# Environment and Natural Resources Trust Fund
# 2020 Request for Proposals (RFP)

**Project Title:** **ENRTF ID: 109-B**

Protecting Natural Resources & Groundwater Aquifers in Rochester

**Category:** B. Water Resources

**Sub-Category:**

**Total Project Budget: $** 537,700

**Proposed Project Time Period for the Funding Requested:** June 30, 2023 (3 yrs)

**Summary:**

Significant population growth is expected in Rochester. This project will collect data on deep aquifers necessary ensure no impacts to natural resources and assess sustainability of future water supplies.

**Name:** Todd Osweiler

**Sponsoring Organization:** Rochester Public Utilities

**Job Title:** Environmental & Regulatory Affairs Coordinator

**Department:**

**Address:** 4000 East River Road NE

Rochester MN 55906

**Telephone Number:** (507) 280-1589

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**Web Address:**

**Location:**

**Region:** Southeast

**County Name:** Olmsted

**City / Township:** Rochester

**Alternate Text for Visual:**

Figure 1: Sensitive ecological features in Olmsted County. Sustainable groundwater use must protect sensitive natural resources, including calcareous fens, trout streams, and designated trout stream tributaries.

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

**PROJECT TITLE: Protecting Natural Resources & Groundwater Aquifers in Rochester**

**I. PROJECT STATEMENT**

Protecting natural resources including calcareous fens, streams, and groundwater aquifers in Rochester is critical as the community continues to experience high growth. Assessing the potential for adverse impacts to calcareous fens and streams due to future increases in groundwater pumping from shallow aquifers in Rochester is crucial to achieve groundwater sustainability in these aquifers for future generations. Data on deeper aquifer will be collected by repurposing inactive municipal wells as monitoring well nests (i.e., multiple monitoring wells in each inactive municipal well). The data will allow a feasibility assessment of using deeper aquifers to prevent impacts to natural resources due to pumping from the currently used shallow aquifers.

Rochester relies primarily on the Jordan and Shakopee aquifers for drinking water. These aquifers also serve surrounding Olmsted County communities such as Stewartville, Byron and Oronoco. Rochester's population is projected to grow 40% by 2040, fueled by the Mayo Destination Medical Center. This growth will result in a significant increase in water demand to be met by pumping from Rochester Public Utilities (RPU) wells. Growth in Olmsted County outside of Rochester could also result in additional pumping from these shallow aquifers.

Water conservation has long been emphasized by RPU and we work closely with our customers on ways to minimize water use. Notwithstanding these conservation efforts, available information suggests projected future RPU pumping from the shallow aquifers may not meet the requirements of Minnesota's groundwater sustainability statute (103G.287), which requires that pumping have no adverse impacts to natural resources. Therefore, the Minnesota Department of Natural Resources (MN DNR) has suggested that RPU may have to pump from aquifers deeper than the Jordan aquifer to reduce potential for impacts to calcareous fens and streams in the area and allow for future sustainable use of the shallow aquifers.

Currently, there is very little information on the productivity and water quality of the aquifers below the Jordan aquifer in the Rochester area. Deeper aquifers in Olmsted County below the Jordan aquifer are the Tunnel City Group, Wonewoc Sandstone, and Mt. Simon Sandstone. There are no municipal supply wells solely in these deeper aquifers in Olmsted County. As a result, it is not known if municipal water supply from the deeper aquifers is feasible or would adversely impact natural resources.

Data will be collected from the deeper aquifers by repurposing two inactive wells to monitoring well nests. RPU has two inactive municipal wells, Well 220785 & Well 220827, that penetrate the deeper aquifers. RPU proposes to convert these inactive wells into monitoring well nests to obtain the necessary information to assess the viability of the deeper aquifers for municipal water supply and the potential for impacts to natural resources. Aquifer information obtained through this project would be available to other communities in Olmsted County. In addition, this project would be consistent with the MN DNR's long term monitoring program to obtain data from all the aquifers in the state.

**II. PROJECT ACTIVITIES AND OUTCOMES**

**Activity 1 Title: Install and test 2-inch diameter monitoring well nests in Wells 220785 and 220827**

**Description:** Construction of the monitoring well nests would conform to the applicable portions of the Minnesota Well Code. Note that the Minnesota Department of Health has been consulted and would issue a variance to MN Rules 4725.2020 to allow construction of the monitoring well nest in a single borehole.

Two-inch diameter monitoring wells would be constructed in Wells 220785 and 220827. Monitoring well intervals would be determined via testing in the wells prior to monitoring well construction. One monitoring

well would be installed in each of the following aquifers and aquitards: Wonewoc aquifer, Tunnel City aquifer, Mt. Simon aquifer, St. Lawrence aquitard (aquitard separating the Jordan and Tunnel City aquifers), and the Eau Claire aquitard (the aquitard separating the Wonewoc and Mt. Simon aquifers). Following well construction, aquifer testing and sampling would be completed in each monitoring well. Data collected as part of this project would be evaluated to assess productivity and water quality of the aquifers.

**ENRTF BUDGET: $452,500 for wellhouse removal, well nest construction, aquifer testing equipment installation and operation, and data logger purchase and installation**
**$8,000 for video and geophysical logging of wells 220785 and 220827 by Minnesota Geological Survey**
**In Kind Services (value $7,200) from MN DNR for technical support**
**$40,000 for aquifer testing oversight, data evaluation and reporting**

| Outcome | Completion Date |
|---|---|
| *1. Monitoring well construction and characterization of aquitard and aquifers below the Jordan aquifer* | *12/31/2020* |
| 2. *Technical memorandum summarizing well conversion and aquifer testing activities and outlining Activity 2 monitoring plan.* | *02/28/2021* |
| *3.* | |

**Activity 2 Title: Groundwater sample collection and analysis**
**Description:** The Minnesota Department of Health (MDH) will assist with collection and analysis of groundwater samples from the monitoring wells constructed under Activity 1 of this project. Groundwater samples will be collected on a quarterly schedule from each monitoring well constructed under Activity 1 for a two-year period to establish baseline water quality in the Mt. Simon, Wonewoc, and Tunnel City aquifers. The baseline water quality data would be used to assess feasibility of pumping deeper aquifers opposed to the shallow aquifers that might have more of an impact on natural resources such as stream flow and calcareous fens.

**ENRTF BUDGET: In Kind Services (value $10,000) from MDH for sample collection and laboratory analysis**
**$20,000 for evaluation and reporting of results**

| Outcome | Completion Date |
|---|---|
| *1. Groundwater sample collection and analysis for deep aquifers* | *12/31/2022* |
| *2. Report summarizing water quality findings and feasibility assessment of using deeper aquifers for municipal water supply.* | *3/31/2023* |
| *3.* | |

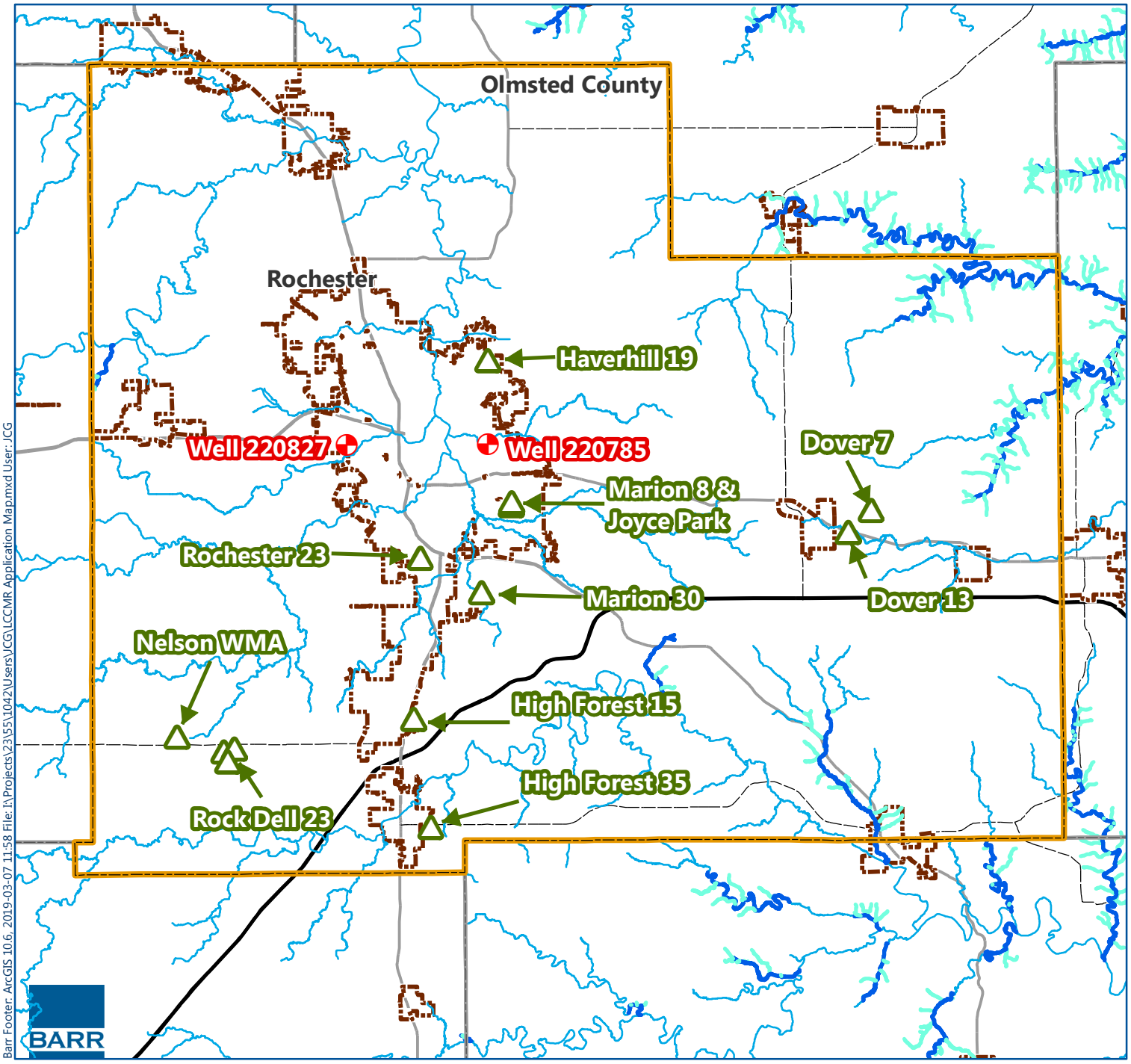
**III. PROJECT PARTNERS AND COLLABORATORS: MN Geological Survey, MN Dept. of Health, MN Dept. of Natural Resources**

**IV. LONG-TERM IMPLEMENTATION AND FUNDING:** Protecting calcareous fens, streams, and shallow aquifers in the Rochester area will require additional information from the deeper aquifers. If the data collected for this project indicate that it is feasible to rely more on deep aquifers for future water supply, the potential for adverse impacts to the natural resources of concern will be reduced. Such an outcome for this project would allow Olmsted County communities to plan for future water supply that does not rely on the shallow aquifers. This, in turn, would be expected to result in a reduced potential for adverse impacts to the natural resources of concern.

**Attachment A: Project Budget Spreadsheet**
**Environment and Natural Resources Trust Fund**
**M.L. 2020 Budget Spreadsheet**
**Legal Citation: MN Statute 103G.287**
**Project Manager:** Todd Osweiler
**Project Title:** Protecting Natural Resources & Groundwater Aquifers in Rochester
**Organization:** Rochester Public Utilties
**Project Budget: $537,700**
**Project Length and Completion Date:** 33 months, completion date of 3/31/2023
**Today's Date:** 4/10/2019

| ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET | Budget | Amount Spent | Balance |
|---|---|---|---|
| **BUDGET ITEM** | | | |
| **Personnel (Wages and Benefits)** | $ - | $ - | $ - |
| | | | |
| **Professional/Technical/Service Contracts** | | | |
| Barr Engineering Co.: Aquifer characterization and water quality data evaluation and reporting services | $ 60,000 | | $ 60,000 |
| Minnesota Geological Survey: Video and geophysical logging of wells 220785 and 220827, summary of the logging results | $ 8,000 | | $ 8,000 |
| Construction of the monitoring well nests by a licensed well contractor. | $ 400,000 | $ - | $ 400,000 |
| Demolition of existing well houses by a licensed contractor prior to monitoring well nest | $ 30,000 | | $ 30,000 |
| **Equipment/Tools/Supplies** | | | |
| 7 OTT Orpheus Mini Water Level Loggers and cables | $ 22,500 | $ - | $ 22,500 |
| **Capital Expenditures Over $5,000** | | | |
| | | $ - | $ - |
| **Fee Title Acquisition** | | | |
| | $ - | $ - | $ - |
| **Easement Acquisition** | | | |
| | $ - | $ - | $ - |
| **Professional Services for Acquisition** | | | |
| | $ - | $ - | $ - |
| **Printing** | | | |
| | $ - | $ - | $ - |
| **Travel expenses in Minnesota** | | | |
| | $ - | $ - | $ - |
| **Other** | | | |
| | $ - | $ - | $ - |
| **COLUMN TOTAL** | $ 520,500 | $ - | $ 520,500 |

| SOURCE AND USE OF OTHER FUNDS CONTRIBUTED TO THE PROJECT | Status (secured or pending) | Budget | Spent | Balance |
|---|---|---|---|---|
| **Non-State:** | | $ - | $ - | $ - |
| **State:** | | $ - | $ - | $ - |
| **In kind:** MN Department of Health will provide groundwater sample collection services along with laboratory analysis of the samples for the first two years after the well nests are constructed. | | $ 10,000 | $ - | $ 10,000 |
| **In kind:** MN Department of Natural Resources will provide 80 hours of in-kind support to this project over a two-year period. | | $ 7,200 | | $ 7,200 |
| **Other ENRTF APPROPRIATIONS AWARDED IN THE LAST SIX YEARS** | **Amount legally obligated but not yet spent** | **Budget** | **Spent** | **Balance** |
| | | $ - | $ - | $ - |

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**Legend**

- Calcareous Fen Location
- Designated Trout Stream
- Protected Tributary to Designated Trout Stream
- Non-Trout Stream Waterway
- Well Targeted for Conversion to Monitoring Nest
- Municipal Boundary
- Interstate Highway
- US Highway
- State Trunk Highway

0 5 10 Miles

# SENSITIVE ECOLOGICAL FEATURES IN OLMSTED COUNTY AND WELLS TARGETED FOR CONVERSION TO MONITORING NESTS

rpu we pledge, we deliver



05/12/2019

ENRTF ID: 109-B FIGURE 1

**Todd Osweiler's Project Manager Qualification**

Todd Osweiler, Environmental & Regulatory Affairs Coordinator with Rochester Public Utilities for 21 years, will be the project manager for the proposed LCCMR project *Protecting Natural Resources & Groundwater Aquifers in Rochester*. Todd has experience with obtaining and managing MDH Source Water Protection grants awarded to Rochester Public Utilities. Todd also manages Rochester Public Utilities MDH's Wellhead Protection Plan and DNR's Water Supply Plan. Todd's experience includes:

- 21 years' experience with Rochester Public Utilities (RPU)
- 10 years at my current position w/RPU is Environmental & Regulatory Affairs Coordinator
- RPU's Wellhead Protection Manager
- RPU's Water Testing Lab Manager
- RPU's Water Supply Plan Manager
- Successfully received and executed three source water protection grants from MDH
- Presented at various civic groups, conferences and schools on water sustainability in Rochester
- Involved with developing water exhibits for display in the Rochester Community