

Memorandum

To: Bassett Creek Watershed Management Commission
From: Barr Engineering Co.
Subject: Item 5H. Consider Approval of 50% Plans for Honeywell Pond Expansion Project (BC-4), Golden Valley
BCWMC September 17, 2015 Meeting Agenda
Date: September 9, 2015
Project: 23270051 2015 632

5H. Consider Approval of 50% Plans for Honeywell Pond Expansion Project (BC-4), Golden Valley

Summary:

Proposed Work: 2016 Honeywell Pond Enhancement/Improvements (CIP BC-4)

Basis for Commission Review: 50% Design Review

Change in Impervious Surface: N.A

Recommendations:

- 1) Conditional approval of 50% drawings
- 2) Authorize the City of Golden Valley to proceed with final plans and contract documents

The 2016 Honeywell Pond Enhancement/Improvement Project (CIP BC-4) will be funded by the BCWMC's ad valorem levy (via Hennepin County). The City of Golden Valley provided the 50% design plans to the BCWMC for review and comment, as set forth in the BCWMC CIP project flow chart.

Feasibility Study Summary

The City of Golden Valley's *Feasibility Report for the Honeywell Pond Enhancement/Improvement Project* (WSB, July 14, 2015) examines the feasibility of several enhancement/improvement projects in the Honeywell Pond and nearby areas that will provide treatment of runoff from the watershed. Additional improvement alternatives were evaluated to reduce runoff rate, reduce runoff volume, and provide habitat enhancements in the area. The improvement options selected for implementation will be constructed as part of the Douglas Drive Improvement Project, scheduled for construction in 2016.

The feasibility report identified three improvement options for the Honeywell Pond and nearby areas, including:

- Option 1 – Expansion of Honeywell Pond, construction of a low flow diversion system from Douglas Drive, and establishment of a buffer/habitat around the perimeter of the pond.

To: Bassett Creek Watershed Management Commission
From: Barr Engineering Co.
Subject: Item 5H. Consider Approval of 50% Plans for Honeywell Pond Expansion Project (BC-4), Golden Valley
Date: September 9, 2015
Page: 2
Project: 23270051 2015 632

- Option 2a – Construction of a lift station and force main to Sandburg Learning Center Ball Fields for irrigation, with a stub for irrigation at the Honeywell site and a force main to the south infiltration system (to be constructed as part of the Douglas Drive Project).
- Option 2b – Construction of a lift station and force main to Sandburg Learning Center Ball Fields for irrigation and a force main to the south infiltration system (to be constructed as part of the Douglas Drive Project). Assumes no irrigation at the Honeywell site.
- Option 3 – Combination of Option 1 and either Option 2a or Option 2b

At their November 19, 2014 meeting, the Commission approved the City of Golden Valley's final feasibility study for this project, and selected implementation of Option 3 (combination of Option 1 and either Option 2a or Option 2b).

50% Design Review Summary

The 50% design plans include the designs for Option 3 (Option 1 and Option 2b above), which includes the expansion of Honeywell Pond, the low flow diversion from the storm sewer along Douglas Drive to the Honeywell Pond and the installation of a pump station and force main to irrigate the Sandburg Ball Field with water from Honeywell Pond. The plans included with the 50% submittal only include the Honeywell Pond grading/contours, the force main alignment along Douglas Drive, and the low flow diversion structure details. Also included in the 50% design plan set are components of a larger city project that are outside the scope of the BCWMC CIP project and will require review as part of the BCWMC project review program, including:

- a force main to pump water from Honeywell Pond to an infiltration system south of the pond along Douglas Drive

Option 1 includes the expansion of the dead storage in Honeywell Pond to improve water quality treatment and the diversion of low flows from the storm sewer along Douglas Drive into Honeywell Pond to provide additional treatment before discharging to Bassett Creek. As recommended during the feasibility study review, the proposed pond expansion incorporates more of an undulating/natural edge and includes a 10:1 safety bench as part of the design. Based on review of the proposed condition XP-SWMM model and the plans sheets provided (Sheet DRD1 of 220), it appears that the low flow diversion is modeled as included on the plan sheets.

Option 2b includes the installation of a pump station on the north side of Honeywell Pond and a 4" force main to the north to irrigate 17 acres at the Sandburg Ball Fields. The force main will connect to an existing irrigation system. The proposed system will pump water from the normal water level (NWL) to 1.5 feet below the NWL in Honeywell Pond and use this water for irrigation, at a rate of approximately 1 inch per week during the typical irrigation season (May through September). Plans and design details for the force main to the Douglas Drive infiltration system (not part of the BCWMC CIP) were not included in the

To: Bassett Creek Watershed Management Commission
From: Barr Engineering Co.
Subject: Item 5H. Consider Approval of 50% Plans for Honeywell Pond Expansion Project (BC-4), Golden Valley
Date: September 9, 2015
Page: 3
Project: 23270051 2015 632

50% submittal. However, the water balance submitted to evaluate pumping from Honeywell Pond included both the irrigation of the Sandburg ball fields and pumping to the Douglas Drive infiltration system. For the Douglas Drive infiltration system, the daily demand used in the water balance assumes that 4 inches of water will be applied to the proposed infiltration area of 0.11 acres (as outlined in Table 3 in the city consultant's 9/1/2015 letter) each day, or 8 inches every two days. The assumed infiltration rate of 0.4 inches/hour is typical of hydrologic soil group B soils. Assuming this infiltration rate, the pumped volume is expected to be drawn down within 24 hours.

Below is a comparison of the estimated water quality treatment (annual total phosphorus (TP) removal) as provided in the feasibility study and the 50% design plans:

	Honeywell Pond Expansion	Irrigation of Sandburg Ball Fields	Pumping to Douglas Drive Infiltration System
Feasibility Study (July 2015)	51.6	5.77-11.54	2.04-4.08
50% Design Plans	60.9 ¹	12.3 ²	2-4 ²

1 – The flood pool volume as entered in the submitted P8 model is 29.52 acre-ft. Based on the proposed storage curve for the Honeywell Pond, the estimated flood pool is 24.9 acre-ft. The flood pool in the P8 model was revised and rerun and resulted in a similar annual TP removal (60.9 lbs/year); however, this value should be revised in the final P8 modeling.

2 – The daily water balance was provided (see comments in item 4-c below). The total phosphorus removal calculations were not included. Based on the estimated annual volume of water used for irrigation of Sandburg ball fields and the Douglas Drive infiltration basin (applied May through September only), we applied a total phosphorus concentration of 150 ug/L to this volume and estimated an annual removal of 14 pounds of total phosphorus per year (which aligns with the estimate in the table above)

The submitted drawings were at a 50% design stage, which means there are a number of details yet to be worked out before the design is final. Based on the review of the 50% design plans, the narrative and summary included in the letter to the Commission dated September 1, 2015, and follow-up conversations with the city's consulting engineer, the Commission Engineer expects the majority of the comments below to be addressed in the 90% design stage drawings.

Recommendations

A. Conditional approval of 50% drawings based on the following comments, recognizing that the current plans are preliminary:

1) Item 1 General Pond Design

- a. Provide an erosion and sediment control plan in accordance with the BCWMC document *Requirements for Improvements and Development Proposals*.

- b. The erosion and sediment control plan must incorporate the following notes and features:
 - i. Erosion control features must be installed and maintained for the duration of site construction until pavement surfaces have been installed and/or final turf establishment has been achieved.
 - ii. Site-access roads must be graded or otherwise protected with silt fences, diversion channels, or dikes and pipes to prevent sediment from leaving the site via the access roads. Vehicle tracking of sediment from the construction site (or onto streets within the site) must be minimized by installing rock construction entrances (with a berm with a minimum height of 2 feet above the adjacent roadway and with maximum side slopes of 4:1), rumble strips (mud mats), wood chips, wash racks, or equivalent system at each site access.
 - iii. Soils tracked from the site by motor vehicles must be cleaned daily (or more frequently, as necessary) from paved roadway surfaces throughout the duration of construction.
 - iv. Temporary or permanent mulch must be uniformly applied by mechanical or hydraulic means and stabilized by disc-anchoring or use of hydraulic soil stabilizers.
 - v. A temporary vegetative cover must be provided consisting of a suitable, fast-growing, dense grass seed mix spread at 1.5 times the usual rate per acre. If temporary cover is to remain in place beyond the present growing season, two-thirds of the seed mix shall be composed of perennial grasses.
- 2) Item 2 Low Flow Diversion Structure
 - a. Provide the proposed storm sewer alignment along Douglas Drive to Honeywell Pond and to the connection point to the existing storm sewer downstream of Honeywell Pond with the next submittal.
- 3) Item 3 TP Removals
 - a. Modeling or other documentation must be provided at the 90% design plan submittal to confirm the expected water quality benefit of all components of the design.
- 4) Item 4 Pumping for Irrigation of Sandburg Fields
 - a. Provide figure showing the 17 acres identified for irrigation and any soils information available for the Sandburg ball fields irrigation area.
 - b. Provide plans and details of the pump/lift station on the north side of Honeywell Pond as shown on sheet FM1 of 220, including the pump details and expected pumping rate for irrigation.
 - c. Provide details of the proposed treatment (e.g. filtration, UV) prior to use for irrigation. The level of treatment for particulate removal should be based on the existing irrigation

To: Bassett Creek Watershed Management Commission
From: Barr Engineering Co.
Subject: Item 5H. Consider Approval of 50% Plans for Honeywell Pond Expansion Project (BC-4), Golden Valley
Date: September 9, 2015
Page: 5
Project: 23270051 2015 632

equipment needs and nozzle sizes and address public health risk concerns. Additionally, we recommend the incorporation of an online UV treatment system sized for the expected flow rate to address any public safety concerns in relation to pathogens. Other items to consider are timing of irrigation to minimize contact with stormwater and signage indicating that water being used to irrigate the fields is non-potable. Also, details on the connection to the existing irrigation system including details for features that address plumbing code requirements that prevent cross contamination of the potable water supply must be included.

- d. The water balance model must be revised to address the following comments and reflect the final design of the Sandburg ball field irrigation and Douglas Drive infiltration systems:
 - i. The total watershed area to Honeywell Pond is entered as 620 acres with 35 percent imperviousness. As indicated in Table 1 of the city consultant's letter dated 9/1/2015, the proposed watershed to the Honeywell Pond is 768 acres. The water balance model must be revised to reflect the expected contributing watershed.
 - ii. The water balance model uses the SCS methodology to estimate the watershed runoff volume. Using a pervious curve number of 61, the estimated initial abstraction from pervious surfaces should be 1.27 inches, rather than the 1.45 inches used in the water balance. Also, using an impervious curve number of 98, the estimated initial abstraction from impervious surface should be 0.04 inches, rather than the 0.07 inches used in the water balance.
 - iii. In the daily water balance, there is a column called "Treatment Plant Backwash Tank" that adds in 75,000 gallons to Honeywell Pond weekly. Explain the source of this volume of water or delete this volume from the water balance calculations.
 - iv. Incorporate the estimated total phosphorus removal calculations in the water balance model, including the assumed total phosphorus concentrations used to estimate the removals.
 - e. Document whether or not a Minnesota Department of Natural Resources (MnDNR) water appropriations permit is required based on the proposed use. As required in the BCWMC Plan, the BCWMC will need to review the proposed appropriations requests.
- 5) Item 5 Additional Stormwater Management with Douglas Drive
- a. Provide plans and details of the infiltration basin, forcemain, and pump/lift station for the Douglas Drive infiltration project, including the basin grading and storage, native soil information and/or proposed soil media, underdrain details (if applicable), pump size and rate. Additionally, confirm if the pumping to the Douglas Drive infiltration system will occur beyond the May through September period.

To: Bassett Creek Watershed Management Commission
From: Barr Engineering Co.
Subject: Item 5H. Consider Approval of 50% Plans for Honeywell Pond Expansion Project (BC-4), Golden Valley
Date: September 9, 2015
Page: 6
Project: 23270051 2015 632

- b. The proposed infiltration basin design must meet the criteria outlined in the BCWMC's Requirements for Improvements and Development Proposals.
- B. Authorize the City of Golden Valley to proceed with final plans and contract documents; note that the parts of the project outside the scope of the BCWMC CIP will require separate review as part of the BCWMC project review program.