



Projects and Practices Application

Grant Name - BCWMC Plymouth Creek Restoration

Grant ID - C17-5029

Organization - Bassett Creek WMC

Allocation	Projects and Practices 2017	Grant Contact	Karen Chandler
Total Grant Amount Requested	\$400,000.00	County(s)	Hennepin
Grant Match Amount	\$386,000	12 Digit HUC(s)	070102060501
Required Match %	25%	Applicant Organization	Bassett Creek WMC
Calculated Match %	97%	Application Submitted Date	
Other Amount			
Project Abstract	<p>The Plymouth Creek Restoration Project will stabilize and restore streambanks along both sides of Plymouth Creek for a total of 2,800 feet including 1,700 feet within Plymouth Creek Park (including through an active disc golf course) and 1,100 feet between Fernbrook Lane and Annapolis Lane in the City of Plymouth. The BCMWC's March 2016 feasibility study estimated the project will reduce total phosphorus and suspended sediment loading to the creek by 52.2 and 90,800 lbs per year, respectively. The study identified three reaches and 21 areas where stabilization and restoration is needed. Techniques proposed to be used include re-meandering the stream channel; restoring the vegetative buffer; re-connecting the stream with its floodplain; installing a variety of stream stabilization measures, including riprap, root wads and toe wood, vegetated reinforced soil stabilization (VRSS), rock or log vanes, and stone toe protection; and removing large woody debris. Many of these techniques including vegetation establishment and log or rock vanes will also improve in-stream and near stream habitat along Plymouth Creek. Finally, educational signage in Plymouth Creek Park will inform residents and disc golf players about the project and its goals along with information on general water quality and best practices.</p>		

Narrative

Questions & Answers
<p>What organization will serve as the Fiscal Agent for this grant?</p>
<p>Bassett Creek Watershed Management Commission</p>
<p>Did your organization receive CWF grant dollars in FY 2014, FY 2015 and/or FY 2016? If less than 50% of the total grant amount awarded from FY 2014, FY 2015 and FY 2016 grants have been spent, please explain your organization's capacity (including available FTEs or contracted resources) to effectively implement additional Clean Water Fund dollars.</p>
<p>The Bassett Creek Watershed Management Commission (BCWMC) received CWF grant dollars in FY2016 for the Northwood Lake Improvement Project. In August 2015, the BCWMC entered into an agreement with the City of New Hope to design and construct the project. The City's consultant (Stantec) designed the project and the BCWMC approved final design plans in November 2015. The city awarded a construction contract to Northdale Construction Company in February 2016 and construction started in March and is continuing. A grant reimbursement request will be submitted to the BWSR by the end of 2016 once appropriate invoices and documentation are gathered.</p>
<p>Water Resource of Concern: Identify the water resource of concern the proposed project is targeting.</p>
<p>The Plymouth Creek Restoration Project will improve water quality in Plymouth Creek and Medicine Lake, the creek's primary receiving water. Additionally, the Main Stem of Bassett Creek flows out of Medicine Lake and may also realize improvements from the project. Medicine Lake is impaired for nutrients, and a TMDL was approved in 2011. Both Plymouth Creek and Medicine Lake are high priority waterbodies for the BCWMC, and Medicine Lake is a regionally significant waterbody offering recreational opportunities and providing important fish and wildlife habitat. Further, the Metropolitan Council's Priority Lakes List includes Medicine Lake.</p>
<p>Project Description: 1. (5 points) A) What nonpoint pollution concerns will be the focus of this action(s)? B) Describe the public benefits of this action(s) to the water resource of concern from a local and state perspective. C) Describe how the resource of concern aligns with at least one of the statewide priorities referenced in the "Projects and Practices" section of the RFP.</p>
<p>The project will reduce total phosphorus and suspended sediment in Plymouth Creek and Medicine Lake stemming from streambank erosion. Streambank erosion is a common source of pollution, particularly in developed landscapes where flows in streams are considered "flashy" and can easily scour unprotected and disturbed streambanks. The public will benefit from pollution reduction and restoration of these waterbodies because the improvements in water quality, aesthetics, and fish and wildlife habitat enhance recreation opportunities and overall enjoyment of these waters. This project is aligned with the statewide priority to restore and protect water resources for public use and public health.</p>
<p>Relationship to Plan: 2a. (15 points) Describe why the water resource of concern was identified in the plan as a priority resource. For the proposed project, identify the specific water management plan reference by plan organization (if different from the applicant), plan title, section, and page number. In addition to the plan citation, provide a brief narrative description that explains: whether this application fully or partially accomplishes the referenced activity, the estimated scale of impact that the activity in the plan has on the problem identified and the estimated scale of impact of the proposed project.</p>

Questions & Answers

The BCWMC went through a rigorous process to prioritize its waterbodies during development of its 2015 Watershed Management Plan (Plan). The BCWMC identified 14 priority waterbodies and divided them into four classes. Priority 1 streams include MDNR public waters watercourses, including Plymouth Creek. MDNR public waters lakes of at least 10 acres in size were classified as Priority 1 or 2 lakes. The BCWMC classified priority lakes with public access or adjacent to public land as Priority 1 lakes, and those without public access or adjacent public land as Priority 2 lakes. The BCWMC further subdivided these lakes based on the MPCA's "deep" or "shallow" classifications. Medicine Lake is classified as a Priority 1, deep lake. The BCWMC adopted water quality standards for priority lakes and streams that are consistent with MPCA water quality standards published in MN Rules 7050.

The 2015 BCWMC Plan includes the proposed project ("2017CR-P") in the Capital Improvement Program (CIP) (Section 5, Table 5-3, pg 5-31). The proposed project fully accomplishes the referenced CIP project. The BCWMC CIP was developed to address pollutant sources throughout the watershed including a continuation of stream restoration projects from the 2004 BCWMC Plan. The BCWMC has restored 7.5 miles of streambanks in the watershed to-date, including 1.3 miles along Plymouth Creek downstream from the proposed project. Upon completion of the proposed project, 9,700 feet of Plymouth Creek streambank will be restored, or 89% of the banks in need of restoration.

The 2011 Medicine Lake TMDL Implementation Plan also includes the proposed project (part of the larger Plymouth Creek restoration). The City of Plymouth completed other projects in the Implementation Plan including the West Medicine Lake Park Pond project (funding provided by BCWMC and others), three restoration projects for creeks directly tributary to Medicine Lake, and an erosion repair project.

Relationship to Plan: 2b. Provide web links to all referenced plans.

BCWMC 2015 Watershed Management Plan, Section 5: Implementation
http://www.bassettcreekwmo.org/application/files/5914/4676/6436/BCWMC_Section_5.pdf

Medicine Lake Excess Nutrients Total Maximum Daily Load Implementation Plan, 2011
<https://www.pca.state.mn.us/sites/default/files/wq-iw8-19c.pdf>

Targeting: 3. (18 points) Describe the methods used to identify, inventory, and target the most critical pollution sources or threats (root cause) done to date and describe any additional efforts that will be completed prior to installing projects or practices.

In 2004, the City of Plymouth completed an inventory of erosion sites and sedimentation sites along Plymouth Creek in need of restoration. The BCWMC used the inventory to identify projects for inclusion in the CIP.

In March 2016, the BCWMC Engineer (Barr Engineering) completed a feasibility study for the proposed project (Feasibility Report for the Plymouth Creek Restoration Project). Early in the study, the BCWMC Engineer walked the entire project area and identified sites with bank erosion, scour, and/or bank failure. The study included an investigation of the surrounding land use, stream characteristics, and historic channel alignment. The investigation included a geomorphic assessment and a determination of root causes of erosion. The causes of erosion are a

Questions & Answers

combination of human influences, such as foot traffic attributed to the current land use within the park and evidence that the channel may have been historically over-widened, straightened; and natural causes due to natural channel migration through the landscape. Additionally, a Phase I Environmental Assessment and analysis of wetland impacts were completed. Recommended stabilization methods include root wads, log vanes, rock vanes, floodplain excavation, toe wood, and channel remeandering. To estimate pollution reductions, the existing stream bank erosion rate (in units of feet per year) for each stabilization site was estimated based on a field assessment method known as the Bank Assessment for Non-Point Source Consequences of Sediment (BANCS) model.

Targeting: 4. (7 points) A) How does this application advance an overall groundwater, watershed protection, and/or restoration strategy implemented by your organization and your partners? Listing in a plan does not necessarily constitute an overall strategy. B) Describe activities other than those funded by this application that you and other partners have or will implement that affect the water resource of concern including but not limited to: other financial assistance or incentive programs, easements, regulatory enforcement, or community engagement activities that are indirectly related to this proposal.

This project is part of a watershed wide strategy to improve and protect lakes, streams, and wetlands by:

- reducing pollution from nonpoint sources,
- addressing water quality impairments,
- improving habitat,
- reducing flooding, and
- engaging residents and businesses.

The BCWMC's 2015 Watershed Management Plans lays out goals and policies and a Capital Improvement Program that includes this project. The BCWMC implements a robust Capital Improvement Program (CIP) through a strong partnership with its member cities. Each year, the BCWMC reviews the list of CIP projects for the upcoming five years and adjusts as needed according to opportunity and project readiness. The feasibility of the project slated for the following year is then studied and the BCWMC certifies a tax levy through Hennepin County under Minnesota Statutes Section 103B.251 for the project. The BCWMC then orders the project and enters into an agreement with the city where the project is located to design and construct the project.

In addition to the proposed project, the BCWMC has funded the following projects (constructed by the City of Plymouth) that address Plymouth Creek and/or Medicine Lake.

- Plymouth Creek Channel Restoration Project Medicine Lake to 26th Ave.
- West Medicine Lake Park Ponds

Additionally, the BCWMC's CIP includes a project in the area of Medley Park in Golden Valley intended to improve water quality in Medicine Lake.

Questions & Answers

Measureable Outcomes: 5. (10 points) A) What pollutant(s) of concern (For groundwater: bacteria, untreated sewage, nitrate, pesticides, etc.; For surface water: dissolved phosphorus, nitrogen, sediment, etc.) does this project specifically address? B) Has there been a pollutant reduction goal set in relation to that pollutant of concern or the water resource of concern that is the subject of this application? C) If so, what is that goal and what process was used to set this goal? If no pollutant reduction goal has been set, describe the water quality trends or other management goals that have been established. D) For protection projects, indicate measurable outputs such as acres of protected land, number of potential contaminant sources removed or managed, etc.

This project addresses total phosphorus and suspended sediments in Plymouth Creek and Medicine Lake and in further downstream waters including Bassett Creek and the Mississippi River.

The 2010 Medicine Lake Excess Nutrients Total Maximum Daily Load Study set a watershed total phosphorus reduction goal (wasteload allocation) of 28% or 1,287 lbs per year. The TMDL study used the P8 Urban Catchment Model and the BATHTUB lake model to develop load reductions scenarios. The Plymouth Creek Restoration Project is estimated to remove 52.2 lbs per year of total phosphorus. Although a reduction goal for total suspended solids has not been set, this project is estimated to remove 90,800 lbs per year of total suspended solids.

Measureable Outcomes: 6. (15 points) A) Describe how this project directly addresses the water resource of concern or potential pollution sources and how much effect the project will have on the root cause of the most critical pollution problems or threats. B) What is the annual reduction in pollutant(s) that will be achieved or avoided for the water resource of concern after this project is completed?

This project will address the root cause of pollution along this stretch of creek: erosion of streambanks due to human influences, such as foot traffic within the park and historical widening or straightening of the channel, and natural causes due to natural channel migration through the landscape. The project will stabilize and restore streambanks on Plymouth Creek which will reduce the amount of total phosphorus and suspended solids entering the creek and Medicine Lake. Streambank restoration projects are a common way to reduce pollution in waterbodies. Streambank restoration on Plymouth Creek is specifically listed in the Medicine Lake TMDL as an effective pollution reducing method.

This project is estimated to reduce total phosphorus loadings by 52.2 lbs per year. Earlier BCWMC projects aimed at reducing total phosphorus loads to Medicine Lake, including a Plymouth Creek restoration project downstream from the current proposed site, and ponds installed in West Medicine Lake Park, were projected to reduce total phosphorus loads to the lake by an estimated 300 lbs per year and 489 lbs per year, respectively.

Questions & Answers

Measureable Outcomes: 7. (10 points) Will the overall project have additional specific secondary benefits, including but not limited to measured or estimated hydrologic benefits, enhancement of aquatic and terrestrial wildlife species, drinking water protection, enhancement of pollinator populations, or protection of rare and/or native species? If so, specifically describe, or quantify if possible, what those benefits will be.

In addition to reducing pollution, the Plymouth Creek Restoration Project will improve in-stream and near stream habitat. Rock vanes, log vanes, and toe wood will add structure into the streambed and streambanks, improving habitats for macroinvertebrates and other aquatic life. The BCWMC monitors Plymouth Creek for biological integrity at a site well downstream of this project area. At that location, the stream does not meet State standards for macroinvertebrates due to a lack of habitat diversity and high levels of streambank erosion and embeddedness. These unfavorable conditions also exist within the project area but are expected to be vastly improved through implementation of the project.

Further, the project will include the establishment of native vegetation along streambanks, including flowering plants where sunlight is available, that will benefit pollinators, birds and other wildlife. Where active erosion is minimal at some locations in the project area, the project will prevent erosion by installing preemptive measures to protect existing stream banks.

Cost Effectiveness: 8. (5 points) Describe why the proposed project(s) is considered to be the most cost effective and reasonable means to attain water quality improvement or protection benefits. Consider such factors as, but not limited to BMP effectiveness, timing, site feasibility, practicality, and public acceptance. If any, what other alternatives were considered to achieve the same type and amount of benefit outlined in the proposed project?

The BCWMC has implemented multiple projects in the Medicine Lake watershed aimed at reducing total phosphorus in the lake. The design and construction costs of this project are estimated at \$766,000 or \$1,000 per pound of phosphorus reduced. This amount is within the acceptable range for pollution removal costs of similar projects.

The restoration and stabilization techniques proposed in the feasibility study are well-tested and known to be effective in settings similar to the project area. The City of Plymouth has been engaged throughout the development of the feasibility study including the city's Parks Department and the Water Resources Department. Under an agreement with the BCWMC, the City is prepared to design and construct the project in late 2017/early 2018.

The BCWMC sought input from residents near and adjacent to the project area by holding a public open house in October 2015, before the feasibility study began. Residents from eight different properties attended the open house. No residents raised major concerns about the project. Residents were in support of restoration in the project area, even if some trees are removed in the process.

The feasibility study for this project analyzed multiple stabilization/restoration techniques for each of the 21 sites within the project area. The most feasible and practical techniques were chosen for each site. The feasibility study was reviewed and formally approved by the Bassett

Questions & Answers

Creek Watershed Management Commission at their meeting in March 2016.

Project Readiness: 9. (8 points) Describe steps and actions already taken to ensure that project implementation can begin soon after grant award including preliminary discussions with permitting authorities (if applicable) and the status of any state, federal or local permits that may be required for the project (Conditional use, NPDES, WCA, EAW, USACE, Public Waters, archeological surveys, etc.). Also describe any preliminary discussions with landowners/occupiers, status of agreements/contracts, contingency plans, and other project development activities to date that will ensure a smooth start to the project and minimize administrative or other critical delays.

As described earlier, a feasibility study is complete for this project. Additionally, the BCWMC will certify to Hennepin County a 2017 tax levy for this project in accordance with Minnesota Statutes, Section 103B.251, Subd. 4 to provide the local match required to complete the project. At their meeting on June 28, 2016, the Hennepin County Board of Commissioners approved a 2017 maximum levy amount for the BCWMC for its 2017 projects, including the project proposed here.

Staff with permitting agencies including the U.S. Army Corps of Engineers (USACE), and the Minnesota Department of Natural Resources (MDNR) toured the project area in October 2015. The tour provided an opportunity to review the project site and discuss options, considering both ideal restoration scenarios and practical aspects of maintaining existing uses within Plymouth Creek Park. The USACE and MDNR expressed their preference for bioengineering techniques whenever possible. The City described the use and popularity of the disc golf course adjacent to the creek. The City noted it will consider realigning holes on the course to minimize disturbance along the creek or to temporarily close holes to help re-establish vegetation on the banks.

In September 2016, the BCWMC will hold a public hearing on the proposed project, order the project, and enter into an agreement with the City of Plymouth to design and construct the project.

Project Readiness: 10. (2 points) Newsletters, signs and press releases are standard communication tools. Beyond those basics, describe any additional project activities that would be added to the grant workplan aimed at engaging your local community on the need, benefits, and long term impacts of this project.

In addition to newsletter article, signs, and press releases, the BCWMC will seek resident input on preliminary project design plans before project plans are finalized. A letter will be mailed to residents near and adjacent to the project (similar to the letter sent during the feasibility study) inviting them to an open house to provide input on the project. Additionally, flyers will be posted in an adjacent apartment complex and at several locations in the disc golf course inviting input on the project at the open house. A webpage dedicated to the project has already been established (<http://www.bassettcreekwmo.org/index.php?CID=284>) and will be updated regularly. The project may also be featured during a future watershed tour and during presentations to groups on BCWMC projects.

BBR: 11. (5 points) Did your organization submit a Biennial Budget Request (BBR) to BWSR in 2014?

Yes, this project was included in the BCWMC 2014 BBR.

Questions & Answers

The Constitutional Amendment requires that Amendment funding must not substitute traditional state funding. Briefly describe how this project will provide water quality benefits to the State of Minnesota without substituting existing funding.

This project supplements spending by the Bassett Creek Watershed Management Commission and does not substitute traditional State funding. Grant funds would help extend BCWMC funds to expedite the implementation of other projects in its CIP.

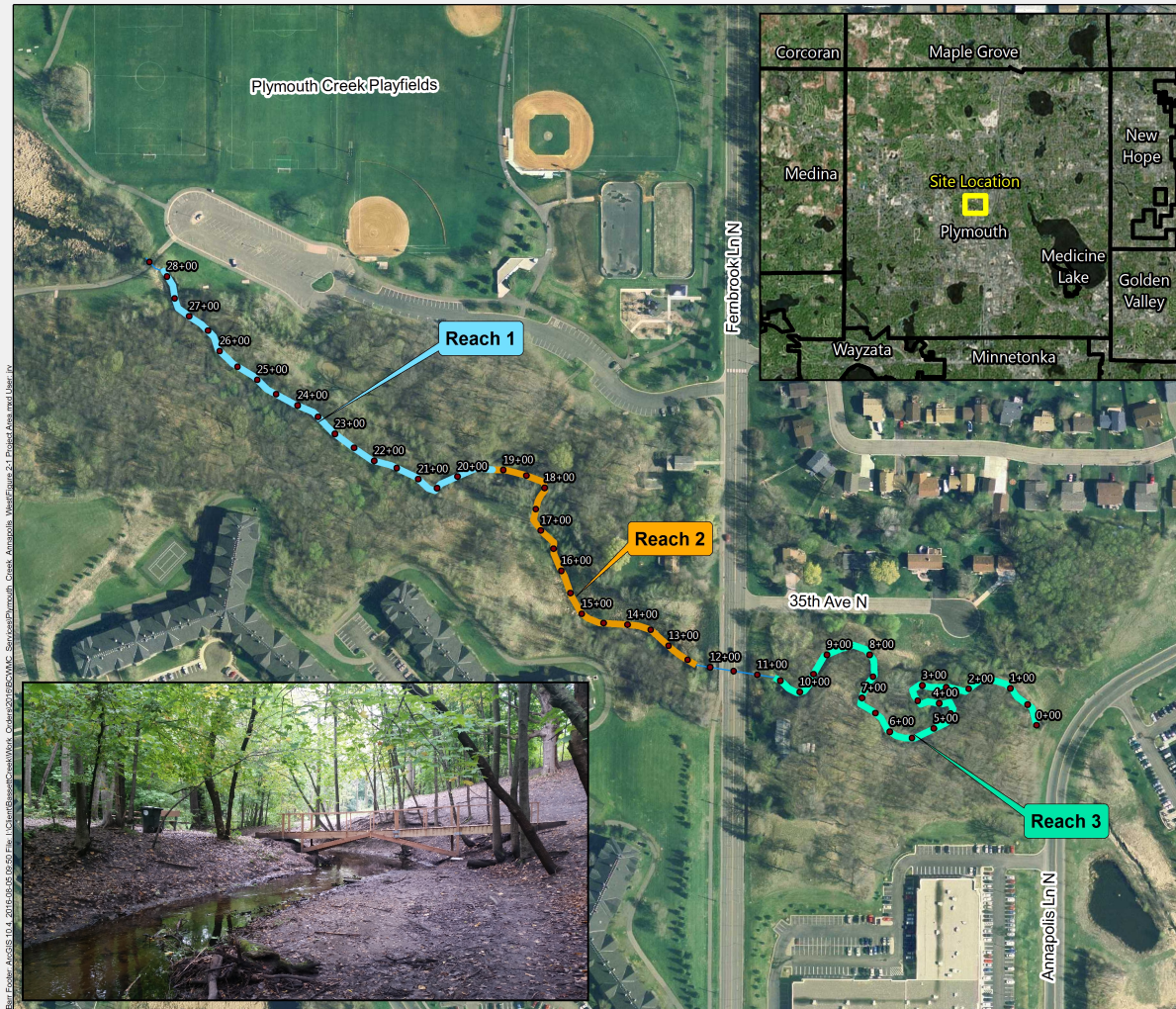
Application Budget

Activity Name	Activity Description	Category	State Grant \$ Requested	Activity Lifespan (yrs)
Project Construction	Project Construction Costs	STREAMBANK OR SHORELINE PROTECTION	\$300,000.00	
Project Design	Technical and engineering activities related to the stream restoration design	TECHNICAL/ENGINEERING ASSISTANCE	\$100,000.00	

Activity Details

Activity Name	Question	Answer
Project Design	Are you interested in applying for CWP Loans for this project?	Not Entered
Project Design	Dollar amount requested for Ag BMP Loan Program:	Not Entered
Project Construction	Are you interested in applying for CWP Loans for this project?	Not Entered
Project Construction	Dollar amount requested for Ag BMP Loan Program:	Not Entered

Application Image



- Non-Reach Creek
- Reach 3
- Reach 2
- Reach 1

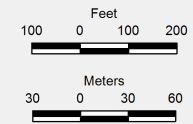


Figure 2-1

PLYMOUTH CREEK STUDY PROJECT AREA
 Plymouth Creek Feasibility Study
 Bassett Creek Watershed
 Management Commission

Map Image

