

## *2 Sewer System Impact Analysis*

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	3,000	SF	Maintenance	0.075	225
	2,500	SF	Office	0.075	188
	2,500	SF	Storage	0.075	188
					2,476

\*GPD/Unit based on 310 CMR 15.00

Office 75 gpd/1000sf  
 Service Bay 150 gpd/bay  
 Public Park Toiler 5 gpd/person

The proposed project is expected to generate 2,476 gallons per day based on accepted values. It is also important to note that as part of this project, the existing 7,200 square foot maintenance building will be removed. The net deduct in waste generation by the removal of the building is not reflected in the table.

Sewage generated at the existing paddle court facility drains to an eOne grinder pump system and is lifted via 1-1/2" forcemain that traverses hole number 5 along the course and into the 8" gravity sewer main. It is the design intent to reuse this forcemain to minimize damage to the course. The maintenance facility will drain via gravity sewer to the pump wetwell and then continue as it does in the pre-development condition.

The existing system should be able to handle the additional flow without capacity issues. This was confirmed with a preliminary meeting with the Department of Public Works to review the project. Additionally, an 8" pipe with a flat slope of 0.50% yields the following:

$$Q_{full} = \left(1.49/n\right)AR^{2/3}S^{1/2}$$

where Q = flow (cubic feet per second)  
 n=Manning's roughness coefficient; 0.01 used  
 A=Area of pipe (square feet); 0.349 square feet  
 WP=wetted perimeter of pipe (feet); 2.09 feet  
 R=Hydraulic Radius (A/WP)  
 S=slope of pipe (feet per foot); 0.005

$$Q_{full} = \left(1.49/0.01\right)(0.349)(2.09)^{2/3}(0.005)^{1/2}$$

$$Q_{full} = 1.09cfs$$

$$Q_{full} = 490gpm$$

The proposed sewer usage rate of 2,476 gallons per day with an applied factor of safety of 3 becomes 7,428 gallons per day (5.16 gallons per minute). The increase in flow represents approximately 1% of the pipe's capacity.

The increase in sewer flow as a result of this project is minimal and is not expected to have any impact on the Town of Wellesley municipal system.