

Applicant: Julie Long; City of Bloomington
Consultant:
Project: Normandale Lake Bank Stabilization
Location: West 84th Street and Normandale Boulevard: Bloomington
Rule(s): 2,5, and 7
Reviewer: BCO

General Background & Comments

The proposed project involves maintenance repairs to the bank of the Normandale Lake along the northern pedestrian trail just south of the intersection of East Bush Lake Road and West 78th Street in Bloomington. The trail was part of the original Normandale Lake construction and located to accommodate the former Scharett property. For the project to proceed in the late 1970's – early 1980's, a life estate was granted to the Scharett's with the site becoming public property and the structure razed in the early 1990's. Repairs to this section of the trail and at other locations riparian to the lake were made in 2012, Permit #2012-14. Because of settlement, the shoreline was reestablished in this location using lightweight fill material to minimize further settlement of the poor soil conditions within the area, though the work was not analyzed against or permitted under NMCWD's Shoreline and Streambank Improvements Rule for purposes of permit 2012-14. The current 8-foot wide bituminous trail is located between 8 to 10 feet from the water's edge at the lakes normal elevation of 808 M.S.L.

During the current drawdown of the lake, the City found that maintenance along a 300 foot section of the trail and around the east abutment of the pedestrian bridge crossing the creek, in the same general location, was necessary. Additional minor settlement, ice-out conditions and muskrat activities since 2012 have created additional voids (depressions) in the shoreline protection requiring correction. The project proposes to install approximately 60 cubic yards of 6-inch field stone rip-rap installed over the existing in-place rip-rap to reestablish the slope and grade of the original and reconstructed 2012 cross-section. The existing rooted plant structure growing in the void space between the rocks will remain in-place and provide addition stability of the shore protection to comply with the bioengineering requirements of District Rule 7.0, Shoreline and Stream Bank Improvements. To benefit from the authorization available under Department of Natural Resources General Permit #97-6112 issued for work in the Nine Mile Creek watershed, the city will need to comply with the terms and conditions of General Permit #97-6112.¹

The City estimates that approximately 25-50% of the rip-rap will be placed below the 808 M.S.L. normal elevation of the lake (which is equivalent to the lake outlet elevation, which is

¹ Though the project exceeds the condition limiting shoreline projects to 200 feet in General Permit no. 97-6112, DNR has provided an informal specific authorization of the project under the general permit via email.

the determining point for dead space storage under adopted Policy 18-13) with the remainder resulting in fill within the floodplain of the lake. (Under the policy, an applicant need not compensate under criterion 2.3.2 of the NMCWD floodplain rule for fill below the outlet elevation of a waterbody.) This work is maintenance that will reestablish the grade and slope of the lake shoreline protection constructed in 2012. Compensatory storage (330 cubic yards) was provided for the 2012 maintenance improvements within the City owned property.

The project will fill more than 50 cubic yards of rip-rap (which is a land-disturbing activity as defined for purposes of the NMCWD Rules) but less than 5000 square feet of surface area disturbed. The District's Stormwater Rule (4) applies since the project will meet Rule 4.2.1a. However since there are no impermeable areas associated with the project that will be created to generate runoff, the requirements of Rules 4.3.1a) volume retention, b) limit peak flow rates for the 2, 10, and 100 year storm events to existing conditions and c) water quality management and 4.3.3 Chloride management are not imposed. The District's Erosion and Sediment Control Rule (5.2.1a) applies to the project because of the volume of disturbance proposed. The District's Shoreline and Streambank Improvements Rule (7) applies to the project because of the city's plan involves installation of a streambank improvement.

Exhibits

1. Permit Application dated December 18, 2018.
2. Plans dated February 8, 1979, February 6, 2012 and additional information dated December 18, 2018 prepared by the City of Bloomington
3. E-mail correspondence dated November 29, 2018 from the MDNR stating the project will not require a separate permit from the MDNR as long as a NMCWD permit is obtained for the work.
4. E-mail correspondence dated October 16, 2018 from the U.S. Army Corps of Engineers stating that the proposed work is considered maintenance and is covered by Nationwide Permit #3.

2.0 Floodplain Management and Drainage Alterations

The project is for maintenance of shoreline stabilization on Normandale Lake previously approved in 2012. An additional 60 cubic yard of 6-inch field stone material is to be placed to reestablish the slope of the trail section in the location previously described. Even if all 60 cubic yards would be placed above elevation 808 M.S.L and considered floodplain fill, compensatory storage has been provided for this and other sections along the lakes shoreline that resulted in fill within the floodplain of the lake approved in 2012, Permit #2012-14. Portions of the rip-rap previously install has settled below the 808 lake level, considered "dead-storage" and the new rip-rap will not result in filling that has an impact on flood volume since the compensatory storage was provided. The flood elevation of the lake is 814 M.S.L. at all locations with Normandale Park therefore the compensatory storage, in 2012, was place within +/- 1 foot of the Lakes flood elevation.

3.0 Wetlands Management

Normandale Lake is a public water, MDNR #1045P, as identified by the Minnesota Department of Natural Resources, not a wetland, therefore the District's buffer requirements, Rule 3.4, are not applicable.

5.0 Erosion and Sediment Control

The proposed work is to be undertaken during the 2018- 2019 winter months with frozen soil conditions to minimize impacts and completed prior to the March 1st date that the refilling of the lake is scheduled to begin. Very little area (earth) if any will be disturbed by the project. The project contact is Steve Segar, city of Bloomington.

7.0 Shoreline and Streambank Improvements

Rule 7.0 states that it is the policy of the Board of Managers to prevent erosion of shorelines and streambanks and to foster the use of natural materials and bioengineering for the maintenance and restoration of shorelines.

Rule 7.0 applies, under paragraph 7.2, to the proposed work because it will involve installation of stabilization along approximately 300 feet of the shoreline of Normandale Lake. The project will provide maintenance of the current shore protection with 6-inch field stone rip-rap, to fill in void spaces that have resulted from settlement and other natural activities, while maintaining the existing rooted vegetation that has been established since 2012.

Rule 7.3.1 states, *An applicant for a shoreline alteration permit must demonstrate a need to prevent shoreline erosion or restore eroded shoreline:*

As a result of continued minor settlement, impacts of ice out conditions on the lake and muskrat activities, void spaces have occurred resulting in a need for maintenance to reestablish a stable shoreline. If not corrected, erosion of the slope protection will continue and with time the existing trail embankment will be undermined.

Rule 7.3.2 states, *An applicant must first consider maintenance or restoration of a shoreline using bioengineering. If bioengineering cannot provide a stable shoreline, a combination of rip-rap and bioengineering may be used to restore or maintain shoreline. If a combination of rip-rap and bioengineering cannot provide a stable shoreline within a reasonable period, rip-rap may be used to restore or maintain shoreline:*

As stated, the project will maintain the existing rip-rap conditions shoreline protection that was installed as part of the original project in 1979 and again in 2012. Existing rooted vegetation has established itself in the spaces between the existing stones that will be maintained as the 6-inch field stone rip-rap is placed. The existing stabilization is exactly the design we would recommend for this area. Maintaining a well establish plant community with the structural integrity of the rip-rap at a 5:1 slope will provided a stabilized slope. The removal and reconstruction of the slope with any further disturbance of the poor foundation soils and the corrective lightweight fill installed in 2012 could result in a breach of the structural integrity of the underlying material and a failure of the entire slope.

Rule 7.3.2a states, *Live plantings incorporated in shoreline bioengineering must be native aquatic vegetation and/or native upland plants:*

The existing live plants that have been established will be preserved as much as possible as the rock stabilization is placed.

Rule 7.3.2b states: *Riprap to be used in shoreline erosion protection must be sized appropriately in relation to the erosion potential of the wave or current action of the particular water body, but in no case shall the riprap rock average less than six inches in diameter or*

more than 30 inches in diameter. Riprap shall be durable, natural stone and of a gradation that will result in a stable shoreline embankment. Stone, granular filter and geotextile material shall conform to standard Minnesota Department of Transportation specifications, except that neither limestone nor dolomite shall be used for shoreline or stream bank riprap, but may be used at stormwater outfalls. All materials used must be free from organic material, soil, clay, debris, trash or any other material that may cause siltation or pollution:

The same size field stone rip-rap (6-inch) will be used for the maintenance of the existing slope stabilization. The existing light-weight fill material placed in 2012 was designed assuming a loading from the stabilization above. A 6-inch stone has an average weight of 15 pounds. Additional weight from larger size rip-rap will overload the weight bearing capacity of the underlying native soil and lightweight fill resulting in a failure of the entire existing slope.

Rule 7.3.2c states: *Riprap shall be placed to conform to the natural alignment of the shoreline.*

The stabilization will not move, alter or change the location of the shoreline. The stabilization will follow the alignment of the existing shoreline.

Rule 7.3.2d states: *A transitional layer consisting of graded gravel, at least six inches deep, and an appropriate geotextile filter fabric shall be placed between the existing shoreline and any riprap. The thickness of riprap layers should be at least 1.25 times the maximum stone diameter. Toe boulders, if used, must be at least 50 percent buried.*

Filter material is currently in-place, will not be altered by the project and no additional filter material is proposed to be installed.

Rule 7.3.2e states: *Riprap must not cover emergent vegetation unless authorized by a Department of Natural Resources permit.*

The rip-rap to be installed to maintain and not cover existing emergent vegetation.

Rule 7.3.2f states: *Riprap shall extend no higher than the top of bank or two feet above the 100-year high water elevation, whichever is lower.*

The rip-rap will not extend beyond its current limits.

Rule 7.3.3 states: *The finished slope of any shoreline shall not be steeper than 3:1 (horizontal to vertical).*

The plans show the stabilized shoreline at a slope of 5:1.

Rule 7.3.4 states: *Horizontal encroachment from a shoreline shall be the minimal amount necessary to permanently stabilize the shoreline and shall not unduly interfere with water flow or navigation. No riprap or filter material shall be placed more than six feet waterward of the OHW. Streambank riprap shall not reduce the cross-sectional area of the channel or result in a stage increase of more than 0.01 feet at or upstream of the treatment.*

The section of the existing in-place rip-rap will not be changed by the proposed maintenance project. Boating activities on Normandale Lake are very limited and not affected by the project.

Rule 7.3.5 states: *The design of any shoreline erosion protection shall reflect the engineering properties of the underlying soils and any soil corrections or reinforcements necessary. The design shall conform to engineering principles for dispersion of wave energy and resistance to*

deformation from ice pressures and movement, considering prevailing winds, fetch and other factors that induce wave energy.

The loss of rip-rap that occurred over time has been the result of the natural activities on the lake. These include minor settlement because of the underlying soil conditions, impacts resulting from ice conditions, muskrats. Wave action is not likely a major influence since the project area is on the north side of the lake.

Rule 7.3.6 states: *Placement of rip-rap for merely cosmetic purposes is prohibited.*

The project is to maintain a stable shoreline section and is not for cosmetic purposes

Rule 7.3.7 states: *Retaining walls extending below the OHW of a water body are prohibited except where:*

- a. There is a demonstrable need for a retaining wall in a public improvement project and*
- b. The design of the retaining wall has been certified by a registered engineer.*

This rule does not apply in this instance.

11.0 Fees

Because the property owner is a public entity, no fees are charged.

Rules 2.0-6.0 \$0

12.0 Sureties

Because the property owner is a public entity, the District's financial assurance requirements do not apply.

Sureties for the project are: \$0

Findings

1. The proposed project includes the information necessary, plan sheets and erosion control plan for review.
2. Rule 2, 5, and 7 are met.
3. The proposed stabilization project is for maintenance activities of work previously permitted by the District for the Normandale Lake project in 1979 and in 2012.

Recommendation

Approval, contingent upon:

1. General Conditions

By accepting the permit, when issued, the applicant agrees to the following stipulations:

1. No activity affecting the bed of a protected watercourse may be conducted between March 15 and June 15.

Board Action

It was moved by Manager _____, seconded by Manager _____ to approve permit application No.2018-139 with the conditions recommended by staff.

Permit #: 2018-139
Project Name: Maintenance of Normandale Lake Shoreline Protection: Bloomington
Approval Date: January 16, 2019

General Provisions

1. All temporary erosion control measures shown on the erosion and sedimentation control plans must be installed prior to commencement of surface or vegetation alteration and be maintained until completion of construction and vegetation is established as determined by NMCWD.

If silt fence is used, the bottom flap must be buried and the maximum allowable spacing between posts is 4-foot on center. All posts must be either 2-inch x 2-inch pine, hardwood, or steel fence posts. If hay bales are used, all bales must be staked in place and reinforced on the downstream side with snow fence.

2. All areas altered because of construction must be restored with seed and disced mulch, sod, wood fiber blanket, or be hard surfaced within two weeks after completion of land alteration and no later than the end of the permit period.
3. Upon final stabilization, the permit applicant is responsible for the removal of all erosion control measures installed throughout the project site.
4. At the entryway onto the site, a rock filter dike being a minimum of two feet in height and having maximum side slopes of 4:1 must be constructed. This rock filter dike will enable construction traffic to enter the site and also provide an erosion control facility.
5. If dewatering is required and sump pumps are used, all pumped water must be discharged through an erosion control facility prior to leaving the construction site. Proper energy dissipation must be provided at the outlet of the pump system.
6. The NMCWD must be notified a minimum of 48 hours prior to commencement of construction.
7. The NMCWD, its officers, employees and agents review, comment upon, and approve plans and specifications prepared by permit applicants and their consultants for the limited administrative purpose of determining whether there is reasonable assurance that the proposed project will comply with the regulations and criteria of the NMCWD. The determination of the NMCWD that issuance of this permit is appropriate was made in reliance on the information provided by the applicant.
8. The grant of this permit shall not in any way relieve the permittee, its engineer, or other professional consultants of responsibility, nor shall it make the NMCWD responsible for the technical adequacy of the engineer's or consultant's work. The grant of this permit shall not relieve the permittee from complying with all conditions and requirements of the permit which shall be retained by the permittee with the permit.
9. The issue of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.
10. This permit is permissive only. No liability shall be imposed upon the NMCWD or any of its officers, agents or employees, officially or personally, on account of the granting of this permit or on account of any damage to any person or property resulting from any act or omission of the permittee or any of its agents, employees, or contractors.

11. In all cases where the doing by the permittee of anything authorized by this permit shall involve the taking, using, or damaging of any property, rights or interests of any other person or persons, or of any publicly-owned lands or improvements or interests, the permittee, before proceeding therewith, shall obtain the written consent of all persons, agencies, or authorities concerned, and shall acquire all necessary property, rights, and interest.
12. The permit is transferable only with the approval of the NMCWD (see NMCWD Rule 1.0). The permittee shall make no changes, without written permission previously obtained from the NMCWD, in the dimensions, capacity, or location of any items of work authorized by this permit.
13. The permittee shall grant access to the site at all reasonable times during and after construction to authorized representatives of the NMCWD for inspection of the work authorized by this permit.
14. This permit may be terminated by the NMCWD at any time deemed necessary in the interest of public health and welfare, or for violation of any of the provisions of this permit.
15. Construction work authorized under this permit shall be completed on or before date specified above. The permittee may, in writing, request that the NMCWD extend the time to complete the project in accordance with NMCWD Rule 1.0.



Permit No.2018-139

Is hereby issued to Julie Long, City of Bloomington, subject to the conditions specified in the attached form:

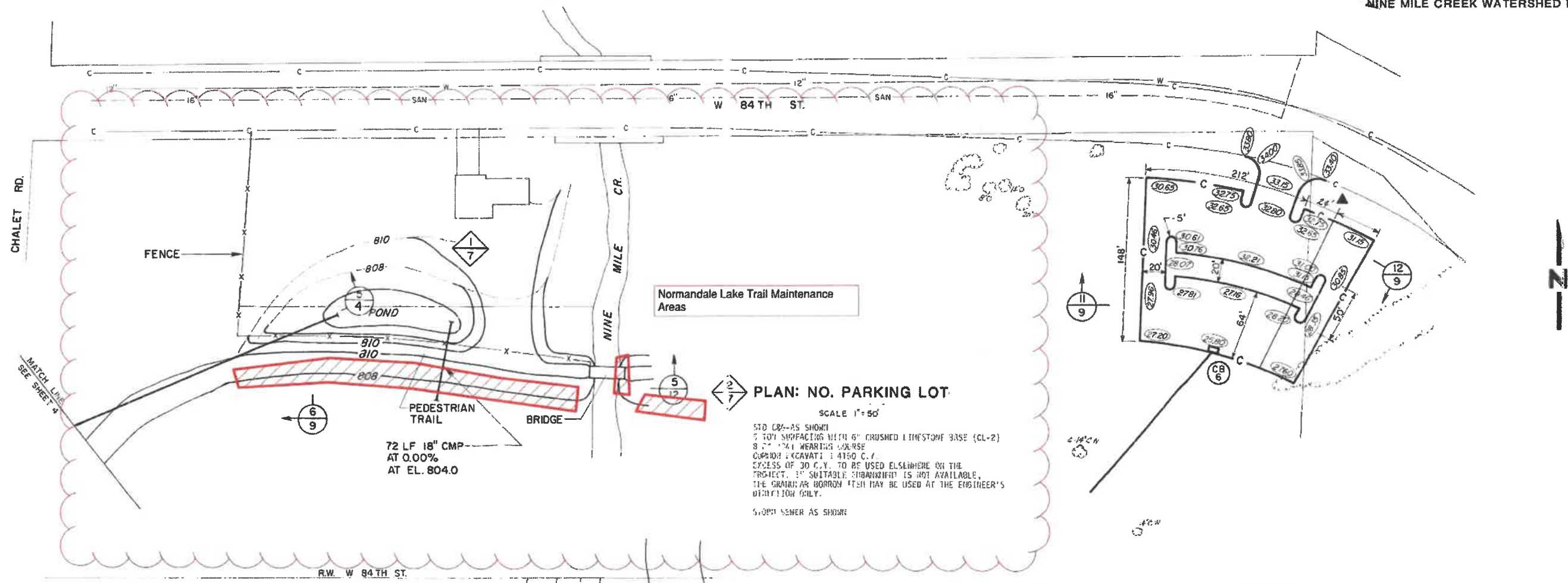
For the maintenance of existing shoreline protection and pedestrian bridge abutment stabilization on Normandale Lake in Bloomington.

Steve Kloiber, Chair
Nine Mile Creek Watershed District

This permit expires on: February 1, 2020

Figure 1

MT NORMANDALE LAKE
NINE MILE CREEK WATERSHED DISTRICT



Existing trail, Lake side of trail has settled, trail patch repair, Existing buffer to be maintained, July 2018



Existing trail, existing rip rap with vegetated buffer in-growth July 2018



Existing trail, trail patch repair, and buffer vegetation, July 2018

RECORD DRAWING 9/21/01

I HEREBY CERTIFY THAT THIS DRAWING OR PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA. <i>Bryan M Borg</i> DATE: 2/28/79 REG. NO. 12023	REVISIONS	SCALE: AS SHOWN	BARR ENGINEERING CO. CONSULTING HYDRAULIC ENGINEERS MINNEAPOLIS, MINNESOTA NORTH PARKING LOT FLOODPROOFING 6101 W. 84TH ST.	SHEET NO. 7 OF 16
		DWN. BY: RLG		
		DATE: 1-29-79 DWG. NO.:		

