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SANITARY SEWER FLOWS

Date: February 20, 2024
To: Michael McCarty, P.E.; City of Mankato
From: Alec W. Pietz, P.E.; Senior Project Engineer
Subject: Mesenbrink Development – Sanitary Sewer Analysis
BMI Project No.: OM1.128460

This memorandum is prepared as a record for anticipated wastewater daily and peak flows contributing to sanitary sewer dubbed “Hoffman Road Trunk Sewer”. The development primarily consists of a mixture of apartments, retail, and single family housing. The table below shows the total anticipated flows from the development:

OVERALL DEVELOPMENT					
UNIT TYPE	NUMBER OF UNITS	ADF PER CAPITA (GPD)	OCCUPANCY	FLOW (GAL/DAY)	PEAK FLOW (GPM X4)
CONVENIENCE STORE & CAR WASH	1	4500	1	4500	12.5
APARTMENTS	671	100	2.7	181170	503.3
COMMUNITY BUILDING	1	1000	1	1000	2.8
SINGLE FAMILY	106	100	3	31800	88.3
RETAIL STORES	8	200	1	1600	4.4
TOTAL OVERALL DEVELOPMENT				220070	611.3

Four connections are proposed from private development to the Hoffman Road Trunk Sewer within the proposed subdivision and are noted on an accompanying figure submitted with the preliminary plat documents. The first connection, “Sanitary Connection 1” includes apartment buildings, a community building, a convenience store and car wash, and retail stores. The table below describes the anticipated flows:

SANITARY CONNECTION 1					
UNIT TYPE	NUMBER OF UNITS	ADF PER CAPITA (GPD)	OCCUPANCY	FLOW (GAL/DAY)	PEAK FLOW (GPM X4)
CONVENIENCE STORE & CAR WASH	1	4500	1	4500	12.5
APARTMENTS	411	100	2.7	110970	308.3
COMMUNITY BUILDING	1	1000	1	1000	2.8
RETAIL STORES	8	200	1	1600	4.4
TOTAL SANITARY CONNECTION 1				118070	328.0



Date: September 26, 2023
To: Michael McCarty, P.E.; City of Mankato
From: Alec W. Pietz, P.E.; Senior Project Engineer
Subject: Mesenbrink Development
Water System Modeling Memo
BMI Project No.: 0M1.128460

Dear Michael,

The City of Mankato's water distribution system model was analyzed on August 9, 2022, with the inclusion of anticipated watermain routing for the Mesenbrink Development. This modeling was done in tandem with the Groh Farm Subd. No. 2 and therefore, on a previously conceived layout than what is being submitted for the Mesenbrink Preliminary Plat. Ultimately, the water demand and layout are in the same vein of what was previously proposed, so we anticipate negligible changes in what was modeled. Results are displayed in the table below.

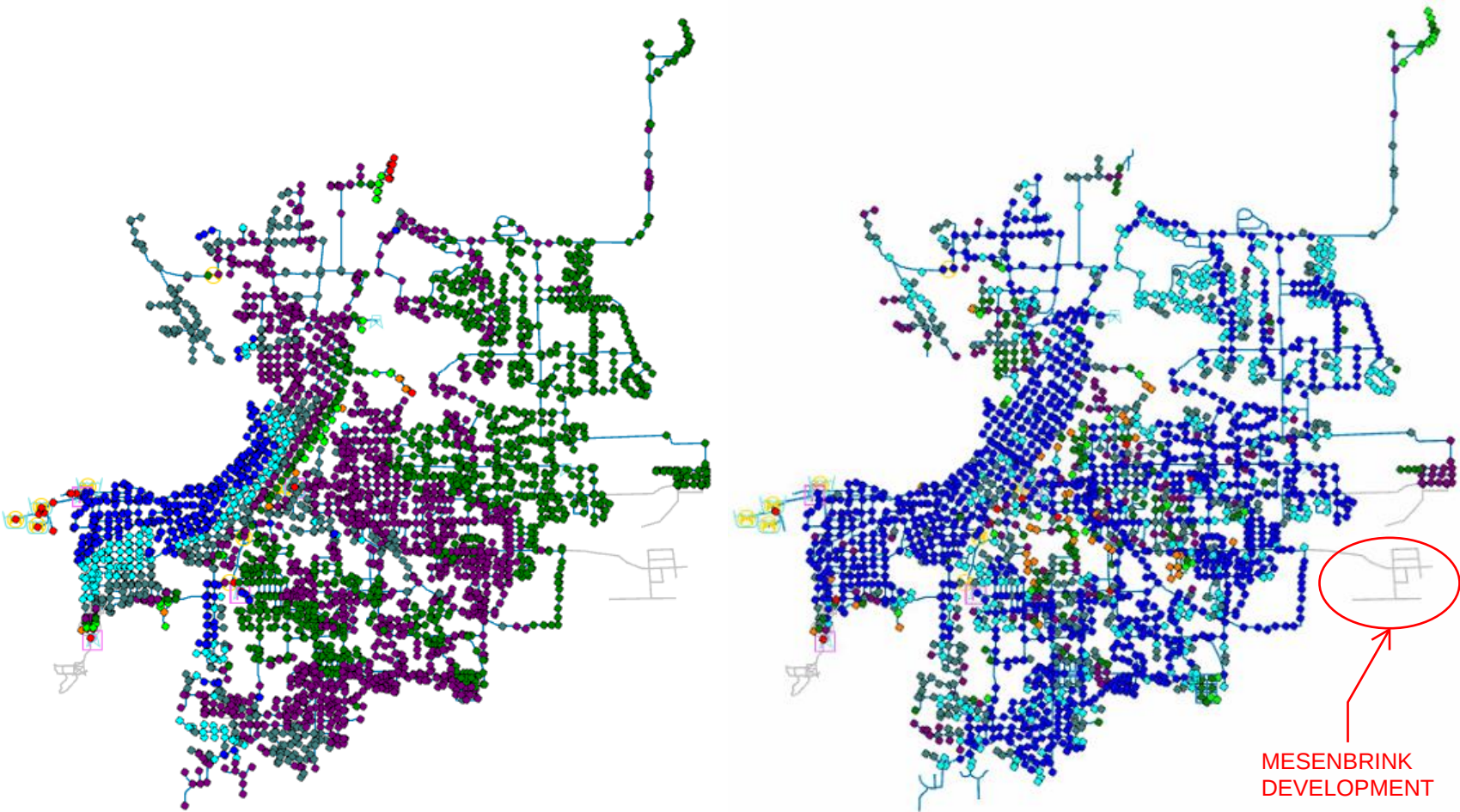
Mesenbrink Development Available Fire Flow Results	
Minimum Fire Flow	1,000 gpm
Average Fire Flow	2,100 gpm
Maximum Fire Flow	3,500 gpm

Results show that the minimum recommended residential fire flow of 1,000 gpm per the MN Fire Code is met. Figures are provided showing the existing and proposed water systems.

Please let me know if you have any questions or concerns.

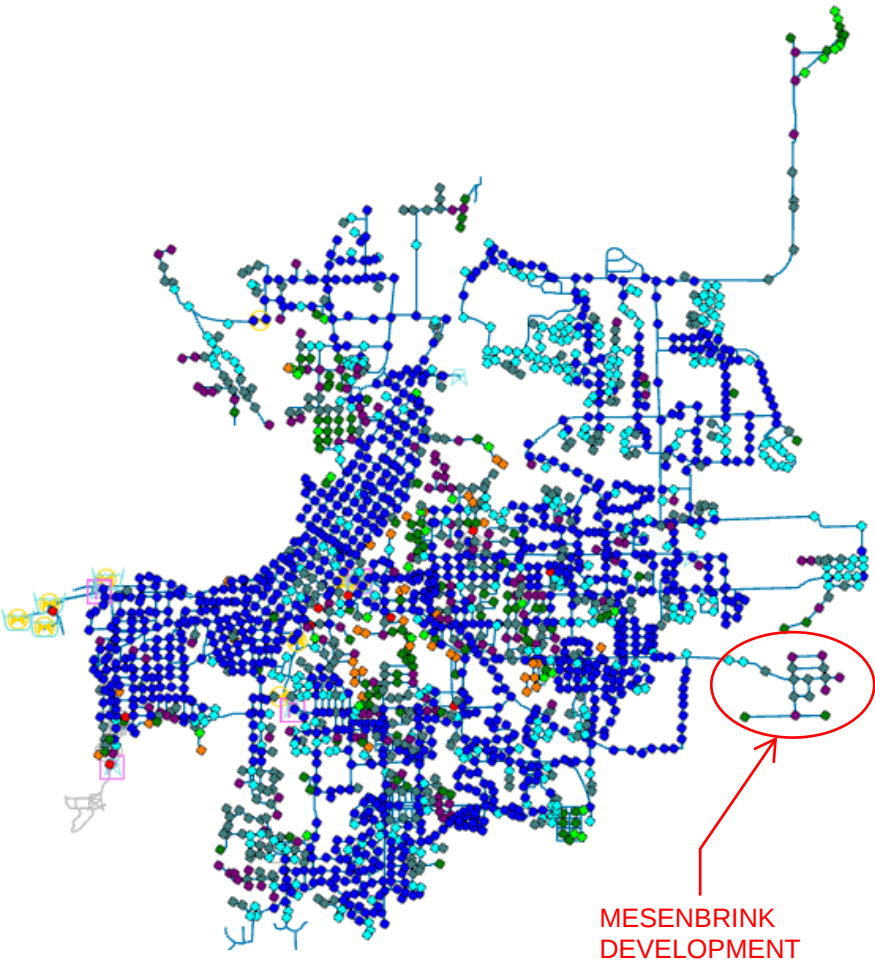
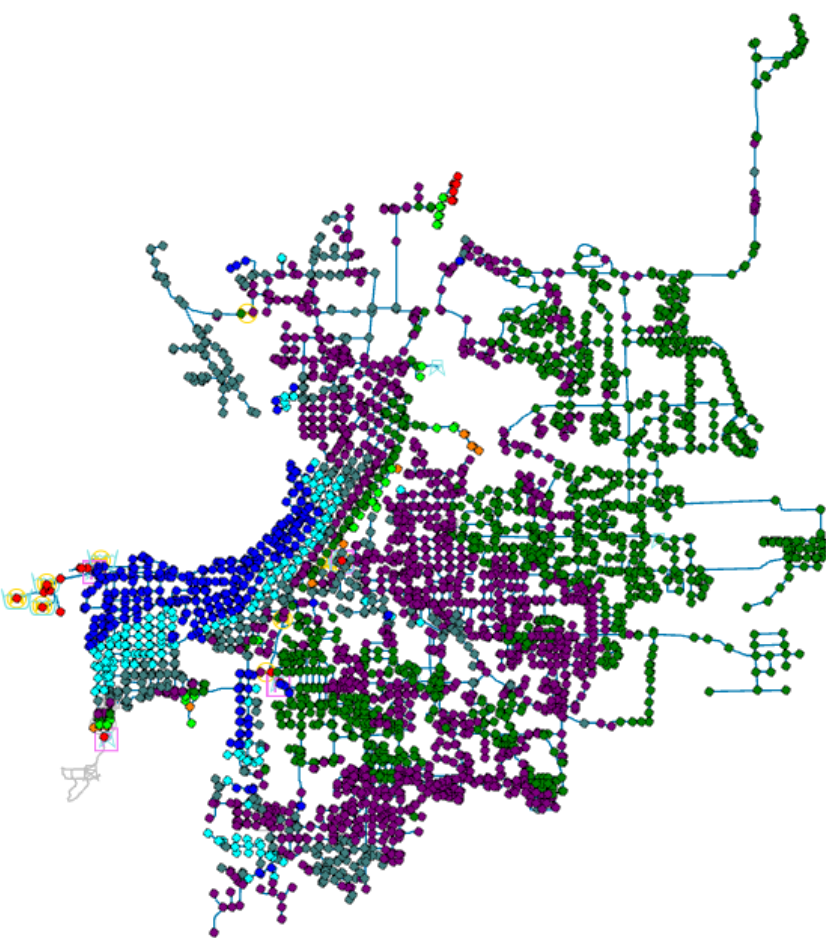
MDD – Existing System

Color Coding Legend - Pressure (psi)		Color Coding Legend - Fire Flow Available (gpm)	
	Less than 30		Less than 500
	30 - 40		500-800
	40 - 50		800-1000
	50 - 60		1000 - 1500
	60 - 70		1500-2000
	70 - 80		2000 - 3000
	80 - 90		3000 - 4000
	90 - 100		4000 - 5000



MDD – Existing System + Proposed Developments

Color Coding Legend - Pressure (psi)		Color Coding Legend - Fire Flow Available (gpm)	
	Less than 30		Less than 500
	30 - 40		500-800
	40 - 50		800-1000
	50 - 60		1000 - 1500
	60 - 70		1500-2000
	70 - 80		2000 - 3000
	80 - 90		3000 - 4000
	90 - 100		4000 - 5000



Sanitary Connection 2 includes apartments:

SANITARY CONNECTION 2					
UNIT TYPE	NUMBER OF UNITS	ADF PER CAPITA (GPD)	OCCUPANCY	FLOW (GAL/DAY)	PEAK FLOW (GPM X4)
APARTMENTS	260	100	2.7	70200	195.0
TOTAL SANITARY CONNECTION 2				70200	195.0

Sanitary Connection 3 includes single family homes on the south side of Hoffman Road:

SANITARY CONNECTION 3					
UNIT TYPE	NUMBER OF UNITS	ADF PER CAPITA (GPD)	OCCUPANCY	FLOW (GAL/DAY)	PEAK FLOW (GPM X4)
SINGLE FAMILY	72	100	3	21600	60.0
TOTAL SANITARY CONNECTION 3				21600	60.0

And Sanitary Connection 4 includes single family homes on the north side of Hoffman Road:

SANITARY CONNECTION 4					
UNIT TYPE	NUMBER OF UNITS	ADF PER CAPITA (GPD)	OCCUPANCY	FLOW (GAL/DAY)	PEAK FLOW (GPM X4)
SINGLE FAMILY	34	100	3	10200	28.3
TOTAL SANITARY CONNECTION 4				10200	28.3

Please review and feel free to reach out with any questions or comments to Alec Pietz, P.E. at Alec.Pietz@bolton-menk.com or 507-625-4171 ext. 3310.