

**Environment and Natural Resources Trust Fund
2015 Request for Proposals (RFP)**

Project Title:

ENRTF ID: 010-A

St. Anthony Falls Lock Closure: Assessing Ecological Impact

Category: A. Foundational Natural Resource Data and Information

Total Project Budget: \$ 148,093

Proposed Project Time Period for the Funding Requested: 1 year, July 2015 - June 2016

Summary:

The Lock closure provides a unique opportunity to study the impact of altering flow patterns on Mississippi River ecology. Study results will help guide restoration decisions during riverfront revitalization.

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Sponsoring Organization: Minneapolis Riverfront Partnership

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Location

Region: Metro

County Name: Hennepin

City / Township: Minneapolis

Alternate Text for Visual:

Map and flow chart describing potential impact of lock and dam closure

_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ TOTAL	



PROJECT TITLE: St. Anthony Falls Lock Closure: Assessing Ecological Impact

I. PROJECT STATEMENT

With the impending passage of bills in the U.S. Congress, the Upper Lock on the Mississippi River at St. Anthony Falls in Minneapolis could close as soon as 2015. This project seeks to understand the impact of this closure on the Mississippi River and the river corridor from the Coon Rapids Dam to Lock & Dam No. 1. Study results will impact revitalization decisions in the Upper River, the next major area of riverfront investment. Timing is critical: if measurements are not established prior to lock closure, this comprehensive picture of the impact will be lost.

Closing the lock will result in the stoppage of dredging activities. Once dredging stops, sediment flowing down the river will begin to accumulate, potentially changing the nature of the river and the riparian corridor above and below the falls. Both physical and biological systems - in the river and beside the river - will likely be affected by the change. The prospect of this lock closure presents a unique opportunity to understand what happens when river patterns are altered.

The long-term goal of this work is to examine what happens to the river over time as the river rebuilds itself without the impact of dredging. This is a two-phase project. Phase 1, proposed here, is to gather baseline data on how the river corridor functions and then to use this data to establish the indicators to track changes in the river, both prior to the lock closure and afterwards. It is expected that with the completion of Phase 1, a Phase 2 project request will be submitted to LCCMR to track these indicators over a 3-5 year period.

The project includes the following activities:

- Identify baseline measures of the river and riparian corridor condition, including both physical and biological metrics (e.g., flow data, mussel sampling, LiDAR data, land cover (MLCCS) data);
- Evaluate this data, involving a technical team with representatives from the Mississippi Watershed Management Organization, the St. Anthony Falls Laboratory and the Department of Natural Resources, including a biologist, an ecologist, and a hydrologist. The National Park Service, the Minnesota Pollution Control Agency, and the Army Corps of Engineers will also be resources;
- Establish criteria to select indicators to track these river changes over 3 to 5 years;
- Select key indicators to track changes in the river and the riparian corridor over 3 to 5 years; and
- Share the data with those interested in the ecology of the river and the riparian corridor.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Baseline measurements

Budget: \$ 75,434

Establish the current physical, chemical, and biological condition of the river corridor. Where possible, mine existing data sources. Physical parameters include river bed depth measurements (to be collected), bank topography (LiDAR flown in 2011), flow, and suspended sediment concentrations. Chemical parameters include water chemistry. Biological data include mussel, fish, and riparian vegetation surveys.

Outcome	Completion Date
1. Complete collection of additional data, including river depth (bathymetry), flow, sediment, mussel population, fish populations, etc.	October 2015
2. Report detailing baseline data collected. Include maps identifying monitoring sites.	December 2015



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Activity 2: Data evaluation and assessment

Budget: \$ 42,434

The technical team will review and assess data collected. A limited set of indicators will be chosen for ongoing measurement of cascading impacts as the river adjusts to its new sediment budget after dredging is halted. These indicators will be selected based on statistical validity, cost, and practicality of continuing with ongoing measurement. These indicators will form the basis of measurements to be proposed in Phase 2 of this project.

Outcome	Completion Date
1. Analyze data to determine prime indicators of impacts to the river and the riparian corridor.	March 2016
2. Complete report detailing the assessment of current baseline measurements and recommendations of river health indicators for future monitoring.	June 2016

Activity 3: Engaging the community in the state of the river

Budget: \$ 25,226

Through mapping tools and community engagement, we will ensure that those with a vested interest in ecological restoration have this information at their ready use.

Outcome	Completion Date
1. Develop an interactive river map that makes data available to residents, planners, and scientists.	June 2016
2. Working with trained students, convey study results to interested audiences.	June 2016

III. PROJECT STRATEGY

A. Project Team/Partners

Minneapolis Riverfront Partnership, Kathleen Boe (Executive Director), Mary Matze (Sr. Research Analyst) project management, project coordination, report development and publication of baseline data.

Mississippi Watershed Management Organization, Dr. Stephanie Johnson (Programs Principal), Dr. Udai Singh (Water Resources Manager), water flow, riverbed and river sediment analysis.

University of Minnesota, St. Anthony Falls Laboratory, Dr. Jessica Kozarek (Research Associate), hydrologist, As this project develops, an ecologist and a geomorphologist will be added to the team.

Minnesota Department of Natural Resources, Ecological & Water Resources Division, Mike Davis (Program Consultant), mussel populations; DNR Fisheries Division, fishery populations

B. Project Impact and Long-Term Strategy

This project represents a unique opportunity to study a river and its riparian corridor just before a known, significant change will be introduced into the physical system. Initial baseline measures will be taken prior to the lock closure and the cessation of dredging, so that a comprehensive picture of the impact of this closure and lack of dredging can be developed. The results of this work will impact ecological restoration decisions along the Upper River and may be used to inform plans for other large river systems.

The proposed project is Phase 1 of a two phase project. Phase 1 establishes this baseline; Phase 2 will track river changes over time. The Mississippi Watershed Management Organization has committed up to \$75,000 in matching funds. The Minneapolis Riverfront Partnership is in active discussions with other organizations about additional support for this project; however, those funds are not yet secured.

C. Timeline Requirements

The project will be completed by June 2016. This includes five months for field work and sample collection.

2015 Detailed Project Budget

Project Title: St. Anthony Falls Lock Closure: Assessing Ecological Impact

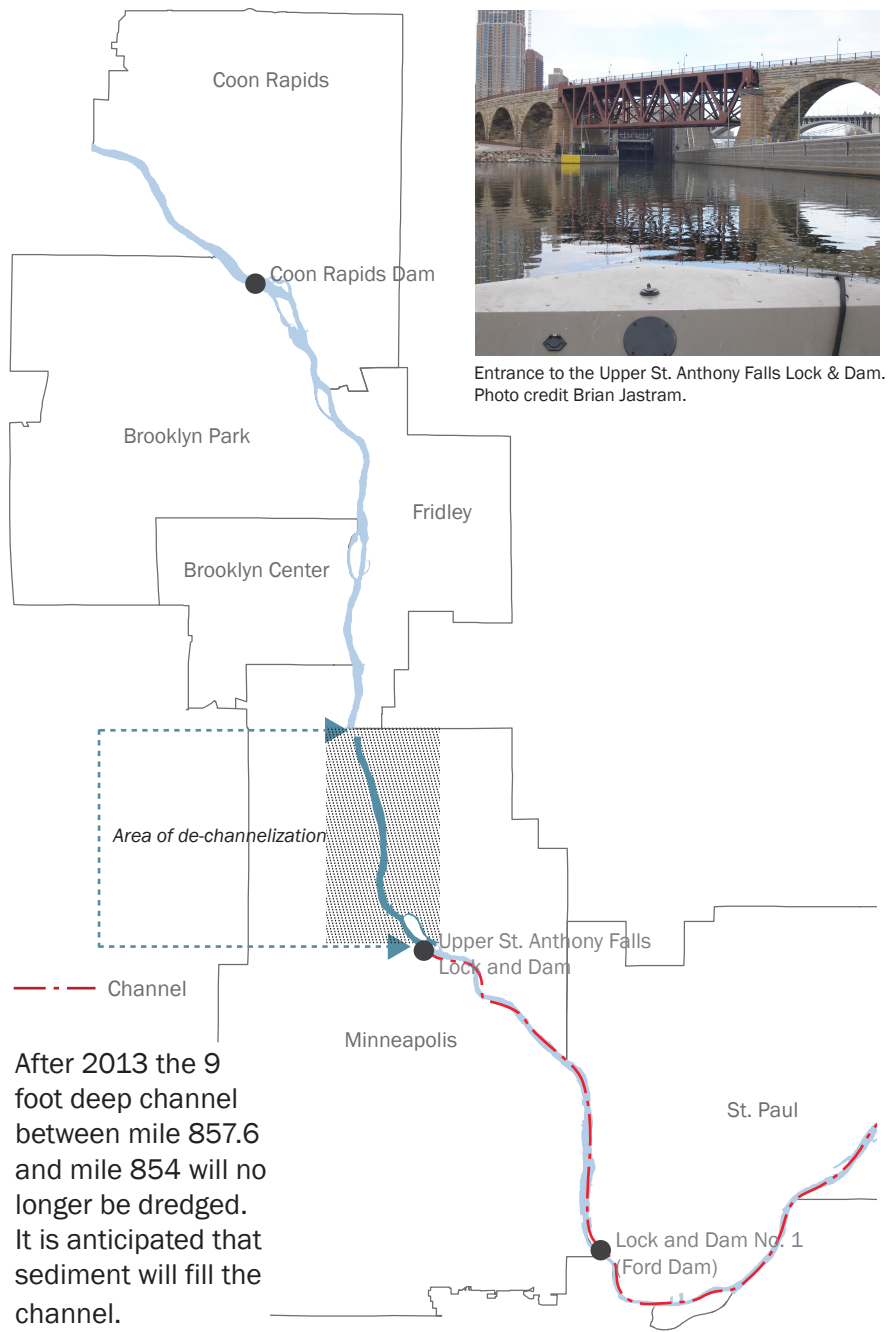
IV. TOTAL ENRTF REQUEST BUDGET 1 years

BUDGET ITEM (See "Guidance on Allowable Expenses", p. 13)	AMOUNT
Personnel:	\$ -
Program Management (\$46/hr, 360 hrs)	17,664
Sr. Research Analyst: Mary Matze (11% benefits, 15% time, 12 mo)	9,600
Contracts:	\$ -
University of Minnesota (Research Associate: Jessica Kozarek (33.6% benefits, 15% time, 12 mo), Biologist: (33.6% benefits, 15% time, 12 mo) est., Hydrologist: (33.6% benefits, 15% time, 12 mo) est.)	40,063
University of Minnesota River Life Program (Program Coordinator: Patrick Nunnally(\$48.2/hr with benefits, 104 hrs), Digital Media Manager: Joanne Richardson (\$37.80/hr with benefits, 312 hrs, Student researchers (5 @\$1,500 ea))	24,306
DNR (Program Consultant, Ecologist: Mike Davis (33.6% benefits, 15% time, 12 mo) est.)	13,600
Mussel Study (sampling species type, size, density and age at discrete points in the river)	\$ 30,000
Equipment/Tools/Supplies:	\$ -
Activity 1 lab supplies for suspended sediment analysis and flow analysis. This includes filters, sample containers, waders, and personal safety items (gloves, etc)	\$ 5,000
Travel: Local travel only . Mileage for sample collection, meetings (12 mo, 2 trips/mo per research team, 20 miles per trip, \$0.56/mi) 1536 miles	\$ 860
Additional Budget Items:	
Report Publication (200 copies, full color, estimate 40 pages, spiral bound. Written for broad, public consumption)	\$ 2,000
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =	\$ 143,093

V. OTHER FUNDS (This entire section must be filled out. Do not delete rows. Indicate "N/A" if row is not applicable.)

SOURCE OF FUNDS	AMOUNT	Status
Other Non-State \$ To Be Applied To Project During Project Period:		
MWMO: The Mississippi Watershed Management Organization has agreed to provide matching funds for this project, pending a recommendation by LCCMR to the 2015 Minnesota Legislature for funding.	up to 25% of project cost, maximum of \$75,000	Secured
Other Organizations: The Minneapolis Riverfront Partnership is in discussion with other organizations about potential funding support. As of this date, no additional funds have been committed.		Pending
Other State \$ To Be Applied To Project During Project Period: N/A	\$ -	
In-kind Services To Be Applied To Project During Project Period:	\$ -	
Staff support from the Mississippi Watershed Management Organization: Dr. Stephanie Johnson (Programs Principal), Dr. Udai Singh (Water Resources Manager), Brian Jastram (Environmental Specialist)	\$ 45,000	Secured
Suspended Sediment Study (Mississippi Watershed Management Organization)	\$ 50,000	Secured
Fish Survey (sampling of fish population in multiple sites, recording, lab analysis)	\$ 5,000	Pending
Funding History: N/A	\$ -	
Remaining \$ From Current ENRTF Appropriation: N/A	\$ -	

Closing the Lock and Dam: How will sedimentation change the river and surrounding habitat?



River morphology
↓
Water quality
↓
Riparian and River Habitat

STREAM TYPE	A	D	B & G	F	C	E
PLAN VIEW						
CROSS-SECTION VIEW						
AVERAGE VALUES	1.5	1.1	3.7	5.3	11.4	24.2
RANGE	1-3	1-2	2-8	2-10	4-20	20-40

Rosgen's morphology classification shows the relationship between the streambed bathymetry and the stream type. Source: <https://riverrestoration.wikispaces.com/Stream+classification+techniques>



Photo credits: Turbidity) <http://mrbdc.mnsu.edu/state-minnesota-river-2000-2005-surface-water-quality-monitoring> ; Mussels) <https://www.fws.gov/midwest/mussel/ecology.html> ; Waterfront) <http://www.nps.gov/stateoftheparks/MISS/>

Project: St. Anthony Falls Lock Closure: Assessing Ecological Impact

Submitted by the Minneapolis Riverfront Partnership, March 28, 2014

Project Manager and Organization Summary

Minneapolis Riverfront Partnership:

The Minneapolis Riverfront Partnership (MRP) is a state-chartered organization, founded in 2008, with the mission of promoting the coordinated revitalization of the Mississippi Riverfront in the City of Minneapolis.

The Board of Directors for MRP uniquely brings together all of the public and private stakeholder organizations in the Minneapolis riverfront community. The Board currently has twenty members with representatives from the City, County, Park Board, riverfront businesses such as Graco and RSP Architects and neighborhood organizations. It is the one place where the diverse needs and interests of the riverfront community come together to work on the revitalization of the riverfront. There is a special focus on Above the Falls (north and northeast Minneapolis) revitalization work.

Project Manager Qualifications:

Kathleen Boe, as Executive Director of MRP, will oversee this project. Kathleen brings extensive private sector experience in engineering, operations and project management. Kathleen joined MRP in 2013. Under her leadership, the Minneapolis Riverfront Partnership released the Riverfront Vitality Project. This Project establishes a set of key indicators that will broadly assess the impact of riverfront revitalization over time. Through this Project, MRP is putting critical revitalization data in the hands of the communities surrounding the Riverfront and working with those communities to ensure that the revitalization work truly benefits the needs and interests of the nearby neighborhoods.

Kathleen holds a Bachelor of Arts Degree from Macalester College, a Bachelor of Science (Mechanical Engineering) Degree from the University of Minnesota and a Masters in Business Administration from the Carlson School of Business at the University of Minnesota.

We plan to hire a Project Manager, reporting to Kathleen, who will lead the project work. It is expected that the Project Manager will be hired on a contract basis and have demonstrated background managing similar projects of this type and scale.