

Engineer's Report

November 11, 2020

Normandale Lake Water Quality Improvement Project:

Results from the October curly-leaf pondweed turion survey on Normandale Lake and the wetland area upstream of West 84th Street were received from Barr's subconsultant. Barr staff have conducted preliminary review of the findings of the turion survey and other water quality and plant data collected in 2020. We plan to summarize the data in the next month and meet with District staff to discuss the results.



Panoramic view of Normandale Lake from boat landing on west side of the lake. Photo(s) taken August 26, 2020.

Discovery Point Restoration:

Barr has been coordinating with Landbridge Ecological for the Discovery Point landscape management for 2020. Landbridge continued on-site management of exotic species during the month of September. Barr met with staff to discuss phase 3 of the restoration efforts. A scope of work to prepare plans and specifications for the eradication of the buckthorn in the northwest corner of the property and the establishment of woodland diversity along the northern edge of the property has been approved by the District. As recommended by District staff, contracting for the Phase 3 restoration work is being combined with the building addition rain garden project. The request for quotes will include two separate quote forms that will be distributed to contractors together on November 19th, with quotes due back three weeks later.

Buckthorn removals are likely to occur during the time period of frozen soils, with spring seedings and plantings to compliment the invasive removals and prevent erosion. District staff is working with the City of Eden Prairie to coordinate buckthorn removal up to the wetland trail which would include some removal on City property to create a seamless restoration area. This fall, the fescue turf area on the southeast side of the property has been prepared for restoration; the turf has been be sprayed with herbicide and a native seed mix matching the established areas from phases 1 and 2 will be installed. Visitors to the site can expect to see dead turf grass in this area during the replacement process.

Building Addition Rain Garden and Landscape:

As indicated in the description above regarding the Discovery Point Restoration, contracting for the building addition rain garden and grading/landscaping will be combined with contracting for the Discovery Point Phase 3 restoration work. See above for information on next steps.

Bush Lake Shoreline Vegetation Management:

Barr has been coordinating ongoing shoreline vegetation management activities with the restoration contractor Landbridge. During Late-October/Early-November, Landbridge was on-site managing buckthorn and other woody species (cut and spray) and removing any purple loosestrife plants that went to seed. Barr staff plans to review the recent work and make any additional recommendations for site management going into the next growing season.

Lake Level Management Plans for Arrowhead and Indianhead Lakes:

Based on the meeting with the City of Edina and District staff on September 30 at which results of the water balance models for the two lakes were presented, Barr is proceeding with flooding risk evaluation. The water balance models combined with groundwater level information showed that rising groundwater levels (a result of a series of wetter-than-average years) combined with a wet summer with high runoff were primary drivers of the 2019 high lake levels. High groundwater levels are expected to be a critical factor in the future threat of flooding, and Edina is looking into adding monitoring wells to track groundwater levels near the two lakes.



Based on the goals for lake level management and constraints that should be observed, Barr is preparing a summary of the risk of flooding for the homes around these lakes. One summary, illustrated in the graph below for Arrowhead Lake, uses the water balance model for the lake and the precipitation amount and frequency charts for the Minneapolis-St. Paul International airport. Barr will be discussing with District and Edina staff how to use this analysis in planning lake level management to protect the houses around the lakes from flooding while minimizing addition of water to Nine Mile Creek during periods of higher flows.

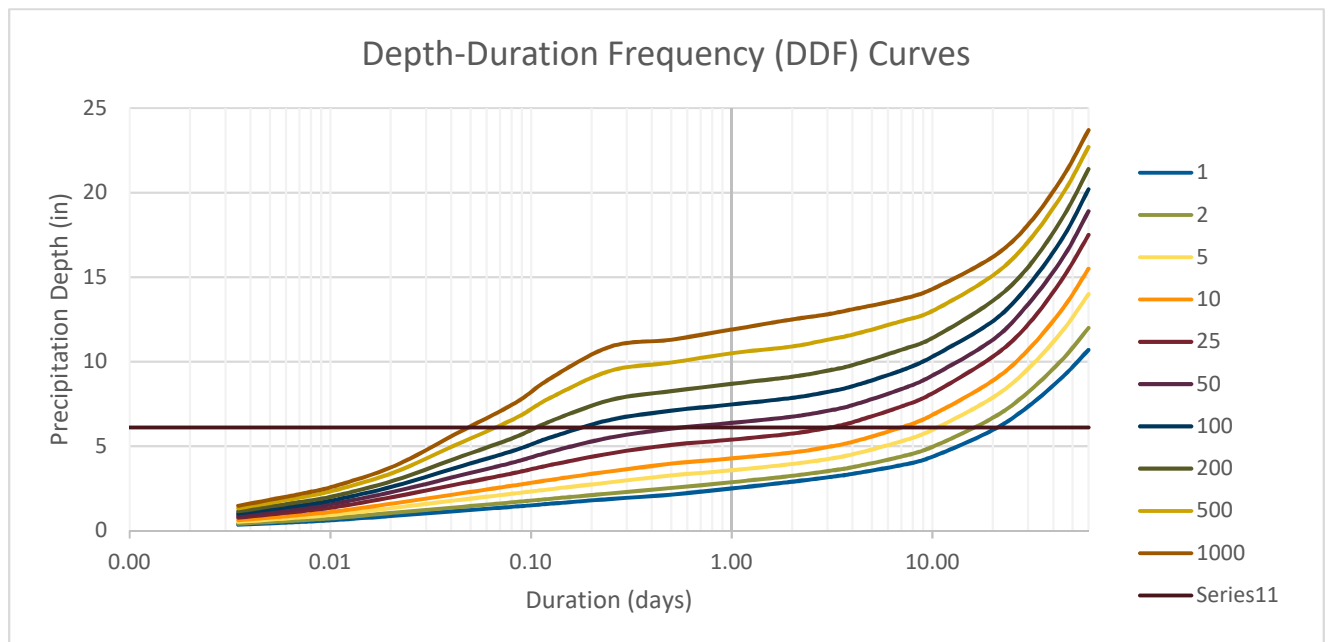


Figure 1. Precipitation amount (depth) frequency chart for a range of storm durations. As shown with the black horizontal line, the duration and frequency of events that produce six inches of precipitation ranges from a 1-year frequency, 20-day rainfall to a 1000-year frequency, 1-hour (0.04 days) event.

Edina Stream Stabilization Project:

There were no new construction/maintenance activities associated with the project. We have received two pay requests from Sunram. Pay application #8 for Phase I of the project includes payment of \$2,900.00 for the remaining 50% of the 1-2 year plant warranty period work item. Pay application #7 for Phase II of the project includes payment of \$3,375.00, which represents an additional 25% of the 1-2 year plant warranty period work item, covering warranty work completed since winter of 2019-2020. We are recommending payment of both pay requests.

Last month we reported that Landbridge has provided a cost estimate for extending their maintenance work for an additional six months into 2021 to line-up with the completion of the maintenance work for Phase 2 of the project. The cost estimate received on September 6th was reviewed and we requested that the cost provided be revisited. The revisited cost received was reviewed and we requested that Landbridge again revisit their cost to come more into line with the original bid cost received for the project. We have not yet received this information and therefore will not have a recommendation for consideration at the November meeting.

BMP Retrofits on Nonprofit Sites:

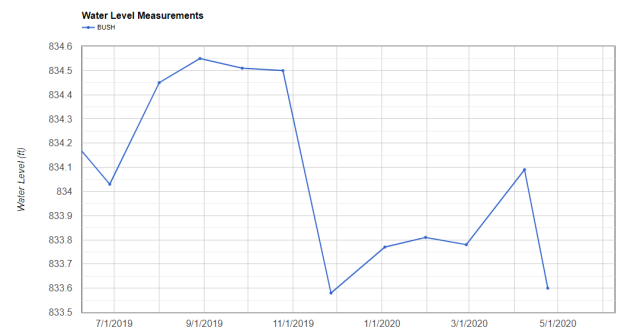
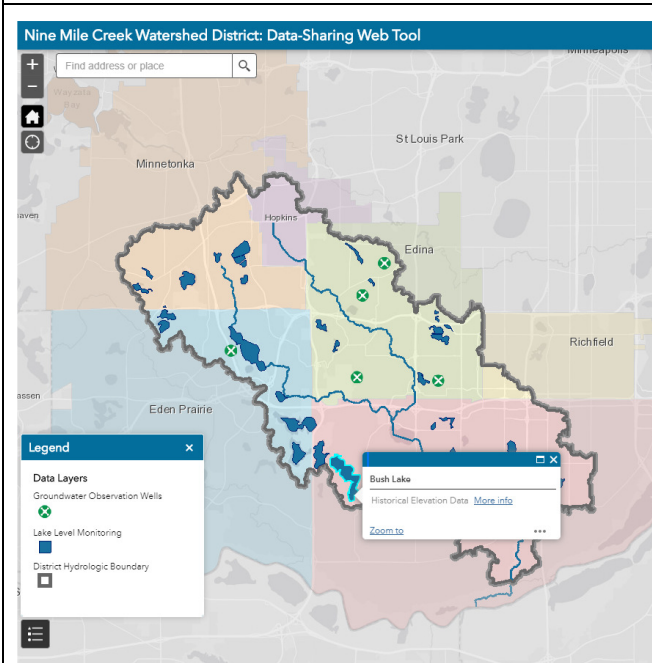
All the rain gardens have been completed and plant warranty assessments will be completed in the spring of 2021. One final weeding of the gardens took place in October. Final project close-out will take place after plant replacements have been performed.



The rain garden at St. Luke's Lutheran Church and Pre-School in Bloomington.

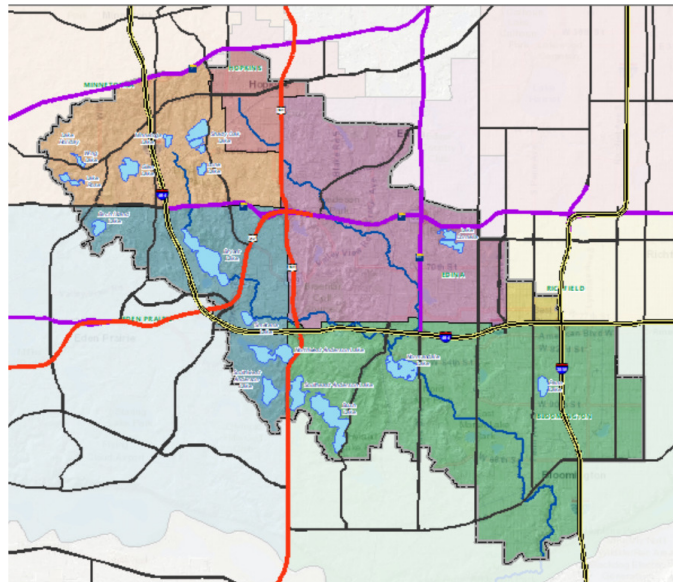
Development of Data-sharing Web Map Tool:

Maintenance and updates to the water level database are ongoing. Enhancements to the charting tool are underway, which include connecting lakes to water quality monitoring reports, incorporating ordinary high water level (OHWL) data, and providing additional reference data to the web map.



Atlas 14 Model Updates:

Work continues on updating the Eden Prairie and Hopkins portions of the model, including updating subwatershed divides, hydrologic inputs, and storm sewer information. Next steps include completing the Eden Prairie and Hopkins model updates, updating the portions of the model in Richfield, reviewing and revising hydrologic parameters throughout the model as necessary, and bringing in the latest models from Edina and Bloomington.



GIS screenshot of the Nine Mile Creek watershed, with individual municipalities shown in different colors. As can be seen in the screenshot, the boundaries between cities in the watershed often correspond with major transportation corridors, including:

- MN 62/CSAH 62 between Minnetonka and Eden Prairie
- U.S. 169 between Hopkins, Minnetonka, and Edina (North Fork)
- U.S. 169 between Eden Prairie and Bloomington (South Fork)
- U.S. 169 between Edina and Eden Prairie (South Fork)
- I-494 between Bloomington, Edina, and Richfield

The multiple jurisdictions involved, and often limited stormwater infrastructure information available, makes understanding drainage patterns especially challenging in these areas. Barr staff is working with the various jurisdictions and reviewing construction drawings and past permit files to better represent these areas in the watershed-wide model.

Lake Cornelia and Lake Edina Water Quality Improvements: Aluminum Treatment

An alum treatment of Lake Cornelia was completed in mid-May. Water quality monitoring of Lake Cornelia was conducted in late-April and throughout the 2020 summer months (June – September).

Monitoring results from August and September identified cyanobacteria (blue-green algae) concentrations in the lake that exceeded the World Health Organization (WHO) threshold of 100,000 per mL for moderate probability of adverse health impacts. Notification of the potential for harmful blue-green algae was provided to the City of Edina and posted on the District's website. Microscopic analysis of water samples collected from Lake Cornelia (North and South basins) on October 23rd indicated that cyanobacteria counts were below the WHO threshold of 100,000 per mL for moderate probability of adverse health impacts (28,144 per mL in North Cornelia and 30,154 per mL in South Cornelia).

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

Design work continues on the Rosland Park Stormwater Filtration BMP. The project team is considering alternate design options to meet project objectives, specifically related to the pumping configuration, in response to feedback received from the MnDNR in September regarding permitting requirements. Three alternative design concepts were presented to the Board at the regular October meeting. Barr continues to evaluate these design concepts, including further development of pollutant removal estimates and preparation of cost estimates. We plan to present an update on these findings to the Board at the regular November meeting. Next steps also including reaching out to MnDNR to confirm our assumptions about permitting and meeting with the City of Edina to review and discuss the revised concepts and associated changes to pollutant removal estimates, cost/benefit analysis, and maintenance requirements.

The design team is also further evaluating maintenance options for the proposed stormwater filtration system, including consideration of a backwash system. A filter must be cleaned periodically to maintain function. While a backwash system would likely have greater upfront design and construction costs than other potential approaches, it would simplify maintenance procedures, result in more reliable long-term performance, and reduce labor and equipment costs over time.



Rendering of proposed stormwater filtration vault in Rosland Park to treat water from Swimming Pool Pond before it flows to Lake Cornelia.

Wetland Restoration and Protection Opportunity Identification:

Barr obtained additional detailed wetland assessment documentation from the City of Eden Prairie and the City of Minnetonka. We conducted functional and vegetation assessments of high quality wetlands with unique or rare native wetland community types or containing rare species within a habitat corridor and wetlands with potential for restoration within high priority areas that could enhance the habitat corridor connections and may have a link with future floodplain management efforts.

Next steps for the project include further characterization of wetland functions and values (e.g., biodiversity, plant community, habitat, etc.) to help the District prioritize protection and restoration opportunities.



Left: Photo of a high quality wetland in the City of Minnetonka.

Below: Photo of cranberries in a high quality wetland in the City of Bloomington.



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

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

- Crosstown Core Industrial in Eden Prairie- Reviewing wetland information and application, discussing with City of Eden Prairie staff and applicant's agent. Conducting a wetland delineation site review.
- Coteau Trail Culvert Replacement in Eden Prairie- Reviewing wetland information and application. Discussing project plans, wetland impacts, and buffers with City of Eden Prairie and Barr staff. Conducting a site review.
- Tiller Corporation – Provide wetland documentation, review NMCWD permit submittal and project plans and provide comments.
- Shady Oak Lake Outlet – Communicate with City of Minnetonka wetland staff.
- Liberty Baptist Church – Communicate with City of Eden Prairie and NMCWD staff and conduct site review.
- Topview Park – Communicate with wetland delineator.
- Provide information for wetland presentation for special Board of Managers meeting.
- Other miscellaneous program administration