

Full Project Proposal

PROJECT NAME:

St. Joseph River Watershed in Michigan – Fish Migration Barrier Inventory

FIELD OFFICE:

Green Bay Fish and Wildlife Conservation Office

PROJECT COORDINATOR:

Rick Westerhof, Fish Biologist

FONS NUMBER:

31320-2010-1055

FUNDING REQUESTED:

Funds requested=\$39,240 Partners contribution=\$40,808 Total=\$80,048

STATEMENT OF PROBLEM:

Indigenous freshwater fish populations in the St. Joseph River system are negatively affected by obstructions to fish passage. Natural movements of fish throughout the watershed are restricted or eliminated due to approximately 190 dams and an unknown number of “impassable” culverts. Artificial barriers such as dams, weirs, causeways and perched or under-sized culverts obstruct the free passage of native fish by preventing or impeding their movement from one part of a stream or river system to another. Many species of fish must move between habitat areas at some stage in their life cycle to spawn or seek food and shelter, with many having definite migration requirements. Obstructions which impede the free passage of fish often result in declining populations or extirpations, as documented in the Michigan Department of Natural Resources (MDNR) St. Joseph River Assessment (1999). The hydrologic condition of the river determines the extent and continuity of the obstruction. Some obstructions prevent fish passage in periods of low flow. Some may allow the movement of fish in times of flood when high water levels provide free passage and the obstacle is said to be 'drowned-out'. Some obstacles prevent fish passage at all times, and are therefore a total barrier, which leads to local extinction of migratory species upstream, and perhaps even downstream. The physical conditions and economic viability (e.g., cost of repairs and maintenance versus cost of removal) of most of the 190 dams in the watershed are unknown. This information is critical for identifying barriers (dams, culverts, etc.) that are potential candidates for removal, initiating discussions with barrier owners, and allocating resources to projects with the highest benefit (in terms of restored fish passage) to cost ratio.

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PROJECT OBJECTIVES:

The overall goal of this project is to identify a minimum of ten migration barriers that meet conditions for immediate removal or further study.

To accomplish this goal, the proposed project will:

1. Gather site-specific information for fish migration barriers that exist within the St. Joseph River watershed.
2. Prioritize the obstructions found in terms of the need to provide fish passage at a given site and the relative ease of removal.
3. Prepare a strategic plan of future actions and funds needed to address the problems posed by the obstruction identified and cataloged.

DESCRIPTION OF PROPOSED PROJECT:

Location

The St. Joseph River basin, located in southwest Michigan and northeast Indiana, is the third largest river basin in Michigan (Figure 1). The river begins in Michigan's Hillsdale County at Baw Beese Lake, and flows in a northerly arc before turning south and entering Indiana. The river flows west across Indiana before making an abrupt turn to the north at South Bend. It re-enters Michigan in southeastern Berrien County and flows northwest until it reaches Lake Michigan between the cities of St. Joseph and Benton Harbor. The St. Joseph River mainstem is 210 miles long, and its tributary streams total an additional 1,641 miles (Brown 1944). The river drains a watershed of 4,685 square miles: 3,000 square miles in Michigan and 1,685 square miles in Indiana. Its major tributaries are the Coldwater, Prairie, Fawn, Pigeon, Elkhart, Dowagiac, and Paw Paw rivers (Figure 2). (Wesley, Jay K., and Joan E. Duffy. 1999. St. Joseph River Assessment. Michigan Department of Natural Resources, Fisheries Division, Special Report 24. Ann Arbor, Michigan.).

Description of On-The-Ground Work

This project will involve inventorying and prioritizing fish passage barriers (dams, water control structures, perched culverts, etc.) in the St. Joseph River watershed. First, an extensive literature review for all barriers will be conducted. Those barriers eliciting further review will be field assessed. Private professional engineering staff will be doing the on-site evaluations of the obstructions. Local Conservation District Staff will provide on-the ground support to engineering staff to locate and navigate to known fish passage obstructions; help identify and locate unknown fish passage obstructions; and provide local resource information regarding landowners and history of fish passage obstructions. A detailed work plan is presented below:

1. The applicant, with assistance from FishBeck Thompson, Carr and Huber (FTC&H), will oversee selection and coordination of a "Barrier Committee".
2. The applicant, with assistance from FTC&H, will oversee a literature review to obtain all existing information regarding fish migration barriers in the watershed, and compile the results into one complete database and report. It is already known that approximately 190 dams are in the watershed, along with an unknown number of "impassable" culverts. Much information already exists relative to the location, height, purpose and impoundment size of each dam. However, several key pieces of information are either missing or "lost" in various documents. Along with GIS data, aerial photos and local knowledge, a

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screening process will be developed to inventory remaining barriers and identify those barriers that require field assessment.

3. Based upon results of literature review, FTC&H will make recommendations for, and the Barrier Committee will determine, which barriers require on-site assessment. It is estimated that approximately 40-50 barriers will be field inspected. The Barrier Committee will complete a detailed plan for these site-specific barrier assessments.
4. A "Fish Passage Obstruction Removal Prioritization Schedule" will be developed to provide a quantitative, science-based, objective basis to rank the priority of a fish-passage restoration project for any obstruction identified in Step 3, either by modifying or removing the obstruction. Criteria to be considered in development of the Fish Passage Obstruction Removal Prioritization Schedule will be, at a minimum:
 - a. details of the size of the river system impacted by the obstruction
 - b. location of the obstruction
 - c. condition of the obstruction
 - d. fish communities and habitat upstream and downstream of the obstruction
 - e. presence of threatened or endangered species
 - f. severity of the obstruction (year-round or seasonal obstruction)
 - g. ease of removing obstruction
 - h. practicality of building a fish way around the obstruction
 - i. length or reach of the river or tributary opened by obstruction removal
 - j. potential expansion of invasive species (e.g., sea lamprey) due to obstruction removal
 - k. effects of obstruction on fish habitat (e.g., impoundment of high gradient stream reaches or alteration of temperature and flow regimes)
 - l. owners willingness to remove the obstruction
 - m. estimated cost of removal/modification
 - n. environmental impacts
5. Under direction of FTC&H, one engineer and a team of project partners will conduct on-site barrier assessments to collect data necessary for prioritization, based upon the schedule developed during Step 4.
6. A final report will be prepared to include methods, results of literature review and a list, with supporting data and justification, of barriers with the highest potential for removal or modification. Each of these high priority barriers will be identified on a diagram and photo documented.
7. A public information/education workshop will be held to present the final report and the impacts of migration barriers on the physical, chemical and biological characteristics of a stream. Local experts will be obtained for the presentations. The workshop will include a field trip component to visit barriers for potential removal, as well as examples of well and poorly-designed or installed culvert crossings.

Probability of Completion

Probability of completion within one year: 95%

Probability of completion within two years: 100%

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Partner Contribution and Total Project Costs

Contributing Partners	Cash or In-Kind?	Amount \$ Contributed
Fishbeck, Thompson, Carr & Huber	In-Kind	\$2,250.00
Potawatomi RC&D	In-Kind	\$3,312.00
Southwest Michigan Planning Commission	In-Kind	\$1,000.00
Friends of the St. Joseph River	In-Kind	\$5,152.00
Branch County Conservation District	In-Kind	\$2,400.00
Cass County Conservation District	In-Kind	\$1,000.00
Calhoun County Conservation District	In-Kind	\$2,400.00
Other Michigan Conservation Districts	In-Kind	\$6,000.00
NRCS	In-Kind	\$8,000.00
Indiana Conservation Districts	In-Kind	\$2,500.00
Michigan Department of Natural Resources - Fisheries Division	In-Kind	\$974.00
Various individuals, including speakers for workshop	In-Kind	\$4,320.00
City of Elkhart, Indiana	In-Kind	\$1,500.00
Total FWS Fish Passage Contribution (include only on-the-ground costs)	Cash	\$39,240.00
Total Project Cost =		\$80,048.00

Itemized List of What Service Funds Will Be Spent On

Expense Item	\$
consulting fees	\$25,000.00
salaries and benefits	\$13,040.00
mileage	\$1,200.00
Total FWS Fish Passage Contribution =	\$39,240.00

HOW DOES THIS PROJECT ADDRESS FWS PRIORITIES?:

The “St. Joseph River Assessment”, Special Report 25, can be found at: http://www.michigan.gov/dnr/0,1607,7-153-10364_52259_10951_19056-46270--_00.html. The report includes full lists of fish and mussels in Tables 24 and 27, respectively. Approximately 100 native fish species are known to inhabit the St. Joseph River watershed. Seven of these species (lake sturgeon, northern brook lamprey, cisco, pugnose shiner, creek chubsucker, river redhorse, and greater redhorse) are listed as threatened or endangered by the States of Michigan and Indiana. Eight special concern fish species also have been documented within the watershed. Identification and subsequent removal of barriers will reconnect fragmented populations, provide access to seasonally important habitat (e.g., spawning sites), and facilitate recolonization of native fishes in stream reaches where populations have been extirpated as a result of human activities.

This project addresses FWS priorities through the Fisheries Strategic Vision:

- 1) Partnerships and Accountability; Objective 1.1. Develop and improve long-term partnerships with States, Tribes other Federal agencies, non-governmental organizations, and other Service programs to develop collaborative conservation strategies for aquatic resources.

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- 2) Aquatic Species Conservation and Management; Objective 2.3: Maintain diverse, self-sustaining fish and other aquatic resource populations. Action 2.3.2. Work with States, Tribes and other federal agencies to identify and implement priority actions that need to be taken to reduce and monitor the biggest threats.
- 3) Aquatic Habitat Conservation and Management; Objective 6.1. Facilitate management of aquatic habitats on national and regional scales. Action 6.1.1. Identify and implement significant watershed management programs with partners to ensure that habitat conservation and restoration is an integral component of management actions.
- 4) Aquatic Habitat Conservation and Management; Objective 6.2. Expand the use of Fisheries Program expertise to avoid, minimize or mitigate impacts of habitat alteration on fish and other aquatic species. Action 6.2.2. Work with partners to identify and provide access beyond barriers to fish migration.

This project addresses the Region 3 Conservation Priorities by working with inland native brook trout populations.

1. Obstacle 4 - inability to restore populations, e.g., lack of availability of genetic material, habitat fragmentation, population isolation, etc.
2. Obstacle 7 - habitat loss or degradation.

HOW DOES THIS PROJECT ADDRESS PARTNER PRIORITIES?

MDNR, Fisheries – Removal of dams to restore hydrology and habitat connectivity within river systems was identified as a Priority Conservation Action in Michigan’s Wildlife Action Plan. This plan lists 44 fish species as species of greatest conservation need (SGCN) in Michigan, and 25 SGCNs occur within the St. Joseph River watershed. (Eagle, A. C., E. M. Hay-Chmielewski, K. T. Cleveland, A. L. Derosier, M. E. Herbert, and R. A. Rustem, eds. 2005. Michigan’s Wildlife Action Plan. MDNR, Lansing, Michigan).

Michigan Department of Environmental Quality (MDEQ), Dam Safety – This inventory will undoubtedly include many dams that have been in disrepair and a hazard for decades. Improving the safety of existing dams is the goal of the MDEQ Dam Safety program.

Potawatomi RC&D – The RC&D is devoted to preservation and sound development of our natural resources and the enhancement of the quality of life for urban and rural communities through sound economic practices.

Southwest Michigan Planning Commission - The mission of the Southwest Michigan Planning Commission is “to promote a sustainable, high quality of life through the facilitation of sound planning and decision-making”. The SWMPC is committed to facilitating the development of intergovernmental cooperation and coordination within our region and with our neighboring regions.

Conservation Districts – Technical support is available through the Districts and this project fits with their guiding philosophy that local people should make decisions

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on conservation issues at the local level, with technical assistance provided by government.

The Friends of the St. Joseph River Association, Inc. – The mission statement of the Friends is to “Unite a diverse group of stakeholders throughout the watershed in a collaborative effort to protect, restore, and foster stewardship of the St. Joseph River Watershed as a critical component of the Great Lakes Basin.” The completion of this proposed project is consistent with this mission statement.

This project is consistent with recommendations set forth in numerous reports, including the St. Joseph River Assessment and the following watershed management plans:

St. Joseph River Watershed Management Plan (WMP) in 2008 that was federally approved 2008 (http://www.michigan.gov/documents/deq/ess-nps-wmp-st-joe_209205_7.pdf).

NPDES Phase 2 communities in Berrien and Cass Counties completed the Lower St. Joseph/Galien River WMP in 2007 (<http://www.swmpc.org/downloads/Lower%20St.%20JosephGalien%20River%20WMP%20Final%20Report.pdf>)

Hog Creek WMP – completed June 30, 2005 (http://www.michigan.gov/documents/deq/ess-nps-fs-hog-creek-planning_207942_7.pdf)

Rocky River WMP – completed in 2004 (http://www.michigan.gov/documents/deq/ess-nps-wmp-rocky-river_208924_7.pdf)

Dowagiac River WMP – completed 2002 (http://www.michigan.gov/documents/deq/ess-nps-wmp-dowagiac_208923_7.pdf)

Paw Paw River Watershed Management Plan, 2008 <http://www.swmpc.org/pprw.asp>

The Berrien County Hazard Mitigation Plan (FEMA approved)

Nottawa Creek WMP – completed in 2000.

Swan Creek WMP

ANTICIPATED BENEFITS:

Watershed-Level Ecological Benefits

Positive impacts of barrier (dams, perched culverts, water diversions) removal are well documented and include improved hydrologic conditions, temperature regimes, and nutrient and sediment transport patterns, among others. The St. Joseph River watershed contains 114 species of fish, 25 species of mussels, and a myriad of plants, aquatic invertebrates, mammals, birds, reptiles and amphibians. The proposed project will serve as a guideline for reconnection of habitats throughout the watershed, thereby benefiting a majority of these species.

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Primary Native Species to Benefit

All of the native species listed in the “St. Joseph River Assessment”, Special Report 25 (http://www.michigan.gov/dnr/0,1607,7-153-10364_52259_10951_19056-46270-,00.html) are expected to benefit from this project. Native species of conservation priority include lake sturgeon, pugnose shiner, creek chubsucker, river redhorse, cisco, northern brook lamprey, and greater redhorse.

Stream Miles or Wetland Acres Reconnected

Over time, the proposed project is expected to lead to the reconnection of hundreds of miles of streams, as funding allows.

Other Social Benefits

The proposed project will address goals of several project partners, including the MDEQ Dam Safety Unit. Several of the dams within the watershed, that may be included in the recommendations for removal, are likely considered to be hazardous to the safety and welfare of humans. Also, we anticipate several culverts could be perched or failing and be unsafe for motor vehicle travel. Working with the county road commissions to provide safer travel and provide fish passage is a “win win” situation.

Possible Negative Impacts

No negative impacts are expected for the proposed project. Invasive species management will need to be considered during the potential removal/modification of any migration barriers. The final report will be shared with all management agencies to get comments on invasive species before removal of any barriers. The FWS Sea Lamprey program will be contacted before any barriers are slated for removal.

EXISTING BIOLOGICAL AND PHYSICAL MONITORING DATA:

A vast amount of biological and physical monitoring data exists for the watershed, including, but not limited to, the “St. Joseph River Assessment”, Special Report 25, numerous watershed management plans previously listed in this document, inventories conducted by the States of Michigan and Indiana, and data collected by several of the project partners. Nearly all of these documents mention improved fish passage as a priority.

BRIEF SUMMARY OF WHY THIS PROJECT SHOULD BE FUNDED:

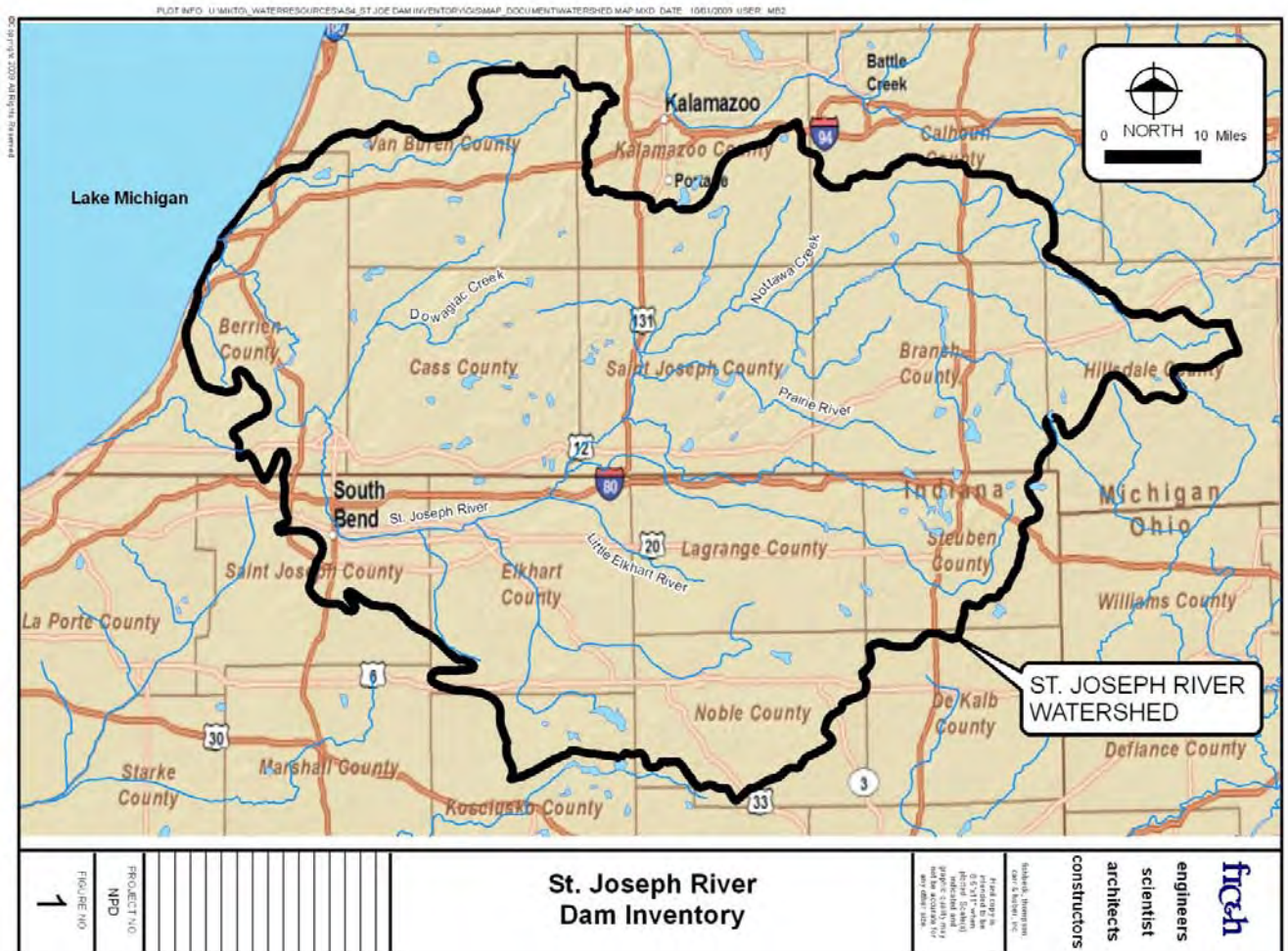
The St. Joseph River and its tributaries are highly fragmented by at least 190 migration barriers. The effects of these migration barriers on fish and other aquatic populations are well documented. While the importance of fish passage is widely recognized within the watershed, little guidance exists to determine which sites are most suitable for project implementation. The proposed study will assess and prioritize migration barriers using a variety of criteria, and will be a valuable tool to determine where money is best spent within the watershed.

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APPENDIX A- Pictures of the Project Site

There are no project sites selected yet.

APPENDIX B- Watershed Map



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APPENDIX C- Map of the State, Highlighting Location of the Watershed

