Permit Application Review

Permit No. 2020-124
Received complete: November 13, 2020

Applicant:	Julie Long; City of Bloomington
Consultant:	
Project:	Utah Pond 1 Culvert Replacement
Location:	8734 Utah Avenue South: Bloomington
Rule(s):	2, 3, 4, 5, 6 and 8
Reviewer(s):	LLH and BCO

General Background & Comments

The City of Bloomington is proposing to replace the culvert connecting Utah Pond 1 (City ID #61-02) to Bush Lake (DNR #47P) at 8734 Utah Avenue South in Bloomington. The existing culvert is approximately 189 linear feet in length and comes into contact with Utah Pond 1 at the upstream end of the pipe (northeast) and Bush Lake at the downstream end of the pipe (southwest).

In 2020, the City of Bloomington identified significant culvert damage during the summer months, which caused a large sediment wash-out to occur. A temporary berm was installed to temporarily remediate the failed structure and restrict flow to Bush Lake. As part of the City's 2020-902 Pond Maintenance Project, the City is proposing to replace 189 linear feet of corrugated metal pipe (CMP) with 180 linear feet of corrugated aluminized steel (CAS) pipe. In addition to culvert replacement, excavation and removal of the temporary berm structure at Utah Pond 1, removal of a sediment plume at the existing pipe outlet, and installation of rip-rap and granular fill material at the outlet is proposed. The land-disturbing activities described above will result in approximately 0.14 acres of disturbance.

The District's Floodplain Management and Drainage Alterations Rule 2.0 applies to the project as a result of land-altering activities proposed below the 100-year frequency flood elevation of Bush Lake (DNR #47P), elevation 834.8 M.S.L.

The District's Wetland Management Rule 3.0 applies to the project, as a result of the proposed land-disturbing activities within the wetlands identified in the project area. The City of Bloomington is the Local Governing Unit (LGU) responsible for administering the requirements of the Wetland Conservation Act (WCA).

The District's requirements for both stormwater management and erosion and sediment control apply to the project because more than 50 cubic yards of material will be disturbed, Rules 4.2.1a and 5.2.1a.

The District's Waterbody Crossings and Structures Rule 6.0 applies to the project as a result of stormwater infrastructure improvements that are in contact with the bank(s) (defined as an enclosed natural depression with definable banks capable of retaining water) of Bush Lake and Utah Pond 1.

The District's Sediment Removal Rule 8.0 applies to the project because of the City's plan to remove 20 cubic yards of in-place soil (sediment) for placement of the rip-rap at the downstream end of the culvert discharging to Bush Lake, a public water.

Exhibits

1. Signed Permit Application dated November 13, 2020.
2. City of Bloomington Construction Plans for 2020-902 Pond Maintenance Project dated October 19, 2020 prepared by the City of Bloomington.
3. City of Bloomington Cover Letter dated November 6, 2020 prepared by the City of Bloomington (accompanying the wetland no-loss decision).
4. Minnesota Wetland Conservation Act (WCA) Notice of Decision dated November 16, 2020.

The application with the submitted information is complete.

2.0 Floodplain Management and Drainage Alterations

As previously stated, the District's Floodplain Management and Drainage Alterations Rule 2.0 applies to the project as a result of land-altering activities proposed below the 100-year frequency flood elevation of Bush Lake, DNR public water #47P. The City of Bloomington's Local Surface Water Management Plan (LSWMP) identifies elevation 834.8 M.S.L. as the 100-year frequency flood elevation for Bush Lake.

The land-altering activities proposed below the flood elevation of the lake must not result in net fill or net impact within the floodplain. Work below the lake's flood elevation includes the removal and disposal of 189 linear feet of 24-inch corrugated metal pipe, and replacement of approximately 180 linear feet of 24-inch corrugated aluminized steel (CAS) pipe.

Approximately 20 cubic yards of material (sediment) will be removed below the lake's flood elevation at the location of the existing system outlet. The area will be over excavated allowing 10 tons of rip-rap and 5 tons of granular filter material to be placed at an elevation matching the existing grade. Area disturbed, upgradient of the lake's water surface and within the floodplain, will be regraded and seeded with a native seed mixture. Post-development conditions will result in no net impact and no net loss of floodplain volume.

In addition to replacement of the culvert connecting Utah Pond 1 to Bush Lake, removal of the constructed temporary berm is proposed. The temporary berm was constructed in the summer of 2020 as an emergency remediation method to prevent further sediment wash-out. The LSWMP does not identify a 100-year high water elevation for Utah Pond.

The paragraphs of Rule 2 state:

2.3.1: The low floor elevation of all new and reconstructed structures must be constructed in accordance with the NMCWD Stormwater Rule, subsection 4.3.3

This section of the rule does not apply to the proposed project.

2.3.2: Placement of fill below the 100-year flood elevation is prohibited unless fully compensatory storage is provided within the floodplain and:

a. at the same elevation +/- 1 foot for fill in the floodplain and:

b. at or below the same elevation for fill in the floodplain of a water basin or constructed stormwater facility.

Regrading and placement of rip-rap and granular material is proposed below the 100-year frequency flood elevation of Bush Lake. Disturbed area within the floodplain will be regraded and over excavated with material removed, allowing the rip-rap and filter material to be placed at an elevation which shall not result in floodplain storage loss. Approximately 20 cubic yards of in-place material (sediment) will be removed (cut) and 15 tons of granular filter and rip-rap will be placed (fill) in the floodplain. The project conforms to Rule 2.3.2.

2.3.3. The District will issue a permit to alter surface flows only if it finds that the alteration will not have an adverse impact on any upstream or downstream landowner and will not adversely affect flood risk, basin or channel stability, groundwater hydrology, stream base-flow, water quality or aquatic or riparian habitat.

The applicant has demonstrated, and the engineer concurs that the project will preserve the existing 100-year flood level of Bush Lake, as the project will not alter surface flows or alter the hydraulic configuration of the pipe, complying with Rule 2.3.3. As the project will not result in increased impervious surface at the site and pre-project drainage patterns will be maintained in post-project conditions, discharge rates from the site will not increase.

Proposed activities will correct a hydraulic problem associated with the deteriorated and damaged pipe, and the undermining of the pipe foundation. The existing pipe is not effectively handling stormwater runoff and functioning as designed, as a result of the pipe conditions described above. The identified deterioration is preventing normal flow through the pipe, exacerbating erosion along the pipe alignment, and introducing sediment into the lake.

The project will not increase the City's management elevation for the lake since there will be no reduction in the available flood volume compared to the existing high water condition. The project will provide for the stability of both the area along the pipe alignment, where the wash-out has occurred beneath the storm sewer pipe, and the bed of the lake. The project will not affect the groundwater hydrology or stream base flow conditions. The project will improve the water quality of the lake by the stabilization of the erosion problem and will restore any aquatic or riparian habitat that may have existed, upon completion of the project.

Proposed work may have a temporary impact on riparian habitat during the construction phase of the project. Once the proposed work is completed and temporary impacts are eliminated, the riparian habitat will be restored to its natural state. Temporary impacts cannot be avoided with any project that involves construction activities.

2.3.4 No structure may be placed, constructed or reconstructed and no surface may be paved within 50 feet of the centerline of any water course, except that this provision does not apply to:

a. Bridges, culverts, and other structures and associated impervious surface regulated under Rule 6.0;

b. Trails 10 feet wide or less, designed primarily for nonmotorized use.

This section of the rule does not apply to the proposed project.

The proposed project conforms to the floodplain management and drainage alteration requirements of Rule 2.0.

3.0 Wetlands Management

The District's Wetland Management Rule 3.0 applies to the project, as a result of the proposed land-disturbing activities within the wetlands identified in the project area. The City of Bloomington is the Local Governing Unit (LGU) responsible for administering the requirements of the Wetland Conservation Act (WCA).

The City completed a desktop analysis of the wetlands in the project area. As identified in the City's submittal, Utah Pond is listed as a permanently flooded shallow open water system in the National Wetland Inventory (NWI). Historically, prior to its incorporation into the urban stormwater system, Utah Pond was likely not a permanently open water basin. A control structure, constructed in 1967, now provides relatively stable water levels. The City notes that the pond is utilized to reduce sediment transport into Bush Lake, and there is likely an emergent wetland fringe around the perimeter. Bush Lake, at the downstream end of the pipe connecting the two waterbodies, is listed as a deep-water system surrounded with an emergent wetland fringe in the National Wetland Inventory.

The 2020-902 Pond Maintenance Project activities proposed at Utah Pond and Bush Lake qualify for no-loss under State Rule 8420.0415(F): "an activity associated with the operation, routine maintenance, or emergency repair of existing utilities and public works structures…provided the activity does not result in additional wetland intrusion or additional impacts, either wholly or partially."

A Notice of Decision dated November 16, 2020 has been issued approving of the wetlands' no-loss determination. Sections 3.4 and 3.5 for wetland buffers and stormwater treatment in the District rules, respectively, do not apply to incidental wetlands or to wetlands that are disturbed by utility improvements or repairs that are the subject of a no-loss determination from the relevant LGU, Rule 3.2.2a.

4.0 Stormwater Management

The District's requirements for stormwater management apply to the project because more than 50 cubic yards of material will be disturbed, Rule 4.2.1a. The project is considered a linear project (Rule 4.2.4). For linear projects creating less than one (1) acre of new or additional impervious area (0 acres of net new impervious area is proposed to be created), the stormwater requirements of Rule 4.3.1 or 4.3.2 do not apply.

5.0 Erosion and Sediment Control

Sediment control logs will be provided for perimeter control. The site will be accessed via an existing walking path at the Utah Avenue South terminus. A woodchip access pad will be installed at the construction site entrance. Native seed mixtures and erosion control blanket will be installed for final stabilization measures over areas disturbed by construction.

The project contact is Julie Long with the City of Bloomington.

6.0 Waterbody Crossings and Structures

The District's Waterbody Crossings and Structures Rule 6.0 applies to the project as a result of stormwater infrastructure improvements that are in contact with the bank(s) of Bush Lake and Utah Pond 1, Rule 6.2. Thus, conformance with Rule 6.3.1 is required.

Work within the banks of both waterbodies includes stormwater infrastructure improvements, site regrading, and installation of associated erosion control measures.

Rule 6.3.1 states construction, improvement, repair or removal of a waterbody crossing in contact with the bed or bank of a waterbody:

a) *Shall retain adequate hydraulic capacity and assure no net increase in the flood stage of the pertinent waterbody:*

Since the project is a linear project and the stormwater requirements of Rule 4.3.1 or 4.3.2 do not apply, a detailed hydrologic model was not provided for the project.

As previously stated, the work will include removal of the existing 24-inch corrugated metal pipe connecting Utah Pond 1 to Bush Lake, and replacement with an equivalent 24-inch corrugated aluminized steel pipe along approximately the same alignment. The proposed diameter will match the existing pipe diameter, and the upstream and downstream invert elevations of the proposed culvert will be approximately the same elevations. The temporary impacts resulting from the replacement of the culvert will be regraded and seeded with a native seed mixture. The grading will result in no net impact and no net loss of floodplain volume.

Bush Lake shall retain adequate hydraulic capacity with no net reduction in flood volume or increase in flood stage. Because the culvert will be replaced in-kind, the hydraulic configuration will maintain existing drainage patterns while minimizing the potential for soil erosion that may result from a deteriorated pipe. Thus, Rule 6.3.1a is met.

b) *Shall retain adequate navigational capacity pursuant to any requirements of the waterbody's classification by the District:*

This Rule does not apply to the project, as the waterbodies are not used for navigational purposes.

c) Shall not adversely affect water quality, change the existing flowline/gradient, or cause increased scour, erosion or sedimentation:

As stated in item (a), the hydraulic capacity of the existing system will be maintained, as the culvert will be replaced in-kind, and the upstream and downstream pipe invert elevations will be similar to existing conditions. Any change in the water quality of the waterbodies will be temporary during construction. Erosion control measures including sediment control logs and temporary construction access trails will be installed to minimize water quality impacts including sedimentation.

Proposed activities will correct a hydraulic problem associated with the damaged and deteriorated pipe, and the undermining of the pipe foundation. The existing pipe is not effectively handling stormwater runoff and functioning as designed due to its deterioration.

Per project scope, only areas surrounding the existing pipe will be excavated in order to complete the pipe replacement. Best management practices will be carried out throughout the construction process. Work will be conducted in the winter to minimize disturbances. All disturbed areas will be stabilized upon completion of work.

The proposed design is not reasonably likely to cause adverse effects to water quality and the physical or biological character of the wetlands because of the in-kind pipe replacement and the restoration of the undermined foundation material, thus conforming to Rule 6.3.1c.

d) *Shall preserve existing wildlife passage along each bank and riparian area:*

The project will not permanently change conditions that will deter wildlife from using the banks of the waterbodies once the project is complete. Additionally, as noted by the City of Bloomington, fish activity will not be impacted in either Utah Pond or Bush Lake. The existing culvert is not a viable passage for fish in any season. No endangered species have been observed throughout the extent of Utah Pond or Bush Lake. While there is a chance of a population of Blanding's turtles within Bush Lake, the location of the pipe replacement would not coincide with the overwintering habitat preferred by Blanding's turtles. Construction activities may temporarily displace wildlife until the areas is restored to pre-project conditions. Thus, Rule 6.3.1d is met.

e) *Shall represent the "minimal impact" solution to a specific need with respect to all other reasonable alternatives:*

Alternative options investigated for the crossing included, 1) no-build alternative, and 2) altering the design of the culvert. A "do nothing" alternative would not correct the existing hydraulic problem resulting from the deteriorated pipe. An alternate design of the culvert may alter the baseflows and hydraulic characteristics. For the reasons noted above, both alternative designs were rejected.

As previously stated, the pipe is not functioning as designed, and proposed activities will correct a hydraulic problem associated with the deteriorated pipe, and the undermining of the pipe foundation. The identified deterioration may prevent normal flow through the pipe, exacerbate erosion along the pipe alignment and introduce sediment into the waterbodies. Thus, replacement of the pipe in-kind meets criteria in Rule 6.3.1e and represents the minimal impact solution.

Rule 6.3.2 with criteria involving projects with directional boring or horizontal drilling does not apply to the project.

Rule 6.3.3 states, removal of structures or other waterway obstructions:

a) *Shall maintain the original cross-section and bed conditions to the greatest extent practicable:*

Areas within the bank of the waterbodies impacted by replacement of the culvert will be restored to pre-project natural conditions, including elevations, contours, and substrate. Disturbed areas will be graded such that no net reduction in floodplain volume will occur.

b) Shall achieve complete removal of the structure, including any footings or pilings that impede navigation:

This rule does not apply to the project.

c) Shall not involve the removal of a water level control device:

The outlet control structure located at the upstream end of the culvert at Utah Pond 1 will not be modified for the project. No level control devices will be removed as part of this project.

Rule 6.3.4 states, *No activity affecting the bed of a protected water may be conducted between April 1 and June 30 on public waterbodies:*

For the purposes of minimizing disturbances caused by the project, the work will be completed in the winter of 2021, before April 1.

8.0 Sediment Removal

The project proposes the removal of a total of approximately 20 cubic yards of sediment within the bank of Bush Lake, triggering NMCWD Rule 8.0.

Rule 8.3 Criteria states, Removal of accumulated sediment at storm sewer outfalls may be permitted upon submittal of an application meeting the following criteria:

8.3.1 Removal of sediment must not alter the original alignment, slope or cross-section of the beds, banks or shores of any public water.

In addition to replacement of the culvert connecting Utah Pond 1 to Bush Lake, excavation and removal of the constructed temporary berm at Utah Pond 1 and removal of the sediment plume at the existing pipe outlet is proposed. Rule 8 does not apply to the sediment removed as part of the Utah Pond 1 berm removal, as the waterbody is not a public water.

Removal of the accumulated sediment near the Bush Lake outfall will reestablish the “dead-storage” volume in the lake. The supporting materials demonstrate that 20 cubic yards of sediment will be removed below the 100-year frequency flood elevation of Bush Lake, 834.8 M.S.L. At the location of the outfall, the area will be over excavated allowing 10 tons of rip-rap and 5 tons of granular filter material to be placed. Material excavated must be placed above the 834.8 M.S.L. and land-altering activities proposed below the 100-year frequency flood elevation of Bush Lake must not result in net fill or net impact within the floodplain.

As a result, removal of the sediment will not alter the original alignment, slope or cross-section of the bank of Bush Lake.

8.3.2 Any excavated materials storage or disposal sites must be identified and shown to be:

a) *Not below the OHW of a public water, public water wetland or wetland subject to the Wetland Conservation Act*

b) *Not in the floodplain; or*

c) *Not subject to erosion or likely to cause redeposition of the sediment to an adjacent water body, storm water facility or storm sewer.*

Any excavated materials must be placed above the 100-year frequency flood elevation of Bush Lake, elevation 834.8 M.S.L. Section 2.0 Floodplain Management and Alterations of this report.

8.3.3 Degradation or erosion of the banks or bed of the subject water body by entry of equipment must be avoided.

The areas disturbed will be restored with erosion control blanket and seeding. The project will be completed in the winter as to minimize disturbances, and the entrance to the project site will be limited to the existing trail from Utah Avenue South.

8.3.4 Where determined necessary by the District to protect water quality, a flotation silt curtain shall be placed around the sediment removal site and maintained for the duration of the project.

Area disturbed, upgradient of the lake's water surface and within the floodplain, will be regraded and seeded with a native seed mixture. A flotation silt curtain will be installed at the project site if necessary.

8.3.5 No activity affecting the bed of a protected water maybe conducted between March 15 and June 15 on watercourses, or between April 1 and June 30 on all other public water bodies, to minimize impacts of fish spawning and migration.

Proposed activities will not occur between April 1 and June 30.

11.0 Fees

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

Rules 2.0-8.0 ..... $0

12.0 Financial Assurances

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. Rules 2, 3, 4, 5 6 and 8 are met.
3. It is our understanding that any excavated materials removed as part of replacement of the culvert shall be placed above the 100-year frequency flood elevation of Bush Lake, elevation 834.8 M.S.L. and the land-altering activities proposed below the 100-year frequency flood elevation of Bush Lake shall not result in net fill or net impact within the floodplain.

Recommendation

Approval, contingent upon:

1. General Conditions

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

1. An as-built grading plan along the pipe alignment conforming to Rule 2.3 criteria for the 100-year flood elevation of Bush Lake (elevation 834.8 M.S.L.), showing that no net reduction in floodplain volume results from the project.
2. Per Rule 8.3.5, no activity affecting the bed of a public waterbody may be conducted between April 1 and June 30.

SITE C – UTAH POND

8734 UTAH AVE S.

CONSTRUCTION NOTES

SITE ACCESS
* ACCESS SITE VIA WALKING PATH AT UTAH AVE. S. TERMINUS
* FURNISH AND INSTALL WOODCHIP ACCESS PAD AT SITE ENTRANCE (50 FEET)

TREE REMOVAL
* CLEAR AND GRUB TREES AS APPROVED. TREES TO BE REMOVED WILL BE MARKED PRIOR TO THE START OF CONSTRUCTION
* BRUSH OTHER VEGETATION AS APPROVED

STORM SEWER
* REMOVE AND DISPOSE 189 LF STORM SEWER PIPE
* FURNISH AND INSTALL 180 LF 24" C.A.S. PIPE

SITE GRADING
* REMOVE TEMPORARY BERM AS SHOWN ON THE PLAN (5 CY COMMON EXCAVATION)
* FILL AROUND EX MH 3 (AS SHOWN IN SECTION F–F) WITH MATERIAL REMOVED FROM THE TEMPORARY BERM (5 CY COMMON BORROW)
* REMOVE SEDIMENT AT PIPE OUTLET AS APPROVED. (20 CY COMMON EXCAVATION). SLOPES NOT TO EXCEED 3:1

RIP RAP
* FURNISH AND INSTALL 10 TONS CLASS III RIP RAP AND 5 TONS GRANULAR FILTER MATERIAL

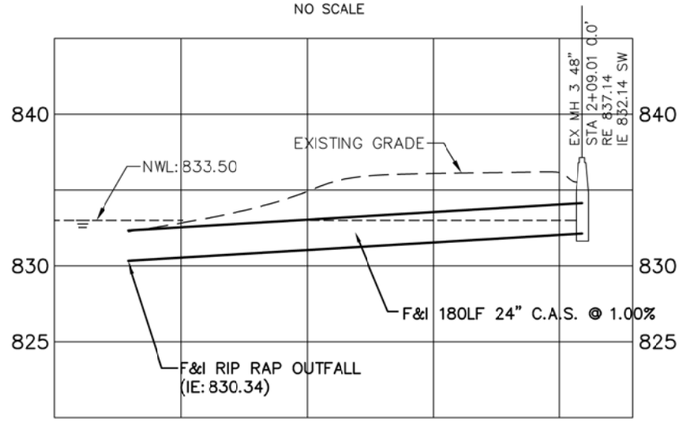
LANDSCAPING & EROSION CONTROL
* FURNISH & INSTALL 470LF SEDIMENT CONTROL LOG. USE AS PERIMETER CONTROL DURING AND AFTER CONSTRUCTION.
* FURNISH AND INSTALL LOAM TOPSOIL BORROW, SEED AND EROSION CONTROL BLANKET OVER AREAS DISTURBED BY CONSTRUCTION.

TRAFFIC CONTROL
* MAINTAIN AT LEAST ONE 11' DRIVING LANE IN EACH DIRECTION AT ALL TIMES
* THE TRAFFIC CONTROL PLAN SHALL CONSIST OF: (2) TRAIL CLOSED SIGNS, (1) ROAD WORK AHEAD SIGN & TYPE B CHANNELIZERS AS REQUIRED BY THE ENGINEER
* GENERAL PHASING AND CHANNELIZATION LAYOUT(S) AND MAY NOT BE ALL INCLUSIVE. ADDITIONAL INCIDENTAL TRAFFIC CONTROL MAY BE NEEDED THAT IS NOT IDENTIFIED ON THIS PLAN.
* SEE SPECIAL PROVISIONS

SITE SAFETY
* CONTRACTOR IS RESPONSIBLE TO ENSURE THE SAFETY OF ACCESS ROADS INCLUDING STAGING AREAS OR WORK PLATFORMS ON OR OVER ICE

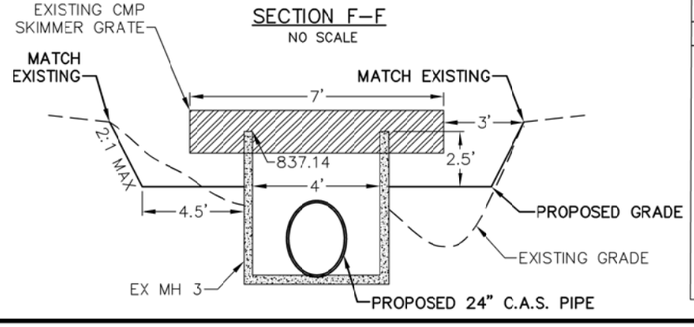
STORM SEWER PROFILE

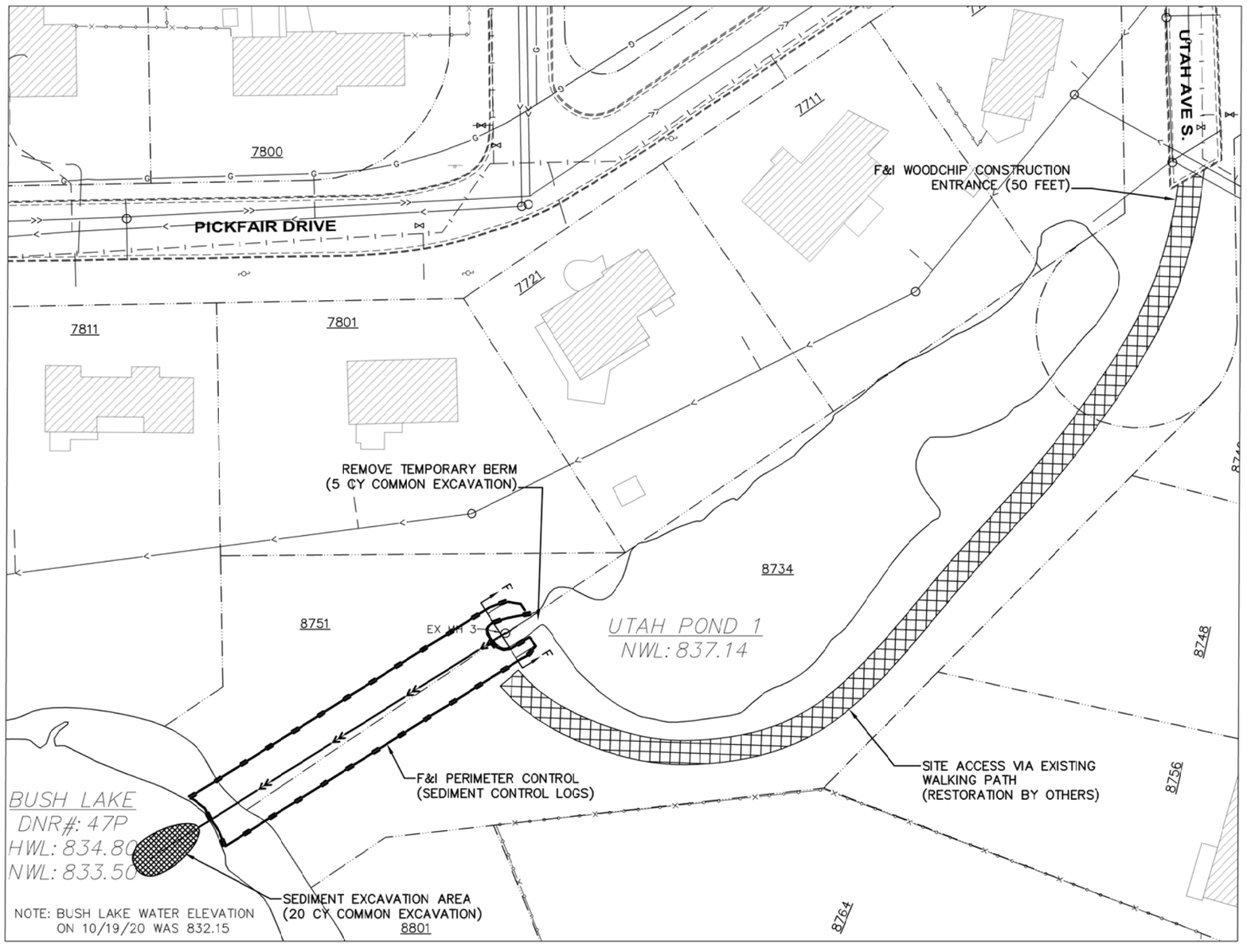
NO SCALE

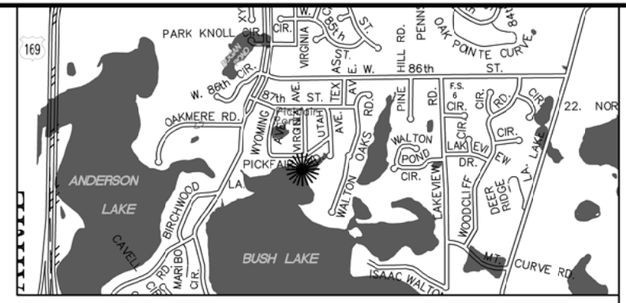


SECTION F–F

NO SCALE







SITE C
UTAH POND
8734 UTAH AVE S.

CITY OF BLOOMINGTON MINNESOTA
1700 W 98TH ST.
BLOOMINGTON MN 55431
PHONE (952) 563-8700

ENGINEERING DIVISION
PUBLIC WORKS DEPARTMENT

2020–902 POND MAINTENANCE PROJECT

REVISIONS

DATE	DESCRIPTION	BY

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Steven G. Gurney — LIC. # 40497 — DATE 10/19/20

DRAWN: DAC
CHECKED: SGG
APPROVED: SGG

SHEET: 9 OF 9

Drawing name: H:\PROJECTS\2020\2020–902 Pond and Storm Sewer Maintenance\CAD Files\2020–902 Plan.dwg -- Printed: Nov 05, 2020 - 9:17am