

Engineer's Report

October 9, 2019

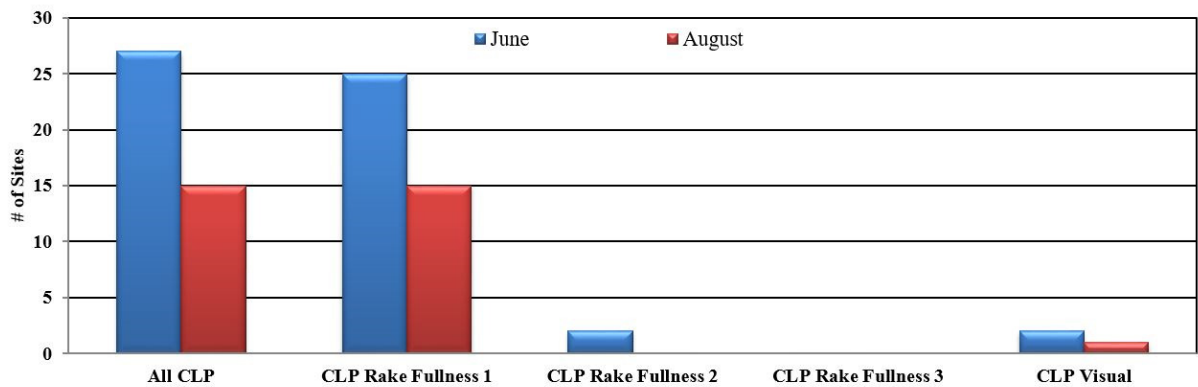
Normandale Lake Water Quality Improvement Project:

An aquatic plant survey was conducted on Normandale Lake on August 23rd, 2019. Results from the survey indicate reductions in the abundance of curly-leaf pondweed (CLP) as compared with the June 2019 survey, as would be expected due to the mid-summer die-off. A more comprehensive summary of the 2019 aquatic plant survey results will be provided to the Board in upcoming months.

District and Barr staff plan to meet with staff from MnDNR in November to discuss the planned herbicide treatment. In the meantime, Barr has begun preparing the Lake Vegetation Management Plan (LVMP), a requirement of MnDNR permitting.

Barr staff is also assisting District staff in reviewing the proposed carp management monitoring and management activities.

CLP Rake Fullness Differences
Normandale Lake - Hennepin Co, MN
June 20 and August 23, 2019



Photos of Normandale Lake on August 23, 2019 from the boat landing.

Edina Stream Stabilization Project: Phase II of the project reached substantial completion at the end of October 2018. The substantial completion deadline was December 31, 2018 so the project was completed ahead of schedule.

Barr worked on a maintenance plan to establish clear roles for the District and the City of Edina for addressing future maintenance needs. A draft of the maintenance plan was provided to Administrator Anhorn in early August. Administrator Anhorn provided comments on the plan, and work on the maintenance plan has continued.

Payment application #5 was submitted in the amount of \$12,127.00 for release of one-half of the retainage currently being held by the District. Barr is recommending approval of this pay application.

No new construction activities occurred this month.



Stabilized and vegetated shoreline on winding stretch of creek at Reach 11 (June 25, 2019).



Vegetated shoreline along the creek at Reach 1 (June 25, 2019).

District Office (Discovery Point): Barr staff coordinated with the restoration contractor regarding site management activities to help ensure aesthetics and ecological goals are being met on site.

Lake Cornelia and Lake Edina Water Quality Improvements:

Alum Treatment

HAB Aquatic Services Inc. has been selected to conduct the alum and sodium aluminate (aluminum) treatment of Lake Cornelia. A site visit with City of Edina, Nine Mile Creek Watershed District, Barr, and HAB Aquatic Services Staff was conducted on October 7, 2019 to finalize site access and the treatment plan.

HAB is planning to conduct the alum treatment the last week of October (Oct 28-31). They plan to begin mobilizing early Monday morning (Oct. 28) and start the treatment Monday afternoon at the North basin. The aluminum treatment of the North Basin should be completed by mid-day Tuesday.

Treatment at the South Basin will likely begin on Wednesday and be completed by end-of-day Wednesday or mid-day Thursday. Barr staff will be on-site to help facilitate the treatment and to measure lake water quality (primarily pH, dissolved oxygen, specific conductance, alkalinity, and total phosphorus).

An alum treatment demonstration for interested public is tentatively planned for Monday, October 25th. Staff from HAB will explain what alum is and how it improves water quality; they will also give a demonstration of the barge application process.



For treatment of the North Basin, HAB will launch their treatment barge on the south side of the fishing dock. Minor tree and brush clearing will be necessary. Access to the South Basin will be from city-owned property along Laguna Drive on the south side of the lake. Minor tree clearing will also be necessary at this location to gain access the South Basin.

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. Board approval included direction to modify Task 1A to reduce the number of stormwater BMPs to be evaluated. A revised scope of work is included in the meeting materials for the October 16, 2019 regular meeting.

The Barr team began work on the project this month with initiating high-level assessment of stormwater management BMP concepts at Rosland Park. A meeting with District and City staff will be held in mid-October to solicit feedback on preliminary BMP concepts.

BMP Retrofits on Nonprofit Sites- Final Design and Construction:

Barr staff are currently working on preparing bid-ready construction documents for five non-profit BMP sites; one of the previously-evaluated BMP sites (Bethlehem Lutheran Church in Minnetonka) was abandoned due to site constraints and lower-than-desired pollutant reduction benefit. We anticipate that 90% design plans will be completed by the end of November, with final plans and contract documents to be completed for public bid following NMCWD's regular board meeting in January 2020.

Smetana Lake Use Attainability Analysis Update:

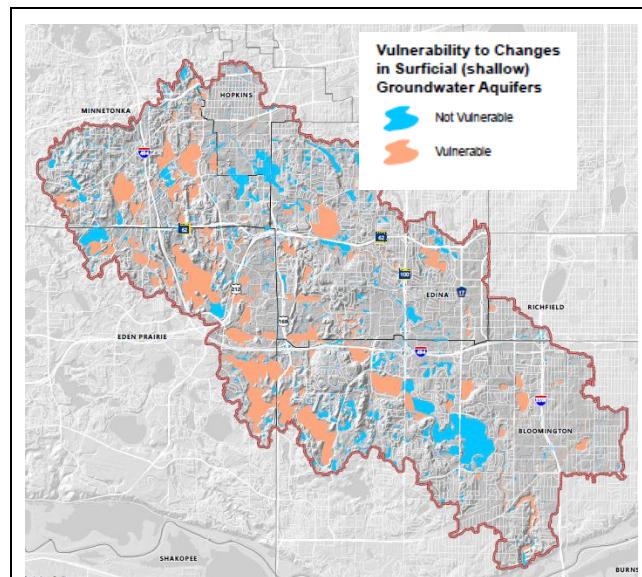
Barr has begun updating the Smetana Lake Use Attainability Analysis (UAA) to assess current water quality and re-evaluate implementation recommendations from the original UAA study completed in 2003. Work on the project over the past month has included updating the P8 watershed model to include Best Management Practices (BMPs) that have been constructed in the watershed since the original study in 2003. Barr staff are also in the process of developing the in-lake model using outputs from the Smetana Lake P8 watershed model, upstream P8 watershed models (Bryant Lake and Lake Minnetoga), as well as in-lake water quality and aquatic plant data.

A meeting to share preliminary study results with stakeholders is tentatively planned for this fall.

**Groundwater/Surface-Water Interaction Study and Assessment of Surface Water Vulnerability to Changes in the Groundwater System:**

Understanding how changes in the groundwater system may affect surface water levels, stream flow, and water quality is an important component of long-term planning and protection of water resources in the Nine Mile Creek watershed. How connected, or disconnected, surface waters are to the groundwater system affects how they may respond to seasonal changes (drought), long-term climate change, or anthropogenic stresses (groundwater pumping).

Barr has completed the assessment for groundwater and surface water interaction and the vulnerability of surface waters to changes in the groundwater system. This analysis included approximately 2000 lakes, ponds, wetlands, and stream reaches across the District. Results of the study were presented to the NMCWD Board of Managers at the September 4, 2019 special meeting. A draft report will be provided to NMCWD staff for review and comment in the upcoming weeks.



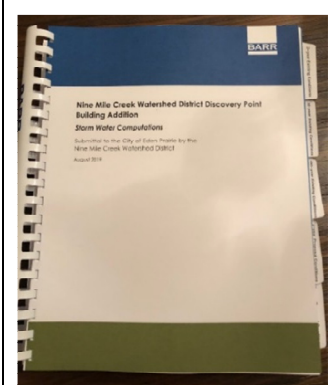
This map shows the vulnerability of waterbodies throughout the watershed to the changes in surficial (shallow) groundwater aquifers.

Bush Lake Outlet Project: No new activities.

Pentagon Park Stormwater Management: No new activities.

Regional Stormwater Volume Reduction Opportunity Study: No new activities.

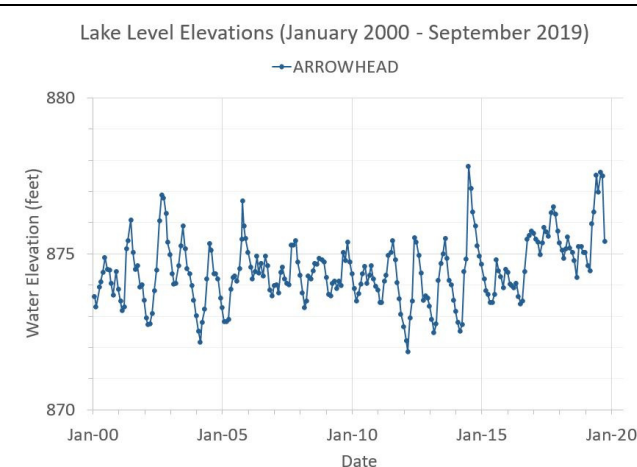
Discovery Point Building Addition: In August, Barr staff updated site grading, stormwater management, and landscaping drawings to reflect the proposed Discovery Point building addition designed by LHB. The updated construction drawings, as well as an updated stormwater management submittal (see image to right), were included in the District's late-August submittal to the Eden Prairie planning commission.



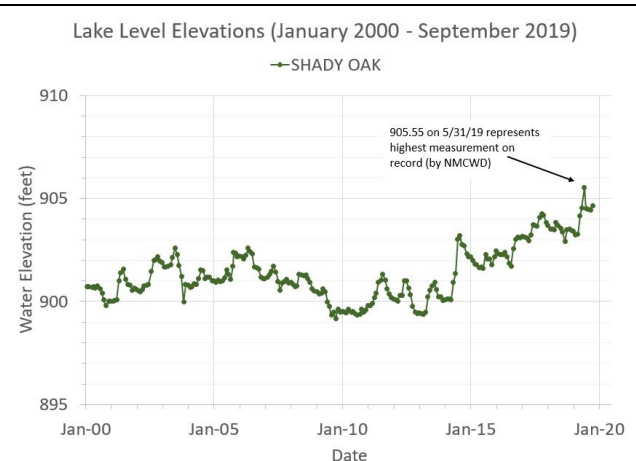
In September, Barr made minor modifications to the site plans. Next steps for the project include review and comment by the Eden Prairie planning commission in late-October, and City Council review in December and January. Additional revisions to the site grading, stormwater, and landscaping plans may be required throughout the city review process.

Update on High Water Levels: Wet weather conditions have continued into the fall. 2019 is now the wettest year-to-date in Twin Cities weather records (January 1 – October 8th), with 37.12 inches of precipitation measured at the Minneapolis- St. Paul International Airport (MSP) weather station. According to the October 8, 2019 blog Paul Douglas on Weather (Star Tribune), if no additional precipitation occurred for the rest of the year, 2019 would be the 7th wettest year on record. The wettest year on record at the MSP station was 2016, when 40.32 inches were recorded. So, we are only 3.2 inches away from the record, with nearly 3 months left in 2019.

Not only has 2019 been a wet year, but the Twin Cities metro area has been in a wet cycle over the past decade. The last five years (2014-2018) have been the wettest five years on record in the area. And the last ten years (2009-2018) have been the wettest 10 years on record. This wet period has resulted in high water levels in several land-locked lakes throughout the Nine Mile Creek watershed, with historic high water levels being reached in Shady Oak Lake and Lone Lake in Minnetonka in 2019.



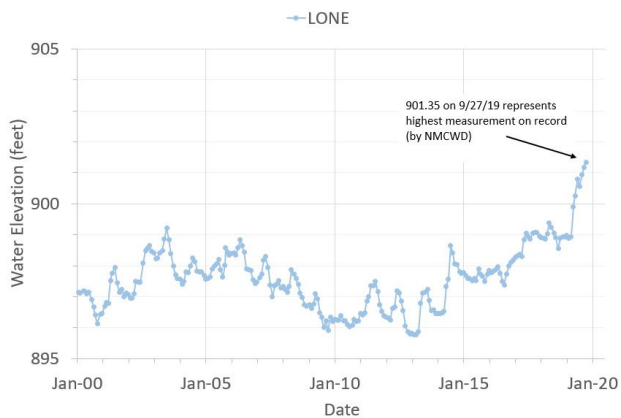
High lake levels have caused flooding of at least one home adjacent to Arrowhead Lake. In response to the high water levels, the City of Edina has been pumping the lake, as evident by the recent drop in water level.



2019 lake levels in Shady Oak Lake exceeded the historic record, which was measured at elevation 904.4 on April 4, 1966. In response to high (and continually rising) lake levels threatening homes and impacting the public beach and associated structures, the City of Minnetonka began pumping the lake in early-June of 2019 and will continue to pump in the upcoming months.

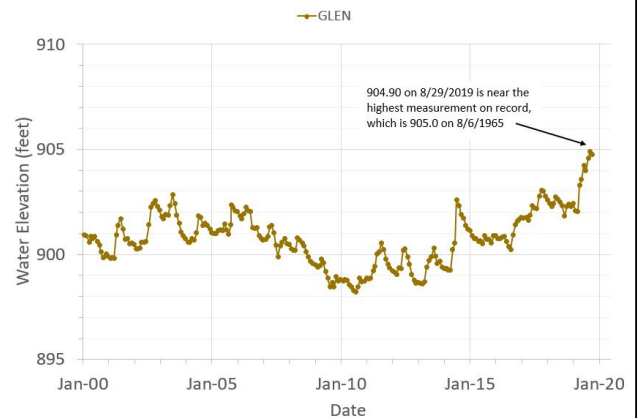
Update on High Water Levels (continued):

Lake Level Elevations (January 2000 - September 2019)



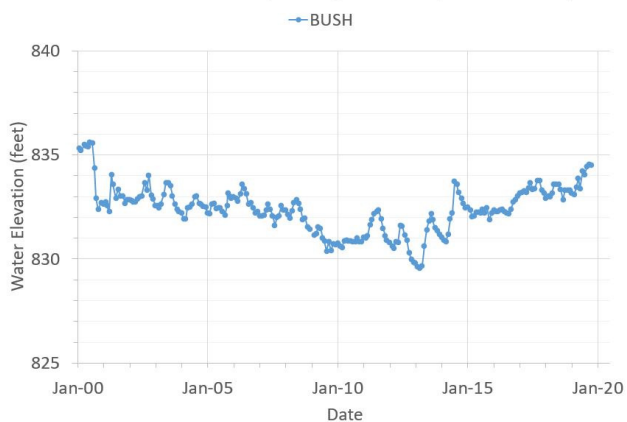
The 9/27/2019 lake level measurement in Lone Lake exceeds the historic record, which was measured at elevation 901.1 on April 4, 1966. Lone Lake is primarily surrounded by park land, with approximately five single family homes adjacent to the lake on the north side, all of which are at least ten feet higher than current lake levels.

Lake Level Elevations (January 2000 - September 2019)



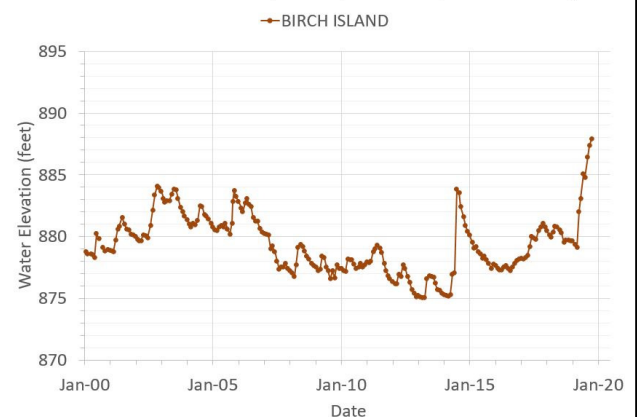
Water levels in Glen Lake in late-August 2019 neared the historic record, which was measured at elevation 905.0 on August 6, 1965. The high water levels were in part due to a restriction in the Glen Lake outlet system in Eden Prairie, which has recently been remedied.

Lake Level Elevations (January 2000 - September 2019)



Lake levels in Bush Lake remain high. Although there is a permanent pumped outlet to Bush Lake, the pump has not been used yet in 2019 due to high water levels in the downstream Anderson Lakes.

Lake Level Elevations (January 2000 - September 2019)



2019 water levels in Birch Island Lake are higher than they have been in recent decades, but haven't exceeded the historic high water level which was measured at elevation 891.2 on March 24, 1969. Residents that have in the past expressed concern regarding low levels in the lake have expressed their pleasure with current lake levels.

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

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

- Conducting site review, communication with TEP members, and meeting with landowner regarding reported unpermitted wetland fill at 6390 Carlson Drive in Eden Prairie.
- Reviewing wetland delineation report, preparing and submitting WCA Notice of Application, providing comments to delineator, and conducting site review of Liberty Plaza property located at 7075 Flying Cloud Drive in Eden Prairie.
- Reviewing and commenting on restoration plans and proposed improvements to temporary impacts planned for Southwest LRT wetlands in Eden Prairie. Reviewing update summary from Lunda Construction regarding sediment release in Southwest LRT wetlands in Minnetonka.
- Providing previously approved wetland delineation boundary and MNRAM information for Hennepin County Medical Examiners building in Minnetonka.
- Providing previously approved wetland delineation and MNRAM information for Tiller Corporation in Eden Prairie.
- Reviewing soil and hydrology data, discuss infiltration options, and conduct a site visit to review soil borings at 7725 Washington Avenue South in Edina.
- Submitting WCA Notice of Decision for wetland boundary and type approval and review MNRAM information for United Properties site located at 11000 Viking Drive in Eden Prairie.
- Conducting site review and follow up communication with TEP members of unpermitted wetland fill. Review City of Eden Prairie summary of ditch and culvert clearing located at 6282 Industrial Drive in Eden Prairie.
- Submitting WCA Notice of Application for wetland boundary and type decision and providing initial comments on Douglas Corporation's Valley View Rd site in Eden Prairie.