Great Lakes Basin Program GLRI Project

Payments for Ecosystem Services in the Paw Paw River Watershed

Size: watershed
Grant Amount: $350,000
Year awarded: 2011

Sponsor: Southwest Michigan Planning Commission
185 E. Main Street, Ste 701
Benton Harbor, MI 49022
work phone - 269-925-1137 x25

Information Contact: Project Manager, Marcy Colclough
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Submitted Project:

Total Grant Amount Requested: $350,000

Match Amount: In-Kind: $40,000
Cash:
Leverage: This project will leverage the Van Buren County Drain Commissioner's Buffer Strip Incentive Program, which offers landowners a 25% reduction in drain assessments per parcel per year for existing or newly established filter strips.

Total Project Soil Savings: 6,576 tons (total for 3 years)
(add the savings from the estimates given below for all the BMPs you have proposed to be installed)

Congressional District(s): Fred Upton (MI-6)

II. Project Background
Sediment Sources

Briefly describe the sediment loading issues, including sediment sources, in your watershed and their relevance to sediment loadings to a Great Lake.
The 2008 Paw Paw River Watershed Management Plan (WMP) and the 2005 St. Joseph River WMP both identified sediment as the highest priority pollutant. The Paw Paw River Watershed (PPRW) is comprised of 47% agricultural land use and the St. Joseph River Watershed (SJRW) is about 70% agricultural. Agricultural runoff and streambank erosion were identified as primary sources of sediment throughout these agricultural areas. Further numerous road/stream crossings are causing erosion and considered another large contributor of sediment to the river systems and to Lake Michigan. According to a US Army Corps funded study in 2005 (St. Joseph River Sediment Transport Modeling Study, Prepared by Baird & Associates), the "*current sediment supply in the entire St. Joseph watershed is 590,625tons/yr with dams and reservoirs trapping 150,500 tons/yr and with 401,625 tons/yr being held by other sediment sinks and in-channel deposition; only 38,500 tons/yr is able to reach the inner channel and river mouth with a significant portion of this is delivered by the Paw Paw*

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River tributary which feeds directly into the inner channel. Sediment delivery from the PPR is at approximately 10,035 tons/yr." Since 1990, 1.2 million tons of sediment has been dredged in the St. Joseph Harbor. The SJRW is estimated to be the 2nd largest contributor of tons of sediment per year to Lake Michigan and 5th in the Great Lakes (The Journal of American Science, 1(2), 2005, Ouyang, et al, Assessing Sediment Loading from Croplands).

Readiness to Implement Project

What fund raising activities from other sources have you engaged in, including local public and private sources, to fund watershed projects? As part of this, list approved grants over $25,000 received from other sources within the past three years. Include the Grantor's name and a brief description of the projects.

The project team has significant experience with fundraising activities for watershed projects. Below is a list of the fundraising experience from the three primary partners on this project.

Southwest Michigan Planning Commission (SWMPC)

The Southwest Michigan Planning Commission assists and partners with local governments and local watershed groups to conduct fundraising, project management, and grant writing, management and implementation.

SWMPC wrote and is helping to implement an US EPA Wetland Development Grant in the St. Joseph River Watershed which was awarded to the Friends of the St. Joseph River in 2009 ($115,800 in federal funds and $40,200 in local match).

Since 2008, SWMPC receives $30,000/year from local municipal governments and businesses to implement a water quality/stormwater education campaign for southwest Michigan.

SWMPC assisted in writing and garnering local match and support for the Van Buren Conservation District's MDEQ 319 grant - Paw Paw and Black River Wetland Protection/Restoration (2009-Current) ($1.6 million - 50% 319 grant funds and 50% local match)

SWMPC assisted the Conservation Fund in securing and generating local support and match for a MDEQ 319 implementation grant for the Galien River Watershed in 2008 ($309,000 in 319 grant funds and $300,000 in local match). SWMPC is responsible for working with municipal governments on land use planning and implementing an education campaign (hosting educational workshops for land and home owners).

SWMPC assisted Preserve the Dunes in securing a $25,000 grant from the MDEQ Coastal Zone Management Program in 2010 to improve site design to lessen impacts to water quality and natural resources in sensitive coastal areas. SWMPC will be responsible for grant management and producing educational materials.

SWMPC is currently working with the Village of Paw Paw in the Paw Paw River Watershed to implement a incentive similar program to cost share with agricultural and urban landowners to implement BMPs in the headwaters of the Paw Paw River Watershed (South Branch). SWMPC has assisted with the Village's recent proposals to MDEQ 319 and GLRI – Watershed Remediation focus area. In the GLRI proposal the Village has committed to a cash local match of over $280,000 for landowner cost share.

Delta Institute

U.S. Environmental Protection Agency, Great Lakes National Program Office 77 W Jackson Blvd Chicago IL 60604

- Lake Michigan Forum Facilitation (2000 – Current)

- *Mona Lake Watershed Stewardship Assessment (Muskegon Co, MI) 2003*
- *Baird Creek Watershed Stewardship Assessment (Brown Co, WI) 2004*

Donnelly Foundation, 35 E Wacker Dr Ste 2600 Chicago, IL 60601

- Transportation & Environmental Collaboration Initiative (2008 – Current)
  - *The Delta Institute is working with members of Chicago Wilderness' Sustainability and Green Infrastructure Vision teams to support integration of the Green Infrastructure Vision into regional and sub-regional plans, as well as improve environmental data and expertise available to transportation planners and professionals in the Chicago region. To date, implementation projects have included the development of green infrastructure plans, collection and development of GIS data on sedimentation and water quality, and the development of pollution prevention plans for Watersheds. The project is now in it third phase.*

Van Buren Conservation District (VBCD)

Michigan Department of Agriculture, Environmental Stewardship Division P.O. Box 30017 Lansing, Michigan 48909

- Michigan Water Stewardship Program (MGSP) Agriculture Technical Assistance (1993-Current)
- Michigan Water Stewardship Program Conservation Technical Assistance Initiative Specialist (CTAI) (2007-Current)
  - *Conservation technical assistance initiative (CTAI) is a unique grant that partners Michigan Department of Agriculture and Natural Resource Conservation Service to provide a technician position to increase practices implementation through federal farm bill programs and assist with conservation plans and practices implemented; majority of these project cost over $25,000.*

Michigan Department Environmental Quality, Kalamazoo District Office, 7953 Adobe Road Kalamazoo, MI 49009

- 319 grant Black River Watershed Management Plan (2002-2005)
  - *Black River Watershed Implementation Project; Lion's Park, Bangor, Michigan: River banks were re-graded and replanted with native vegetation and a raingarden installed to filter stormwater.*
- 319 grant Black River Watershed Implementation Project(2006-2009)
  - *Shady Brook Park, Bloomingdale, Michigan: BMPs installed at this site included a raingarden, tree revetments, crushed concrete resurfacing of the parking areas, and a public access.*
- 319 grant Paw Paw and Black River Wetland Protection/Restoration(2009-Current)
  - *Recently begun, this project will include wetland restoration of over 100 acres and protection of over 440 acres of wetlands and 220 acres of associated uplands.*

The Nature Conservancy 3728 West River Dr. NE Comstock Park, Michigan 49321

- Paw Paw Watershed BMP grant(2010-Current)

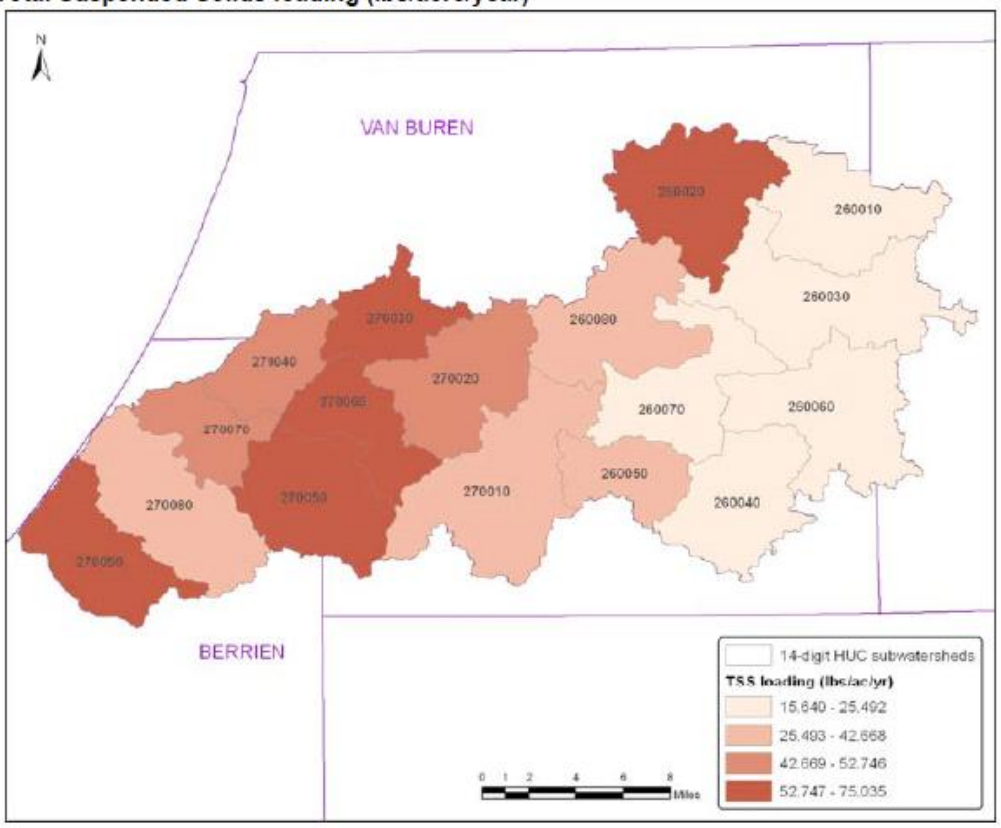
Is there a state approved watershed plan (or one in development) that includes your designated implementation HUCs? If yes, does the watershed plan denote specific soil/sediment reduction BMPs and list implementation locations for those BMPs?

Yes, the Paw Paw River Watershed Management Plan (WMP) (2008) is approved by MDEQ and meets EPA's 319 requirements. The plan designates Mill, Pine, Red and Brandywine Creek watersheds as the highest priority areas for agricultural BMP implementation in the watershed. Specific high priority agricultural BMPs in the plan include riparian buffers, wetland restoration and protection, filter strips, no till or mulch tillage, cover crops and grassed waterways.

In the Paw Paw River WMP, SWAT modeling indicated a 40% reduction in sediment loading into the St. Joseph Harbor at Lake Michigan if a combination of best management practices (no-till, filter strips and cover crops) were implemented on 25% of the agricultural area in the watershed.

The following maps are from the PPR WMP and show which areas are contributing sediment. The first map was produced using pollutant load calculations based on land use and the second map was developed using SWAT.

Total Suspended Solids loading (lbs/acre/year)



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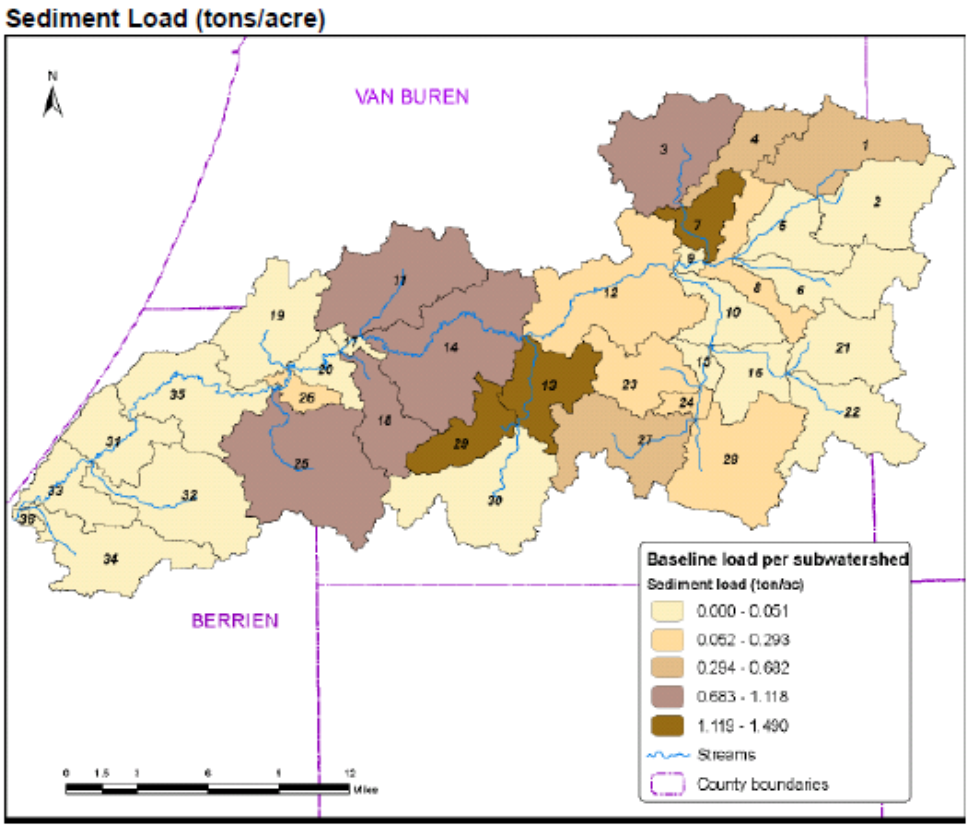
Great Lakes Commission
des Grands Lacs

Keeping It On the Land

Great Lakes Basin Program for Soil Erosion and Sediment Control
www.glc.org/basin



The following map from the Paw Paw River WMP shows the places in the watershed where agricultural practices are MOST needed to improve water quality. Based on the information in the PPRWMP, the amount of agricultural lands and the information on sediment loading from modeling, this project will be focused on subwatersheds 11 (Mud Lake Drain), 13 (Mill Creek) and 14 (Pine Creek) (outlined in red in the following map). By offering incentives for the highest erosion areas in the highest priority areas of the watershed, this project will have a significant impact on reducing sediment loads to the St. Joseph River harbor and Lake Michigan.

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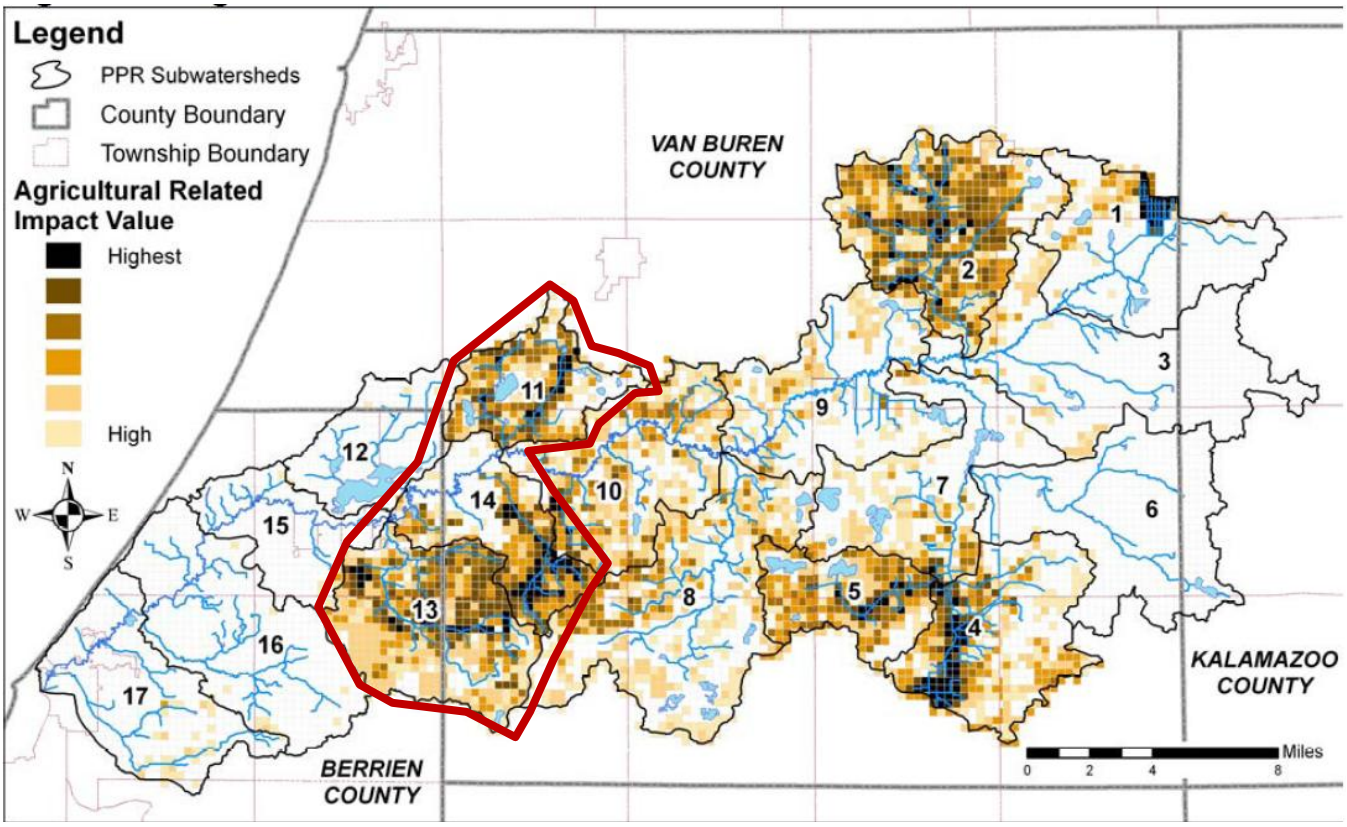

What other on-going conservation activities are taking place in the HUCs? Are there any existing project being implemented such as a Section 319 project?
There are many projects on-going that will complement this project. The Van Buren Conservation District (VBCD) has an existing 319 Implementation project for the Black and Paw Paw River Watersheds which will protect 400 acres and restore 100 acres of wetland. The Nature Conservancy, VBCD and The Coca-Cola Foundation are currently funding a technician to assist with agriculture BMP implementation in high priority areas of the Paw Paw River Watershed. The PPRW is also part of the St. Joseph River Watershed which has AWEP funding through the Department of Agriculture, NRCS. Lastly, the Van Buren Drain Commissioner just began a Buffer Strip Incentive program offering a 25% reduction in drain assessments to landowners who leave or create a buffer along county drains.

Is there an established watershed council or steering committee involved with the project? If yes, briefly describe the mission of the group. When was it established, how often does it meet, what is the average attendance at the meetings? If not, what is your plan for broad based community involvement in implementing the project?
Yes, the Two Rivers Coalition (TRC) is a non-profit, citizen based group working to implement the Paw Paw and Black River Watershed Management Plans. The organization was formed in 2009 and meets monthly with 15-30 participants at each monthly meeting and over 75 people attended the first 2 annual meetings. Further, TRC has an email list of 500 contacts of watershed stakeholders and will be a critical partner, along with the Conservation Districts and Southwest Michigan Planning Commission, for ensuring community involvement.

What partnerships (outside of your organization) have you established to help implement this project? List your partners.
The Southwest Michigan Planning Commission (SWMPC) will coordinate stakeholder involvement. SWMPC has been bringing together partners for over 6 years to do watershed planning and to implement the Paw Paw River Watershed Management Plan. The partners for the proposed project include Van Buren Conservation

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District, Delta Institute, Van Buren County Drain Commissioner, Berrien Conservation District, The Nature Conservancy, St. Joseph River Harbor Authority, Two Rivers Coalition, Friends of the St. Joseph River Association, Sauk Trails RC&D, Southwest Michigan Land Conservancy, Farm Bureau, Michigan Department of Environmental Quality and NRCS.

Watershed/ Project Work Area

List up to three 12 digit USGS HUC codes that comprise your watershed implementation area:

- Mill Creek (040500012506)
- Pine Creek (040500012507)
- Mud Lake Drain (040500012503)

Enter the total acres in the selected HUCs:

- 40,486

Enter the number of acres in those HUCs that are in the following land uses:

- Agriculture including pasture land use: 27,312 (67%)
- Forest including brushland land use: 9,816 (24%)
- Urban, suburban, industrial, commercial and rural residential land use: 2,034 (5%)
- Water/Wetlands: 1,324 (3%)

Is your proposed area upstream from a significant dam? If so, explain why the reservoir is not acting as a sediment trap, especially for clay particles, and how your project is reducing sediment in the Great Lakes.

The proposed area is not upstream of any significant dam that retains sediment. There is one dam on the main stem of the Paw Paw River at Watervliet, which is scheduled to be removed the summer of 2011 (all funding has been secured from NOAA, USFWS, MDNR, Berrien County and other local agencies). Currently, there is no impoundment area behind the Watervliet Dam and it does not act as a trap for sediment. This proposed project will result in significant, long-term reduction of sediment loading to the PPRW, SJRW and Lake Michigan. Through an attractive incentive payment program, agricultural BMPs will be implemented in the highest priority agricultural management areas as identified by extensive modeling in the PPRW Management Plan. The PPRW is the largest contributor of sediment to the St. Joseph River harbor at Lake Michigan (estimated to be 10,035 tons per year) and agricultural lands are the largest sources of sediment in the PPRW. Specifically, this proposed project will address the highest sediment loading areas in the PPRW and will target the highest loading lands within those areas through the use of established tools. The estimated soil reductions per year from this project will be 2,192 tons (or at least 22% of the load to Lake Michigan) and these estimates are believed to be very conservative.

Describe the Priority Areas within the watershed where you are going to concentrate your efforts, list by geographic area or narrative description of specific conditions.

In the PPRWMP, water quality issues are summarized for the targeted 3 subwatersheds as indicated in the table below. Sediment is a known pollutant in the subwatersheds that will be the focus of this project. Then following the table is a detailed description of each sub-watershed from the PPRWMP explaining the source and causes of the pollutants in more detail.

Water Body	Impaired Uses	Threatened Uses	Pollutant (known (k) or suspected (s)
Paw Paw Mainstem		Warmwater Fishery Other Indigenous Wildlife	Sediment (k), Nutrients (s), Pesticides (s)
Mill Creek	Partial & Total Body Contact*	Coldwater Fishery Other Indigenous	Sediment (k), Nutrients (s),

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		Wildlife	Temperature (s), Pathogens (k), Pesticides (s)
Pine Creek	Coldwater Fishery* Other Indigenous Wildlife* Partial & Total Body Contact*		Sediment (k), Nutrients (s), Temperature (s), Pathogens (k), Pesticides (s)
Mud Lake Drain		Warmwater Fishery Other Indigenous Wildlife	Sediment (k), Nutrients (s), Pesticides (s)

**This designated use was listed as not supported by the MDEQ in the 2008 Integrated Report.*

Mill Creek is a coldwater stream that meets the Paw Paw River in the City of Watervliet. The Total and Partial Body Contact designated uses are impaired due to known bacteria and pathogens (E. coli). The designated uses of Coldwater Fishery and Other Indigenous Aquatic Life and Wildlife are threatened due to known sedimentation. Nutrients, pesticides and increased water temperature are also suspected to be threatening water quality. Streambanks are a suspected source of sediment. Agricultural lands are a suspected source of sediment, nutrients, pesticides and increased water temperature.

Land use in the Mill Creek Watershed is primarily agricultural. Agricultural lands without BMPs (buffer strips, no-till, cover crops, etc.) allow sediment, nutrients and pesticides to be transported directly to surface water with runoff from rain events. Mill Creek is listed as a Category 5 water body in MDEQ's 2006 Integrated Report and the 2008 Integrated Report. According to these reports, Mill Creek is not meeting its designated use for Total and Partial Body Contact due to E. coli. A TMDL had been developed. A biological survey conducted by the MDEQ in 2006 at a site just upstream of Red Arrow Hwy rated the habitat as good due to a large amount of gravel and some woody debris, but also found evidence of flow fluctuations and sedimentation. A biological survey conducted by the MDEQ in 2005 rated the habitat at 67th Street as severely impaired.

Pine Creek is a coldwater stream that meets the Paw Paw River near the City of Hartford. The designated uses of Coldwater Fishery and Other Indigenous Aquatic Life and Wildlife are impaired due to known sedimentation. The Total and Partial Body Contact designated uses are impaired due to known bacteria and pathogens (E. coli). Nutrients, pesticides and increased water temperature are also suspected to be threatening water quality. The only known source of sediment is streambanks. Agricultural lands are a suspected source of sediment, nutrients, pesticides and increased water temperature.

Land use in the Pine Creek Watershed is primarily agricultural. Agricultural lands without BMPs (buffer strips, no-till, cover crops, etc.) allow sediment, nutrients and pesticides to be transported directly to surface water with runoff from rain events. Pine Creek is listed as a Category 5 water body in MDEQ's 2006 Integrated Report and the 2008 Integrated Report. According to the 2008 Integrated Report, Pine Creek is not supporting its designated use for Coldwater Fishery and Other Indigenous Aquatic Life and Wildlife due to channel modifications and other flow regime alterations. It is not meeting its designated use for Total and Partial Body Contact due to E. coli. A TMDL has been developed. A biological survey conducted by the MDEQ in 2006 rated the macro-invertebrate community poor at Red Arrow Hwy. Habitat was rated as marginal because the substrate consisted entirely of sand with little pool variability. According to the staff report the stream appeared to experience severe flow fluctuations.

Mud Lake Drain is a warm water stream that meets the Paw Paw River north of the City of Hartford. The designated use of Warmwater Fishery is impaired and the designated use of Other Indigenous Aquatic Life and Wildlife is threatened due to known sedimentation. Nutrients are also suspected to be threatening water

quality. Suspected sources of sediment are agricultural lands and streambanks. Agricultural lands are the suspected source of nutrients.

Land use in the Mud Lake Drain Watershed is primarily agricultural. Agricultural lands without BMPs (buffer strips, no-till, cover crops, etc.) allow sediment and nutrients to be transported to surface water with runoff from rain events. Increased runoff, due to the lack of BMPs, wetland loss and channel modification, creates flow fluctuations and increased stream power. These hydrologic changes cause stream bank erosion and habitat modification resulting in adverse impacts to native biota. Streams with more uniform flow throughout the year typically have more stable channel morphology and fish assemblages. According to the MDEQ Wetland Functional Assessment report, the Mud Lake Drain Watershed has lost 42% of its wetlands with a high significance for streamflow maintenance and 81% of its wetlands with a high significance for fish and shellfish habitat.

Mud Lake Drain is listed as a Category 4c water body in MDEQ's 2006 Integrated Report. According to the 2008 Integrated Report, Mud Lake Drain is fully supporting its designated use for Other Indigenous Aquatic Life and Wildlife, but its designated use of Warmwater Fishery was not assessed. A biological survey conducted by the MDEQ in 2006 at 52nd Street noted that 70% of the stream bottom was affected by sand deposition. MDNR Fisheries Division staff reported that Mud Lake Drain has recently lost two fish species.

III. Implementation

Implementation Strategy

Briefly describe the specific methodology(ies) you are going to use to implement the project. These can be traditional or creative nontraditional efforts. While 100% cost-share is allowed it is not encouraged. Include such items as:

- **The types of BMPs you are planning to install i.e. tree planting, easements, conservation tillage, streambank stabilization, hay in rotation, sediment basins, buffers, other**
- **timeline for implementation**
- **priority areas identification process**
- **incentive methods**
- **equipment purchases**

The Southwest Michigan Planning Commission, Delta Institute and the Van Buren and Berrien Conservation Districts in partnership with local watershed groups, county and state agencies, and other organizations, propose to implement a Payment for Ecosystem Services (PES) Program in the Paw Paw River Watershed (PPRW). The PES Program will not only help meet the goals of the local watershed plan, but also the Great Lakes Restoration Initiative, the Great Lakes Regional Collaboration, and the Lake Michigan Lakewide Management Plan through the implementation of on the ground restoration and conservation activities on private agricultural lands. These activities will improve near shore health by expanding green infrastructure; reduce sediment, nutrient, pathogen and chemical loadings through agricultural best management practices; enhance stewardship and conservation efforts with verifiable, metric-based water and habitat benefits; increase partnerships and collaboration; develop transferable infrastructure for ecosystem service payment programs; and, help restore the biological, chemical and physical integrity of the Great Lakes region.

The PPRW is an ideal location to implement the PES program, because of the existing partnerships and projects, the watershed planning and implementation efforts, and the continued need for implementation. The VBCD has had a technician focusing on these types of BMPs for the last year and so the project team has the knowledge to know what payments and incentives are needed for this type of incentive program to be successful. The PPRW Management Plan (approved by MDEQ and meets EPA 319 criteria) has specific targeted reductions for priority non-point source pollutants, such as sediment, nutrients, habitat loss,

pathogens, pesticides and hydrological modification (flashiness). Specific high priority agricultural BMPs in the plan include riparian buffers, wetland restoration and protection, filter strips, no-till or mulch tillage, cover crops and grassed waterways. The plan includes modeling of pollutant reductions with the implementation of agricultural best management practices which could be used as a basis to develop an evaluation and tracking system for this project. Further, this project will build on the existing partnerships and momentum of several current efforts, such as the Paw Paw and Black River Wetland Protection and Restoration Project and The Nature Conservancy Paw Paw River Watershed BMP Project.

This project will be managed by the Southwest Michigan Planning Commission with significant contributions from the Delta Institute and the Van Buren Conservation District. This project will rely on a diverse and effective partnership. Other partners contributing to the project include the Van Buren County Drain Commissioner, the Berrien Conservation District, The Nature Conservancy, the St. Joseph River Harbor Authority, the Two Rivers Coalition, the Friends of the St. Joseph River Association, the Sauk Trails RC&D, the Southwest Michigan Land Conservancy, the Michigan Farm Bureau, the Michigan Department of Environmental Quality and the USDA Natural Resource Conservation Service. Additional partners will be solicited as stakeholder engagement and project implementation progresses.

The project partners will develop and implement the PES over a three-year project period. Eight (8) major task areas have been identified, and the project team has organized them into three (3) general time periods. The first two months (Phase 1) is the targeting period, which focuses on finalizing program details and identifying target areas and landowners(Oct 2011 – March 2012). The next phase is focused on implementation, lasting 31 months (Dec 2011 – June 2014). The final phase (July 2014 – Sept 2014) is evaluation, measurement and reporting, where the project team would critically evaluate the project.

The project team proposes to use $168,708 of the requested grant funds for the implementation of the agricultural practices (includes BMP establishment costs, equipment rental costs and incentive payment) selected for the PES. The project team will use existing tools to target high sediment loading agricultural lands and to measure the actual outcomes of the project. Specifically, the High Impact Targeting (HIT) tool and a sediment reduction calculator, currently being developed by the Institute for Water Research at MSU, will be utilized to measure the farm and landscape level impacts of non-point source pollution from reduced sediment and nutrient loading. By offering incentives for the highest erosion areas in the highest priority areas of the watershed, this project will have a significant impact on reducing sediment loads to the St. Joseph River harbor and Lake Michigan.

The project team has identified 8 major task areas to implement the PES:

1. Identification of Best Management Practices (completed)
2. Identification of Target Areas (completed) & Target Landowners
3. Landowner Engagement
4. Managing Landowner Participation
5. Quantification of Sediment Reductions from Best Management Practices
6. Verification of Best Management Practice Implementation
7. Payments for Implementing Best Management Practices
8. Evaluation, Measurement, and Reporting of Project Results

Identification of Best Management Practices *Complete*

The project team has selected eligible BMPs based on the recommendations of the Paw Paw River Watershed Management Plan and past BMP modeling work for the watershed. The BMPs eligible for payments under this program include: no-till practices, mulch till, 30’ grass filter strips, and cover crops. Implementation of these practices must be within fields that currently lack the BMP. In other words, this project will only pay for the implementation of new practices. The project will not pay for the retention of existing practices or preservation of existing filter strips that may be funded by current Farm Bill incentives.

The Farm Bill programs that best fund these four BMPs are Environmental Quality Incentives Program (EQIP) and Agricultural Water Enhancement Program (AWEP), which both use a ranking system based on total number of practices in an application to award contracts to the highest ranking applicants. Also, in Van Buren County there is strong competition for EQIP and AWEP funds with approximately a two-year wait. Because applicants who only wish to do vegetative practices such as no-till, cover crop and others rank low compared to other applicants with engineered practices, Farm Bill funding for these four BMPs are not fully utilized in the priority areas. By targeting implementation to those priority areas that are not currently receiving Farm Bill funding for these BMPs, the project will create additional sediment reductions above and beyond current government-funded BMPs. The project team believes that this project will attract landowners in the priority areas that are interested in starting these BMPs, but not interested in enlisting NRCS and Farm Bill assistance for other engineered practices that would make their applications more selectable.

The project team believes that eligible BMPs would be implemented by landowners in between the 2011 and 2012 growing seasons.

Identification of Target Areas & Target Landowners *Oct 2011 – Nov 2011*

The project partners have already identified the highest loading agricultural HUC 12 sub-watersheds that are contributing the most sediment to Lake Michigan. Within the three identified sub-watersheds, the project team will use the High Impact Targeting (HIT) tool to identify high priority areas for sediment reduction. In addition to identifying target areas via HIT, the project team will work with the county drain commissioner to identify other priority landowners. A mailing list will be generated utilizing parcel data from the counties and the HIT model to identify priority, high and highest priority landowners.

The HIT tool was developed by the Institute of Water Research (IWR) at Michigan State University and Michigan Department of Agriculture (funded by EPA) to identify the high-risk sediment loading areas at the field level. HIT utilizes sophisticated geospatial models to estimate sediment loadings with a high degree of resolution. The Institute's approach can be used from a watershed-level scale on down to the field level for precise identification of high-risk areas. The HIT tool integrates three spatially-explicit components. First, an estimate of the percentage of eroded soil that ends up in nearby streams is obtained from the Spatially-Explicit Delivery Model (SEDMOD). Second, the actual annual volume (in tons/acre/year) of eroded soil is obtained from the Revised Universal Soil Loss Equation (RUSLE). Third, the annual volume of sediment transported to nearby streams is obtained by combining the results of SEDMOD and RUSLE. The HIT tool is available for no cost, though an on-line system with data and tools that allow for fast and efficient prioritization of conservation efforts to reduce sediment loadings.

Once the priority areas are identified, the project team will compare these areas with parcel maps to determine ownership. Then, the landowners will be contacted via through multiple means, as identified in the Landowner Engagement section. Once the landowners are identified, we would work with the Van Buren Conservation District to determine if the high priority areas are currently under USDA Farm Bill Programs. This check will ensure that farmers aren't currently enrolled in Farm Bill programs.

SWMPC and VBCD will be the responsible parties for this task.

Landowner Engagement *Dec 2011 – Sept 2014*

The project team will develop a comprehensive, multi-media outreach strategy for building landowner interest in the project. The campaign will consist of direct mailings, phone calls, workshops, field days, farm visits and press releases. We would start with a kick-off event and corresponding media advisory. We would follow-up these initial public awareness tasks with a direct mailing to targeted high priority landowners, which invites them to a workshop to learn more. The interest generated from this initial targeted outreach would dictate future outreach activities. If we get little response from the first mailing, we will plan additional workshops,

write more media advisories, publish articles in local newspapers, make site visits and place phone calls. (More information on outreach efforts is in the Media Advisory section of this proposal.)

Outreach efforts will be lead by the Van Buren Conservation District (VBCD), which is the conservation gateway for many landowners. The VBCD has strong relationships with individual producers and the credibility to market this program. Additional outreach and landowner engagement will be provided by the SWMPC and the Delta Institute. Much of SWMPC and Delta's role will be in support of the VBCD.

As part of landowner engagement, the project team will develop promotional items and educational materials related to the project. These materials will be used throughout the campaign to engage and educate landowners on the program requirements and benefits. Special attention will be given to the incentives offered by the Van Buren County Drain Commissioner, which are leveraged by this project. Promotional materials will emphasis the duel incentives available to landowners who implement certain BMPs.

Managing Landowner Participation *Oct 2011 – March 2012*

The Delta Institute will draft a comprehensive program protocols that will cover all aspects of the project, including the eligible activities and technical specifications, the criteria for participation, the payment structure, the administration process, and all application and contract materials.

The program protocols will focus on several topics, including qualifying activities, eligible participants, contracts, payment structure, and payment logistics. From the list of activities selected for the project, the project team will create the technical specification and requirements for the activities to ensure that projects that are enrolled in the program produce real and verifiable results. Eligibility requirements will include: 1)Participation as being above and beyond regulation or existing Farm Bill incentive programs; 2)Enrollees as the legal entity to be the implementing party on private and other non-federal lands; and, 3)Other issues that are defined as the program development progresses. The project team will also develop the payment structure and payment logistics to be used for each of the eligible activities.

Delta will create a spreadsheet for managing landowner participation, BMP implementation, BMP verification, sediment reductions, and payment tracking. This spreadsheet will be the information center of the project, allowing the project team to track all actions related to landowners and best management practices.

Delta will also hold and manage the contracts for landowners. As a developer of forestry and agricultural carbon offset projects, Delta has managed over 1,500 contracts with landowners and disbursed over $1.5 million in carbon offset payments. Thus, Delta has internal administrative processes for managing landowner participation in payment for ecosystem service programs.

Quantification of Sediment Reductions from Best Management Practices *Oct 2011 – Sept 2014*

Quantification of sediment reductions from the Best Management Practices serves as the basis for payments under this program. Thus, it is crucial for the project to have a strong quantification methodology. The Nature Conservancy has asked the Institute of Water Research (IWR) at Michigan State University to assess the feasibility of developing an on-line sediment load reduction calculator within the Paw Paw River Watershed of southwest Michigan. The calculator would allow the project team to delineate an area within the watershed on a web-based mapping interface, specify a best management practice (BMP), and estimate a subsequent reduction in annual sediment loading to nearby streams. (TNC is going forward with this on-line sediment load reduction calculator as part of a different project and is allowing us to use the calculator for this project).

TNC's field scale sediment reduction calculator is based on the HIT model. HIT's principle benefits for modeling sediment loading change are its relative simplicity, enabling it to be employed dynamically, and its raster cell level output, allowing change to be visualized within individual fields. However, HIT's simplicity is also a limitation. Its singular focus on sheet erosion (a byproduct of employing RUSLE) means that sediment

loading estimates fail to account for large gullies, wind, or bank erosion. For this reason, HIT is primarily promoted as a tool for relative comparison between areas. Thus, sediment load reduction results from the proposed calculator would likely underestimate actual annual sediment loading. Underestimating sediment loads is acceptable, particularly when those sediment loads have a payment attached. In any Payment for Ecosystem Services program, it is also better to conservatively estimate reductions, leaving some reductions unaccounted for, than to overestimate reductions and pay for reductions that didn't occur. TNC expects this sediment reduction calculator to be developed by October 2011.

The project team will work on this task jointly, although VBCD will have primary responsibility.

Verification of Best Management Practice Implementation *June 2012 – Sept 2014*

A critical step in any payment for ecosystem services program is confirmation that the eligible practices were actually implemented according to program requirements. For this project, the Van Buren Conservation District will annually site inspect 100% of the acres enrolled in an eligible practice for three years. Verification will occur before any payments to landowners are made. The timing of the verification will depend on the implemented practice. For example, filter strips can be verified any time after establishment, while no-till practices will only be verified in the late summer. Cover crops will be verified after harvest in the winter months.

Payments for Implementing of Best Management Practices *April 2012 – Sept 2014*

The payments in this program will be two-fold. First, we will pay a one-time establishment fee on a per acre basis. This fee will help offset the initial cost of implementing the BMP. The establishment fee is based on the 2011 EQIP payments. Then, we will pay an annual performance payment, on a per pound basis, providing a greater incentive for landowners to implement BMP's with the highest sediment reduction potential. The payments are based on the quantification of sediment reduction using the sediment calculator tool created for The Nature Conservancy by the MSU Institute for Water Research.

In addition, the performance payments will be weighted based on the location of the project. Projects located in the highest priority areas, as indicated in the HIT analysis, will have the performance payment at $12/acre. Projects located in the priority area will have a performance payment of $5/acre (the base rate). The priority/base rate was determined from previous work in a nearby watershed, which suggested that landowners would accept payments rates between $4.50 and $14.50 per ton. The project team felt that the base/priority performance payment of $5/ton and $12/ton for high priority lands was acceptable, given the one-time establishment fee. Payments to landowners are made annually after field verification of the BMPs.

BMP	**BMP Description**	**Establishment Fee ($/acre)**	**Performance Payments ($/ton)**	
			Priority/Base Rate	**High Priority Rate**
Cover Crop	Cover crop – 3 yr contract	$35.00	$5	$12
Filter Strip	Cool season grasses – 30 ft strip – 3 -10 yr contract	$270.85		
Filter Strip	Warm season grasses – 30 ft strip – 3 10 yr contract	$397.98		
Mulch-Till	Mulch-Till – 3 yr contract	$9.00		
No-Till	No-Till – 3 yr contract	$18.00		

This project was funded by the Great Lakes Restoration Initiative, and is maintained through the Great Lakes Basin Program for Soil Erosion and Sediment Control at the Great Lakes Commission.

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To ensure that this program is providing additional sediment reductions above and beyond current practices, landowners can only enroll lands not currently in one of these BMPs.

Delta will be the lead on this task and have primary responsibility for developing and holding all contracts and disbursing all payments to landowners.

Evaluation, Measurement and Reporting of Project Results *Jan 2012 – Sept 2014*

The project team will implement a grant reporting and administration function to ensure that all required project and accounting reports are submitted, per GLRI requirements, on a quarterly basis. Furthermore, the project team will also report regularly on the expected sediment reductions, as determined by the IWR sediment reduction calculator. The proposed timeline for the project by task is included in the Timeline section.

This part of the project evaluation will actually be launched concurrently with landowner engagement and continue throughout the majority of the project to maximize the potential for creating the appropriate system for funding the program beyond the grant period.

The project team will work on this task jointly, although SWMPC will have primary responsibility.

Technical Assistance

Grant money can be used to pay for technical assistance. Briefly describe the technical assistance required to implement the project over a three year period. You will be required to provide in-kind office space, administrative support, computer and other equipment, general office supplies, and other items and services required to perform their job. This can be shown as match.

The project budget has set aside $149,900 to retain technical assistance on the project. Project success is dependent upon having a technician on the ground working with landowners. The VBCD will house and employ a technician to work with landowners and will provide in-kind office space, administrative support, computer and other equipment and supplies. Delta will provide program management such as developing and holding landowner contracts and making and tracking program payments to landowners over three years of the contract.

BMPS - Fill out all that apply (A-E):

A. Agronomic/Cover-based Practices (BMPAs) installed by Landowners/Landusers with incentives paid for with this grant (ex. Cover Crops, conservation tillage, no-till.) If you have more than three BMPAs, copy and paste BMPA1 section and change the number as appropriate.

BMPA1 – No-till

Description: No-till practices, as defined by the USDA Natural Resources Conservation Services (NRCS), on a 3 year contract

Quarter	1	2	3	4	5	6	7	8	9	10	11	12
Start/Complete												

Number of acres/units of BMP to be installed during project: **1350**

Incentive method: **$18.00/acre establishment rate** and **rates based on priority areas - $5/ton/year for base priority or $12/ton/year for high priority.**

Expected soil savings from BMPA1: **2,235*** total tons over the life of the BMPs.

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**This is for the 3 year contract period.*

BMPA2 – Mulch-till

Description: Mulch-till practices, as defined by NRCS, on a 3 year contract

Quarter	1	2	3	4	5	6	7	8	9	10	11	12
Start/Complete												

Number of acres/units of BMP to be installed during project: **2160**

Incentive method: **$9.00/acre establishment rate** and rates **based on priority areas - $5/ton/year for base priority or $12/ton/year for high priority.**

Expected soil savings from BMPA2: **1,788*** total tons over the life of the BMPs.
**This is for the 3 year contract period.*

BMPA3 – Cover Crops

Description: Annual cover crop to be planted in fall

Quarter	1	2	3	4	5	6	7	8	9	10	11	12
Start/Complete												

Number of acres/units of BMP to be installed during project: **2160**

Incentive method: **$35.00/acre establishment rate** and **rates based on priority areas - $5/ton/year for base priority or $12/ton/year for high priority.**

Expected soil savings from BMPA3: **2,442*** total tons over the life of the BMPs.
**This is for the 3 year contract period.*

BMPA4 – Grass Filter Strip

Description – Cool or Warm Season Grass filter strips, 30 ft wide, installed to NRCS specifications

Quarter	1	2	3	4	5	6	7	8	9	10	11	12
Start/Complete												

Number of acres/units of BMP to be installed during project: **40 acres**

Incentive method: **$270.85/acre (cool season grass) or $397.98/acre (warm season grass) establishment rate** and rates **based on priority areas - $5/ton/year for base priority or $12/ton/year for high priority.**

Expected soil savings from BMPA4: **111*** total tons over the life of the BMPs.
**Even though this is a 10 year contract with the landowner, the sediment reduction is only calculated for 3 years to be consistent with the other practices. Further, verification and incentive payments will only be for 3 years.*

Media Campaign

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You will be required to conduct a kickoff event in the first quarter of the project. You are specifically to invite, among others, all members of congress who have a portion of their district within your watershed project boundaries, the media and the chairperson of the Great Lakes Commission delegation from your state. Describe how and what you will do to meet this requirement.
The project team will kick-off the project in late October or early November. The team will plan and host the kick-off event on-location, where these practices can be viewed first-hand. The Van Buren Conservation District will find a suitable farm who can host the kick-off event. Congressman Fred Upton's office will be invited to give remarks at the event. The media and State and local elected officials will also be invited. The project partners have existing mailing lists for these individuals and have a successful history in planning and hosting well attended events.

You are also required to establish an on-going outreach campaign. Describe your on-going outreach campaign strategy for the general public/media, landowners/landusers and elected officials.
At the beginning of the project, the project team will formulate a communications and marketing strategy. This plan will focus on how to best communicate the project to landowners, promote program participation, and engage local policymakers in the effort. The communication of the activities, payment structure and eligibility requirements will be formulated to be as simple as possible with appropriate messages being developed for the variety of different of audiences that will be need to be contacted to launch, run and grow the program successfully.

The media campaign will continue throughout the project and will describe the project, report on progress and results. At a minimum, the campaign will consist of direct mailings, phone calls, workshops, field days, farm visits, press releases, website updates and the use of social media. After the initial kick-off event, we would invite landowners to a seminar to learn more about the project. The interest generated from this initial targeted outreach would dictate future outreach activities. If we get a poor response from the first mailing and seminar, we will plan additional workshops, write more media advisories, publish articles in local newspapers, make site visits and place phone calls.

The Van Buren Drain Commissioners office will contact landowners that they have worked with in these areas. SWMPC and TRC both have extensive email contact lists (over 2,000) and will utilize these lists to publicize the project's progress, opportunities and results. Several organizations, including Two Rivers Coalition (TRC), VBCD, SWMPC, Van Buren Drain Commissioners Office, and Friends of the St. Joe River, will have a project description, project progress and results on their websites. Lastly, TRC will also utilize its Facebook and Twitter pages to publicize the project.

Outreach efforts will be lead by the Southwest Michigan Planning Commission and the Van Buren Conservation Dsitrict, which is the conservation gateway for many landowners. Van Buren Conservation District has strong relationships with individual producers and the credibility to market this program. Additional outreach and landowner engagement will be provided by the Delta Institute and other partners. With the diverse partnership involved, many people in the Great Lakes region will be reached during this extensive media campaign.

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