

IV. Utility Review, Mark Spencer



MEMORANDUM

TO: Master Plan & Zoning Committee

FROM: Mark Spencer, AICP, Planner *Mark Spencer*

DATE: October 5, 2007

SUBJECT: Utility Review for Master Plan Review 2007

As a part of the City's 2007 Master Plan Review, this memo provides a brief recap of the status of the City's sanitary sewer, water supply and storm water systems in the three study areas included in the Master Plan Review. This recap consolidates information found in the City's Master Plan for Land Use, 2004; the Storm Water Master Plan, February 2007; 2005 Sanitary Sewer Capacity Study; and the 2004 Water Distribution Study and Master Plan. It also includes information provided by the City's Engineering, Public Works and GIS Departments.

General Information

Sanitary Sewer

The City of Novi is served by three different sanitary sewer systems. The majority of the City's sewerage flows into the North Huron Valley/Rouge Valley interceptor which flows into the Wayne County sanitary sewer system and is ultimately treated at the Detroit Water and Sewerage Department (DWSD) Wastewater Treatment Plant which discharges into the Detroit River. All three Master Plan Review Study Areas are served by this system. This system is divided into 10 sewer districts with an additional 7 sub-districts that are served by lift/pump stations. The 2005 Sanitary Sewer Study concluded that the City would exceed contracted outlet capacity before the time of build-out. Any proposed change of land use that would increase sewerage flows beyond the flows contemplated in the Master Plan will ultimately increase the capacity shortage.

Water

The City's water system is supplied by transmission mains owned by the Detroit Water and Sewer Department. The City has four pressure districts and their pressures are controlled by two booster pumps and a number of pressure reducing valves. The *Water Distribution Study and Master Plan*, adopted by the City Council on March 15, 2004, recommended infrastructure improvements to "...ensure delivery of safe water at desired quantities and pressures any time of the day, every day, to all of Novi." The Study identified the area of the City west of Taft Road as having the potential to have unacceptable pressures of 35 pounds per square inch (psi) or less when the City is built out. Four substantial capital improvement projects have been

constructed since 2004 that have eliminated the pressure problems. The first was the additional water main crossing under I-96 east of Beck Road. The second was a fifth connection to DWSD at Pontiac Trail and West Park Drive. The third was the construction of the water booster station at West Park Drive and Twelve Mile Road. The fourth was the construction of an additional 24" water main along Beck Road from Grand River Avenue to Eleven Mile Road. The current Capital improvement Plan lists two unfunded projects in the Southwest Quadrant Study Area. First, a \$0.3 million Garfield Road/Tuscany Reserve to Nine Mile water main loop and Second, a \$0.9 million Nine Mile, Napier, Eight Mile water main loop.

Storm Water

The City's storm water ultimately flows into the Huron and Rouge Rivers. The City's Stormwater Management Ordinance requires developers to build stormwater management facilities for pretreatment (remove sediment, oil and gas) of smaller storms and storage for the 100 year storm event so that it is released slowly into the City's rivers and drains. The City operates 11 regional detention basins to mediate storm flows from the drainage districts in which the basins are located. Additional study may be required for sites that are located in districts that have regional detention basins to determine the extent to which the regional basin can be used for storage and the ability for any open channel to convey the additional flow to the regional basin.

I-96 & Novi Road Study Area

Sanitary Sewer

This Study Area is served by three sanitary sewer districts: Interceptor, West Oaks; and Lannys Road. Additional sewer capacity exists in the Interceptor and West Oaks Districts. Sewer capacity is adequate in the Lannys Road District, if the projected flow rate remains the same as currently planned, since the discharge of this service area is at the far downstream outlet of the district into the Oakland County collector sewer. Any rezoning in the Study Area that increases demand beyond the flow that was anticipated when the system was designed could require substantial infrastructure improvements and could require the purchase of additional sewer capacity.

Water

This Study Area is served by one pressure district, the Intermediate District. All properties in the study area are either served or have water at the property line except for the Adell property (former Novi Expo site) which is served by a private water system. A 30" main exists along Novi Road that could be tapped to serve this property. The City would require adequate main sizing and looping to improve system reliability and performance.

Storm Water

Located in the Rouge River watershed, storm water from this Study Area all ultimately drains into the Middle Branch of the Rouge River. This Study Area is served by the West Oaks, Taft Road and C & O drainage sub-districts. The I-96 Novi Road Study Area is the only Study Area served by regional basins. The portion of the Study Area north of I-96 drains into the West Oaks basin that flows ultimately into Bishop Creek and the area south of I-96 drains into the Walled Lake Branch of the Middle Rouge River and is served by the in-line Taft and C & O basins. The Storm Water Master Plan Phase II has recommended that due to flooding in the Meadowbrook Lake District, all new development sites upstream of Meadowbrook Lake should be required to fully detain runoff on-site. As such, additional study will be required for sites that are located in districts tributary to Meadowbrook Lake to determine the extent to which the regional basin can be used for storage and the ability for any open channel to convey the additional flow.

Twelve Mile, Napier and Wixom Roads Study Area

Sanitary Sewer

This study area is served by one sanitary sewer district; Lannys Road. The City is currently undertaking a \$2,000,000 project to increase the capacity of the Lannys Road District with the addition of a diversion chamber, pumping station and bypass force main along the Beck Road and I-96 corridors. The design of this bypass project was based on the Master Plan for Land Use that was adopted in 2004 and does not take into account additional capacity increases in these areas. Future improvements to address increased density and additional flow could be difficult to implement and very expensive.

There are several sanitary lift stations that were constructed for other developments within the study area. New sanitary sewer flows from the study area should be routed to decrease the impact on the existing pump stations. In general flows should be directed toward Wixom Road to avoid adding to pumped flows. The Engineering Department will require extensive study of proposed zoning changes within the study area to determine infrastructure impacts.

Any rezoning in the Study Area that increases demand beyond the flow that was anticipated when the system was designed would require substantial infrastructure improvements and could require the purchase of additional sewer capacity at the City's outlet to Wayne County.

Water

The study area is served by two water pressure districts; Island Lake and Intermediate. With the completion of the capital improvement projects listed above and minor improvements, additional volumes of water could be supplied throughout the Study Area. The City would require adequate main sizing and looping to improve system reliability and performance.

Storm Water

This Study Area is located in the Huron and Rouge River watersheds and is not served by regional detention basins. The majority of the north portion of the area drains to the Rouge River and the balance to the Huron River. Three sub drainage areas are identified: The Twelve Mile District in the Rouge River watershed and the Napier and Center District that drain into the Huron River. Because the area is not served by regional detention basins, all new developments in the study area will be required to meet the detention requirements as outlined in City Ordinances.

SW Quadrant Study Area

Sanitary Sewer

The Study Area is served by three sanitary sewer districts; Lannys Road, Simmons and Nine Mile. The Simmons District has the flow capacity in its pipes to handle a minor increase in flow although any substantial increase in flow beyond the flow contemplated in the Master Plan adopted in 2004, could trigger the need for infrastructure improvements to accommodate the flow.

The design of the Nine Mile District facilities was based on the Master Plan for Land Use in place at the time of design. The Nine Mile District may not have capacity for additional flow

without installing larger pumps and mains. City sewer models indicate that the section of sanitary sewer along the north side of Nine Mile Road and west of Novi Road will exceed its capacity with the addition of any substantial flow not contemplated when the system was designed.

The Lannys Road District also serves this Study Area. As development occurs in this District, minor main and lift station improvements may be needed. Any rezoning in the Study Area that increases demand beyond the flow that was anticipated when the Lannys Road District system was designed would require substantial infrastructure improvements.

Overall, any rezoning the study area that increases sanitary sewer flows beyond those anticipated in the 2005 Sanitary Sewer Capacity Analysis (based on the 2004 Master Plan for Land Use) could require the acquisition of additional sewer capacity in the Wayne County interceptor. The Engineering Department will require extensive study of proposed zoning changes within the study area to determine infrastructure impacts.

Water

This Study Area is served by two pressure districts; Island Lake and Intermediate. With the completion of the capital improvement projects listed above and minor improvements, additional volumes of water could be supplied throughout the study area. The City would require adequate main sizing and looping to improve system reliability and performance.

Storm Water

This Study Area is located in the Huron and Rouge River watersheds and are not served by regional detention basins. The majority of the western, northern and central portions of the Study Area drain into the Huron River with the remainder draining to the Rouge River. The Huron River watershed is served by the Novi-Lyon, Balko and West Novi drainage sub-districts and the Rouge watershed is served by the Napier, Eight-Napier, Eight-Garfield, Sump, Eight Mile, Bulk, Randolph, City Line and Thornton drainage sub-districts. Because the area is not served by regional detention basins, all new developments in the study area will be required to meet the on-site detention requirements as outlined in City Ordinances.

References

Water Distribution Study and Master Plan adopted by the City Council on March 15, 2004

Master Plan for Land Use, 2004

Storm Water Master Plan Update - February 2007

Impact of Rezoning Requests on Lannys Sanitary Sewer District Memorandum, Brian Coburn, February 13, 2007.

Engineering Rezoning Reviews 18.667, 18.671, PRO for St. Catherine, and Legacy Parc

Interviews with Brian Coburn and Benny McCusker, September 2007