

# One Congress Street

Boston, Massachusetts

SUBMITTED TO **Boston Conservation Commission**  
City Hall Plaza, Room 709  
Boston, MA 02201

PROPONENT **BC One Congress Tower JV LLC**  
**c/o The HYM Investment Group**  
1 Congress Street  
Boston, Massachusetts 02114

PREPARED BY **VHB**  
99 High Street, 10<sup>th</sup> Floor  
Boston, MA 02110

February 05, 2019





February 20, 2019

Boston Conservation Commission  
One City Hall Square  
Boston, MA 02201

Re: **Notice of Intent, One Congress Street**  
Redevelopment of the Government Center Garage – WP-B2 Office Building  
One Congress Street, Boston, Massachusetts

Dear Commissioners:

On behalf of BC One Congress Tower JV LLC, the owner of the proposed project, The HYM Investment Group, LLC ("HYM") is pleased to submit the enclosed Notice of Intent ("NOI") for proposed office building to be located at One Congress Street in downtown Boston (the "Project Site"). The proposed project consists of a 43-story tower with approximately 976,000 square feet of office space and approximately 10,600 square feet of ground floor retail space, associated utilities to service the new building, and hardscape and landscape areas. Proposed work includes the demolition of a portion of the existing parking garage structure, construction of the new office building with a roof garden and landscaped areas, installation of new utility services, excavation, reconstruction of adjacent streetscape, and roadway improvements to the adjacent public streets (New Chardon Street, Merrimac Street, and Bowker Street). The Project will impact approximately 30,960 square feet of Land Subject to Coastal Storm.

Included with this submittal is a check payable to the City of Boston in the amount of \$750.00 for payment of the Boston share of the NOI filing fee. Abutters within 100 feet of the property have been notified of this filing via certified mail. Please publish the appropriate public notice and schedule this matter for the next regularly scheduled meeting of the Conservation Commission.

We look forward to working with you and the community in your continuing review of this project.

Very truly yours,

Thomas O'Brien  
Managing Partner  
The HYM Investment Group, LLC

Enclosure

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## Attachment B – Abutter Notification Materials

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Attachment C – Project Site Plans

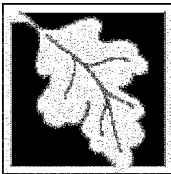
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# Notice of Intent Forms

- WPA Form 3
- Fee Transmittal Form
- Copy of Filing Fee Checks



Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands

**WPA Form 3 – Notice of Intent**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File Number
Document Transaction Number
City/Town

**Important:**  
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Note:  
Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

**A. General Information**

1. Project Location (**Note:** electronic filers will click on button to locate project site):

<u>1 Congress Street</u>	<u>Boston</u>	<u>02114</u>
a. Street Address	b. City/Town	c. Zip Code
Latitude and Longitude:	<u>42.3628 N</u>	<u>71.0592 W</u>
	d. Latitude	e. Longitude
<u>0302700000</u>	<u>0302700000</u>	
f. Assessors Map/Plat Number	g. Parcel /Lot Number	

2. Applicant:

<u>Thomas</u>	<u>O'Brien</u>	
a. First Name	b. Last Name	
<u>BC One Congress Tower JV LLC</u>		
c. Organization		
<u>c/o The HYM Investment Group - One Congress Street, 11th Floor</u>		
d. Street Address		
<u>Boston</u>	<u>MA</u>	<u>02114</u>
e. City/Town	f. State	g. Zip Code
<u>617 248 8905</u>	<u>tobrien@hyminvestments.com</u>	
h. Phone Number	i. Fax Number	j. Email Address

3. Property owner (required if different from applicant):  Check if more than one owner

<u></u>	<u></u>	
a. First Name	b. Last Name	
<u></u>		
c. Organization		
<u></u>		
d. Street Address		
<u></u>	<u></u>	<u></u>
e. City/Town	f. State	g. Zip Code
<u></u>	<u></u>	<u></u>
h. Phone Number	i. Fax Number	j. Email address

4. Representative (if any):

<u>Lisa</u>	<u>Chow</u>	
a. First Name	b. Last Name	
<u>VHB</u>		
c. Company		
<u>99 High Street, 10th Floor</u>		
d. Street Address		
<u>Boston</u>	<u>MA</u>	<u>02110</u>
e. City/Town	f. State	g. Zip Code
<u>617 607 2940</u>	<u>lchow@vhb.com</u>	
h. Phone Number	i. Fax Number	j. Email address

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

<u>\$1,262.50</u>	<u>\$512.50</u>	<u>\$750.00</u>
a. Total Fee Paid	b. State Fee Paid	c. City/Town Fee Paid



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**A. General Information (continued)**

6. General Project Description:

The Project proposes a new office tower with associated utilities and hardscape and landscaped areas. Work includes the demolition of a portion of the existing parking garage structure, construction of new office building, associated utilities, and hardscape and landscaped areas, excavation, roadway improvements to the adjacent public streets, and stormwater improvements.

7a. Project Type Checklist: (Limited Project Types see Section A. 7b.)

- 1.  Single Family Home
- 2.  Residential Subdivision
- 3.  Commercial/Industrial
- 4.  Dock/Pier
- 5.  Utilities
- 6.  Coastal engineering Structure
- 7.  Agriculture (e.g., cranberries, forestry)
- 8.  Transportation
- 9.  Other

7b. Is any portion of the proposed activity eligible to be treated as a limited project (including Ecological Restoration Limited Project) subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

- 1.  Yes  No If yes, describe which limited project applies to this project. (See 310 CMR 10.24 and 10.53 for a complete list and description of limited project types)

2. Limited Project Type

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR10.24(8), 310 CMR 10.53(4)), complete and attach Appendix A: Ecological Restoration Limited Project Checklist and Signed Certification.

8. Property recorded at the Registry of Deeds for:

Suffolk	
a. County	b. Certificate # (if registered land)
57965	1
c. Book	d. Page Number

**B. Buffer Zone & Resource Area Impacts (temporary & permanent)**

- 1.  Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.
- 2.  Inland Resource Areas (see 310 CMR 10.54-10.58; if not applicable, go to Section B.3, Coastal Resource Areas).

Check all that apply below. Attach narrative and any supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.



Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands

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### B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. <input type="checkbox"/> Bank	1. linear feet	2. linear feet
b. <input type="checkbox"/> Bordering Vegetated Wetland	1. square feet	2. square feet
c. <input type="checkbox"/> Land Under Waterbodies and Waterways	1. square feet	2. square feet
	3. cubic yards dredged	

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. <input type="checkbox"/> Bordering Land Subject to Flooding	1. square feet	2. square feet
	3. cubic feet of flood storage lost	4. cubic feet replaced
e. <input type="checkbox"/> Isolated Land Subject to Flooding	1. square feet	
	2. cubic feet of flood storage lost	3. cubic feet replaced
f. <input type="checkbox"/> Riverfront Area	1. Name of Waterway (if available) - <b>specify coastal or inland</b>	

2. Width of Riverfront Area (check one):

- 25 ft. - Designated Densely Developed Areas only
- 100 ft. - New agricultural projects only
- 200 ft. - All other projects

3. Total area of Riverfront Area on the site of the proposed project: \_\_\_\_\_ square feet

4. Proposed alteration of the Riverfront Area:

a. total square feet \_\_\_\_\_ b. square feet within 100 ft. \_\_\_\_\_ c. square feet between 100 ft. and 200 ft. \_\_\_\_\_

5. Has an alternatives analysis been done and is it attached to this NOI?  Yes  No

6. Was the lot where the activity is proposed created prior to August 1, 1996?  Yes  No

3.  Coastal Resource Areas: (See 310 CMR 10.25-10.35)

**Note:** for coastal riverfront areas, please complete **Section B.2.f.** above.



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**B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)**

Check all that apply below. Attach narrative and supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Online Users:  
 Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

<u>Resource Area</u>	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
a. <input type="checkbox"/> Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. <input type="checkbox"/> Land Under the Ocean	_____	
	1. square feet	
	_____	
	2. cubic yards dredged	
c. <input type="checkbox"/> Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. <input type="checkbox"/> Coastal Beaches	_____	_____
	1. square feet	2. cubic yards beach nourishment
e. <input type="checkbox"/> Coastal Dunes	_____	_____
	1. square feet	2. cubic yards dune nourishment
	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
f. <input type="checkbox"/> Coastal Banks	_____	
	1. linear feet	
g. <input type="checkbox"/> Rocky Intertidal Shores	_____	
	1. square feet	
h. <input type="checkbox"/> Salt Marshes	_____	_____
	1. square feet	2. sq ft restoration, rehab., creation
i. <input type="checkbox"/> Land Under Salt Ponds	_____	
	1. square feet	
	_____	
	2. cubic yards dredged	
j. <input type="checkbox"/> Land Containing Shellfish	_____	
	1. square feet	
k. <input type="checkbox"/> Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above	
	_____	
	1. cubic yards dredged	
l. <input checked="" type="checkbox"/> Land Subject to Coastal Storm Flowage	30,960	
	1. square feet	
4. <input type="checkbox"/> Restoration/Enhancement	If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.2.b or B.3.h above, please enter the additional amount here.	
	_____	_____
	a. square feet of BVW	b. square feet of Salt Marsh
5. <input type="checkbox"/> Project Involves Stream Crossings		
	_____	_____
	a. number of new stream crossings	b. number of replacement stream crossings



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## C. Other Applicable Standards and Requirements

- This is a proposal for an Ecological Restoration Limited Project. Skip Section C and complete Appendix A: Ecological Restoration Limited Project Checklists – Required Actions (310 CMR 10.11).

### Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

- Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? To view habitat maps, see the *Massachusetts Natural Heritage Atlas* or go to [http://maps.massgis.state.ma.us/PRI\\_EST\\_HAB/viewer.htm](http://maps.massgis.state.ma.us/PRI_EST_HAB/viewer.htm).

a.  Yes  No **If yes, include proof of mailing or hand delivery of NOI to:**

**Natural Heritage and Endangered Species Program  
Division of Fisheries and Wildlife  
1 Rabbit Hill Road  
Westborough, MA 01581**

August 2017  
b. Date of map

If yes, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.c, and include requested materials with this Notice of Intent (NOI); *OR* complete Section C.2.f, if applicable. *If MESA supplemental information is not included with the NOI, by completing Section 1 of this form, the NHESP will require a separate MESA filing which may take up to 90 days to review (unless noted exceptions in Section 2 apply, see below).*

c. Submit Supplemental Information for Endangered Species Review\*

- Percentage/acreage of property to be altered:
  - (a) within wetland Resource Area \_\_\_\_\_ percentage/acreage
  - (b) outside Resource Area \_\_\_\_\_ percentage/acreage
- Assessor's Map or right-of-way plan of site

- Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work \*\*
  - (a)  Project description (including description of impacts outside of wetland resource area & buffer zone)
  - (b)  Photographs representative of the site

\* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see <http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/regulatory-review/>). Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.

\*\* MESA projects may not be segmented (321 CMR 10.16). The applicant must disclose full development plans even if such plans are not required as part of the Notice of Intent process.



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## C. Other Applicable Standards and Requirements (cont'd)

(c)  MESA filing fee (fee information available at [http://www.mass.gov/dfwele/dfw/nhosp/regulatory\\_review/mesa/mesa\\_fee\\_schedule.htm](http://www.mass.gov/dfwele/dfw/nhosp/regulatory_review/mesa/mesa_fee_schedule.htm)). Make check payable to "Commonwealth of Massachusetts - NHESP" and **mail to NHESP** at above address

*Projects altering 10 or more acres of land, also submit:*

(d)  Vegetation cover type map of site

(e)  Project plans showing Priority & Estimated Habitat boundaries

(f) OR Check One of the Following

1.  Project is exempt from MESA review. Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, [http://www.mass.gov/dfwele/dfw/nhosp/regulatory\\_review/mesa/mesa\\_exemptions.htm](http://www.mass.gov/dfwele/dfw/nhosp/regulatory_review/mesa/mesa_exemptions.htm); the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)

2.  Separate MESA review ongoing. a. NHESP Tracking # \_\_\_\_\_ b. Date submitted to NHESP \_\_\_\_\_

3.  Separate MESA review completed. Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

3. For coastal projects only, is any portion of the proposed project located below the mean high water line or in a fish run?

a.  Not applicable – project is in inland resource area only      b.  Yes     No

If yes, include proof of mailing, hand delivery, or electronic delivery of NOI to either:

South Shore - Cohasset to Rhode Island border, and the Cape & Islands:

Division of Marine Fisheries -  
Southeast Marine Fisheries Station  
Attn: Environmental Reviewer  
836 South Rodney French Blvd.  
New Bedford, MA 02744  
Email: [DMF.EnvReview-South@state.ma.us](mailto:DMF.EnvReview-South@state.ma.us)

North Shore - Hull to New Hampshire border:

Division of Marine Fisheries -  
North Shore Office  
Attn: Environmental Reviewer  
30 Emerson Avenue  
Gloucester, MA 01930  
Email: [DMF.EnvReview-North@state.ma.us](mailto:DMF.EnvReview-North@state.ma.us)

Also if yes, the project may require a Chapter 91 license. For coastal towns in the Northeast Region, please contact MassDEP's Boston Office. For coastal towns in the Southeast Region, please contact MassDEP's Southeast Regional Office.





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**C. Other Applicable Standards and Requirements (cont'd)**

4. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?
- a.  Yes  No If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations). **Note:** electronic filers click on Website.
- b. ACEC
5. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?
- a.  Yes  No
6. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?
- a.  Yes  No
7. Is this project subject to provisions of the MassDEP Stormwater Management Standards?
- a.  Yes. Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:
1.  Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)
  2.  A portion of the site constitutes redevelopment
  3.  Proprietary BMPs are included in the Stormwater Management System.
- b.  No. Check why the project is exempt:
1.  Single-family house
  2.  Emergency road repair
  3.  Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

**D. Additional Information**

- This is a proposal for an Ecological Restoration Limited Project. Skip Section D and complete Appendix A: Ecological Restoration Notice of Intent – Minimum Required Documents (310 CMR 10.12).

Applicants must include the following with this Notice of Intent (NOI). See instructions for details.

**Online Users:** Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department.

1.  USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)
2.  Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.

**Online Users:**  
Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.



Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands

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### D. Additional Information (cont'd)

3.  Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.

4.  List the titles and dates for all plans and other materials submitted with this NOI.

One Congress Sheets C000-C700

a. Plan Title

VHB

b. Prepared By

02/05/19

d. Final Revision Date

SV-1

f. Additional Plan or Document Title

c. Signed and Stamped by

As Indicated

e. Scale

9/18/18

g. Date

5.  If there is more than one property owner, please attach a list of these property owners not listed on this form.
6.  Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.
7.  Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.
8.  Attach NOI Wetland Fee Transmittal Form
9.  Attach Stormwater Report, if needed.

### E. Fees

1.  Fee Exempt: No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority, municipal housing authority, or the Massachusetts Bay Transportation Authority.

Applicants must submit the following information (in addition to pages 1 and 2 of the NOI Wetland Fee Transmittal Form) to confirm fee payment:

1038  
2. Municipal Check Number

1039  
4. State Check Number

BC ONECONGRESS TOWER JV LLC  
6. Payor name on check: First Name

2/20/2019  
3. Check date

2/20/2019  
5. Check date

7. Payor name on check: Last Name



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### F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

1. Signature of Applicant

2. Date

3. Signature of Property Owner (if different)

4. Date

5. Signature of Representative (if any)

6. Date

#### For Conservation Commission:

Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

#### For MassDEP:

One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a copy of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

#### Other:

If the applicant has checked the "yes" box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.



**Massachusetts Department of Environmental Protection**  
 Bureau of Resource Protection - Wetlands  
**NOI Wetland Fee Transmittal Form**  
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



**A. Applicant Information**

1. Location of Project:

1 Congress Street	Boston
a. Street Address	b. City/Town
_____	_____
c. Check number	d. Fee amount
_____	_____

2. Applicant Mailing Address:

Thomas	O'Brien	
a. First Name	b. Last Name	
_____	_____	
BC One Congress Tower JV LLC	_____	
c. Organization	_____	
c/o The HYM Investment Group - One Congress Street, 11th Floor	_____	
d. Mailing Address	_____	
Boston	MA	02114
e. City/Town	f. State	g. Zip Code
617 248 8905	tobrien@hyminvestments.com	_____
h. Phone Number	i. Fax Number	j. Email Address

3. Property Owner (if different):

_____	_____	
a. First Name	b. Last Name	
_____	_____	
c. Organization	_____	
_____	_____	
d. Mailing Address	_____	
_____	_____	_____
e. City/Town	f. State	g. Zip Code
_____	_____	_____
h. Phone Number	i. Fax Number	j. Email Address

**B. Fees**

Fee should be calculated using the following process & worksheet. **Please see Instructions before filling out worksheet.**

**Step 1/Type of Activity:** Describe each type of activity that will occur in wetland resource area and buffer zone.

**Step 2/Number of Activities:** Identify the number of each type of activity.

**Step 3/Individual Activity Fee:** Identify each activity fee from the six project categories listed in the instructions.

**Step 4/Subtotal Activity Fee:** Multiply the number of activities (identified in Step 2) times the fee per category (identified in Step 3) to reach a subtotal fee amount. Note: If any of these activities are in a Riverfront Area in addition to another Resource Area or the Buffer Zone, the fee per activity should be multiplied by 1.5 and then added to the subtotal amount.

**Step 5/Total Project Fee:** Determine the total project fee by adding the subtotal amounts from Step 4.

**Step 6/Fee Payments:** To calculate the state share of the fee, divide the total fee in half and subtract \$12.50. To calculate the city/town share of the fee, divide the total fee in half and add \$12.50.

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).



**BC ONE CONGRESS TOWER JV LLC**  
1 CONGRESS ST, SUITE 11  
BOSTON, MA 02114

FIRST REPUBLIC BANK  
160 FEDERAL STREET FLOOR 8  
BOSTON, MA 02110

1039

11-8166/3210  
66  
CHECK ARMOR  
FEDERAL RESERVE BANK

2/20/2019

PAY TO THE ORDER OF Commonwealth of Massachusetts

\$ \*\*512.50

Five Hundred Twelve and 50/100\*\*\*\*\* DOLLARS

Commonwealth of Massachusetts  
Dept of Environmental Protection  
Box 4062  
Boston, MA 02211

MEMO

  
AUTHORIZED SIGNATURE

⑈001039⑈ ⑆321081669⑆ 80007188222⑈

**BC ONE CONGRESS TOWER JV LLC**  
1 CONGRESS ST, SUITE 11  
BOSTON, MA 02114

FIRST REPUBLIC BANK  
160 FEDERAL STREET FLOOR 8  
BOSTON, MA 02110

1038

11-8166/3210  
66  
CHECK ARMOR  
FEDERAL RESERVE BANK

2/20/2019

PAY TO THE ORDER OF City Of Boston

\$ \*\*750.00

Seven Hundred Fifty and 00/100\*\*\*\*\* DOLLARS

City Of Boston  
1010 Massachusetts Avenue  
Boston, MA 02118

MEMO

  
AUTHORIZED SIGNATURE

⑈001038⑈ ⑆321081669⑆ 80007188222⑈



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# Notice of Intent Figures

- Figure 1 – Site Locus Map
- Figure 2 – Aerial Map
- Figure 2a – Existing Conditions Photo
- Figure 3 – NHESP Map
- Figure 4 – Wetland Resource Areas
- Figure 5 – FEMA Map





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**Legend**

- Project Site

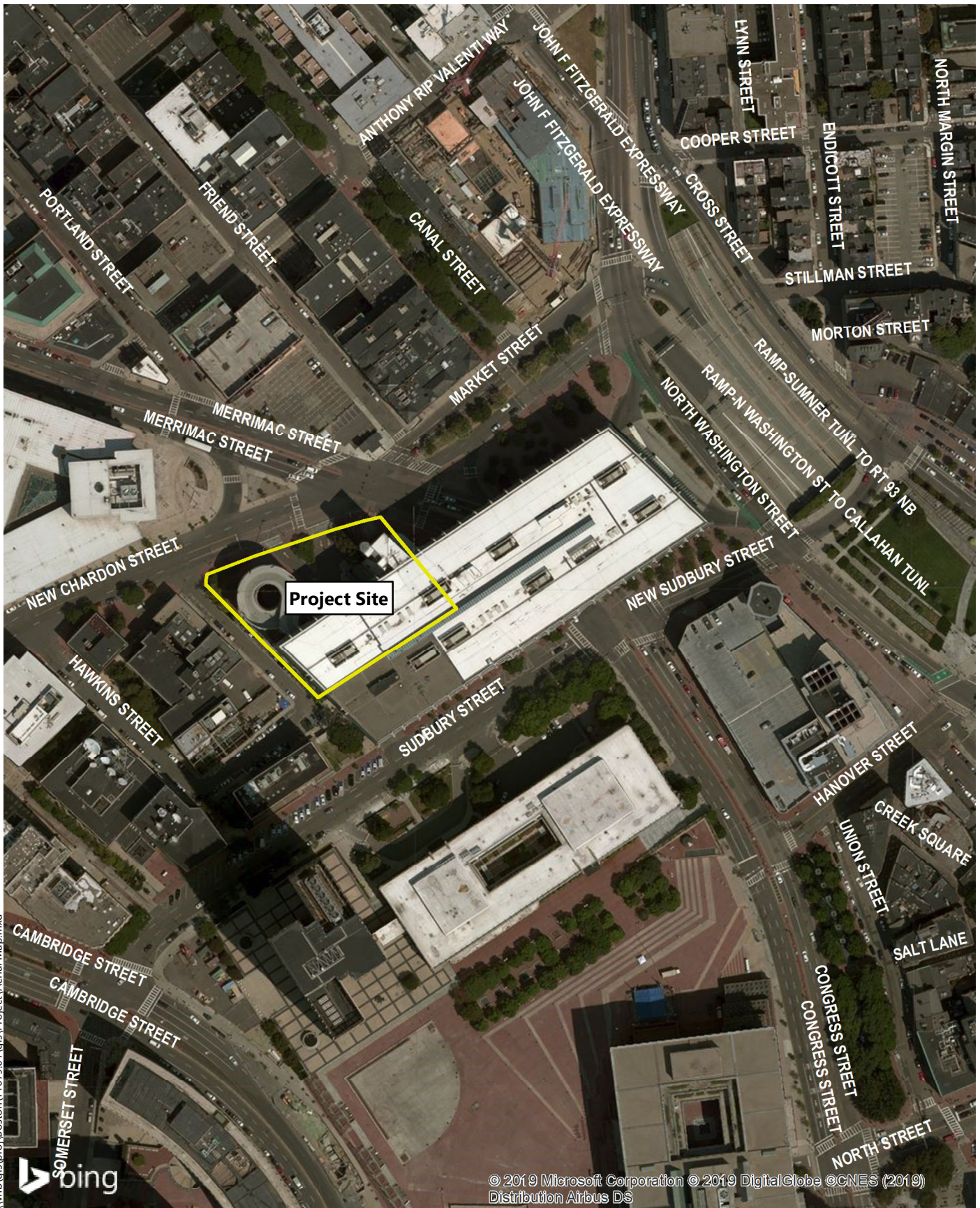
**One Congress Office Tower**

Boston, Massachusetts

**Site Location Map  
One Congress Street  
Boston MA**

Source: MassGIS, VHB





\\vhb\gis\proj\Boston\11679\_01\gis\Project\Aerial Map.mxd



One Congress Office Tower

Boston, Massachusetts

**Aerial Map**  
**One Congress Street**  
**Boston MA**

Source: MassGIS, Bing, VHB





View of New Chardon Street and Existing Garage  
Looking South

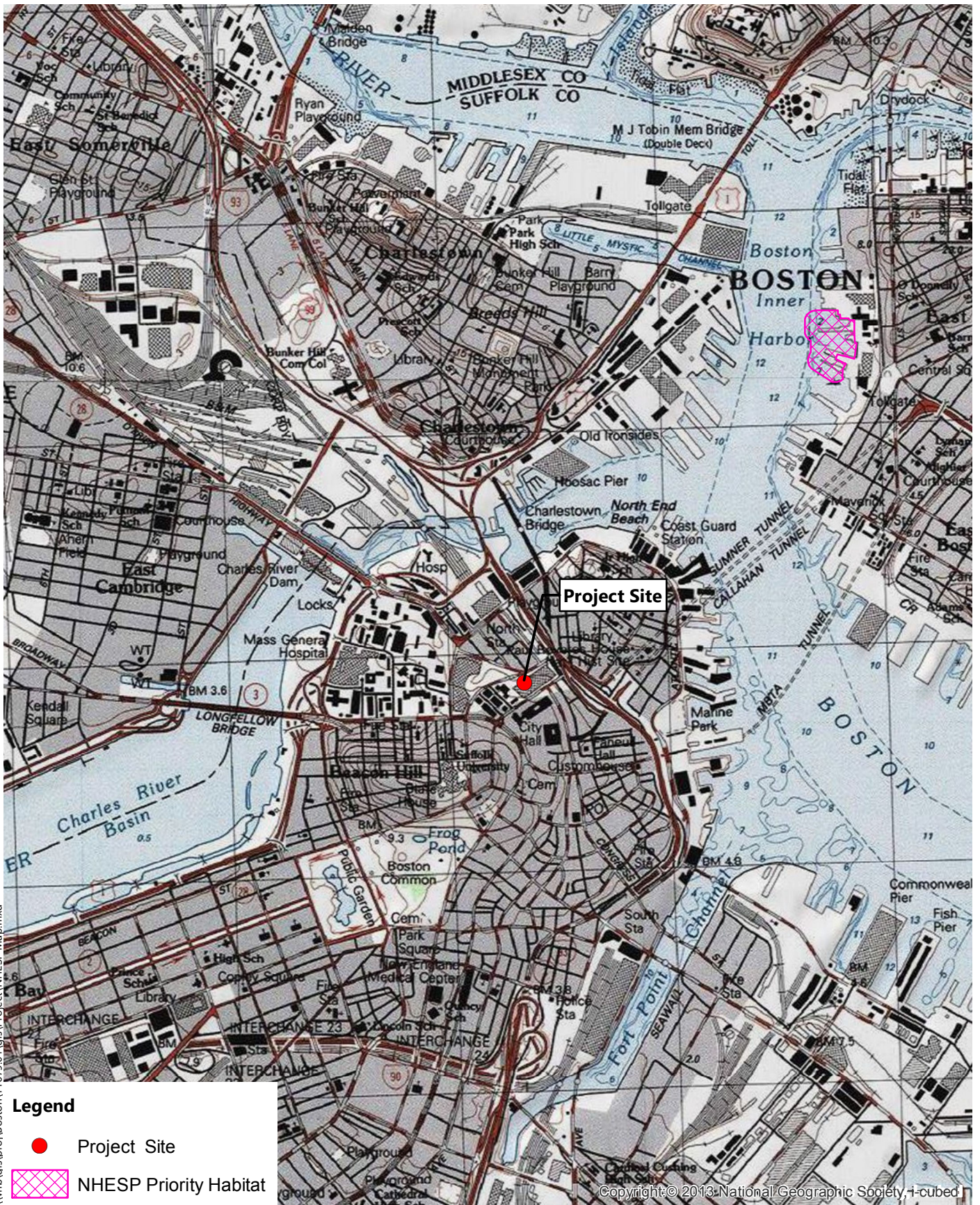


Existing Conditions Photo  
One Congress Office Tower  
Boston, MA

**Figure 2a**

February 2019





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**Legend**

- Project Site
- NHEP Priority Habitat



**One Congress Office Tower**

Boston, Massachusetts

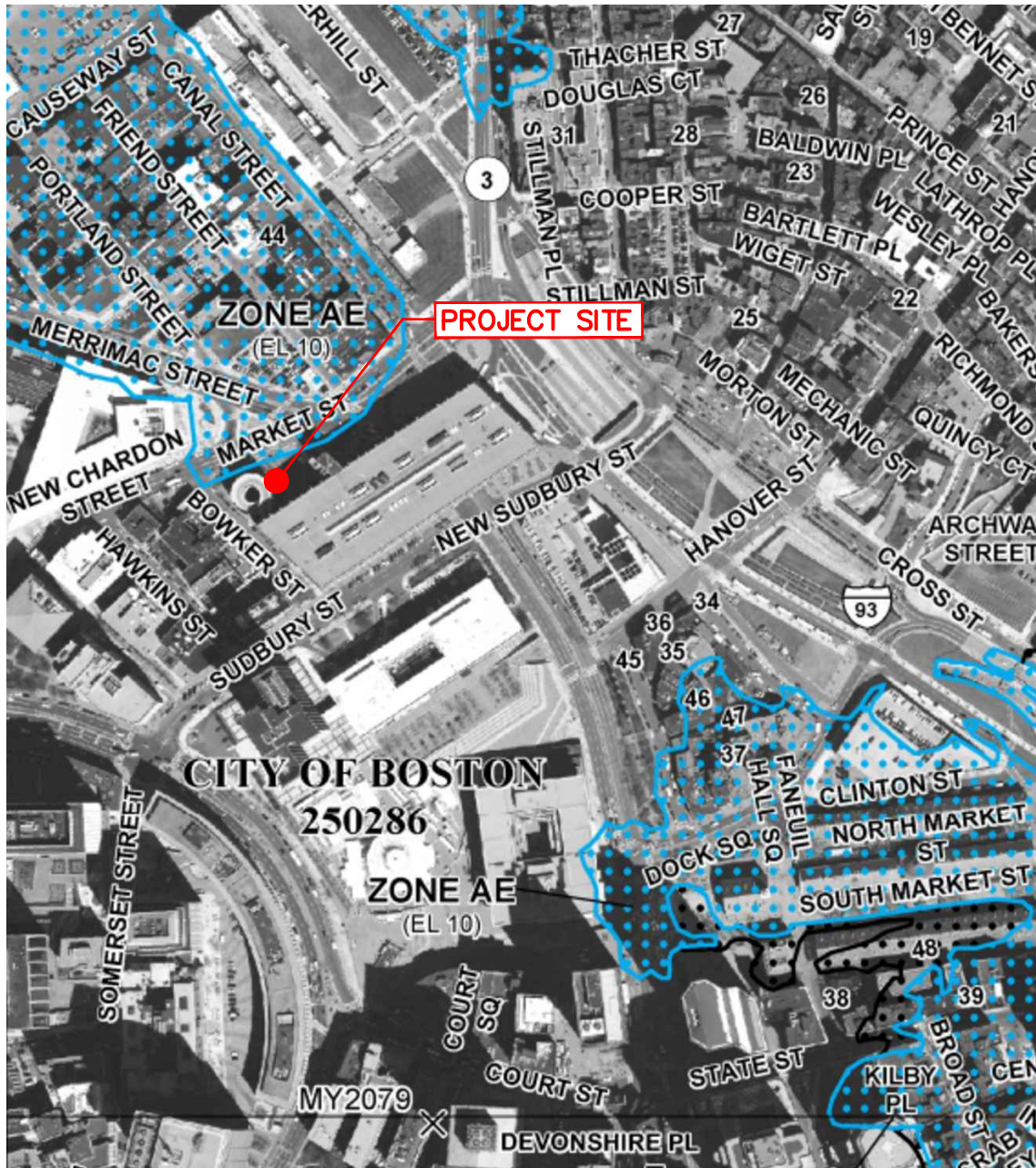
**NHEP Map  
One Congress Street  
Boston MA**

Source: MassGIS, VHB

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NATIONAL FLOOD INSURANCE PROGRAM

**NFIP**

PANEL 0081J

# FIRM

FLOOD INSURANCE RATE MAP

SUFFOLK COUNTY,  
MASSACHUSETTS  
(ALL JURISDICTIONS)

**PANEL 81 OF 176**  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BOSTON, CITY OF	250286	0081	J

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

**MAP NUMBER**  
25025C0081J

**MAP REVISED**  
MARCH 16, 2016

Federal Emergency Management Agency



FEMA Map  
One Congress Office Tower  
Boston, MA

**Figure 5**

February 2019



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# **Attachment A**

## **Notice of Intent Narrative**

- Introduction
- Site Description
- Wetland Resource Areas
- Project Description
- Anticipated Work Schedule
- Climate Resiliency
- Stormwater
- Mitigation Measures
- Regulatory Compliance
- Summary





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# Attachment A

## Notice of Intent Narrative

This Notice of Intent (NOI) is submitted pursuant to the requirements of the Massachusetts Wetlands Protection Act (MGL Chapter 131, Section 40) and its implementing regulations (310 CMR 10.00).

### 1.1 Introduction

BC One Congress Tower JV LLC, (the "Proponent") is proposing a new office building, known as the One Congress Office Tower, at 1 Congress Street (the "Project Site"). The proposed project consists of a 43-story tower with approximately 976,000 square feet of office space and approximately 10,600 square feet of ground floor retail space, associated utilities to serve the new building, and hardscape and landscape areas. The Site is currently occupied by a garage structure with some office space and hardscape and landscape areas. Proposed work includes the demolition of a portion of the existing parking garage structure, construction of the new office building with a roof garden and landscaped areas, installation of new utility services, excavation, reconstruction of the adjacent streetscape, roadway improvements to the adjacent public streets (New Chardon, Merrimac, and Bowker streets), and stormwater improvements (the "Project"). The proposed improvements are shown on the attached Project plans, Attachment C.

The Project Site contains Land Subject to Coastal Storm Flowage (LSCSF). The Project is anticipated to impact approximately 30,960 sf LSCSF, approximately 1,330 sf of which is on private property and 29,630 sf of which is within the public right-of-way. The Project does not impact any estimated habitats of rare wildlife, outstanding resource waters, or areas of critical environmental concern.

The resource area will be protected from impacts during construction through the implementation of an erosion and sedimentation control program, described in further detail in Section 1.8, including the installation of sediment traps in all active stormwater catch basins on-site, as well as those surrounding the limits of construction. The construction site will also continuously be surrounded by erosion control barriers. These barriers will be maintained and relocated as necessary as the limits of construction change over time. Erosion control and sedimentation measures will be maintained until the Project Site and landscaping elements are stabilized (i.e., ground covers have been fully constructed and vegetation has reached a stable

growth state). These erosion and sedimentation measures will be consistent with the applicable National Pollutant Discharge Elimination System (NPDES) permit.

Runoff generated from the Project will be collected and treated in accordance with the policy developed by the Massachusetts Department of Environmental Protection (MassDEP) and stormwater standards contained in the Regulations as described in Section 1.9. The Stormwater Report and Checklist are included as Attachment D.

## 1.2 Site Description

The 99,960 sf (2.3 acre) Project Site is bound by New Chardon Street to the north, Merrimac Street to the east, and Bowker Street to the west (Figure 1). The Project Site is currently occupied by a garage structure with some office space and hardscape and landscape areas.

According to the National Resources Conservation Service (NRCS), surface soils on the Site include Urban Land. The on-site soil type is unranked but assumed as Hydrologic Soil Groups (HSG) D.

## 1.3 Wetland Resource Areas

The Project Site contains LSCSF as described below and shown in Figure 4.

### 1.3.1 Land Subject to Coastal Storm Flowage

According to 310 CMR 10.04, LSCSF means land subject to any inundation caused by coastal storms up to and including that caused by the 100-year storm, surge of record or storm of record, whichever is greater. It is coterminous with the Special Flood Hazard Area defined in the currently effective Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) or (FIRM) Rate Map.

Per FIRM panel 25025C0018-J, effective March 16, 2016, a portion of the Site is classified as Zone AE, with a flood elevation of 10 feet NAVD88, or approximately 16.46 feet Boston City Base (BCB). Approximately 30,960 sf of the Site is within LSCSF and would be impacted by the Project.

## 1.4 Project Description

The Project proposes a new 43-story tower with approximately 976,000 square feet of office space and approximately 10,600 square feet of ground floor retail space. Site redevelopment will result in a decrease in impervious cover. Proposed work includes the demolition of a portion of the existing parking garage structure, construction of the new office building and landscaped areas, installation of new utility services, excavation, reconstruction of the adjacent streetscape, roadway improvements to the adjacent public streets, and stormwater improvements.

A roof garden is also planned for the new office building. The roof garden will be constructed over a portion of the existing garage. Under the currently proposed design, approximately 13,000 sf of plantings is anticipated.

The Project is also proposing streetscape improvements that include a drop-off/pick-up zone on New Chardon Street, realigned curb alignment on New Chardon Street and Merrimac Street, concrete sidewalks, street lighting, raised planters, and permeable paver strips on New Chardon Street, Merrimac Street, and Bowker Street.

The proposed improvements are anticipated to reduce the Site's impervious area. Stormwater improvements are described in Section 1.7 and Attachment D. Attachment C contains Project plans.

## 1.5 **Anticipated Work Schedule**

The Project includes landside work exclusively, as described below. Construction will be designed and sequenced to minimize the potential for the discharge of silt to any nearby waterways. The Project will commence with the installation of environmental controls around the Site perimeter. Construction staging will be designed to isolate construction and provide safe access for pedestrians and vehicles during normal day-to-day activity (including access to existing residences) and emergencies.

Construction is anticipated to commence during the first quarter of 2019 and continue through the fourth quarter of 2020. The Proponent will submit a Construction Management Plan (CMP) to the Boston Transportation Department in compliance with the City's Construction Management Program.

## 1.6 **Climate Resiliency**

In the interest of prevention of pollution and storm damage prevention, the Proponent has considered future Sea Level Rise (SLR) in the design of the Project. The Boston Planning and Development Agency's (BPDA) Climate Resiliency Guidance document calls for all projects to consider present and future climate conditions in assessing project environmental impacts and identify building strategies that would eliminate, reduce, and/or mitigate adverse impacts including those due to changing climate conditions. To comply with this guidance, the Proponent has completed the Climate Change Preparedness and Resiliency Checklist (the "Resiliency Checklist"), which provides a framework and specific resiliency targets for assessing project vulnerabilities and adverse impacts. Projects must identify initial strategies for reducing vulnerabilities and adverse impacts, as well as future adaptation strategies for meeting or exceeding resiliency targets and further reducing vulnerabilities and adverse impacts due to future climate conditions. The required checklist has been completed for the Project and is provided in Attachment E.

The BPDA's Climate Resiliency Guidance document states that projects within the FEMA Special Flood Hazard Area (SFHA) or the BPDA Sea Level Rise – Flood Hazard Area (SLR – FHA) should use its recommended Sea Level Rise – Design Flood Elevation (SLR – DFE) for the year 2070 as the minimum performance target for assessing SLR impacts and for reducing or eliminating flood risk, potential damage, and related adverse impacts.

The projected SLR – DFEs are comprised of two components: the Sea Level Rise – Base Flood Elevation (SLR-BFE) and freeboard. The SLR – BFE is based on the Boston Harbor Flood Risk Model (BH-FRM) results, which include 40-inches of SLR, 2.5 inches of local subsidence, and the 1% annual chance coastal flood event in 2070. Freeboard consists of raising the first floor an additional amount above the BPDA SLR-BFE. The BPDA recommends 12-inches of freeboard for non-critical, non-residential uses and 24-inches for critical buildings, infrastructure and ground floor residential to a location's highest SLR-BFE to reach the recommended SLR – DFE.

The SLR – BFE at the site is 18 ft Boston City Base (BCB), therefore the SLR – DFE for non-residential uses is 19 ft BCB. The proposed first floor elevation is 16.67 ft BCB.

### **Building Resiliency**

The Building design includes a dry flood-proofing strategy using aqua fence that is stored on-site in the basement. This system will be deployed ahead of a projected 1% annual chance flood event. Critical systems are located on upper floors above the anticipated flood level, including generators, transformers, air handler units (AHUs), and fire pump. Two (2) Multiple Point of Entry (MPOE) rooms, dry sprinkler room, and the building security room are all located above the current BFE. Backwater valves will be provided on the stormwater inlet to the storage tank. Since the tank will be sealed, a backwater valve on the outfall from the storage tank is not necessary.

In the future, it would be possible to raise the elevator lobby floor area that is currently set at 16.67' to a higher elevation, as there is sufficient height between first and second floor to raise the first-floor level. This adaptation strategy would also be sufficient should the City decide to raise the adjacent street elevation.

### **Site Design Resiliency**

The proposed roof garden and landscaping designs described above will help to mitigate on-site stormwater flooding.

### **Resource Area Protection**

Measures intended to prevent pollution and storm damage within LSCSF, both today and in the future, include increasing perviousness on the Site, preventing floatable debris from traveling outside the building during flood events through the use of deployable flood protection devices, and installing backwater valves within the building to help prevent water pollution.

## 1.7 Stormwater

The existing stormwater management system consists of a 12-inch drain connection to the 36-inch drain in New Chardon Street. Based on the existing topography of the Site, the exterior site runoff sheet flows into the catch basins located in adjacent streets. The existing catch basins are connected to the 36-inch drain in New Chardon Street, which eventually discharges into the Charles River.

The roof runoff from the new development will be collected via roof drain and conveyed to an internal 55,500-gallon stormwater tank located within the building basement. The 55,500-gallon stormwater tank is part of the Project's infiltration system designed to mitigate the first 1.25-inch of stormwater runoff. The runoff from the tank will be diverted to filters prior to being pumped to a perimeter infiltration trench located along the building foundation for infiltration. Once the stormwater tank has reached its capacity, the runoff will discharge into an existing 36-inch storm drain main in New Chardon Street via a 15-inch overflow pipe. The runoff from the Site will eventually discharge into the Charles River.

The Project will improve the existing stormwater management infrastructure by reducing the quantity of impervious area on the Site and reducing runoff by infiltrating the first 1.25-inches of stormwater runoff.

### 1.7.1 Source Control

A comprehensive source control program will be implemented at the Site, which includes regular pavement sweeping, catch basin cleaning, and enclosure and maintenance of all dumpsters, compactors, and loading areas. Further discussion of Site maintenance is included in Section 5 of the Stormwater Management Report (Attachment D), as well as in the Stormwater Management System Long Term Operation and Maintenance Plan attached to the Stormwater Report.

## 1.8 Mitigation Measures

As detailed in the Stormwater Pollution Prevention Plan (SWPPP), the Project will employ the measures described below to mitigate any potential impacts to wetland resource areas.

### 1.8.1 Erosion and Sedimentation Control Measures

Downstream resource areas will be protected from impacts during construction through the implementation of an erosion and sedimentation (E&S) control program including the installation of sediment traps in all active stormwater catch basins on-site, as well as those surrounding the limits of construction. The construction site will also continuously be surrounded by erosion control barriers. These barriers will be maintained and relocated as necessary as the limits of construction change over time. E&S measures will be maintained until the Project Site and landscaping elements are stabilized (i.e., ground covers have been fully constructed and

vegetation has reached a stable growth state). These E&S measures will be consistent with the applicable National Pollutant Discharge Elimination System (NPDES) permit.

All E&S measures will be inspected daily and after significant rain events (greater than 0.5 inches of precipitation) and maintained as necessary, including the removal of accumulated sediments. The contractor will ensure that additional erosion and sediment control materials are available for immediate installation to replace those that are damaged or degraded. The applicant will notify the Commission in writing when E&S measures are in place to allow for Commission verification. E&S measures will be removed upon completion of work and after disturbed areas are stabilized.

Preliminary plans depicting the proposed E&S control procedures, as well as other construction period measures to be implemented during construction, are included in Attachment D. Final E&S control plans will be submitted to both the Conservation Commission and the Boston Water and Sewer Commission (BWSC), and the contractor will be required to implement the measures as part of the BWSC general services application process.

## 1.9 **Regulatory Compliance**

The Project will comply with all applicable regulations required by the Wetlands Protection Act, the Massachusetts Stormwater Standards and Massachusetts General Law, Chapter 91. The Boston Conservation Commission has not adopted a local wetlands ordinance to date.

### 1.9.1 **Wetlands Protection Act**

The Project complies with the WPA regulations set forth for the resource area described below.

#### **LSCSF**

The Wetlands Regulations at 310 CMR 10.00 do not contain performance standards for work in LSCSF. The City of Boston does not have a currently effective Local Wetlands Ordinance.

The Project will improve the Site relative to existing conditions within LSCSF by reducing impervious cover, improving stormwater treatment, removing contaminants, and attenuating potential flooding.

### 1.9.2 **Massachusetts Stormwater Management Standards**

The Project includes the installation of a stormwater management system that, as a redevelopment project, is being designed to meet or exceed MADEP Stormwater management Standards to the maximum extent practicable. The useful life of stormwater management infrastructure places currently conceived systems well within the time period when climate change impacts will manifest. The Proponent has designed the Project to prepare for forecasted changes to rainfall intensity and watershed runoff.

The Stormwater Management Standards are regulated under the Wetlands Protection Act Regulations 310 CMR 10.05(6)(k) through (q). The Policy prescribes specific stormwater management standards for redevelopment projects, including urban pollutant removal criteria for projects that may impact environmental resource areas. A brief explanation of each Policy Standard and the system compliance is provided below:

- **Standard #1:** *No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*  
Compliance: There are no new discharges proposed as part of the Project. Consequently, The Project has been designed to comply with Standard 1. The Project consists of no new stormwater outlets. The proposed rooftop runoff is currently directed to filters, a stormwater tank, and a perimeter infiltration trench prior to overflow discharge into the public storm drain. Existing deep sump catch basins and proposed deep sump catch basins are located in the public street.
- **Standard #2:** *Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.*  
Compliance: The Project creates a reduction in impervious area and increase in vegetation on the Site. Consequently, the Project will not result in an increase in peak rates of runoff from the Site.
- **Standard #3:** *Loss of annual recharge to ground water shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices and good operation and maintenance. At a minimum, the annual recharge from the post- development site shall approximate the annual recharge from the pre-development conditions based on soil type.*  
Compliance: Due to the decrease in impervious area on the Site, the required recharge volume is zero. However, the project is proposing an infiltration system consisting of a stormwater tank and perimeter subsurface infiltration trench to infiltrate the first 1.25-inch of runoff over the impervious area. Additionally, the Site is not within Boston's Groundwater Conservation Overlay District.
- **Standard #4:** *Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids ("TSS"). This Standard is met when: a. Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan and thereafter are implemented and maintained; b. Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with Massachusetts Stormwater Handbook; and c. Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.*  
Compliance: The Project is seeking relief under Stormwater Management Standard 7 and as such complies with Standard 4 to the maximum extent practicable. Under the proposed conditions, there will be an on-site infiltration system consisting of a stormwater tank and perimeter infiltration trench. The proposed roof runoff will go through initial filtering prior to entering the stormwater tank, then additional TSS is removed as the



runoff is infiltrated through the perimeter infiltration trench. New permeable paver strip is also proposed along the curb to allow for surface runoff from the sidewalk to be infiltrated. Existing deep sump catch basins and proposed deep sump catch basins are located in the public street. The Long-Term Pollution Prevention Plan is attached to the Stormwater Report (Appendix D).

- **Standard #5:** *For land uses with higher potential pollutant loads (LUHPPL), source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention, all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such use as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26 through 53, and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.*

Compliance: The Project is not considered a LUHPPL.

**Standard #6:** *Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply and stormwater discharges near or to any other critical area require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such area as provided in the Massachusetts Stormwater Handbook.*

Compliance: As noted above in the discussion of Standard 4, the Project is designed to comply with Standard 6 to the maximum extent practicable. The Project will not discharge stormwater near or to a critical area.

- **Standard #7:** *A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural stormwater best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.*

Compliance: The Project is a redevelopment and has been designed to comply with Stormwater Management Standards 2-6 to the maximum extent practicable. Standards 8-10 have been met completely.

- **Standard #8:** *A plan to control construction related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation and pollution prevention plan) shall be developed and implemented.*

Compliance: The Project will disturb more than one acre of land and is therefore required to obtain coverage under the Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Construction General Permit. As required under this permit, a Stormwater Pollution Prevention Plan (SWPPP) will be developed and submitted before land disturbance begins. Recommended construction period pollution prevention and erosion and sedimentation controls to be finalized in the SWPPP are included with the Stormwater Report in Appendix E.

- **Standard 9:** *A Long-Term Operation and Maintenance (O&M) Plan shall be developed and implemented to ensure that stormwater management systems function as designed.*

Compliance: In compliance with Standard 9, a Post Construction Stormwater Operation and Maintenance (O&M) Plan has been developed for the Project. The O&M Plan is attached to the Stormwater Report (Appendix D). The O&M Plan will be reviewed by the BWSC.

- **Standard 10:** *All illicit discharges to the stormwater management system are prohibited.*

Compliance: The design plans submitted with this report have been designed so that the components included therein are in full compliance with current standards. No statement is made with regard to the drainage system in portions of the site not included in the redevelopment project area. The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges.

## 1.10 Summary

The applicant respectfully requests that the Boston Conservation Commission issue an Order of Conditions for the proposed activities, which will impact up to approximately 30,960 sf of LSCSF.



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# **Attachment B**

## **Abutter Notification Materials**

- Abutter Notification Form
- List of Abutters



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**NOTIFICATION TO ABUTTERS UNDER THE  
MASSACHUSETTS WETLANDS PROTECTION ACT**

In accordance with the second paragraph of Massachusetts General Laws Chapter 131, Section 40, you are hereby notified of the following:

BC One Congress Tower JV LLC, has filed a Notice of Intent with the Boston Conservation Commission seeking permission to work in Areas Subject to Protection and Regulation under the Wetlands Protection Act.

This work is proposed at 1 Congress Street in Boston, Massachusetts. Work proposed under this Notice of Intent consists of the demolition of a portion of the existing parking garage structure, construction of the new office building and landscaped areas, installation of new utility services, excavation, reconstruction of the adjacent streetscape, roadway improvements to the adjacent public streets – New Chardon Street, Merrimac Street, and Bowker Street, and stormwater improvements.

Copies of the Notice of Intent may be examined at the Boston Conservation Commission office located at Boston City Hall. For more information, call the Boston Conservation Commission at (617) 635-3850. The Notice of Intent may also be examined at the offices of VHB by appointment. For more information, call Lisa Chow at (617) 607-2940.

Copies of the Notice of Intent may be obtained from the Boston Conservation Commission or by calling Amelia Croteau at (617) 635-4416. You may be charged for the cost of the copy.

Notice of the Public Hearing, including its date, time and place, will be published in a local newspaper at least 5 days in advance, and will be posted at Boston City Hall not less than 48 hours in advance of the Hearing.

You may also contact the Department of Environmental Protection Northeast Regional Office at (978) 694-3200 for more information about this application or the Wetlands Protection Act.

## Abutters List

Below is the generated Abutters List from the City of Boston Assessing Department.

PID	OWNER	ADDRESSEE	MLG_ADDRESS	MLG_CITYSTATE	MLG_ZIPCODE	LOC_ADDRESS	LOC_CITY	LOC_ZIPCODE
301686000	COMMONWEALTH OF MASS		115 CAMBRIDGE	BOSTON MA	2114	115 CAMBRIDGE ST	BOSTON	2114
301688000	COMMONWEALTH OF MASS		ONE ASHBURTON PL	BOSTON MA	2108	24 NEW CHARDON ST	BOSTON	2114
301626000	CITY OF BOSTON		NEW CHARDON	BOSTON MA	2114	NEW CHARDON ST	BOSTON	2114
301628000	BOSTON HAYMARKET ACQUISITIONS		8 BYRON ST	BOSTON MA	2108	158 FRIEND ST	BOSTON	2114
302573001	BOSTON PUBLIC MARKET		12 MARSHALL ST	BOSTON MA	2108	136 BLACKSTONE ST	BOSTON	2109
302573002	BOSTON PUBLIC MARKET		12 MARSHALL ST	BOSTON MA	2108	136 BLACKSTONE ST	BOSTON	2109
302605000	UNITED STATES OF AMERICA		15 NEW SUDBURY	BOSTON MA	2114	15 NEW SUDBURY ST	BOSTON	2114
302625000	BOSTON REDVLP MINT AUTH		HAWKINS	BOSTON MA	2114	HAWKINS ST	BOSTON	2114
302647000	CITY OF BOSTON		BOWKER	BOSTON MA	2114	BOWKER ST	BOSTON	2114
302646000	BOSTON REDEVLPMNT AUTH		NEW CHARDON	BOSTON MA	2114	NEW CHARDON ST	BOSTON	2114
302700000	BULFINCH CORSSING PRIMARY	C/O HYM INVESTMENT GROUP LLC	ONE CONGRESS ST	BOSTON MA	2104	100 SUDBURY ST	BOSTON	2114
302573000	MASSACHUSETTS TURNPIKE		136 BLACKSTONE ST	BOSTON MA	2109	136 BLACKSTONE ST	BOSTON	2109
302640000	BOSTON EDISON CO MASS		PO BOX # 270	HARTFORD CT	6141	25 HAWKINS ST	BOSTON	2114
302642000	CITY OF BOSTON		35 HAWKINS	BOSTON MA	2114	35 HAWKINS ST	BOSTON	2114
302626000	CITY OF BOSTON		40 NEW SUDBURY	BOSTON MA	2114	40 NEW SUDBURY ST	BOSTON	2114
302644000	CITY OF BOSTON		40-50 BOWKER ST	BOSTON MA	2114	40 BOWKER ST	BOSTON	2114
303430000	MASSACHUSETTS DEPARTMENT OF		KEELAND ST	BOSTON MA	2111	KNEELAND ST	BOSTON	2111

## List of Abutters

301686000 Commonwealth of Mass 115 Cambridge St Boston, MA 02114	302625000 Boston Planning & Development Agency 1 City Hall Square, 9 <sup>th</sup> Floor Boston, MA 02201
301688000 Commonwealth of Mass One Ashburton Pl Boston, MA 02114	302647000 City of Boston Property Management 1 City Hall Square Rm 811 Boston, MA 02201
301626000 City of Boston Property Management 1 City Hall Square Rm 811 Boston, MA 02201	302646000 Boston Planning & Development Agency 1 City Hall Square, 9 <sup>th</sup> Floor Boston, MA 02201
301628000 Boston Haymarket Acquisitions 8 Byron St Boston, MA 02108	302700000 Bulfinch Crossing Primary c/o HYM Investment Group LLC One Congress St Boston, MA 02104
302573001 Boston Public Market 12 Marshall St Boston, MA 02108	302573000 Massachusetts Turnpike 136 Blackstone St Boston, MA 02109
302573002 Boston Public Market 12 Marshall St Boston, MA 02128	302640000 Boston Edison Co Mass c/o Nstar Electric CO Prop Tax PO Box #270 Hartford, CT 06141
302605000 United States of America 15 New Sudbury Boston, MA 02114	302642000 City of Boston 35 Hawkins St Boston, MA 02114
302644000 City of Boston 40-50 Bowker St Boston, MA 02114	



302626000  
City of Boston  
40 New Sudbury St  
Boston, MA 02114

303430000  
Massachusetts Department of  
Highway, District 6  
185 Kneeland St  
Boston, MA 02111

# Attachment C

## Project Site Plans

- Sheet C000: Cover Sheet
- Sheet C100: Legend and General Notes
- Sheet C200: Layout and Materials Plan
- Sheet C300: Grading and Drainage Plan
- Sheet C400: Utility Plan
- Sheet C500: Erosion Control Plan
- Sheet C600: Site Details
- Sheet C700: Utility Details

### For Reference

- Sheet SV-1: Existing Conditions Plan of Lan

# **Attachment D**

# **Stormwater Report**

- Stormwater Checklist
- Stormwater Report

# One Congress Office Tower

Boston, Massachusetts

---

PREPARED FOR

BC One Congress Tower JV LLC  
c/o The HYM Investment Group LLC  
One Congress Street, 11<sup>th</sup> Floor  
Boston, MA 02114  
(857) 288-3417

---

PREPARED BY



**Vanasse Hangen Brustlin Inc.**

99 High Street, 10<sup>th</sup> Floor  
Boston, MA 02110  
(617) 728-7777

February 2019





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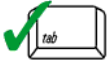
# Checklist for Stormwater Report



# Checklist for Stormwater Report

## A. Introduction

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the [Massachusetts Stormwater Handbook](#). The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.<sup>1</sup> This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8<sup>2</sup>
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

<sup>1</sup> The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

<sup>2</sup> For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.



# Checklist for Stormwater Report

## B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

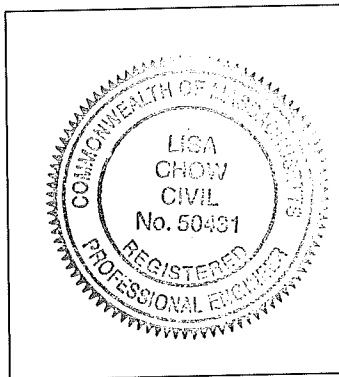
*Note:* Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

### Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



*L. Chow*

2/19/19

Signature and Date

## Checklist

**Project Type:** Is the application for new development, redevelopment, or a mix of new and redevelopment?

- New development
- Redevelopment
- Mix of New Development and Redevelopment



# Checklist for Stormwater Report

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## Checklist (continued)

**LID Measures:** Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- No disturbance to any Wetland Resource Areas
- Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- Reduced Impervious Area (Redevelopment Only)
- Minimizing disturbance to existing trees and shrubs
- LID Site Design Credit Requested:
  - Credit 1
  - Credit 2
  - Credit 3
- Use of "country drainage" versus curb and gutter conveyance and pipe
- Bioretention Cells (includes Rain Gardens)
- Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- Treebox Filter
- Water Quality Swale
- Grass Channel
- Green Roof
- Other (describe): \_\_\_\_\_

### Standard 1: No New Untreated Discharges

- No new untreated discharges
- Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.



# Checklist for Stormwater Report

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## Checklist (continued)

### Standard 2: Peak Rate Attenuation

- Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
- Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.
- Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

### Standard 3: Recharge

- Soil Analysis provided.
- Required Recharge Volume calculation provided.
- Required Recharge volume reduced through use of the LID site Design Credits.
- Sizing the infiltration, BMPs is based on the following method: Check the method used.
  - Static
  - Simple Dynamic
  - Dynamic Field<sup>1</sup>
- Runoff from all impervious areas at the site discharging to the infiltration BMP.
- Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
  - Site is comprised solely of C and D soils and/or bedrock at the land surface
  - M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
  - Solid Waste Landfill pursuant to 310 CMR 19.000
  - Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.
- Calculations showing that the infiltration BMPs will drain in 72 hours are provided.
- Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

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<sup>1</sup> 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.



# Checklist for Stormwater Report

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## Checklist (continued)

### Standard 3: Recharge (continued)

- The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.
- Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

### Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
  - Provisions for storing materials and waste products inside or under cover;
  - Vehicle washing controls;
  - Requirements for routine inspections and maintenance of stormwater BMPs;
  - Spill prevention and response plans;
  - Provisions for maintenance of lawns, gardens, and other landscaped areas;
  - Requirements for storage and use of fertilizers, herbicides, and pesticides;
  - Pet waste management provisions;
  - Provisions for operation and management of septic systems;
  - Provisions for solid waste management;
  - Snow disposal and plowing plans relative to Wetland Resource Areas;
  - Winter Road Salt and/or Sand Use and Storage restrictions;
  - Street sweeping schedules;
  - Provisions for prevention of illicit discharges to the stormwater management system;
  - Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
  - Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
  - List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.
- A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.
  - Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:
    - is within the Zone II or Interim Wellhead Protection Area
    - is near or to other critical areas
    - is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
    - involves runoff from land uses with higher potential pollutant loads.
  - The Required Water Quality Volume is reduced through use of the LID site Design Credits.
  - Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.



# Checklist for Stormwater Report

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## Checklist (continued)

### Standard 4: Water Quality (continued)

- The BMP is sized (and calculations provided) based on:
  - The ½" or 1" Water Quality Volume or
  - The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.
- The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.
- A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

### Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

- The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.
- The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted **prior to** the discharge of stormwater to the post-construction stormwater BMPs.
- The NPDES Multi-Sector General Permit does **not** cover the land use.
- LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.
- All exposure has been eliminated.
- All exposure has **not** been eliminated and all BMPs selected are on MassDEP LUHPPL list.
- The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

### Standard 6: Critical Areas

- The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.
- Critical areas and BMPs are identified in the Stormwater Report.



# Checklist for Stormwater Report

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## Checklist (continued)

### Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

- The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:
  - Limited Project
  - Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
  - Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
  - Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
  - Bike Path and/or Foot Path
- Redevelopment Project
- Redevelopment portion of mix of new and redevelopment.
- Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.
- The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

### Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
  - Construction Period Operation and Maintenance Plan;
  - Names of Persons or Entity Responsible for Plan Compliance;
  - Construction Period Pollution Prevention Measures;
  - Erosion and Sedimentation Control Plan Drawings;
  - Detail drawings and specifications for erosion control BMPs, including sizing calculations;
  - Vegetation Planning;
  - Site Development Plan;
  - Construction Sequencing Plan;
  - Sequencing of Erosion and Sedimentation Controls;
  - Operation and Maintenance of Erosion and Sedimentation Controls;
  - Inspection Schedule;
  - Maintenance Schedule;
  - Inspection and Maintenance Log Form.
- A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.





# Checklist for Stormwater Report

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## Checklist (continued)

### Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

- The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has **not** been included in the Stormwater Report but will be submitted **before** land disturbance begins.
- The project is **not** covered by a NPDES Construction General Permit.
- The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.
- The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

### Standard 9: Operation and Maintenance Plan

- The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:
  - Name of the stormwater management system owners;
  - Party responsible for operation and maintenance;
  - Schedule for implementation of routine and non-routine maintenance tasks;
  - Plan showing the location of all stormwater BMPs maintenance access areas;
  - Description and delineation of public safety features;
  - Estimated operation and maintenance budget; and
  - Operation and Maintenance Log Form.
- The responsible party is **not** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:
  - A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
  - A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

### Standard 10: Prohibition of Illicit Discharges

- The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;
- An Illicit Discharge Compliance Statement is attached;
- NO Illicit Discharge Compliance Statement is attached but will be submitted **prior to** the discharge of any stormwater to post-construction BMPs.



# Stormwater Report Narrative

This Stormwater Report has been prepared to demonstrate compliance with the Massachusetts Stormwater Management Standards in accordance with the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00) and Water Quality Certification Regulations (314 CMR 9.00). This report also demonstrates compliance with the Boston Water and Sewer Commission (BWSC) and Boston Planning and Development Agency (BPDA) rules and regulations for stormwater design and mitigation as included in the Stormwater Best Management Practices: Guidance Document from January 3013, as well as the Smart Utilities Policy for Article Development Review from June 2018.

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## Project Description

The Applicant, BC One Congress Tower JV LLC, is proposing to construct a new forty-three story office tower, known as WP-B2, at the site of the existing Government Center Garage, the Project, in Boston MA. As proposed, the Project consists of approximately 976,000 square feet of office space with approximately 10,600 square feet of ground floor retail space, ancillary landscape improvements, and utility improvements to support this use. The Project will be the second phase of the larger Bulfinch Crossing redevelopment of the Government Center Garage. The Project will also include street improvements to the adjacent streets – New Chardon Street, Merrimac Street, and Bowker Street.

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## Site Description

The Project Site is located at One Congress Street in Boston, MA (see Figure 1) and consists of an approximately 1.12-acre of private property and 1.13 acres of surrounding public roadway. The Site is bounded by New Chardon Street to the north, a portion of Merrimac Street to the east, Bowker Street to the west, and the first phase of the Bulfinch Crossing redevelopment, WP-B1 residential tower to the south. See Figure 1, Site Locus Map.

The private property component of the Project Site is currently occupied by an existing eleven-story parking garage with office space, driveways, some landscaped planters, and paved surface areas. Portions of the adjacent New Chardon Street, Merrimac Street, and Bowker Street comprise of the public roadway component of the Project Site.



The Project Site contains Land Subject to Coastal Storm Flowage (LSCSF). According to 310 CMR 10.04, LSCSF means land subject to any inundation caused by coastal storms up to and including that caused by the 100-year storm, surge of record or storm of record, whichever is greater. It is coterminous with the Special Flood Hazard Area defined in the currently effective Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) or (FIRM) Rate Map.

Per FIRM panel 25025C0018-J, effective March 16, 2016, a portion of the Site is classified as Zone AE, with a flood elevation of 10 feet NAVD88, or approximately 16.46 feet Boston City Base (BCB). Approximately 30,960 sf of the Site is within LSCSF and would be impacted by the Project.

According to the National Resources Conservation Service (NRCS), surface soils on the Site include Urban Land. The on-site soil type is unranked but assumed as Hydrologic Soil Groups (HSG) D. Based on the soil evaluation included in Appendix C, the Site is not considered to be within an area of rapid infiltration (soils with a saturated hydraulic conductivity greater than 2.4 inches per hour).

---

## Existing Drainage Conditions

Under existing conditions, the Site is predominantly impervious and located in a dense urban context. Surfaces generally consist of paved sidewalks, driveways, and a large concrete parking garage with some existing office space. Topography of the Site is generally flat, with grades sloping away from the Site. Existing surface runoff sheet flows into nearby deep sump catch basins located in New Chardon Street, Merrimac Street, and Bowker Street. The surface drainage for these streets drains to Combined Sewer Outfall (CSO) 049 in Charles River near the Nashua Street Jail. There is an existing 15-inch storm drain in Bowker Street that connects in a 36-inch drain in New Chardon Street. There is an existing 36-inch storm drain in Merrimac Street. These existing storm drain services are BWSC public storm drains.

The Figure 2 illustrates the existing drainage patterns on the Site. Currently, the Site is divided into 8 drainage areas as stormwater runoff flows to one (1) Design Point, which have been identified as DP-1 Charles River. The existing drainage areas are listed below:

**EX-1** – This area consists of existing Bowker Street sidewalk and paved surface area on the private property. Runoff sheet flows toward an existing catch basin in Bowker Street.

**EX-2** - This area consists of existing New Chardon Street sidewalk and paved surface areas and small landscape area on the private property. A portion of one of driveways into the existing parking garage is located within this area. Runoff sheet flows toward an existing catch basin in New Chardon Street.



**EX-3** - This area consists of existing New Chardon Street sidewalk and paved surface areas and landscape areas on the private property. A majority of the main driveway into the existing parking garage is located within this area. Runoff sheet flows toward an existing catch basin in New Chardon Street.

**EX-4** - This area consists of existing New Chardon Street sidewalk, existing Merrimac Street sidewalk and roadway and paved areas on the private property. Runoff sheet flows toward an existing catch basin in Merrimac Street.

**EX-5** – This area consists of the portion of the existing parking garage that will be demolished for the new office tower. Roof runoff discharges into the public drains via roof drains.

**EX-6** - This area consists of existing Merrimac Street roadway. Runoff sheet flows toward an existing catch basin in Merrimac Street.

**EX-7** - This area consists of existing New Chardon Street roadway. Runoff sheet flows toward an existing catch basin in New Chardon Street.

**EX-8** - This area consists of existing New Chardon Street roadway. Runoff sheet flows toward an existing catch basin in Merrimac Street.

Table 2 below provides a summary of the existing conditions hydrologic data.

**Table 2  
Existing Conditions Hydrologic Data**

<i>Drainage Area</i>	<i>Discharge Location</i>	<i>Design Point</i>	<i>Area (acres)</i>	<i>Curve Number</i>	<i>Time of Concentration (min)</i>
EX-1	Charles River	DP-1	.060	98	5.0
EX-2	Charles River	DP-1	.122	98	5.0
EX-3	Charles River	DP-1	.278	97	5.0
EX-4	Charles River	DP-1	.308	98	5.0
EX-5	Charles River	DP-1	.940	98	5.0
EX-6	Charles River	DP-1	.092	98	5.0
EX-7	Charles River	DP-1	.240	98	5.0
EX-8	Charles River	DP-1	.210	98	5.0

## Proposed Drainage Conditions

Figure 3 illustrates the proposed “post construction” drainage conditions for the project. As shown, the Site will be divided into 9 drainage areas that discharge treated stormwater to the one (1) existing Design Point; the Charles River. The Project proposes an infiltration system that consists of a 55,500-gallon stormwater tank and a



perimeter infiltration trench. A 15-inch overflow drain pipe from the stormwater tank is proposed. Once the stormwater tank has reached its capacity, the additional runoff will leave the stormwater tank via the 15-inch drain pipe and enter the existing 36-inch BWSC storm drain main in New Chardon Street. The existing drainage patterns in New Chardon Street, Merrimac Street, and Bowker Street are generally maintained.

The proposed drainage areas are listed below:

**PR-1** – This area consists of the Bowker Street sidewalk and paved surface area on the private property. A permeable paver strip is proposed along the edge of the Bowker Street curb. Runoff sheet flows toward an existing catch basin in Bowker Street.

**PR-2** - This area consists of paved surface area and landscape area on the private property adjacent to New Chardon Street. An area drain is proposed in a portion of the paved area. Runoff from this area will enter the perimeter infiltration trench.

**PR-3** - This area consists of New Chardon Street sidewalk and paved surface area on the private property adjacent to New Chardon Street. A permeable paver strip is proposed along the edge of the New Chardon Street curb. Runoff from this area will sheet flow toward a proposed catch basin in New Chardon Street.

**PR-4** - This area consists of paved surface area and landscape area on the private property adjacent to Merrimac Street. A permeable paver strip is proposed along the edge of the New Chardon Street curb. Runoff sheet flows towards a proposed shallow inlet catch basin in Merrimac Street.

**PR-5** – This area consists of the proposed building. A roof garden with approximately 13,000 square feet of plantings is currently. The roof garden was not considered pervious area for the hydrologic calculations. Roof runoff is conveyed into an internal 55,500-gallon tank and then pumped into a perimeter subsurface infiltration trench.

**PR-6** - This area consists of Merrimac Street sidewalk and roadway. A permeable paver strip is proposed along the edge of the Merrimac Street curb. Runoff sheet flows toward a proposed shallow inlet catch basin in Merrimac Street.

**PR-7** - This area consists of existing Merrimac Street roadway. Runoff sheet flows toward an existing catch basin in Merrimac Street.

**PR-8** - This area consists of New Chardon Street sidewalk and roadway. A permeable paver strip is proposed along the edge of the New Chardon Street curb. Runoff sheet flows toward a proposed catch basin in New Chardon Street.

**PR-9** - This area consists of New Chardon Street sidewalk and roadway. Runoff sheet flows toward an existing catch basin in Merrimac Street.



Table 3 below provides a summary of the proposed conditions hydrologic data.

**Table 3**  
**Proposed Conditions Hydrologic Data**

<i>Drainage Area</i>	<i>Discharge Location</i>	<i>Design Point</i>	<i>Area (acres)</i>	<i>Curve Number</i>	<i>Time of Concentration (min)</i>
PR-1	Charles River	DP-1	.050	98	5.0
PR-2	Charles River	DP-1	.055	89	5.0
PR-3	Charles River	DP-1	.032	98	5.0
PR-4	Charles River	DP-1	.039	92	5.0
PR-5	Charles River	DP-1	1.27	98	5.0
PR-6	Charles River	DP-1	.215	98	5.0
PR-7	Charles River	DP-1	.077	98	5.0
PR-8	Charles River	DP-1	.305	98	5.0
PR-9	Charles River	DP-1	.210	98	5.0

Integrated into the site design is a comprehensive stormwater management system that has been developed in accordance with the Massachusetts Stormwater Handbook. The proposed stormwater management system has been designed to treat the one and one-quarter (1.25) inch volume required by BWSC.

### **Environmentally Sensitive and Low Impact Development (LID) Techniques**

Low Impact Development (LID) techniques and stormwater Best Management Practices (BMPs) implemented into the site design include reduction of impervious area, deep sump catch basins in the public streets, and a stormwater infiltration system. In general, stormwater from the proposed impervious ground surfaces is directed towards deep sump catch basins in the roadway, and stormwater runoff from the proposed building roof is directed into an internal 55,500-gallon stormwater tank within the building and is then pumped to a perimeter subsurface infiltration trench, allowing the water to recharge the natural groundwater table within 72-hours of a storm event. The Project is improving water quality prior to discharge into the public storm drains by proposing these stormwater management measures. In addition, a roof garden with approximately 13,000 square feet of planting is proposed which reduces impervious building roof area.



## Figure 1: Site Locus Map





\\vhb\gis\proj\Boston\111679\_01\gis\Project\Figure1\USGS.mxd



**Legend**

- Project Site

**One Congress Office Tower**

Boston, Massachusetts

**Site Location Map  
One Congress Street  
Boston MA**

Source: MassGIS, VHB





## Figure 2: Existing Drainage Areas



## Legend

SYMBOLS

	DESIGN POINT
	DRAINAGE AREA DESIGNATION
	POND

LINETYPES

	DRAINAGE AREA BOUNDARY
	TIME OF CONCENTRATION FLOW LINE
	SOIL TYPE BOUNDARY
	100' BUFFER ZONE
	WETLAND BOUNDARY

SCS SOIL CLASSIFICATIONS

	602 URBAN LAND, 0 TO 15 PERCENT SLOPES, HSG D
--	---





### Figure 3: Proposed Drainage Areas



### Legend

SYMBOLS

	DESIGN POINT
	DRAINAGE AREA DESIGNATION
	POND

LINETYPES

	DRAINAGE AREA BOUNDARY
	TIME OF CONCENTRATION FLOW LINE
	SOIL TYPE BOUNDARY
	100' BUFFER ZONE
	WETLAND BOUNDARY

SCS SOIL CLASSIFICATIONS

	URBAN LAND, 0 TO 15 PERCENT SLOPES, HSG D
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# Regulatory Compliance

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## Massachusetts Department of Environmental Protection (DEP) - Stormwater Management Standards

As demonstrated below, the proposed Project fully complies with the DEP Stormwater Management Standards.

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### Standard 1: No New Untreated Discharges or Erosion to Wetlands

The Project has been designed to fully comply with Standard 1.

The Best Management Practices (BMPs) included in the proposed stormwater management system have been designed in accordance with the Massachusetts Stormwater Handbook. Supporting information and computations demonstrating that no new untreated discharges will result from the Project are presented through compliance with Standards 4 through 6.

The Project consists of no new stormwater outlets. The proposed rooftop runoff is currently directed to filters, stormwater tanks, and a perimeter infiltration trench prior to overflow discharge into the public storm drain. Existing deep sump catch basins and proposed deep sump catch basins are located in the public street.

---

### Standard 2: Peak Rate Attenuation

The Project has been designed to fully comply with Standard 2.

The rainfall-runoff response of the Site under existing and proposed conditions was analyzed for storm events with recurrence intervals of 2, 10, 25 and 100-years. The results of the analysis, as summarized in Table 4 below, indicate that there is no increase in peak discharge rates between the existing and proposed conditions for the all storm events.

Computations and supporting information regarding the hydrologic modeling are included in Appendix B.



**Table 4  
Peak Discharge Rates (cfs\*)**

<i>Design Point</i>	<i>2-year</i>	<i>10-year</i>	<i>25-year</i>	<i>100-year</i>
<b>Design Point:</b> Charles River				
Existing	6.89	11	13.58	17.52
Proposed	2.83	9.32	11.38	14.26

**Standard 3: Stormwater Recharge**

The Project has been designed to fully comply with Standard 3.

In accordance with the BWSC regulations to mitigate 1.25-inch for new buildings over 100,000 square feet, the Required Recharge Volume for the Project is 7,394 cubic feet.

Recharge of stormwater has been provided through the use of a perimeter infiltration trench which has been designed and sized by the project geotechnical engineer. The infiltration BMP has been designed to drain completely within 72 hours. Table 5 below provides a summary of the proposed infiltration BMPs utilized for the Project.

**Table 5  
Summary of Recharge Calculations**

<i>Infiltration BMP</i>	<i>Provided Recharge Volume (cubic feet)</i>
Perimeter Infiltration Trench	7,419
<b>Total Provided Recharge</b>	<b>7,419</b>
<b>Total Required Recharge</b>	<b>7,394</b>

Soil evaluation (including Geotechnical Report), computations, and supporting information are included in Appendix C.

**Standard 4: Water Quality**

The Project is seeking relief under Stormwater Management Standard 7 and as such complies with Standard 4 to the maximum extent practicable.

The proposed stormwater management system implements BMPs that has been designed to provide TSS removal to the maximum extent practicable of stormwater runoff from all proposed impervious surfaces.

Under the proposed conditions, there will be an on-site infiltration system consisting of a stormwater tank and perimeter infiltration trench. The proposed roof runoff will go through initial filtering prior to entering the stormwater tank, then additional TSS is removed as the runoff is infiltrated through the perimeter infiltration trench. New permeable paver strip is also proposed along the curb to allow for surface runoff from





the sidewalk to be infiltrated. Existing deep sump catch basins and proposed deep sump catch basins are located in the public street.

Computations and supporting information, including the Long-Term Pollution Prevention Plan, are included in Appendix D.

---

### **Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPLs)**

The Project is not considered a LUHPPL.

---

### **Standard 6: Critical Areas**

The Project will not discharge stormwater near or to a critical area.

---

### **Standard 7: Redevelopments and Other Projects Subject to the Standards only to the Maximum Extent Practicable**

The Project is a redevelopment and has been designed to comply with Stormwater Management Standards 2-6 to the maximum extent practicable. Standards 8-10 have been met completely.

Refer directly to each Standard for applicable computations and supporting information demonstrating compliance with each.

---

### **Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Controls**

The Project will disturb approximately 2.25 acres of land and is therefore required to obtain coverage under the Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Construction General Permit. As required under this permit, a Stormwater Pollution Prevention Plan (SWPPP) will be developed and submitted before land disturbance begins. Recommended construction period pollution prevention and erosion and sedimentation controls to be finalized in the SWPPP are included in Appendix E.

---

### **Standard 9: Operation and Maintenance Plan**

In compliance with Standard 9, a Post Construction Stormwater Operation and Maintenance (O&M) Plan has been developed for the Project. The O&M Plan is included in Appendix D as part of the Long Term Pollution Prevention Plan.

---

## Standard 10: Prohibition of Illicit Discharges

Building sanitary sewer and storm drainage structures which were part of the previous development on this site are to be removed during the site redevelopment associated with the new office tower. The design plans submitted with this report have been designed in full compliance with current municipal and state standards. The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges.

A No Illicit Discharge Compliance Statement will be submitted by the Owner prior to the discharge of any stormwater to post-construction BMPs. (language per MA Stormwater Report Checklist)

---

## Local Municipal Rules and Regulations

The following discusses the regulatory framework of stormwater management, site plan reviews and standards as determined by the BWSC.

Improvements and connections to BWSC infrastructure will be submitted to BWSC for review as part of the BWSC Site Plan Review process. This process includes a comprehensive design review of the proposed service connections, assessment of system demands and capacity, and establishment of service accounts.

- › BWSC approval will be required for all sewer, water, and stormwater systems.
- › Construction of the Project will incorporate on-site stormwater management and treatment systems which will result in improved water quality and TSS removal, as well as reduced stormwater runoff volumes and peak rates of runoff in comparison to existing conditions.
- › The proposed stormwater management system and associated infrastructure will be designed to promote phosphorus removal and provide for groundwater recharge to the extent of 1.25 inches over the site impervious area, in accordance with City of Boston requirements.

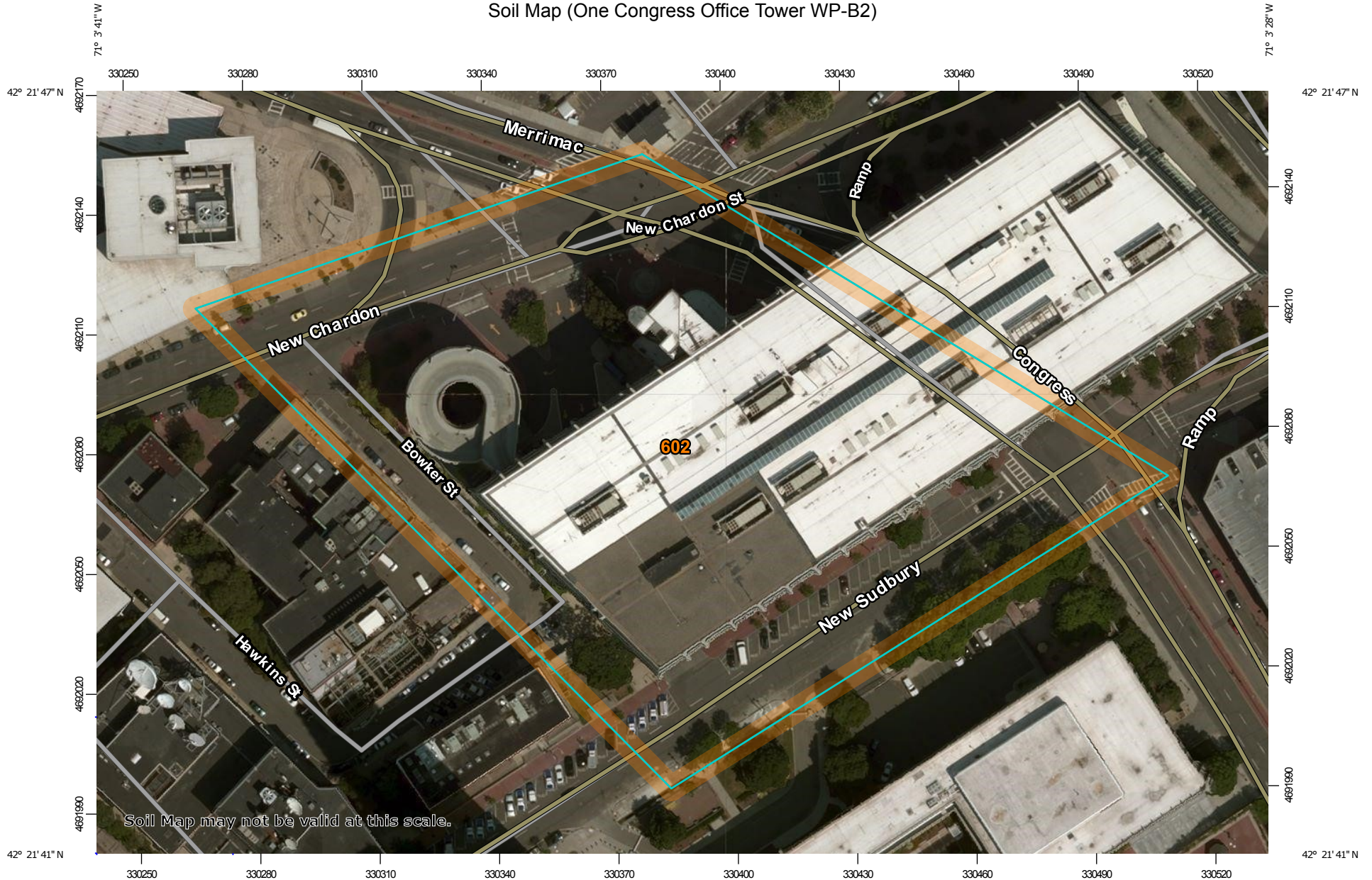




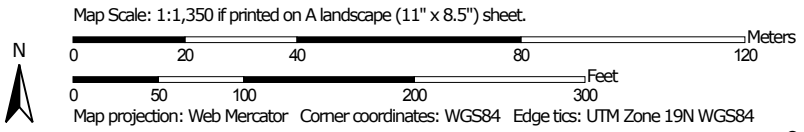
# Appendix A

## NRCS Soil Survey Information

Custom Soil Resource Report  
Soil Map (One Congress Office Tower WP-B2)




Soil Map may not be valid at this scale.



### MAP LEGEND

**Area of Interest (AOI)**

 Area of Interest (AOI)




















**Soils**







 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

**Special Point Features**






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

**Water Features**

 Streams and Canals

**Transportation**

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

**Background**

 Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts  
 Survey Area Data: Version 14, Sep 12, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 10, 2014—Aug 11, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend (One Congress Office Tower WP-B2)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
602	Urban land, 0 to 15 percent slopes	4.8	100.0%
<b>Totals for Area of Interest</b>		<b>4.8</b>	<b>100.0%</b>

## Map Unit Descriptions (One Congress Office Tower WP-B2)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

## Custom Soil Resource Report

delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Norfolk and Suffolk Counties, Massachusetts

### 602—Urban land, 0 to 15 percent slopes

#### Map Unit Setting

*National map unit symbol:* vkyj

*Mean annual precipitation:* 32 to 50 inches

*Mean annual air temperature:* 45 to 50 degrees F

*Frost-free period:* 120 to 200 days

*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Urban land:* 99 percent

*Minor components:* 1 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Urban Land

##### Setting

*Parent material:* Excavated and filled land

#### Minor Components

##### Rock outcrops

*Percent of map unit:* 1 percent

*Hydric soil rating:* Unranked



# References

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- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_054262](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262)
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053577](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577)
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053580](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580)
- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2\\_053374](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374)
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

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United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2\\_054242](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242)

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053624](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624)

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. [http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs142p2\\_052290.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf)





# Appendix B

## Standard 2 Computations and Supporting Information

Rainfall volumes used for this analysis were based on the Natural Resources Conservation Service (NRCS) Type III, 24-hour storm event for Boston, MA. Runoff coefficients for the existing and proposed conditions, as previously shown in Tables 1 and 2 respectively, were determined using NRCS Technical Release 55 (TR-55) methodology as provided in HydroCAD. The HydroCAD model is based on the NRCS Technical Release 20 (TR-20) Model for Project Formulation Hydrology.



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## HydroCAD Analysis: Existing Conditions



EX-1



EX-2



EX-3



EX-4



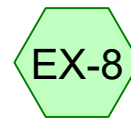
Existing Bldg



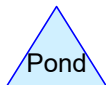
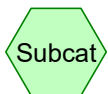
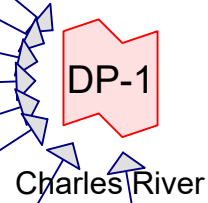
EX-6



EX-7



EX-8



**Routing Diagram for WP-B2 Existing Drainage Conditions**

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## WP-B2 Existing Drainage Conditions

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Page 2

### Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.039	89	<50% Grass cover, Poor, HSG D (EX-3, EX-4)
0.940	98	Roofs, HSG D (EX-5)
1.272	98	Unconnected pavement, HSG D (EX-1, EX-2, EX-3, EX-4, EX-6, EX-7, EX-8)
<b>2.251</b>	<b>98</b>	<b>TOTAL AREA</b>

## WP-B2 Existing Drainage Conditions

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### Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
2.251	HSG D	EX-1, EX-2, EX-3, EX-4, EX-5, EX-6, EX-7, EX-8
0.000	Other	
<b>2.251</b>		<b>TOTAL AREA</b>

## WP-B2 Existing Drainage Conditions

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Type III 24-hr 2-year Rainfall=3.14"

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Page 4

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>SubcatchmentEX-1: EX-1</b>	Runoff Area=2,617 sf 100.00% Impervious Runoff Depth=2.91" Tc=5.0 min CN=98 Runoff=0.18 cfs 0.015 af
<b>SubcatchmentEX-2: EX-2</b>	Runoff Area=5,328 sf 100.00% Impervious Runoff Depth=2.91" Tc=5.0 min CN=98 Runoff=0.38 cfs 0.030 af
<b>SubcatchmentEX-3: EX-3</b>	Runoff Area=12,133 sf 90.92% Impervious Runoff Depth=2.80" Tc=5.0 min CN=97 Runoff=0.84 cfs 0.065 af
<b>SubcatchmentEX-4: EX-4</b>	Runoff Area=13,405 sf 95.53% Impervious Runoff Depth=2.91" Tc=5.0 min CN=98 Runoff=0.94 cfs 0.075 af
<b>SubcatchmentEX-5: Existing Bldg</b>	Runoff Area=40,948 sf 100.00% Impervious Runoff Depth=2.91" Tc=5.0 min CN=98 Runoff=2.88 cfs 0.228 af
<b>SubcatchmentEX-6: EX-6</b>	Runoff Area=4,009 sf 100.00% Impervious Runoff Depth=2.91" Tc=5.0 min CN=98 Runoff=0.28 cfs 0.022 af
<b>SubcatchmentEX-7: EX-7</b>	Runoff Area=10,466 sf 100.00% Impervious Runoff Depth=2.91" Tc=5.0 min CN=98 Runoff=0.74 cfs 0.058 af
<b>SubcatchmentEX-8: EX-8</b>	Runoff Area=9,132 sf 100.00% Impervious Runoff Depth=2.91" Tc=5.0 min CN=98 Runoff=0.64 cfs 0.051 af
<b>Link DP-1: Charles River</b>	Inflow=6.89 cfs 0.543 af Primary=6.89 cfs 0.543 af

**Total Runoff Area = 2.251 ac Runoff Volume = 0.543 af Average Runoff Depth = 2.89"**  
**1.74% Pervious = 0.039 ac 98.26% Impervious = 2.212 ac**



# WP-B2 Existing Drainage Conditions

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Type III 24-hr 2-year Rainfall=3.14"

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## Summary for Subcatchment EX-1: EX-1

Runoff = 0.18 cfs @ 12.07 hrs, Volume= 0.015 af, Depth= 2.91"

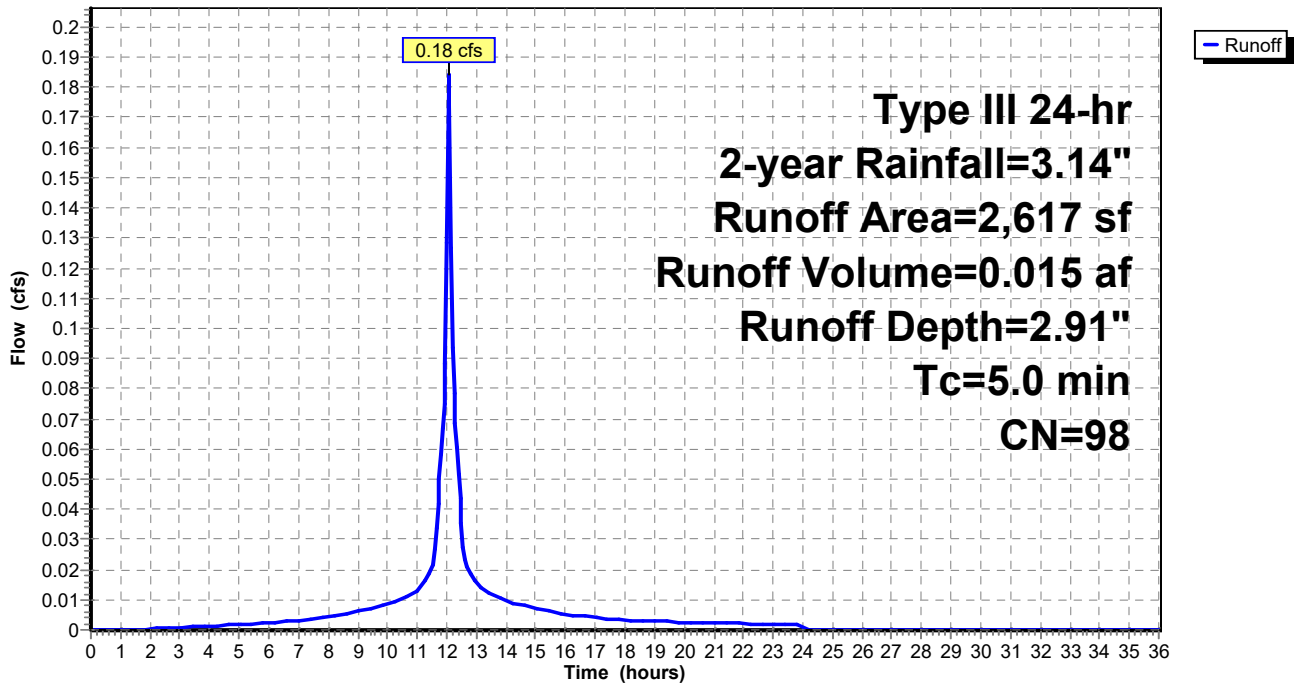
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-year Rainfall=3.14"

Area (sf)	CN	Description
2,617	98	Unconnected pavement, HSG D
2,617		100.00% Impervious Area
2,617		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-1: EX-1

Hydrograph



# WP-B2 Existing Drainage Conditions

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Type III 24-hr 2-year Rainfall=3.14"

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## Summary for Subcatchment EX-2: EX-2

Runoff = 0.38 cfs @ 12.07 hrs, Volume= 0.030 af, Depth= 2.91"

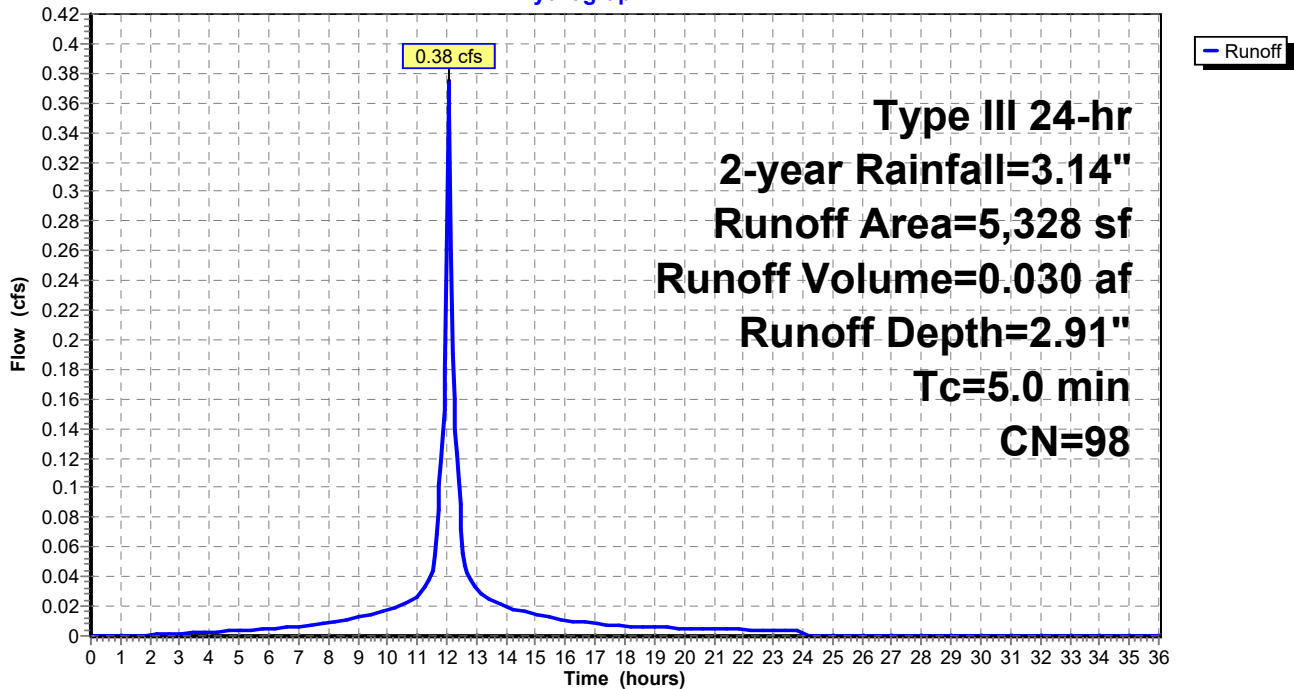
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-year Rainfall=3.14"

Area (sf)	CN	Description
5,328	98	Unconnected pavement, HSG D
5,328		100.00% Impervious Area
5,328		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-2: EX-2

Hydrograph



# WP-B2 Existing Drainage Conditions

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Type III 24-hr 2-year Rainfall=3.14"

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## Summary for Subcatchment EX-3: EX-3

Runoff = 0.84 cfs @ 12.07 hrs, Volume= 0.065 af, Depth= 2.80"

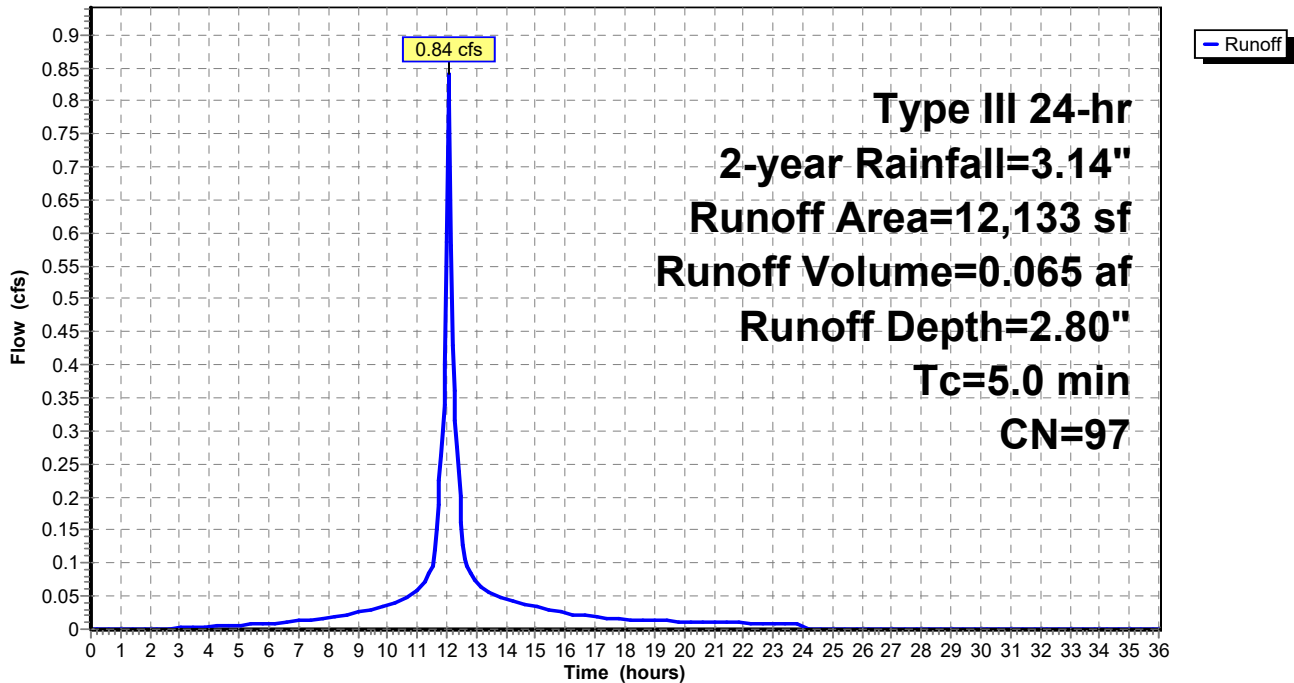
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-year Rainfall=3.14"

Area (sf)	CN	Description
11,031	98	Unconnected pavement, HSG D
1,102	89	<50% Grass cover, Poor, HSG D
12,133	97	Weighted Average
1,102		9.08% Pervious Area
11,031		90.92% Impervious Area
11,031		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-3: EX-3

Hydrograph



# WP-B2 Existing Drainage Conditions

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Type III 24-hr 2-year Rainfall=3.14"

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## Summary for Subcatchment EX-4: EX-4

Runoff = 0.94 cfs @ 12.07 hrs, Volume= 0.075 af, Depth= 2.91"

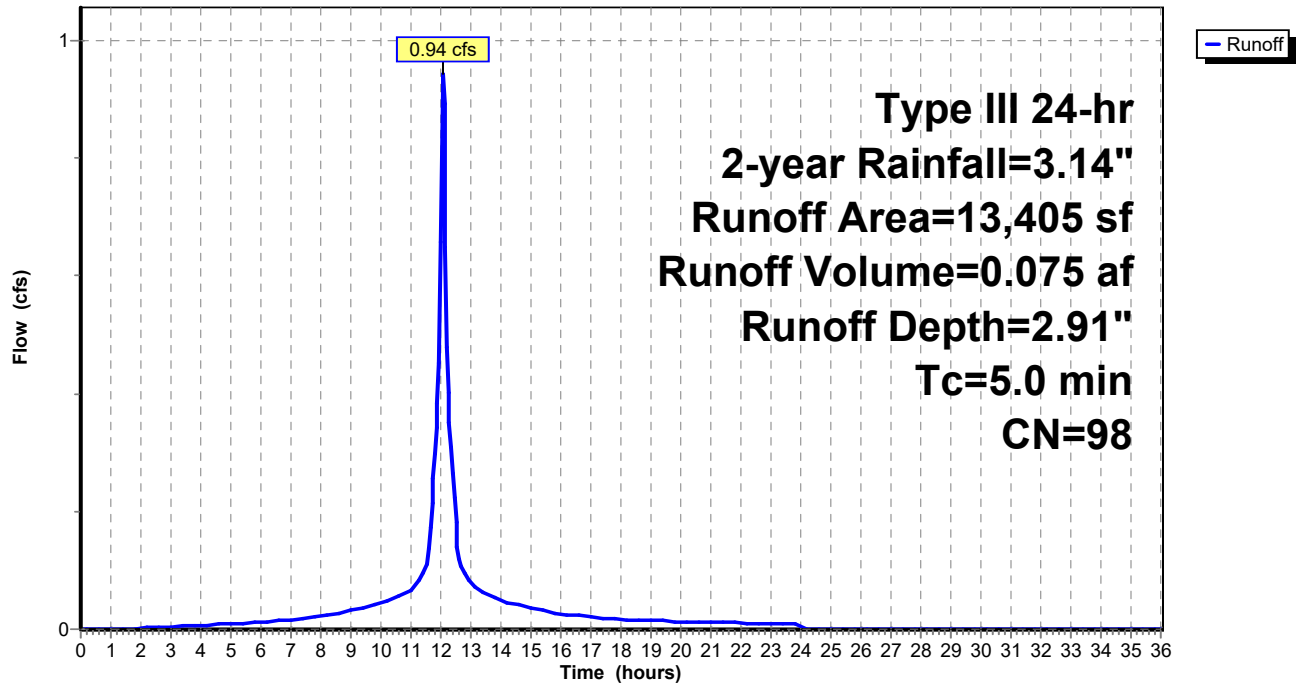
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-year Rainfall=3.14"

Area (sf)	CN	Description
12,806	98	Unconnected pavement, HSG D
599	89	<50% Grass cover, Poor, HSG D
13,405	98	Weighted Average
599		4.47% Pervious Area
12,806		95.53% Impervious Area
12,806		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-4: EX-4

Hydrograph



# WP-B2 Existing Drainage Conditions

Prepared by VHB

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Type III 24-hr 2-year Rainfall=3.14"

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## Summary for Subcatchment EX-5: Existing Bldg

Runoff = 2.88 cfs @ 12.07 hrs, Volume= 0.228 af, Depth= 2.91"

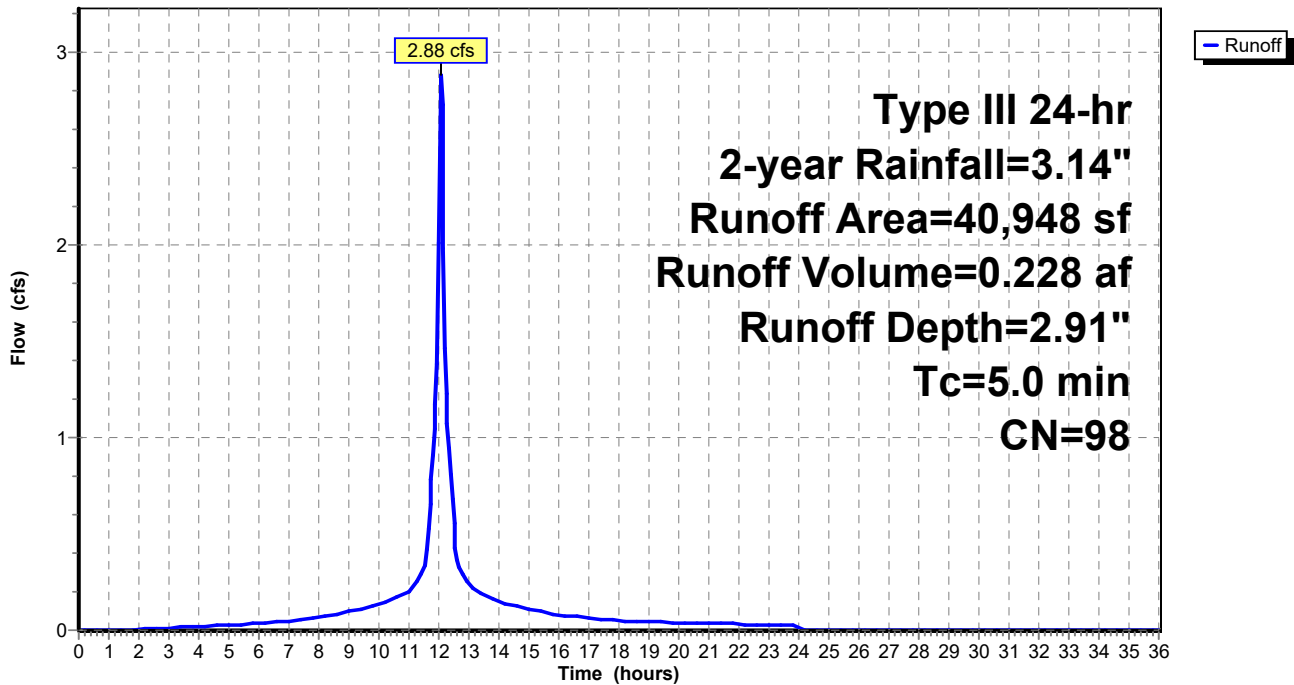
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-year Rainfall=3.14"

Area (sf)	CN	Description
40,948	98	Roofs, HSG D
40,948		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-5: Existing Bldg

Hydrograph



**WP-B2 Existing Drainage Conditions**

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Type III 24-hr 2-year Rainfall=3.14"

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**Summary for Subcatchment EX-6: EX-6**

Runoff = 0.28 cfs @ 12.07 hrs, Volume= 0.022 af, Depth= 2.91"

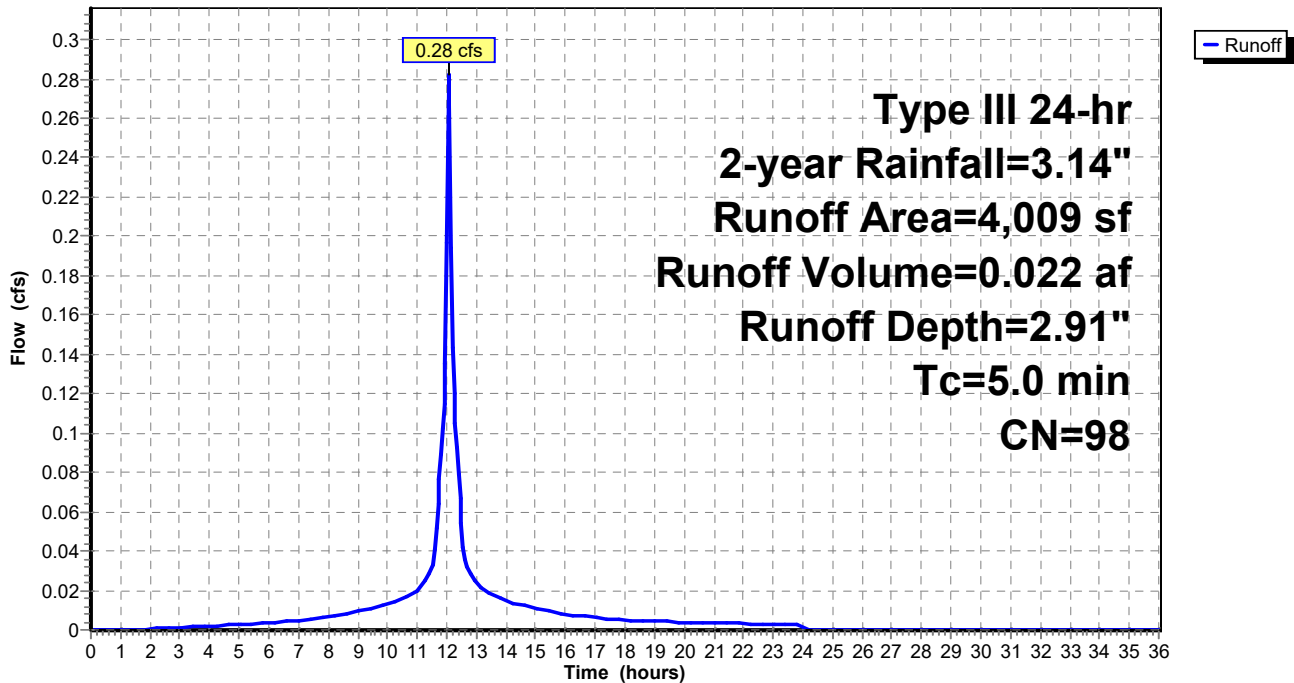
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-year Rainfall=3.14"

Area (sf)	CN	Description
4,009	98	Unconnected pavement, HSG D
4,009		100.00% Impervious Area
4,009		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

**Subcatchment EX-6: EX-6**

Hydrograph





# WP-B2 Existing Drainage Conditions

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Type III 24-hr 2-year Rainfall=3.14"

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## Summary for Subcatchment EX-7: EX-7

Runoff = 0.74 cfs @ 12.07 hrs, Volume= 0.058 af, Depth= 2.91"

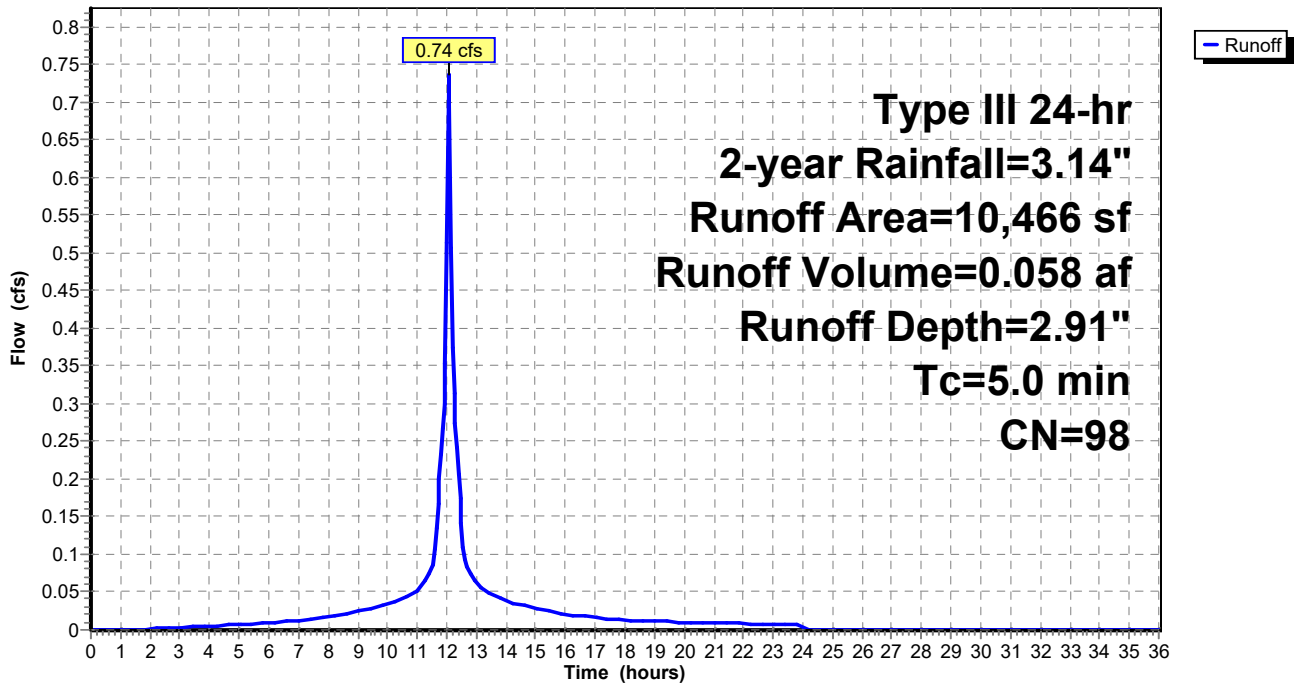
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-year Rainfall=3.14"

Area (sf)	CN	Description
10,466	98	Unconnected pavement, HSG D
10,466		100.00% Impervious Area
10,466		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-7: EX-7

Hydrograph



# WP-B2 Existing Drainage Conditions

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Type III 24-hr 2-year Rainfall=3.14"

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## Summary for Subcatchment EX-8: EX-8

Runoff = 0.64 cfs @ 12.07 hrs, Volume= 0.051 af, Depth= 2.91"

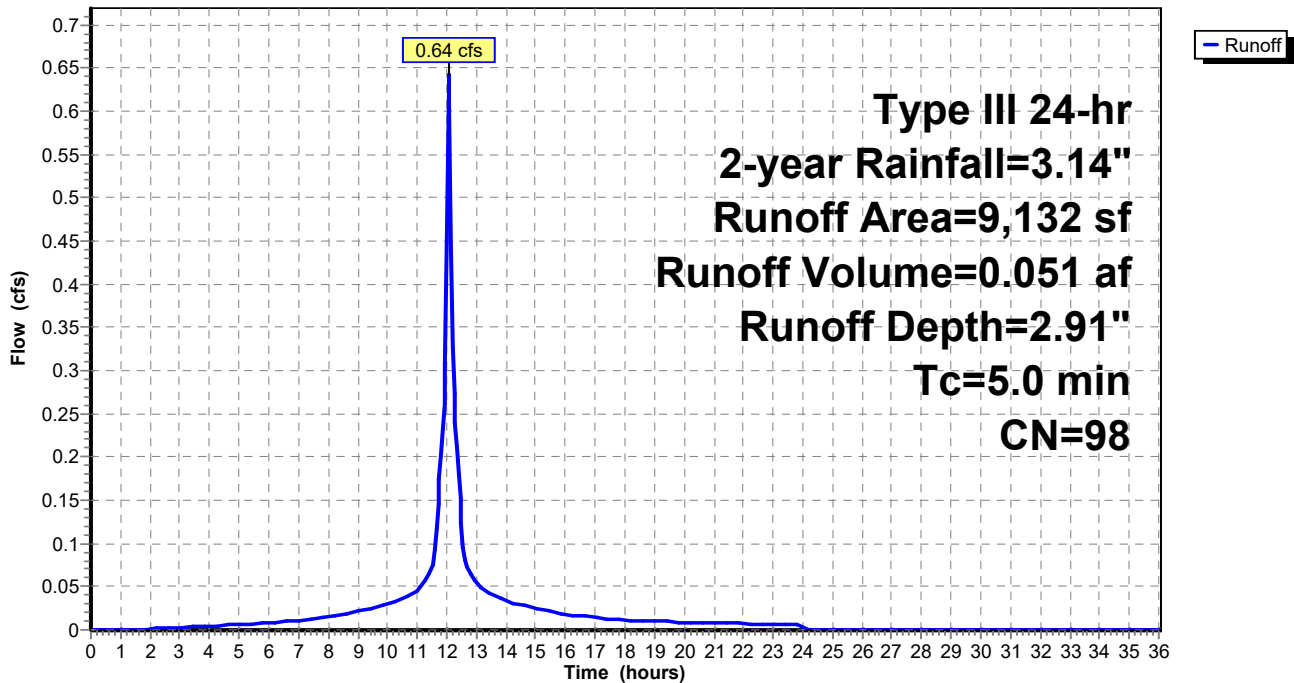
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-year Rainfall=3.14"

Area (sf)	CN	Description
9,132	98	Unconnected pavement, HSG D
9,132		100.00% Impervious Area
9,132		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-8: EX-8

Hydrograph



# WP-B2 Existing Drainage Conditions

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Type III 24-hr 2-year Rainfall=3.14"

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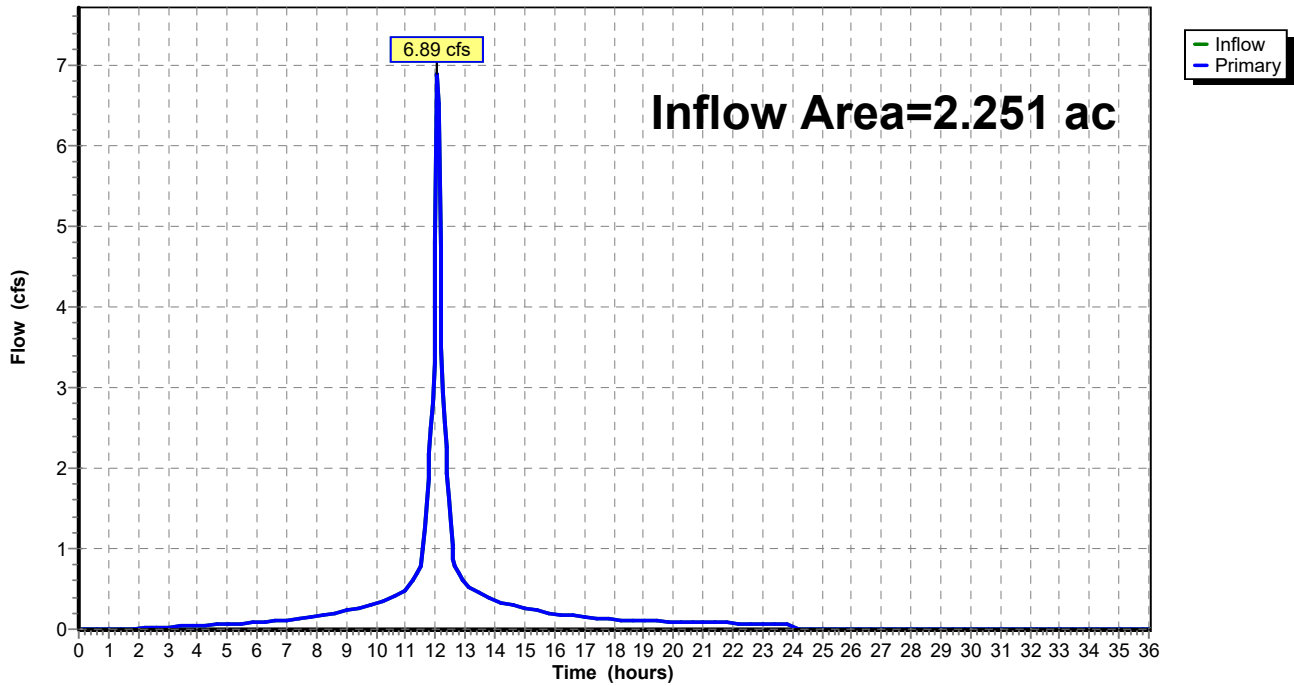
## Summary for Link DP-1: Charles River

Inflow Area = 2.251 ac, 98.26% Impervious, Inflow Depth = 2.89" for 2-year event  
Inflow = 6.89 cfs @ 12.07 hrs, Volume= 0.543 af  
Primary = 6.89 cfs @ 12.07 hrs, Volume= 0.543 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

### Link DP-1: Charles River

Hydrograph



## WP-B2 Existing Drainage Conditions

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Type III 24-hr 10-year Rainfall=4.97"

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Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>SubcatchmentEX-1: EX-1</b>	Runoff Area=2,617 sf 100.00% Impervious Runoff Depth=4.73" Tc=5.0 min CN=98 Runoff=0.29 cfs 0.024 af
<b>SubcatchmentEX-2: EX-2</b>	Runoff Area=5,328 sf 100.00% Impervious Runoff Depth=4.73" Tc=5.0 min CN=98 Runoff=0.60 cfs 0.048 af
<b>SubcatchmentEX-3: EX-3</b>	Runoff Area=12,133 sf 90.92% Impervious Runoff Depth=4.62" Tc=5.0 min CN=97 Runoff=1.35 cfs 0.107 af
<b>SubcatchmentEX-4: EX-4</b>	Runoff Area=13,405 sf 95.53% Impervious Runoff Depth=4.73" Tc=5.0 min CN=98 Runoff=1.51 cfs 0.121 af
<b>SubcatchmentEX-5: Existing Bldg</b>	Runoff Area=40,948 sf 100.00% Impervious Runoff Depth=4.73" Tc=5.0 min CN=98 Runoff=4.60 cfs 0.371 af
<b>SubcatchmentEX-6: EX-6</b>	Runoff Area=4,009 sf 100.00% Impervious Runoff Depth=4.73" Tc=5.0 min CN=98 Runoff=0.45 cfs 0.036 af
<b>SubcatchmentEX-7: EX-7</b>	Runoff Area=10,466 sf 100.00% Impervious Runoff Depth=4.73" Tc=5.0 min CN=98 Runoff=1.18 cfs 0.095 af
<b>SubcatchmentEX-8: EX-8</b>	Runoff Area=9,132 sf 100.00% Impervious Runoff Depth=4.73" Tc=5.0 min CN=98 Runoff=1.03 cfs 0.083 af
<b>Link DP-1: Charles River</b>	Inflow=11.00 cfs 0.885 af Primary=11.00 cfs 0.885 af

**Total Runoff Area = 2.251 ac Runoff Volume = 0.885 af Average Runoff Depth = 4.72"**  
**1.74% Pervious = 0.039 ac 98.26% Impervious = 2.212 ac**

# WP-B2 Existing Drainage Conditions

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Type III 24-hr 10-year Rainfall=4.97"

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## Summary for Subcatchment EX-1: EX-1

Runoff = 0.29 cfs @ 12.07 hrs, Volume= 0.024 af, Depth= 4.73"

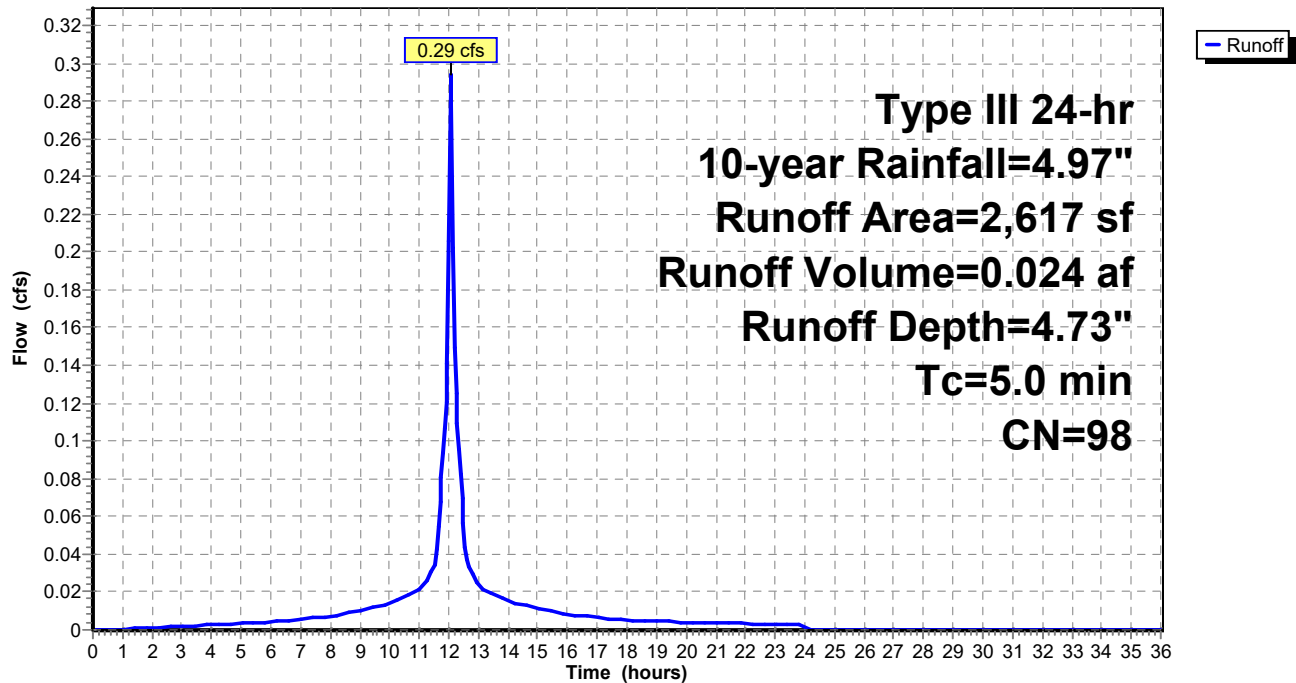
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-year Rainfall=4.97"

Area (sf)	CN	Description
2,617	98	Unconnected pavement, HSG D
2,617		100.00% Impervious Area
2,617		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-1: EX-1

Hydrograph



# WP-B2 Existing Drainage Conditions

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Type III 24-hr 10-year Rainfall=4.97"

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## Summary for Subcatchment EX-2: EX-2

Runoff = 0.60 cfs @ 12.07 hrs, Volume= 0.048 af, Depth= 4.73"

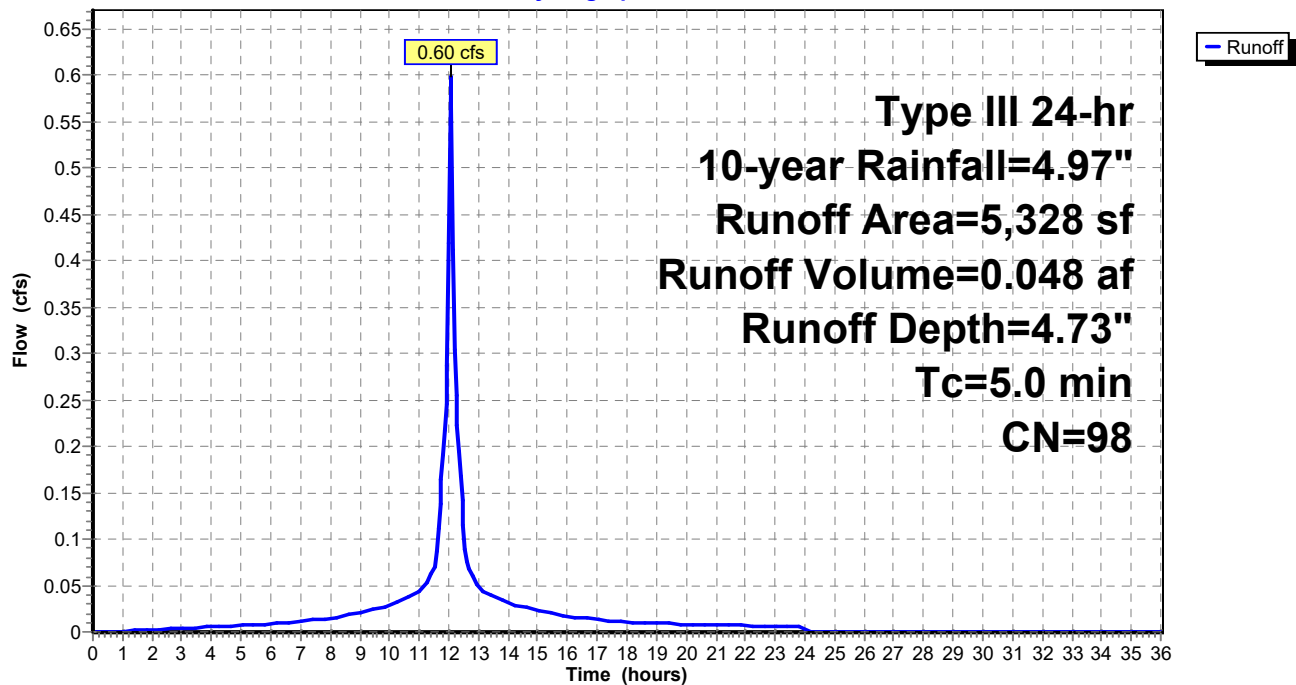
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-year Rainfall=4.97"

Area (sf)	CN	Description
5,328	98	Unconnected pavement, HSG D
5,328		100.00% Impervious Area
5,328		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-2: EX-2

Hydrograph





# WP-B2 Existing Drainage Conditions

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Type III 24-hr 10-year Rainfall=4.97"

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## Summary for Subcatchment EX-3: EX-3

Runoff = 1.35 cfs @ 12.07 hrs, Volume= 0.107 af, Depth= 4.62"

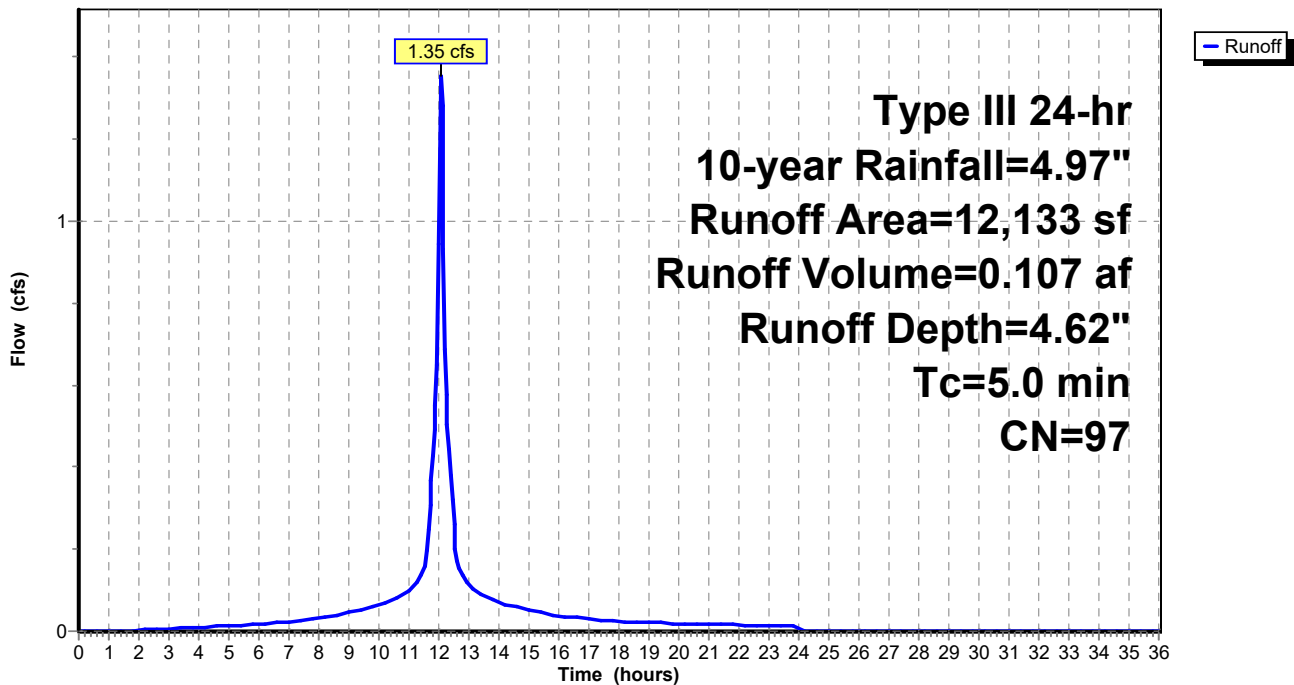
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-year Rainfall=4.97"

Area (sf)	CN	Description
11,031	98	Unconnected pavement, HSG D
1,102	89	<50% Grass cover, Poor, HSG D
12,133	97	Weighted Average
1,102		9.08% Pervious Area
11,031		90.92% Impervious Area
11,031		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-3: EX-3

Hydrograph



**WP-B2 Existing Drainage Conditions**

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Type III 24-hr 10-year Rainfall=4.97"

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**Summary for Subcatchment EX-4: EX-4**

Runoff = 1.51 cfs @ 12.07 hrs, Volume= 0.121 af, Depth= 4.73"

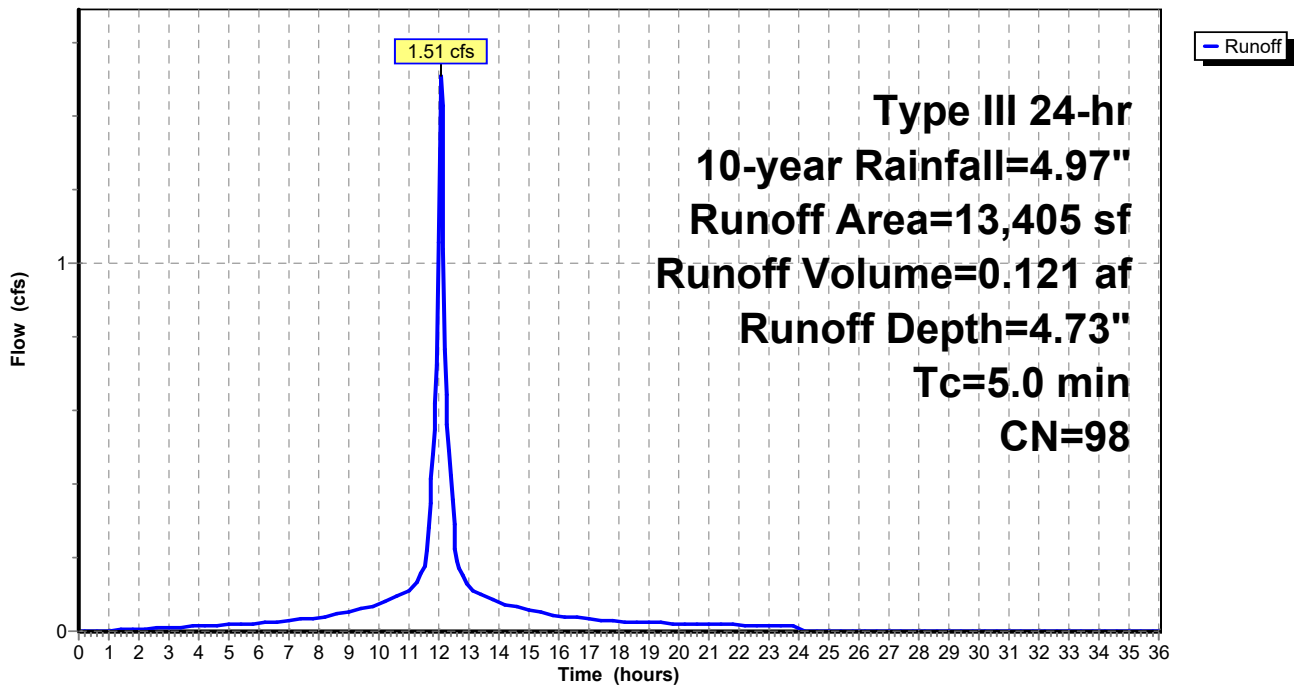
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-year Rainfall=4.97"

Area (sf)	CN	Description
12,806	98	Unconnected pavement, HSG D
599	89	<50% Grass cover, Poor, HSG D
13,405	98	Weighted Average
599		4.47% Pervious Area
12,806		95.53% Impervious Area
12,806		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

**Subcatchment EX-4: EX-4**

Hydrograph



# WP-B2 Existing Drainage Conditions

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Type III 24-hr 10-year Rainfall=4.97"

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## Summary for Subcatchment EX-5: Existing Bldg

Runoff = 4.60 cfs @ 12.07 hrs, Volume= 0.371 af, Depth= 4.73"

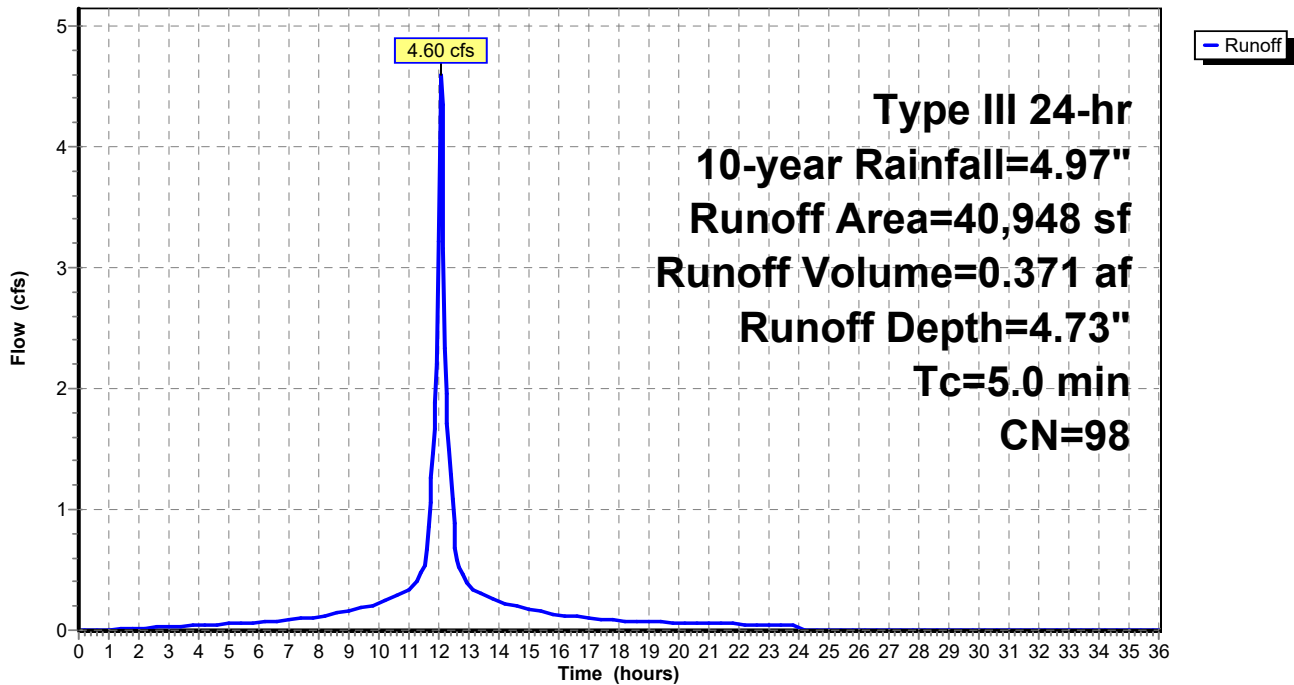
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-year Rainfall=4.97"

Area (sf)	CN	Description
40,948	98	Roofs, HSG D
40,948		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-5: Existing Bldg

Hydrograph



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## Summary for Subcatchment EX-6: EX-6

Runoff = 0.45 cfs @ 12.07 hrs, Volume= 0.036 af, Depth= 4.73"

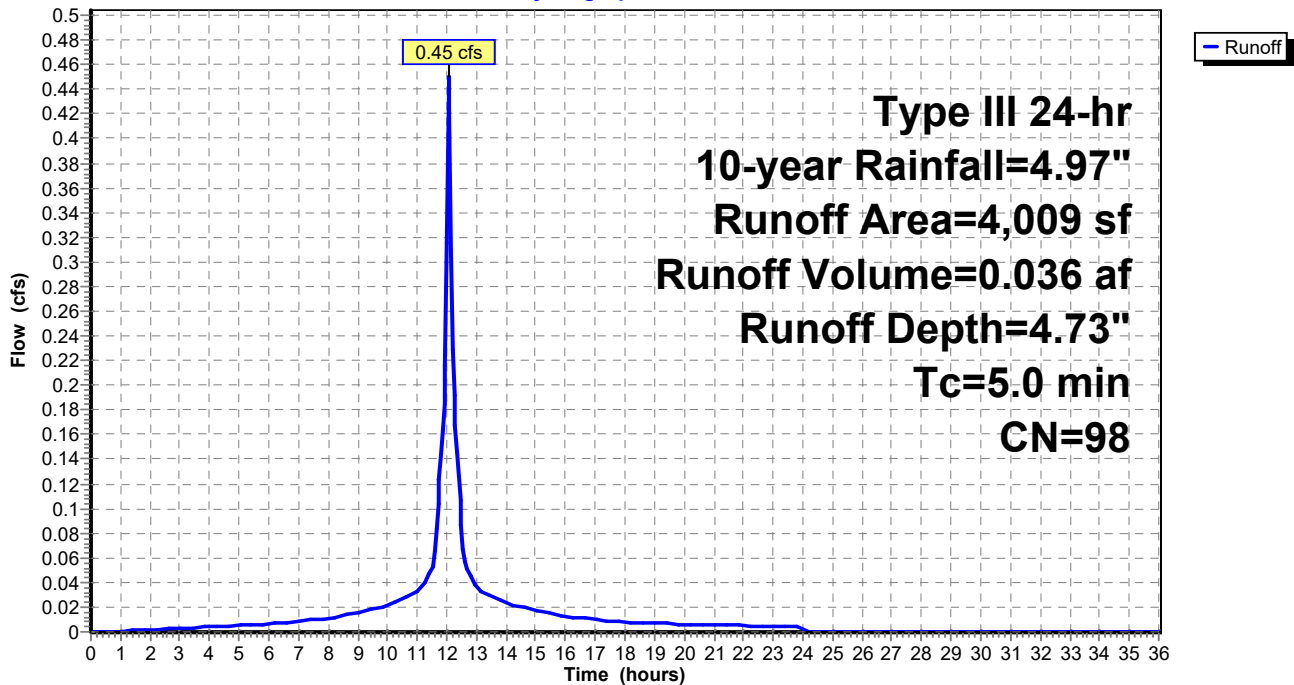
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-year Rainfall=4.97"

Area (sf)	CN	Description
4,009	98	Unconnected pavement, HSG D
4,009		100.00% Impervious Area
4,009		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-6: EX-6

Hydrograph



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Type III 24-hr 10-year Rainfall=4.97"

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## Summary for Subcatchment EX-7: EX-7

Runoff = 1.18 cfs @ 12.07 hrs, Volume= 0.095 af, Depth= 4.73"

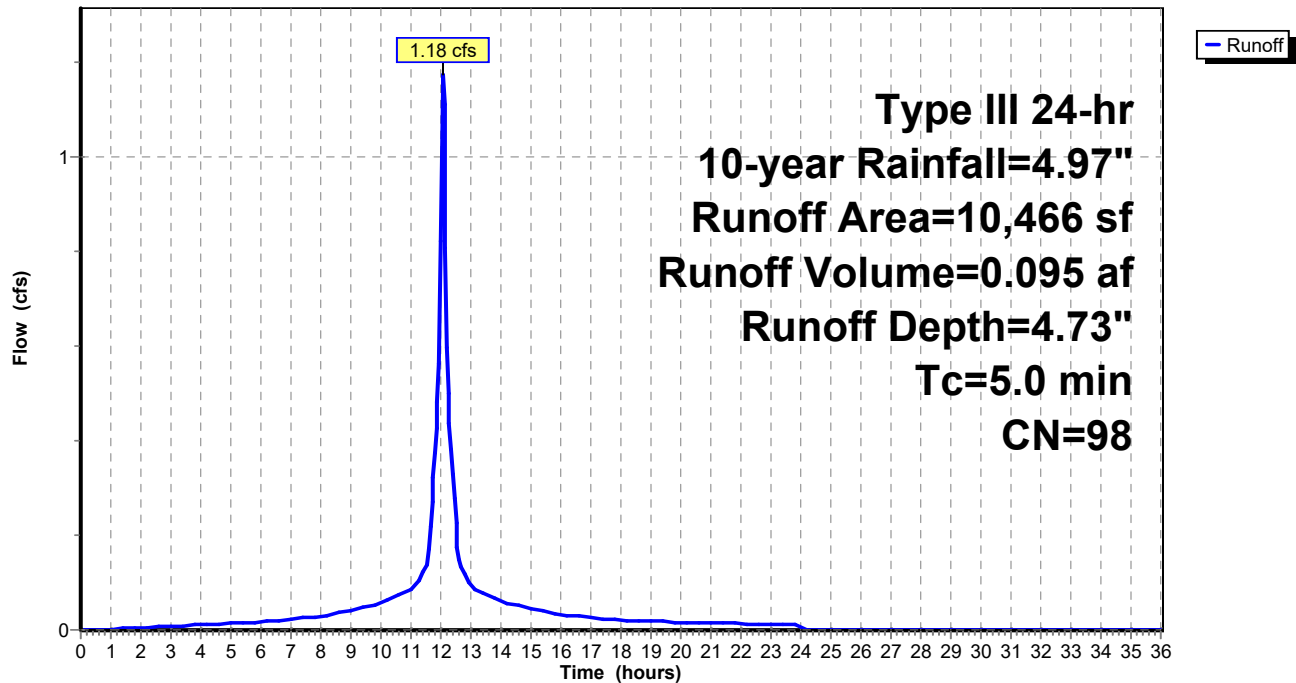
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-year Rainfall=4.97"

Area (sf)	CN	Description
10,466	98	Unconnected pavement, HSG D
10,466		100.00% Impervious Area
10,466		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-7: EX-7

Hydrograph



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## Summary for Subcatchment EX-8: EX-8

Runoff = 1.03 cfs @ 12.07 hrs, Volume= 0.083 af, Depth= 4.73"

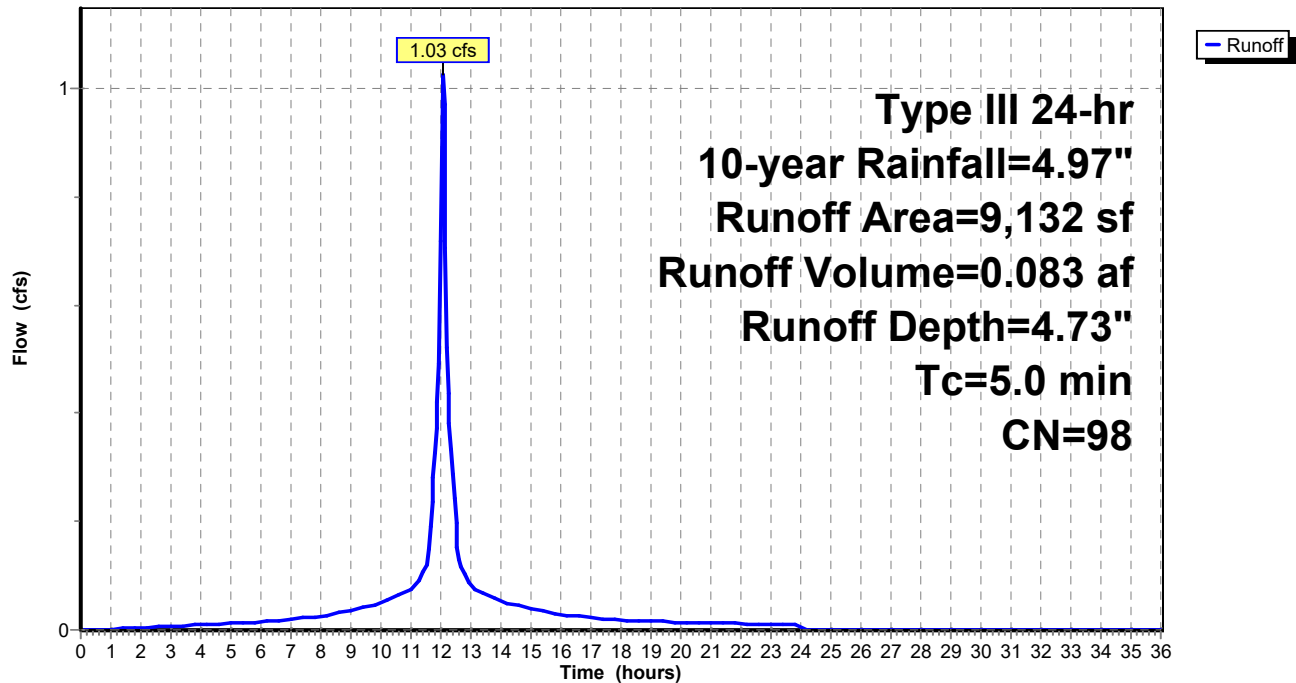
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-year Rainfall=4.97"

Area (sf)	CN	Description
9,132	98	Unconnected pavement, HSG D
9,132		100.00% Impervious Area
9,132		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-8: EX-8

Hydrograph





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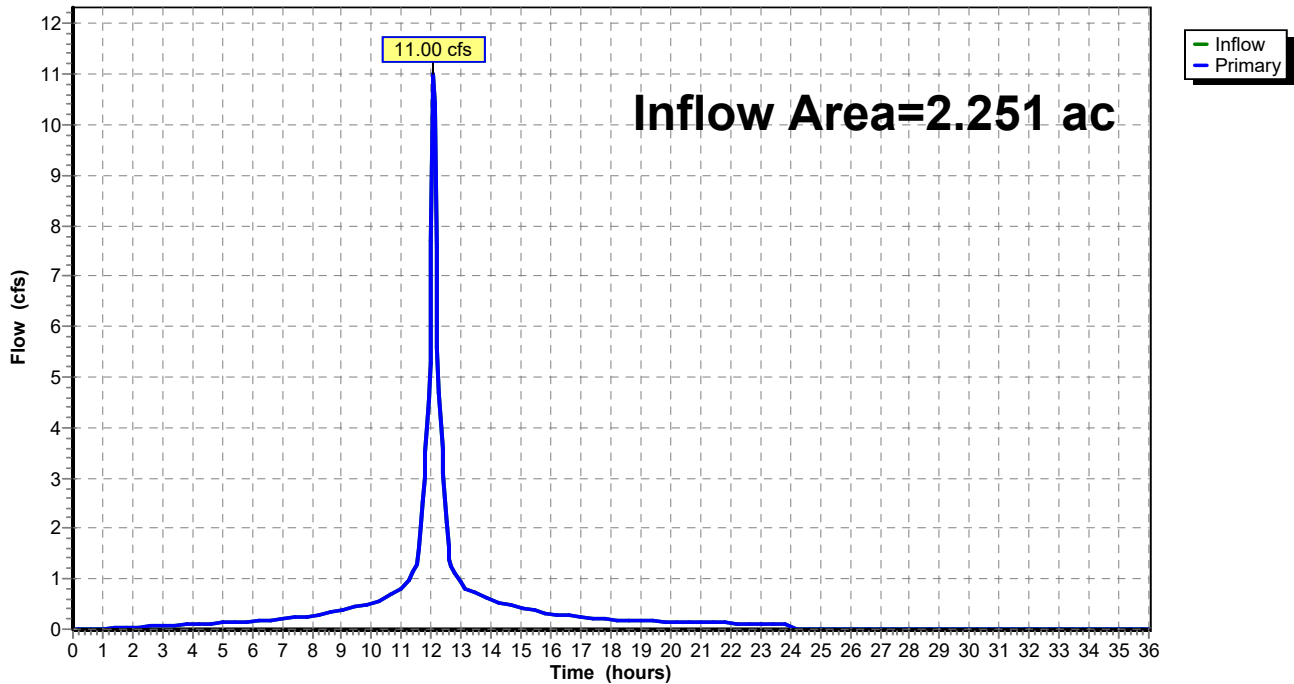
## Summary for Link DP-1: Charles River

Inflow Area = 2.251 ac, 98.26% Impervious, Inflow Depth = 4.72" for 10-year event  
Inflow = 11.00 cfs @ 12.07 hrs, Volume= 0.885 af  
Primary = 11.00 cfs @ 12.07 hrs, Volume= 0.885 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

### Link DP-1: Charles River

Hydrograph



## WP-B2 Existing Drainage Conditions

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Type III 24-hr 25-year Rainfall=6.12"

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Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>SubcatchmentEX-1: EX-1</b>	Runoff Area=2,617 sf 100.00% Impervious Runoff Depth=5.88" Tc=5.0 min CN=98 Runoff=0.36 cfs 0.029 af
<b>SubcatchmentEX-2: EX-2</b>	Runoff Area=5,328 sf 100.00% Impervious Runoff Depth=5.88" Tc=5.0 min CN=98 Runoff=0.74 cfs 0.060 af
<b>SubcatchmentEX-3: EX-3</b>	Runoff Area=12,133 sf 90.92% Impervious Runoff Depth=5.76" Tc=5.0 min CN=97 Runoff=1.67 cfs 0.134 af
<b>SubcatchmentEX-4: EX-4</b>	Runoff Area=13,405 sf 95.53% Impervious Runoff Depth=5.88" Tc=5.0 min CN=98 Runoff=1.86 cfs 0.151 af
<b>SubcatchmentEX-5: Existing Bldg</b>	Runoff Area=40,948 sf 100.00% Impervious Runoff Depth=5.88" Tc=5.0 min CN=98 Runoff=5.68 cfs 0.461 af
<b>SubcatchmentEX-6: EX-6</b>	Runoff Area=4,009 sf 100.00% Impervious Runoff Depth=5.88" Tc=5.0 min CN=98 Runoff=0.56 cfs 0.045 af
<b>SubcatchmentEX-7: EX-7</b>	Runoff Area=10,466 sf 100.00% Impervious Runoff Depth=5.88" Tc=5.0 min CN=98 Runoff=1.45 cfs 0.118 af
<b>SubcatchmentEX-8: EX-8</b>	Runoff Area=9,132 sf 100.00% Impervious Runoff Depth=5.88" Tc=5.0 min CN=98 Runoff=1.27 cfs 0.103 af
<b>Link DP-1: Charles River</b>	Inflow=13.58 cfs 1.100 af Primary=13.58 cfs 1.100 af

**Total Runoff Area = 2.251 ac Runoff Volume = 1.100 af Average Runoff Depth = 5.87"**  
**1.74% Pervious = 0.039 ac 98.26% Impervious = 2.212 ac**

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Type III 24-hr 25-year Rainfall=6.12"

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## Summary for Subcatchment EX-1: EX-1

Runoff = 0.36 cfs @ 12.07 hrs, Volume= 0.029 af, Depth= 5.88"

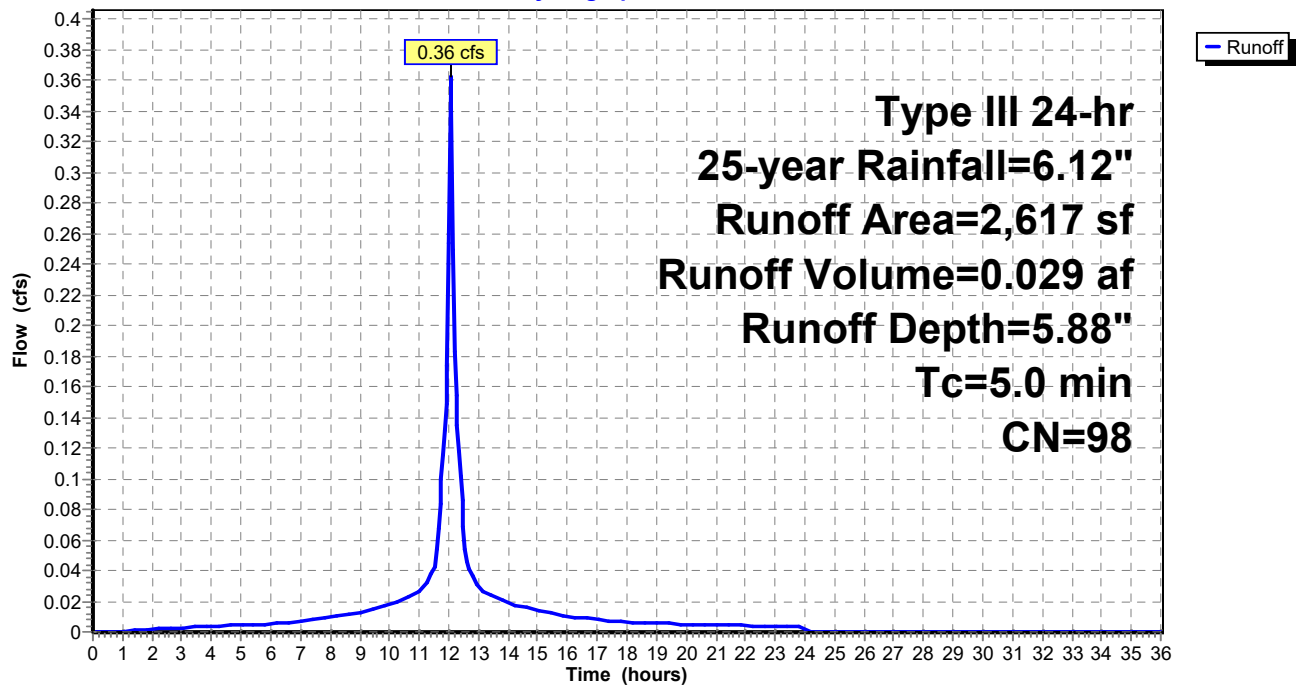
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-year Rainfall=6.12"

Area (sf)	CN	Description
2,617	98	Unconnected pavement, HSG D
2,617		100.00% Impervious Area
2,617		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-1: EX-1

Hydrograph



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Type III 24-hr 25-year Rainfall=6.12"

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## Summary for Subcatchment EX-2: EX-2

Runoff = 0.74 cfs @ 12.07 hrs, Volume= 0.060 af, Depth= 5.88"

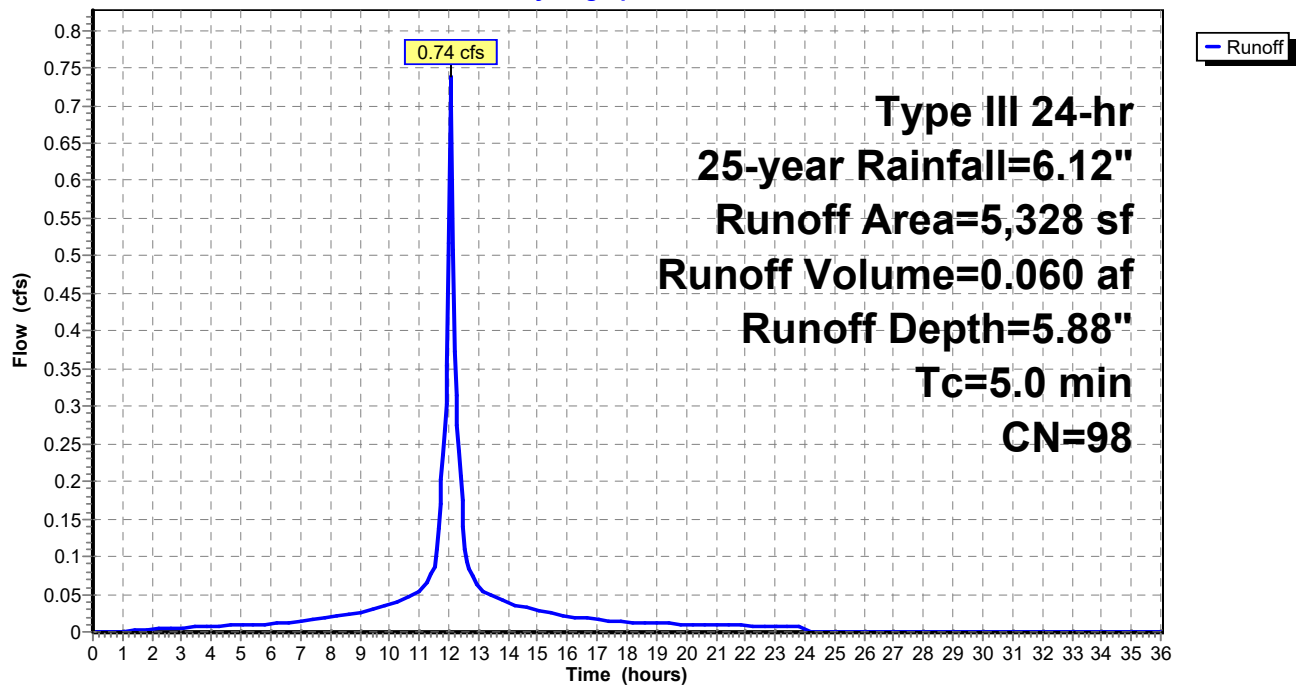
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-year Rainfall=6.12"

Area (sf)	CN	Description
5,328	98	Unconnected pavement, HSG D
5,328		100.00% Impervious Area
5,328		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-2: EX-2

Hydrograph



**WP-B2 Existing Drainage Conditions**

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Type III 24-hr 25-year Rainfall=6.12"

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**Summary for Subcatchment EX-3: EX-3**

Runoff = 1.67 cfs @ 12.07 hrs, Volume= 0.134 af, Depth= 5.76"

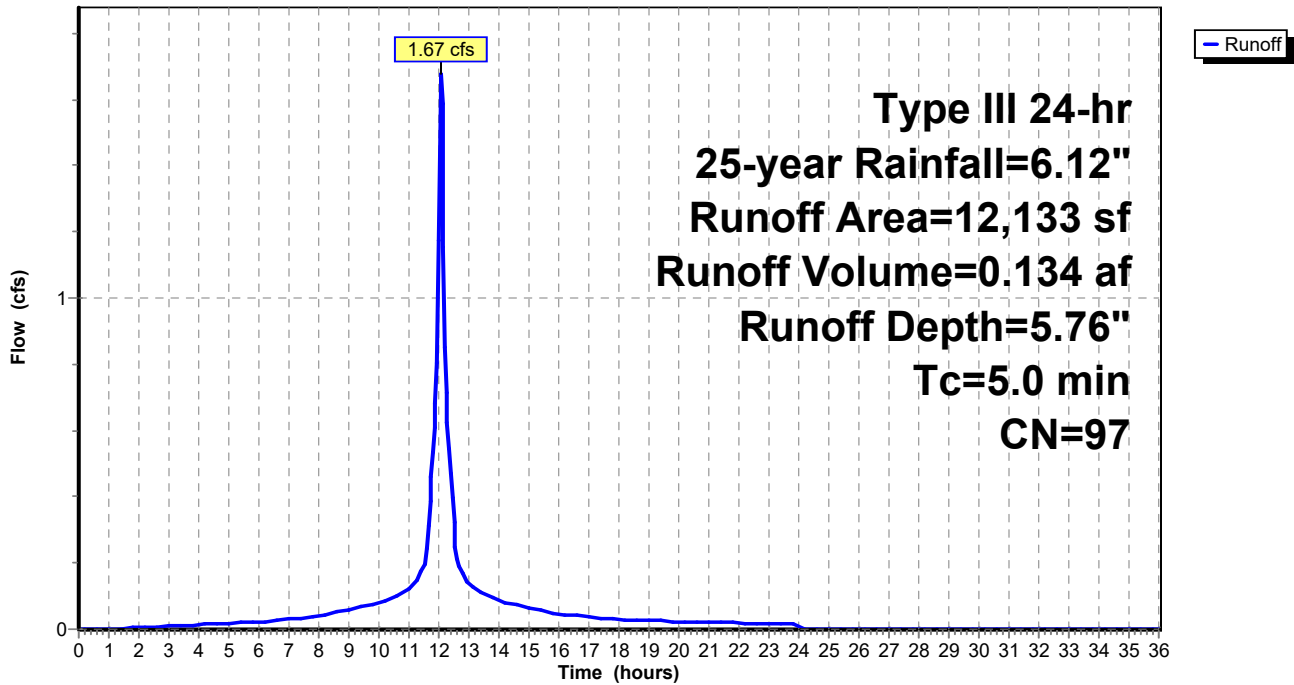
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-year Rainfall=6.12"

Area (sf)	CN	Description
11,031	98	Unconnected pavement, HSG D
1,102	89	<50% Grass cover, Poor, HSG D
12,133	97	Weighted Average
1,102		9.08% Pervious Area
11,031		90.92% Impervious Area
11,031		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

**Subcatchment EX-3: EX-3**

Hydrograph



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Type III 24-hr 25-year Rainfall=6.12"

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## Summary for Subcatchment EX-4: EX-4

Runoff = 1.86 cfs @ 12.07 hrs, Volume= 0.151 af, Depth= 5.88"

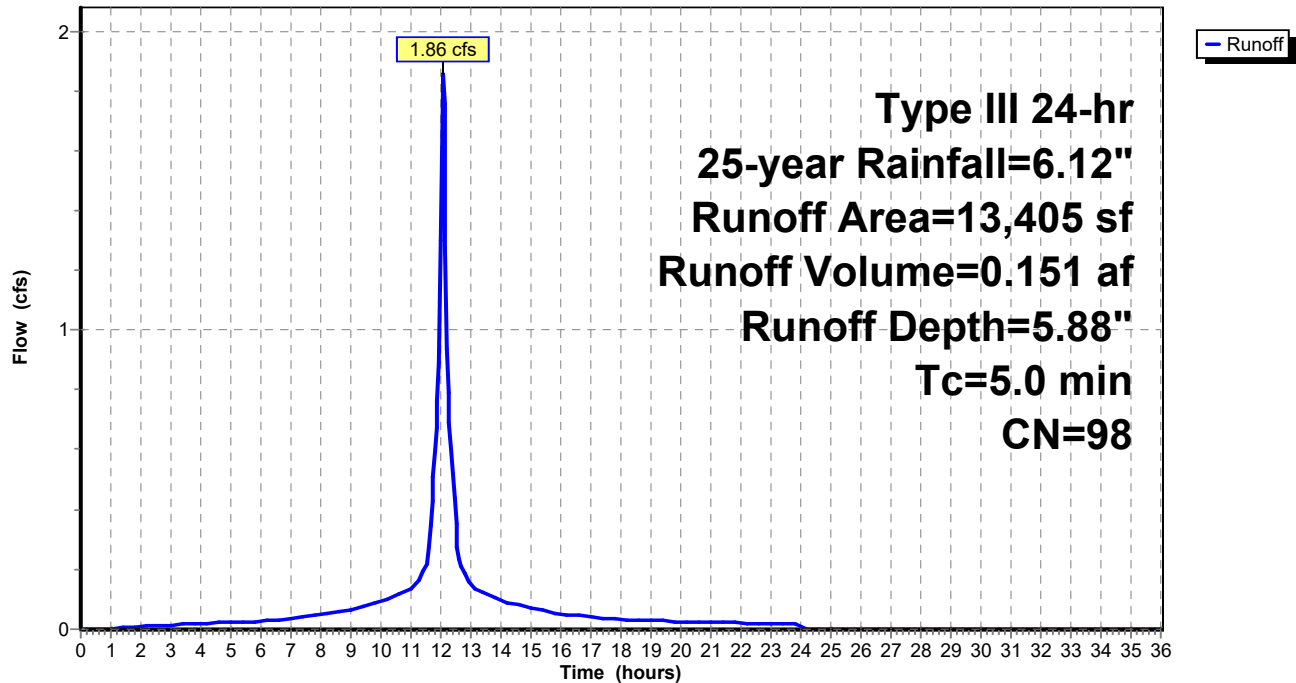
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-year Rainfall=6.12"

Area (sf)	CN	Description
12,806	98	Unconnected pavement, HSG D
599	89	<50% Grass cover, Poor, HSG D
13,405	98	Weighted Average
599		4.47% Pervious Area
12,806		95.53% Impervious Area
12,806		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-4: EX-4

Hydrograph



# WP-B2 Existing Drainage Conditions

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Type III 24-hr 25-year Rainfall=6.12"

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## Summary for Subcatchment EX-5: Existing Bldg

Runoff = 5.68 cfs @ 12.07 hrs, Volume= 0.461 af, Depth= 5.88"

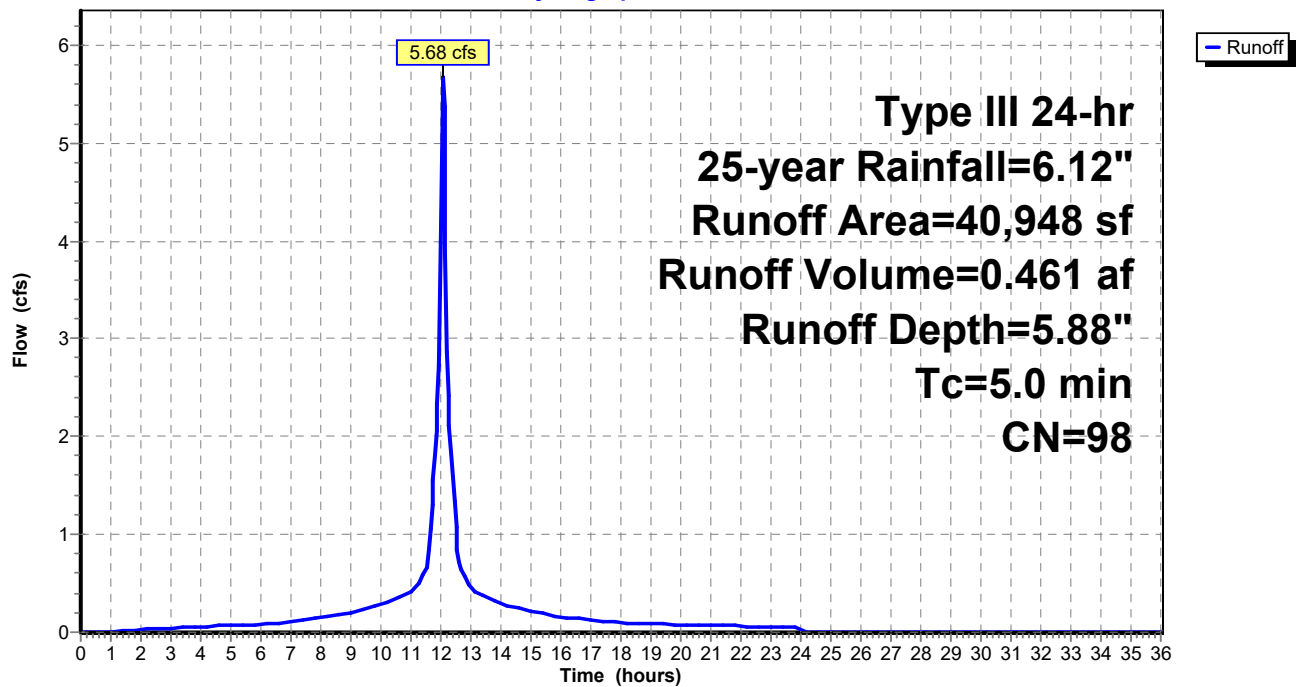
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-year Rainfall=6.12"

Area (sf)	CN	Description
40,948	98	Roofs, HSG D
40,948		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-5: Existing Bldg

Hydrograph





# WP-B2 Existing Drainage Conditions

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Type III 24-hr 25-year Rainfall=6.12"

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## Summary for Subcatchment EX-6: EX-6

Runoff = 0.56 cfs @ 12.07 hrs, Volume= 0.045 af, Depth= 5.88"

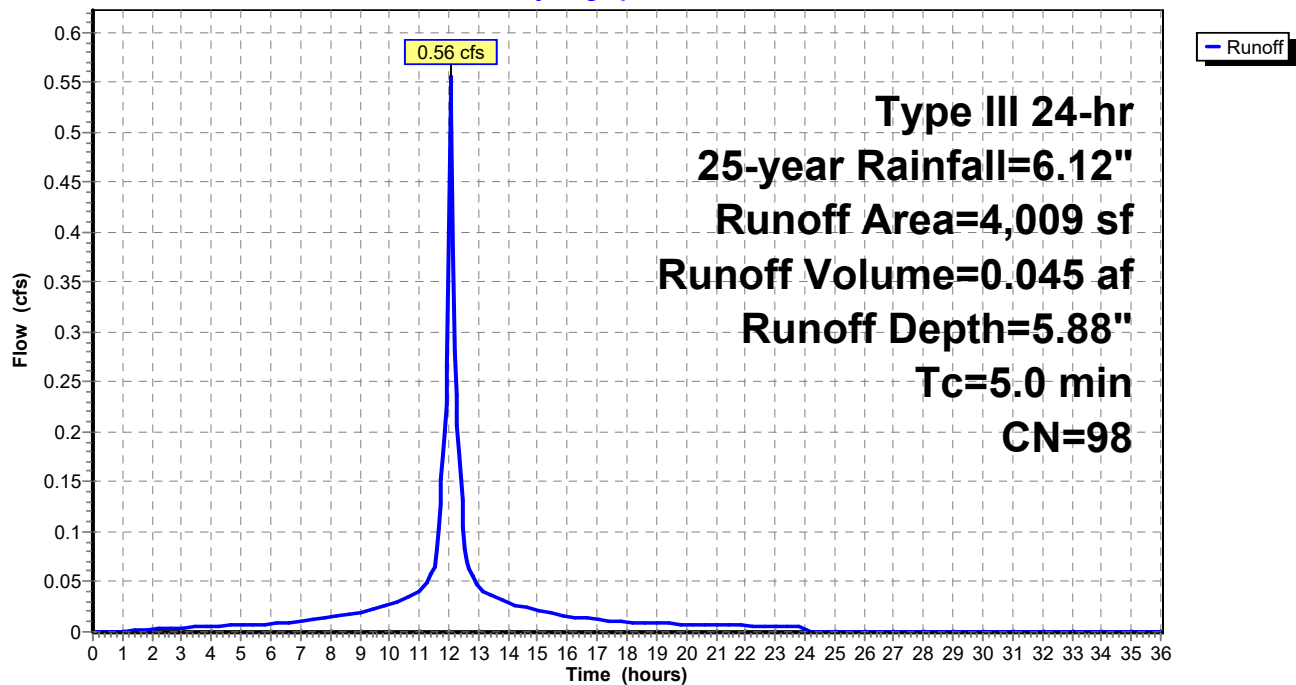
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-year Rainfall=6.12"

Area (sf)	CN	Description
4,009	98	Unconnected pavement, HSG D
4,009		100.00% Impervious Area
4,009		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-6: EX-6

Hydrograph



# WP-B2 Existing Drainage Conditions

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Type III 24-hr 25-year Rainfall=6.12"

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## Summary for Subcatchment EX-7: EX-7

Runoff = 1.45 cfs @ 12.07 hrs, Volume= 0.118 af, Depth= 5.88"

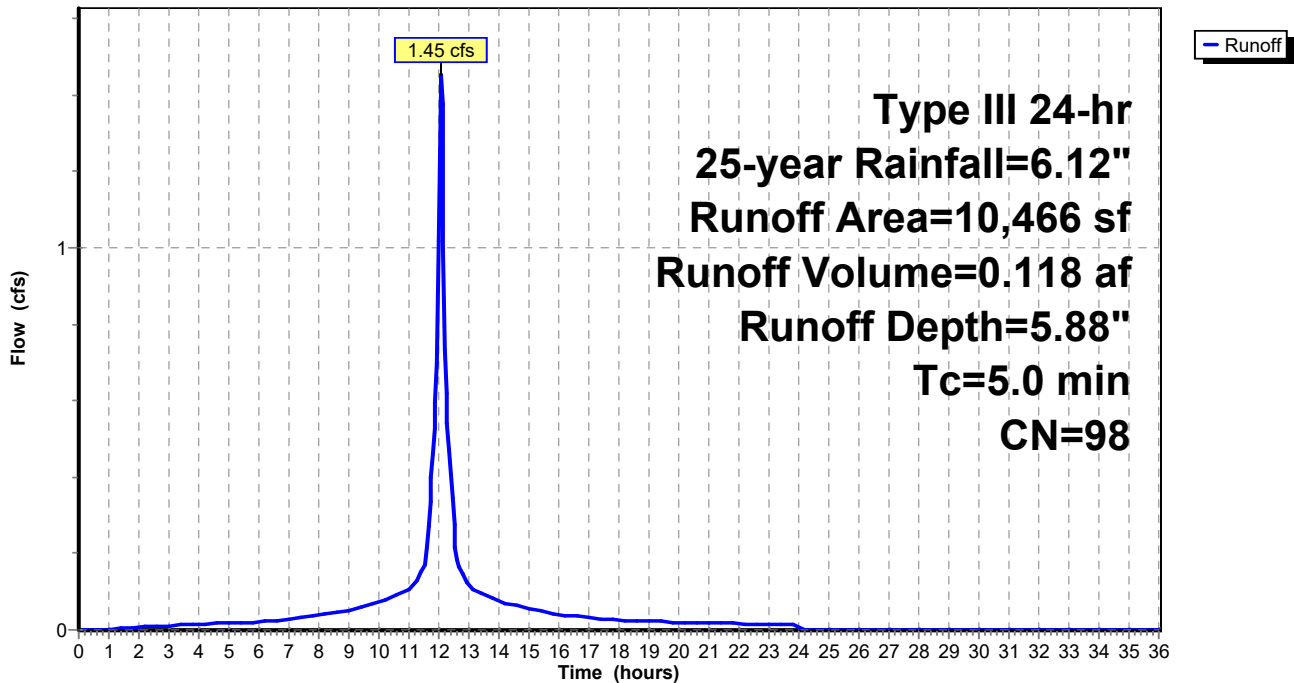
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-year Rainfall=6.12"

Area (sf)	CN	Description
10,466	98	Unconnected pavement, HSG D
10,466		100.00% Impervious Area
10,466		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-7: EX-7

Hydrograph



# WP-B2 Existing Drainage Conditions

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Type III 24-hr 25-year Rainfall=6.12"

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## Summary for Subcatchment EX-8: EX-8

Runoff = 1.27 cfs @ 12.07 hrs, Volume= 0.103 af, Depth= 5.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-year Rainfall=6.12"

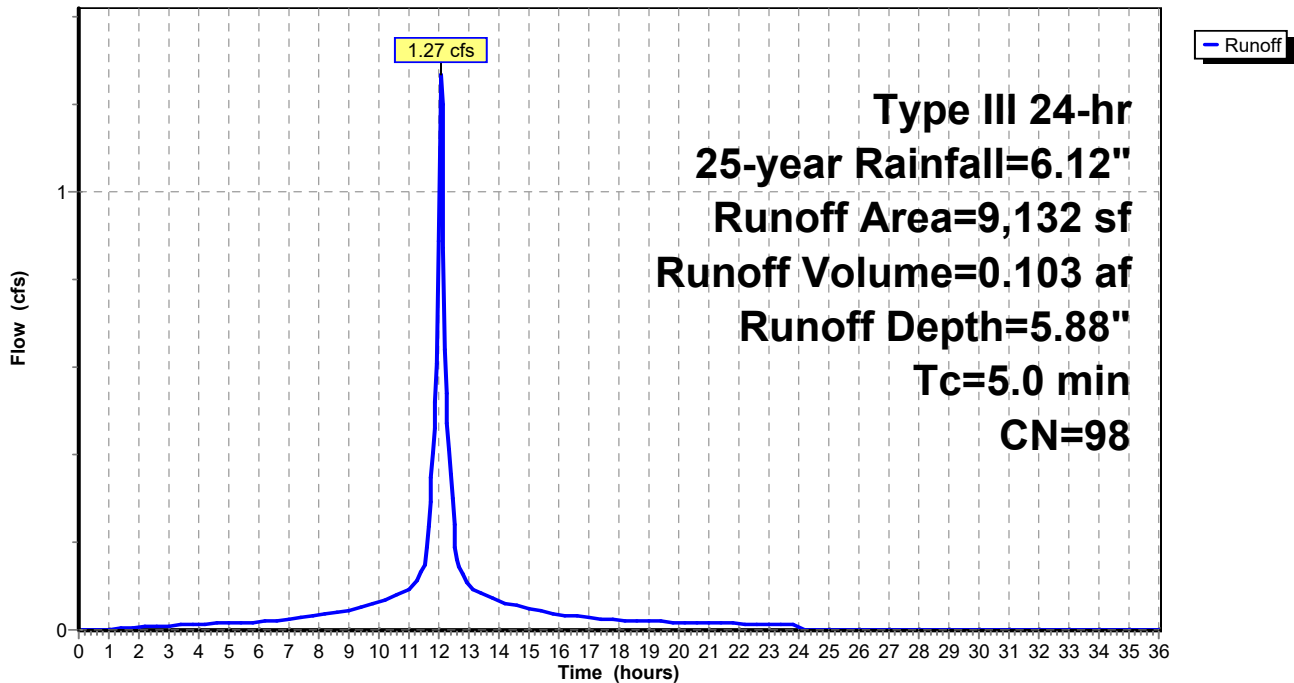
Area (sf)	CN	Description
9,132	98	Unconnected pavement, HSG D
9,132		100.00% Impervious Area
9,132		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-8: EX-8

Hydrograph



# WP-B2 Existing Drainage Conditions

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Type III 24-hr 25-year Rainfall=6.12"

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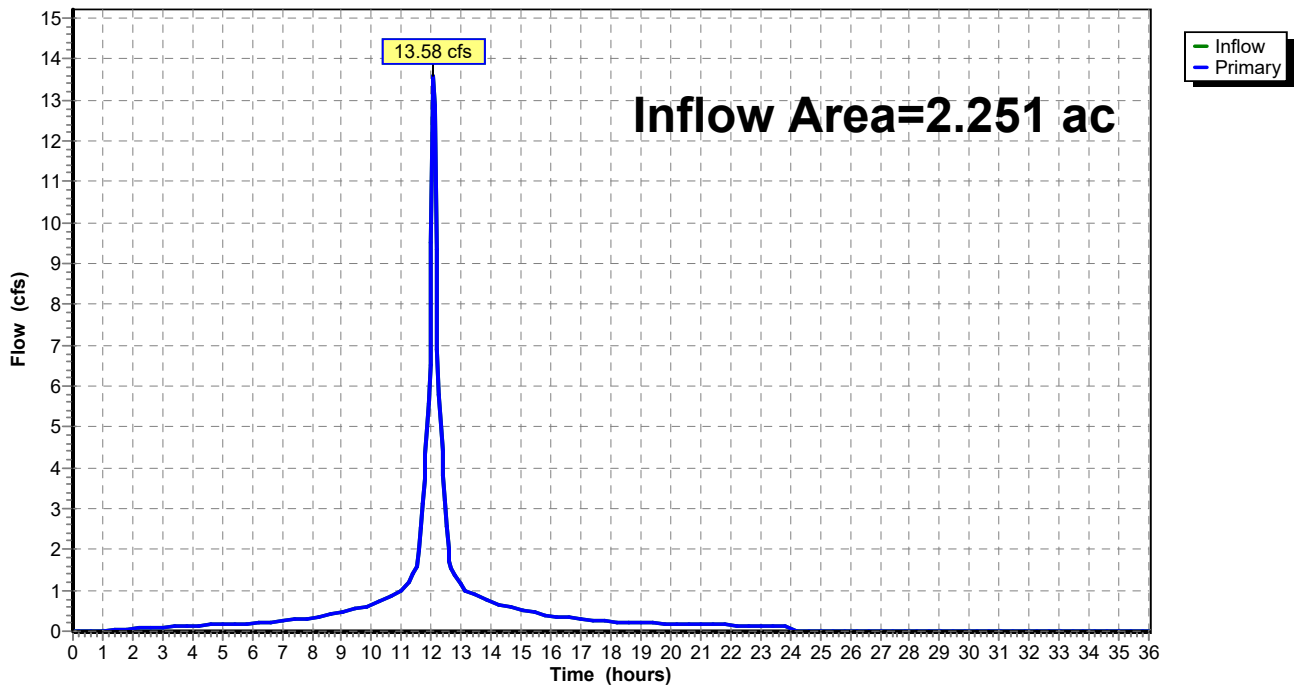
## Summary for Link DP-1: Charles River

Inflow Area = 2.251 ac, 98.26% Impervious, Inflow Depth = 5.87" for 25-year event  
Inflow = 13.58 cfs @ 12.07 hrs, Volume= 1.100 af  
Primary = 13.58 cfs @ 12.07 hrs, Volume= 1.100 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

### Link DP-1: Charles River

Hydrograph



## WP-B2 Existing Drainage Conditions

Type III 24-hr 100-year Rainfall=7.88"

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Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>SubcatchmentEX-1: EX-1</b>	Runoff Area=2,617 sf 100.00% Impervious Runoff Depth=7.64" Tc=5.0 min CN=98 Runoff=0.47 cfs 0.038 af
<b>SubcatchmentEX-2: EX-2</b>	Runoff Area=5,328 sf 100.00% Impervious Runoff Depth=7.64" Tc=5.0 min CN=98 Runoff=0.95 cfs 0.078 af
<b>SubcatchmentEX-3: EX-3</b>	Runoff Area=12,133 sf 90.92% Impervious Runoff Depth=7.52" Tc=5.0 min CN=97 Runoff=2.16 cfs 0.175 af
<b>SubcatchmentEX-4: EX-4</b>	Runoff Area=13,405 sf 95.53% Impervious Runoff Depth=7.64" Tc=5.0 min CN=98 Runoff=2.40 cfs 0.196 af
<b>SubcatchmentEX-5: Existing Bldg</b>	Runoff Area=40,948 sf 100.00% Impervious Runoff Depth=7.64" Tc=5.0 min CN=98 Runoff=7.32 cfs 0.599 af
<b>SubcatchmentEX-6: EX-6</b>	Runoff Area=4,009 sf 100.00% Impervious Runoff Depth=7.64" Tc=5.0 min CN=98 Runoff=0.72 cfs 0.059 af
<b>SubcatchmentEX-7: EX-7</b>	Runoff Area=10,466 sf 100.00% Impervious Runoff Depth=7.64" Tc=5.0 min CN=98 Runoff=1.87 cfs 0.153 af
<b>SubcatchmentEX-8: EX-8</b>	Runoff Area=9,132 sf 100.00% Impervious Runoff Depth=7.64" Tc=5.0 min CN=98 Runoff=1.63 cfs 0.133 af
<b>Link DP-1: Charles River</b>	Inflow=17.52 cfs 1.430 af Primary=17.52 cfs 1.430 af

**Total Runoff Area = 2.251 ac Runoff Volume = 1.430 af Average Runoff Depth = 7.63"**  
**1.74% Pervious = 0.039 ac 98.26% Impervious = 2.212 ac**

# WP-B2 Existing Drainage Conditions

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Type III 24-hr 100-year Rainfall=7.88"

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## Summary for Subcatchment EX-1: EX-1

Runoff = 0.47 cfs @ 12.07 hrs, Volume= 0.038 af, Depth= 7.64"

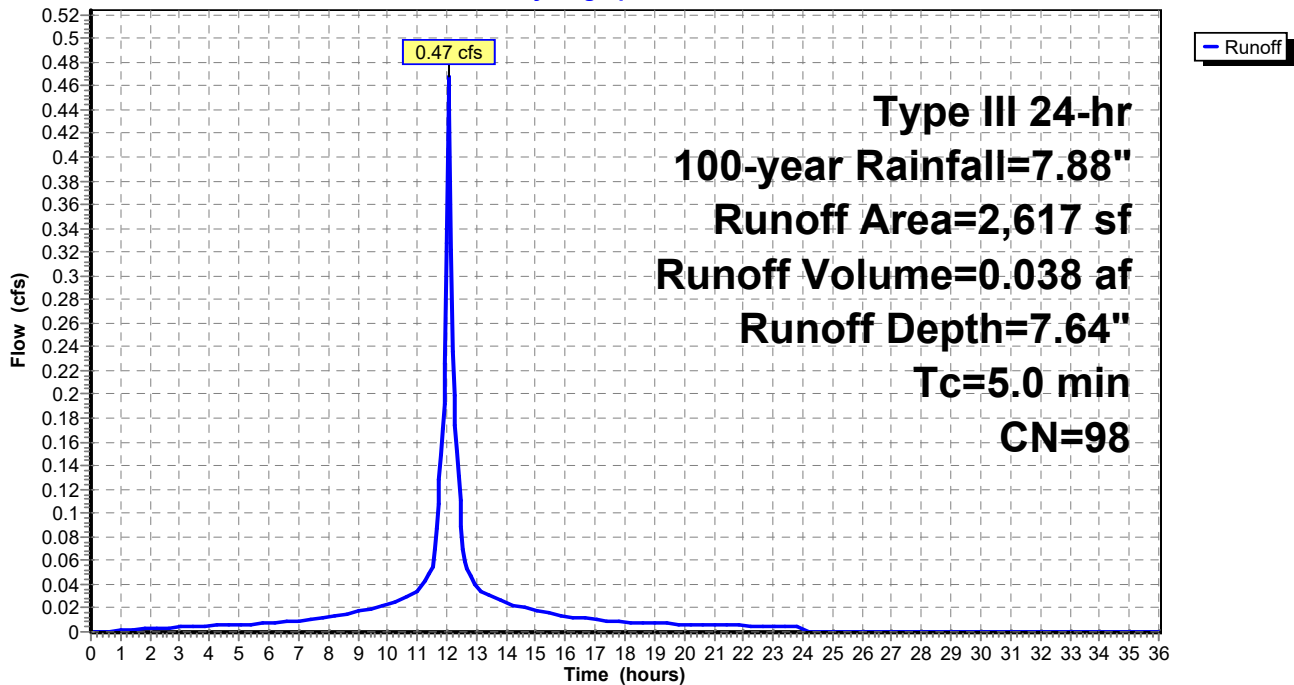
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100-year Rainfall=7.88"

Area (sf)	CN	Description
2,617	98	Unconnected pavement, HSG D
2,617		100.00% Impervious Area
2,617		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-1: EX-1

Hydrograph



# WP-B2 Existing Drainage Conditions

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Type III 24-hr 100-year Rainfall=7.88"

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## Summary for Subcatchment EX-2: EX-2

Runoff = 0.95 cfs @ 12.07 hrs, Volume= 0.078 af, Depth= 7.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100-year Rainfall=7.88"

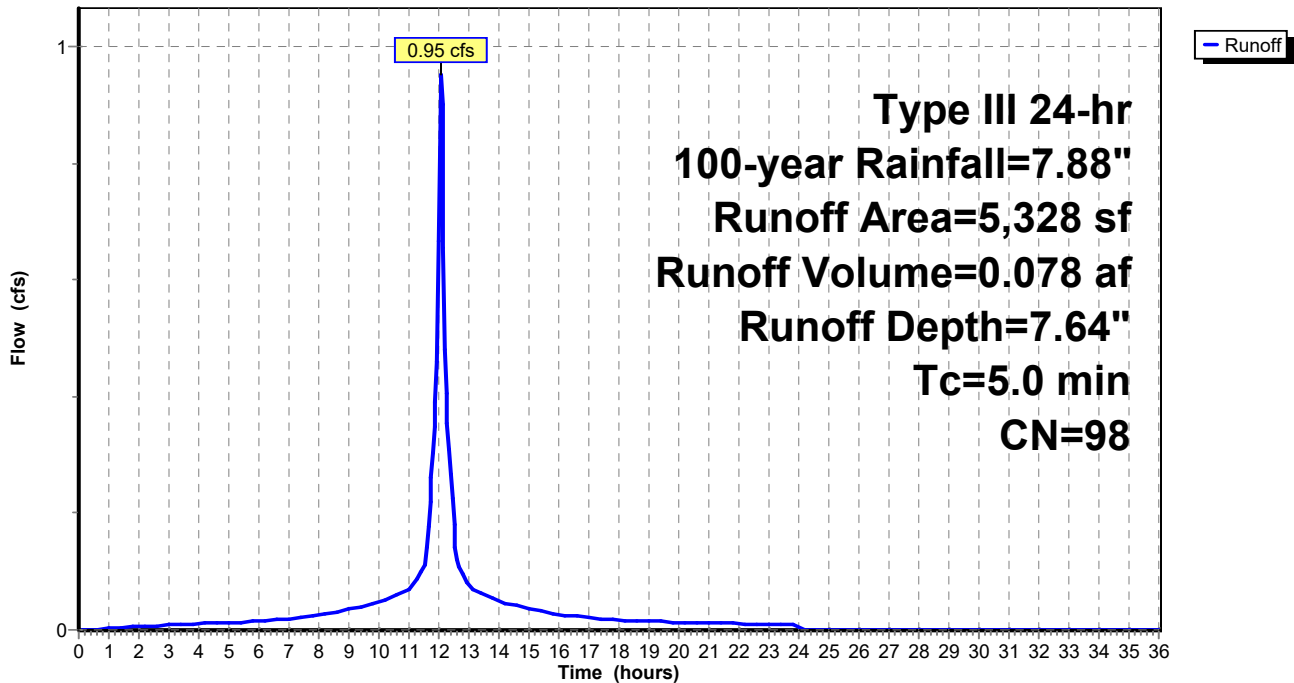
Area (sf)	CN	Description
5,328	98	Unconnected pavement, HSG D
5,328		100.00% Impervious Area
5,328		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-2: EX-2

Hydrograph





**WP-B2 Existing Drainage Conditions**

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Type III 24-hr 100-year Rainfall=7.88"

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**Summary for Subcatchment EX-3: EX-3**

Runoff = 2.16 cfs @ 12.07 hrs, Volume= 0.175 af, Depth= 7.52"

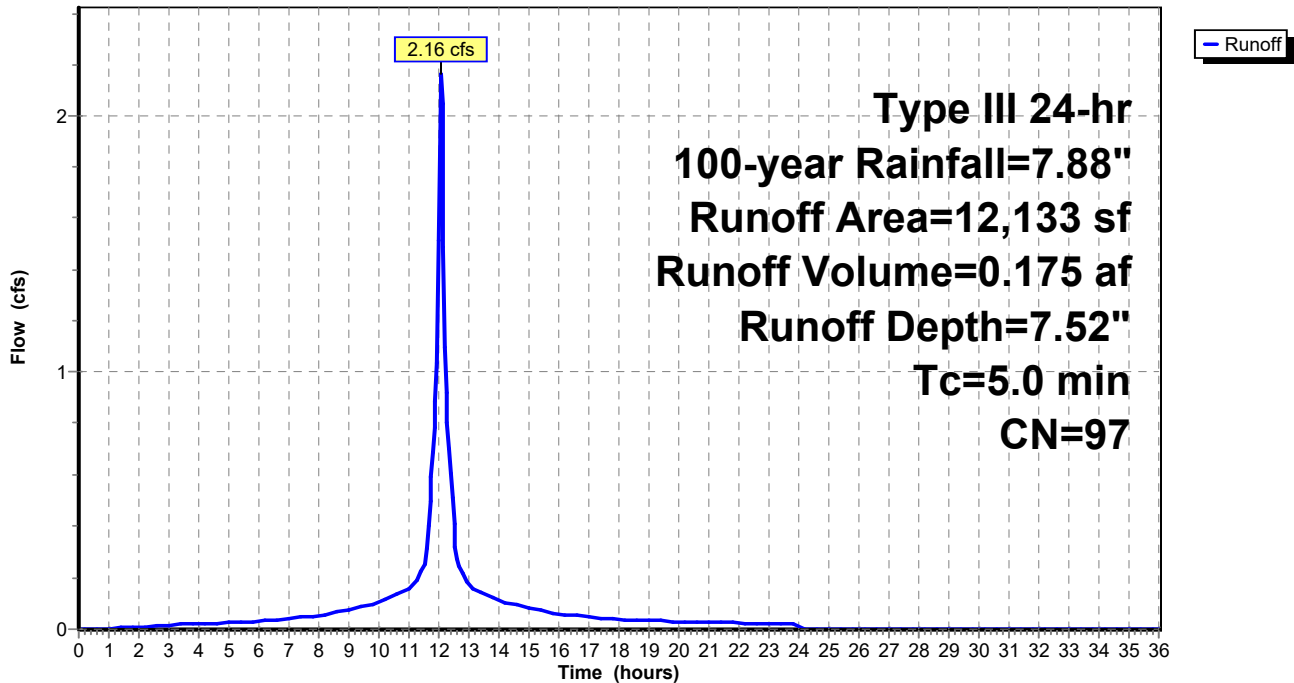
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-year Rainfall=7.88"

Area (sf)	CN	Description
11,031	98	Unconnected pavement, HSG D
1,102	89	<50% Grass cover, Poor, HSG D
12,133	97	Weighted Average
1,102		9.08% Pervious Area
11,031		90.92% Impervious Area
11,031		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

**Subcatchment EX-3: EX-3**

Hydrograph



# WP-B2 Existing Drainage Conditions

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Type III 24-hr 100-year Rainfall=7.88"

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## Summary for Subcatchment EX-4: EX-4

Runoff = 2.40 cfs @ 12.07 hrs, Volume= 0.196 af, Depth= 7.64"

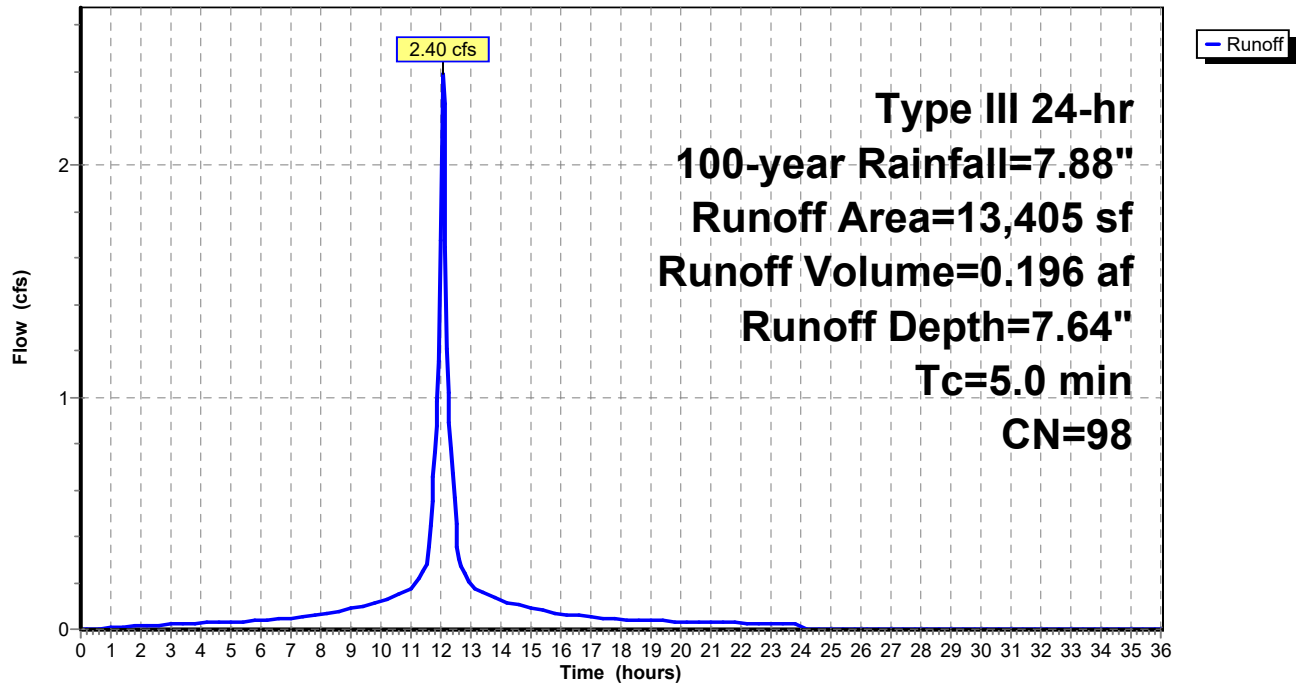
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100-year Rainfall=7.88"

Area (sf)	CN	Description
12,806	98	Unconnected pavement, HSG D
599	89	<50% Grass cover, Poor, HSG D
13,405	98	Weighted Average
599		4.47% Pervious Area
12,806		95.53% Impervious Area
12,806		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-4: EX-4

Hydrograph



# WP-B2 Existing Drainage Conditions

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Type III 24-hr 100-year Rainfall=7.88"

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## Summary for Subcatchment EX-5: Existing Bldg

Runoff = 7.32 cfs @ 12.07 hrs, Volume= 0.599 af, Depth= 7.64"

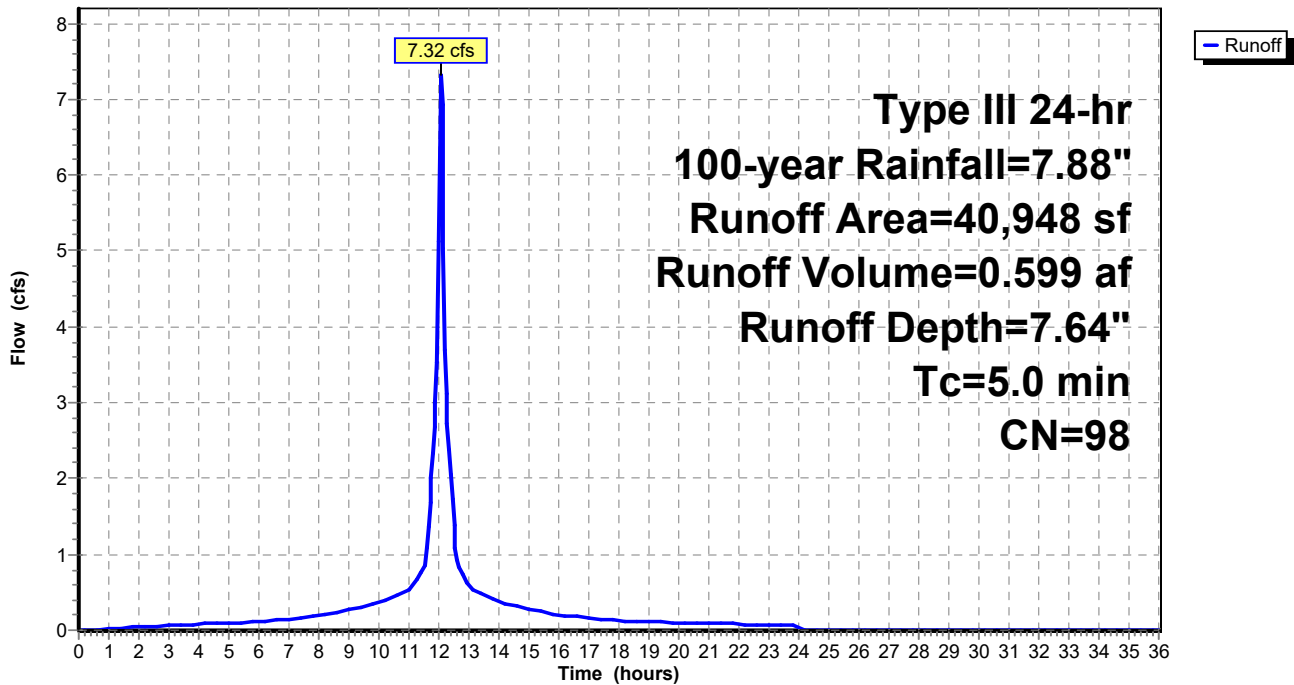
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100-year Rainfall=7.88"

Area (sf)	CN	Description
40,948	98	Roofs, HSG D
40,948		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-5: Existing Bldg

Hydrograph



# WP-B2 Existing Drainage Conditions

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Type III 24-hr 100-year Rainfall=7.88"

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## Summary for Subcatchment EX-6: EX-6

Runoff = 0.72 cfs @ 12.07 hrs, Volume= 0.059 af, Depth= 7.64"

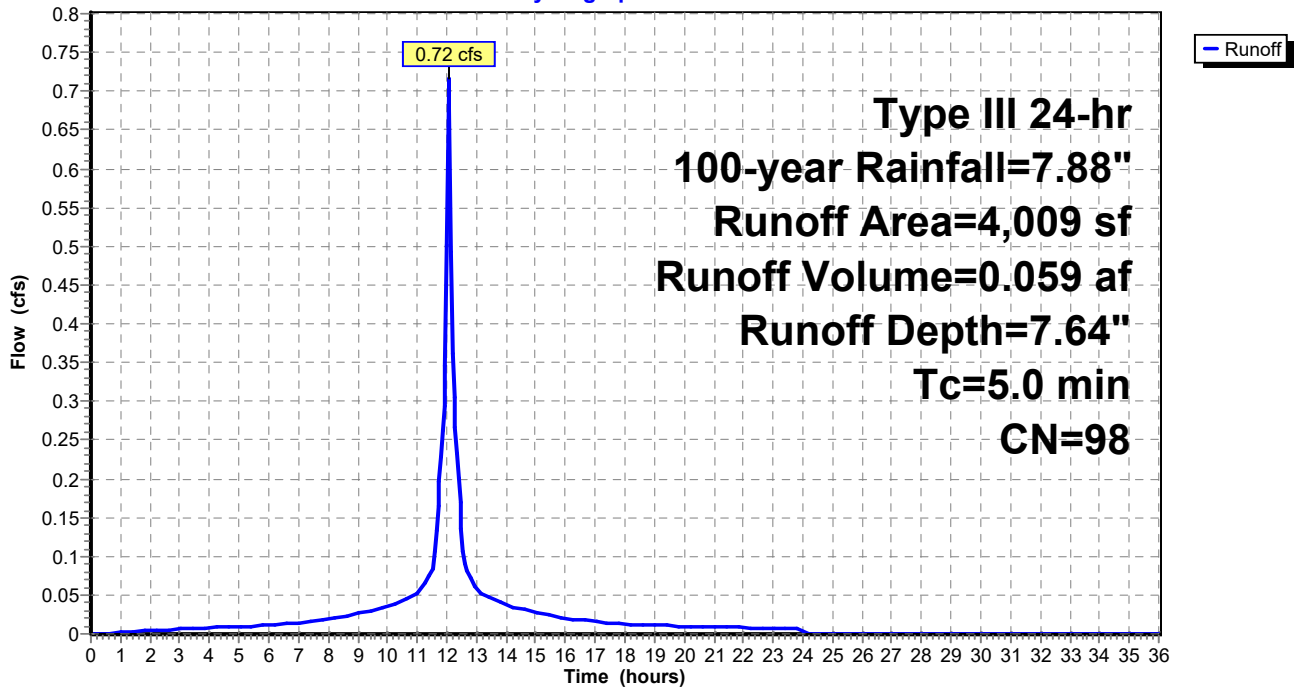
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100-year Rainfall=7.88"

Area (sf)	CN	Description
4,009	98	Unconnected pavement, HSG D
4,009		100.00% Impervious Area
4,009		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-6: EX-6

Hydrograph



# WP-B2 Existing Drainage Conditions

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Type III 24-hr 100-year Rainfall=7.88"

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## Summary for Subcatchment EX-7: EX-7

Runoff = 1.87 cfs @ 12.07 hrs, Volume= 0.153 af, Depth= 7.64"

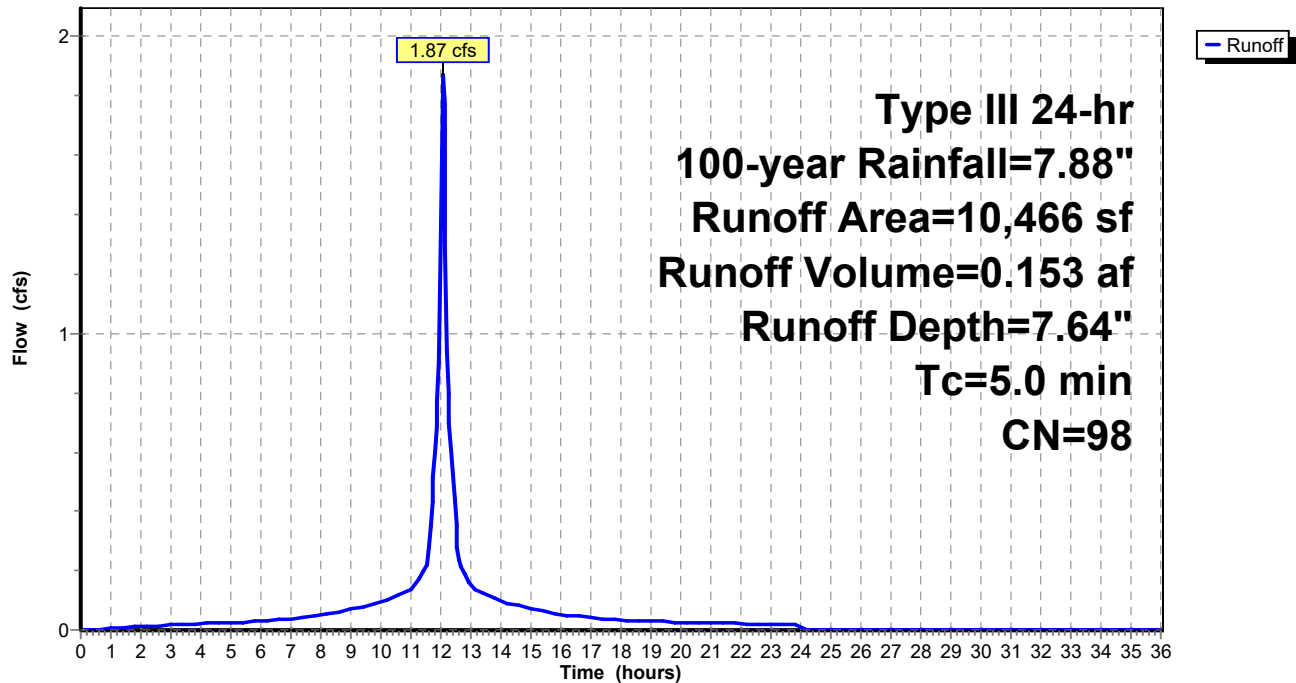
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100-year Rainfall=7.88"

Area (sf)	CN	Description
10,466	98	Unconnected pavement, HSG D
10,466		100.00% Impervious Area
10,466		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-7: EX-7

Hydrograph



# WP-B2 Existing Drainage Conditions

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Type III 24-hr 100-year Rainfall=7.88"

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## Summary for Subcatchment EX-8: EX-8

Runoff = 1.63 cfs @ 12.07 hrs, Volume= 0.133 af, Depth= 7.64"

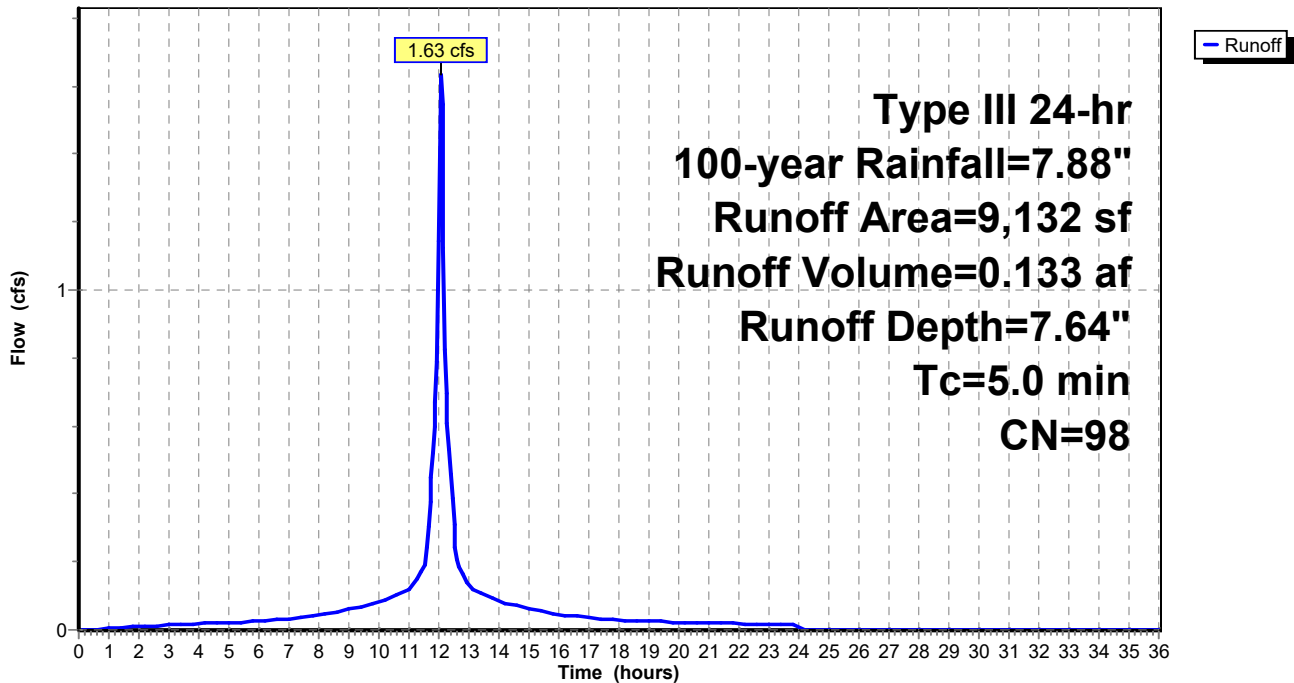
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100-year Rainfall=7.88"

Area (sf)	CN	Description
9,132	98	Unconnected pavement, HSG D
9,132		100.00% Impervious Area
9,132		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment EX-8: EX-8

Hydrograph



# WP-B2 Existing Drainage Conditions

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Type III 24-hr 100-year Rainfall=7.88"

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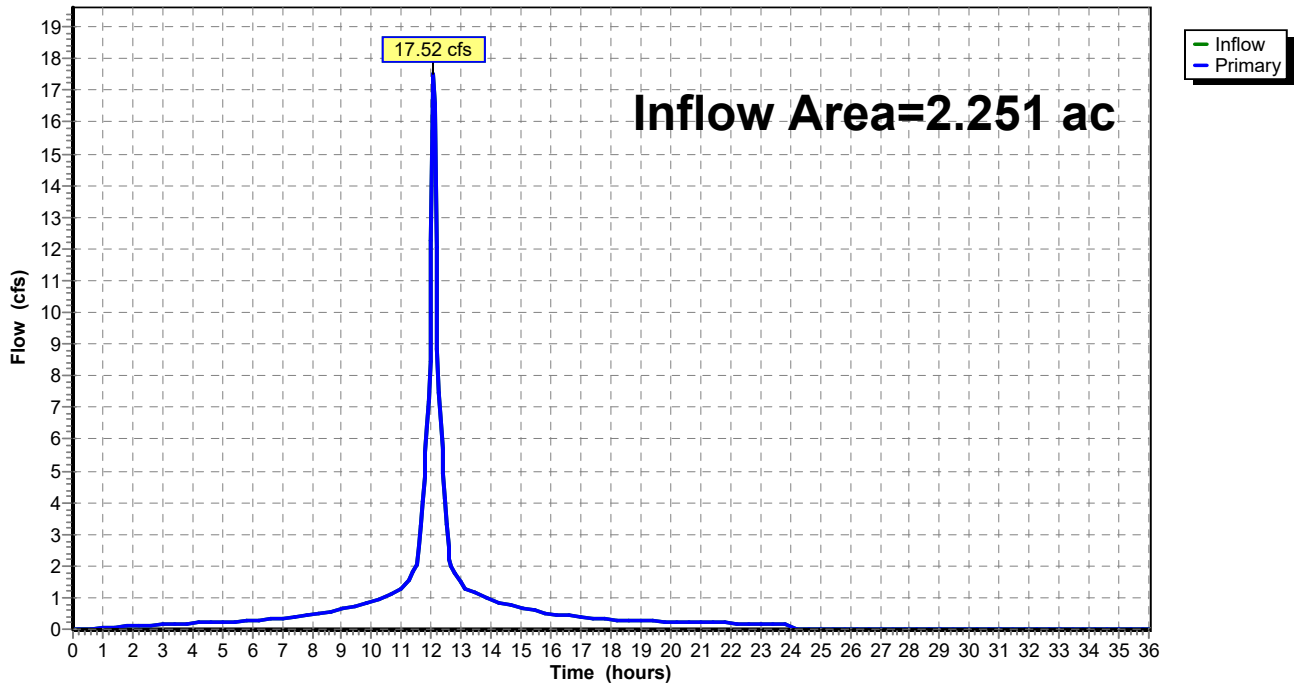
## Summary for Link DP-1: Charles River

Inflow Area = 2.251 ac, 98.26% Impervious, Inflow Depth = 7.63" for 100-year event  
Inflow = 17.52 cfs @ 12.07 hrs, Volume= 1.430 af  
Primary = 17.52 cfs @ 12.07 hrs, Volume= 1.430 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

### Link DP-1: Charles River

Hydrograph

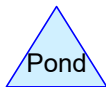
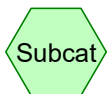
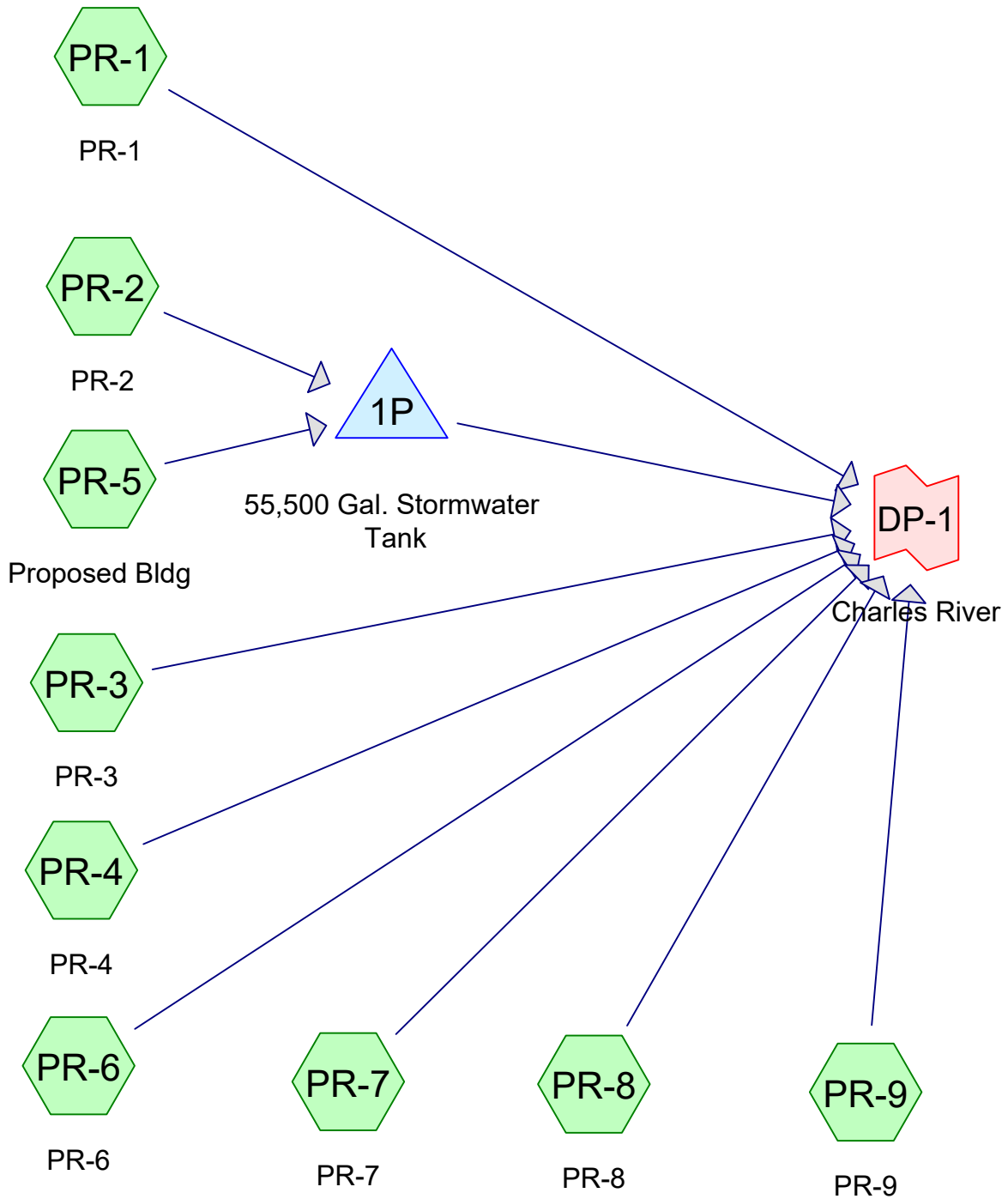






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## HydroCAD Analysis: Proposed Conditions



**Routing Diagram for WP-B2 Proposed Drainage Conditions**  
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## WP-B2 Proposed Drainage Conditions

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### Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.043	80	>75% Grass cover, Good, HSG D (PR-2, PR-4)
0.807	98	Paved roads w/curbs & sewers, HSG D (PR-6, PR-7, PR-8, PR-9)
1.268	98	Roofs, HSG D (PR-5)
0.133	98	Unconnected pavement, HSG D (PR-1, PR-2, PR-3, PR-4)
<b>2.251</b>	<b>98</b>	<b>TOTAL AREA</b>

## WP-B2 Proposed Drainage Conditions

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### Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
2.251	HSG D	PR-1, PR-2, PR-3, PR-4, PR-5, PR-6, PR-7, PR-8, PR-9
0.000	Other	
<b>2.251</b>		<b>TOTAL AREA</b>

## WP-B2 Proposed Drainage Conditions

Type III 24-hr 2-year Rainfall=3.14"

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Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>SubcatchmentPR-1: PR-1</b>	Runoff Area=2,196 sf 100.00% Impervious Runoff Depth=2.91" Tc=5.0 min CN=98 Runoff=0.15 cfs 0.012 af
<b>SubcatchmentPR-2: PR-2</b>	Runoff Area=2,384 sf 47.27% Impervious Runoff Depth=2.03" Tc=5.0 min CN=89 Runoff=0.13 cfs 0.009 af
<b>SubcatchmentPR-3: PR-3</b>	Runoff Area=1,379 sf 100.00% Impervious Runoff Depth=2.91" Tc=5.0 min CN=98 Runoff=0.10 cfs 0.008 af
<b>SubcatchmentPR-4: PR-4</b>	Runoff Area=1,700 sf 64.71% Impervious Runoff Depth=2.29" Tc=5.0 min CN=92 Runoff=0.10 cfs 0.007 af
<b>SubcatchmentPR-5: Proposed Bldg</b>	Runoff Area=55,227 sf 100.00% Impervious Runoff Depth=2.91" Tc=5.0 min CN=98 Runoff=3.89 cfs 0.307 af
<b>SubcatchmentPR-6: PR-6</b>	Runoff Area=9,351 sf 100.00% Impervious Runoff Depth=2.91" Tc=5.0 min CN=98 Runoff=0.66 cfs 0.052 af
<b>SubcatchmentPR-7: PR-7</b>	Runoff Area=3,365 sf 100.00% Impervious Runoff Depth=2.91" Tc=5.0 min CN=98 Runoff=0.24 cfs 0.019 af
<b>SubcatchmentPR-8: PR-8</b>	Runoff Area=13,302 sf 100.00% Impervious Runoff Depth=2.91" Tc=5.0 min CN=98 Runoff=0.94 cfs 0.074 af
<b>SubcatchmentPR-9: PR-9</b>	Runoff Area=9,132 sf 100.00% Impervious Runoff Depth=2.91" Tc=5.0 min CN=98 Runoff=0.64 cfs 0.051 af
<b>Pond 1P: 55,500 Gal. Stormwater Tank</b>	Peak Elev=13.03' Storage=8,129 cf Inflow=4.02 cfs 0.316 af 15.0" Round Culvert n=0.011 L=45.3' S=0.0397 '/' Outflow=1.25 cfs 0.145 af
<b>Link DP-1: Charles River</b>	Inflow=2.83 cfs 0.368 af Primary=2.83 cfs 0.368 af

**Total Runoff Area = 2.251 ac Runoff Volume = 0.539 af Average Runoff Depth = 2.88"**  
**1.89% Pervious = 0.043 ac 98.11% Impervious = 2.208 ac**

# WP-B2 Proposed Drainage Conditions

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Type III 24-hr 2-year Rainfall=3.14"

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## Summary for Subcatchment PR-1: PR-1

Runoff = 0.15 cfs @ 12.07 hrs, Volume= 0.012 af, Depth= 2.91"

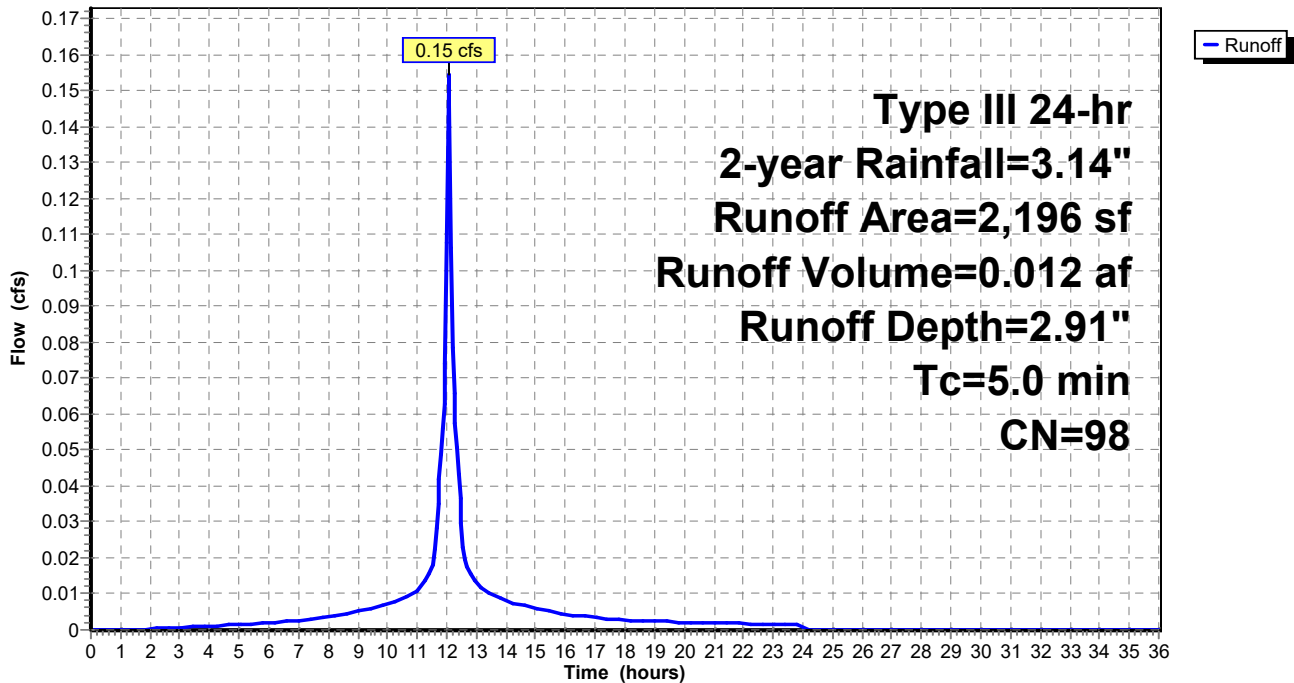
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-year Rainfall=3.14"

Area (sf)	CN	Description
2,196	98	Unconnected pavement, HSG D
2,196		100.00% Impervious Area
2,196		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-1: PR-1

Hydrograph



# WP-B2 Proposed Drainage Conditions

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Type III 24-hr 2-year Rainfall=3.14"

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## Summary for Subcatchment PR-2: PR-2

Runoff = 0.13 cfs @ 12.07 hrs, Volume= 0.009 af, Depth= 2.03"

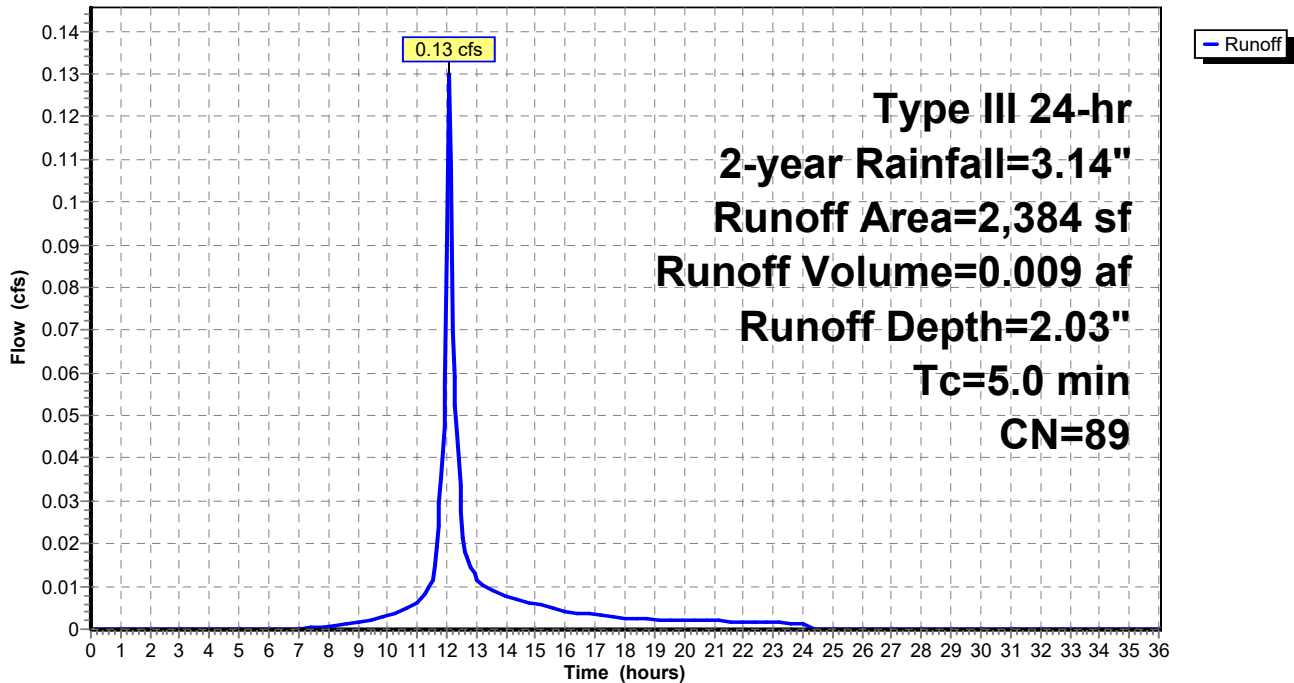
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-year Rainfall=3.14"

Area (sf)	CN	Description
1,127	98	Unconnected pavement, HSG D
1,257	80	>75% Grass cover, Good, HSG D
2,384	89	Weighted Average
1,257		52.73% Pervious Area
1,127		47.27% Impervious Area
1,127		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-2: PR-2

Hydrograph





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Type III 24-hr 2-year Rainfall=3.14"

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## Summary for Subcatchment PR-3: PR-3

Runoff = 0.10 cfs @ 12.07 hrs, Volume= 0.008 af, Depth= 2.91"

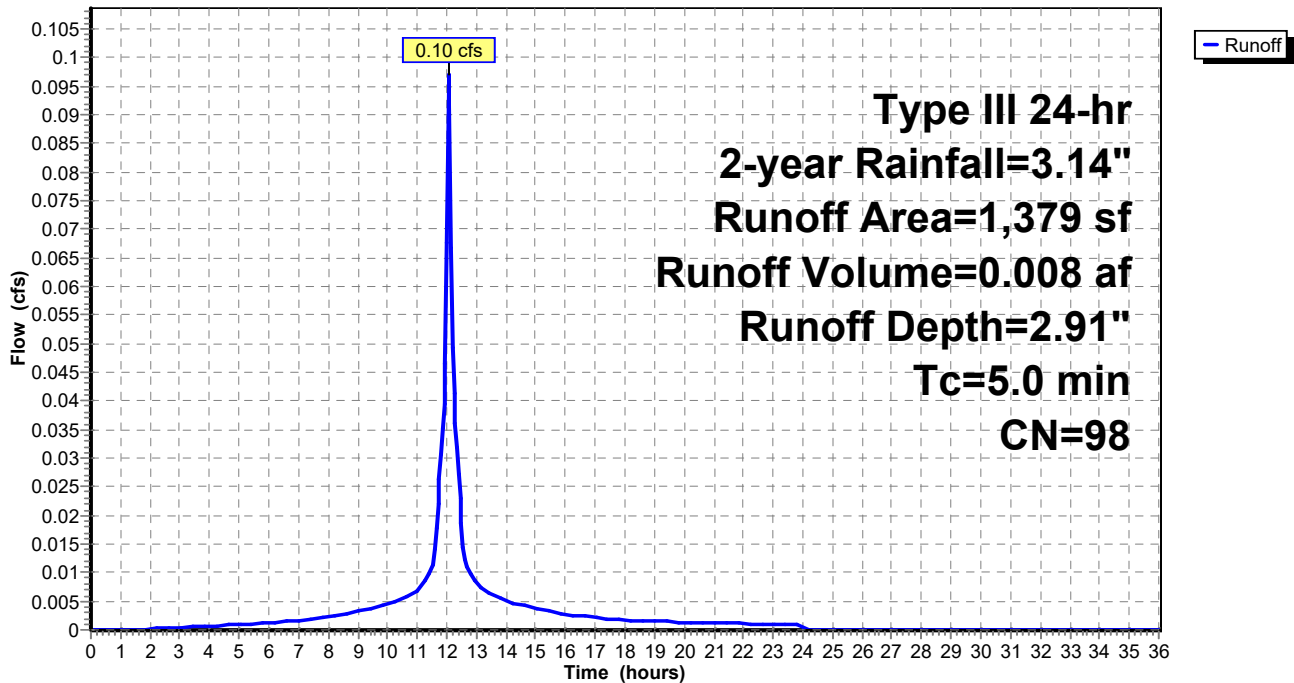
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-year Rainfall=3.14"

Area (sf)	CN	Description
1,379	98	Unconnected pavement, HSG D
1,379		100.00% Impervious Area
1,379		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-3: PR-3

Hydrograph



**WP-B2 Proposed Drainage Conditions**

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Type III 24-hr 2-year Rainfall=3.14"

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**Summary for Subcatchment PR-4: PR-4**

Runoff = 0.10 cfs @ 12.07 hrs, Volume= 0.007 af, Depth= 2.29"

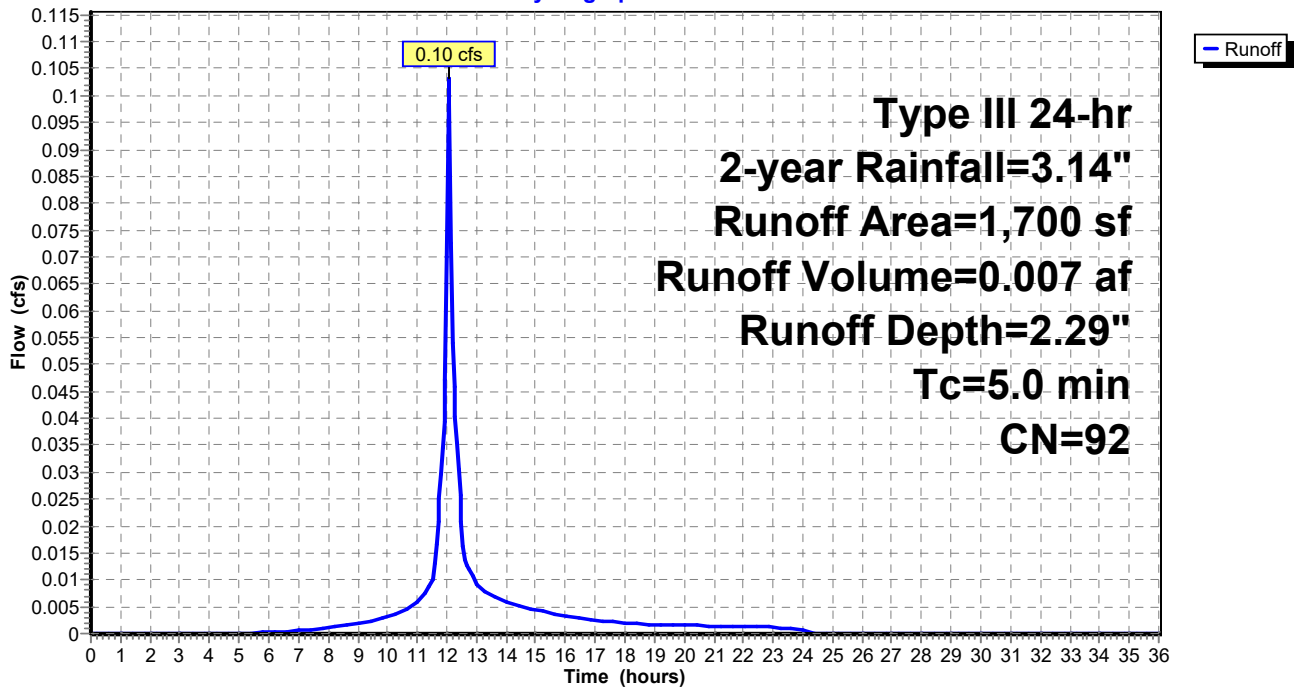
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-year Rainfall=3.14"

Area (sf)	CN	Description
182	98	Unconnected pavement, HSG D
918	98	Unconnected pavement, HSG D
600	80	>75% Grass cover, Good, HSG D
1,700	92	Weighted Average
600		35.29% Pervious Area
1,100		64.71% Impervious Area
1,100		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

**Subcatchment PR-4: PR-4**

Hydrograph



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Type III 24-hr 2-year Rainfall=3.14"

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## Summary for Subcatchment PR-5: Proposed Bldg

Runoff = 3.89 cfs @ 12.07 hrs, Volume= 0.307 af, Depth= 2.91"

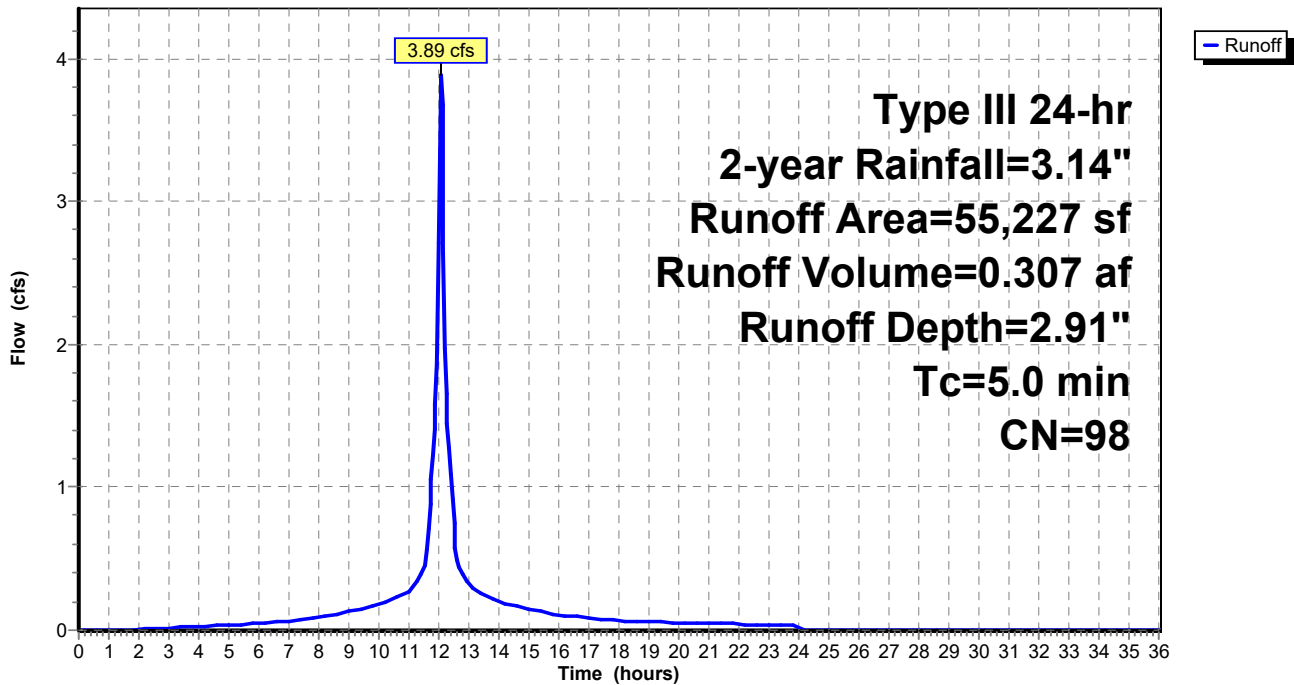
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-year Rainfall=3.14"

Area (sf)	CN	Description
55,227	98	Roofs, HSG D
55,227		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-5: Proposed Bldg

Hydrograph



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Type III 24-hr 2-year Rainfall=3.14"

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## Summary for Subcatchment PR-6: PR-6

Runoff = 0.66 cfs @ 12.07 hrs, Volume= 0.052 af, Depth= 2.91"

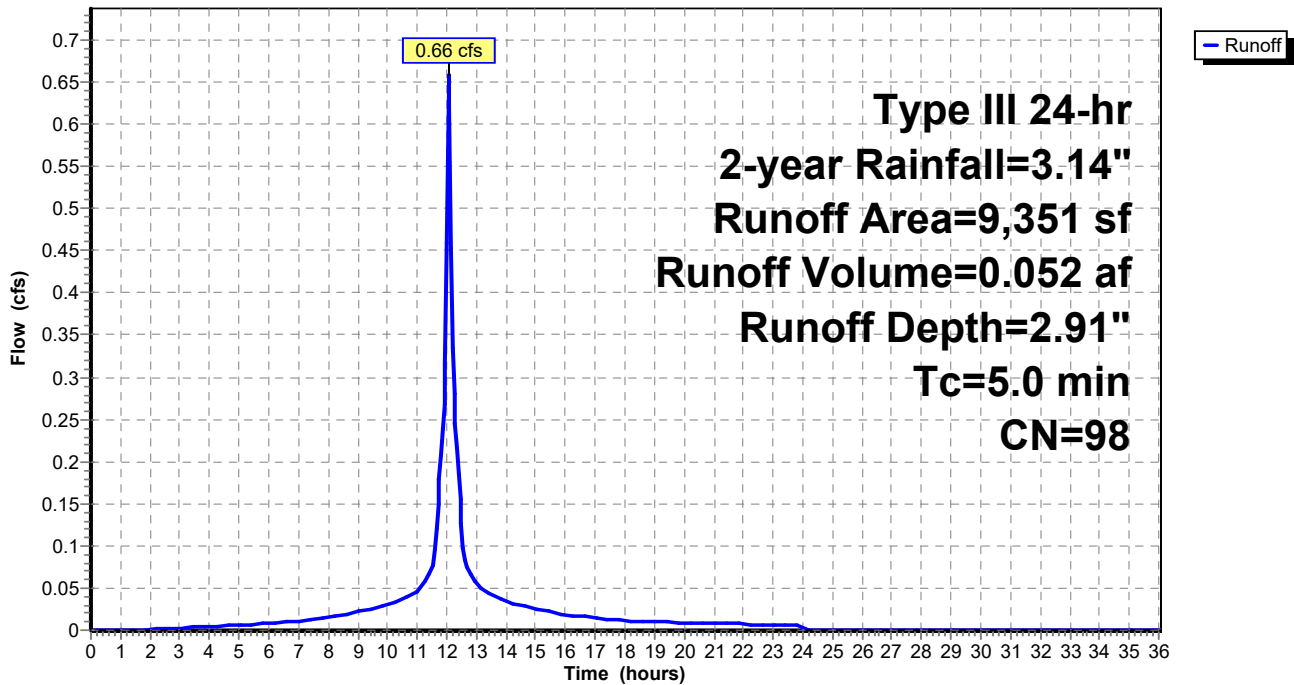
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-year Rainfall=3.14"

Area (sf)	CN	Description
9,351	98	Paved roads w/curbs & sewers, HSG D
9,351		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-6: PR-6

Hydrograph



# WP-B2 Proposed Drainage Conditions

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Type III 24-hr 2-year Rainfall=3.14"

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## Summary for Subcatchment PR-7: PR-7

Runoff = 0.24 cfs @ 12.07 hrs, Volume= 0.019 af, Depth= 2.91"

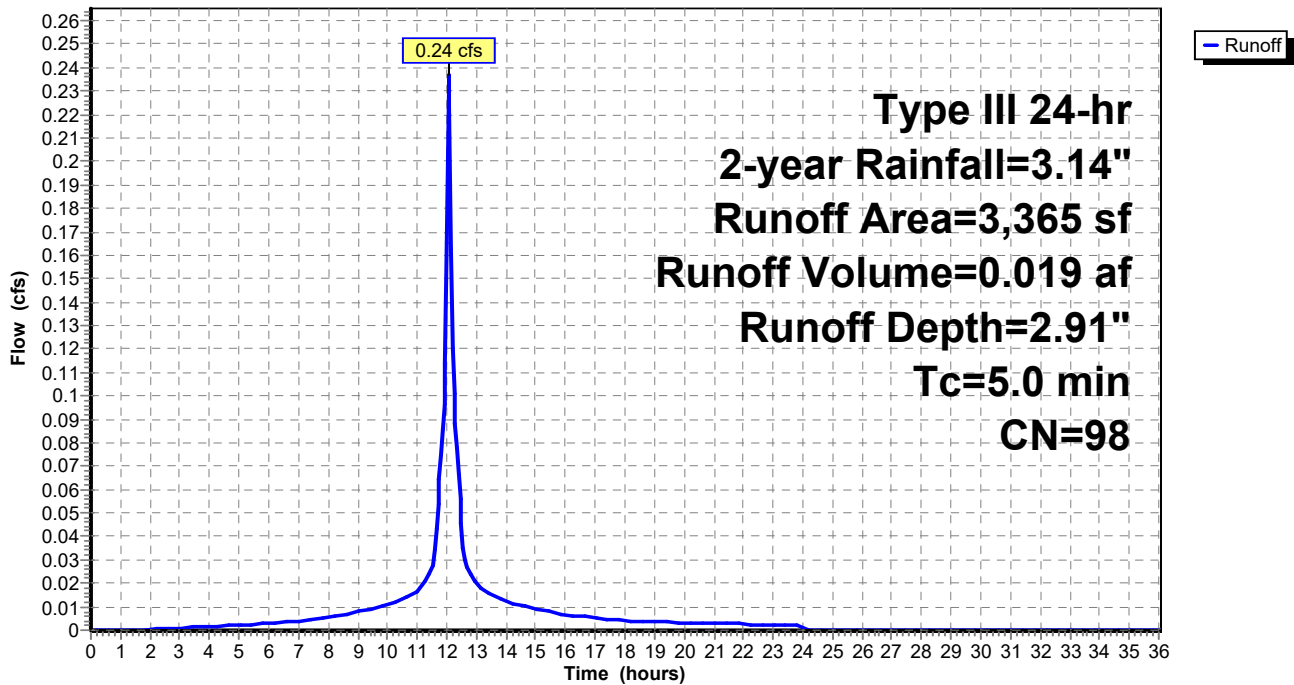
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-year Rainfall=3.14"

Area (sf)	CN	Description
3,365	98	Paved roads w/curbs & sewers, HSG D
3,365		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-7: PR-7

Hydrograph



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Type III 24-hr 2-year Rainfall=3.14"

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## Summary for Subcatchment PR-8: PR-8

Runoff = 0.94 cfs @ 12.07 hrs, Volume= 0.074 af, Depth= 2.91"

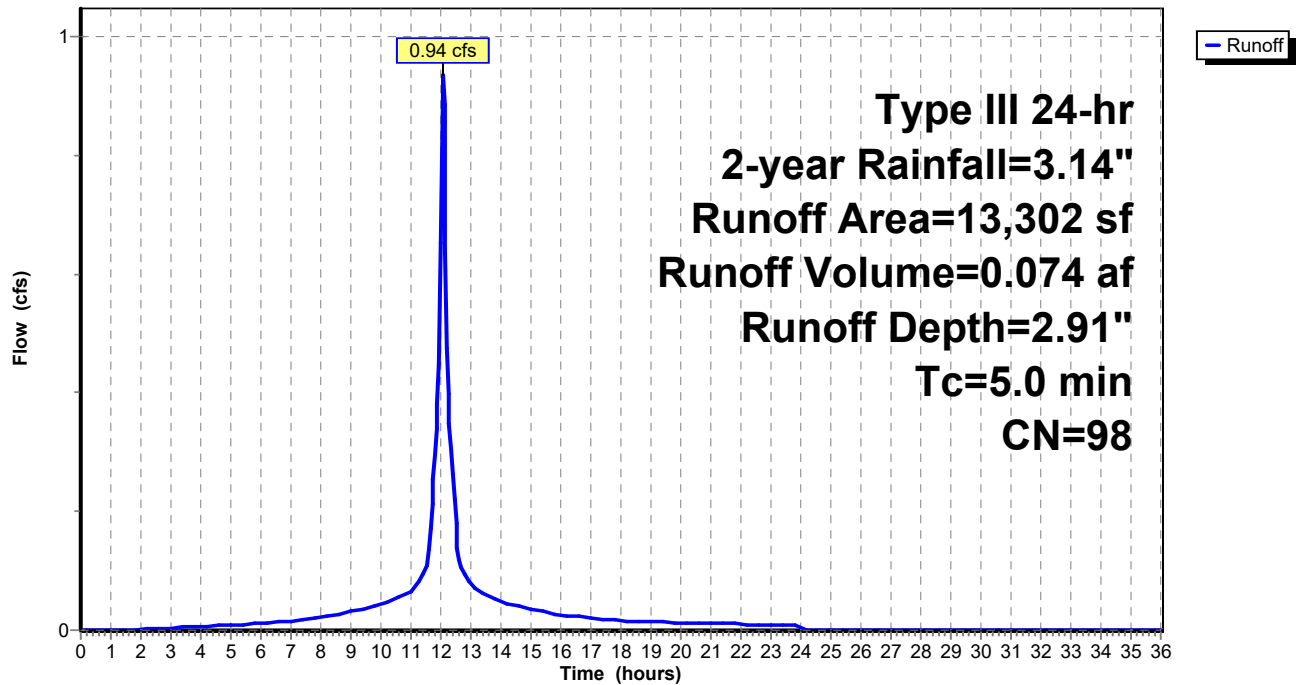
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-year Rainfall=3.14"

Area (sf)	CN	Description
13,302	98	Paved roads w/curbs & sewers, HSG D
13,302		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-8: PR-8

Hydrograph



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## Summary for Subcatchment PR-9: PR-9

Runoff = 0.64 cfs @ 12.07 hrs, Volume= 0.051 af, Depth= 2.91"

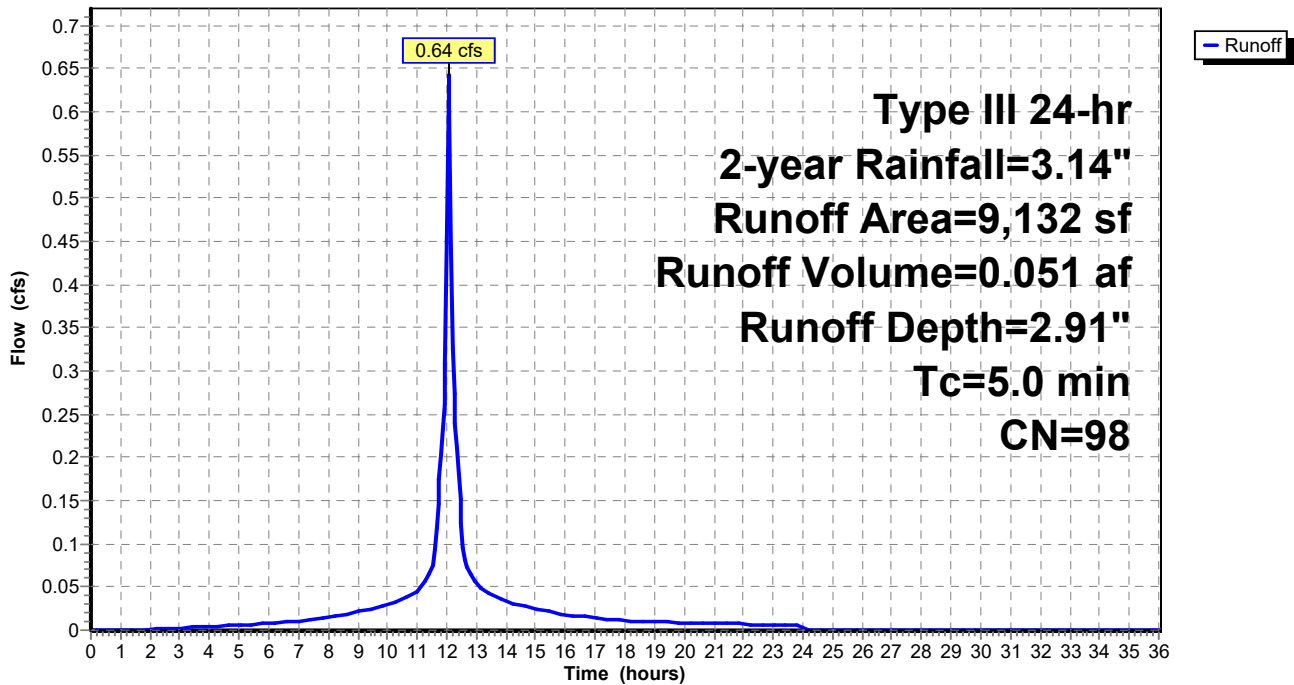
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2-year Rainfall=3.14"

Area (sf)	CN	Description
9,132	98	Paved roads w/curbs & sewers, HSG D
9,132		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-9: PR-9

Hydrograph



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Type III 24-hr 2-year Rainfall=3.14"

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### Summary for Pond 1P: 55,500 Gal. Stormwater Tank

Inflow Area = 1.323 ac, 97.82% Impervious, Inflow Depth = 2.87" for 2-year event  
Inflow = 4.02 cfs @ 12.07 hrs, Volume= 0.316 af  
Outflow = 1.25 cfs @ 12.37 hrs, Volume= 0.145 af, Atten= 69%, Lag= 18.2 min  
Primary = 1.25 cfs @ 12.37 hrs, Volume= 0.145 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Peak Elev= 13.03' @ 12.37 hrs Surf.Area= 1,244 sf Storage= 8,129 cf

Plug-Flow detention time= 291.8 min calculated for 0.145 af (46% of inflow)  
Center-of-Mass det. time= 160.5 min ( 918.0 - 757.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	6.50'	11,196 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.50	1,244	0	0
12.50	1,244	7,464	7,464
15.50	1,244	3,732	11,196

Device	Routing	Invert	Outlet Devices
#1	Primary	12.50'	<b>15.0" Round RCP_Round 15"</b> L= 45.3' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 12.50' / 10.70' S= 0.0397 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

**Primary OutFlow** Max=1.23 cfs @ 12.37 hrs HW=13.03' (Free Discharge)

↑1=RCP\_Round 15" (Inlet Controls 1.23 cfs @ 2.48 fps)



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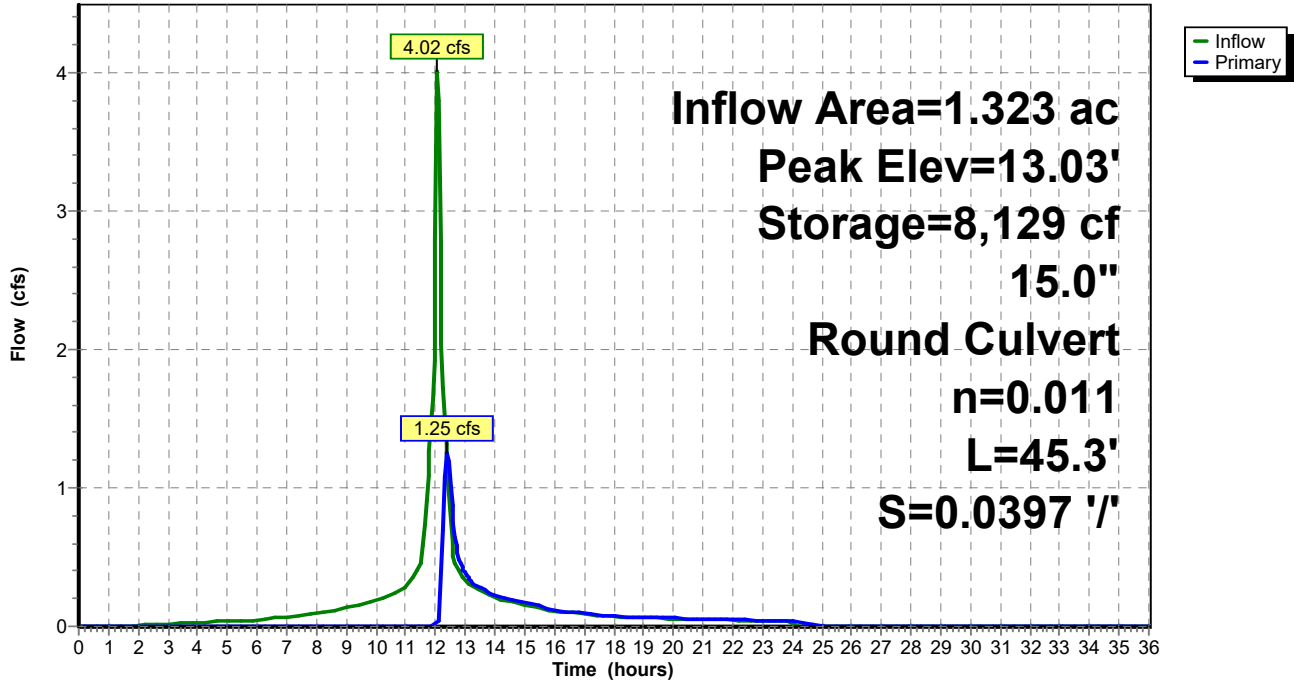
Type III 24-hr 2-year Rainfall=3.14"

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**Pond 1P: 55,500 Gal. Stormwater Tank**

Hydrograph



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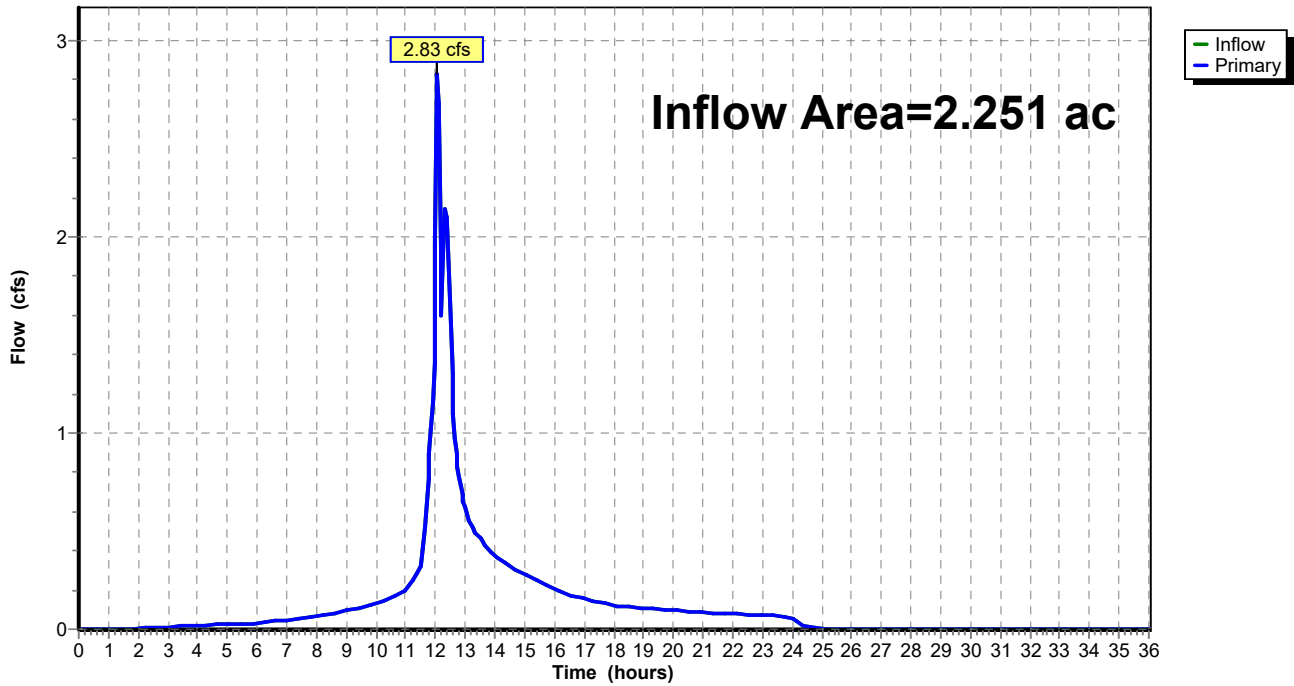
## Summary for Link DP-1: Charles River

Inflow Area = 2.251 ac, 98.11% Impervious, Inflow Depth = 1.96" for 2-year event  
Inflow = 2.83 cfs @ 12.07 hrs, Volume= 0.368 af  
Primary = 2.83 cfs @ 12.07 hrs, Volume= 0.368 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

### Link DP-1: Charles River

Hydrograph



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Type III 24-hr 10-year Rainfall=4.97"

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Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>SubcatchmentPR-1: PR-1</b>	Runoff Area=2,196 sf 100.00% Impervious Runoff Depth=4.73" Tc=5.0 min CN=98 Runoff=0.25 cfs 0.020 af
<b>SubcatchmentPR-2: PR-2</b>	Runoff Area=2,384 sf 47.27% Impervious Runoff Depth=3.74" Tc=5.0 min CN=89 Runoff=0.23 cfs 0.017 af
<b>SubcatchmentPR-3: PR-3</b>	Runoff Area=1,379 sf 100.00% Impervious Runoff Depth=4.73" Tc=5.0 min CN=98 Runoff=0.15 cfs 0.012 af
<b>SubcatchmentPR-4: PR-4</b>	Runoff Area=1,700 sf 64.71% Impervious Runoff Depth=4.06" Tc=5.0 min CN=92 Runoff=0.18 cfs 0.013 af
<b>SubcatchmentPR-5: Proposed Bldg</b>	Runoff Area=55,227 sf 100.00% Impervious Runoff Depth=4.73" Tc=5.0 min CN=98 Runoff=6.20 cfs 0.500 af
<b>SubcatchmentPR-6: PR-6</b>	Runoff Area=9,351 sf 100.00% Impervious Runoff Depth=4.73" Tc=5.0 min CN=98 Runoff=1.05 cfs 0.085 af
<b>SubcatchmentPR-7: PR-7</b>	Runoff Area=3,365 sf 100.00% Impervious Runoff Depth=4.73" Tc=5.0 min CN=98 Runoff=0.38 cfs 0.030 af
<b>SubcatchmentPR-8: PR-8</b>	Runoff Area=13,302 sf 100.00% Impervious Runoff Depth=4.73" Tc=5.0 min CN=98 Runoff=1.49 cfs 0.120 af
<b>SubcatchmentPR-9: PR-9</b>	Runoff Area=9,132 sf 100.00% Impervious Runoff Depth=4.73" Tc=5.0 min CN=98 Runoff=1.03 cfs 0.083 af
<b>Pond 1P: 55,500 Gal. Stormwater Tank</b>	Peak Elev=13.89' Storage=9,189 cf Inflow=6.44 cfs 0.517 af 15.0" Round Culvert n=0.011 L=45.3' S=0.0397 '/' Outflow=5.16 cfs 0.346 af
<b>Link DP-1: Charles River</b>	Inflow=9.32 cfs 0.710 af Primary=9.32 cfs 0.710 af

**Total Runoff Area = 2.251 ac Runoff Volume = 0.881 af Average Runoff Depth = 4.70"**  
**1.89% Pervious = 0.043 ac 98.11% Impervious = 2.208 ac**

# WP-B2 Proposed Drainage Conditions

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Type III 24-hr 10-year Rainfall=4.97"

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## Summary for Subcatchment PR-1: PR-1

Runoff = 0.25 cfs @ 12.07 hrs, Volume= 0.020 af, Depth= 4.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-year Rainfall=4.97"

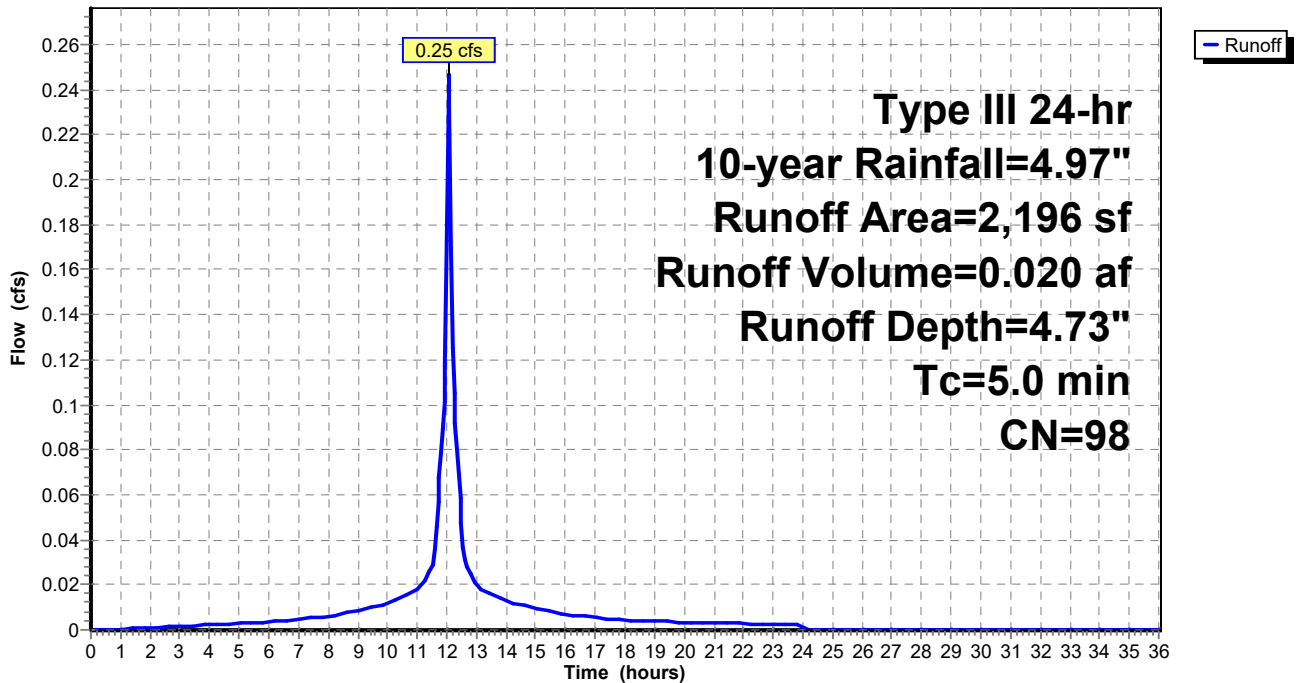
Area (sf)	CN	Description
2,196	98	Unconnected pavement, HSG D
2,196		100.00% Impervious Area
2,196		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-1: PR-1

Hydrograph



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## Summary for Subcatchment PR-2: PR-2

Runoff = 0.23 cfs @ 12.07 hrs, Volume= 0.017 af, Depth= 3.74"

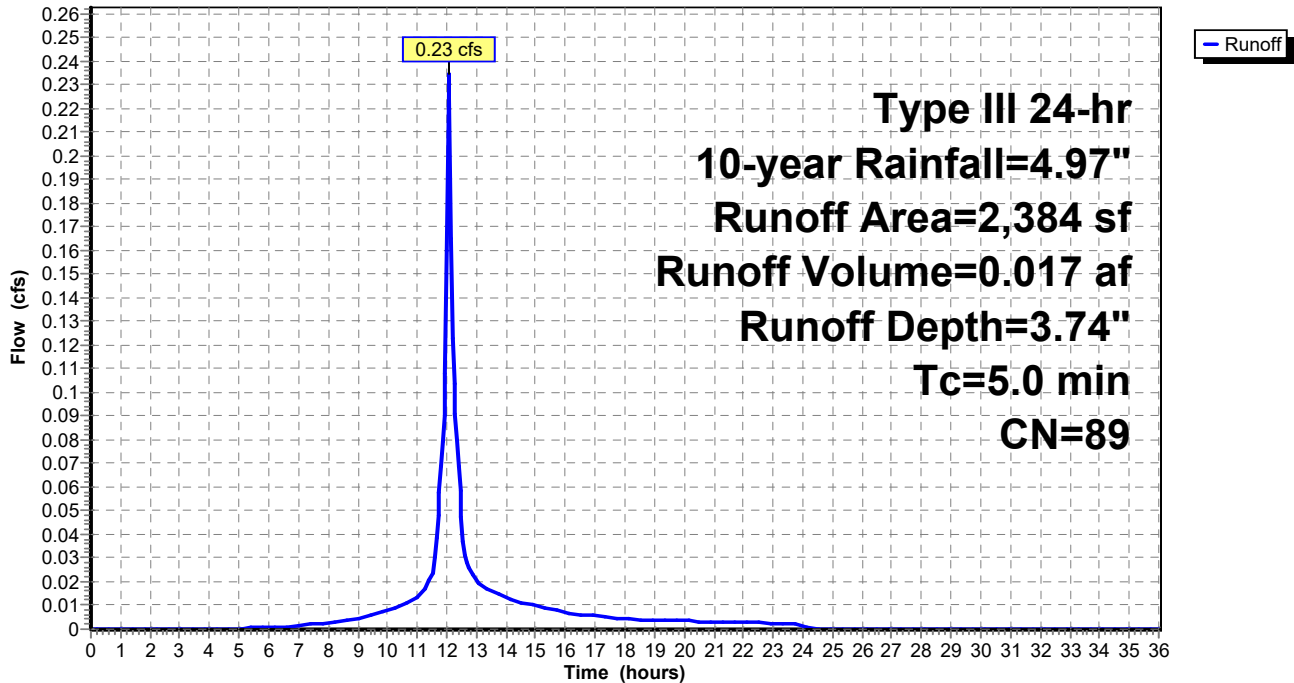
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-year Rainfall=4.97"

Area (sf)	CN	Description
1,127	98	Unconnected pavement, HSG D
1,257	80	>75% Grass cover, Good, HSG D
2,384	89	Weighted Average
1,257		52.73% Pervious Area
1,127		47.27% Impervious Area
1,127		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-2: PR-2

Hydrograph



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## Summary for Subcatchment PR-3: PR-3

Runoff = 0.15 cfs @ 12.07 hrs, Volume= 0.012 af, Depth= 4.73"

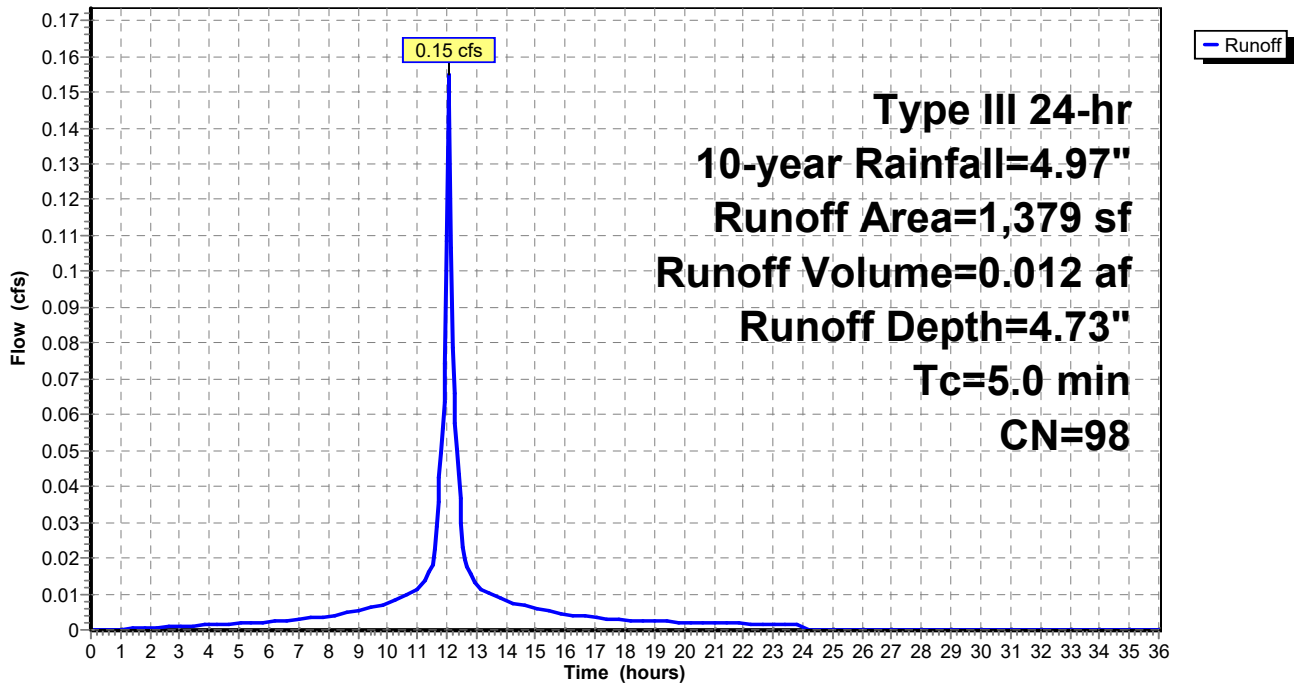
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-year Rainfall=4.97"

Area (sf)	CN	Description
1,379	98	Unconnected pavement, HSG D
1,379		100.00% Impervious Area
1,379		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-3: PR-3

Hydrograph



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**Summary for Subcatchment PR-4: PR-4**

Runoff = 0.18 cfs @ 12.07 hrs, Volume= 0.013 af, Depth= 4.06"

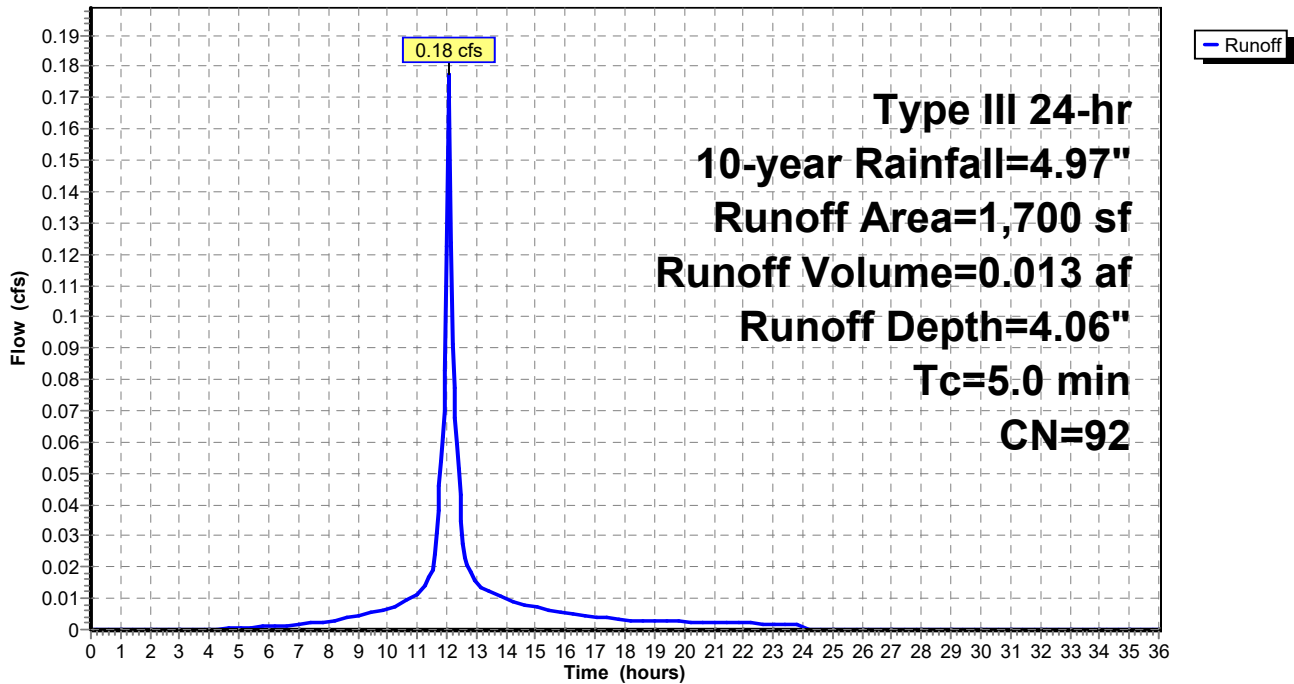
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-year Rainfall=4.97"

Area (sf)	CN	Description
182	98	Unconnected pavement, HSG D
918	98	Unconnected pavement, HSG D
600	80	>75% Grass cover, Good, HSG D
1,700	92	Weighted Average
600		35.29% Pervious Area
1,100		64.71% Impervious Area
1,100		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

**Subcatchment PR-4: PR-4**

Hydrograph



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Type III 24-hr 10-year Rainfall=4.97"

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## Summary for Subcatchment PR-5: Proposed Bldg

Runoff = 6.20 cfs @ 12.07 hrs, Volume= 0.500 af, Depth= 4.73"

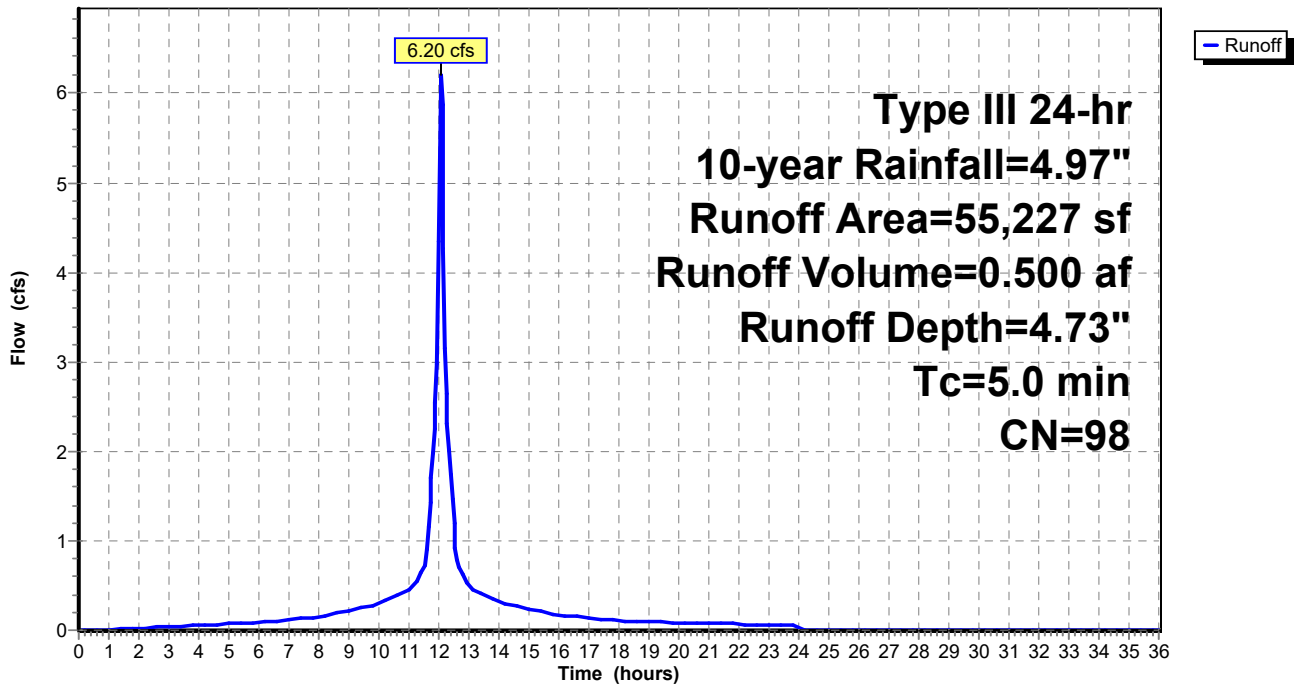
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-year Rainfall=4.97"

Area (sf)	CN	Description
55,227	98	Roofs, HSG D
55,227		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-5: Proposed Bldg

Hydrograph





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Type III 24-hr 10-year Rainfall=4.97"

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## Summary for Subcatchment PR-6: PR-6

Runoff = 1.05 cfs @ 12.07 hrs, Volume= 0.085 af, Depth= 4.73"

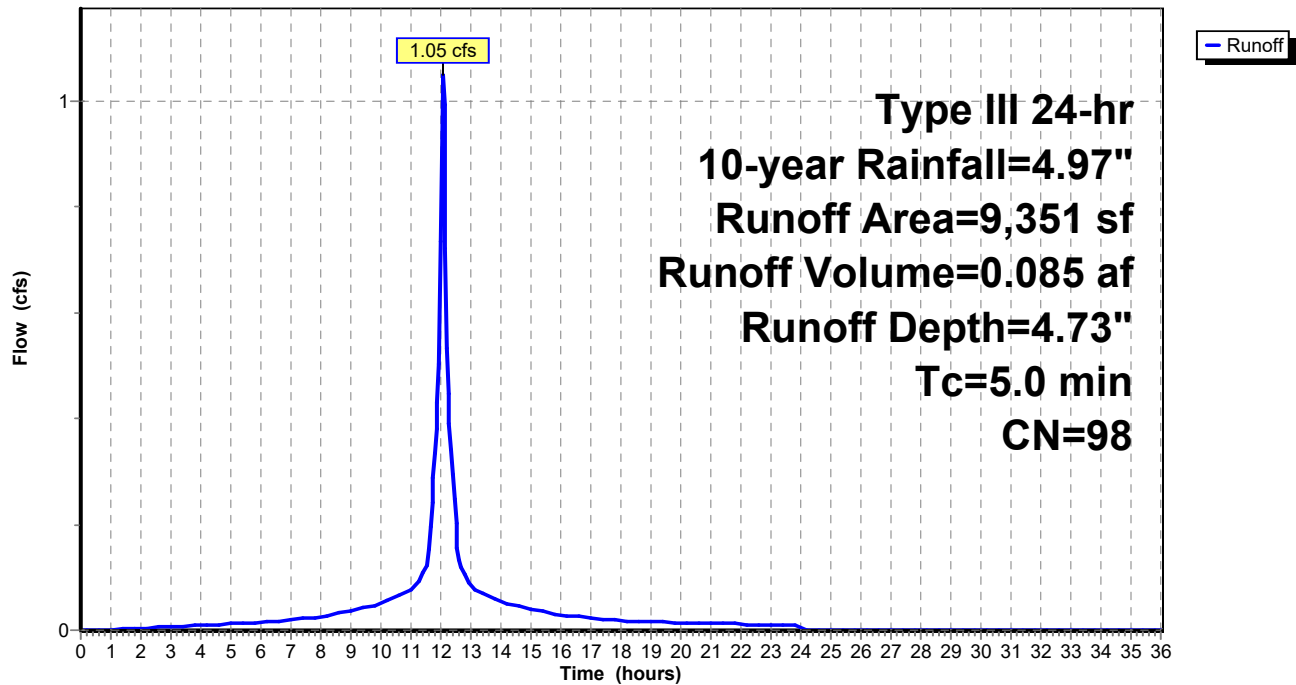
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-year Rainfall=4.97"

Area (sf)	CN	Description
9,351	98	Paved roads w/curbs & sewers, HSG D
9,351		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-6: PR-6

Hydrograph



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## Summary for Subcatchment PR-7: PR-7

Runoff = 0.38 cfs @ 12.07 hrs, Volume= 0.030 af, Depth= 4.73"

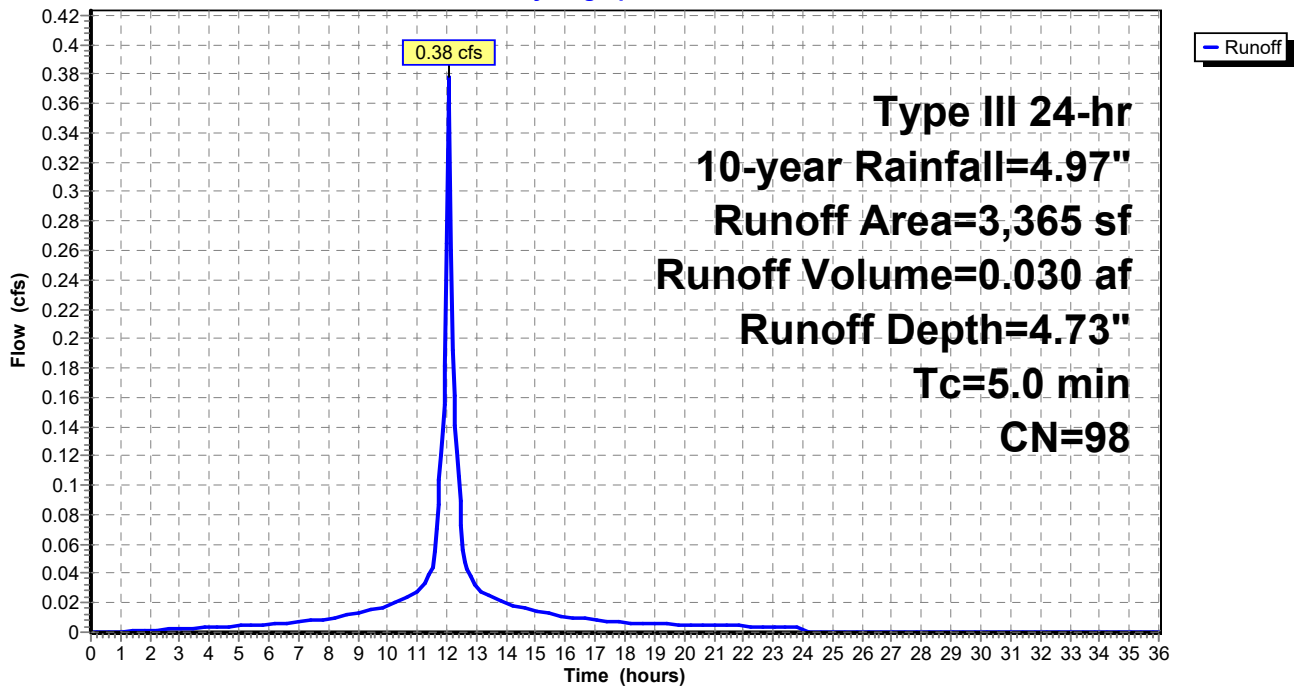
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-year Rainfall=4.97"

Area (sf)	CN	Description
3,365	98	Paved roads w/curbs & sewers, HSG D
3,365		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-7: PR-7

Hydrograph



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## Summary for Subcatchment PR-8: PR-8

Runoff = 1.49 cfs @ 12.07 hrs, Volume= 0.120 af, Depth= 4.73"

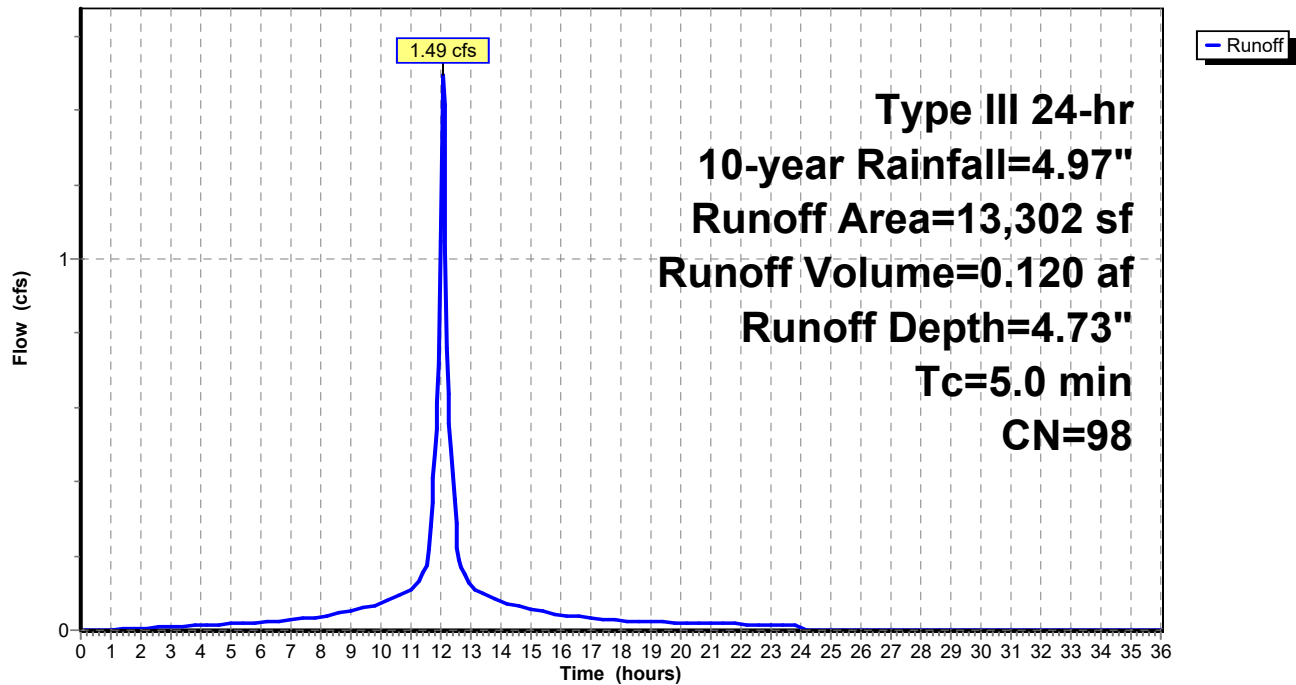
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-year Rainfall=4.97"

Area (sf)	CN	Description
13,302	98	Paved roads w/curbs & sewers, HSG D
13,302		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-8: PR-8

Hydrograph



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## Summary for Subcatchment PR-9: PR-9

Runoff = 1.03 cfs @ 12.07 hrs, Volume= 0.083 af, Depth= 4.73"

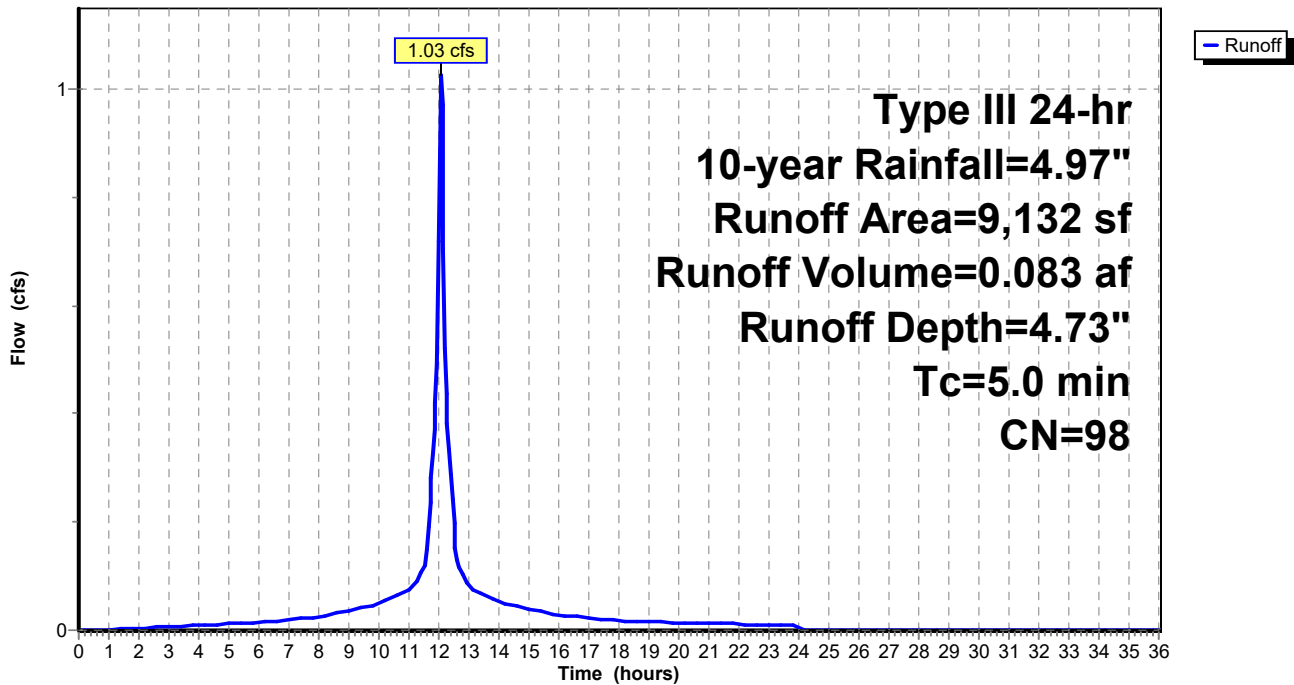
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-year Rainfall=4.97"

Area (sf)	CN	Description
9,132	98	Paved roads w/curbs & sewers, HSG D
9,132		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-9: PR-9

Hydrograph



**WP-B2 Proposed Drainage Conditions**

Type III 24-hr 10-year Rainfall=4.97"

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**Summary for Pond 1P: 55,500 Gal. Stormwater Tank**

Inflow Area = 1.323 ac, 97.82% Impervious, Inflow Depth = 4.69" for 10-year event  
 Inflow = 6.44 cfs @ 12.07 hrs, Volume= 0.517 af  
 Outflow = 5.16 cfs @ 12.13 hrs, Volume= 0.346 af, Atten= 20%, Lag= 3.8 min  
 Primary = 5.16 cfs @ 12.13 hrs, Volume= 0.346 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
 Peak Elev= 13.89' @ 12.13 hrs Surf.Area= 1,244 sf Storage= 9,189 cf

Plug-Flow detention time= 201.6 min calculated for 0.345 af (67% of inflow)  
 Center-of-Mass det. time= 103.1 min ( 851.8 - 748.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	6.50'	11,196 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.50	1,244	0	0
12.50	1,244	7,464	7,464
15.50	1,244	3,732	11,196

Device	Routing	Invert	Outlet Devices
#1	Primary	12.50'	<b>15.0" Round RCP_Round 15"</b> L= 45.3' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 12.50' / 10.70' S= 0.0397 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

**Primary OutFlow** Max=5.09 cfs @ 12.13 hrs HW=13.87' (Free Discharge)

↑1=RCP\_Round 15" (Inlet Controls 5.09 cfs @ 4.15 fps)

# WP-B2 Proposed Drainage Conditions

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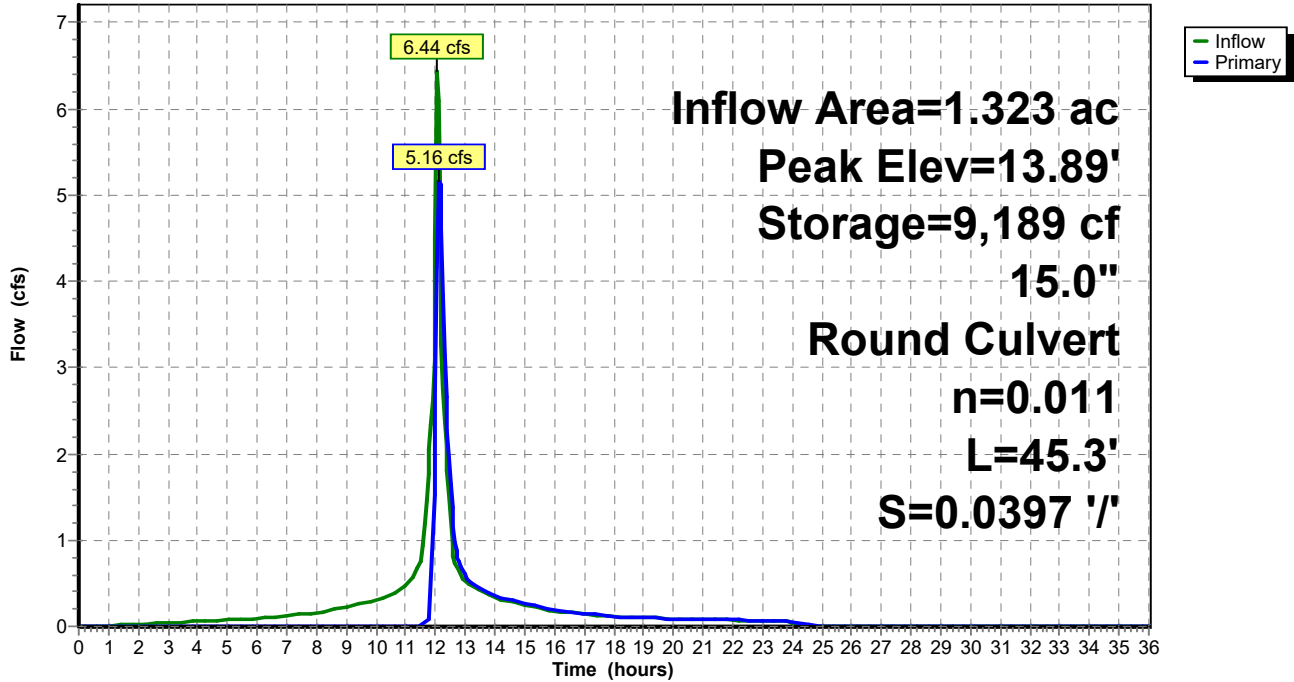
Type III 24-hr 10-year Rainfall=4.97"

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## Pond 1P: 55,500 Gal. Stormwater Tank

Hydrograph



# WP-B2 Proposed Drainage Conditions

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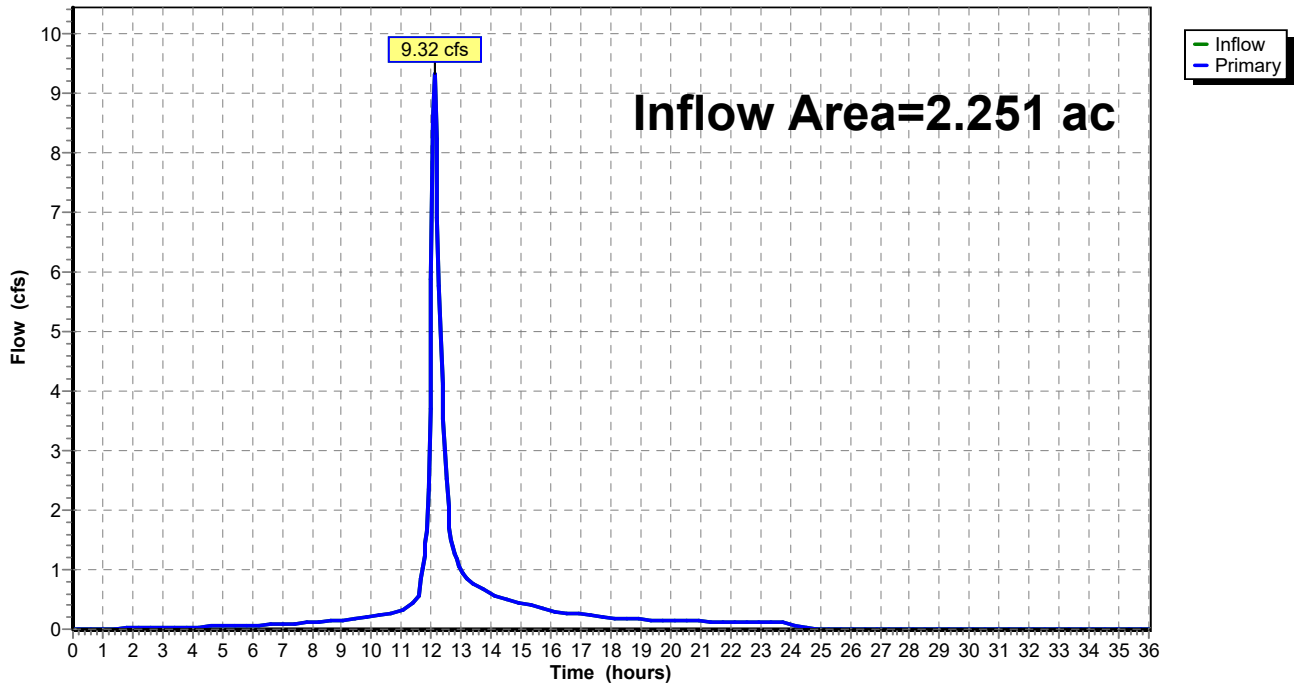
## Summary for Link DP-1: Charles River

Inflow Area = 2.251 ac, 98.11% Impervious, Inflow Depth = 3.78" for 10-year event  
Inflow = 9.32 cfs @ 12.10 hrs, Volume= 0.710 af  
Primary = 9.32 cfs @ 12.10 hrs, Volume= 0.710 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

### Link DP-1: Charles River

Hydrograph



## WP-B2 Proposed Drainage Conditions

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Type III 24-hr 25-year Rainfall=6.12"

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Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>SubcatchmentPR-1: PR-1</b>	Runoff Area=2,196 sf 100.00% Impervious Runoff Depth=5.88" Tc=5.0 min CN=98 Runoff=0.30 cfs 0.025 af
<b>SubcatchmentPR-2: PR-2</b>	Runoff Area=2,384 sf 47.27% Impervious Runoff Depth=4.85" Tc=5.0 min CN=89 Runoff=0.30 cfs 0.022 af
<b>SubcatchmentPR-3: PR-3</b>	Runoff Area=1,379 sf 100.00% Impervious Runoff Depth=5.88" Tc=5.0 min CN=98 Runoff=0.19 cfs 0.016 af
<b>SubcatchmentPR-4: PR-4</b>	Runoff Area=1,700 sf 64.71% Impervious Runoff Depth=5.19" Tc=5.0 min CN=92 Runoff=0.22 cfs 0.017 af
<b>SubcatchmentPR-5: Proposed Bldg</b>	Runoff Area=55,227 sf 100.00% Impervious Runoff Depth=5.88" Tc=5.0 min CN=98 Runoff=7.65 cfs 0.621 af
<b>SubcatchmentPR-6: PR-6</b>	Runoff Area=9,351 sf 100.00% Impervious Runoff Depth=5.88" Tc=5.0 min CN=98 Runoff=1.30 cfs 0.105 af
<b>SubcatchmentPR-7: PR-7</b>	Runoff Area=3,365 sf 100.00% Impervious Runoff Depth=5.88" Tc=5.0 min CN=98 Runoff=0.47 cfs 0.038 af
<b>SubcatchmentPR-8: PR-8</b>	Runoff Area=13,302 sf 100.00% Impervious Runoff Depth=5.88" Tc=5.0 min CN=98 Runoff=1.84 cfs 0.150 af
<b>SubcatchmentPR-9: PR-9</b>	Runoff Area=9,132 sf 100.00% Impervious Runoff Depth=5.88" Tc=5.0 min CN=98 Runoff=1.27 cfs 0.103 af
<b>Pond 1P: 55,500 Gal. Stormwater Tank</b>	Peak Elev=14.24' Storage=9,628 cf Inflow=7.95 cfs 0.644 af 15.0" Round Culvert n=0.011 L=45.3' S=0.0397 '/' Outflow=6.24 cfs 0.472 af
<b>Link DP-1: Charles River</b>	Inflow=11.38 cfs 0.925 af Primary=11.38 cfs 0.925 af

**Total Runoff Area = 2.251 ac Runoff Volume = 1.096 af Average Runoff Depth = 5.84"**  
**1.89% Pervious = 0.043 ac 98.11% Impervious = 2.208 ac**



# WP-B2 Proposed Drainage Conditions

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Type III 24-hr 25-year Rainfall=6.12"

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## Summary for Subcatchment PR-1: PR-1

Runoff = 0.30 cfs @ 12.07 hrs, Volume= 0.025 af, Depth= 5.88"

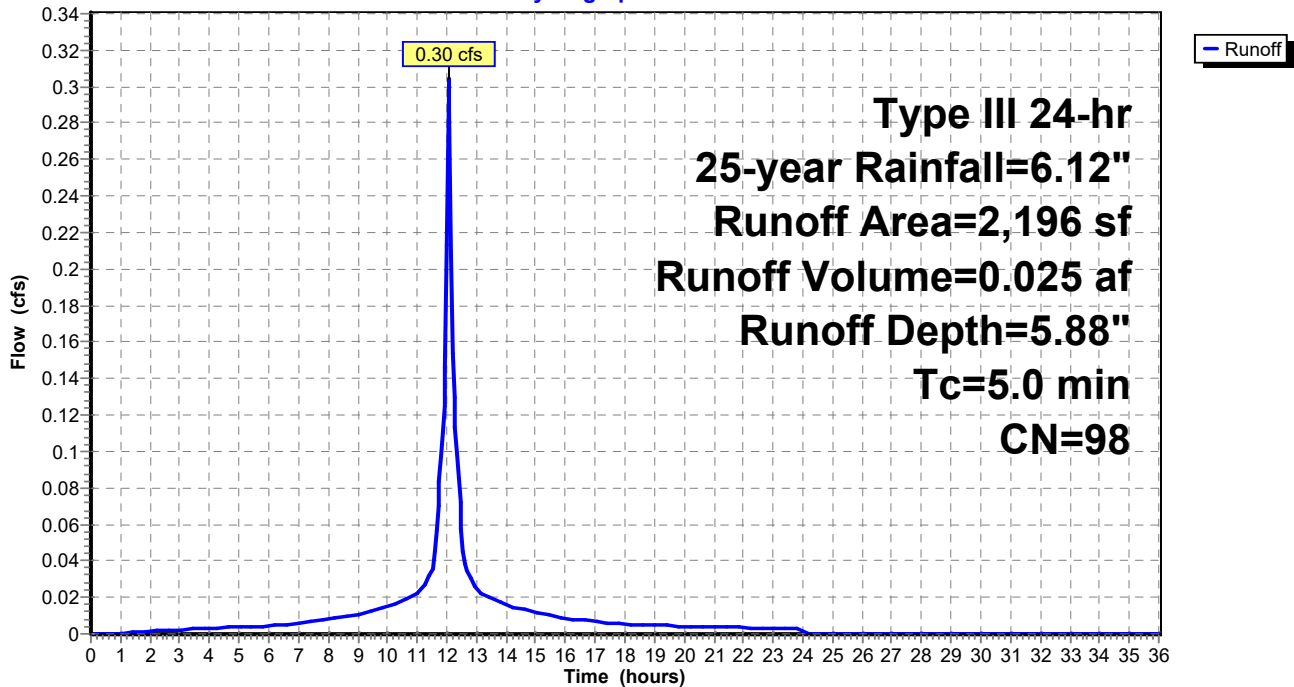
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-year Rainfall=6.12"

Area (sf)	CN	Description
2,196	98	Unconnected pavement, HSG D
2,196		100.00% Impervious Area
2,196		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-1: PR-1

Hydrograph



# WP-B2 Proposed Drainage Conditions

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Type III 24-hr 25-year Rainfall=6.12"

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## Summary for Subcatchment PR-2: PR-2

Runoff = 0.30 cfs @ 12.07 hrs, Volume= 0.022 af, Depth= 4.85"

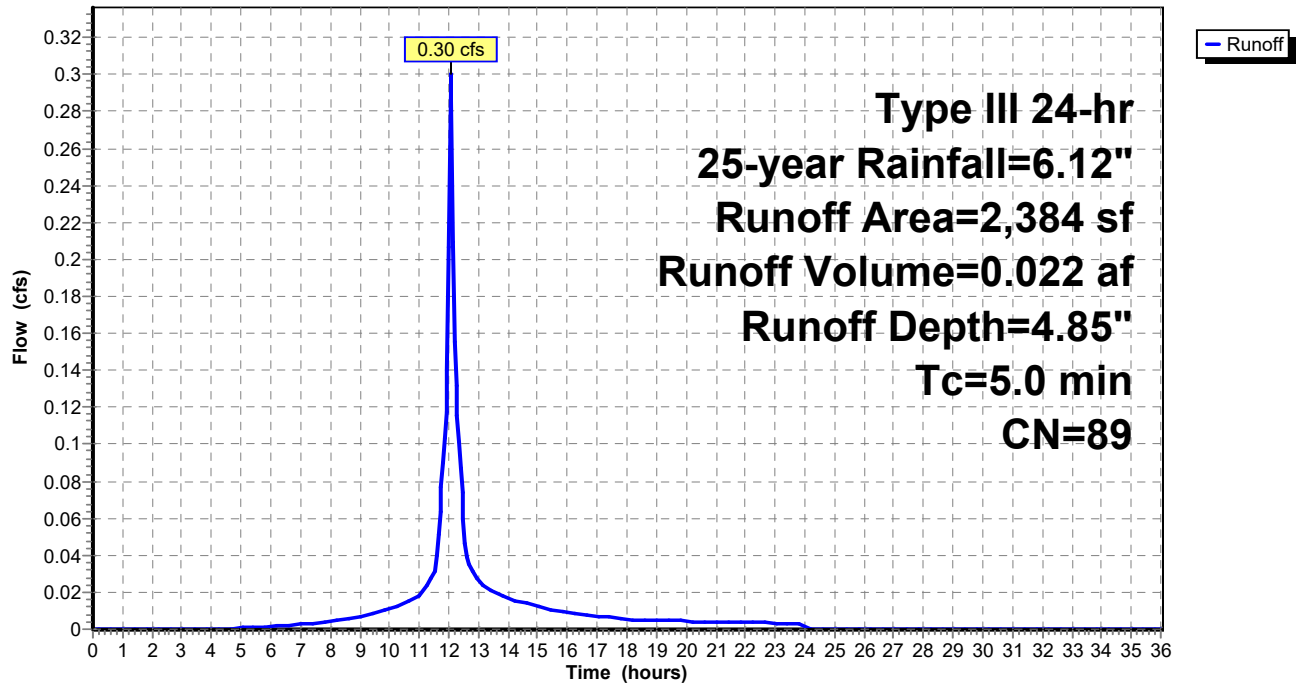
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-year Rainfall=6.12"

Area (sf)	CN	Description
1,127	98	Unconnected pavement, HSG D
1,257	80	>75% Grass cover, Good, HSG D
2,384	89	Weighted Average
1,257		52.73% Pervious Area
1,127		47.27% Impervious Area
1,127		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-2: PR-2

Hydrograph



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Type III 24-hr 25-year Rainfall=6.12"

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## Summary for Subcatchment PR-3: PR-3

Runoff = 0.19 cfs @ 12.07 hrs, Volume= 0.016 af, Depth= 5.88"

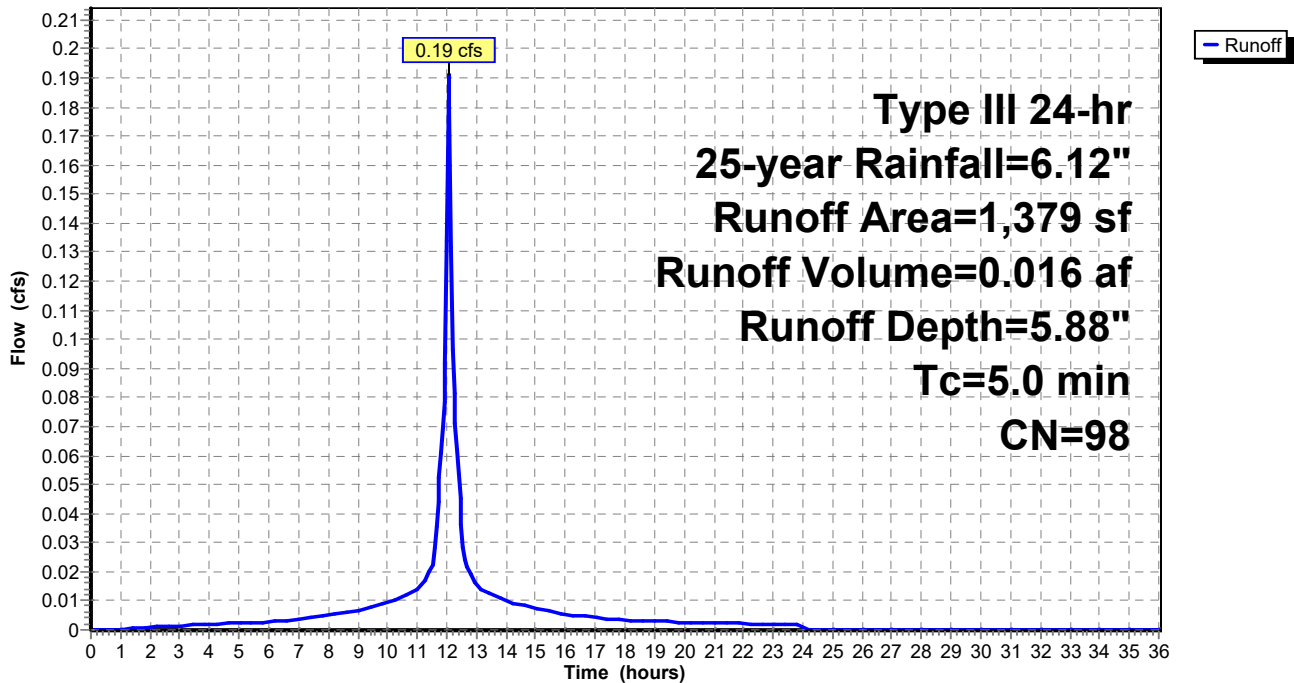
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-year Rainfall=6.12"

Area (sf)	CN	Description
1,379	98	Unconnected pavement, HSG D
1,379		100.00% Impervious Area
1,379		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-3: PR-3

Hydrograph



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Type III 24-hr 25-year Rainfall=6.12"

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**Summary for Subcatchment PR-4: PR-4**

Runoff = 0.22 cfs @ 12.07 hrs, Volume= 0.017 af, Depth= 5.19"

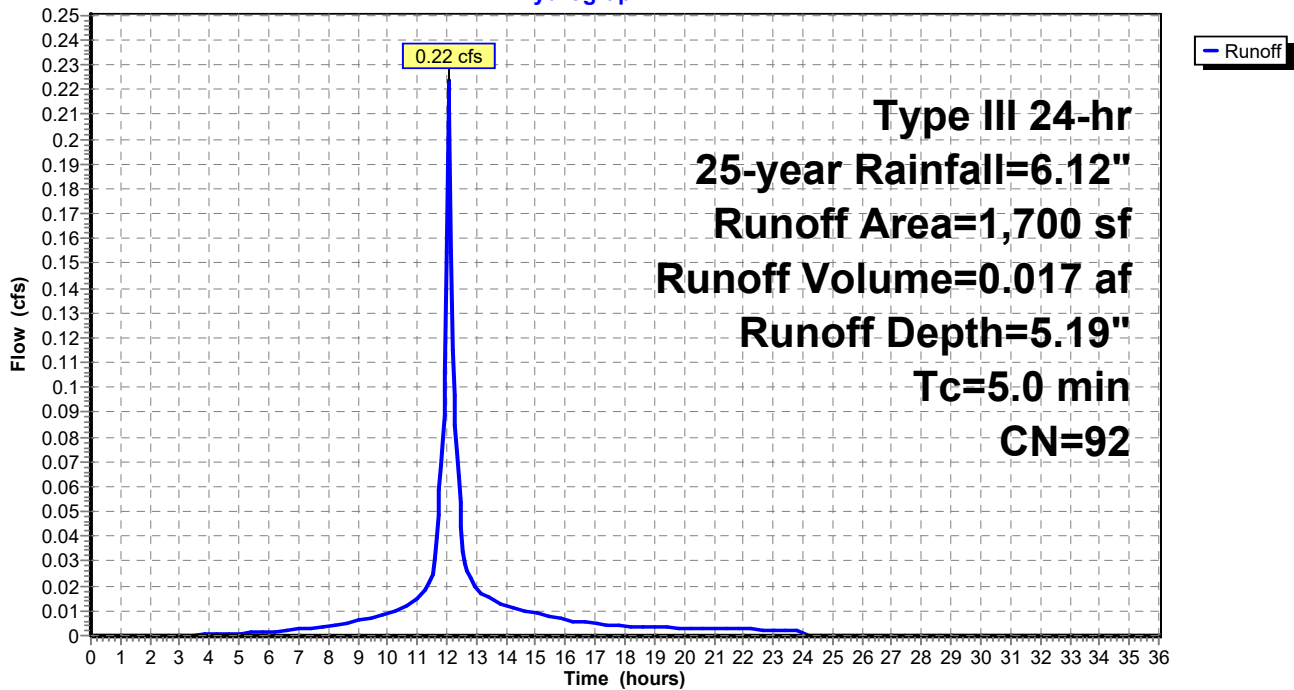
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-year Rainfall=6.12"

Area (sf)	CN	Description
182	98	Unconnected pavement, HSG D
918	98	Unconnected pavement, HSG D
600	80	>75% Grass cover, Good, HSG D
1,700	92	Weighted Average
600		35.29% Pervious Area
1,100		64.71% Impervious Area
1,100		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

**Subcatchment PR-4: PR-4**

Hydrograph



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Type III 24-hr 25-year Rainfall=6.12"

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## Summary for Subcatchment PR-5: Proposed Bldg

Runoff = 7.65 cfs @ 12.07 hrs, Volume= 0.621 af, Depth= 5.88"

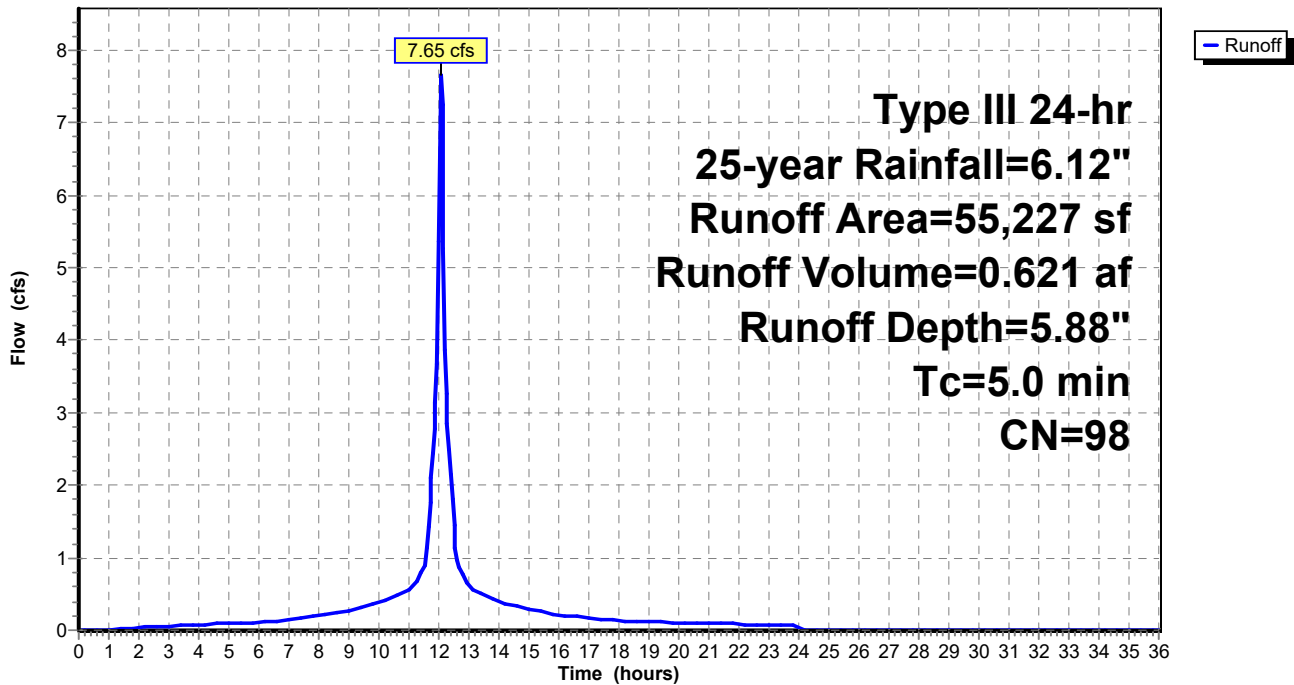
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-year Rainfall=6.12"

Area (sf)	CN	Description
55,227	98	Roofs, HSG D
55,227		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-5: Proposed Bldg

Hydrograph



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Type III 24-hr 25-year Rainfall=6.12"

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## Summary for Subcatchment PR-6: PR-6

Runoff = 1.30 cfs @ 12.07 hrs, Volume= 0.105 af, Depth= 5.88"

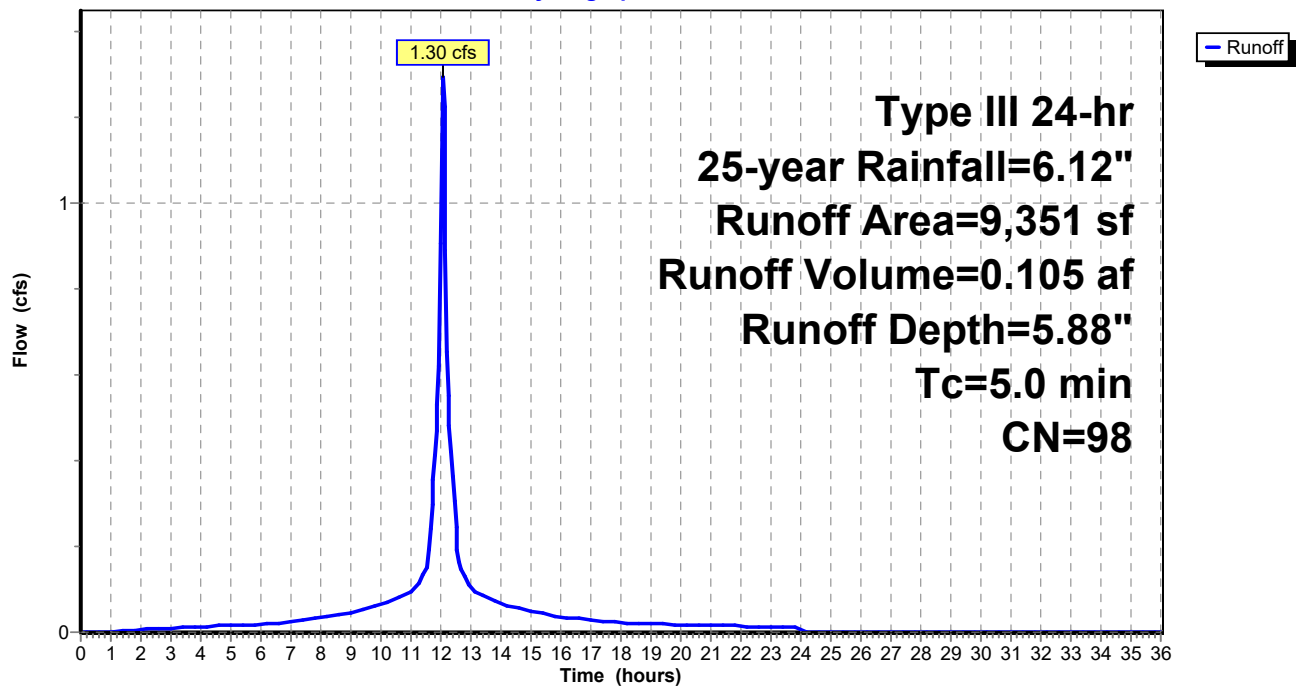
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-year Rainfall=6.12"

Area (sf)	CN	Description
9,351	98	Paved roads w/curbs & sewers, HSG D
9,351		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-6: PR-6

Hydrograph



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Type III 24-hr 25-year Rainfall=6.12"

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## Summary for Subcatchment PR-7: PR-7

Runoff = 0.47 cfs @ 12.07 hrs, Volume= 0.038 af, Depth= 5.88"

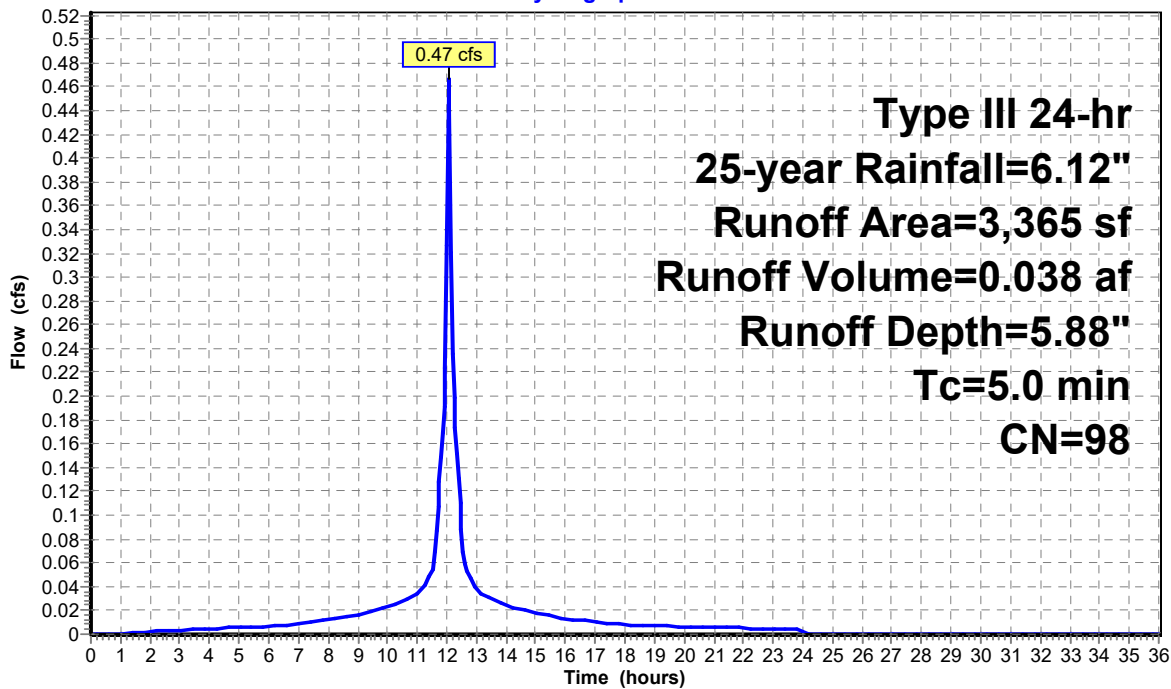
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-year Rainfall=6.12"

Area (sf)	CN	Description
3,365	98	Paved roads w/curbs & sewers, HSG D
3,365		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-7: PR-7

Hydrograph



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Type III 24-hr 25-year Rainfall=6.12"

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## Summary for Subcatchment PR-8: PR-8

Runoff = 1.84 cfs @ 12.07 hrs, Volume= 0.150 af, Depth= 5.88"

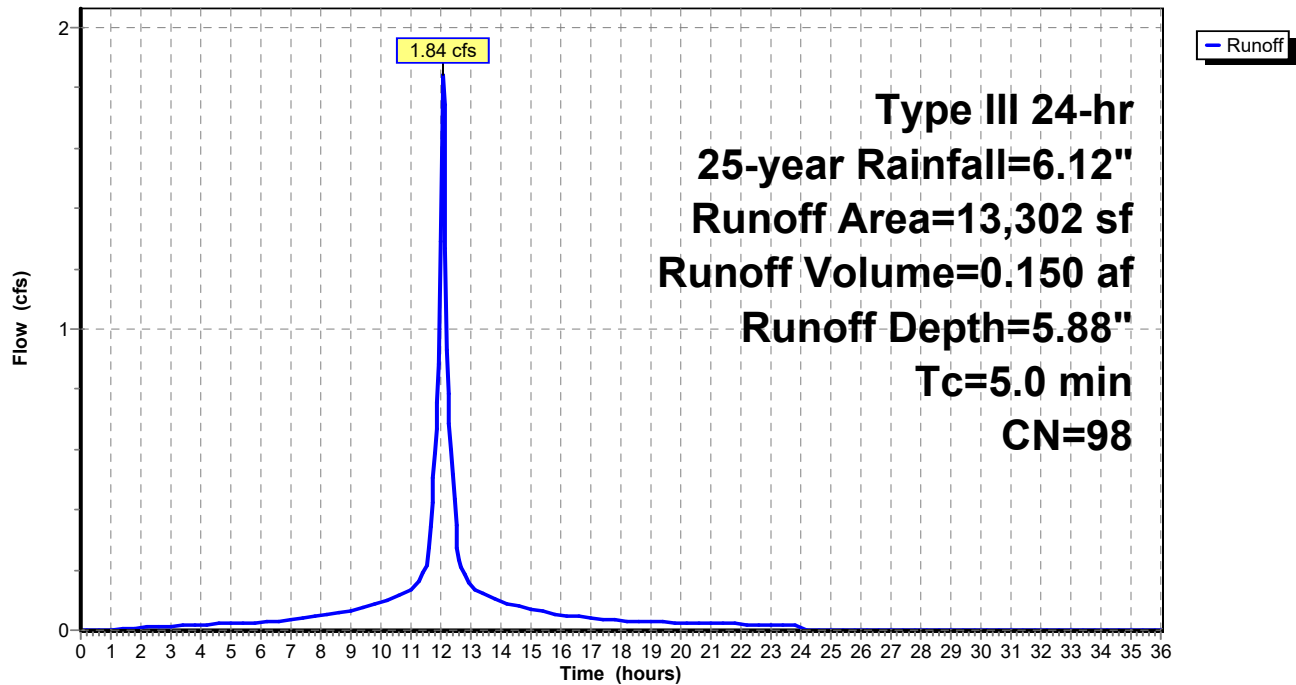
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-year Rainfall=6.12"

Area (sf)	CN	Description
13,302	98	Paved roads w/curbs & sewers, HSG D
13,302		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-8: PR-8

Hydrograph





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Type III 24-hr 25-year Rainfall=6.12"

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## Summary for Subcatchment PR-9: PR-9

Runoff = 1.27 cfs @ 12.07 hrs, Volume= 0.103 af, Depth= 5.88"

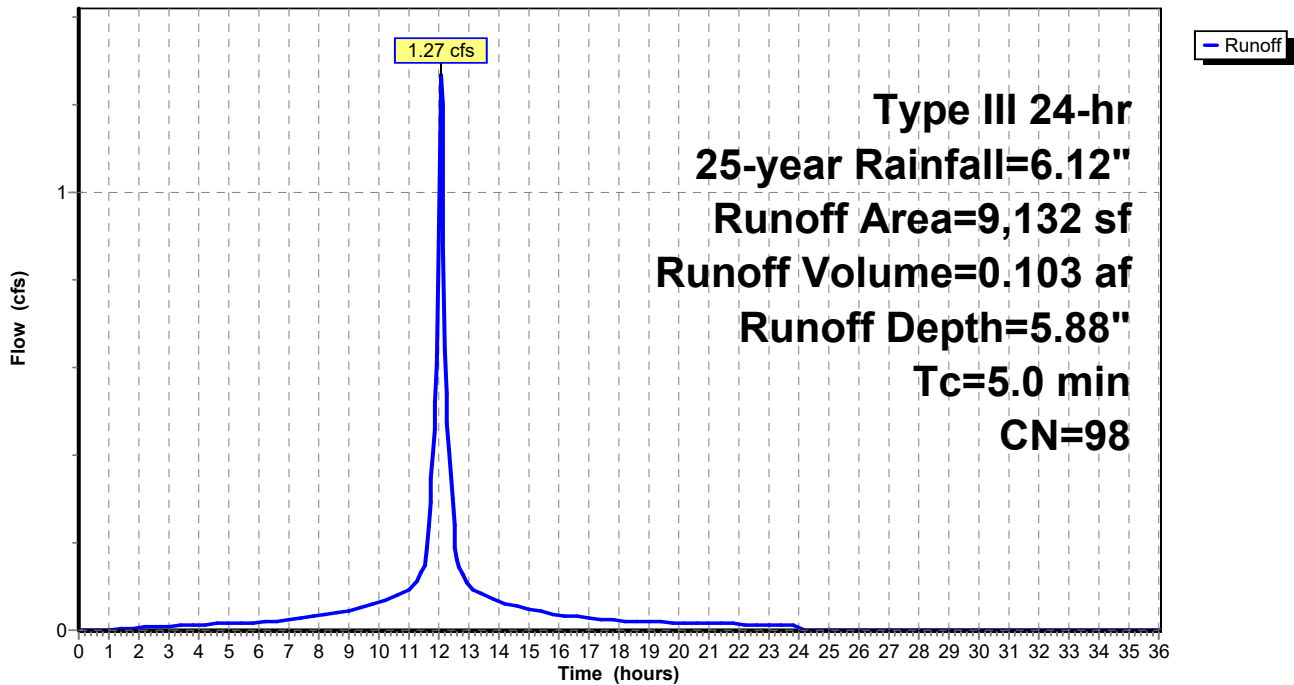
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-year Rainfall=6.12"

Area (sf)	CN	Description
9,132	98	Paved roads w/curbs & sewers, HSG D
9,132		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-9: PR-9

Hydrograph



**WP-B2 Proposed Drainage Conditions**

Type III 24-hr 25-year Rainfall=6.12"

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**Summary for Pond 1P: 55,500 Gal. Stormwater Tank**

Inflow Area = 1.323 ac, 97.82% Impervious, Inflow Depth = 5.84" for 25-year event  
 Inflow = 7.95 cfs @ 12.07 hrs, Volume= 0.644 af  
 Outflow = 6.24 cfs @ 12.14 hrs, Volume= 0.472 af, Atten= 22%, Lag= 4.0 min  
 Primary = 6.24 cfs @ 12.14 hrs, Volume= 0.472 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
 Peak Elev= 14.24' @ 12.14 hrs Surf.Area= 1,244 sf Storage= 9,628 cf

Plug-Flow detention time= 180.5 min calculated for 0.472 af (73% of inflow)  
 Center-of-Mass det. time= 91.7 min ( 837.1 - 745.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	6.50'	11,196 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.50	1,244	0	0
12.50	1,244	7,464	7,464
15.50	1,244	3,732	11,196

Device	Routing	Invert	Outlet Devices
#1	Primary	12.50'	<b>15.0" Round RCP_Round 15"</b> L= 45.3' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 12.50' / 10.70' S= 0.0397 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

**Primary OutFlow** Max=6.18 cfs @ 12.14 hrs HW=14.22' (Free Discharge)

↑1=RCP\_Round 15" (Inlet Controls 6.18 cfs @ 5.03 fps)

**WP-B2 Proposed Drainage Conditions**

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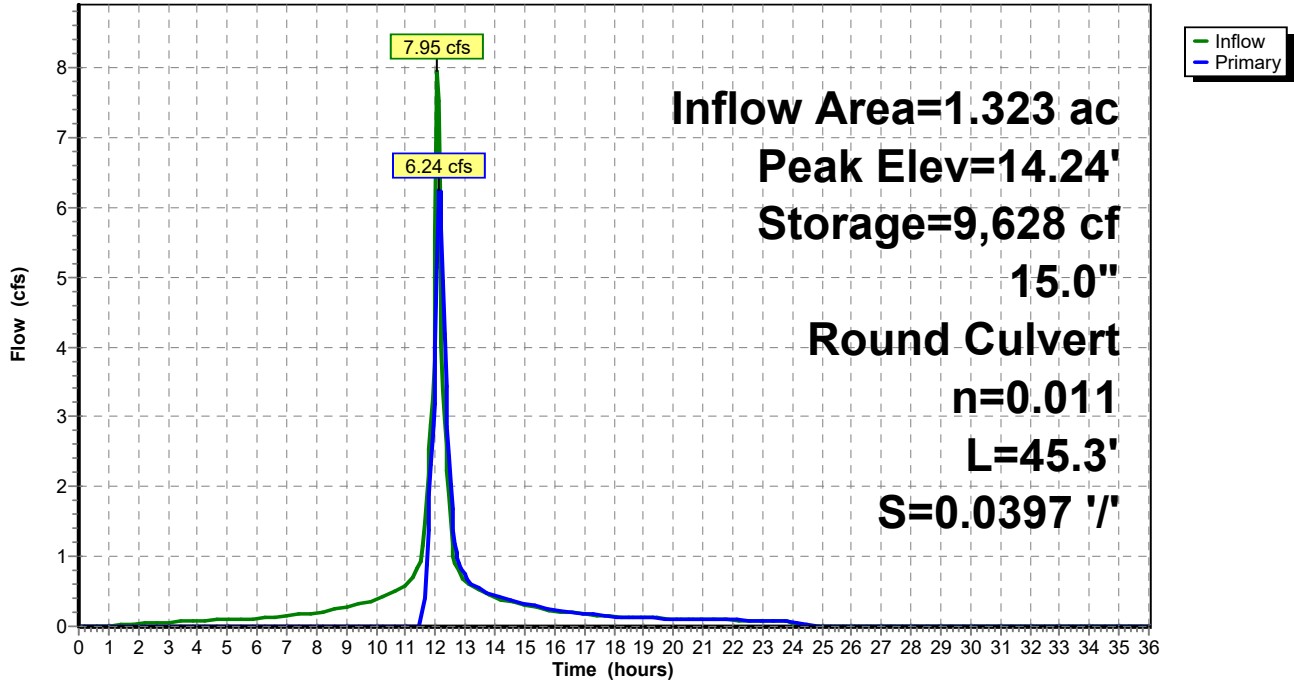
Type III 24-hr 25-year Rainfall=6.12"

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**Pond 1P: 55,500 Gal. Stormwater Tank**

Hydrograph



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Type III 24-hr 25-year Rainfall=6.12"

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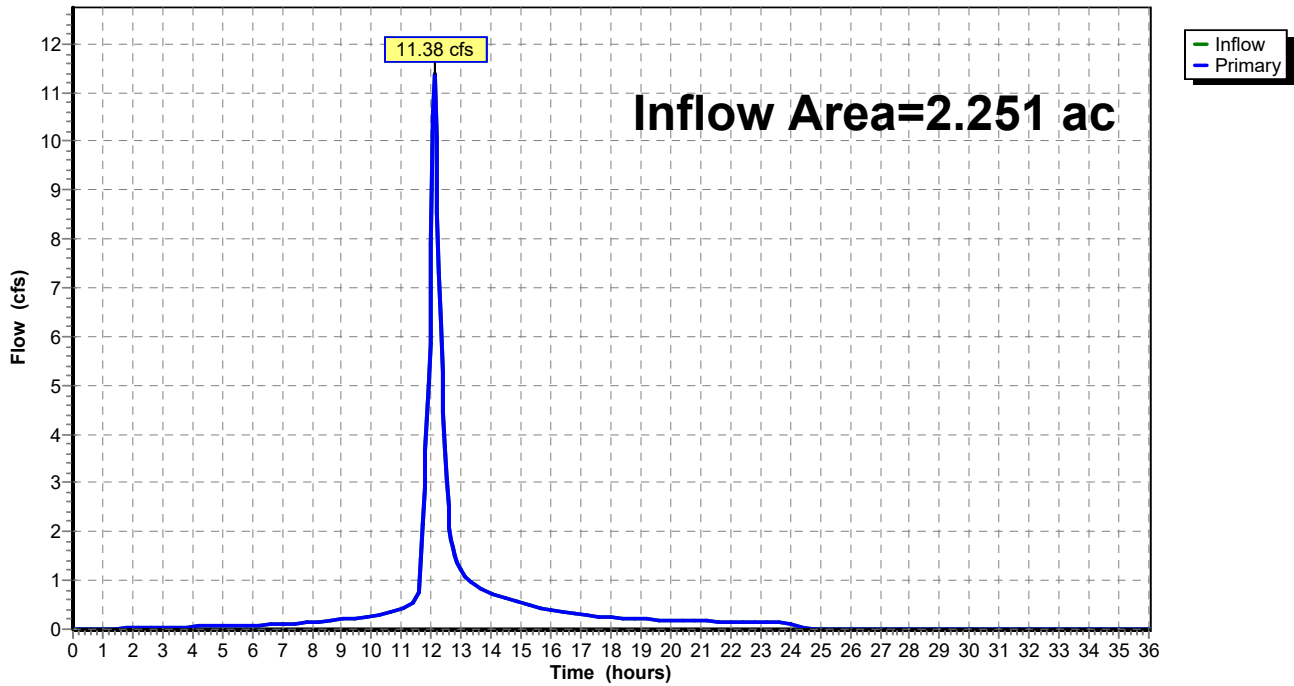
## Summary for Link DP-1: Charles River

Inflow Area = 2.251 ac, 98.11% Impervious, Inflow Depth = 4.93" for 25-year event  
Inflow = 11.38 cfs @ 12.09 hrs, Volume= 0.925 af  
Primary = 11.38 cfs @ 12.09 hrs, Volume= 0.925 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

### Link DP-1: Charles River

Hydrograph



**WP-B2 Proposed Drainage Conditions**

Type III 24-hr 100-year Rainfall=7.88"

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Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>SubcatchmentPR-1: PR-1</b>	Runoff Area=2,196 sf 100.00% Impervious Runoff Depth=7.64" Tc=5.0 min CN=98 Runoff=0.39 cfs 0.032 af
<b>SubcatchmentPR-2: PR-2</b>	Runoff Area=2,384 sf 47.27% Impervious Runoff Depth=6.57" Tc=5.0 min CN=89 Runoff=0.40 cfs 0.030 af
<b>SubcatchmentPR-3: PR-3</b>	Runoff Area=1,379 sf 100.00% Impervious Runoff Depth=7.64" Tc=5.0 min CN=98 Runoff=0.25 cfs 0.020 af
<b>SubcatchmentPR-4: PR-4</b>	Runoff Area=1,700 sf 64.71% Impervious Runoff Depth=6.92" Tc=5.0 min CN=92 Runoff=0.29 cfs 0.023 af
<b>SubcatchmentPR-5: Proposed Bldg</b>	Runoff Area=55,227 sf 100.00% Impervious Runoff Depth=7.64" Tc=5.0 min CN=98 Runoff=9.87 cfs 0.807 af
<b>SubcatchmentPR-6: PR-6</b>	Runoff Area=9,351 sf 100.00% Impervious Runoff Depth=7.64" Tc=5.0 min CN=98 Runoff=1.67 cfs 0.137 af
<b>SubcatchmentPR-7: PR-7</b>	Runoff Area=3,365 sf 100.00% Impervious Runoff Depth=7.64" Tc=5.0 min CN=98 Runoff=0.60 cfs 0.049 af
<b>SubcatchmentPR-8: PR-8</b>	Runoff Area=13,302 sf 100.00% Impervious Runoff Depth=7.64" Tc=5.0 min CN=98 Runoff=2.38 cfs 0.194 af
<b>SubcatchmentPR-9: PR-9</b>	Runoff Area=9,132 sf 100.00% Impervious Runoff Depth=7.64" Tc=5.0 min CN=98 Runoff=1.63 cfs 0.133 af
<b>Pond 1P: 55,500 Gal. Stormwater Tank</b>	Peak Elev=14.82' Storage=10,350 cf Inflow=10.27 cfs 0.837 af 15.0" Round Culvert n=0.011 L=45.3' S=0.0397 '/' Outflow=7.69 cfs 0.666 af
<b>Link DP-1: Charles River</b>	Inflow=14.26 cfs 1.254 af Primary=14.26 cfs 1.254 af

**Total Runoff Area = 2.251 ac Runoff Volume = 1.426 af Average Runoff Depth = 7.60"**  
**1.89% Pervious = 0.043 ac 98.11% Impervious = 2.208 ac**

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Type III 24-hr 100-year Rainfall=7.88"

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## Summary for Subcatchment PR-1: PR-1

Runoff = 0.39 cfs @ 12.07 hrs, Volume= 0.032 af, Depth= 7.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100-year Rainfall=7.88"

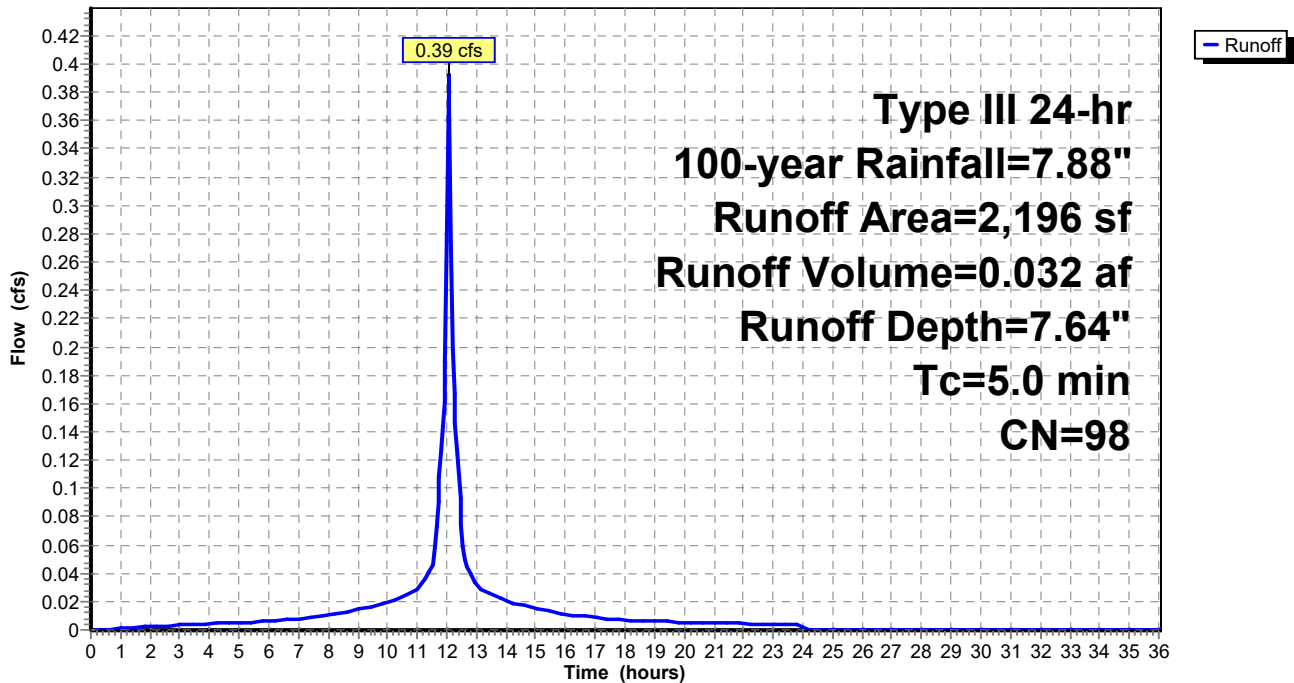
Area (sf)	CN	Description
2,196	98	Unconnected pavement, HSG D
2,196		100.00% Impervious Area
2,196		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

### Subcatchment PR-1: PR-1

Hydrograph



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Type III 24-hr 100-year Rainfall=7.88"

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## Summary for Subcatchment PR-2: PR-2

Runoff = 0.40 cfs @ 12.07 hrs, Volume= 0.030 af, Depth= 6.57"

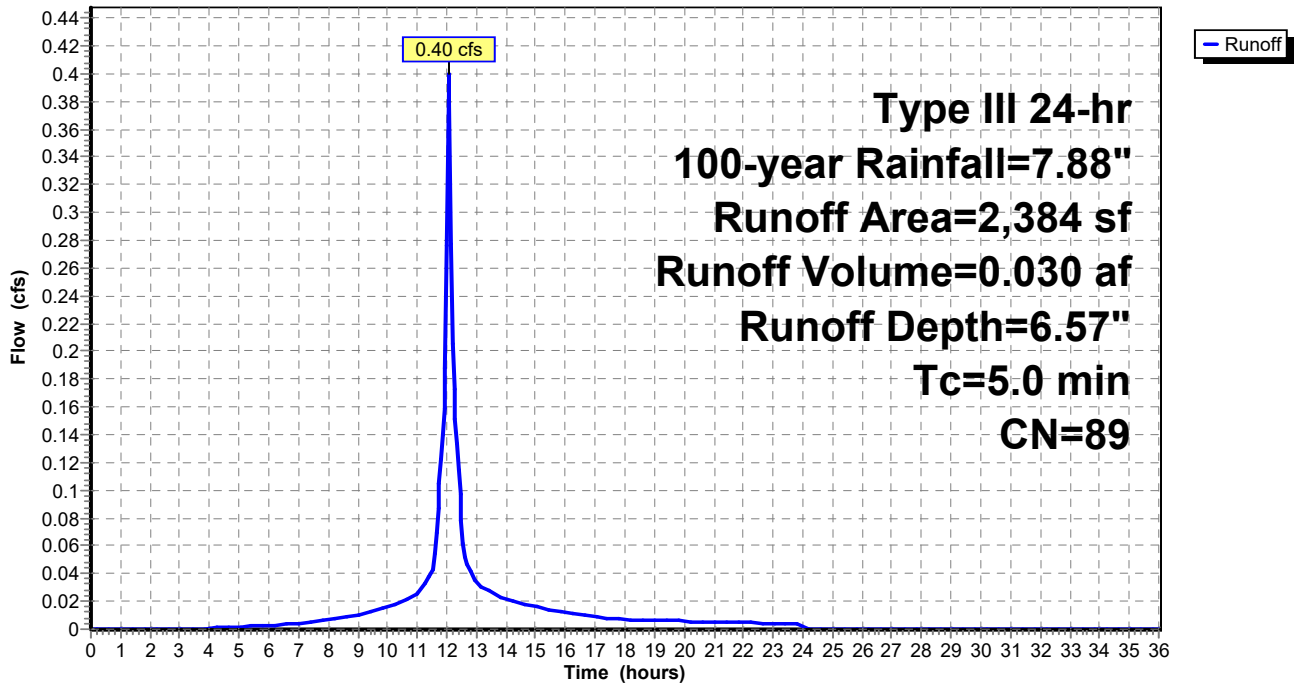
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100-year Rainfall=7.88"

Area (sf)	CN	Description
1,127	98	Unconnected pavement, HSG D
1,257	80	>75% Grass cover, Good, HSG D
2,384	89	Weighted Average
1,257		52.73% Pervious Area
1,127		47.27% Impervious Area
1,127		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-2: PR-2

Hydrograph



# WP-B2 Proposed Drainage Conditions

Prepared by VHB

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Type III 24-hr 100-year Rainfall=7.88"

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## Summary for Subcatchment PR-3: PR-3

Runoff = 0.25 cfs @ 12.07 hrs, Volume= 0.020 af, Depth= 7.64"

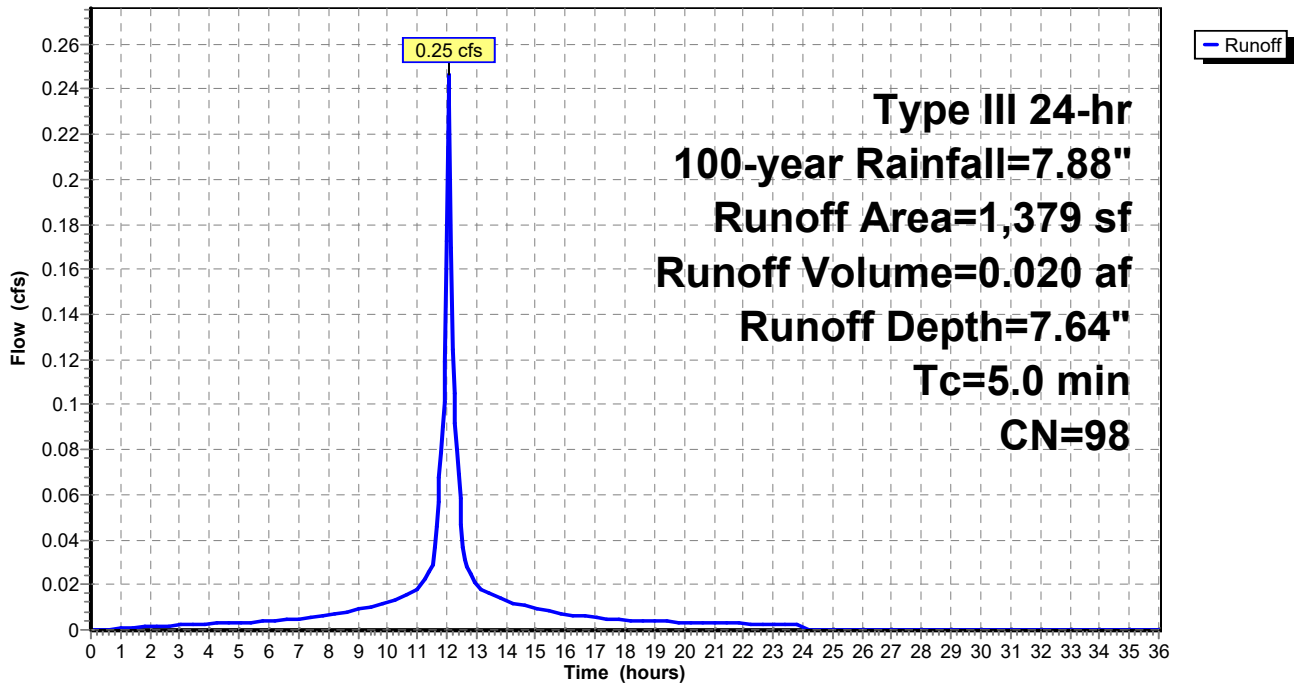
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100-year Rainfall=7.88"

Area (sf)	CN	Description
1,379	98	Unconnected pavement, HSG D
1,379		100.00% Impervious Area
1,379		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-3: PR-3

Hydrograph





# WP-B2 Proposed Drainage Conditions

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Type III 24-hr 100-year Rainfall=7.88"

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## Summary for Subcatchment PR-4: PR-4

Runoff = 0.29 cfs @ 12.07 hrs, Volume= 0.023 af, Depth= 6.92"

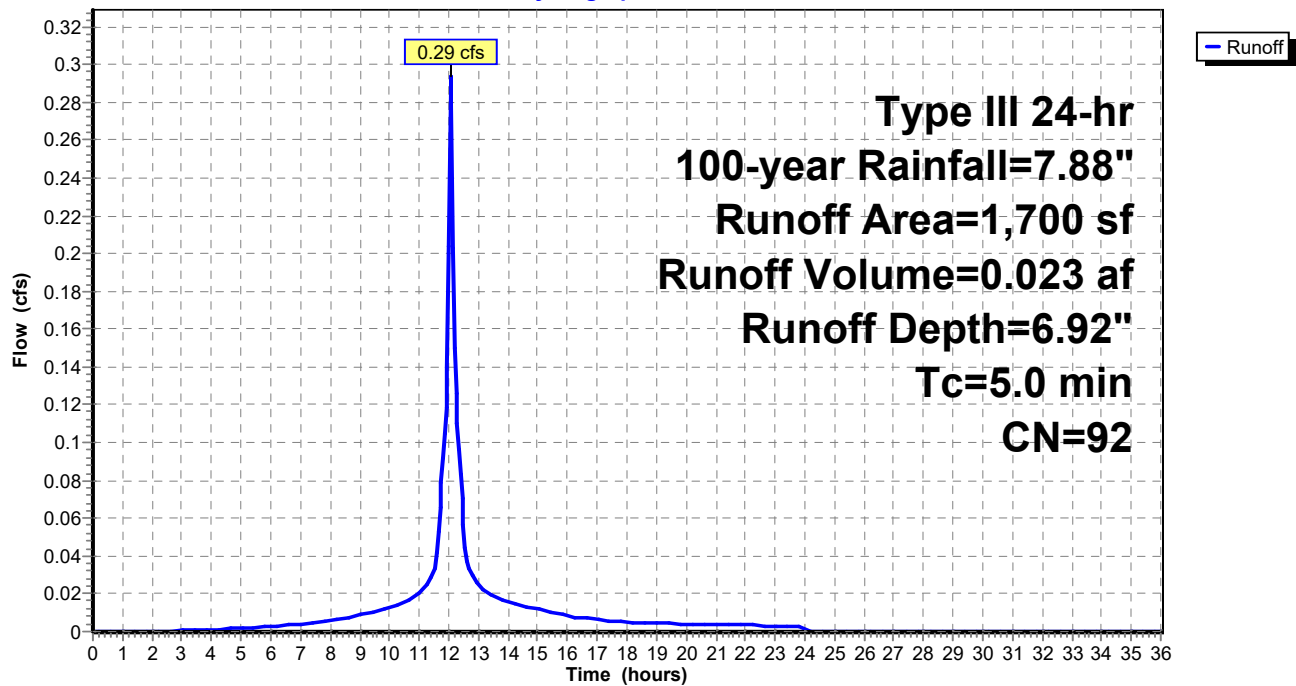
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100-year Rainfall=7.88"

Area (sf)	CN	Description
182	98	Unconnected pavement, HSG D
918	98	Unconnected pavement, HSG D
600	80	>75% Grass cover, Good, HSG D
1,700	92	Weighted Average
600		35.29% Pervious Area
1,100		64.71% Impervious Area
1,100		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-4: PR-4

Hydrograph



# WP-B2 Proposed Drainage Conditions

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Type III 24-hr 100-year Rainfall=7.88"

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## Summary for Subcatchment PR-5: Proposed Bldg

Runoff = 9.87 cfs @ 12.07 hrs, Volume= 0.807 af, Depth= 7.64"

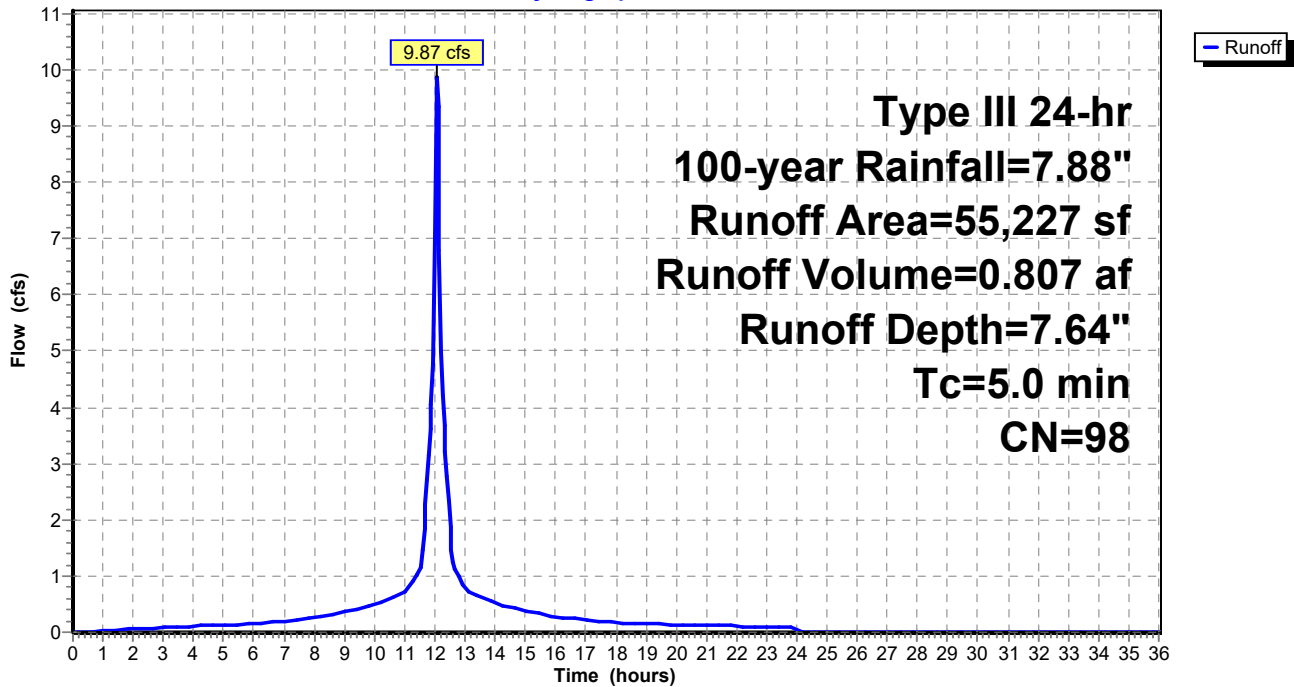
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100-year Rainfall=7.88"

Area (sf)	CN	Description
55,227	98	Roofs, HSG D
55,227		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-5: Proposed Bldg

Hydrograph



# WP-B2 Proposed Drainage Conditions

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Type III 24-hr 100-year Rainfall=7.88"

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## Summary for Subcatchment PR-6: PR-6

Runoff = 1.67 cfs @ 12.07 hrs, Volume= 0.137 af, Depth= 7.64"

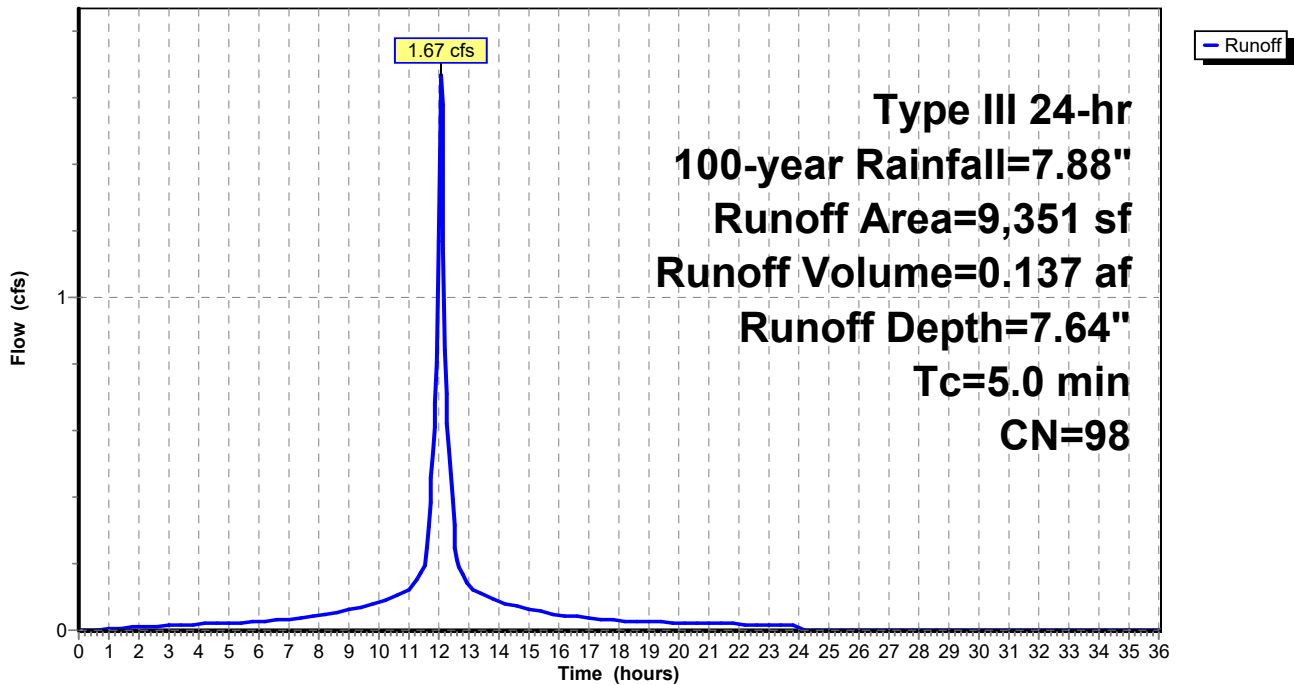
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100-year Rainfall=7.88"

Area (sf)	CN	Description
9,351	98	Paved roads w/curbs & sewers, HSG D
9,351		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-6: PR-6

Hydrograph



# WP-B2 Proposed Drainage Conditions

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Type III 24-hr 100-year Rainfall=7.88"

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## Summary for Subcatchment PR-7: PR-7

Runoff = 0.60 cfs @ 12.07 hrs, Volume= 0.049 af, Depth= 7.64"

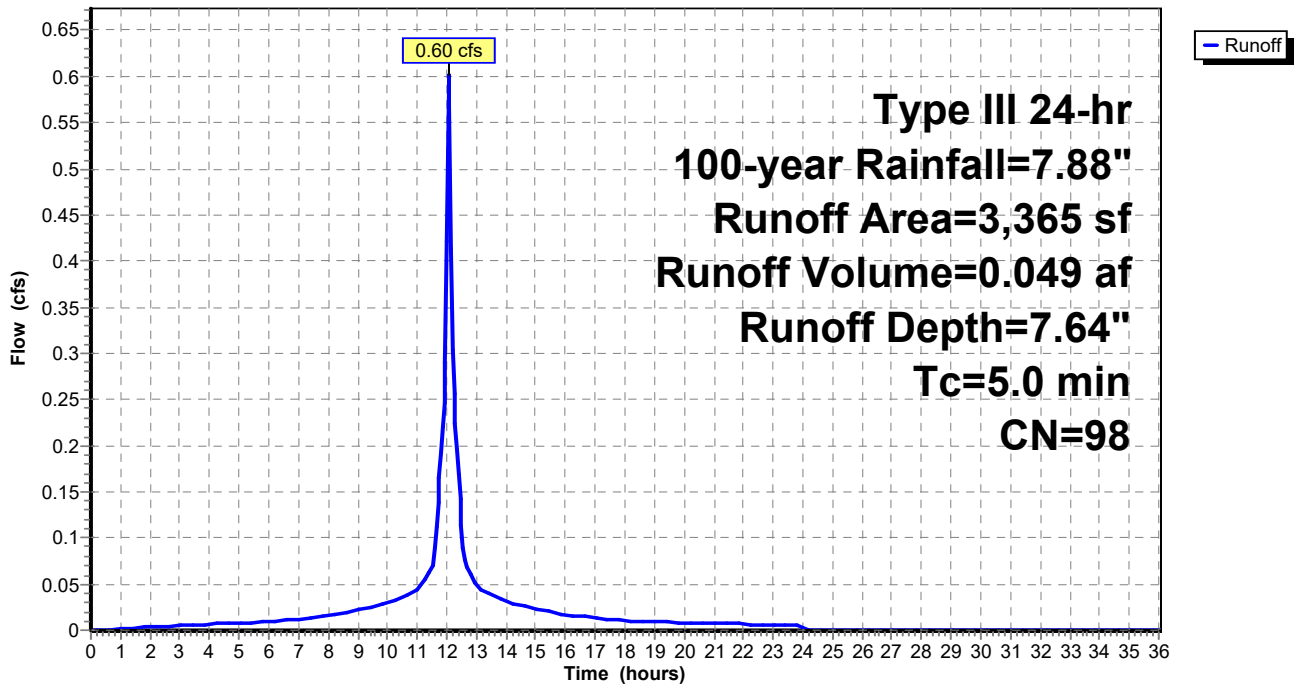
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100-year Rainfall=7.88"

Area (sf)	CN	Description
3,365	98	Paved roads w/curbs & sewers, HSG D
3,365		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-7: PR-7

Hydrograph



# WP-B2 Proposed Drainage Conditions

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Type III 24-hr 100-year Rainfall=7.88"

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## Summary for Subcatchment PR-8: PR-8

Runoff = 2.38 cfs @ 12.07 hrs, Volume= 0.194 af, Depth= 7.64"

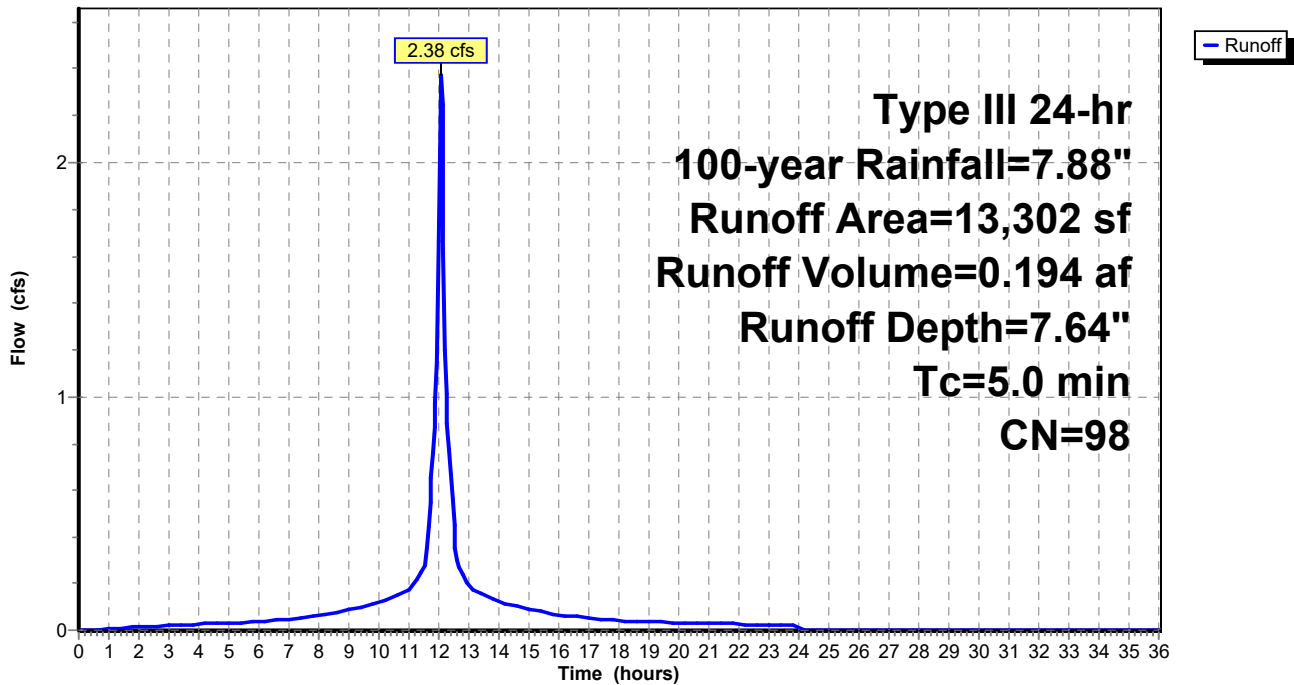
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100-year Rainfall=7.88"

Area (sf)	CN	Description
13,302	98	Paved roads w/curbs & sewers, HSG D
13,302		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-8: PR-8

Hydrograph



# WP-B2 Proposed Drainage Conditions

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Type III 24-hr 100-year Rainfall=7.88"

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## Summary for Subcatchment PR-9: PR-9

Runoff = 1.63 cfs @ 12.07 hrs, Volume= 0.133 af, Depth= 7.64"

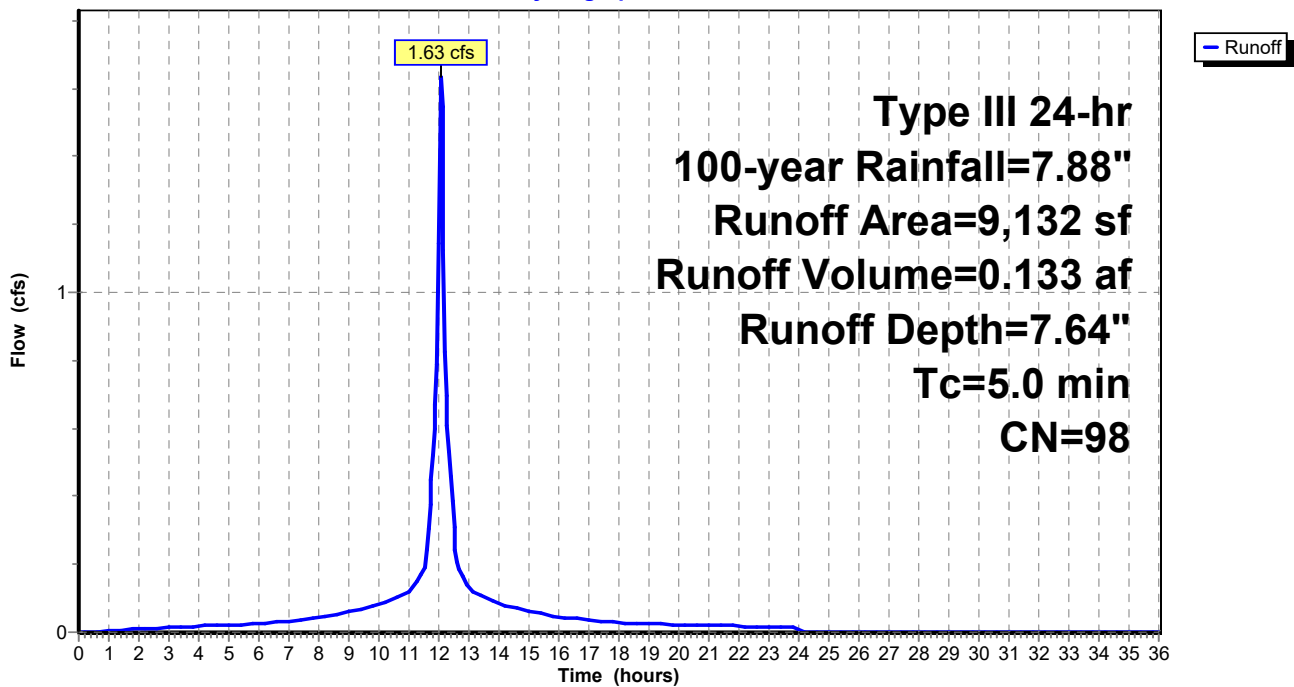
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100-year Rainfall=7.88"

Area (sf)	CN	Description
9,132	98	Paved roads w/curbs & sewers, HSG D
9,132		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, TC

## Subcatchment PR-9: PR-9

Hydrograph



**WP-B2 Proposed Drainage Conditions**

Type III 24-hr 100-year Rainfall=7.88"

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**Summary for Pond 1P: 55,500 Gal. Stormwater Tank**

Inflow Area = 1.323 ac, 97.82% Impervious, Inflow Depth = 7.60" for 100-year event  
 Inflow = 10.27 cfs @ 12.07 hrs, Volume= 0.837 af  
 Outflow = 7.69 cfs @ 12.14 hrs, Volume= 0.666 af, Atten= 25%, Lag= 4.4 min  
 Primary = 7.69 cfs @ 12.14 hrs, Volume= 0.666 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs  
 Peak Elev= 14.82' @ 12.14 hrs Surf.Area= 1,244 sf Storage= 10,350 cf

Plug-Flow detention time= 159.8 min calculated for 0.666 af (80% of inflow)  
 Center-of-Mass det. time= 81.0 min ( 822.8 - 741.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	6.50'	11,196 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.50	1,244	0	0
12.50	1,244	7,464	7,464
15.50	1,244	3,732	11,196

Device	Routing	Invert	Outlet Devices
#1	Primary	12.50'	<b>15.0" Round RCP_Round 15"</b> L= 45.3' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 12.50' / 10.70' S= 0.0397 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

**Primary OutFlow** Max=7.66 cfs @ 12.14 hrs HW=14.80' (Free Discharge)

↑1=RCP\_Round 15" (Inlet Controls 7.66 cfs @ 6.24 fps)

**WP-B2 Proposed Drainage Conditions**

Prepared by VHB

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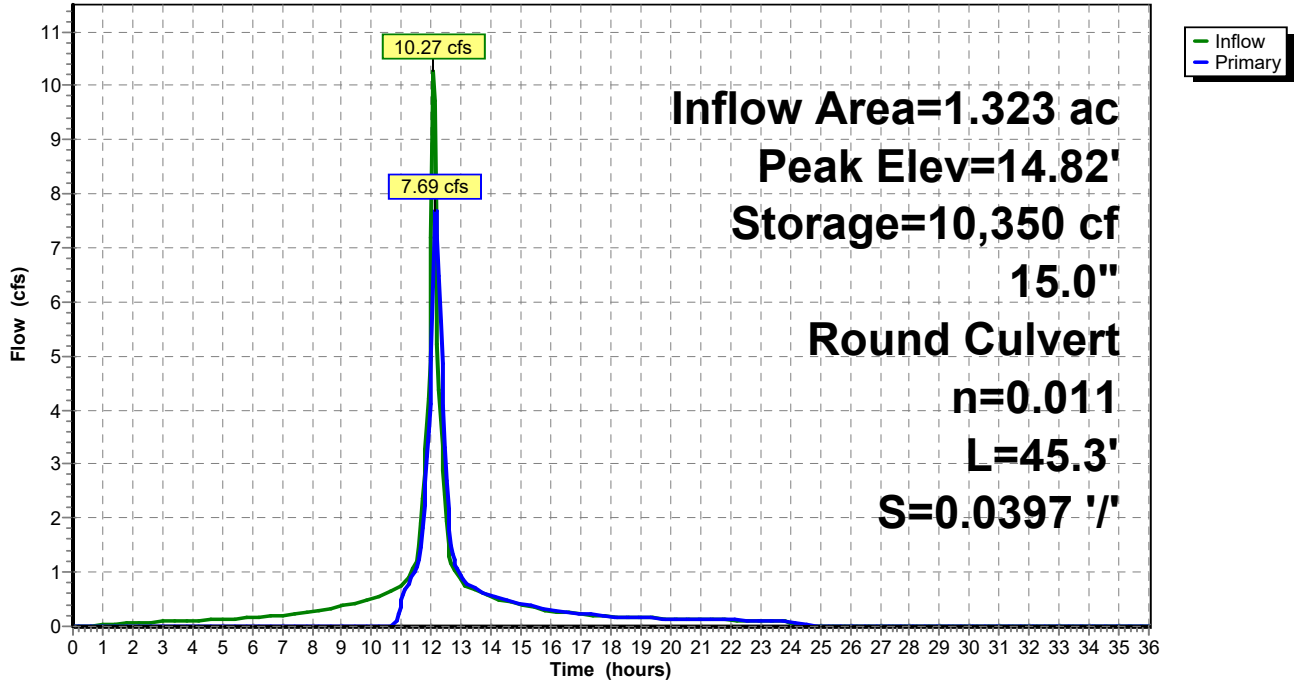
Type III 24-hr 100-year Rainfall=7.88"

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**Pond 1P: 55,500 Gal. Stormwater Tank**

Hydrograph





# WP-B2 Proposed Drainage Conditions

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Type III 24-hr 100-year Rainfall=7.88"

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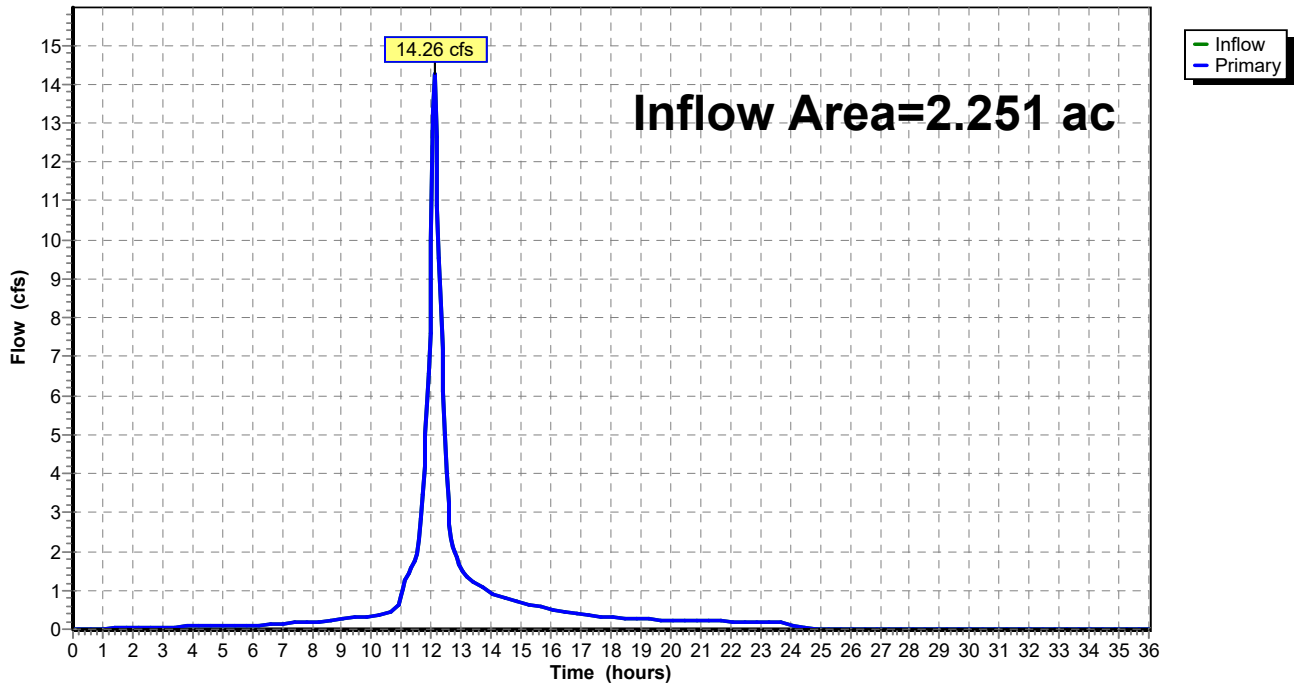
## Summary for Link DP-1: Charles River

Inflow Area = 2.251 ac, 98.11% Impervious, Inflow Depth = 6.69" for 100-year event  
Inflow = 14.26 cfs @ 12.09 hrs, Volume= 1.254 af  
Primary = 14.26 cfs @ 12.09 hrs, Volume= 1.254 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

### Link DP-1: Charles River

Hydrograph





# Appendix C

## Standard 3 Computations and Supporting Information

- Required/Provided Recharge Volume Calculations



---

## Required and Provided Recharge Volumes



HALEY & ALDRICH, INC.  
465 Medford St.  
Suite 2200  
Boston, MA 02129  
617.886.7400

7 February 2019  
File No. 40181-110

Mr. Philip E. LaRocque  
Boston Water and Sewer Commission  
900 Harrison Avenue  
Boston, Massachusetts 02119

SUBJECT: Boston Water and Sewer Commission Stormwater Infiltration Submission  
One Congress at Bulfinch Crossing  
1 Congress Street  
Boston, Massachusetts

Dear Mr. LaRocque:

This letter provides calculations and details related to the stormwater infiltration system proposed for the One Congress Office Tower project, as part of the Bulfinch Crossing Development on 1 Congress Street in Boston, Massachusetts.

## **BACKGROUND**

The Boston Water and Sewer Commission (BWSC) requires that the equivalent of 1.25 in. of rain water over the Office Tower's building footprint be captured and recharged into the ground within 72 hours, minus any captured water reused for other building and site purposes. The required volume of rain water that needs to be stored and recharged into the ground for the subject project is approximately 55,309 gallons (approximately 71,000 sq. ft site area).

## **STORMWATER INFILTRATION SYSTEM**

The proposed Office Tower will include one basement, finished at El. 5 (Boston City Base, BCB), which is approximately 4 ft below the estimated seasonal high groundwater level (SHGW) for the site of El. 9. The proposed stormwater infiltration system design includes a 55,500-gallon stormwater storage tank located in the basement and a perimeter infiltration trench around the outside of the majority of the basement perimeter. The recharge trench is comprised of perforated PVC pipe enveloped in ¾ in. crushed stone wrapped in a geotextile. The trench will receive stormwater from the tank at a controlled flow rate of between approximately 5 to 10 gallons per minute.

The invert of the infiltration pipe is established at El. 12, 3 ft above the design SHGW. The proposed infiltration zone will be from El. 12 to El. 5, within the crushed stone and fill soils overlying the Organic soil and/or Marine Deposits; El. 7 is the highest elevation the Organics soils were observed in explorations.

An overflow pipe in the infiltration trench at invert El. 14 will prevent buildup of groundwater and hydrostatic pressures against the Office Tower and walls. The overflow pipe will connect to a sump pit in the basement, which will pump the overflow water back into the storage tank. The storage tank will have an emergency overflow connected to the municipal drain set at invert El. 12.5. Design assumptions, calculations and details are attached to this memorandum.

Details of this infiltration system are illustrated on the attached GT1 drawing dated 5 February 2019.


Based on our evaluations, the proposed stormwater infiltration system can accommodate the required base infiltration volume of approximately 55,309 gallons into the ground within 72 hours. Revisions made to the design, if any, will be reviewed with and submitted to BWSC.

## CLOSURE

In the opinion of Haley & Aldrich, the proposed stormwater capture/infiltration system, as described herein, conform to the requirements of the Boston Water and Sewer Commission for such systems.

Thank you for your consideration of this submission. Please do not hesitate to contact the undersigned if you wish to discuss any aspect of this submission.

Sincerely yours,  
HALEY & ALDRICH, INC.

  
Sandra M. Iberg, P.E. (CA)  
Assistant Project Manager

Kelvin Wong, P.E.  
Project Manager



Attachments:

Appendix A GT1 – Stormwater Recharge System Layout  
Appendix B Stormwater Infiltration Calculations

c: The HYM Investment Group, LLC - Doug Manz, John Hurley  
Vanasse Hangen Brustlin Inc. – Howard Moshier, Lisa Chow

## **APPENDIX A**



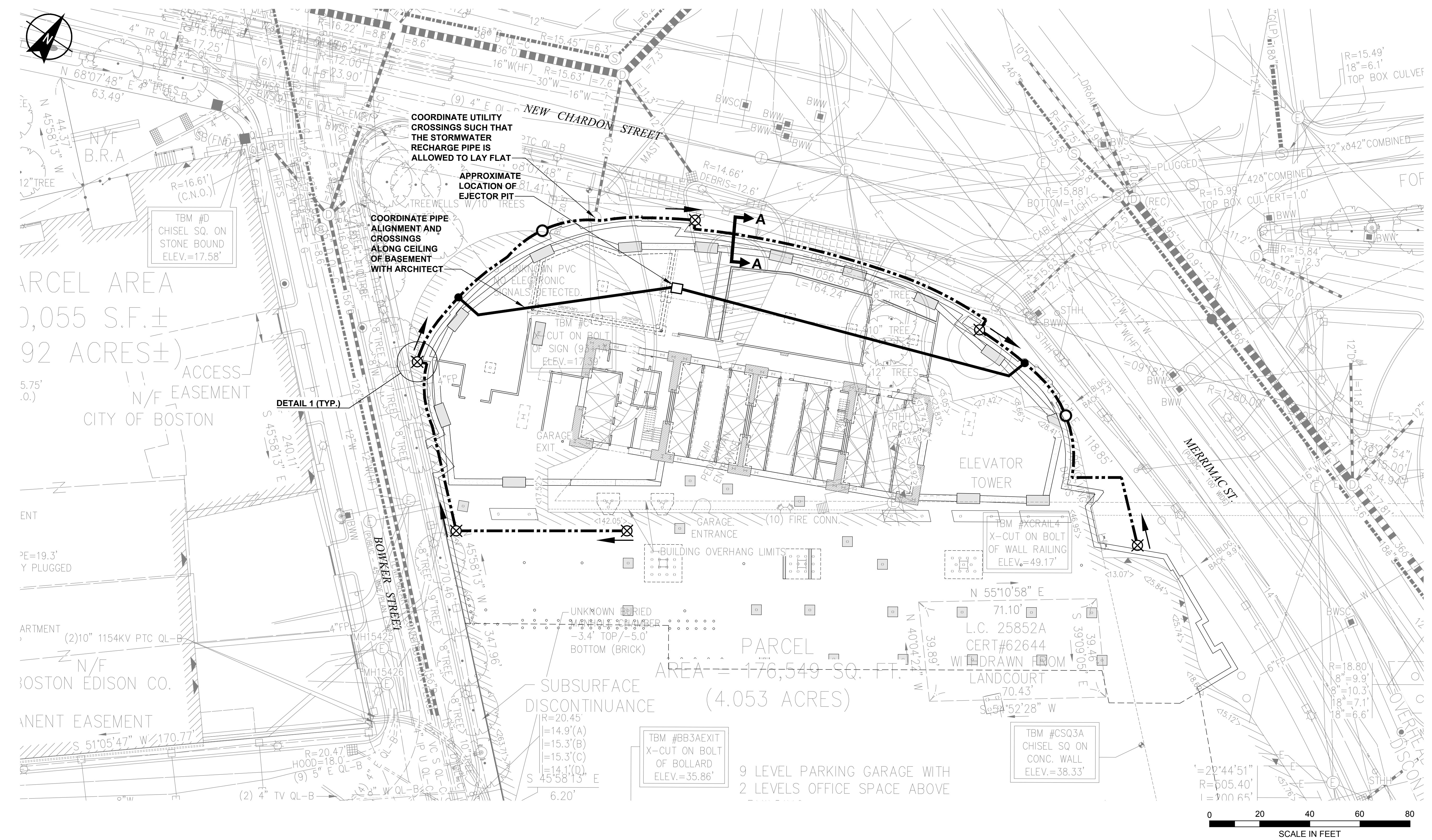
REVISIONS	
#	DATE DESCRIPTION

BOSTON, MASSACHUSETTS

**cbt** 617 262 4354 cbtarchitects.com  
 110 canal street boston, ma 02114

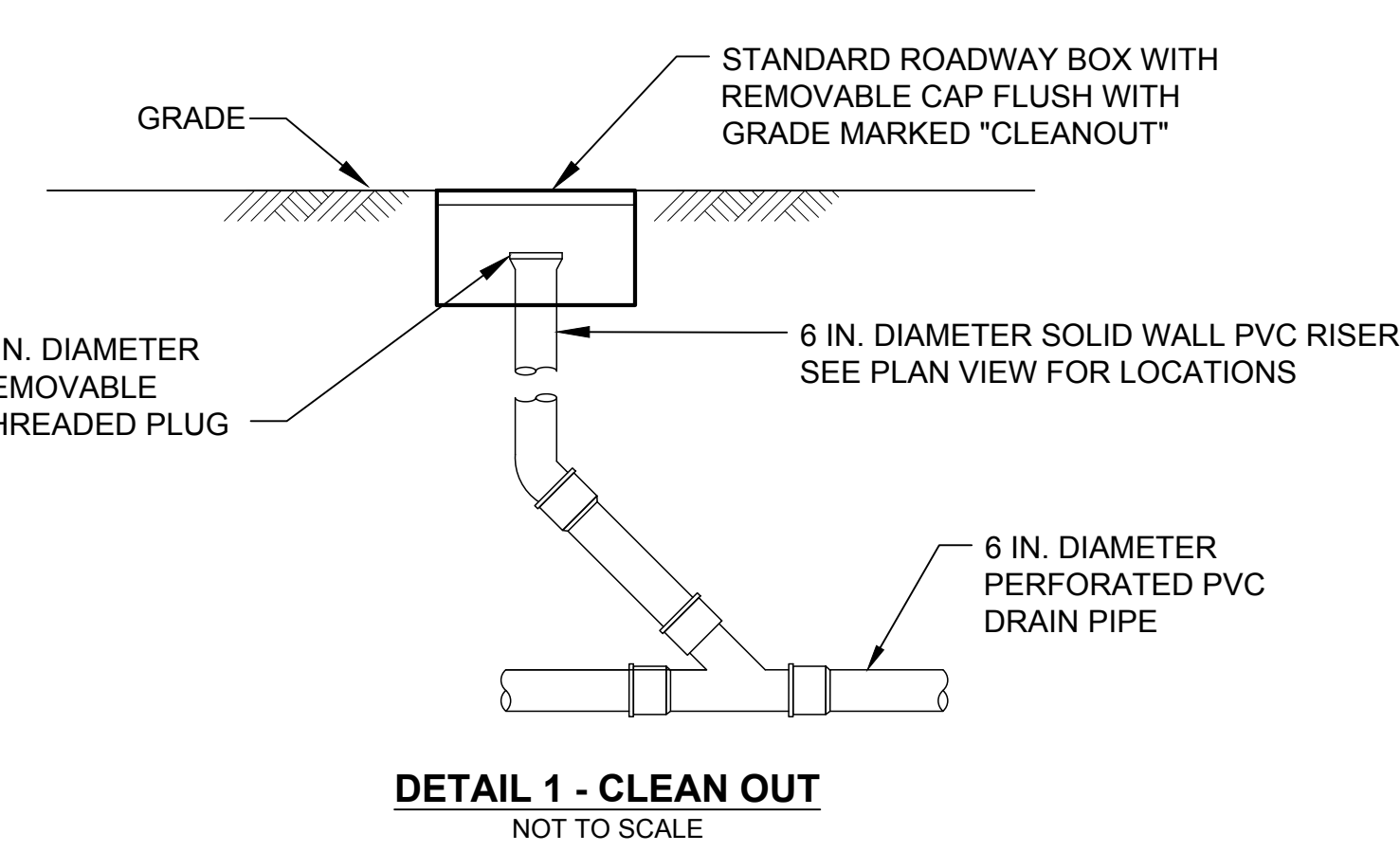
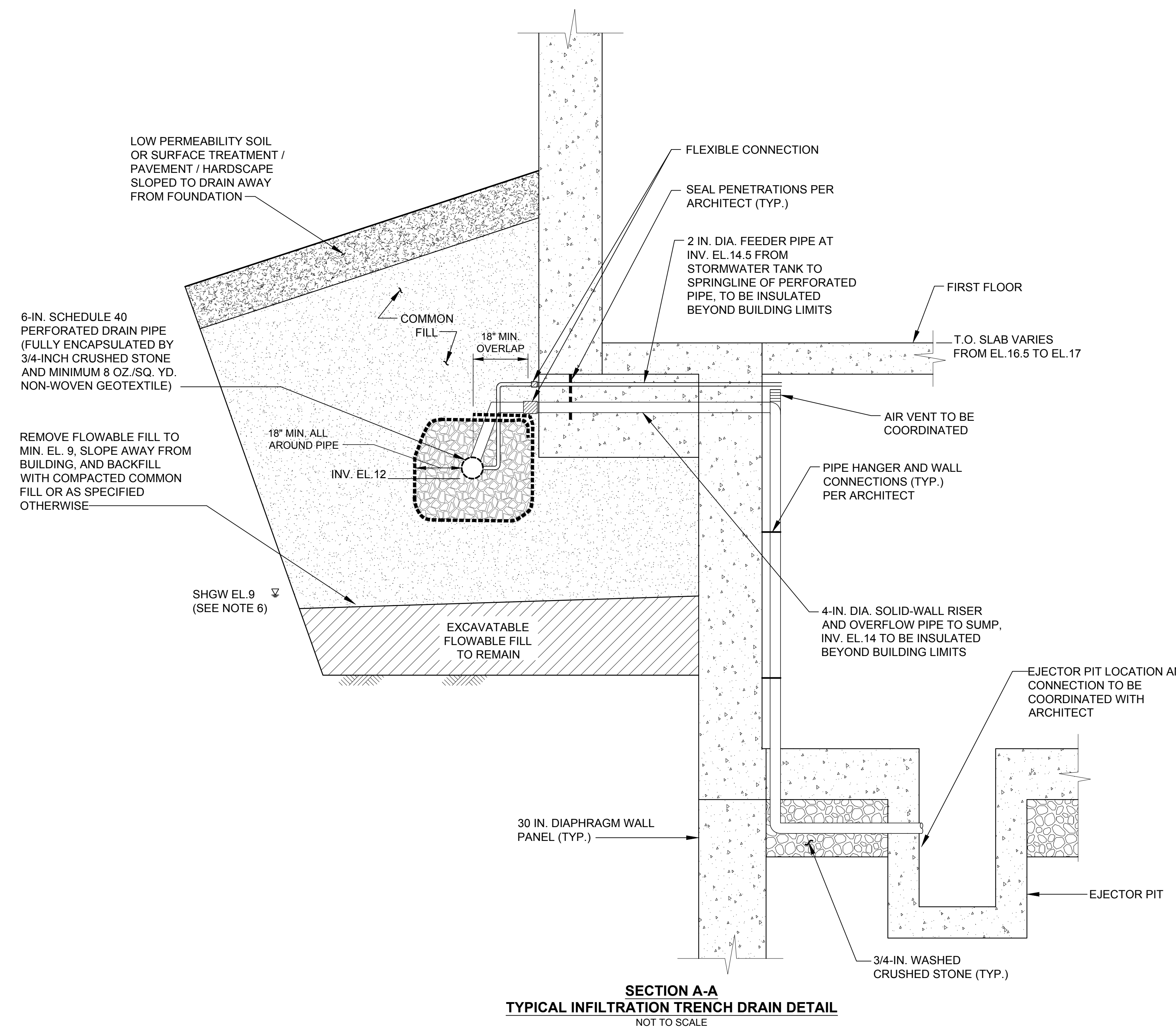
**HALEY ALDRICH**  
 Haley & Aldrich, Inc.  
 485 Medford Street, Suite 2200  
 Boston, MA 02129-1400  
 Tel: 617.886.7400  
 www.haleyaldrich.com

DESCRIPTION	DATE
A00 - General Information	
A000 - Architectural Plans	
A100 - Enlarged Plans	
A200 - Curtain Wall Drawings	
A300 - Shell 3D & EPS	
A400 - Exterior Details	
A500 - Vertical Transportation	
A600 - Interior	
A700 - Reflected Ceiling Plans	
A800 - Schedules and Menus	
A900 - Interior Details	
ASE - Architectural Slab Edge	



- LEGEND**
- APPROXIMATE LOCATION OF 6-IN. DIA. PERFORATED PERIMETER DRAIN PIPE
  - APPROXIMATE LOCATION OF 4-IN. DIA. SOLID WALL PVC OVERFLOW PIPE
  - APPROXIMATE LOCATION OF 4 IN. DIA. SOLID WALL RISER OVERFLOW TO CONNECT TO SUMP
  - APPROXIMATE LOCATION OF 2 IN. DIA. FEEDER PIPE FROM STORMWATER TANK
  - ⊗ APPROXIMATE LOCATION OF CLEAN OUT/INSPECTION PORT, ARROW INDICATES DIRECTION OF WYE FITTING

- NOTES**
- EXISTING CONDITIONS TAKEN FROM AN ELECTRONIC FILE TITLED "11679.01PR.dwg", RECEIVED 30 JULY 2018, PREPARED BY VHB.
  - PROPOSED GROUND FLOOR FEATURES TAKEN FROM TAKEN FROM AN ELECTRONIC FILE TITLED "11679.01PR.dwg", RECEIVED 10 JANUARY 2019, PREPARED BY VHB.
  - PROPOSED BASEMENT FEATURES TAKEN FROM AN ELECTRONIC FILE TITLED "A001 - 1ST FLOOR PLAN.dwg", RECEIVED 4 OCTOBER 2018, PROVIDED BY CBT ARCHITECTS AND AN ELECTRONIC FILE TITLED "StructuralPlan- BASEMENT.dwg", RECEIVED 2 JANUARY 2019, PROVIDED BY MCNAMARA SALVIA.
  - SUMP AND INTERNAL PLUMBING TO BE COORDINATED WITH ARCHITECT. OVERFLOW STORMWATER COLLECTED IN EJECTOR PIT TO BE PUMPED BACK INTO STORMWATER TANK.
  - PERFORATED PIPE MUST BE LAID FLAT AT ALL LOCATIONS WITH INVERT AT EL. 12.
  - SEASONAL HIGH GROUNDWATER LEVEL (SHGW) ESTIMATED FROM AVAILABLE MONITORING WELL DATA AND TEST PIT EXPLORATION OBSERVATIONS.



**SECTION A-A**  
**TYPICAL INFILTRATION TRENCH DRAIN DETAIL**  
 NOT TO SCALE

## **APPENDIX B**





# CALCULATIONS

File No.	40181-110
Sheet	1 of 1
Date	12/20/18
Computed By	MDK
Checked By	CKJ

Client	BC One Congress Tower JV LLC
Project	Bulfinch Crossing - WPB2 Office Tower, Boston, Massachusetts
Subject	Stormwater Infiltration and Mounding Analysis

PROBLEM: Determine the capacity of on-site infiltration system within the footprint of a perimeter drain (550 ft x 3.0 ft basin).

SOLUTION: Estimate infiltration capacity by employing USGS closed form solution for "Groundwater Mound Beneath Rectangular Recharge Area." Method calculated using principles outlined by Hantush 1967.

REFERENCES:

- Hantush, M.S., 1967. Growth and decay of groundwater-mounds in response to uniform percolation, Water Resources Research, vol. 3, no. 1, pp. 227-234
- US Geological Survey Scientific Investigations Report 2010-5102 "Simulation of Groundwater Mounding Beneath Hypothetical Stormwater Infiltration Basins."

ASSUMPTIONS:

- Unconfined Aquifer of Infinite extent
- Hydraulic Conductivity Range from 2.04 ft/day (Sandy Loam Rawls Rate) to 4.82 ft/day (Loamy Sand Rawls Rate) Both to be evaluated
- Specific Yield : 0.2 (dimensionless)
- Initial Saturated Thickness: 4 ft (Assumes initial groundwater is at El. 9, which is 4 ft. above the organic deposit).
- Length of Recharge: 550 ft (Building Perimeter, excluding footprint of Back of House Area)
- Width of Recharge: 3.0 ft, which is the bottom width of the Perimeter drain (neglecting side wall area)
- Time: 3 days (Assumes that recharge occurs at constant rate over 3 day period 24 hours /day)
- The limit of mounding is estimated on the attached USGS calculation spreadsheet.
- Assume depth to water is 4 ft. above organics initially (El. 9.0)
- Assume acceptable mounding height of 3.0 ft. or less (Inv El. 12.0 for Infiltration pipe)

CALCULATIONS:

- Refer to Attached Sheets Mounding Calculator Outputs: Volume of Recharge = 55,500 gallons over 72 hours. This volume is based on 1.25 inches of rain over the total impervious area of the site.

RESULTS:

Hydraulic Conductivity: 2.04 ft/day ( $7.1 \times 10^{-4}$  cm/sec)

Hydraulic Conductivity: 4.82 ft/day ( $1.7 \times 10^{-3}$  cm/sec)

Basin Size	Mound Height (ft)	Recharge Rate	
		ft/day	GPD
550 x 3.0 ft	2.81	1.5	<b>18,500</b>

Basin Size	Mound Height (ft)	Recharge Rate	
		ft/day	GPD
550 x 3.0 ft	1.94	1.5	<b>18,500</b>

DISCUSSION:

- The perimeter drain provides an effective area of infiltration of 1,650 square ft.
- The resulting mounding ranges from 1.79 ft. to 2.61 ft. after 72 hours of recharge. The initial condition is for groundwater at El. 9, which is 4.00 ft. of saturated soil above the organic deposit, the top of which is at El. 5, within most of the building perimeter. The invert elevation of the perimeter drain is El. 12.0, which is 3.0 ft. above the estimated seasonal high water of El. 9.0, and above the mounded groundwater elevation with the most restrictive soil used in the calculation.

This spreadsheet will calculate the height of a groundwater mound beneath a stormwater infiltration basin. More information can be found in the U.S. Geological Survey Scientific Investigations Report 2010-5102 "Simulation of groundwater mounding beneath hypothetical stormwater infiltration basins".

The user must specify infiltration rate (R), specific yield (Sy), horizontal hydraulic conductivity (Kh), basin dimensions (x, y), duration of infiltration period (t), and the initial thickness of the saturated zone (hi(0), height of the water table if the bottom of the aquifer is the datum). For a square basin the half width equals the half length (x = y). For a rectangular basin, if the user wants the water-table changes perpendicular to the long side, specify x as the short dimension and y as the long dimension. Conversely, if the user wants the values perpendicular to the short side, specify y as the short dimension, x as the long dimension. All distances are from the center of the basin. Users can change the distances from the center of the basin at which water-table aquifer thickness are calculated.

Cells highlighted in yellow are values that can be changed by the user. Cells highlighted in red are output values based on user-specified inputs. **The user MUST click the blue "Re-Calculate Now" button each time ANY of the user-specified inputs are changed** otherwise necessary iterations to converge on the correct solution will not be done and values shown will be incorrect. Use consistent units for all input values (for example, feet and days)

Input Values		use consistent units (e.g. feet & days <b>or</b> inches & hours)	Conversion Table	
			inch/hour	feet/day
1.5000	R	Recharge (infiltration) rate (feet/day)	0.67	1.33
0.200	Sy	Specific yield, Sy (dimensionless, between 0 and 1)		
4.82	K	Horizontal hydraulic conductivity, Kh (feet/day)*	2.00	4.00
1.500	x	1/2 length of basin (x direction, in feet)		
275.000	y	1/2 width of basin (y direction, in feet)	hours	days
3.000	t	duration of infiltration period (days)	36	1.50
4.000	hi(0)	initial thickness of saturated zone (feet)		

5.940	h(max)	maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
1.940	Δh(max)	maximum groundwater mounding (beneath center of basin at end of infiltration period)

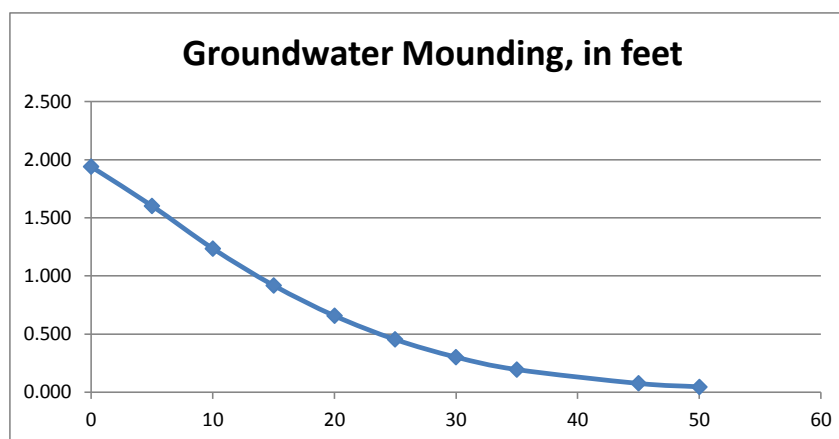
Ground-water Mounding, in feet

Distance from center of basin in x direction, in feet

1.940	0
1.603	5
1.236	10
0.919	15
0.658	20
0.454	25
0.302	30
0.195	35
0.076	45
0.047	50



**Re-Calculate Now**



### Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

This spreadsheet will calculate the height of a groundwater mound beneath a stormwater infiltration basin. More information can be found in the U.S. Geological Survey Scientific Investigations Report 2010-5102 "Simulation of groundwater mounding beneath hypothetical stormwater infiltration basins".

The user must specify infiltration rate (R), specific yield (Sy), horizontal hydraulic conductivity (Kh), basin dimensions (x, y), duration of infiltration period (t), and the initial thickness of the saturated zone (hi(0), height of the water table if the bottom of the aquifer is the datum). For a square basin the half width equals the half length (x = y). For a rectangular basin, if the user wants the water-table changes perpendicular to the long side, specify x as the short dimension and y as the long dimension. Conversely, if the user wants the values perpendicular to the short side, specify y as the short dimension, x as the long dimension. All distances are from the center of the basin. Users can change the distances from the center of the basin at which water-table aquifer thickness are calculated. Cells highlighted in yellow are values that can be changed by the user. Cells highlighted in red are output values based on user-specified inputs. **The user MUST click the blue "Re-Calculate Now" button each time ANY of the user-specified inputs are changed** otherwise necessary iterations to converge on the correct solution will not be done and values shown will be incorrect. Use consistent units for all input values (for example, feet and days)

Input Values		use consistent units (e.g. feet & days <b>or</b> inches & hours)	Conversion Table	
			inch/hour	feet/day
1.5000	R	Recharge (infiltration) rate (feet/day)	0.67	1.33
0.200	Sy	Specific yield, Sy (dimensionless, between 0 and 1)		
2.04	K	Horizontal hydraulic conductivity, Kh (feet/day)*	2.00	4.00
1.500	x	1/2 length of basin (x direction, in feet)		
275.000	y	1/2 width of basin (y direction, in feet)	hours	days
3.000	t	duration of infiltration period (days)	36	1.50
4.000	hi(0)	initial thickness of saturated zone (feet)		

6.811	h(max)	maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
2.811	Δh(max)	maximum groundwater mounding (beneath center of basin at end of infiltration period)

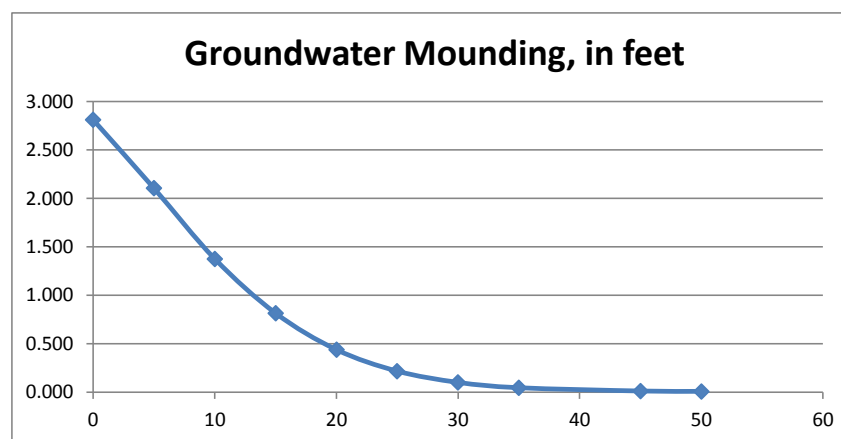
Ground-water Mounding, in feet

Distance from center of basin in x direction, in feet

2.811	0
2.105	5
1.377	10
0.816	15
0.440	20
0.218	25
0.102	30
0.046	35
0.013	45
0.009	50



**Re-Calculate Now**



### Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

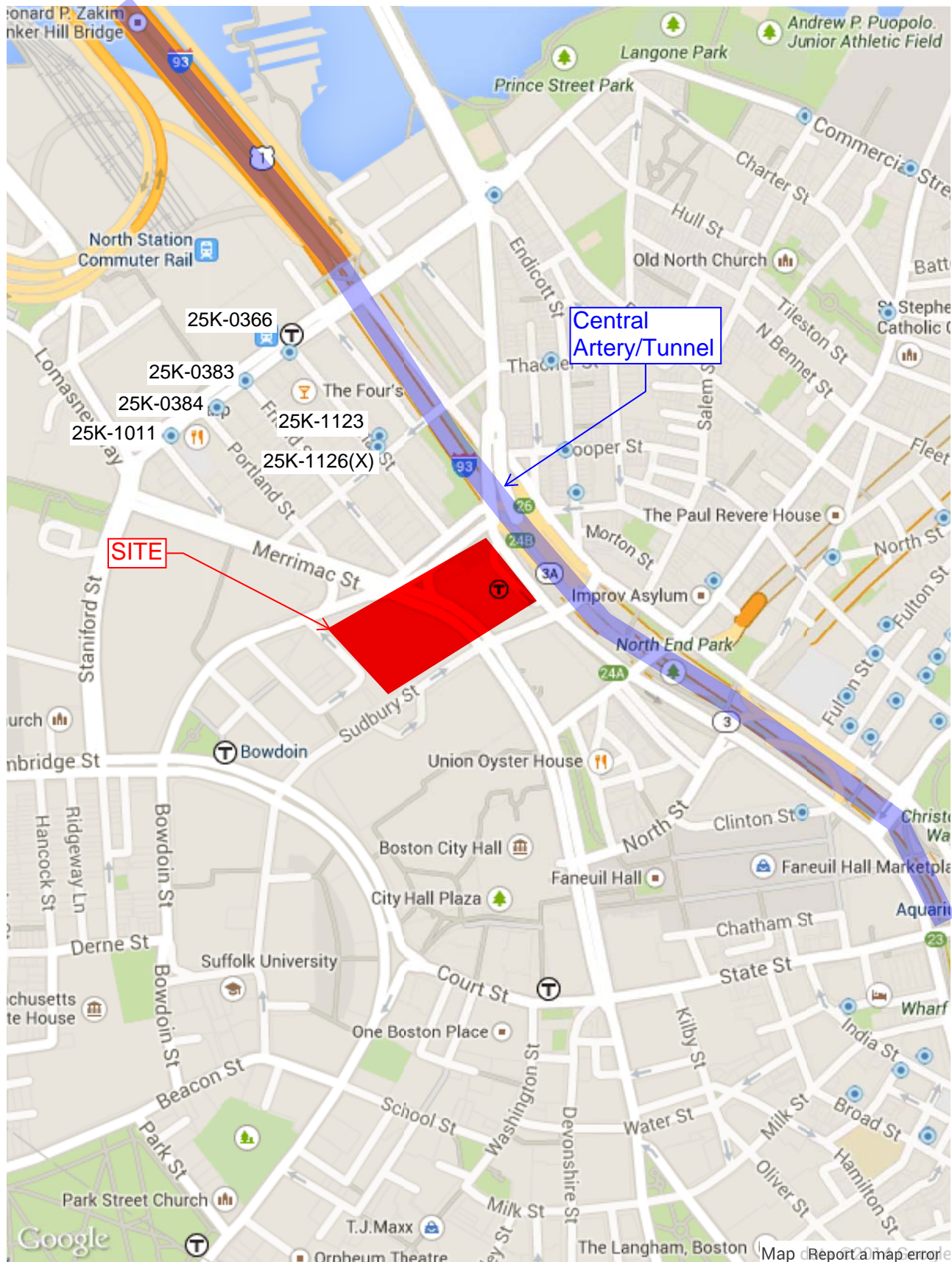
# Boston Groundwater Trust Well Locations Map

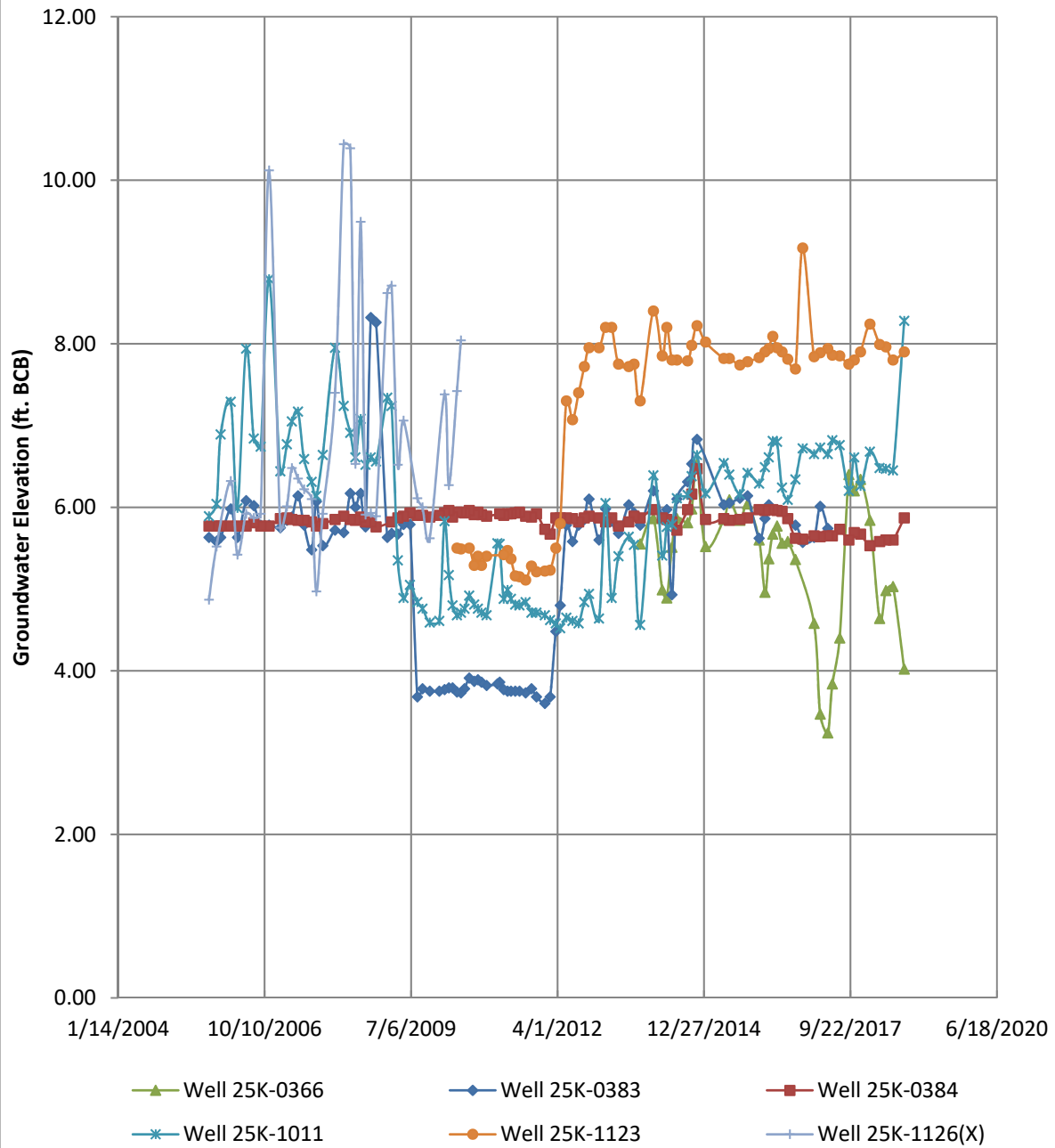
Contact Information: Christian Simonelli, csimonelli@bgwt.org, 617.859.8439

Click a well on the map below to view more information.

Find an Address:

Or select a well:





NOTES:

1). Elevations refer to Boston City Base (BCB)



WPB2 Office Tower  
Boston, Massachusetts

Historic Groundwater Levels

40181-110

Dec 2018

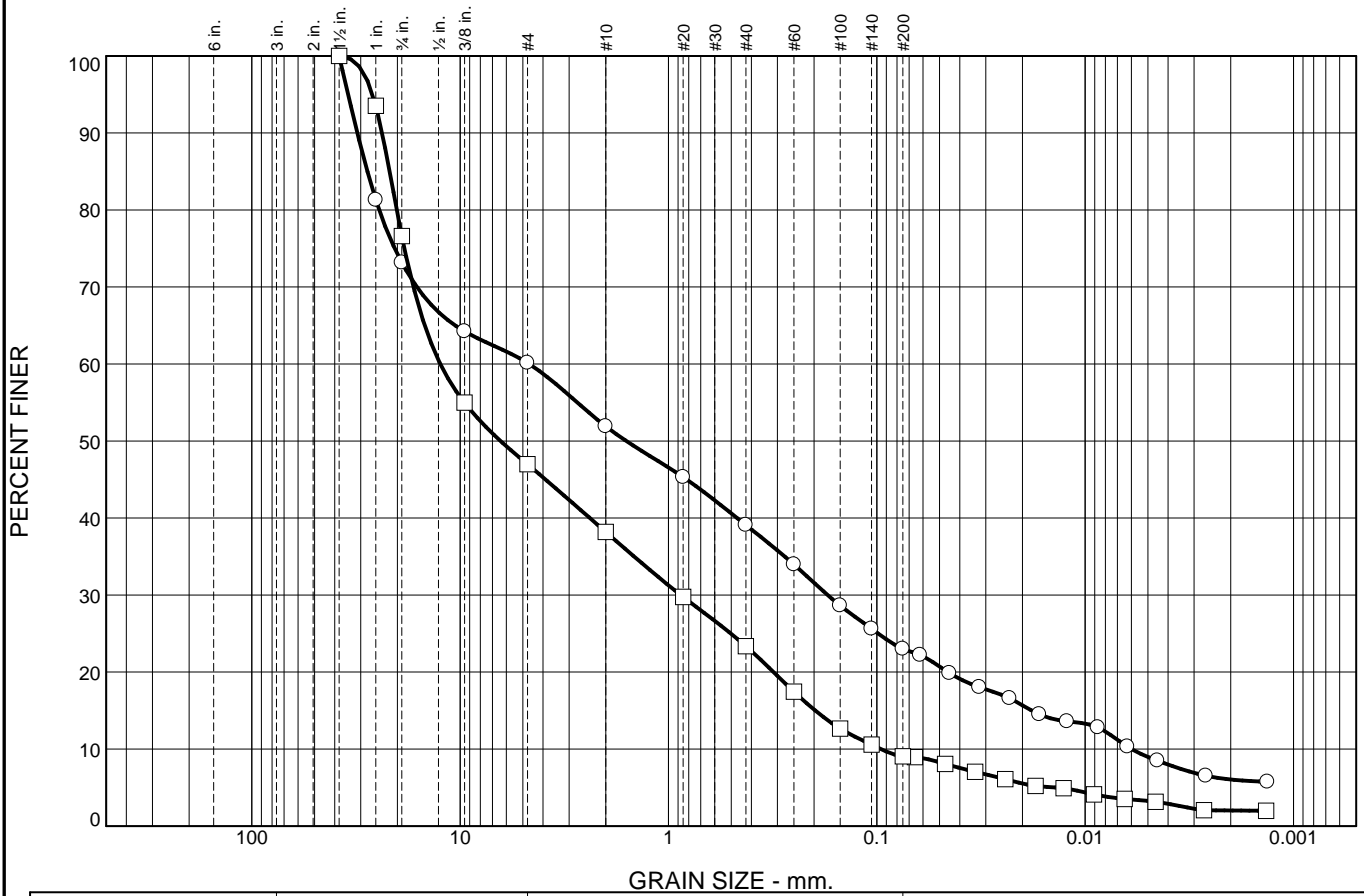
**Table I - Summary of Exploration and Stormwater Design Information**

Exploration ID <sup>1</sup>	Sampling Depth (ft)	Encountered Stratum at Sampling Elevation	Soil Classification <sup>2</sup>	Infiltration Rate <sup>3</sup> (in/hr)	Comments
HA18-B004	14.0 to 16.0	Fill	Sandy Loam	1.02	
HA18-B005	9.0 to 11.0	Granular Fill	Loamy Sand	2.41	
HA18-B008	9.0 to 11.0	Granular Fill	Sandy Loam	1.02	
HA18-B009	3.0 to 5.0	Granular Fill	Loamy Sand	2.41	

Notes:

1. See Figure 1 for approximate locations of explorations.
2. Soil Classification based on published USDA Textural Triangle from U.S. Department of Agriculture, Natural Resources Conservation Service, National Soil Survey Handbook, Title 430-VI.
3. Infiltration Rate based on published values from Rawls Rate Table 2.3.3 of the Massachusetts Stormwater Handbook, Vol. 3, Chapter 1, Page 22.
4. Sampling depths are referenced from ground surface at time of drilling.

U.S. STANDARD SIEVE SIZE



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	26.8	13.1	8.2	12.8	16.1	17.0	6.0
□	0.0	23.4	29.6	8.8	14.8	14.3	7.1	2.0

Expl. No.	Sample No.	Depth (m.)	Atterberg Limits %			Water Content (%)	C <sub>u</sub>	C <sub>c</sub>	USCS	
			W <sub>L</sub>	W <sub>P</sub>	I <sub>P</sub>					
○	HA18-B004	S04	14.0-16.0 ft.				25.3	778.72	1.06	GM
□	HA18-B005	S03	9.0-11.0 ft.				19.3	130.24	0.64	GP-GM

Sample Description	
○	Gray silty gravel with sand
□	Red brown poorly graded gravel with silt and sand

Remarks:

WPB2 Early Design  
Boston, Massachusetts



GRAIN SIZE DISTRIBUTION

DATE: 11/19/2018

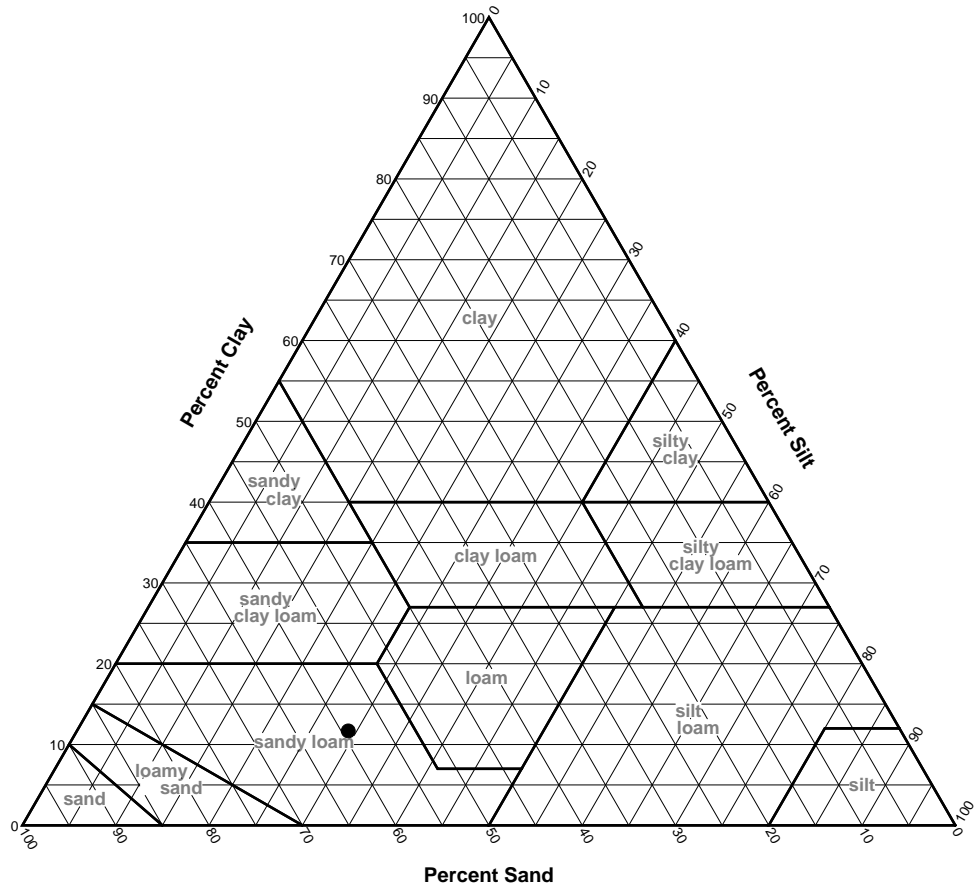
FILE NO: 40181-107







# USDA Soil Classification



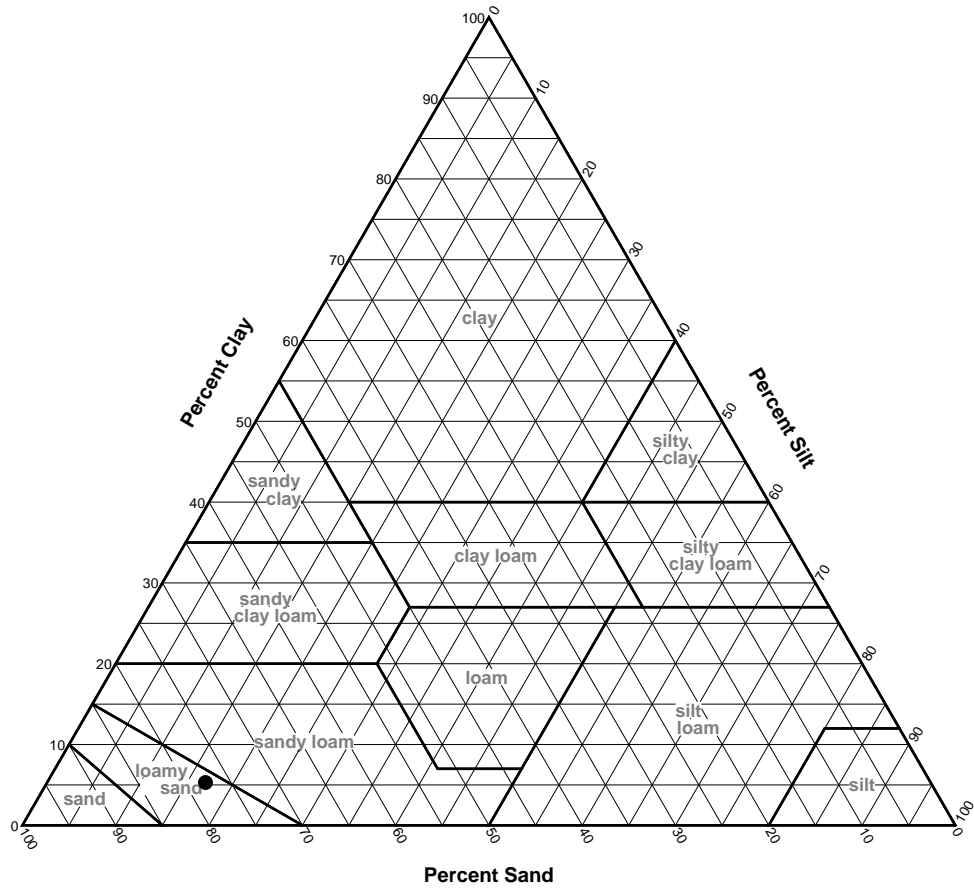
SOIL DATA						
Source	Sample No.	Depth	Percentages From Material Passing a #10 Sieve			Classification
			Sand	Silt	Clay	
● HA18-B004	S04	14.0-16.0 ft.	59.2	29.3	11.6	Sandy loam



Client:  
 Project: WPB2 Early Design  
 Boston, Massachusetts  
 Project No.: 40181-107

Figure

# USDA Soil Classification



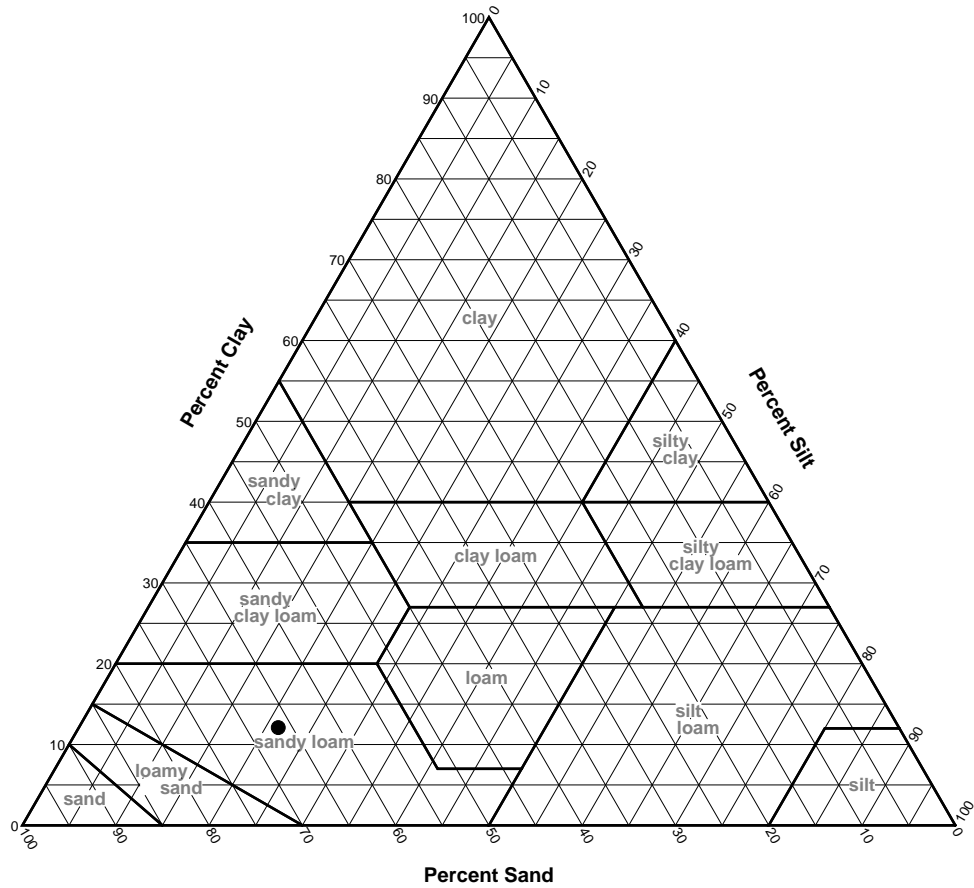
SOIL DATA						
Source	Sample No.	Depth	Percentages From Material Passing a #10 Sieve			Classification
			Sand	Silt	Clay	
● HA18-B005	S03	9.0-11.0 ft.	77.7	17.0	5.2	Loamy sand



**Client:**  
**Project:** WPB2 Early Design  
 Boston, Massachusetts  
**Project No.:** 40181-107

Figure

# USDA Soil Classification



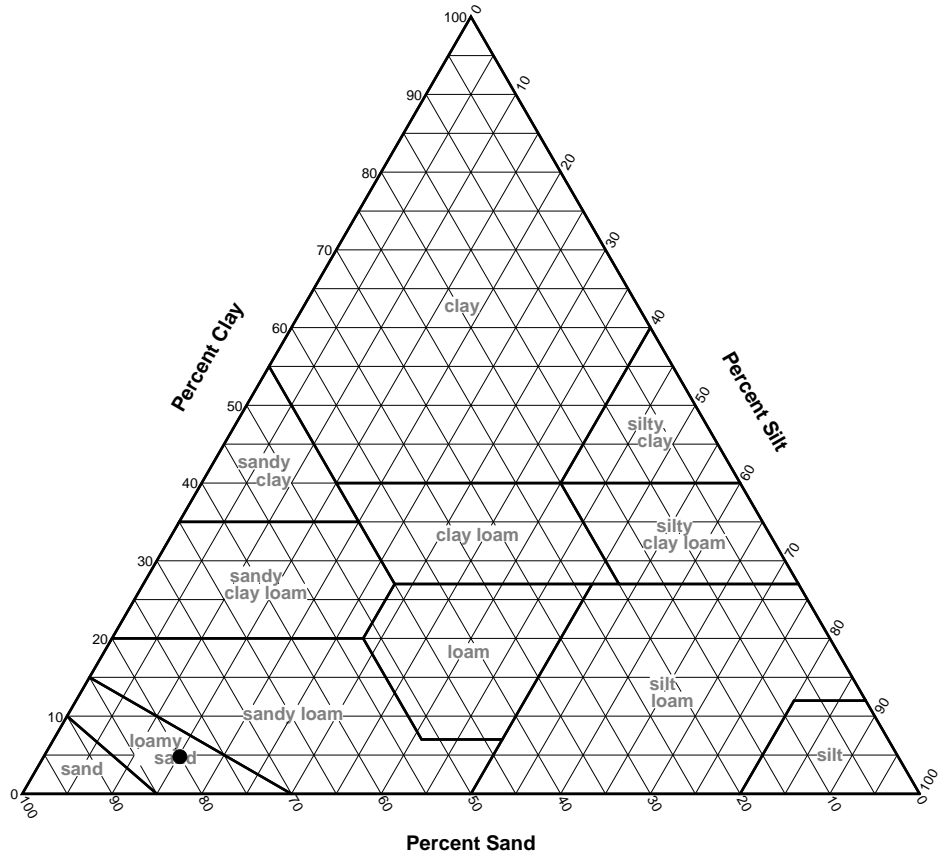
SOIL DATA						
Source	Sample No.	Depth	Percentages From Material Passing a #10 Sieve			Classification
			Sand	Silt	Clay	
● HA18-B008	S03	9.0-11.0 ft.	66.5	21.6	12.0	Sandy loam



Client:  
 Project: WPB2 Early Design  
 Boston, Massachusetts  
 Project No.: 40181-107

Figure

# USDA Soil Classification



SOIL DATA							
	Source	Sample No.	Depth	Percentages From Material Passing a #10 Sieve			Classification
				Sand	Silt	Clay	
●	HA18-B009	S01	3.0-5.0 ft.	80.0	15.3	4.7	Loamy sand
■	HA18-B009						



**Client:**  
**Project:** WPB2 Early Design  
 Boston, Massachusetts  
**Project No.:** 40181-107

**Figure**

Checked By: D. Crawford

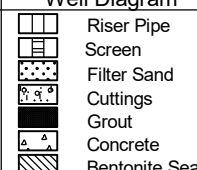
Project WPB2 OFFICE TOWER, BOSTON, MA  
 Client BULFINCH UNIT A OWNER LLC  
 Contractor GEOLOGIC-EARTH EXPLORATION, INC.

File No. 40181-107  
 Sheet No. 1 of 6  
 Start August 1, 2018  
 Finish August 10, 2018

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	PW/HW/NW	S	NX	Rig Make & Model: Acker Scout Track
Inside Diameter (in.)	5/4/3	1 3/8	2	Bit Type: Roller Bit
Hammer Weight (lb)	-	140	-	Drill Mud: None
Hammer Fall (in.)	Spin	30	-	Casing: PW spun 19 ft, HW spun 29 ft, NW spun 86 ft
				Hoist/Hammer: Cat-Head Doughnut Hammer
				PID Make & Model: Not used

H&A Rep. D. Warren  
 Elevation 25.0 (est.)  
 Datum Boston City Base  
 Location See Plan

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	USCS Symbol	Stratum Change Elev/Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size <sup>†</sup> , structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test						
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength		
0						-CONCRETE SLAB-												
13 19 17	S1 12	0.6 2.1	SP	24.4 0.6		Dense brown poorly graded SAND (SP), mps 0.25 in., no structure, no odor, dry			5	30	65							
21 17 19 50/8"	S2 10	4.0 5.7	SW-SM			Dense brown well graded SAND with silt (SW-SM), mps 1.0 in., no structure, no odor, moist  Note: Drilled through obstruction from approximately 5.5 ft - 6.5 ft.  Note: Drilled through obstruction from approximately 7.0 ft - 8.5 ft.	5	10	10	30	35	10						
8 22 4 4	S3 3	9.0 11.0	SW			Medium dense brown well graded SAND (SW), mps 1.0 in., no structure, no odor, moist, trace gravel	10	20	45	20	5							
						-FILL-												
10 3 3 2	S4 6	14.0 16.0	CL			Medium stiff gray sandy lean CLAY with gravel (CL), mps 1.5 in., no structure, no odor, trace brick fragments  Note: Drill action indicates COHESIVE FILL intermixed with rubble.  Note: Drill action indicates brick and mortar blocks in soft cohesive fill from approximately 18.5 ft - 22.0 ft.  Note: No recovery, brick fragments noted in wash.	5	10	10	15	10	50						
80/4"	NR	19.5																

Water Level Data			Sample ID			Well Diagram		Summary	
Date	Time	Elapsed Time (hr.)	Depth (ft) to:			O - Open End Rod T - Thin Wall Tube U - Undisturbed Sample S - Split Spoon Sample		Overburden (ft)	Rock Cored (ft)
			Bottom of Casing	Bottom of Hole	Water				
8/10/18	0700		86	153.5	18.9			86.4	67.1
								<b>Boring No. HA18-BO04</b>	

**Field Tests:** Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High  
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

<sup>†</sup>Note: Maximum particle size is determined by direct observation within the limitations of sampler size.  
 Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HA-TEST BORING-09 REV-WINDOWS 10 HA-LIB09-BOS.GLB HA-TB-CORE+WELL-09 W FENCE.GDT G:\40181\GINT\40181-107\_TB\_C\_OW.GPJ Sep 11, 18



# TEST BORING REPORT

Boring No. HA18-BO04

File No. 40181-107

Sheet No. 2 of 6

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	USCS Symbol	Stratum Change Elev/Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size <sup>†</sup> , structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test							
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength			
20		NR	19.9			-FILL-													
25	22 12 17 20	S5* 8	24.5 26.5			Note: Drill action indicates brick and mortar blocks in soft cohesive fill from approximately 22.5 ft - 23.5 ft.													
				SW	-0.5 25.5 -1.0 26.0	S5: No recovery. * Overdrove 3 in. spoon, recovered 8.0 in. medium dense gray well graded SAND with gravel (SW), trace brick fragments. -GRANULAR FILL-	10	15	20	30	25								
	28 31 45	S6 10	26.5 28.0	CL		S6: Hard gray lean CLAY (CL), mps < 1 mm, no structure, no odor, wet						100							
35						-MARINE DEPOSITS-													

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA18-BO04



# TEST BORING REPORT

Boring No. HA18-B004

File No. 40181-107

Sheet No. 3 of 6

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	USCS Symbol	Stratum Change Elev/Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size <sup>†</sup> , structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test							
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength			
50						-MARINE DEPOSITS-													
					-31.0 56.0	Note: Drill action indicates strata change at 56.0 ft.													
60	35 62 74 68	S7 10	59.5 61.5	CL- SW- SM		Hard gray sandy lean CLAY with gravel (CL) with pockets of well graded SAND with silt and gravel (SW-SM), mps 1.5 in., no structure, no odor, wet	10	10	10	20	10	40							
65	22 22 26 81	S8 18	64.5 66.5	CL		Hard gray lean CLAY with gravel (CL), mps 1.0 in., no structure, no odor, wet	5	10				85							
						-GLACIOMARINE DEPOSITS-													
70	12 12 15 16	NR	69.5 71.5			No recovery. Drill action indicates material similar to above, except very stiff.													
75	22 29 36 45	S9 15	74.5 76.5	CL		Hard gray lean CLAY with gravel (CL), mps 1.0 in., no structure, no odor, moist, with cobbles	5	10	5			80							
					-54.0 79.0	TOP OF WEATHERED BEDROCK 79.0 FT													

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA18-B004



# TEST BORING REPORT

Boring No. HA18-BO04

File No. 40181-107

Sheet No. 4 of 6

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	USCS Symbol	Stratum Change Elev/Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size <sup>†</sup> , structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test						
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength		
80	20 30 49 65	S10 17	79.5 81.5	ML		Very dense gray SILT with gravel (ML), mps 1.0 in., residual bedrock structure, wet, sample consists of completely weathered decomposed ARGILLITE	5	10				85						
						-DECOMPOSED BEDROCK-												
85	135 35*	S11 8	84.5 85.5	GM		Very dense gray silty GRAVEL (GM), mps 1.5 in., distinct rock fabric, moist, sample consists of highly weathered ARGILLITE * Note: 300 lb hammer. Note: Advanced borehole with button bit and spun NW casing to 86.0 ft SEE CORE BORING REPORT FOR ROCK DETAILS	30	50				20						
90																		
95																		
100																		
105																		

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA18-BO04



Depth (ft)	Drilling Rate (min./ft)	Run No.	Run Depth (ft)	Recovery/RQD		Weathering	Elev./Depth (ft)	Visual Description and Remarks
				in.	%			
<i>SEE TEST BORING REPORT FOR OVERBURDEN DETAILS</i>								
90	4	C1	86.4	24	40	High to Moderate		Soft to medium hard, highly to moderately weathered, gray aphanitic ARGILLITE. Bedding very thin, dipping at high angles to vertical. Joints dipping at moderate angles to vertical, very close, smooth, planar, discolored to decomposed, tight to open with frequent silt and clay infillings and coatings.
	3		91.4	0	0			
	3							
	4							
	4	C2	91.4	48	80	Moderate		Soft, moderately weathered, gray aphanitic ARGILLITE. Bedding and joints similar to above.
	4		96.4	0	0			
	4							
	4							
95	5							-WEATHERED BEDROCK-
	4	C3	96.4	60	100	Moderate to Slight	-71.4 96.4	TOP OF BEDROCK 96.4 FT
	4		101.4	48	80			Medium hard, moderately to slightly weathered, gray aphanitic ARGILLITE. Bedding indistinct. Joints dipping at moderate angles to vertical, very close to widely spaced, smooth to rough, planar, discolored to decomposed, tight to open with frequent silt and clay infillings and coatings. Occasional well developed pyrite crystals.
	4							
	5							
100	4	C4	101.4	48	80	Moderate to Slight		Similar to above, except soft to medium hard. Joints very close to close, planar to undulating.
	3		106.4	0	0			
	3							
	4							
105	3	C5	106.4	60	100	Slight		C5 106.4 ft - 110.5 ft: Similar to above, except medium hard, slightly weathered. Joints dipping at low angles to vertical, widely spaced, occasionally healed.
	3		111.4	51	85			
	3							
	3							
110	3	C6	111.4	32	53	Moderate to Slight	-85.5 110.5	C5 110.5 ft - 111.4: Medium hard, slightly weathered, light gray aphanitic TUFF. Bedding indistinct. Joints dipping at high angles to vertical, very close, smooth, planar, fresh to discolored, tight.
	4		116.4	0	0			C6: Similar to above, except soft to medium hard, moderately to slightly weathered. Joints dipping at moderate to high angles, very close, smooth, planar, discolored to decomposed, tight and occasionally healed to open, with frequent silt coatings and occasional sand infillings.
	4							
	5							
115	4	C7	116.4	49	83	Slight		Similar to above, except medium hard, slightly weathered
	4		121.3	7	12			
	4							
	5							
120	7							-BEDROCK-

H-A\_CORE-WELL-09 HA-LIB09-BOS-GLB HA-TB-CORE-WELL-09 W FENCE GDT G:140181\GINT\40181-107\_TB\_C\_OW.GPJ Sep 11, 18

Depth (ft)	Drilling Rate (min./ft)	Run No.	Run Depth (ft)	Recovery/RQD		Weathering	Elev./Depth (ft)	Visual Description and Remarks	
				in.	%				
125	5	C8	121.3	29	48	Slight		Hard, slightly weathered, light gray aphanitic TUFF with occasional very thin seams of gray aphanitic ARGILLITE. Bedding dipping at high angles where discernible. Joints dipping at high angles to vertical, very close, frequently intersecting, smooth to rough, planar, discolored, open, with frequent silt infillings.	
	5		126.3	0	0				
	5								
	5								
	5								
	6							-BEDROCK-	
	130	6	C9	126.3	36	64	Slight	-103.0	C9 126.3 ft - 128.0 ft: Hard, slightly weathered, gray aphanitic ARGILLITE interbedded with very thin seams of light gray TUFF. Bedding very thin, dipping at moderate angles. Joints very close to close, moderately dipping, smooth to rough, planar, discolored and occasionally oxidized, tight to open.
		7		131.0	0	0			
		8					128.0	C9 128.0 ft - 131.0 ft: Very hard, slightly weathered, gray, fine grained to aphanitic QUARTZ SANDSTONE. Bedding indistinct. Joint orientation indiscernible due to completely fractured condition of core.	
		8							-BEDROCK-
9									
135	8	C10	131.0	30	83	Slight		Similar to above, with seams of very hard, fresh, white QUARTZ and occasional open quartz infilled cavities.	
	12		134.0	0	0				
	7								
	2	C11	134.0	18	33	Slight to High	-110.0	C11 134.0 ft - 135.0 ft: Similar to above, with trace quartz core stones.	
	2		138.5	0	0				
3						135.0	C11 135.0 ft - 138.5 ft: Very soft, highly weathered, gray aphanitic ARGILLITE. Bedding very thin, dipping at high angles. Joints indistinct due to poor rock quality. Rock crumbles easily with light finger pressure.		
5									
140	4	C12	138.5	54	90	Slight		Moderately hard, slightly weathered, gray aphanitic ARGILLITE. Bedding very thin, dipping at high angles. Joints dipping at high angles, very close to moderately close, smooth, planar, discolored, tight to open, with frequent silt coatings.	
	4		143.5	47	78				
	4								
	4							-BEDROCK-	
	3								
145	4	C13	143.5	48	80	Slight		Similar to above	
	4		148.5	44	73				
	3								
	4								
	4								
150	4	C14	148.5	54	90	Slight		Similar to above	
	4		153.5	42	70				
	4								
	4								
	4								
155							-128.5		
							153.5	BOTTOM OF EXPLORATION 153.5 FT	
								Note: Approximately 50% - 75% estimated water loss observed below approximately 110.0 ft.	

H-A\_CORE-WELL-09 HA-LIB09-BOS.GLB HA-TB-CORE-WELL-09 W FENCE.GDT G:\40181\GINT\40181-107\_TB\_C\_OW.GPJ Sep 11, 18





# TEST BORING REPORT

Boring No. HA18-BO05

File No. 40181-107

Sheet No. 2 of 6

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	USCS Symbol	Stratum Change Elev/Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size <sup>†</sup> , structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test						
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength		
20	6 5					-FILL-												
					3.0 22.0													
25	WOR/ 12" - 2 3	S6 15	24.5 26.5	OL/ OH- PT		Soft gray ORGANIC SOIL (OL/OH), intermixed with 50% brown fibrous PEAT (PT), mps < 1 mm, no structure, organic odor, wet						100						
						-ORGANIC DEPOSITS-												
30	7 15 21 30	S7* 12	29.5 31.5	CL	-5.0 30.0	Hard mottled yellow brown to gray lean CLAY (CL), trace gravel, mps 0.75 in., no structure, no odor, wet Note: * Poor recovery, sample disturbed from gravel not washing out from 5.0 in. casing. Telescoped HW casing to 30.0 ft and resampled with 3.0 in. spoon.		10				90						
35	10 18 30 33	S8 11	34.5 36.5	CL		Hard tan lean CLAY (CL), mps < 1 mm, no structure, no odor, wet 3.75 tsf						100						
						-MARINE DEPOSITS-												
40	9 11 19 24	S9 14	39.5 41.5	CL		Similar to above, except gray 1.75 tsf						100						
					-17.5 42.5	Note: Drill action indicates minor amounts of sand and gravel in clay at approximately 42.5 ft.												
45						-GLACIOMARINE DEPOSITS-												

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA18-BO05



# TEST BORING REPORT

Boring No. HA18-BO05

File No. 40181-107

Sheet No. 3 of 6

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	USCS Symbol	Stratum Change Elev/Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size <sup>†</sup> , structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test				
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength
50	25 30 40 42	S10 12	49.5 51.5	CL		Hard gray lean CLAY with gravel (CL), mps 1.5 in., no structure, no odor, wet, frequent decomposed ARGILLITE fragments	5	10				85				
55	12 20 44 41	S11 14	54.5 56.5	CL- ML		Hard gray lean CLAY (CL), trace gravel with occasional seams of sandy SILT (ML), mps 0.75 in., no structure, no odor, wet  -GLACIOMARINE DEPOSITS-		10		10	80					
60	24 41 40 45	S12 3	59.5 61.5	CL		Hard gray sandy lean CLAY with gravel (CL), mps 1.5 in., no structure, no odor, wet, with cobbles	5	5	5	5	10	70				
65	30 18 30 47	S13 20	64.5 66.5	CL- ML		Hard gray lean CLAY (CL) with occasional seams of dense sandy SILT (ML), mps < 1 mm, no structure, no odor, wet					15	85				
70	44 48 70 75	S14 12	69.5 71.5	ML	-44.0 69.0	Very dense gray SILT with sand, trace gravel (ML), mps 1.0 in., well bonded in-situ, moist, with cobbles  -GLACIAL TILL- (FLOW TILL)	5	5			15	75				
75	42 52 55 100/ 5"	S15 14	74.5 76.5	CL	-47.0 72.0	Hard gray lean CLAY with gravel (CL), mps 1.0 in., no structure, no odor, wet  -GLACIOMARINE DEPOSITS-	5	10				85				

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA18-BO05



# TEST BORING REPORT

Boring No. HA18-BO05

File No. 40181-107

Sheet No. 4 of 6

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	USCS Symbol	Stratum Change Elev/Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size <sup>†</sup> , structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test					
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength	
80	6 13 15 20	S16 24	79.5 81.5	CL		Very stiff gray lean CLAY (CL), mps < 1 mm, no structure, no odor, wet 0.75 tsf						100					
					-57.5 82.5	-GLACIOMARINE DEPOSITS-											
						-GLACIOFLUVIAL DEPOSITS-											
85	48 100/ 2"	NR NR	84.5 85.2			Note: No recovery. Drill action indicates very dense, tightly nested coarse granular material with cobbles and boulders from approximately 82.5 ft - 88.0 ft.											
					-63.0 88.0	TOP OF WEATHERED BEDROCK 88.0 FT											
90	50 55 100/ 8"	S17 10	89.5 90.7	GM		Very dense gray silty GRAVEL (GM), mps 1.5 in., distinct rock fabric, moist, sample consists of severely weathered, decomposed ARGILLITE	30	30			40						
						-DECOMPOSED BEDROCK-											
					-69.5 94.5	TOP OF BEDROCK 94.5 FT											
95	120/ 5"	S18 4	94.5 94.9	GM		Similar to above	35	40			25						
						Note: Spun NW casing to 95.5 ft. SEE CORE BORING REPORT FOR ROCK DETAILS											

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA18-BO05

Depth (ft)	Drilling Rate (min./ft)	Run No.	Run Depth (ft)	Recovery/RQD		Weathering	Elev./Depth (ft)	Visual Description and Remarks
				in.	%			
<i>SEE TEST BORING REPORT FOR OVERBURDEN DETAILS</i>								
6		C1	96.2	54	90	Moderate to Slight		Soft to medium hard, moderately to slightly weathered, gray aphanitic TUFFACEOUS ARGILLITE. Bedding indistinct. Joints dipping at moderate angles to vertical, very close, smooth, planar, discolored to decomposed, tight to open with occasional calcite coatings. Occasional slickensides parallel to dip of high angle joints noted.
6			101.2	0	0			
5								
6								
100		C2	101.2	58	97	Slight		Moderately hard, slightly weathered, gray aphanitic ARGILLITE. Bedding very thin, dipping at moderate to high angles. Joints dipping at moderate angles to vertical, very close to close, smooth to rough, planar to undulating, fresh to discolored.
6			106.2	33	55			
5								
5								
105		C3	106.2	53	96	Slight		Similar to above, except joints very close to moderately close
5			110.8	26	47			
5								
5								
110		C4	110.8	58	97	Slight		Similar to above
5			115.8	36	60			
6								
5								
115		C5	115.8	50	83	Fresh		Hard, fresh, gray aphanitic ARGILLITE. Bedding very thin, irregular, dipping at moderate angles to horizontal. Joints dipping at moderate angles to horizontal, occasionally high angle, very close to moderately close, smooth to rough, planar to discolored, tight to open, with frequent decomposed calcite coatings.
5			120.8	19	32			
5								
5								
120		C6	120.8	50	89	Slight		Similar to above, except moderately hard, slightly weathered, joints dipping at moderate to high angles
5			125.5	19	34			
5								
6								
125		C7	125.5	36	69	Slight		Hard, slightly weathered, gray aphanitic ARGILLITE. Bedding and joints indistinct due to completely fractured condition of core. Rock appears to have frequent intersecting vertical joints. Core barrel jammed at 129.8 ft, core bit destroyed. Replaced bit, proceeded with next run.
6			129.8	0	0			
8								
9								
130		C8	129.8	12	86	Slight to Fresh		Very hard slightly weathered to fresh ARGILLITE/SANDSTONE core stones. Drill action and water loss indicate highly fractured hard rock.
12			131.0	0	0			

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-104.0  
-----  
129.0

Depth (ft)	Drilling Rate (min./ft)	Run No.	Run Depth (ft)	Recovery/RQD		Weathering	Elev./Depth (ft)	Visual Description and Remarks
				in.	%			
15		C9	131.0	24	75	Slight		Note: Approximately 75% - 100% estimated water loss observed below 130.0 ft. Hard, slightly weathered, gray fine grained SANDSTONE. Bedding indistinct. Rock extremely fractured. Joint appears very close, high angle to vertical, open, decomposed with sand infillings.  -BEDROCK-
14			133.7	0	0			
12		C10	133.7 136.3	18 6	58 19	Slight		Hard, slightly weathered, green gray to gray, fine grained SANDSTONE. Bedding indistinct. Joints dipping at moderate to high angles, very close to close, smooth to rough, discolored to decomposed, tight to open, with frequent chlorite and calcite coatings. Occasional slickensides roughly diagonal to dip of joint surfaces.
14								
15								
135		9					-111.3 136.3	BOTTOM OF EXPLORATION 136.3 FT
140								
145								
150								
155								
160								
165								

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# TEST BORING REPORT

Boring No. HA18-BO08

File No. 40181-107

Sheet No. 2 of 5

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	USCS Symbol	Stratum Change Elev/Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size <sup>†</sup> , structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test							
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength			
20	15																		
25	6 9 14 15	S6 24	24.0 26.0	CL		Similar to above  3.75 tsf  -MARINE DEPOSITS-													
30	4 4 5 6	S7 24	29.0 31.0	CL		Similar to above, except stiff  2.25 tsf													
35	WOR WOH 2 3	S8 24	34.0 36.0	CL		Very soft gray lean CLAY, trace fine sand in occasional partings  0.50 tsf					5	95							
45	10 10 9 15	S9 20	44.0 46.0	CL	-25.0 43.0	Very stiff gray sandy lean CLAY with gravel (CL), mps 1.0 in., no structure, no odor, moist  -GLACIOMARINE DEPOSITS-	5	10	5	5	10	65							
	15	S10	49.0	ML	-30.5 48.5	-GLACIAL TILL- Very dense gray gravelly SILT (ML), trace sand, mps 1.5 in., no structure,	10	15	5		5	65							

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA18-BO08



Depth (ft)	Drilling Rate (min./ft)	Run No.	Run Depth (ft)	Recovery/RQD		Weathering	Elev./Depth (ft)	Visual Description and Remarks
				in.	%			
<i>SEE TEST BORING REPORT FOR OVERBURDEN DETAILS</i>								
75	4	C1	71.0	57	95	Moderate to Slight	-53.0 71.0	Soft to medium hard, moderately to slightly weathered, gray aphanitic ARGILLITE. Bedding very thin, dipping at high angles. Joints dipping at moderate angles to vertical, very close to close, smooth, planar, discolored to decomposed, tight to open.
	4		76.0	5	8			
	4							
	4							
	4	C2	76.0	60	100	Slight		Similar to above, except medium hard, slightly weathered. Joints very close to moderately close.
	4		81.0	10	17			
	4							
	4							
80	4	C3	81.0	57	95	Slight		Similar to above
	4		86.0	37	62			
	4							
	4							
	4	C4	86.0	60	100	Slight		Similar to above
	4		91.0	48	80			
	4							
	4							
	4	C5	91.0	48	89	Slight		Similar to above, joints very close to close.
	4		95.5	0	0			
	4							
	4							
95	4	C6	95.5	33	103	Slight		Similar to above
	4		98.2	0	0			
	4							
	4							
	4	C7	98.2	29	100	Moderate to High		Very soft to medium hard, moderately to highly weathered, gray aphanitic ARGILLITE. Bedding very thin, dipping at high angles. Joints dipping at high angles to vertical, very close, smooth, planar, discolored to decomposed, tight to open, with frequent silt infillings and coatings.
	4		100.6	0	0			
	4							
	4							
100	4	C8	100.6	60	100	Slight		Similar to above, except moderately hard, slightly weathered. Joints dipping at low to moderate angles, widely spaced.
	4		105.6	60	100			
	4							
	4							
105	4	C9				Fresh		Similar to above, except moderately hard to hard, fresh.

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-BEDROCK-







# TEST BORING REPORT

Boring No. HA18-BO09

File No. 40181-107

Sheet No. 2 of 5

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	USCS Symbol	Stratum Change Elev/Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size <sup>†</sup> , structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test							
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength			
20	7 10																		
25	2 2 3 5	S5 22	24.0 26.0	CL		Medium stiff gray lean CLAY (CL), mps < 1 mm, no structure, no odor, wet 0.75 tsf													
						-MARINE DEPOSITS-													
30	3 4 5 6	S6 24	29.0 31.0	CL		Similar to above, except stiff with trace gravel, mps 0.5 in. 0.50 tsf		5											
					-16.5 33.0														
35	10 9 12 14	S7 20	34.0 36.0	CL		Very stiff gray lean CLAY with gravel (CL), mps 1.0 in., no structure, no odor, wet, with cobbles	10	10											
						-GLACIOMARINE DEPOSITS-													
40	5 6 6 9	S8 15	39.0 41.0	CL		Stiff gray sandy lean CLAY with gravel (CL), mps 1.5 in., no structure, no odor, wet, with cobbles	5	10	5	5	10	65							
45	10 12 15	NR	44.0 46.0			No recovery. Residue in spoon similar to above.													
					-30.5 47.0														
						-GLACIAL TILL-													
	17	S9	49.0	ML		Dense mottled gray brown sandy SILT with gravel (ML), intermixed with	10	10	5	5	10	60							

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA18-BO09



# TEST BORING REPORT

Boring No. HA18-BO09

File No. 40181-107

Sheet No. 3 of 5

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	USCS Symbol	Stratum Change Elev/Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size <sup>†</sup> , structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel		Sand			Field Test							
							% Coarse	% Fine	% Coarse	% Medium	% Fine	% Fines	Dilatancy	Toughness	Plasticity	Strength			
50	12 28 29	15	51.0			30% decomposed ARGILLITE fragments, mps 1.5 in., no structure, no odor, moist, with cobbles  -GLACIAL TILL- TOP OF WEATHERED BEDROCK 51.5 FT													
55	24 30 41 51	S10 20	54.0 56.0	ML	-35.0 51.5	Very dense gray SILT with gravel (ML), mps 1.5 in., distinct rock fabric, moist. Sample consists of completely weathered, decomposed ARGILLITE.  -WEATHERED BEDROCK-	10	10			80								
60	26 18 25 33	S11 22	59.0 61.0	GM		Dense gray silty GRAVEL (GM), mps 1.5 in., distinct rock fabric, moist. Sample consists of completely weathered, decomposed ARGILLITE.	30	30			40								
					-45.5 62.0	Note: Drill action indicates sound rock at 62.0 ft.													
65	67 128	S12 9	64.0 65.0	GW-GM		Very dense gray well graded GRAVEL with silt (GW-GM), mps 1.5 in., distinct rock fabric with very thin vertical bedding, no odor, moist. Sample consists of highly weathered ARGILLITE.  -BEDROCK-	60	30			10								
70	100/4"	NR	69.0 69.3			No recovery. Spoon refusal at 69.3 ft.  Note: Advanced borehole with button bit and spun NW casing to 71.0 ft.  SEE CORE BORING REPORT FOR ROCK DETAILS													
75																			

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA18-BO09



Depth (ft)	Drilling Rate (min./ft)	Run No.	Run Depth (ft)	Recovery/RQD		Weathering	Elev./Depth (ft)	Visual Description and Remarks
				in.	%			
<i>SEE TEST BORING REPORT FOR OVERBURDEN DETAILS</i>								
3		C1	71.0	36	75	Slight		Moderately hard, slightly weathered, gray aphanitic ARGILLITE. Bedding very thin, irregular, dipping at high angles. Joints dipping at high angles, very close to close, smooth, planar, discolored to decomposed, tight to open, with frequent silt coatings.
4			75.0	0	0			
6								
6								
75		C2	75.0	29	73	Slight		Similar to above, with frequent intersecting vertical joints. Core very brittle, fractures readily along intersecting joints.
4			78.3	0	0			
4								
6								
5		C3	78.3	28	61	Slight		Similar to above, with joint orientation indistinct due to completely fractured condition of core.
4			82.1	0	0			
4								
80								
4		C4	82.1	58	97	Slight		Moderately hard, slightly weathered, gray aphanitic ARGILLITE. Bedding very thin, dipping at high angles. Joints dipping at high angles to vertical, very close to close, smooth to rough, planar to undulating, discolored, tight to open and occasionally healed with frequent silt infillings and coatings. Rock very brittle, fractures readily along bedding planes and intersecting vertical joints.
6			87.1	12	20			
5								
85								
6		C5	87.1	60	100	Slight		Similar to above
5			92.1	26	43			
5								
90								
6		C6	92.1	57	95	Slight		Similar to above
5			97.1	30	50			
5								
95								
4		C7	97.1	48	80	Slight		Similar to above, with bedding dipping at high angles to vertical.
5			102.1	27	45			
5								
100								
4		C8	102.1	48	92	Slight		Similar to above
4			106.4	36	69			
5								
105								
4								

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Depth (ft)	Drilling Rate (min./ft)	Run No.	Run Depth (ft)	Recovery/RQD		Weathering	Elev./Depth (ft)	Visual Description and Remarks
				in.	%			
110	6	C9	106.4	60	100	Slight	-94.9 111.4	Similar to above with bedding dipping at high angles. Joints very close to moderately close.  -BEDROCK-  BOTTOM OF EXPLORATION 111.4 FT  Note: Approximately 75% estimated water loss observed while coring.
	5		111.4	44	73			
	4							
	4							
	4							
115								
120								
125								
130								
135								
140								

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# Appendix D

## Standard 4 Computations and Supporting Information

- Long-Term Pollution Prevention Plan
- TSS Removal Worksheets



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## Long –Term Pollution Prevention Plan



# Long-Term Pollution Prevention Plan

This Long-Term Pollution Prevention Plan has been developed to establish site management practices that improve the quality of stormwater discharges from the Project. This plan applies to the proposed Office Tower at One Congress Street. The maintenance obligations for the site will reside with the parcel owner.

---

## Description of Pollutant Sources

Potential pollutant sources for the project includes the loading dock, building itself, and exterior courtyards and landscaped areas.

---

## Pollutant Control Approach

---

### Maintenance of Pavement Systems

#### Standard Concrete Pavement

Regular maintenance of pavement surfaces will prevent pollutants such as oil and grease, trash, and sediments from entering the stormwater management system. The following practices should be performed:

- Sweep or vacuum concrete pavement areas on private property quarterly with a commercial cleaning unit and properly dispose of removed material
- Check loading areas and dumpster areas frequently for spillage and/or pavement staining and clean as necessary
- Pick up and remove litter from the exterior landscaping areas on weekly basis.



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## Maintenance of Vegetated Areas

Proper maintenance of vegetated areas can prevent the pollution of stormwater runoff by controlling the source of pollutants such as suspended sediments, excess nutrients, and chemicals from landscape care products. Practices that should be followed under the regular maintenance of the vegetated landscape include:

- Inspect planted areas on a semi-annual basis and remove any litter.
- Maintain planted areas adjacent to pavement to prevent soil washout.
- Immediately clean any soil deposited on pavement.

---

## Pesticides/Herbicides/Fertilizers

- Pesticide/Herbicide Usage – No pesticides/herbicides are to be used unless a single spot treatment is required for a specific control application.
- Fertilizer usage should be avoided. If deemed necessary, slow release fertilizer should be used. Fertilizer may be used to begin the establishment of vegetation in bare or damaged areas, but should not be applied on a regular basis unless necessary.
- No fertilizers/herbicides/pesticides shall be stored outside. Any such materials shall preferably be stored off-site. If required on-site, these materials shall be stored indoors

---

## Management of Snow and Ice

### Storage and Disposal

In general, snow shall be stockpiled on standard pavement surfaces or in a designated area determined by the property owner so that sand and salt may be swept in the spring or removed as snow melts and drains through the stormwater management system. Snow storage areas on private property shall be located outside of any resource area. Key practices for the safe storage and disposal of snow include:

- Under no circumstances shall snow be disposed or stored in resource areas.

### Salt and Deicing Chemicals

The amount of salt and deicing chemicals to be used on the site shall be reduced to the minimum amount needed to provide safe pedestrian and vehicle travel.



The following practices should be followed to control the amount of salt and deicing materials that come into contact with stormwater runoff:

- Devices used for spreading salt and deicing chemicals should be capable of varying the rate of application based on the site specific conditions.
- Sand and salt should be stockpiled under covered storage facilities that prevent precipitation and adjacent runoff from coming in contact with the deicing materials

---

## Spill Prevention and Response Plan

Spill prevention equipment and training will be provided by the property management company.

---

### Initial Notification

In the event of a spill the facility and/or construction manager or supervisor will be notified immediately.

#### ONE CONGRESS TOWER PARCEL SITE MANAGER

Name: David Ambrose Phone: (617) 593-8697 (Cell)  
 Phone: (617) 248-8905 x206 E-mail: dambrose@hyminvestments.com

#### CONSTRUCTION MANAGER

Name: Finnbar O’Sullivan Phone: (617) 719 9813  
 Phone: \_\_\_\_\_ E-mail: fosullivan@jm-a.com

The supervisor will first contact the Fire Department and then notify the Police Department, the Public Health Commission and the Conservation Commission. The Fire Department is ultimately responsible for matters of public health and safety and should be notified immediately.

---

### Further Notification

Based on the assessment from the Fire Chief, additional notification to a cleanup contractor may be made. The Department of Environmental Protection (DEP) and the EPA may be notified depending upon the nature and severity of the spill. The Fire Chief will be responsible for determining the level of cleanup and notification required. The attached list of emergency phone numbers shall be posted in the main construction/facility office and readily accessible to all



employees. A hazardous waste spill report shall be completed as necessary using the attached form.

---

## Facility Manager Training

The facility manager shall be responsible for record-keeping, submission of yearly reports to the Conservation Commission and training of facility staff involved with implementation of the LTPPP.





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## Emergency Notification Phone Numbers

### 1. ONE CONGRESS TOWER SITE MANAGER

Name: David Ambrose Home Phone: (617) 593-8697 (Cell)  
Phone: (617) 248-8905 x206 E-mail: dambrose@hyminvestments.com

#### ALTERNATE

Name: James O’Keeffe Gordon Home Phone: \_\_\_\_\_  
Phone: (617) 248-8905 x215 E-mail: jgordon@hyminvestments.com

### 2. BOSTON FIRE DEPARTMENT

Emergency: 911  
Business: (617) 343-2880

### 3. BOSTON POLICE DEPARTMENT

Emergency: 911  
Business: (617) 343-4240

### 4. CLEANUP CONTRACTOR:

Address: \_\_\_\_\_  
Phone: \_\_\_\_\_

### 5. MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

Emergency: (888) 304-1133  
Boston Office: (617) 292-5500

### 6. EPA NATIONAL EMERGENCY RESPONSE CENTER

Phone: (800) 424-8802

### 7. U.S. ENVIRONMENTAL PROTECTION AGENCY

Emergency: (800) 439-2370  
Business Call Center: (888) 372-7341

### 8. CONSERVATION COMMISSION

Contact: \_\_\_\_\_  
Phone: (617) 635-3850

### 9. DEPARTMENT OF PUBLIC HEALTH

Contact: \_\_\_\_\_  
Phone: (617) 624-6000



**Hazardous Waste / Oil Spill Report**

Date \_\_\_\_\_ Time \_\_\_\_\_ AM / PM

Exact location (Transformer #) \_\_\_\_\_

Type of equipment \_\_\_\_\_ Make \_\_\_\_\_ Size \_\_\_\_\_

S / N \_\_\_\_\_ Weather Conditions \_\_\_\_\_

On or near Water  Yes If Yes, name of body of Water \_\_\_\_\_

No

Type of chemical/oil spilled \_\_\_\_\_

Amount of chemical/oil spilled \_\_\_\_\_

Cause of Spill \_\_\_\_\_

Measures taken to contain or clean up spill \_\_\_\_\_

Amount of chemical/oil recovered \_\_\_\_\_ Method \_\_\_\_\_

Material collected as a result of cleanup:

\_\_\_\_\_ Drums containing \_\_\_\_\_

\_\_\_\_\_ Drums containing \_\_\_\_\_

\_\_\_\_\_ Drums containing \_\_\_\_\_

Location and method of debris disposal

\_\_\_\_\_

Name and address of any person, firm, or corporation suffering damages:

\_\_\_\_\_

Procedures, method, and precautions instituted to prevent a similar occurrence from recurring:

\_\_\_\_\_

Spill reported to General Office by \_\_\_\_\_ Time \_\_\_\_\_ AM / PM

Spill reported to DEP / National Response Center by \_\_\_\_\_

DEP Date \_\_\_\_\_ Time \_\_\_\_\_ AM / PM Inspector \_\_\_\_\_

NRC Date \_\_\_\_\_ Time \_\_\_\_\_ AM / PM Inspector \_\_\_\_\_

Additional comments: \_\_\_\_\_



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## Assessment - Initial Containment

The supervisor or manager will assess the incident and initiate containment control measures with the appropriate spill containment equipment included in the spill kit kept on-site. A list of recommended spill equipment to be kept on site is included on the following page.

Emergency Fire / Police Department	<u>911</u>
Boston Department of Public Health	<u>(617) 624-6000</u>
Boston Conservation Commission:	<u>(617) 635-3850</u>




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## Emergency Response Equipment

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The following equipment and materials shall be maintained at all times and stored in a secure area for long-term emergency response need.

<b>Supplies</b>	<b>Quantity</b>	<b>Recommended Suppliers</b>
SORBENT PILLOWS/"PIGS"	2	<a href="http://www.newpig.com">http://www.newpig.com</a>
SORBENT BOOM/SOCK	25 FEET	Item # KIT276 – mobile container with two pigs, 26 feet of sock, 50 pads, and five pounds of absorbent (or equivalent)
SORBENT PADS	50	
LITE-DRI® ABSORBENT	5 POUNDS	<a href="http://www.forestry-suppliers.com">http://www.forestry-suppliers.com</a>
SHOVEL	1	Item # 33934 – Shovel (or equivalent)
PRY BAR	1	Item # 43210 – Manhole cover pick (or equivalent)
GOGGLES	1 PAIR	Item # 23334 – Goggles (or equivalent)
GLOVES – HEAVY	1 PAIR	Item # 90926 – Gloves (or equivalent)



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## Stormwater Operation and Maintenance Plan

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### Project Information

#### Site

One Congress Tower  
1 Congress Street  
Boston, MA 02114

#### Site Owner

BC One Congress Tower JV LLC  
c/o The HYM Investment Group LLC  
1 Congress Street, 11<sup>th</sup> Floor  
Boston, MA, 02114  
(857) 288-3417

#### Site Supervisor

To Be Determined

Name: \_\_\_\_\_

Telephone: \_\_\_\_\_

Cell phone: \_\_\_\_\_

Email: \_\_\_\_\_



---

## Description of Stormwater Maintenance Measures

The following Operation and Maintenance (O&M) program is proposed to ensure the continued effectiveness of the stormwater management system. Attached to this plan is a Stormwater Best Management Practices Checklist for use during the long-term operation and maintenance of the stormwater management system.

### Area Drains

- All area drains shall be inspected and cleaned a minimum of at least four times per year.
- Sediment (if more than six inches deep) and/or floatable pollutants shall be pumped from the basin and disposed of at an approved offsite facility in accordance with all applicable regulations.
- Any structural damage or other indication of malfunction will be reported to the site manager and repaired as necessary
- During colder periods, the area drain grates must be kept free of snow and ice.
- During warmer periods, the area drain grates must be kept free of leaves, litter, sand, and debris.

### Roof Drain Leaders

- Perform routine roof inspections quarterly.
- Keep roofs clean and free of debris.
- Keep roof drainage systems clear.
- Clean inlets draining to the subsurface bed twice per year as necessary.

### Subsurface Infiltration System

- Perform maintenance of the subsurface infiltration system per attached Haley and Aldrich memo

### Stormwater Tank

- Perform maintenance of the stormwater tank conveying water to the subsurface infiltration system per attached WSP memo.



HALEY & ALDRICH, INC.  
465 Medford St.  
Suite 2200  
Boston, MA 02129  
617.886.7400

## MEMORANDUM

12 February 2019  
File No. 40181-110

TO: John Hurley  
The HYM Investment Group, LLC

FROM: Kelvin Wong, P.E.  
Haley & Aldrich, Inc.

SUBJECT: Infiltration Trench Drain System - Operation and Maintenance  
Bulfinch Crossing - One Congress Office Tower  
1 Congress Street  
Boston, Massachusetts

This memorandum provides the recommended maintenance of the stormwater recharge system proposed for the subject WPB2 tower, as part of the Bulfinch Crossing Development on 1 Congress Street in Boston, Massachusetts. Specifically, the upkeep of the network of drain piping surrounding the WPB2 building footprint (as shown on submitted Drawing GT1) will be described herein; the project MEP Engineer will provide procedural maintenance for the plumbing at the basement interior.

Drawing GT1, dated 2/5/2019, illustrates the general location of cleanouts at ground surface and the details of its riser connection to the infiltration trench. These locations will act as access points for both regular inspection and any necessary maintenance, after the system is constructed and operational. All other aspects of the infiltration system and its maintenance will be managed within the basement interior.

Installation of the GT1 system will be observed by Haley & Aldrich, Inc. Once configured for automation, we recommend that the GT1 system be inspected once every 2 years via the cleanout locations, using a scope camera typical for video line inspections. Other documentation such as flow rate logs and storage tank levels can be measured throughout the year for record. If substantial buildup of sediment is observed within the perforated pipe network, the pipes shall be flushed to mobilize the sediment, either into the overflow sumps or vacuum excavated/pumped from the adjacent cleanout.

\\haleyaldrich.com\share\bos\_common\40181\107 - WPB2 office\Recharge System\2019-0212-HAI-WPB2 InfiltrationSystem O&M-F.docx



## MEMO

TO: The HYM Investment Group, LLC  
FROM: Jacob Littman CFPS, CPD  
SUBJECT: Storm Water Storage Collection System  
DATE: February 12, 2019

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The storm water collection tank has two primary sections, a dedicated settling basin and the main collection chamber. Both sections will have an access hatch and ships ladders for inspection and cleaning. The settling basin has two primary functions, first to catch and contain all large particles, leaves and debris that may have entered the storm water piping system through the basket strainer and gratings at the roof top drains, second function is to slow down the velocity of the incoming rainwater during heavy rain events. This will keep turbulent water conditions out of the main collection tank where the pump suction lines and float switches are present. Settling basin water will fill up and cascade into the main collection tank through multiple large wall sleeves as detailed.

Recommended maintenance initially should be on a quarterly basis and then adjusted either more or less frequent depending on the buildings conditions and history. Both chambers should be pumped out and hosed clean after construction and prior to starting up the recharge system pumps.

The recharge pumps will have duplex cartridge type filters on each pump discharge line, removing additional sediment prior to introduction into the recharge trench.

Recommended maintenance initially should be on a bi weekly basis and then adjusted either more or less frequent depending on the buildings conditions and history. Filter cartridges are either replaceable or washable at the discretion of the building operator. It is recommended to wash the filters on a normal basis and replace them quarterly dependent upon condition and function.

Jacob Littman CFPS, CPD  
Senior Engineer





---

## TSS Removal Worksheets



99 High Street  
10th Floor  
Boston, MA 02110  
P 617.728.7777

## TSS Removal Calculation Worksheet

Project Name: **WP-B2**  
 Project Number: **11679.01**  
 Location: **Boston, MA**  
 Discharge Point: **DP 1: Charles River**  
 Drainage Area(s): **Proposed PR-1, PR-3, PR-4, PR-6**

Sheet: **1 of 1**  
 Date: **2/1/2019**  
 Computed by: **CL**  
 Checked by: **LC**

### 1. Pre-Treatment prior to Discharge

BMP*	TSS Removal Rate*	Starting TSS Load**	Amount Removed (C*D)	Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	<b>25%</b>	<b>100%</b>	<b>25%</b>	<b>75%</b>
	<b>0%</b>	<b>75%</b>	<b>0%</b>	<b>75%</b>
	<b>0%</b>	<b>75%</b>	<b>0%</b>	<b>75%</b>
<b>Pre-Treatment TSS Removal =</b>				<b>25%</b>

### 2. Total TSS Removal including Pretreatment 1.

BMP*	TSS Removal Rate*	Starting TSS Load**	Amount Removed (C*D)	Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	<b>25%</b>	<b>100%</b>	<b>25%</b>	<b>75%</b>
	<b>0%</b>	<b>75%</b>	<b>0%</b>	<b>75%</b>
	<b>0%</b>	<b>75%</b>	<b>0%</b>	<b>75%</b>
	<b>0%</b>	<b>75%</b>	<b>0%</b>	<b>75%</b>

\* BMP and TSS Removal Rate Values from the MassDEP Stormwater Handbook Vol. 1. Removal rates for proprietary devices are from approved studies and/or manufacturer data. Stormceptor sizing calculations give a TSS removal rate of at least 75%. To be conservative, 50% removal is used for this calculation.

\*\* Equals remaining load from previous BMP (E)

**Treatment Train  
TSS Removal =**

<b>25%</b>
------------



99 High Street  
10th Floor  
Boston, MA 02110  
P 617.728.7777

## TSS Removal Calculation Worksheet

Project Name: **WP-B2**  
 Project Number: **11679.01**  
 Location: **Boston, MA**  
 Discharge Point: **DP 1: Charles River**  
 Drainage Area(s): **Proposed PR-7, PR-8, PR-9**

Sheet: **1 of 1**  
 Date: **2/1/2019**  
 Computed by: **CL**  
 Checked by: **LC**

### 1. Pre-Treatment prior to Discharge

BMP*	TSS Removal Rate*	Starting TSS Load**	Amount Removed (C*D)	Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	25%	100%	25%	75%
	0%	75%	0%	75%
	0%	75%	0%	75%
<b>Pre-Treatment TSS Removal =</b>				<b>25%</b>

### 2. Total TSS Removal including Pretreatment 1.

BMP*	TSS Removal Rate*	Starting TSS Load**	Amount Removed (C*D)	Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	25%	100%	25%	75%
	0%	75%	0%	75%
	0%	75%	0%	75%
	0%	75%	0%	75%

**Treatment Train  
TSS Removal =**

<b>25%</b>
------------

\* BMP and TSS Removal Rate Values from the MassDEP Stormwater Handbook Vol. 1. Removal rates for proprietary devices are from approved studies and/or manufacturer data. Stormceptor sizing calculations give a TSS removal rate of at least 75%. To be conservative, 50% removal is used for this calculation.

\*\* Equals remaining load from previous BMP (E)



99 High Street  
10th Floor  
Boston, MA 02110  
P 617.728.7777

## TSS Removal Calculation Worksheet

Project Name: **WP-B2**  
 Project Number: **11679.01**  
 Location: **Boston, MA**  
 Discharge Point: **DP 1: Charles River**  
 Drainage Area(s): **Proposed PR-2, PR-5**

Sheet: **1 of 1**  
 Date: **2/1/2019**  
 Computed by: **CL**  
 Checked by: **LC**

### 1. Pre-Treatment prior to Discharge

BMP*	TSS Removal Rate*	Starting TSS Load**	Amount Removed (C*D)	Remaining Load (D-E)
Filter <sup>1</sup>	0%	100%	0%	100%
	0%	100%	0%	100%
	0%	100%	0%	100%
<b>Pre-Treatment TSS Removal =</b>				<b>0%</b>

### 2. Total TSS Removal including Pretreatment 1.

BMP*	TSS Removal Rate*	Starting TSS Load**	Amount Removed (C*D)	Remaining Load (D-E)
Filter <sup>1</sup>	0%	100%	0%	100%
Infiltration Trench	80%	100%	80%	20%
	0%	20%	0%	20%
	0%	20%	0%	20%

**Treatment Train  
TSS Removal =**

<b>80%</b>
------------

\* BMP and TSS Removal Rate Values from the MassDEP Stormwater Handbook Vol. 1. Removal rates for proprietary devices are from approved studies and/or manufacturer data. Stormceptor sizing calculations give a TSS removal rate of at least 75%. To be conservative, 50% removal is used for this calculation.

\*\* Equals remaining load from previous BMP (E)

1 = Roof runoff goes through a filter to remove silt and fines prior to entering stormwater tank



# Appendix E

## Standard 8 Supporting Information

- Stormwater Pollution Prevention and Erosion and Sedimentation Control Plan (see Stormwater Report checklist for list of information required)



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## **Stormwater Pollution Prevention and Erosion and Sedimentation Controls (SWPPP)**

**Stormwater Pollution Prevention Plan (SWPPP)**

**For Construction Activities At:**

Bulfinch Crossing – WP-B2  
One Congress Street  
Boston, Massachusetts 02114  
617-248-8905

**SWPPP Prepared For:**

BC ONE CONGRESS TOWER JV LLC  
c/o The HYM Investment Group, LLC  
One Congress Street, 11<sup>th</sup> Floor  
Boston, Massachusetts 02114  
617-248-8905  
dambrose@hyminvestments.com

**SWPPP Prepared By:**

The Vertex Companies, Inc.  
Jesse Freeman, PE  
100 North Washington Street, Suite 302  
Boston, Massachusetts 02114  
617-275-5407  
jfreeman@vertexeng.com

**SWPPP Preparation Date:**

02/19/2019

**Estimated Project Dates:**

**Project Start Date:** 03/01/2019

**Project Completion Date:** TBD

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**SECTION 1: CONTACT INFORMATION/RESPONSIBLE PARTIES**

**1.1 Operator(s) / Subcontractor(s)**

**Owner and Primary Stormwater Contact**

David Ambrose

BC ONE CONGRESS TOWER JV LLC  
c/o The HYM Investment Group, LLC  
One Congress Street, 11<sup>th</sup> Floor  
Boston, MA 02114  
617-248-8905  
[dambrose@hyminvestments.com](mailto:dambrose@hyminvestments.com)

**Operator(s):**

John Moriarty and Associates  
Finnbar O'Sullivan  
3 Church Street  
Winchester, Massachusetts 01890  
617-719-9813  
[fosullivan@jm-a.com](mailto:fosullivan@jm-a.com)

**Emergency 24-Hour Contact:**

The HYM Investment Group, LLC  
David Ambrose  
617-593-8697

**1.2 Stormwater Team**

<b>Stormwater Team</b>		
Name and/or position, and contact	Responsibilities	I Have Read the CGP and Understand the Applicable Requirements
<p>David Ambrose The HYM Investment Group, LLC Vice President, Construction 617-593-8697 <a href="mailto:dambrose@hyminvestments.com">dambrose@hyminvestments.com</a></p>	<ul style="list-style-type: none"> <li>• Overall project management</li> </ul>	<p><input type="checkbox"/> Yes Date: _____</p>
<p>John Moriarty &amp; Associates, Inc. Finnbar O'Sullivan 3 Church Street Winchester, MA 01890 781-719-9813 <a href="mailto:fosullivan@jm-a.com">fosullivan@jm-a.com</a></p>	<ul style="list-style-type: none"> <li>• Installing and maintaining stormwater controls;</li> <li>• Compliance with permit requirements;</li> <li>• Site inspections;</li> <li>and</li> <li>• Taking corrective actions where required</li> </ul>	<p><input type="checkbox"/> Yes Date: _____</p>
<p>Jesse Freeman, PE The Vertex Companies, Inc. Consultant 617-275-5407 <a href="mailto:jfreeman@vertexeng.com">jfreeman@vertexeng.com</a></p>	<ul style="list-style-type: none"> <li>• SWPPP development and modification; and</li> <li>• Conducting site inspections</li> </ul>	<p><input checked="" type="checkbox"/> Yes Date: 2/19/2019</p>

## SECTION 2: SITE EVALUATION, ASSESSMENT, AND PLANNING

### 2.1 Project/Site Information

#### Project Name and Address

Project/Site Name: [Bulfinch Crossing – WP-B2](#)  
Project Street/Location: [One Congress Street](#)  
City: [Boston](#)  
State: [Massachusetts](#)  
ZIP Code: [02114](#)  
County or Similar Subdivision: [Suffolk](#)

Business days and hours for the project: [M-F 7am to 3pm](#)

#### Project Latitude/Longitude

Latitude: 42.362684° N  
(decimal degrees)                      Longitude: - 71.059226 ° W  
(decimal degrees)

Latitude/longitude data source:

Map     GPS     Other (please specify): [Google Earth™](#)

Horizontal Reference Datum:

NAD 27     NAD 83     WGS 84

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#### Additional Project Information

Are you requesting permit coverage as a “federal operator” as defined in [Appendix A](#) of the 2017 CGP?     Yes     No

Is the project/site located on Indian country lands, or located on a property of religious or cultural significance to an Indian tribe?     Yes     No

If yes, provide the name of the Indian tribe associated with the area of Indian country (including the name of Indian reservation if applicable), or if not in Indian country, provide the name of the Indian tribe associated with the property: [N/A](#)

If you are conducting earth-disturbing activities in response to a public emergency, document the cause of the public emergency (e.g., *natural disaster, extreme flooding conditions*), information substantiating its occurrence (e.g., *state disaster declaration*), and a description of the construction necessary to reestablish effective public services: [N/A](#)

**2.2 Discharge Information**

Does your project/site discharge stormwater into a Municipal Separate Storm Sewer System (MS4)?  Yes  No

Are there any waters of the U.S. within 50 feet of your project's earth disturbances?  Yes  No

For each point of discharge, provide a point of discharge ID (a unique 3-digit ID, e.g., 001, 002), the name of the first water of the U.S. that receives stormwater directly from the point of discharge and/or from the MS4 that the point of discharge discharges to, and the following receiving water information, if applicable:								
Point of Discharge ID	Name of receiving water:	Is the receiving water impaired (on the CWA 303(d) list)?	If yes, list the pollutants that are causing the impairment:	Has a TMDL been completed for this receiving waterbody?	If yes, list TMDL Name and ID:	Pollutant(s) for which there is a TMDL:	Is this receiving water designated as a Tier 2, Tier 2.5, or Tier 3 water?	If yes, specify which Tier (2, 2.5, or 3)?
001	Charles River	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Chlorophyll-a, combined biota/habitat bioassessments, DDT in fish tissue, dissolved oxygen saturation, Escherichia coli, harmful algal bloom, nutrient/eutrophication biological indicators, oil and grease, dissolved oxygen, PCB in fish tissue, total phosphorus, salinity, secchi disk transparency, sediment screening value exceedance, taste and odor, and water temperature.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Total Maximum Daily Load for Nutrients in the Lower Charles River Basin, Massachusetts (CN 301.0)  Total Maximum Daily Loads for Pathogens within the Charles River Watershed (CN 156.0)	Chlorophyll-a, dissolved oxygen saturation, Escherichia coli, harmful algal bloom, nutrient/eutrophication biological indicators, total phosphorus, Secchi disk transparency, taste and odor.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

**2.3 Nature of the Construction Activities**

**General Description of Project**

The Bulfinch Crossing Development Site is located between New Chardon Street, Sudbury Street, Instate 93 on-ramp, and Bowker Street in Boston, Massachusetts, at 42.362684°N and -71.059226°W. The development site is a total of approximately 4.8 acres and is currently occupied by both a building under construction and an 11-story concrete building built in 1968. The existing building is currently used as a multi-level open parking garage with office space above, and retail space on the ground floor. A subway line and associated station is located underneath the eastern portion of the development site.

The development site will be developed with multi-family residential, retail, office, and a hotel. The initial phase of development (enabling phase: to support the garage for construction of subsequent phases) commenced in 2015) and one of the multi-family residential towers commenced in 2017. Construction is anticipated to continue in stages until each project is complete, with several projects overlapping. It is anticipated that an enabling phase, which includes the activities required to prepare the property for construction will precede each construction phases. Enabling phases will vary in complexity depending on their location, but may include removal of the existing building or portions thereof. The maximum area anticipated to be disturbed at one time during construction activities is approximately 4 acres.

Prior to 1968, the development site was densely developed with multi-use buildings including factories, commercial spaces, and residences. Based on previous subsurface investigations, soil at the development site consists of historical fill materials to 10 feet below grade followed by clay and organic materials.

Prior to construction activities, the development site was almost completely covered by paved impervious surfaces, generating a runoff coefficient of close to 0.95. However, once construction on each phase commences, the runoff coefficient will be diminished due to the removal of impervious surface for development activities (excavation and off-site disposal of site material). Additionally, the Bulfinch Crossing development will consist of increased green spaces in the form of landscaped areas and green roofs.

It should be noted that due to the size and ongoing construction activities, this SWPPP will have to be modified based on site changes and changes to or additional RGP and National Pollutant Discharge Elimination System (NPDES) permits.

**Size of Construction Site**

Size of Property	Approximately 4.8 Acres
Total Area Expected to be Disturbed by Construction Activities	Approximately 4.8 Acres
Maximum Area Expected to be Disturbed at Any One Time	4 Acres

*[Repeat as necessary for individual project phases.]*

**Type of Construction Site** (check all that apply):

- Single-Family Residential   
  Multi-Family Residential   
  Commercial   
  Industrial  
 Institutional   
 Highway or Road   
 Utility   
 Other \_\_\_\_\_

Will there be demolition of any structure built or renovated before January 1, 1980?     Yes     No

If yes, do any of the structures being demolished have at least 10,000 square feet of floor space?     Yes     No     N/A

Was the pre-development land use used for agriculture (see [Appendix A](#) for definition of "agricultural land")?     Yes     No

**Pollutant-Generating Activities**

List and describe all pollutant-generating activities and indicate for each activity the type of pollutant that will be generated. Take into account where potential spills and leaks could occur that contribute pollutants to stormwater discharges, and any known hazardous or toxic substances, such as PCBs and asbestos, that will be disturbed during construction.

<b>Pollutant-Generating Activity</b> (e.g., paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal; and dewatering operations)	<b>Pollutants or Pollutant Constituents</b> (e.g., sediment, fertilizers, pesticides, paints, caulks, sealants, fluorescent light ballasts, contaminated substrates, solvents, fuels)
Clearing, grading, excavating, and un-stabilized areas	Sediment, debris, lead, solids
Paving operations	Sediment, debris, solids
Concrete washout and waste	Heavy metals, pH, sediment, debris, solids
Structure Construction/painting/cleaning	Nutrients, pH, trash, debris, solids, other toxic chemicals
Demolition and debris disposal	Sediment, trash, debris, solids
Dewatering operations	Sediment, nutrients
Drilling operations	Sediment
Material delivery and storage	Oil and grease, trash, debris, solids
Material use during building process	Heavy metals, oil and grease, trash, debris, solids, other toxic chemicals
Vehicle/equipment fueling and maintenance	Oil and grease, other toxic chemicals
Landscaping operations	Sediment, nutrients, pesticides, herbicides

**Construction Support Activities** (only provide if applicable)

Describe any construction support activities for the project (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas):

Construction Support Activities: Construction vehicle fueling, material storage areas, clean fill storage areas.



Contact information for construction support activity:

David Ambrose  
 The HYM Investment Group, LLC  
 Vice President, Construction  
 617-593-8697  
[dDambrose@hyminvestments.com](mailto:dDambrose@hyminvestments.com)

**2.4 Sequence and Estimated Dates of Construction Activities**

<a href="#">WPB2 – One Congress</a>	
Estimated Start Date of Construction Activities for this Phase	3/1/2019
Estimated End Date of Construction Activities for this Phase	6/1/2023
Estimated Date(s) of Application of Stabilization Measures for Areas of the Site Required to be Stabilized	3/1/2019
Estimated Date(s) when Stormwater Controls will be Removed	6/1/2023

**2.5 Authorized Non-Stormwater Discharges**

**List of Authorized Non-Stormwater Discharges Present at the Site**

Type of Authorized Non-Stormwater Discharge	Likely to be Present at Your Site?
Discharges from emergency fire-fighting activities	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Fire hydrant flushings	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Landscape irrigation	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Waters used to wash vehicles and equipment	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Water used to control dust	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Potable water including uncontaminated water line flushings	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
External building washdown (soaps/solvents are not used and external surfaces do not contain hazardous substances)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Pavement wash waters	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Uncontaminated air conditioning or compressor condensate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Uncontaminated, non-turbid discharges of ground water or spring water	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Foundation or footing drains	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Construction dewatering water	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

**2.6 Site Maps**

**Site Maps are Attached. Please note certain features not included on the included Site Maps:**

- Approximate slopes before and after major grading activities: Not applicable as the majority of subsurface work will be performed within installed sheet pile walls.

- Locations where sediment, soil, or other construction materials will be stockpiled: Due to restricted space at the development site, the majority of sediment and or/soil will be live loaded and transported off-site. Construction material storage locations are depicted.
- Areas of federally-listed critical habitat for endangered or threatened species within the site and/or at discharge locations: Federally-listed critical habitat for endangered or threatened species is not located within the site.
- Authorized non-stormwater discharge locations: The majority of the work is to be completed below grade. Therefore, any authorized non-stormwater discharge will remain below grade and infiltrate into the below grade pervious surface. If the authorized non-stormwater discharge exceeds the infiltration capacity of the development site, it will be pumped and processed through the dewatering system.
- Locations where polymers, flocculants, or other treatment chemicals will be used and stored: These materials are not anticipated to be used or stored at the development site.

Once construction commences on additional phases, the Site Maps will be updated to include relevant locations pertaining to each specific work area within the development site.

### SECTION 3: DOCUMENTATION OF COMPLIANCE WITH OTHER FEDERAL REQUIREMENTS

#### 3.1 Endangered Species Protection

##### Eligibility Criterion

Under which criterion listed in [Appendix D](#) are you eligible for coverage under this permit?

- Criterion A: No ESA-listed species and/or designated critical habitat present in action area.**

Using the process outlined in Appendix D of this permit, you certify that ESA-listed species and designated critical habitat(s) under the jurisdiction of the USFWS or NMFS are not likely to occur in your site's "action area" as defined in Appendix A of this permit.

**Basis statement content/Supporting documentation:** A basis statement supporting the selection of Criterion A should identify the USFWS and NMFS information sources used. Attaching aerial image(s) of the site to your NOI is helpful to USEPA, USFWS, and NMFS in confirming eligibility under this criterion. Please Note: NMFS' jurisdiction includes ESA-listed marine and estuarine species that spawn in inland rivers. Check the applicable source(s) of information you relied upon:

- Specific communication with staff of the USFWS and/or NMFS. N/A
- Species list from USFWS and/or NMFS. See the [CGP ESA webpage, Step 2](#) for available websites. [Fish and Wildlife Service Consultation Code 05E1NE00-2018-SLI-1184 Official Species List, provided by New England Ecological Services Field Office \(ECOS-IPaC\)](#)

- Criterion B: Eligibility requirements met by another operator under the 2017 CGP.** The construction site's discharges and discharge-related activities were already addressed in another operator's valid certification of eligibility for your "action area" under eligibility Criterion A, C, D, E, or F of the 2017 CGP and you have confirmed that no additional ESA-listed species and/or designated critical habitat under the jurisdiction of USFWS and/or NMFS not considered in the that certification may be present or located in the "action area." To certify your eligibility under this criterion, there must be no lapse of NPDES permit coverage in the other CGP operator's certification. By certifying eligibility under this criterion, you agree to comply with any conditions upon which the other CGP operator's certification was based. You must include in your NOI the NPDES ID from the other 2017CGP operator's notification of authorization under this permit. If your certification is based on another 2017 CGP operator's certification under criterion C, you must provide USEPA with the relevant supporting information required of existing dischargers in criterion C in your NOI form.

**Basis statement content/Supporting documentation:** A basis statement supporting the selection of Criterion B should identify the eligibility criterion of the other CGP NOI, the authorization date, and confirmation that the authorization is effective.

- ✓ Provide the 9-digit NPDES ID number from the other operator's NOI under the 2017 CGP: N/A
- ✓ Authorization date of the other 2017 CGP operator: N/A
- ✓ Eligibility criterion of the other 2017 CGP operator: A C D E F
- ✓ Provide a brief summary of the basis the other operator used for selecting criterion A, C, D, E, or F: N/A

- Criterion C:** Discharges not likely to adversely affect ESA-listed species and/or designated critical habitat. ESA-listed species and/or designated critical habitat(s) under the jurisdiction of the USFWS and/or NMFS are likely to occur in or near your site's "action area," and you certify to USEPA that your site's discharges and discharge-related activities are not likely to adversely affect ESA-listed threatened or endangered species and/or designated critical habitat. This certification may include consideration of any stormwater controls and/or management practices you will adopt to ensure that your discharges and discharge-related activities are not likely to adversely affect ESA-listed species and/or designated critical habitat. To certify your eligibility under this criterion, indicate 1) the ESA-listed species and/or designated habitat located in your "action area" using the process outlined in Appendix D of this permit; 2) the distance between the site and the listed species and/or designated critical habitat in the action area (in miles); and 3) a rationale describing specifically how adverse effects to ESA-listed species will be avoided from the discharges and discharge-related activities. You must also include a copy of your site map from your SWPPP showing the upland and in-water extent of your "action area" with this NOI.

**Basis statement content/Supporting documentation:** A basis statement supporting the selection of Criterion C should identify the information resources and expertise (e.g., state or federal biologists) used to arrive at this conclusion. Any supporting documentation should explicitly state that both ESA-listed species and designated critical habitat under the jurisdiction of the USFWS and/or NMFS were considered in the evaluation.

- ✓ Resources used to make determination: N/A
- ✓ ESA-listed Species/Critical Habitat in action area: N/A
- ✓ Distance between site and ESA-listed Species/Critical Habitat: N/A
- ✓ How adverse effects will be avoided: N/A

- 
- Criterion D:** Coordination with USFWS and/or NMFS has successfully concluded. Coordination between you and the USFWS and/or NMFS has concluded. The coordination must have addressed the effects of your site's discharges and discharge-related activities on ESA-listed species and/or designated critical habitat under the jurisdiction of USFWS and/or NMFS, and resulted in a written concurrence from USFWS and/or NMFS that your site's discharges and discharge-related activities are not likely to adversely affect listed species and/or critical habitat. You must include copies of the correspondence with the participating agencies in your SWPPP and this NOI.

**Basis statement content/Supporting documentation:** A basis statement supporting the selection of Criterion D should identify whether USFWS or NMFS or both agencies participated in coordination, the field office/regional office(s) providing that coordination, and the date that coordination concluded.

- ✓ Agency coordinated with:  USFWS  NMFS
- ✓ Field/regional office(s) providing coordination: N/A
- ✓ Date coordination concluded: N/A
- ✓ Attach copies of any letters or other communication between you and the U.S. Fish & Wildlife Service or National Marine Fisheries Service concluding coordination activities.

- 
- Criterion E:** ESA Section 7 consultation has successfully concluded. Consultation between a Federal Agency and the USFWS and/or NMFS under section 7 of the ESA has concluded.

The consultation must have addressed the effects of the construction site's discharges and discharge-related activities on ESA-listed species and/or designated critical habitat under the jurisdiction of USFWS and/or NMFS. To certify eligibility under this criterion, Indicate the result of the consultation:

- Biological opinion from USFWS and/or NMFS that concludes that the action in question (taking into account the effects of your site's discharges and discharge-related activities) is not likely to jeopardize the continued existence of listed species, nor the destruction or adverse modification of critical habitat; or
- Written concurrence from USFWS and/or NMFS with a finding that the site's discharges and discharge-related activities are not likely to adversely affect ESA-listed species and/or designated critical habitat. You must include copies of the correspondence between yourself and the USFWS and/or NMFS in your SWPPP and this NOI.

**Basis statement content/Supporting documentation:** A basis statement supporting the selection of Criterion E should identify the federal action agency(ies) involved, the field office/regional office(s) providing that consultation, any tracking numbers of identifiers associated with that consultation (e.g., IPaC number, PCTS number), and the date the consultation was completed.

- ✓ Federal agency(ies) involved: N/A
- ✓ Field/regional office(s) providing consultation: N/A
- ✓ Tracking numbers associated with consultation: N/A
- ✓ Date consultation completed: N/A
- ✓ Attach copies of any letters or other communication between you and the U.S. Fish & Wildlife Service or National Marine Fisheries Service concluding consultation.

- 
- Criterion F: Issuance of section 10 permit.** Potential take is authorized through the issuance of a permit under section 10 of the ESA by the USFWS and/or NMFS, and this authorization addresses the effects of the site's discharges and discharge-related activities on ESA-listed species and designated critical habitat. You must include copies of the correspondence between yourself and the participating agencies in your SWPPP and your NOI.

**Basis statement content/Supporting documentation:** A basis statement supporting the selection of Criterion F should identify whether USFWS or NMFS or both agencies provided a section 10 permit, the field office/regional office(s) providing permit(s), any tracking numbers of identifiers associated with that consultation (e.g., IPaC number, PCTS number), and the date the permit was granted.

- ✓ Agency providing section 10 permit: USFWS NMFS
- ✓ Field/regional office(s) providing permit: N/A
- ✓ Tracking numbers associated with consultation: N/A
- ✓ Date permit granted: N/A
- ✓ Attach copies of any letters or other communication between you and the U.S. Fish & Wildlife Service or National Marine Fisheries Service.

### 3.2 Historic Preservation

#### Appendix E, Step 1

Do you plan on installing any of the following stormwater controls at your site? Check all that apply below, and proceed to Appendix E, Step 2.

- Dike
- Berm
- Catch Basin
- Pond
- Stormwater Conveyance Channel (e.g., ditch, trench, perimeter drain, swale, etc.)
- Culvert
- Other type of ground-disturbing stormwater control: [N/A](#)

(Note: If you will not be installing any ground-disturbing stormwater controls, no further documentation is required for Section 3.2 of the Template.)

### Appendix E, Step 2

If you answered yes in Step 1, have prior surveys or evaluations conducted on the site already determined that historic properties do not exist, or that prior disturbances at the site have precluded the existence of historic properties?  YES  NO

- If yes, no further documentation is required for Section 3.2 of the Template.
- If no, proceed to Appendix E, Step 3.

### Appendix E, Step 3

If you answered no in Step 2, have you determined that your installation of subsurface earth-disturbing stormwater controls will have no effect on historic properties?  YES  NO

If yes, provide documentation of the basis for your determination. [N/A](#)

If no, proceed to Appendix E, Step 4.

### Appendix E, Step 4

If you answered no in Step 3, did the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Office (THPO), or other tribal representative (whichever applies) respond to you within 15 calendar days to indicate whether the subsurface earth disturbances caused by the installation of stormwater controls affect historic properties?  YES  NO

If no, no further documentation is required for Section 3.2 of the Template.

If yes, describe the nature of their response:

- Written indication that no historic properties will be affected by the installation of stormwater controls. [N/A](#)
- Written indication that adverse effects to historic properties from the installation of stormwater controls can be mitigated by agreed upon actions. [N/A](#)
- No agreement has been reached regarding measures to mitigate effects to historic properties from the installation of stormwater controls. [N/A](#)

Other: N/A

### **3.3 Safe Drinking Water Act Underground Injection Control Requirements**

Do you plan to install any of the following controls? Check all that apply below.

- Infiltration trenches (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)
- Commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate stormwater flow
- Drywells, seepage pits, or improved sinkholes (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)

No subsurface injection points to be installed.

## SECTION 4: EROSION AND SEDIMENT CONTROLS

### 4.1 Natural Buffers or Equivalent Sediment Controls

#### Buffer Compliance Alternatives

Are there any waters of the U.S. within 50 feet of your project's earth disturbances?  YES  NO

(Note: If no, no further documentation is required for Part 4.1 in the SWPPP Template. Continue on to Part 4.2.)

Check the compliance alternative that you have chosen:

- (i) I will provide and maintain a 50-foot undisturbed natural buffer.
- (ii) I will provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by additional erosion and sediment controls, which in combination achieves the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.
- (iii) It is infeasible to provide and maintain an undisturbed natural buffer of any size, therefore I will implement erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.
- I qualify for one of the exceptions in Part 2.2.1.b. (If you have checked this box, provide information on the applicable buffer exception that applies, below.)

#### Buffer Exceptions

Which of the following exceptions to the buffer requirements applies to your site?

- There is no discharge of stormwater to the water of the U.S. that is located 50 feet from my construction disturbances.
- No natural buffer exists due to preexisting development disturbances that occurred prior to the initiation of planning for this project.
  - (Note (1): If this exception applies, no further documentation is required for Section 4.1 of the Template.)
  - (Note (2): Where some natural buffer exists but portions of the area within 50 feet of the surface water are occupied by preexisting development disturbances, you must still comply with the one of the CGP Part 2.2.1.a compliance alternatives.)
- For a "linear construction sites" (defined in Appendix A), site constraints (e.g., limited right-of-way) make it infeasible to meet any of the CGP Part 2.2.1.a compliance alternatives.
- The project qualifies as "small residential lot" construction (defined in Appendix A) (see Appendix G, Part G.3.2).
  - For Alternative 1:
  - For Alternative 2:



- Buffer disturbances are authorized under a CWA Section 404 permit.  
 (Note (1): If this exception applies, no further documentation is required for Section 4.1 of the Template.)  
 (Note (2): This exception only applies to the limits of disturbance authorized under the Section 404 permit, and does not apply to any upland portion of the construction project.)
  
- Buffer disturbances will occur for the construction of a water-dependent structure or water access area (e.g., pier, boat ramp, and trail).  
 (Note (1): If this exception applies, no further documentation is required for Section 4.1 of the Template.)

**4.2 Perimeter Controls**

**General**

- Perimeter control will be used to address sediment that could potentially discharge to a stormwater catch basin.

**Specific Perimeter Controls**

<b>STORMWATER INLET PROTECTION</b>	
<b>Description:</b> All nearby catch basins will be fitted with a silt sack (or equivalent) to limit sediment flow into the stormwater system.	
<b>Installation</b>	TBD
<b>Maintenance Requirements</b>	Visual observations of downgradient and abutting catch basins will be checked as part of each scheduled inspection. If sediment accumulation approaches one-half of the above-ground height of the control, it must be removed.
<b>Design Specifications</b>	See attached designs.

**4.3 Sediment Track-Out**

**General**

- The majority of traffic will remain on paved asphalt surface outside of the area of disturbance; however, in some instances vehicles or construction equipment will need to enter the disturbance area. A single point of entry with a stabilized construction entrance will be constructed to reduce track of soils onto the paved surface. Where needed a wheel/track wash will be used prior to leaving the site (wash water will be infiltrated on-site or discharged through the dewatering system treatment train). If sediment is observed on the paved surface, the street will be cleaned at the end of the business day.

**Specific Track-Out Controls**

<b>RESTRICTED ACCESS</b>	
<b>Description:</b> Construction vehicles and other support vehicles that do not need to enter the development site will remain outside of the work area, on an asphalt or concrete paved surface.	
<b>Installation</b>	3/1/2019
<b>Maintenance Requirements</b>	During business hours, site entrances will be staffed with personnel to restrict on-site access. When the development site is inactive, access will be restricted by a lockable gate and perimeter fence. Where sediment has been tracked-out from the development site onto paved roads, sidewalks, or other paved areas outside of the development site, the sediment will be removed by the end of the same business day in which the track-out occurred or by the end of the next business day if track-out occurred on a non-business day. Track-out will be removed by sweeping, shoveling, or vacuuming surfaces, or by using other similarly effective means of sediment removal. Tracked-out sediment will not be hosed or swept into any stormwater conveyance, storm drain inlet, or water of the U.S.
<b>Design Specifications</b>	See Site Maps

<b>STABILIZED CONSTRUCTION ENTRANCE</b>	
<b>Description:</b> The designated entrance/exit for all construction vehicles will be constructed of crushed stone placed to a maximum depth of 1-foot, 6-inches, tapered to meet the surrounding ground surface. If vehicles and/or equipment exiting the development need washing, the vehicle wash will occur within the stabilized construction entrance with washwater allowed to infiltrate.	
<b>Installation</b>	3/1/2019
<b>Maintenance Requirements</b>	Inspections will be completed to ensure crushed stone is not covered, remains pervious. At a minimum, where sediment has been tracked-out from the development site onto paved roads, sidewalks, or other paved areas outside of the development site, the sediment will be removed by the end of the same business day in which the track-out occurred or by the end of the next business day if track-out occurred on a non-business day. Track-out will be removed by sweeping, shoveling, or vacuuming surfaces, or by using other similarly effective means of sediment removal. Tracked-out sediment will not be hosed or swept into any stormwater conveyance, storm drain inlet, or water of the U.S.
<b>Design Specifications</b>	See attached designs.

**4.4 Stockpiled Sediment or Soil**

**General**

- If stockpiles are placed above grade, the material will be placed on top of polyethylene (poly) sheeting, covered with poly sheeting and silt fence will be placed around the stockpile. If the stockpile is scheduled to remain in place for greater than 5 business days, the poly sheeting cover can be replaced with seeding.

**Specific Stockpile Controls**

<b>BELOW GRADE STOCKPILED SOIL</b>	
<b>Description:</b> Stockpiled material below grade will be managed according to material management plans implemented at the development site.	
<b>Installation</b>	As needed.
<b>Maintenance Requirements</b>	Inspections must be completed to ensure that stockpiled material remains below ground. If stockpiled material elevates above grade, above grade stockpile controls must be implemented.
<b>Design Specifications</b>	N/A

<b>ABOVE GRADE STOCKPILED SOIL ≤10 BUSINESS DAY STORAGE</b>	
<b>Description:</b> Stockpiled material will be placed on top of 6 millimeter (mm) thick poly sheeting and covered with the poly sheeting to prevent sediment runoff. A silt fence will also be placed around the perimeter of each stockpile.	
<b>Installation</b>	As needed.
<b>Maintenance Requirements</b>	The integrity of the poly sheeting and silt fence will be checked as part of each scheduled inspection. If compromises are observed, they must be mitigated within the same business day. Hosing down or sweeping material accumulated on pavement as a result of runoff from the stockpiles must not be hosed down or swept into any stormwater conveyance, storm drain inlet, or water of the U.S."
<b>Design Specifications</b>	See attached designs

<b>ABOVE GRADE STOCKPILED SOIL &gt;10 BUSINESS DAY STORAGE</b>	
<b>Description:</b> Stockpiled material will be placed on top of 6 millimeter (mm) thick poly sheeting and hydroseeded to prevent sediment runoff. A silt fence will also be placed around the perimeter of each stockpile.	
<b>Installation</b>	As needed.
<b>Maintenance Requirements</b>	The integrity of the poly sheeting and silt fence will be checked as part of each scheduled inspection. If compromises are observed, they must be mitigated within the same business day. Hosing down or sweeping material accumulated on pavement as a result of runoff from the stockpiles must not be hosed down or swept into any stormwater conveyance, storm drain inlet, or water of the U.S."
<b>Design Specifications</b>	See attached designs

**4.5 Minimize Dust**

**General**

- Dust suppression will be performed as needed.

**Specific Dust Controls**

<b>DUST SUPPRESSION</b>	
<b>Description:</b> Light water sprays will be implemented as needed to control dusting during periods where potentially impacted soil is disturbed. Visual inspections will be used to determine whether dust suppression is needed during the disturbance of un-impacted soil.	
<b>Installation</b>	AS NEEDED
<b>Maintenance Requirements</b>	Visual inspections will be conducted to verify that dust controls are functioning properly. Should inspections identify the need for dust controls, the frequency of water sprays will be increased.
<b>Design Specifications</b>	N/A

**4.6 Minimize Steep Slope Disturbances**

**General**

- Steep slopes above grade (other than those associated with stockpiled materials, see Section 4.5) are not anticipated in relation with this development project. However, if 15% slopes are encountered during unanticipated activities, temporary rolled erosion control in the form of open weave textile will be applied to the slope.

**Specific Steep Slope Controls**

<b>TEMPORARY ROLLED EROSION CONTROL</b>	
<b>Description:</b> If above ground 15% slopes are encountered during development activities, open weave textile will be applied to the slope for temporary erosion control.	
<b>Installation</b>	As needed
<b>Maintenance Requirements</b>	The textile will be inspected as part of each scheduled inspection to ensure the integrity remains intact. If compromises to the material is observed, an additional layer of the open weave textile will be applied over the compromise, and any observed sediment wash out will cleaned and swept up the same business day.
<b>Design Specifications</b>	See attached designs.

**4.7 Topsoil**

**General**

- Native topsoil is not present at the development site due to the presence of historical fill and urban structures.

**Specific Topsoil Controls**

<b>NO SPECIFIC TOPSOIL CONTROL IS TO BE CONDUCTED</b>	
<b>Description:</b> N/A	
<b>Installation</b>	N/A
<b>Maintenance Requirements</b>	N/A

<b>Design Specifications</b>	N/A
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#### 4.8 Soil Compaction

##### General

- Soil compaction is not anticipated to be a significant issue since the majority of the development site will consist of impervious paved surfaces or buildings. In the areas anticipated to be landscaped, soil compaction will be minimized.

##### Specific Soil Compaction Controls

<b>NO SPECIFIC SOIL COMPACTION CONTROLS TO BE CONDUCTED</b>	
<b>Description:</b> Soil compaction will not be specifically conducted at the development site. In minimal areas anticipated to be landscaped, soil compaction will be minimized.	
<b>Installation</b>	N/A
<b>Maintenance Requirements</b>	N/A
<b>Design Specifications</b>	N/A

#### 4.9 Storm Drain Inlets

##### General

- Storm drain inlets downgradient of the development site will have Silt Sacks installed for protection.

##### Specific Storm Drain Inlet Controls

<b>SILT SACK INSTALLATION</b>	
<b>Description:</b> Silt sacks will be installed in storm drain inlets downgradient of the development site. The Silt Saks will consist of a continuous barrier, covering each manhole in order to capture sediment.	
<b>Installation</b>	TBD
<b>Maintenance Requirements</b>	Visual inspections will be conducted to verify that the inlet protections are functioning properly. Should inspections identify the need for replacement, the inlet protections will be replaced by the end of the business day. Additionally, if visual inspections identified significant accumulations of sediment adjacent to the inlet protection, the sediment will be removed by the end of the following business day if removal by the same business day is not feasible.
<b>Design Specifications</b>	See attached designs.

#### 4.10 Stormwater Conveyance Channels

##### General

- Not applicable. No constructed stormwater conveyance channels will be constructed at the development project.

**Specific Conveyance Channel Controls**

<b>STORMWATER CONVEYANCE CHANNELS NOT PRESENT</b>	
<b>Description:</b> N/A	
<b>Installation</b>	N/A
<b>Maintenance Requirements</b>	N/A
<b>Design Specifications</b>	N/A

**4.11 Sediment Basins**

**General**

- Sediment basins are not anticipated to be installed as part of the development project.

**Specific Sediment Basin Controls**

<b>SEDIMENT BASINS NOT ANTICIPATED TO BE INSTALLED</b>	
<b>Description:</b> N/A	
<b>Installation</b>	N/A
<b>Maintenance Requirements</b>	N/A
<b>Design Specifications</b>	N/A

**4.12 Chemical Treatment**

**Soil Types**

List all the soil types (including soil types expected to be found in fill material) that are expected to be exposed during construction in areas of the project that will drain to chemical treatment systems: No chemicals will be applied to soil at the development site.

**Treatment Chemicals**

List all treatment chemicals that will be used at the site and explain why these chemicals are suited to the soil characteristics: N/A

Describe the dosage of all treatment chemicals you will use at the site or the methodology you will use to determine dosage: N/A

Provide information from any applicable Safety Data Sheets (SDS): N/A

Describe how each of the chemicals will stored: N/A

Include references to applicable state or local requirements affecting the use of treatment chemicals, and copies of applicable manufacturer’s specifications regarding the use of your specific treatment chemicals and/or chemical treatment systems: N/A

**Special Controls for Cationic Treatment Chemicals** (if applicable)

If the applicable USEPA Regional Office authorized you to use cationic treatment chemicals, include the official USEPA authorization letter or other communication, and identify the specific controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to an exceedance of water quality standards: N/A

**Schematic Drawings of Stormwater Controls/Chemical Treatment Systems**

Provide schematic drawings of any chemically-enhanced stormwater controls or chemical treatment systems to be used for application of treatment chemicals: [N/A](#)

**Training**

Describe the training that personnel who handle and apply chemicals have received prior to permit coverage, or will receive prior to the use of treatment chemicals: [N/A](#)

**4.13 Dewatering Practices**

**General**

- The document, Notice of Intent (NOI): Temporary Construction Dewatering, dated August 4, 2017 has been approved by U.S. USEPA Region 1. The NOI identifies that if dewatering is conducted, the water resulting from the dewatering will be treated and discharged under NPDES Permit Remediation General Permit MAG070000.

**Specific Dewatering Practices**

<b>TEMPORARY CONSTRUCTION DEWATERING</b>	
<b>Description:</b> <a href="#">Described in the NOI</a>	
<b>Installation</b>	<a href="#">3/1/2019</a>
<b>Maintenance Requirements</b>	<a href="#">In addition to maintenance information included in the NOI, NPDES, and RGP, at a minimum, backwash water must be returned to the beginning of the treatment process, and when pressure differential equals or exceeds the manufacturer's specifications, the filter media must be cleaned or replaced.</a>
<b>Design Specifications</b>	<a href="#">Included in the NOI</a>

**4.14 Other Stormwater Controls**

**General**

- [Not applicable, no other stormwater controls planned.](#)

**4.15 Site Stabilization**

**Total Amount of Land Disturbance Occurring at Any One Time**

- [Five Acres or less](#)  
 [More than Five Acres](#)

**Use this template box if you are not located in an arid, semi-arid, or drought-stricken area**

<b>TEMPORARY EXPOSED AREA STABILIZATION</b>	
<input checked="" type="checkbox"/> <a href="#">Vegetative</a> <input checked="" type="checkbox"/> <a href="#">Non-Vegetative</a> <input checked="" type="checkbox"/> <a href="#">Temporary</a> <input type="checkbox"/> <a href="#">Permanent</a>	
<b>Description:</b>	
<ul style="list-style-type: none"> <li>▪ <a href="#">It is not anticipated that disturbed areas will be left exposed once development has permanently stopped; however, in the case unforeseen temporary halts in development occurs, exposed site soils will be stabilized.</a></li> </ul>	

	<ul style="list-style-type: none"> <li>If earth-disturbing activities cease for an extended period, disturbed areas left exposed will either be hydroseeded or stabilized using open weave textile within 14-days of work cessation.</li> </ul>
<b>Installation</b>	As needed
<b>Completion</b>	As needed
<b>Maintenance Requirements</b>	Stabilization cover will be visually inspected at least weekly. If a compromise to the cover is observed, it will be fixed by the end of the next business day, if it is not possible to fix by the end of the same business day.
<b>Design Specifications</b>	See attached designs.

*Use this template box if you are located in an arid, semi-arid, or drought-stricken area.*

<b>Not Applicable</b>	
<input type="checkbox"/> Vegetative <input type="checkbox"/> Non-Vegetative <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	
<b>Description:</b>	
<ul style="list-style-type: none"> <li>N/A</li> </ul>	
<b>Dry Period</b>	<ul style="list-style-type: none"> <li>Beginning date of seasonally dry period: N/A</li> <li>Ending date of seasonally dry period: N/A</li> <li>Site conditions during this period: N/A</li> </ul>
<b>Installation and completion schedule</b>	N/A <ul style="list-style-type: none"> <li>Approximate installation date: N/A</li> <li>Approximate completion date: N/A</li> </ul>
<b>Maintenance Requirements</b>	N/A
<b>Design Specifications</b>	N/A

*Use this template box if unforeseen circumstances have delayed the initiation and/or completion of vegetative stabilization.*

<b>To be addressed in SWPPP modification, if needed</b>	
<input type="checkbox"/> Vegetative <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	
<b>Description:</b>	
<ul style="list-style-type: none"> <li>TBD</li> <li>TBD</li> </ul>	
<b>Justification</b>	TBD
<b>Installation and completion schedule</b>	<b>Vegetative Measures:</b> TBD <ul style="list-style-type: none"> <li>Approximate installation date: TBD</li> <li>Approximate completion date: TBD</li> </ul>



	<b>Non-Vegetative Measures:</b> <i>(must be completed within 14 days of the cessation of construction if disturbing 5 acres or less; within 7 days if disturbing more than 5 acres)</i> <ul style="list-style-type: none"><li>▪ Approximate installation date: TBD</li><li>▪ Approximate completion date: TBD</li></ul>
<b>Maintenance Requirements</b>	TBD
<b>Design Specifications</b>	TBD

**SECTION 5: POLLUTION PREVENTION STANDARDS**

**5.1 Potential Sources of Pollution**

**Construction Site Pollutants**

See table below.

<b>Pollutant-Generating Activity</b>	<b>Pollutants or Pollutant Constituents</b> (that could be discharged if exposed to stormwater)	<b>Location on Site</b> (or reference SWPPP site map where this is shown)
Concrete crushing	Concrete dust	Throughout the site
Equipment Fueling	Diesel Fuel	WBP2 parcel
Equipment Maintenance	Hydraulic Fluid, Oils	WBP2 parcel
Materials Storage	Paints, Curing Compounds	TBD based upon construction location
Soil/sediment	Suspended solids	Throughout the site

**5.2 Spill Prevention and Response**

Spills will be prevented by carefully handling and dispensing all liquids and to the extent possible handling and dispensing liquids in areas with containment or on impervious surfaces. Hazardous materials will be stored on an impervious surface.

Spill responses will be initiated immediately following a spill. A spill response kit with absorbent materials will be present at the development site during all work. If the spill cannot be contained, or a substantial amount is released, the spill will be reported to the construction manager and the Massachusetts Department of Environmental Protection (MassDEP) based on the Massachusetts Contingency Plan (MCP).

Additionally, appropriately sized containers will be maintained at the site for debris, waste, dewatering, etc. Care should be taken to ensure containers do not overflow. If overflowing is observed, it should be treated as a spill, and responded to immediately.

**5.3 Fueling and Maintenance of Equipment or Vehicles**

**General**

- During proposed development activities, the potential for discharge of spilled or leaked chemicals, including fuel, will be minimized through the use of planned handling and dispensing procedures.

**Specific Pollution Prevention Practices**

<b>PLANNED HANDLING AND DISPENSING</b>	
<b>Description:</b>	To limit the discharge of spilled or leaked chemicals, a spill response kit will remain at the development site during the duration of work. Drip pans will also be made available to address chronic leaks from parked vehicles. Generated oils, fluids, or oily wastes are to be recycled or disposed of properly.
<b>Installation</b>	3/1/2019
<b>Maintenance Requirements</b>	If absorbents from the spill response kit are used, they must be replaced immediately.
<b>Design Specifications</b>	N/A

**5.4 Washing of Equipment and Vehicles**

**General**

- If it is necessary for vehicles to enter and exit the development site, a wheel wash will be installed at the stabilized construction entrance. Other equipment and vehicle washing is not anticipated to be conducted at the development site.

**Specific Pollution Prevention Practices**

<b>LIMITED EQUIPMENT AND VEHICLE WASH</b>	
<b>Description:</b> Equipment and vehicle washing is not anticipated to be conducted at the development site. However, if vehicles are needed to enter/exit the development site, a wheel wash will be located at the stabilized construction entrance. The wheels will be washed using municipal water, with the wash water remaining within the pervious surface of the stabilized construction entrance.	
<b>Installation</b>	As needed
<b>Maintenance Requirements</b>	During the use of the wheel wash, personnel will be present to ensure sediment and wash water remain within the stabilized construction entrance. If sediment and wash water are observed migrating off of the pervious surface, washing will immediately stop and perimeter sediment controls will be installed around the wheel wash area.
<b>Design Specifications</b>	See Stabilized Construction Entrance designs.

**5.5 Storage, Handling, and Disposal of Building Products, Materials, and Wastes**

**5.5.1 Building Products**

**General**

- Construction related materials and products that pose a risk of impacted stormwater as a result of contact with precipitation or stormwater will be stored in areas that prevent interaction.

**Specific Pollution Prevention Practices**

<b>MATERIAL STORAGE</b>	
<b>Description:</b> Construction related materials and products that pose a risk of impacted stormwater as a result of contact with precipitation or stormwater will be stored in air-tight containers in a covered area. The covered area could be the current building at the development site, poly sheeting, or enclosed shipping containers.	
<b>Installation</b>	3/1/2019
<b>Maintenance Requirements</b>	Cover provided to protect materials from precipitation and stormwater will be visually inspected for holes. If holes or voids in the cover are observed, they will be repaired prior to the next precipitation event.
<b>Design Specifications</b>	N/A

<b>CONSTRUCTION WASTE</b>	
<b>Description:</b> Construction waste will be segregated as produced and stored in designated lockable dumpsters. The dumpsters should be of appropriate size to fit the proposed volume of waste. The waste will then be transported off site and properly disposed of.	
<b>Installation</b>	As needed
<b>Maintenance Requirements</b>	Dumpsters should be visually inspected prior to use.
<b>Design Specifications</b>	N/A

**5.5.2 Pesticides, Herbicides, Insecticides, Fertilizers, and Landscape Materials**

**General**

- Pesticides, herbicides, and insecticides are not anticipated to be used during development activities. If any are used, materials will be used and stored according to the manufacturer's instructions.

**Specific Pollution Prevention Practices**

<b>PROPER USE/STORAGE</b>	
<b>Description:</b>	Pesticides, herbicides, and insecticides are not anticipated to be used during development activities. If they are to be used, materials will be applied and stored according to the manufacturer's instructions. If fertilizers are used, they will be applied at the rate identified by the manufacturer's instructions. Once use is complete, the materials will be shipped off-site for proper disposal.
<b>Installation</b>	As needed
<b>Maintenance Requirements</b>	Ensure materials kept in original manufacturer's labelled containers.
<b>Design Specifications</b>	N/A

**5.5.3 Diesel Fuel, Oil, Hydraulic Fluids, Other Petroleum Products, and Other Chemicals**

**General**

- Diesel fuel, oil, hydraulic fluids, and other petroleum products if stored on the development site, will be maintained in their original marked containers, or other appropriately marked containers. The containers will be kept closed at all times when not in use.

**Specific Pollution Prevention Practices**

<b>INSERT NAME OF POLLUTION PREVENTION PRACTICE</b>	
<b>Description:</b>	Diesel fuel, oil, hydraulic fluids, and other petroleum products, if stored on the development site, will be maintained in their original marked containers, or other appropriately marked containers, and will be kept closed at all times when not in use. If these chemicals are maintained on the development site, they will be kept in a covered area. The covered area could be the current building at the development site, poly sheeting, or enclosed shipping containers.
<b>Installation</b>	As needed
<b>Maintenance Requirements</b>	Cover provided to protect materials from precipitation and stormwater will be visually inspected for holes. If holes or voids in the cover are observed, they will be repaired prior to the next precipitation event.
<b>Design Specifications</b>	N/A

**5.5.4 Hazardous or Toxic Waste**

**General**

- Hazardous or toxic waste used during development activities will be stored in their original marked containers, or other appropriately marked containers and will be kept closed at all times when not in use.

**Specific Pollution Prevention Practices**

<b>HAZARDOUS OR TOXIC WASTE STORAGE</b>	
<b>Description:</b> Hazardous or Toxic Waste, if identified or generated during the work, will be maintained in their original marked containers, or other appropriately marked container and will be kept closed at all times when not in use. If these wastes are maintained on the project site, they will be kept in covered area, so they are not exposed to precipitation. These wastes will be characterized and shipped off-site for proper disposal.	
<b>Installation</b>	As needed
<b>Maintenance Requirements</b>	Cover provided to protect materials from precipitation and stormwater will be visually inspected for holes. If holes or voids in the cover are observed, they will be repaired prior to the next precipitation event.
<b>Design Specifications</b>	N/A

**5.5.5 Construction and Domestic Waste**

**General**

- Construction waste will be separated and stored in dumpsters of sufficient size for the load. Domestic waste will be kept in a separate dumpster.

**Specific Pollution Prevention Practices**

<b>CONSTRUCTION AND DOMESTIC WASTE CONTAINERIZATION</b>	
<b>Description:</b> Construction waste will be segregated as produced and stored in designated lockable dumpsters. The dumpsters should be of appropriate size to fit the proposed volume of waste. Domestic waste will be kept in a separate dumpster. The waste will then be transported off site and properly disposed of.	
<b>Installation</b>	As needed
<b>Maintenance Requirements</b>	If waste is observed on business days, the waste must be cleaned up and disposed of in the appropriate dumpster.
<b>Design Specifications</b>	N/A

**5.5.6 Sanitary Waste**

**General**

- Portable toilets will be positioned throughout the development site. They will be placed on secure level ground and not tipped over.

**Specific Pollution Prevention Practices**

<b>PORTABLE TOILETS</b>	
<b>Description:</b> Portable toilets will be placed in accessible, secure places, throughout the development site. The portable toilets will be professionally cleaned and serviced at least once a week.	
<b>Installation</b>	3/1/2019
<b>Maintenance Requirements</b>	Weekly professional cleaning and servicing.
<b>Design Specifications</b>	N/A

**5.6 Washing of Applicators and Containers used for Paint, Concrete or Other Materials**

**General**

- To provide an effective means of eliminating the discharge of water from the washout and cleanout of paint, concrete, form release oils, curing compounds, and other construction materials, washwater will be directed into a leak-proof container.

**Specific Pollution Prevention Practices**

<b>WASHWATER CONTAINERIZATION</b>	
<b>Description:</b>	Washwater generated from the cleanout of paint, concrete, form release oils, curing compounds, and other construction materials will be directed into a leak-proof container. The container will be designed so that no overflows can occur due to inadequate sizing or precipitation. Cleanout washwater will be disposed of in accordance with applicable requirements, including the removal and disposal of hardened concrete waste. Cleanout washwater will not be dumped into sewers.
<b>Installation</b>	3/1/2019
<b>Maintenance Requirements</b>	Visually inspect the designated container for holes or flaws. Repair prior to use.
<b>Design Specifications</b>	N/A

**5.7 Fertilizers**

**General**

- Fertilizers are not anticipated to be used at the development site. However, if fertilizers containing nitrogen and phosphorous are used, they will be applied according to manufacturer's instructions.

**Specific Pollution Prevention Practices**

<b>APPROPRIATE FERTILIZER APPLICATION</b>	
<b>Description:</b>	Fertilizers are not anticipated to be used at the development site. However, if fertilizers containing nitrogen and phosphorous are used, they will be applied according to manufacturer's instructions, which includes: <ul style="list-style-type: none"> <li>Application rates and amounts consistent with manufacturer's specifications (or document departures where appropriate);</li> <li>Apply at the appropriate time of year for Boston, MA, and preferably timed to coincide as closely as possible to the period of maximum vegetation uptake and growth;</li> <li>Avoiding application before heavy rains or to frozen ground; and</li> <li>Never applying to stormwater conveyance channels with flowing water.</li> </ul>
<b>Installation</b>	As needed
<b>Maintenance Requirements</b>	Visually inspect storage containers and application machinery for leaks.
<b>Design Specifications</b>	N/A

### 5.8 Other Pollution Prevention Practices

#### General

- No additional practices have been identified. This will be updated as necessary if other practices that do not fit into the above categories are identified.

#### Specific Pollution Prevention Practices

<b>TBD</b>	
Description: N/A	
Installation	N/A
Maintenance Requirements	N/A
Design Specifications	N/A



**SECTION 6: INSPECTION, MAINTENANCE, AND CORRECTIVE ACTION**

**6.1 Inspection Personnel and Procedures**

**Personnel Responsible for Inspections**

The Vertex Companies, Inc. - Consultant  
 Finnbar O'Sullivan – Project Manager

Note: All personnel conducting inspections must be considered a “qualified person.” CGP Part 4.1 (or RGP where needed) clarifies that a “qualified person” is a person knowledgeable in the principles and practices of erosion and sediment controls and pollution prevention, who possesses the appropriate skills and training to assess conditions at the construction site that could impact stormwater quality, and the appropriate skills and training to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of this permit.

**Inspection Schedule**

<b>Standard Frequency:</b>
<input type="checkbox"/> Every 7 days <input checked="" type="checkbox"/> Every 14 days and within 24 hours of a 0.25" rain or the occurrence of runoff from snowmelt sufficient to cause a discharge
<b>Increased Frequency (if applicable):</b>
<b>For areas of sites discharging to sediment or nutrient-impaired waters or to waters designated as Tier 2, Tier 2.5, or Tier 3</b> <input type="checkbox"/> Every 7 days and within 24 hours of a 0.25" rain
<b>Reduced Frequency (if applicable)</b>
<b>For stabilized areas</b> <input type="checkbox"/> Twice during first month, no more than 14 calendar days apart; then once per month after first month; <ul style="list-style-type: none"> <li>▪ N/A</li> <li>▪ N/A</li> </ul>
<b>For stabilized areas on “linear construction sites”</b> <input type="checkbox"/> Twice during first month, no more than 14 calendar days apart; then once more within 24 hours of a 0.25" rain <ul style="list-style-type: none"> <li>▪ N/A</li> <li>▪ N/A</li> </ul>
<b>For arid, semi-arid, or drought-stricken areas during seasonally dry periods or during drought</b> <input type="checkbox"/> Once per month and within 24 hours of a 0.25" rain  Insert beginning and ending dates of the seasonally-defined dry period for your area or the valid period of drought: <ul style="list-style-type: none"> <li>▪ Beginning date of seasonally dry period: N/A</li> <li>▪ Ending date of seasonally dry period: N/A</li> </ul>
<b>For frozen conditions where earth-disturbing activities are being conducted</b>

Once per month

Insert beginning and ending dates of frozen conditions on your site:

- Beginning date of frozen conditions: [December](#)
- Ending date of frozen conditions: [March](#)

Rain Gauge Location (if applicable)

The rain gauge is located on a construction trailer located on the development site.

### **Inspection Report Forms**

Inspection Report Forms are provided in Appendix D.

## **6.2 Corrective Action**

### **Personnel Responsible for Corrective Actions**

[Finnbar O'Sullivan](#)

### **Corrective Action Forms**

Corrective Action Forms are provided in Appendix E.

## **6.3 Delegation of Authority**

**Duly Authorized Representative(s) or Position(s):**

[John Moriarty & Associates, Inc.](#)

[Finnbar O'Sullivan](#)

[3 Church Street](#)

[Winchester, MA 01890](#)

[617-719-9813](#)

[fosullivan@jm-a.com](mailto:fosullivan@jm-a.com)



**SECTION 8: CERTIFICATION AND NOTIFICATION**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## **SWPPP APPENDICES**

Attach the following documentation to the SWPPP:

***Appendix A – Site Maps***

***Appendix B – Copy of the RGP***

***Appendix C – NOI and USEPA Authorization Email***

***Appendix D – Inspection Form***

***Appendix E – Corrective Action Form***

***Appendix F – SWPPP Amendment Log***

***Appendix G – Subcontractor Certifications/Agreements***

***Appendix H – Grading and Stabilization Activities Log***

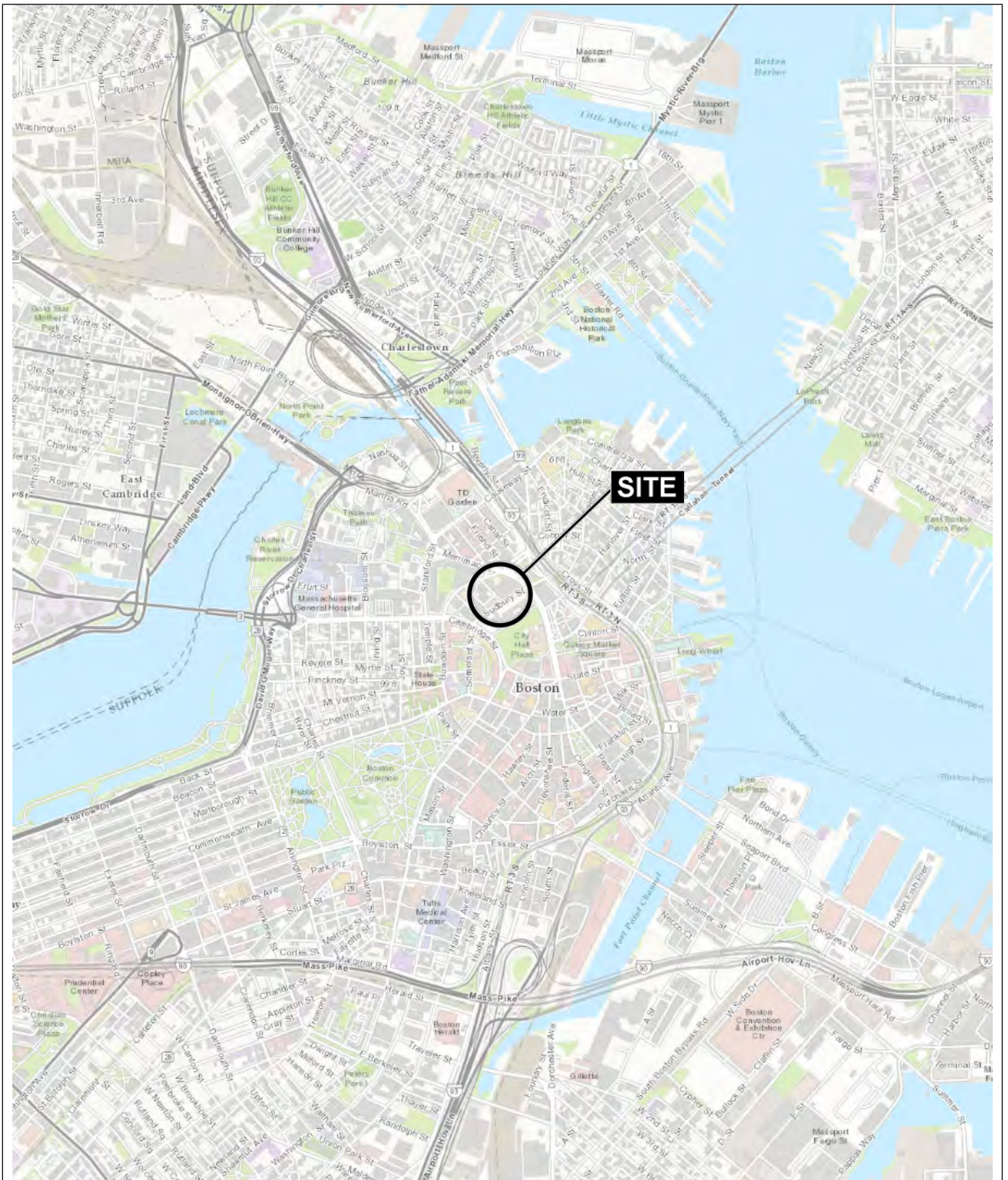
***Appendix I – Training Log***

***Appendix J – Delegation of Authority***

***Appendix K – Endangered Species Documentation***

***Appendix L – Historic Preservation Documentation***

**Appendix A – Site Maps**



MAP SOURCE: ESRI

SITE COORDINATES: 42°21'44"N, 71°3'35"W

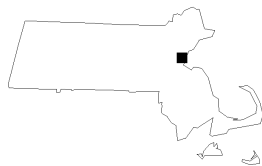
**VERTEX**

BULFINCH CROSSING  
ONE CONGRESS STREET  
BOSTON, MASSACHUSETTS

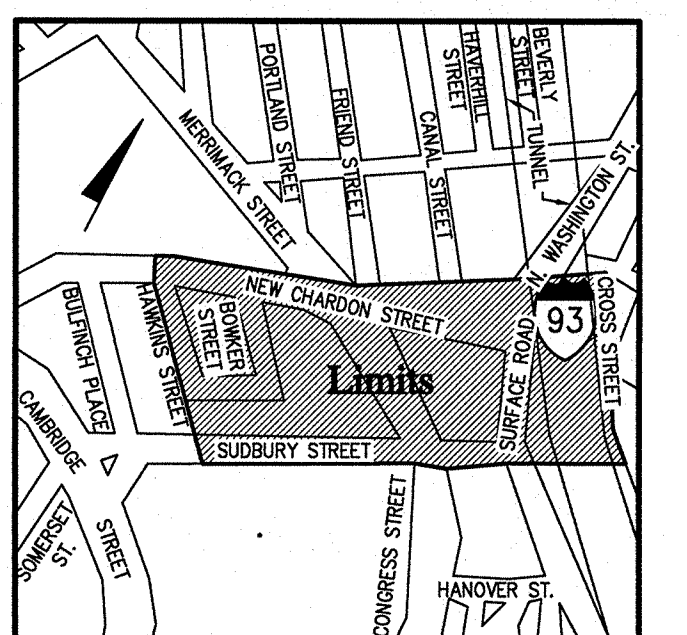
**PROJECT LOCUS**

APPROXIMATE SCALE: 1 IN = 2000 FT  
FEBRUARY 2019

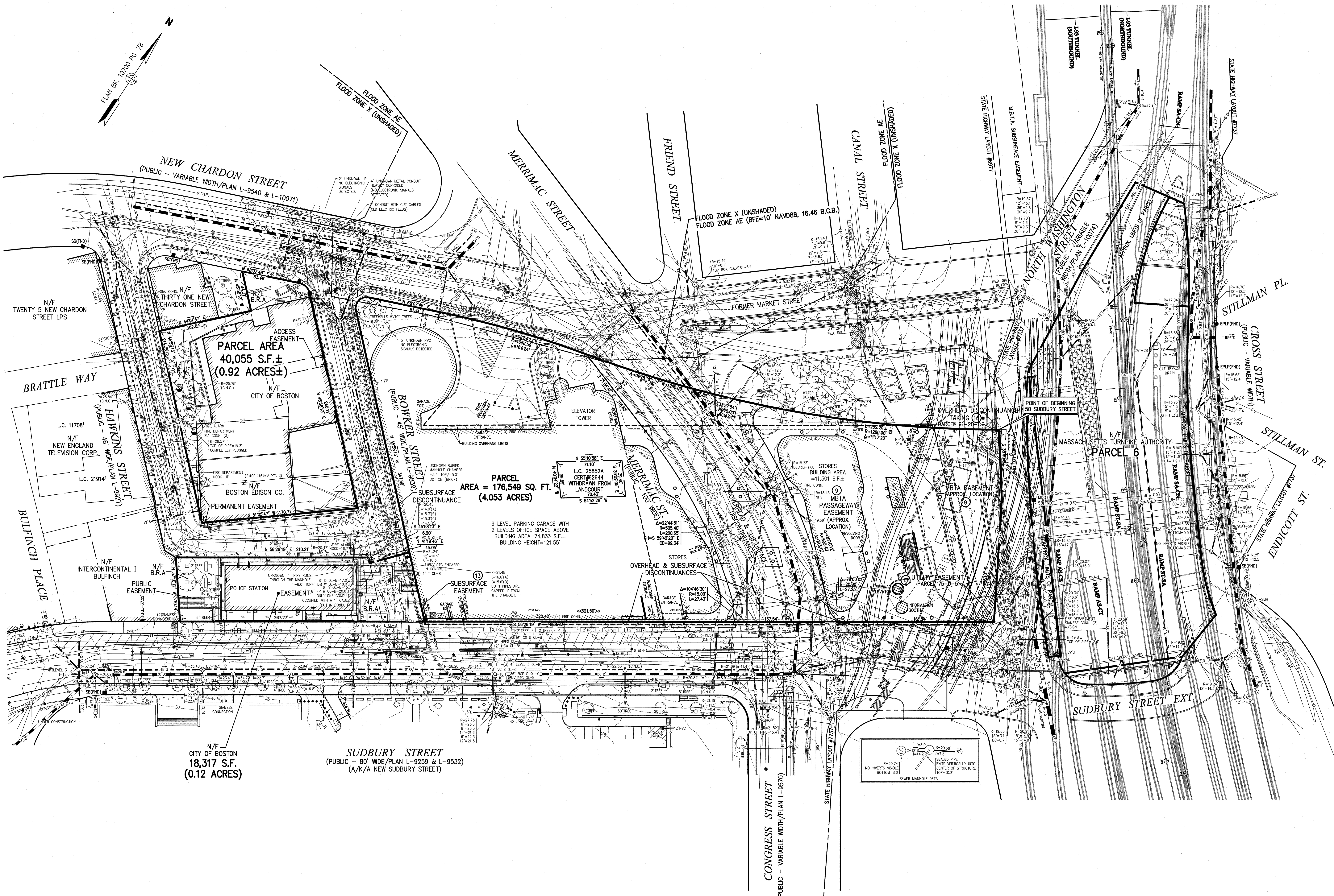
**FIGURE 1**







Locus Map



- Legend**
- DRAIN MANHOLE
  - ⊕ CATCH BASIN
  - ⊙ SEWER MANHOLE
  - ⊙ ELECTRIC MANHOLE
  - ⊙ TELEPHONE/TELEPORT MANHOLE
  - MANHOLE
  - HANDHOLE
  - WATER GATES
  - FIRE HYDRANT
  - GAS GATE
  - STREET SIGN
  - LIGHT POLE
  - UTILITY POLE
  - GUY WIRE
  - GUY POLE
  - FIRST FLOOR ELEVATION
  - MONITORING WELL
  - TOP
  - EDGE OF PAVEMENT
  - VERTICAL GRANITE CURB
  - SLOPED GRANITE EDGE
  - BITUMINOUS BERM
  - GUARD RAIL
  - CHAIN LINK FENCE
  - DRAINAGE LINE
  - SEWER LINE
  - OVERHEAD WIRE
  - UNDERGROUND ELECTRIC
  - UNDERGROUND ELECTRIC PTC
  - TELEPHONE LINE
  - GAS LINE
  - WATER LINE
  - TELEPORT LINE
  - WESTERN UNION LINE
  - GROUND WATER EQUILIBRATION LINE
  - FUEL LINE
  - FIBER OPTIC LINE

**Government Center Garage**  
50 Sudbury Street  
Boston, Massachusetts

No.	Revision	Date	Appr.

Drawing Title  
**ALTA/NSPS  
Land Title Survey  
(Existing Conditions)**

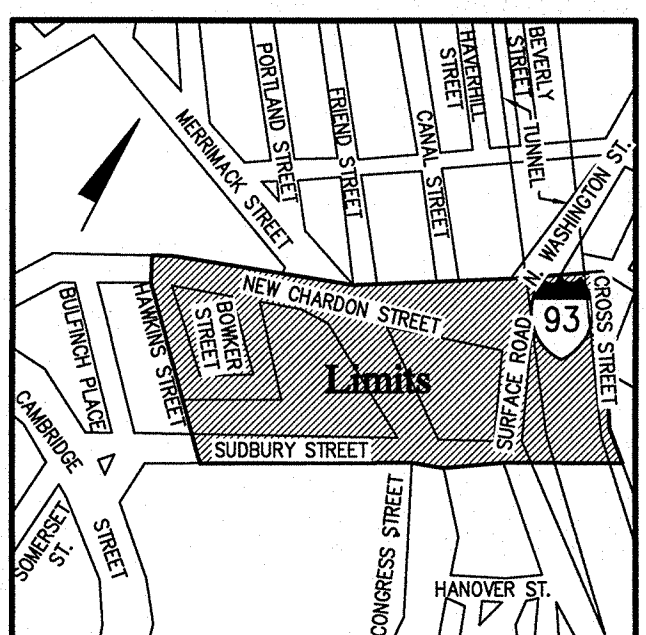
**FIGURE**  
**2**

Project Number:  
27026

**ALTA SURVEY**  
BULFINCH CROSSING  
ONE CONGRESS STREET  
BOSTON, MASSACHUSETTS



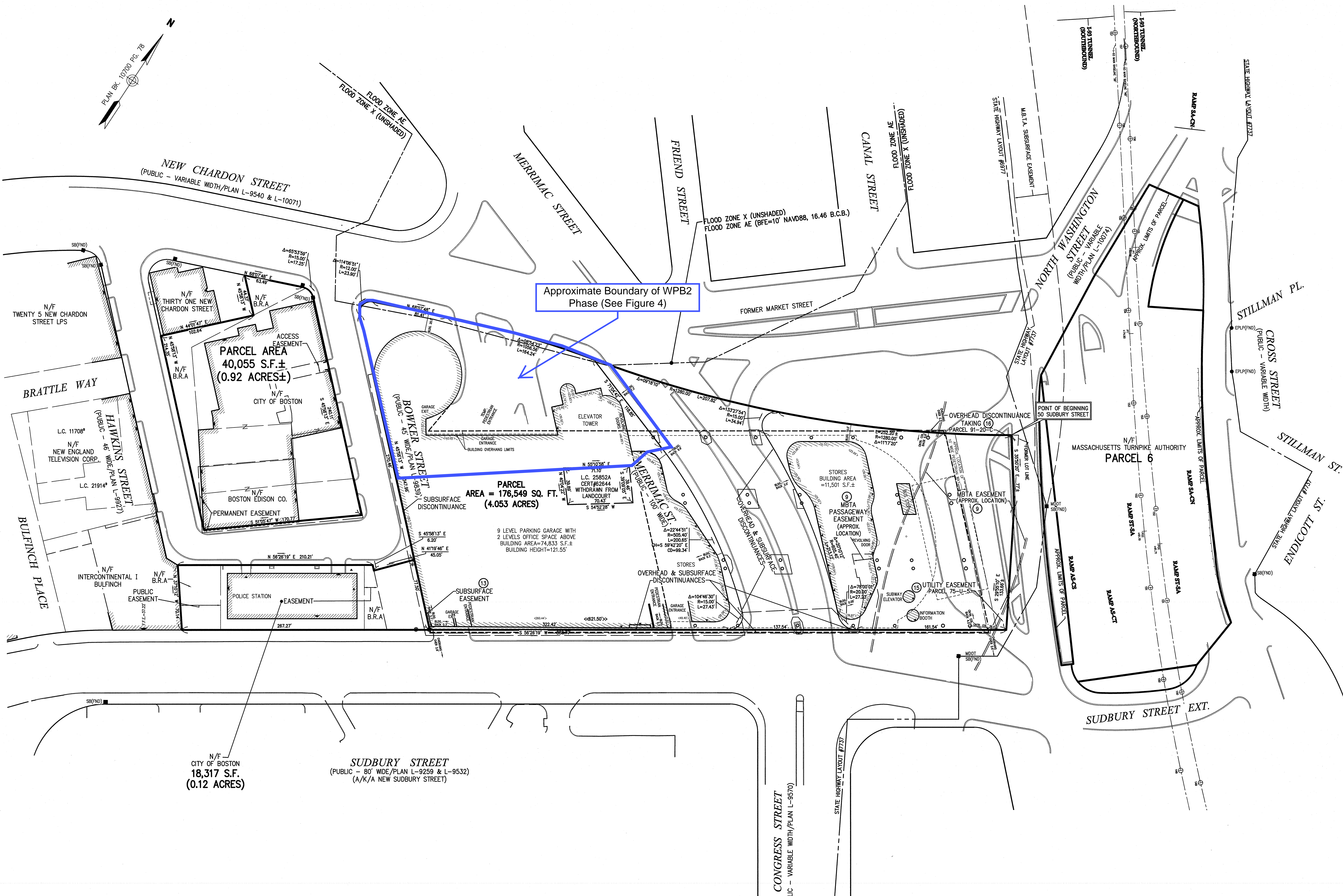




Locus Map

Legend

- ⊙ DRAIN MANHOLE
- ⊙ CATCH BASIN
- ⊙ SEWER MANHOLE
- ⊙ ELECTRIC MANHOLE
- ⊙ TELEPHONE/TELEPORT MANHOLE
- ⊙ MANHOLE
- ⊙ HANDHOLE
- ⊙ WATER GATES
- ⊙ FIRE HYDRANT
- ⊙ GAS GATE
- ⊙ STREET SIGN
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- ⊙ UTILITY POLE
- ⊙ GUY WIRE
- ⊙ GUY POLE
- ⊙ FIRST FLOOR ELEVATION
- ⊙ MONITORING WELL
- TOP
- EDGE OF PAVEMENT
- CONCRETE CURB
- VERTICAL GRANITE CURB
- SLOPED GRANITE EDGE
- BITUMINOUS BERM
- GUARD RAIL
- CHAIN LINK FENCE
- DRAINAGE LINE
- SEWER LINE
- OVERHEAD WIRE
- UNDERGROUND ELECTRIC
- UNDERGROUND ELECTRIC PTC
- TELEPHONE LINE
- GAS LINE
- WATER LINE
- TELEPORT LINE
- WESTERN UNION LINE
- GROUND WATER EQUILIBRATION LINE
- STEAM LINE
- FUEL LINE
- FIBER OPTIC LINE



Approximate Boundary of WPB2 Phase (See Figure 4)

N/F CITY OF BOSTON  
18,317 S.F.  
(0.12 ACRES)

SUDBURY STREET  
(PUBLIC - 80' WIDE/PLAN L-9259 & L-9532)  
(A/K/A NEW SUDBURY STREET)

CONGRESS STREET  
(PUBLIC - VARIABLE WIDTH/PLAN L-9570)



SITE SCHEMATIC

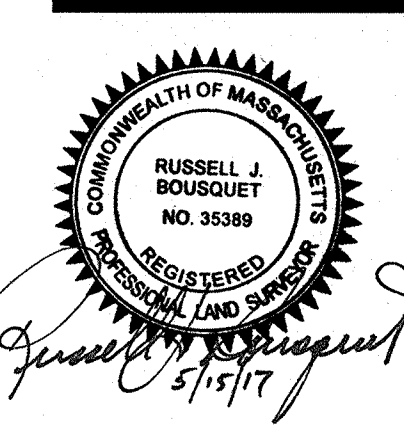
BULFINCH CROSSING  
ONE CONGRESS STREET  
BOSTON, MASSACHUSETTS

Government Center Garage

50 Sudbury Street  
Boston, Massachusetts

No.	Revision	Date	Appr.

ALTA/NSPS  
Land Title Survey  
(Title Information)

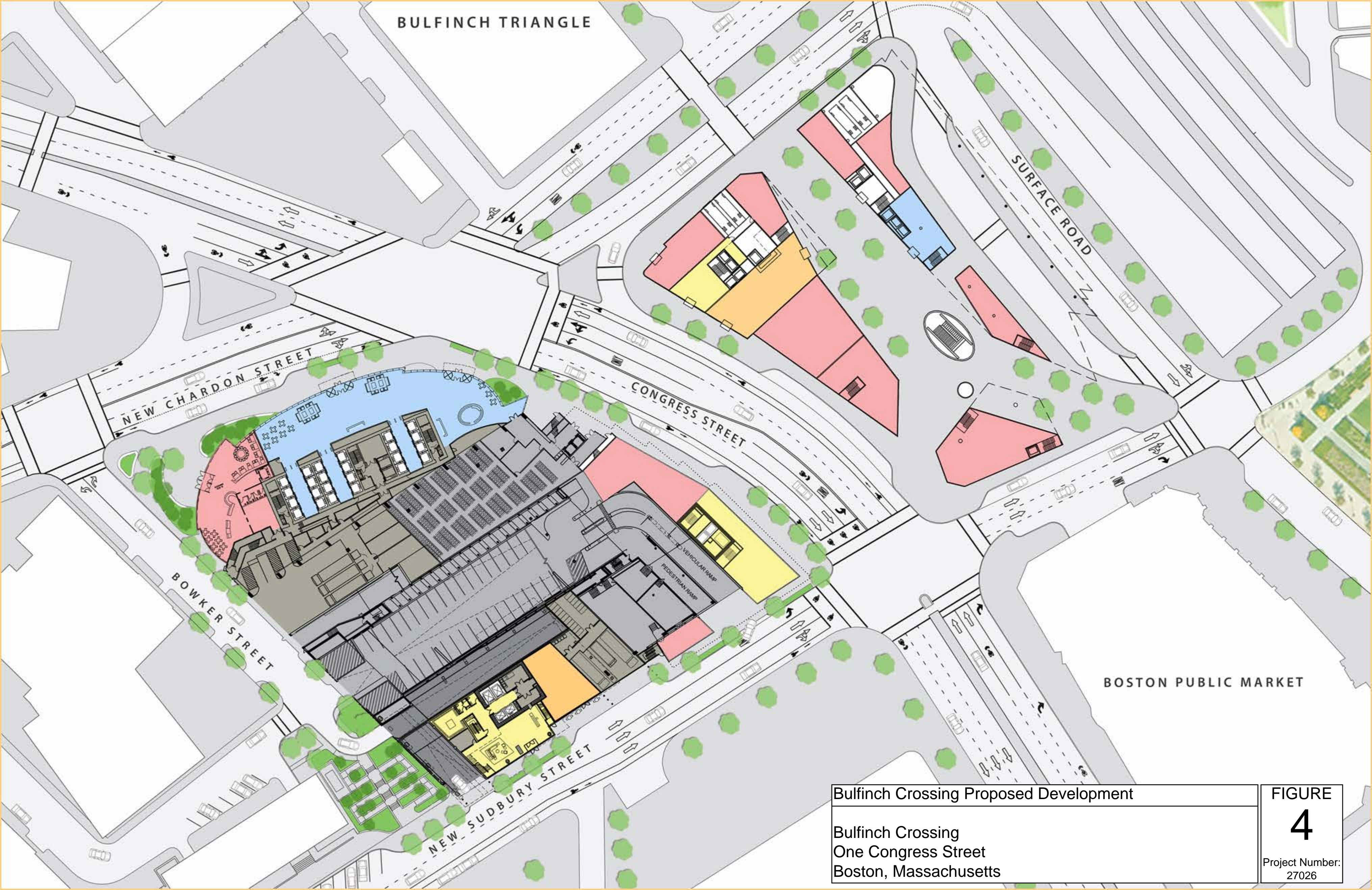


FIGURE

3

Project Number:  
27026





BULFINCH TRIANGLE

NEW CHARDON STREET

CONGRESS STREET

SURFACE ROAD

BOWKER STREET

NEW SUDBURY STREET

BOSTON PUBLIC MARKET

Bulfinch Crossing Proposed Development

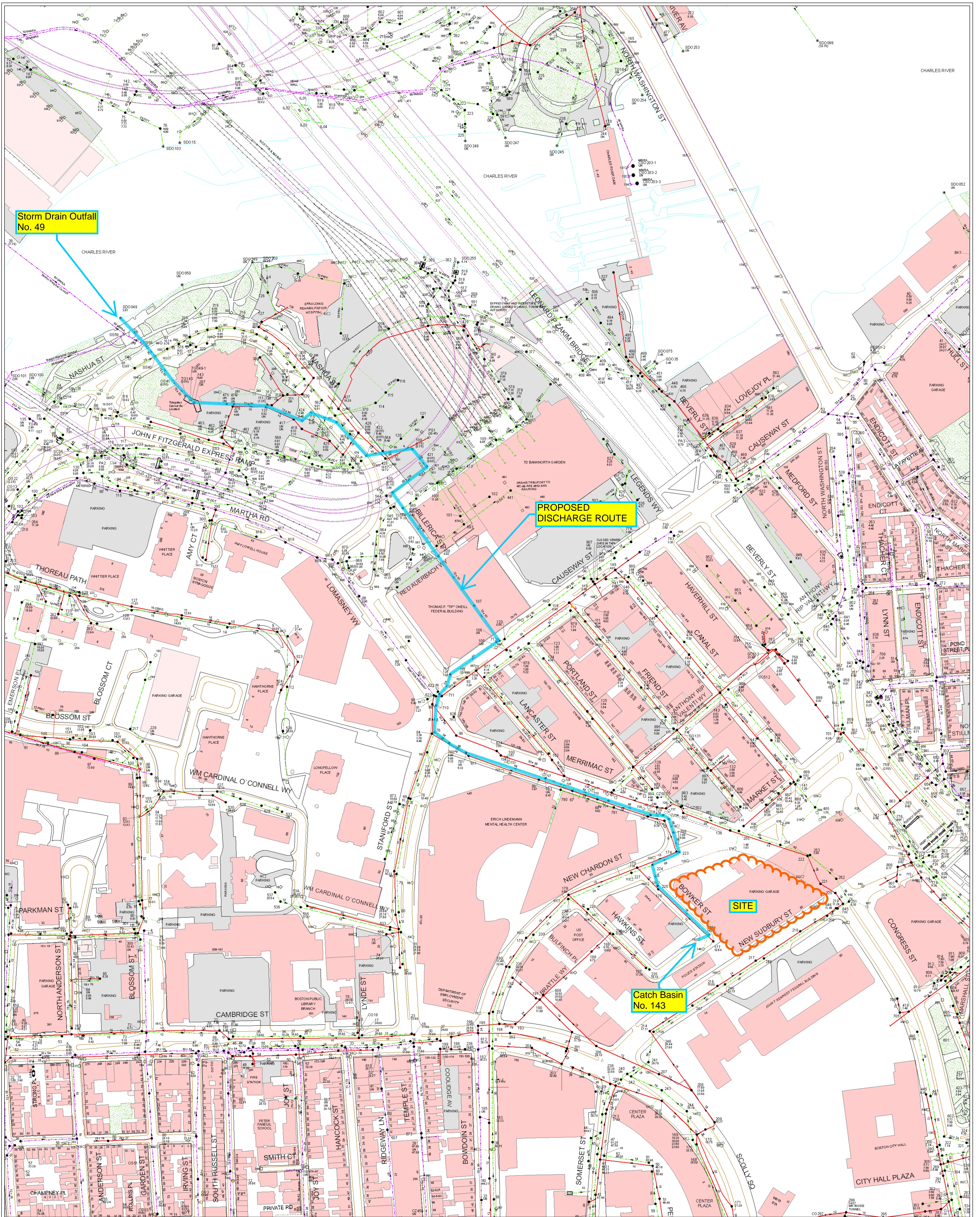
Bulfinch Crossing  
One Congress Street  
Boston, Massachusetts

FIGURE

4

Project Number:  
27026



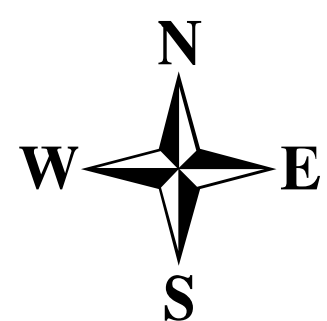


Storm Drain Outfall  
No. 49

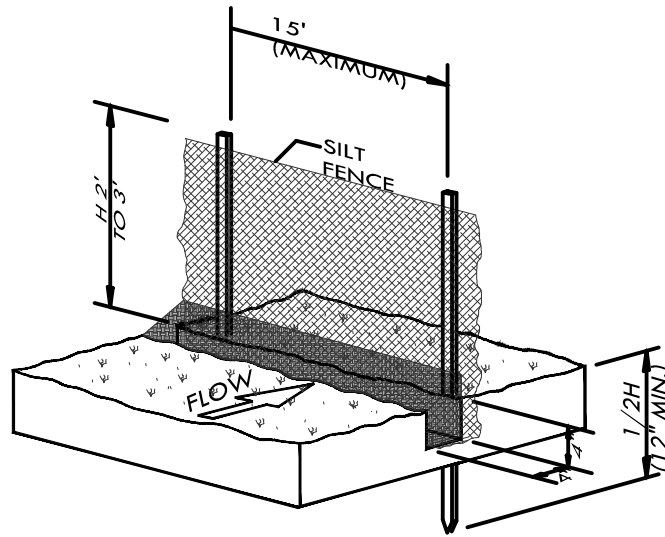
PROPOSED  
DISCHARGE ROUTE

Catch Basin  
No. 143

SITE

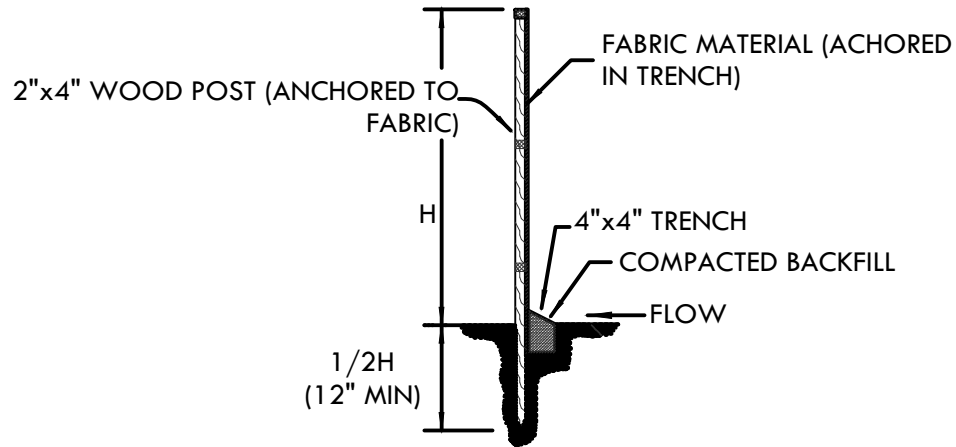






SILT FENCE INSTALLATION

-NTS-



SECTION

-NTS-

DETAIL

SILT FENCE EROSION BARRIER

**NOTE:**

EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL LANDSCAPING IS COMPLETED, OR AS DIRECTED BY LOCAL JURISDICTION

DETAIL - SILT FENCE EROSION BARRIER

STORMWATER POLLUTION PREVENTION PLAN  
BULFINCH CROSSING

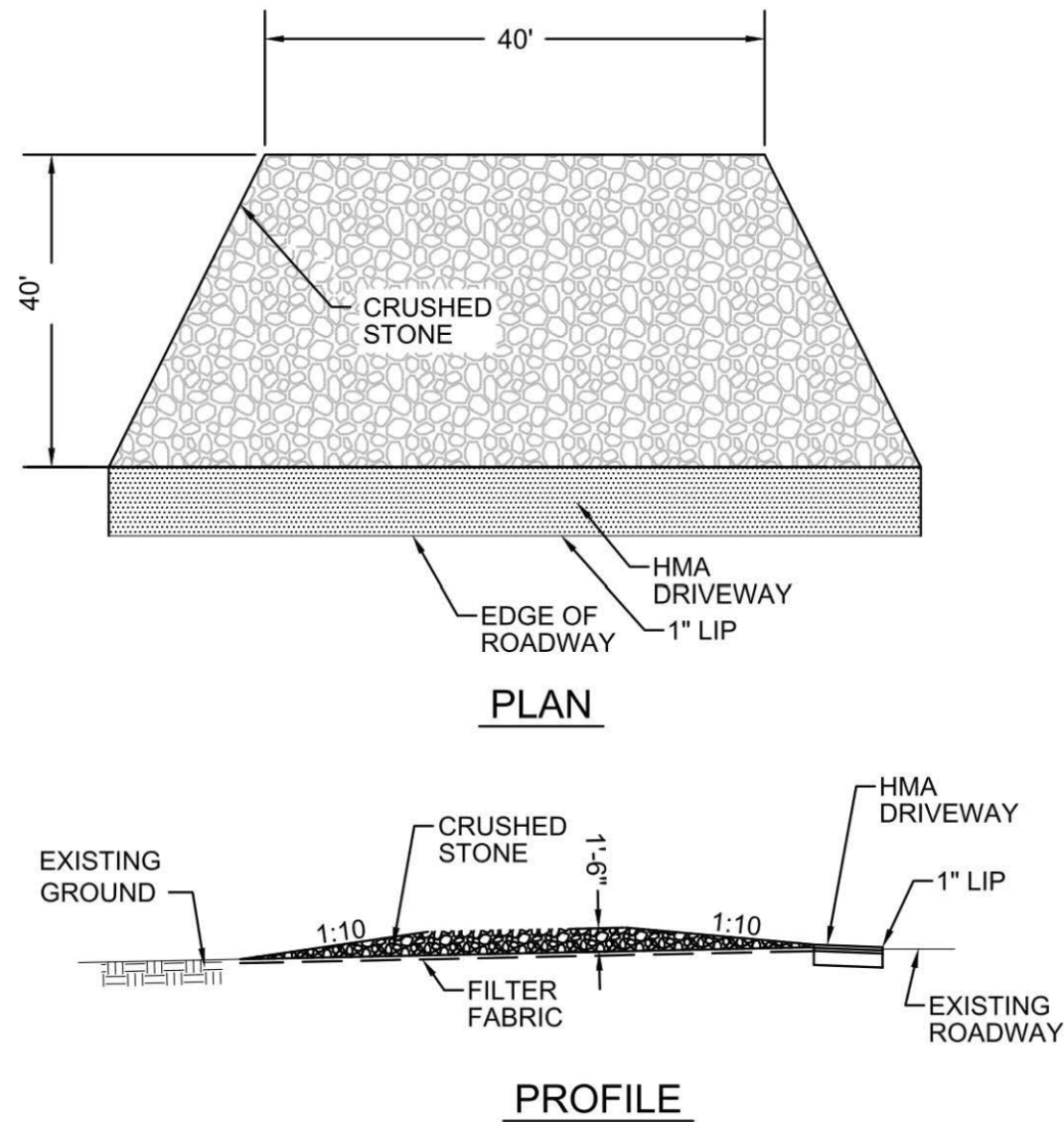
ONE CONGRESS STREET  
BOSTON, MASSACHUSETTS 02114

Date:	FEB 2019
Drawn:	BS
Checked:	JF
Env. Proj. No.:	27026

FIGURE

6

**VERTEX**<sup>®</sup>



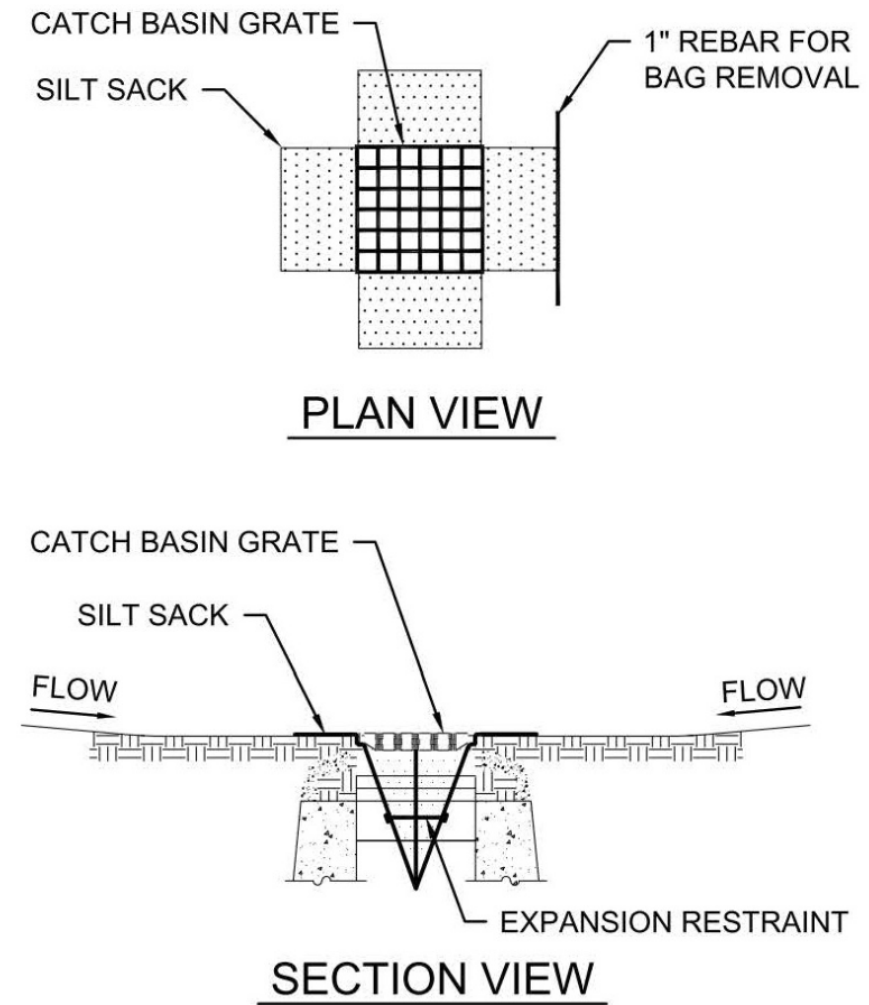
\*TOLERANCE FOR CONSTRUCTION  $\pm 0.5\%$

### STABILIZED CONSTRUCTION ENTRANCE

SCALE: NTS

DWG: SP-06

DATE: APRIL 2013



#### NOTES:

1. INSTALL SILT SACK IN EXISTING CATCH BASINS, BEFORE COMMENCING WORK, AND IN NEW CATCH BASINS IMMEDIATELY AFTER INSTALLATION OF STRUCTURE. MAINTAIN UNTIL SURFACE COURSE PAVING IS COMPLETE OR A PERMANENT STAND OF GRASS HAS BEEN ESTABLISHED.
2. GRATE TO BE PLACED OVER SILT SACK.
3. SILT SACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED

### INLET PROTECTION - SILT SACK IN CATCH BASIN

SCALE: N.T.S.



REVISIONS

FIGURE  
**7**

Date:	02/19/2019
Drawn:	BS
Checked:	JJF
Job No.:	27026

SEDIMENT AND EROSION CONTROL SPECIFICATIONS

BULFINCH CROSSING  
ONE CONGRESS STREET  
BOSTON, MASSACHUSETTS

**Appendix B – Copy of the RGP**

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
GENERAL PERMIT FOR REMEDIATION ACTIVITY DISCHARGES**

**TABLE OF CONTENTS**

NOTE: The Remediation General Permits for the Commonwealth of Massachusetts and the State of New Hampshire are combined. Parts 1 through 6 contain general permit provisions applicable to both General Permits; and Parts 2 and 7 contain permit provisions for remediation activity discharges specific to the Commonwealth of Massachusetts or the State of New Hampshire.

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## **APPENDICES**

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Appendix II: Summary of Endangered Species Act Listings and Essential Fish Habitat Designations

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## **ATTACHMENTS**

Attachment A: Whole Effluent Toxicity Test Procedure and Protocol for Freshwater and Marine Discharges

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
GENERAL PERMIT FOR REMEDIATION ACTIVITY DISCHARGES**

**Massachusetts General Permit, Permit No. MAG910000**

In compliance with the provisions of the Federal Clean Water Act as amended, (33 U.S.C. §§1251 *et seq.*; the "CWA"), and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §§26-53), the following permit authorizes discharges from eight general remediation activity categories, including:

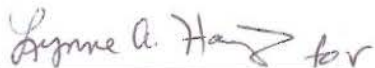
- I. Petroleum-related site remediation;<sup>1</sup>
- II. Non-petroleum-related site remediation;<sup>1</sup>
- III. Contaminated site dewatering;
- IV. Pipeline and tank dewatering;
- V. Aquifer pump testing;
- VI. Well development/rehabilitation;
- VII. Collection structure remediation/dewatering; and
- VIII. Dredge-related dewatering.

Such discharges are authorized at sites located in Massachusetts to all classes of waters designated in the Massachusetts Water Quality Standards, 314 CMR 4.00 *et seq.*, unless otherwise restricted, in accordance with effluent limitations, monitoring requirements, and other conditions set forth herein.

This Remediation General Permit (RGP) shall become effective thirty (30) days from the date of signature.

This general permit and the authorization to discharge supersede the previous Remediation General Permit which expired on September 9, 2015. This general permit will expire at midnight, 5 years from the effective date.

Signed this 9<sup>th</sup> day of March 2017.



Ken Moraff, Director  
Office of Ecosystem Protection  
Environmental Protection Agency  
Region 1  
Boston, MA



Douglas E. Fine, Assistant Commissioner  
Bureau of Water Resources  
Department of Environmental Protection  
Commonwealth of Massachusetts  
Boston, MA

<sup>1</sup> For discharges that are subject to the Massachusetts Contingency Plan (310 CMR 40.0000), this general permit applies as a matter of federal, but not state, law. For all other discharges, this general permit applies as a matter of both.

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
GENERAL PERMIT FOR REMEDIATION ACTIVITY DISCHARGES**

**New Hampshire General Permit, Permit No. NHG910000**

In compliance with the provisions of the Federal Clean Water Act as amended, (33 U.S.C. §§1251 *et seq.*; the "CWA"), the following permit authorizes discharges from eight general remediation activity categories, including:

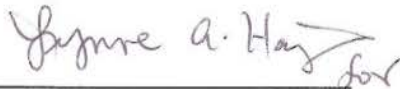
- I. Petroleum-related site remediation;
- II. Non-petroleum-related site remediation;
- III. Contaminated site dewatering;
- IV. Pipeline and tank dewatering;
- V. Aquifer pump testing;
- VI. Well development/rehabilitation;
- VII. Collection structure remediation/dewatering, and
- VIII. Dredge-related dewatering.

Such discharges are authorized to all waters located in New Hampshire, unless otherwise restricted by the New Hampshire Water Quality Standards,<sup>2</sup> in accordance with effluent limitations, monitoring requirements, and other conditions set forth herein.

This Remediation General Permit (RGP) shall become effective thirty (30) days from the date of signature.

This general permit and the authorization to discharge supersede the previous Remediation General Permit which expired on September 9, 2015. This general permit will expire at midnight, 5 years from the effective date.

Signed this *9<sup>th</sup>* day of *March* 2017.



Ken Moraff, Director  
Office of Ecosystem Protection  
Environmental Protection Agency  
Region 1  
Boston, MA

<sup>2</sup> 50 RSA §485-A:8 and the N.H. Code of Administrative Rules, Chapter Env-Wq 1700 Surface Water Quality Regulations.

## **PART 1 APPLICABILITY AND COVERAGE OF THE RGP**

For purposes of this general permit, the owner or operator (hereinafter referred to as the “operator”), as defined by 40 CFR §122.2, of any “facility or activity” (hereinafter referred to as “site”) subject to regulation under the NPDES program is responsible for applying for coverage under this general permit. As required by 40 CFR §122.21(b), “[w]hen a facility or activity is owned by one person but is operated by another person, it is the operator’s duty to obtain a permit.” For the purposes of this general permit, this can include residential owners treating contaminated groundwater released from heating oil tanks.

### **1.1 Subject Discharges**

Existing, emergency, and new discharges from the following remediation, dewatering and dewatering/remediation-related activities are eligible for coverage under this general permit:

1. Petroleum-related site remediation includes remediation of groundwater contaminated by petroleum products (e.g., gasoline, fuel oil, jet fuel, fuel additives and oxygenates, waste oil) and related activities.
2. Non-petroleum-related site remediation includes remediation of groundwater contaminated by volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), or inorganics (e.g., metals) and related activities.
3. Contaminated site dewatering includes dewatering conducted at former remediation sites, sites with no known source of contamination, or sites where pollutants are naturally occurring and related activities.
4. Pipeline and tank dewatering includes dewatering of pipelines, tanks, and similar structures and appurtenances that store or convey petroleum products, non-petroleum products, potable water, groundwater, and certain surface waters during construction of new structures or repair or maintenance of existing structures.
5. Aquifer pump testing includes short or long-term testing of a distinct contaminated or formerly contaminated aquifer(s), including when contamination is naturally occurring.
6. Well development/rehabilitation includes the development or rehabilitation of groundwater monitoring, groundwater extraction, and water supply wells at contaminated or formerly contaminated sites, including when contamination is naturally occurring.
7. Collection structure dewatering/remediation includes dewatering/remediation of structures utilized for collecting miscellaneous sources of water from contaminated or formerly contaminated sites or sources (e.g., sumps and dikes), including when contamination is naturally occurring or a result of the infiltration of contaminated groundwater or storm water.

- 8. Dredge-related dewatering includes certain short-term dredging-related activities such as a short-term pilot study or similar activity associated with dredging, dredge material dewatering, including drain back waters and dewatering of contaminated solids.

**Table 1: Activities Covered by the Remediation General Permit**

Activity Category	Contamination Type	
I. Petroleum-Related Site Remediation II. Non-Petroleum-Related Site Remediation	A. Inorganics B. Non-Halogenated Volatile Organic Compounds C. Halogenated Volatile Organic Compounds D. Non-Halogenated Semi-Volatile Organic Compounds E. Halogenated Semi-Volatile Organic Compounds F. Fuels Parameters	
Activity Category	Contamination Type	
III. Contaminated Site Dewatering IV. Pipeline and Tank Dewatering V. Aquifer Pump Testing VI. Well Development/Rehabilitation VII. Collection Structure Dewatering/Remediation VIII. Dredge-Related Dewatering	G. Sites with Known Contamination	A. Inorganics B. Non-Halogenated Volatile Organic Compounds C. Halogenated Volatile Organic Compounds D. Non-Halogenated Semi-Volatile Organic Compounds E. Halogenated Semi-Volatile Organic Compounds F. Fuels Parameters
	H. Sites with Unknown Contamination	

For the purposes of this general permit, remediation and dewatering discharges are those that contain only the pollutants included in the Contamination Type Categories in this general permit at levels that do not exceed the effluent limitations in this general permit (see Part 2), unless otherwise authorized on a case-by-case basis. Minimum treatment requirements, including Best Management Practices (BMPs), are found in Part 2.5 of this general permit. The term “existing discharge” refers to a discharge in accordance with the Remediation General Permit that expired on September 9, 2015. The term “emergency discharge” refers to a discharge that is a result of remediation or dewatering activities conducted in response to a public emergency and the discharge requires immediate authorization to avoid imminent endangerment to human health, public safety, or the environment, or to reestablish essential public services. The term “new discharge” refers to any discharge that is not an existing or emergency discharge. The term “known” used in Contamination Type G, above, refers to sites with fully characterized and/or specific contamination type categories, where pollutants have been quantified in environmental samples, and such data meet minimum data validation requirements.<sup>3</sup> Activity Categories III-G through VIII-G must select all Contamination Type Categories A through F, that are present. The term “unknown” used in Contamination Type H, above, refers to sites broadly associated with

<sup>3</sup> For sites located in Massachusetts, operators may refer to Massachusetts Policy #WSC-07-350, *MCP Representativeness Evaluations and Data Usability Assessments* for guidance on data usability assessments. For sites located in New Hampshire, operators may refer to EPA Region 1 guidance for data validation.

contamination that may or may not be fully characterized, including, but not limited to sites where pollutants may be present, but all potential pollutants have not been quantified, or pollutants have been quantified, but such data do not meet minimum data validation requirements. For Activity Categories III-H through VIII-H, Contamination Type Categories A through F apply. For the purposes of this general permit, a pollutant is “known present” if measured above the analytical detection limit using a sufficiently sensitive test method in an environmental sample, and “believed present” if a pollutant has not been measured in an environmental sample but will be added or generated prior to discharge, such as through a treatment process. Consequently, a pollutant is “known absent” if measured as non-detect relative to the analytical detection limit using a sufficiently sensitive test method in an environmental sample, and “believed absent” if a pollutant has not been measured in an environmental sample but will not be added or generated prior to discharge and is not a parameter that applies to the applicable activity category for a site. See Part 2.1.1 for parameter applicability and Part 4.1.4 for additional definitions.

## **1.2 Geographic Coverage Area**

### **1. Sites located in Massachusetts**

All of the discharges to be authorized by this general NPDES permit in the Commonwealth of Massachusetts are into all waters of the Commonwealth unless otherwise restricted by the Massachusetts Surface Water Quality Standards, 314 CMR 4.00 (or as revised), including 314 CMR 4.04(3), Protection of Outstanding Resource Waters.

### **2. Sites located in New Hampshire**

All of the discharges to be authorized by this general NPDES permit in the State of New Hampshire are into all waters of the State of New Hampshire unless otherwise restricted by the New Hampshire Surface Water Quality Regulations, New Hampshire Code of Administrative Rules, Chapter Env-Wq 1700 (or as revised), including 50 RSA §485-A:8-11, Classification of Waters.

## **1.3 Limitations on Coverage**

The following discharges are ineligible for coverage under this general permit:

1. Discharges to Outstanding Resource Waters in Massachusetts and New Hampshire:
  - a. as defined in Massachusetts by 314 CMR 4.06, including Public Water Supplies (314 CMR 4.06(1)(d)1) which have been designated by the State as Class A waters, unless an authorization is granted by the Massachusetts Department of Environmental Protection (MassDEP) by 314 CMR 4.04(3)(b); or
  - b. as defined in New Hampshire under Env-Wq 1708.05(a), unless allowed by the New Hampshire Department of Environmental Services (NHDES) under Env-Wq 1708.05(b).
2. Discharges to Class A waters in New Hampshire, in accordance with RSA 485A:8, I. and Env-Wq 1708.06. To determine if the proposed receiving water is a Class A waterbody, contact NHDES as listed in Part 4.6 of this general permit.

3. Discharges that are likely to adversely affect any species listed as endangered or threatened under the Endangered Species Act (ESA) or result in the adverse modification or destruction of critical habitat under ESA. See Appendix I of this general permit for additional ESA requirements, and Appendix II of this general permit for additional ESA information.
4. Discharges whose direct or indirect impacts do not prevent or minimize adverse effects on any designated Essential Fish Habitat (EFH). See Appendix II of this general permit for additional EFH information.
5. Discharges of pollutants identified as the cause of an impairment to receiving water segments identified on the Commonwealth of Massachusetts or the State of New Hampshire approved 303(d) lists, unless the pollutant concentration is at or below a concentration that meets water quality standards.<sup>4</sup>
6. Discharges to Ocean Sanctuaries in Massachusetts, as defined at 302 CMR 5.00.
7. Discharges to territorial seas, as defined by Section 502 of the CWA.
8. Discharges to a river designated as a Wild and Scenic River, except in accordance with 16 U.S.C. 1271 *et seq.* See <http://www.rivers.gov/> for additional information.
9. Discharges which adversely affect properties listed or eligible for listing in the National Registry of Historic Places under the National Historic Preservation Act of 1966 (NHPA), 16 USC §470 *et seq.* See Appendix III of this general permit for additional NHPA requirements.
10. Remediation or dewatering discharges resulting from on-site response action conducted pursuant to §§104, 106, 120, 121 or 122 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).
11. Discharges of uncontaminated effluent authorized or allowable under other United States Environmental Protection Agency (EPA) permits.
12. Discharges to a Publicly Owned Treatment Works (POTW) which is permitted under Section 402 of the CWA.

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<sup>4</sup> The discharge would be eligible if a segment is impaired due to a pollutant which is not expected in the discharge covered by this general permit. Similarly, the discharge would be eligible if the discharge contains the pollutants for which a segment is impaired (e.g., metals) but meets the limitations in this general permit for those pollutants, as these limitations are equal to the water quality standards with no allowable dilution. See Massachusetts' integrated list of waters (CWA 303(d) and 305(b)) at <http://www.mass.gov> and New Hampshire's integrated list of waters (CWA 303(d) and 305(b)) at <http://des.nh.gov>.



13. Discharges directly or indirectly to the ground subject to other program authority, including the Underground Injection Control (UIC) Program under authority of the Safe Drinking Water Act, a State groundwater discharge permit program, or a similar program authority.
14. Discharge of dredge-related waters where the United States Army Corps of Engineers (ACE) intends to authorize the discharge under a CWA §404 permit.<sup>5</sup>
15. New Sources, as defined in 40 CFR §122.2.
16. Discharges covered by an individual NPDES permit unless:
  - a. The discharges are separate from the currently permitted discharges; or
  - b. The discharges covered by an individual NPDES permit are eligible for this general permit.
17. Discharges for which the Director makes a determination that an individual permit is required. See Part 3 of this general permit.

#### 1.4 Special Eligibility Determinations

Sites located in Massachusetts and New Hampshire that are seeking coverage under this general permit must certify compliance with the requirements of this permit related to threatened and endangered species and critical habitat under the Endangered Species Act (i.e., ESA and EFH) and to historic properties under the National Historical Preservation Act, where applicable (i.e., NHPA).

##### 1. Endangered and Threatened Species and/or Critical Habitat<sup>6</sup>

Sites that are located in areas in which listed species may be present are not automatically covered under this general permit. Operators must demonstrate permit eligibility following the eligibility requirements in Appendix I and include this determination in the Notice of Intent (NOI). See Appendix II of this general permit for additional information.

##### 2. National Historic Preservation Act

Sites that are located on or near properties listed or eligible for listing in the National Registry of Historic Places under the National Historic Preservation Act of 1966, 16 USC §470 *et seq.* are not automatically covered under this permit. Prior to submitting a NOI, operators must meet the requirements of Appendix III pertaining to historic places, which requires *the operator* to determine whether discharges have the potential to affect a property that is listed or eligible for

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<sup>5</sup> Dredge-related discharges may be covered under the RGP provided the ACE does not intend to issue a general or individual permit under 33 USC §1344 for the activities. If authorized to discharge under the RGP, this general permit does not authorize dredging or disposal of dredge material. This general permit also does not constitute authorization under §404 of any dredging or filling operations. See 33 CFR §330.5 and §§401 and 404 of the CWA.

<sup>6</sup> Several listed species may apply to operators under this general permit, including, but not limited to: the shortnose sturgeon, Atlantic sturgeon, dwarf wedge mussel, bog turtle, northern redbelly cooter, and northern long-eared bat. The shortnose sturgeon and Atlantic sturgeon are listed under the jurisdiction of the National Marine Fisheries Service (NMFS) and the dwarf wedgemussel, bog turtle, northern redbelly cooter, and northern long-eared bat are listed under the jurisdiction of the United States Fish and Wildlife Service (FWS).



listing on the National Register of Historic Places. If the potential exists, the operator must consult with the appropriate agencies. Operators must submit the results of any consultations with the NOI.

Operators must also comply with applicable State and local laws concerning the protection of historic properties and places. Where a discharge(s) has the potential to affect a property that is either listed or eligible for listing on the National Register of Historic Places, an operator must coordinate with the appropriate State Historic Preservation Officer (SHPO) regarding effects of their discharges.<sup>7</sup> In the event there is an inadvertent discovery of a historic property on the site, the operator must immediately stop the remediation activity, contact EPA, and coordinate with the appropriate official(s) consistent with the steps outlined in 36 CFR §800.13 of the NHPA regulations.

### **1.5 Coverage under the RGP**

Under this general permit, operators in Massachusetts and New Hampshire may request authorization to discharge into waters of the respective States. To obtain authorization to discharge under this general permit, an operator must:

1. Have a discharge type described in Part 1.1 of this general permit;
2. Have a discharge located in the areas listed in Part 1.2 of this general permit;
3. Meet the eligibility requirements in Part 1.3 and Part 1.4 of this general permit;
4. Submit a complete and accurate Notice of Intent in accordance with the requirements of Part 3 of this general permit; and
5. Receive a written authorization to discharge from EPA.<sup>8</sup>

To maintain coverage under this general permit, the discharge must meet applicable water quality standards and all effluent limitations and requirements included in Part 2 and Part 6, and, if applicable, Part 7 of this general permit. The operator must also meet the requirements included in Part 4 and 5 of this general permit.

## **PART 2 GENERAL PERMIT FOR REMEDIATION ACTIVITY DISCHARGES**

### **2.1 Effluent Limitations and Monitor-Only Requirements**

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<sup>7</sup> For sites located in Massachusetts, the SHPO is currently within the Massachusetts Historical Commission. For sites located in New Hampshire, the SHPO is currently the Director of Cultural Resources within the Department of Cultural Resources.

<sup>8</sup> Where the RGP refers to correspondence in writing from EPA, such correspondence may be by mail, email and/or facsimile transmittal. An emergency discharge is considered provisionally covered under the RGP immediately upon the initiation of discharges on the condition that: 1) A complete and accurate NOI is submitted in accordance with Part 3.3 within fourteen (14) days after the emergency discharges commence; 2) Notification is provided to EPA in accordance with Part 4.6.3.b and c prior to commencing an emergency discharge when feasible, but no later than twenty-four (24) hours after such discharges commence; and 3) Monitoring proceeds in accordance with the monitoring requirements specified in Part 4.4. as for short-term discharges for the duration of provisional coverage. Provisional coverage is authorized for up to fourteen (14) days, after which the operator must either: 1) Received written authorization to discharge from EPA, unless EPA notifies the operator that their authorization has been delayed or denied; or 2) Submitted a NOT to EPA.

1. Chemical-Specific Effluent Limitations in Massachusetts and New Hampshire  
During the period beginning on the effective date and lasting through the expiration date, EPA will authorize the discharges under Part 1.1 of this general permit to receiving waters in Massachusetts and New Hampshire. The effective date of authorization for each discharge covered under this general permit is the date indicated in EPA's written authorization to discharge, lasting through the expiration date of this general permit or written termination of coverage, whichever occurs first. Each discharge shall be limited and monitored as specified in Table 2, below. The applicability of effluent limitations for each Activity Category listed in Table 1 is included in footnote 2, below. Additional limitations and monitoring requirements are specified in Parts 2.2 through 2.5 and Part 4, below.

**Table 2: Chemical-Specific Effluent Limitations and Monitor-Only Requirements<sup>1</sup>**

Parameter <sup>2</sup>	Effluent Limitation <sup>3,4</sup>	
	TBEL <sup>5</sup>	WQBEL <sup>6</sup>
<b>A. Inorganics</b>		
Ammonia <sup>7</sup>		Report mg/L
Chloride <sup>8</sup>		Report µg/L
Total Residual Chlorine <sup>9</sup>	0.2 mg/L	FW= 11 µg/L SW= 7.5 µg/L
Total Suspended Solids		30 mg/L
Antimony <sup>10</sup>	206 µg/L	640 µg/L in MA 4.3 mg/L in NH
Arsenic <sup>10</sup>	104 µg/L	FW= 10 µg/L SW= 36 µg/L
Cadmium <sup>11,12</sup>	10.2 µg/L	FW= 0.25 µg/L SW= 8.8 µg/L in MA SW= 9.3 µg/L in NH
Chromium III <sup>11,12</sup>	323 µg/L	FW= 74 µg/L SW= 100 µg/L
Chromium VI <sup>11,13</sup>	323 µg/L	FW= 11 µg/L SW= 50 µg/L
Copper <sup>11,12</sup>	242 µg/L	FW= 9 µg/L SW= 3.1 µg/L
Iron <sup>10</sup>	5,000 µg/L	FW = 1,000 µg/L
Lead <sup>11,12</sup>	160 µg/L	FW= 2.5 µg/L SW= 8.1 µg/L
Mercury <sup>11</sup>	0.739 µg/L	FW= 0.77 µg/L SW= 0.94 µg/L
Nickel <sup>11,12</sup>	1,450 µg/L	FW= 52 µg/L SW= 8.2 µg/L
Selenium	235.8 µg/L	FW= 5.0 µg/L <sup>10</sup> SW= 71 µg/L <sup>11</sup>
Silver <sup>11,12</sup>	35.1 µg/L	FW= 3.2 µg/L SW= 1.9 µg/L
Zinc <sup>11,12</sup>	420 µg/L	FW= 120 µg/L SW= 81 µg/L

Parameter <sup>2</sup>	Effluent Limitation <sup>3,4</sup>	
	TBEL <sup>5</sup>	WQBEL <sup>6</sup>
Cyanide <sup>14</sup>	178 mg/L	FW = 5.2 µg/L SW = 1.0 µg/L
<b>B. Non-Halogenated Volatile Organic Compounds</b>		
Total BTEX <sup>15</sup>	100 µg/L	
Benzene <sup>15</sup>	5.0 µg/L	
1,4 Dioxane <sup>16</sup>	200 µg/L	
Acetone	7.97 mg/L	
Phenol	1,080 µg/L	300 µg/L
<b>C. Halogenated Volatile Organic Compounds</b>		
Carbon Tetrachloride	4.4 µg/L	1.6 µg/L in MA
1,2 Dichlorobenzene	600 µg/L	
1,3 Dichlorobenzene	320 µg/L	
1,4 Dichlorobenzene	5.0 µg/L	
Total dichlorobenzene	763 µg/L in NH	
1,1 Dichloroethane	70 µg/L	
1,2 Dichloroethane	5.0 µg/L	
1,1 Dichloroethylene	3.2 µg/L	
Ethylene Dibromide <sup>17</sup>	0.05 µg/L	
Methylene Chloride	4.6 µg/L	
1,1,1 Trichloroethane	200 µg/L	
1,1,2 Trichloroethane	5.0 µg/L	
Trichloroethylene	5.0 µg/L	
Tetrachloroethylene	5.0 µg/L	3.3 µg/L in MA
cis-1,2 Dichloroethylene	70 µg/L	
Vinyl Chloride	2.0 µg/L	
<b>D. Non-Halogenated Semi-Volatile Organic Compounds</b>		
Total Phthalates <sup>18</sup>	190 µg/L	FW = 3.0 µg/L in NH SW = 3.4 µg/L in NH
Diethylhexyl phthalate <sup>18</sup>	101 µg/L	2.2 µg/L in MA 5.9 µg/L in NH
Total Group I Polycyclic Aromatic Hydrocarbons <sup>19</sup>	1.0 µg/L	As Individual PAHs
Benzo(a)anthracene <sup>19</sup>	As Total Group I PAHs	0.0038 µg/L
Benzo(a)pyrene <sup>19</sup>		0.0038 µg/L
Benzo(b)fluoranthene <sup>19</sup>		0.0038 µg/L
Benzo(k)fluoranthene <sup>19</sup>		0.0038 µg/L
Chrysene <sup>19</sup>		0.0038 µg/L
Dibenzo(a,h)anthracene <sup>19</sup>		0.0038 µg/L
Indeno(1,2,3-cd)pyrene <sup>19</sup>		0.0038 µg/L
Total Group II Polycyclic Aromatic Hydrocarbons <sup>20</sup>	100 µg/L	
Naphthalene <sup>20</sup>	20 µg/L	
<b>E. Halogenated Semi-Volatile Organic Compounds</b>		
Total Polychlorinated Biphenyls <sup>21</sup>	0.000064 µg/L	
Pentachlorophenol	1.0 µg/L	

Parameter <sup>2</sup>	Effluent Limitation <sup>3,4</sup>	
	TBEL <sup>5</sup>	WQBEL <sup>6</sup>
<b>F. Fuels Parameters</b>		
Total Petroleum Hydrocarbons <sup>22</sup>	5.0 mg/L	
Ethanol <sup>23</sup>	Report mg/L	
Methyl-tert-Butyl Ether <sup>24</sup>	70 µg/L	20 µg/L in MA
tert-Butyl Alcohol	120 µg/L in MA 40 µg/L in NH	
tert-Amyl Methyl Ether <sup>24</sup>	90 µg/L in MA 140 µg/L in NH	

**Table 2 Footnotes:**

<sup>1</sup> The following abbreviations are used in Table 2, above:

<sup>a</sup> TBEL = technology-based effluent limitation

<sup>b</sup> WQBEL = water quality-based effluent limitation

<sup>c</sup> mg/L = milligrams per liter

<sup>d</sup> avg = average

<sup>e</sup> µg/L = micrograms per liter

<sup>f</sup> FW = freshwater

<sup>g</sup> SW = saltwater

<sup>2</sup> The sample type required for all parameters is grab. Grab samples must be analyzed individually and cannot be composited. See Appendix IX for additional definitions.

<sup>3</sup> The effluent limitation and/or monitor-only requirement for any parameter listed applies to any site if the given parameter is present at that site. The effluent limitations and monitor-only requirements also apply to Activity Categories as follows:

<sup>a</sup> Activity Category I:

all parameters in contamination type A. Inorganics;  
any present in contamination type B. non-halogenated VOCs;  
if present in contamination type C. halogenated VOCs;  
any present in contamination type D. non-halogenated SVOCs;  
if present in contamination type E. halogenated SVOCs; and  
any present in contamination type F. fuels parameters.

<sup>b</sup> Activity Category II:

all parameters in contamination type A. Inorganics;  
any present in contamination type B. non-halogenated VOCs;  
any present in contamination type C. halogenated VOCs;  
any present in contamination type D. non-halogenated SVOCs;  
if present in contamination type E. halogenated SVOCs; and  
if present in contamination type F. fuels parameters.

<sup>c</sup> Activity Category III-G:  
all parameters in contamination type A. Inorganics; and  
if present in contamination type B through F.

<sup>d</sup> Activity Category IV-G, V-G, VI-G, VII-G, VIII-G:  
if present in contamination type A through F.

<sup>e</sup> Activity Category III-H, IV-H, V-H, VI-H, VII-H, VIII-H:  
all parameters in contamination type A through F apply.

<sup>f</sup> When “if present” is noted above, the effluent limitation and/or monitor-only requirement for a parameter in the Contamination Type applies to a site only if the given parameter is known or believed present at that site. When “any present” is noted above, the effluent limitations and/or monitor-only requirements for all parameters in the Contamination Type apply to a site when at least one parameter in that Contamination Type is known or believed present at that site, unless otherwise specified below. See Part 1.1 for additional definitions.

<sup>4</sup> The limitation type for all parameters is monthly average. See Appendix IX for additional definitions.

<sup>5</sup> For any parameter with a single effluent limitation, that effluent limitation applies to a site if that parameter is applicable to that site. For any parameter with both a TBEL and a WQBEL, the TBEL applies to a site, at a minimum, if that parameter is applicable to that site.

<sup>6</sup> For any parameter with both a TBEL and a WQBEL, the WQBEL applies to a site if: 1) *The operator* determines that the WQBEL for a parameter calculated in accordance with Appendix V or VI applies; or 2) EPA or the appropriate State determines that a WQBEL is necessary to meet water quality standards. The calculation of WQBELs shall be as follows: 1) A dilution factor may be used to calculate the WQBEL for a parameter, if allowable and approved by the appropriate State prior to the submission of the NOI to EPA; 2) The calculations are completed in accordance with the instructions provided in Appendix V for sites located in Massachusetts or Appendix VI for sites located in New Hampshire; 3) The WQBEL calculations are included in the NOI submitted to EPA; and 4) The calculated WQBEL is confirmed by EPA in writing. In the event of a calculation error, the operator will be informed of any corrected WQBEL when notified of permit coverage by EPA. Operators are encouraged to use the additional resources provided by EPA at <https://www.epa.gov/region1/npdes/rgp.html> to follow the calculation methodologies for effluent limitations in Appendix V for sites in Massachusetts and Appendix VI for sites in New Hampshire.

<sup>7</sup> This parameter is expressed as ammonia nitrogen. The minimum level (ML) for analysis must be less than or equal to 0.1 mg/L. See Appendix VII for additional definitions.

<sup>8</sup> Sites located in Massachusetts must report concentrations of chloride. Sites located in New Hampshire may be subject to §401 certification requirements by the State of New Hampshire, including a numeric effluent limitation for chloride.

<sup>9</sup> Effluent limitations for TRC only apply if TRC is present or if discharges are likely to contain residual chlorine (e.g., potable water is in use or chlorine is a chemical used for and/or byproduct of treatment). The TBEL applies to all discharges subject to a TRC effluent limitation. The WQBELs are shown with zero dilution. The FW or SW WQBELs are calculated as follows:

<sup>a</sup>  $11 \mu\text{g/L} \times \text{approved dilution factor for discharges to freshwater waterbodies}$

<sup>b</sup>  $7.5 \mu\text{g/L} \times \text{approved dilution factor for discharges to saltwater waterbodies}$

If the FW or SW limitation for TRC as calculated above is less than the TBEL for TRC, the FW or SW limitation for TRC applies. The compliance level for TRC is  $50 \mu\text{g/L}$ .

<sup>10</sup> The TBEL and WQBEL for this parameter is expressed on the basis of total recoverable metal in the water column. The WQBEL is shown with zero dilution. For the antimony WQBEL in NH, EPA anticipates that the applicable revised WQC found in Env-Wq 1700 shall be incorporated into the RGP for sites in New Hampshire, once final. Based on the proposed revision for this value,  $640 \mu\text{g/L}$ , EPA expects to change the WQBEL from  $4.3 \mu\text{g/L}$  to  $640 \mu\text{g/L}$ .

<sup>11</sup> The WQBEL for this parameter is expressed on the basis of dissolved metal in the water column. The WQBEL is shown with zero dilution. The WQBEL shall apply in the form of total recoverable metal in the water column. The WQBEL must be adjusted using the calculation methodology included in Appendix V for sites located in Massachusetts or Appendix VI for sites located in New Hampshire. For the saltwater cadmium WQBEL in NH, EPA anticipates that the applicable revised WQC found in Env-Wq 1700 shall be incorporated into the RGP for sites in New Hampshire, once final. Based on the proposed revision for this value,  $7.9 \mu\text{g/L}$ , EPA expects to change the WQBEL from  $9.3 \mu\text{g/L}$  to  $7.9 \mu\text{g/L}$ .

<sup>12</sup> This parameter is hardness-dependent in freshwater. The WQBEL shown assumes a hardness of  $100 \text{ mg/L CaCO}_3$ . Hardness-dependent metals WQBELs must be adjusted for actual hardness using the calculation methodology included in Appendix V for sites located in Massachusetts or Appendix VI for sites located in New Hampshire. The hardness-dependent calculation requirement does not apply to saltwater discharges.

<sup>13</sup> The effluent limitations for chromium VI assume this metal is reduced to chromium III as a result of treatment. This metal is not hardness-dependent in freshwater.

<sup>14</sup> The effluent limitations for cyanide only applies if this parameter is present. The TBEL is shown as total cyanide. The WQBEL is shown as free cyanide per liter. However, total cyanide must be reported. The compliance level for total cyanide is  $5 \mu\text{g/L}$ .

<sup>15</sup> Total BTEX is the sum of: benzene (CAS No. 71432); toluene (CAS No. 108883); ethylbenzene (CAS No. 100-41-4); and (m,p,o) xylenes (CAS Nos. 108-88-3, 106-42-3, 95-47-6, and 1330-20-7). The Volatile Petroleum Hydrocarbon (VPH) method cannot be used for analysis of this parameter.

<sup>16</sup> The effluent limitation for 1,4-dioxane only applies if this parameter and/or 1,1,1 trichloroethane is present. 1,4-dioxane analysis must achieve a ML less than or equal to 50 µg/L. See Appendix VII for additional definitions.

<sup>17</sup> The effluent limitation for EDB only applies if this parameter is present.

<sup>18</sup> Total Phthalates is the sum of: diethylhexyl phthalate (CAS No. 117-81-7); butyl benzyl phthalate (CAS No. 85-68-7); di-n-butyl phthalate (CAS No. 84-74-2); diethyl phthalate (CAS No. 84-66-2); dimethyl phthalate (CAS No. 131-11-3); di-n-octyl phthalate (CAS No. 117-84-0). The effluent limitations for total phthalates and the individual phthalate, diethylhexyl phthalate, only apply if these parameters are present. For the diethylhexyl phthalate WQBEL in NH, EPA anticipates that the applicable revised WQC found in Env-Wq 1700 shall be incorporated into the RGP for sites in New Hampshire, once final. Based on the proposed revision for this value, 2.2 µg/L, EPA expects to change the WQBEL from 5.9 µg/L to 2.2 µg/L.

<sup>19</sup> Total Group I PAHs is the sum of: benzo(a)anthracene (CAS No. 56-55-3); benzo(a)pyrene (CAS No. 50-32-8); benzo(b)fluoranthene (CAS No. 205-99-2); benzo(k)fluoranthene (CAS No. 207-08-9); chrysene (CAS No. 218-01); dibenzo(a,h)anthracene (CAS No. 53-70-3); indeno(1,2,3-cd)pyrene (CAS No. 193-39-5). The compliance level for each individual PAH is 0.1 µg/L using a test method in 40 CFR §136 with selected ion monitoring. The extractable petroleum hydrocarbon (EPH) method cannot be used for analysis of this parameter.

<sup>20</sup> Total Group II PAHs is the sum of: acenaphthene (CAS No. 83-32-9); acenaphthylene (CAS No. 208-96-8); anthracene (CAS No. 120-12-7); benzo(g,h,i)perylene (CAS No. 191-24-2); fluoranthene (CAS No. 206-44-0); fluorene (CAS No. 86-73-7); naphthalene (CAS No. 91-20-3); phenanthrene (CAS No. 85-01-8); pyrene (CAS No. 129-00-0). The EPH method cannot be used for analysis of this parameter.

<sup>21</sup> Total PCBs is the sum of the following aroclors: PCB-1016, PCB-1221, PCB-1232, PCB-1242, PCB-1248, PCB-1254, and PCB-1260. The compliance level for total PCBs is 0.5 µg/L. The effluent limitation for total PCBs only applies if one or more of these parameters are present.

<sup>22</sup> The VPH and EPH methods cannot be used for TPH analysis.

<sup>23</sup> The monitor-only requirement for ethanol only applies if ethanol is present (e.g., discharges are likely to contain ethanol at a site where a release of a petroleum product that contains ethanol or where ethanol has been used or stored). Ethanol analysis must achieve a ML less than or equal to 0.4 mg/L. See Appendix VII for additional definitions.

<sup>24</sup> The effluent limitation for this parameter only applies if this fuel additive/oxygenate is present (e.g., discharges are likely to contain this fuel additive/oxygenate at a site where a release of a petroleum product that contained this additive/oxygenate occurred or where oxygenates/additives have been used or stored).

## 2. Effluent Flow Limitations

Effluent flow shall be limited and monitored as specified below.

**Table 3: Effluent Flow Limitations<sup>1</sup>**

<b>Effluent Flow<sup>2</sup></b>	<b>Effluent Limitations</b>	
	Design Flow BMP <sup>3</sup>	1.0 MGD <sup>4</sup>

**Table 3 Footnotes**

<sup>1</sup> Effluent flow limitations apply to all discharges. The limitation type for effluent flow is daily maximum. Effluent flow shall be the sum of the recorded discharge volume for each day (i.e., 24 hours) that effluent is discharged.

<sup>2</sup> Effluent flow shall be measured after treatment using a continuous measurement flow meter (i.e., a device that records the instantaneous gallons per minute (gpm) and total gallons discharged). If an operator demonstrates that use of a meter is infeasible and such a change is provided to the operator in writing, effluent flow shall be based on an estimate. An estimate of effluent flow shall be determined by the operation time and design flow of the treatment system in use at a site, or the flow rate and dimensions of the outfall at a site, if no treatment system is in use, unless otherwise instructed by EPA and/or the appropriate State. An operator must provide justification in the NOI or through a subsequent Notice of Change (NOC) submitted to EPA for a site if the use of a meter is infeasible.

<sup>3</sup> Effluent flow shall not exceed the design flow rate of any treatment system in use at a site, determined by the component of the treatment system with the most restricted flow and as reported in the NOI submitted to EPA for that site. Additional Design Flow BMP requirements are included in Part 2.5.2, below.

<sup>4</sup> Effluent flow shall not exceed 1.0 MGD, unless an effluent flow limitation greater than 1.0 MGD is approved by EPA and the appropriate State on a case-by-case basis. Effluent flow shall not exceed the flow of receiving water, or alter the structural characteristics of the receiving water. Flow control measures must be used if necessary to dissipate energy and control erosion or scouring during discharge.

**2.2 Water Quality-Based Effluent Limitations and Requirements**

1. The discharge shall not cause a violation of the water quality standards of the receiving water.
2. The discharge shall be adequately treated to ensure that the receiving water(s) remain free from:
  - a. Pollutants in concentrations or combinations that settle to form harmful deposits, float as foam, debris, scum, form a visible sheen or other visible pollutants.
  - b. Color, odor, taste, or turbidity in concentrations that would render them unsuitable for their designated use, unless such concentrations are naturally occurring.
  - c. Oil, grease and petrochemicals that produce a visible film on the surface of the water, impart an oily taste to the water or an oily or other undesirable taste to the edible portions of aquatic life, coat the banks or bottom of the water course, or become toxic to aquatic life.



3. Toxics Control
  - a. The discharge shall not contain any pollutant or combination of pollutants in toxic amounts or in concentrations or combinations which are toxic to humans, aquatic life, or wildlife, or which would impair the uses designated by the classification of the receiving waters;
  - b. The discharge shall not contain any pollutant or combination of pollutants in concentrations or combinations which violate any applicable water quality standard; and
  - c. If a discharge contains any pollutant which is not limited by this general permit and the operator is otherwise eligible for coverage under this general permit, the operator must specifically disclose the pollutant and concentration in the Notice of Intent to request authorization to discharge that pollutant. EPA and the applicable State may authorize the discharge of additional pollutants on a case-by-case basis, including effluent limitations when necessary, provided that such a discharge does not violate Section 307 or 311 of the CWA or applicable State water quality standards.
  
4. EPA may impose additional effluent limitations on a case-by-case basis, or require an operator to obtain coverage under an individual permit, if information in the NOI, required reports, or from other sources indicates that the discharges are not controlled as necessary to meet water quality standards. If additional effluent limitations, including monitor-only requirements, are required, EPA will state the reasons for the additional effluent limitations, and will specify the monitoring and reporting requirements.

**2.3 Massachusetts General Permit Limitations and Conditions**

In addition to the Effluent Limitations and Monitor-Only Requirements included in Part 2.1 and Part 2.2, above, each outfall shall be limited and monitored as specified below.

1. pH Limitations for Discharges in Massachusetts

**Table 4: pH Limitations for Discharges in Massachusetts<sup>1</sup>**

<b>Receiving Water Class<sup>2</sup></b>	<b>Effluent Limitations<sup>3</sup></b>
Freshwater <sup>4</sup>	6.5 to 8.3 SU
Saltwater <sup>5</sup>	6.5 to 8.5 SU

**Table 4 Footnotes**

<sup>1</sup> pH effluent limitations apply to all discharges.

<sup>2</sup> There shall be no change from natural background conditions that would impair any use assigned to the class of the receiving water.

<sup>3</sup> The limitation type for pH is range. The sample type required for pH is grab. Grab samples shall be analyzed using EPA Method 4500-H<sup>+</sup>-B 2000 or other EPA-approved methods in 40 CFR §136.

<sup>4</sup> The pH of the effluent shall be in the range of 6.5 to 8.3 standard units (SU) and not more than 0.5 SU outside of the naturally occurring range for freshwater classes.

<sup>5</sup> The pH of the effluent shall be in the range of 6.5 to 8.5 SU and not more than 0.2 SU outside of the naturally occurring range for saltwater classes.

2. Temperature Limitations for Discharges in Massachusetts

**Table 5: Temperature Limitations for Discharges in Massachusetts<sup>1</sup>**

Receiving Water Class		Effluent Limitation <sup>2,3</sup>	ΔT Limitation <sup>4</sup>
Class A	Warm Water Fishery	83°F	≤ 1.5°F
	Cold Water Fishery	68°F	≤ 1.5°F
Class B	Warm Water Fishery	83°F	≤ 5°F
	Cold Water Fishery	68°F	≤ 3°F
	Lakes and Ponds	83°F Warm Water Fishery 68°F Cold Water Fishery	≤ 3°F in epilimnion
Class SA	---	85°F 80°F (mean)	≤ 1.5°F
Class SB	July to September	85°F 80°F (mean)	≤ 1.5°F
	October to June	85°F 80°F (mean)	≤ 4°F

**Table 5 Footnotes**

<sup>1</sup> Temperature effluent limitations apply on a case-by-case basis if heat is indicated as a pollutant in the NOI submitted to EPA, or if EPA and/or the State determine a discharge is likely to contain residual heat.

<sup>2</sup> The limitation type for temperature is daily maximum. The sample type required for temperature is grab. Grab samples shall be analyzed using EPA Method 2550-B-2000 or other EPA-approved methods in 40 CFR §136.

<sup>3</sup> The effluent shall not exceed the maximum temperature noted in Table 5, above for the class of the receiving water. There shall be no change from natural background that would impair any uses assigned to this class including those conditions necessary to protect normal species diversity, successful migration, reproductive functions or growth of aquatic organisms.

<sup>4</sup> The rise due to a discharge shall not exceed the change in temperature (ΔT) noted for each class in Table 5, above. Change in temperature from background shall be determined by subtracting the temperature of the effluent from the temperature of the receiving water measured a point immediately upstream of a discharge(s) zone of influence at a reasonably accessible location.

3. Massachusetts State Permit Conditions

- a. This discharge permit is issued jointly by the EPA and the MassDEP under Federal and State law, respectively. As such, all the terms and conditions of this permit are

hereby incorporated into and constitute a discharge permit issued by the Commissioner of the MassDEP pursuant to M.G.L. Chapter 21 §43, except where exempted under 310 CMR 40.0042(2) of the Massachusetts Contingency Plan. Each agency shall have the independent right to enforce the terms and conditions of this permit. Any modification, suspension or revocation of this permit shall be effective only with respect to the agency taking such action, and shall not affect the validity or status of this permit as issued by the other agency, unless and until each agency has concurred in writing with such modification, suspension or revocation. In the event that any portion of this permit is declared invalid, illegal or otherwise issued in violation of State law, such permit shall remain in full force and effect under federal law as an NPDES permit issued by the EPA. In the event that this permit is declared invalid, illegal or otherwise issued in violation of federal law, this permit shall remain in full force and effect under State law as a permit issued by the Commonwealth of Massachusetts, except where exempted under 310 CMR 40.0042(2) of the Massachusetts Contingency Plan.

- b. An authorization to discharge under this General Permit, where the activity discharges to a municipal or private storm drain owned by another party, does not convey any rights or authorization to connect to that drain. If the storm sewer system is within an urbanized area, the applicant must notify the MS4 operator of the proposed discharge.
- c. At any time MassDEP determines that additional requirements are necessary to protect water quality and in lieu of requiring a discharger covered under a general permit to obtain an individual permit (314 CMR 3.06(8)), MassDEP may require a discharger to undertake additional control measures, BMPs, or other actions. MassDEP may exercise its authority to require the discharger to take these actions by imposing a condition in the general permit to that effect, or by taking an enforcement action against the discharger, or by any other means. Any such conditions shall be supplied to the permittee in writing.

**2.4 New Hampshire General Permit Limitations and Conditions**

In addition to the Effluent Limitations and Monitoring Requirements included in Part 2.1 and Part 2.2, above, each outfall shall be limited and monitored as specified below.

1. pH Limitations for Discharges in New Hampshire

**Table 6: pH Limitations for Discharges in New Hampshire<sup>1</sup>**

Receiving Water Class	Effluent Limitations <sup>2,3</sup>
Class B	6.5 to 8.0 SU

**Table 6 Footnotes**

<sup>1</sup> pH effluent limitations apply to all discharges.

<sup>2</sup> The limitation type for pH is range. The sample type required for pH is grab. Grab samples shall be analyzed using EPA Method 4500-H<sup>+</sup>-B 2000 or other EPA-approved methods in 40 CFR §136.

<sup>3</sup> The pH of the effluent shall be in the range of 6.5 to 8.0 standard units unless a different range is allowed in accordance with Part 2.4.3.b and 5.1.2.c.

2. Temperature Limitations for Discharges in New Hampshire

**Table 7: Temperature Limitations in New Hampshire<sup>1</sup>**

Receiving Water Class		Effluent Limitation <sup>2,3</sup>
Class B	Warm Water Fishery	83°F
	Cold Water Fishery	68°F

**Table 7 Footnotes**

<sup>1</sup> Temperature effluent limitations apply on a case-by-case basis if heat is indicated as a pollutant in the NOI submitted to EPA, or if EPA and/or the State determine a discharge is likely to contain residual heat.

<sup>2</sup> The limitation type for temperature is daily maximum. The sample type required for temperature is grab. Grab samples shall be analyzed using EPA Method 2550-B-2000 or other EPA-approved methods in 40 CFR §136.

<sup>3</sup> The effluent shall not exceed the maximum temperature noted in Table 7, above for the class of the receiving water. Any stream temperature increase associated with the discharge(s) shall not be such as to appreciably interfere with the uses assigned to the receiving water.

3. New Hampshire State Permit Conditions

- a. This NPDES permit is issued by the EPA under Federal law. Upon final issuance by the EPA, the NHDES may adopt this permit, including all terms and conditions, as a State permit pursuant to RSA 485-A:13. Each agency shall have the independent right to enforce the terms and conditions of this permit. Any modification, suspension or revocation of this permit shall be effective only with respect to the agency taking such action, and shall not affect the validity or status of the permit as issued by the other agency, unless and until each agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this permit is declared invalid, illegal, or otherwise issued in violation of State law, such permit shall remain in full force and effect under federal law as a NPDES permit issued by the EPA.
- b. An operator may request a change in the permitted pH range of 6.5-8.0 standard units (SU) if the operator can demonstrate to NHDES: 1) that the range should be widened due to naturally occurring conditions in the receiving water; or 2) that the naturally occurring receiving water pH is not significantly altered by the authorized discharge. The scope of any demonstration project must receive prior approval from NHDES. The upstream or background sampling location identified by the operator shall be approved by NHDES prior to the initiation of sampling. In addition, the upstream and effluent sampling is to occur as close in time as possible, but not greater than 1 hour

- apart. In no case, shall the above procedure result in pH limits less restrictive than 6.0–9.0 SU. Written approval from NHDES must be submitted to EPA for consideration of this change (see Part 5.1, below).
- c. The operator shall not at any time, either alone or in conjunction with any person or persons, cause directly or indirectly the discharge of waste into the said receiving water unless it has been treated in such a manner as will not lower the legislated water quality classification or interfere with the uses assigned to said water by the New Hampshire Legislature (RSA 485-A:13).
  - d. Pursuant to New Hampshire Statute RSA 485-A:13I(c), any person responsible for a bypass or upset at a wastewater facility shall give immediate notice of a bypass or upset to all public or privately owned water systems drawing water from the same receiving water and located within 20 miles downstream of the point of discharge regardless of whether or not it is on the same receiving water or on another surface water to which the receiving water is tributary. Wastewater facility is defined at RSA 485-A:2XIX as the structures, equipment, and processes required to collect, convey, and treat domestic and industrial wastes, and dispose of the effluent and sludge. The operator shall maintain a list of persons, and their telephone numbers, who are to be notified immediately by telephone. In addition, written notification, which shall be postmarked within 3 days of the bypass or upset, shall be sent to such persons.
  - e. An authorization to discharge under this general permit, where the activity discharges to a municipal or private storm drain owned by another party, does not convey any rights or authorization to connect to that drain.
  - f. Persons filing a NOI for a new discharge that will last for one year or more will be required to supply NHDES with additional water quality data for the discharge and the receiving water. The data must be collected during both low flow and high flow (spring/autumn) conditions in accordance with an approved Scope of Work and Sampling/Analysis Plan. NHDES recommends that applicants meet with staff of the Wastewater Engineering Bureau at least one year prior to the date of the commencement of the discharge.
  - g. At any time that NHDES determines that additional water quality certification requirements are necessary to protect water quality, an individual discharger may be required to meet additional conditions to obtain coverage or to continue coverage under this general permit. Any such conditions shall be supplied to the operator in writing.

## 2.5 Special Conditions

### 1. Best Management Practices Plan (BMPP)

Operators must develop, implement, and maintain a BMPP for the discharges covered under this general permit.

- a. The BMPP shall provide a plan for compliance with the terms of this general permit and must document the implementation of control measures, including best management practices (BMPs), to meet the following non-numeric technology-based effluent limitations:
  - i. Minimize the potential for violations of the terms of this general permit, taking corrective actions, when necessary;

- ii. Minimize the number and quantity of pollutants and/or the toxicity generated, discharged, or potentially discharged at the site;
  - iii. Minimize discharges of pollutants from the remediation activities, including: material storage areas, on-site control measures and materials, treatment and material handling areas, loading and unloading operations, and accidental leaks or spills, including implementation of material compatibility and good housekeeping practices; and
  - iv. Use pollution control technologies when necessary to meet the effluent limitations and requirements in this general permit, including the proper operation and maintenance of any treatment system.
- b. The BMPP must include the following information, at a minimum:
- i. Name and location of the site;
  - ii. Any necessary system schematics, drawings or maps, including up to date site plans with a detailed outfall diagram;
  - iii. Identification and contact information for the operator(s);
  - iv. Identification of potential sources of pollution;
  - v. Description of the specific control measures, including BMPs, the operator will take to reduce the pollutants associated with the following:
    - 1) Influent and effluent;
    - 2) Storage and handling areas;
    - 3) Site runoff;
    - 4) On-site transfer;
    - 5) Loading or unloading operations;
    - 6) Spillage or leaks;
    - 7) Sludge and waste disposal; and
    - 8) Drainage from material storage and handling areas.
  - vi. Specific control measures, including BMPs, used to meet the requirements of this general permit and including the specific BMPs required for all discharges in Part 2.5.2, below.
- c. The BMPP must be prepared in accordance with good engineering practices and must be a written document (hardcopy or electronic). The BMPP may either be a stand-alone document or may be incorporated into any other BMPP, Pollution Prevention Plan, Spill Prevention Control and Counter Measures (SPCC) Plan, or other plan developed for the site as required under other permits or programs.<sup>9</sup> Operators must provide BMPP certification in the NOI submitted to EPA for a site as follows:
- i. Operators with existing discharges without an existing BMPP seeking coverage under this general permit shall develop and implement the BMPP and shall certify as part of the NOI that a BMPP meeting the requirements of this general permit has been developed and implemented;
  - ii. Operators with existing discharges with an existing BMPP seeking coverage under this general permit shall revise the BMPP to meet the terms of this general permit and shall certify as part of the NOI that a BMPP meeting the requirements of this general permit has been developed and implemented;

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<sup>9</sup> Operators may refer to *Guidance Manual for Developing Best Management Practices (BMPs)* (EPA-833-B-93-004, 1993).

- iii. Operators with emergency discharges shall certify as part of the NOI that the BMP requirements included in Part 2.5.2 were met during provisional coverage and, if discharges will continue, shall certify as part of the NOI that a BMPP meeting the requirements of this general permit has been developed and implemented; and
  - iv. Operators initiating new discharges shall certify as part of the NOI that a BMPP meeting the requirements of this general permit will be developed and implemented upon initiation of discharge.
- d. The operator must certify the BMPP as follows:
- i. On or before January 15<sup>th</sup> each calendar year, or upon Notice of Termination (NOT) if a discharge lasts less than one year, the operator must prepare a statement certifying that the requirements of the BMPP were met for the previous calendar year, or for the duration of discharge if a discharge lasts less than a full calendar year;
  - ii. Each certification shall state whether the operation and maintenance activities were conducted, results recorded, and records maintained, and must indicate whether the discharges are in compliance with the requirements of the BMPP and meet the effluent limitations included in this general permit;
  - iii. The required certification statements must be maintained with a complete, up to date BMPP on site or at the location of the principal operator identified in the NOI and made available for inspection by EPA or the State;
  - iv. Any amendments to the BMPP resulting from any change which occurred at the site that increases the generation of pollutants, or the release or potential release of pollutants to the receiving water, or changes the operation and maintenance procedures covered by the BMPP must be explained in the certification for the reporting period in which the change(s) occurred;
  - v. Each certification must be signed in accordance with 40 CFR §122.22; and
  - vi. Failure to prepare the required certifications may result in permit termination and/or penalties imposed by EPA, the State, or both.

## 2. Best Management Practices (BMPs)

Operators must implement control measures, including the following best management practices (BMPs), to meet the effluent limitations and requirements in this general permit. The BMPs specified below are required for all operators.<sup>10</sup>

- a. An Effluent Flow BMP must include, at a minimum:
  - i. Flow control measures that prevent discharge(s) in exceedance of the design flow of the discharge (i.e., the maximum flow through the component with the lowest limiting capacity); and
  - ii. Documentation of the method(s) for measuring effluent flow.
- b. A Preventative Maintenance BMP must include, at a minimum:
  - i. Documented procedures and protocols that ensure all control measures, including all treatment system components and related appurtenances used to achieve the limitations in this general permit remain in effective operating condition and do not result in leaks, spills, and other releases of pollutants;

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<sup>10</sup> Additional guidance for BMPs can be found in *Guidance Manual for Developing Best Management Practices* (EPA 833-B-93-004).



- ii. A maintenance schedule for all treatment system components and related appurtenances used to meet the limitations of this general permit; and
  - iii. Records of the completion of regular maintenance activities.
- c. A Site Management BMP must include, at a minimum:
  - i. Control measures that ensure proper management of solid and hazardous waste and prevent solids, sludge, or other pollutants removed in the course of treatment or control of water and wastewaters from entering Waters of the United States;
  - ii. Run-on and runoff management practices which divert, infiltrate, reuse, contain, or otherwise reduce extraneous uncontaminated waters and minimize the extent to which such uncontaminated waters commingle with remediation activity discharges; and
  - iii. Water quality control measures must ensure that the discharges covered by this general permit do not adversely affect existing water quality by preventing any erosion, stream scouring, or sedimentation, and/or any direct or indirect discharge which contributes additional pollutants.
- d. A Pollutant Minimization BMP must include, at a minimum:
  - i. Identification and assessment of the type and quantity of pollutants, including their potential to impact receiving water quality;
  - ii. Water quality control measures must ensure dilution is not used as a form of treatment, or as a means to achieve the limitations and requirements in this general permit; and
  - iii. Selection, design, installation and proper operation and maintenance of pollution control technologies necessary to meet the limitations and requirements in this general permit. The treatment technologies may include, but are not limited to any combination of the following:<sup>11</sup>
    - 1) Adsorption/Absorption
    - 2) Advanced Oxidation Processes
    - 3) Air Stripping
    - 4) Granulated Activated Carbon (GAC)/Liquid Phase Carbon Adsorption
    - 5) Ion Exchange
    - 6) Precipitation/Coagulation/Flocculation
    - 7) Separation/Filtration
- e. An Administrative Controls BMP must include, at a minimum:
  - i. Documentation of the site security procedures appropriate for the treatment and other systems related to the NPDES discharge(s);
  - ii. Documentation of employee training conducted at least annually (or once, for discharges lasting less than one year) for site personnel who have direct or indirect responsibility for ensuring compliance with this general permit;
  - iii. Procedures for initiating corrective action and completing within a reasonable timeframe: evaluation, and revision (i.e., repair, modification, or replacement), if necessary, of any control measure used at the site if the control measure is identified as missing, installed incorrectly, or ineffective in

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<sup>11</sup> Descriptions of these treatment technologies can be found in the Federal Remediation Technology Roundtable *Remediation Technologies Screening Matrix and Reference Guide, Version 4.0 (2007)* available at <http://www.frtr.gov/scrntools.htm>.

ensuring the discharge meets applicable water quality standards and/or effluent limitations and requirements in this general permit. The following actions are required upon discovery of a violation of a permit limitation or requirement, at a minimum:

- 1) The discharge must stop immediately, unless the operator is otherwise instructed by EPA and/or the appropriate State;
  - 2) The operator must immediately take all reasonable steps to minimize or prevent the discharge of pollutants until a permanent solution is achieved;
  - 3) Notification must be provided to EPA and to the appropriate State via telephone, e-mail or other verbal or written means in accordance with Part 4.6.3.b or c within twenty-four (24) hours; and
  - 4) The cause of the permit violation must be identified and corrective action must be initiated within seventy-two (72) hours, if necessary, prior to resuming discharge in accordance with Part 4.3, or Part 4.1.2 when a treatment system is not in use, unless otherwise instructed by EPA and/or the appropriate State.
- iv. A schedule for and record of routine inspections conducted at least monthly by site personnel who have direct knowledge of the remediation activity at the site, the control measure(s) in use at the site, and the ability to assess the effectiveness of any control measure(s) in use at the site to meet the limitations and requirements of this general permit. Routine inspections must, at a minimum:
- 1) Assess the influent, effluent, treatment system, and remediation activity areas, including the outfall, where practicable;
  - 2) Identify any uncontrolled leaks, spills or discharges; and
  - 3) Conduct visual inspection for indicators of pollution, including, but not limited to: objectionable aesthetic properties including color, odor, clarity, floating solids, settled solids, suspended solids, foam, and oil sheen.
- f. Quality Assurance/Quality Control (QA/QC) BMP must include, to the maximum extent practicable:
- i. A description of applicable monitoring requirements;
  - ii. A map and/or treatment system diagram indicating the location of each monitoring point with a geographic identifier (i.e., latitude and longitude coordinates);
  - iii. Specifications for the number of samples, type of sample containers, type of preservation, holding times, type and number of quality assurance field samples (i.e., matrix spiked and duplicate samples and sample blanks), sample preparation requirements (e.g., sampling equipment calibration, clean sampling procedures), and sample storage and shipping methods, including EPA QA/QC and chain-of-custody procedures;<sup>12</sup>
  - iv. Name(s), address(es), and telephone number(s) of the laboratories used by the operator;

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<sup>12</sup> Described in *Requirements for Quality Assurance Project Plans* (EPA/QA/R-5) and *Guidance for Quality Assurance Project Plans* (EPA/QA/G-5).

- v. Specifications for analytical methods, analytical detection and quantitation limits for each required parameter, and laboratory data delivery and documentation requirements;
  - vi. A schedule for review of sample results, which must be reviewed by the operator no more than seventy-two (72) hours from receipt of the results; and
  - vii. A description of data validation and data reporting processes.
- g. Materials Management BMP must include, at a minimum:
- i. Good housekeeping practices and/or control measures that maintain areas that are potential sources of pollutants, including, but not limited to: contaminated soil and groundwater and treatment system chemicals, additives, materials or appurtenances;
  - ii. Material compatibility practices and/or control measures must ensure safe handling, use and storage of materials including, but not limited to chemicals and additives (e.g., algaecides/biocides, antifoams, coagulants, corrosion/scale inhibitors/coatings, disinfectants, flocculants, neutralizing agents, oxidants, oxygen scavengers, pH conditioners, surfactants and bioremedial agents, including microbes);
  - iii. For any chemical and/or additive used or stored at a site, operators must document, at a minimum:
    - 1) Product name, chemical formula, and manufacturer of the chemical or additive;
    - 2) Purpose or use of the chemical or additive;
    - 3) Safety Data Sheet (SDS) and Chemical Abstracts Service (CAS) Registry number for each chemical or additive;
    - 4) The frequency (e.g., hourly, daily), duration (e.g., hours, days), magnitude (i.e., frequency as maximum and average concentration), and method of application for the chemical or additive;
    - 5) Any material compatibility risks for storage of the chemical or additive;
    - 6) If available, the vendor's reported aquatic toxicity (NOAEL and/or LC<sub>50</sub> for aquatic organism(s)); and
    - 7) A description of the material management control measures employed (e.g., inventory, containment devices, protected storage building(s) and/or cabinet(s)) and any measures taken to ensure material compatibility.
  - iv. Spill prevention practices and spill control measures, including other handling and collection methods, when necessary (e.g., containment devices), must reduce spills and leaks from the treatment system and the release of chemical and/or additives in use at a site. The following actions are required upon detection of a leak, spill, or other release containing a hazardous substance or oil, such as visual observation of a visible sheen, at a minimum:
    - 1) The discharge must stop immediately;
    - 2) Notification must be provided to EPA in accordance with Part 4.6.3.b or c within twenty-four (24) hours;<sup>13</sup>

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<sup>13</sup> State, tribal, or local requirements may necessitate additional notification to local emergency response, public health, and/or drinking water supply agencies.

- 3) The source of the leak, spill or other release must be identified and corrective action must be taken in accordance with Part 2.5.2.e, above, if necessary, prior to resuming discharge, unless instructed otherwise by EPA and/or the appropriate State; and
- 4) When a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Part 110, 40 CFR Part 117, or 40 CFR Part 302 occurs, the operator must document a description of the release, the circumstances leading to the release, the date of the release, a description of any corrective actions taken and the date such corrective actions are completed.

### 3. Conditions for Discharges of Chemicals & Additives

- a. An operator shall not discharge any chemical or additive, including, but not limited to: algaecides/biocides, antifoams, coagulants, corrosion/scale inhibitors/coatings, disinfectants, flocculants, neutralizing agents, oxidants, oxygen scavengers, pH conditioners, surfactants and bioremedial agents, including microbes, which was not reported in the NOI submitted to EPA for a site or provided through a subsequent NOC submitted to EPA.
- b. Upon authorization to discharge, chemicals and/or additives which have been disclosed to EPA and the appropriate State may be discharged up to the frequency and level disclosed, provided that such discharge does not violate Section 307 or 311 of the CWA or applicable state water quality standards.
- c. EPA and/or the appropriate State may request additional information to provide authorization to discharge chemicals and/or additives, including but not limited to: WET testing.
- d. To request authorization to discharge chemicals and/or additives in the NOI submitted to EPA for a site, or in a subsequent NOC, an operator must submit the following information in writing, at a minimum, in accordance with Appendix IV, Part 2 of this general permit:
  - i. All information required in Part 2.5.2.g.iii, above;
  - ii. An explanation which demonstrates that the addition of such chemicals:
    - 1) Will not add any pollutants in concentrations which exceed permit effluent limitations;
    - 2) Will not exceed any applicable water quality standard; and
    - 3) Will not add any pollutants that would justify the application of permit conditions that are different from or absent in this permit; or
    - 4) An operator may demonstrate through sampling and analysis using sufficiently sensitive test methods that each of the 126 priority pollutants in CWA Section 307(a) and 40 CFR Part 423.15(j)(1) are non-detect in discharges with the addition of the chemicals and/or additives.

### 4. Conditions for Pipeline and Tank Dewatering

In addition to meeting the BMP requirements for all discharges, above, discharges from pipeline and tank dewatering must meet the following requirements:

- a. Discharges of tank bottom water are prohibited;

- b. Pipeline(s), tank(s) or similar structures and appurtenances must be pre-cleaned to remove scale, solids, and residues unless these structures are used only for water storage;<sup>14</sup>
- c. Water quality control measures must be implemented if potable water, groundwater or surface waters other than the receiving water will be discharged that prevent lower quality waters being transferred to higher quality waters;
- d. Discharges of chemicals and/or additives used for tank or pipeline cleaning, repair or installation are prohibited unless in accordance with Part 2.5.3, above; and
- e. Discharges of sludge generated in the dewatering of the pipelines or tanks is prohibited.

## **PART 3 NOTICE OF INTENT (NOI)**

### **3.1 Obtaining Coverage under this General Permit**

1. To obtain authorization to discharge under this general permit, an operator must:
  - a. Have a discharge type described in Part 1.1, above;
  - b. Have a discharge located in the areas listed in Part 1.2, above;
  - c. Meet the eligibility requirements in Part 1.3 and Part 1.4, above;
  - d. Submit a complete and accurate Notice of Intent (NOI) in accordance with the requirements of this part, below; and
  - e. Receive a written authorization to discharge from EPA.<sup>15</sup>
2. Operators with one or more discharges eligible for coverage under this general permit must submit a NOI to EPA prior to the initiation of such discharge(s), except emergency discharges, as noted in Part 1.5, above. The NOI must be complete (i.e., contain all of the information required in the suggested NOI format included in Appendix IV, Part 1), accurate (i.e., prepared in accordance with the instructions provided in Appendix IV, Part 1), and signed by the operator in accordance with the signatory requirements of 40 CFR §122.22. In the event EPA and/or the appropriate State determines a NOI is incomplete, EPA will notify the operator of the information required for completeness and specify a timeframe for submission of the information. EPA may request additional information, including analytical data, as authorized under CWA §308(a), 33 U.S.C. §1318(a), when the information is necessary to adequately review the NOI and make a determination of coverage.

### **3.2 NOI Options**

For purposes of this general permit, the NOI consists of either the suggested NOI format in Appendix IV, Part 1 of this permit or another form of official correspondence containing all of the information required in the NOI instructions in Appendix IV, Part 1 of this general permit. All NOIs submitted after **December 21, 2020** must be submitted electronically.

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<sup>14</sup> Discharges resulting from the hydrostatic testing of pipelines or tanks must follow the procedures detailed in the American Petroleum Institute 653 Standard and/or applicable State regulations.

<sup>15</sup> See footnote 7, above.

1. Under 310 CMR 40.0000, as a matter of *state law*, this general permit only applies to discharges that are not subject to the Massachusetts Contingency Plan (MCP). Therefore, sites subject to the MCP are not required to submit a copy of the NOI to MassDEP, the State form (BRPWM12, or as revised), or pay an application fee for this general permit. Any operator with a site that is not subject to the MCP must submit the State form and fee to MassDEP when submitting a copy of the NOI to MassDEP. Municipalities are fee-exempt, but must send a copy of the transmittal form to MassDEP.<sup>16</sup> EPA's suggested NOI format is found in Appendix IV, Part 1.
2. The State of New Hampshire does not have a State application form. Operators of sites located in New Hampshire are encouraged to submit EPA's suggested NOI format, found in Appendix IV, Part 1, to NHDES.

### 3.3 NOI Timeframes

1. **Existing Discharges:** For any existing discharge (i.e., discharges in accordance with the 2010 Remediation General Permit that expired on September 9, 2015), the following applies:
  - a. Operators of existing discharges must submit a NOI to EPA, and the appropriate State, when required, for coverage under this general permit **no later than ninety (90) days after the effective date of this general permit**. For operators with authorization to discharge under the 2010 Remediation General Permit that submit a complete NOI under this general permit within the 90-day period, coverage under the 2010 Remediation General Permit remains administratively continued until EPA authorizes the discharge under this general permit, or notifies the operator of permit termination. For enforcement purposes, failure to submit a NOI within 90 days of the effective date of this general permit for an existing discharge will be considered to be discharging without a permit. A NOI is not required if the operator submits a NOT before the 90-day period expires. See Appendix IV, Part 1 and/or Part 3.
2. **Emergency Discharges:** For any emergency discharge, including discharges conducted in response to a public emergency (e.g., natural disaster, which includes, but is not limited to: tornadoes/hurricanes/tropical storms, earthquakes, mud slides, or extreme flooding conditions; or widespread disruption in essential public services), the following applies:
  - a. Operators of emergency discharges must submit a NOI to EPA, and the appropriate State, when required, **no later than fourteen (14) days after the discharges commence**. An operator is required to provide documentation in the NOI submitted to EPA to substantiate the occurrence of a public emergency.
3. **New Discharges:** For any discharge not considered an existing or emergency discharge, including sites that received authorization to discharge under the 2010 Remediation General Permit but subsequently submitted a NOT or sites covered under other discharge permits that wish to seek coverage under this general permit, the following applies:

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<sup>16</sup> For State forms, see <http://www.mass.gov/eea/agencies/massdep/>.

- a. Operators of new discharges must submit a NOI to EPA, the appropriate State, when required, and the municipality in which the proposed discharge is located **at least seven (7) days prior to the commencement of discharge.**
4. EPA will post NOIs received for a minimum of seven (7) days on EPA's RGP website.<sup>17</sup>

### 3.4 NOI Requirements

1. For each eligible discharge, the NOI submitted to EPA for a site must include, in writing, all information required in the suggested NOI format, found in Appendix IV, Part 1, including:
  - a. General site information;
  - b. Receiving water information;
  - c. Source water information;
  - d. Discharge information;
  - e. Treatment system information;
  - f. Treatment chemical/additive information;
  - g. Determination of Endangered Species Act Eligibility;
  - h. Documentation of National Historic Preservation Act Requirements;
  - i. Supplemental Information; and
  - j. Signature Requirements.
2. The NOI must meet the monitoring requirements specified in Part 4, including monitoring locations, test methods and minimum level and detection limit requirements, Appendix VII, and Appendix IX, Standard Conditions, for the parameters required for the applicable activity category or categories.
3. Additional NOI monitoring is required, as specified in Part 4.2, below and Appendix IV, Part 1.
4. All operators must meet the requirements of Appendix I, regarding obligations under the Endangered Species Act, and Appendix III, regarding obligations under the National Historic Preservation Act.
5. The NOI must be signed by the operator(s) of the site, as defined in Part 1, above, in accordance with the signatory requirements of 40 CFR §122.22.
6. All operators must submit a NOI to the appropriate State in accordance with Part 4.6, when required, as noted in Appendix IV, Part 1, prior to the initiation of discharges.
7. The operator must provide certification that the following notifications have been given prior to the initiation of such discharge(s):
  - a. All operators must notify the municipality in which the proposed discharge will be located. The operator must provide a copy of the NOI to the municipality, if

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<sup>17</sup> Available at: <https://www.epa.gov/region1/npdes/rgp.html>.

- requested. Authorization to discharge under this general permit does not convey any authorization from a municipality.
- b. All operators intending to discharge to a municipal or non-municipal storm sewer system must notify the owner of this system, and must obtain permission to discharge to this system prior to initiating discharges. An operator must include a description of any requirements imposed by the owner of the municipal or non-municipal storm sewer system to which they are proposing discharge and certify that these conditions will be complied with. Authorization to discharge under this general permit does not convey any rights or authorization to connect to a municipal or non-municipal storm sewer system.
  - c. Where there is separate ownership and/or different operators of the area where discharges to be covered under this general permit will occur and the area associated with discharges covered by other discharge permit(s) (e.g., EPA's Construction General Permit and EPA's Multi-Sector General Permit), the operator seeking authorization to discharge under this general permit must certify that notification has been given to the owner/operator of the area associated with the activities covered by the other discharge permit(s) in the NOI submitted to EPA for that site.

### **3.5 When the Director May Require Application for an Individual NPDES Permit**

The Director may require any operator authorized by or requesting coverage under this general permit to apply for and obtain an individual NPDES permit. Any interested person may petition the Director to take such action. Instances where an individual permit may be required include the following:

1. A determination under 40 CFR §122.28(b)(3), including:
  - a. A change has occurred in the availability of the demonstrated technology of practices for the control or abatement of pollutants applicable to the point source(s);
  - b. Effluent limitation guidelines are promulgated for the point source(s) covered by this permit;
  - c. A Water Quality Management Plan or Total Maximum Daily Load containing requirements applicable to such point source(s) is approved and inconsistent with this permit;
  - d. Circumstances have changed since the time of the request to be covered so that the discharger is no longer appropriately controlled under the general permit, or either a temporary or permanent reduction or elimination of the authorized discharge is necessary; and
  - e. The discharge(s) is a significant contributor of pollutants.
2. The discharger is not in compliance with the conditions of this general permit.
3. The discharge(s) is in violation of State water quality standards for the receiving water.
4. Actual or imminent harm to aquatic organisms, including ESA or human health, is identified.



5. The discharge adversely impacts any federally-managed species for which critical habitat (under ESA) or EFH has been designated.
6. The point source(s) covered by this general permit no longer:
  - a. Involves the same or substantially similar types of operations;
  - b. Discharges the same types of wastes;
  - c. Requires the same effluent limitations or operating conditions; or
  - d. Requires the same or similar monitoring.
7. In the opinion of the Director, is more appropriately controlled under an individual or alternate general permit.

If the Director requires that an individual permit be issued, the operator will be notified in writing that an individual permit is required, and will be given a brief explanation of the reasons for this decision. When an individual NPDES permit is issued to an operator otherwise subject to this general permit, the applicability of this permit to that operator is automatically terminated upon the effective date of the individual permit.

### **3.6 When an Individual Permit May Be Requested**

Any operator may request to be excluded from the coverage under this general permit by applying for an individual NPDES permit. When an individual NPDES permit is issued to an operator otherwise subject to this general permit, the applicability of this permit to that owner or operator is automatically terminated on the effective date of the individual permit.

### **3.7 EPA Determination of Coverage**

Any operator may request to be covered under this general permit but the final authority rests with EPA. Coverage under this general permit will not be effective until EPA has reviewed the NOI, made a determination that coverage under this general permit is authorized, and has notified the operator in writing of its determination. The effective date of coverage will be the date indicated in the authorization to discharge provided by EPA in writing. Any additional State conditions will be provided in writing.

Any operator authorized to discharge under the RGP will receive written notification from EPA. Failure to submit to EPA a NOI to be covered and/or failure to receive from EPA written notification of permit coverage means that the operator is not authorized to discharge under this general permit. An operator that is denied permit coverage by EPA is not authorized under this general permit to discharge to Waters of the United States.

## **PART 4 MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS**

In addition to any monitoring, record-keeping and reporting requirements specified in Parts 1, 2 and 3, above, and in the Standard Conditions of this general permit (Appendix IX), the following monitoring, record-keeping and reporting requirements apply to discharges covered under this general permit. EPA may notify the operator of additional monitoring requirements. Any such

notice will briefly state the reasons for the monitoring and will specify the monitoring and reporting requirements.

#### 4.1 Monitoring Requirements

Sampling of the influent, effluent and/or receiving water must yield data representative of the discharge under authority of Section 308(a) in accordance with 40 CFR §122.41(j), §122.44(i), and §122.48. The sample type for all monitoring locations is grab. Each grab sample must be analyzed and cannot be composited.

##### 1. Monitoring Locations

- a. **Influent** (i.e., the untreated influent) samples shall be taken at a consistent point defined by geographic coordinates in the NOI (i.e., latitude and longitude), immediately prior to treatment of the water, before entering any treatment system component. If the influent sampling location as defined has not been established prior to submittal of the NOI, the operator must provide a detailed description of the sample location(s) selected such that an inspector from EPA or the State could replicate the sample upon site inspection. The following requirements apply:
  - i. Influent samples must be collected from areas of contamination, when known;
  - ii. The influent sample must ensure that the highest concentrations of pollutants that may be treated and/or discharged are represented;
  - iii. If a monitoring well is used as the sampling location for the influent, the monitoring well must be located within the maximum extent of contamination.
  - iv. If influent is generated from multiple areas of a site across which contamination types and/or concentrations can vary, the operator must collect additional samples such that the data provided are representative of the expected influent characteristics, and each location must be defined;<sup>18</sup>
  - v. If the influent concentrations are unknown or vary widely across a site, additional samples must be collected that are representative of the expected variability, and each location must be defined.<sup>19</sup>
- b. **Effluent** (i.e., the treated effluent) samples shall be taken at a consistent point defined by geographic coordinates in the NOI (i.e., latitude and longitude), following all treatment, immediately prior to discharge to the receiving water, private or municipal separate storm sewer system, or, if the treated effluent is commingled with another discharge, prior to such commingling.
- c. **Receiving water** samples shall be taken at a consistent point defined by geographic coordinates in the NOI (i.e., latitude and longitude), from a reasonably accessible location, upstream or otherwise immediately outside of the zone of influence of the discharge or other site activities that could affect water quality.

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<sup>18</sup> Operators of such sites are encouraged to contact EPA in accordance with Part 4.6.3 for assistance in influent sample design.

<sup>19</sup> See footnote 18, above.

## 2. Monitoring Frequency

- a. The routine monitoring frequency for discharges covered under this general permit is **monthly** (i.e. at least one sample per each calendar month) for both **influent and effluent**, as follows:
  - i. Beginning no more than thirty (30) days from the effective date of permit coverage for existing discharges, no more than thirty (30) days following the end of provisional coverage for emergency discharges, and no more than thirty (30) days following completion of the treatment system startup monitoring requirements for new discharges (Part 4.3.2) or treatment system interruption or shutdown monitoring requirements for discharges that have been interrupted (Parts 4.3.3 and 4.3.4);
  - ii. Continuing a minimum of six (6) months and ten (10) samples, prior to submission of any request for modification of this monitoring frequency in accordance with Part 5.1 below; and
  - iii. Continuing thereafter for the term of this general permit, or until Notice of Termination, whichever occurs first, unless modified by EPA in writing.
- b. The monitoring frequency specified applies to all discharges covered under this general permit unless sampling would not otherwise be required (e.g., during a treatment system interruption as in 4.3.2, below), or unless otherwise specified (e.g., certain short-term discharges as in Part 4.4, below).
- c. Changes to the specified monitoring frequency must be approved by EPA in writing through a Notice of Change. See Appendix IV, Part 2.

## 3. Test Methods

- a. All samples shall be tested using the analytical methods found in 40 CFR §136, or alternative test methods approved by EPA, in accordance with the procedures in 40 CFR §136, unless specifically prohibited in this general permit. Test methods which can be used for analysis of the parameters included in this general permit are summarized in Appendix VII.
- b. All analyses must be conducted using a sufficiently sensitive test method in accordance with 40 CFR §122.44(i)(1)(iv) and as specified in Part 4.1.4, below.

## 4. Minimum Levels and Detection Limits

- a. For the purposes of this general permit, the minimum level (ML) for analysis is the lowest level at which the test equipment produces a recognizable signal and acceptable calibration point for a pollutant or pollutant parameter, representative of the lowest concentration at which a pollutant or pollutant parameter can be measured with a known level of confidence.
- b. For the purposes of this general permit, the detection limit (DL) is the lowest concentration that can be reliably measured within specified limits of precision and accuracy for a specific laboratory analytical method during routine laboratory operating conditions (i.e., the level above which an actual value is reported for an analyte, and the level below which an analyte is reported as non-detect).
- c. Operators must achieve the MLs for analysis specified in in Appendix VII of this general permit and the following requirements:

- i. Analysis of influent, effluent and/or receiving water samples shall use test methods with a ML at or below the level of the effluent limitation<sup>20</sup> for the given parameter, or the applicable water quality criterion for a parameter with a monitor-only requirement;
  - ii. The DL must be less than or equal to the ML for an analyte using a sufficiently sensitive test method. When an analyte is not detected, the operator must report results using the data qualifier signifying less than the DL reported for that analyte (i.e. <0.1 µg/L, if the DL reported for an analyte is 0.1 µg/L);
  - iii. Where the sample concentration of an analyte is above the ML, any of the test methods listed for that analyte in Appendix VII may be used, unless otherwise noted; and
  - iv. Where the ML for the approved test methods are above the permit effluent limitations, the test method that has the lowest ML of the analytical methods in 40 CFR §136 must be used.
- d. When a parameter is required to be reported as a total value, the total value must be calculated by adding the measured concentration of each individual compound noted for that parameter. If the measurement of an individual compound analyzed for a total value is less than the DL and the test method and minimum level meet the requirements in this Part and Appendix VII, the operator shall use a value of zero for that compound in the total value calculation.

#### 5. Existing Data Substitution

Existing data substitution is allowed for the purposes of preparing a NOI and for the purposes of meeting the monitoring requirements included in this general permit if the following requirements are met:

- a. Sampling and analysis must have been conducted pursuant to: Massachusetts Regulations 310 CMR 40.0000, the Massachusetts Contingency Plan (Chapter 21E); New Hampshire's Title 50 RSA 485-A: Water Pollution and Waste Disposal or Title 50 RSA 485-C: Groundwater Protection Act; the 2010 Remediation General Permit; or other existing data if allowed by EPA on a case-by-case basis;
- b. Sampling and analysis must meet the monitoring requirements specified in Part 2 and Parts 4.1.1 through 4.1.4, above, and, for data submitted with a NOI, Part 4.2, below;
- c. For data submitted with a NOI, the date of analysis for the existing data may not be greater than twelve (12) months for existing discharges or six (6) months for new discharges;
- d. For data submitted to meet reporting requirements, the date of analysis for the existing data must approximately coincide with other sampling and analysis conducted for the general permit; and
- e. Existing data must be submitted in accordance with Part 4.6.1, below, and meet the requirements specified in Part 2.5.2.f, above, and Part 4.6.2, below.

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<sup>20</sup> When a compliance level is specified for an effluent limitation, the sufficiently sensitive test method ML shall be no greater than the compliance level.

6. Whole Effluent Toxicity (WET) Testing
  - a. Activity Categories I and II must conduct one (1) acute WET test:<sup>21</sup>
    - i. No later than thirty (30) days following authorization to discharge for existing discharges;
    - ii. No later than twelve (12) months following initiation of discharges for new discharges if discharges are expected to last twelve (12) months or more; and
    - iii. If requested by EPA and/or the appropriate State on a case-by-case basis for short-term discharges, including emergency discharges.
  - b. Activity Categories III, IV, V, VI, VII, and VIII must conduct WET testing if requested by EPA and/or the appropriate State on a case-by-case basis.
  - c. If the result of any WET test indicates toxicity (i.e., a  $LC_{50} < 100\%$ ), notification must be provided within twenty-four (24) hours to EPA in accordance with Part 4.6.3.c and to the appropriate State via telephone, e-mail or other verbal or written means in accordance with Part 4.6.3.b or c.
  - d. If EPA and/or the appropriate State determine that a discharge may cause or contribute to an excursion above applicable water quality standards, EPA and/or the appropriate State may require additional WET testing, limitations and/or requirements as authorized at 40 CFR §122.44(d)(1)(v). If additional WET requirements apply, EPA will provide the reasons for the additional requirements to the operator in writing, and will specify the monitoring and reporting requirements and/or limitation.
  - e. Results of the WET requirements specified above must be submitted in accordance with Part 4.6.1, below, and must meet the QA/QC requirements specified in Part 2.5.2.f, above, and Part 4.6.2, below. The results of WET testing above its required frequency must also be submitted to EPA (see Appendix IX, Standard Conditions); and
  - f. If any parameter is analyzed in accordance with Attachment A for the requirement in this Part, the WET test result may be reported for any parameter for which monitoring is required in Part 4.1.2, above, or elsewhere in Part 4. A duplicate sample is not required.

#### 4.2 NOI Monitoring Requirements

Samples collected and analyzed for the purposes of a NOI submitted for coverage under this general permit must be representative of the proposed discharge(s) and must meet the monitoring requirements specified in Part 2 and Part 4.1, above. Samples must be collected in accordance with the instructions included in Appendix IV, Part 1, and as required below.

1. Analysis for a minimum of one (1) **influent** sample is required for:
  - a. Activity Category I for:
    - i. all parameters in contamination type A. Inorganics;
    - ii. any present in contamination type B. non-halogenated VOCs;
    - iii. if present in contamination type C. halogenated VOCs;
    - iv. any present in contamination type D. non-halogenated SVOCs;

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<sup>21</sup> Acute Whole Effluent Toxicity Testing must be completed in accordance with USEPA Region 1 Freshwater Acute Toxicity Test Procedure and Protocol (February, 2011) for discharges to freshwater and Marine Acute Toxicity Test Procedure and Protocol (July 2012) for discharges to saltwater, including estuaries. See Attachment A.

- v. if present in contamination type E. halogenated SVOCs; and
  - vi. any present in contamination type F. fuels parameters.
  - b. Activity Category II for:
    - i. all parameters in contamination type A. Inorganics;
    - ii. any present in contamination type B. non-halogenated VOCs;
    - iii. any present in contamination type C. halogenated VOCs;
    - iv. any present in contamination type D. non-halogenated SVOCs;
    - v. if present in contamination type E. halogenated SVOCs; and
    - vi. if present in contamination type F. fuels parameters.
  - c. Activity Category III-G for:
    - i. all parameters in contamination type A. Inorganics; and
    - ii. if present in contamination type B through F
  - d. Activity Category IV-G, V-G, VI-G, VII-G, VIII-G for:
    - i. if present in contamination type A through F.
  - e. Activity Category III-H, IV-H, V-H, VI-H, VII-H, VIII-H for:
    - i. all parameters in contamination type A through F.
  - f. All Activity Categories:
    - i. pH, temperature, and hardness (freshwater receiving waters only);
    - ii. Any parameter listed in Part 2.1.1, if present, but not otherwise specified in this Part for the Activity Category that applies to a site;
    - iii. Any parameter listed in Part 2.1.1 if it is unknown whether the given parameter is present or absent; and
    - iv. Any parameter present that is not included in this general permit.
  - g. When “if present” is noted in Part 4.2.1, above, the monitoring requirement for a parameter in the Contamination Type applies to a site only if the given parameter is known or believed present at that site. When “any present” is noted in Part 4.2.1, above, the monitoring requirement for all parameters listed in the Contamination Type apply to a site when at least one parameter listed for that Contamination Type is known or believed present at that site.
2. Analysis is required for a minimum of one (1) **receiving water** sample for:
- a. All activity categories: pH, temperature, hardness (freshwater receiving waters), salinity (saltwater receiving waters), and ammonia; and
  - b. All activity categories for total recoverable antimony, total recoverable arsenic, total recoverable cadmium, total recoverable chromium III and VI, total recoverable copper, total recoverable iron, total recoverable lead, total recoverable mercury, total recoverable nickel, total recoverable selenium, total recoverable silver, total recoverable zinc, if present and if a dilution factor applies.
3. Results of the NOI monitoring requirements specified above must be submitted to EPA as an attachment to the NOI in accordance with Appendix VIII, and must meet the QA/QC requirements specified in Part 2.5.2.f, above, and the reporting requirements specified in Part 4.6.2, below.
4. The results of sampling for any parameter above its required minimum must be submitted to EPA as an attachment to the NOI.

5. EPA and/or the appropriate State may require additional NOI monitoring on a case-by-case basis. If additional monitoring is required, EPA and/or the appropriate State will briefly state the reasons for the monitoring, and will specify the monitoring and reporting requirements.
6. Where an operator conducts any of the monitoring specified above prior to the submission of a NOI, additional samples are not required, so long as the monitoring requirements specified in Part 2.1 and elsewhere in Part 4, are met, including Part 4.1.5 for existing data substitution.

### 4.3 Treatment System Monitoring Requirements

All operators must perform treatment system monitoring when a treatment system is in use at a site. Treatment system monitoring requirements for startup, interruption and shutdown are specified below.

1. Treatment System Startup
  - a. The operator must perform the following sampling and analysis for all parameters required for the applicable activity category or categories as specified in Part 2.1, above, when a discharge is either initiated for the first time, or upon the re-initiation of discharge following a treatment system interruption lasting ninety (90) or more consecutive days, unless otherwise specified:
    - i. During the first week of discharge, operators must sample the **influent and effluent** two (2) times: one (1) sample of the influent and one (1) sample of the effluent must be collected on the first day of the discharge; and one (1) sample of the influent and one (1) sample of the effluent must be collected on one additional non-consecutive day within the first week of discharge;
    - ii. During the first week of discharge, samples must be analyzed in accordance with 40 CFR §136 unless otherwise specified in this general permit with a maximum five (5)-day turnaround time and results must be reviewed no more than forty-eight (48) hours from receipt of the results of each sampling event. After the first week, samples may be analyzed with up to a ten (10)-day turnaround time and results must be reviewed no more than seventy-two (72) hours from receipt of the results;
    - iii. If the treatment system is operating as designed and achieving the effluent limitations in this general permit, sampling of the **influent and effluent** shall be as follows, thereafter:
      - 1) 1/Week for three (3) additional weeks beginning no earlier than twenty-four hours following the sampling required in Part 4.3.2.a.ii, above;
      - 2) 1/Month in accordance with Part 4.1.2, above for the remaining term of the permit; and
      - 3) Adjusted for any monitoring frequency reduction approved by EPA in writing.
  - b. If the treatment system is shut down during startup or interrupted as a result of a problem, including when discharge concentrations for any parameter exceeds effluent

limitations, corrective actions must be taken in accordance with Part 2.5.2.e, above and as follows:

- i. Upon system restart and/or re-initiation of discharge, the operator shall collect one (1) sample with a maximum five (5)-day turnaround time and results must be reviewed no more than forty-eight (48) hours from receipt of the results of the sampling event;
    - ii. If the problem has been corrected, the operator may resume with treatment system startup as specified in Part 4.3.1.a.iii, above, or routine monitoring specified in Part 4.1.2 following a treatment system interruption; and
    - iii. If the problem persists, the operator must immediately halt discharge again and notify EPA and the appropriate State via telephone, e-mail or other verbal or written means in accordance with Part 4.6.3.b or c within twenty-four (24) hours of the need to cease discharge a second time; discharge may resume upon completion of corrective actions unless otherwise directed by EPA and/or the State contact.
2. Treatment System Interruption
  - a. In addition to the requirements for certain upset and/or bypass conditions specified in Appendix IX, Standard Conditions, if the operator has any indication of treatment system upset or violation of effluent limitations, corrective actions must be taken in accordance with Part 2.5.2.e, above.
  - b. If the discharge has been interrupted for ninety (90) or more consecutive days, the same monitoring requirements apply as specified in Part 4.3.1.a.i and Part 4.3.1.b, above, upon treatment system re-start.
  - c. If the discharge has been interrupted less than ninety (90) consecutive days, the same monitoring requirements apply as specified in Part 4.3.1.b, above, upon treatment system re-start.
3. Treatment System Shutdown
  - a. The operator must perform the following monitoring for all parameters required for the applicable activity category or categories as specified in Part 2.1.1, above, prior to permanent treatment system shutdown (i.e., termination), and must submit the results with the NOT, in accordance with Part 5.2, below, and Appendix IV, Part 3.:
    - i. During the final week of discharge, operators must sample the **influent and effluent** two (2) times: one (1) sample of the influent and one (1) sample of the effluent must be collected on the last day of the discharge; and one (1) sample of the influent and one (1) sample of the effluent must be collected on one additional non-consecutive day within the last week of discharge; and
    - ii. Samples must be analyzed in accordance with 40 CFR §136 unless otherwise specified in this general permit with up to a ten (10)-day turnaround time and results must be reviewed no more than seventy-two (72) hours from receipt of the results, or upon confirmation that additional sampling prior to treatment system shutdown is not necessary.
  - b. Where an operator collects any portion of the information specified above no more than three (3) months prior to treatment system shutdown, an additional sample is not required, so long as the information was collected in accordance with the monitoring



- requirements of this general permit or otherwise meets the requirements for existing data substitution in Part 4.1.5, above; and
- c. In the event the treatment system has been interrupted for more than ninety (90) consecutive days prior to treatment system shutdown, existing data may be substituted for the data required for the submission of a NOT from equivalent monitoring conducted nearest in time to NOT submission, so long as the requirements in Part 4.1.5, above, are otherwise met.

#### 4.4 Short-Term Discharge Monitoring Requirements

For the purposes of this general permit, discharges lasting twelve (12) months or less (e.g., emergency discharges, immediate response actions, pump tests, temporarily containerized waters and dewatering of pipelines and tanks), which are then terminated and will not be re-started are considered “short-term discharges”. The monitoring requirements for short-term discharges are as follows:

1. Discharges from Dewatering of Pipelines and Tanks
  - a. The operator must take a minimum of five (5) grab samples, including:
    - i. For **influent**, the operator must take one (1) sample of the source water during the fill process, except when infeasible. A representative sample the source water may be used for influent if sampling during the fill process is infeasible;
    - ii. For tanks, the operator shall take a minimum of one (1) **in-process** sample representative of the tank water following maintenance or testing, but before draining. If the tank contents are likely to undergo phase separation or stratification, multiple samples from multiple depths within the water column must be collected and composited. The operator shall analyze and review the in-process sample prior to discharge. If the analysis demonstrates that the tank water does not meet the effluent limitations in this general permit, the operator shall not discharge the tank water unless treatment reduces the pollutant levels below the effluent limitations established in this general permit;
    - iii. For pipelines, the operator shall take one (1) **in-process** sample of the pipeline water following depressurization. The operator shall analyze and review the in-process sample prior to discharge. If the analysis demonstrates that the pipeline water does not meet the effluent limitations in this general permit, the operator shall not discharge the pipeline water unless treatment reduces the pollutant levels below the effluent limitations established in this general permit; and
    - iv. For **effluent**, the operator must take one (1) sample of the discharge during the first 10% of discharge, one (1) sample of the discharge at the approximate midpoint of discharge, and one (1) sample of the discharge during the last 10% of discharge. If at any time the analysis demonstrates that the discharge does not meet the effluent limitations and requirements in this general permit, corrective action must be taken in accordance with Part 2.5.2.e, above prior to resuming discharge, unless instructed otherwise by EPA and/or the appropriate State.

2. Short-Term Discharges Other than Those from Dewatering of Pipelines and Tanks
  - a. For any short-term discharge lasting twenty-four (24) hours or less:
    - i. The operator must take a minimum of one (1) representative sample of the **influent and effluent**;
    - ii. Samples must be analyzed in accordance with 40 CFR §136 or by other methods authorized by this general permit with no more than a ten (10) day turnaround time and results must be reviewed within seventy-two (72) hours of the date of receipt of the sample results; and
    - iii. The monitoring frequencies specified in Part 4.1.2 and Part 4.3 do not apply.
  - b. For any short-term discharge lasting seven (7) days or less:
    - i. The operator must take a minimum of two (2) samples of the **influent and effluent**: one (1) sample of the influent and one (1) sample of the effluent must be collected on the first day of discharge; and one (1) sample of the influent and one (1) sample of the effluent must be collected on one additional non-consecutive day within the first week of discharge;
    - ii. Samples must be analyzed in accordance with 40 CFR §136 or by other methods authorized by this general permit with no more than a ten (10) day turnaround time and results must be reviewed within seventy-two (72) hours of the date of receipt of the sample results; and
    - iii. The monitoring frequencies specified in Part 4.1.2 and Part 4.3 do not apply.
  - c. For any short-term discharge lasting more than seven (7) calendar days but not more than twelve (12) months, sampling must proceed as follows:
    - i. Operators must perform treatment system monitoring in accordance with Part 4.3.1.a.i, above, when a treatment system is in use at a site;
    - ii. If a treatment system is not in use at a site, operators must perform monitoring as follows:
      - 1) The operator must take a minimum of two (2) representative samples of the **influent and effluent**: one (1) sample of the influent and one (1) sample of the effluent must be collected on the first day of discharge; and one (1) sample of the influent and one (1) sample of the effluent must be collected on one additional non-consecutive day within the first week of discharge;
      - 2) The operator must take a minimum of one (1) sample of the **influent and effluent** weekly for three (3) additional weeks beginning no earlier than twenty-four hours following the sampling required in Part 4.4.2.c.ii.1, above; and
      - 3) The operator must take a minimum of one (1) sample of the **influent and effluent** monthly in accordance with Part 4.1.2, above, until Notice of Termination, beginning no earlier than twenty-four hours following the sampling required in Part 4.4.2.c.ii.2, above.
    - iii. During the first week of discharge, samples must be analyzed in accordance with 40 CFR §136 unless otherwise specified in this general permit with a maximum five (5) day turnaround time and results must be reviewed no more than forty-eight (48) hours from receipt of the results of each sampling event. After the first week, samples may be analyzed with up to a ten (10) day turnaround time and results must be reviewed no more than seventy-two (72) hours from receipt of the results.

- d. Where the monitoring frequencies specified in Part 4.4, above, are duplicative of the monitoring required elsewhere in this general permit, duplicate sampling is not required; and
- e. The reporting requirements specified in Part 4.6.1.a do not apply.

#### **4.5 Record-Keeping Requirements**

1. Records Content: Operators must include the following records (hardcopy or electronic) pertaining to coverage under this general permit:
  - a. Data used to complete the NOI for this general permit;
  - b. Sample collection information, including: the date, exact location, and time of sampling or measurement; the name of the individual(s) who performed the sampling or measurement; and the sample chain of custody for each sample;
  - c. Analytical laboratory reports for each sample analysis, which: identifies the sample(s), the target analyte(s), the test method(s), the dates collected and analyzed, the analytical result(s), the detection limit for each analyte, and the names of the laboratory and individual that conducted the analysis; includes a legible copy of the signed sample chain of custody; and indicates if all appropriate QA/QC procedures were met and were within acceptable limits;
  - d. Documentation for the development, implementation and maintenance of the BMPP, including certifications;
  - e. Discharge monitoring data in the suggested format included in Appendix VIII, or other format containing all of the information included in Appendix VIII;
  - f. Any records of monitoring instrumentation, field monitoring, and visual observations (e.g. portable organic vapor monitoring, turbidity meter, visible sheen observations);
  - g. Any records of system operation and maintenance; and
  - h. Any records of site inspections and employee training.
2. On-Site Records: The following records (hardcopy or electronic) must be maintained on-site and/or with the operator to be made available upon inspection and/or request by EPA or the appropriate State:
  - a. A complete copy of this general permit;
  - b. A copy of EPA's authorization to discharge and any subsequent modifications, if applicable;
  - c. Copies of any information submitted to EPA, the appropriate State, and the municipality in which the site is located;
  - d. Copies of any correspondence received from EPA, the appropriate State, and the municipality in which the site is located regarding permit coverage; and
  - e. A copy of the BMPP.
3. Retention of Records: Operators must retain the records specified above for a minimum of three (3) years from the date of the sample, measurement, report or notice, whichever applies. This period may be extended at the request of EPA or the appropriate State.

## 4.6 Reporting Requirements

### 1. Discharge Monitoring Reports

- a. **For discharges lasting twelve (12) months or more**, in addition to the reporting requirements found in Appendix IX, Standard Conditions, of this general permit, the operator shall submit the following information to EPA and the appropriate State:

i. Submittal of DMRs and the Use of NetDMR

- 1) **Beginning the effective date of the authorization to discharge** the operator must record all monitoring data collected to comply with this general permit;
- 2) **Beginning the first full calendar month following twelve (12) months after the effective date of the authorization to discharge**, the operator shall begin reporting monitoring data in DMRs to EPA and the State, due no later than the 15<sup>th</sup> day of the month following the completed reporting period; the reporting periods for this general permit consist of each calendar month, inclusive;
- 3) All DMRs must be submitted electronically using NetDMR, unless, in accordance with Part 4.6.1.a.iii, below, the operator is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs. NetDMR is a web-based tool that allows operators to electronically submit DMRs and other required reports via a secure internet connection;<sup>22</sup> the operator must continue to use NetDMR after beginning to do so.
- 4) The operator must utilize an appropriate No Data Indicator (NODI) Code(s)<sup>23</sup> in instances where monitoring data have not been obtained or are otherwise not required. Commonly applicable NODI Codes for this general permit include, but are not limited to:
  - (A) "C" if no discharge occurs during a required sample frequency;
  - (B) "A" if an operator is exempted from the requirement to sample for a parameter, such as when EPA approves, in writing, sample frequency reduction and/or elimination;
  - (C) "2" if operation is shut down, such as during a treatment system interruption; and/or
  - (D) "9" if an effluent limitation is conditional and does not apply during a required sample frequency (e.g., TRC effluent limitation applies only if a discharge is likely to contain residual chlorine such as when a chemical additive containing chlorine is being used).

ii. Submittal of Reports as NetDMR Attachments

- 1) When the operator begins submitting DMR reports to EPA electronically using NetDMR, the operator shall electronically submit other reports to EPA as NetDMR attachments rather than as hard copies, unless otherwise specified in this general permit. Because the due dates for reports described in this general permit may not coincide with the due date for submitting DMRs (which is no later than the 15<sup>th</sup> day of the month), a report submitted electronically as a NetDMR attachment shall be considered timely if it is electronically submitted

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<sup>22</sup> NetDMR is currently accessed from: <http://www.epa.gov/netdmr>.

<sup>23</sup> DMR instructions are currently accessed from: <http://www3.epa.gov/region1/npdes/dmr.html>.

to EPA using NetDMR with the next DMR due following the particular report due date specified in this general permit.

iii. Submittal of NetDMR Opt-Out Requests

- 1) NetDMR opt-out requests must be submitted in writing to EPA for written approval at least 60 days prior to the date a site would be required under this general permit to begin using NetDMR. This demonstration shall be valid for 12 months from the date of EPA approval and shall thereupon expire. At such time, DMRs and reports shall be submitted electronically to EPA unless the operator submits a renewed opt-out request and such request is approved by EPA. All opt-out requests should be sent to EPA at the following address:

Attn: NetDMR Coordinator  
U.S. Environmental Protection Agency, Water Technical Unit  
5 Post Office Square, Suite 100 (OES04-4)  
Boston, MA 02109-3912

- b. **For discharges lasting less than twelve (12) months**, the operator is not subject to the DMR reporting requirements defined in Part 4.6.1.a, above, but remains subject to the monitoring requirements of this general permit, the reporting requirements in 4.6.2 through 4.6.6, below, the requirements found in Appendix IX, Standard Conditions, and the requirements of a NOI, NOC and NOT. Information that must be submitted with an operator's NOI, NOC and NOT is defined in Appendix IV, Part 1, Part 2 and Part 3 of this general permit, respectively. Also see and Part 3, above, and Part 5, below.

2. Analytical Reports

- a. Operators shall submit a copy of the laboratory analytical report(s) for each sampling event, concurrent with the submittal of discharge monitoring data in accordance with Part 4.6.1, as applicable. The laboratory case narrative shall include a copy of the laboratory analytical reports for each sample analysis, which: identifies the sample(s), the target analyte(s), the test method(s), the dates collected and analyzed, the analytical result(s), the detection limit for each analyte, and the names of the laboratory and individual(s) that conducted the analysis; includes a legible copy of the signed sample chain of custody; and indicates if all appropriate QA/QC procedures were met and were within acceptable limits.

3. Notification Requirements

- a. As required in 40 CFR §122.44(f), all operators must notify EPA as soon as they have reason to believe that any activity has occurred or will occur which would result in the discharge of any toxic pollutant (see 40 CFR §401.15) which is not limited in this general permit which exceeds:
  - i. The notification level of in 40 CFR §122.42; or
  - ii. Any other notification level established in accordance with 40 CFR §122.44(f) and State regulations.
- b. Written notifications required in this general permit, unless otherwise specified, shall be made to both EPA and to the appropriate State. Written notifications shall be made

- in accordance with Part 4.6.4 and Part 4.6.5 or 4.6.6, as applicable, below, unless otherwise specified.
- c. Verbal notifications required in this general permit, unless otherwise specified, shall be made to both EPA and to the appropriate State. This includes verbal notifications which require reporting within 24 hours (e.g., see Appendix IX Parts B.4.c.(2), B.5.c.(3), and D.1.e). Verbal notifications shall be made to:
- i. The EPA and appropriate State contacts listed on EPA's website for this general permit<sup>24</sup>; and
  - ii. EPA's Office of Environmental Stewardship at: 617-918-1510 for Verbal Notifications required under Appendix IX, if Part 4.6.1.a applies.
4. EPA Region 1 Addresses
- a. Submittal of Notifications and Reports to EPA/OEP
- i. The following notifications and reports described in this general permit shall be submitted to the EPA/OEP RGP Coordinator in the EPA Office Ecosystem Protection (OEP):<sup>25</sup>
    - 1) Notice of Intent (NOI);
    - 2) Notice of Change (NOC);
    - 3) Notice of Termination (NOT);
    - 4) Written notifications required in this general permit; and
    - 5) Reports and DMRs in electronic format, if NetDMR is not required (i.e., if Part 4.6.1.a does not apply).
  - ii. These notifications and reports shall be submitted to EPA/OEP electronically at [NPDES.Generalpermits@epa.gov](mailto:NPDES.Generalpermits@epa.gov), or, where an operator is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes submittal in electronic format, in hard copy form:
- U.S. Environmental Protection Agency  
Office of Ecosystem Protection  
EPA/OEP RGP Coordinator  
5 Post Office Square - Suite 100 (OEP06-01)  
Boston, MA 02109-3912
- b. Submittal of Notifications and Reports to EPA/OES
- i. The following notifications and reports shall be signed and dated originals, submitted in hard copy, with a cover letter describing the submission, if Net DMR is required (i.e., if Part 4.6.1.a applies):
    - 1) NetDMR Opt-Out Requests;
    - 2) DMRs and transmittal record of DMRs submitted, when a NetDMR Opt-Out Request has been approved; and
    - 3) Written notifications required under Appendix IX.
  - ii. This information shall be submitted to EPA/OES at the following address:

U.S. Environmental Protection Agency

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<sup>24</sup> See footnote 17.

<sup>25</sup> See footnote 17.

Office of Environmental Stewardship (OES)  
Water Technical Unit  
5 Post Office Square, Suite 100 (OES4-SMR)  
Boston, MA 02109-3912

5. MassDEP Address

- a. Massachusetts sites must submit copies of all notifications and reports required in Part 4.6.4.a, above, to the MassDEP RGP Coordinator,<sup>26</sup> or, where an operator is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes submittal in electronic format, in hard copy form:

Massachusetts Department of Environmental Protection  
Bureau of Water Resources  
1 Winter St. 5<sup>th</sup> Floor  
Boston, MA 02108

- b. Massachusetts sites must submit copies of all notifications and reports required in Part 4.6.4.b, above, to the appropriate regional office as follows:
- i. Massachusetts Department of Environmental Protection - Central Region  
8 New Bond Street  
Worcester, Massachusetts 01606
  - ii. Massachusetts Department of Environmental Protection - Northeast Region  
205B Lowell Street  
Wilmington, Massachusetts 01887
  - iii. Massachusetts Department of Environmental Protection - Southeast Region  
20 Riverside Drive  
Lakeville, MA 02347
  - iv. Massachusetts Department of Environmental Protection – Western Region  
436 Dwight Street  
Springfield, MA 01103

6. NHDES Address

- a. New Hampshire sites must submit copies of all notifications and reports to the NHDES RGP Coordinator,<sup>27</sup> or, where an operator is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes submittal in electronic format, in hard copy form:

New Hampshire Department of Environmental Services  
Water Division, Wastewater Engineering Bureau  
29 Hazen Drive, P.O. Box 95  
Concord, NH 03302-0095

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<sup>26</sup> See footnote 17.

<sup>27</sup> See footnote 17.

**PART 5 ADMINISTRATIVE REQUIREMENTS****5.1 Notice of Change (NOC)**

Operators covered under this general permit may request a change to certain conditions through submission of a NOC to EPA and the appropriate State, when required, prepared in accordance with the instructions provided in Appendix IV, Part 2, and signed in accordance with 40 CFR §122.22.

1. For the purposes of this general permit, a NOC may consist of either:
  - a. The suggested NOC format in Appendix IV, Part 2 of this general permit; or
  - b. Other form of official correspondence containing all of the information included in the NOC suggested format in Appendix IV, Part 2 of this general permit.
2. Eligible changes, which are not otherwise major permit modifications as provided for under 40 CFR §122.62, may consist of:
  - a. Request for reduction in monitoring requirements: Certain monitoring requirements may be reduced upon demonstration of compliance if the eligibility requirements for reduction are met. Written approval by EPA is required for this change to be effective. Prior to receiving written approval, the operator must continue to monitor the parameters required in this general permit at the frequency specified in this general permit. This request requires supporting rationale and monitoring data as follows:
    - i. To be eligible for a reduction in treatment system monitoring (Part 4.3) or short-term monitoring (Part 4.4) due to technical infeasibility, the operator must provide justification for each parameter for which reduction is being requested that must include a proposed monitoring frequency;
    - ii. To be eligible for a reduction in **influent** monitoring (Part 4.1.2), the operator must provide monitoring data for a minimum of six (6) consecutive months and ten (10) samples for each parameter for which reduction is being requested;
    - iii. To be eligible for a reduction in **effluent** monitoring (Part 4.1.2), the operator must provide monitoring data for a minimum of six (6) consecutive months and ten (10) samples for each parameter for which reduction is being requested;
    - iv. Monitoring data must be submitted in support of requests for reduction of monitoring frequency in Part 5.1.2.a.ii and iii, above. Monitoring data submitted in support of this request must be in compliance with the monitoring and reporting requirements of this general permit, including the QA/QC requirements specified in Part 2.5.2.f, above, and must be attached in accordance with the instructions in Appendix VIII;
    - v. The discharge must be in compliance with the effluent limitation for any parameter for which a reduction is requested in Part 5.1.2.a.ii and iii, above; and



- vi. A proposed monitoring frequency must be included for each parameter for which a reduction is requested in Part 5.1.2.a.ii and iii, which shall be no less than once per year for any parameter.
- b. Request for a change in the site-specific effluent flow limitation: A NOC must be submitted if effluent flow increases, a change in flow conditions will decrease the daily maximum effluent flow by more than 25 percent, or an operator believes use of a flow meter is infeasible. Written approval by EPA is required for this change to be effective. Prior to receiving written approval, the operator must continue to limit effluent flow as required in this general permit at the frequency specified in this general permit. Written rationale provided in the NOC for this request must indicate:
  - i. The effluent flow will not exceed 1.0 MGD;
  - ii. The design flow of the treatment system will not be exceeded;
  - iii. WQBEL calculations for any limited parameter that applies to the discharge that is based on effluent flow; and
  - iv. Certification that any revised effluent limitation or monitoring requirement will be complied with.
- c. Request for a change in pH range for sites in New Hampshire: A NOC must be submitted to request a change in pH range due to naturally occurring conditions in the receiving water or where the naturally occurring source water is unaltered by the remediation activities. An operator must request and receive approval from NHDES for a change in pH range prior to submitting a NOC to EPA. See Part 2.4.3.b, above. Supporting documentation from the State must be provided with the NOC. Written approval by EPA is required for this change to be effective.
- d. Request for a change in authorized pollutants or pollutant parameters: A NOC must be submitted if: 1) A parameter limited in this general permit that is not included in an operator's authorization to discharge is identified; 2) The concentration of any parameter present in the effluent differs significantly from the influent, once effluent sampling begins; and/or 3) a WQBEL change is required or is otherwise requested. Written approval by EPA is required for this change to be effective. Additional effluent limitations and/or monitoring requirements may apply. **Changes in a pollutant or pollutant parameter not limited in this general permit require a new NOI or an individual NPDES permit.**
- e. Request to discharge chemical(s) and/or additive(s): A NOC must be submitted when an operator intends to discharge a chemical or additive that was not disclosed in the NOI submitted for a site. Written approval by EPA is required for this change to be effective. Monitoring data submitted in support of this request must be in compliance with the monitoring and reporting requirements specified in this general permit, including the QA/QC requirements specified in Part 2.5.2.f, and must be attached in accordance with the instructions in Appendix VIII. Written rationale provided in the NOC for this request must include:
  - i. All information required in Part 2.5.2.g.iii, above; and
  - ii. An explanation as required in Part 2.5.3.b.i through iii, above; or
  - iii. Monitoring data that demonstrates that each of the 126 priority pollutants are non-detect in discharges with the addition of the requested chemicals and/or additives. All data submitted in support of this request must be in compliance with the monitoring and reporting requirements of this general permit,

- including the QA/QC requirements specified in Part 2.5.2.f, above, and must be attached in accordance with the instructions in Appendix VIII.
- f. Notification of change to administrative information: This includes, but is not limited to: expected date of initiation of discharge; a change in the address for an owner or operator; a change in contact information for an owner or operator; and a change in ownership, so long as the operator authorized to discharge under this general permit remains unchanged. A requested change to administrative information is automatic unless EPA notifies the operator otherwise. Examples of when EPA is likely to provide such notification is when EPA intends to revoke and reissue coverage under this general permit or intends to issue an individual permit. **For a change in operator, a new NOI is required.** For a change in ownership, the new owner must submit:
- i. Written notification to EPA no more than thirty (30) days following the date of ownership change; and
  - ii. Written notification containing the new ownership information, the specific date for ownership change, and an acknowledgement of permit responsibility, coverage, and liability.
- g. Notification of a change in discharge location: Notification may be provided in a NOC for a change in discharge location so long as the receiving water identified in the NOI remains unchanged. Supporting documentation for this notification must indicate the new discharge location. A change in discharge location is automatic unless EPA notifies the operator otherwise. **For a change in receiving water, a new NOI is required.**
- h. Notification of a change in activity area: Notification may be provided in a NOC for a change in activity area so long as the receiving water identified in the NOI and the operator authorized to discharge under this general permit remain unchanged, and any change in treatment or discharge location are either included in the NOC, or are unchanged. Supporting documentation for this notification must indicate the new activity area. A change in activity area is automatic unless EPA notifies the operator otherwise. **For a change in receiving water and/or operator, a new NOI is required.**
- i. Notification of a change to a treatment system or process: Notification may be provided in a NOC for a change to a treatment system or process that adds or removes any major component. Written rationale for this notification must indicate:
- i. Why the addition or removal is necessary, including when necessary to meet an effluent limitation in this general permit, or to meet a State permit condition; and
  - ii. The discharge will meet the effluent limitations in this general permit with the addition or removal.
- j. Notification of a discharge interruption planned or encountered which will extend greater than ninety (90) days. Written rationale for this notification must indicate:
- i. The reason(s) for the interruption of discharge;
  - ii. When the discharge ceased or will cease;
  - iii. When the discharge will be re-initiated; and

- iv. An acknowledgment that the additional monitoring required for system re-start will be conducted and routine sampling will be resumed as specified in the RGP.
3. Attach a brief narrative statement that describes the change. Include any written rationale or supporting documentation for the change, if required, or if otherwise being provided.
4. Attach monitoring data, if required, or if otherwise being provided, in accordance with the instructions in Appendix VIII.

## **5.2 Notice of Termination (NOT)**

All operators covered under this general permit must submit a written NOT to EPA, and the appropriate State, when required, in accordance with Part 4.6, above, signed in accordance with 40 CFR §122.22 and in accordance with the instructions provided in Appendix IV, Part 3.

1. A NOT is required when one or more of the following conditions have been met:
  - a. All discharges covered under the RGP have been terminated;
  - b. Coverage under an individual or other general NPDES permit has been obtained;
  - c. There is a change in operator; or
  - d. Authorization to discharge has expired and coverage under a new general permit will not be requested.
2. For purposes of this general permit, the NOT may consist of either:
  - a. The suggested NOT format in Appendix IV, Part 3 of this general permit, or
  - b. Another form of correspondence containing all of the information included in the NOT suggested format in Appendix IV, Part 3 of this general permit.
3. A NOT must be submitted no later than thirty (30) days following the identification of the condition(s) requiring a NOT.
4. A NOT must include the following general site information:
  - a. The NPDES permit number assigned by EPA;
  - b. The name of the site and the street address (or a description of location using approximate geographic coordinates if no street address is available) for which the notification is submitted;
  - c. The name, address and telephone number of the owner of the site;
  - d. The name, address and telephone number of the operator of the site, if different from the owner;
  - e. Discharge identification (i.e., the outfall number), the discharge location (i.e., longitude and latitude), and the receiving water(s).
5. A NOT must include the following discharge information:
  - a. Indicate that all discharges have been permanently terminated.
  - b. Indicate the reason for the termination (e.g., completion of construction project, remediation completion, termination of temporary discharge).

- c. Indicate the date of the initiation of discharge, the date of the termination of discharge, the daily maximum effluent flow, and frequency of discharge.
  - d. Attach a summary of all monitoring results from the initiation of discharge through termination, including the results of monitoring requirements included in Part 4.3 of the RGP, when required for treatment system start-up(s), interruption(s), and shutdown, in accordance with the instructions in Appendix VIII.
6. Failure to submit a NOT shall result in continuation of general permit coverage until expiration, including continuation of all monitoring, record-keeping and reporting requirements.

### **5.3 Continuation of this General Permit after Expiration**

If this general permit is not reissued prior to the expiration date, it will be administratively continued in accordance with the Administrative Procedures Act and remain in force and in effect as to any individual operator. However, EPA cannot provide written notification of coverage under this general permit to any operator who submits a NOI to EPA after the permit's expiration date. Any operator who was granted general permit coverage prior to the expiration date will automatically remain covered by the continued general permit until the earlier of:

1. Reissuance of this general permit, at which time the operator must comply with the NOI requirements of the new general permit to maintain authorization to discharge;
2. The operator's submittal of a NOT;
3. Issuance of an individual permit for the operator's discharges; or
4. A formal decision by EPA not to reissue the general permit, at which time the operator must seek coverage under an individual permit or other general NPDES permit.

## **PART 6 STANDARD CONDITIONS**

The Standard Conditions are included in Appendix IX.

## **PART 7 ADDITIONAL PERMIT CONDITIONS APPLICABLE TO SPECIFIC STATES**

If required, this section is reserved and will be completed following the State certification process and the public notice period.

**Appendix C – Copy of NOI and USEPA Authorization email**

**Appendix D – Copy of Inspection Form**

# 2017 Construction General Permit Inspection Report Template – Field Version

## Purpose

This Inspection Report Template (or “template”) is to assist you in preparing inspection reports for EPA’s 2017 Construction General Permit (CGP). If you are covered under the 2017 CGP, you can use this template to create an inspection report form that is customized to the specific circumstances of your site and that complies with the minimum reporting requirements of Part 4.7 of the permit. Note that the use of this form is optional; you may use your own inspection report form provided it includes the minimum information required in Part 4.7 of the CGP.

If you are covered under a state CGP, this template may be helpful in developing a form that can be used for that permit; however, it will need to be modified to meet the specific requirements of that permit. If your permitting authority requires you to use a specific inspection report form, you should not use this form.

## Notes:

While EPA has made every effort to ensure the accuracy of all instructions contained in the Inspection Report Template, it is the permit, not the template, that determines the actual obligations of regulated construction stormwater discharges. In the event of a conflict between the Inspection Report Template and any corresponding provision of the 2017 CGP, you must abide by the requirements in the permit. EPA welcomes comments on the Inspection Report Template at any time and will consider those comments in any future revision of this document. You may contact EPA for CGP-related inquiries at [cgp@epa.gov](mailto:cgp@epa.gov).

## Overview of Inspection Requirements (see CGP Part 4)

Construction operators covered under the 2017 CGP are subject to the following inspection requirements:

### Person(s) Responsible for Inspecting the Site (see Part 4.1)

The person(s) inspecting your site must be a “qualified person” who may be either on your staff or a third party you hire to conduct such inspections.

- A “qualified person” is a person knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention, who possesses the appropriate skills and training to assess conditions at the construction site that could impact stormwater quality, and the appropriate skills and training to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of this permit.

### Inspection Frequency (see Part 4.2)

You are required to conduct inspections either:

- Once every 7 calendar days; or
- Once every 14 calendar days and within 24 hours of a storm event of 0.25 inches or greater or the occurrence of runoff from snowmelt sufficient to cause a discharge.

Your inspection frequency is increased if the site discharges to a sensitive water. See Part 4.3. Your inspection frequency may be decreased to account for stabilized areas, or for arid, semi-arid, or drought-stricken conditions, or for frozen conditions. See Part 4.4.

### Areas That Need to Be Inspected (see Part 4.5)

During each inspection, you must inspect the following areas of your site:

- Cleared, graded, or excavated areas of the site;
- Stormwater controls (e.g., perimeter controls, sediment basins, inlets, exit points etc.) and pollution prevention practices (e.g., pollution prevention practices for vehicle fueling/maintenance and washing, construction product storage, handling, and disposal, etc.) at the site;
- Material, waste, or borrow areas covered by the permit, and equipment storage and maintenance areas;
- Areas where stormwater flows within the site;
- Stormwater discharge points; and
- Areas where stabilization has been implemented.

### What to Check For During Your Inspection (see Part 4.6)

During your site inspection, you are required to check:

- Whether stormwater controls or pollution prevention practices are properly installed, require maintenance or corrective action, or whether new or modified controls are required;
- For the presence of conditions that could lead to spills, leaks, or other pollutant accumulations and discharges;
- For locations where new or modified stormwater controls are necessary to meet requirements of the permit;

- Whether there are visible signs of erosion and sediment accumulation at points of discharge and to the channels and streambanks that are in the immediate vicinity of the discharge;
- If a stormwater discharge is occurring at the time of the inspection, whether there are obvious, visual signs of pollutant discharges; and
- If any permit violations have occurred on the site.

#### Inspection Reports (see Part 4.7)

Within 24 hours of completing each inspection, you are required to complete an inspection report that includes:

- Date of inspection;
- Names and titles of person(s) conducting the inspection;
- Summary of inspection findings;
- Rain gauge or weather station readings if your inspection is triggered by the 0.25-inch storm threshold; and
- If you determine that a portion of your site is unsafe to access for the inspection, documentation of what conditions prevented the inspection and where these conditions occurred on the site

### Instructions for Using This Template

This Field Version of the Inspection Report Template is intended to be used in the field and filled out by hand. If you will be filling out the Inspection Report Template electronically (i.e., you will be typing in your findings), please use the Electronic Version of the Inspection Report Template available at <https://www.epa.gov/npdes/stormwater-discharges-construction-activities#resources>. The Electronic Version includes text fields with instructions for what to enter.

Keep in mind that this document is a template and not an “off-the-shelf” inspection report that is ready to use without some modification. You must first customize this form to include the specifics of your project in order for it to be useable for your inspection reports. Once you have entered all of your site-specific information into these fields, you may print out this form for use in the field to complete inspection reports.

The following tips for using this template will help you ensure that the minimum permit requirements are met:

- **Review the inspection requirements.** Before you start developing your inspection report form, read the CGP’s Part 4 inspection requirements. This will ensure that you have a working understanding of the permit’s underlying inspection requirements.
- **Complete all required text fields.** Fill out all text fields. Only by filling out all fields will the template be compliant with the requirements of the permit. (Note: Where you do not need the number of rows provided in the template form for your inspection, you may leave those rows blank. Or, if you need more space to document your findings, you may add an additional sheet.)
- **Use your site map to document inspection findings.** In several places in the template, you are directed to specify the location of certain features of your site, including where stormwater controls are installed and where you will be stabilizing exposed soil. You are also asked to fill in location information for unsafe conditions and the locations of any discharges occurring during your inspections. Where you are asked for location information, EPA encourages you to reference the point on your SWPPP site map that corresponds to the requested location on the inspection form. Using the site map as a tool in this way will help you conduct efficient inspections, will assist you in evaluating problems found, and will ensure proper documentation.
- **Sign and certify each inspection report.** The operator or a duly authorized representative (see Appendix I, Part I.11.2) must sign and certify each inspection report for it to be considered complete. Where a contractor or subcontractor carries out your inspections, it is recommended that you also have the inspector sign and certify the form, in addition to the signature and certification required of the permitted operator. The template includes a signature block for both parties.
- **Include the inspection form with your SWPPP.** Once your form is complete, make sure to include a copy of the inspection form in your SWPPP in accordance with Part 7.2.7.e of the CGP.
- **Retain copies of all inspection reports with your records.** You must also retain in your records copies of all inspection reports in accordance with the requirements in Part 4.7.3 of the 2017 CGP. These reports must be retained for at least 3 years from the date your permit coverage expires or is terminated.

### Section-by-Section Instructions

You will find specific instructions corresponding to each section of the report form on the reverse side of each page. These instructions provide you with more details in terms of what EPA expects to be documented in these reports.



**General Information**  
(see reverse for instructions)

<b>Name of Project</b>		<b>NPDES ID No.</b>		<b>Inspection Date</b>	
<b>Weather conditions during inspection</b>		<b>Inspection start time</b>		<b>Inspection end time</b>	
<b>Inspector Name, Title &amp; Contact Information</b>					
<b>Present Phase of Construction</b>					
<b>Inspection Location</b> (if multiple inspections are required, specify location where this inspection is being conducted)					
<p><b>Inspection Frequency</b></p> <p><b>Standard Frequency:</b></p> <p><input type="checkbox"/> Every 7 days</p> <p><input type="checkbox"/> Every 14 days and within 24 hours of a 0.25" rain or the occurrence of runoff from snowmelt sufficient to cause a discharge</p> <p><b>Increased Frequency:</b></p> <p><input type="checkbox"/> Every 7 days and within 24 hours of a 0.25" rain (for areas of sites discharging to sediment or nutrient-impaired waters or to waters designated as Tier 2, Tier 2.5, or Tier 3)</p> <p><b>Reduced Frequency:</b></p> <p><input type="checkbox"/> Twice during first month, no more than 14 calendar days apart; then once per month after first month; (for stabilized areas)</p> <p><input type="checkbox"/> Twice during first month, no more than 14 calendar days apart; then once more within 24 hours of a 0.25" rain (for stabilized areas on "linear construction sites")</p> <p><input type="checkbox"/> Once per month and within 24 hours of a 0.25" rain (for arid, semi-arid, or drought-stricken areas during seasonally dry periods or during drought)</p> <p><input type="checkbox"/> Once per month (for frozen conditions where earth-disturbing activities are being conducted)</p>					
<p><b>Was this inspection triggered by a 0.25" storm event?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><b>If yes, how did you determined whether a 0.25" storm event has occurred?</b></p> <p><input type="checkbox"/> Rain gauge on site      <input type="checkbox"/> Weather station representative of site. Specify weather station source:</p> <p><b>Total rainfall amount that triggered the inspection (in inches):</b></p>					
<p><b>Was this inspection triggered by the occurrence of runoff from snowmelt sufficient to cause a discharge?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No</p>					
<p><b>Unsafe Conditions for Inspection</b></p> <p><b>Did you determine that any portion of your site was unsafe for inspection per CGP Part 4.5?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><b>If "yes", complete the following:</b></p> <p>- Describe the conditions that prevented you from conducting the inspection in this location:</p> <p>- Location(s) where conditions were found:</p>					

Instructions for Filling Out "General Information" Section

**Name of Project**

Bulfinch Crossing

**NPDES ID No.**

#MAG910755

**Inspection Date**

\_\_\_\_\_

**Weather Conditions During Inspection**

\_\_\_\_\_

**Inspection start and end times**

\_\_\_\_\_

**Inspector Name, Title & Contact Information**

\_\_\_\_\_

\_\_\_\_\_

**Present Phase of Construction**

\_\_\_\_\_

**Inspection Location**

\_\_\_\_\_

**Inspection Frequency**

\_\_\_\_\_

**Was This Inspection Triggered by a 0.25 Inch Storm Event or the occurrence of runoff from snowmelt sufficient to cause a discharge?**

\_\_\_\_\_

**Unsafe Conditions for Inspection**

\_\_\_\_\_

**Condition and Effectiveness of Erosion and Sediment (E&S) Controls (CGP Part 2.2)**

(see reverse for instructions)

Type/Location of E&S Control [Add an additional sheet if necessary]	Maintenance Needed?*	Corrective Action Required?*	Date on Which Maintenance or Corrective Action First Identified?	Notes
1.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
2.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
3.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
4.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
5.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
6.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
7.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
8.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
9.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
10.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		

\* **Note:** The permit differentiates between conditions requiring routine maintenance, and those requiring corrective action. The permit requires maintenance in order to keep controls in effective operating condition. Corrective actions are triggered only for specific conditions, which include: 1) A stormwater control needs repair or replacement (beyond routine maintenance) if it is not operating as intended; 2) A stormwater control necessary to comply with the permit was never installed or was installed incorrectly; 3) You become aware that the stormwater controls you have installed and are maintaining are not effective enough for the discharge to meet applicable water quality standards or applicable requirements in Part 3.1; 4) One of the prohibited discharges in Part 1.3 is occurring or has occurred; or 5) EPA requires corrective actions as a result of a permit violation found during an inspection carried out under Part 4.8. If a condition on your site requires a corrective action, you must also fill out a corrective action form found at <https://www.epa.gov/npdes/stormwater-discharges-construction-activities#resources>. See Part 5 of the permit for more information.

## Instructions for Filling Out the "Erosion and Sediment Control" Table

Type and Location of E&S Controls

---

Maintenance Needed?

---

Corrective Action Needed?

---

Date on Which Maintenance or Corrective Action First Identified?

---

Notes

---

**Condition and Effectiveness of Pollution Prevention (P2) Practices (CGP Part 2.3)**

(see reverse for instructions)

Type/Location of P2 Practices [Add an additional sheet if necessary]	Maintenance Needed?*	Corrective Action Required?*	Date on Which Maintenance or Corrective Action First Identified?	Notes
1.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
2.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
3.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
4.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
5.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
6.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
7.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
8.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
9.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
10.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		

\* **Note:** The permit differentiates between conditions requiring routine maintenance, and those requiring corrective action. The permit requires maintenance in order to keep controls in effective operating condition. Corrective actions are triggered only for specific conditions, which include: 1) A stormwater control needs repair or replacement (beyond routine maintenance) if it is not operating as intended; 2) A stormwater control necessary to comply with the permit was never installed or was installed incorrectly; 3) You become aware that the stormwater controls you have installed and are maintaining are not effective enough for the discharge to meet applicable water quality standards or applicable requirements in Part 3.1; 4) One of the prohibited discharges in Part 1.3 is occurring or has occurred; or 5) EPA requires corrective actions as a result of a permit violation found during an inspection carried out under Part 4.8. If a condition on your site requires a corrective action, you must also fill out a corrective action form found at <https://www.epa.gov/npdes/stormwater-discharges-construction-activities#resources>. See Part 5 of the permit for more information.

## Instructions for Filling Out the "Pollution Prevention (P2) Practice" Table

Type and Location of P2 Controls

---

Maintenance Needed?

---

Corrective Action Needed?

---

Date on Which Maintenance or Corrective Action First Identified?

---

Notes

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**Stabilization of Exposed Soil (CGP Part 2.2.14)**

(see reverse for instructions)

Stabilization Area [Add an additional sheet if necessary]	Stabilization Method	Have You Initiated Stabilization?	Notes
1.		<input type="checkbox"/> YES <input type="checkbox"/> NO If yes, provide date:	
2.		<input type="checkbox"/> YES <input type="checkbox"/> NO If yes, provide date:	
3.		<input type="checkbox"/> YES <input type="checkbox"/> NO If yes, provide date:	
4.		<input type="checkbox"/> YES <input type="checkbox"/> NO If yes, provide date:	
5.		<input type="checkbox"/> YES <input type="checkbox"/> NO If yes, provide date:	

**Description of Discharges (CGP Part 4.6.6)**

(see reverse for instructions)

Was a stormwater discharge or other discharge occurring from any part of your site at the time of the inspection?  Yes  No

If "yes", provide the following information for each point of discharge:

Discharge Location [Add an additional sheet if necessary]	Observations
1.	Describe the discharge:  At points of discharge and the channels and banks of waters of the U.S. in the immediate vicinity, are there any visible signs of erosion and/or sediment accumulation that can be attributed to your discharge? <input type="checkbox"/> Yes <input type="checkbox"/> No  If yes, describe what you see, specify the location(s) where these conditions were found, and indicate whether modification, maintenance, or corrective action is needed to resolve the issue:
2.	Describe the discharge:  At points of discharge and the channels and banks of waters of the U.S. in the immediate vicinity, are there any visible signs of erosion and/or sediment accumulation that can be attributed to your discharge? <input type="checkbox"/> Yes <input type="checkbox"/> No  If yes, describe what you see, specify the location(s) where these conditions were found, and indicate whether modification, maintenance, or corrective action is needed to resolve the issue:

### Instructions for Filling Out the "Stabilization of Exposed Soil" Table

**Stabilization Area**

---

**Stabilization Method**

---

**Have You Initiated Stabilization**

---

**Notes**

---

### Instructions for Filling Out the "Description of Discharges" Table

You are only required to complete this section if a discharge is occurring at the time of the inspection.

**Was a Stormwater Discharge Occurring From Any Part of Your Site At The Time of the Inspection?**

---

**Discharge Location** (repeat as necessary if there are multiple points of discharge)

---



**Contractor or Subcontractor Signature and Certification**

(see reverse for instructions)

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

**Signature of Contractor or Subcontractor:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Printed Name and Affiliation:** \_\_\_\_\_

**Operator Signature and Certification**

(see reverse for instructions)

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

**Signature of Operator or "Duly Authorized Representative":** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Printed Name and Affiliation:** \_\_\_\_\_

## Instructions for Signature/Certification

Each inspection report must be signed and certified to be considered complete.

**Contractor or Subcontractor Signature and Certification**

---

**Operator Signature and Certification**

**Appendix E – Copy of Corrective Action Form**

# 2017 Construction General Permit Corrective Action Report Form – Field Version

## Purpose

This Corrective Action Report Form is to assist you in preparing corrective action reports for EPA's 2017 Construction General Permit (CGP). If you are covered under EPA's 2017 CGP, you can use this form to create a corrective action report that complies with the minimum reporting requirements of Part 5.4 of the permit.

You are only required to fill out this form if one of the conditions triggering corrective action in Part 5.1 or 5.3 occurs on your site. Routine maintenance is generally not considered to trigger corrective action. Corrective actions are triggered only for specific conditions that are identified below in the "Overview of Corrective Action Requirements."

If you are covered under a state CGP, this form may be helpful in developing a report that can be used for that permit; however, it will need to be modified to meet the specific requirements of the permit. If your permitting authority requires you to use a specific corrective action report form, you should not use this form.

## Notes

While EPA has made every effort to ensure the accuracy of all instructions contained in the Corrective Action Report Form, it is the permit, not the form, that determines the actual obligations of regulated construction stormwater discharges. In the event of a conflict between the Corrective Action Report Form and any corresponding provision of the 2017 CGP, you must abide by the requirements in the permit. EPA welcomes comments on the Corrective Action Report Form at any time and will consider those comments in any future revision of this document. You may contact EPA for CGP-related inquiries at [cgp@epa.gov](mailto:cgp@epa.gov).

## Overview of Corrective Action Requirements

Construction operators covered under the 2017 CGP are required to conduct corrective actions and report on progress made in correcting the problem condition(s) in accordance with the following requirements:

### *Conditions Triggering Corrective Action (Parts 5.1 and 5.3)*

Corrective action is required whenever any of the following conditions occur at your site:

- A stormwater control needs repair or replacement (beyond routine maintenance required under Part 2.1.4); or
- A stormwater control necessary to comply with the requirements of this permit was never installed, or was installed incorrectly; or
- Discharges are causing an exceedance of applicable water quality standards; or
- A Part 1.3 prohibited discharge has occurred; or
- EPA requires corrective action as a result of permit violations found during an inspection carried out under Part 4.8.

### *Deadlines for Completing Corrective Actions (Part 5.2)*

For any condition triggering corrective action:

- You must immediately take all reasonable steps to address the condition (e.g. cleaning up contaminated surfaces so the material(s) is not discharged in subsequent storm events);
- If the problem does not require a new or replacement control or significant repair, you must complete the corrective action by the close of the next business day
- If the problem does require a new or replacement control or significant repair, you must complete corrective action (e.g., installing and making operational any new or modified control, completing repairs) by no later than 7 calendar days from the time of discovery of the condition. If infeasible to complete the installation or repair within 7 calendar days, you must document why it is infeasible and document your schedule for completing the corrective action as soon as practicable. If any of these actions result in changes to the stormwater controls documented in your SWPPP, you must modify your SWPPP within 7 calendar days.

#### *Deadlines for Documenting Corrective Actions in a Report (Part 5.4)*

You are required to complete a corrective action report for each corrective action you take in accordance with the following deadlines.

- Within 24 hours of *identifying* the corrective action condition, you must document the following:
  - The condition identified at your site; and
  - The date and time you identified the condition
  
- Within 24 hours of completing the corrective action, you must document the following:
  - The actions you took to address the condition, and
  - Whether any SWPPP modifications are required.

#### **Instructions for Using This Report Form**

This Field Version of the Corrective Action Report Form is intended to be used in the field and filled out by hand. If you will be filling out the Corrective Action Report Form electronically (i.e., you will be typing in your findings), please use the Electronic Version of the Corrective Action Report Form available at <https://www.epa.gov/npdes/stormwater-discharges-construction-activities#resources>. The Electronic Version includes text fields with instructions for what to enter.

The following tips for using this form will help you ensure that the minimum permit requirements are met:

- **Review the corrective action requirements.** Before you fill out this corrective action report form, read the CGP's Part 5 corrective action requirements. This will ensure that you have a working understanding of the permit's underlying corrective action requirements.
  
- **Complete a separate report for each condition that triggers corrective action.** For each triggering condition on your site, you will need to fill out a separate corrective action report form.
  
- **Complete all required text fields.** Fill out all text fields. Only by filling out all fields will the form be compliant with the requirements of the permit. (Note: Where you do not need the number of rows provided in the corrective action report form, you may leave those rows blank. Or, if you need more space to document your findings, you may add an additional sheet.)
  
- **Sign and certify each corrective action report.** The operator or a duly authorized representative (see Appendix I, Part I.11.2) must sign and certify each corrective action report form for it to be considered complete. Where a contractor or subcontractor carries out your corrective actions, it is recommended that you also have that individual sign and certify the form, in addition to the signature and certification required of the permitted operator. The form includes a signature block for both parties.
  
- **Include the corrective action report form with your SWPPP.** Once your form is complete, make sure to include a copy of the corrective action report form in your SWPPP in accordance with Part 7.2.7.e of the CGP.
  
- **Retain copies of all corrective action reports with your records.** You must retain copies of your corrective action reports in your records in accordance with the requirements in Part 5.4.4 of the 2017 CGP. These reports must be retained for at least 3 years from the date your permit coverage expires or is terminated.

#### **Section-by-Section Instructions**

You will find specific instructions corresponding to each section of the report form on the reverse side of each page. These instructions were written in order to provide you with more details in terms of what EPA expects to be documented in these reports

**Section A – Initial Report (CGP Part 5.4.1)**

(Complete this section within 24 hours of identifying the condition that triggered corrective action)

Name of Project		NPDES ID No.		Today's Date	
Date Problem First Discovered		Time Problem First Discovered			
Name and Contact Information of Individual Completing this Form					

**What site conditions triggered the requirement to conduct corrective action** (*check the box that applies*):

- A stormwater control needs repair or replacement (beyond routine maintenance required under Part 2.1.4)
- A stormwater control necessary to comply with the requirements of this permit was never installed, or was installed incorrectly
- A discharge is causing an exceedance of applicable water quality standards
- A Part 1.3 prohibited discharge has occurred
- EPA requires corrective action as a result of permit violations found during an EPA inspection carried out under Part 4.8

**Provide a description of the problem:**

**Deadline for completing corrective action** (*check the box that applies*):

- Immediately take all reasonable steps to address the condition, including cleaning up any contaminated surfaces so the material will not discharge in subsequent storm events
- Complete by close of the next business day when problem does not require a new or replacement control or significant repair
- No later than 7 calendar days from the time of discovery for problems that require a new or replacement control or significant repair
- Infeasible to complete the installation or repair within 7 calendar days. Explain why it is infeasible and document schedule for installing control:

Enter date of corrective action completion: \_\_\_\_\_

**Section B – Corrective Action Completion (CGP Part 5.4.2)**

(Complete this section no later than 24 hours after completing the corrective action)

**Section B.1 – Why the Problem Occurred**

Cause(s) of Problem (Add an additional sheet if necessary)	How You Determined the Cause and the Date You Determined the Cause
1.	1.
2.	2.

**Section B.2 – Stormwater Control Modifications Implemented to Correct the Problem**

List of Stormwater Control Modification(s) Needed to Correct Problem (Add an additional sheet if necessary)	Date of Completion	SWPPP Update Necessary?	Notes
1.		<input type="checkbox"/> Yes <input type="checkbox"/> No If yes, provide date SWPPP modified:	
2.		<input type="checkbox"/> Yes <input type="checkbox"/> No If yes, provide date SWPPP modified:	

## Instructions for Filling Out the Initial Report (Section A)

You must complete Section A of the report form within 24 hours of discovering the condition that triggered corrective action

**Name of Project**  
Bulfinch Crossing

**NPDES ID No.**  
#MAG910755

**Today's Date**

---

**Date/Time Problem First Discovered**

---

**Name/Contact Information**

---

**Site Condition That Triggered Corrective Action**

---

**Description of the Site Condition**

---

**Deadline for Completing Corrective Action**

---

## Instructions for Filling Out the Corrective Action Completion Table (Section B)

You must complete Section B of the report form no later than 24 hours after completing the correction action.

**Section B.1 – Why the Problem Occurred**

---

**Section B.2 – Stormwater Control Modifications Implemented**

**Section C –Signature and Certification (CGP Part 5.4.3)**

**Section C.1 – Contractor or Subcontractor Signature and Certification**

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

**Signature of Contractor or Subcontractor:** \_\_\_\_\_

**Date:**

**Printed Name and Affiliation:** \_\_\_\_\_

**Section C.2 – Operator Signature and Certification**

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

**Signature of Operator or "Duly Authorized Representative":** \_\_\_\_\_

**Date:**

**Printed Name and Affiliation:** \_\_\_\_\_



## **Instructions for Signature and Certification (Section C)**

Each corrective action report must be signed and certified to be considered complete.

### **Section C.1 – Contractor or Subcontractor Signature and Certification**

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### **Section C.2 – Operator Signature and Certification**

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**Appendix F –SWPPP Amendment Log**

No.	Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title]
1	Update of contact information	12/21/2018	Jesse Freeman, PE Senior Project Manager

**Appendix G –Subcontractor Certifications/Agreements**

SUBCONTRACTOR CERTIFICATION  
STORMWATER POLLUTION PREVENTION PLAN

Project Number: \_\_\_\_\_

Project Title: \_\_\_\_\_

Operator(s): \_\_\_\_\_

As a subcontractor, you are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the office trailer.

Each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement:

**I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the practices described in the SWPPP.**

This certification is hereby signed in reference to the above named project:

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

Type of construction service to be provided: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

**Appendix H –Grading and Stabilization Activities Log**

Date Grading Activity Initiated	Description of Grading Activity	Description of Stabilization Measure and Location	Date Grading Activity Ceased (Indicate Temporary or Permanent)	Date When Stabilization Measures Initiated
			INSERT DATE <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	
			INSERT DATE <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	
			INSERT DATE <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	
			INSERT DATE <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	
			INSERT DATE <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	
			INSERT DATE <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	
			INSERT DATE <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	
			INSERT DATE <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	

**Appendix I –SWPPP Training Log**

**Stormwater Pollution Prevention Training Log**

Project Name:

Project Location:

Instructor's Name(s):

Instructor's Title(s):

Course Location: \_\_\_\_\_ Date: \_\_\_\_\_

Course Length (hours): \_\_\_\_\_

Stormwater Training Topic: *(check as appropriate)*

- Sediment and Erosion Controls**
- Stabilization Controls**
- Pollution Prevention Measures**
- Emergency Procedures**
- Inspections/Corrective Actions**

Specific Training Objective: \_\_\_\_\_

Attendee Roster: *(attach additional pages as necessary)*

No.	Name of Attendee	Company
1		
2		
3		
4		
5		
6		
7		
8		

**Appendix J –Delegation of Authority Form**

Delegation of Authority

I, \_\_\_\_\_ (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the Construction General Permit (CGP), at the \_\_\_\_\_ construction site. The designee is authorized to sign any reports, stormwater pollution prevention plans and all other documents required by the permit.

\_\_\_\_\_ (name of person or position)  
\_\_\_\_\_ (company)  
\_\_\_\_\_ (address)  
\_\_\_\_\_ (city, state, zip)  
\_\_\_\_\_ (phone)

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in Appendix I of USEPA's CGP, and that the designee above meets the definition of a "duly authorized representative" as set forth in Appendix I.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

**Name:** \_\_\_\_\_  
**Company:** \_\_\_\_\_  
**Title:** \_\_\_\_\_  
**Signature:** \_\_\_\_\_  
**Date:** \_\_\_\_\_

**Appendix K – Endangered Species Documentation**



# United States Department of the Interior



FISH AND WILDLIFE SERVICE  
New England Ecological Services Field Office  
70 Commercial Street, Suite 300  
Concord, NH 03301-5094  
Phone: (603) 223-2541 Fax: (603) 223-0104  
<http://www.fws.gov/newengland>

In Reply Refer To:  
Consultation Code: 05E1NE00-2018-SLI-1184  
Event Code: 05E1NE00-2018-E-02659  
Project Name: Bulfinch Crossing

March 01, 2018

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

## To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.



A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan ([http://www.fws.gov/windenergy/eagle\\_guidance.html](http://www.fws.gov/windenergy/eagle_guidance.html)). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
-

## Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**New England Ecological Services Field Office**

70 Commercial Street, Suite 300

Concord, NH 03301-5094

(603) 223-2541

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## Project Summary

Consultation Code: 05E1NE00-2018-SLI-1184

Event Code: 05E1NE00-2018-E-02659

Project Name: Bulfinch Crossing

Project Type: DEVELOPMENT

Project Description: The location is a 4 acre development project in Boston Massachusetts. Development commenced in 2017 and is scheduled to continue in stages until at least 2020.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/42.362644536661755N71.0593481303471W>



Counties: Suffolk, MA

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## **Endangered Species Act Species**

There is a total of 0 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

### **Critical habitats**

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

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**Appendix L – Historic Properties Documentation**

# Massachusetts Cultural Resource Information System

## MACRIS

### MACRIS Search Results

Search Criteria: Town(s): Boston; Place: Government Center; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year
BOS.AV	Sears' Crescent and Sears' Block		Boston	
BOS.1508	McCormack, John W. State Office Building	1 Ashburton Pl	Boston	1975
BOS.1509	Massachusetts Teachers Association Building	20 Ashburton Pl	Boston	c 1965
BOS.1551	One Beacon Street	1 Beacon St	Boston	c 1969
BOS.1552	Lawyers Building	9 Beacon St	Boston	1922
BOS.1553	Boston Transit Commission Building	15 Beacon St	Boston	1903
BOS.1554	Hotel Bellevue	19-21B Beacon St	Boston	1899
BOS.1576	Beacon Hill Apartment House	126 Bowdoin St	Boston	c 1927
BOS.1577	Church of the New Jerusalem - Church On The Hill	140 Bowdoin St	Boston	1963
BOS.1578	Boston Society of the New Jerusalem Building	144 Bowdoin St	Boston	c 1925
BOS.1579	Way, Samuel A. Carriage House	146-150 Bowdoin St	Boston	1870
BOS.1904	Temporary Home for Women	40-50 Bowker St	Boston	1924
BOS.1582	Bradlee, James Bowdoin Building	50-54 Broad St	Boston	1853
BOS.917	Bowdoin Street Subway Station	Cambridge St	Boston	1916
BOS.918	Scollay Square Under Subway Station	Cambridge St	Boston	1916
BOS.922	Scollay Square - Government Center Subway Station	1 Cambridge St	Boston	1898
BOS.1575	New England Telephone and Telegraph Company	65 Cambridge St	Boston	1930
BOS.1616	Saltonstall, Leverett State Office Building	100 Cambridge St	Boston	1965
BOS.1618	Massachusetts Health, Welfare and Education Center	115 Cambridge St	Boston	r 1965
BOS.1645	One, Two and Three Center Plaza	1-3 Center Plaza	Boston	r 1965
BOS.1656	Kirstein Memorial Library	20 City Hall Ave	Boston	1930
BOS.1657	Boston City Hall	1 City Hall Sq	Boston	r 1965
BOS.1672	Sears' Crescent	38-68 Cornhill St	Boston	1816
BOS.1673	Sears' Block	70-72 Cornhill St	Boston	1848

Inv. No.	Property Name	Street	Town	Year
BOS.1674		38 Court Sq	Boston	1914
BOS.1678	Ames Building, The	1 Court St	Boston	c 1891
BOS.1671	Old Colony Trust Company	17-19 Court St	Boston	1923
BOS.1679	Old Colony Trust Company Building	17 Court St	Boston	1908
BOS.1680	City Bank and Trust Company Building	25 Court St	Boston	1967
BOS.1676	Boston City Hall Annex	26 Court St	Boston	1912
BOS.1677	Scollay Building	30-40 Court St	Boston	1914
BOS.1614	Capital Bank Building	30 Hawkins St	Boston	1972
BOS.948	Edison Electric Illuminating Substation	33 Hawkins St	Boston	1927
BOS.1783	Overseers of Public Welfare Building	35 Hawkins St	Boston	1924
BOS.1782	R. K. O. General Building	40 Hawkins St	Boston	1967
BOS.1901	Bulfinch Building	15 New Chardon St	Boston	1968
BOS.1902	Royal Globe Insurance Company	25 New Chardon St	Boston	1967
BOS.1903	Jewish Family and Children's Service	31 New Chardon St	Boston	1967
BOS.1617	Kennedy, John F. Federal Office Building	15 New Sudbury St	Boston	1966
BOS.2023	Boston District #1 Police Station	40 New Sudbury St	Boston	1968
BOS.2024	Government Center Parking Garage	50 New Sudbury St	Boston	1966
BOS.938	Choate, Rufus Statue	Pemberton Sq	Boston	1898
BOS.1573	Suffolk County Courthouse Addition	1 Pemberton Sq	Boston	c 1936
BOS.1945	Adams, John Courthouse	1 Pemberton Sq	Boston	r 1885
BOS.1675	Thompson's Spa	15 Pie Alley	Boston	1922
BOS.1970	Boston Five Cents Savings Bank	10 School St	Boston	c 1972
BOS.1974	Hunnewell, Horatio Hollis Building	13-15 School St	Boston	1888
BOS.1975	Codman, Martha C. Building	19-21 School St	Boston	1917
BOS.1976	Niles Building	23-29 School St	Boston	1915
BOS.932	Franklin, Benjamin Statue	41-45 School St	Boston	1855
BOS.936	Quincy, Josiah Statue	41-45 School St	Boston	1879
BOS.1977	Old City Hall	41-45 School St	Boston	1862
BOS.1979	Boston City Club	12-14 Somerset St	Boston	1913
BOS.1980	Metropolitan District Commission Building	20 Somerset St	Boston	1932
BOS.919	Devonshire - State Street Subway Station	State St	Boston	1904
BOS.2107	Old State House	State St	Boston	1712
BOS.803	King's Chapel Burying Ground	Tremont St	Boston	1630
BOS.2064	Hemenway Building	2-16 Tremont St	Boston	1883
BOS.2065	Kimball Building	18-28 Tremont St	Boston	1902
BOS.2067	King's Chapel	58 Tremont St	Boston	r 1750
BOS.2068	Tremont Building	67-81 Tremont St	Boston	1895
BOS.2106	One Washington Mall	1 Washington Mall	Boston	1972

Inv. No.	Property Name	Street	Town	Year
BOS.2124	Boston Company Building, The	197-235 Washington St	Boston	1968
BOS.1569	Boston Company Building	201 Washington St	Boston	1970
BOS.2125	Coffman's Washington Street Garage	227-275 Washington St	Boston	1966
BOS.2126	Cunningham, Andrew House	277-279 Washington St	Boston	r 1725
BOS.2127	Old Corner Bookstore, The	277-285 Washington St	Boston	1718



# Massachusetts Cultural Resource Information System

## MACRIS

### MACRIS Search Results

Search Criteria: Town(s): Boston; Place: West End; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year
BOS.CA	Charles River Basin Historic District		Boston	
BOS.4156		23-25 Anderson St	Boston	1910
BOS.4186	Holiday Inn	5 Blossom St	Boston	1967
BOS.4158	West End House	16-18 Blossom St	Boston	1929
BOS.4159	Winchell Elementary School	24 Blossom St	Boston	1884
BOS.4190	Pratt, Dr. John W. House	Cambridge St	Boston	1892
BOS.9034	Longfellow Bridge - West Boston Bridge	Cambridge St	Boston	c 1900
BOS.4160		106 Cambridge St	Boston	1925
BOS.4161		116-120 Cambridge St	Boston	1928
BOS.4162		122-128 Cambridge St	Boston	1925
BOS.4182	Old West Church	131 Cambridge St	Boston	1806
BOS.4163		138 Cambridge St	Boston	1901
BOS.4183	Otis, First Harrison Gray House	141 Cambridge St	Boston	1796
BOS.4164		148 Cambridge St	Boston	c 1850
BOS.4184	Boston Public Library - West End Branch	155 Cambridge St	Boston	1968
BOS.4165		156-172 Cambridge St	Boston	1926
BOS.4185	Charles River Plaza	161-209 Cambridge St	Boston	1965
BOS.4166	McGauley Building	180 Cambridge St	Boston	1910
BOS.4167	Boston Ladder Company #24 Fire House	200 Cambridge St	Boston	1964
BOS.4168		204 Cambridge St	Boston	c 1928
BOS.4169		210 Cambridge St	Boston	c 1860
BOS.4170	Puffer, Alvin D. Commercial Building	214-218 Cambridge St	Boston	1896
BOS.4171		222-224 Cambridge St	Boston	r 1865
BOS.4172		226-234 Cambridge St	Boston	r 1865
BOS.4173		236-240 Cambridge St	Boston	r 1865
BOS.4187	Exxon Gas Station	239 Cambridge St	Boston	1937
BOS.4174		242 Cambridge St	Boston	1890

Inv. No.	Property Name	Street	Town	Year
BOS.9428		245 Cambridge St	Boston	c 1980
BOS.4175		248-270 Cambridge St	Boston	1925
BOS.4189	Mobil Gas Station	261 Cambridge St	Boston	c 1930
BOS.4176		272-274 Cambridge St	Boston	c 1910
BOS.4177		276-280 Cambridge St	Boston	c 1910
BOS.4178		282-284 Cambridge St	Boston	c 1910
BOS.4179		286-288 Cambridge St	Boston	c 1910
BOS.4191		295-299 Cambridge St	Boston	1912
BOS.4180	Sunoco Gas Station	296 Cambridge St	Boston	1941
BOS.4192		301-303 Cambridge St	Boston	c 1925
BOS.4193		305-307 Cambridge St	Boston	c 1895
BOS.4194		309-311 Cambridge St	Boston	c 1940
BOS.4181	Harvard Gardens Restaurant	310-316 Cambridge St	Boston	c 1925
BOS.4195		313 Cambridge St	Boston	1896
BOS.4196	Boston Edison Electric Company Substation	317-325 Cambridge St	Boston	1924
BOS.4197	Colonial Beacon Oil Company Lubritorium	327 Cambridge St	Boston	1937
BOS.4198	Charles Street Subway Station	Charles Circ	Boston	1932
BOS.927	Charles River Railroad Bridge at North Station	Charles River	Boston	1931
BOS.4200	Suffolk County Jail	215 Charles St	Boston	1851
BOS.9036	East Boston Tunnel Extension	East Boston Tunnel	Boston	1916
BOS.9041	Embankment Road	Embankment Rd	Boston	c 1949
BOS.4201	Massachusetts General Hospital - Bulfinch Building	Fruit St	Boston	c 1823
BOS.9037	Massachusetts General Hospital - Ether Dome	Fruit St	Boston	c 1823
BOS.9033	Beacon Hill Subway Tunnel	Lindall Pl	Boston	1909
BOS.4157		31 N Anderson St	Boston	c 1910
BOS.4202	Registry of Motor Vehicles Building	100 Nashua St	Boston	1932
BOS.9032	East Cambridge Viaduct - Lechmere Viaduct	O'Brien Hwy	Boston	1910
BOS.9039	Charles River Dam Bridge	O'Brien Hwy	Boston	1961
BOS.4203	State Service Center	25 Staniford St	Boston	1970
BOS.4204	Eye Research Institute	99 West Cedar St	Boston	1957
BOS.4205	Twelfth Congregational Church	68 Wm. C. O'Connell Way	Boston	1823
BOS.15230	Saint Joseph's Roman Catholic Church Rectory	70 Wm. C. O'Connell Way	Boston	c 1902

**Appendix M – Rainfall Gauge Recording**

Use the table below to record the rainfall gauge readings at the beginning and end of each work day. An example table follows.

Month/Year			Month/Year			Month/Year		
Day	Start time	End time	Day	Start time	End time	Day	Start time	End time
1			1			1		
2			2			2		
3			3			3		
4			4			4		
5			5			5		
6			6			6		
7			7			7		
8			8			8		
9			9			9		
10			10			10		
11			11			11		
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27			27			27		
28			28			28		
29			29			29		
30			30			30		
31			31			31		

**Appendix B – Copy of the RGP**

**Appendix C – Copy of NOI and USEPA Authorization email**

**Appendix D – Copy of Inspection Form**

**Appendix E – Copy of Corrective Action Form**





**Appendix G –Subcontractor Certifications/Agreements**

SUBCONTRACTOR CERTIFICATION  
STORMWATER POLLUTION PREVENTION PLAN

Project Number: \_\_\_\_\_

Project Title: \_\_\_\_\_

Operator(s): \_\_\_\_\_

As a subcontractor, you are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the office trailer.

Each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement:

**I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the practices described in the SWPPP.**

This certification is hereby signed in reference to the above named project:

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

Type of construction service to be provided: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

**Appendix H –Grading and Stabilization Activities Log**

Date Grading Activity Initiated	Description of Grading Activity	Description of Stabilization Measure and Location	Date Grading Activity Ceased (Indicate Temporary or Permanent)	Date When Stabilization Measures Initiated
			INSERT DATE <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	
			INSERT DATE <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	
			INSERT DATE <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	
			INSERT DATE <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	
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			INSERT DATE <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	
			INSERT DATE <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	

**Appendix I –SWPPP Training Log**

**Stormwater Pollution Prevention Training Log**

Project Name:

Project Location:

Instructor's Name(s):

Instructor's Title(s):

Course Location: \_\_\_\_\_ Date: \_\_\_\_\_

Course Length (hours): \_\_\_\_\_

Stormwater Training Topic: *(check as appropriate)*

- |   |  |
|---|--|
| <input type="checkbox"/> <b>Sediment and Erosion Controls</b> | <input type="checkbox"/> <b>Emergency Procedures</b>           |
| <input type="checkbox"/> <b>Stabilization Controls</b>        | <input type="checkbox"/> <b>Inspections/Corrective Actions</b> |
| <input type="checkbox"/> <b>Pollution Prevention Measures</b> |  |

Specific Training Objective: \_\_\_\_\_

\_\_\_\_\_

Attendee Roster: *(attach additional pages as necessary)*

No.	Name of Attendee	Company
1		
2		
3		
4		
5		
6		
7		
8		

**Appendix J –Delegation of Authority Form**

Delegation of Authority

I, \_\_\_\_\_ (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the Construction General Permit (CGP), at the \_\_\_\_\_ construction site. The designee is authorized to sign any reports, stormwater pollution prevention plans and all other documents required by the permit.

\_\_\_\_\_ (name of person or position)  
\_\_\_\_\_ (company)  
\_\_\_\_\_ (address)  
\_\_\_\_\_ (city, state, zip)  
\_\_\_\_\_ (phone)

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in Appendix I of USEPA's CGP, and that the designee above meets the definition of a "duly authorized representative" as set forth in Appendix I.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

**Name:** \_\_\_\_\_

**Company:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Appendix K – Endangered Species Documentation**

**Appendix L – Historic Properties Documentation**

**Appendix M – Rainfall Gauge Recording**

Use the table below to record the rainfall gauge readings at the beginning and end of each work day. An example table follows.

Month/Year			Month/Year			Month/Year		
Day	Start time	End time	Day	Start time	End time	Day	Start time	End time
1			1			1		
2			2			2		
3			3			3		
4			4			4		
5			5			5		
6			6			6		
7			7			7		
8			8			8		
9			9			9		
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30			30			30		
31			31			31		



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# **Attachment E**

## **Climate Resiliency Checklist**

**NOTE: Project filings should be prepared and submitted using the online [Climate Resiliency Checklist](#).**

**A.1 - Project Information**

Project Name:	One Congress Office Tower		
Project Address:	One Congress St.		
Project Address Additional:	Boston, MA 02114		
Filing Type (select)	<i>Initial (PNF, EPNF, NPC or other substantial filing)</i> <b>Design / Building Permit (prior to final design approval), or</b> <i>Construction / Certificate of Occupancy (post construction completion)</i>		
Filing Contact	John Hurley	The HYM Investment Group, LLC	<a href="mailto:jhurley@hyminvestments.com">jhurley@hyminvestments.com</a> 617-248-8905
Is MEPA approval required	Yes/No		2/20/19

**A.3 - Project Team**

Owner / Developer:	BC One Congress Tower JV LLC
Architect:	CBT Architects, Pelli Clarke Pelli Architects
Engineer:	WSP
Sustainability / LEED:	The Green Engineer
Permitting:	N/A
Construction Management:	JMA

**A.3 - Project Description and Design Conditions**

List the principal Building Uses:	High Rise Office
List the First Floor Uses:	Retail (Restaurant, Café Kiosk); Base Building and Tenant Lobbies
List any Critical Site Infrastructure and or Building Uses:	generators, transformers, AHUs, and fire pump

**Site and Building:**

Site Area:	48,035 SF	Building Area:	988,791 SF
Building Height:	528 Ft	Building Height:	43 Stories
Existing Site Elevation – Low:	15.7 Ft BCB	Existing Site Elevation – High:	22.3 Ft BCB
Proposed Site Elevation – Low:	15.6 Ft BCB	Proposed Site Elevation – High:	19.9 Ft BCB
Proposed First Floor Elevation:	16.67 Ft BCB	Below grade levels:	1 Story

**Article 37 Green Building:**

LEED Version - Rating System :	LEED-CS v2009	LEED Certification:	Yes / No
--------------------------------	---------------	---------------------	----------

Proposed LEED rating: 

<del>Certified/Silver/ Gold/Platinum</del>
--

Proposed LEED point score: 

62 Pts.
---------

**Building Envelope**

When reporting R values, differentiate between R discontinuous and R continuous. For example, use “R13” to show R13 discontinuous and use R10c.i. to show R10 continuous. When reporting U value, report total assembly U value including supports and structural elements.

Roof:	R-30 c.i.	Exposed Floor:	(R)
Foundation Wall:	Uninsulated slurry wall	Slab Edge (at or below grade):	R-7

Vertical Above-grade Assemblies (%'s are of total vertical area and together should total 100%):

Area of Opaque Curtain Wall & Spandrel Assembly:	26.4%	Wall & Spandrel Assembly Value:	U-0.356
Area of Framed & Insulated / Standard Wall:	7.7%	Wall Value	R- 11.11 c.i.
Area of Vision Window:	65.9%	Window Glazing Assembly Value:	U-0.38
		Window Glazing SHGC:	0.29 (SHGC)
Area of Doors:	0.2%	Door Assembly Value:	U-0.40

**Energy Loads and Performance**

For this filing – describe how energy loads & performance were determined

*Energy modeling using eQuest v3.65. Baseline model was derived from ASHRAE90.1-2013 App. G with MA amendments.*

Annual Electric:	8,745,998 (kWh)	Peak Electric:	3,200 (kW)
Annual Heating:	12,077 (MMbtu)	Peak Heating:	14.8 (MMbtu/hr)
Annual Cooling:	22,460 (Tons-hrs)	Peak Cooling:	1,469 (Tons)
Energy Use - Below ASHRAE 90.1 - 2013:	11.1 %	Have the local utilities reviewed the building energy performance?:	Not to date. Review is being coordinated/scheduled with the utilities
Energy Use - Below Mass. Code:	11.1 %	Energy Use Intensity:	38.0 (kBtu/SF)

**Back-up / Emergency Power System**

Electrical Generation Output:	1,500 (kW)	Number of Power Units:	One
System Type:	Combustion Engine	Fuel Source:	Diesel

**Emergency and Critical System Loads** (in the event of a service interruption)

Electric:	1,200(kW)	Heating:	0(MMbtu/hr)
		Cooling:	5 (Tons)

---

## B – Greenhouse Gas Reduction and Net Zero / Net Positive Carbon Building Performance

Reducing GHG emissions is critical to avoiding more extreme climate change conditions. To achieve the City's goal of carbon neutrality by 2050 new buildings performance will need to progressively improve to net carbon zero and positive.

### B.1 – GHG Emissions - Design Conditions

For this Filing - Annual Building GHG Emissions: 6,243 (Tons)

For this filing - describe how building energy performance has been integrated into project planning, design, and engineering and any supporting analysis or modeling:

The project utilized energy modeling early in the design phase to help guide the design of the building envelope and HVAC system to increase building energy performance. The project team will continue to update the energy modeling as the design progress to further energy performance.

Describe building specific passive energy efficiency measures including orientation, massing, envelop, and systems:

It is expected that premium motors will be used in the mechanical, electrical, and plumbing systems.  
Destination dispatch elevator control system and premium motors will be utilized.  
Energy Recovery has been included to incorporate energy and waste-heat savings.  
Occupancy sensors will be applied throughout the building  
Daylighting controls are expected to be used where feasible  
High performance fixtures such as LED (light emitting diodes) will be installed throughout the project  
Lighting controls will enable controllability and energy savings throughout the residence  
Energy Star appliance will be specified where applicable  
HVAC equipment will be design to maximize efficiency and exceed code standard

Describe building specific active energy efficiency measures including equipment, controls, fixtures, and systems:

The HVAC design for the building is based upon an active chilled beam system, energy recovery systems along with a fully automated building control system to optimize system performance. High efficient chilled water and hot water plant, LED lighting and plumbing fixtures will also be utilized

Describe building specific load reduction strategies including on-site renewable, clean, and energy storage systems:

Currently, these systems are being reviewed for inclusion into the design. Further analysis will be performed as the project and budget progress.

Describe any area or district scale emission reduction strategies including renewable energy, central energy plants, distributed energy systems, and smart grid infrastructure:

The team did not utilize a plant outside of the building beyond electricity from the available grid. Should the grid become a smart grid, the building will be enabled to adapt to that technology.

Describe any energy efficiency assistance or support provided or to be provided to the project:

Both WSP Energy Group and The Green Engineer have been brought on board to analyze and provide continued support to the design team during the development of the building design. The team will also be meeting with Eversource and National Grid to determine and finalize the options for rebates and incentives for technologies and controls in the building.

**B.2 - GHG Reduction - Adaptation Strategies**

Describe how the building and its systems will evolve to further reduce GHG emissions and achieve annual carbon net zero and net positive performance (e.g. added efficiency measures, renewable energy, energy storage, etc.) and the timeline for meeting that goal (by 2050):

The current systems are reliant on an efficient form of electricity from the grid, which is has reduced its emissions by more than 15% over the past 5 years. This trend is likely to continue with regulations.

**C - Extreme Heat Events**

Annual average temperature in Boston increased by about 2 °F in the past hundred years and will continue to rise due to climate change. By the end of the century, the average annual temperature could be 56° (compared to 46° now) and the number of days above 90° (currently about 10 a year) could rise to 90.

**C.1 - Extreme Heat - Design Conditions**

Temperature Range - Low:	7 Deg.	Temperature Range - High:	91 Deg.
Annual Heating Degree Days:	5641	Annual Cooling Degree Days	2897
What Extreme Heat Event characteristics will be / have been used for project planning			
Days - Above 90°:	9	Days - Above 100°:	0
Number of Heatwaves / Year:	10	Average Duration of Heatwave (Days):	3

Describe all building and site measures to reduce heat-island effect at the site and in the surrounding area:

The Project will include high-albedo roof materials, new street trees and other landscaping to minimize the heat island effect. In addition, a roof deck is being planned which will include additional landscaped areas.

**C.2 - Extreme Heat - Adaptation Strategies**

Describe how the building and its systems will be adapted to efficiently manage future higher average temperatures, higher extreme temperatures, additional annual heatwaves, and longer heatwaves:

The building will include high performance heating, cooling, and ventilation, lighting controls, building system controls, healthy/resilient materials, and energy recovery.

Describe all mechanical and non-mechanical strategies that will support building functionality and use during extended interruptions of utility services and infrastructure including proposed and future adaptations:

The building will be provided with emergency generator sized for life safety systems. In the event of an extended utility service interruption, it is anticipated that the building will be closed.

---

## D - Extreme Precipitation Events

From 1958 to 2010, there was a 70 percent increase in the amount of precipitation that fell on the days with the heaviest precipitation. Currently, the 10-Year, 24-Hour Design Storm precipitation level is 5.25". There is a significant probability that this will increase to at least 6" by the end of the century. Additionally, fewer, larger storms are likely to be accompanied by more frequent droughts.

### D.1 – Extreme Precipitation - Design Conditions

10 Year, 24 Hour Design Storm:

Describe all building and site measures for reducing storm water run-off:

The proposed infiltration system will help reduce storm water. The infiltration system is composed of a stormwater tank located inside the building and a subsurface perimeter infiltration trench located around the building perimeter. The project is also considering to provide new landscaped areas and a permeable paver strip along portions of the sidewalk. Additionally, a reclaim strategy for irrigation of the green roof on level 11 that would draw from water recharge tank.

### D.2 - Extreme Precipitation - Adaptation Strategies

Describe how site and building systems will be adapted to efficiently accommodate future more significant rain events (e.g. rainwater harvesting, on-site storm water retention, bio swales, green roofs):

The proposed infiltration system as well as proposed landscaped areas will help reduce storm water run-off. The team is also incorporating a storm water reclaim strategy for irrigation of the green roof on Level 11 that would draw from the water recharge tank.

---

## E – Sea Level Rise and Storms

Under any plausible greenhouse gas emissions scenario, sea levels in Boston will continue to rise throughout the century. This will increase the number of buildings in Boston susceptible to coastal flooding and the likely frequency of flooding for those already in the floodplain.

Is any portion of the site in a FEMA SFHA?

What Zone:

Current FEMA SFHA Zone Base Flood Elevation:

Is any portion of the site in a BPDA Sea Level Rise - Flood Hazard Area? Use the online [BPDA SLR-FHA Mapping Tool](#) to assess the susceptibility of the project site.

---

***If you answered YES to either of the above questions, please complete the following questions. Otherwise you have completed the questionnaire; thank you!***

---

### E.1 – Sea Level Rise and Storms – Design Conditions

Proposed projects should identify immediate and future adaptation strategies for managing the flooding scenario represented on the BPDA Sea Level Rise - Flood Hazard Area (SLR-FHA) map, which depicts a modeled 1% annual chance coastal flood event with 40 inches of sea level rise (SLR). Use the online [BPDA SLR-FHA Mapping Tool](#) to identify the

highest Sea Level Rise - Base Flood Elevation for the site. The Sea Level Rise - Design Flood Elevation is determined by adding either 24" of freeboard for critical facilities and infrastructure and any ground floor residential units OR 12" of freeboard for other buildings and uses.

Sea Level Rise - Base Flood Elevation:	18.0 Ft BCB		
Sea Level Rise - Design Flood Elevation:	19.0 Ft BCB	First Floor Elevation:	16.67 Ft BCB
Site Elevations at Building:	15.7 Ft BCB	Accessible Route Elevation:	16.67 Ft BCB

Describe site design strategies for adapting to sea level rise including building access during flood events, elevated site areas, hard and soft barriers, wave / velocity breaks, storm water systems, utility services, etc.:

The proposed infiltration system will help mitigate storm water systems.

Describe how the proposed Building Design Flood Elevation will be achieved including dry / wet flood proofing, critical systems protection, utility service protection, temporary flood barriers, waste and drain water back flow prevention, etc.:

The Building design has a dry flood-proofing strategy using aqua fence that is stored on-site in the basement; critical systems are located on upper floors above the flood level, including generators, transformers, AHUs, and fire pump. Two (2) MPOE rooms, dry sprinkler room, and building security room are all located above flood level. Backwater valves will be provided on the stormwater inlet to the storage tank. The tank will be sealed; there will not be a backwater valve on the outfall from the storage tank.

Describe how occupants might shelter in place during a flooding event including any emergency power, water, and waste water provisions and the expected availability of any such measures:

There is access from the building to Bowker Street, should a flood event occur. Bowker Street is above flood levels.

Describe any strategies that would support rapid recovery after a weather event:

Rapid recovery is expected based upon the above strategies and given that the design uses a dry waterproofing strategy.

### E.2 – Sea Level Rise and Storms – Adaptation Strategies

Describe future site design and or infrastructure adaptation strategies for responding to sea level rise including future elevating of site areas and access routes, barriers, wave / velocity breaks, storm water systems, utility services, etc.:

The Building design has a dry flood-proofing strategy using aqua fence that is stored on-site in the basement; critical systems are located on upper floors above the flood level, including generators, transformers, AHUs, and fire pump. Two (2) MPOE rooms, dry sprinkler room, and building security room are all located above flood level. Backwater valves will be provided on the stormwater inlet to the storage tank.

Describe future building adaptation strategies for raising the Sea Level Rise Design Flood Elevation and further protecting critical systems, including permanent and temporary measures:

In the future, based on ample shaft space design, it would be possible to raise the first floor elevator lobby floor areas that are currently set at 16.67' to a higher elevation. First floor elevation could be adjusted inside to meet this new elevation.

A pdf and word version of the Climate Resiliency Checklist is provided for informational use and off-line preparation of a project submission. **NOTE: Project filings should be prepared and submitted using the online [Climate Resiliency Checklist](#).**

For questions or comments about this checklist or Climate Change best practices, please contact:  
[John.Dalzell@boston.gov](mailto:John.Dalzell@boston.gov)



# Site Plans

Issued for	Notice of Intent Filing
Date Issued	February 5, 2019
Latest Issue	February 5, 2019



99 High Street  
Boston, MA 02110  
617.728.7777

**Architect:**

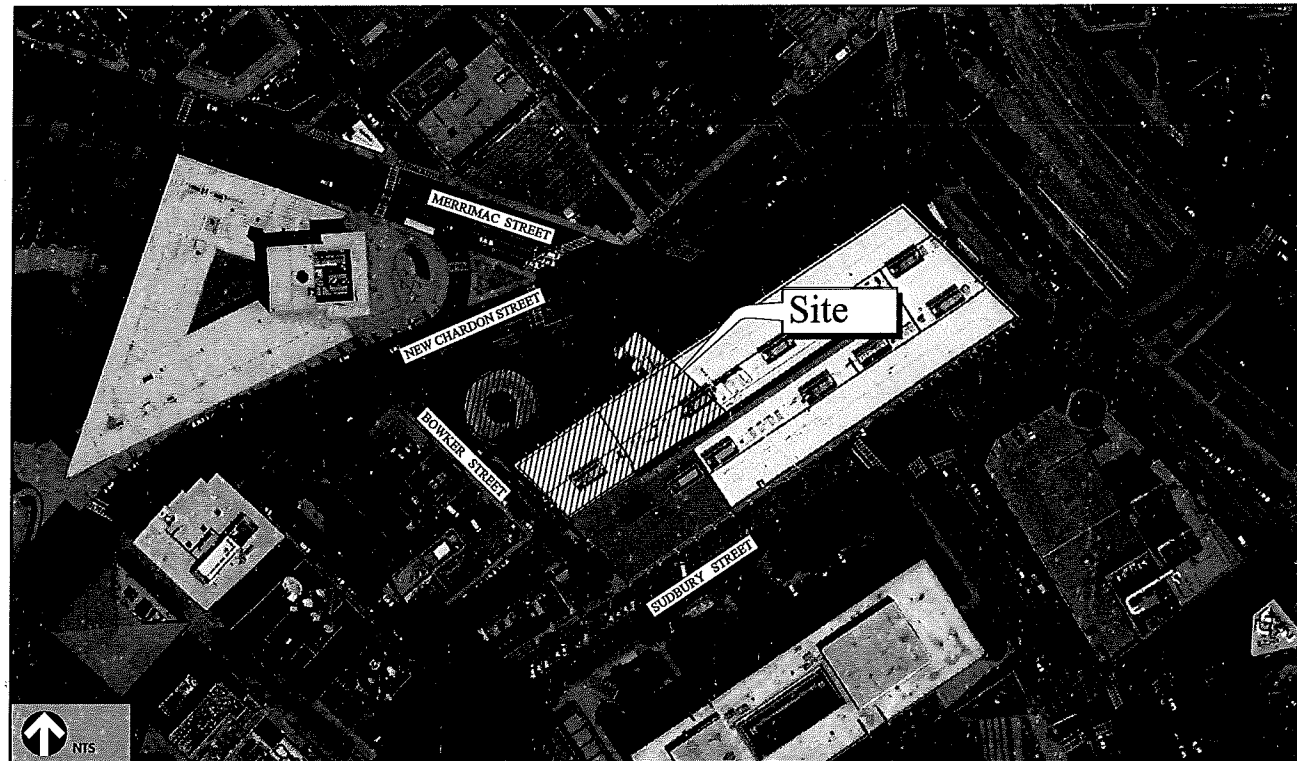
CBT  
110 Canal Street  
Boston, MA 02114  
617-262-4354

**Surveyor:**

Vanasse Hangen Brustlin, Inc.  
101 Walnut Street  
Watertown, MA 02471  
617-924-1770

**Civil Engineer:**

Vanasse Hangen Brustlin, Inc.  
99 High Street  
10th Floor  
Boston, MA 02110  
617-728-7777



**Owner**

BC One Congress Tower JV LLC  
c/o The HYM Investment Group  
1 Congress Street  
Boston, MA 02114

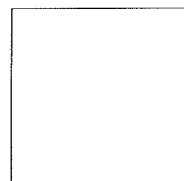
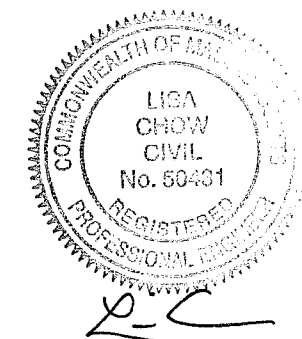
**Applicant**

BC One Congress Tower JV LLC  
c/o The HYM Investment Group  
1 Congress Street  
Boston, MA 02114

**Assessor's Parcel Number: 0302700000**

No.	Drawing Title	Latest Issue
C 100	Legend And General Notes	February 5, 2019
C 200	Layout and Materials Plan	February 5, 2019
C 300	Grading and Drainage Plan	February 5, 2019
C 400	Utility Plan	February 5, 2019
C 500	Erosion and Sediment Control Plan	February 5, 2019
C 600	Site & Utility Details	February 5, 2019
C 700	Site & Utility Details	February 5, 2019

Reference Drawings		
No.	Drawing Title	Latest Issue
Sv-1	Existing Conditions Plan of Land	September 20, 2018



VHB Project:  
Issued for:



101 Walnut Street  
PO Box 9151  
Watertown, MA 02471  
617.924.1770

Legend

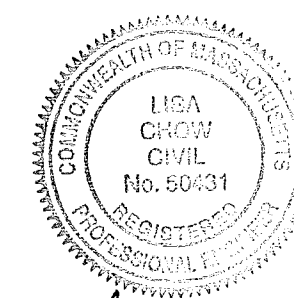
Legend table with columns: Exist., Prop., Description, and symbols for various site features like property lines, easements, parking, and utilities.

Abbreviations

Abbreviations table with columns: General and Utility, listing symbols for items like concrete, drainage, and manholes.

Notes

- Notes section containing: General, Layout and Materials, Demolition, Erosion Control, Existing Conditions Information, and Document Use.



One Congress Office Tower

One Congress Street  
Boston, Massachusetts

Revision table with columns: No., Revision, Date, Appr.

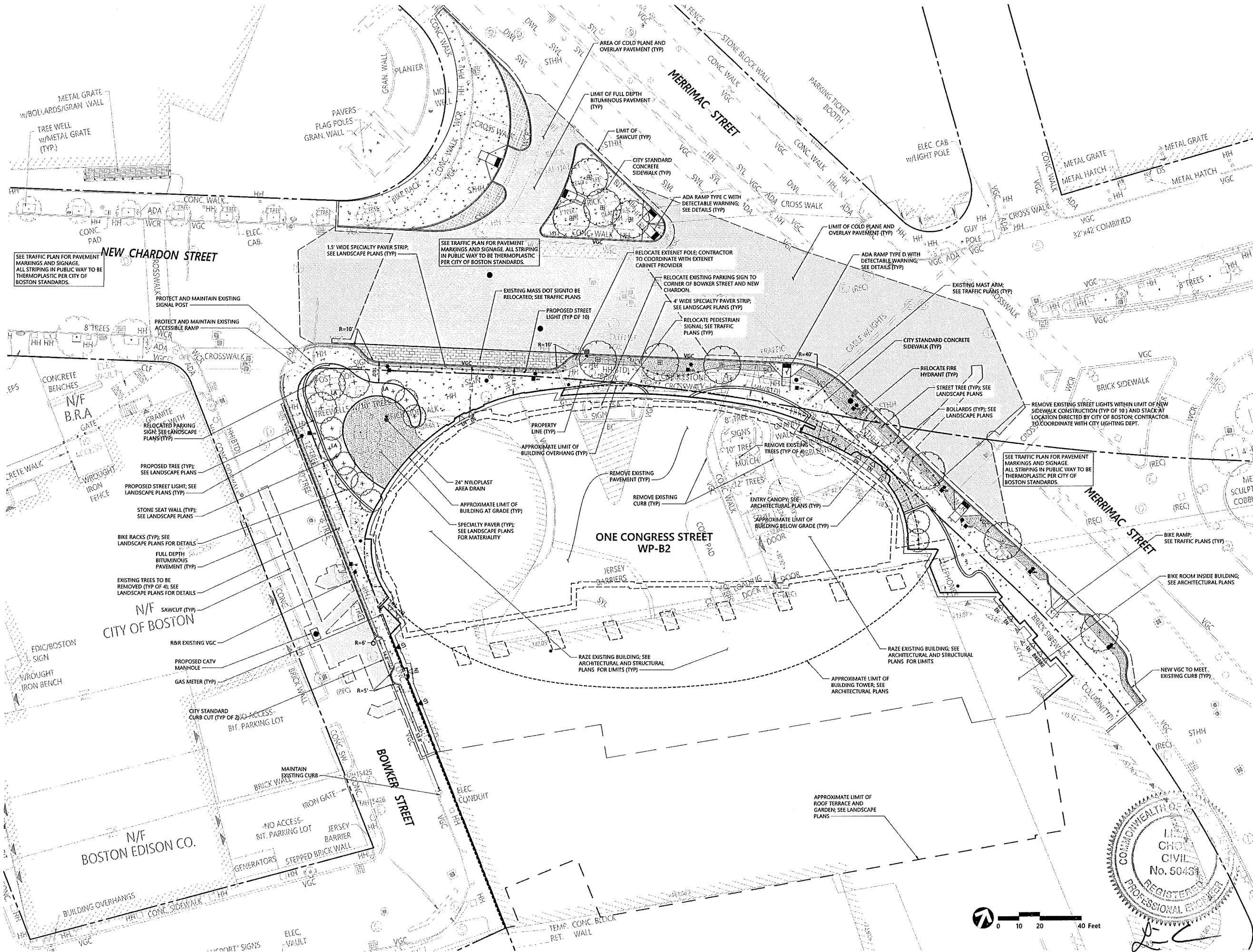
Notice of Intent  
Submission  
Not Approved for Construction

LEGEND AND  
GENERAL NOTES

C 100

Sheet 1 of 7

Project Number  
11679.01



SEE TRAFFIC PLAN FOR PAVEMENT MARKINGS AND SIGNAGE. ALL STRIPING IN PUBLIC WAY TO BE THERMOPLASTIC PER CITY OF BOSTON STANDARDS.

SEE TRAFFIC PLAN FOR PAVEMENT MARKINGS AND SIGNAGE. ALL STRIPING IN PUBLIC WAY TO BE THERMOPLASTIC PER CITY OF BOSTON STANDARDS.

SEE TRAFFIC PLAN FOR PAVEMENT MARKINGS AND SIGNAGE. ALL STRIPING IN PUBLIC WAY TO BE THERMOPLASTIC PER CITY OF BOSTON STANDARDS.

### One Congress Office Tower

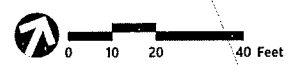
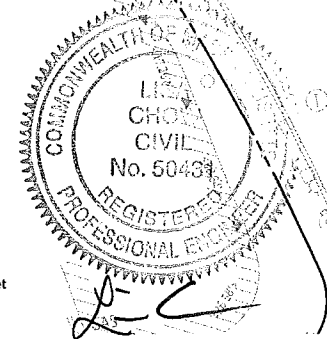
One Congress Street  
Boston, Massachusetts

No.	Revision	Date	Appr.

Prepared by: \_\_\_\_\_ Checked by: \_\_\_\_\_  
Issued for: \_\_\_\_\_ Date: \_\_\_\_\_

Notice of Intent  
Submission  
Not Approved for Construction

**LAYOUT AND MATERIAL PLAN**



# C 200

Sheet 2 of 7

Project Number  
11679.01

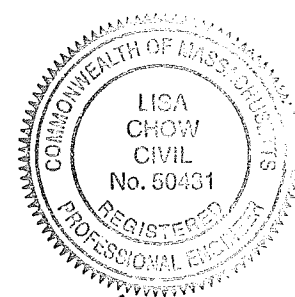
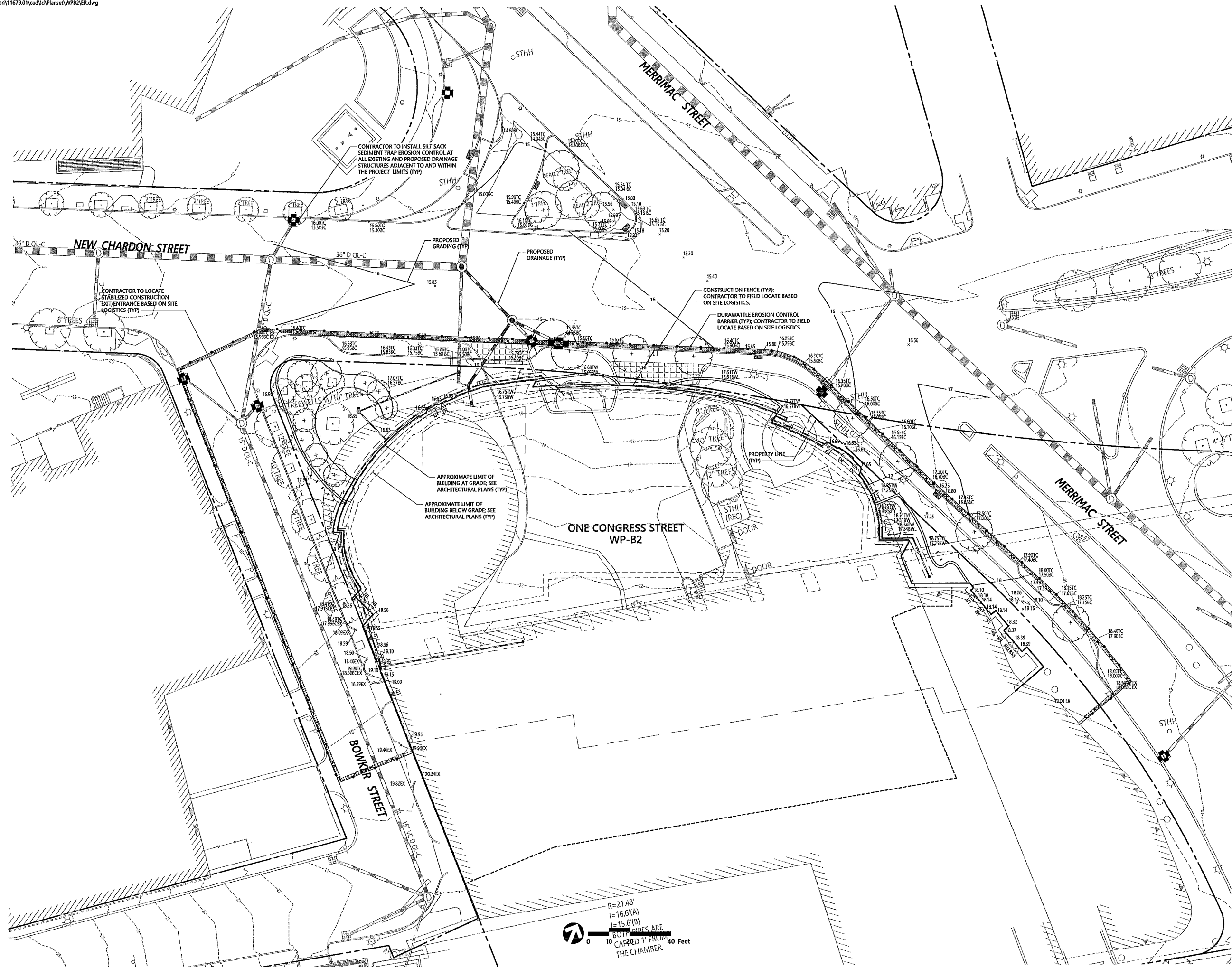








101 Walnut Street  
PO Box 9151  
Watertown, MA 02471  
617.924.1770



*L.C.*

### One Congress Office Tower

One Congress Street  
Boston, Massachusetts

No.	Revision	Date	Appr.

Designed by: \_\_\_\_\_ Checked by: \_\_\_\_\_  
Issued for: \_\_\_\_\_ Date: Feb. 5, 2019

Notice of Intent  
Submission  
Not Approved for Construction

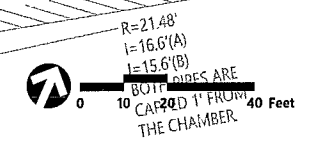
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Drawing Number

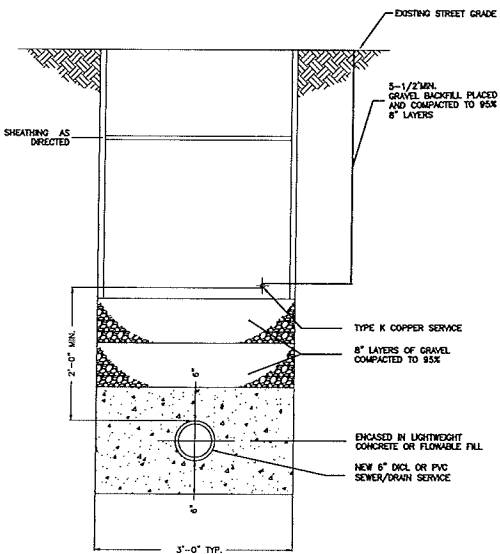
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Sheet 5 of 7

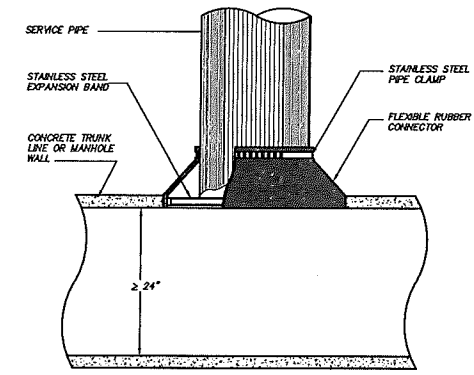
Project Number  
11679.01



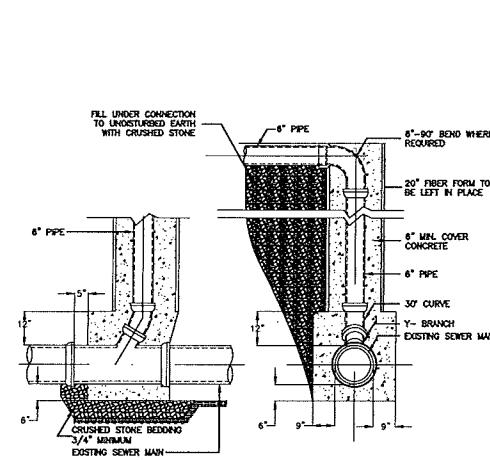




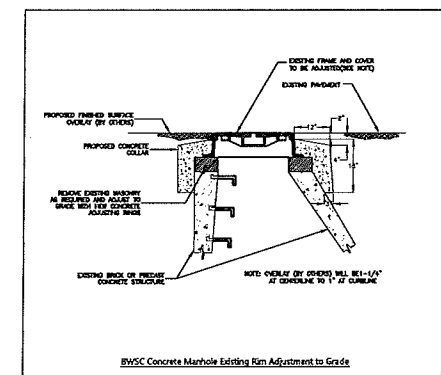
**BWSC - Common Utility Trench**  
N.T.S. Source: BWSC B-10



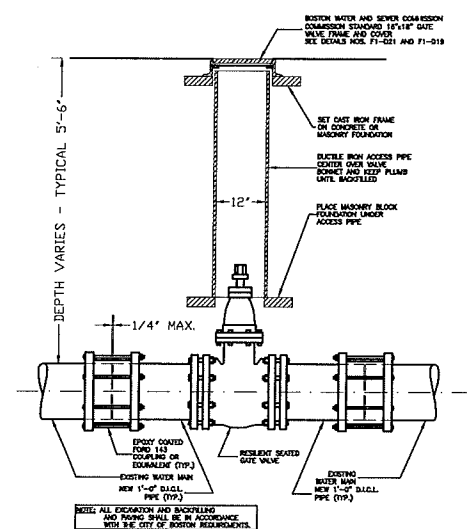
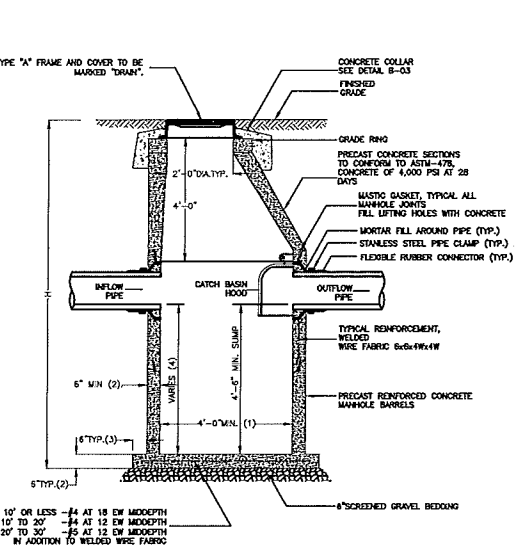
**BWSC Typical Field Connection to Concrete Manhole**  
N.T.S. Source: BWSC B-21



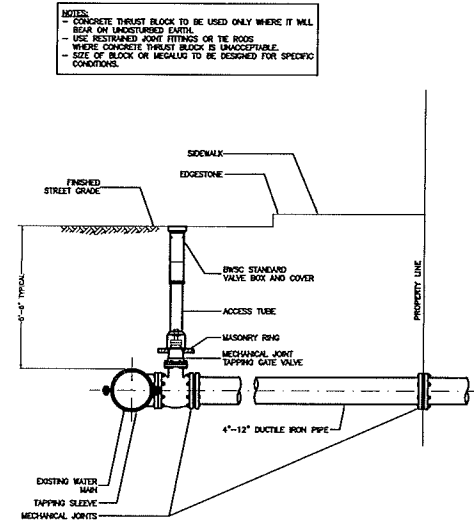
**BWSC - Typical Sewer/Drain Chimney Connection**  
N.T.S. Source: BWSC B-15



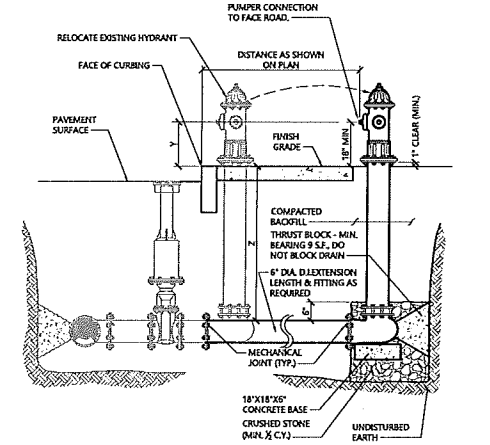
**BWSC - Typical Drain Sump Manhole and Existing Rim Adjustment to Grade**  
N.T.S. Source: BWSC B-07, B-03



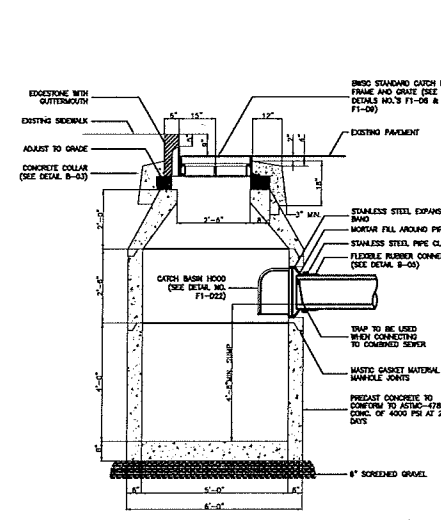
**BWSC - Typical Gate Valve Installation**  
N.T.S. Source: BWSC A-19B



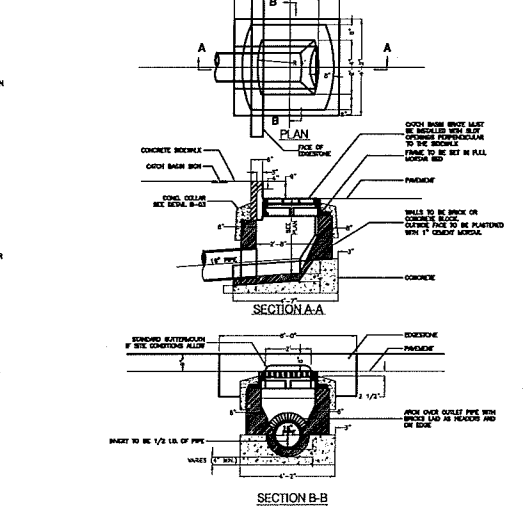
**Typ. Tapping Sleeve and Gate Valve Water Connection**  
N.T.S. Source: BWSC A-09



**Hydrant Relocation Detail**  
N.T.S. Source: VHB LD\_251



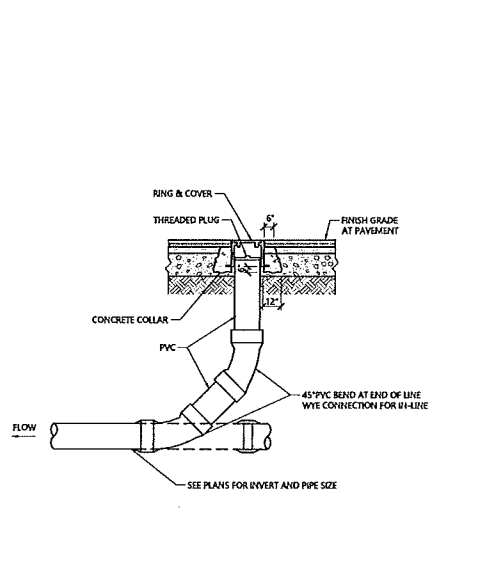
**BWSC Standard Catch Basin No. 5**  
N.T.S. Source: BWSC B-01



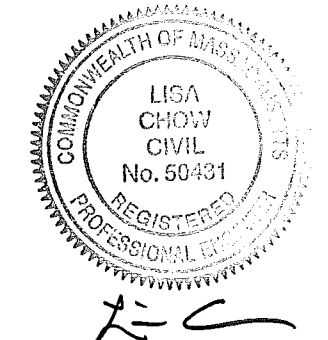
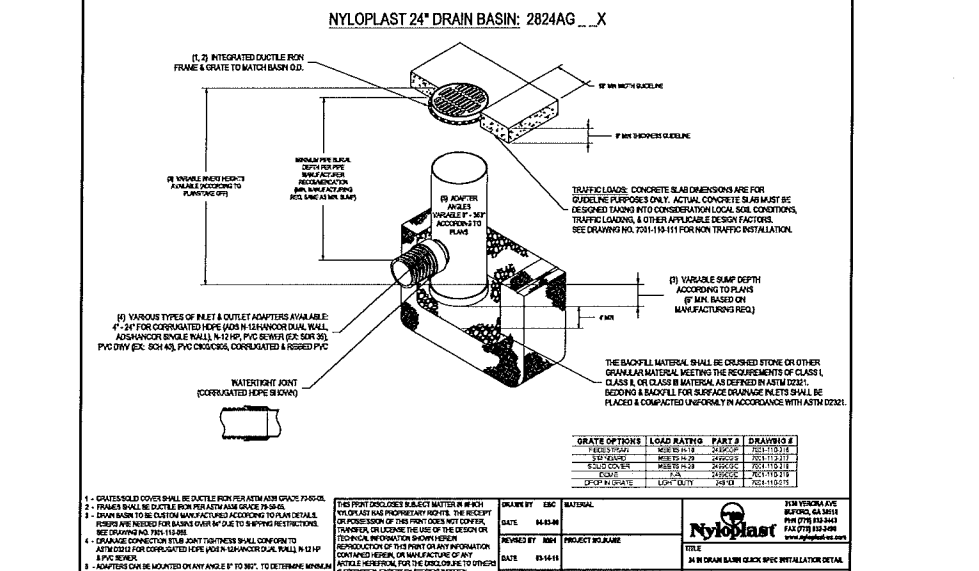
**BWSC - Typical Drop Inlet**  
N.T.S. Source: BWSC B-01E



**Cleanout - Paved Area**  
N.T.S. Source: VHB LD\_303



**Nyloplast 24 inch Drain**  
N.T.S. Source: Nyloplast



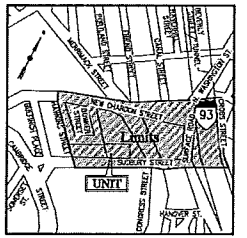
**One Congress Office Tower**  
One Congress Street  
Boston, Massachusetts

No.	Revision	Date	Appr.

Designed by: \_\_\_\_\_ Checked by: \_\_\_\_\_  
Issued for: \_\_\_\_\_ Date: Feb. 5, 2019  
**Notice of Intent**  
Submission  
Not Approved for Construction  
**SITE & UTILITY**  
**DETAILS**

Drawing Number: **C 700**  
Sheet of 7  
Project Number: 11673.01





Locus Map

Legend

- GRAY MANHOLE
- SEWER MANHOLE
- ELECTRIC MANHOLE
- TELEPHONE/TELEPORT MANHOLE
- WATER GATES
- FIRE HYDRANT
- GAS GATE
- STREET SIGN
- LIGHT POLE
- UTILITY POLE
- GUY WIRE
- GUY POLE
- FIRST FLOOR ELEVATION MONITORING WELL
- EDGE OF PAVEMENT
- CONCRETE CURB
- VERTICAL GRANITE CURB
- SLOPED GRANITE EDGE
- BITUMINOUS BERM
- GRASS RAIL
- CHAIN LINK FENCE
- DRAINAGE LINE
- SEWER LINE
- OVERHEAD WIRE
- UNDERGROUND ELECTRIC
- UNDERGROUND ELECTRIC PTC
- TELEPHONE LINE
- GAS LINE
- WATER LINE
- TELEPORT LINE
- WESTERN UNION LINE
- GROUND WATER EQUILIBRATION LINE
- STEAM LINE
- FUEL LINE
- FIBER OPTIC LINE

Government Center Garage

Sudbury Street  
Boston, Massachusetts

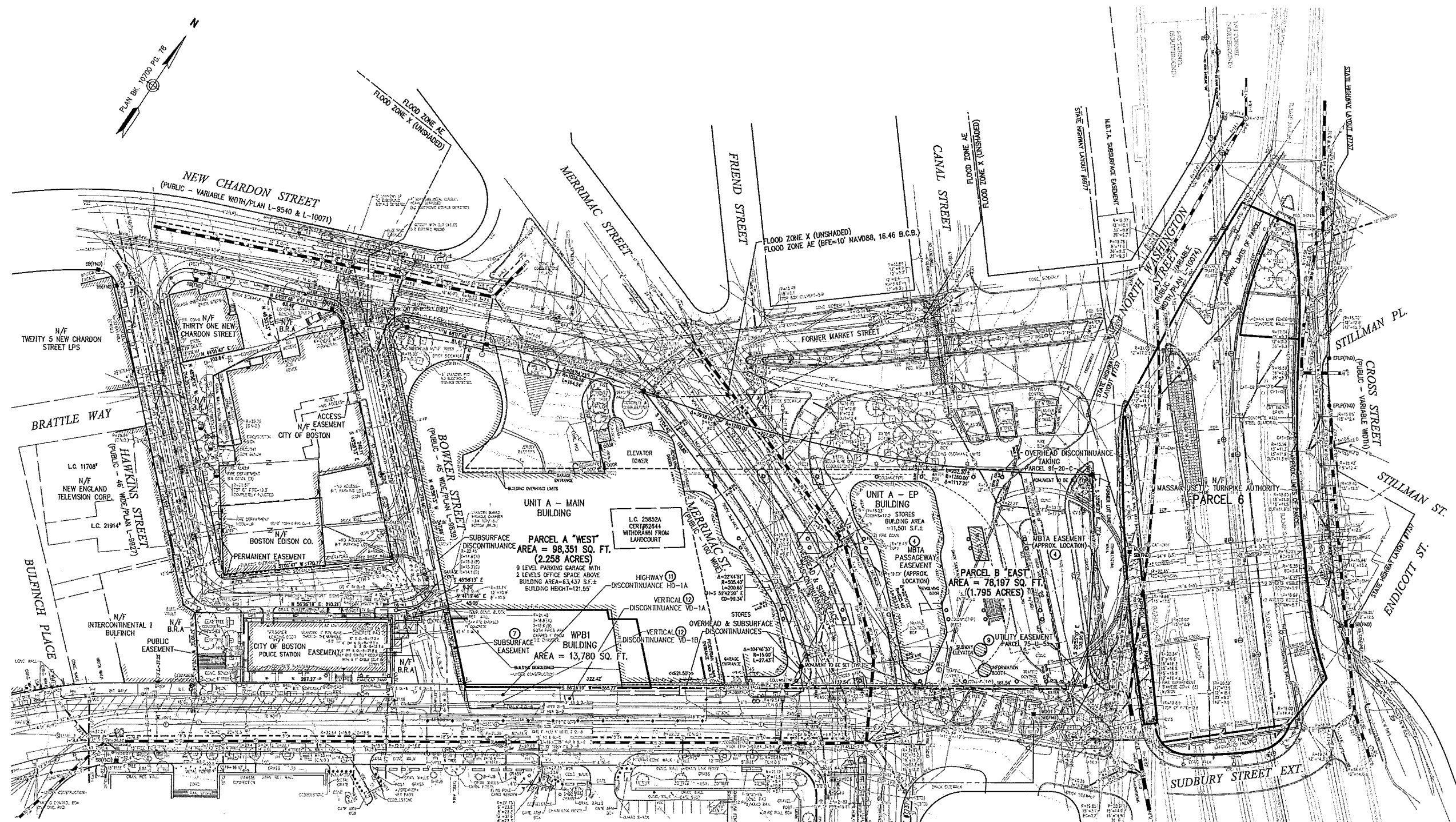
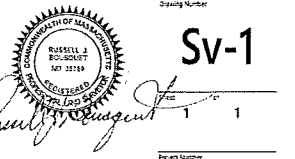
No.	Revision	Date	Author

Designed by: \_\_\_\_\_  
Checked by: \_\_\_\_\_  
Date: \_\_\_\_\_  
Scale: \_\_\_\_\_

Existing Conditions  
Plan of Land

CITY OF BOSTON ENGINEERING PLANS:  
PLAN NO. L-9259 SUDBURY STREET  
PLAN NO. L-9532 SUDBURY STREET  
PLAN NO. L-9540 NEW CHARDON STREET  
PLAN NO. L-9570 NEW CONGRESS STREET  
PLAN NO. L-9549 BOWKER STREET  
PLAN NO. L-9927 HAWKINS STREET  
PLAN NO. L-10071 NEW CHARDON STREET  
PLAN NO. L-10074 NORTH WASHINGTON STREET  
PLAN NO. L-10245 SUDBURY STREET

MASSACHUSETTS HIGHWAY DEPARTMENT PLANS:  
LAYOUT 6977  
LAYOUT 7244  
LAYOUT 7737



SUDBURY STREET  
(PUBLIC - 80' WIDE/PLAN L-9259 & L-9532)  
(A/K/A NEW SUDBURY STREET)

General Notes

- 1) THE PROPERTY LINES SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL FIELD SURVEY CONDUCTED BY VANASSE HANGEN BRUSTLIN, INC. IN JANUARY 2007 AND FROM DEEDS AND PLANS OF RECORD.
- 2) THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY VANASSE HANGEN BRUSTLIN, INC. IN JANUARY 2007 AND ADDITIONAL SURVEY COMPLETED IN APRIL 2008, UPDATES TO SUDBURY STREET IN MAY & JULY 2016 AND ADDITIONAL SURVEY COMPLETED IN OCTOBER, 2017.
- 3) AS-BUILT OF THE GREEN LINE TUNNEL WALLS WAS PERFORMED BY VANASSE HANGEN BRUSTLIN, INC. IN DECEMBER 2011.
- 4) THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE BASED ON FIELD OBSERVATIONS AND INFORMATION OF RECORD. THEY ARE NOT WARRANTED TO BE EXACTLY LOCATED NOR IS IT WARRANTED THAT ALL UNDERGROUND UTILITIES OR OTHER STRUCTURES ARE SHOWN ON THIS PLAN.
- 5) ELEVATIONS REFER TO BOSTON CITY BASE.
- 6) THE SITE LIES PARTIALLY WITHIN ZONE X (UNSHADED) (AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) & PARTIALLY WITHIN ZONE AE (BFE=10' AREA WITHIN THE 1% ANNUAL FLOODPLAIN) AS SHOWN ON THE FLOOD INSURANCE RATE MAP FOR THE CITY OF BOSTON, MASSACHUSETTS COUNTY PANEL NUMBER 22025C 0081J (MAP#22025C0081J), EFFECTIVE DATE MARCH 16, 2016. THE REFERENCED MAP IS THE CURRENT MAP FOR THE COMMUNITY IN WHICH THE PROPERTY IS LOCATED. THE FLOOD LINE SHOWN ON THIS PLAN WAS DOWNLOADED FROM FEMA FLOOD MAP SERVICE CENTER WEBSITE. ZONE AE LIMITS SHOWN ON THE PLAN DO NOT AFFECT THE WPB1 BUILDING UNIT (TABLE A - ITEM 3)
- 7) THE SITE FALLS ENTIRELY WITHIN PLANNED DEVELOPMENT AREA NO. 96 WITH AN UNDERLYING ZONE OF GOVERNMENT CENTER/MARKET DISTRICT, ALSO WITHIN THE RESTRICTED PARKING OVERLAY DISTRICT AND A PORTION WITHIN THE GREENWAY OVERLAY DISTRICT. DIMENSIONAL REQUIREMENTS PER REPORT:  
MINIMUM FRONT YARD SETBACK \_\_\_\_\_ NONE  
MINIMUM SIDE YARD SETBACK \_\_\_\_\_ NONE  
MINIMUM REAR YARD SETBACK \_\_\_\_\_ NONE  
MAXIMUM BUILDING STORIES \_\_\_\_\_ 11 STORIES  
MAXIMUM FAR \_\_\_\_\_ 11.0  
REQUIRED PARKING SPACES \_\_\_\_\_ NONE
- 8) THE UTILITY INVERT ELEVATIONS ARE LISTED IN A CLOCKWISE DIRECTION WITH THE OUTLET ELEVATION LAST.
- 9) AS-BUILT UTILITY INFORMATION FOR THE CENTRAL ARTERY UNDER CONTRACT C15A1, C15A2, C17A8 & MAJID SUPPLIED ELECTRONICALLY BY CA/T PRODUCT (MASSDOT).
- 10) THE LOCATION OF THE I-93 TUNNELS ARE BASED UPON ELECTRONIC FILES SUPPLIED BY THE CA/T PROJECT (MASSDOT) ARE APPROXIMATE AND HAVE NOT BEEN FIELD VERIFIED BY VANASSE HANGEN BRUSTLIN, INC.
- 11) THE TREE SYMBOL OUTLINE SHOWN ON THIS PLAN DOES NOT REPRESENT THE ACTUAL TREE CANOPY.
- 12) A PARCEL OF FORMERLY REGISTERED LAND INCLUDED WITHIN LOCUS PARCEL AND SHOWN ON LAND COURT PLAN 25852A, WAS WITHDRAWN FROM THE LAND REGISTRATION SYSTEM IN ACCORDANCE WITH M.G.L. CHAPTER 185, SECTION 52, AS AMENDED THROUGH CHAPTER 287 OF THE ACTS OF 2014, BY ORDER OF THE LAND COURT RECORDED WITH THE SUFFOLK COUNTY REGISTRY OF DEEDS IN BOOK 57674, PAGE 17 AND FILED WITH THE SUFFOLK COUNTY REGISTRY DISTRICT OF THE LAND COURT AS DOCUMENT NO. 867855.

Current Owner

BULFINCH WPB1 OWNER LLC  
UNIT DEED BK. 57965 PG. 122

BULFINCH CROSSING PRIMARY CONDOMINIUM  
MASTER DEED BK 57965 PG. 1

BULFINCH CONGRESS HOLDINGS LLC  
50 SUDBURY STREET (AKA 1 CONGRESS STREET)  
WARD 63 ASSESSORS PARCEL 2700  
DEED BOOK 41361, PAGE 316  
CERT# 733862 (WITHDRAWN FROM LAND COURT)

Plan References

- SUFFOLK COUNTY REGISTRY OF DEEDS PLANS:
- BK. 7600 PG. 3
  - BK. 7728 PG. 131
  - BK. 7876 PG. 446
  - BK. 7932 PG. 350
  - BK. 7976 PG. 25
  - BK. 7976 PG. 43
  - BK. 8269 PG. 685
  - BK. 8170 PG. 442
  - BK. 8170 PG. 476
  - BK. 8115 PG. 618
  - BK. 8287 PG. 696
  - BK. 8404 PG. 444
  - BK. 8500 PG. 438
  - BK. 10700 PG. 78
  - BK. 10988 PG. 142 & 143
  - BK. 10988 PG. 144 & 146
  - BK. 12190 PG. 303
  - BK. 14536 PG. 242
  - BK. 20311 PG. 183
  - BK. 21391 PG. 112
  - BK. 24122 PG. 142
  - BK. 29507 PG. 293
  - BK. 42021 PG. 16
  - BK. 42937 PG. 161
  - PLAN 85 & 86 OF 2017
  - PLAN 265 & 266 OF 2017



I=8.5' 30" PIPE (P10)  
I=8.8' 10" PIPE (P12)  
I=8.6' 36" PIPE (P7)  
I=11.6' 15" PIPE (P13)

I=7.0' 36" PIPE (P200)  
I=7.0' 36" PIPE (P201)  
R=14.48'  
(P8) FULL OF SILT=8.3'  
I=7.0' 36" PIPE (P200)  
R=14.14'  
I=10.3' 12" DI (P206)

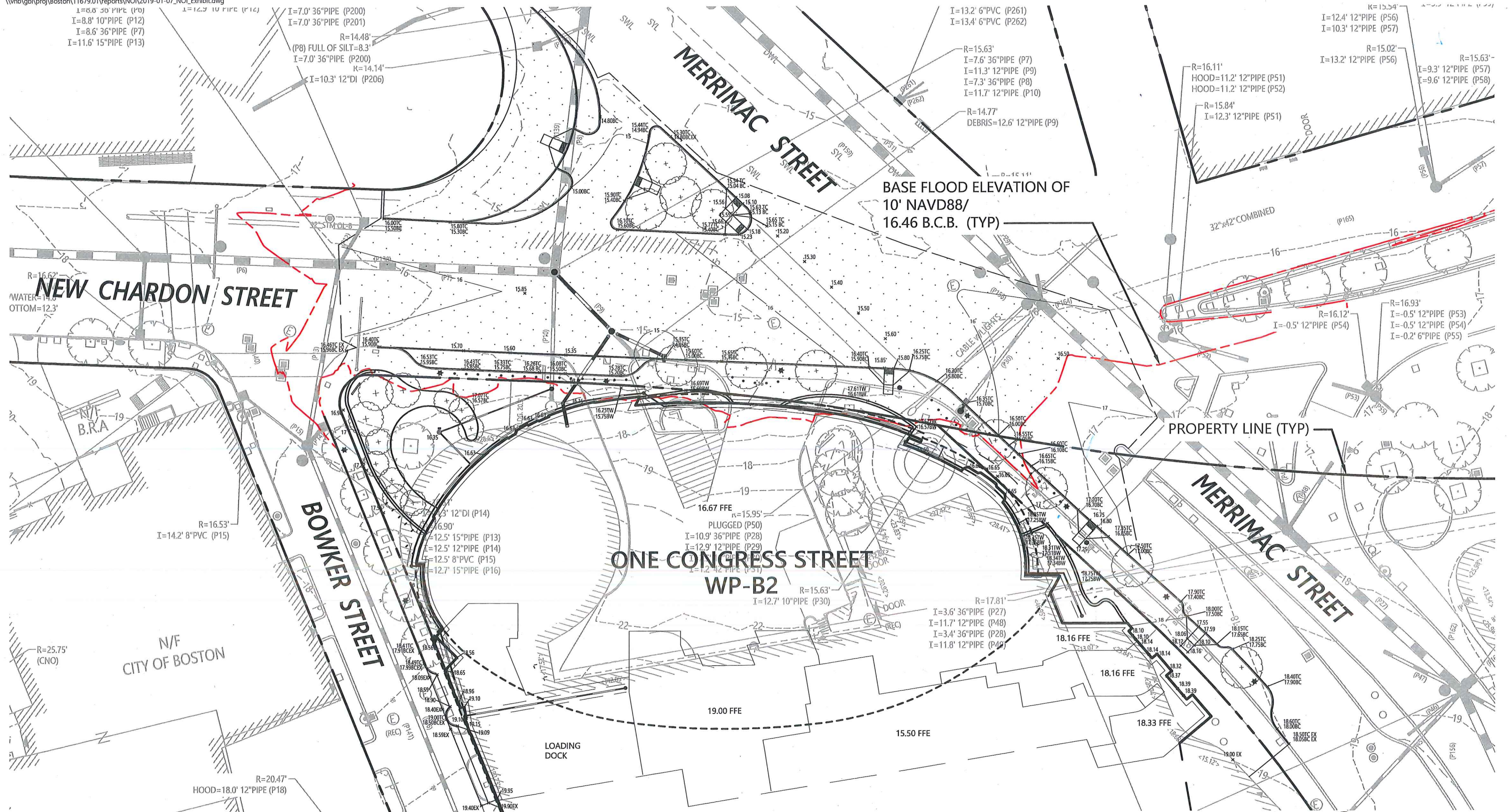
I=13.2' 6" PVC (P261)  
I=13.4' 6" PVC (P262)  
R=15.63'  
I=7.6' 36" PIPE (P7)  
I=11.3' 12" PIPE (P9)  
I=7.3' 36" PIPE (P8)  
I=11.7' 12" PIPE (P10)  
R=14.77'  
DEBRIS=12.6' 12" PIPE (P9)

K=15.54'  
I=12.4' 12" PIPE (P56)  
I=10.3' 12" PIPE (P57)  
R=15.02'  
I=13.2' 12" PIPE (P56)  
R=15.63'  
I=9.3' 12" PIPE (P57)  
I=9.6' 12" PIPE (P58)

R=16.11'  
HOOD=11.2' 12" PIPE (P51)  
HOOD=11.2' 12" PIPE (P52)  
R=15.84'  
I=12.3' 12" PIPE (P51)

BASE FLOOD ELEVATION OF  
10' NAVD88/  
16.46 B.C.B. (TYP)

PROPERTY LINE (TYP)



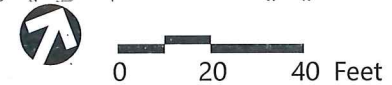
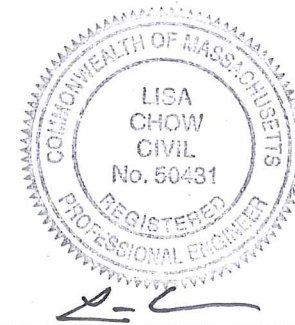
# Exhibit 1: Site Plan

## One Congress Office Tower

### One Congress Street, Boston MA

#### GENERAL NOTE:

1. BASE FLOOD ELEVATION OF 10' NAVD 88 (16.46 B.C.B.) IS PER THE FLOOD INSURANCE RATE MAP FOR THE CITY OF BOSTON, MASSACHUSETTS COMMUNITY PANEL NUMBER 25025C 0081J (MAP#25025C0081J), EFFECTIVE DATE MARCH 16, 2016.
2. FINISHED FLOOR ELEVATIONS (FFE) SHOWN ON THIS EXHIBIT INDICATES CURRENTLY PROPOSED FIRST FLOOR ELEVATIONS PROVIDED BY CBT ARCHITECTS.







February 20, 2019

Boston Conservation Commission  
One City Hall Square  
Boston, MA 02201

Re: **Affidavit, Notice to Abutters of One Congress Street**  
Redevelopment of the Government Center Garage – WP-B2 Office Building  
One Congress Street, Boston, Massachusetts

Dear Commissioners:

As the Applicant on behalf of BC One Congress Tower JV LLC, I, Thomas O'Brien, of The HYM Investment Group, LLC ("HYM"), certify that the abutters of 1 Congress Street in Boston, Massachusetts, were notified that a Notice of Intent ("NOI") with the Boston Conservation Commission was filed by BC One Congress Tower JV LLC for the redevelopment project at Bulfinch Crossing, WP-B2 Office Building at One Congress Street, on February 20, 2019.

Enclosed with this affidavit are a list of abutters notified, the notification letter, and a copy of the certified mail receipts.

Very truly yours,

A handwritten signature in blue ink, appearing to read "T. O'Brien", written over a blue horizontal line.

Thomas O'Brien  
Managing Partner  
The HYM Investment Group, LLC

Enclosure

**NOTIFICATION TO ABUTTERS UNDER THE  
MASSACHUSETTS WETLANDS PROTECTION ACT**

In accordance with the second paragraph of Massachusetts General Laws Chapter 131, Section 40, you are hereby notified of the following:

BC One Congress Tower JV LLC, has filed a Notice of Intent with the Boston Conservation Commission seeking permission to work in Areas Subject to Protection and Regulation under the Wetlands Protection Act.

This work is proposed at 1 Congress Street in Boston, Massachusetts. Work proposed under this Notice of Intent consists of the demolition of a portion of the existing parking garage structure, construction of the new office building and landscaped areas, installation of new utility services, excavation, reconstruction of the adjacent streetscape, roadway improvements to the adjacent public streets – New Chardon Street, Merrimac Street, and Bowker Street, and stormwater improvements.

Copies of the Notice of Intent may be examined at the Boston Conservation Commission office located at Boston City Hall. For more information, call the Boston Conservation Commission at (617) 635-3850. The Notice of Intent may also be examined at the offices of VHB by appointment. For more information, call Lisa Chow at (617) 607-2940.

Copies of the Notice of Intent may be obtained from the Boston Conservation Commission or by calling Amelia Croteau at (617) 635-4416. You may be charged for the cost of the copy.

Notice of the Public Hearing, including its date, time and place, will be published in a local newspaper at least 5 days in advance, and will be posted at Boston City Hall not less than 48 hours in advance of the Hearing.

You may also contact the Department of Environmental Protection Northeast Regional Office at (978) 694-3200 for more information about this application or the Wetlands Protection Act.



## Abutters List

Below is the generated Abutters List from the City of Boston Assessing Department.

PID	OWNER	ADDRESSEE	MLG_ADDRESS	MLG_CITYSTATE	MLG_ZIPCODE	LOC_ADDRESS	LOC_CITY	LOC_ZIPCODE
301686000	COMMONWEALTH OF MASS		115 CAMBRIDGE	BOSTON MA	2114	115 CAMBRIDGE ST	BOSTON	2114
301688000	COMMONWEALTH OF MASS		ONE ASHBURTON PL	BOSTON MA	2108	24 NEW CHARDON ST	BOSTON	2114
301626000	CITY OF BOSTON		NEW CHARDON	BOSTON MA	2114	NEW CHARDON ST	BOSTON	2114
301628000	BOSTON HAYMARKET ACQUISITIONS		8 BYRON ST	BOSTON MA	2108	158 FRIEND ST	BOSTON	2114
302573001	BOSTON PUBLIC MARKET		12 MARSHALL ST	BOSTON MA	2108	136 BLACKSTONE ST	BOSTON	2109
302573002	BOSTON PUBLIC MARKET		15 NEW SUDBURY	BOSTON MA	2114	15 NEW SUDBURY ST	BOSTON	2114
302605000	UNITED STATES OF AMERICA		HAWKINS	BOSTON MA	2114	HAWKINS ST	BOSTON	2114
302625000	BOSTON REDVLPMNT AUTH		BOWKER	BOSTON MA	2114	BOWKER ST	BOSTON	2114
302647000	CITY OF BOSTON		NEW CHARDON	BOSTON MA	2114	NEW CHARDON ST	BOSTON	2114
302700000	BOSTON REDEVLPMNT AUTH		ONE CONGRESS ST	BOSTON MA	2104	100 SUDBURY ST	BOSTON	2114
302573000	BULFINCH CORSSING PRIMARY	C/O HYM INVESTMENT GROUP LLC	136 BLACKSTONE ST	BOSTON MA	2109	136 BLACKSTONE ST	BOSTON	2109
302640000	MASSACHUSETTS TURNPIKE		PO BOX # 270	HARTFORD CT	6141	25 HAWKINS ST	BOSTON	2114
302642000	BOSTON EDISON CO MASS	NSTAR ELECTRIC CO PROP TAX	35 HAWKINS	BOSTON MA	2114	35 HAWKINS ST	BOSTON	2114
302644000	CITY OF BOSTON		40 NEW SUDBURY	BOSTON MA	2114	40 NEW SUDBURY ST	BOSTON	2114
302644000	CITY OF BOSTON		40-50 BOWKER ST	BOSTON MA	2114	40 BOWKER ST	BOSTON	2114
303430000	MASSACHUSETTS DEPARTMENT OF		KEELAND ST	BOSTON MA	2111	KNEELAND ST	BOSTON	2111

## List of Abutters

301686000 Commonwealth of Mass 115 Cambridge St Boston, MA 02114	302625000 Boston Planning & Development Agency 1 City Hall Square, 9 <sup>th</sup> Floor Boston, MA 02201
301688000 Commonwealth of Mass One Ashburton Pl Boston, MA 02114	302647000 City of Boston Property Management 1 City Hall Square Rm 811 Boston, MA 02201
301626000 City of Boston Property Management 1 City Hall Square Rm 811 Boston, MA 02201	302646000 Boston Planning & Development Agency 1 City Hall Square, 9 <sup>th</sup> Floor Boston, MA 02201
301628000 Boston Haymarket Acquisitions 8 Byron St Boston, MA 02108	302700000 Bulfinch Crossing Primary c/o HYM Investment Group LLC One Congress St Boston, MA 02104
302573001 Boston Public Market 12 Marshall St Boston, MA 02108	302573000 Massachusetts Turnpike 136 Blackstone St Boston, MA 02109
302573002 Boston Public Market 12 Marshall St Boston, MA 02128	302640000 Boston Edison Co Mass c/o Nstar Electric CO Prop Tax PO Box #270 Hartford, CT 06141
302605000 United States of America 15 New Sudbury Boston, MA 02114	302642000 City of Boston 35 Hawkins St Boston, MA 02114
302644000 City of Boston 40-50 Bowker St Boston, MA 02114	







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 Adult Signature Restricted Delivery \$0.00  
 Postage \$1.00  
 Total Postage and Fees \$7.30

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 Street and Apt. No. or PO Box No. **40-50 Banker Street**  
 City, State, ZIP+4® **Boston, MA 02114**

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 City, State, ZIP+4® **Boston, MA 02108**

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 Certified Mail Restricted Delivery \$0.00  
 Adult Signature Required \$0.00  
 Adult Signature Restricted Delivery \$0.00  
 Postage \$1.00  
 Total Postage and Fees \$7.30

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 Street and Apt. No. or PO Box No. **40-50 Banker Street**  
 City, State, ZIP+4® **Boston, MA 02114**

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7025 1520 0002 7607 6676

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 Extra Services & Fees (check box, add fee) \$2.80  
 Return Receipt (hardcopy) \$2.80  
 Return Receipt (electronic) \$0.00  
 Certified Mail Restricted Delivery \$0.00  
 Adult Signature Required \$0.00  
 Adult Signature Restricted Delivery \$0.00  
 Postage \$1.00  
 Total Postage and Fees \$7.30

Sent to **Massachusetts Turnpike**  
 Street and Apt. No. or PO Box No. **12 Market Street**  
 City, State, ZIP+4® **Boston, MA 02109**

PS Form 3800, April 2015 PSN 7502-0200-9007 See Reverse for Instructions

7025 1520 0002 7607 6591

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 Return Receipt (electronic) \$0.00  
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 Adult Signature Required \$0.00  
 Adult Signature Restricted Delivery \$0.00  
 Postage \$1.00  
 Total Postage and Fees \$7.30

Sent to **City of Boston**  
 Street and Apt. No. or PO Box No. **40-50 Banker Street**  
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PS Form 3800, April 2015 PSN 7502-0200-9007 See Reverse for Instructions

7025 1520 0002 7607 6599





Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands

# WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File Number
Document Transaction Number
City/Town

## F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

1. Signature of Applicant

2/20/2019

2. Date

3. Signature of Property Owner (if different)

4. Date

5. Signature of Representative (if any)

2/20/19

6. Date

### For Conservation Commission:

Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

### For MassDEP:

One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a copy of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

### Other:

If the applicant has checked the "yes" box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.