

Memorandum

To: Bassett Creek Watershed Management Commission
From: Barr Engineering Co.
Subject: Item 5C – Consider Approval of Southwest Light Rail Transit (SWLRT) Project –
Minneapolis
BCWMC December 15, 2016 Meeting Agenda
Date: December 7, 2016
Project: 23270051 2016 2083

5C Consider Approval of Southwest Light Rail Transit (SWLRT) Project – Minneapolis BCWMC 2016-17

Summary:

Proposed Work: Construction of a new LRT project along a corridor from Minneapolis to Eden Prairie, including stations, tracks, and park & ride features

Basis for Commission Review: Linear (tracks and stations) construction project disturbing over 5 acres

Impervious Surface Area: Increase in impervious area by approximately 1.3 acres

Recommendation:

- (1) Approval
- (2) Extend approval expiration date through December 2021

General Background & Comments

(Note: As described later in this memo, the Commission approved SWLRT's requested connection to the new Bassett Creek tunnel at their March 17, 2016 meeting. A condition of that approval was that "drawings and supporting information must be submitted to the BCWMC Engineer for separate review as part of the BCWMC project review program." The Commission reviewed the SWLRT project at their June 16, 2016 meeting. The Commission did not approve the project plans, but they directed BCWMC staff to submit comments to the project proposer and to bring revised SWLRT project plans to the Commission at a future meeting, at which time the Commission would also consider extending the approval expiration date through December 2020. The SWLRT project team submitted revised plans in response to the BCWMC's comments.)

The proposed SWLRT project is a 16-mile extension of the Green Line/Central Corridor LRT. The SWLRT project requests that the BCWMC extend the review approval through December 31, 2021. This is longer than the 2 years allowed upon issuance of a BCWMC approval, per the September 2015 BCWMC Requirements for Improvements and Development Proposals (Requirements) document. The extension request is also one year longer than requested with the previous submittal, due to revenue service projected to begin in 2021, rather than 2020.

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Approximately two miles of the proposed SWLRT project corridor falls within the boundaries of the Bassett Creek watershed, in the City of Minneapolis. Within the Bassett Creek watershed, the project includes freight rail, light rail, paved trails, associated support facilities, and two stations. The three project segments within the Bassett Creek watershed are Segments E4-1A, E4-1B, and E4-2 (see attached map). The SWLRT project team submitted a separate stormwater management plan for each segment; they also provided project-wide construction plans and a Stormwater Pollution Prevention Plan (SWPPP).

The entire project will disturb approximately 485 acres and will increase the imperviousness by 37.9 acres, from 196.1 acres to 234 acres (19.3% increase). For the segments within the Bassett Creek watershed, the following table summarizes the project segment, the general scope of the work, the watershed area, and the existing and proposed imperviousness. In the Bassett Creek watershed, the proposed project would result in a net increase of 1.3 acres in impervious area over existing conditions.

<i>Project Segment</i>	<i>General Scope</i>	<i>Existing Total Watershed Area (ac)</i>	<i>Existing Impervious Area (ac)</i>	<i>Proposed Total Watershed Area (ac)</i>	<i>Proposed Impervious Area (ac) (Change from Existing)</i>
E4-1A	Reconstruction of bike/ped trail, LRT tracks, Bryn Mawr Station and ped bridge, passenger drop off lane, side walk additions and safety improvements at Wayzata Blvd and Penn Ave	58.3	11.9	58.3	14.3 (+2.4)
E4-1B	Reconstruction of bike/ped trail, LRT tracks, Bassett Creek Valley (BCV) station, ped bridge from Luce Line Trail to (BCV) Station, and passenger drop off lane	37.4	25.3	37.5	23.0 (-2.3)
E4-2	Conversion of existing corridor to a combined parallel freight rail, ped trail, LRT guideway section, Glenwood LRT Bridge, replacement of adjoining Glenwood Ave bridge decks	9.7	3.8	9.6	5.0 (+1.2)
Bassett Creek Watershed Totals		105.4	41	105.4	42.3 (+1.3)

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Floodplain

The project does not involve work in the Bassett Creek 100-year floodplain.

Wetlands

The City of Minneapolis is the LGU for administering the Minnesota Wetland Conservation Act (WCA). According to the application, the SWLRT project within the Bassett Creek watershed will not impact any wetlands. No wetlands were identified within Segment E4-1B or Segment E4-2. Segment E4-1A contains DOT-MPL-11, a PEMC Type 3 shallow marsh that is part of the highway drainage system per the SWLRT project team's 10-02-2014 Wetland Delineation Report. This wetland is a regional MnDOT-owned treatment pond and is located south of the proposed drop-off lane for access to Bryn Mawr Station southeast of Penn Ave. S and I-394. According to the segment E4-1A stormwater management plan, it is the SWLRT project team's understanding that the pond is not subject to WCA regulation because it was created incidentally as part of the I-394 construction in the 1980's. This needs to be confirmed by the City of Minneapolis.

Stormwater Management

The BCWMC Requirements document requires that projects containing more than 1 acre of new or redeveloped impervious area must be managed such that proposed peak flows 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 depths, using the 24-hour nested distribution. As discussed below, all proposed peak flows meet the BCWMC requirement.

Under existing conditions, the watersheds within Segments E4-1A and E4-1B ultimately drain to Bassett Creek (and the new Bassett Creek tunnel). The existing watersheds within Segment E4-2 are technically within the jurisdiction of the Mississippi Watershed Management Organization (MWMO) and ultimately drain to the old Bassett Creek tunnel; however under proposed conditions, the watersheds within Segment E4-2 will be connected to the new Bassett Creek tunnel (see additional discussion below).

For the proposed stormwater management system within the Segment E4-1A, the following table summarizes the existing and proposed peak discharges from the project area to Bassett Creek:

<i>Storm Event</i>	<i>Existing Peak Discharge (cfs)</i>	<i>Proposed Peak Discharge (cfs)</i>
2-year	21.12	19.26
10-year	47.09	45.34
100-year	115.49	115.33

For the proposed stormwater management system for Segment E4-1B, the following table summarizes the existing and proposed peak discharges from the project area to Bassett Creek:

<i>Storm Event</i>	<i>Existing Peak Discharge (cfs)</i>	<i>Proposed Peak Discharge (cfs)</i>
2-year	19.91	5.07
10-year	32.82	10.36
100-year	68.59	36.69

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For the proposed stormwater management system for Segment E4-2, the following table summarizes the existing peak discharge to the old Bassett Creek tunnel and proposed peak discharges to the new Bassett Creek tunnel. *(As part of this project, the SWLRT requested connection of the drainage from the proposed stormwater BMPs in Segment E4-2 to the new Bassett Creek tunnel near Glenwood Avenue. This tunnel connection was evaluated in December 2015-January 2016 and approved by the Commission at their March 17, 2016 meeting.)*

Storm Event	Existing Peak Discharge (cfs) (to Old Bassett Creek Tunnel)	Proposed Peak Discharge (cfs) (to New Bassett Creek Tunnel)
2-year	8.63	8.42
10-year	19.43	19.31
100-year	46.29	42.66

Water Quality Management

Within the Bassett Creek watershed, the SWLRT project is a linear project that will create one acre or greater of new and/or fully reconstructed impervious surfaces. Per the BCWMC Requirements document, the project must 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. Per the MIDS design sequence flow chart, the volume reduction techniques considered to “capture and retain” runoff are to include infiltration, rainwater harvesting and reuse, bioretention, permeable pavement, tree boxes, grass swales and/or additional techniques included in the MIDS calculator or the Minnesota Stormwater Manual (i.e., infiltration practices). If the applicant is unable to meet the performance goal due to site restrictions, the Requirements document requires that the applicant use the MIDS flexible treatment options approach, following the MIDS design sequence flow chart.

Under existing conditions, there is limited water quality treatment within the watersheds in the BCMWC that are included with SWLRT project segments E4-1A, E4-1B, and E4-2.

Per the stormwater management plan for segment E4-1A, 0.55 inches of runoff from the new and fully reconstructed impervious surfaces is the larger volume, resulting in a required “capture and retain” (infiltration) volume of 0.319 acre-feet (13,916 cubic feet). Several different BMPs are proposed within segment E4-1A, including four (4) infiltration basins and five (5) filtration basins. Because of extensive areas of contamination and shallow groundwater, infiltration was not possible at many sites. There are also several other BMPs included to provide pretreatment and/or rate control. The following summarizes the estimated filtration and infiltration volumes provided by the BMPs in segment E4-1A:

BMP Type	Volume Provided (cubic feet)
Infiltration	3,975
Filtration	19,887

Per the stormwater management plan for segment E4-1B, 0.55 inches of runoff from the new and fully reconstructed impervious surfaces is the larger volume, resulting in a required “capture and retain”

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(infiltration) volume of 0.428 acre-feet (18,647 cubic feet). Several different BMPs are proposed within segment E4-1B including four (4) infiltration basins and four (4) filtration basins. Because of extensive areas of contamination, infiltration was not possible at many sites. The following summarizes the estimated filtration and infiltration volumes provided by the BMPs in segment E4-1B:

<i>BMP Type</i>	<i>Volume Provided (cubic feet)</i>
Infiltration	4,766
Filtration	36,873

Per the stormwater management plan for segment E4-2, 0.55 inches of runoff from the new and fully reconstructed impervious surfaces is the larger volume, resulting in a required “capture and retain” (infiltration) volume of 0.139 acre-feet (6,073 cubic feet). Several different BMPs are proposed within segment E4-2 including two (2) infiltration basins and one (1) filtration basin. Because of contamination, infiltration was not possible at all sites. The following summarizes the estimated filtration and infiltration volumes provided by the BMPs in segment E4-2:

<i>BMP Type</i>	<i>Volume Provided (cubic feet)</i>
Infiltration	5,823
Filtration	2,515

The MIDS calculator was used to evaluate the proposed stormwater BMPs intended to improve water quality and the SWLRT project team summarized the results in the Stormwater Management Plans they submitted for each segment within the Bassett Creek watershed.

For segment E4-1A, because of the lack of space within the right-of-way, extensive contamination, and areas of high groundwater, the project is pursuing Flexible Treatment Option (FTO) Alternative Number 2, in accordance with the MIDS Design Flow Chart. FTO No. 2 includes achieving volume reduction to the maximum extent practical, removing 60 percent annual total phosphorus load, and considering relocation of project elements to address varying soil conditions and other constraints across the site. However, as summarized in the Stormwater Management Plan for Segment E4-1A (October 21, 2016), the proposed stormwater management system in segment E4-1A does not meet MIDS FTO No. 2. However, the combined total phosphorus removal of segments E4-1A, E4-1B, and E4-2 (the other segments within the Bassett Creek watershed) is 61%, achieving the total phosphorus removal required by MIDS FTO No. 2 through the application of FTO No. 3, which allows for offsite mitigation (in segments E4-1B and E4-2) to meet the performance goal.

For segment E4-1B, because of the lack of space within the right-of-way, extensive contamination, and areas of high groundwater, the project is pursuing FTO No. 2, in accordance with the MIDS Design Flow Chart. As summarized in the Stormwater Management Plan for Segment E4-1B (October 11, 2016), the proposed stormwater management system in segment E4-1A meets MIDS FTO No. 2.

For segment E4-2, because of contamination limiting infiltration in the area, the project is pursuing FTO No. 2, in accordance with the MIDS Design Flow Chart. As summarized in the Stormwater Management Plan for Segment E4-2 (October 11, 2016), the proposed stormwater management system in segment E4-2 meets MIDS FTO No. 2.

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<i>Segment</i>	<i>Average Annual TSS Removal (%)</i>	<i>Average Annual TP Removal (%)</i>
E4-1A	61	59
E4-1B	88	62
E4-2	76	61
Combined Removal	77	61

Erosion and Sediment Control

Since the area of land disturbance (for linear projects) is greater than one acre, the proposed project must meet the BCWMC construction erosion and sediment control requirements. Proposed temporary erosion control features include: silt fence, sediment control logs, floating silt fence, rock construction entrances, erosion control blanket, and inlet protection.

Review Process

Section 3.1 (8) of the BCWMC Requirements document states that “application approvals expire two years from the date of approval.” Due to the revenue service currently projected to begin in 2021, the SWLRT requests that the BCWMC extend the approval through December 2021.

Recommendation

- (1) Approval
- (2) Extend approval expiration date through December 2021