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Stormwater Management Memorandum

Date: May 27, 2025
To: Karl Keel, P.E. – City of Mankato
Cc: Mark Konz – City of Mankato
From: Alec Pietz, P.E. – Land Development Project Manager
Subject: Lot S2 Construction
Mayo Clinic Health System
BMI Project No.: 25X.139115

I. Project Introduction

The following report provides a summary and analysis of the existing and proposed hydrology for conversion of a previously built temporary construction staging laydown area to a permanent Mayo Clinic parking lot in Mankato, Minnesota. The estimated disturbed area is approximately 0.9 acres and is located near Main Street, and adjacent to Garden Boulevard and Mulberry Street. The proposed project includes the reclamation of existing pavements, curb and gutter installation, stormwater management construction, paving, and striping. Landscaping will also be provided with the project. The previously installed tile and inlet system will be maintained and modified as needed for the construction of permanent stormwater management. The SCS TR-20 hydrology method was utilized in Autodesk Storm and Sanitary Analysis (SSA) for the project. NOAA Atlas 14 rainfalls for Mankato, Minnesota and MSE 3 distribution curves were used to develop rainfall events. Although additional storm events were used in the stormwater modeling, the 2-yr (2.87”), 10-yr (4.29”), and 100-yr (7.21”) events are reported for relevant data in this report. This project is being designed in accordance with the City of Mankato Grading Manual.

II. Existing Site Hydrology

The existing topography has underwent numerous changes since acquisition by Mayo Clinic. Single-family homes existed for decades prior to removal by Mayo Clinic and establishment of the laydown area. A figure showing the hydrology related to the laydown project is provided with this memo and is the basis for existing conditions.

Utilizing SSA for hydraulic modeling, existing and proposed peak flow rates for the design storms were determined and are shown in the following table:

Existing Condition Peak Flow Rates (cfs)			
Location	2-yr	10-yr	100-yr
Backyards	1.06	1.91	3.69
Right-of-Way	0.85	1.51	2.91
Total	1.91	3.42	6.60

Peak flows may not exceed pre-project conditions.

III. Proposed Site Hydrology

The total project impervious area is 0.57 acres which includes the existing and new impervious areas, requiring 0.052 ac-ft of water quality volume (WQV). The stormwater filtration basin is sized for 0.069 ac-ft of WQV, exceeding the required volume and allowing for additional future pavements. Additional information of the basin is provided with this memo.

The proposed hydrology of the project is illustrated with the *Site Hydrology* figure included with the memo and shows the site, stormwater routing, and stormwater improvements. When inputting this information into SSA, the following peak flow results are yielded:

Proposed Condition Peak Flow Rates (cfs)			
Location	2-yr	10-yr	100-yr
City Storm Sewer	1.12	1.20	2.76
Right-of-Way	0.20	0.39	0.79
Total	1.32	1.59	3.55

The peak flows for all design storms are less than the existing peak rates due to the basin.

Erosion and sediment control best management practices will be implemented with the project and detailed in an Erosion & Sediment Control Plan to be provided in the permitting construction documents to mitigate construction stormwater runoff and potential pollution. These will be in conformance with the City of Mankato Grading Manual.

Please review the provided information and Civil construction documents and feel free to contact Alec Pietz, P.E. at Alec.Pietz@bolton-menk.com or (507) 902-2606.

NPDES/SDS CONSTRUCTION STORMWATER PERMIT
RAIN GARDEN CALCULATIONS
MAYO CLINIC HEALTH SYSTEM - MANKATO
LOT S2 CONSTRUCTION
BMI Project No. 25X.139115

Date: May 2025
Engineer: AWP

Rain Garden

Input Data

New Impervious Area: Acres

Water Quality Volume

(1.1 inches of runoff from new impervious surfaces)

Volume : cubic feet = acre-feet

Filtration Basin Storage Curve			
Elevation (ft)	Area (sf)	Volume (cf)	Volume (ac-ft)
997	2370	0	0.000
998 (WQV)	3660	3015	0.069
999	5090	7390	0.170

WQV Requirement Met

HYDROLOGY FIGURE FROM
THE MAY 2022 SUBMITTAL
FOR THE LAYDOWN AREA
PROJECT



