


# Lower Rum River Watershed Management Organization

## Andover–Anoka–Coon Rapids–Ramsey

2015 First Avenue; Anoka, MN 55303

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**To:** Lower Rum River Water Management Organization  
**From:** Barr Engineering Company   
**Date:** March 12, 2018  
**Re:** Permit #2017-33: South Street Addition: Anoka

We have received plans and a LRRWMO permit application for the proposed 4-lot residential subdivision to be located between Washington Street and South Street, west of 8<sup>th</sup> Avenue in Anoka. This is a redevelopment of the approximate 1.4 acre site however a tributary drainage area of approximately 2.1 acres is directed to a proposed underground stormwater management infiltration facility (UGSWMF) to be located in the back-yard area of these lots. The UGSWMF consists of 190 lineal-feet of 30-inch corrugated polyethylene pipe that will provide volume retention, rate control and water quality management. This system has been designed for stormwater management for the redevelopment of the 2.1 acres tributary to the system (the area of 8<sup>th</sup> Avenue on the north, 7<sup>th</sup> Avenue on the south, South Street on the east and Washington Street on the west).

The following table summarizes the existing and proposed discharges from the site the 2, 10, and 100-year frequency storm events:

Frequency	Existing Discharge to 8 <sup>th</sup> Avenue c.f.s.	Proposed Discharge to 8 <sup>th</sup> Avenue c.f.s
2-Year	<1.0	<1.0
10-Year	<1.0	<1.0
100-Year	1.5	1.3

A volume retention of 1,822 cubic feet is required from the 0.5 acres of the proposed impervious area. The on-site underlying soils have been classified as a poorly graded sand (SP). With an assumed infiltration rate of 0.8 inches/hour according to the Minnesota Stormwater Manual, an area of 570 square feet is required for the UGSWMF to be drawn-down within 48 hours. The stage-volume relationship for the UGSWMF indicates at the outlet elevation of 861.4 M.S.L. a volume of 2,490 cubic feet (1,822 cubic feet required) with an area of 1,520 square feet (570 square feet required) will be provided.

LRRWMO water quality criteria requires an annual removal efficiency of 90% for total suspended solids and 60% of total phosphorous for the project. A “dead-storage” volume of 2,490 cubic feet is required to meet these removal efficiencies. The UGSWMF will provide a volume of 2,490 cubic feet below the outlet elevation of 861.4 M.S.L.

The borings show that groundwater was encountered to a depth of 12 feet, approximately 852.9 M.S.L. +/- The bottom elevation of the UGSWMF is 859.8 M.S.L., a separation of 6.9 feet. A minimum vertical separation of 3 feet is required between an infiltration facility and groundwater.

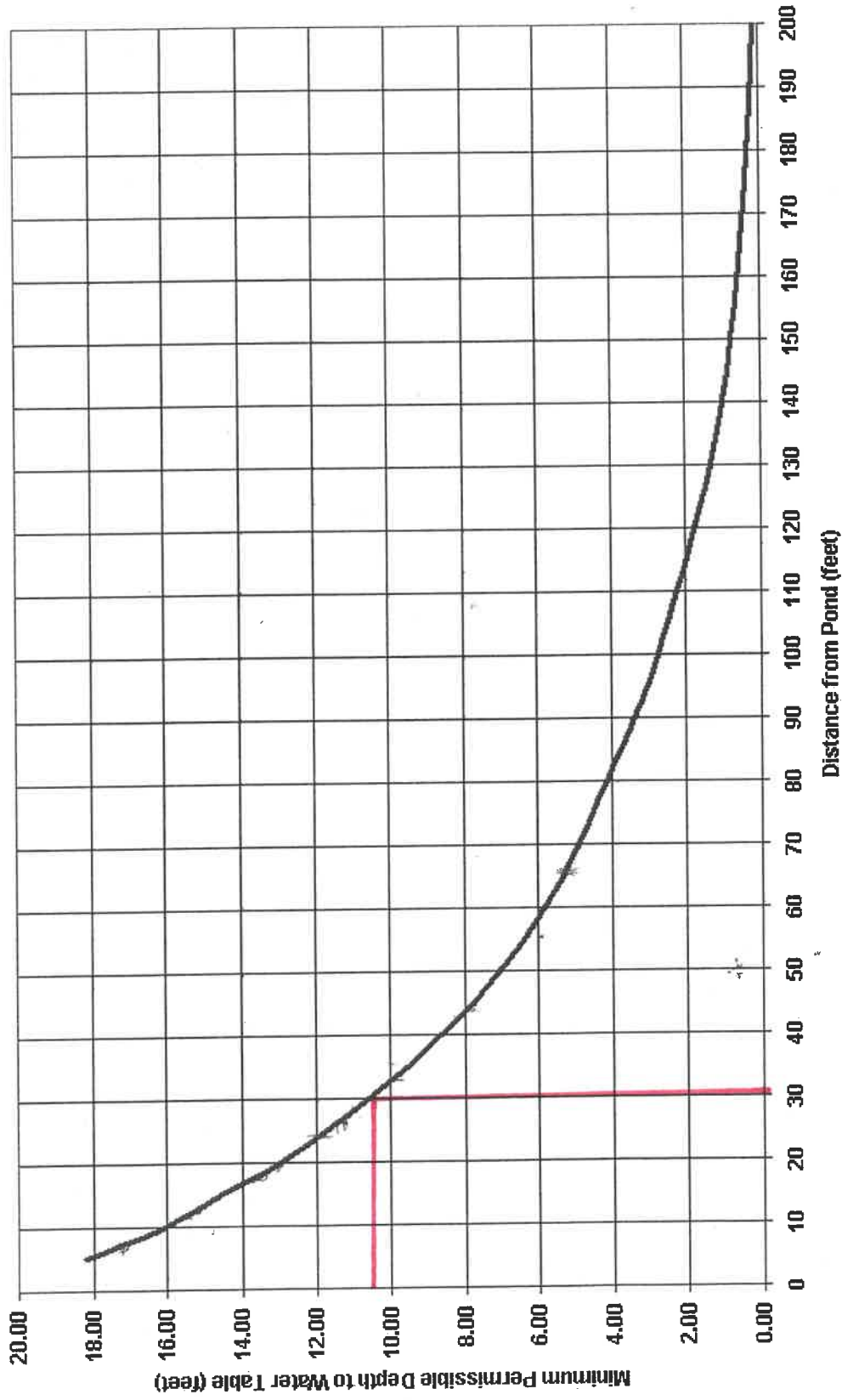
The calculated 100-year frequency flood elevation of the UGSWMF is 867.3 M.S.L. The proposed homes have full basements with the lowest finished floor elevation shown to be 863.3 M.S.L. The LRRWMO low floor criteria requires a minimum of 2 feet of freeboard between the calculated flood elevation and the low floor elevation of the building however in the situation the mounding of groundwater and the elevation that surface water can enter the structure are the critical issues. Using the methodology that considers soil type, depth to groundwater and distance between the structure and high water that has been used in similar situations in the LRRWMO, the minimum separation that must be provided between the high water elevation and the structure is 30 feet. A copy of the graph used to determine this distance is attached for reference. The footprints of the proposed structures are shown to be approximately 50 feet from the high water elevation. The low opening of the proposed structures **must** be established at or above 869.3 M.S.L., two feet above the calculated flood elevation of the UGSWMF.

Silt fence is shown to be constructed at the limits of construction, inlet protection encircling existing catch basins. A rock construction entrance for erosion control will be required.

It is our recommendation that the LRRWMO approve of the permit for this project subject to the following conditions:

1. Erosion control measures need to be installed prior to the commencement of construction.
2. Upon completion of construction and restoration of disturbed areas, the permit applicant is responsible for the removal of all erosion control measures installed throughout the construction site.
3. To minimize the potential of material from leaving the site and being tracked onto the roadway, a rock filter construction entrance being a minimum of two feet in height and having side slopes of 4:1 must be constructed at the entryway onto the site. The rock construction entrance will provide an erosion control facility and also enable construction traffic to enter the site.
4. Street sweeping must be undertaken and completed on an as needed basis.
5. The calculated 100-year frequency flood elevation of the UGSWMF is 867.3 M.S.L. The lowest finished floor elevation of the four proposed homes is shown to be 863.3 M.S.L. Using the criteria described above, the four proposed structures must be located a minimum distance of 30 feet from the 867.3 M.S.L. calculated high water. The low opening of the proposed structures must be set at or above elevation 869.3 M.S.L., providing of 2 feet of freeboard between the calculated flood elevation and the elevation that surface water could enter the structures.
6. Compliance with the storm water management requirements of the Lower Rum River Watershed Management Organization are to be administered for this project by the City of Anoka.
7. 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; shall obtain the written consent of all persons, agencies, or authorities concerned, and shall acquire all necessary property rights and interest.

PLOT 1: Minimum Depth to Water Table for No Further Evaluation



863.3 (LFE)  
- 852.9 (G.W.)  
10.4 feet