ 34 tons of sediment erosion eliminated	2017	$850,000
Building Collaborations to Manage Phragmites around Lake St. Clair *Sponsor*: Southeast Michigan Council of Governments *Contact:* Bill Parkus parkus@semcog.org	Successfully established Lake St. Clair CISMA a partnership of 24 governments and organizations that treat invasive species in Macomb and St. Clair County.	2018	$1,650,000
Restoring Fish Passage in Lane Drain *Sponsor*: City of Troy, EPA, OGL *Contact*: Bill Huotari Bill Huotari cityengineer@troymi.gov	Removal of aquatic center pond dam Restored connectivity to headwater streams, Three acres of riparian vegetation add, Restored 1,400 acres of stream channel and reconnected 1.7 miles of stream	2018	$1,600,000
Chrysler Beach Fishing Pier and Habitat Restoration *Sponsor:* City of Marysville *Contact:* Randy Fernandez rfernandez@cityofmarysvillemi.com	Installation of fishing pier Retrofitted parking lot with 1 acre of green stormwater infrastructure elements to improve storm water management	2019	$3,900,000
Clinton River Corridor *Sponsor*: Sterling Heights/MDEQ *Contact*: Jason Caster jcaster@sterling-heights.net	Bank stabilization reduced an estimated 230,000 tons of sediment loading annually Cleared 40 log jams, corridor is now navigable since 1970s,	2019	$4,500,000

Projects and Sponsor	Outcomes	Year Completed	Cost
	Increased fish spawning habitat quantity and diversity from clearing river and reducing sedimentation		
Harley Ensign/Clinton River Mouth Coastal Restoration *Sponsor*: Army Corps of Engineers *Contact*: Ken Verkest kverkest@harrison-township.org	11 acres of wetland habitat restored. 4 acres of sedge meadow and wet mesic habitat added 11 large woody debris habitat structures installed	2019	$3,900,000
Clinton River Spillway Coastal Restoration Sponsor: Macomb County Public Works Office/Office of Great Lakes Contact: Danielle Devlin danielle.devlin@macombgov.org	1.75 miles of Channel Restoration, 44,000 sq/yds riffle and glide creation , 1.5 miles of off channel aquatic habitat, 8.5 acres of floodplain shelf excavation, 17,000 ft^2 of marsh restored 2,000 yd^3 of woody debris installed over two miles of shoreline improvement and stabilization	2019	$4,000,000
Partridge Creek/Gloede Drain Habitat Restoration *Sponsor*: Macomb County Public Works Office/Office of the Great Lakes *Contact*: Danielle Devlin danielle.devlin@macombgov.org	52 acres of habitat, river and wetland restored	2019	$2,300,000
McBride Drain Habitat Restoration *Sponsor*: Macomb County Public Works Office/Office of the Great Lakes *Contact*: Danielle Devlin danielle.devlin@macombgov.org	~4 miles of habitat restored 10 acres of re-vegetation and invasive species control Restoration of fish habitat	2019	$2,500,000
Clinton River in Shelby Township *Sponsor*: Shelby Township/ Office of the Great Lakes *Contact*: Chelsea Oland coland@shelbytwp.org	Restoration of ~ 1 mile of natural river channel,	2019	$1,700,000

Projects and Sponsor	Outcomes	Year Completed	Cost
	Installation of soft shoreline structures and instream fish habitat structures Establishment of native-vegetation		
Galloway Creek Fish Passage Restoration *Sponsor:* Oakland University *Contact*: Ryan Giorio giorio@oakland.edu	2 miles of fish passage restored, Restore 4,000 ft. of channel to stable meandering Creek. Install 2,710 ft. of toewood. Install 1,053 ft. of log riffles.	2019	$3,000,000
Galloway Wetland Restoration *Sponsor:* Oakland University *Contact*: Ryan Giorio giorio@oakland.edu	• ~ 2 acres of wetland habitat restoration • Establishment of native vegetation	2019	$370,000
Avon Creek Restoration, Phase I-IV *Sponsor*: Farmington Hills *Contact*: Tim Polizzi polizzit@rochesterhills.org	Restored 1,250’ of incised creek with natural channel design. Restored 4,800 ft^2 of pool habitat. Restored 4,850 ft^2 of riffle habitat. Added 40 pieces of woody material for bank stability and macroinvertebrate habitat. 10,000 ft^2 of riparian buffer. 2,000 feet of headwater stream connection for fish and macroinvertebrate migration.	2019	$150,000

SEMCOG Officers
2019-2020

Donald Hubler
Chairperson
Trustee,
Macomb Intermediate
School District

Brenda Jones
Vice Chairperson
President,
Detroit City Council

Chris Barnett
Vice Chairperson
Supervisor,
Orion Township

Mandy Grewal
Vice Chairperson
Supervisor,
Pittsfield Township

Pauline Repp
Vice Chairperson
Mayor,
City of Port Huron

Eric Sabree
Vice Chairperson
Treasurer,
Wayne County

Phil Weipert
Immediate Past Chair
Commissioner,
Oakland County

Kathleen Lomako
Executive Director