

**Municipal Systems Impact Analysis
140-148 Weston Road
Wellesley, Massachusetts**

Existing Site Utilities and Municipal Demand

Stormwater

The project proponent Wellesley Park, LLC, proposes to redevelop a 1.28-acre parcel of land located at 140-148 Weston Road in Wellesley, Massachusetts. The proposed redevelopment will consist of 26 multi-family residential units. The proposed development will involve the construction of a three (3) story plus one (1) basement level parking building, sidewalks, roof-top courtyard, retaining walls, access drive, stormwater management systems, utilities and other related infrastructure.

The project is comprised of two (2) parcels which is shown as Parcel ID 149-3 and 149-4 on the Town of Wellesley Assessor's Map. The site is bounded by Weston Road to the northeast, developed residential property to the southeast and municipal property owned by the Town of Wellesley to the north and west.

The property is located within the General Residence Zoning District and the Residential Incentive Overlay District. The majority of the 1.28 acre-parcel is vacant with one (1) single family home with a bituminous driveway and associated landscaping located on Parcel 149-3.

The existing topography generally ranges in elevation from approximately 159 ft. (Wellesley Vertical Datum) in the northeast portion of the site to an elevation of approximately 142 ft. (Wellesley Vertical Datum) in the southeast portion of the site. The parcel slopes from the northeast and southeast property lines, towards a depression in the middle of the site. Stormwater drains uncontrolled and untreated into the depression and then overland onto Parcel 150-1.

The site is located within Wellesley College's Zone II Wellhead Protection Area, and the Town of Wellesley's Water Supply Protection District. Review of available environmental databases such as MassGIS reveals that the site is not located within a mapped Natural Heritage Endangered Species Area, FEMA Flood Insurance Rate Map Panel No. 25021C0016E, or a Contributing Watershed to Outstanding Resource Water (ORW).

The Natural Resources Conservation Service (NRCS) has identified the soil on the site as 254B, Merrimac Fine Sandy Loam, 3 to 8% slopes with hydrologic soil group (HSG) A, and 630C, Charlton-Hollis-Urban land complex, 3 to 15% slopes with hydrologic soil group (HSG) A.

Sanitary Sewer

The existing single-family home is currently serviced by existing sewer services from an existing ten (10) inch sewer main located in Weston Road. The existing sewer flows are calculated as follows:

Number of Bedrooms (1)	Minimum Flow (2)	Calculated Flow	Design Flow	Adjusted Flow based on Peak Factor of 3.8 (3)
#148 Weston (razed) 3 bedrooms	110/gpd/bedroom	330 gpd	330 gpd	1,254 gpd
#140 Weston 3 bedrooms	110/gpd/bedroom	330 gpd	330 gpd	1,254 gpd

- (1) Based on Town of Wellesley Assessors Information
- (2) 310 CMR Section 15.203 System Sewage Design Criteria
- (3) Peak factor based on "TR-16: Guides for the Design of Wastewater Treatment Works - Prepared by the New England Interstate Water Pollution Control Commission

The total estimated existing sewage flow is 2,508 gpd (0.004 cfs).

Water

The existing single-family home is currently serviced by two (2) existing water services off of the existing twelve (12) inch water main located in Weston Road. The site is covered by an existing hydrant located at 148 Weston Road. Water usage is estimated by using the sewage flows. Therefore, the total estimated water usage is 2,508 gpd (0.004 cfs).

Proposed Site Utilities and Municipal Demand

140-148 Weston Road is proposed as a 26-unit redevelopment and consists of the construction of a three (3) story plus one (1) basement level parking building, sidewalks, roof-top courtyard, retaining walls, access drive, stormwater management systems, utilities and other related infrastructure.

The project will access the existing utility infrastructure located on Weston Road, including sanitary sewer, water, gas, electric, telephone, and cable television. The stormwater management system will be designed to fully comply with all standards of the Department of Environment Protection's Stormwater Management Regulations and will utilize an on-site subsurface infiltration system for stormwater storage and treatment. The subsurface infiltration chamber systems were designed to accommodate peak flow generated by all storms up to the 100-year storm event. Parking areas will be contained within the building and will drain to oil/sediment traps prior to discharge into the municipal sewer system, as required.

Watershed areas were analyzed in the post-development condition to design low impact stormwater management facilities to mitigate impacts resulting from redeveloping the property. The objective in designing the proposed drainage facilities for the project was to maintain existing drainage patterns to the extent practicable and to ensure that the post-development rates of runoff are less than pre-development rates at the design points.

In the pre-development and post-development stormwater analysis, the watershed area analyzed was approximately 1.28 acres consisting of the subject parcel to be developed and offsite tributary areas. Drainage calculations were performed by employing SCS TR-20 methods for the 2, 10, 25, and 100-year Type III storm events.

A comparison of the pre-development and post-development peak rates of runoff indicates that the peak rates of runoff and runoff volumes for the post-development condition will be equal or less than the pre-development condition for all storm events.

Please refer to the following tables:

Pre-Development vs. Post-Development Peak Rates of Runoff

Design Point	<u>2 Year Storm</u> (3.20 Inches)		<u>10 Year Storm</u> (4.70 Inches)		<u>25 Year Storm</u> (5.50 Inches)		<u>100 Year Storm</u> (6.70 Inches)	
	Exist. (cfs)	Prop. (cfs)	Exist. (cfs)	Prop. (cfs)	Exist. (cfs)	Prop. (cfs)	Exist. (cfs)	Prop. (cfs)
Design Point 1	0.00	0.000	0.04	0.03	0.12	0.07	0.61	0.31

Pre-Development vs. Post-Development Volume in ac-ft

Design Point	<u>2 Year Storm</u> (3.20 Inches)		<u>10 Year Storm</u> (4.70 Inches)		<u>25 Year Storm</u> (5.50 Inches)		<u>100 Year Storm</u> (6.70 Inches)	
	Exist. (ac-ft)	Prop. (ac-ft)	Exist. (ac-ft)	Prop. (ac-ft)	Exist. (ac-ft)	Prop. (ac-ft)	Exist. (ac-ft)	Prop. (ac-ft)
Design Point 1	0.00	0.00	0.024	0.005	0.060	0.009	0.140	0.081

Sanitary Sewer

The proposed project will include abandoning all existing sewer services and a proposed one (1) new sewer connection. The proposed sewer connection will be via a new eight (8) inch PVC (SDR-35) sewer pipe connection into the existing 10-inch sewer main in Weston Road. The proposed sewer flows are calculated as follows:

Number of bedrooms	Minimum Flow (1)	Calculated Flow	Design Flow	Adjusted Flow based on Peak Factor of 3.8 (2)
52	110/gpd/bedroom	5,720 gpd	5,720 gpd	21,736 gpd

(1) 310 CMR Section 15.203 System Sewage Design Criteria

(2) Peak factor based on "TR-16: Guides for the Design of Wastewater Treatment Works - Prepared by the New England Interstate Water Pollution Control Commission

The total estimated proposed sewage flow is 21,736 gpd (0.034 cfs). This is an increase of 19,228 gpd over pre-development conditions.

Water

The proposed project will include abandoning all existing water service connections and proposing one (1) new 6-inch service to the existing ten (10) inch main in Weston Road. The domestic water service and fire service will tap into the 6-inch service. The size of the domestic water service is to be determined. The daily water usage for the project is estimated by using the proposed sewage flow. Therefore, the total estimated water usage for the project is 21,736 gpd (0.034 cfs).