Item 4K.
BCWMC 4-21-22

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Memorandum

To: Bassett Creek Watershed Management Commission (BCWMC)
From: Barr Engineering Co. (Barr)
Subject: Item 4K: Meadowbrook Elementary School Parking Lot Improvements – Golden Valley, MN
BCWMC April 21, 2022 Meeting Agenda
Date: April 14, 2022
Project: 23270051.53 2022 2248

4K Meadowbrook Elementary School Parking Lot Improvements – Golden Valley, MN BCWMC 2021-09

Summary:

Project Proposer: Hopkins School District (ISD 270)

Proposed Work: Parking lot Improvements

Basis for Review at Commission Meeting: Use of alternative BMP

Impervious Surface Area: Increase approximately 0.1 acres

Project Schedule: June 2022 Construction

Recommendation for Commission Action: Conditional Approval

General Project Information

The proposed project is in the Sweeney Lake subwatershed at 5430 Glenwood Avenue in Golden Valley, MN. The proposed project includes a parking lot reconstruction and stormwater improvements resulting in 1.21 acres of land disturbance. The proposed project creates 0.96 acres of new and fully reconstructed impervious surfaces, including 0.86 acres of fully reconstructed impervious surfaces and an increase of 0.1 acres of impervious surfaces from 0.95 acres (existing) to 1.05 acres (proposed).

As noted in Section 6.1.1 of the February 2021 BCWMC Requirements for Improvements and Development Proposals (Requirements) document, the BCWMC tracks redevelopment project locations and the amount of new and/or fully reconstructed impervious surface. If a property has several redevelopment projects that individually do not trigger the BCWMC performance goal, but would when combined, the applicant is required to provide treatment in accordance with the BCWMC performance goal for all redevelopment. A previous submittal, BCWMC #2018-14: Meadowbrook Elementary 2018 Northwest Addition was approved June 19, 2018. As shown in the following Table 1, in aggregate, the 2018 project (BCWMC #2018-14) and proposed 2021 project (BCWMC #2021-09) create more than one acre of new and fully reconstructed impervious surfaces; therefore, the proposed project must provide water quality treatment in accordance with the BCWMC performance goal.

Table 1: Summary of Regulated Impervious Surfaces Based on Project Developments

Project	New and Fully Reconstructed Impervious Surfaces
BCWMC #2018-04	0.78 acres
BCWMC #2021-09	0.95 acres
Total	1.73 acres

The initial submittal was received April 27, 2021. The BCWMC engineer reviewed the submittal and provided comments to the City and applicant on June 10, 2021. The applicant addressed most of the comments and submitted revised plans and supporting documentation in March and April 2022 for review.

Floodplain

The proposed project does not involve work in the Bassett Creek 1% (base flood elevation, 100-year) floodplain; therefore, BCWMC floodplain review is not required.

Wetlands

The proposed project includes work adjacent to wetlands. The City of Golden Valley is the local government unit (LGU) responsible for administering the Wetland Conservation Act; therefore, BCWMC wetland review is not required.

Rate Control

The Requirements document states that projects that create one (1) acre or more of new or fully reconstructed impervious area *must manage stormwater such that peak flow rates leaving the site are equal to or less than the existing rate leaving the site for the 2-, 10-, and 100-year events, based on Atlas 14 precipitation amounts and using a nested 24-hour rainfall distribution*.

In both existing and proposed conditions, stormwater runoff to the east is collected by an existing storm sewer and stormwater runoff to north is discharged to an existing wetland.

In proposed conditions, the best management practices and the reduction in impervious surfaces result in reduced overall peak discharge rates. Table 2 summarizes the existing and proposed peak discharge rates for the proposed project as provided by the applicant and shows that the proposed stormwater management system meets the BCWMC rate control requirements.

Table 2: Existing and Proposed Peak Discharge Rates

	2-Year Peak (cfs)	10-Year Peak (cfs)	100-Year Peak (cfs)
Existing to East	2.7	4.7	9.1
Proposed to East	0.8	4.4	8.8
Existing to Wetland	8.7	14.1	25.7
Proposed to Wetland	2.9	9.6	25.4

Water Quality

The Requirements document states that projects on sites without restrictions *that create one or more acres of new and/or fully reconstructed impervious surfaces shall capture and retain on-site 1.1 inches of runoff from the new and/or fully reconstructed impervious surfaces*. If the applicant is unable to achieve the

performance goals due to site restrictions, the BCWMC Flexible Treatment Options approach shall be used following the BCWMC Design Sequence Flow Chart.

As noted, the proposed project creates 1.73 acres of fully reconstructed impervious area. The proposed site is constrained due to the presence of clay soils and high groundwater elevation. Due to these site constraints, the applicant is unable to meet the BCWMC performance goal or Flexible Treatment Option (FTO) #1. FTO #1 requires a volume reduction of 0.55 inches and removing 75% of the annual total phosphorus (TP) load from new and/or fully reconstructed impervious surfaces. The applicant followed the BCWMC Design Sequence Flow Chart and determined that the proposed project must meet FTO #2. FTO #2 requires that the proposed project remove 60% of the annual TP load from the new and/or fully reconstructed impervious surfaces.

The applicant proposed two underground detention systems; each is connected to a Bayfilter—a proprietary manufactured treatment device (MTD)—to provide rate control and water quality treatment. The applicant indicates that the underground detention system, made of Stormtech Isolator Rows, will provide rate control, as well as water quality improvements by settling out particulate phosphorus. Meanwhile, the Bayfilter will primarily provide water quality improvements. The Bayfilter MTD is certified with a General Use Level Designation (GULD) from the Washington Department of Ecology's Technology Assessment Protocol – Ecology (TAPE) program. The BCWMC Requirements document allows the use of stormwater MTDs to meet flexible treatment options, if the applicant provides verification that the MTDs have achieved GULD designation (the applicant provided this verification). The BCWMC Requirements document states that the applicant *may then apply 50% total phosphorus (TP) and 80% total suspended solids (TSS) removals for stormwater MTDs, as long as the stormwater MTDs are designed in accordance with the manufacturer's and TAPE's recommendations and guidelines.* The underground detention and filtration systems will collect runoff from new and fully reconstructed impervious surfaces and additional area from an existing building and parking lot that does not require treatment. Table 3 summarizes the annual TP loading, annual TP removals, and overall percent TP removal for the proposed project provided by the applicant.

Table 3: Summary of TP Loading and TP Removals

	Impervious Area (acres)	Total Phosphorus Loading (lbs/year)	Total Phosphorus Removal (lbs/year)
Regulated impervious, TP loading, and TP removal based on new and fully reconstructed impervious	1.7[1]	3.8	2.3 (required)[2]
Proposed treated impervious, TP loading, and TP removal	1.8[3]	4.2	2.9 (proposed) [4]

[1] Area of fully reconstructed impervious surface
[2] Per BCWMC guidelines for FTO #2, 60% annual TP removal
[3] Impervious area to be treated by both underground detention and filtration systems
[4]Additional information or treatment must be provided to support proposed phosphorus removal

Erosion and Sediment Control

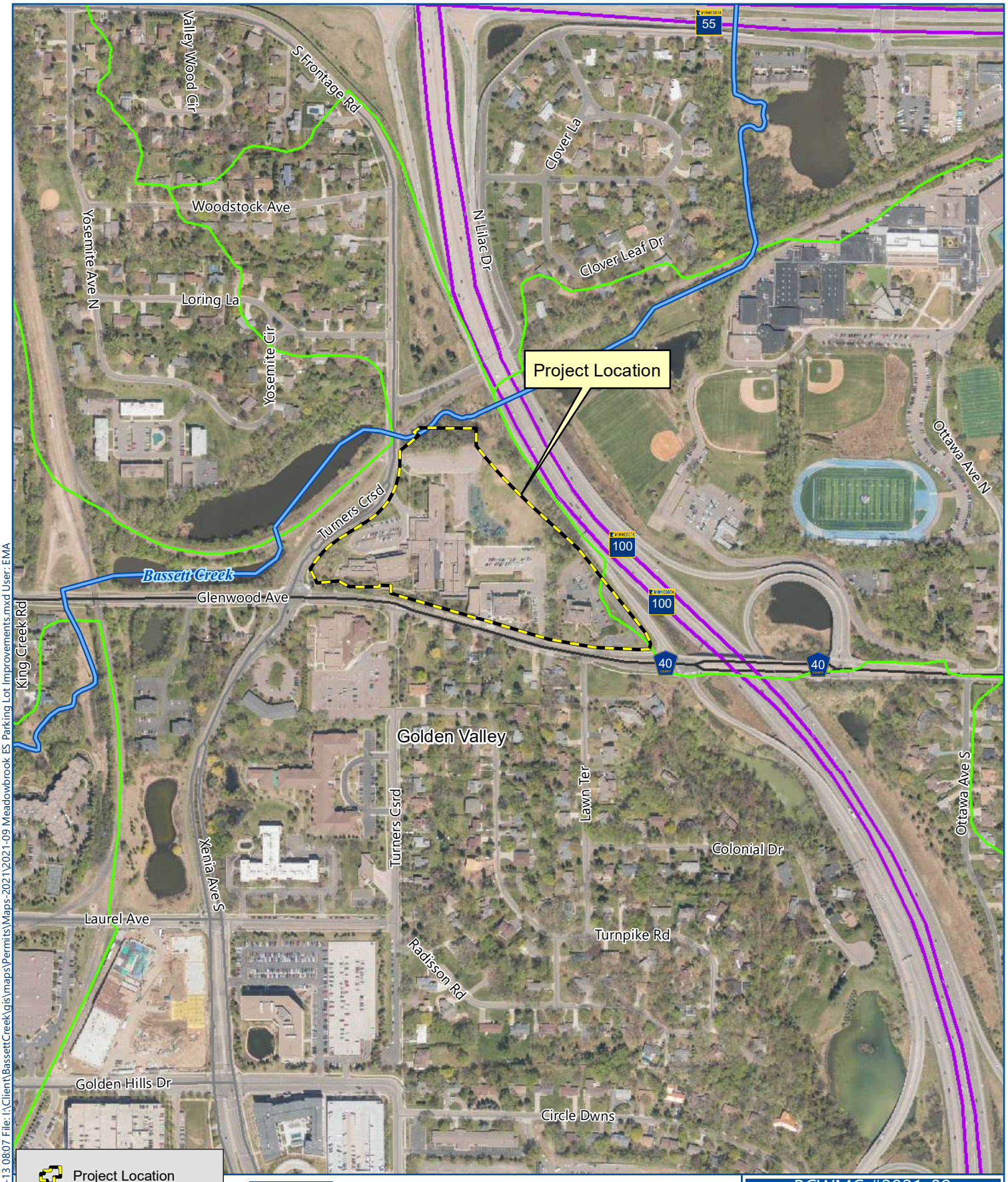
The proposed project results in more than 10,000 square feet of land disturbance; therefore, the proposed project must meet the BCWMC erosion and sediment control requirements. Proposed temporary erosion

and sediment control features includes silt fence, inlet protection, and rock construction entrances. Permanent erosion and sediment control features include erosion control blanket and stabilization with sod or seed and mulch.

Recommendation

Conditional approval based on the following comment:

1. Documentation consistent with the MN Stormwater Manual must be provided to support the pollutant removal efficiencies assumed for the Stormtech Isolator Row or additional water quality treatment must be implemented to demonstrate that the project meets FTO #2.



Project Location
Municipality
BCWMC Legal Boundary
Major Subwatershed
BCWMC Hydrologic Boundary
Bassett Creek

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N

0 250 500 Feet

Bassett Creek Watershed Management Commission

BCWMC #2021-09 MEADOWBROOK ELEMENTARY SCHOOL PARKING LOT IMPROVEMENTS
Golden Valley, MN

LOCATION MAP

Barr Footer: ArcGIS 10.8.1, 2022-04-13 08:07 File: I:\Client\BassettCreek\gis\maps\Permits\Maps-2021\2021-09 Meadowbrook ES Parking Lot Improvements.mxd User: EMA