

ENGINEER'S REPORT

CONNECTION TO THE TOWN OF GOSHEN HAMBLETONIAN PARK SEWER DISTRICT TO SERVE MAPLEWOOD VILLAGE AT GOSHEN

TOWN OF GOSHEN
ORANGE COUNTY, NEW YORK

Prepared By:

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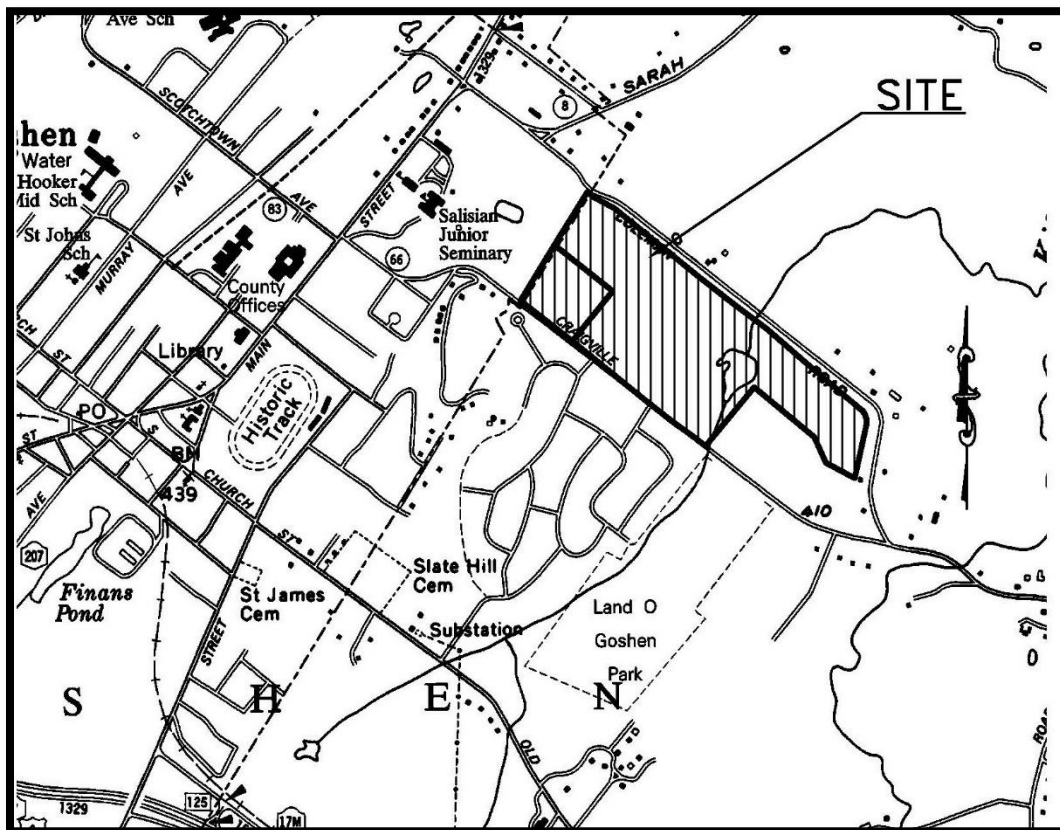
June 28, 2021

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PROJECT OVERVIEW

Maplewood Village at Goshen (hereinafter referred to as "Maplewood") is a proposed lot consolidation and 71-lot major subdivision for the construction of 68 single-family detached homes. Of the 71 lots, two are proposed to contain sanitary sewer pump stations and one will contain two public well sites and water infrastructure. The three lots will be offered for dedication to the Town of Goshen. The Proposed Site consists of approximately 95.4 acres and is bound by Coleman Road to the northeast and east, and Craigville Road/County Route 66 to its southwest. The project site borders the Orange County Veterans Memorial Cemetery to the south, and Salesian Park to the northwest. The boundary between the project site and Salesian Park is adjoining the corporate boundary of the adjacent Village of Goshen.

FIGURE 1 – LOCATION MAP



The proposed development will occur in three enclaves. Ten single-family homes are proposed on a cul-de-sac designated Road "A" (Area A) in the south-central portion of the site and will have access via Craigville Road. Twenty single-family homes are proposed along a cul-de-sac road designated Road "B" (Area B) at the western end of the site accessed via Craigville Road. The remaining 38 single-family homes are proposed in the northeastern part of the site along a road designated as Road "C" (Area C-D) that will connect to Coleman Road in two locations. A short a cul-de-sac road designated Road "D" will serve seven of these homes originating from Road "C".

The Maplewood project will be served by municipal water and sanitary sewer service by extension of the Town of Goshen Hambletonian Park Sewer District and the Town of Goshen Hambletonian Water District.

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In accordance with NYSDEC design standards, the sixty-eight (68) four-bedroom dwellings are estimated to generate 440 gallons per day (gpd) per dwelling for an anticipated total of 29,920 gallons per day of additional wastewater to the existing sewer system.

As part of the Environmental Review for the proposed project, an Engineer's Report was prepared and accepted which concluded the existing system Hambletonian Park Sewer District's collection system and pump station has the capacity to accommodate the additional wastewater from the Maplewood project. The Hambletonian Park Sewer District conveys wastewater to the Village of Goshen for treatment. As such, this Engineer's Report addresses the capacity of the Village of Goshen Wastewater Treatment Plant to accommodate the additional flows. A willingness to serve the Maplewood project has been provided by the Village of Goshen.

The Village of Goshen Wastewater Treatment Plant, located on Cypress Road, is permitted to treat 2 MGD based on a 30-day average under NYSDEC Permit NY0031518. Average flow treated at the wastewater treatment plant is 1.10 MGD; an additional 0.52 MGD average flow is anticipated by committed in-Village and outside Village projects under development.

As stated above, the Village of Goshen has a permitted treatment capacity of 2.0 MGD and currently treats an average of 1.10 MGD. The additional anticipated flow from the Maplewood project of 29,920 GPD will increase the treatment volume to approximately 1.13 MGD. Accounting for future flows generated by the anticipated committed in-Village and outside Village projects under development, total future flows to the Village wastewater treatment plant are estimated at 1.65 MGD which is well within the permitted treatment capacity of 2.0 MGD.

PROPOSED WASTEWATER COLLECTION/TRANSMISSION SYSTEM

As stated above, the proposed development will occur in three enclaves; Area A, Area B and Area C-D. The proposed systems for each area are discussed individually below:

Area A: A total of five (5) sanitary sewer manholes and 399± linear feet of 8" SDR 35 sewer main will service this area. The ten (10) dwelling units will be connected to this gravity system with 4" SDR 35 sewer laterals. From the low point manhole, 110± linear feet of 8" SDR 35 will be installed through an easement to a proposed shallow manhole on Craigville Road. An additional 41± linear feet of 8" SDR 35 will extend across Craigville Road to the existing sanitary sewer manhole at Oakwood Drive that is contained in the Hambletonian Park collection system.

Area B: A total of twelve (12) sanitary sewer manholes and 1,055± linear feet of 8" SDR 35 sewer main will service this area. The twenty (20) dwelling units will be connected to the gravity systems with 4" SDR 35 sewer laterals. From the high point of Road B, seventeen (17) of the dwelling units will flow via gravity to Pump Station #1. Approximately 684 linear feet of 2" DR11 HDPE forcemain will be installed to a gravity manhole at the high point of Road B and flow through the collection system to the intersection of Road B and Craigville Road. An additional 662± linear feet of 8" SDR 35 and two (2) sanitary manholes will extend along and ultimately across Craigville Road to the existing sanitary sewer manhole at Yankee Maid Lane that is contained in the Hambletonian Park collection system.

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Area C-D: A total of sixteen (16) sanitary sewer manholes and 1,867± linear feet of 8" SDR 35 sewer main will service this area. The thirty-eight (38) dwelling units will be connected to the gravity systems with 4" SDR 35 sewer laterals. The gravity systems from Roads C and D will flow to Pump Station #2. Approximately 1,948 linear feet of 2.5" DR11 HDPE forcemain will be installed from Pump Station #2 and discharge into a sanitary manhole along Craigville Road which will connect to the proposed shallow manhole in Area A discussed above. A total of one (1) air relief manhole and three (3) clean-out manholes will be installed along the forcemain.

The wastewater collection and transmission systems for the Maplewood project have been designed in accordance with NYSDEC and Town of Goshen standards and requirements. Construction costs for the for the wastewater collection and transmission system are estimated at \$706,800.00.

PUMP STATIONS

Pump Station #1:

Pump Station #1 will be a pre-engineered, packaged Walk-In PumpMate above grade valve and control chamber factory assembled on a common epoxy coated steel base, enclosed in a modular steel building as manufactured by USEMCO, Inc., Tomah, Wisconsin. Factory installed equipment includes 3" sewage piping and valves; 3" emergency pump connection; NEMA 1 control panel for 230 volt, 3 phase, 3 wire incoming service with USEMCO Sentry touch screen controller; accessory items to include lighting, ventilation blowers, dehumidifiers and heaters; all internal wiring within the main chamber only. The pump station is also equipped with a 45 KW Natural Gas generator and auto transfer switch, factory installed and wired. The pump station area will be fenced by 6-foot-high chain link fencing and appropriately screened.

The pump station shall be equipped with two (2) Sulzer-ABS Piranha, PE 35/2 grinder pumps. Each pump is rated for 60 GPM at 85.2 feet TDH. The pumps selected are 6.0 HP, 3,530 RPM with 6" diameter macerator impellers.

Only one pump is required for normal operation, the second pump is a 100% standby unit. A control panel with automatic alternator will be provided for the operation of the pumps. Controls are designed so that the standby pump will automatically start upon failure of the lead pump and/or upon liquid level reaching to the lag pump start level. A 6.0 foot inside diameter wet well with a total depth of 14 feet is proposed. Between the wet well base and the invert of the collection sewer invert is a distance of 4.68 feet, thereby providing approximately 1,031.7 gallons of storage capacity; a full day storage capacity is not necessary with the provision of standby emergency power to the station.

Design flow, total dynamic head, wet well capacity and pump cycle calculations, and pump curve for Pump Station #1 are included in Appendix A.

Preliminary float settings for Pump Station #1 operation have been calculated as follows:

Pumps Off:	418.0	Lag Pump On:	419.0
Lead Pump On:	418.5	High Level Alarm:	419.5

These settings provide a cycle time during peak flow of 12.48 minutes and a cycle time of 21.8 minutes during average flow. These cycle times are well within the manufacturer's specifications. Additionally, the pump operating will alternate with each pumping cycle.

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Pump Station #2:

Pump Station #1 will be a pre-engineered, packaged Walk-In PumpMate above grade valve and control chamber factory assembled on a common epoxy coated steel base, enclosed in a modular steel building as manufactured by USEMCO, Inc., Tomah, Wisconsin. Factory installed equipment includes 3" sewage piping and valves; 3" emergency pump connection; NEMA 1 control panel for 230 volt, 3 phase, 3 wire incoming service with USEMCO Sentry touch screen controller; accessory items to include lighting, ventilation blowers, dehumidifiers and heaters; all internal wiring within the main chamber only. The pump station is also equipped with a 45 KW Natural Gas generator and auto transfer switch, factory installed and wired. The pump station area will be fenced by 6-foot-high chain link fencing and appropriately screened.

The pump station shall be equipped with two (2) Sulzer-ABS Piranha, PE 35/2 grinder pumps. Each pump is rated for 65 GPM at 77.2 feet TDH. The pumps selected are 6.0 HP, 3,530 RPM with 6" diameter macerator impellers.

Only one pump is required for normal operation, the second pump is a 100% standby unit. A control panel with automatic alternator will be provided for the operation of the pumps. Controls are designed so that the standby pump will automatically start upon failure of the lead pump and/or upon liquid level reaching to the lag pump start level. A 6.0 foot inside diameter wet well with a total depth of 13 feet is proposed. Between the wet well base and the invert of the collection sewer invert is a distance of 7.1 feet, thereby providing approximately 1,501.3 gallons of storage capacity; a full day storage capacity is not necessary with the provision of standby emergency power to the station.

Design flow, total dynamic head, wet well capacity and pump cycle calculations and pump curve for Pump Station #2 are included in Appendix B.

Preliminary float settings for Pump Station #2 operation have been calculated as follows:

Pumps Off:	408.0	Lag Pump On:	410.0
Lead Pump On:	409.0	High Level Alarm:	411.0

These settings provide a cycle time during peak flow of 13.9 minutes and a cycle time of 20.8 minutes during average flow. These cycle times are well within the manufacturer's specifications. Additionally, the pump operating will alternate with each pumping cycle.

CONCLUSIONS

The existing Hambletonian Park Sewer District sewer collection system and sewage pump station have adequate capacity to support the additional wastewater flows generated by the proposed Maplewood project. The Village of Goshen Wastewater Treatment Plant has a permitted treatment capacity of 2.0 MGD and currently treats an average of 1.10 MGD. The additional anticipated flow from the Maplewood project of 29,920 GPD will increase the treatment volume to approximately 1.13 MGD. Accounting for future flows generated by the anticipated committed in-Village and outside Village projects under development, total future flows to the Village wastewater treatment plant are estimated at 1.65 MGD which is well within the permitted treatment capacity of 2.0 MGD.

The new sanitary sewer infrastructure will be constructed and tested in accordance with NYSDEC requirements to ensure no inflow or infiltration to the Town of Goshen sanitary sewer system and ultimately the Village of Goshen sanitary sewer system.

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The pump stations will each be provided with a standby emergency generator to ensure operation during power outages and also include an auto-dialer alarm system to promptly notify the Town of Goshen if the pump stations are not operating properly.

Therefore, no adverse impacts on the Hambletonian Park Sewer District or the Village of Goshen Wastewater Treatment Plant are anticipated.

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