

Town of Farmington

1000 County Road 8
Farmington, NY 14425

PRELIMINARY ENGINEERING REPORT

for the

TOWN OF FARMINGTON

SANITARY SEWER CAPACITY IMPROVEMENTS



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MRB Group Project No. 0610.20001

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I. EXECUTIVE SUMMARY

In recent years, the Town of Farmington (Town) has continued to experience high rates of development and has experienced some Infiltration and Inflow (I&I) in the sewer collection system, which has led to concerns over the capacity of the sanitary sewer system. Two previous engineering reports evaluated the existing conditions and main sewer line capacities in conjunction with rapid development and with I&I flow monitoring in these sewer lines.¹

As the southwest quadrant continues to develop there is a need to continue these capacity studies and plan for future use. This Preliminary Engineering Report (PER) aims to address and identify two sanitary sewer improvements that are critical to current and known future development. One is increasing the capacity of a portion of the sanitary sewer along Mertensia Road south of Route 96, and the second is the realignment of the Race Track Pump Station (PS-1) force main from the Route 96 sewers to the Interceptor Sewer Line.

Based on the analysis, installation of a force main along the east side of Beaver Creek Road, between State Route 96 and the Interceptor Sewer line crossing located on Beaver Creek, will relieve the capacity strain experienced by the existing line along State Route. In addition, installation of a 12-inch section of gravity sanitary sewer line along a portion of the west side of Mertensia Road connecting into the Pheasants Crossing development will provide additional capacity, easy access for maintenance, minimal disruption to residents, and connect to the Interceptor Sewer closer to the WWTP. Due to the location of current overflows and sewer back-ups, and the flow trends experienced along Route 96, the Town views the PS-1 force main realignment along Beaver Creek as a high priority project. The proposed improvements to the sanitary sewer along Mertensia Road south of Route 96 are also viewed as a high priority project as the existing flows currently exceed the sewer's critical capacity and will continue to increase each year from the continued development buildout in that area.

The infrastructure identified herein, including Pump Station 1 and the associated forcemain and the sewer collection system on Mertensia Road is currently owned by the Town of Farmington Sewer District and operated by the Town of Farmington. The total estimated total project cost of the PS-1 force main realignment along Beaver Creek Road and the Mertensia Road sewer improvements is \$999,999.

¹ MRB Group (2018). *Sewer System Capacity Report for the Town of Farmington* (Project No. 0610.17004); MRB Group (2019). *Sewer Transmission Development Capacity Study for the Town of Farmington* (Project No. 0610.18001).

The proposed improvements will provide benefit to the users in the District by freeing up capacity in the sanitary sewer collection system and alleviating sanitary sewer overflows in the Town. The Town is currently seeking grant opportunities and other means of securing funds in order to reduce the necessary debt service as much as practical.

It is recommended that the Town consider the use of this PER to pursue grant assistance from the NYS Environmental Facilities Corporation (EFC) Water Infrastructure Improvement Act (WIIA) program which may contribute up to 25% of the total eligible project costs in grant monies.

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II. PROJECT BACKGROUND AND HISTORY

For the past ten years, the Town of Farmington (Town) has continued to experience high rates of population growth and development, which has led to concerns over the capacity of this portion of the sanitary sewer system. Two previous reports that addressed concerns about overall capacity include: (1) *Sanitary System Capacity Report* (January 2018) studied flow capacities in the Town's sewer trunk lines and identified critical areas that are near or over capacity under existing conditions, and (2) *Sewer Transmission Development Capacity Study* (February 2019) studied the current developments in progress and known proposed future developments to identify capacity issues within the sanitary sewer transmission mains.

These previous reports identified two (2) critical sanitary sewer segments that are operating at capacity, and cannot support additional flows from developments: the 10-inch diameter sewer along State Route 96, and the 8-inch portion of the sewer along Mertensia Road. Both of these two (2) critical segments are located between County Road 41 and State Route 96, and feed into the Farmington Sewage Plant (WWTP) located on McMahan Road in the Town of Victor. This area of the Town is recognized in the latest edition of the Town Comprehensive Plan as the Community Center Area, and identifies with compliance with the State of New York's Public Infrastructure Policy Act.

III. EXISTING SYSTEM AND SITE INFORMATION

As the Community Center Area continues to develop there is a need to continue these capacity studies and plan for future use. The two areas of critical sanitary sewer improvements are along Mertensia Road and Beaver Creek Road, both between County Road 41 and State Route 96. A map of the project areas is included in Appendix A.

A. SITE INFORMATION

During the planning phase, it is important to consider the environmental, geographic, and topographic factors affecting the two potential project areas. Both areas are located within close proximity to Beaver Creek, and therefore require investigation of the soil and bedrock to prevent unforeseen complications, and subsequent delays during construction. The United States Geographical Survey (USGS) 7.5 minute series quadrangle maps and United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) were used to compile information regarding the topography, soil data, depth to any restrictive layer, depth to groundwater, and flooding considerations. The following sections provide information of the project areas, and highlight potential concerns.

1. Mertensia Road

According to the DEC online Environmental Resource Mapper tool, the entire area surrounding Mertensia Road is comprised of rare plants and animals. However, these areas are not precise locations, but rather show the vicinity around known locations. Since the project area is located within this vicinity, special environmental permitting may be required. Further investigations will be required as part of a pending environmental review under the State Environmental Quality Review Act (SEQR).

According to USGS, there are two (2) types of bedrock identified near the Mertensia Road project area. The northern section is comprised of Akron Dolostone (Sab), part of the Akron Dolostone and Cobleskill Limestone and Salina group. The southern portion is comprised of Onondaga Limestone (Don), part of the Onondaga Limestone and Tristates group. According to the surficial geology, the Mertensia Road project area is located in an area of Till (t). Till is variable in texture and may include anything from boulders to silt. It is defined as unusually poorly sorted sand-rich diamict, with permeability varying with compaction, and a variable thickness between 3.2 and 164 feet.

According to data from USDA-NRCS, there are numerous soils surrounding Mertensia Road, but approximately six (6) are located within the project area. These soils include: Schoharie silty clay loam (36A) with 0-3% slopes, Schoharie silty clay loam (36E) with 25-45% slopes, Palmyra gravelly sandy loam (128A) with 0-3% slopes, Palmyra and Howard soils (120E) with 25-45% slopes, Cazenovia silt loam (255B) with 3-8% slopes, and Cazenovia silt loam (255D) with 15-25% slopes. The Hydrologic Soil classes comprise B, C/D, and D, and all soils have more than 80 inches to a restrictive layer. Therefore, although there is some variability in slope, there should not be any construction issues within the project area based on soil restriction and available depths. Maps associated with these findings are included in Appendix B.

2. Beaver Creek Road

According to the DEC online Environmental Resource Mapper tool, the project location along Beaver Creek Road is not located in or near an area that requires special environmental permitting. There are no rare plants and animals located nearby.

According to USGS, there are two (2) types of bedrock near the Beaver Creek Road project area. The northern section is comprised of Akron Dolostone (Sab), part of the Akron Dolostone and Cobleskill Limestone and Salina group. The southern portion is comprised of Onondaga Limestone (Don), part of the Onondaga Limestone and Tristates group. According to the surficial geology, the Beaver Creek Road project area is located in an area of Bedrock (r). The USGS defines bedrock of this nature as exposed, or generally within 3.3 feet of the surface.

According to data from USDA-NRCS, there are numerous soils surrounding Beaver Creek Road, but approximately six (6) of these soils are located in the project area. These soils include: Wayland soils complex (5A) with 0-3% slopes, Rhinebeck silty clay loam (39A) with 0-3% slopes, Palmyra gravelly loam (126A) with 0-3% slopes, Palmyra gravelly loam (126B) with 3-8% slopes, Kendaia Loam (304A) with 0-3% slopes, and Ovid silt loam (356A) with 0-3% slopes. The Hydrologic Soil classes comprise B, B/D, and C/D, and all soils have more than 80 inches to a restrictive layer. With exception to Soil 5A, which surround Beaver Creek and is susceptible to frequent flooding, there should not be any major construction issues based on soil restriction and available depths. Maps associated with these findings are included in Appendix C.

B. SERVICE AREA

Estimated sewer flows from new residential and commercial developments within the Community Center Area will be based on the guidance contained in the Recommended Standards for Wastewater Facilities, 2014 Edition (Ten States). Ten States defines the design flow to be used for planning purposes as 100 gallons per day (gpd) per person. The value of 100 gpd per person will be applied to the proposed development based on the average number of people expected to occupy the new residences. A portion of the proposed units in this service area will be apartment complexes. According to data from the 2010 U.S. Census Bureau, the average household size for renter-occupied units is 2.35 people. Therefore, this figure will be used for sewer flow estimation calculations.

The number of residential units expected per acre has been calculated based on recent and currently proposed projects including the Auburn Meadows buildout, Estates at Beaver Creek, Monarch Manor buildout, and potential Town of Canandaigua projects. The estimated peak hour flow from the full buildout of these projects is approximately 335 gpm, with approximately 172 gpm of that peak hour flow coming from future project phases. Sewer flow from commercial development can vary significantly. These projects will have vastly different flows per acre, and are therefore difficult to predict on an area basis. Estimates for commercial use are based on the type of proposed development project and associated references provided by literature.

According to the 2011 Guides for the Design of Wastewater Treatment Works (TR-16), the design period for new wastewater collection systems should be 50 years. Therefore, both recorded and projected population estimates were considered. Population data for the Town was obtained from the Genesee / Finger Lakes Regional Planning Council and the U.S. Census Bureau. Based on the data provided, the Town population makes up about 11% of the entire population of Ontario County. A trend of 20.7% growth occurred between 2010 and 2020, and this percentage was used to aid in the estimated projected populations:

Year	Ontario County Population	Town Population
2010	107,931	11,825
2020	112,458	14,275
2030	115,157	14,603
2040	117,575	14,881
2050	119,692	15,134

2060	121,487	15,341
2070	122,945	15,504

As shown, there is a projected increase in population of about 3,679 people between 2020 and 2070. Therefore, future design criteria for the Community Center Area will be based on a population estimate of approximately 16,000 people. This will prevent the system from being undersized in case of unexpected economic or urban development.

The relationship between design average flow and peak hourly flow is defined in Ten States Figure 1 from Chapter 10. The peaking factor equating average hourly flow to peak hourly flow varies between 2.0 and 4.2, and is based on the population of the sewer catchment area being considered. For the analysis of critical sewer segments, the population of 16,000 was used. This corresponds to an estimated peaking factor of approximately 2.8. A summary of population estimate data is included in Appendix D.

C. FINANCIAL STATUS

The 2019 American Community Survey Statewide Median Household Income (MHI) for New York State is \$68,289, which is adjusted for certain counties by a Regional Cost Factor (RCF). The RCF for Upstate is 1.0, and therefore the adjusted MHI is \$68,289. The 80% MHI is \$54,631. The Clean Water State Revolving Fund (CWSRF) hardship program offers both interest free and/or grant funding to eligible projects. To be eligible for hardship financing, the community must meet the following criteria:

- The municipal population must be less than 300,000; if greater than 300,000 the Town must submit an acceptable income survey to confirm the population served by the project is less than 300,000
- The MHI of the municipality must be less than 80% of the regionally adjusted Statewide MHI; if between 80% and 100% of the regionally adjusted MHI, the Family Poverty must be greater than the Statewide Poverty of 11.3%.
- The municipality must not exceed the \$20 million municipal limit on hardship financing and grant.

According to the 2020 American Community Survey United States Census Bureau, the total estimated population was 14,170, the MHI for the Town was \$68,289, and the Family Poverty was 9.7%. Therefore, the Town does not meet criteria and will not be considered

for hardship financing and grant funding. However, there are subsidized and market rates available at approximately 2.5 and 4.5%, respectively. Census Bureau data is included in Appendix E.

D. FLOOD PROTECTION

TR-16 design standards related to Inflow and Infiltration (I&I) require that all projects evaluate sewer lines that run cross country through easements located in a 100-year floodplain. The sewer manholes in these sections should be protected from I&I in flood conditions. Considerations to include water-tight manholes or manholes raised above the 100-year flood level.

According to the FEMA Flood Insurance Risk Maps effective September 30, 1983, both the Mertensia Road and Beaver Creek Road project areas are located entirely in Zone C, which is representative of areas of minimal flooding outside the 500-year flood zone. Therefore, all sanitary line and manholes installed will be above the 100-year flood level. The FEMA Flood Insurance Rate Maps are included in Appendix F.

IV. CRITICAL SEWER SEGMENTS

In addition to considering the total flow that can be treated at the WWTP, the capacity of the existing sewer system conveying the sewage to the plant must be considered. The use of portable flow meters in 2017 and 2018 helped establish the current amount of flow in many critical segments of the collection system. Meters were placed in areas where there are known occurrences of periodic sewer surcharging and overflows in the system, as well as locations near planned development areas. The two critical areas of interest in this study are (1) the sewer along NYS Route 96 and (2) the sewer along Mertensia Road. Flow meter data for both project locations is included in Appendix G.

The added flow from these two (2) critical sewer segments not only stresses the infrastructure, but also significantly impacts the loading and treatment operations at the WWTP. As each planned development project is located near an already critical sewer segment, alternate solutions are needed to relieve the loads. The following paragraphs discuss the details of each proposed improvement project and how it impacts the collection system as a whole.

A. MERTENSIA ROAD

The sewer segment along Mertensia Road from Deerfield Road north to the Interceptor Sewer is approximately 1,600 linear feet. The section of pipe south of the intersection with Deerfield Road has a 12-inch diameter, but changes to an 8-inch diameter from this point to the Interceptor Sewer. Flow in the 8-inch sewer is controlled by shallow slopes ranging between 0.16% and 0.29%. The maximum calculated flow possible without surcharging is approximately 218 gpm. Based on the measured flow meter data, base dry weather flow in this segment already exceeds 300 gpm on a daily basis, creating periodic surcharging without accounting for I&I. A wet weather peak flow of 700 gpm was recorded on August 14, 2018.

There are several proposed development projects which could influence this critical sewer segment including the continued buildout of (1) Auburn Meadows, (2) the Estates at Beaver Creek, (3) Monarch Manor, and (4) the Town of Canandaigua projects. As of 2019, approximately 75% of the approved homes in the development were constructed. As the remaining lots are developed in the next few years, the sewer flows will continue to increase. It is anticipated that these projects would add approximately 172 gpm to the peak hour flow, increasing the existing dry weather peak hour flow from 300 gpm to 472 gpm, and further exceeding the capacity of 218 gpm on a daily basis. Therefore, this sewer is already significantly overloaded, and cannot accept new flows from the continued buildout from the

known or proposed new developments without improvements.

B. ROUTE 96

The sewer segment along Route 96 from Route 332 to Mertensia Road receives flow from the Race Track Pump Station (PS-1), along with flow from businesses and residences along Route 96. The pipe has a 10-inch diameter, and is controlled by the flattest segment with a slope of 0.16%. The calculated capacity is 395 gpm. Based on the measured flow meter data, base dry weather flow in this area is 140 gpm from residences and businesses near the intersection of Route 96 and Route 332. Flow from PS-1 increases the flow in this segment to approximately 360 gpm when the pump station is actively pumping, nearing the total capacity of the pipeline. Additional pump station cycles may be accommodated within this segment depending upon I&I conditions, but the frequent peak of 360 gpm limits additional flows and development along Route 96.

There are two proposed development projects along Route 96 which could influence this critical sewer segment including (1) the BME LeFrois project and (2) the Market Center Zoning project. It is anticipated that these two (2) projects would add approximately 200 gpm to the peak hour flow, increasing the existing dry weather peak hour flow from 360 gpm to 560 gpm, and far exceeding the capacity of 395 gpm on a daily basis. Therefore, the sewer flows from the proposed BME LeFrois and Market Center projects cannot be added to the existing Route 96 sewer.

V. PROPOSED IMPROVEMENTS

Based on the flow capacity calculations from existing and new development, the following sections describe the proposed sewer improvements for each critical segment.

A. MERTENSIA ROAD DIVERSION SEWER

As previously discussed, the existing 8-inch pipe segment from Deerfield Road to the Interceptor Sewer is undersized for both current capacity and future development. The following sections describe the alternative routes considered for installation of a new diversion sewer. Aerial maps, record drawings, elevation profiles, and capacity calculations for each are included in Appendix H.

1. Alternative 1 – Back Property Line

The first alternative considered crossing Mertensia Road from manhole F-0201 south of Deerfield Road to the west side of the road, running a 12” sanitary sewer line to the back property lines of the Pheasants Crossing development along the tree line, and connect to the existing manhole F0230, utilizing the existing 8” sanitary line in the development that ties into the Interceptor Sewer at manhole F-0023. Although this would cause the least disruption to properties and traffic along Mertensia Road, the topography yields a steep slope between the tree line and nearby Mud Creek to the west, making access and construction difficult. In addition, at least eight (8) standard manholes would be required over the approximate 2,600 linear feet of gravity sewer to comply with TR-16 and Town standards of 400-foot spacing. The Town’s flusher truck only has about 800 feet of hose, and consequently, it would be very difficult to access these manholes for maintenance in the future without disrupting the properties.

2. Alternative 2 – Connect to South End of Pheasants Crossing

The second alternative considered crossing Mertensia Road from manhole F-0201 south of Deerfield Road to the west side of the road, running a 12” sanitary sewer line to the existing manhole F-0238 at the south end of Pheasants Crossing development between Lots 1 and 2. From here, the existing 8” sanitary sewer would be utilized, which exits the development at manhole F-0231 and connects to the Interceptor Sewer at manhole F-0023. This route would require three (3) manhole installations and approximately 720 linear feet of new sewer. Very few of the properties in the development would be disrupted, and the newly installed manholes could be easily accessed for ongoing maintenance from either Mertensia

Road or Pheasants Crossing.

3. Alternative 3 – Connect Midway at Pheasants Crossing

The third alternative considered crossing Mertensia Road from manhole F-0201 south of Deerfield Road to the west side of the road, running a 12” sanitary sewer line to the intersection with Antlers Drive at the south entrance of Pheasants Crossing development, and running a sewer line through the back of Lot 15, south side of Lot 17 to connect with existing manhole F-0234. From here, the existing 8” sanitary sewer would be utilized, which exits the development at manhole F-0231, and connects to the Interceptor Sewer at manhole F-0023. This route would require seven (7) manhole installations along Mertensia Road and approximately 1,355 linear feet of new sewer. It would be easily accessible, but cause more disruption to residents during construction than Alternatives 1 and 2.

4. Alternative 4 – Connect to North End of Pheasants Crossing

The fourth alternative considered crossing Mertensia Road from manhole F-0201 south of Deerfield Road to the west side of the road, running a 12” sanitary sewer line to the intersection with the north end of Pheasants Crossing development, and connecting to manhole F-0239, the last manhole to the east. From here, the existing 8” sanitary sewer would be utilized, which exits the development at manhole F-0231, and connects to the Interceptor Sewer at manhole F-0023. This would require four (4) manhole installations and approximately 1,400 linear feet of new sewer. To meet the minimum required separation from the new water main installed on the west side of Mertensia Road in 2019, the sewer would need to be installed outside of the right of way within an easement.

5. Alternative 5 – Install Parallel Sewer

The final alternative considered crossing Mertensia Road from manhole F-0201 south of Deerfield Road to the west side of the road, running a 12” sanitary sewer line to the Interceptor Sewer, connecting at manhole F-5004. The sewer capacity study completed in 2019 recommended a possible solution of running a parallel sewer to the existing Interceptor line which would include approximately 1,800 linear feet of new sewer and installation of six (6) manholes. To meet the minimum required separation from the new water main installed on the west side of Mertensia Road in 2019, the sewer would need to be installed outside of the right of way within an easement.

Overall, the elevation profiles for all alternatives would maintain an average velocities

between 2 and 10 fps, as recommended by Ten States Standards, to provide sufficient slope to maintain the required velocity through a gravity sanitary sewer. All estimates consider the pipe is flowing full and the Manning’s n value is 0.013.

Alternatives 1, 2, and 5 provide the smoothest profile, with average velocities between 2.9 and 4.6 fps, eliminating the risk of backflow or recharge. Based on the profiles, Alternative 2 provides the best alternative route for a new diversion sanitary sewer line.

Finally, it was important to calculate the estimated capacities of each alternative route, to ensure the selected alternative meets or exceeds what is required for future development. Based on the flow meter data, approximately 300 and 700 gpm are required for DWF and WWF, respectively. The proposed development projects would add approximately 172 gpm at full buildout. The following table summarizes the results based on estimated slope and proposed diameter.

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Diameter (in)	8 / 12	8 / 12	8 / 12	8 / 12	12
Avg Slope (%)	1.19	0.86	0.79	1.06	0.80
Max. Capacity (gpm)	1,240	993	1,050	1,096	1,917
Result	Yes	Yes	Yes	Yes	Yes

Based on these results, all five alternatives provide sufficient capacity to meet future development and WWF loadings. Alternatives 2, 3, and 4 provide the most available capacity, and the least pipe installation.

Overall, Alternatives 2, 3, and 4 have the lowest cost estimate. However, Alternative 2 provides sufficient velocity, the least disruption to residents in Pheasants Crossing development, easy access for maintenance, sufficient capacity to meet future demands, and the lowest overall project cost. Therefore, Alternative 2 is the recommended diversion route.

B. BEAVER CREEK ROAD PS-1 REALIGNMENT FORCE MAIN

The existing 10-inch diameter sewer sections along NYS Route 96 discharge into an 8-inch diameter sewer line. As discussed the 8-inch diameter sections are overloaded and show signs of surcharging, with occasional overflows. A significant portion of this flow comes from PS-1.

In order to reduce the strain on the 10-inch and 8-inch sections, a new forcemain for PS-1 is proposed to be installed, running along the east side of Beaver Creek Road and discharging directly to a manhole on the Interceptor Sewer. The force main will be comprised of approximately 3,800 linear feet of 6-inch diameter pipe, with 350 linear feet directionally drilled under Beaver Creek, connecting to the Interceptor Sewer at existing manhole F-0044. The alignment will fall between the existing 12-inch water line and the road edge, which allows for accessibility for operation and maintenance. An aerial map, record drawings, an elevation profile, and the proposed alignment for the new diversion force main is included in Appendix I.

VI. COST ESTIMATE

The following economic analysis includes a cost estimate of overall system improvements, a review of sewer use and associated costs per dwelling and type of user, and financing options based on the analysis for the community to consider.

A. CAPITAL COST ESTIMATES

The capital cost estimates for both project improvements include construction, mobilization and demobilization, contingency, engineering, legal, and administration fees. Please note, for the Mertensia Road cost estimates, all five alternatives were evaluated, and Alternative 2 was selected as the recommended installation route.

Project Location	Est. Capital Cost
Mertensia Road	\$253,235
Beaver Creek Road	\$746,764
TOTAL	\$999,999

Overall cost estimates for both project locations, as well as the comparison costs for the Mertensia Road route alternatives, are included in Appendix J.

B. EDU ANALYSIS

An Equivalent Dwelling Unit (EDU) is defined as a one single-family residential household. It is the unit of measure by which the user is charged for water services provided by the municipal water district. It is calculated and imposed upon each improved property served as determined in accordance with district approved ordinances. Non-residential facilities EDUs are calculated based on their demand.

The WWTP serves approximately 2,689 sewer accounts in the Town of Farmington. In 2019, the total annual use for the service area was approximately 126,920,265 gallons, with an average daily use of 347,727 gpd. Based on the calculations for sewer use in the community, the average residential consumption rate was 112 gpd, with a total of 3,115 EDUs. Using the average residential value, the breakdown of EDUs for all residential, commercial, institutional, and industrial users are as follows:

Property Use	No. of EDUs
Residential	2,863
Commercial	223
Institutional	17
Industrial	12
Total	3,115

A full analysis of EDU calculations, consumption data, and the Town Code are included in Appendix K.

C. FINANCING OPTIONS

The 2020 sewer budget was estimated at approximately \$4,376,360, with about \$2,200,000 spent on O&M. The Town will need to accommodate a small increase in O&M costs for the proposed system improvements of about \$50,000. Therefore, the total estimated annual O&M costs are \$2,250,000.

The EFC administers grants through the Water Infrastructure Improvement Act (WIIA) program, with a 25% match for total project costs for improvement projects under \$50M. It is recommended the Town consider applying for the WIIA grant program to offset project costs. Further details of the budget and possible financing options based on EDU calculations for the projects are included in Appendix L.

VII. CONCLUSION

The proposed improvements are designed to address the sewer capacity issues and have been identified as necessary improvements to accommodate the anticipated rates of growth and development in the Town.

Installation of a new force main along the east side of Beaver Creek Road that discharges directly into the Interceptor Sewer will significantly reduce the flows along State Route 96, freeing up capacity for future development and alleviating sanitary sewer overflows. The proposed PS-1 force main realignment has an estimated project cost of \$746,764.

Installation of a gravity sanitary sewer line along the west side of Mertensia Road that diverts flow to the Pheasants Crossing development will provide additional capacity and relieve strain on the existing 8" sanitary sewer on Mertensia Road. After careful consideration of multiple routes for the proposed diversion sanitary sewer, Alternative 2 was selected as the recommended option. This alternative provides sufficient velocity, the least disruption to residents in Pheasants Crossing development, easy access for maintenance, and sufficient capacity to meet future demands. Additionally, this alternative has the lowest overall estimated project cost of \$253,235.

The debt service for these improvements, with an estimated total cost of \$999,999, is anticipated to be paid back by the sewer users from a combination of grant monies, cash contributions (as appropriate), and loan monies. Due to the existing sewer overflows and capacity issues along Route-96 and Mertensia Road, the Town has identified both the PS-1 force main realignment and the Mertensia Road diversion sewer as high priority projects that are critical to the Town's overall operations and continued rate of growth.

APPENDIX A

PROJECT AREA LOCATIONS

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APPENDIX B

MERTENSIA ROAD SITE INFORMATION

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APPENDIX C

BEAVER CREEK ROAD SITE INFORMATION

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APPENDIX D

POPULATION ESTIMATES

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CENSUS BUREAU DATA

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FEMA FLOOD INSURANCE RATE MAP

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FLOW METER DATA

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MERTENSIA ROAD PROPOSED IMPROVEMENTS

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APPENDIX I

BEAVER CREEK ROAD PROPOSED IMPROVEMENTS

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SEWER BUDGETS AND FINANCING OPTIONS

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SMART GROWTH ASSESSMENT FORM

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