

Program Title: Lake Zumbro Restoration Project

**Request for Funding Form  
Lessard-Sams Outdoor Heritage Council  
Fiscal Year 2011**

Program or Project Title: **#24** Lake Zumbro Restoration Project – Dredging with Nature

Date: 11/2/09

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Funds Requested (\$000s)	Council Funding Request	Out-Year Projections of Needs		
	FY 2011	FY 2012	FY 2013	FY 2014
Outdoor Heritage Fund	5,000,000	0	0	0

**A. Summary**

The Olmsted-Wabasha Counties Lake Zumbro Joint Powers Board is requesting \$5 million in funding to dredge 120 acres of Lake Zumbro to restore aquatic habitat, improve water quality, increase public access, expand recreational opportunities for boating, fishing, and swimming, and enhance hydropower production. Improved water clarity would promote the growth of submergent vegetation which would result in improved fish habitat on approximately 500 additional acres of lake.

**B. Background Information**

**1. What is the problem or opportunity being addressed?**

Lake Zumbro provides critical aquatic habitat, unique recreational opportunities, and is a source of renewable hydroelectric power in Southeastern Minnesota. The lake is used by a wide range of bird species including migratory waterfowl. The sport

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fishery includes sunfish, crappies, bass, channel catfish, northern pike, and muskellunge. The lake corridor has been identified in the Minnesota Department of Natural Resources County Biological Survey as containing some of the most biologically diverse tracts of land in Olmsted County.

The problem is that sediment deposition in the lake is reducing the quality of the aquatic habitat, reducing the area of the lake available for recreational use, and reducing the electric generation capability of the hydropower facility.

Lake Zumbro was formed in 1919 when the City of Rochester installed a 3 MW hydropower dam on the Zumbro River in Wabasha County. A bathymetric study completed in 2005 found that the lake has lost approximately half of its volume to sedimentation. That study also found that most of the damage occurred prior to 1957 when the first lake depth map was completed by the Minnesota Department of Natural Resources. Follow up mapping completed in 1978 showed that sedimentation rates had decreased substantially and a detailed map completed in 2005 found that current rates are now only 10% of those pre-1957. The Zumbro Watershed Partnership, a 501C3 organization is working to further reduce sedimentation rates in the watershed by an additional 30%. The current sediment loading rate creates an opportunity to restore lost lake areas and to improve water quality in the remainder of the lake by reducing areas where sediment resuspension occurs.

### **2. What action will be taken?**

Dredging would be undertaken to restore 120 acres of the lake for recreational use. Preliminary engineering and design work for the dredging and dredge spoil management is being completed by Barr Engineering, Inc. Proposed dredge prisms are being developed in consultation with the Minnesota Department of Natural Resources (DNR). Project objectives include: restoring aquatic habitat, improving water quality, increasing public access, expanding recreational opportunities for boating, fishing, and swimming, and enhancing hydropower production.

### **3. Who will take action and when?**

In June of 2009, Olmsted and Wabasha Counties expanded the authorities of the Lake Zumbro Joint Powers Board to include 1)administering grants and loans for funding lake dredging, 2)purchasing engineering and construction services for dredging, and 3)purchasing land and easements for construction access and dredge materials management. The Joint Powers Board has accepted funding from the State of Minnesota and the City of Rochester, as well as in-kind contributions from Lake Zumbro Forever, Inc. to complete preliminary engineering for a dredging project. Barr Engineering Inc. is currently doing the preliminary engineering and is expected to complete that work in early 2010.

In October of 2009, lakeshore owners in Olmsted and Wabasha Counties submitted petitions requesting that the County Boards create a Lake Improvement District



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The primary organization that will be responsible for funding maintenance of the lake restoration is the 501c3 organization, Lake Zumbro Forever, Inc. However, the Joint Powers Board and the Lake Improvement District may also participate in funding future maintenance.

**9. How does this action directly restore, enhance, or protect prairies, wetlands, forests or habitat for fish, game, and wildlife?**

The Dredging with Nature project would directly restore 120 acres of aquatic habitat, enhance an additional 500 acres of aquatic habitat and restore approximately 100 acres of wetlands and prairie at dredge spoil sites.

**10. If you are restoring or enhancing property, is the activity on permanently protected land?**

  X   YES        NO  
If yes briefly describe the kind of protection.

Lake Zumbro is public waters and the lakebed is owned by the City of Rochester.

**11. How will you ensure transparency and provide information about your work and use of Outdoor Heritage Fund dollars.**

Because the work and funds will be managed by Olmsted County, any decisions, actions, and budget revenues and expenditures are public information and subject to review and audit.

Olmsted County maintains a web page for the Lake Zumbro Joint Powers Board and will use the site to provide information about the project including construction progress and budget revenues and expenses. Additionally, the Lake Zumbro Improvement Association maintains a website that includes information about the restoration project which is accessed through the Minnesota Waters website.

**12. Why will this strategy work?**

Lake dredging has been a very successful water quality and fisheries improvement program in similar lakes in Iowa.

**13. Who might make decisions that assist or work against achieving the expected impact program?**

The Minnesota Department of Natural Resources staff has recommended that after dredging is completed, the Olmsted-Wabasha Lake Zumbro Joint Powers Board should

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designate several bays as “no-wake zones” to maximize fisheries benefit and reduce potential shoreline erosion. If the Joint Powers Board fails to implement that recommendation, much of the water quality and fisheries benefits in those areas may be lost.

**14. If this is acquisition of land, has the local government formally approved the acquisition?**

YES  NO

The Olmsted- Wabasha Counties Lake Zumbro Joint Powers Board has been given authority to purchase land and easements for construction access and dredge materials management.

**15. If this is fee simple acquisition of land, is the land free of any other permanent protection such as a conservation easement?**

YES  NO

Barr Engineering Inc. and the Lake Zumbro Forever, Inc. are currently assessing properties for potential use as dredge spoil sites. That work is scheduled to be completed in 2010. If L-SOHC funding is received for the purchase of these sites, they would receive permanent protection.

**16. If this is an easement acquisition, will the eased land be open for public use?**

YES  NO  
If Yes what kind of use?

If land or easements are purchased using L-SOHC funds, the land would be open for public use such as hiking and hunting. All areas where aquatic habitat restoration and enhancement is proposed are public waters and available for public use.

**17. If easement acquisition, will the easement be a permanent conservation easement as described in MS 2009, Chapter 84C.01, specifically protecting the natural resource values of real property forever?**

YES  NO

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If land or easements are purchased with L-SOHC funds, the natural resource values of the land would be protected forever through permanent easement as described in MS 2009, Chapter 84C.01.

**18. If you are proposing funding for a new or ongoing program how long into the future do you expect this program to operate?**

\_\_\_\_\_ **Years**

No ongoing funding is being requested.

**19. Which planning sections will you work in? Check all that apply in the list below.**

- \_\_\_\_\_ Northern Forest
- \_\_\_\_\_ Forest/Prairie Transition
- \_\_\_X\_\_\_ Southeast Forest
- \_\_\_\_\_ Prairie
- \_\_\_\_\_ Metropolitan Urbanizing Area

**20. Does the request address an urgent conservation opportunity that will be lost if not immediately funded?**

\_\_\_X\_\_\_ **YES**                      \_\_\_\_\_ **NO**  
**If yes, please explain.**

During the period 2007 and 2008, the Minnesota Pollution Agency conducted 19 water quality samplings at four sites on the lake. That testing found marked improvements in water quality in the deeper downstream reaches of the lake. Water clarity as measured by average Secchi depth increased from 0.5 to 1.5 meters between the upper shallow end of the lake and the much deeper northern end. Dredging unconsolidated sediment from the southern area of the lake will widen the channel thus decreasing velocities which allows sediment to settle out of the water in the uppermost reaches of the lake to improve water clarity in the remaining area of the lake. If dredging isn't done in these areas, overall turbidity levels in the lake will decline and habitat will be lost. If L-SOHC funding is not received for the purchase of dredge spoil sites, financial constraints may dictate that those sites would be returned to other uses such as farming or mining.

**21. Does the request restore and/or enhance habitat on existing state-owned Wildlife or Aquatic Management Areas or Scientific and Natural Areas?**

           YES       X       NO

**If Yes, list the names of the AMAs, WMAs and/or SNAs and the acres to be restored and/or enhanced.**

**22. Is this request based on assessment through a science based strategic planning and evaluation model similar to the United States Fish and Wildlife Service's Strategic Habitat Conservation model?**

           YES       X       NO

**If yes explain the model briefly.**

**23. Explain the scientific foundation for your project, and the benefits it will produce.**

The planning and evaluation model being used for the Lake Zumbro Dredging with Nature Project is one used by the Iowa Department of Natural Resources. Lake Zumbro is similar to many of the lakes and reservoirs that are being restored in Iowa where they increase lake depths to improve water clarity, expand areas of submergent vegetation, and improve fisheries production.

The area and depth of Lake Zumbro at the time of its creation in 1919 was established using 5-ft topographic maps completed for the City of Rochester. In 2005 lake depth maps completed in 1957, 1978, and 2005 were used by the Minnesota Pollution Control Agency to complete a bathymetric study that calculated sediment deposition depths and rates. The current rate of filling was found to be just 10% of the pre-1957 rate. In 2006, Barr Engineering collected five representative lake sediment cores and had them analyzed for 13 metals, 32 pesticides, 8 PCBs, and 20 other chemicals. The testing did not identify any pollutant levels that would constrain reuse of the dredge material.

In August 2007, the Department of Natural Resources completed a Standard Lake Survey Report noting that "water level and clarity are subject to rapid change due to the river's influence. It is likely that these fluctuations have a dramatic impact on fish populations." That is consistent with the Iowa DNR's experience in lake restoration as well.

**24. How do you set priorities? (Be sure to list the criteria you use and the weight you give each one.)**

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Priorities for dredge sites were based on the following criteria listed in the order of priority (no weighting has yet been assigned to the criteria):

- 1) restore aquatic habitat,
- 2) improve water quality,
- 3) increase public access,
- 4) expand recreational opportunities for boating, fishing, and swimming, and
- 5) enhance hydropower production.

**C. Relationship to the *Minnesota Conservation and Preservation Plan* and Other Published Resource Management Plans**

The Lake Zumbro Restoration Project is supported by the *Minnesota Conservation and Preservation Plan's* "Broad Policy and Action Recommendation H4: Restore and protect shallow lakes", and the "Targeted Policy and Action Recommendation H3: Improve connectivity and access to recreation".

Improving access to recreation is an important element of the Project. Lake Zumbro is centrally located in the southeast region and is a major recreational water body for residents of Wabasha, Olmsted, Dodge, and Goodhue Counties. The Lake has the highest population relative to lake area in all of greater Minnesota. Communities within 15 miles of the Lake Zumbro that rely on it for recreation include Oronoco, Pine Island, Byron, Rochester, Mantorville, Kasson, Plainview, Hammond, Mazeppa, Zumbro Falls, Goodhue, and Zumbrota.

Minnesota DNR and Olmsted County both maintain boat launches on the Lake. Other public facilities on the Lake include two campgrounds, three restaurants, a marina, and a handicapped accessible public fishing access.

The Project is also supported by *Minnesota's Aquatic Management Area Acquisition Plan* which recognizes the importance of public access for angling and the value of partner involvement.

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**D. Budget**

Budget Item	Fiscal Year 11	Fiscal Year 12	Fiscal Year 13
<b>Personnel</b>			
<b>Contracts</b>	\$7,000,000		
<b>Equipment/Tools/Supplies</b>			
<b>Fee Acquisition</b>			
<b>Easement Acquisition</b>	\$1,200,000		
<b>Easement Stewardship</b>			
<b>Professional Services</b>	\$800,000		
<b>Travel</b>			
<b>Additional Budget Items</b>			
<b>TOTAL</b>	<b>\$9,000,000</b>		

**E. Personnel Details** *In the space below list the names, titles and anticipated program funds to be paid by this recommendation. If you will need to fill a position just list the title and amount.*

<b>Title</b>	<b>Name</b>	<b>Amount.</b>
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The project would be done with consulting engineers, contract dredging, and existing staff

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**F. All Leverage** In the table below list the sources and amounts of leverage you anticipate by fiscal year you anticipate receiving it. Include state and non-state leverage.

Source of Leverage	Fiscal Year 11	Fiscal Year 12	Fiscal Year 13
LOHC	\$5,000,000		
Lake Improvement District	\$2,000,000		
Rochester Public Utilities	\$1,000,000		
Local Units of Government	\$1,000,000		
<b>TOTAL</b>	<b>\$9,000,000</b>		

**G. Outcomes:**

- 1) *In the first table below, quantify the outcomes you plan to achieve with the recommended funds.*
- 2) *In the second table show list the sections where outcomes will occur.*
- 3) *In the third table, allocate your recommended funds to each cell with outcomes listed in table 1.*
- 4) *In the fourth table show the leverage to be applied to each cell with outcomes listed in table 1. and*
- 5) *If you have any outcomes listed in the “protect” row in table 1, account for them according to the type of acquisition and PILT status in table 5*

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<b>Table 1 Accomplish- ments</b>	<b>Wetlands</b>	<b>Prairies</b>	<b>Forests</b>	<b>Habitats for Fish, Game and Wildlife</b>
<b>Restore</b>	<i>Restore 50 acres of wetland at dredge spoil sites</i>	<i>Restore 50 acres of prairie at dredge spoil sites</i>		<i>Restore 120 acres of aquatic habitat through dredging</i>
<b>Protect</b>				
<b>Enhance</b>				<i>Enhance 500 acres of aquatic habitat through improved water clarity</i>

<b>Table 2 Sections Impacted and Impact Quantifier</b>	<b>Wetlands</b>	<b>Prairies</b>	<b>Forests</b>	<b>Habitats for Fish, Game and Wildlife</b>
<b>Restore</b>	<i>Southeast Forest 50 acres of wetland at dredge spoil sites</i>	<i>Southeast Forest 50 acres of prairie at dredge spoil sites</i>		<i>Southeast Forest 120 acres of fish habitat</i>
<b>Protect</b>				
<b>Enhance</b>				<i>Southeast Forest 500 acres of fish habitat</i>

<b>Table 3 Recommend Fund Allocation</b>	<b>Wetlands</b>	<b>Prairies</b>	<b>Forests</b>	<b>Habitats for Fish, Game and Wildlife</b>
<b>Restore</b>	<i>\$400,000</i>	<i>\$400,000</i>		<i>\$2,800,000</i>
<b>Protect</b>				
<b>Enhance</b>				<i>\$1,200,000</i>

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<b>Table 4 Leverage \$</b>	<b>Wetlands</b>	<b>Prairies</b>	<b>Forests</b>	<b>Habitats for Fish, Game and Wildlife</b>
<b>Restore</b>	\$200,000	\$200,000		\$2,000,000
<b>Protect</b>				
<b>Enhance</b>				\$1,800,000

<b>Table 5 Acquisition Data</b>	<b>Wetlands</b>	<b>Prairies</b>	<b>Forests</b>	<b>Habitats for Fish, Game and Wildlife</b>
<b>Acquired in Fee with State PILT Liability</b>				
<b>Acquired in Fee without State PILT Liability</b>				
<b>Permanent Easement</b>				

**H. Accomplishment Time Table** Using the headings below, include a clear statement of how much of what is being accomplished and when. Attach a map showing where accomplishments are anticipated. Accomplishments should clearly restore, enhance or protect forests, wetlands, prairies and habitat for fish, game and wildlife.

<b>Milestone</b>	<b>Date</b>	<b>Measure</b>
Dredge Lake Zumbro	November 30, 2011	120 acres of lake restored
Restore dredge spoil areas	October 15, 2013	100 acres of prairie and wetland

**I. Relationship to Your Current Budget**

To date, \$365,000 has been budgeted or spent for the Lake Zumbro Restoration Project. Previous work includes lake depth mapping at 2-ft contours and lake sediment characterization. There is currently a \$275,000 contract with Barr Engineering for preliminary engineering work for the dredging and dredge spoil sites.

**J. How Will the Habitat Improvements Be Sustained?**

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The primary organization that will be responsible for funding maintenance of the lake restoration is the 501c3 organization, Lake Zumbro Forever, Inc. Additionally, Olmsted and Wabasha Counties have a Lake Zumbro Joint Powers Board with authority to maintain the habitat improvements and the counties likely will establish a Lake Improvement District that also would have authority to do that work.

**K. Attach a list of your projects listing their county location and edit the map of Minnesota on the next page to show each project as a symbol.**

Olmsted and Wabasha Counties have not undertaken similar projects but both local units of government routinely construct and maintain public works projects in all areas of their respective counties.