



Title: Authorization to Execute a Contract for the County Road 6 Stormwater Pond Retrofit Feasibility Study

Resolution number: 23-018

Prepared by: Josh Wolf, Project and Land Program Manager
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Reviewed by: Tiffany Schaufler, Senior Project Maintenance Coordinator; Michael Hayman, Project Planning Manager

Recommended action: The Board of Managers authorizes the Administrator to execute a contract with Stantec to conduct preliminary field visits, refine modeling, and feasibility level engineering design for the County Road 6 Pond Retrofit Project.

Schedule: May 2023: Refine P8 model and conduct field visits.
June 2023: Develop feasibility report outlining potential retrofit options.
Summer/Fall 2023: Design of potential pond retrofit project
Winter 2023-2024: Anticipated construction of pond retrofit project

Budget considerations: Fund name: Planning & Projects, Engineering 2002-4340
Fund budget: \$150,000.00
Expenditures to date: \$12,623
Requested amount of funding: \$26,373.56

Past Board action: Res # 18-066 Resolution of Support for the Long Lake Creek Subwatershed Partnership

Res # 18-084 Authorization to Apply for BWSR CWF Competitive Grant Funding for Long Lake Creek Subwatershed Assessment.

Res # 19-039 Authorization to release RFP for Long Lake Creek Subwatershed Assessment

Summary:

County Road 6 Pond Background

In 1989, the Minnehaha Creek Watershed District (MCWD) with assistance from the Minnesota Pollution Control Agency (MPCA), through a Clean Water Partnership (CWP) grant, conducted a diagnostic study of Long Lake that characterized and quantified potential causes to declining water quality within the lake, and developed numerical water quality goals and performance standards to improve water quality in Long Lake. This study, completed with the support of local municipalities, laid the foundation for the projects undertaken by MCWD in the Long Lake area throughout the 1990s.

The County Road 6 (CR 6) Pond was constructed in 1997-1998 as a result of this Long Lake diagnostic study. The pond was designed to reduce sediment and nutrient loading from the Holy Name tributary in the northeast and the Wolsfeld tributary in the northwest in the Long Lake subwatershed. The pond was designed to remove 16% total phosphorus based the 1998 Long Lake Diagnostic Study

Long Lake Creek Roadmap

At the January 26, 2023, Board Meeting, staff presented the draft Long Lake Creek Partnership Roadmap (the "Roadmap"). This Roadmap, which is based on a subwatershed assessment performed by Wenck (now Stantec) and significant diagnostic work by MCWD Research and Monitoring, identified water resource issues, drivers causing the identified issues, and implementation strategies to address the Subwatershed challenges. The Roadmap ultimately recommended 34 projects for advancement based on an assessment of cost-effectiveness and feasibility to implement.

One of the key findings of the Roadmap is the enhancement and addition of regional treatment as a key priority as these projects will target large drainage areas in the near-term while more dispersed, localized treatment is implemented over time. The CR 6 pond was identified as one of two top-priority projects for near-term implementation. The CR 6 pond presents an excellent opportunity to retrofit an asset that MCWD already owns and manages. The retrofit will utilize improved technology and modern computer modeling to increase the total phosphorus reduction into the Long Lake, as well as the potential to increase water quantity storage for the two large tributaries draining to Long Lake. While the Roadmap identified priority projects for implementation, a feasibility study is the first step in identifying possible retrofit alternatives.

County Road 6 Pond Performance History:

The CR6 pond has been monitored numerous times between 1998 and 2022 using a variety of different methodologies to assess its performance. These monitoring activities included:

- Stantec (Wenck) Pond Monitoring (1998)
- MCWD Historic Monitoring (2010-2018)
- Stantec (Wenck) Pond Survey (2019)
- MCWD Stormwater Sampling (2021)

MCWD staff summarized these monitoring in 2022 (MCWD, 2022), which found that the pond does appear to be meeting or exceeding its phosphorus removal design goals. However, the monitoring and synthesis also found that there may be the possibility to improve the efficiency of the pond through a retrofit based on the updated information collected between 1998 and 2021.

County Road 6 Preliminary Feasibility Assessment:

In 2022, Stantec conducted a planning-level feasibility assessment to characterize the potential benefits of retrofitting the CR6 pond. This assessment identified that the CR6 pond does have the potential to improve phosphorus load reduction to Long Lake, which is currently impaired for excess phosphorus. The Stantec feasibility assessment identified modeling improvements necessary to refine potential phosphorus load reduction range (10 lbs P/yr to 150 lbs P/yr) for a pond retrofit (Stantec, 2022).

Feasibility Study Scope of Work, Budget, and Schedule

Based on findings from the Long Lake Roadmap, staff and Stantec have continued discussions surrounding the approach to utilizing existing facilities as top priority projects. These discussions informed the tasks for the feasibility study and include the refinement of the Wolsfeld and Holy Name models into a singular model, completion of a site assessment, and identifying and modeling alternatives for implementation. The scope of work is divided into four major tasks:

- **Task 1: Further Refinement of P8 modeling:** Stantec will refine the P8 model to include a longer period of rainfall data, to allow calibration against flow monitoring data collected by MCWD. Live storage will be added to devices included in the model. Following these revisions, the model will be run and the results refined.

- **Task 2: Site Investigation:** A land surveyor will be dispatched to the CR 6 Pond site to collect topographic survey information related to the CR 6 Pond and to survey known utilities and those identified through the Gopher State One Call.
- **Task 3: Identification of Alternatives:** Stantec will generate a list of possible retrofit options for the CR 6 pond. Alternatives considered will span from passive to active treatment methods.
- **Task 4: Modeling of Alternatives:** 3-5 different retrofit alternatives or combinations of alternatives will be carried through modeling and evaluation. Concept-level water quality modeling will be completed to evaluate the ability of each retrofit alternative to remove TP. The results of modeling will be used to compare the water quality benefits of the alternatives against each other to inform decision making. The District's XP-SWMM model will be used as-needed to inform hydraulics and evaluate event-based scenarios.

April 13, 2023 MCWD Board Meeting

At the April 13, 2023 Board meeting, staff will provide the Board with a presentation regarding the County Road 6 pond retrofit feasibility study. This feasibility study aligns with the goals of the Long Lake Roadmap to prioritize pre-existing infrastructure for retrofit for increased efficiencies in reductions of nutrients to address challenges within the subwatershed.

After extensive review, staff has assessed that Stantec is uniquely qualified to conduct this work based on Stantec's 10+ years of surveying MCWD's stormwater ponds and their recent analysis of MCWD's longitudinal stormwater pond data for MCWD's Project Maintenance and Land Management program. Additionally, Stantec, in conjunction with MCWD's Research and Monitoring program, has completed P8 modeling of Wolsfeld and Holy Name tributaries for the Long Lake Roadmap and originally designed the pond. Lastly, staff have determined based on an understanding of the marketplace, that other firms would need to build in a discovery task to familiarize themselves with the pond performance data, Long Lake Creek Roadmap, and Research and Monitoring's P8 models to support the model build for this feasibility work. Staff is confident that Stantec's proposal is cost competitive within the marketplace.

At the April 13, 2023 MCWD Board Meeting, staff will seek authorization for the Administrator to negotiate and execute a contract with Stantec for contracted services.

Supporting documents (list attachments):

- Stantec Scope of Services for County Road 6 Pond Retrofit Feasibility Study
- Map of Long Lake Subwatershed



RESOLUTION

Resolution number: 23-018

Title: Authorization to Execute a Contract for the County Road 6 Stormwater Pond Retrofit Feasibility Study

- WHEREAS in 1998, the Minnehaha Creek Watershed District (MCWD) constructed the County Road 6 pond as a result of the Long Lake diagnostic study to reduce sediment and nutrient loading to Long Lake;
- WHEREAS a regional partnership was formed in 2018 among the cities of Medina, Long Lake and Orono, and the Long Lake Waters Association, to pursue water quality improvements in the Long Lake Creek Subwatershed;
- WHEREAS in 2019, in order to support the regional partnership effort, MCWD completed the Long Lake Creek Watershed Assessment which identified key locations to monitor hydrology and water quality to support model calibration, and built a watershed data model to help identify and assess potential projects;
- WHEREAS MCWD staff has utilized the Long Lake Creek Watershed Assessment to identify and evaluate a variety of potential watershed improvement projects and worked with partners to develop a Long Lake Creek Roadmap, which recommends a project implementation strategy;
- WHEREAS at the January 26, 2023, MCWD Board of Managers meeting, the Board reviewed the Long Lake Creek Roadmap, which identified a retrofit of the County Road 6 pond as a top priority for near term implementation to increase efficiencies based on updated information collected between 1998 and 2021;
- WHEREAS a feasibility study is the first step in MCWD's project implementation model, and may include elements such as site investigation, modeling, and alternatives assessments to identify a preferred retrofit of the County Road 6 pond;
- WHEREAS MCWD has requested that Stantec submit a scope of work to perform a feasibility study, which MCWD staff have reviewed and determined to be sound and appropriate;
- WHEREAS the District Governance Manual, Policy #6: Executive Limitations, provides that the MCWD Administrator may not contract for professional services in excess of \$25,000 without obtaining competitive quotes or bids;
- WHEREAS the proposed contract does not meet this threshold, but nevertheless staff recommends, and the Board finds, that a competitive process is not warranted, in that Stantec is uniquely qualified to conduct this work, on the basis of Stantec's 10+ years of surveying MCWD stormwater ponds and their recent analysis of longitudinal stormwater ponds data. Additionally, Stantec has completed P8 modeling of the subwatershed for the Long Lake Roadmap and originally designed the pond;

NOW, THEREFORE, BE IT RESOLVED that the Minnehaha Creek Watershed District Board of Managers authorizes the District Administrator, on advice of counsel, to enter into a contract with Stantec Consulting Services, Inc. to conduct a feasibility study for the retrofit of the County Road 6 pond, in an amount not to exceed \$23,975.96, and further authorizes the Administrator thereafter to amend the contract in his discretion up to an additional 10% of this fee.

Resolution Number 23-018 was moved by Manager _____, seconded by Manager _____. Motion to adopt the resolution ___ ayes, ___ nays, ___ abstentions. Date: 4/13/2023

Secretary Date: _____

DRAFT



Stantec Consulting Services Inc.
One Carlson Parkway North, Suite 100
Plymouth MN 55447-4440

March 27, 2023

Project/File: 227703389

Josh Wolf
MCWD

Greetings Josh Wolf,

Reference: Proposed Scope of Services for County Road 6 Pond Retrofit Feasibility Study

Introduction

This proposed scope of services is in response to a request by MCWD for feasibility analysis of retrofit options for the Long Lake Creek – Country Road 6 Pond (CR 6 Pond) in Orono, MN. The CR 6 Pond is downstream from Holy Name and Wolsfeld Lakes, and upstream from Long Lake. All three lakes are impaired by excess nutrients. The CR6 Pond is strategically located in the subwatershed, with recent monitoring and analysis of the pond and subwatershed indicating opportunities for further improvements in the pond's effectiveness in total phosphorus load reduction.

MCWD Research & Monitoring has shown that Long Lake requires a 62% reduction in phosphorus (742 lbs.) to meet state water quality standards, which includes 411 lbs/yr from watershed sources (4-7 Initial concept evaluation by Stantec suggests that TP removals of 10 – 150 lbs/yr could be achieved through CR 6 Pond retrofits, depending on the annual flow and TP concentrations entering the pond.

Stantec recently completed modeling updates for MCWD to consolidate MCWD's Wolsfeld and Holy Name P8 water quality models into a single comprehensive model to inform this proposed CR 6 Pond retrofit feasibility assessment. Opportunities for model improvement and refinement were identified, which are outlined in the sections below, to better quantify system TP loads and potential TP load removals.

Approach

Task 1: Further Refinement of P8 modeling

The recent combination of MCWD's Wolsfeld and Holy Name P8 models into a single P8 model and refinement of model parameters based on 2021 monitoring data yielded a model more representative of actual conditions, for use in designing retrofits at CR 6 Pond. However, opportunities for further model improvement were identified, which, if completed before advancing feasibility analysis of retrofit options, would help ensure design expectations are estimated using best available data. If further model refinement is not completed at this time, the feasibility study will compare relative load capture by various evaluated alternatives, not absolute load capture. The following model refinements are recommended.

- Current version of refined model utilizes 2020-2021 precipitation data provided by MCWD, retrieved from MesoNet, for the Long Lake subwatershed. We understand that additional relative data back to 2017 is present. A longer period of rainfall data would allow adequate model warmup period and

Reference: Proposed Scope of Services for County Road 6 Pond Retrofit Feasibility Study

incorporation of multiple years into average flow and load outputs. This will allow calibration of the model against 2018 and 2019 flow monitoring data collected by MCWD. It is assumed that MCWD will provide rainfall data for the MesoNET period of record for use in the P8 model. It is assumed MCWD would provide the precipitation data and Stantec would incorporate and run the P8 model for these years.

- While combining the Holy Name and Wolsfeld P8 models, it was noted that the majority of devices in the P8 models do not have live storage included. Live storage was added for Wolsfeld Lake, and the addition was found to have a significant impact on the results at CR 6 Pond. The addition of live storage at all other devices was outside of the scope of work when combining the models but would be beneficial to ensure that flows to receiving waterbodies and devices are representative of real world conditions. It is assumed MCWD staff will input live storage for the devices in the model. Stantec staff will have a meeting with MCWD prior to incorporating live storage to review the most efficient way for live storage incorporation into the model.
- Once live storage is added, the model will be run and results refined based on the additional data.
- Since MCWD's event-based monitoring occurred during drought years (2021 and 2022), it is recommended that the system continue to be monitored and that the P8 model continue to be refined and calibrated based on monitoring results. If collected by MCWD, 2023 monitoring data will be compared to precipitation data provided by the District, but due to timing and project sequencing, model refinements based on 2023 monitoring data is not included in this scope of work.

Assumptions:

- MCWD will provide period of (2017 – Present) record of rainfall data for use in the P8 model, formatted for use by P8.
- Live storage will be added based on available LiDAR topography by MCWD staff.
- Refinement efforts will consist of calibrating to annual flow volumes, not individual events, to MCWD monitoring data.
- If collected by MCWD, summer 2023 monitoring data will be evaluated with 2023 precipitation data provided by MCWD.

Deliverables:

Refined P8 model and a bulleted list of documented model changes which will be attached as an appendix to the feasibility report.

Task 2: Site Investigation

A land surveyor will be dispatched to the CR 6 Pond site to collect topographic survey information related to the CR 6 Pond and to survey known utilities and those identified through the Gopher State One Call.

Reference: Proposed Scope of Services for County Road 6 Pond Retrofit Feasibility Study

Assumptions:

- Stantec will coordinate the Gopher State One Call request.
- Wetland delineation is not included in this scope of work. We understand that a wetland delineation has been completed for the site and will be provided by MCWD.
- Tree survey is not included in this scope of work. Impacts to trees will be estimated via aerial imagery at this phase of the project.

Deliverables:

None. Survey will be used to inform feasibility assessment.

Task 3: Identification of Alternatives

Using knowledge of the site, Stantec will generate a list of possible retrofit options for the CR 6 Pond. Alternatives considered will span from passive to active treatment methods. Examples of alternatives that may be considered include sand filter bench, increased pond storage, iron enhanced sand filter bench, active / predictive pumping system with filter bench, proprietary manufactured filter devices, modification of pond storage capacity, retrofits to pond hydraulics (such as creating more defined cells, or outlet structure modifications), etc.

Assumptions:

- Stantec will present a list of alternatives at the kick-off meeting, and MCWD will collaborate by providing initial input and suggesting any additional alternatives for consideration.

Deliverables:

A list of alternatives, will be developed through a brainstorming session with MCWD staff at kickoff meeting, to serve as a starting point to identify which alternatives (3-5) to carry through the modeling and evaluation phase.

Task 4: Modeling of Alternatives

It is anticipated that 3-5 different retrofit alternatives or combinations of alternatives will be carried through modeling and evaluation. Concept-level water quality modeling will be completed to evaluate the ability of each retrofit alternative to remove TP. The results of modeling will be used to compare the water quality benefits of the alternatives against each other to inform decision making. The District's XP-SWMM model will be used as-needed to inform hydraulics and evaluate event-based scenarios.

Assumptions:

- It is assumed that hydraulic limitations of the project require high water levels to not be exacerbated and for ponded water to be contained within the existing easement at the CR 6 Pond.

Reference: Proposed Scope of Services for County Road 6 Pond Retrofit Feasibility Study

- MCWD XP-SWMM model will be used for hydraulic assessments.
- MCWD refined P8 model will be used for water quality modeling. The version of the model used will be the refined version based on 2021 monitoring data.

Deliverables:

- Total phosphorus load removal estimates will be included in the final memo.
- Key modeling decisions will be documented in the final memo.

Task 5: Evaluation of Alternatives

An evaluation matrix will be prepared to summarize and rank the pros and cons of each identified alternative. Compiled information and methods will be summarized in a technical memorandum. The evaluation process will identify the following information for each alternative:

- Ability of alternative to achieve MCWD goals
 - Water quality (TP load reduction)
 - Water quantity (discharge rate and flood control)
 - Ecological integrity (habitat & wetland restoration and/or preservation)
 - Thriving communities
- Project capital costs
- Annual operation & maintenance costs
- Lifecycle cost
- Permitting needs and hurdles
- Site constraints and/or needs
 - Land rights
 - Access
 - Utilities
- Additional data needs for final design
- Engineering complexity and challenges

Assumptions

- Capital costs will be estimated based on recent bids Stantec has reviewed from similar projects in nearby geographies. Cost estimates may also be informed by engineering judgement and/or discussions with local contractors.
- Operation & maintenance costs will be assumed to be a constant percentage of capital cost, unless more detailed information is readily available.

Reference: Proposed Scope of Services for County Road 6 Pond Retrofit Feasibility Study

- Project lifecycles will be assumed to be 30 years, unless otherwise justified
- The following costs will be assumed to be constant percentages of the capital cost:
 - Design & Construction Engineering (30%)
 - Contingency (30%)
 - Permitting & Legal (10%)
- A preliminary determination of relevant regulatory agencies and required permits will be made for each alternative. Any concerns regarding the permitting process will be summarized.
- One iteration of review by MCWD of the technical memorandum.

Deliverables

- A final memo documenting the information gathered and summarized as part of this task will be provided.

Task 6: Schematic Design of Preferred Alternatives

It is anticipated that one or two alternatives will be preferred. Schematic design figures will be prepared to communicate key project details such as footprint of the retrofit and locations of key retrofit infrastructure. These figures will be informational and will be intended as a communication aid when discussing project opportunities and impacts with stakeholders.

Assumptions

- Up to two figures will be generated.
- Figures will be Schematic-level.

Deliverables

One concept level figure for each of the two highest ranked alternatives.

Task 7: Meetings and Project Management

The following meetings are included in this scope of work. Additional meetings will be subject to additional fees.

- Kickoff meeting
 - Discuss project goals
 - Identify possible alternatives
- Discussion of Alternatives Evaluation
 - Review alternatives matrix

Reference: Proposed Scope of Services for County Road 6 Pond Retrofit Feasibility Study

- Determine 1-2 preferred alternatives

Assumptions

- Stantec will provide meeting agendas.
- MCWD will prepare and provide meeting notes.
- Meetings may be held virtually or in-person, based on MCWD & Stantec staff preference at the time of meetings.
- Up to two Stantec staff will attend each meeting.

Deliverables

Two meetings with MCWD staff.

Schedule

Stantec is prepared to begin this scope of services within two weeks of receiving notice to proceed, assuming modeling files necessary to complete Task 1 are provided by MCWD at the time notice to proceed is given. It is assumed that MCWD will be available for the kickoff meeting 1-2 weeks after the project starts. Stantec plans to complete the scope of work within 9-11 weeks from receiving notice to proceed.

Fees

This work is proposed on a time and materials basis, not to exceed the total estimate of \$23,975.96.

Task Number	Task Name	Hours	Labour	Expense	Total
1	Update modeling	22.00	\$3,351.00	\$0.00	\$3,351.00
2	Site Investigation	18.00	\$2,529.00	\$0.00	\$2,529.00
3	Identification of Alternatives	7.00	\$1,116.00	\$0.00	\$1,116.00
4	Modeling of Alternatives	28.00	\$4,391.00	\$0.00	\$4,391.00
5	Evaluation of Alternatives	46.00	\$7,153.00	\$0.00	\$7,153.00
6	Concept Design Schematics	17.00	\$2,759.00	\$0.00	\$2,759.00
7	Meetings & Project Management	15.00	\$2,640.00	\$36.96	\$2,676.96
	Total	153.00	\$23,939.00	\$36.96	\$23,975.96

Sincerely,

STANTEC CONSULTING SERVICES INC.

Reference: **Proposed Scope of Services for County Road 6 Pond Retrofit Feasibility Study**

A handwritten signature in blue ink, appearing to read 'CJM', is positioned above the contact information for Chris Meehan.

Chris Meehan, PE (MN)
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