

Appendix C

PRELIMINARY WATER FACILITIES ENGINEER'S REPORT



**PRELIMINARY
WATER FACILITIES 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.

Water service for the development will be provided by a new public water system supplied by proposed on-site wells. The public water system will be designed and constructed in accordance with the standards and subject to the approval of the Putnam County Department of Health (PCDOH) and the New York State Department of Health (NYSDOH).

2.0 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 water 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 employees	12	408
Visitors	540 people	4	2,160
Food Service Operations	227 customers	4	980
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 employees	12	756
Visitors	4,320 people	4	17,280
Food Service Operations	3,024 customers	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. As the water system will need to meet the peak hourly demand on a weekend day, the design flow will be based on a weekend day (30,132 gpd).

The average hourly flow rate for the project is calculated as follows:

$$\text{Average Hourly Flow} = 30,132 \text{ gpd} \div 18 \text{ hr/day} \div 60 \text{ min/hr} = 28 \text{ gpm}$$

The peak hourly flow for the water system is calculated using a peaking factor of 4 as required by the Putnam County Department of Health.

$$\text{Peak Hourly Flow} = 28 \text{ gpm} \times 4 = 112 \text{ gpm}$$

The peak hourly flow will be used to size the proposed water system.

The proposed buildings may be required to be equipped with fire sprinklers. If required, the final fire sprinkler demands for the system shall be calculated by the project's mechanical engineer and provided in the Final Engineer's Report.

3.0 WATER SUPPLY SOURCE

The water supply for the project is proposed to be provided by a minimum of two proposed drilled wells. The two wells will be drilled and used as public water supply wells. The wells will be required to meet the maximum day demand of 60,264 gpd (2 times average daily flow for the weekend), or 42 gpm with the best well out of service. It is anticipated that 2 to 3 total wells may be required to meet the 42 gpm max day flow with the best well out of service.

The following will be required to develop a public water supply for the proposed project:

1. Well location selected meeting separation distance to sources of contamination and ownership as required by the New York State Department of Health (NYSDOH) and the Putnam County Department of Health (PCDOH). The proposed location for the public water supply wells are required to satisfy the Water Well Location and Protection requirements in Appendix 5-D, Special Requirements for Wells Serving Public Water Systems. *The owner possesses legal title to the lands and controls by ownership within 200' of the proposed well locations.*
2. Obtain a PCDOH permit for the well drilling and testing parameters.
3. Perform 72-hour pump test to confirm well yield is adequate to supply the maximum day demand with the best well out of service.

4. Water quality testing performed to NYSDOH Part 5 standards by a Laboratory approved by the New York State Department of Health's *Environmental Laboratory Approval Program*.
5. Design water treatment and disinfection system based on water quality test results and distribution system based on well yields.
6. PCDOH application, review and approval of public water supply treatment system.

4.0 WATER TREATMENT SHED

A water control/treatment shed is proposed to contain electrical controls and treatment equipment. The shed will be locked except for maintenance and repair. The discharge from the two to three supply wells will be piped to this building through separate well service lines. After entering the building, the raw water will be chlorinated before the well lines combine into a single pipe to transport the treated water to the storage/contact tank. The building will contain meters, water sampling spigots, and chlorinator equipment for each well source. Ultraviolet light (UV) treatment may also be required. An emergency backup generator will be proposed to power the well pumps, controls, and disinfection equipment should primary utility power fail.

5.0 CHLORINE CONTACT / WATER STORAGE TANK

A chlorine contact tank would be required for chlorine disinfection. Based on an anticipated combined well pumping rate of 84 gpm, a 2,000-gallon contact tank with a baffling factor of 0.7 would be required.

A 30,000-gallon vented storage tank (approximately equal to the max day) would be proposed to provide supplemental storage during times of peak flow. The Health Department's policy requires that the volume of the storage tank be approximately equal to or greater than the daily flow. The tank may also be used for chlorine contact.

The tank is proposed to be a fiberglass potable water tank that conforms to NSF Standard 61. The tank levels will be used to control the well pumps. The well pumps will be set to rotate as lead pump so all wells will be utilized.

6.0 DISINFECTION

Disinfection will be provided by UV light or chlorine disinfection. The chlorine disinfection would include injection of liquid sodium hypochlorite. A separate chemical solution crock and feed pump will inject chlorine into each of the raw well water service lines prior to discharge into the contact tank. The chlorination systems will be housed in a separate room within the water treatment shed.

The New York State Department of Health Fact Sheet on Microbial Log Removal/Inactivation Rule Requirements was used to determine the required CT value to achieve 4-log virus inactivation. Assuming water with a maximum pH of 7.4 and a minimum temperature of 5 degree Celsius, a CT of 8.0 min*mg/l is required. The system is proposed to be designed to meet a CT of 8.0 min*mg/l.

An alternate to chlorine disinfection would be UV light disinfection. UV light systems would be installed at the water service entry to each building. The units would need to meet the requirements of NSF 55 to be used on a public water supply. UV units are subject to higher water quality standards than chlorine and would need to be accepted by PCDOH as an alternative disinfection system.

7.0 SYSTEM OPERATION PRESSURES

Pressure for the system will be provided by booster pumps. In either scenario VFD pump controls would be used to control the pumps to maintain a constant pressure. The system will be designed to meet

the *Recommended Standards for Water Works* 2012 Edition, minimum pressure at each service connection of 35 psi under normal flow conditions. Higher pressures may be required for equipment.

8.0 DISTRIBUTION SYSTEM

The distribution system is proposed to be of PVC DR-14 and HDPE DR-11 water service lines to each building. The system will contain valves on each service line between the water treatment shed and each building. Gate valves will be located strategically to minimize the number of buildings out of service due to a service disruption.

9.0 FIRE PROTECTION

A sprinkler fire protection system may be required to be designed and installed for some or all of the proposed buildings. If required, a separate distribution system to each building will be required along with the domestic public water supply system. A fire protection system will require a storage tank, booster pump system and distribution system to each building.