1. Application Cover

A. **Project Title**: Saginaw Bay Watershed Conservation Partnership

B. **Project Director and Contact Information**:
Mary Fales, Saginaw Bay Project Director of the Nature Conservancy, and James (Jim) Byrum, President of the Michigan Agri-Business Association will co-manage the project.

Mary Fales
The Nature Conservancy
101. E Grand River Avenue
Lansing, MI 48906
517-316-2278
mfales@tnc.org
rdell@tnc.org (alternative address)

Jim Byrum
Michigan Agri-Business Association
1501 North Shore Dr., Suite A
East Lansing, MI 48823
517-336-0223
jim@miagbiz.org

C. **Name of Lead Partner submitting the application and other collaborating partners**:
The Nature Conservancy (Mary Fales) will be submitting the application on behalf of the entire project team. Co-leading this project is the Michigan Agribusiness Association (Jim Byrum). Any changes made to the project team from the pre-proposal have been highlighted. The project team members have been categorized as follows: **partners** (providing in kind, non-cash partner contributions, appear in normal font), **sponsors** (providing cash support to one of the organizations co-leading this project, appear in bold) or general **supporters** (italicized):

- AGRONOMY RETAILERS:
  - **Star of the West Milling Co.**
  - **Crop Production Services**
  - **Helena Chemical Co.**
  - Brown Milling
  - Michigan Agricultural Commodities
  - **Wilbur Ellis**
  - **Cooperative Elevator Company**
- COMMODITY GROUPS:
  - *Michigan Bean Commission*
  - **Michigan Sugar**
  - *Michigan Soybean Promotion Committee*
  - **Michigan Milk Producers Association**
  - *Michigan Corn Growers Association*
  - *Michigan Wheat Program*
- CONSERVATION GROUPS:
  - Ducks Unlimited
  - National Wild Turkey Federation
  - Delta Institute
- HIGHER EDUCATION:
  - Michigan State University-Institute of Water Research
- FOUNDATIONS
  - **Charles Stewart Mott Foundation**
- STATE AND FEDERAL AGENCIES:
  - Michigan Department of Natural Resources (MDNR)
  - *Michigan Department of Environmental Quality (MDEQ)*
  - *Michigan Department of Agriculture and Rural Development (MDARD)*
  - *U.S. Fish and Wildlife Service (FWS)*
- CORPORATIONS:
  - Kellogg Company
  - Agri-Drain Corporation
  - Ecosystem Services Exchange, Inc.
  - Mondelēz International, Inc.
  - **The Andersons, Inc.**
  - **Dow Agro Sciences, LLC**
- REGIONAL WATERSHED GROUPS:
  - *Cass River Greenway*
  - *Friends of the Shiawassee River*
  - *Chippewa Watershed Conservancy*
  - *Little Forks Conservancy*
  - *Saginaw Basin Land Conservancy*
  - *Partnership for the Saginaw Bay Watershed*
  - *Saginaw Bay Resources Conservation and Development*

We believe that each project partner listed above is eligible according to the APF requirements because they can be categorized as organizations or entities having an established history working with producers on agricultural land including the seven agronomy retailers, the commodity groups, the conservation organizations and the regional watershed groups.

D. Mailing Address and telephone number (lead partner):

The Nature Conservancy
101. E Grand River Avenue
Lansing, MI 48906
517-316-2278

E. **Funding Pool**: Critical Conservation Area (Great Lakes Region)

F. **Short Summary**:

Michigan's Saginaw Bay which is an ecologically significant and highly productive embayment of Lake Huron, supporting a diversity of fish, waterfowl, and other wildlife; it has the largest concentration of coastal wetlands in the Lake Huron Basin and serves as Lake Huron's most important source for several fish species, including walleye, of interest economically, recreationally and ecologically. Although Saginaw Bay itself and the Saginaw Bay Watershed provide people and nature with a suite of values, the region faces many severe water quality challenges including loss of fish and wildlife habitat, excessive levels of nutrients, sediments and frequent nuisance algal blooms. To protect and restore Saginaw Bay, restoration and conservation need to be achieved within the Saginaw Bay Watershed. The primary resource concern is water quality degradation caused in part, by high levels of phosphorus and sediment-laden runoff which impact water quality and severely limit the health of the local fish communities (Sowa et al. 2011). Secondary resource concerns include inadequate habitat for fish and wildlife and soil health.

The Saginaw Bay Watershed Conservation Partnership intends to develop a new strategy to address the primary and secondary resource concerns in this region (water quality degradation and inadequate fish and wildlife habitat). The partnership is a unique collaboration between conservation organizations, agronomy retailers, higher education, commodity groups, agribusinesses and state and federal agencies. **Our goal is to develop and deliver outcome-based agricultural conservation by utilizing the agricultural supply chain as a delivery mechanism to increase conservation practices throughout the Saginaw Bay Watershed**. This project has three main innovations including 1) setting ecologically relevant, outcome-based implementation goals, 2) tracking progress towards outcome-based goals by using new online tools that can target practices to the parcels able to deliver the highest ecological benefits and 3) harnessing the influence of agribusiness as an efficient and complementary delivery mechanism.

Our proposal is composed of four main objectives. Specifically, we will (1) develop the framework (training, communication plan and processes) to demonstrate a successful, innovative, outcome-based implementation project by partnering with agribusinesses to deliver conservation to private landowners in targeted areas of the Saginaw Bay Watershed. We will (2) improve water quality and increase and enhance fish and wildlife habitat by implementing approximately 55,000 acres of new conservation practices by 2019 that reduce sediment and nutrient laden runoff in eligible watersheds utilizing EQIP. We will (3) improve water quality and increase and enhance fish and wildlife habitat by implementing at least 400 acres of wetland-related practices by 2019 utilizing ACEP. We will (4) demonstrate and document project effectiveness by using the Great Lakes Watershed Management System to spatially quantify acres implemented and total sediment and nutrients reduced annually while also working with project partners to monitor long term trends in fish community health.

G. **Geographic Focus**:
This project will be focused on improving water quality and biodiversity throughout select tributaries of the Saginaw Bay Watershed by increasing the use of specific conservation practices in the following subwatersheds (see Attachment 1):

Tier 1 Targeted Areas (associated HUC codes):

- Cass River (908 mi^2): 04080205
- Shiawassee River (1160 mi^2): 04080203
- Pigeon River (145 mi^2): 0408010302
- Pinnebog River (195 mi^2): 0408010303

Tier 2 Targeted Areas (associated HUC codes):

- Pine and Chippewa Rivers (1,025 mi^2): 04080202
- Kawkawlin River (250 mi^2): 0408010202
- Sebewaing River (103 mi^2): 0408010301

H. Application Form SF-424 (see attached)

I. Leverage Federal Funds Along with Partner Resources, by Project Objective

Objective	Federal Funds	Partner (In Kind)	Partner (Cash)
A. Develop the framework to demonstrate a successful, innovative, outcome-based implementation project by partnering with agribusinesses to deliver conservation to private landowners in targeted areas of the Saginaw Bay Watershed.	$692,000 (TA-EQIP)	**$1,486,250 total** based on: $780,000 (TNC), $150,000 (MSU), $550,000 (MABA) $6,250 (Kellogg)	$100,000 provided by C.S. Mott Foundation to TNC and $45,000 provided by various entities to MABA (see Section L for more information)
B. Improve water quality and increase and enhance fish and wildlife habitat by implementing approximately 55,000 acres of new conservation practices by 2019 that reduce sediment and nutrient laden runoff in eligible watersheds utilizing EQIP.	$16,448,000 (FA-EQIP)	**$13,722,750 (update total**) based on: $12,937,500 (CCAs), $100,000 (Agri-Drain), $105,000 (ESE), $154,000 (Delta), $395,000 (TNC) $6,250 (Kellogg) $25,000 (Mondelēz)	NA
C. Improve water quality and increase and enhance fish and wildlife habitat by implementing at least 400 acres of wetland-related practices by 2019 utilizing ACEP.	$2,860,000 (FA-ACEP)	**$294,000 total** Combined contribution from NWTF, MDNR, DU and MDARD	NA
D. Demonstrate and document project effectiveness by using the Great Lakes Watershed Management System to spatially quantify acres implemented and total sediment and nutrients reduced annually while also working with project partners to monitor long term trends in fish community health.	NA	**$1,420,000 total** Based on: $720,000 (TNC), $150,000 (MSU), $550,000 (MABA)	$60,000 provided by C.S. Mott Foundation to TNC

J. Application Form 424A (see attached)

K. **Project Start and End Dates**:

This project is designed to run a full five years beginning on or about January 2015 (or a date as directed by NRCS) and ending on or about December 2019. A total of $19,308,000 is being requested in FA under EQIP and ACEP programs, and $692,000 is being requested in TA from EQIP (total project cost is $20,000,000). Funds being requested under EQIP and ACEP as described below:

Year		EQIP	ACEP	Total Funding Request
FY2015	Partner Requested FA $	$2,000,000	$572,000	$2,572,000
	Partner Requested TA $	$195,400	$0	$195,400
	Partner Provided FA $	$0	$0	$0
	Partner Provided TA $	$2,645,900	$744,414	NA
	Partner Admin $	$40,542	$40,542	NA
	Acres (CSP and ACEP)	NA	25	25
FY2016	Partner Requested FA $	$3,612,000	$572,000	$4,184,000
	Partner Requested TA $	165,400	$0	$165,400
	Partner Provided FA $	$0	$0	$0
	Partner Provided TA $	$2,555,829	$739,934	NA
	Partner Admin $	$32,794	$32,794	NA
	Acres (CSP and ACEP)	NA	93	93
FY2017	Partner Requested FA $	$3,612,000	$572,000	$4,184,000
	Partner Requested TA $	$150,400	$0	$150,400
	Partner Provided FA $	$0	$0	$0
	Partner Provided TA $	$2,555,531	$738,761	NA
	Partner Admin $	$32,905	$32,905	NA
	Acres (CSP and ACEP)	NA	94	94
FY2018	Partner Requested FA $	$3,612,000	$572,000	$4,184,000
	Partner Requested TA $	$90,400	$0	$90,400
	Partner Provided FA $	$0	$0	$0
	Partner Provided TA $	$2,555,398	$741,628	NA
	Partner Admin $	$33,538	$33,538	NA
	Acres (CSP and ACEP)	NA	94	94
FY2019	Partner Requested FA $	$3,612,000	$572,000	$4,184,000
	Partner Requested TA $	$90,400	$0	$90,400
	Partner Provided FA $	$0	$0	$0
	Partner Provided TA $	$2,557,741	$744,791	NA
	Partner Admin $	$34,171	$34,171	NA
	Acres (CSP and ACEP)	NA	94	94
Totals	Partner Requested FA $	$16,448,000	$2,860,000	$19,308,000
	Partner Requested TA $	$692,000	$0	$692,000
	Partner Provided FA $	$0	$0	$0
	Partner Provided TA $	$12,865,397	$3,709, 706	NA
	Partner Admin $	$173,949	$173,949	NA
	Acres (CSP and ACEP)	NA	400	400

1. All requested TA funds are attributed to Michigan State University-Institute of Water Research to support training of the project team on the use of the Great Lakes Watershed Management System (GLWMS), ongoing

technical support of the tool, travel, supplies and enabling communication between the GLWMS and NRCS Toolkit database.

L. Funding Request by Activity by Fiscal Year:

Fiscal Year	Activity	Lead Partner	Federal FA requested	Federal TA Requested	Non-Federal Resources (in-kind)	Non-Federal Resources (Cash)
			Amount and Program	Amount and Program	Amount and Description	Amount and Description
FY15	Calculate outcome-based goals	TNC	$0	$0	$60,591	$0
	Upgrade GLWMS for project needs	TNC, MSU-IWR	$0	$65,133 (EQIP, for MSU-IWR)	$80,000	$0
	Develop and conduct training for CCAs	TNC, MSU-IWR, MABA, CCAS, Delta, Biologist, ESE	$0	$65,133 (EQIP, for MSU-IWR)	$843,640	$0
	Conduct outreach to private landowners (EQIP)	CCAs, Kellogg, Mondelez	$0	$0	$1,063,125	$0
	Host field days/workshops for farmers	MABA, TNC, CCAs, Kellogg	$0	$0	$299,875	$0
	Assist landowners in executing EQIP contracts	CCAs, Agri-Drain, ESE	$2,000,000 (EQIP)	$0	$847,574	$0
	Conduct outreach to private landowners (ACEP)	Farm Bill Biologist funded by DU, NWTF, MDNR, MDARD	$0	$0	$17,640	$0
	Assist landowners in executing ACEP projects	Farm Bill Biologist, TNC	$572,000 (ACEP)	$0	$52,164	$0
	Report on project achievements per USDA requirements	TNC, MABA. MSU-IWR, Biologist, ESE, Delta	$0	$65,133 (EQIP, for MSU-IWR)	$206,789	$0
FY16	Develop and conduct training for CCAs	TNC, MSU-IWR, MABA, CCAS, Delta, Biologist, ESE	$0	$55,133 (EQIP, for MSU-IWR)	$769,026	$0
	Maintain and upgrade GLWMS as needed	TNC, MSU-IWR	$0	$55,133 (EQIP, for MSU-IWR)	$106,386	$0
	Conduct outreach to private landowners (EQIP)	CCAs, Kellogg	$0	$0	$1,038,125	$0
	Host field days/workshops for farmers	MABA, TNC, CCAs, Kellogg	$0	$0	$312,670	$0
	Assist landowners in executing EQIP contracts	CCAs, Agri-Drain, ESE	$3,612,000 (EQIP)	$0	$847,574	$0
	Conduct outreach to private landowners (ACEP)	Farm Bill Biologist funded by DU, NWTF, MDNR, MDARD	$0	$0	$17,640	$0
	Assist landowners in executing ACEP projects	Farm Bill Biologist, TNC	$572,000 (ACEP)	$0	$52,164	$0
	Report on project achievements per USDA requirements	TNC, MABA. MSU-IWR, Biologist, ESE, Delta	$0	$55,133 (EQIP, for MSU-IWR)	$217,766	$0

Fiscal Year	Activity	Lead Partner	Federal FA requested	Federal TA Requested	Non-Federal Resources (in-kind)	Non-Federal Resources (Cash)
FY17	Develop and conduct training for CCAs	TNC, MSU-IWR, MABA, CCAS, Delta, Biologist, ESE	$0	$50,133 (EQIP, for MSU-IWR)	$796,326	$0
FY17	Maintain and upgrade GLWMS as needed	TNC, MSU-IWR	$0	$50,133 (EQIP, for MSU-IWR)	$106,686	$0
FY17	Conduct outreach to private landowners (EQIP)	CCAs	$0	$0	$1,035,000	$0
FY17	Host field days/workshops for farmers	MABA, TNC, CCAs	$0	$0	$309,645	$0
FY17	Assist landowners in executing EQIP contracts	CCAs, Agri-Drain, ESE	$3,612,000 (EQIP)	$0	$847,574	$0
FY17	Conduct outreach to private landowners (ACEP)	Farm Bill Biologist funded by DU, NWTF, MDNR, MDARD	$0	$0	$17,640	$0
FY17	Assist landowners in executing ACEP projects	Farm Bill Biologist, TNC	$572,000 (ACEP)	$0	$52,164	$0
FY17	Report on project achievements per USDA requirements	TNC, MABA. MSU-IWR, Biologist, ESE, Delta	$0	$50,133 (EQIP, for MSU-IWR)	$218,066	$0
FY18	Develop and conduct training for CCAs	TNC, MSU-IWR, MABA, CCAS, Delta, Biologist, ESE	$0	$30,133 (EQIP, for MSU-IWR)	$771,426	$0
FY18	Maintain and upgrade GLWMS as needed	TNC, MSU-IWR	$0	$30,133 (EQIP, for MSU-IWR)	$108,786	$0
FY18	Conduct outreach to private landowners (EQIP)	CCAs	$0	$0	$1,035,000	$0
FY18	Host field days/workshops for farmers	MABA, TNC, CCAs	$0	$0	$310,345	$0
FY18	Assist landowners in executing EQIP contracts	CCAs, Agri-Drain, ESE	$3,612,000 (EQIP)	$0	$847,574	$0
FY18	Conduct outreach to private landowners (ACEP)	Farm Bill Biologist funded by DU, NWTF, MDNR, MDARD	$0	$0	$17,640	$0
FY18	Assist landowners in executing ACEP projects	Farm Bill Biologist, TNC	$572,000 (ACEP)	$0	$52,164	$0
FY18	Report on project achievements per USDA requirements	TNC, MABA. MSU-IWR, Biologist, ESE, Delta	$0	$30,133 (EQIP, for MSU-IWR)	$220,166	$0
FY19	Develop and conduct training for CCAs	TNC, MSU-IWR, MABA, CCAS, Delta, Biologist, ESE	$0	$30,133 (EQIP, for MSU-IWR)	$773,826	$0
FY19	Maintain and upgrade GLWMS as needed	TNC, MSU-IWR	$0	$30,133 (EQIP, for MSU-IWR)	$111,186	$0
FY19	Conduct outreach to private landowners (EQIP)	CCAs	$0	$0	$1,035,000	$0
FY19	Host field days/workshops	MABA, TNC,	$0	$0	$311,145	$0

Fiscal Year	Activity	Lead Partner	Federal FA requested	Federal TA Requested	Non-Federal Resources (in-kind)	Non-Federal Resources (Cash)
	for farmers	CCAs,				
FY19	Assist landowners in executing EQIP contracts	CCAs, Agri-Drain, ESE	$3,612,000 (EQIP)	$0	$847,574	$0
FY19	Conduct outreach to private landowners (ACEP)	Farm Bill Biologist funded by DU, NWTF, MDNR, MDARD	$0	$0	$17,640	$0
FY19	Assist landowners in executing ACEP projects	Farm Bill Biologist, TNC	$572,000 (ACEP)	$0	$52,164	$0
FY19	Report on project achievements per USDA requirements	TNC, MABA. MSU-IWR, Biologist, ESE, Delta	$0	$30,133 (EQIP, for MSU-IWR)	$222,519	$0
		Totals	**$19,308,000**	**$692,000**	**16,923,000**	**$0**

- **Total RCPP Request: $20,000,000**
- **Total FA Request: $19,308,000**
- **Total leveraged resources provided by partnership**: $16,923,000
  1. The Nature Conservancy: $1,895,000
     - Includes $160,000 cash support provided by Charles Stewart Mott Foundation
  2. Michigan Agri-Business Association (MABA): $1,100,000
     - Includes cash support provided by the following entities:
     - Crop Production Services - $5,000
     - Wilbur-Ellis Co. - $5,000
     - Helena Chemical Co. - $5,000
     - The Andersons, Inc. - $5,000
     - Co-op Elevator Co. - $5,000
     - Michigan Sugar - $5,000
     - Star of the West Milling Co. - $5,000
     - Dow AgroSciences - $5,000
     - Michigan Milk Producers Association - $5,000
  3. Michigan State University-Institute of Water Research (MSU-IWR): $300,000
  4. Agronomy Retailers (7): $12,937,500
     - The in-kind partner contribution provided by the group of seven agronomy retailers was originally estimated by estimating approximately 125 Certified Crop Advisors and staff would lend time toward achieving project goals (at 138 hours annually per staff member) at an average rate of $150 per hour. The project team believes that that the administrative burden of tracking the actual number of hours that each CCA and staff member spends working on this project would be enormous, due to the nontraditional nature of this promotion work, in which CCA's will incorporate promotion of conservation practices into their everyday interactions with farmers. Instead, we believe that the best way to quantify the leveraged contribution of the agronomy retailers is to report on actual outcomes. Each retailer will work with MABA and TNC to report the acreage of practices achieved via the program (which will contribute toward our ultimate goal of implementing 55,000 acres). In addition, we propose to apply a standard multiplier (hours of staff time per acre implemented) to estimate the monetary value of the agronomy retailers' partner contributions over the life of the project.
  5. Ducks Unlimited/National Wild Turkey Federation/MDNR/MDARD: $294,000
     - This funding will support a full time Farm Bill Biologist position.

6. AgriDrain Corporation (AgriDrain): $100,000
7. Ecosystem Services Exchange, Inc (ESE): $105,000
8. Delta Institute (Delta): $154,000
9. Kellogg Company (Kellogg): $12,500
10. Mondelēz International, Inc. (Mondelez): $25,000

M. Intended Producer and Landowner Participants

The agronomy retailers and their certified crop advisers will work with any interested producer farming eligible cropland, pastureland, or incidental land within any of the eligible watersheds. The 2012 Census of Agriculture indicates there are approximately 3,229 principal operators in the eligible watersheds. All values are approximations derived using county level data apportioned to watersheds based on the percent of each county represented in each watershed. We estimate that 15% of those operators will most likely meet requirements set out under our scoring rubric (approximately 484 operators).

Watershed Name	Number of farms	Number of principal operators	Total Number of operators
Cass	1,432	735	2,177
Kawkawlin	335	175	482
Pigeon	227	126	340
Pine/Chippewa	1,496	754	2,210
Pinnebog	268	149	401
Sebewaing	631	317	941
Shiawassee	1,894	973	2,885
Totals	**6,283**	**3,229**	**9,435**

N. Describe the land that will be the focus of the project

This program will target cropland, grassland, pastureland and other land incidental to agricultural production (wetlands and riparian lands) in the identified eligible watersheds (see Attachment 1). We anticipate that most of the EQIP and ACEP practices will occur on cropland and pastureland (total acres outlined in table below).

Eligible Watersheds	Size (acres)	Total Cropland (acres)	Total Cropland (% of watershed[1])	Pastureland (acres)	Pastureland (% of watershed[1])
Cass	581,035	336,337	58	10,823	1.9
Kawkawlin	144,150	66,860	46	2,102	1.5
Pigeon	100,710	75,355	75	1,109	1.1
Pine/Chippewa	656,389	261,490	40	18,610	2.8
Pinnebog	119,329	90,257	76	1,270	1.1
Sebewaing	250,431	144,385	58	4,298	1.7
Shiawassee	810,046	349,788	43	11,836	1.5
Totals	**2,662,093**	**1,324,475**	**50**	**50,050**	**2**

1. % indicate of percent of total watershed area. Source 2012 Census of Agriculture

2. Letter of Support from NRCS State Conservationist (see attached)

3. Natural Resource Objectives and Actions

a) Primary and Secondary Resource Concerns

THE PROBLEM: Michigan's Saginaw Bay Watershed is the largest watershed within the State of Michigan, and a critical component of the Great Lakes ecosystem. Containing more than 8,700 square miles and encompassing portions of 22 Michigan counties, the watershed accounts for about 15 percent of Michigan's total land area. It is home to nearly 1.4 million people and is a key part of Michigan's agricultural production. The watershed, and ultimately, Saginaw Bay face many severe water quality challenges including excessive levels of nutrients and sediments (the primary resource concern), degraded soil health and loss of fish and wildlife habitat (secondary resource concern) and nuisance algal blooms (tertiary resource concern). Throughout the watershed, high levels of phosphorus and sediments are impacting water quality and severely limiting the health of the local fish communities (Sowa et al. 2011). In fact, research has indicated that a significant amount of the sediment and phosphorus input to the Great Lakes originates from cultivated cropland, pastureland and hayland within the watershed (USDA-NRCS 2011). Intensive agricultural land use has shown a need for conservation practices to help reduce nutrient and sediment runoff across the Saginaw Bay watershed.

Our RCPP proposal is rooted in years of research and partnership development through our involvement in an effort funded by NRCS's Conservation Effects Assessment Project (CEAP). The first phase of the project developed relationships between current health of the fish community (based on actual fish sampling data) and predicted water quality parameters based on modeling via the Soil and Water Assessment Tool (SWAT) for the entire Saginaw Bay Watershed (Sowa et al. 2011). Fish community health (Figure 1A) is measured using the Index of Biotic Integrity (IBI; Lyons et al. 1996; Wang et al. 2003; Wang et al. 2007). The analysis revealed that summer levels of sediment, and spring, fall and winter levels of organic phosphorus were the water quality variables most limiting ecological health of the waterways in the Saginaw Bay Watershed (Figure 1B). These resource concerns have been identified and confirmed via a variety of in depth studies of the Great Lakes Region and the watershed itself including:

- Assessment of the effects of conservation practices on the cultivated cropland in the Great Lakes Region (2011), research conducted under the USDA's CEAP-Cropland Category (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/ceap/?cid=stelprdb1045403)
- Assessing benefits of conservation practices to the biological integrity of agricultural streams in MI and WI (Sowa et. al 2011), research conducted under the USDA's CEAP- Wildlife Category (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1047736.pdf)
- Lake Huron Lakewide Management Plan (http://www.epa.gov/greatlakes/huron.html)
- The Sweetwater Sea: Strategies for Conserving Lake Huron Biodiversity (http://www.miseagrant.umich.edu/explore/restoration/biodiversity/)
- Saginaw Bay Area of Concern Remedial Action Plan (http://michigan.gov/documents/deq/Saginaw_2012_Stage_2_RAP_FINAL_382894_7.pdf)
- Great Lakes Regional Collaboration Strategy to Restore and Protect the Great Lakes, by the Great Lakes Regional Collaboration of National Significance (GLRC), (http://www.glrc.us/documents/strategy/GLRC_Strategy.pdf)
- Priorities for reducing phosphorus loadings and abating algal blooms in the Great Lakes: Opportunities and challenges for improving Great Lakes aquatic ecosystems, 2012, Great Lakes Commission (http://glc.org/category/docs/water-quality/)
- Saginaw Bay Coastal Initiative Phosphorus Committee Report, 2009 (http://www.michigan.gov/documents/deq/sagbayphosrep_283289_7.pdf)
- Update of phosphorus load data for Saginaw Bay, 2010, Michigan Department of Environmental Quality (Report MI/DEQ/WB-10/006; not available online)

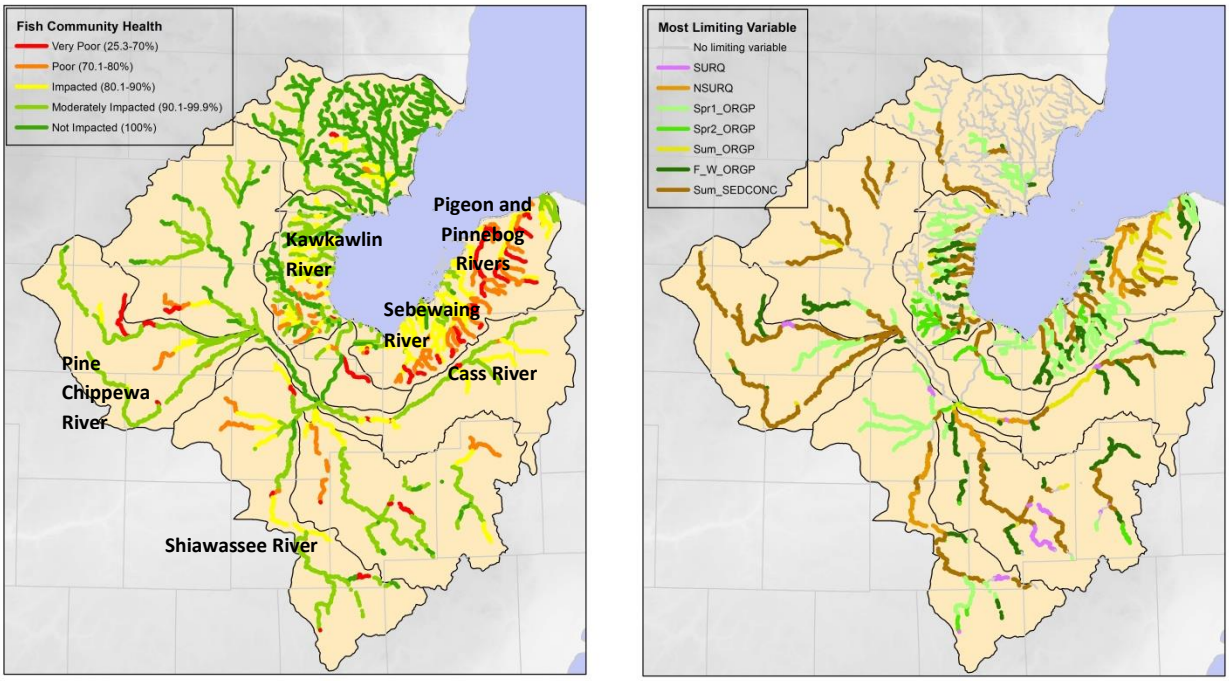


Figure 1A (left panel). Current fish community health as measured by the Index of Biotic Integrity. Figure 1B (right panel). Most limiting water quality variable is indicated (SURQ: surface runoff, NSURQ: nitrogen in surface runoff, SPR1_ORGP: early spring organic phosphorus, Spr2_ORGP: late spring organic phosphorus, SUM_ORGP: summer organic phosphorus, F_W_ORGP: fall winter organic phosphorus, Sum_SEDCONC: summer sediment.

b) Proposed Objectives and Relationship to Resource Concerns

SOLUTION: This project is designed to sustain the freshwater, riverine environment of the Saginaw Bay Watershed by working with the agricultural industry to optimize the placement, timing and type of management practices. Conservation practices that are proven to reduce nutrient and sediment laden runoff and enhance fish and wildlife habitat need to be implemented in the highest risk areas across the watershed, at a scale that ensures ecological results, to address primary and secondary resource concerns. We believe that setting outcome-based, ecologically-significant implementation goals; tracking project implementation via the Great Lakes Watershed Management System and partnering with agribusinesses and their certified crop advisers to deliver conservation directly to agricultural landowners is the most effective way to achieve this solution.

OBJECTIVES:

A. Develop the framework (training, communication plan and processes) to demonstrate a successful, innovative, outcome-based implementation project by partnering with agribusinesses to deliver conservation to private landowners in targeted areas of the Saginaw Bay Watershed.
B. Improve water quality and increase and enhance fish and wildlife habitat by implementing approximately 55,000 acres of new conservation practices by 2019 that reduce sediment and nutrient laden runoff in eligible watersheds utilizing EQIP.
C. Improve water quality and increase and enhance fish and wildlife habitat by implementing at least 400 acres of wetland-related practices by 2019 utilizing ACEP.

D. Demonstrate and document project effectiveness by using the Great Lakes Watershed Management System to spatially quantify acres implemented and total sediment and nutrients reduced annually while also working with project partners to monitor long term trends in fish community health.

Our modeling efforts (described above) predict that successfully achieving these objectives will address the primary and secondary resource concerns in the Saginaw Bay Watershed by substantially reducing sediment and nutrient runoff and increasing and enhancing fish and wildlife habitat. Most conservation practices *and* their associated water quality benefits (tons of sediment reduced and pounds of phosphorus reduced) will be tracked using the Great Lakes Watershed Management System. Some conservation practices (drainage water management, nutrient management plans and nutrient management activities) will be tracked by the project team and reported separately.

Pollutant load reductions vary substantially depending on practice type and land/soil characteristics. Each implemented practice will be modeled at the field level (using the Great Lakes Watershed Management System) to account for soil, slope and land cover variations. It is impossible to provide specific estimates of sediment and nutrient reductions from this project until actual implementation occurs. However, due to the substantial acreage goal we predict that the projects will reduce approximately 6,200 tons of sediment (12,400,000 lbs), approximately 40,000 lbs of total phosphorus and 425,000 lbs of total nitrogen.

The project has been developed to achieve ecological improvements at the watershed scale in the Saginaw Bay Watershed. Therefore, edge of field monitoring is not a suitable monitoring strategy to capture the effectiveness of 55,000 acres of conservation practices across a large geographic area. The ultimate environmental outcome is a measurable improvement in riverine water quality. The Conservancy uses fish community health (measured by the Index of Biotic Integrity) to gauge ecological improvement over time. The Michigan Department of Environmental Quality evaluates fish community health in each watershed by conducting fish monitoring every five years. The Conservancy will use long term trends in fish IBI to monitor project effectiveness over time.

c) Actions to Achieve Each Objective

The project objectives (A-D) and their associated actions are described below:

A. Develop the framework to demonstrate a successful, innovative, outcome-based implementation project by partnering with agribusinesses to deliver conservation to private landowners in targeted areas of the Saginaw Bay Watershed.

- ACTION A.1. The Nature Conservancy will expand current modeling and data analyses to calculate outcome-based goals to ensure ecological results in Tier 2 watersheds (goals have already been developed for Tier 1 watersheds). Completed using non-federal leveraged resources.
- ACTION A.2. MSU-IWR will make improvements to the Great Lakes Watershed Management System (GLWMS) to enable the project team to target conservation practices to areas offering the highest return on investment, document practices and track progress towards implementation goals target and track practices efficiently. Completed using technical assistance funding via EQIP.
- ACTION A.3. The Nature Conservancy, MABA and MSU-IWR will work closely with Michigan NRCS to provide training to agribusiness partners (in particular, Certified Crop Advisers) on NRCS practice standards, contract requirements and use of online tools to model ecological effects of field specific conservation practices. Completed using both federal technical assistance funding (for MSU-IWR) and non-federal leveraged resources (all other project partners).

B. *Improve water quality and increase and enhance fish and wildlife habitat by implementing approximately 55,000 acres of new conservation practices by 2019 that reduce sediment and nutrient laden runoff in eligible watersheds utilizing EQIP.*
   - ACTION B.1. Agribusinesses and their certified crop advisers will work directly with their customers (agricultural land managers) to enroll them into a variety of conservation practices. Our best estimate is that those practices will consist of 27,500 acres of nutrient management plans and activities, 27,500 acres of reduced tillage (no till, mulch till or strip till), 22,000 acres of cover crops, 2,750 acres of filter strips and conservation cover and/or forage and biomass planting, 33,000 acres treated with drainage water management. Outreach to producers will be completed via non-federal leveraged resources while cost share for EQIP practices will come from federal financial assistance requested via EQIP.

C. *Improve water quality and increase and enhance fish and wildlife habitat by implementing at least 400 acres of wetland-related practices by 2019 utilizing ACEP.*
   - ACTION C.1. A full time Farm Bill Biologist (who will be funded by Ducks Unlimited MDNR and Wild Turkey Federation and employed by MDARD) will work with producers to plan and execute at least 400 acres of wetland-related projects under ACEP. Outreach to producers will be completed via non-federal leveraged resources while cost share for wetland practices will come from federal financial assistance requested via ACEP.

D. *Demonstrate and document project effectiveness by using the Great Lakes Watershed Management System to spatially quantify acres implemented and total sediment and nutrients reduced annually while also working with project partners to monitor long term trends in fish community health.*
   - ACTION D.1. The Nature Conservancy and MABA will work collaboratively with the project team to monitor and evaluate progress, market the program's opportunities, develop reporting procedures and track improvement in fish community health metrics over time. Completed using non-federal leveraged resources.
   - ACTION D.2. The Nature Conservancy and MABA will communicate project results to local, regional and national stakeholders by showcasing project accomplishments and transferring knowledge to other regions and partnerships. Completed using non-federal leveraged resources.

4. Detailed Application Requirements

a) Detailed map and narrative description of geographic area

i. Location and size of the proposed project area

This project will be focused on improving water quality and biodiversity in selected tributaries of the Saginaw Bay Watershed, located in the Thumb Region of Michigan, by increasing the use of specific conservation practices in the following subwatersheds (Figure 2, also see Attachment 1).

Tier 1 Targeted Areas:

- Cass River (908 mi^2)
- Shiawassee River (1160 mi^2)
- Pigeon and Pinnebog Rivers (340 mi^2)

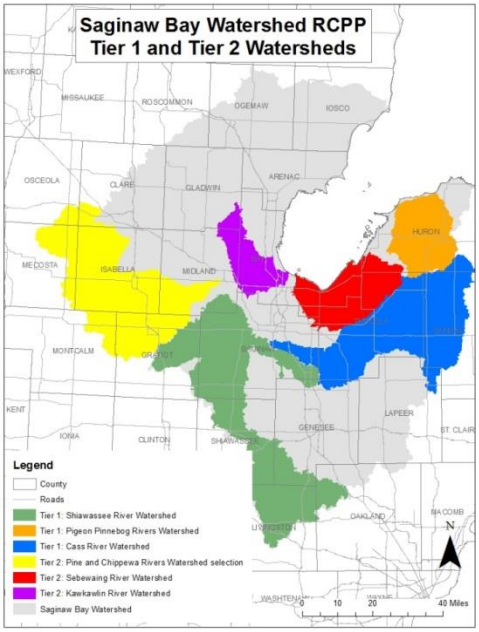


Figure 2. Map of RCPP eligible watersheds.

Tier 2 Targeted Areas:

- Pine and Chippewa Rivers (1,025 mi^2)
- Kawkawlin River (250 mi^2)
- Sebewaing River (103 mi^2)

Tier 1 targeted areas make up ~28% of the Saginaw Bay Watershed. By adding Tier 2 targeted watersheds, this program will cover ~44% of the entire watershed.

ii. Major land uses within the project area

Approximately 50% of the entire Saginaw Bay Watershed is in agricultural land use. Agricultural land use ranges from 40% in the Pine/Chippewa Rivers Watershed to 76% in the Pinnebog River Watershed (see table below, source 2012 Census of Agriculture). The data indicates that the most common row crops are corn for grain, soybeans, wheat, dry edible beans and sugarbeets.

Watershed Name	Size (acres)	Total Cropland (% of watershed[1])	Corn for grain %	Corn for Silage %	Soybean %	Wheat %	Dry edible beans %	Sugar-beets %	Potatoes %	Forage (Hay) %
Cass River	581,035	58	17	2	16	7	5	4	0.0	4
Kawkawlin River	144,150	46	16	0.3	11	4	4	4	0.6	2
Pigeon River	100,710	75	19	5	9	10	13	10	0.0	4
Pine/Chippewa	656,389	40	12	2	11	4	1	1	0.3	6
Pinnebog River	119,329	76	19	5	9	10	13	10	0.0	4
Sebewaing River	250,431	58	18	1	13	7	7	5	0.1	3
Shiawassee River	810,046	43	15	1	15	4	1	2	0.1	3

iii. Reasons for selecting the eligible areas

One of our major innovations was to select areas based upon a scientific assessment of potential for water quality impacts (level of nutrient and sediment loadings), The Conservancy's "How Much Conservation is Enough?" modeled watersheds, The Conservancy's Agricultural to Non-Agricultural Threat Index Analysis (Figure 3) and the customer service areas of the participating agronomy retailers.

Figure 3. The Agricultural to Non-Agricultural Ratio maps are used to show areas where agricultural threats dominate over the non-agricultural threats. In places were agricultural threats are high (higher positive numbers) there is greater likelihood of improving stream conditions by implementing agricultural conservation practices (as opposed to reducing impacts of urban storm water for example). Note: The Shiawassee River Watershed boundary is depicted on this map for reference.

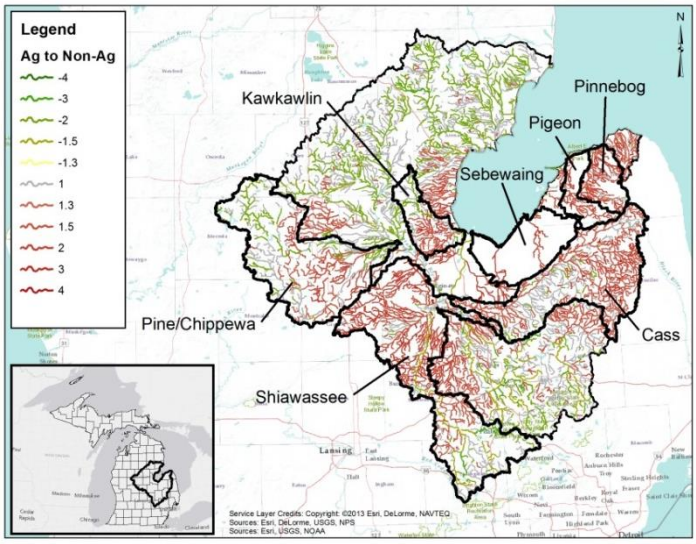


Figure 4 summarizes the considerable sediment and nutrient load for each of the targeted watersheds as calculated by the Conservancy's analyses using the Soil and Water Assessment Tool (Sowa et. al 2011). Working to reduce sediment and nutrient loading in these watersheds by implementing ~55,000 acres of conservation practices on lands that offer the highest ecological impacts will substantially improve water quality and ultimately fish community health.

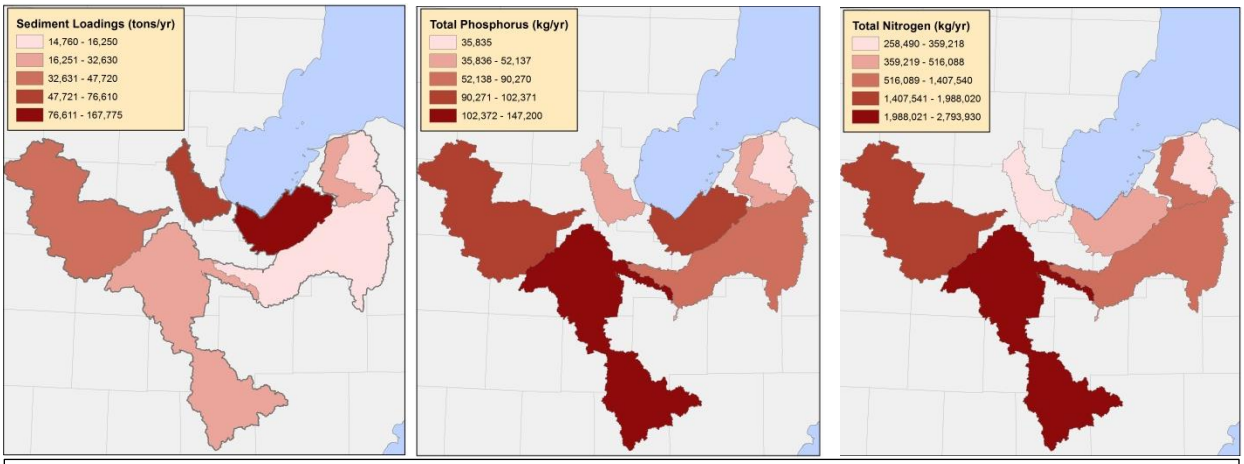


Figure 4. Sediment and nutrient loading summarized by subwatershed. Source: SWAT model, Soewa et al. 2011)

Watershed	Plants			Animals		
	Threatened Species	Endangered Species	Species of Concern	Threatened Species	Endangered Species	Species of Concern
Cass	1	1	0	7	1	9
Kawkawlin	0	0	0	0	1	2
Pigeon	1	0	0	0	1	2
Pine/ Chippewa	2	0	1	4	1	13

Pinnebog	1	0	0	0	1	0
Sebewaing	2	1	1	4	2	8
Shiawassee	9	0	4	7	3	18

Source: December 2012 Natural Heritage Biotics Database. Consolidated by: Michigan Natural Features Inventory. Accessed September 2014.

Finally, the Saginaw Bay region is home to a variety of threatened and endangered species and species of concern (table above) and provides drinking water for approximately 900,000 people, with approximately 70% of those customers served by surface water (Saginaw Bay). We estimate that there are approximately 260,000 drinking water customers in the targeted watersheds under this program, with roughly 60% served by a surface water source (see table below).

No.	Counties in the Saginaw Bay Watershed[1]	# customers (groundwater)	# customers (surface water)	Estimated % of county in RCPP Area	Estimated # customers in RCPP area (groundwater)	Estimated # customers in RCPP area (surface water)
1	Arenac	214	8,372	0%	0	0
2	Bay	0	101,334	40%	0	40,534
3	Clare	5,199	0	5%	260	0
4	Genesee	52,215	271,754	10%	5,222	27,175
5	Gladwin	4,793	0	5%	240	0
6	Gratiot	12,665	9,275	50%	6,333	4,638
7	Huron	4,377	13,083	60%	2,626	7,850
8	Iosco	265	14,889	0%	0	0
9	Isabella	41,822	0	75%	31,367	0
10	Lapeer	5,307	15,744	2%	106	315
11	Livingston	54,147	0	40%	21,659	0
12	Midland	1,995	58,334	35%	698	20,417
13	Ogemaw	2,647	0	0%	0	0
14	Saginaw	5,257	118,457	50%	2,629	59,229
15	Sanilac	12,362	6,210	40%	4,945	2,484
16	Shiawassee	30,513	0	35%	10,680	0
17	Tuscola	14,879	0	95%	14,135	0
	Total	248,657	617,452		100,897	162,641

Source: 2013 Drinking Water Data from the Michigan Department of Environmental Quality, http://www.michigan.gov/documents/deq/CWS_List_by_County_426701_7.pdf
1.This analysis excludes 5 counties with negligible land area within the Saginaw Bay Watershed including Oakland, Mecosta, Osceola, Montcalm and Roscommon Counties.

iv. Outline on the map the areas that need conservation treatment and identify acres involved

All cropland, pastureland and incidental agricultural land in the targeted watersheds is eligible for implementation of conservation practices. Conservation practices implemented on land with soil and slope characteristics that make it high risk for sediment runoff will be given priority (see Attachment 2).

b) Cost Effectiveness

The proposed project approach is cost-effective relative to the "as is" scenario of current conservation delivery as well as relative to regulatory approaches. Cost-efficiencies are achieved through: a) leveraging private resources and existing producer-CCA relationships to enroll producers in NRCS contracts; b) use of a scoring rubric and the GLWMS to determine producer eligiblity prior to the application process, eliminating USDA and producer effort spent on unfunded EQIP and ACEP contracts and c) use of modeling and data anlayses to develop outcome-based goals, target conservations practices and track progress towards these goals, thereby increasing conservation outcomes per conservation investment. Agronomy retailers are committing to provide an estimated $13 Million in services for the promotion and enrollment of NRCS conservation practices, freeing up USDA employees to focus on contract execution and other tasks. The use of the GLWMS to estimate nutrient and sediment reductions of proposed practices for use in the proposed scoring rubric will provide an efficient process for screening and approving projects for funding *before* staff time is spent developing application materials. This relatively instantaneous upfront verification process will save both USDA employees and producers the time and effort of completing necessary application forms for projects that may otherwise go unfunded. In the 2009 Federal Fiscal Year, Michigan had 306 EQIP contracts funded out of 938 contracts submitted. The 632 unfunded applications represent a considerable amount of USDA staff time and producer time and effort completing the necessary application materials that went unrewarded in the Fiscal Year (source: http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/programs/financial/eqip/?cid=nrcs143_008294).

The proposed project is also uniquely cost-effective in that modeling and the GLWMS are able to assist in both targeting, attributing credit to existing voluntary activities and tracking of producer contributions towards watershed ecological goals. Legget et al. 2003 demonstrated that approximately twice the sediment reduction benefits could be achieved from using a targeted approach to implementing conservation practice on high priority parcels when compared with traditional methods used by USDA. Outcome-based goals (based on achieving improvements in aquatic biological communities) provides an assurance that utlimate outcomes are achieved rather than activity-based goals (measurement of progress via total acres implemented).

Additional cost efficiencies include the use of GLWMS to capture voluntary, non-federally funded conservation actions, accounting for the additional nutrient and sediment reductions from these practices and thereby lowering the estimated need for additional federally-funded conservation practices to achieve watershed goals. Expedited implementation of conservation through enhanced outreach and streamlined enrollment will allow more conservation to occur in the present relative to the future. Due to inflationary pressures and the general time value of money, conservation achieved in the present will provide a greater net present value than an equal amount of conservation (acres) spread out over a longer time horizon.

Finally, by focusing on outcomes and tracking progress towards those outcomes, the proposed project is strongly suited to avoiding conditions where a regulatory approach may be initiated. The cost of this voluntary private-public-NGO partnership is substantially less than what would be spent developing, legally-defending, monitoring and enforcing a Total Maximum Daily Load or other regulatory approaches in the project region.

c) Partner Collaboration (roles, responsibilities, capabilities of the partners)

Partner Name	Type	Partner Role and Responsibilities
CO-LEAD: The Nature Conservancy	NP	• Provide overall project coordination in concert with co-lead Michigan Agri-Business Association. TNC and MABA will serve jointly as the primary point of contact for NRCS and USDA staff. • Overall project coordination

Partner Name	Type	Partner Role and Responsibilities
		• Develop outcome-based implementation goals for each targeted watershed • Assist in developing and executing training of the project team • Assist in developing outreach materials and hosting farmer events • Manage sub-agreement with MSU-IWR ($692,000 in TA from EQIP) • Collecting, summarizing and reporting on project developments, progress and accomplishments Leveraged in-kind partner contribution: $1,895,000, Note that TNC's contribution includes $160,000 in cash from Charles Stewart Mott Foundation .
CO-LEAD: Michigan Agri-Business Association	NP	• Provide overall project coordination in concert with co-lead The Nature Conservancy. • Assist in project coordination • Serve as lead coordinator of the agronomy retailers (who employ the CCAs) and the commodity groups, which are members of MABA. • Assist in developing and executing training of the project team • Lead in developing outreach materials and hosting farmer events Leveraged in-kind partner contribution: $1,100,000. Note that MABA's contribution includes $45,000 in combined cash contributions from Crop Production Services, Wilbur Ellis Company, Helena Chemical Company, The Andersons, Inc., Cooperative Elevator Company, Michigan Sugar, Star of the West Milling Company, Dow AgroSciences and Michigan Milk Producers.
Michigan State University-Institute of Water Research	HE	• Upgrade GLWMS as needed • Provide technical assistance on operation of GLWMS throughout project • Assist in developing and executing training of project team • Coordinate with NRCS to ensure communication with NRCS Toolkit database Leveraged partner in-kind contribution: $300,000
Agribusinesses employing Certified Crop Advisers includes: Crop Production Services, Helena Chemical Co., Brown Milling Co., Michigan Agricultural Commodities, Wilbur Ellis, Cooperative Elevator Company and Star of the West Milling Co.	FP	The group of agronomy retailers contributing to this effort, commit to: • **S**end CCA's to annual training events and empower CCA's to deliver conservation practices on-farm. • Ensure CCA's are, as appropriate, helping to promote conservation practices approved under this partnership. • Provide technical assistance to interested farmers by helping them execute contracts with USDA • Refer farmers interested in wetland related projects to appropriate Farm Bill Biologist • Refer interested and eligible farmers to Delta Institute for enrollment in Nitrogen Credit Program • Report activities to project team thru Michigan Agri-Business Association as a first point of contact. Leveraged in kind partner contribution (all CCA's): $12,937,500 million. Since all of these partners are members of the Michigan Agri-Business Association (MABA), this partner contribution will be tracked by and reported by MABA.
Ducks Unlimited	NP	• Collaborate with NWTF, MDNR and MDARD to provide funding to support a full time Farm Bill Biologist to provide technical assistance to private landowners interested in wetland-related practices under ACEP Leveraged in kind partner contribution: $294,000 combined among Ducks Unlimited, National Wild Turkey Federation, MDNR and MDARD.
National Wild Turkey Federation	NP	• Collaborate with DU, MDNR and MDARD to provide funding to support a full time Farm Bill Biologist to provide technical assistance to private landowners

Partner Name	Type	Partner Role and Responsibilities
		interested in wetland-related practices under ACEP Leveraged in kind partner contribution: $294,000 combined among Ducks Unlimited, National Wild Turkey Federation, MDNR and MDARD.
Michigan Department of Natural Resources	SG	• Collaborate with DU, NWTF and MDARD to provide funding to support a full time Farm Bill Biologist to provide technical assistance to private landowners interested in wetland-related practices under ACEP. Leveraged in kind partner contribution: $294,000 combined among Ducks Unlimited, National Wild Turkey Federation, MDNR and MDARD.
Michigan Department of Agriculture and Rural Development	SG	• Collaborate with DU, NWTF and MDNR to provide funding to support a full time Farm Bill Biologist to provide technical assistance to private landowners interested in wetland-related practices under ACEP. Leveraged in kind partner contribution: $294,000 combined among Ducks Unlimited, National Wild Turkey Federation, and MDARD.
United States Fish and Wildlife Service	FG	• Assist with wetland related project
Michigan Department of Environmental Quality	SG	• Coordinate with MDNR and MDARD, along with project co-leads, to help resolve any issues that arise in the delivery of conservation programs in the target area. • May conduct fish monitoring by request in targeted watersheds in accordance with rotating 5 year schedule under the direction of the Surface Water Assessment Section
Agri-Drain Corporation	FP	• Provide materials and equipment at a discounted rate to enable the implementation of drainage water management (554) and structures for water control (587). Leveraged in kind partner contribution: $100,000
Ecosystem Services Exchange, Inc.	FP	• Provide technical assistance via a discounted rate to develop drainage water management plans (CAP 130) Leveraged in kind partner contribution: $105,000
Delta Institute	NP	• Provide technical assistance to CCAs and private landowners • Enroll interested producers into the Nitrogen Credit Program to leverage conservation program investment. Leveraged partner in kind contribution: $154,500
Kellogg Co.	FP	Assist in outreach and communications; promote program to producers through existing partnerships with CCA's and Bayer Crop Sciences. Estimated leveraged partner contribution: $12,500
Mondelēz International Inc.	FP	Assist in outreach and communications; promote program to producers through existing partnerships with Cooperative Elevator Company. Estimated leveraged partner contribution: $25,000
Michigan Bean Commission	AA	Michigan commodity and producer groups, along with Michigan Sugar Co. and the Michigan Milk Producers Association, will assist with outreach to their members/growers in the target area in partnership with the project co-leads.
Michigan Sugar	FP	Commodity/Producer Group (same as above)
Michigan Soybean	AA	Commodity/Producer Group (same as above)

Partner Name	Type	Partner Role and Responsibilities
Promotion Committee		
Michigan Milk Producers Association	FP	Commodity/Producer Group (same as above)
Michigan Corn Growers Association	AA	Commodity/Producer Group (same as above)
Michigan Wheat Program	AA	Commodity/Producer Group (same as above)
Cass River Greenway	NP	Assist in project outreach/awareness
Friends of the Shiawassee River	NP	Assist in project outreach/awareness
Saginaw Bay Resource Conservation and Development	NP	Assist in project outreach/awareness
Chippewa Watershed Conservancy	NP	Assist in project outreach/awareness
Little Forks Conservancy	NP	Assist in project outreach/awareness
Partnership for the Saginaw Bay Watershed	NP	Assist in project outreach/awareness

d) Project timeline (including submittal of annual and final reports)

Task (partners)	2015				2016				2017				2018				2019			
	Qtrs				Qtrs				Qtrs				Qtrs				Qtrs			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1. Execute subcontract with MSU-IWR (TNC)																				
2. Hold kick off mtg with core project team members (TNC, MABA, MSU-IWR, MDNR, DU, NWTF, Delta, Kellogg)																				
3. Calculate outcome-based goals for Tier 2 Watersheds (TNC)																				
4. Upgrade GLWMS for project needs (TNC, MSU-IWR)																				
5. Hire Farm Bill Biologist (DU, MDNR, NWTF, MDARD)																				
6. Develop and conduct training for CCAs (TNC, MABA, MSU, Delta, ESE)																				
7. Conduct outreach to private landowners thru EQIP (CCAs)																				
8. Host field days/workshops for farmers (TNC, MABA, CCAs)																				
9. Assist landowners in executing EQIP contracts (CCAs, AgriDrain, ESE)																				
10. Conduct outreach to private landowners thru ACEP (Farm Bill Biologist)																				
11. Assist landowners in executing ACEP projects (Farm Bill Biologist)																				

Task (partners)	2015				2016				2017				2018				2019			
	Qtrs				Qtrs				Qtrs				Qtrs				Qtrs			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
12. Hold project team meetings as needed with key team members																				
13. Report on project achievements per USDA requirements (TNC, MABA, MSU-IWR, Delta, CCAs, Farm Bill Biologist)																				
14. Submit final report per USDA requirements (TNC, MABA)																				

e) Eligible Practices, Sequence of Implementation and Innovative Outcome Based Strategies

The partnership will conduct this project in a systematic, deliberate way with a focus on implementing nutrient management and soil conservation practices as quickly and effectively as possible, while quantifying ecological impacts and contribution towards an overall implementation goal. The project will be executed in a phased approach as described below:

Planning Phase: Key project partners will hold planning meetings over the course of two months with a focus on beginning work as soon as possible. Key goals include 1) identifying areas for initial focus within each targeted watershed, 2) finalizing a rubric for scoring projects from interested landowners and 3) developing appropriate training materials for the entire project team. During this phase the Conservancy will begin to work through the data analyses and modeling needed to develop ecologically significant outcome-based goals for the Tier 2 subwatersheds outlined above. Again, these implementation goals have already been developed for Tier 1 targeted watersheds.

During the planning phase, we will finalize and prioritize acceptable EQIP practices. We anticipate that the eligible practices will be described as high priority practices and secondary priority practices. Most of the "High Priority" practices are established practices and the predicted water quality impacts can be readily modeled using the Great Lakes Watershed Management System (GLWMS, described below). In other words, like the Tier 1 Subwatersheds, these high priority practices are proven and "shovel ready." While the GLWMS does not currently model nutrient management planning (104) and nutrient management (554), these are included as High Priority given their contribution to a behavioral shift in how agriculture applies nutrients across the Saginaw Bay Watershed – which has a direct link to the resources concern within the Great Lakes Critical Conservation Area. The practices identified below as "Secondary Priority" may be newer, more innovative practices that are considered beneficial to water quality but are not easily modeled using the GLWMS.

High priority practices (and associated NRCS Practice Standards) include cover crops (340), filter strips (393), mulch till residue and tillage management (345), no-till/strip till residue management and tillage management (329), riparian herbaceous cover (390), conservation cover (327), wetland creation (658), forage and biomass planting (512), nutrient management planning (104) and nutrient management (590). Secondary priority practices include drainage water management plan (CAP 130), drainage water management (554), structure for water control (587), constructed wetland (656), wetland enhancement (659), wetland restoration (657) and wetland wildlife habitat management (644). No more than 20% of financial assistance will be used to cost-share secondary priority practices and drainage water management practices will likely be limited to the Pigeon and Pinnebog River Watersheds.

Training and Preparation Phase: During months 3-4 MABA and TNC will coordinate with NRCS to provide training to participating agronomy retailers and their CCAs. Training will cover NRCS conservation program requirements, practice standards for eligible conservation practices and guidelines for developing approvable contracts. The project team will work together to develop outreach materials and a communications plan for promoting the program. Note that MABA and TNC, working with NRCS

staff, have capacity to prepare outreach and training material specific to the Bay. NRCS staff would only be needed to outline specific statutory and regulatory requirements of the practices to be promoted, to ensure that partners have a full understanding of NRCS practices. While non-federal conservation district staff will play no direct role in this effort, TNC, MABA and NRCS will communicate the details of the program to local NRCS district conservationists with help from the NRCS State Office to ensure that NRCS employees' awareness of the program and leverage their participation.

In addition, TNC and MSU-IWR will train partners on the proper use of the Great Lakes Watershed Management System for modeling the ecological benefits of various conservation practices. Delta Institute will provide guidelines for enrolling eligible producers into their Nitrogen Credit Program (as another potential source of funding for producers). The CCAs will be responsible for recruiting 10-15 of their local customers to participate in pilot training exercises with the GLWMS.

Program Promotion and Implementation Phase: By approximately month 6, the agronomy retailers (through their CCAs) will begin promoting the program as a part of their normal meetings with crop producers in the Tier 1 targeted watersheds primarily. Tier 2 subwatersheds will be eligible for participation from the beginning of the program, with CCA's delivering information back to TNC as a long-term outcome measure is developed. We anticipate that a majority of acreage in Years 1-2 will be dedicated in areas designated as Tier 1.

CCA's will use outreach materials prepared and approved by the project team and will ensure that eligible practices are planned and implemented in accordance with applicable NRCS standards. In addition, MABA will facilitate meetings and events across the watershed to promote the program and the eligible conservation practices.

Adaptive Management and Evaluation Phase: see Section 4, part F below.

Communication Phase: Throughout the five year implementation period, TNC and MABA will put a high priority on communicating project progress and results to USDA, partnering organizations and the general public. Communication goals include 1) increasing awareness of the program and encouraging producer participation, 2) showcasing project accomplishments and 3) transferring knowledge to other regions and partnerships. Information will be developed for distribution via newsletters, websites (of the partnering organizations), media announcements and press releases.

The project team will also identify individuals within the partnership who will be designated to handle speaking requests and presentations to interested parties. Events that may be targeted for presentations on the project may include MABA's Annual Winter Conference and Trade Show, MSU's Biennial Saginaw Bay Watershed Conference and the Michigan Soil and Water Conservation Society's Seminar during Agricultural and Natural Resources Week at MSU. Finally, TNC and MABA will develop and distribute a final project report (in accordance with NRCS requirements) to the project team and other interested entities.

SCIENCE BACKGROUND:

SETTING OUTCOME-BASED GOALS: The Conservancy's work in the Saginaw Bay Watershed is focused on answering a fundamental question that has plagued resource managers for decades. How much conservation is enough to actually achieve the ecological outcomes that the broader community expects and desires? To answer this question, The Conservancy completed a two-phased research project funded by the NRCS's Conservation Effects Assessment Project (CEAP).

The first phase of the CEAP project was described above in Section 3a. During the second phase of the CEAP analysis The Conservancy utilized the SWAT model to explore the effects of two implementation scenarios (25% and 50% coverage of agricultural acres with conservation practices) on aquatic health. Traditionally, agricultural best management practices have been implemented randomly across broad landscapes. Although progress has been made, our model suggests that by targeting these same practices to specific areas of the watershed, results (ecological outcomes) can be achieved more efficiently. The predicted ecological response to implementation of various levels of conservation practices is depicted in Figure 5. Please note that the Rifle River (northernmost tributary to Saginaw Bay) was included in this analysis and is shown on Figure 5, however, the Rifle River is NOT included as one of the eligible implementation watersheds.

As shown below, the analysis is completed for Tier 1 Targeted watersheds (which includes the Shiawassee River, Cass River, Pigeon River and Pinnebog River Watersheds). We used the model to develop dose-response curves for each subwatershed to determine the implementation level needed to improve water quality (which is measured by fish community health). The Conservancy identifies the following goals for long term ecological health:

- Achieve a minimum of an 80 IBI (yellow category) in subwatersheds of the Pigeon and Pinnebog River watersheds, and
- Achieve a minimum of a 90 IBI (light green category) in subwatersheds of all other Tier 1 Targeted areas.

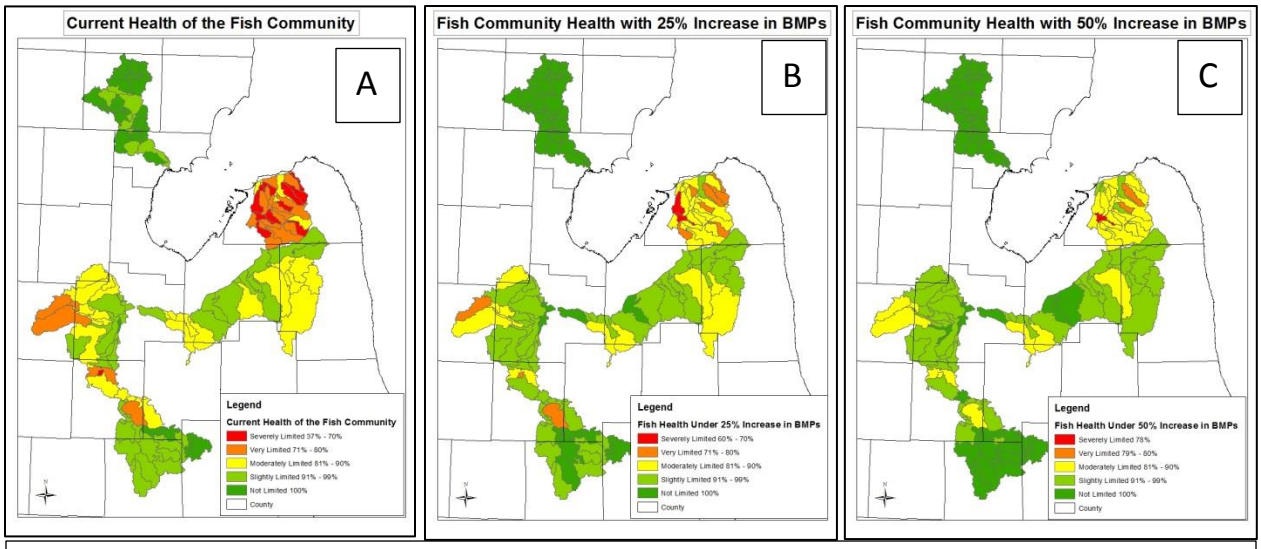


Figure 5. Fish community health depicted under the current level of practices (A), under a 25% increase in practices (B) and under a 50% increase in practices (C). Green reflects very healthy fish communities not limited by water quality or flow variables while orange and red areas reflect moderately to extremely limited fish communities.

The data analysis indicates that a long term implementation goal of achieving 209,000 acres of conservation practices will achieve satisfactory ecological health (as defined above with expected results depicted Figure 6). Using these dose-response relationships, The Conservancy has estimated that an additional 120,000 acres of conservation practices (a long term goal) would need to be implemented in Tier 2 Watersheds for a total **long term goal of 329,000 acres**.

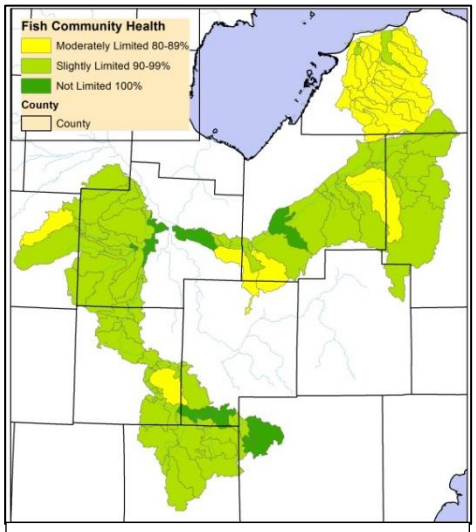
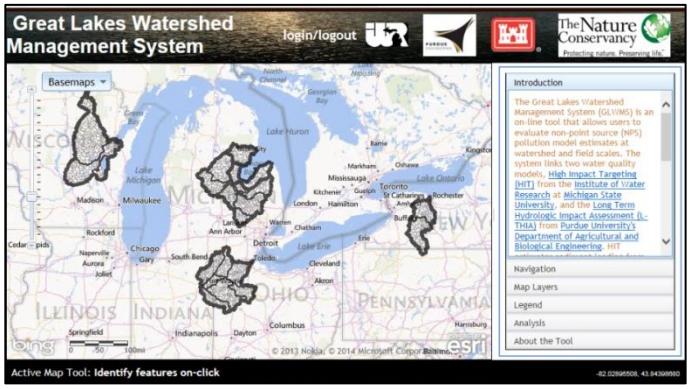


Figure 6. Fish community health goals.

Based on average annual implementation rates of the targeted conservation practices (reviewed during the CEAP analysis), The Conservancy recommends developing a **short term implementation goal of 55,000 acres** for the RCPP (meant to be installed over a 5 year time period):

Note that The Conservancy will confirm the estimated long and short term goals for Tier 2 Watersheds during the first year of this project and will translate these acreage goals into sediment and nutrient reduction goals.

TECHNOLOGY TO TARGET AND TRACK: To enhance the use of this data and ensure that our work is fully accessible to the agriculture community, stakeholders and others, the Conservancy partnered with Michigan State University's –Institute of Water Research (MSU-IWR) to develop a suite of innovative online tools that will help better target where BMPs will result in the greatest improvement to water quality and conservation. The new online tool (pictured at right), called the Great Lakes Watershed Management System (www.iwr.msu.edu/glwms/), is available free of charge to the public and houses sediment, nutrient and groundwater recharge calculators. The calculators allow users to target practices to areas with the highest levels of sediment and nutrient runoff (demonstrated in Figure 7A) and identify specific farm parcels for implementation of a wide variety of conservation practices (Figure 7B). The tool uses soil, slope and land cover characteristics to predict the change in sediment and nutrient runoff and groundwater recharge from implemented practices.



In addition, MSU-IWR and TNC are also developing a companion tracking system to capture and display the benefits of all BMPs implemented in the Saginaw Bay Watershed through the GLWMS website. We will capture all BMPs that are implemented as a part of this project using the "BMP tracker". Results are viewable by the public and other resource agencies on the online platform. Personal details will be kept confidential and locations will only be aggregated at the HUC 12 level.

The intended audience for these tools includes crop advisers, university extension staff, conservation district technicians, watershed groups and/or farmers. It provides a way to quickly and easily measure the benefits (in tons of sediment or pounds of phosphorus reduced) of several conservation practices to more strategically implement BMPs. Use of the GLWMS will be an important element of project implementation, used to spatially quantify progress over time and track progress towards implementation goals developed by the Conservancy.

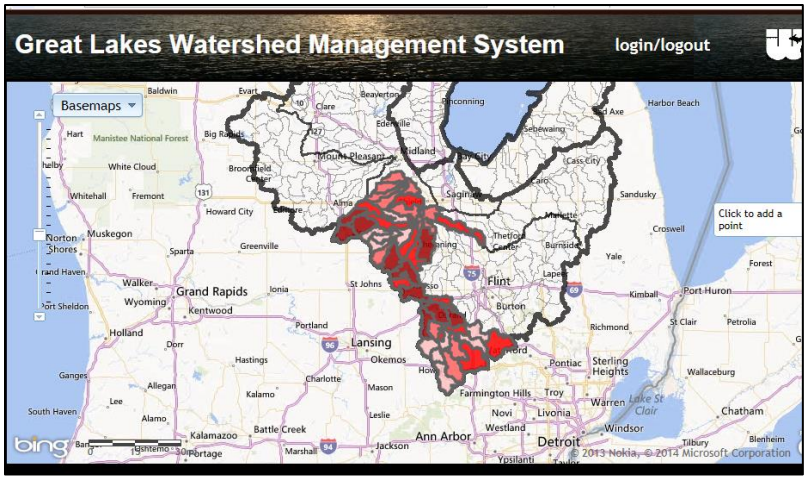


Figure 7A. Depiction of how the GLWMS maps sediment loading rates across the Shiawassee River Watershed.

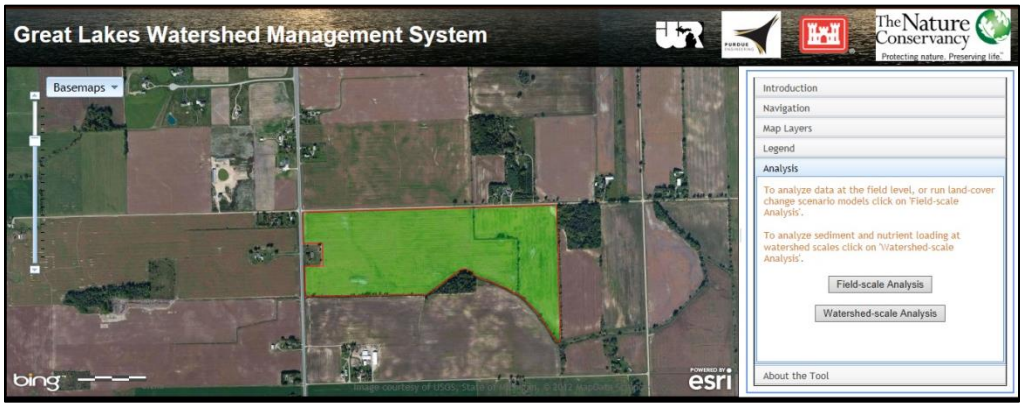


Figure 7B. Depiction of how a user can digitize the outlines of a specific field to run implementation scenarios.

f) **Evaluation and Reporting**

The Conservancy and MABA will continually evaluate the program for both administrative and ecological effectiveness. We will monitor administrative effectiveness during frequent meetings between The Conservancy and MABA to review and evaluate progress, anticipate problems and develop methods, outreach materials or training events to overcome challenges. Targeted areas, the scoring rubric and/or eligible practices may be adjusted annually to ensure a high level of project participation. In addition, TNC and MABA will coordinate with project team members to gather project information to develop and submit progress reports in accordance with USDA requirements.

The Conservancy will work to evaluate the ecological effectiveness utilizing changes in "fish community health" as a measurable metric to track long term changes in water quality. Fish community health is characterized by calculating an Index of Biotic Integrity (IBI) for each sample of riverine fish. A long term monitoring program is essentially built into this project because fish sampling in these watersheds is something routinely conducted by the Michigan Department of Environmental Quality every 5 years on a rotating watershed basis. Evaluating changes in fish IBIs will help us quantify how water quality is responding over time to implementation of conservation practices. The MDEQ currently plans to monitor the targeted watersheds on the following schedule:

- Cass River Watershed: 2016, 2021, 2026 etc
- Shiawassee, Sebewaing, Kawkawlin: 2015, 2020, 2025 etc
- Pine Chippewa: 2017, 2022, 2027 etc
- Pigeon, Pinnebog: 2018, 2023, 2028 etc

Finally, the project team would like to work with USDA's Economic Research Service to evaluate the beliefs, attitudes and perceptions of participating producers regarding implementing conservation practices using USDA cost share programs. This task is NOT currently included in the scope of work but we feel this is important for understanding and quantifying the long term impact of cost-share funding to gauge practice longevity and the long-term influence of such conservation investments.

g) Consideration of different approaches for evaluating project outcomes

The project has been developed to achieve ecological improvements at the watershed scale in the Saginaw Bay Watershed. Therefore, edge of field monitoring is not a suitable monitoring strategy to capture the effectiveness of 55,000 acres of conservation practices across a large geographic area. The ultimate environmental outcome is a measurable improvement in riverine water quality. The Conservancy uses fish community health (measured by the Index of Biotic Integrity) to gauge ecological improvement over time. The Michigan Department of Environmental Quality conducts water quality monitoring in each watershed every five years (described above). The Conservancy will work with MDEQ to request that fish community health be included in this monitoring where appropriate. The Conservancy will also work with MDNR-Fisheries Division to meet fish monitoring needs over the course of the project. The Conservancy will use long term trends in fish IBI to monitor project effectiveness over time.

h) Criteria to Evaluate and Rank Applications

To maximize both the cost effectiveness of this approach (in terms of staff capacity and time) and the likelihood of achieving ecological outcomes as efficiently as possible (targeting practices to farms with the highest risk for sediment and nutrient runoff) we have developed a "scoring rubric" to be used to evaluate all potential implementation projects. While we request that NRCS allow us to provide cost share funding for any nutrient management plans (104) and/or drainage water management plans (CAP 130) automatically, we propose to evaluate all other proposed implementation projects using the scoring rubric. The scoring rubric will be critical to ensure that we are targeting funding to areas that offer the highest return on investment. We have included a draft scoring rubric (following page) as an example. The draft scoring rubric offers a total of 34 points to any one project (based on the characteristics of the project implementation). We will set a "score" at which funding will be guaranteed on a rolling basis (25 pts as an example). Projects that fall below 25 points may still be considered for funding but the use of the scoring rubric allows us to target and prioritize funds effectively.

The evaluation categories were selected to ensure that we efficiently prioritize projects that affect the most acres, stack multiple practices, occur on land at the highest risk of sedimentation, have the highest likelihood of resulting in significant sediment and/or phosphorus reductions, and are in areas of the watershed with impaired fish communities.

Project Details	Category	Points	Total Points
Number of implementation acres	0-100	1	5
	101-500	2	
	501-1000	3	
	1001-3000	4	
	more than 3000	5	
Number of practices implemented as part of the project	1 practice	1	3
	2 practices	2	
	3 or more practices	3	
% of parcel at high risk for sedimentation	0-10%	1	6

Project Details	Category	Points	Total Points
(use MSU's High Impact Targeting Tool)	11-30%	2	
	31-50%	3	
	51-70%	4	
	71-90%	5	
	over 90%	6	
Sediment Removal (tons) **OR** **Phosphorus removal (lbs)** (whichever gets the producer more points)	**SEDIMENT/PHOSPHORUS**		
	0-10 tons/0-20 lbs	1	11
	10-20 tons/21-30 lbs	3	
	21-30 tons/31-40 lbs	5	
	31-40 tons/41-50 lbs	7	
	40-50 tons/51-60 lbs	9	
	over 51 tons/over 61 lbs	11	
Current Fish Community Health (use The Conservancy's "How Much Conservation is Enough?" map of current fish community health)	Not Impacted	1	9
	Moderately Impacted	3	
	Impacted	5	
	Poor	7	
	Very Poor	9	
	TOTAL AVAILABLE POINTS		34

i) Eligible producers and outreach to beginning, socially disadvantaged, limited resource, tribal or veteran farmers

The agronomy retailers and their certified crop advisers will work with any interested producer farming eligible cropland, pastureland, or incidental land within any of the eligible watersheds. The 2012 Census of Agriculture indicates there are approximately 3,229 principal operators in the eligible watersheds. All values are approximations derived using county level data apportioned to watersheds based on the percent of each county represented in each watershed. We estimate that 15% of those operators will be most likely to receive funding based on the scoring rubric (approximately 484 operators). The NASS data set provided some information on beginning, socially disadvantaged and/or tribal farmers. The Conservancy and MABA will work hard to be sure the best effort is made to reach these producers leveraging CCAs' long established relationships while also proactively working with NRCS to identify and reach out to those producers. We do not anticipate serious obstacles in reaching eligible producers.

Watershed Name	**#of farms**	**# of principal operators**	**Total # of operator**	**# Hispanic Latino**	**# Native American**	**# Asian**	**# African American**	**Beginning farmers (<5 years)**
Cass	1,432	735	2,177	12.8	5.0	0.3	*3.2*	64.5
Kawkawlin	335	175	482	2.1	0.7	0.0	*0.0*	13.4
Pigeon	227	126	340	2.2	0.4	0.0	*0.0*	12.1
Pine/Chippewa	1,496	754	2,210	16.2	*9.0*	0.5	*0.4*	93.2

Pinnebog	268	149	401	2.7	0.4	0.0	*0.0*	14.5
Sebewaing	631	317	941	2.3	1.6	0.0	*1.0*	25.2
Shiawassee	1,894	973	2,885	20.9	*5.5*	1.4	*8.3*	90.2
Totals	**6,283**	**3,229**	**9,435**	**59.3**	**22.8**	**2.2**	**12.9**	**313.1**

Italicized entries indicate that some counties comprising this watershed had data withheld to avoid disclosing data for individual farms; therefore values likely under represented.

CCAs will be trained to provide technical assistance to interested landowners which will include helping them complete necessary documentation (USDA forms and conservation plans), communicating on their behalf with USDA (only with landowners' permission), providing technical assistance during practice implementation and follow up technical assistance after practice are implemented.

j) **Avoiding the Need for Regulation**

Regulatory certainty is highly important for producers across the Saginaw Bay Watershed. In particular, the regulatory issues surrounding drinking water quality for residents across the Great Lakes region has emerged as a top policy priority in the wake of the Toledo drinking water crisis in August 2014. As policymakers and industry leaders look to the future and seek to address the causes of the water issues in Lake Erie, new discussions on regulations for agriculture may not be limited directly to that area. There is a specific and timely opportunity across the Great Lakes to prove the impact of voluntary conservation opportunities in agriculture.

This proposal would have specific impacts on water quality as it relates to agriculture, thereby helping Saginaw Bay Watershed farmers and growers show proactive, positive action to provide modern water quality solutions. These solutions are well-represented within the priority practices listed in this proposal. By expanding program uptake among the producers within the Saginaw Bay Watershed, this partnership will help document the impact of these practices on water quality.

While this proposal achieves a number of unique objectives, including a broad and nontraditional partnership group with opportunity for further growth; an innovative delivery mechanism via CCAs; and the capacity to incorporate innovative new ideas; the most important is the capacity to achieve measurable conservation and water quality outcomes in the riverine systems of the Saginaw Bay Watershed. Again, as policy attention turns to public drinking water supplies, measurable outcomes are critically important.

Historically, conservation practices have been measured in two ways. First, by input only (i.e. number of acres implemented, number of contracts executed or amount of funding allocated). This method is useful for examining the scope of an effort, but not as useful in determining benefit to the land and water. The second measurement involves an estimate of nutrients and sediment reduction annually. This is a slightly more useful measure which borders on quantifying ecological impact, but still does not quantify ultimate water quality outcomes. Without straightforward outcome metrics, there is greater uncertainty with regard to conservation practices.

Ultimately, this uncertainty has been met in the past by a push for additional regulation to address many of the priority concerns outlined in this proposal. There is a demonstrated need to document the impact of voluntary conservation programs.

This partnership includes a new, targeted effort to quantify water quality outcomes by measuring riverine fish populations throughout the Saginaw Bay Watershed. By prioritizing conservation practices and areas

where outcome measurements can be made, we are prepared to measure and share results that can be directly attributed to on-farm conservation practices. In addition, we aim to reach more producers than has been done in the past, achieving the critical reach necessary to have the greatest possible impact across the Bay. By emphasizing these efforts – along with associated, measurable outcomes – agriculture in the Saginaw Bay will have a new tool to work with many others concerned with water quality in the Bay. By increasing certainty and understanding for the value of these practices, agriculture will be better positioned to work with policymakers toward achieving a greater degree of regulatory stability.

These demonstrated impacts will be especially timely as many actors within the Great Lakes region – policymakers, agriculture leaders, the conservation community, and members of the public – respond to the concerns highlighted by the Toledo drinking water crisis in the months and years ahead.

k) Requested Adjustments

To efficiently implement this program, the project team requests the following adjustments:

1. TNC, MABA and Certified Crop Advisers should be provided direct access to already-completed conservation plans for any landowner interested in participating in this project.
2. For any conservation plans developed under this RCPP project, the maps that can be developed by the Great Lakes Watershed Management System should be accepted as sufficient.
3. Although the project team will undergo training to ensure that crop advisers can promote programs and enroll landowners in compliance with NRCS standards and efficiently assist NRCS with developing approvable contracts, we anticipate that some required documentation will not be able to be completed by the project team (e.g. entering information into USDA databases, calculating AGI requirements etc). We will rely on NRCS to complete those activities.
4. The project team intends to use a scoring rubric to ensure that funding is prioritized to areas with the highest potential ecological return (sediment and nutrient reduction and positive impact on fish community health). A draft scoring rubric has been developed and we will consult NRCS as appropriate to ensure that the rubric is appropriate for use with NRCS programs.
5. Because the resource concern has already been identified for the Great Lakes Region as a Critical Conservation Area, we would like to bypass completion of the Environmental Evaluation Worksheet (NRCS-CPA-52) for each project.
6. For wetland related projects, members of our project team will recruit and educate landowners on funding opportunities, evaluate the project via the team's scoring rubric and serve as a liaison to the local NRCS office. However, we request that NRCS retain responsibility for design, engineering and installation of said practices.
7. Eligible producers should be allowed to receive funding for multiple CAPs at a time (nutrient management plan and drainage water management plan simultaneously, for example) to facilitate expedited implementation of said plans within the five-year timeframe of this project.

l) Alternative Funding Arrangements

The Saginaw Bay Watershed Partnership is NOT requesting an alternative funding arrangement.

m) Practices without NRCS Practice Standards

The project team has not proposed to use any practices that do not already have approved NRCS practice standards.

n) SF-424B (attached)

o) DUNS number and SAMS registration

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