



Memorandum

To: Bassett Creek Watershed Management Commission
From: Technical Advisory Committee
Subject: Responsibilities and Funding Mechanisms for Rehabilitation and Replacement of Flood Control Project Features
Date: July 13, 2016

At their May 19, 2016 meeting, the Commission discussed the TAC recommendations contained in the TAC's May 11, 2016 memo "Responsibilities and Funding Mechanisms for Rehabilitation and Replacement of Flood Control Project Features." Of the eight recommendations in the memo, the Commission accepted recommendations 2 – 6, but had questions regarding recommendations 1, 7 and 8. The Commission requested that the TAC come back to the Commission with more information about these recommendations and/or revised recommendations. The following paragraphs provide the recommendations as written in the TAC's May 11, 2016 memo, the Commission action/discussion from the May 19, 2016 meeting, additional information and TAC discussion, and the final TAC recommendation.

Recommendation 1:

Original recommendation from May 11, 2016 TAC memo:

1. Recommend the Commission continue an inspection and maintenance program for the FCP features. The current inspection and maintenance program (*note to Commission: this program is identified in the Bassett Creek Flood Control Project Operation and Maintenance Manual*) includes an annual inspection of all of the FCP features, except the double box culvert and the deep tunnel, an inspection at least every 5 years of the double box culvert and an inspection at least every 20 years of the deep tunnel. The TAC recommends that the Commission conduct more-frequent inspections of the deep tunnel – every 10 years or every 5 years, depending on the tunnel segment (e.g., 3rd Avenue tunnel could be inspected every 5 years if Minneapolis inspects the I-94 tunnel because access to the I-94 tunnel requires passing through the 3rd Avenue tunnel).

Commission action/discussion – excerpt from May 19, 2016 meeting minutes:

Commission Engineer Chandler noted (under recommendation 1), that the TAC recommends more frequent tunnel inspections. There was discussion about the frequency of the inspections and if the City of Minneapolis or the Commission would pay for additional inspections. It was noted the TAC didn't discuss funding of the inspections, which are currently a Commission expense. Administrator Jester wondered if the Commission could negotiate with the City to fund added inspections at the point at which the additional inspection is requested or planned. After discussion, this item was sent back to the TAC and/or staff to refine.

Additional information and TAC discussion:

The TAC reviewed the current inspection program and the recommended inspection program. Attached Table 1 shows the estimated 20-year costs following the current and recommended inspection frequencies. The Commission currently funds the FCP inspection costs through the Long Term Maintenance Fund. Over 20 years, the total added cost of new recommended tunnel inspections would be \$55,000, or \$2,750/year.

Final TAC Recommendation (changes from original shown in underline/strikeout):

1. Recommend the Commission continue an inspection and maintenance program for the FCP features. The current inspection and maintenance program (*note to Commission: this program is identified in the Bassett Creek Flood Control Project Operation and Maintenance Manual*) includes an annual inspection of all of the FCP features, except the double box culvert and the deep tunnel, an inspection at least every 5 years of the double box culvert and an inspection at least every 20 years of the deep tunnel.

The TAC recommends that the Commission conduct more-frequent inspections of the deep tunnel – every 10 years (2nd Street tunnel) or every 5 years (3rd Avenue tunnel, in conjunction with City of Minneapolis I-94 tunnel inspection – access to the I-94 tunnel requires passing through the 3rd Avenue tunnel) ~~depending on the tunnel segment (e.g., 3rd Avenue tunnel could be inspected every 5 years if Minneapolis inspects the I-94 tunnel because access to the I-94 tunnel requires passing through the 3rd Avenue tunnel).~~

The TAC recommends that the Commission continue fully funding the FCP inspections (including the recommended more-frequent tunnel inspections), unless the City of Minneapolis requests even more-frequent inspections or more complicated (more expensive) inspections beyond the currently used National Association of Sewer Service Companies' (NASSCO) assessment and certification program.

The TAC recommends the Commission continue funding the FCP inspection costs through the Long Term Maintenance Fund.

Recommendation 7:

Original recommendation from May 11, 2016 TAC memo:

7. Recommend the Commission require that the cities (or other road authority) where the FCP structures are located be responsible for maintenance, repair and replacement of road crossings, and their corresponding conveyance structures, that were installed as part of the FCP. If the BCWMC directs replacement or significant alteration of crossings as part of a project, then the BCWMC would be responsible for funding the replacement.

This recommendation clarifies BCWMC policy (#23) in the Plan, which states that these crossings will be “maintained” by the city where the structure is located. However, policy #23 does not address significant rehabilitation or replacement. This clarification also aligns with the intent of the original FCP—that the cities would be responsible for significant rehabilitation or replacement of road crossings that were installed as part of the FCP because they are primarily transportation-related.

Commission action/discussion – excerpt from May 19, 2016 meeting minutes:

There was discussion on recommendation 7 regarding who will maintain FCP components at road crossings. Mr. Asche wondered if current FCP agreements between the cities would need to be revised to incorporate the recommended policy requiring cities to maintain all FCP road crossings and their conveyance structures unless the Commission directed a reconstruction of a road crossing. After discussion, the Commission directed staff to investigate the recommendation's impact on existing agreements and to consider using a subcommittee that includes the Commission's Legal Counsel, Administrator, Engineer, and Minneapolis TAC and Commission members.

Additional information and TAC discussion:

The Commission's Legal Counsel reviewed the existing agreements and prepared comments. According to the Legal Counsel's review, no changes to the existing agreements will be required for the Commission to implement the TAC's recommended policy. The Commission's Legal Counsel's comments noted that ultimately, maintenance responsibilities for the FCP improvements remain with the cities, the Commission is simply setting out its policies for when it is willing to expend Commission funds to provide assistance. After discussion about BCWMC-directed replacement/alteration of crossings and the potential impact on BCWMC funds, the TAC recommended striking the sentence from the recommendation (i.e., delete "If the BCWMC directs replacement or significant alteration of crossings as part of a project, then the BCWMC would be responsible for funding the replacement.").

Final TAC Recommendation (changes from original shown in underline/strikeout):

7. Recommend the Commission require that the cities (or other road authority) where the FCP structures are located be responsible for maintenance, repair and replacement of road crossings, and their corresponding conveyance structures, that were installed as part of the FCP. ~~If the BCWMC directs replacement or significant alteration of crossings as part of a project, then the BCWMC would be responsible for funding the replacement.~~

This recommendation clarifies BCWMC policy (#23) in the Plan, which states that these crossings will be "maintained" by the city where the structure is located. However, policy #23 does not address significant rehabilitation or replacement. This clarification also aligns with the intent of the original FCP—that the cities would be responsible for significant rehabilitation or replacement of road crossings that were installed as part of the FCP because they are primarily transportation-related.

Recommendation 8:

Original recommendation from May 11, 2016 TAC memo:

8. The TAC offers the following recommendations regarding *routine versus major maintenance/repair* of the FCP features. The recommendations are intended to clarify BCWMC Plan policy #24, which states that routine maintenance and repair is the responsibility of the city where the FCP feature is located, and Plan policy #20, which states that funding of major repair and maintenance is a BCWMC responsibility. The TAC discussed whether the routine maintenance and repair activities listed in policy #24 are sufficient to demarcate between routine and major maintenance/repair.
 - o Recommend the Commission continue to require that cities be responsible for routine maintenance and repair of the FCP features (per Policy #24). Table 2 (*attached, named Table*

1 in May 11, 2016 TAC memo) shows the routine maintenance and repairs, as decided by the TAC.

- Recommend the Commission reimburse cities (if requested) for maintenance and repairs that are over \$25,000, using funds from the Long-Term Maintenance Fund. The TAC also recommends that before receiving funding from the Long-Term Maintenance Fund, the cities must perform regular, routine maintenance (reporting of completed maintenance and repair actions would be required as part of Recommendation #1). This will help prevent the situation wherein the Commission pays for maintenance work over \$25,000 because the cities neglected routine maintenance for several years.
- Recommend the Commission consider adding maintenance and repair projects that are more than \$100,000 to the BCWMC CIP. Table 3 (*attached*) provides examples of maintenance and repairs that are major or could be major.

Commission action/discussion – excerpt from May 19, 2016 meeting minutes:

There was discussion on recommendation 8 which aimed to clarify the meaning of the terms “routine” and “major” maintenance in policies 20 and 24 in the Watershed Management Plan. There was a question about whether past maintenance costs could inform future funding needs in order to plan for future costs. Engineer Chandler noted the TAC did not consider that question and agreed the spending and replacement levels of the Long Term Maintenance Fund should be analyzed. There was also concern, from Commissioner Welch, that dramatically expanding the use of the capital improvement program funds through an annual levy may become unsustainable. There were enough concerns among Commissioners about the future funding needs that staff and TAC were asked to provide further detail and bring a revised recommendation and/or more detail to a future Commission meeting.

Additional information and TAC discussion:

The TAC reviewed and discussed attached Table 2 below (Routine vs. Major Maintenance and Repair Items) and attached Table 3 (Summary of Annual/Periodic Operation and Maintenance Requirements & Costs) September 1, 2015 table. The TAC members were not aware of future maintenance, repair, and significant rehabilitation costs of FCP features in their respective cities, so it was difficult to estimate the potential short-term demand for reimbursement from the Long Term Maintenance fund. However, attached Table 3 below provides estimated costs for annual operation and maintenance, five year operation and maintenance, significant rehabilitation of structures, and replacement of structures. The TAC notes the high costs of these items and potential future financial liability to the Commission if the Commission approves/implements the TAC recommendations. As Table 3 shows, the five year operation and maintenance costs (in blue) over \$25,000 could be \$1,232,000; the significant rehabilitation of structures costs (in blue) could be from \$2,026,000 (without tunnel) to \$14,800,000 (including the tunnel); and the replacement of structures costs (in blue) could be from \$8,100,00 (without tunnel) to \$142,740,000 (including the tunnel).

The current balance of the Long Term Maintenance Fund is \$455,778.83, and the Commission currently budgets \$25,000 per year to add to the Long Term Maintenance Fund, but then subtracts the cost of the FCP inspections for that year, currently averaging \$18,650/year for 20 years. The Commission should have sufficient time to understand the demand on the Long Term

Maintenance Fund as a result of the new policy, through an annual review of the fund balances and upcoming reimbursement requests.

Final TAC Recommendation (changes from original shown in underline/strikeout):

8. The TAC offers the following recommendations regarding *routine* versus *major maintenance/repair* of the FCP features. The recommendations are intended to clarify BCWMC Plan policy #24, which states that routine maintenance and repair is the responsibility of the city where the FCP feature is located, and Plan policy #20, which states that funding of major repair and maintenance is a BCWMC responsibility. The TAC discussed whether the routine maintenance and repair activities listed in policy #24 are sufficient to demarcate between routine and major maintenance/repair.
 - Recommend the Commission continue to require that cities be responsible for routine maintenance and repair of the FCP features (per Policy #24). Table 2 (*attached, named Table 1 in May 11, 2016 TAC memo*) shows the routine maintenance and repairs, as decided by the TAC.
 - Recommend the Commission reimburse cities (if requested) for maintenance and repairs that are over \$25,000, using funds from the Long-Term Maintenance Fund. The TAC also recommends that before receiving funding from the Long-Term Maintenance Fund, the cities must perform regular, routine maintenance (reporting of completed maintenance and repair actions would be required as part of Recommendation #1). This will help prevent the situation wherein the Commission pays for maintenance work over \$25,000 because the cities neglected routine maintenance for several years. Cities are expected to inform the Commission in advance (e.g., two years) of their request for reimbursement.
 - Recommend the Commission consider adding maintenance and repair projects that are more than \$100,000 to the BCWMC CIP. Table 2 (*attached*) provides examples of maintenance and repairs that are major or could be major.

Table 1. Current and Recommended Flood Control Project Inspection Program

Item	Current/ Recommended Inspection Cycle	Cost/Inspection¹	20-Year Cost¹ Current/Recommended
Annual inspection of the FCP features, except double box culvert and the deep tunnel	Annually	\$10,000	\$200,000/\$200,000
Double box culvert inspection (NASSCO) ³	Every 5 years	\$32,000	\$128,000/\$128,000
Deep tunnel (2 nd St. & 3 rd Ave.) inspection (NAASCO) ³	Every 20 years/ Every 10 years	\$45,000	\$45,000/\$90,000
Two additional 3 rd Ave deep tunnel inspections (NASSCO) ^{3,4}	Not Applicable/ Every 5 years	\$5,000	\$0/\$10,000 ⁴
Total²			\$373,000/\$428,000

¹ 2016 dollars

² Simple summation (annualized or present worth not calculated)

³ Tunnel condition inspection based on pipeline assessment and certification program developed by the National Association of Sewer Service Companies (NASSCO)

⁴ 3rd Avenue tunnel inspections assume two additional inspections that are combined with I-94 tunnel inspection (by Minneapolis); the I-94 tunnel inspection provides access to the 3rd Avenue tunnel, therefore does not require separate mobilization.

Table 2 Routine vs. Major Maintenance and Repair Items

Item #	Routine vs. Major Maintenance and Repairs –as Recommended by TAC¹
Routine	
1	Vegetation: removal of trees, removal of brush, chemical treatment of stumps, control of noxious weeds, establish vegetation on bare areas.
2	Removal of debris: woody debris, riprap, trash from channel, inlets, culverts
3	Repair erosion; channels, inlet and outlet structures, culvert ends
4	Repair/replace riprap: on inlet and outlet ends of culverts, channels, banks
6	Remove sediment from channels, structures, culverts, etc.
10	Repair/maintain guard rails, hand rails and fencing: remove rust, prime and paint, repair damaged rails and posts, replace rusted-out sections, repair cables, replace posts, repair chain link fence
12	Repair concrete pipe: repair joints, tie-bolts, spalling, connection to culverts, breakage
13	Repair/replace catch basins, manholes, casting assemblies, grates
14	Repair/maintain debris barrier: removal of debris, repair cables, replace poles
15	Repair/maintain tunnel inlet trash rack: repair/replace trash rack rods, loose or broken, vandalized, bent
16	Street repairs: pavement, curb and gutter, cracks, depressions, settlement
Major	
5	Repair/replace gabion baskets
7	Remove sediment/dredge ponds, basins, etc.
17	Tunnel repairs: concrete and other repairs to the new Bassett Creek tunnel
Could be major depending on extent	
8	Repair scouring/undercutting at structures and culvert outlets
9	Repair concrete structures: cracking, spalling, breakage
11	Culverts/Bebo sections: joints, settlement, separation, concrete spalling, wing walls – movement and breakage

¹ Based on needed repairs identified during 2015 FCP inspection

**Table 3 (Table 1 in September 2, 2015 memo to TAC)
Summary of Annual/Periodic Operation and Maintenance Requirements & Costs
Bassett Creek Flood Control Project, MN
September 1, 2015**

	Annual Operation & Maintenance			Five Year Operation & Maintenance		Significant Rehabilitation of Structure ⁽⁶⁾	End of Design Life	
	Annual Inspection & Report ⁽¹⁾	Debris Removal ⁽²⁾	Brushing & Tree Removal ⁽³⁾	Five-Year Inspection & Report ⁽⁴⁾	General Maintenance & Repairs ⁽⁵⁾		Estimated Year of Replacement ⁽⁷⁾	Replacement of Structure ⁽⁹⁾
Minneapolis								
A Tunnel								
1 Phase 1 - Second Street Tunnel (Mn/DOT)					\$439,100	\$5,030,400	2029	\$61,944,784
2 Phase 2 - 3rd Avenue Tunnel (BCWMC)					\$150,900	\$1,728,400	2040	\$12,378,834
3 Phase 3 - Double Box Conduit and Inlet Structure				\$13,900	\$524,600	\$6,010,500	2042	\$60,309,774
Minneapolis Subtotal:				\$13,900	\$1,114,600	\$12,769,300		\$134,633,400
Golden Valley								
B Golden Valley Country Club Embankment	\$1,500	\$1,800	\$1,800		\$14,600	N.A.	2031	N.A.
Golden Valley Country Club Control Structure	\$1,500	\$1,800	\$1,800		\$14,600	\$491,521	2044	\$1,966,083
C Hwy 55 Control Structure	\$1,500	\$1,800			\$14,600	\$115,295	2044	\$461,180
D Wisconsin Avenue Control Structure	\$1,500	\$1,800			\$14,600	\$108,547	2037	\$434,189
E Road Crossings								
1 Regent Avenue	\$700	(8)			(8)	\$123,964	2031	\$495,854
2 Noble Avenue	\$700	(8)			(8)	\$123,964	2031	\$495,854
3 Westbrook Road	\$700	(8)			(8)	\$217,982	2043	\$871,929
Golden Valley Subtotal:	\$8,100	\$7,200	\$3,600		\$58,400	\$1,181,270		\$4,725,089
Crystal								
F Edgewood Embankment and Control Structures	\$1,500	\$1,800	\$4,400		\$14,600	\$95,039	2031	\$380,155
G Markwood Channel & Culverts	\$1,500	(8)			(8)	\$61,982	2031	\$247,927
H Hwy 100 Control Structure & BC Park Pond	\$1,500	\$1,800	\$1,800		\$117,100	\$975,180	2031	\$3,900,720
I Road Crossings								
1 32nd Avenue	\$700	(8)			(8)	\$95,039	2031	\$380,155
2 Brunswick Avenue	\$700	(8)			(8)	\$95,039	2031	\$380,155
3 34th Avenue	\$700	(8)			(8)	\$95,039	2031	\$380,155
4 Georgia Avenue	\$700	(8)			(8)	\$78,510	2031	\$314,041
5 36th/Hampshire Avenue	\$700	(8)			(8)	\$157,021	2031	\$628,082
6 Douglas Drive	\$700	(8)			(8)	\$108,547	2037	\$434,189
Crystal Subtotal:	\$8,800	\$3,500	\$6,100		\$131,700	\$1,761,393		\$7,045,580
Plymouth								
J Medicine Lake Outlet Structure	\$1,500	\$1,800	\$1,800			\$115,879	2046	\$463,515
K Plymouth Creek Fish Barrier	\$1,500	\$1,800	\$1,800			\$64,142	2037	\$256,566
Plymouth Subtotal:	\$1,500	\$1,800	\$1,800			\$180,020		\$720,081
Total Bassett Creek Flood Control Project Costs	\$18,400	\$12,500	\$11,500	\$13,900	\$1,304,700	\$15,900,000		\$147,120,000
						\$14,800,000		\$142,740,000
						\$1,100,000		\$4,380,000

- (1) Inspection & report; Inspection at tunnel only includes inlet structure and approach channel
- (2) BCMWC Responsible for Maintenance. Work assumed to be performed by City and reimbursed by BCWMC.
- (3) BCMWC Responsible for Maintenance. Work assumed to be performed by City and reimbursed by BCWMC.
- (4) Five year inspection required for above-water portion of Bassett Creek Tunnel
- (5) General Maintenance includes: sediment removal, erosion repair, riprap replacement, sod & vegetation and other misc. maintenance items.
Does not include gate at Wisconsin Ave. (Note: Bassett Creek Park Pond is assumed to be dredged every 10 years at cost of \$230,000 assuming a type 1 material and \$500,000 for a type 2 material that requires disposal in a landfill)
Lowering the middle pool (if approved by Corps, Coast Guard, DNR etc.) could decrease dewatering costs up to \$45,000.
- (6) Includes all items in 1-year and 5-year O & M repairs plus void fill in Minneapolis tunnels, partial structure demo and replacement, Wisconsin Avenue gate upgrades for construction costs in 2014.
(assume one repair project per project feature in addition to 5-yr maintenance)
- (7) Assumes a 50 year life of project
- (8) Assumes City shall be responsible for maintenance of all road crossings and the Markwood channel modifications and storm sewer components.
- (9) Cost includes total replacement of structure at the end of design life assuming 3% inflation and construction technology, means, and methods remain as they are today (2014).
- (10) **5.1.1.3 Management of the BCWMC Trunk System and Flood Control Project**
...The BCWMC will finance major maintenance and repair of water level control and conveyance structures that were part of the original BCWMC Flood Control Project on the same basis as the original project. Ne road crossings of the creek that were installed as part of the project will be maintained by the city where the structure is located. Member cities are responsible for routine maintenance and repair of BCWMC Flood Control Project structures located within each city; this includes the removal of debris, brush, and trees. The BCWMC will work with member cities to determine responsibilities for major rehabilitation and replacement of the BCWMC Flood Control Project features and establish the associated funding mechanisms (see policy 22, Section 4.2.2).