

Memorandum

To: Bassett Creek Watershed Management Commission (BCWMC)
From: Barr Engineering Co. (Barr)
Subject: Item 4F – Southwest Light Rail Transit (SWLRT) Project – Minneapolis, MN
BCWMC March 21, 2019 Meeting Agenda
Date: March 14, 2019
Project: 23270051 2018 3006

4F Southwest Light Rail Transit (SWLRT) Project – Minneapolis, MN 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 Review at Commission Meeting: Linear project with more than 5 acres of disturbance and revised drainage to the new Bassett Creek tunnel

Impervious Surface Area: Increase approximately 2.6 acres

Recommendation: Conditional Approval

General Background & Comments

The proposed SWLRT project is a 16-mile extension of the Green Line/Central Corridor LRT. 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 Commission originally became involved with this project when the City of Minneapolis requested that the BCWMC consider approval of a new direct connection to the new Bassett Creek tunnel associated with the SWLRT project (March 9, 2016 letter). The Commission reviewed and conditionally approved the connection to the new Bassett Creek tunnel at its March 17, 2016 meeting. Conditions of the March 17, 2016 conditional approval are included in the recommendations.

A condition of the March 17, 2016 conditional 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 SWLRT project team submitted drawings and supporting information on May 2, 2016 and the Commission reviewed the submittal at its June 16, 2016 meeting. The Commission did not approve the project plans at their June 16, 2016 meeting, 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. The SWLRT project team submitted revised plans in response to the BCWMC’s comments on October 27, 2016 and the Commission reviewed and approved revised grading, drainage and erosion control plans at

its December 15, 2016 meeting. The Commission also extended the review approval through December 31, 2021.

Several plan revisions have occurred on the SWLRT project since the BCWMC approval in December 2016, including the addition of a corridor protection barrier between the BNSF and SWLRT tracks and expansion of the project area to include the construction of the Northstar Tail Track. These updates have resulted in revisions to drainage areas, BMP design, discharge points, rate control, and water quality treatment. This memorandum reflects the most recent submittal from the SWLRT project team.

Table 1 summarizes the three project segments within the Bassett Creek watershed. As noted in the table, the proposed project would result in a net increase of 2.6 acres in impervious area over existing conditions.

Table 1: Summary of Project Segments, Scope, Watershed Areas, and Imperviousness

Project Segment	General Scope	Existing Watershed Area (ac)	Existing Impervious Area (ac)	Proposed Watershed Area (ac)	Proposed Impervious Area (ac)	Impervious Change from Existing (ac)
E4-1A	Reconstruction of bike/pedestrian trail, LRT tracks, Bryn Mawr Station and pedestrian bridge, passenger drop off lane, sidewalk additions and safety improvements at Wayzata Boulevard and Penn Avenue, corridor protection barrier	59.5	12.5	58.3	14.3	+1.8
E4-1B	Conversion of existing corridor to a combined parallel LRT and freight rail, construction of recreation trails, pedestrian bridge from Luce Line Trail to Bassett Creek Valley (BCV) Station, BCV station, and passenger drop off lane, corridor protection barrier	37.4	25.3	37.5	23.0	-2.3
E4-2	Conversion of existing corridor to a combined parallel LRT and freight rail, pedestrian trail, Northstar tail track, Glenwood LRT Bridge, replacement of adjoining Glenwood Avenue bridge decks, Corridor protection barrier	11.9	4.9	11.9	7.8	+3.1

Wetlands

The City of Minneapolis is the local government unit (LGU) responsible for administering the Wetland Conservation Act; therefore, BCWMC wetland review is not required.

Floodplain

The proposed project does not involve work in the BCWMC 100-year floodplain; therefore, BCWMC floodplain review is not required.

Modifications to the Bassett Creek Tunnels

The 2015 Requirements document (in effect at time of 2016 approval) stated that proposed projects located within the jurisdiction of the BCWMC or the MWMO shall be submitted for BCWMC review and approval if the proposed project will increase the area tributary to the new Bassett Creek tunnel, add connections or outlets to the new Bassett Creek tunnel, or change the rate of runoff in the new Bassett Creek tunnel for the 10-year, 50-year, or 100-year event.

As part of the proposed linear project, the SWLRT requested (via the City of Minneapolis) to divert drainage from the old Bassett Creek tunnel to the new Bassett Creek tunnel for some of the proposed stormwater BMPs in Segment E4-2 near Glenwood Avenue. The Commission approved this diversion and new tunnel connection at its March 17, 2016 meeting.

Stormwater Management

At the time the SWLRT project received BCWMC approval, the BCWMC's 2015 Requirements document was in effect. The 2015 Requirements document stated that linear projects on sites without restrictions that create one or more acres of net new impervious surfaces must manage stormwater such that peak flow rates leaving the site are equal to or less than the existing rates leaving the site for the 2-, 10-, and 100-year events, based on Atlas 14 precipitation amounts and using a nested 24-hour rainfall distribution. As shown below, the proposed stormwater management system meets the BCWMC rate control requirements.

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

Table 2 summarizes the existing and proposed peak discharges from the project area within Segment E4-1A to Bassett Creek.

Table 2: Summary of existing and proposed peak discharge rates for Segment E4-1A

Discharge Point	2-year peak discharge		10-year peak discharge		100-year peak discharge	
	Existing (cfs)	Proposed (cfs)	Existing (cfs)	Proposed (cfs)	Existing (cfs)	Proposed (cfs)
Bryn Mawr Meadows Park storm sewer ¹	5.24	0	16.71	0	48.47	0
MnDOT Pond (Penn Pond), upstream of Bryn Mawr Meadows Park storm sewer ¹	11.41	14.34	20.38	34.56	41.84	89.76
Subtotal discharge to Bryn Mawr Meadows Park/MnDOT Pond	16.65	14.34	37.09	34.56	90.31	89.76
Linden Yard	3.76	3.01	9.26	5.91	23.51	12.67
Mount View Avenue	0.75	0.75	1.17	1.17	2.06	2.06

¹ The Minnesota Department of Transportation (MnDOT), the City of Minneapolis, and the Minneapolis Park and Recreation Board (MPRB) have approved rerouting the existing drainage through the Bryn Mawr Meadows Park Storm Sewer to the MnDOT Pond (Penn Pond).

Table 3 summarizes the existing and proposed peak discharges from the project area within Segment E4-1B to Bassett Creek:

Table 3: Summary of existing and proposed peak discharge rates for Segment E4-1B

Discharge Point	2-year peak discharge		10-year peak discharge		100-year peak discharge	
	Existing (cfs)	Proposed (cfs)	Existing (cfs)	Proposed (cfs)	Existing (cfs)	Proposed (cfs)
SWLRT corridor	19.91	6.14	32.82	14.41	68.59	45.22
Minneapolis run-on	23.78	16.77	42.01	38.55	82.81	79.62

Table 4 summarizes the existing and proposed peak discharges within Segment E4-2 to the old Bassett Creek tunnel and to the new Bassett Creek Tunnel.

Table 4: Summary of existing and proposed peak discharge rates for Segment E4-2

Discharge Point	2-year peak discharge		10-year peak discharge		100-year peak discharge	
	Existing (cfs)	Proposed (cfs)	Existing (cfs)	Proposed (cfs)	Existing (cfs)	Proposed (cfs)
Project drainage area to old Bassett Creek tunnel ¹	8.62	-	19.43	-	46.29	-
Project drainage area diverted from old Bassett Creek tunnel to new Bassett Creek tunnel ¹	-	8.42	-	19.31	-	42.66
Project drainage area to new Bassett Creek tunnel ²	1.79	0.78	3.69	2.61	8.26	2.65
Segment E4-2 discharge to Bassett Creek	10.41	9.20	23.12	21.92	54.55	45.31

¹ The BCWMC previously evaluated and approved the requested connection to the new Bassett Creek tunnel near Glenwood Avenue at its March 17, 2016 meeting.

² This includes the project drainage area tributary to the New Bassett Creek Tunnel from existing conditions and proposed conditions but does not include the project drainage area diverted to the New Bassett Creek Tunnel in proposed conditions.

Water Quality Management

Within the Bassett Creek watershed, the SWLRT linear project creates one acre or greater of new and/or fully reconstructed impervious surfaces. The BCWMC 2015 Requirements document (in effect at time of 2016 approval) stated that the proposed linear 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 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 2015 Requirements document stated that the applicant must use the MIDS flexible treatment options approach, following the MIDS design sequence flow chart.

According to the stormwater management plan, 0.55 inches of runoff from the new and fully reconstructed impervious surfaces results in the larger “capture and retain” volume for all three SWLRT segments within the Bassett Creek watershed. The applicant proposed volume reduction BMPs, including infiltration basins and underground infiltration systems, within the SWLRT segments and the Bassett Creek watershed. However due to limited area within the right-of-way, extensive contamination, and areas of high groundwater, the proposed linear project is unable to achieve the MIDS volume reduction goal.

For segments E4-1A, E4-1B, and E4-2, the applicant is pursuing Flexible Treatment Option 2 (FTO #2), in accordance with the MIDS Design Flow Chart. FTO #2 includes achieving volume reduction to the maximum extent practicable, removing 60 percent of the annual total phosphorus load from the new and

fully reconstructed impervious surfaces, and considering relocation of project elements to address varying soil conditions and other constraints across the site. Table 5 summarizes the MIDS volume reduction goal and volume reduction provided for segments E4-1A, E4-1B, and E4-2.

Table 5: Summary of required and provided volume reduction within the Bassett Creek Watershed

Segment	Volume Reduction Required (cubic feet)	Volume Reduction Provided (cubic feet)
E4-1A	13,916	4,731
E4-1B	18,647	9,646
E4-2	14,614	9,692
Bassett Creek Watershed	47,177	24,069

The applicant used the MIDS calculator to evaluate the proposed stormwater BMPs. Table 6 summarizes the average annual TP loading and removal for each of the project segments.

Table 6: Summary of average annual TP removal for project segments

Segment	TP Loading (lbs/year)	Required TP Removal (lbs/year)	TP Removal Provided (lbs/year)	TP Removal Provided (%)
E4-1A	16.08	9.65	11.32	70
E4-1B	29.02	17.41	17.81	61
E4-2	14.58	8.75	9.29	64
Bassett Creek Watershed	59.68	35.81	38.41	64

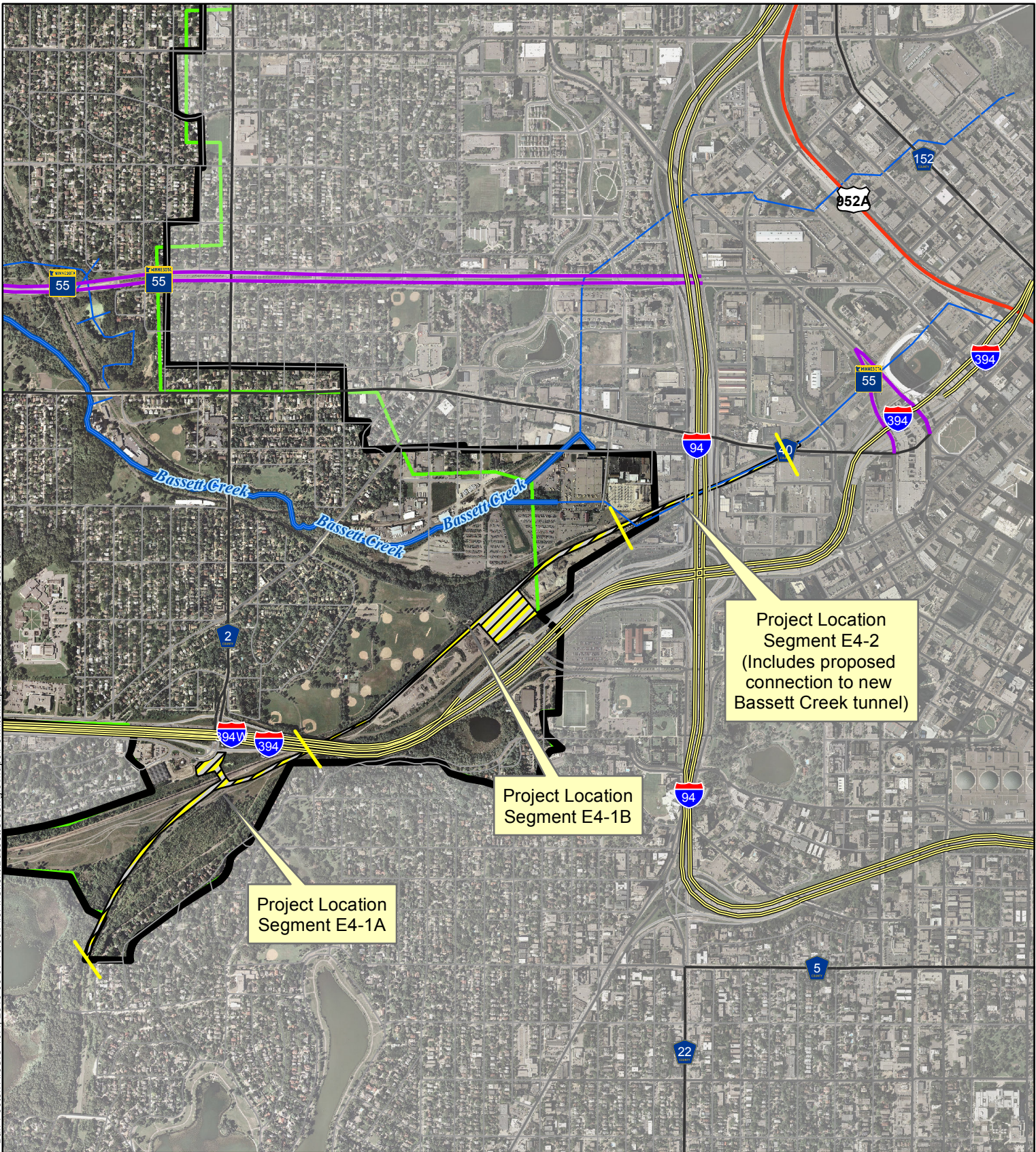
Erosion and Sediment Control

The proposed linear project involves more than one acre of land disturbance, therefore the proposed linear project must meet the BCWMC 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.







Recommendation

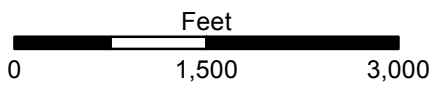
Conditional approval based on the following comments:

1. Approval for the connection to the new Bassett Creek tunnel connection and/or change in tributary area to the new Bassett Creek tunnel must be obtained from MnDOT.
2. Stormwater Management Plans for each project segment within the BCWMC jurisdiction were submitted on March 14, 2019 and thorough review has not been completed. Additional comments provided as part of the review must be addressed to the satisfaction of the BCWMC Engineer prior to final approval.
3. Revised plans and supporting information (paper copy and final electronic files) must be provided to the BCWMC Engineer for final review and approval.



Imagery Source: Aerial Express (2009)

-  Project Location
-  Bassett Creek
-  WMC Boundary
-  Major Subwatershed
-  Municipality
-  Stream



**LOCATION MAP
APPLICATION 2016-17
Southwest LRT
Minneapolis, MN**