

Appendix D
PRELIMINARY WASTEWATER ENGINEER'S REPORT



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WASTEWATER ENGINEER'S REPORT**

For

Brewster Yards

Pugsley Road

Town of Southeast, New York

January 28, 2022

Owner Information:

Town of Southeast
1360 Route 22
Brewster, NY 10509

Applicant Information:

ProSwing Sports Realty, Inc.
27 Radio Circle Drive
Mount Kisco, NY 10590

Prepared by:
Insite Engineering, Surveying & Landscape Architecture, P.C.
3 Garrett Place
Carmel, New York 10512

1.0 INTRODUCTION

The project is located on two (2) parcels totaling 153.5± acres on Pugsley Road in the Town of Southeast. The parcels are identified as Tax Map No. 45.-1-10 and 45.1-11. The parcels are located in the Rural Community (RC) zone. The project site is bordered by Interstate-84 to the east and Pugsley Road and Fields Corner Road to the west with Barrett Road running east and west between the two parcels. The project proposes to develop the two parcels with the following:

- 4 Baseball Fields
- 1 Showcase Field
- 4 Little League Fields
- 1 Multi-Sport Fields
- 3 Batting Cage Facilities
- 3 Concession/Restroom Facilities
- 2 Concession Facilities
- 35,000 s.f. Indoor Facility
- Parking Areas (449 Parking Spaces, 8 Bus Parking Spaces)
- 1 Playground

The site is currently undeveloped and consists mainly of wooded areas. The two parcels consist of areas of steep slopes, Town of Southeast ridgeline protection and a NYSDEC regulated wetland, LC-28. A single subsurface sewage treatment system (SSTS) is proposed to treat the wastewater generated for the project.

2.0 WASTEWATER DESIGN FLOW

Flow rates for the anticipated uses at the proposed facility and the design flow for the proposed project are listed in the tables below. The average daily sewer design flows for the proposed project are based on the hydraulic loading rates given in the New York State Department of Environmental Conservation (NYSDEC) publication *Design Standards for Intermediate Sized Wastewater Treatment Systems – 2014 (DEC 14)*.

The project site is anticipated to have more use over the weekends than the weekdays. Due to the fluctuation in visitors throughout the week, a design flow has been calculated for an average weekday (Monday thru Friday) average weekend (Saturday and Sunday).

Maximum Daily Public Water System Design Flow (Weekday)			
Use	# of Units	Flow Rate (gpd/unit)	Design Flow (gpd)
Staff	34	12	408
Visitors	540	4	2,160
Food Service Operations	227	4	908
Total			3,476

¹ The design flow takes into account the 20% reduction in design flows for modern plumbing fixtures as allowed by DEC 14

Maximum Daily Public Water System Design Flow (Weekend)			
Use	# of Units	Flow Rate (gpd/unit)	Design Flow (gpd)
Staff	63	12	756
Visitors	4,320	4	17,280
Food Service Operations	3,024	4	12,096
Total			30,132

¹ The design flow takes into account the 20% reduction in design flows for modern plumbing fixtures as allowed by DEC 14

A flow of 3,476 gallons per day (gpd) for each weekday and 30,132 gpd for each weekend day will be used for the water facilities for the proposed development. A design flow of 11,092 gpd will be used for the project based on the average flow for the entire week as shown below:

$$\frac{(3,476 \text{ gpd} \times 5 \text{ days/week}) + (30,132 \text{ gpd} \times 2 \text{ days/week})}{7 \text{ days/week}} = 11,092 \text{ gpd}$$

3.0 WASTEWATER COLLECTION SYSTEM

The wastewater collection system is proposed to consist of individual 4" diameter PVC SDR 35 sewer service connections with cleanouts from each proposed building. The sewer service will connect to an 8" diameter PVC SDR 35 sewer main with concrete manholes to the proposed septic tanks.

4.0 SUBSURFACE SEWAGE TREATMENT SYSTEM (SSTS)

4.1 Soil Testing

The SSTS area is proposed to be located on the southeastern side of the site on the northern parcel. Witnessed deep test holes and percolation testing with the Putnam County Department of Health (PCDOH) were performed on December 11, 2020.

4.1a Deep Test Holes

15 deep test holes were performed in the proposed SSTS area, with the average test hole profile of 0 to 12" topsoil, 12" to 24-30" Red Brown Sandy Loam, 30" to 66" Medium Brown Fine Sand, 66" to 92"+ Light Brown Sand. No mottling or ledge rock was observed in any deep test.

The deep tests were observed by Kirsten Miller, and Eric Schlobohm P.E. of Insite Engineering, as well as Gene Reed P.E. of the Putnam County Department of Health. A *Design Data Sheet* has been attached to this report describing the soil testing results.

4.1b Percolation Test Holes

15 percolation tests were performed in the proposed SSTS area. The rates ranged from 3 min/in to 15 min/in. The design percolation rate was established at 11 to 15 min/in. Based upon on-site observations the soil is suitable to support an SSTS.

4.2 Absorption Trenches

The proposed SSTS absorption fields will consist of conventional 2' wide absorption trenches spaced 6' on center. The SSTS areas will be alternately dosed over the entire SSTS area to evenly disperse the wastewater through a pump dosing system. The absorption trench design parameters are as follows:

SSTS Area	Design Flow (gpd)	Assumed Soil Percolation Rate * (min/in)	Application Rate (gpd)	Absorption Trench Width (ft)	Required Length of Primary Absorption Trench (lf)
1	11,092	11 to 15	0.8	2.0	6,933

The SSTS area will include the required linear footage for the primary and 100% expansion absorption trenches in the designated SSTS area. The SSTS area will consist of 15 sections of absorption trenches. Each section will consist of up to 1,000 feet of absorption trench spaced 6 feet on center.

4.3 Septic Tanks & Grease Traps

The septic tanks are anticipated to be located adjacent to the buildings. The total septic tank volume shall be designed in accordance with DEC 14 and sized based on the maximum daily flow from the weekend of 30,132 gpd. The septic tank shall be sized to provide a capacity of 0.75 times the design flow plus an additional 3,750 gallons. A final design is proposed to include a separate septic tank adjacent to each building. Based on the maximum daily design flow for a weekend, the following septic tank sizing for the SSTS is shown in the below table:

SSTS Area	Q Design Flow (gpd)	Sizing Equation	Required Septic Tank Size (gallons)	Proposed Total Septic Tank Storage Capacity (gallons)
1	30,132	Q	30,132	31,000

The proposed septic tank will be reinforced concrete and will include inlet and outlet tees and access manhole covers. The proposed septic tanks and grease traps shall comply to H-20 loading.

Additionally, it is proposed to provide grease traps prior to the septic tanks of concession buildings where increased levels of fats, grease, and oils are anticipated. Sizing for the grease traps shall be in accordance with section D.5 of DEC 14, which for buildings with a known equipment layout are sized. Alternatively, the daily design flow from a building directed to each of the grease traps will be multiplied by a peaking factor and converted to a peak flow based on a 16-hour day in gallons per minute. The peak flows will then be multiplied by a 30-minute detention time per DEC 14 to provide an overall volume for the grease traps.

4.4 Equalization Tank / Pump Pit

An equalization tank will be required to temporarily store the septic tank effluent generated on weekend days. As calculated above, 60,264 gallons of wastewater could be generated over a weekend. The SSTS would be designed for 11,092 gpd (22,184 gallons for a 2-day weekend). The equalization tank would need to temporarily store the delta in generated wastewater over the

flows that can be sent to the SSTS area. This delta is approximately 38,080 gallons. Additional storage would be required for equalized dosing over a full day. A 50,000-gallon dosing tank is proposed.

The equalization tank will also be used as a pump pit to convey the effluent from the septic tank to the SSTS area with duplex submersible pumps, valving, and controls. The electrical meter and service panel, breaker panel, pump controls and a transfer switch for auxiliary power, and an automatic standby emergency generator is proposed for the wastewater pump pit. A forcemain will deliver the septic tank effluent from the equalization tank to the designated SSTS area.

4.5 Alternate Dosing

In accordance with PCDOH requirements alternate dosing is provided for the proposed SSTS as the total length of absorption trench exceeds 1,000 linear feet. A dual alternating pump chamber will convey septic tank effluent to the SSTS area via a forcemain. Hydrostatic pressure and leakage testing shall be performed on the proposed forcemain in accordance with the notes and specifications provided on the project drawings.

4.6 Automatic Multizone Valves

As previously stated, the SSTS area will consist of 15 sections of absorption trenches. An Automatic Multizone Valve is proposed to be installed at the end of the forcemain in a manhole. The multizone valve is a pressure based distribution device with one inlet and five outlets. Once a section of absorptions trenches is dosed and the pump shuts off, the pressure drops in the force main, and the multizone valve indexes to another section, awaiting the next dose. An Automatic Multizone Valve is proposed to distribute the dose to the each of the five absorption trench sections.

4.7 Timed Dosing System

After exiting the septic tank, the wastewater will enter a dosing tank. Pumps will be used to dose the septic tank effluent to the SSTS at timed intervals. The pump run time will be set to provide the required dose. The tank will be oversized to provide additional capacity for high weekend use and a high level alarm will be installed. The fields will be split into two groups so they can be alternatively dosed. The dose volume will be sized as 75% of the absorption field pipe volume or 0.5 gallons/lineal feet of field.

5.0 ALTERNATE WASTEWATER TREATMENT (Connection to Ace Endico WWTP)

An alternate option for treating the wastewater produced by the proposed development is to pump raw sewage to the nearby Ace Endico Wastewater Treatment Plant located just across Interstate 84. The plant reputedly has excess treatment capacity capable of treating the wastewater from the proposed development. This alternate treatment would be subject to the following:

1. Business agreement including establishing connection fee for the required conveyance system between the project parcel and the treatment plant. A user fee will also need to be established for the use of the plant to treat the wastewater.
2. The project site is currently not in the existing sewer district of the Ace Endico Wastewater Treatment Plant. An expansion of the sewer district would be required or an out of district user agreement established.
3. If Ace Endico has not already formed a Transportation Corporation to allow outside properties to connect to the existing plant, one will need to be formed.

4. Municipal acceptance of the new connection will be required.
5. Additional requirements of the New York City Department of Environmental Protection (NYCDEP) may be required.