

Engineer's Report

September 20, 2021

Lake Cornelia and Lake Edina Water Quality Improvements- Rosland Park Stormwater Filtration BMP

Construction has started on the Rosland Park Stormwater Filtration BMP project. The contractor, Pember Companies Inc, delayed their start date to September 30, 2021 due to concrete structure material delays and have been modifying their schedule to complete as much work as possible before the end of November. They have made good progress in recent weeks with pedestrian/traffic safety measures, erosion control, tree removals, vault excavation, and pipe installation. They plan to start pouring concrete in the vault structure yet this week. Barr continues to coordinate with Pember on shop drawing and material submittals.

Since onset of the project, Barr has been working with Pember to identify potential cost savings for the Rosland Park BMP project. The proposed project changes, which result in an overall reduction in contract price of \$68,235, are summarized in Change Order #1.

Barr received Pay Application #1 from Pember for \$52,031.50 for work completed through October 7, 2021. The pay application includes half of the mobilization item, pedestrian and traffic safety control measures, construction layout and staking, and clearing and grubbing. Barr is recommending payment of Pay Application #1.



Pember starts construction of the Rosland Park BMP Project at the end of September 2021.



Installing rebar and preparing for pouring of the concrete in the filtration vault.



A new pipe is installed to convey filtered water from the treatment vault to Lake Cornelia.



The disturbed area was seeded and restored using erosion control blanket.

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Lake Cornelia and Lake Edina Water Quality Improvements: *Lynmar Basin Stormwater Retrofit Concept Plan*

A feasibility analysis scope was approved at the September Board meeting and work is underway to complete that work this fall. The feasibility study will include soil borings and infiltration capacity analysis and additional engineering analysis to optimize basin sizing to maximize cost/benefit ratio. If the project is ordered by the District upon completion of the feasibility study, construction document preparation and bidding would take place over the winter of 2021/22 and spring 2022. Construction is anticipated for 2022.

A request for proposals was sent to several local geotechnical contractors to perform four soil borings on site. While only one proposal was received from Haugo Geotechnical for \$6,909, the proposed cost was similar to the estimated cost included in Barr's scope of work (scope estimated \$6,000 for the subcontractor and \$3,600 for the coordination and oversight by Barr). We suspect the aggressive timeline to try to keep the project on schedule likely played into the number of bids received (drillers are busy this fall). We are moving ahead with contracting with Haugo Geotechnical based on consultation with the NMCWD Administrator. Regarding timeline, the drillers are running roughly 1-2 weeks out for conducting the soil borings.

We are working on soliciting quotes for a site survey, to be completed yet this fall. This work will be completed outside of the approved feasibility analysis scope of work.



The final Lynmar Basin stormwater retrofit concept design has been summarized in a report document, including the estimated costs and potential water quality and flood improvements.

Discovery Point Restoration and Building Addition Rain Garden and Landscape

Planting and the final construction items related to the rain garden and remaining restoration have been completed. On-site visits with the Contractor have been recently performed to review site conditions. On-going restoration and site management tasks going forward will include monthly site visits, site-wide herbicide application to control woody invasive re-sprouts, garlic mustard, and narrowleaf bittercress.

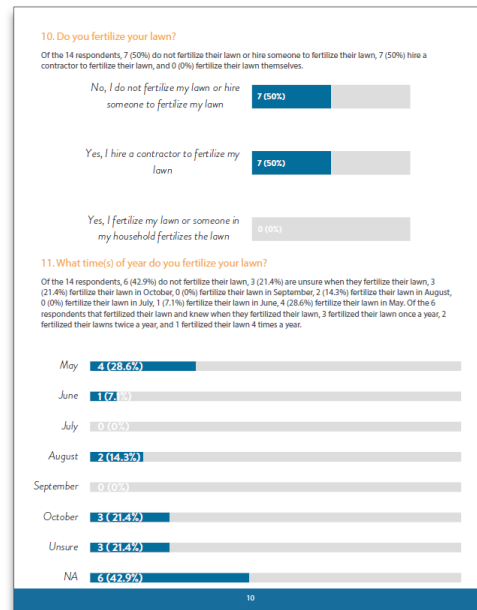
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Arrowhead Lake and Indianhead Lake Use Attainability Analysis/Water Quality Study

Activities for the Arrowhead Lake and Indianhead Lake Use Attainability Analyses (UAA) updates are progressing. Barr has completed the existing conditions in-lake model calibrations and has gained insight on nutrient loading concerns. In September, Barr modeled proposed in-lake best management practices and assessed the potential water quality improvements in Arrowhead Lake and Indianhead Lake.

On October 8th, staff from Barr, NMCWD, and the City of Edina met virtually to discuss the project's progress, public engagement survey insights, and determine how to best evaluate external/watershed best managements practices for this study.



A survey was sent to residents that live adjacent to Arrowhead and Indianhead lakes. NMCWD staff summarized results, including this question about lawn fertilization practices.

Holiday-Wing-Rose Chain of Lakes Use Attainability Analysis/Water Quality Study

Activities for the Holiday-Wing-Rose Chain of Lakes Use Attainability Analysis (UAA) Update are progressing. Barr has completed the existing conditions in-lake model calibrations and has gained insight on nutrient loading concerns. In September, Barr modeled proposed in-lake best management practices and assessed the potential water quality improvements in Holiday, Wing, and Rose lakes.



Invitation postcard developed by NMCWD staff for the September 29, 2021 community meeting regarding the Holiday-Wing-Rose UAA Update.

NMCWD and the City of Minnetonka staff worked together to post a StoryMap that included background information on lake ecology, lake characteristics, and the goals of the UAA study. The StoryMap was posted in mid-September to act as a precursor to the public meeting held on September 29, 2021 at the Minnetonka Community Center. A number of residents that live around the Holiday, Wing, and Rose lakes attended the public meeting. During this meeting a presentation was given that provided background information on the lakes and past and current studies. Following the presentation, staff from the City of Minnetonka led a group round table dialogue using the World Café methodology. During this activity, residents were asked to provide their insight

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regarding what they value about their lakes, what concerns them about their lakes, and what they see as a vision for the future of their lakes. The responses are being compiled and summarized.

On October 18th, staff from Barr, NMCWD, and the City of Minnetonka met virtually to discuss the feedback from the public meeting and public engagement survey, and determine how to best evaluate external/watershed best managements practices for this study, given the limited availability of public land in the watersheds.

Bush Lake Shoreline Vegetation Management

Barr staff coordinated with the restoration contractor regarding final maintenance activities for the year. The restoration contractor focused on the removal of buckthorn, purple loosestrife and cattails around the lake shoreline.



Shoreline of Bush Lake.

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Atlas 14 Flood Risk and Resiliency, Phase II

Maps depicting preliminary 10-, 100-, and 500-year model results were provided to NMCWD's Technical Advisory Committee in August for review and comment. Feedback was received from representatives of all municipalities and Hennepin County public works by September 20th, including comments, questions and insight based on institutional knowledge of flood impact areas throughout the watershed. Barr staff have been working to incorporate stakeholder review comments and other model changes to reflect recent infrastructure changes (e.g., the proposed Shady Oak outlet). Several requests were received from municipal TAC members to incorporate a handful of additional model updates and new development areas that were beyond the original scope. Barr coordinated with the NMCWD Administrator to develop a plan to accommodate these requests, which have resulted in some adjustment to the project schedule.

A revised project schedule has been drafted to reflect the additional effort related to incorporating stakeholder feedback and other model updates (see below, also attached in larger format).

	Jan 2021	Feb 2021			March 2021		April 2021		May 2021		June 2021		July 2021		August 2021		Sept 2021		Oct 2021		Nov 2021		Dec 2021		Jan 2022		
Task/Task Description	wk 4	wk 1-2	wk 3-4	wk 1-2	wk 3-4	wk 1-2	wk 3-4	wk 1-2	wk 3-4	wk 1-2	wk 3-4	wk 1-2	wk 3-4	wk 1-2	wk 3-4	wk 1-2	wk 3-4	wk 1-2	wk 3-4	wk 1-2	wk 3-4	wk 1-2	wk 3-4	wk 1-2	wk 3-4	wk 1-2	wk 3-4
Internal project kickoff																											
1A/1B Model modifications to "capture" runoff for mid-century precipitation event, Additional QA/QC				TAC																							
2 Data Processing for Model Calibration				TAC																							
2 Model Calibration																											
1C Flood Mapping + Additional model QA/QC																											
1D Preliminary Identification of Flood Prone Areas, Structures, and Roadways																											
3 Stakeholder Review of Model Results and Flood Inundation Mapping														TAC Board	TAC Board												
Finalize model results and mapping (as needed based on stakeholder review) + incorporate detailed comments																									TAC Board		
4 Quantify potential flood damage costs																					Board		TAC Board	TAC Board			
5 Risk analysis for potential pipe failures or clogging at creek crossings															TAC Board	TAC Board							Board	TAC Board			
6 Develop framework for evaluating potential flood mitigation				TAC					TAC						TAC Board	TAC Board								TAC Board			
8 Documentation memo/report																											
Phase 3 Scoping/Discussions														TAC Board	TAC Board						Board		Board	TAC Board	Board		

■ = task underway
 ■ = task underway, schedule adjustment
 TAC = tentative Technical Advisory Committee (TAC) meeting
 Board = tentative presentation to NMCWD Board

Barr staff also completed work related to detailed analysis of crossing failures. For eight (8) select crossings, Barr modeled crossing failures under a number of different hydrologic conditions (e.g., rainfall and baseflow event conditions) and failure conditions (e.g., 50% capacity failure, 100% capacity failure). Final mapping of our detailed failure analysis is nearing completion. Results of the creek crossing risk analysis have already proven useful in evaluating potential impacts of a real-world capacity-restriction scenario. Barr field monitoring staff noticed that beaver dams at the American Boulevard and East Bush Lake Road crossings near I-494 were significantly restricting flows in the South Fork and causing water to back up upstream. The information and maps showing potential for inundation upstream of these crossings were shared with staff from the City of Bloomington, who responded in a timely manner to address the situation.

Barr staff also made progress related to quantifying flood damage costs, including testing calculation procedures and methodologies, while in wait for the final model results. Next steps include finalizing the modeling and re-mapping of flood inundation areas, computing flood damage cost estimates, and

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discussing Phase 3 scoping. This will include further discussions with the Board at the upcoming October and November regular monthly meetings, to be used to help inform the Phase 3 scope of work. We will also coordinate with the NMCWD Administrator to schedule our next TAC meeting.

A FEMA hazard mitigation grant program (HMGP) funding opportunity was identified related to the COVID19 emergency declaration and associated funds, in which projects related to flood mitigation planning and/or implementation are potentially eligible. Barr staff prepared and submitted a notice of interest on October 1st to the State of Minnesota Hazard Mitigation Officer and continue to pursue additional information regarding eligibility.



Figure showing results of our detailed crossing failure analysis at the Bush Lake Road crossing. Results show the impact of 50% and 100% failure crossing 10-days after crossing failure during normal baseflow conditions. Results were reviewed recently in response to discovery of a beaver dam in the area restricting flow at this crossing.

Wetland Conservation Act (WCA) and NMCWD Wetland Rule Administration

Work administering the WCA and NMCWD wetland rule in the past month included:

- 5125 Schaefer Road, Edina – preparing and submitting the WCA Notice of Decision for wetland boundary and type approval
- 6075 Lincoln Drive, Edina – communicating with delineator and TEP, preparing and submitting the WCA Notice of Decision for wetland boundary and type approval
- McCauley Trail, Edina – preparing and submitting the WCA Notice of Application
- Blue Stem, Eden Prairie – reviewing wetland functional assessment data and providing comments, responding to City of Eden Prairie questions regarding previous wetland delineations

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- TC&W Railroad Expansion, Eden Prairie – reviewing wetland application, conducting a site review, preparing and submitting the WCA Notice of Application
- Three Rivers Park District Bryant Lake Culvert, Eden Prairie – communicating with delineator and TEP, preparing and submitting WCA Notice of Decision for wetland boundary/type and de minimis exemption approval
- 557 McCauley Trail, Edina- preparing and submitting WCA Notice of Decision for wetland boundary type and no loss approval
- Willow Creek Road Improvements, Eden Prairie – preparing and submitting WCA Notice of Application, conducting site review, preparing and submitting WCA Notice of Decision for wetland boundary type approval
- Interlachen Country Club, Edina – reviewing wetland delineation report, preparing and submitting WCA Notice of Application
- Other miscellaneous program administration

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**Change Order No. 1
Nine Mile Creek Watershed District
Rosland Park BMP Project**

DATE OF ISSUANCE: October 18, 2021

Owner: Nine Mile Creek Watershed District
12800 Gerard Drive
Eden Prairie, MN 55346
Attn: Bob Cutshall, Randy Anhorn

Contractor: Pember Companies, Inc.
N4449 469th Street
Menomonie, WI 54751
Attn: Dave Webb, Haley Pember

Engineer: Barr Engineering Company
4300 MarketPointe Drive, Suite 200
Minneapolis, MN 55435
Attn: Janna Kieffer, Katie Turpin-Nagel

The Engineer and Contractor coordinated to identify alternate project delivery options to reduce costs on four bid items. The Contractor is hereby directed to make the following changes in the Contract Documents for the Rosland Park BMP Project.

C.O.1.A Filter Underdrain System (Pipes, Fittings, Valves Inside Vault) Unit Price Change

Description of Change:

This change reduces the bid unit price for Filter Underdrain System (Pipes, Fittings, Valves Inside Vault).

Bid Form and Base Bid:

Delete the following from Section 00 41 00 ARTICLE 4.01.A. BID ITEMS:

Bid Item	Description	Unit	Estimated Quantity	Unit Price	Estimated Cost
LL	Filter Underdrain System (Pipes, Fittings, Valves Inside Vault)	LS	1	\$127,000.00	\$127,000.00

Add the following to Section 00 41 00 ARTICLE 4.01.A. BID ITEMS:

Bid Item	Description	Unit	Estimated Quantity	Unit Price	Estimated Cost
LL	Filter Underdrain System (Pipes, Fittings, Valves Inside Vault)	LS	1	\$99,800.00	\$99,800.00

Reason for Change: The Contractor will perform this work instead of using a subcontractor.

C.O.1.B Stainless Steel Plate Troughs with Weir Plates (P) Unit Price Change

Description of Change:

This change reduces the bid unit price for Stainless Steel Plate Troughs with Weir Plates (P).

Bid Form and Base Bid:

Delete the following from Section 00 41 00 ARTICLE 4.01.A. BID ITEMS:

Bid Item	Description	Unit	Estimated Quantity	Unit Price	Estimated Cost
RR	Stainless Steel Plate Troughs with Weir Plates (P)	LBS	880	\$154.50	\$135,960.00

Add the following to Section 00 41 00 ARTICLE 4.01.A. BID ITEMS:

Bid Item	Description	Unit	Estimated Quantity	Unit Price	Estimated Cost
RR	Stainless Steel Plate Troughs with Weir Plates (P)	LBS	880	\$115.00	\$101,200.00

Reason for Change: The Engineer approved use of a non-AISC certified steel fabricator. The Contractor found an alternate manufacturer to perform fabrication of the steel plate troughs.

C.O.1.C Anthracite (Cell 1A – 1F) (P) Unit Price Change

Description of Change:

This change reduces the bid unit price for Anthracite (Cell 1A – 1F) (P).

Bid Form and Base Bid:

Delete the following from Section 00 41 00 ARTICLE 4.01.A. BID ITEMS:

Bid Item	Description	Unit	Estimated Quantity	Unit Price	Estimated Cost
SS	Anthracite (Cell 1A – 1F) (P)	CY	21	\$1,640.00	\$34,440.00

Add the following to Section 00 41 00 ARTICLE 4.01.A. BID ITEMS:

Bid Item	Description	Unit	Estimated Quantity	Unit Price	Estimated Cost
SS	Anthracite (Cell 1A – 1F) (P)	CY	21	\$1,400.00	\$29,400.00

Reason for Change: The Contractor identified an alternate supplier.

C.O.1.D ¼-inch x ½-inch Support Gravel (Cells 1A – 1F, 2 – 4) (P) Unit Price Change

Description of Change:

This change reduces the bid unit price for ¼-inch x ½-inch Support Gravel (Cells 1A – 1F, 2 – 4) (P).

Bid Form and Base Bid:

Delete the following from Section 00 41 00 ARTICLE 4.01.A. BID ITEMS:

Bid Item	Description	Unit	Estimated Quantity	Unit Price	Estimated Cost
TT	¼-inch x ½-inch Support Gravel (Cells 1A – 1F, 2 – 4) (P)	CY	19	\$900.00	\$17,100.00

Add the following to Section 00 41 00 ARTICLE 4.01.A. BID ITEMS:

Bid Item	Description	Unit	Estimated Quantity	Unit Price	Estimated Cost
TT	¼-inch x ½-inch Support Gravel (Cells 1A – 1F, 2 – 4) (P)	CY	19	\$835.00	\$15,865.00

Reason for Change: The Contractor identified an alternate supplier.

Change in Contract Time:

There is no change in the Contract Time.


Change in Contract Price:

The Contract Price is lowered by **\$68,235.00**.

This Change Order No. 1 is:

Submitted By:  Date: October 18, 2021
(ENGINEER) Janna Kieffer, PE, District Engineer
Barr Engineering Company

Authorized By: _____ Date: _____
(OWNER) Bob Cutshall, President
Nine Mile Creek Watershed District

Approved By:  Date: October 19, 2021
(CONTRACTOR) Dave Webb, Project Manager
Pember Companies, Inc.