



## VOLUME III - APPENDICES

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28-30 WENDELL ST  
CAMBRIDGE, MA  
06/23/25



VOLUME III - APPENDICES

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### Article 22 Compliance

To comply with the City of Cambridge's Article 22 Sustainable Design and Development Policy, the 28-30 Wendell Project will be designed and constructed in accordance with the Enterprise Green Communities Certification. This certification offers numerous benefits, including an emphasis on environmental sustainability, efficient usage of water and energy, and a focus on the well-being and health of the residents. The building will be Passive House Certified, with substantial insulation, and low heating and cooling loads. 30 Wendell will be fully electric, and a portion of its electricity will be offset with renewable energy from a rooftop solar installation. High-performance envelopes also mean higher comfort and better indoor air quality for the residents, which will be further enhanced through rigorous review of the materials employed. Civil engineering plans include stormwater mitigation measures. Lastly, the project team is reviewing materials with low-embodied carbon for a more sustainable building lifecycle.





June 6, 2025

Project #319

Kara Falise  
Cambridge DPW  
147 Hampshire Street  
Cambridge, MA 02139

**28-30 Wendell Street, Cambridge, MA –Stormwater Narrative (70% DD Phase)**

Dear Kara,

Quetti Design LLC (DBA Boston Civil) has completed a stormwater design and narrative for the proposed affordable housing redevelopment located at 28-30 Wendell Street in Cambridge. The Project is through the 70% Design Development Phase, and an updated stormwater mitigation design and narrative can be prepared and resubmitted to the DPW for final approval after the project and stormwater designs advance. Refer to the latest plan set dated March 14, 2025.

***Project Overview***

The current site contains an existing tennis court, two 3-story brick buildings, and parking areas that were previously owned by Lesley University. The proposed improvements include a new affordable housing tower, utility upgrades, internal transformer, building parking and accessible pathways from Wendell Street. The Project's stormwater management improvements have been designed to meet the standards for the City of Cambridge's Stormwater Control Permit to the extent practicable.

***Sewer Improvements Overview***

The City of Cambridge owns, operates, and maintains the sewer system in proximity to the Project Site. The existing project site is presently served by a 12-inch sewer main flowing easterly in Wendell Street. There is an existing sewer lateral that will be cut and capped at the 12-inch sewer main in Wendell Street. The proposed residential building's sanitary sewage system, a new SDR 35 PVC sewer service, will connect to the 12-inch sewer main in Wendell Street.

The City of Cambridge requires a 4:1 Inflow and Infiltration (I/I) calculation due to a net increase of more than 15,000 gallons per day (GPD). The existing and proposed sewer generation rate were estimated based on Title 5 design criteria (310 CMR 15.203). The sewage generation values are used to evaluate the approximate increase in sewer flow due to the Project. The estimated sewage flow for the existing building is 2,970 gallons per day (GPD) based on the number of existing bedrooms. The proposed sewage flows are expected to generate 19,928 GPD, an increase of 16,958 GPD. Please note the hub space values assume the maximum capacity of the "Hub Space" as a function hall. Due to the tenants being the majority of the users of the space and it not being used daily, if there is any flexibility to

the sewage generation allowed, the Project Team would be interested in discussing if any allowances could be made for that portion of the calculation. No infiltration credit is applied because the geotechnical report indicated high groundwater, and it was determined that on-site infiltration is infeasible. Additional soil and drainage information can be found in the following pages. Due to the project creating a net increase of more than 15,000 GPD, the project will require to contribute to the City of Cambridge's 4:1 Inflow and Infiltration (I/I) Program.

### ***Water and Fire Protection Improvements***

Wendell Street is served by an 8-inch cast iron water main. Currently, there are three (3) existing domestic water services that serve the existing buildings, which will be cut and capped at the main. The proposed project includes new domestic water and fire protection service connections to the main in Wendell Street. A new 4-inch DICL Class 52 domestic water service and a 6-inch DICL Class 52 fire protection service are proposed as determined by the MEP to meet the building design requirements.

### ***Stormwater Management Overview***

The Site runoff was analyzed using one design point, which per the City of Cambridge's GIS, is an 18-inch storm drain in Wendell Street, that is currently being collected by a catch basin in front of the site. The proposed stormwater management system which will be described later in this narrative, which uses an outlet control structure to mitigate the rate and volume of runoff from the system before discharging to the existing drain main in Wendell Street and meet the 25-year to 2-year runoff requirement.

Per the FEMA Flood Insurance Map 25017C0438E, the parcels are located within Zone X, described as areas determined to be outside the 0.2% annual chance floodplain. However, the City of Cambridge has their own online Flood Viewer which indicates areas that are impacted by sea level rise, storm surge flooding, and precipitation flooding for present day, 2030, and 2070 storm events. Per the City of Cambridge's FloodViewer 2022 (**Attachment A**), last checked February 24, 2025, indicates that 28 Wendell Street parcel has a 1% long term flood elevation of 28.5. The 30 Wendell Street parcel has a 1% long term flood elevation of 27.9 for the 2070 precipitation event. The lowest point of the site is approximately elevation 29.0, so the site itself is not noted as being impacted based on the elevations provided by the surveyor of record.

The Project is currently designed to demonstrate a reduction of impervious area due to the new construction. The change in land use conditions from existing to proposed is summarized in **Table 1** below. Please note, permeable pavers were included in the Total Impervious category since infiltration is infeasible due to high groundwater.

**Table 1: Drainage Area Summary (SF)**

Description	Total	Roof	Permeable Pavers	Site Impervious	Total Impervious*	Pervious (HSG D)
Existing	22,545	3,271	0	15,571	18,842	3,703
Proposed	22,545	14,852	2,792	651	18,295	4,250
Change	0	11,581	2,792	(14,920)	(547)	547

### *Stormwater Management Requirements*

The Project is required to demonstrate a pre/post runoff rate and volume reduction per MA DEP requirements. Due to the reduction of impervious area, these have been met. Additionally, the City of Cambridge requires that the total volume of runoff generated between the pre-construction 2-year 24-hour storm peak discharge and the post-construction 25-year 24-hour storm peak discharge shall be retained, based on the City of Cambridge's projected rainfall data for 2070 storm events. Further information on this design can be found later in this narrative.

### *Soil Information*

Boring logs were performed by McPhail Associates, who prepared a Foundation Engineering Report dated November 8, 2024. The boring logs indicate fill is present 4 to 10 feet below grade and is underlain by glacial outwash, marine clay, and organics/peat. Groundwater monitoring wells installed, with a highest recorded water level of 26.9. Therefore, it is our opinion that on-site infiltration is infeasible, not only due the presence of material that would not meet the minimum infiltration rate requirements to provide infiltration, but to provide two (2) feet of vertical separation between the bottom of the system and the seasonal high groundwater elevation.

Therefore, a detention system design has been proposed and is described later in this narrative.

***Proposed Stormwater Management Approach***

The existing and proposed drainage areas to Wendell Street can be found in **Table 1** on the previous page. In the existing condition, the tennis court, parking lot, and site runoff sheet flows into Wendell Street and is collected by a catch basin on the south side of Wendell Street. The existing roof drainage discharge point from the existing two 3-story brick buildings is unknown, but all building services will be cut and capped at the main.

The pre-post runoff rates and volumes, using the City of Cambridge's 2070 24-hour rainfall values, can be found below in **Table 2**.

**Table 2: Stormwater Runoff Calculations – Mellen Street – Stormwater Runoff**

<b>2-Year Storm (3.65")</b>			
<b>Existing Rate (CFS)</b>	<b>Post Rate (CFS)</b>	<b>Pre Volume (CF)</b>	<b>Post Volume (CF)</b>
<b>1.72</b>	<b>1.07</b>	<b>5,799</b>	<b>5,766</b>
<b>10-Year Storm (6.40")</b>			
<b>Existing Rate (CFS)</b>	<b>Post Rate (CFS)</b>	<b>Pre Volume (CF)</b>	<b>Post Volume (CF)</b>
<b>3.12</b>	<b>1.51</b>	<b>10,914</b>	<b>10,861</b>
<b>25-Year Storm (8.22")</b>			
<b>Existing Rate (CFS)</b>	<b>Post Rate (CFS)</b>	<b>Pre Volume (CF)</b>	<b>Post Volume (CF)</b>
<b>4.03</b>	<b>1.71</b>	<b>14,317</b>	<b>14,257</b>
<b>100-Year Storm (11.70")</b>			
<b>Existing Rate (CFS)</b>	<b>Post Rate (CFS)</b>	<b>Pre Volume (CF)</b>	<b>Post Volume (CF)</b>
<b>5.77</b>	<b>4.02</b>	<b>20,838</b>	<b>20,769</b>

As indicated above, the project is proposing two stormwater detention system designs to meet Cambridge's 25-year to 2-year runoff rate reduction requirement.

Detention System #1, located at the rear of the property, consists of six (6) Shea Leaching Galleys (each 8x14x3.67). The system is designed to manage approximately 10,768 SF of roof area, 1,462 SF of permeable pavers, 323 SF of site impervious area, and 1,960 SF of landscaped area. The permeable pavers are modeled separately than the site impervious areas, but a curve number of 98 is still provided since they will have underdrains connecting to the system (due to high groundwater). The system will overflow to Detention System #2, utilizing an outlet control structure and two 6-inch orifices at the bottom of the system for a consistent flow of runoff to Detention System #2. The system does not reach the top of interior structure elevation for the 100-year storm event.

Detection System #2, located at the front of the property, consists of three (3) Shea Leaching Galleys (each 8x14x4.67). The system is designed to manage the controlled discharge from Detention System #1, as well as approximately 4,084 SF of roof area, 1,330 SF of permeable pavers, 328 SF of site impervious area, and 1,422 SF of landscaped area. The permeable pavers are modeled separately than the site impervious areas, but a curve number of 98 is still provided since they will have underdrains connecting to the system (due to high groundwater). The system utilizes an outlet control structure and a 6-inch orifice at the bottom of the system to control and manage the rate of stormwater leaving the project site through a 10-inch drain overflow, which connects to the 18-inch drain main in Wendell Street.

### **Phosphorous (P) Calculations**

<b>P Load Export Rate</b>	
High Density Residential - Impervious	2.32 lbs/ac/year
DevPERV - HSG D	0.37 lbs/ac/year

### **Baseline P Load**

**Existing:**  $(2.32 \text{ lbs/ac/year}) * (18,842 \text{ SF} / 43,560) \text{ (Impervious)} + (0.37 \text{ lbs/ac/year}) * (3,703 \text{ SF} / 43,560) \text{ (Pervious)} = 1.035 \text{ lbs/P/year}$

**Proposed (Uncaptured):**  $(2.32 \text{ lbs/ac/year}) * (18,295 \text{ SF} / 43,560) \text{ (Impervious)} + (0.37 \text{ lbs/ac/year}) * (4,250 \text{ SF} / 43,560) \text{ (Pervious)} = 1.010 \text{ lbs/P/year}$

**P Reduction:**  $1.035 \text{ lbs/ac/year} - 1.010 \text{ lbs/ac/year} = 0.025 \text{ lbs/P/year}$

**65% P Reduction Requirement (over Proposed Impervious):**

$0.65 * (2.32 \text{ lbs/ac/year}) * (18,295 \text{ SF} / 43,560) \text{ (Impervious)} = 0.633 \text{ lbs/P/year}$

Please note that the Project does not comply with the City of Cambridge redevelopment project 65% phosphorus reduction requirements due to the project site's soil conditions and high groundwater levels. However, the proposed stormwater detention system has been designed to the maximum extent feasible. A complete assessment of potential measures has been conducted, incorporating environmentally sensitive site design, low-impact development (LID) techniques, and stormwater BMPs. Although complete compliance with all requirements may not be practicable, stormwater management practices have been implemented to provide water quality benefits, including providing a reduction of impervious area, meeting the 25-year to 2-year peak runoff rate requirements, and reducing surface runoff to Wendell Street.

### ***Total Suspended Solids (TSS)***

The City of Cambridge requires stormwater systems that can remove 80% of TSS from redevelopment projects. Due to the site's soil conditions and high groundwater levels, TSS removal for non-roof areas cannot be effectively achieved through traditional stormwater infiltration methods.



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In addition, all attempts to keep excavated land lower than surrounding lands (while maintaining proper erosion controls) should be exercised to help mitigate off-site runoff potential. The contractor shall construct and maintain erosion and sediment control measures in accordance with the latest edition of "Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas" prepared by the DEP and as directed by the local permitting authority.

Thank you for reviewing this Stormwater Narrative. If you have any questions or comments, please don't hesitate to give me a call to discuss.

Best,

**Boston Civil**



Kevin Quetti, PE  
Principal Engineer

Attachments:

- Proposed Site Plan Set for New Construction prepared by Boston Civil, last revised March 14, 2025
- Attachment A - City of Cambridge Flood Viewer

**Attachment A:**  
**City of Cambridge Flood Viewer (28 & 30 Wendell)**

Water Bodies



Parcels With Flood Data



Sea Level Rise / Storm Surge Flooding - 2070 - 1%

2070 - 1% - SLR/SS Impacted Parcels



2070 - 1% - SLR/SS Flooding Extent



2070 - 1% - SLR/SS Impacted Parcels



Precipitation Flooding - 2070 - 1%

2070 - 1% - Impacted Parcels



2070 - 1% - Extent of Flooding



2070 - 1% - Impacted Parcels



Sea Level Rise / Storm Surge Flooding - 2070 - 10%

2070 - 10% - SLR/SS Impacted Parcels



2070 - 10% - SLR/SS Flooding Extent



2070 - 10% - SLR/SS Impacted Parcels

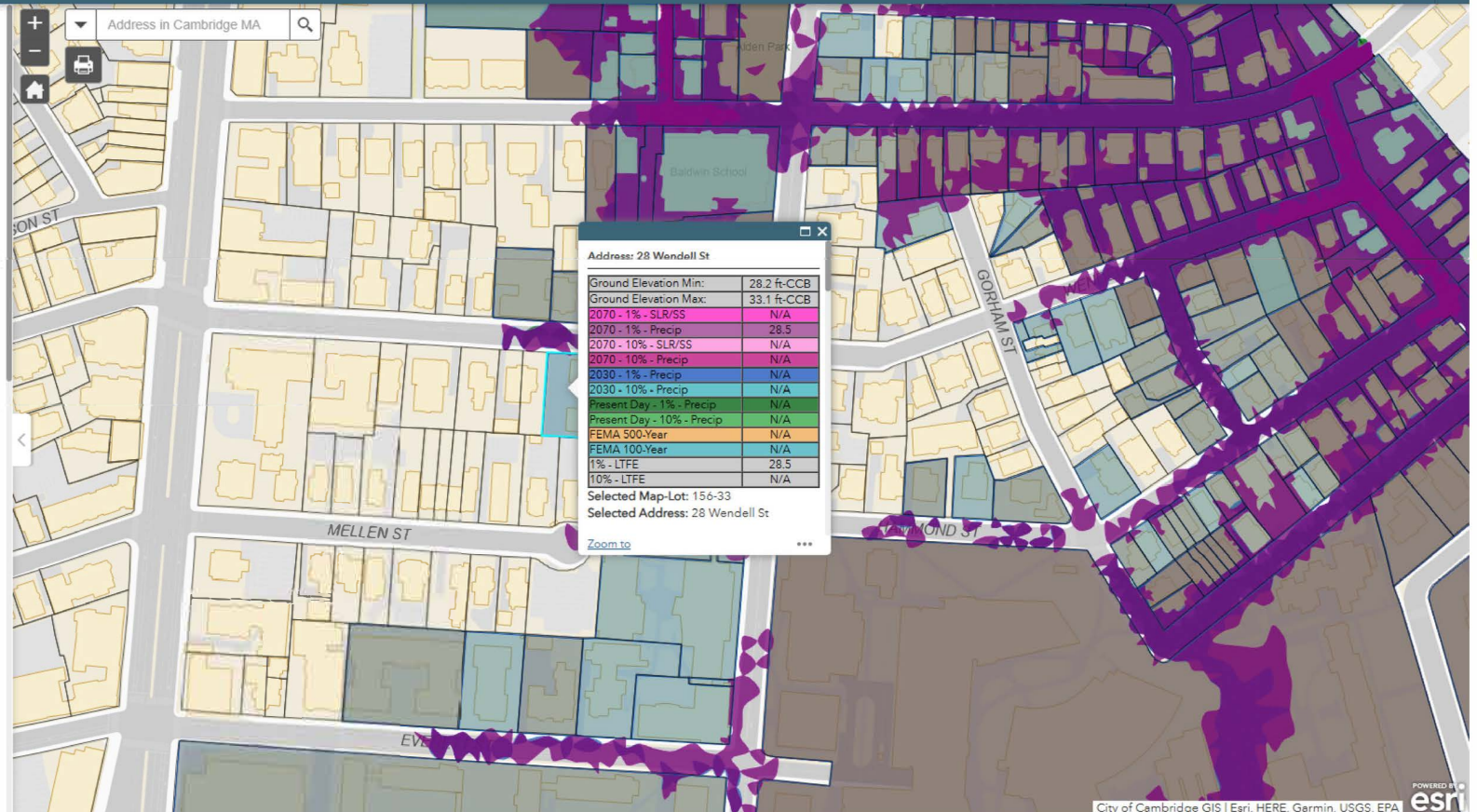


Precipitation Flooding - 2070 - 10%

2070 - 10% - Impacted Parcels



2070 - 10% - Extent of Flooding



Water Bodies



Parcels With Flood Data



Sea Level Rise / Storm Surge Flooding - 2070 - 1%

2070 - 1% - SLR/SS Impacted Parcels



2070 - 1% - SLR/SS Flooding Extent



2070 - 1% - SLR/SS Impacted Parcels



Precipitation Flooding - 2070 - 1%

2070 - 1% - Impacted Parcels



2070 - 1% - Extent of Flooding



2070 - 1% - Impacted Parcels



Sea Level Rise / Storm Surge Flooding - 2070 - 10%

2070 - 10% - SLR/SS Impacted Parcels



2070 - 10% - SLR/SS Flooding Extent



2070 - 10% - SLR/SS Impacted Parcels



Precipitation Flooding - 2070 - 10%

2070 - 10% - Impacted Parcels



2070 - 10% - Extent of Flooding

