

Engineer's Report

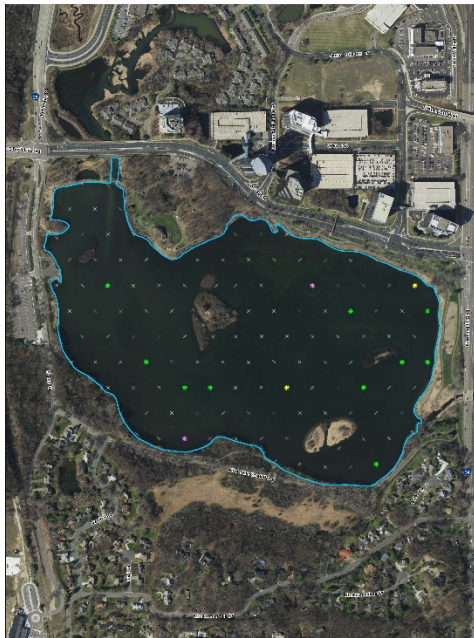
May 13, 2020

Normandale Lake Water Quality Improvement Project:

An herbicide treatment of Normandale Lake and an upstream portion of Nine Mile Creek was conducted on May 8, 2020 to further reduce the curly-leaf pondweed (CLP) remaining following the winter of 2018-2019 lake drawdown. Plant surveys conducted in June of 2019 identified CLP in portions of Nine Mile Creek upstream of Normandale Lake (between Norman Center Drive and West 84th Street) and sporadically throughout Normandale Lake, especially along the creek channel which remained unfrozen during the 2018-2019 drawdown. A pretreatment plant delineation survey was completed on April 18, 2020 to inform the herbicide treatment approach and meet DNR permit requirements. Despite the early ice-out and warm early-spring temperatures, CLP plants were still very small (a few inches in length) and found at only a few locations throughout Normandale Lake and the upstream area. A second pretreatment plant survey conducted on May 2, 2020 identified CLP at more locations throughout the lake and upstream portion of Nine Mile Creek. However, the extent of CLP was still less than observed in 2019 in both Normandale Lake and the upstream area.



The spring 2020 herbicide treatment areas in Normandale Lake and a portion of upstream Nine Mile Creek based on the May 2, 2020 pretreatment plant survey.



Extent of curly-leaf pondweed during May 2, 2020 pretreatment survey.



Extent of curly-leaf pondweed during June 2019 plant survey.

The limited extent of curly-leaf pondweed throughout Normandale Lake (see comparison above) was positive news, indicating continued success of the 2018-2019 drawdown and further depletion of the CLP turion seed bank in 2019. The reduction in CLP in the portion of Nine Mile Creek upstream of Normandale Lake was unanticipated.

Because the extent of CLP observed during the May 2020 plant survey was limited to approximately 15% of the littoral area of the lake and upstream creek areas, a spot treatment using the herbicide diquat dibromide was recommended by Barr (versus a whole lake treatment). Use of diquat dibromide for a partial lake treatment ($\leq 15\%$ of littoral area) was included as an alternate quote item in the contract with Lake Restoration.

The diquat dibromide herbicide treatment was conducted by Lake Restoration on May 8, 2020 and an invoice for \$4,913.00 was submitted. **We have reviewed the invoice and supporting documentation and are recommending payment of this invoice.** The cost of the spot treatment using diquat dibromide (\$4,913.00) was well below that of the anticipated whole lake endothall treatment (\$40,775.00).

Water quality monitoring of Normandale Lake has begun, and will continue throughout the 2020 summer months. This year, we are monitoring water quality at the lake inlet, in addition to the typical monitoring location in the deepest portion of the lake near the outlet, to get a better understanding of nutrient cycling as water moves through the lake system.

Edina Stream Stabilization Project:

Barr staff completed the as-built drawings for Phases I and II. Work with District staff and legal counsel on the project maintenance agreement between the District and City of Edina continues.

Discovery Point Restoration:

Barr has been coordinating with Landbridge Ecological for the Discovery Point landscape management for 2020. The first tasks this year once on-site work commences will be the management of garlic mustard and the refreshing of the landscaping beds around Discovery Point including mulching and cutting back of the prior year's vegetation. This work has been scheduled for the week of May 11th.



Discovery Point Building Addition:

The contracting of the landscaping and site restoration plans associated with the building addition work has been delayed slightly but will go out for quotes in the coming weeks. The new landscaping will include a rain garden to capture roof runoff and updated native-centric plantings. This work, representing Phase 2 of the project to be bid under a separate contract from the building addition work, will begin immediately after building construction is complete. The project contract documents will be ready for solicitation of quotes by the end of May in order to have contracting completed in ample time prior to the addition construction. Building construction is currently set for spring and summer 2020. Landscaping work is likely to begin late summer into early fall 2020.



Bush Lake Shoreline Vegetation Management:

Landbridge Ecological, Inc. was recently awarded a contract for a three-year maintenance period of the Bush Lake shoreline vegetation. Barr developed the technical specifications for the restoration and related reporting activities to be performed by Landbridge Ecological. Barr will be monitoring the restoration activities at Bush Lake this year to ensure that the District’s plant management goals are being met.

Since the early-2000s, when a pumped outlet was constructed on Bush Lake, the NMCWD has partnered in managing the vegetation along the shoreline to control invasive species and manage the healthy and diverse native plant community. A kick-off meeting with District, City of Bloomington, and Landbridge staff, as well as a representative from the Isaak Walton League, was held on May 8, 2020 to discuss the management of the shoreline this year. Barr will be conducting a kick-off meeting in the field with Landbridge staff on May 13, 2020 to review site conditions and develop expectations for a successful year of vegetation management.



Vegetation along the shoreline of Bush Lake.



Vegetation along the shoreline of Bush Lake.

BMP Retrofits on Nonprofit Sites- Final Design and Construction:

Construction has begun on the Non-Profit BMP retrofit sites. The first site, a large rain garden at St. Luke's Lutheran Church in Bloomington, is substantially complete, with the exception of the plantings and final concrete work. The excavation and placement of the planting soils and drain-tile went smoothly and Sunram Construction then moved over to Oak Grove Presbyterian Church, also in Bloomington. Church stakeholders have been very active during the construction project, being present on-site and asking lots of great questions. Enthusiasm is high for the projects. Sunram will be transitioning to the two churches in Edina after the Bloomington site BMPs are complete. Construction is occurring more quickly than planned and the work is anticipated to be complete in a few weeks, barring weather or other delays.



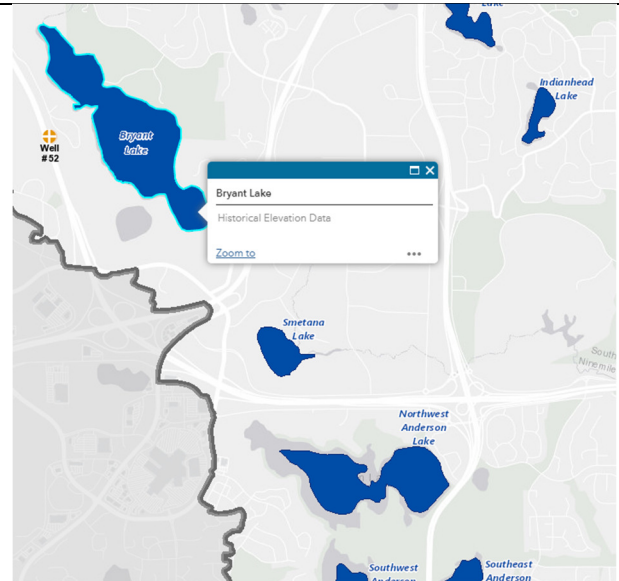
Final grading of the planting soils and adjustment of the overflow structure at St. Luke's Church in Bloomington.



On the busy corner of Old Shakopee Road and Penn Avenue in Bloomington, Sunram Construction measures planned depths of the rain garden.

Development of Data-sharing Web Map Tool:

Design and development continues on the display and charting capabilities of the web mapping tool. The GIS database containing historical water levels is complete. The next step is to connect the charting options to the mapping components and decide on the best method to deploy the tool to Barr's web servers.



Smetana Lake Use Attainability Analysis Update:

Barr has completed updating the Smetana Lake Use Attainability Analysis (UAA) to assess current water quality and re-evaluate implementation recommendations from the original UAA study completed in 2003. Results of the study and management recommendations were presented to the NMCWD Board of Managers at the February 6, 2020 special meeting.

Minor revisions to the draft report are underway. A revised copy will be shared with the City of Eden Prairie to solicit feedback.



Lake Cornelia and Lake Edina Water Quality Improvements: Aluminum Treatment

The City of Edina conducted an herbicide treatment targeting curly-leaf pondweed of Lake Cornelia on May 1, 2020. HAB Aquatic Services Inc. is currently scheduled to conduct the alum treatment of North and South Lake Cornelia between May 20-23, 2020. Barr staff plans to conduct oversight and monitoring of the alum treatment.

Lake Cornelia and Lake Edina Water Quality Improvements: Feasibility Study

At the September 18, 2019 regular meeting, the Board approved a scope of work for Barr to complete a preliminary engineering/feasibility study to further evaluate the other water quality improvement practices recommended in the UAA study for Lake Cornelia and Lake Edina. The feasibility study includes the following tasks:

Task	Description of Task
1A	Stormwater Treatment BMP in Rosland Park- Conceptual Design Evaluation
1B	Stormwater Treatment BMP in Rosland Park- Feasibility Analysis/Preliminary Design
2A	High-level Evaluation of Other Stormwater Treatment/Phosphorus Reduction BMPs in the Lake Cornelia and/or Lake Edina Watershed
3	Curly-leaf Pondweed Management
4A	Promoting a Healthy Predator Fish Population
4B	Evaluating Other Fishery Management Strategies
5	Final Report, Presentation, and Public Hearing

Task 1B- Barr has continued to refine the conceptual design of the proposed filtration treatment vault. The proposed BMP concept includes pumping water from Swimming Pool Pond to the stormwater BMP. A primary design objective is to optimize the pumping of water, trying to balance the amount of water treated by the stormwater BMP with an acceptable amount of impact (lowering) to upstream water levels. The extent, duration, and frequency of lowered water levels will likely affect MN DNR permitting requirements and support from upstream landowners.

To help characterize potential impacts of lowered water levels to upstream properties, Barr staff developed a long-term continuous XP-SWMM model of Lake Cornelia and the upstream waterbodies (including Swimming Pool Pond). The continuous model, based on 35 years of precipitation data, has been used to help evaluate how much of the water that flows through Swimming Pool Pond will be diverted to the BMP for treatment (versus flowing directly to Lake Cornelia) under various pumping conditions (pumping rates and on/off triggers).

Under the proposed BMP concept design, stormwater from Swimming Pool Pond will be pumped into the above-ground vault, then flow down through filter media to remove pollutants prior to being discharged to downstream Lake Cornelia. As previously discussed, the proposed BMP concept design will include an option to have several separate filtration chambers so the effectiveness of multiple filtration media can be tested. Barr staff have been further evaluating potential media and will include recommendations in the feasibility report. A meeting was held with NMCWD and City of Edina staff from the engineering and parks and recreation departments on April 28, 2020 to discuss preliminary results of the feasibility analysis. Barr staff will share results of the feasibility analysis with the NMCWD Board of Managers at the May 18, 2020 meeting. As a next step, following Board feedback at its May meeting, Barr will work with NMCWD staff and legal counsel to begin developing a cooperative agreement between NMCWD and the City of Edina.



Sketch of proposed BMP concept for a stormwater feature in Rosland Park to treat runoff prior to reaching Lake Cornelia.

Task 2A- Barr staff have also evaluated additional stormwater treatment/phosphorus reduction BMP opportunities in the Lake Edina watershed. We developed high-level conceptual designs for retrofitting two sites with infiltration-based stormwater BMPs: the Lynmar Basin (currently a turfed stormwater detention area) at Hazelton Road and Lynmar Lane and Cornelia Elementary/Cornelia School Park located at 72nd Street and Cornelia Drive. The conceptual designs, including high-level costs and volume and pollutant reduction estimates will be discussed briefly at the NMCWD's May 18, 2020 Board meeting. The conceptual designs will also be included in the feasibility study report.

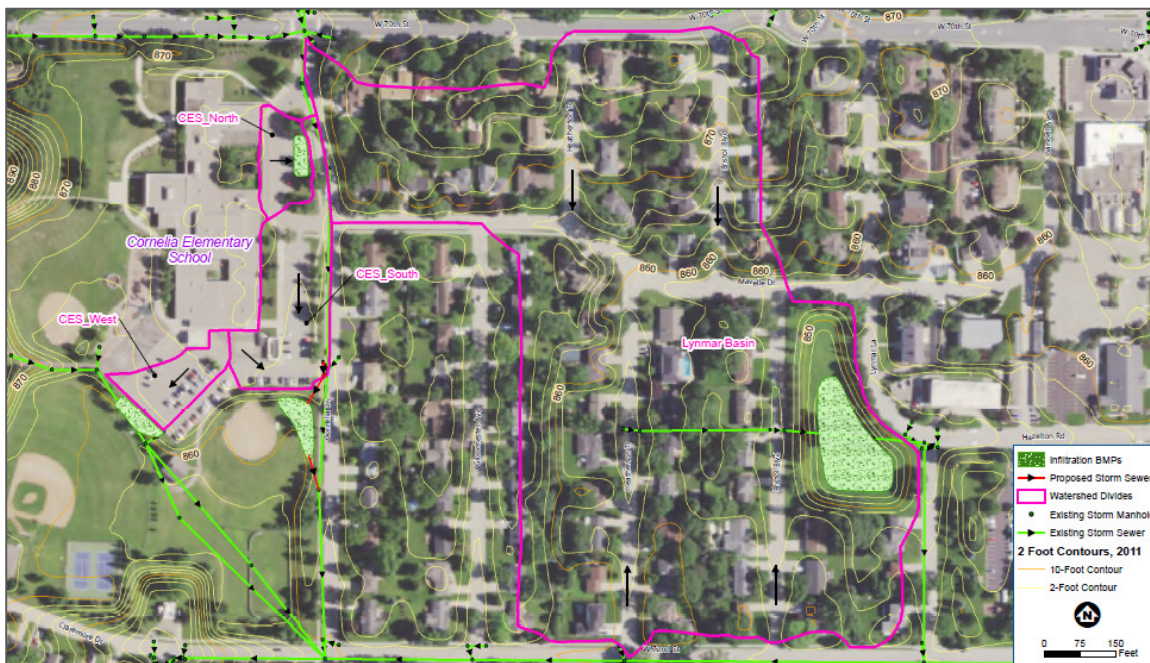


Figure showing potential stormwater infiltration BMPs at the Cornelia Elementary School Park and the Lynmar Basin in the Lake Edina watershed.

Barr staff have also continued progress in evaluating other potential lake management activities that are part of the ongoing feasibility study, including a high-level feasibility analysis of a lake drawdown to manage curly-leaf pondweed in Lake Cornelia, analysis of aeration options for Lake Cornelia, and a literature review regarding goldfish management in shallow lakes. Information on these activities will be included in the feasibility report, which will be provided to the Board for review prior to the regular June 2020 board meeting.

Pentagon Park Stormwater Management: No new activities.

Regional Stormwater Volume Reduction Opportunity Study: No new activities.

Lower Valley Stabilization:

Work on the two maintenance and repair locations in the most downstream section of Nine Mile Creek in Bloomington has been substantially completed. City of Bloomington staff continue to monitor the site, as needed.

Wetland Restoration and Protection Opportunity Identification:

During development of the NMCWD 2017 Water Management Plan, the NMCWD Board of Managers, local cities, and other stakeholders identified wetland protection as an important issue and identified the following specific priority issues/opportunities related to wetland protection:

- Inventorying and assessing wetlands within the Nine Mile Creek watershed for function and value.
- Preserving the quality of existing wetlands and protecting high quality wetlands.
- Seeking opportunities to restore degraded wetlands.
- Improving wetland health by promoting diversity and abundance of native aquatic species and improving habitat.

In 2020, the NMCWD budgeted for a wetland restoration and protection opportunity study as a first step to 1) compile the best available information regarding wetlands within the Nine Mile Creek watershed, 2) use that information to identify high-value wetlands and/or wetlands with rare and high-quality wetland biological communities in the watershed, and 3) identify the highest-priority opportunities for wetland restoration or protection. Barr staff have kicked off the effort and will begin compiling an inventory of "best available" wetland information, based on the latest National Wetland Inventory (NWI) data, wetland information (delineations and/or function and value assessment information) received through the NMCWD permitting program, and information available from the cities within the watershed.

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

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

- Conducting a site review of NM-EP-09 sediment release and follow up at SW LRT.
- Reviewing MNRAM information for the Walser Bloomington wetland.
- Gathering and providing information for the wetland at 6109 St. John's Avenue in Edina.
- Wetland review of 1 Capital One Drive in Eden Prairie.
- Miscellaneous program administration.