

Memorandum

To: Bassett Creek Watershed Management Commission
From: Barr Engineering Co.
Subject: Item 5A – Douglas Drive Project – Golden Valley
BCWMC December 17, 2015 Meeting Agenda
Date: December 9, 2015
Project: 23270051 2015 2063

5A Douglas Drive – Golden Valley

Summary:

Proposed Work: road reconstruction on Douglas Drive from Highway 55 to Medicine Lake Road (27th Avenue North), box culvert reconstruction at a Bassett Creek crossing at Douglas Drive, utility reconstruction, surface improvements, and landscaping

Basis for Commission Review: work within the floodplain, Bassett Creek crossing reconstruction, road construction project disturbing over 5 acres

Impervious Surface Area: Increase 2.26 acres

Recommendation: Conditional approval

General Background & Comments

The proposed project includes reconstruction of Douglas Drive from Highway 55 to Medicine Lake Road (27th Avenue North), box culvert reconstruction at the Bassett Creek crossing at Douglas Drive, utility reconstruction, surface improvements, landscaping, and construction of an underground infiltration system at 1576 Douglas Drive North (water for the underground infiltration system will be pumped from Honeywell Pond). This project will be completed in conjunction with the Honeywell Pond project, which will provide stormwater reuse and volume control by pumping stormwater from Honeywell Pond to the Sandburg Ball Fields. Major considerations for the Douglas Drive review include the Bassett Creek crossing at Douglas Drive and compliance with the MIDS performance goal requirements. The project is in the Bassett Creek Main Stem subwatershed and 32.87 acres will be graded as part of the Douglas Drive and Honeywell Pond projects. The proposed project results in an increase of 2.26 acres of impervious surface and a total proposed impervious area of 20.55 acres.

Floodplain

The project involves reconstruction of the Bassett Creek crossing at Douglas Drive, which will include work within the floodplain of the Bassett Creek Main Stem. The floodplain elevation upstream of Douglas Drive is 871.0, and the floodplain elevation downstream of Douglas Drive is 870.2. Construction plans provided indicate that the project will result in 46 cubic yards of cut and 41 cubic yards of fill on the upstream side of Douglas Drive and 60 cubic yards of cut and 23 cubic yards of fill on the downstream side of Douglas Drive. The city's consultant provided a HEC-RAS model to document the flood level in Bassett Creek after

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construction of the project. The model results show that there will be no rise in flood level along the Bassett Creek trunk system as a result of the project.

Wetlands

The project appears to involve work in and adjacent to wetlands. The City of Golden Valley is the LGU for administering the Minnesota Wetland Conservation Act of 1991.

Stormwater Management

Under existing conditions, a small portion of the project drains north to Medicine Lake Road, the middle portion of the site drains to storm sewer along the Canadian Pacific Railway, and the southern portion of the project drains to storm sewer along the Union Pacific Railroad. Under proposed conditions, the drainage patterns will ultimately remain similar; however, stormwater treatment will be provided within the project area by diverting water to Honeywell Pond and an underground infiltration system.

Water Quality Management

Water quality treatment in the project area is currently provided by Honeywell Pond. Because the project is a linear redevelopment that creates one acre or greater of new and/or fully reconstructed impervious surfaces, the September 2015 BCWMC Requirements for Improvements and Development Proposals (Requirements) document requires that the project capture and retain the larger of 1) 0.55 inches of runoff from the new and fully reconstructed impervious surfaces, or 2) 1.1 inches of runoff from the net increase in impervious area. In this case, 0.55 inches of runoff from the new and fully reconstructed impervious surfaces is the larger volume, resulting in a required treatment volume of 0.94 acre-feet. If the performance goal is unable to be met due to site restrictions, the Requirements document requires that the MIDS flexible treatment options approach be used, following the MIDS design sequence flow chart.

The city proposes to construct an infiltration system to provide water quality treatment for the project. The infiltration system will provide a storage volume of 0.31 acre-feet. This is equivalent to 0.18 inches of runoff from the new and fully reconstructed impervious surfaces. However, because the infiltration system will receive water pumped from Honeywell Pond, not direct runoff from storm events, the applicant converted the single storm event-based treatment requirement to an annualized treatment requirement to be consistent with treatment provided by the Honeywell Pond project. The required annualized treatment volume for the project is 21.5 acre-feet. The proposed infiltration system provides 5.2 acre-feet of annualized treatment volume (24% of the required volume). The Honeywell Pond project will provide approximately 28 acre-feet of annualized treatment. The Honeywell Pond project is part of the BCWMC CIP (partially funded by the BCWMC), and was intended to improve water quality in the watershed beyond required practices, not to provide required water quality treatment for proposed projects. The city is planning to meet treatment requirements by taking credit for the portion of the Honeywell Pond project that is funded by the city. Based on the Honeywell Pond CIP project costs provided previously to the commission, the city's share/credit would be 36% of the project cost (\$450,000 from the city and a total project cost of \$1,260,000). However, the city's financial contribution to the project is more than \$450,000. The additional city contributions include:

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- \$117,000 to furnish and install irrigation lines in the ball fields
- \$28,000 in parts and labor to install an additional zone of irrigation
- \$25,000 to connect the pumping system to the SCADA system
- \$175,000 to remove 600 feet of overhead power line and power pole (pole is in pond) and bury the line around the pond.

With the above additional city contributions, the total revised city contribution to the Honeywell Pond project is \$795,000 (\$450,000 + \$345,000). The total revised project cost for the Honeywell Pond project is \$1,605,000 (\$1,260,000 + \$345,000). The city is contributing 49.5% of the Honeywell Pond project costs (\$795,000/\$1,605,000), and can therefore take credit for 49.5% of the treatment provided by the Honeywell Pond project. Taking credit for the city contribution to the Honeywell Pond project and the underground infiltration system, the city is able to provide 19.1 acre-feet of annualized treatment.

Because the city is not able to meet the MIDS performance goal, the city's consultant provided a sequencing analysis following the MIDS design sequence flow chart and indicating what treatment options were explored and feasible on the site. Based on the flow chart, the first alternative to be considered for this project is Flexible Treatment Option #2 (FTO 2). The flow chart analysis indicates that FTO 2 is feasible on the site. FTO 2 requires volume reduction to the maximum extent practicable, removal of 60% of the annual total phosphorus (TP) load, and discussion of options considered toward relocating elements and addressing varying soil conditions and constraints across the site.

The applicant has limited right of way area in which to construct stormwater BMPs because the project is primarily road reconstruction. Low areas in the project area have Type C and D soils with low infiltration rates, which do not allow significant infiltration. Also, many of the low areas that would be considered for infiltration are wetlands. The area within the project with soils suitable for infiltration is located at a high point. The infiltration system will be constructed at this location and will treat stormwater runoff pumped from Honeywell Pond. Based on limited right of way, presence of wetlands, and soils with low infiltration rates, the applicant has demonstrated volume reduction to the maximum extent practicable by maximizing the size of the underground infiltration system.

To meet the removal of 60% of the annual TP load requirement, the applicant is using treatment provided by the underground infiltration system and taking credit for the portion of the Honeywell Pond project that the city is funding. Based on the BCWMC's P8 model, the 20.55-acre project watershed generates 35 pounds of TP annually. 60% removal of this annual load is 21 pounds of TP. The city is contributing 49.5% of the Honeywell Pond project costs, and can therefore take credit for 49.5% of the TP treatment provided by the Honeywell Pond project. Using treatment provided by the underground infiltration system and the city contribution to the Honeywell Pond project, the applicant demonstrated that the project removes 21.5 pounds of TP annually, 61% of the annual TP load, and is therefore in compliance with the FTO 2 criteria. The TP removal provided by the Honeywell Pond project and the underground infiltration system is summarized below.

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	TP Removed (lbs/yr)	City Contribution (%)	City Credited TP Removal (lbs/yr)	Commission Credited TP Removal (lbs/yr)
Pond/Low Flow Diversion	24.6	49.5	12.2	12.4
Irrigate Sandburg Fields	12.3	49.5	6.1	6.2
Underground Infiltration System	3.2	100	3.2	0
Totals	40.1		21.5	18.6

The applicant has demonstrated that the project is a road reconstruction project with limited right-of-way in which to construct stormwater BMPs and the only additional land owned outside the right of way is being used for construction of the underground infiltration system. The project has demonstrated lack of right-of-way as required by FTO 2.

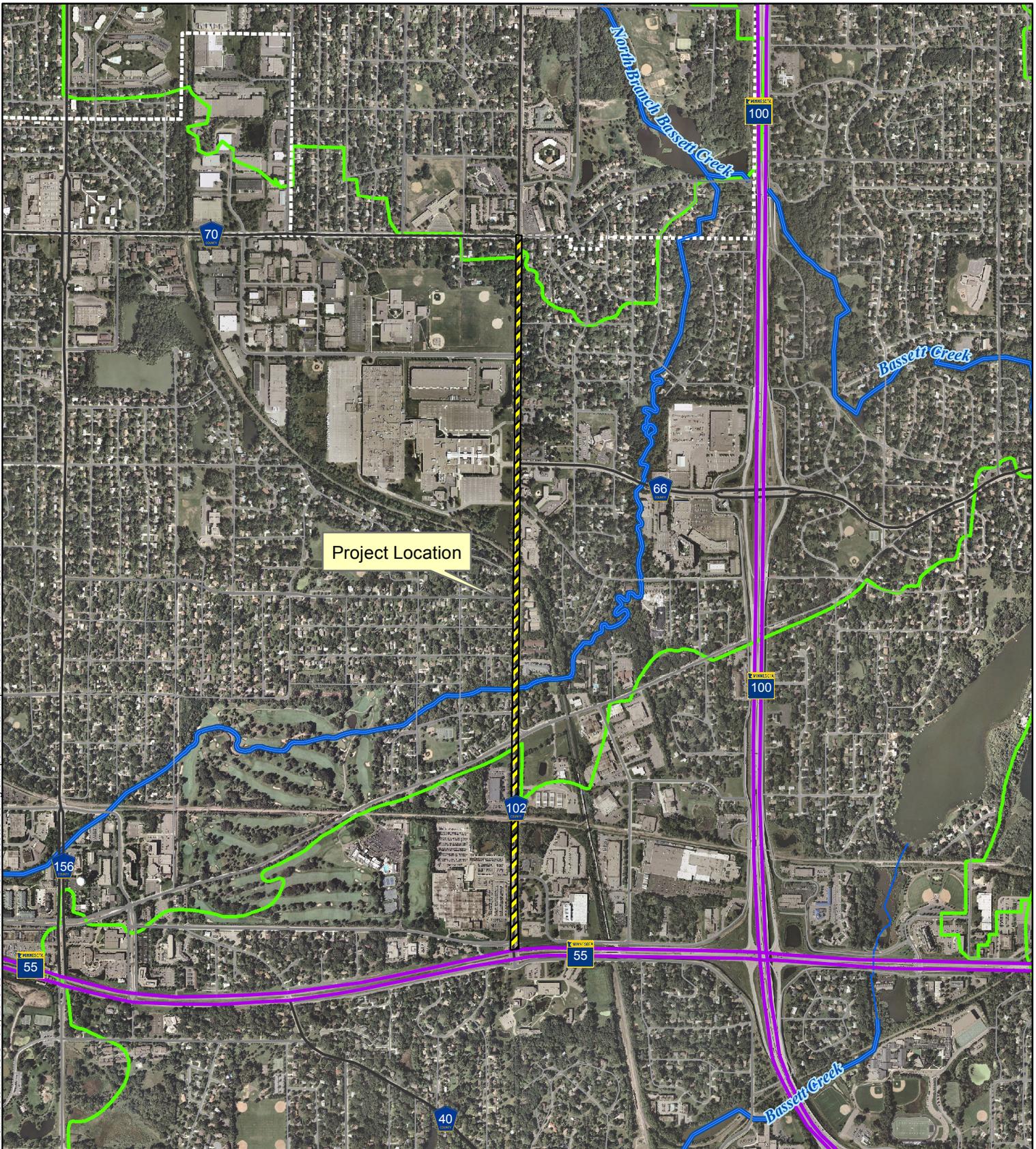
Erosion and Sediment Control

Since the area to be graded is greater than 10,000 square feet, the proposed project must meet the BCWMC erosion control requirements. Proposed temporary erosion control features include silt fence, rock construction entrances, and inlet protection.

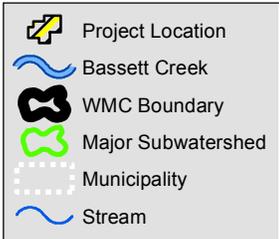
Recommendation

Conditional approval based on the following comments:

1. Section XI.D of the submittal includes improvement plans for the Sandburg Learning Center Athletic Fields, which are dated May 18, 2015. The BCWMC reviewed improvements for the Sandburg Learning Center Athletic Fields as Application #2015-12. The approved plans are dated June 16, 2015. The approved/most recent set of plans needs to be included with the submittal and be consistent with the proposed irrigation plans.
2. A maintenance plan for the infiltration system must be developed.
3. Revised hard copy drawings must be provided to the BCWMC Engineer for final review and approval.



Imagery Source: Aerial Express (2009)



Feet



**LOCATION MAP
APPLICATION 2015-32
Douglas Drive Project
Golden Valley, MN**