

Engineer's Report

June 9, 2021

Normandale Lake Water Quality Improvement Project:

An herbicide treatment of Normandale Lake and an upstream portion of Nine Mile Creek (Jostens Pond) was completed on May 10, 2021 using diquat, a contact herbicide, to further reduce the presence of curly-leaf pondweed in Normandale Lake. The District received an invoice for \$1,840 from PLM Lake and Land Management Corp following completion of the treatment. We have reviewed the invoice and associated documentation and are recommending payment.

Aquatic plant surveys will be conducted in Normandale Lake and upstream portions of Nine Mile Creek in June and August of 2021. A fall curly-leaf pondweed turion survey of Normandale Lake will be completed in the fall of 2021. Water quality monitoring will occur in Normandale Lake in the summer of 2021, including near the inlet of Nine Mile Creek and at the routine monitoring location on the east side of the lake. We will also be collecting dissolved oxygen measurements at several locations (transects) across the lake in June, July, August, and September.

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

Activities for the Lake Arrowhead and Lake Indianhead Use Attainability Analysis (UAA) are underway and include analysis of recent and historic lake water quality, stormwater volume and quality modeling (P8 model), and in-lake water quality modeling. While these efforts are designed to understand phosphorus loading contributions and reductions needed to meet Minnesota eutrophication standards for shallow lakes, we are learning quite a bit about these unique shallow lakes. A public meeting with lake association members, the City of Edina, Nine Mile Creek, and Barr representatives was held virtually on May 25, 2021. The purpose of the impending UAA study was discussed during this meeting and there was good exchange of information on current management practices, association member concerns, and member observations of lake ecology and water quality. A recording of the meeting can be found here:

<https://www.ninemilecreek.org/whats-happening/current-projects/arrowhead-and-indianhead-lake-study/>

There is a high level of interest by association members on the outcome of these studies. Next steps include the development of a survey of residents to better understand how they use the lake, their perceptions of water quality, and their interest in committing to lake water quality improvements by managing fertilizer use and other activities such as shoreline buffers. A program is also being considered to encourage residents to collect lawn soil samples for analysis at the University of Minnesota to determine appropriate fertilizer needs for each residence.

Bush Lake Shoreline Vegetation Management:

No new activities, with exception of ongoing coordination with the vegetation management contractor.

Wetland Restoration and Protection Opportunity Identification:

Barr staff incorporated revisions to the request for proposals (RFP) for a wetland protection scoping and prioritization study, based on feedback received at the NMCWD's May 19, 2021 regular board meeting. The RFP is to further assess the scope, high-level feasibility, and cost of potential wetland protection projects identified in the Wetland Restoration and Protection Opportunity Identification report (March 2021) for four high-quality wetlands, prioritize protection activities, and conduct a detailed feasibility analysis for one selected wetland protection project, based on board and staff feedback.



Protecting and restoring high-quality wetlands is one of the wetland management goals identified in the District's 10-year Water Management Plan.

Lake Level Management Plans for Arrowhead and Indianhead Lakes:



Photo of Indianhead Lake in northwest Edina.

The Lake Level Management report was revised in response to comments and the final report was issued June 3.

Edina Stream Stabilization Project:

There were no new construction or maintenance activities associated with the project. Landbridge will be completing the final maintenance work for the Phase 2 reaches by the end of June, thereby completing the Phase 2 contract obligations.

Barr and District staff have been working with the City of Edina as they prepare for long term contracting for future maintenance of the Phase 1 and Phase 2 reaches. A field walk of the Phase 1 and 2 reaches of the creek was completed with City staff and their consultant on June 8th in conjunction with future maintenance obligations. Barr staff will be reviewing contract documents prepared by the City's consultant in advance of bidding.

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

Activities for the Holiday-Wing-Rose Chain of Lakes Use Attainability Analysis (UAA) Update are underway and include analysis of recent and historic lake water quality and stormwater volume and quality modeling (P8 model). A coordination meeting with District, City of Minnetonka, and Barr representatives was held virtually on June 9, 2021 to discuss the objectives of the study and the public engagement approach. We anticipate that a community meeting will be held in late-July to inform the interested public about the study and provide background information on shallow lake management. A GIS story map will be developed by City of Minnetonka staff, in conjunction with Barr and District staff, to provide information on the study; the story map will be distributed to watershed residents prior to the community meeting.

Discovery Point Restoration and Building Addition Rain Garden and Landscape:

Rain garden construction on the north side of the building is now complete and is awaiting planting. The recent hot weather has delayed planting activities in hopes of more seasonal temperatures in the near future. Pay request #2 was received from Minnesota Native Landscapes for work completed through May 11, 2021 in the amount of \$42,654.00. The pay request includes work completed to construct the rain garden, including construction of the limestone retaining wall, excavation and grading, installation of drain tile, site seeding, and other miscellaneous items. Barr is recommending payment.

On-going restoration and site management has included monthly site visits, a site-wide herbicide application to control woody invasive re-sprouts, garlic mustard, and narrowleaf bittercress, and a prescribed burn to convert a low-mow fescue area into additional short grass prairie on the southwestern portion of the site.



A prescribed burn was performed by Minnesota Native Landscapes to convert a low-mow fescue area into additional short grass prairie on the southwestern portion of the site.

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

Barr staff are working on preparing 100% design plans, and technical specifications for the stormwater filtration vault. Work in the last month included further refining the construction drawings and technical specifications, including design for traffic control, site grading, filter vault layout and grading, vault structural design, piping system (inflow, outflow, and backwash piping), monitoring access and equipment, pump station, electrical, and site planting and restoration. The City of Edina provided preliminary comments on the 90% construction drawings on May 11th. We have been working to address the City's design comments, including incorporating a fish screen to prevent fish from reaching the pumping station and modifying the design for the grating on the top of the vault to accommodate maintenance preferences. Several options for the filtration vault grating were developed and presented to City staff for consideration and discussed at a meeting with staff from public works and engineering on June 7th. Barr is now working to incorporate the City's preferred design option which uses fiber reinforced plastic (FRP) grating to minimize the weight of the grates.

We anticipate the project will go out for bid late next week.

The stormwater filtration vault will include several chambers, in which multiple filtration media can be used/tested to optimize phosphorus removal. In-field column test experiments of several filter media options were conducted by Barr staff in early-May to assess the performance of each media (e.g., TP removal), the filtration rates, and the performance as a function of flow rate through the media (some react quickly and some react slowly). Filtration media tested included spent lime (drinking water treatment byproduct), CC17 (crushed limestone, CC17 + iron, granite sand + iron, granite sand + activated alumina, and several waste iron ore materials. Lab results indicate that CC17 + iron, granite sand + iron, and granite sand + activated alumina showed the best phosphorus removal.

Work on MNDNR/US Army Corp of Engineers (ACOE) permitting is ongoing. Barr staff are also working on preparing the application submittal for NMCWD permitting.

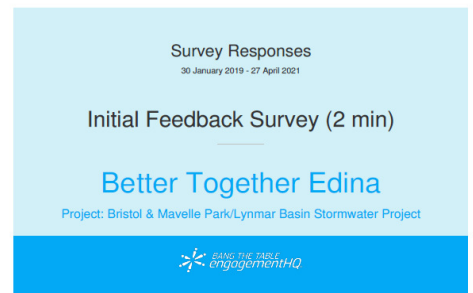


Column testing of filtration media at Rosland Park.

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

The Lynmar Basin, located in the Lake Edina watershed, currently serves as a dry pond, providing flood detention but minimal water quality benefits. This site was identified for implementation of stormwater best management practices in the *Lake Cornelia and Lake Edina Water Quality Improvement Project, Feasibility Study/Preliminary Engineering Report* (2020) to reduce stormwater volume and pollutants to downstream Lake Edina. The proposed partnership project between the District and City of Edina will retrofit and enhance stormwater quality improvement and flood reduction best management features (BMPs) within the park. The proposed project will also seek to provide additional co-benefits, including improved ecology and wildlife habitat, enhanced active and passive recreation opportunities within the park, and educational opportunities for park users.

The development of concept plans has begun and will be presented to the City and District staff for review and comment in the next month. Barr has been coordinating with the City of Edina regarding details on the existing stormwater pipe(s) from the basin, as the GIS storm sewer information provided was not consistent with the asbuilt construction drawings. City of Edina staff conducted a field survey of the storm sewer system last week and has provided the updated data to Barr. Receipt of this information is important, as the invert elevations and configuration of the existing pipe(s) affect how the basin currently functions for water quality and flood protection purposes and options for retrofitting.



VISITORS					
19					
CONTRIBUTORS			RESPONSES		
11			11		
1	0	10	1	0	10
Registered	Unverified	Anonymous	Registered	Unverified	Anonymous

A survey was developed by the City of Edina, in conjunction with NMCWD, to better understand values and perceptions regarding the existing park space. The survey was administered via the City of Edina's Better Together Edina website, a public engagement platform.

Wetland Conservation Act (WCA) and NMCWD Wetland Rule Administration:

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

- Cherokee Trail/Old Shady Oak Road Culvert Improvements (Eden Prairie) – reviewing/discussing responses from permit applicant.
- Hennepin County Home School proposed wetland bank site (Minnetonka) – reviewing a habitat management plan, communication with MNDNR and Hennepin County regarding Exceptional Natural Resource Value credit.
- 4425 Valley View Road (Edina) – reviewing a report and evaluating wetland value, preparing and submitting WCA Notice of Application for wetland boundary/type.
- 6075 Lincoln Dr. (Edina) – conducting a desktop wetland review and evaluation for potential incidental wetlands.
- Nine Mile Village (Edina) – conducting a desktop review for potential incidental wetlands.
- Crosstown Core Industrial site (Eden Prairie) - preparing and submitting a WCA Notice of Decision for wetland boundary/type and no-loss for incidental wetland determination.
- Other miscellaneous program administration

Atlas 14 Flood Risk and Resiliency, Phase II:

Project efforts during the month of May were focused on model calibration. Calibration of a model of this size and scope is a considerable effort. Long model simulation times require that any model calibration adjustments be applied thoughtfully and be based on sound hydrologic and hydraulic modeling methodology. Balancing model calibration adjustments across models of multiple calibration events and multiple monitoring stations requires a high degree of organization and a deliberate approach.

As we enter the month of June, we are honing in on model adjustments that are consistently improving model calibration across all events and monitoring stations. Our goal remains to have calibration efforts completed by mid-June, allowing us to begin tasks related to flood mapping and continue our analysis related to flood damage cost.

While focusing on model calibration efforts, Barr continued to make progress on other project tasks and the project as a whole remains on schedule. Barr completed several tasks related to our "high-level" risk analysis related to pipe failure and clogging. A detailed review of all model crossings has been completed and we are beginning review of inundation impacts related to pipe failure at all crossings. Structure data provided by TAC members has been processed and used to create a watershed-wide primary habitable structure dataset which will be used for evaluating inundation impacts as well as estimating flood damage cost.

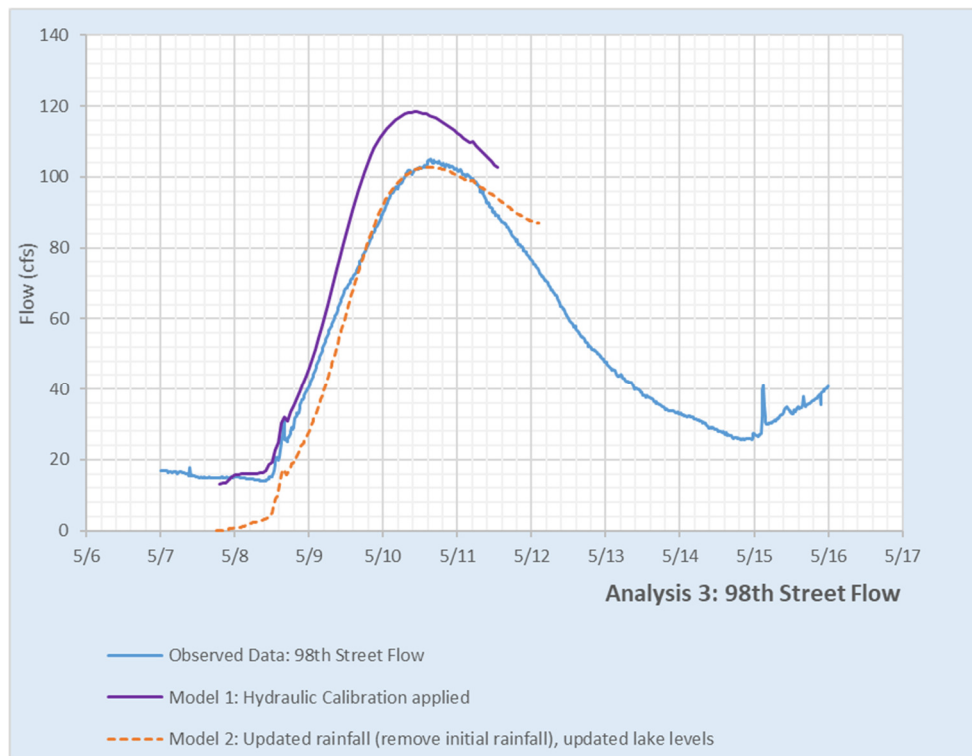


Image showing initial, uncalibrated model results and example calibration run results compared to monitored flow at the 98th Street Watershed Outlet Monitoring Program (WOMP) station for the 5/8/2019 rainfall calibration event.