



## Bassett Creek Watershed Management Commission

June 21, 2021

Mr. Ben Scharenbroich  
Water Resources Supervisor  
City of Plymouth  
3400 Plymouth Boulevard  
Plymouth, MN 55447

**Re: 2021 Mount Olivet Streambank Restoration & Parkers Lake Drainage Improvements Project, 60% Plan Set Review (BCWMC CIP 2021 ML-20 and PL-7) – Plymouth, MN**

Dear Mr. Scharenbroich:

The Bassett Creek Watershed Management Commission (BCWMC) reviewed the 60-percent stage construction plans for the above-referenced project. The plans include the designs for:

- Mount Olivet Stream Stabilization project—stream stabilization using bio-engineering techniques and fieldstone riprap at targeted locations, stabilization of stormwater outlets, debris clearing, vegetation management, wetland restoration, and installation of a manhole drop structure at the Mount Olivet Church parking lot; and
- Parkers Lake Drainage Improvements project—stream stabilization using bio-engineering techniques and fieldstone riprap at targeted locations, stabilization of stormwater outlets, debris clearing, and vegetation management.

The plans were reviewed in accordance with the cooperative agreement between the City of Plymouth and the BCWMC. The BCWMC conditionally approved the plans at its June 17, 2021 meeting, contingent on the final plan set incorporating or addressing the following comments:

- A. Comments that apply to both the Mount Olivet Streambank Restoration and Parkers Lake Drainage Improvements projects:
- 1) The two-dimensional modeling results submitted with the 60% drawings show areas of high velocity during the 100-year flood event, with velocities reaching 6.1 ft/s at the Mount Olivet site and 9.0 ft/s at the Parkers Lake site. Many of the highest-velocity areas are proposed for stabilization with fieldstone riprap armoring on the channel banks and as a component of rock ditch checks. We understand from communication with the design engineer that MNDOT Class III fieldstone riprap is proposed for these applications. Please confirm the proposed riprap gradation and provide additional detail to document that the proposed materials are adequately sized to meet the design stability criteria based on the hydraulic modeling results.
  - 2) The plans do not provide a design typical cross section or detail for riprap bank stabilization applications. Please include a design riprap section on the design drawings, including proposed riprap sizes, thickness, filter, and side slopes.

**Bassett Creek Watershed Management Commission**

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- 3) The plans call for the use of geotextile fabric beneath ditch checks and in plunge pools; however, for in-stream applications, geotextile fabric can allow for the development of preferential flow paths beneath the fabric. Please revise the design to use a granular filter in place of the proposed geotextile fabric. This comment does not apply at flared end sections, where the use of the City-standard detail and geotextile fabric is appropriate.
- 4) The plans include trees anchored to the side slope to provide protection against toe erosion, with the trees anchored by duckbill cable anchors. Please provide additional detail on the proposed cable anchors, including the number of anchors required per log to counteract buoyancy forces.
- 5) The plans call for rock and rock-log ditch checks at multiple locations, with a typical height of 30 inches above the existing channel bed. Please consider whether the ditch checks have the potential for downstream scour hole development and whether scour protection through material embedment in the channel bottom, flattening of the downstream slope of the ditch check, or a decrease in ditch check height is required.
- 6) The plans do not provide a design cross section or allowable slope limits for areas with grading only ("blend side slope into the ditch bottom"). Please include a design typical section on the design drawings, including proposed maximum slope and stabilization extents (erosion control blanket or other stabilization).
- 7) The plans include the use of bioroll (sediment control log) at the toe of graded areas and downstream floating silt curtain for erosion and sedimentation control. We understand from communication with the design engineer that bioroll is also proposed at the downstream locations to provide sedimentation control during very low-flow conditions. Please include the proposed bioroll/silt curtain combination on the drawings.
- 8) The plans do not show any construction staging areas within the construction limits or on adjacent areas. Please identify construction staging areas that will be required and provide appropriate erosion and sedimentation control measures on the plans.
- 9) Please include on the plans instructions for the contractor to limit tree clearing as much as possible and only at the direction of the Engineer. We understand from communication with the City that additional tree plantings are not proposed at this time, as discussed above.
- 10) Please include on the plans the elevations and upstream/downstream stationing for all proposed toe stabilization measures.
- 11) The proposed seed mixes in the wetland restoration area are BWSR mix 34-271 (wet meadow south and west) and BWSR mix 34-181 (emergent wetland). Stream bank bioengineering areas call for "seeding special" with a seed mix referenced in the specifications (not provided with the 60% drawings). Please provide the custom seed mix proposed for use on the stream bank areas for Commission review.

B. Comments that apply only to the Mount Olivet Streambank Restoration site:

- 1) The plans do not specify any outlet protection or stilling basin at the proposed storm sewer outlet from the Mount Olivet parking lot at station 4+10. We understand from communication with the

City that a City-standard outlet protection detail is proposed; please include the standard detail on the plans.

- 2) The plans call for widening of the stream channel to eight feet wide from station 7+00 to 9+00; however, a design cross section or proposed channel side slopes are not provided. Please specify a design cross section or side slopes and indicate the extent of the disturbance on the plans.
- 3) The plans do not show any downstream erosion control measures at the proposed wetland restoration and access route at the Mount Olivet site (downstream and to the south of the proposed construction areas). Please provide downstream erosion control, such as silt fence or bioroll along the access and at the wetland restoration location.

C. Comments that apply only to the Parkers Lake Drainage Improvements site:

- 1) The plans call for grading of the stream channel bottom from station 13+00 to 14+80; however, only a portion of this length has accompanying bank stabilization measures shown. We understand from communication with the design engineer that the remaining length is proposed for sediment removal and reshaping of the bottom of the channel only and will not require additional bank grading. Please provide clarification regarding the proposed grading in the drawings, including a design slope and direction to the contractor to limit bank disturbance in this area.

D. Revised (90%) plans must be submitted to the BCWMC engineer for review and BCWMC approval at a future Commission meeting.

In addition to the above comments, the BCWMC requested the inclusion of the following additional information as part of the 90% plan submittal:

- Regarding the HEC-RAS 2D model, provide additional model documentation including the following:
  - Boundary conditions and inflow hydrographs, including any 1D/2D model interaction
  - Existing and post-project Manning's roughness values for channel and overbanks
  - 2D model cell sizes and justification for the selected size
  - A review of areas with high velocity adjacent to the model boundary to determine whether the boundary should be extended or cell sizes reduced
  - Discussion of areas where model results do not match observed erosion patterns
- Show nearest mapped FEMA floodplain area(s) (SFHAs)
- Provide the updated construction cost estimate

The BCWMC encourages the city to work with the adjacent apartment complexes and church regarding chloride management on their properties.

The costs for the bridge crossing to access Mount Olivet Church (if built) are not eligible for BCWMC reimbursement.

We reviewed the following information, which was received May 19, 2021:

- 60% drawings (undated)
- Project memo (dated May 19, 2021)
- Hydraulic modeling results
- Pollutant loading calculations

If you have questions, please contact me at 612-247-6666 ([kchandler@barr.com](mailto:kchandler@barr.com)).

Sincerely,



Karen Chandler, P.E.  
Barr Engineering Co.  
Engineers for the Bassett Creek Watershed Management Commission (BCWMC)

c: Chris McKenzie, City of Plymouth  
Laura Jester, BCWMC  
Jake Newhall, WSB  
Laura Rescorla, WSB