



## Memorandum

**To:** Bassett Creek Watershed Management Commission  
**From:** Barr Engineering Co.  
**Subject:** Item 5C. Consider Approval of 90% Plans for Four Seasons Mall Area Water Quality (Agora) Project (2013 CIP NL-2), Plymouth  
BCWMC August 17, 2017 Meeting Agenda  
**Date:** August 9, 2017  
**Project:** 23270051 2017 623

### 5C. Consider Approval of 90% Plans Four Seasons Mall Area Water Quality (Agora) Project (2013 CIP NL-2), Plymouth

#### Summary

**Proposed Work:** Four Seasons Mall Area Water Quality (Agora) Project (2013 CIP NL-2)

**Basis for Commission Review:** 90% plan review

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

#### **Recommendation:**

- 1) Conditional approval of 90% drawings
- 2) Authorize BCWMC Engineer to provide administrative approval after final plans have been revised and comments have been sufficiently addressed.

The Four Seasons Mall Area Water Quality (Agora) Project (2013 CIP NL-2) is located in the Northwood Lake subwatershed, southwest of the TH 169 and Rockford Road interchange. The Agora CIP project will be funded by the BCWMC's ad valorem levy, already collected by Hennepin County. The Agora developer's consultant provided the 90% design CIP plans to the BCWMC for review and comment, as set forth in the BCWMC CIP project flow chart.

#### **General Background & Comments**

At their December 2016 meeting, the Commission took action to contribute up to \$830,000 of Four Seasons Mall Area Water Quality Treatment Project CIP funds for "above-and-beyond" stormwater management practices to be provided at the Agora development site (on the old Four Seasons Mall location) and the adjacent wetland to the south of the site. At that time, it was estimated that the proposed stormwater management practices would remove 109 pounds of phosphorus above-and-beyond the BCWMC's requirements.

At their January 2017 meeting, the Commission took action directing staff to enter into an agreement directly with the developer, Rock Hill Management. At their February meeting, the Commission approved an agreement with Rock Hill Management and a separate agreement with the City of Plymouth allowing the developer access to a city-owned parcel to construct a wetland restoration project and to ensure ongoing maintenance of the CIP project components. The agreements were executed in February. The

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agreement between BCWMC and Rock Hill Management requires that the CIP project remove at least 100 pounds of total phosphorus (TP) above-and-beyond the BCWMC requirements for the Agora development project.

Also at their February meeting, the Commission conditionally approved the Agora development project as part of the BCWMC project review program. Although the entire development site was reviewed separately, the stormwater best management practices (BMPs) on the development site that provide above-and-beyond treatment are part of the CIP project and are therefore part of this 90% CIP review.

## **90% Design Review Summary**

The Agora CIP project is closely connected to the Agora development project. The Agora CIP project includes the wetland restoration south of the Agora development site and the BMPs on the development site that provide above-and-beyond treatment, most notably the stormwater pond with iron-enhanced filter bench at the south end of the Agora site (see attached plan sheets). The structural BMPs on the Agora development site include: two iron-enhanced sand filtration basins, two filtration basins, one infiltration basin with amended soils to peat layer, permeable pavers with subsurface storage, a wetland walk with plant uptake, and a stormwater pond with an iron-enhanced sand filter bench. The 90% design CIP plans, along with the Agora development plans indicate that the Agora CIP project will provide 100.76 pounds of annual TP removal above-and-beyond the TP removal required for the Agora development project. This meets the TP removal requirement of the agreement between BCWMC and Rock Hill Management.

Per the Commission Engineer's recommendation, the 90% design optimizes the wetland restoration and constructed stormwater pond designs by directing more flows through the stormwater pond, which takes advantage of the additional treatment provided by the pond (and the iron-enhanced sand filter), reduces the flowrates and velocities entering the wetland restoration, and directs more flows to the west end of the wetland restoration (prevents short-circuiting).

Under existing conditions, the wetland receives flows from the North Branch of Bassett Creek, the Four Seasons Mall site, Lancaster Lane, and the drainage area south and west of Lancaster Lane. Under proposed conditions, the stormwater runoff from the Agora development site will be initially routed to various structural BMPs on the Agora development site, then, along with low flows from the North Branch of Bassett Creek, stormwater will be routed into the proposed stormwater pond. The proposed stormwater pond will discharge to the wetland through an outlet control structure on the northeast side of the wetland. High flows from the North Branch of Bassett Creek will overtop a shallow berm, bypass the stormwater pond, and discharge into the wetland in the northeast corner. Stormwater runoff from Lancaster Lane and the drainage area south and west of Lancaster Lane will remain the same.

The TP removal for each BMP is summarized in Table 1 below:

**Table 1. BMP Total Phosphorus (TP) Removal Summary**

<b>BMP Name</b>	<b>TP Loading (lbs/yr)</b>	<b>TP Removal (lbs/yr)</b>	<b>Percent Removal<sup>1</sup></b>
P1 Iron enhanced sand filter basin	29.46	12.91	44%
P2 Iron enhanced sand filter basin	5.50	3.78	69%
P4 Infiltration basin with amended soils to peat layer	3.81	3.51	92%
P5a Permeable pavers (west)	0.93	0.57	61%
P5b Underground storage beneath permeable pavers (west)	2.02	2.02	100%
P6a Permeable pavers (east)	0.97	0.65	67%
P6b Underground storage beneath permeable pavers (east)	1.68	1.68	100%
P7 Wetland walk with plant uptake	2.61	0.78	30%
P8 Filtration basin	0.96	0.66	69%
P9 Filtration basin	0.64	0.44	68%
P10b Constructed stormwater pond with sediment forebay and IESF bench:			
• onsite loading	9.89	7.42	75%
• off-site loading – from North Branch	99.11	42.48	43%
<b>P10b Subtotal</b>	<b>109.00</b>	<b>49.90</b>	<b>46%</b>
<b>AGORA DEVELOPMENT SITE SUBTOTAL</b>	157.59	76.90	49%
Wetland Restoration (remaining offsite loading – from North Branch)	56.64	2.08	4%
Wetland Restoration (offsite loading – from West)	125.76	47.80	38.0%
<b>AGORA WETLAND RESTORATION SUBTOTAL</b>	182.40	49.88	27%
<b>TOTAL (AGORA DEVELOPMENT SITE AND WETLAND RESTORATION)</b>	283.34	126.78	45%
Minus Agora Development treatment requirement		14.35	
Minus Agora wetland existing treatment		11.67 <sup>2</sup>	
<b>ABOVE-AND-BEYOND TREATMENT TOTAL</b>	283.34	100.76	35%

<sup>1</sup>Percent Removal is calculated as TP Removal divided by TP Loading, this calculation does not distinguish between onsite and offsite drainage.

<sup>2</sup>Monitoring data suggest the existing treatment provided by the wetland could be much lower.

The agreement between BCWMC and Rock Hill Management (RHM, Agora developer) requires that the developer develop and record “an operations and maintenance plan to provide for the ongoing maintenance of the stormwater improvements constructed on the Agora Parcel, which will include a chloride management plan.” The plan has not yet been submitted to the Commission Engineer for review.

According to the agreement between BCMWMC and RHM, the Commission will reimburse the developer for costs incurred to construct the Project, up to a maximum of \$848,148 (from BCWMC CIP funds). Table 2 below summarizes the estimated cost of the stormwater BMPs for the project. As shown in the table, the total estimated cost to construct all of the BMPs is \$1,610,735. Subtracting out from Table 2 the items not included in Table 1, the total estimated cost is \$1,545,735.

**Table 2. BMP Construction Cost Estimates**

<b>BMP Name</b>	<b>Cost Estimate</b>
P1 Iron enhanced sand filter basin	\$90,000.00
P2 Iron enhanced sand filter basin	\$70,000.00
P3 Swale <i>(not included in Table 1 above)</i>	\$15,000.00
P4 Infiltration basin with amended soils to peat layer	\$0
P5 Permeable pavers with underground storage (west)	\$240,162.50
P6 Permeable pavers with underground storage (east)	\$240,162.50
P7 Wetland walk	\$336,910.00
P8 Filtration basin	\$29,250.00
P9 Filtration basin	\$29,250.00
P10a+b Sediment forebay for stormwater pond	\$50,000.00
P10c Constructed stormwater pond with IESF bench:	\$225,000.00
Wetland Restoration	\$235,000.00
Other pre-treatment items (sump manholes, pipes, SAFL Baffles, etc.) <i>(not included in Table 1 above)</i>	\$50,000.00
<b>Total Estimated Costs</b>	<b>\$1,610,735.00</b>

## Recommendations

- A. Authorize BCWMC Engineer to provide administrative approval after final plans have been revised and comments have been sufficiently addressed.
- B. Conditional approval of 90% drawings based on the following comments:
  - 1) An operations and maintenance plan must be submitted that provides for the ongoing maintenance of the stormwater improvements constructed on the Agora Parcel, and includes a chloride management plan.
  - 2) The plans must show how flows entering the wetland restoration area from the North Branch of Bassett Creek and from the storm sewer flows from the west will be managed during construction.
  - 3) The developer must obtain all required local, state, and federal permits for the project.
  - 4) Outstanding comments from the BCWMC's June 9, 2017 letter regarding the Agora development site (BCWMC application review #2017-01) must be addressed prior to final BCWMC approval of the Agora CIP project plans. (Note: the Commission Engineer reviewed the floodplain information submitted as part of the 90% design review; any concerns will be addressed as part of the Agora development project re-submittal review).
  - 5) The final plans must be submitted to the BCWMC Engineer for review and approval after modifications have been completed.