

## Memorandum

To: Bassett Creek Watershed Management Commission  
From: Barr Engineering Co.  
Subject: Item 5A – Briarwood/Dawnview Water Quality Improvement Project (CIP BC-7), 50% Plan Set Review  
BCWMC March 20, 2014 Meeting Agenda  
Date: March 12, 2014  
Project: 23270051 2014 629

### 5A. Briarwood/Dawnview Water Quality Improvement Project (CIP BC-7), 50% Plan Set Review

#### Summary

**Proposed Work:** Briarwood Nature Area Water Quality Improvement Project (CIP BC-7)

**Basis for Commission Review:** 50% plan review

**Change in Impervious Surface:** N.A.

**Recommendation:** Conditional Approval

The Briarwood/Dawnview water quality improvement project (CIP BC-7) is being funded by the BCWMC's ad valorem levy (via Hennepin County). The plans for the improvements are at the 50% stage, and the City of Golden Valley provided the plans to the BCWMC for review and comment, as set forth in the BCWMC CIP project flow chart developed by the TAC.

#### **Feasibility Study Summary**

The City of Golden Valley completed the Briarwood/Dawnview Water Quality Improvement Project Feasibility Report (WSB, April 2013) to evaluate options for improving the water quality discharged from a 184-acre single family residential watershed into the Bassett Creek Main Stem. Five potential projects were identified in the feasibility study.

#### **Selected Project**

The BCWMC selected Option 5 from the feasibility study for construction, because it would remove the largest amount of total suspended solids and total phosphorus per year. The goal of the selected project is to reduce the phosphorus loading to Bassett Creek downstream of Highway 100 by an estimated 94 pounds per year. The 50-percent plans for the Briarwood/Dawnview Water Quality Improvement Project include a proposed pond with an iron enhanced sand filter located south of Dawnview Terrace and east of Highway 100. Review of the 50% submittal indicates the project is generally consistent with the feasibility study.

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Primary design features of the proposed pond, as shown on the 50% plans include:

- An 18-inch pipe will intercept runoff from the existing storm sewer under Dawnview Terrace and direct runoff through the proposed pond.
- The proposed pond has a bottom elevation of 835.0 feet, and provides 1.35 acre-feet of water quality (“dead”) storage.
- An iron-enhanced sand filter will be placed at elevation 842.0 ft. in the proposed pond to provide enhanced water quality treatment. The filter will be triangular-shaped, approximately 30’ wide and 145 feet long, and cover an area of 3,500 square feet.
- Discharge from the pond will be controlled by a weir at elevation 842.5 ft., with an overflow elevation of 844.0 feet.

According to information provided by the city’s consultant, the project is anticipated to achieve reductions in total phosphorus ranging from 47 – 69 pounds per year and reductions in total suspended solids ranging from 13.5 – 15 tons per year. These pollutant reductions are lower than the feasibility study estimated. The city’s consultant provided the following potential explanations for the changes in the estimated pollutant reductions between the feasibility study and the 50% design:

- Pond size
- Size of iron-enhanced sand filter—currently slightly smaller in the 50% plan than in the Feasibility study
- Elimination of two inlet pipes to the pond— the feasibility study identified three inlet locations; the 50% design plans identify one inlet location
- Reduction of inlet capacity to reduce the flow velocities discharging into the pond:
  - Feasibility study identified three 30” RCP pipes
  - Current 50% design (P8 model) identifies one 18” RCP
- Differences in the pond normal water level between the feasibility study and the 50% design plans:
  - Feasibility study identified a 845 normal water level
  - Current 50% design (P8 model) identifies a 842 normal water level

The city anticipates that the pond size, depth, normal water level and precise location, along with the iron-enhanced sand filter size and location could change as they move through the design process.

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## **Recommendations**

Conditional approval of 50% drawings and authorize the City of Golden Valley to proceed with final plans and contract documents. Although we understand these drawings are still preliminary, note the following initial review comments.

1. The updated P8 water quality model should be provided to the BCWMC Engineer for review.
2. Pretreatment in the form of grit chambers, swales with check dams, filter strips, or sediment forebays/traps should be considered.
3. The pond outlet pipe must discharge at a downstream direction along the creek.
4. Revised manhole details must be provided on the 90% plans submittal.
5. Revised plans must be submitted to the BCWMC engineer for review.