

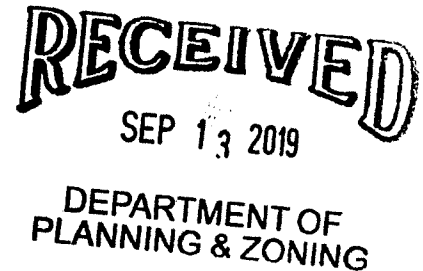


September 10, 2019

Ref: 58126.01

City of Burlington
Development Review Board
149 Church Street
Burlington, VT 05401

Re: Manhattan Drive Stormwater Outfall Repair
Burlington, Vermont
Application for Development Plan Approval



Dear Members of the Board:

On behalf of the City of Burlington, ("City" or "Applicant"), VHB has prepared the enclosed application materials in support of the proposed Manhattan Drive Outfall Repair Project ("Project") that would partially be located within the mapped Special Flood Hazard Overlay District in Burlington, Vermont. The Project consists of the repair/replacement of three (3) stormwater outfalls (IV8.0, IV9.0, and IV10.0), and the stabilization of approximately 970 feet of earth slope above these outfalls via stone toe-berm. The project also includes the subsequent stabilization of approximately 360 feet of existing stormwater drainage channel. Review by the Development Review Board ("DRB") is required because elements of the Project are proposed to be located within the FEMA-mapped Special Flood Hazard Area ("SFHA") associated with the Winooski River.

Field Investigation and Site Visit

VHB conducted a Natural Resource Assessment of the Project and adjacent areas ("Study Area") in 2018. Wetlands within the Study Area were also delineated.

Flood Hazard Area

The FEMA flood data was reviewed for Chittenden County in order to determine if any portions of the Study Area are situated within designated floodways or floodway fringes, as shown on Flood Insurance Rate Maps ("FIRM") 50007C0251D (FEMA, effective date 07/18/2011). A portion of the proposed stone toe berm around Outfall IV8.0 requires filling of an AE Zone, defined by the contour of elevation 112 feet.

The Project has been designed to avoid fill within designated flood hazard zones. However, approximately 29 cubic yards of fill is required below the base flood elevation ("BFE") (elevation 112 feet) to construct a stone toe berm. The toe berm will protect the slope against erosion and increase the factor of safety for

40 IDX Drive, Building 100
Suite 200

Engineers | Scientists | Planners | Designers

South Burlington, Vermont 05403

P 802.497.6100

F 802.495.5130

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slope stability to an acceptable level. The area of proposed fill below the BFE is located at the edge of a portion of the Winooski River floodplain that is over 5,000 feet from the river itself. This area consists of a large wetland complex bounded to the north and east by roadway and railroad embankments and to the south and west by the landform that will be protected from further slope failure by the stone toe berm. The stone berm will be constructed generally on a 2.8:1 (H:V) slope, thereby minimizing the area of floodplain impact while still providing the intended slope protection. Because the adjacent floodplain wetland occupies relatively flat terrain, the fill would occur between elevations 110 and 112 feet, the upper limit of the BFE. Because of the steepness of the adjacent slope and the relatively flat terrain at the toe of the slope, compensatory storage to replace the proposed volume of fill is not practicable on this site.

However, when spread over the floodplain adjacent to the project site (bounded by railway earthwork to the north and the Route 127 roadway embankment to the east), the displaced 29 cubic yards (783 cu. ft.) would result in a negligible rise in flood level over the Study Area as shown in the following calculation:

$$\text{Increase in Flood Level} = \frac{\text{Volume of Fill}}{\text{Adjacent Floodplain Area}}$$
$$\text{Increase in Flood Level} = \frac{783 \text{ cu. ft.}}{390,000 \text{ sq. ft.}} = 0.002 \text{ ft} = 0.02 \text{ in}$$

For context, a single grain of sand averages 0.04 inches in diameter.

Installation methods will meet the Flood Hazard Area Standard, will not adversely affect public safety by increasing flood elevations, or flood velocities, and will not be in violation of the National Flood Insurance Program Floodplain Management Criteria in 44 C.F.R. §60.3.

Summary

The Project has been designed to avoid and minimize impacts within the floodplain. The Project has been designed not to endanger the health, safety, and welfare of the public, or downstream landowners during flooding or from potential erosion.

This package has been developed in coordination with the Burlington Department of Public Works Water Resources Division in order to provide the Board with the information necessary to make a determination of No Impact.

The following materials are provided as attachments:

- Figure 01 showing the Project Area within floodplain zone
- FIRMette 50007C0251D showing bounded flooding area adjacent to project

City of Burlington
Ref: 57913.01
Page 3 of 3
September 10, 2019



Please let us know if you have any questions or need additional information.

Sincerely,

A handwritten signature in black ink, appearing to read "Nicholas C. Hadjaris".

Nicholas C. Hadjaris, PE, DBIA, LEED AP BD+C
Senior Project Manager

cc: Scott Gustin
Norm Baldwin
Lynnette Claudon
Rob Evans

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