COON CREEK WATERSHED DISTRICT
Request for Board Action

MEETING DATE: February 13, 2017
AGENDA NUMBER: 15
ITEM: 319 Grant Application for Sand Creek

AGENDA: Discussion

ACTION REQUESTED
Authorize staff to pursue 319 grant funding for the Lower Sand Creek Corridor Restoration project

BACKGROUND
In January, the MPCA opened a round of funding for FY 2017 federal Clean Water Act Section 319 grant funds. The purpose of the 319 grant program is to provide funding to implement projects that reduce nonpoint source pollution in impaired waters. To be eligible, the impaired waterbody must have an EPA-approved TMDL study and the proposed project activities must be identified in an MPCA-approved TMDL implementation plan or WRAPS implementation table. The MPCA anticipates approximately $2.5 million will be available; the minimum grant request is $50,000 with no cap and all grantees are required to contribute at least 40% of the total project costs as a cash or in-kind match.

With the approval of the Coon Creek Watershed TMDL and WRAPS in 2016, the District is now eligible to apply for 319 grant funding. District staff identified Sand Creek as a priority area to decrease sediment and nutrient loading and improve habitat for macroinvertebrates and fish.

The main stem of Sand Creek was added to Minnesota’s 303(d) list of impaired waters for aquatic life impairments in 2006 due to macroinvertebrate bioassessments and for aquatic recreation impairments in 2016 due to elevated levels of Escherichia coli (E. coli). Sand Creek also failed to meet standards for fish biotic condition, but this impairment was deferred until the adoption of Tiered Aquatic Life Use (TALU) standards. Excess total phosphorus (TP), total suspended solids (TSS), habitat alterations, and altered hydrology were identified as the primary stressors to Sand Creek’s biota. Since 2009, water quality in Sand Creek has been monitored annually at a minimum of 4 sites. During baseflow, concentrations of TSS and TP generally meet state standards (median = 5.5 mg/L and 54 ug/L, respectively) and vary little between sampling locations. During storm events, both TSS and TP increase from upstream to downstream, with 14% and 40% of samples exceeding state standards at the downstream-most site. The primary sources of excess TSS and TP were determined to be stormwater inputs and stream bank erosion during high flow events. To attain pollution standards and reduce stress on biota, the TMDL study calls for annual load reductions of 10% of TSS and 33% of TP during
the highest 10% of flows which corresponds to approximately 36 tons of TSS and 813 pounds of TP per year.

The ½ mile section of Lower Sand Creek was selected as the project site because it was identified as a TSS loading hot-spot based on the results of annual water quality monitoring and a comprehensive inventory of erosion sites conducted in 2015. Specifically, all 11 miles of creeks and ditches within the Sand Creek subwatershed were visually inspected and any incidences of erosion were measured and documented. Estimates of sediment loading at each erosion site were calculated using the Wisconsin NRCS direct volume method (bank length x height x lateral recession rate x soil density). The half mile project reach contained 16 erosion sites with an estimated cumulative annual TSS load of 372 tons, which is approximately 40% of the TSS load attributable to streambank erosion in the whole subwatershed (see map below). A load duration curve analysis using flow and TSS monitoring data near the outlet of Sand Creek estimated an annual watershed TSS load of 1,436 tons. This analysis shows that although the project reach is relatively small, it contributes approximately 26% of the annual subwatershed TSS load.

Over the past five years, several BMPs including 25 rain gardens and a stormwater treatment pond have been installed in the lower portion of the subwatershed to address stormwater inputs and rate control. To address the remaining non-point sources of TSS and TP in Sand Creek, in-channel BMPs are necessary to prevent further channel incision and bank erosion. This project will utilize a variety of BMPs to reduce sediment and nutrient loading and to improve in-stream and riparian habitat (see photos below). Specifically:

1. To reduce in-stream erosion caused by channel incision and to create habitat heterogeneity (riffle-pool sequences), six grade stabilization cross vanes will be installed.
2. To address bank erosion, a combination of bioengineering and hard-armoring practices will be implemented.
3. To stabilize severely eroded sites, vegetated rock riprap will be used along with stream barbs and/or root wads to deflect flow and create habitat features.
4. For less severely eroded sites, banks will be stabilized with log toes, cedar revetments, and/or regraded to a suitable slope and stabilized with vegetation as needed.
5. Additionally, tree thinning along the project reach will allow sunlight to penetrate the canopy and promote the growth of new low lying deep-rooted vegetation along bare streambanks. An increase in riparian vegetation will not only stabilize banks, but will also capture overland nutrient runoff and provide additional habitat to macroinvertebrates and fish.

The proposed BMPs will reduce between 75% and 100% of the bank erosion presently occurring within the project reach which will reduce annual sediment loads in Sand Creek by approximately 279-372 tons. This TSS load reduction corresponds to an annual TP load reduction between 112 and 312 lbs depending on the nutrient content of the sediment
(0.40-0.84 lbs of TP per ton of TSS; Cross & Schlesinger 1995). Additional TSS and TP load reductions can be expected from preventing further channel incision with grade control structures and from enhancing riparian vegetation to better treat overland flow. The estimated load reductions from this project would exceed the TSS reduction goals and accomplish roughly 15-35% of needed TP load reductions identified for Sand Creek in the TMDL and WRAPS studies. Additionally, because Sand Creek is a major tributary to Coon Creek, these load reductions would also contribute to meeting TSS and TP reduction goals for Lower Coon Creek.

Restoring the Lower Sand Creek corridor will not only help address local biotic impairments in Sand Creek by reducing sediment and nutrient loading and enhancing habitat, but will also reduce TSS and TP loading to downstream impaired waters, Coon Creek and the Mississippi River. Additionally, the City of Coon Rapids maintains a popular public trail system adjacent to Sand Creek along the entire project reach and stabilization of this corridor will help protect trail infrastructure that is currently threatened by bank erosion. This project will also benefit source water protection efforts as it is located in the Priority ‘A’ Source Water Protection Area for the City of Minneapolis which supplies drinking water to roughly a half million people.

The deadline for applications is March 6th, 2017; awardees will be notified by the end of May 2017 and work may begin as early as spring 2018.

**ISSUES/CONCERNS**

**2018 Budget Implications:** If awarded a 319 grant, the District would be responsible for a 40% cash or in-kind match. Based on preliminary estimates, the total project cost would be approximately $446,700, requiring at least $178,700 in match funds.

**Potential Matching Funds:** It may be possible to receive additional match funds through state grant programs (e.g. Clean Water Fund grants administered by BWSR), but supplemental funding is not guaranteed.

**Necessity of Project:** If the District is not awarded a 319 grant for this project, there is still value in implementing this project or a portion of the project.

**Collaboration:** Staff have reviewed this proposal with the Anoka Conservation District and the City of Coon Rapids

**PRIOR DECISIONS**

**April 23, 2016:** As a first step in developing the 2017 budget the Board reviewed and adopted budget guidelines and adopted financial objectives which supported the pursuit of grants to augment or supplement the District’s budget and pursuit of its mission.
OPTIONS
- Pursue 319 grant opportunity
- Do not pursue 319 grant opportunity

RECOMMENDATION
Authorize staff to pursue 319 grant funding for the Lower Sand Creek Corridor Restoration project
Map of all erosion sites identified in the 2015 Sand Creek subwatershed comprehensive drainage system inspection. The project reach contains 16 erosion sites with an estimated total sediment load of 372 tons per year, 40% of the annual TSS load for all erosion sites within the Sand Creek subwatershed.
**Before:**
Example of a severely eroded bank within the Lower Sand Creek project reach

**Before:**
A stretch of Lower Sand Creek with an incised channel, eroded banks, and poor riparian vegetation and in-stream habitat

**After:**
A rendering of the Lower Sand Creek Restoration project; note the root wads (A), log toe (B), restored backwater habitat (C), cross vane with riffle-pool sequence (D), vegetated riprap (E), regraded banks, and tree thinning to enhance riparian vegetation