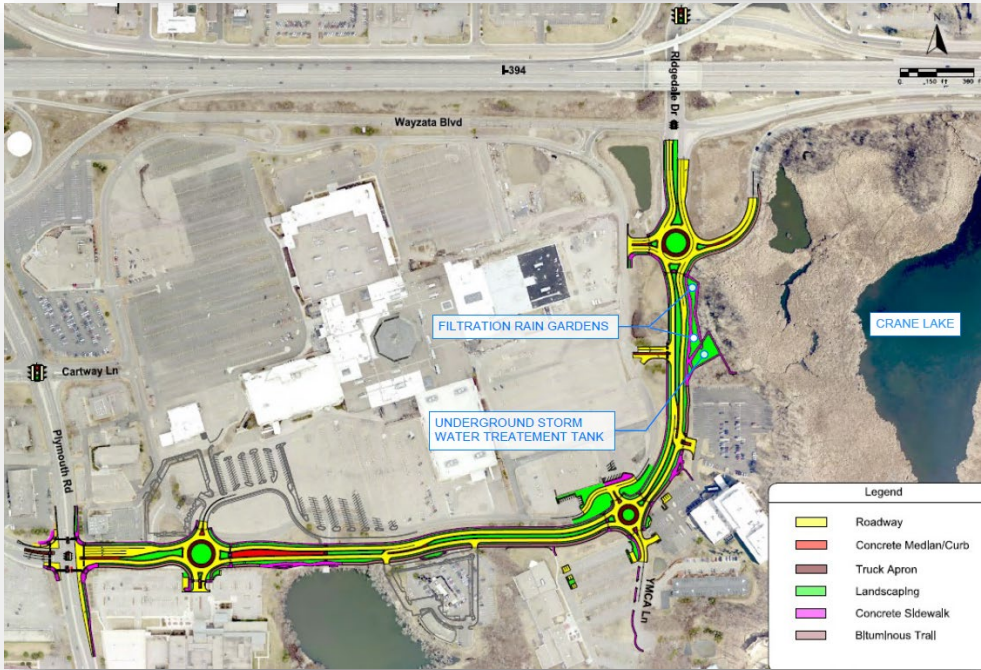


# Crane Lake Improvement Project (CL-3)



FINAL REPORT  
December 4, 2020



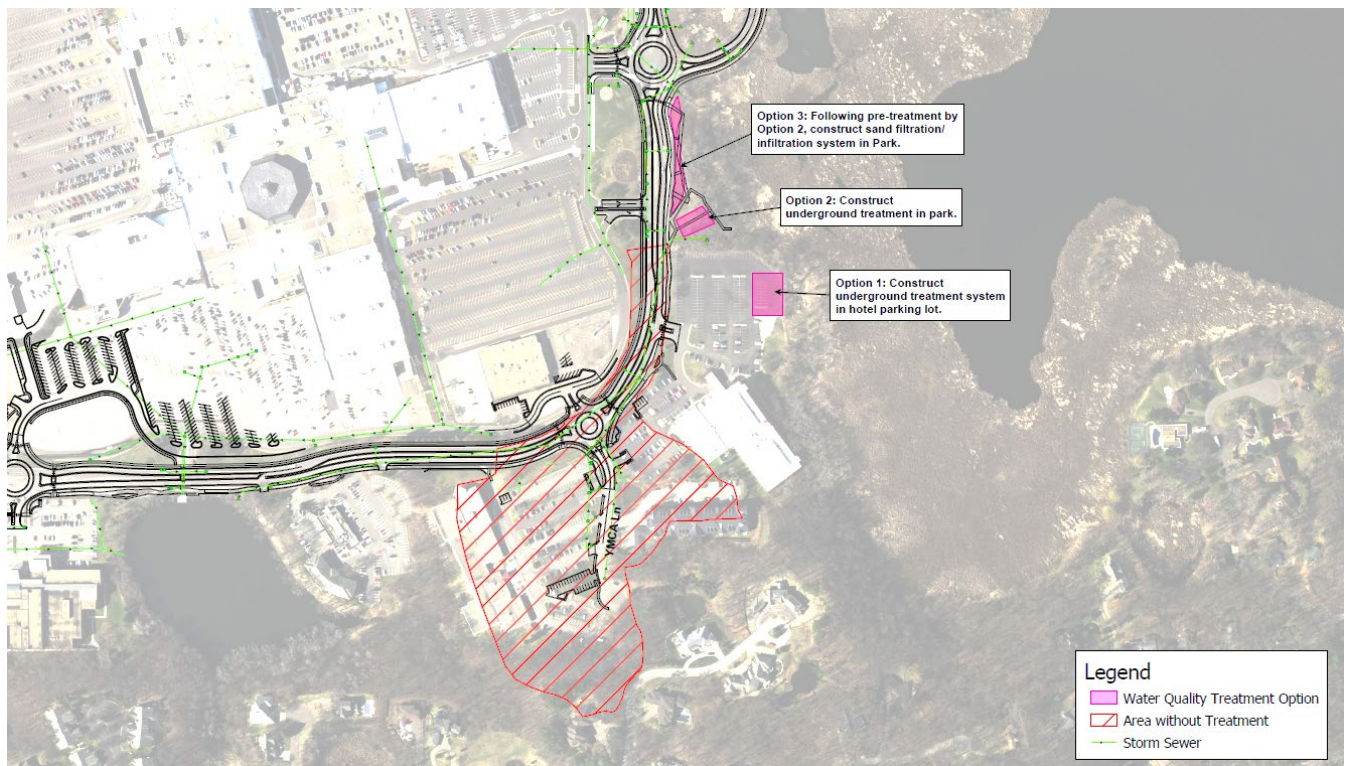
## I. Project Overview

The Crane Lake Improvements Project included storm water quality improvements which were completed in conjunction with the Ridgedale Drive Reconstruction Project. The reconstruction of Ridgedale Drive between Plymouth Road and Wayzata Boulevard reconfigured the roadway with three roundabouts, and reduced the impervious area by approximately two acres. The associated Crane Lake Improvements include the installation of an underground treatment system beneath the park, which then pumps to a series of rain garden filtration basins prior to outlet into Crane Lake. These improvements provide treatment of a 13.3 acre drainage area which was previously not treated prior to entering Crane Lake.

The underground treatment system and rain gardens were constructed in the park area where a future park shelter (planned for 2021) with educational kiosk will be built and can educate the public about the treatment system and Crane Lake. This is a great opportunity for education with the close proximity to the Ridgedale Mall, park amenities, and adjacent trail network.

## II. Project Area

The project area map shown below from the Feasibility Report is located on Ridgedale Drive from YMCA Lane to Wayzata Boulevard. A storm sewer network was installed to collect the untreated drainage area and direct storm water to the underground tank and filtration basins (Option 2 and 3 below). During the feasibility study, it was determined to no longer explore Option 1 which was not constructed.



### III. Project Description and Outcomes

The Crane Lake Improvements included the installation of a 12,250 cubic-foot underground storage tank, a wet well with a 30 gallon per minute pump, and a series of rain garden filtration basins. The untreated drainage area of 13.3 acres as shown in the above image is collected and directed to the tank, where it is then pumped and filtered through the rain gardens prior to outlet into Crane Lake.

During construction, it was determined the soils were not conducive to infiltration and the rain gardens were constructed with granular filter media and underdrains to allow for filtration. As the improvements were constructed according to the approved design plans, the pollutant load reductions are anticipated to remove the originally estimated 9 pounds of total phosphorus and 3,500 pounds of total suspended solids from the runoff each year. The annualized cost per pound of total phosphorous pollutant removal is \$1,580 to \$1,960.

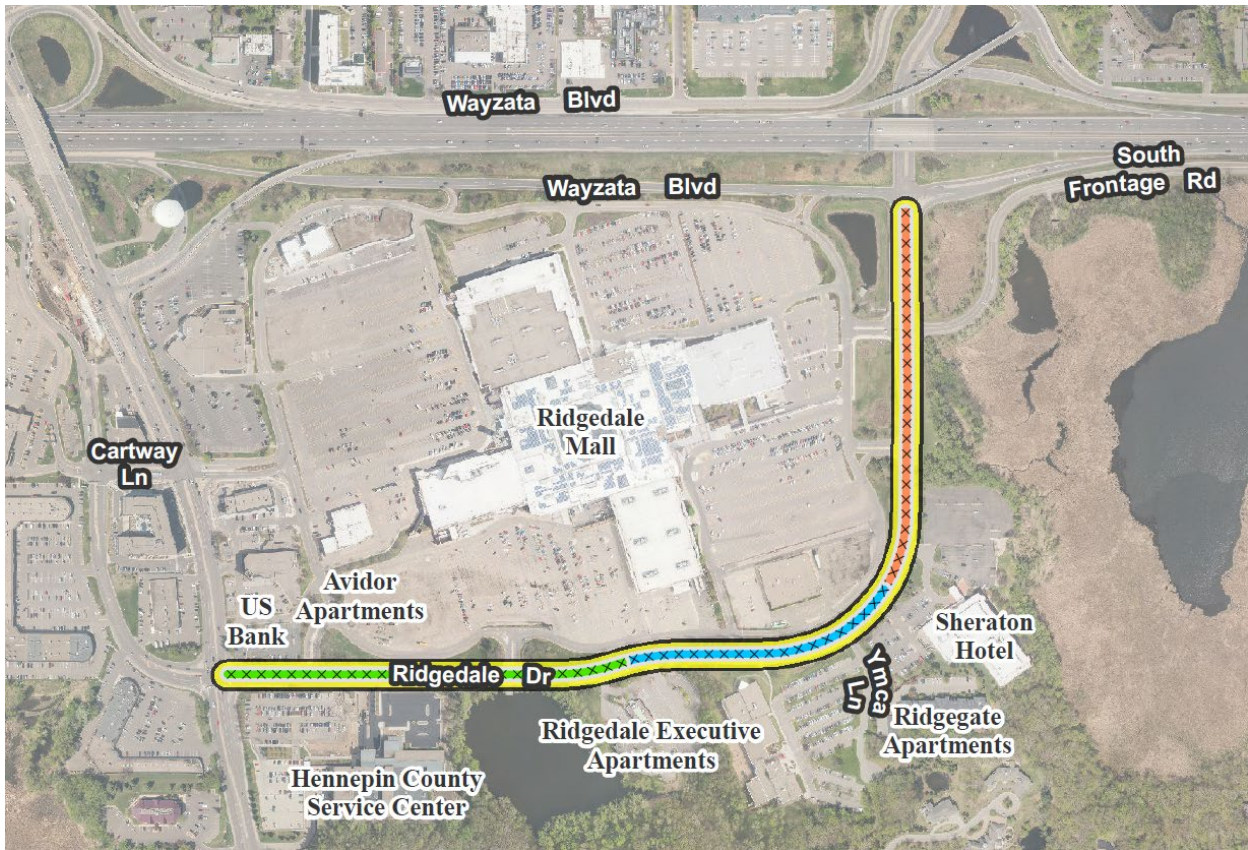
In efforts to further understand the amount of storm water pumped to the rain gardens each year, the City of Minnetonka installed a flow meter in the wet well. This flow meter will be removed along with the pump in the fall, and then replaced again in the spring.

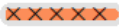

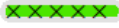

### IV. Timeline and Key Documents

The project timeline is found below with documents found at:

<https://www.bassettcreekwmo.org/projects/all-projects/crane-lake-improvement-project>.

- April 19, 2018: BCWMC approved the 5-year (working) CIP, which included implementation of the Crane Lake Improvement Project (CIP #CL-3), as part of the Ridgedale Drive Reconstruction Project.
- March 21, 2019: Presentation and approval of Feasibility Study (Option 3 approved)
- May 16, 2019: 90% Design Plans Approved
- September 19, 2019: Resolution 19-09 Ordering Project
- Construction Timeline (Staging Map provided below)
  - July - November 2019: Ridgedale Drive Stage 1 Construction
    - Installation of storm sewer, underground tank, and rain gardens.
  - April – June 2020:
    - Installation of underground tank lift station pump to rain gardens, rain garden plantings, and remaining storm sewer directed to tank in Stage 2 area by YMCA Lane.
  - July – November 2020:
    - Final punch list item completion for lift station pump and rain gardens. Installation of street and utilities in Stage 3 area.



-  Stage 1 (2019 Construction)
-  Stage 2 (2020 Construction)
-  Stage 3 (2020 Construction)
-  Project Area

V. Project Budget and Funding

- BCWMC Reimbursement Request 1 & Final – December 4, 2020
    - Request Amount = \$367,999.15

The actual project costs for the related BCWMC items were approximately 10% above the original feasibility study estimated costs. The overall project costs received at bidding were higher than originally estimated, which is the primary reason the actual project costs were higher. The project scope and material quantities constructed were consistent with the approved design plans. The table below compares the actual project costs with the approved feasibility estimate provided in March of 2019.

<b>Project Costs</b>	<b>Actual Project Costs</b>	<b>Feasibility Estimate</b>
Construction	\$520,352.30	\$416,400.00
Indirect (25%)	\$130,088.08	\$104,100.00
Contingency (~15%)	N/A	\$62,337.00
<b>Total Costs</b>	<b>\$650,440.38</b>	<b>\$582,837.00</b>

The Crane Lake Improvements were funded by the City of Minnetonka and the BCWMC. Per the Cooperative Agreement with the BCWMC and the City, the total reimbursement from the BCWMC could not exceed \$380,000.00 less Commission expenses. The table below summarizes the funding detail for this project.

<b>Project Funding</b>	<b>Amount</b>
BCWMC	\$367,999.15
BCWMC - Administrative Expenses	\$12,000.85
City of Minnetonka	\$270,440.38
<b>Total</b>	<b>\$650,440.38</b>

#### VI. Lessons Learned

The project overall was very successful. An item that could have been improved included the connection details with the underground tank and storm system. Field modifications were required at the structure and pipe connections to the underground tank. Additional effort during the shop drawing creation could have been completed to ensure the separate designs for the tank and storm system were coordinated.

#### VII. Maintenance

The City of Minnetonka Public Works will be inspecting the underground tank system at a minimum of two times per year. Sediment, trash, and floating debris can be removed from the structures outside of the tank system. It is anticipated the tank system will need to be cleaned and sediment removed once every 10 years.

The maintenance of the rain gardens will be completed on a regular basis. The current contract with the planting maintenance includes an additional two year maintenance period to clean the rain gardens and remove weeds every month. It is anticipated the rain garden soil media material will need to be replaced every 15 years.

The flow meter and pump within the wet well will be removed each fall and replaced each spring in efforts to prolong the life of the equipment and avoid potential winter freezing damages.

#### VIII. Photos



*Preconstruction - Drone South View of Ridgedale Drive & Crane Lake Park*



*Construction Starting - South View of Ridgedale Drive & Crane Lake Park*



*Underground Storm Water Tank Construction at Crane Lake Park – South View*



*Underground Storm Water Tank Construction at Crane Lake Park – East View*



*Underground Storm Water Tank Construction at Crane Lake Park – North View*





*Storm Water Lift Station Access Structures at Crane Lake Park – West View*



*South Rain Garden – South View*



*North Rain Garden – North View*



*North Rain Garden (Valve Closed – Filtration Needed) – North View*



*Temporary Seeding – North View*



*South Rain Garden Plantings Installed – North View*



*North Rain Garden Plantings Installed (Lift Station Outlet Left Side of Photo) – SE View*



*North Rain Garden Plantings Installed – North View*



*Aerial of Crane Lake Park Area – September 2020*



*Graphic Depiction of Rain Garden Areas at Crane Lake Park*



*Graphic Depiction of Future Shelter with Educational Kiosk at Crane Lake Park*



*Graphic Depiction of Ridgedale Drive Near Crane Lake Park – South View*

