Environment and Natural Resources Trust Fund
2011-2012 Request for Proposals (RFP)

LCCMR ID: 061-B

Project Title: Groundwater Recharge: Nicols Fen, Kennealy/Harnack Trout Streams

Category: B. Water Resources

Total Project Budget: $ $37,540

Proposed Project Time Period for the Funding Requested: 3 yrs, July 2011 - June 2014

Other Non-State Funds: $ 0

Summary:

Pilot project infiltrating groundwater beneath perched wetlands to recharge groundwater sources of calcareous fen, trout streams, and groundwater aquifers. Pilot project can be expanded to regional scale for regional benefits.

Name: Todd Hubmer

Sponsoring Organization: Gun Club Lake Watershed Management Organization

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Web Address http://www.dakotaswcd.org/watersheds/gunclubwmo/index.htm

Location

Region: Metro

Ecological Section: Minnesota and NE Iowa Morainal (222M)

County Name: Dakota

City / Township: Eagan

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

2011-2012 MAIN PROPOSAL

PROJECT TITLE: Groundwater Recharge: Nicols Fen, Kennealy/Harnack Trout Streams

I. PROJECT STATEMENT

The Gun Club Lake Watershed (Watershed) contains numerous lakes and wetlands which are situated in depressions and collect significant surface water runoff volumes. Because there are no major creeks or rivers, the majority of surface water runoff is conveyed through ponds and wetlands to the Minnesota River with minimal recharge of groundwater.

The significant urban development in the watershed has had a negative affect on the groundwater recharge and resources such as Nicols Fen and two trout streams: Kennealy Creek and Harnack Creek. This project is an implementation component of the 2002 MnDNR Metor Greenways Planning Grant and the 2008 MnDNR Conservation Partnership Grant for the evaluation of the fen and trout streams.

The goal of this project is to retrofit existing urban environments to transfer surface water runoff into natural ground water infiltration and recharge groundwater aquifers. Many wetlands in the Watershed are characterized by a perched condition above the ground water by a restrictive or confining layer. This offers a unique opportunity to utilize the natural infiltration of the permeable soils beneath the existing wetlands to recharge the downstream groundwater dependent resources including Nicols Fen and Kennealy and Harnack trout streams. An additional benefit of this project is the reduction of the overall volume of surface water runoff and recharging the source of drinking water to the users of the aquifer.

This project will be a pilot program to monitor the effectiveness of the methodology for groundwater recharge in the Watershed. The project will involve the installation of an infiltration system at a qualifying wetland site. Water which previously flowed out of wetlands through storm sewer pipes will be redirected to an underground infiltration system that will lie below the confining layer that is perching the wetland hydrology. The volume of infiltrated surface water providing groundwater recharge will be monitored and quantified as a measure of the success of the project. In addition, we propose to monitor total phosphorus and other parameter to determine if significant pollutants are being removed from downstream surface waters. The benefits from this project are numerous and have regional significance. They include, but are not limited to:

- recharging source water for Nicols Fen and Kennealy and Harnack trout streams
- increasing infiltration;
- recharging aquifers in a region dependent on ground water resources for public consumption;
- reducing overall cost associated with purchasing land for accomplishing groundwater recharge;
- surface water runoff volume reduction.

II. DESCRIPTION OF PROJECT ACTIVITIES

Activity 1: Identify Project Site Location **Budget:** $ 2,000

A suitable location will be identified through review of existing documentation (e.g. Watershed Management Plan), data analysis, agency collaboration and input, soil borings (if necessary), and field site visits.

Outcome	Completion Date
1. Determine suitability of site (soils, hydrology, constructability)	July-August 2011
2. Hold agency coordination meeting	July 2011
3. Make recommendation and present to Watershed Board	August 2011

Activity 2: Install Groundwater Recharge Infiltration System **Budget:** $ 23,000
Designed and construct the infiltration system in the pilot program project location. This will involve excavation and directional boring.

Outcome	Completion Date
1. Installation of groundwater recharge infiltration system	September 2011

Activity 3: Monitor Infiltration Rates and Pollutants **Budget:** $ 9,500
Infiltration rates of the system will be monitored for two years with four monitoring samples for pollutants collected each year for a total of eight samples.

Outcome	Completion Date
1. Monitor infiltration volumes and pollutants	October 2013

Activity 4: Compile Results, Analyze, and Report **Budget:** $3,040
The data will be compiled, analyzed, and summarized in a Project Report. The success of the project will be assessed and the results will be provided to Eagan, Mendota Heights, and Inver Grove Heights. The findings will also be submitted for presentation at the Water Resources Convergence and this project may serve as a model for future installations of these groundwater recharge systems.

Outcome	Completion Date
1. Compile and analyze data	November 2013
2. Assess success of the pilot project, present results in Report	December 2013
3. Develop a project model for implementation at other locations	December 2013

III. PROJECT STRATEGY

A. Project Team/Partners

The project teams will be comprised of Watershed staff, Watershed consultant staff, a construction contractor for installation of the groundwater recharge system, and possibly Agency staff as needed for project input. The majority of the planning, design, monitoring and reporting will be completed by the technical consulting staff of the Gun Club Lake Watershed Management Organization (GCLWMO) and funding will by managed by the GCLWMO Board.

B. Timeline Requirements

The project will need to be initiated as soon as funding is available. Design and installation can be completed in the fall of 2011 with monitoring beginning immediately. Monitoring will need to be initiated no later that the fall of 2011 to ensure two full years of monitoring data are collected. The project is anticipated to be completed within the timeframe as required by the grant conditions.

C. Long-Term Strategy and Future Funding Needs

This project will not require additional funding. It is the goal of the project, however, to produce a feasible and effective ground water recharge system for long term implementation and regional installation by other government and private entities. Implementation of strategy will include presentation to local governments, watersheds, and water resource professionals to ensure the success of this project is shared for the benefit of all watersheds.

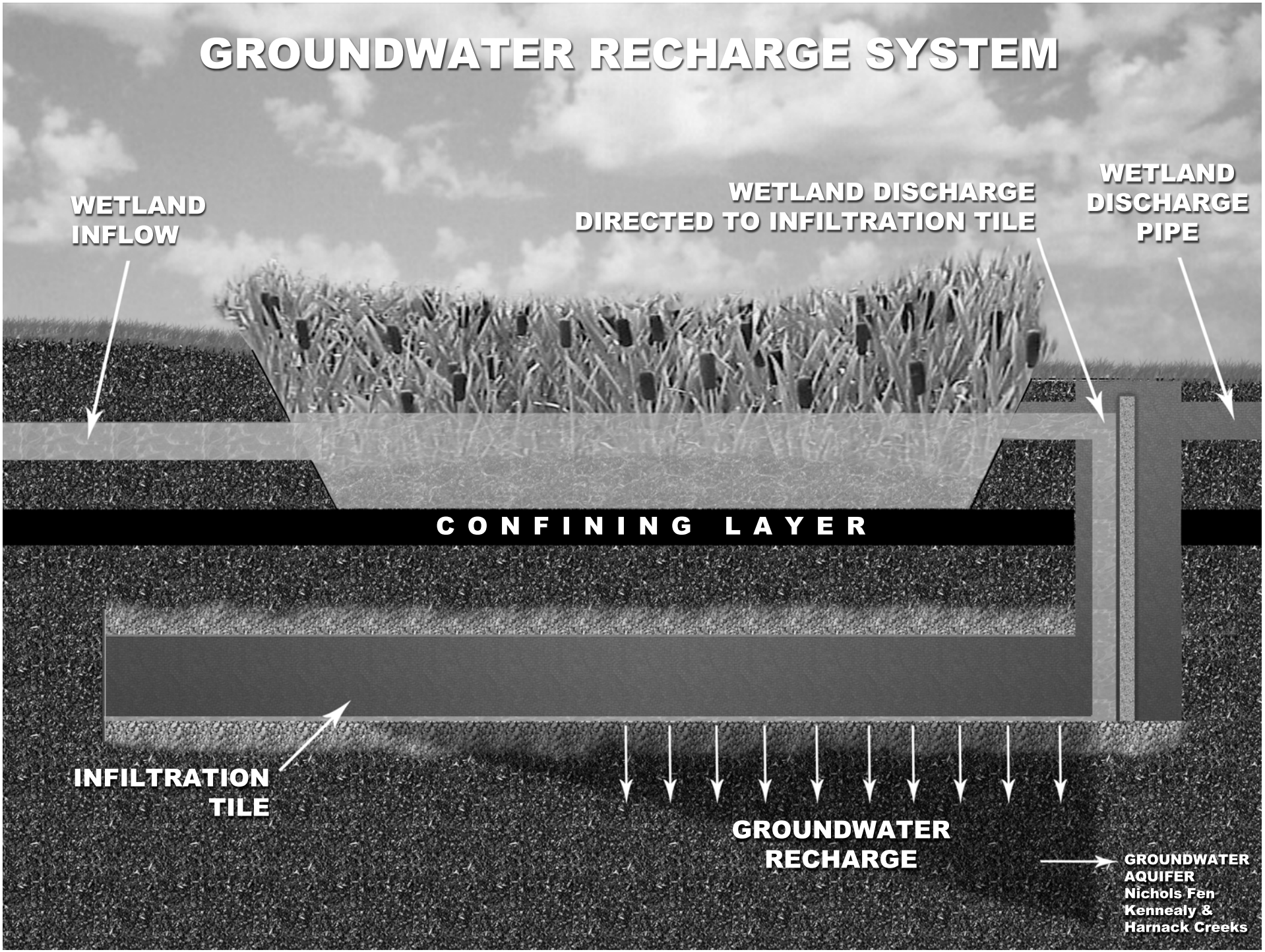
2011-2012 Detailed Project Budget

IV. TOTAL TRUST FUND REQUEST BUDGET - 2 years

BUDGET ITEM	AMOUNT
Personnel:	
WMO Engineer ($96/hr: $34.78 salary;$61.22 overhead, benefits)	$ 4,100
WMO Hydrologist ($76/hr: $27.53 salary; $48.47 overhead, benefits)	$ 8,200
WMO Technical Staff ($68/hr: $24.64 salary; $43.36 overhead, benefits)	$ 1,240
Contracts:	
Infiltration system installation contractor (TBD by competitive bid)	$ 23,000
Equipment/Tools/Supplies:	
Infiltration Rate Monitoring Equipment (Stage Recorder)	$ 1,000
Additional Budget Items:	NA
TOTAL ENVIRONMENT & NATURAL RESOURCES TRUST FUND $ REQUEST	$ 37,540

V. OTHER FUNDS

SOURCE OF FUNDS	AMOUNT	Status
Other Non-State $ Being Applied to Project During Project Period: WMO can contribute up to $15,000 to overall project costs.	$ 15,000	
Other State $ Being Applied to Project During Project Period:	NA	
In-kind Services During Project Period: WMO Board of Managers: Administration of grant, project oversight, project review (40hrs)	$2,000	
Remaining $ from Current ENRTF Appropriation (if applicable):	NA	
Funding History:	NA	


GROUNDWATER RECHARGE SYSTEM
WETLAND INFLOW
WETLAND DISCHARGE DIRECTED TO INFILTRATION TILE
WETLAND DISCHARGE PIPE
CONFINING LAYER
INFILTRATION TILE
GROUNDWATER RECHARGE
GROUNDWATER AQUIFER
Nichols Fen
Kennealy &
Harnack Creeks

2011-2012 Attachment Item #6

Project Manager Qualifications and Organization Description

Project Manager – Todd Hubmer, PE (WSB & Associates)

Todd has over 18 years of experience in the field of water resources engineering. He has been responsible for completing numerous hydrologic and hydraulic analyses for drainage systems in a wide variety of water resource, environmental, and municipal projects. Todd is also an expert in water quality and quantity modeling and very familiar with the processes involved in monitoring various Best Management Practices. He has managed multiple innovative stormwater quality projects in the past, examples include but are not limited to: St. Anthony Water Reuse Facility, Brooklyn Center Underground Regional Treatment Facility, and Roseville Biofiltration and Wetland Enhancement Project. In addition, Todd has successfully administered FEMA, Watershed District, County, State Aid, FHWA, MnDOT, Met Council, MnDNR Metro Greenways, MnDNR Conservation Partnership grants and many other grant and public finance projects. He is fully capable of successfully managing this groundwater recharge grant. Todd serves as the Technical Consultant for the Gun Club Lake Watershed Management Organization and is knowledgeable in the conditions, characteristics, and needs of the Gun Club Lake Watershed.

Organization Description – Gun Club Lake Watershed Management Organization

The Gun Club Lake Watershed Management Organization (GCLWMO) was formed on June l, 1985 through a joint powers agreement. The Gun Club Lake Watershed is located in the east-central portion of the Minneapolis-St. Paul seven county metropolitan area. The GCLWMO goals are broad and wide reaching. They include:

- **Protect and conserve the groundwater resource and encourage the infiltration of properly treated surface water to recharge groundwater;**
- Coordinate intercommunity and/or interagency storm water runoff, flooding, and other water quality issues;
- Maintain or improve the quality of water in lakes, streams, or rivers within or in proximity to the GCLWMO boundary;
- Protect and enhance water-based recreational facilities and fish and wildlife habitat;
- Educate the public on pertinent water resource management issues and increase public participation in water management activities;
- Protect existing wetlands and restore diminished or drained wetlands;
- Prevent and minimize the effects of sedimentation from erosion-prone areas.

The GCLWMO's purpose is to preserve, protect, enhance, and restore water resource systems within the Gun Club Lake Watershed to meet the purposes set forth in the Surface Water Management Act.