



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

Provided by MassDEP:

WPA Form 3 – Notice of Intent

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

MassDEP File Number

Document Transaction Number

Boston
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):

874 East Sixth Street

a. Street Address

So. Boston

b. City/Town

02127

c. Zip Code

Latitude and Longitude:

42.329773

d. Latitude

-70.999352

e. Longitude

Ward 6

f. Assessors Map/Plat Number

04438

g. Parcel /Lot Number

2. Applicant:

David

a. First Name

Matteo

b. Last Name

874 East Sixth Street LLC c/o Cedarwood Development

c. Organization

202 West Broadway

d. Street Address

South Boston

e. City/Town

MA

f. State

02127

g. Zip Code

617-821-5594

h. Phone Number

i. Fax Number

davematteo@cedarwoodboston.com

j. Email Address

3. Property owner (required if different from applicant):

Check if more than one owner

same

a. First Name

b. Last Name

c. Organization

d. Street Address

e. City/Town

f. State

g. Zip Code

h. Phone Number

i. Fax Number

j. Email address

4. Representative (if any):

Frederick

a. First Name

Geisel

b. Last Name

Civil Environmental Consultants LLC

c. Company

8 Oak Street

d. Street Address

Peabody

e. City/Town

MA

f. State

01960

g. Zip Code

978-531-1191

h. Phone Number

978-531-5501

i. Fax Number

ceclandsurvey@comcast.net

j. Email address

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

\$1050

a. Total Fee Paid

\$512.50

b. State Fee Paid

\$537.50

c. City/Town Fee Paid



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A. General Information (continued)

6. General Project Description:

Construction of a 6-unit dwelling. A corner of the property is within a Flood Hazard Zone - AE 11 (Elevation 11)

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

60208

c. Book

b. Certificate # (if registered land)

290

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.



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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) - specify coastal or inland _____	

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.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
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 _____

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
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	
l. <input checked="" type="checkbox"/> Land Subject to Coastal Storm Flowage	1. cubic yards dredged _____ 500 1. square feet _____	

4. 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. 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

- 1. 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.

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**

2008
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*

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

North Shore - Hull to New Hampshire border:

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

Division of Marine Fisheries -
North Shore Office
Attn: Environmental Reviewer
30 Emerson Avenue
Gloucester, MA 01930
Email: 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)

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

- 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.



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D. Additional Information (cont'd)

3. Identify the method for BWV and other resource area boundary delineations (MassDEP BWV 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.

CONSERVATION PLAN (BCB) 874 SIXTH ST SOUTH BOSTON, MA

a. Plan Title

Civil Environmental Consultants LLCI

Frederick Geisel

b. Prepared By

c. Signed and Stamped by

09/04/2019

1" = 10'

d. Final Revision Date

e. Scale

CONSERVATION PLAN (NAVD 88)

09/04/2019

f. Additional Plan or Document Title

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:

266
2. Municipal Check Number

9/26/19
3. Check date

263
4. State Check Number

9/26/19
5. Check date

KENNETH
6. Payor name on check: First Name

BOUFFARD
7. Payor name on check: Last Name



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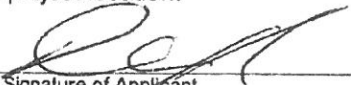
Document Transaction Number _____

Boston
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. Date _____

3. Signature of Property Owner (if different)

4. Date _____

5. Signature of Representative (if any)

09/11/19

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.

NARRATIVE

874 EAST SIXTH ST. SO. BOSTON, MA - October 7, 2019

Wetlands Narrative

The site is approximately 350 feet from the beach and other coastal wetlands resource areas. The site is within wetlands resource area of Land Subject to Coastal Storm Flowage (LSCSF), within the FEMA Flood Zone. A small portion (500 sq. ft.) of the site is within FEMA Flood Zone AE Elevation 11. (NAVD88).

The existing grade at the sidewalk at the right front corner of the property is at elevation 10.2 (NAVD88) and will remain so. A ramp to the basement level garage will start from that sidewalk elevation of 10.2 and ramp down to the garage floor elevation of 4.7. Only parking and utility meters will be in the basement level. No significant alteration of the land subject to coastal storm flowage will occur with the construction of this building. The first floor of the building will be at elevation 13.54 (NAVD88), 20.0 BCB.

Mitigation to flooding of the basement will involve the placement of removeable barriers at the top of the driveway ramp to prevent flood waters from the 100-yr storm from entering the driveway ramp. No cars will be allowed to enter the garage when a severe storm is forecast.

As indicated in the COASTAL RESILIENCE SOLUTIONS FOR SOUTH BOSTON, only regional solutions are effective for protection against rising sea levels and coastal flooding.

National Flood Hazard Layer FIRMette



42°20'13.24"N



Uses The National Map: Orthoimagery. Data refreshed April, 2019.



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS



Without Base Flood Elevation (BFE)
Zone A, V, A99
With BFE or Depth Zone AE, AO, AH, VE, AR
Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD



0.2% Annual Chance Flood Hazard, Area of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile (Zone X)
Future Conditions 1% Annual Chance Flood Hazard (Zone X)
Area with Reduced Flood Risk due to Levee. See Notes, Zone X
Area with Flood Risk due to Levee (Zone D)

OTHER AREAS



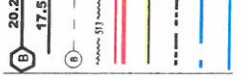
Area of Minimal Flood Hazard (Zone X)
Effective LOMRs
Area of Undetermined Flood Hazard (Zone X)

GENERAL STRUCTURES



Channel, Culvert, or Storm Sewer
Levee, Dike, or Floodwall

OTHER FEATURES



Cross Sections with 1% Annual Chance Water Surface Elevation
20.2
17.5
Coastal Transect
Base Flood Elevation Line (BFE)
Limit of Study
Jurisdiction Boundary
Coastal Transect Baseline
Profile Baseline
Hydrographic Feature

MAP PANELS



Digital Data Available
No Digital Data Available
Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/9/2019 at 3:18:50 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

NOTIFICATION TO ABUTTERS
UNDER THE MASSACHUSETTS WETLANDS PROTECTION ACT
AND THE CITY OF BOSTON WETLANDS ORDINANCE

In accordance with Massachusetts General Laws Chapter 131, Section 40 and the City of Boston Wetlands Ordinance you are hereby notified of the following:

- A. The name of the applicant is **David Matteo, Cedarwood Development**
 - B. The applicant has filed a Notice of Intent with the Boston Conservation Commission, seeking permission to remove, fill, dredge or alter an Area subject to Protection under the Wetlands Protection Act (General Laws Chapter 131, Section 40).
 - C. The address where the activity is proposed is **874 East Sixth Street, So. Boston**
 - D. A brief description of the proposed activities: The proposed project is to construct a 6-unit dwelling partially within the 100-yr flood zone. The project will include storm-water infiltration and connections to the City's water and sewer systems.
 - E. Copies of the Notice of Intent may be examined at the Boston Conservation Commission Office, Rm 709, 1 City Hall Square, Boston, MA 02201 during normal business hours. You may also wish to call the DEP Northeast Region for more information concerning this application or the Wetlands Protection Act. 978-694-3200
 - F. Information regarding or copies of the Notice of Intent may be obtained from the applicant's representative – Kenneth Bouffard, Civil Environmental Consultants by calling 978-531-1191, between the hours of 8:00 AM and 5:00 PM Mon.- Fri.
 - G. A Public Hearing for the proposed activity is scheduled for **Wednesday October 23, 2019** in the Piedmonte Room on the fifth floor of City Hall. The meeting begins at **6:00 PM**, not 6:30 PM as previously noticed. If you wish to attend the hearing please contact the Conservation Office for the time slot in which this item will be discussed. Abutters and interested parties are strongly encouraged to submit comments in writing so that they may be entered into the record.
 - H. Notice of the Public Hearing, its date, time, and location will be posted at City Hall, not less than 48 hours in advance of the meeting. The agenda for the meeting can also be viewed at the City website.
 - I. Notice of the public Hearing, including the date, time and place will be published at least five days in advance.
-

AFFADAVIT OF SERVICE

Under the Massachusetts Wetlands Protection Act and the City of Boston Wetlands Ordinance

I, Frederick Geisel, hereby certify under the pains and penalties of perjury that on October 9, 2019 I gave notification to abutters in compliance with the second paragraph of Massachusetts General Laws Chapter 131, Section 40 and the City of Boston Wetlands Ordinance, in connection with the following matter:

A Notice of Intent filed under the Massachusetts Wetlands Protection Act by David Matteo (APPLICANT) with the Boston Conservation Commission on October 4, 2019 for property located at 874 East Sixth Street, So. Boston, MA

The form of the notification and list of abutters to whom it was given and their addresses are attached to this Affidavit of Service.

Frederick Geisel
Representative

October 9, 2019
Date

STORMWATER MANAGEMENT REPORT – AUGUST 30, 2019

874 EAST SIXTH ST. SO. BOSTON, MA

Background:

The property is located at 874 East sixth St. in South Boston, MA. This is a redevelopment site. The total area of property to be redeveloped consists of 6250 sq. ft. of land. The site previously contained a multi-family house. The project proponent proposes to construct a six-unit dwelling in a single structure. The project is a full redevelopment of the site.

Soil Conditions

The soils are classified as Merrimac Urban Land Complex. The soils are classified as Class A soils, for drainage purposes.

Flood Plain

The project site is within the Special Flood Hazard Areas designated by FEMA, for the 100-yr storm, with a flood elevation of AE-11.

Wetlands

The wetland resource areas of coastal bank and beach are approximately 350 feet from the site. The site contains approximately 500 sq. ft. of land subject to coastal storm flowage within the 100-yr flood zone.

Stormwater Management

As a redevelopment site, the project is required to meet Stormwater Standards to the maximum Extent Practicable. Roof and driveway ramp runoff is infiltrated by four 100-gallon shallow drywells surrounded by crushed stone, which hold and infiltrate all design storms. Based on our analysis and design, the post-development flow rates and volume will be reduced from the pre-development flows for the analyzed frequency storms – 2-yr, 10-yr and 25-yr. Flooding will not be increased for the 100-yr storm. All storm events will be infiltrated by the roof infiltrator systems. All Stormwater Management Standards will be met for the site.

All peak flows from the proposed roof areas will be attenuated by storage and infiltration through infiltration chambers that will store and infiltrate stormwater. These chambers will be as shown on the proposed site plan with the galleries located below the garage floor.

Land in the rear will be landscaped with loam and grass, mulch, shrubs, and trees that will all serve to adsorb rainfall and reduce runoff.

NARRATIVE

874 EAST SIXTH ST. SO. BOSTON, MA - AUGUST 30, 2019

Wetlands Narrative

As the site is more than 350 feet from any wetlands resource area, the only issue is the FEMA Flood Zone. A small portion (500 sq. ft.) of the site is within FEMA Flood Zone AE Elevation 11. (NAVD88).

The existing grade at the sidewalk at the right front corner of the property is at elevation 10.2 (NAVD88) and will remain so. A ramp to the basement level garage will start from that sidewalk elevation of 10.2 and ramp down to the garage floor elevation of 4.7. Only parking and utility meters will be in the basement level. The first floor of the building will be at elevation 13.54.

Boston Planning & Development Agency Climate Resiliency Report Summary



Submitted: 09/12/2019 15:12:38

A.1 - Project Information

Project Name:	874 EAST SIXTH STREET		
Project Address:	874 EAST SIXTH STREET		
Filing Type:	Construction / Certificate of Occupancy (post construction completion)		
Filing Contact:	KENNETH BOUFFARD	CIVIL ENVIRONMENTAL CONSULTANTS LLC	CECLANDSURVEY@COM 978-531-1191 CAST.NET
Is MEPA approval required?	No	MEPA date:	

A.2 - Project Team

Owner / Developer:	874 EAST SIXTH STREET LLC
Architect:	PISANI ARCHITECTS
Engineer:	CIVIL ENVIROMENTAL CONSULTANTS LLC
Sustainability / LEED:	N/A
Permitting:	PISANI ARCHITECTS
Construction Management:	874 EAST SIXTH STREET LLC

A.3 - Project Description and Design Conditions

List the principal Building Uses:	RESIDENTIAL MULTIFAMILY BUILDING
List the First Floor Uses:	HANDICAP ACCESS, BUILDING UNITS, UTILITIES
List any Critical Site Infrastructure and or Building Uses:	N/A

Site and Building:

Site Area (SF):	6250	Building Area (SF):	3514
Building Height (Ft):	38.5	Building Height (Stories):	3
Existing Site Elevation – Low (Ft BCB):	16.5	Existing Site Elevation – High (Ft BCB):	19.8
Proposed Site Elevation – Low (Ft BCB):	11.36	Proposed Site Elevation – High (Ft BCB):	16.5
Proposed First Floor Elevation (Ft BCB):	20.0	Below grade spaces/levels (#):	0

Article 37 Green Building:

Boston Planning & Development Agency Climate Resiliency Report Summary



LEED Version - Rating System:	N/A	LEED Certification:	No
Proposed LEED rating:		Proposed LEED point score (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:	N/A	Exposed Floor:	N/A
Foundation Wall:	N/A	Slab Edge (at or below grade):	N/A
Vertical Above-grade Assemblies (%'s are of total vertical area and together should total 100%):			
Area of Opaque Curtain Wall & Spandrel Assembly:	N/A	Wall & Spandrel Assembly Value:	.3
Area of Framed & Insulated / Standard Wall:	10164	Wall Value:	30
Area of Vision Window:	14.4	Window Glazing Assembly Value:	.3
		Window Glazing SHGC:	.41-.6
Area of Doors:	2	Door Assembly Value:	.3

Energy Loads and Performance

For this filing – describe how energy loads & performance were determined	UNDETERMINED AT THIS TIME		
Annual Electric (kWh):		Peak Electric (kW):	
Annual Heating (MMbtu/hr):		Peak Heating (MMbtu):	
Annual Cooling (Tons/hr):		Peak Cooling (Tons):	
Energy Use - Below ASHRAE 90.1 - 2013 (%):		Have the local utilities reviewed the building energy performance?:	No
Energy Use - Below Mass. Code (%):		Energy Use Intensity (kBtu/SF):	

Back-up / Emergency Power System

Electrical Generation Output (kW):	0	Number of Power Units:	0
System Type (kW):	n/a	Fuel Source:	N/A

Emergency and Critical System Loads (in the event of a service interruption)

Electric (kW):		Heating (MMbtu/hr):	
		Cooling (Tons/hr):	

B – Greenhouse Gas Reduction and Net Zero / Net Positive Carbon Building Performance

Reducing greenhouse gas emissions is critical to avoiding more extreme climate change conditions. To achieve the City’s goal of carbon-neutrality by 2050 the performance of new buildings will need to progressively improve to carbon net zero and net positive.

B.1 – GHG Emissions - Design Conditions

For this filing - Annual Building GHG Emissions (Tons):

[REDACTED]

For this filing - describe how building energy performance has been integrated into project planning, design, and engineering and any supporting analysis or modeling:

[REDACTED]

Describe building specific passive energy efficiency measures including orientation, massing, building envelop, and systems:

[REDACTED]

Describe building specific active energy efficiency measures including high performance equipment, controls, fixtures, and systems:

[REDACTED]

Describe building specific load reduction strategies including on-site renewable energy, clean energy, and storage systems:

[REDACTED]

Describe any area or district scale emission reduction strategies including renewable energy, central energy plants, distributed energy systems, and smart grid infrastructure:

[REDACTED]

Describe any energy efficiency assistance or support provided or to be provided to the project:

[REDACTED]

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):

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 (Deg.):

Temperature Range - High (Deg.):

Annual Heating Degree Days:

Annual Cooling Degree Days

What Extreme Heat Event characteristics will be / have been used for project planning

Days - Above 90° (#):

Days - Above 100° (#):

Number of Heatwaves / Year (#):

Average Duration of Heatwave (Days):

Describe all building and site measures to reduce heat-island effect at the site and in the surrounding area:

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:

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:

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

What is the project design precipitation level? (In. / 24 Hours)

Describe all building and site measures for reducing storm water run-off:

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):

E – Sea Level Rise and Storms

Under any plausible greenhouse gas emissions scenario, the sea level 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 Special Flood Hazard Area? What Zone:

What is the current FEMA SFHA Zone Base Flood Elevation for the site (Ft BCB)?

Is any portion of the site in the BPDA Sea Level Rise Flood Hazard Area (see [SLR-FHA online map](#))?

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 by the Sea Level Rise Flood Hazard Area (SLR-FHA), which includes 3.2’ of sea level rise above 2013 tide levels, an additional 2.5” to account for subsidence, and the 1% Annual Chance Flood. After using the SLR-FHA to identify a project’s Sea Level Rise Base Flood Elevation, proponents should calculate the Sea Level Rise Design Flood Elevation by

adding 12” of freeboard for buildings, and 24” of freeboard for critical facilities and infrastructure and any ground floor residential units.

What is the Sea Level Rise - Base Flood Elevation for the site (Ft BCB)?	17.46		
What is the Sea Level Rise - Design Flood Elevation for the site (Ft BCB)?	17.46	First Floor Elevation (Ft BCB):	20
What are the Site Elevations at Building (Ft BCB)?	16.5	What is the Accessible Route Elevation (Ft BCB)?	16.5

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.:

REGIONAL SOLUTIONS REQUIRED

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.:

1ST FLOOR BUILDING ELEV 2.5' ABOVE FEMA 100YR FLOOD. USE BACKWATER VALVE ON SEWER

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:

SHELTER IN PLACE IN BUILDING UNITS,

Describe any strategies that would support rapid recovery after a weather event:

USE MOLD AND ROT RESISTANT BUILDING MATERIALS

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.:

REGIONAL SOLUTIONS REQUIRED

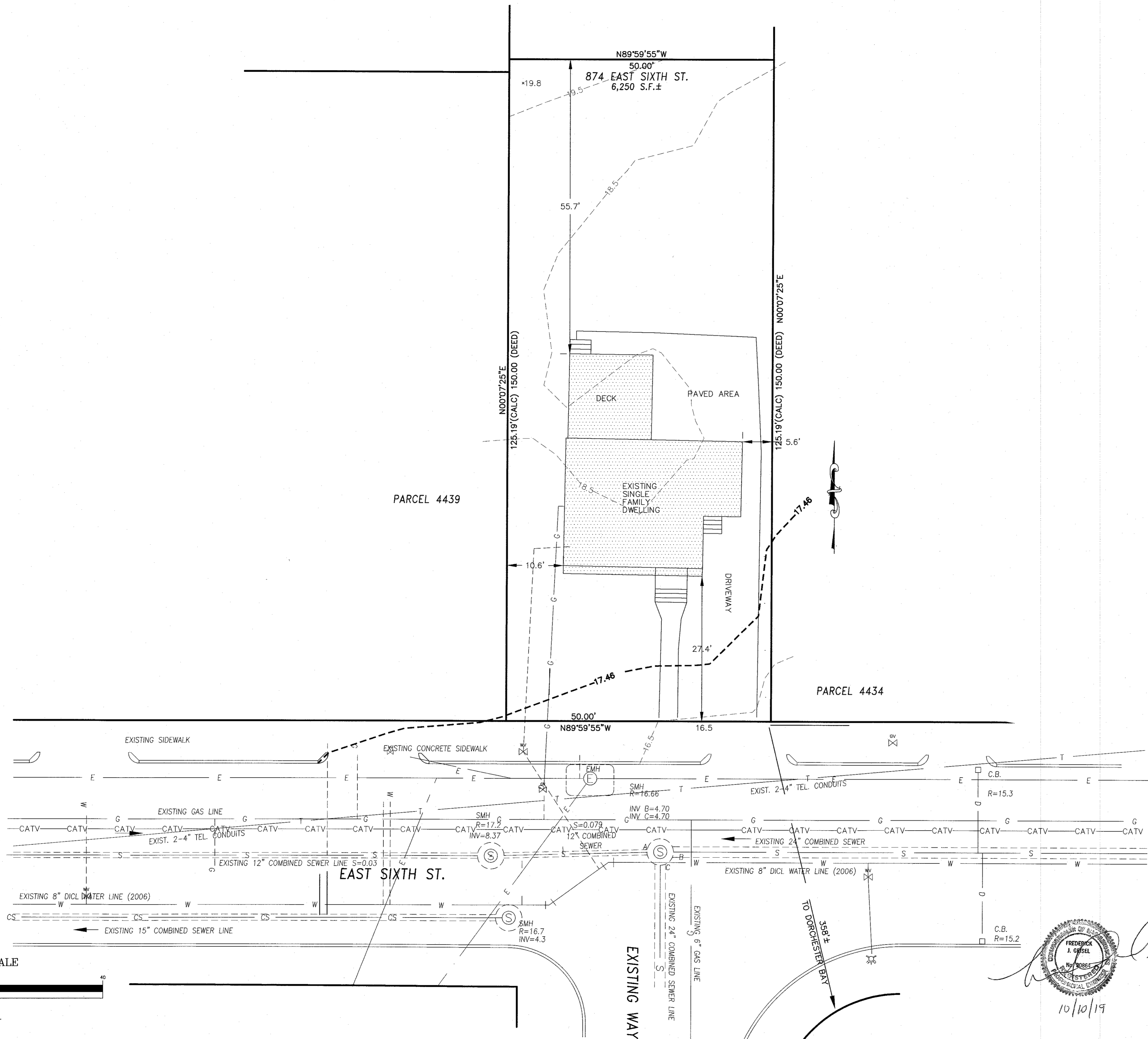
Describe future building adaptation strategies for raising the Sea Level Rise Design Flood Elevation and further protecting critical systems, including permanent and temporary measures:

REGIONAL SOLUTIONS REQUIRED

Thank you for completing the Boston Climate Change Checklist!

For questions or comments about this checklist or Climate Change best practices, please contact:

John.Dalzell@boston.gov

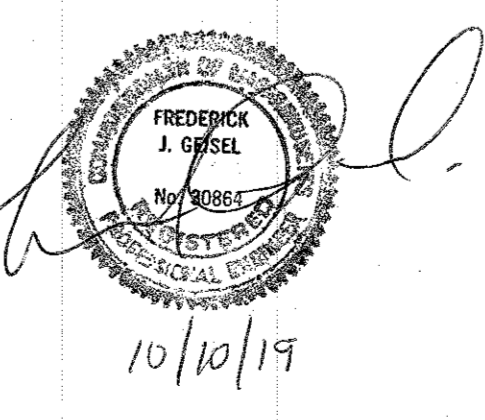
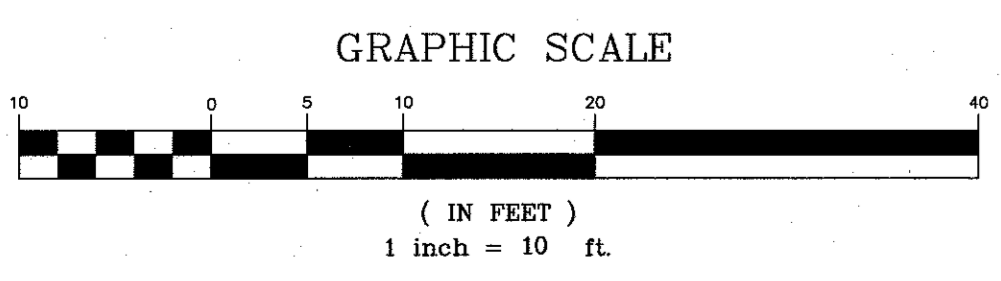


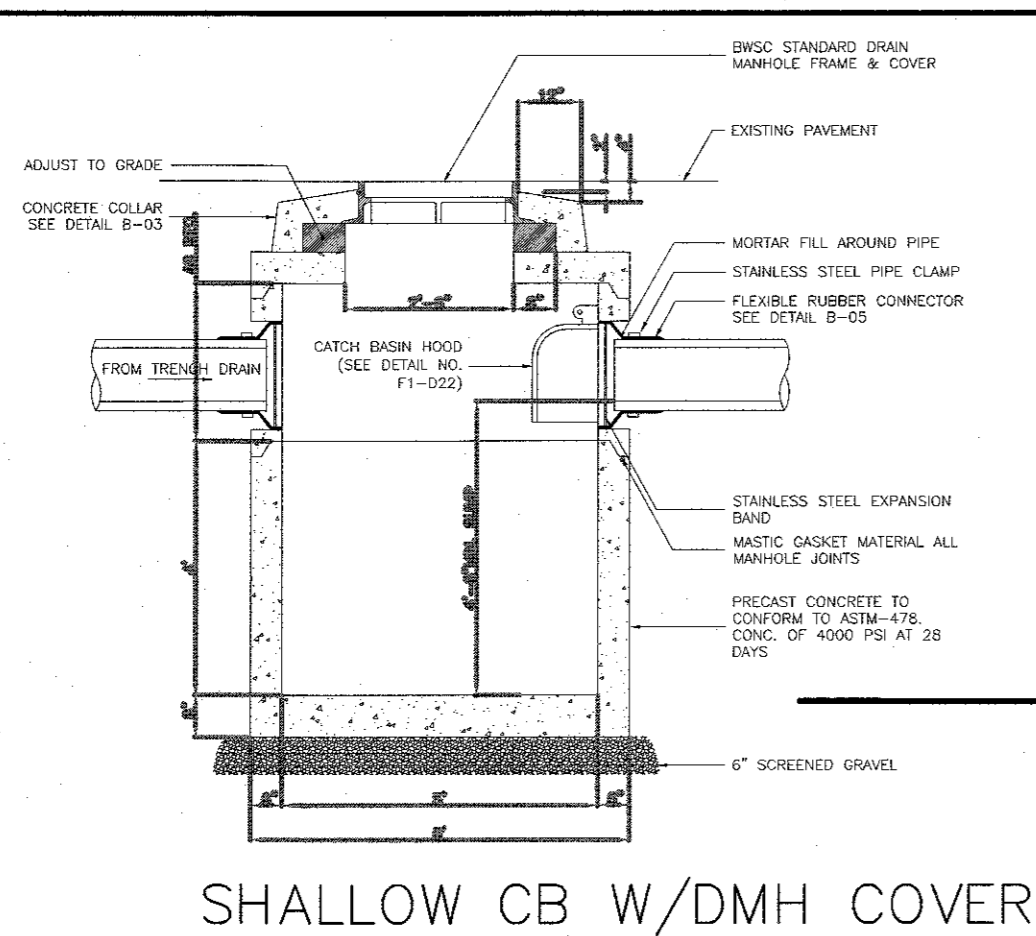
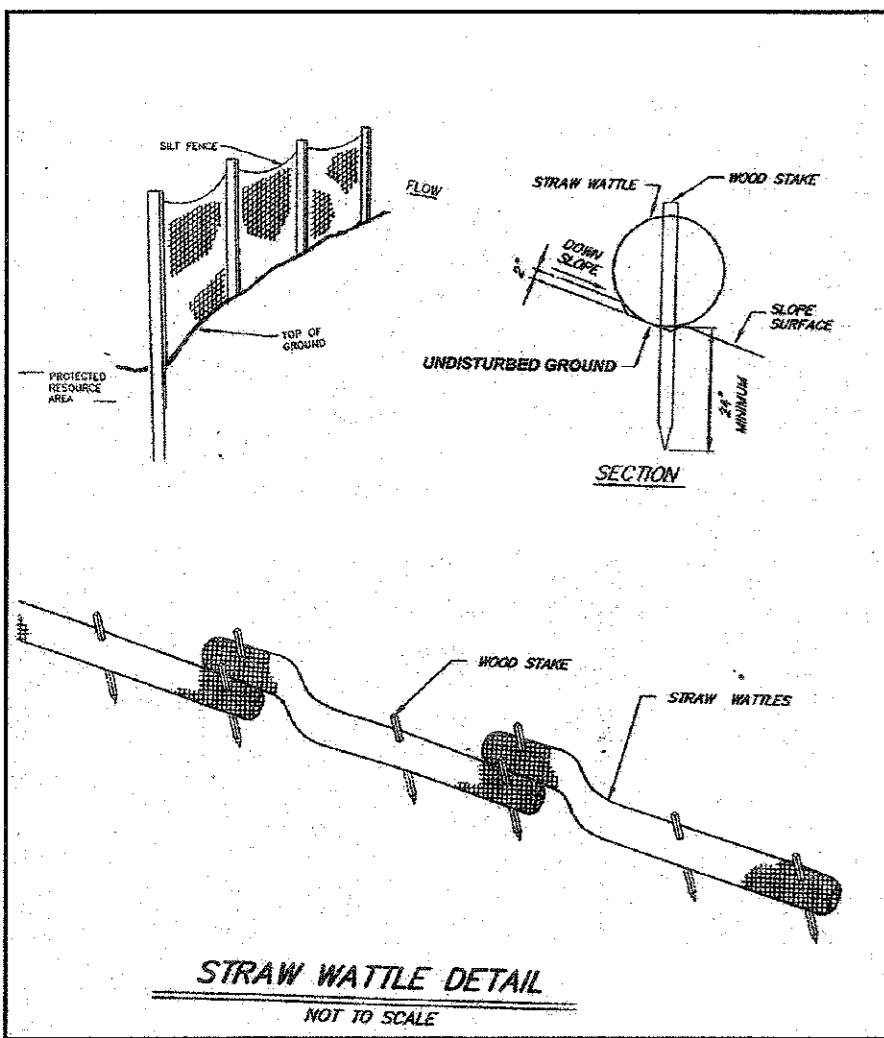
ELEVATIONS SHOWN BASED
UPON BOSTON CITY DATUM
TO ADJUST ELEVATIONS SHOWN TO NAVD88
BASE DATUM SUBTRACT 6.46 TO ALL
ELEVATIONS: NAVD88 ELEV 0.00=6.46 CITY OF BOSTON

ADDED SPOT GRADE C.R.L. 10/10/2019

EXISTING CONDITIONS—B.C.B.
874 EAST SIXTH STREET
SOUTH BOSTON, MA
 FOR
874 EAST SIXTH STREET LLC
CIVIL ENVIRONMENTAL CONSULTANTS
 8 OAK STREET PEABODY, MA 01960 978-531-1191

SHEET NO: 1 OF 1 DATE: 9/4/2019 JOB: 3793
 DRAWN BY: L.J.B.



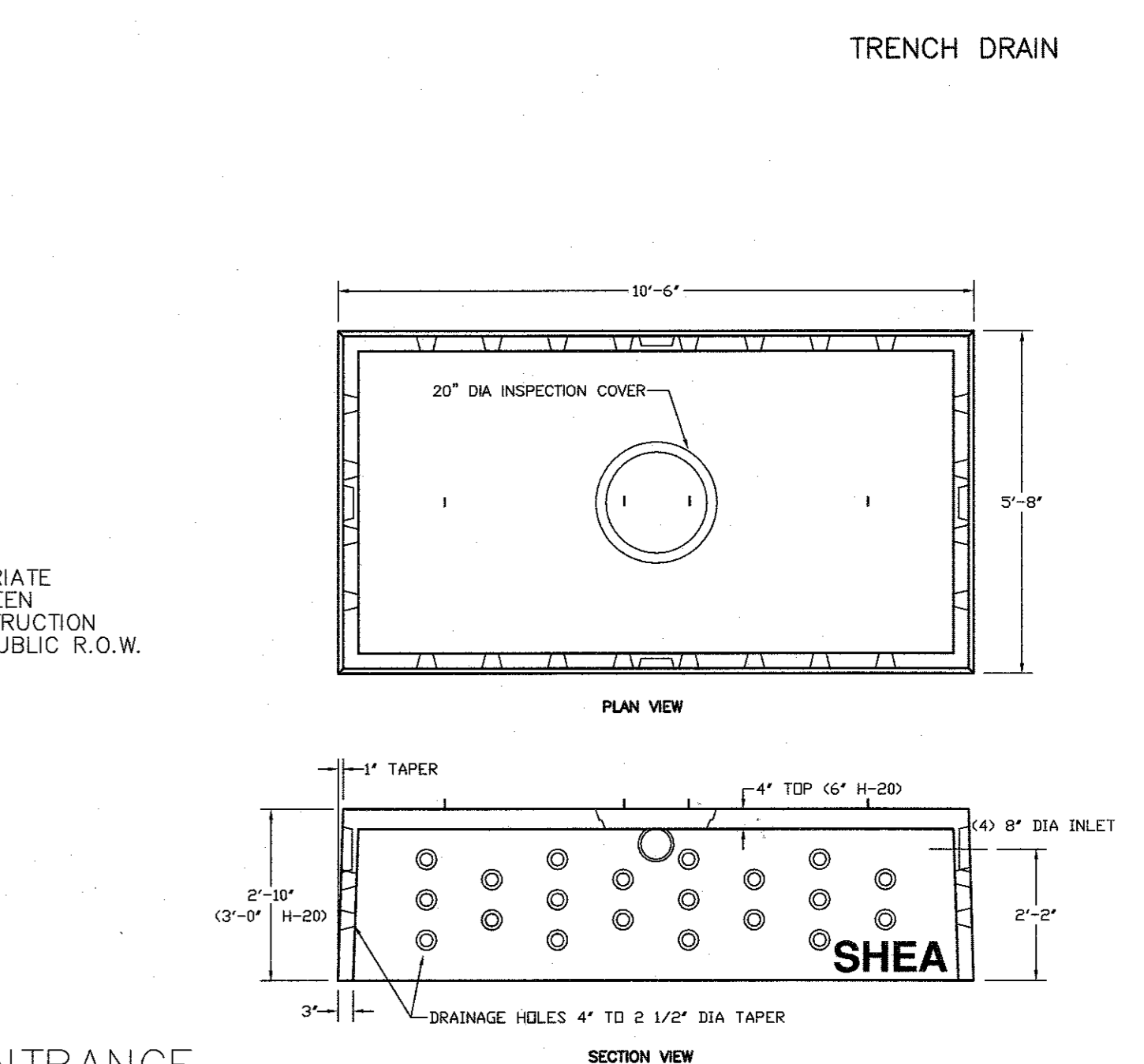
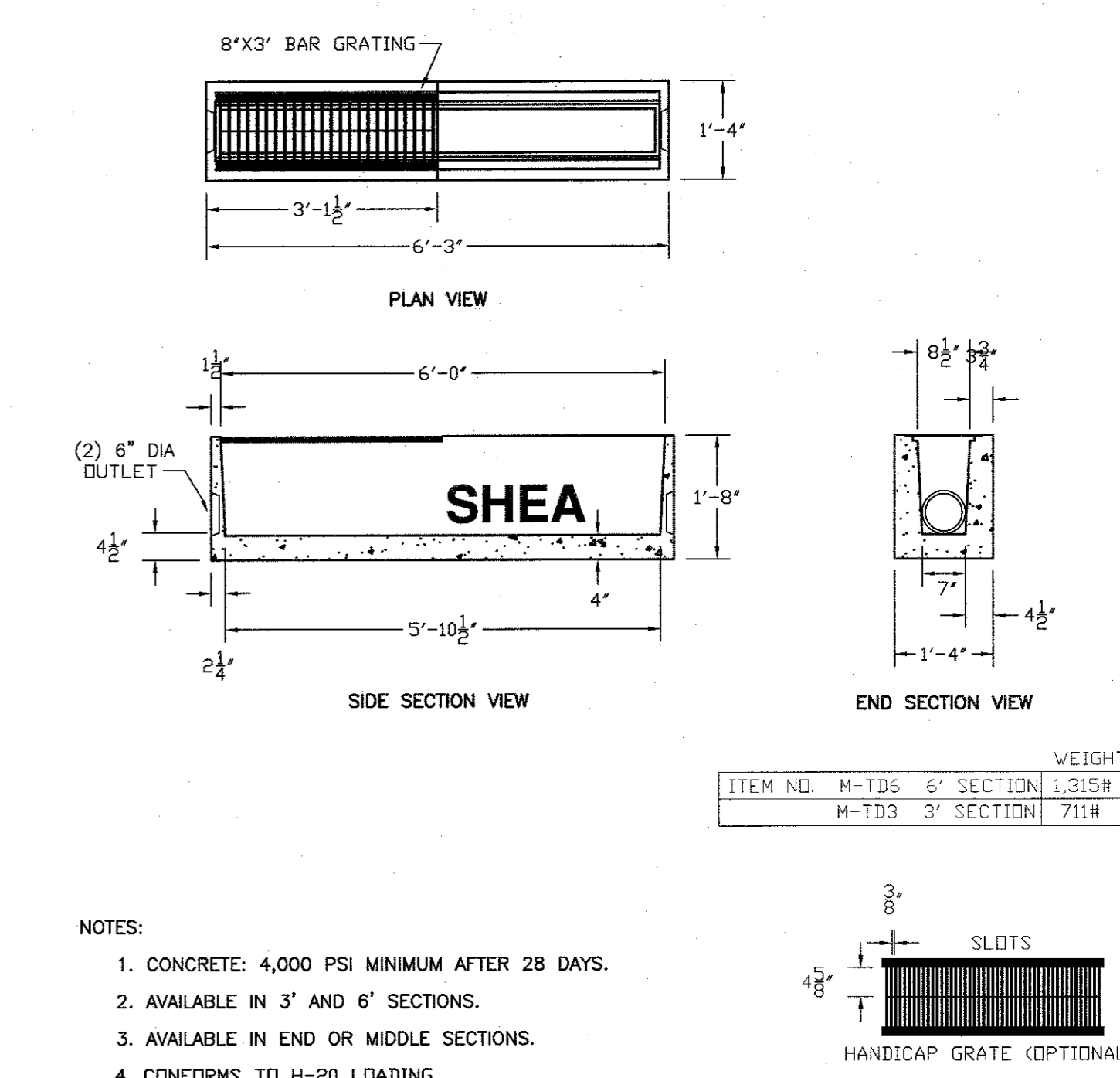
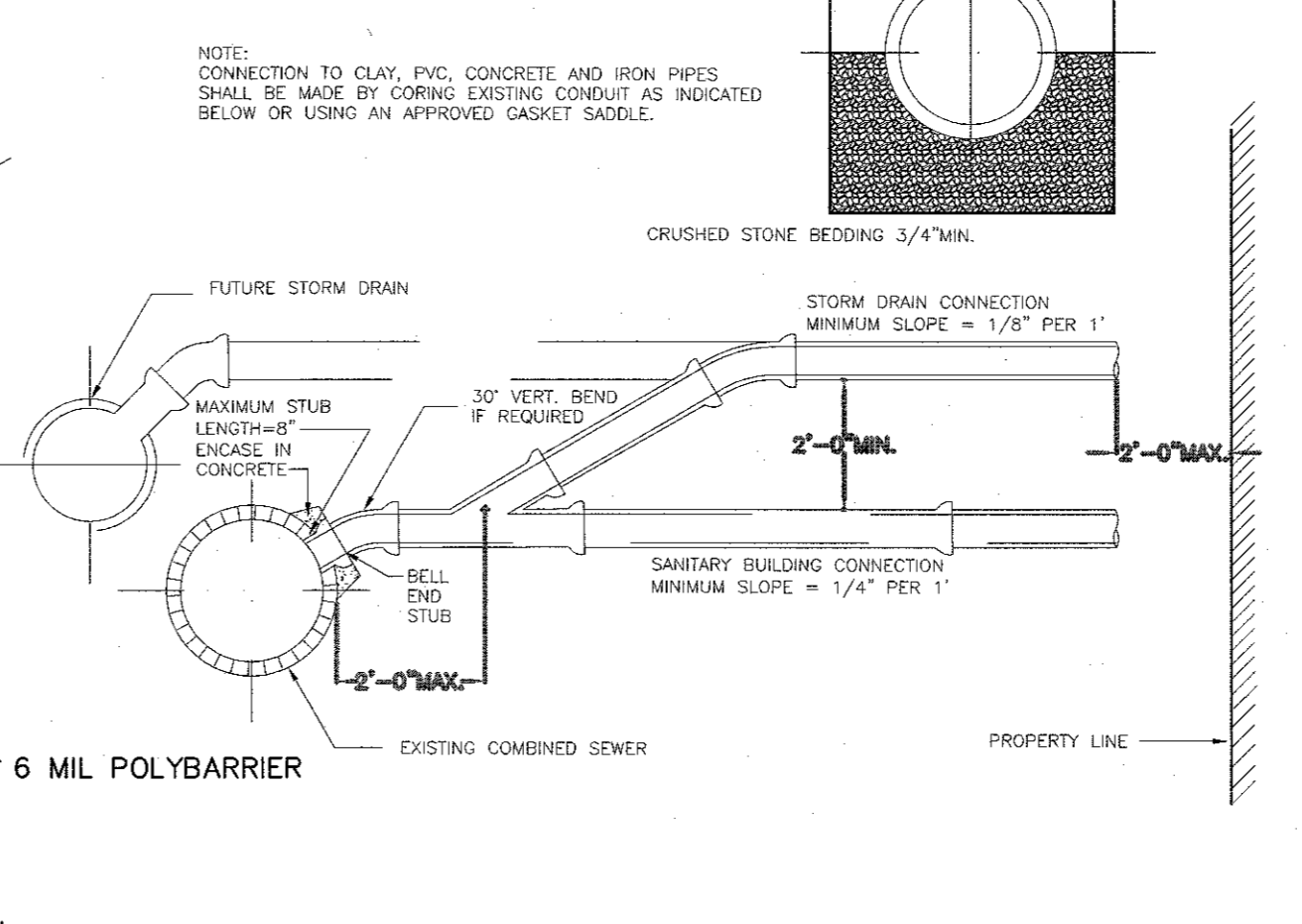
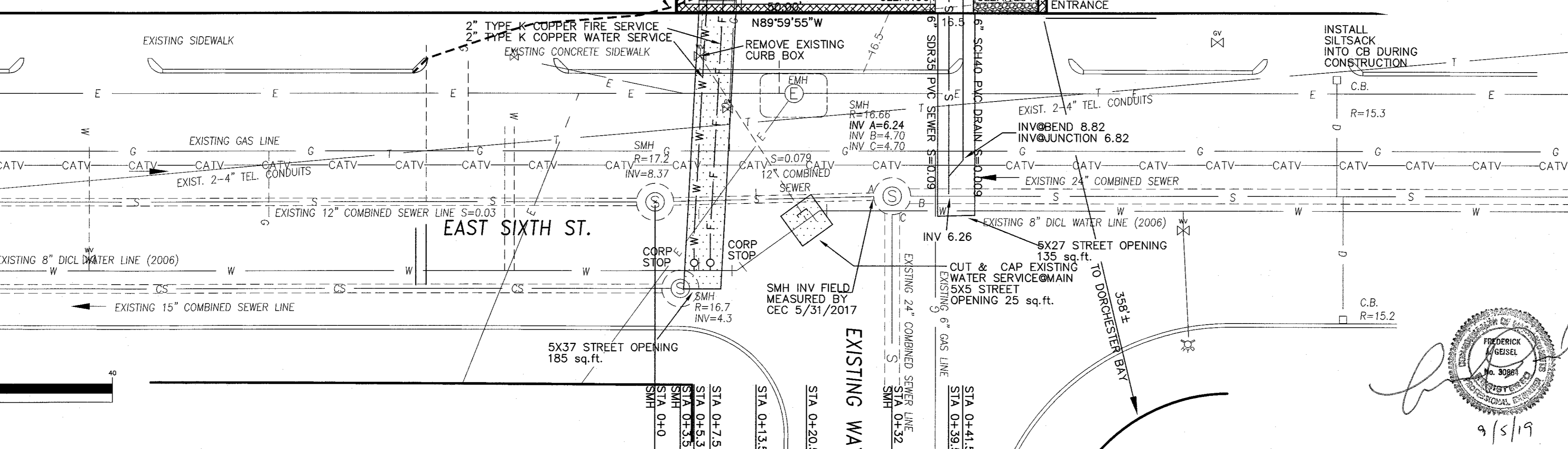
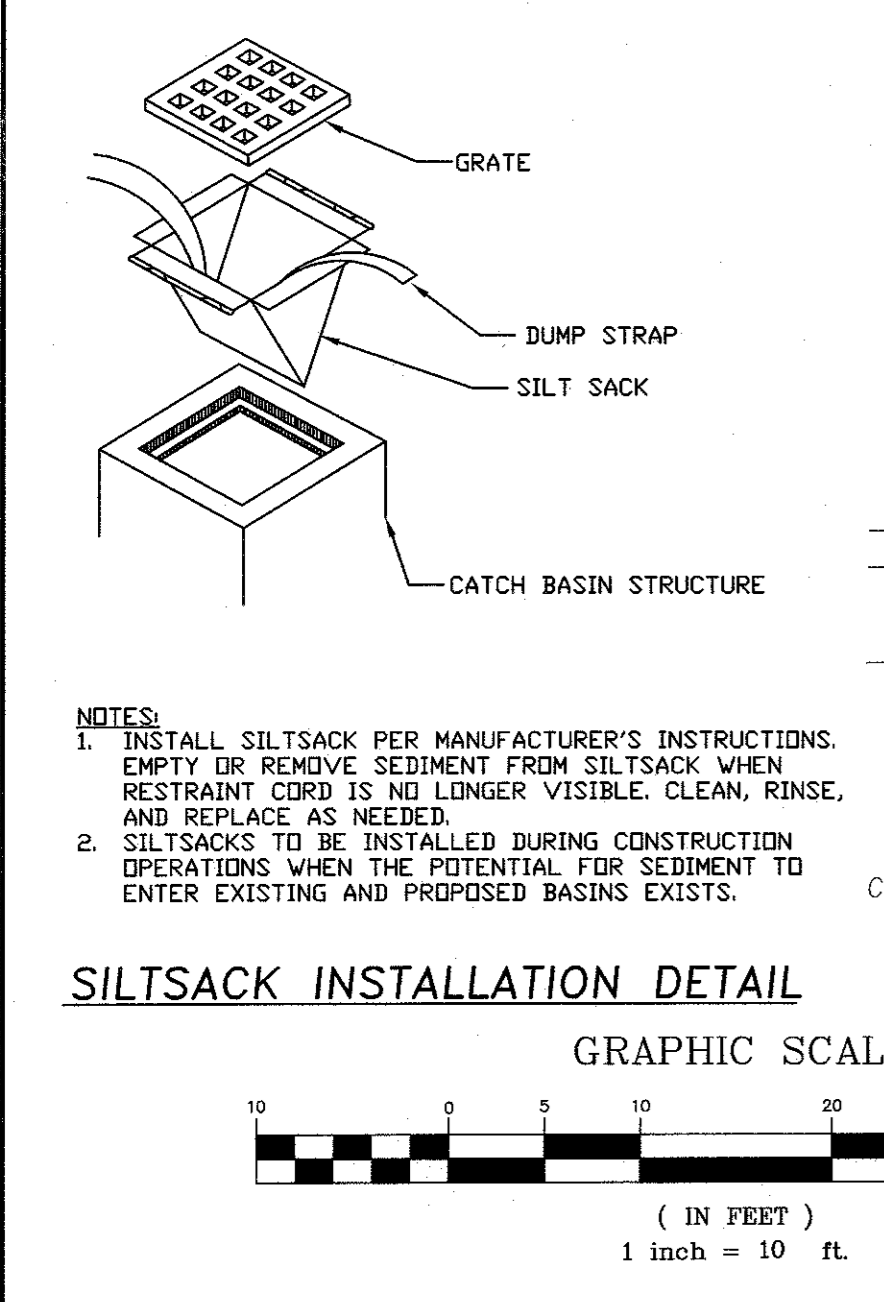
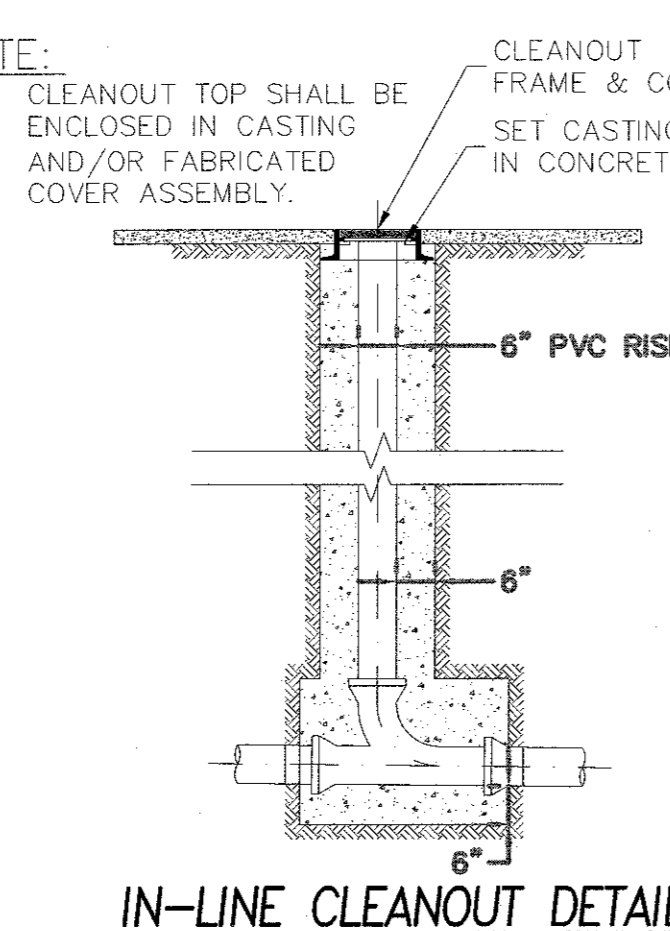
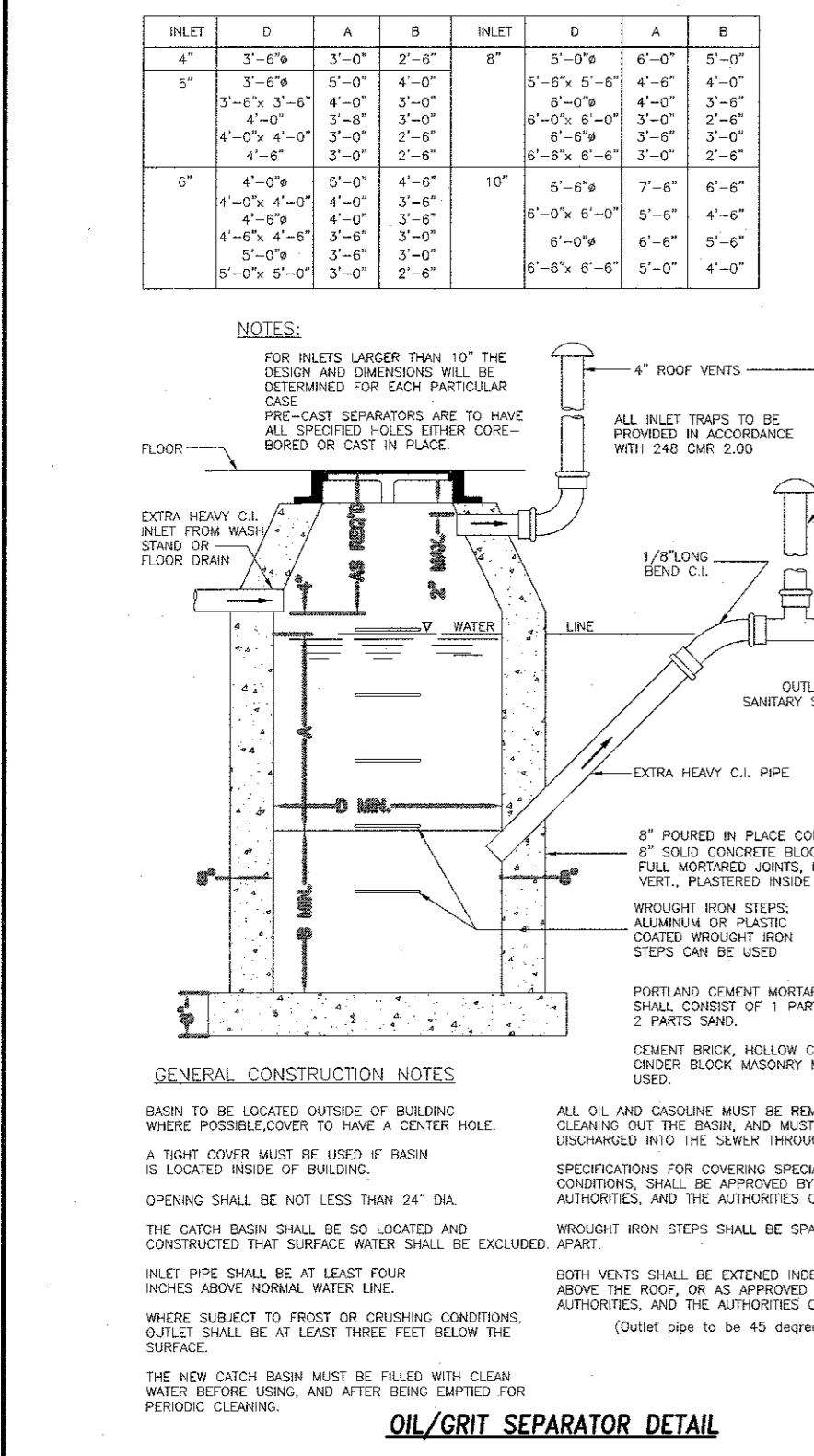


Standard Valve Dimensions (inches)

Size	A	B	C	E	F	G	H	I
2	1-13/16	1-3/4	2-5/8	5/16	3-1/4	5-9/32	4-3/16	4-9/16
3	2-5/8	2	4-3/16	1/8	4-1/8	7-3/4	6	6-1/8
4	3-5/8	3-3/4	5-7/16	2/32	5-7/16	10-15/16	8-1/4	7-15/16
6	4-3/4	4-5/8	7-3/4	1/16	7-3/4	16-3/8	11-1/4	10-13/16

Valve with Extension Kit Dimensions (inches)

Valve Size	2	3	4	6
HEIGHT-D				
12	10-3/4	10-7/8	10-1/4	10-1/4
16	14-3/4	14-7/8	14-1/4	14-1/4
20	18-3/4	18-7/8	18-1/4	18-1/4
24	22-3/4	22-7/8	22-1/4	22-1/4
36	34-3/4	34-7/8	34-1/4	34-1/4
48	46-3/4	46-7/8	46-1/4	46-1/4



NOTES:

- CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
- AVAILABLE IN 3' AND 6' SECTIONS.
- AVAILABLE IN END OR MIDDLE SECTIONS.
- CONFORMS TO H-20 LOADING.

ITEM NO. M-TD6 6' SECTION 1,315#
M-TD3 3' SECTION 711#

CONSERVATION PLAN-B.C.B.
874 EAST SIXTH STREET
SOUTH BOSTON, MA
FOR
874 EAST SIXTH STREET LLC
CIVIL ENVIRONMENTAL CONSULTANTS
 8 OAK STREET PEABODY, MA 01960 978-531-1191

SHEET NO: 1 OF 1
 DATE: 9/4/2019 JOB: 3793
 DRAWN BY: L.J.B.

DRAINAGE REPORT

At

874 EAST SIXTH STREET

SOUTH BOSTON, MA

JUNE 12, 2019



STORMWATER MANAGEMENT REPORT – AUGUST 30, 2019

874 EAST SIXTH ST. SO. BOSTON, MA

Background:

The property is located at 874 East sixth St. in South Boston, MA. This is a redevelopment site. The total area of property to be redeveloped consists of 6250 sq. ft. of land. The site previously contained a multi-family house. The project proponent proposes to construct a six-unit dwelling in a single structure. The project is a full redevelopment of the site.

Soil Conditions

The soils are classified as Merrimac Urban Land Complex. The soils are classified as Class A soils, for drainage purposes.

Flood Plain

The project site is within the Special Flood Hazard Areas designated by FEMA, for the 100-yr storm, with a flood elevation of AE-11.

Wetlands

There are no wetland resource areas within 350 feet of the site.

Stormwater Management

As a redevelopment site, the project is required to meet Stormwater Standards to the maximum Extent Practicable. Roof and driveway ramp runoff is infiltrated by four 100-gallon shallow drywells surrounded by crushed stone, which hold and infiltrate all design storms. Based on our analysis and design, the post-development flow rates and volume will be reduced from the pre-development flows for the analyzed frequency storms – 2-yr, 10-yr and 25-yr. Flooding will not be increased for the 100-yr storm. All storm events will be infiltrated by the roof infiltrator systems. All Stormwater Management Standards will be met for the site.

All peak flows from the proposed roof areas will be attenuated by storage and infiltration through infiltration chambers that will store and infiltrate stormwater. These chambers will be as shown on the proposed site plan with the galleries located below the garage floor.

Land in the rear will be landscaped with loam and grass, mulch, shrubs, and trees that will all serve to adsorb rainfall and reduce runoff.

NARRATIVE

874 EAST SIXTH ST. SO. BOSTON, MA - AUGUST 30, 2019

Wetlands Narrative

As the site is more than 350 feet from any wetlands resource area, the only issue is the FEMA Flood Zone. A small portion (500 sq. ft.) of the site is within FEMA Flood Zone AE Elevation 11. (NAVD88).

The existing grade at the sidewalk at the right front corner of the property is at elevation 10.2 (NAVD88) and will remain so. A ramp to the basement level garage will start from that sidewalk elevation of 10.2 and ramp down to the garage floor elevation of 4.7. Only parking and utility meters will be in the basement level. The first floor of the building will be at elevation 13.54.

PRE & POST DEVELOPMENT STORMWATER FLOWS

874 EAST SIXTH STREET

SO. BOSTON, MA

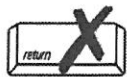
PROPOSED
FLOWS

FREQ. STORM <u>(YR)</u>	PRE DEVEL. EXIST FLOWS <u>(CFS)</u>	POST. DEVEL. FLOWS <u>(CFS)</u>	POST. INFIL. FLOWS <u>(CFS)</u>
2YR	0.00	0.37	0.00
10YR	0.07	0.58	0.00
25 YR	0.16	0.75	0.00
100 YR	0.41	1.09	0.15

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.¹ 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 8²
- 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.

¹ 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.

² 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.

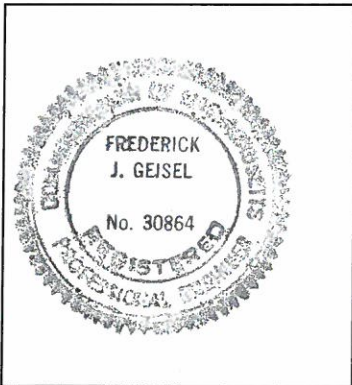
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the 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




9/11/19
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

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

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 Field¹
- 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.

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

Checklist for Stormwater Report

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

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 proprietary 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

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

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.

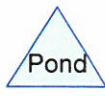
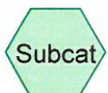
Standard 10: Prohibition of Illicit Discharges

- 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.

EXISTING CONDITIONS- HYDROCAD



874 E 6th Existing



Routing Diagram for 3793-874 east sixth

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3793-874 east sixth

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.117	39	>75% Grass cover, Good, HSG A (1S)
0.008	98	Paved parking, HSG A (1S)
0.018	98	Roofs, HSG A (1S)
0.143	50	TOTAL AREA

3793-874 east sixthPrepared by Civil Environmental Consultants LLC
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Page 3**Soil Listing (selected nodes)**

Area (acres)	Soil Group	Subcatchment Numbers
0.143	HSG A	1S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.143		TOTAL AREA

3793-874 east sixth

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.117	0.000	0.000	0.000	0.000	0.117	>75% Grass cover, Good	1S
0.008	0.000	0.000	0.000	0.000	0.008	Paved parking	1S
0.018	0.000	0.000	0.000	0.000	0.018	Roofs	1S
0.143	0.000	0.000	0.000	0.000	0.143	TOTAL AREA	

3793-874 east sixth

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874 East Sixth Street
NRCC 24-hr D 2-Year Rainfall=3.26"

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Page 5

Summary for Subcatchment 1S: 874 E 6th Existing

Runoff = 0.00 cfs @ 13.04 hrs, Volume= 0.002 af, Depth> 0.14"

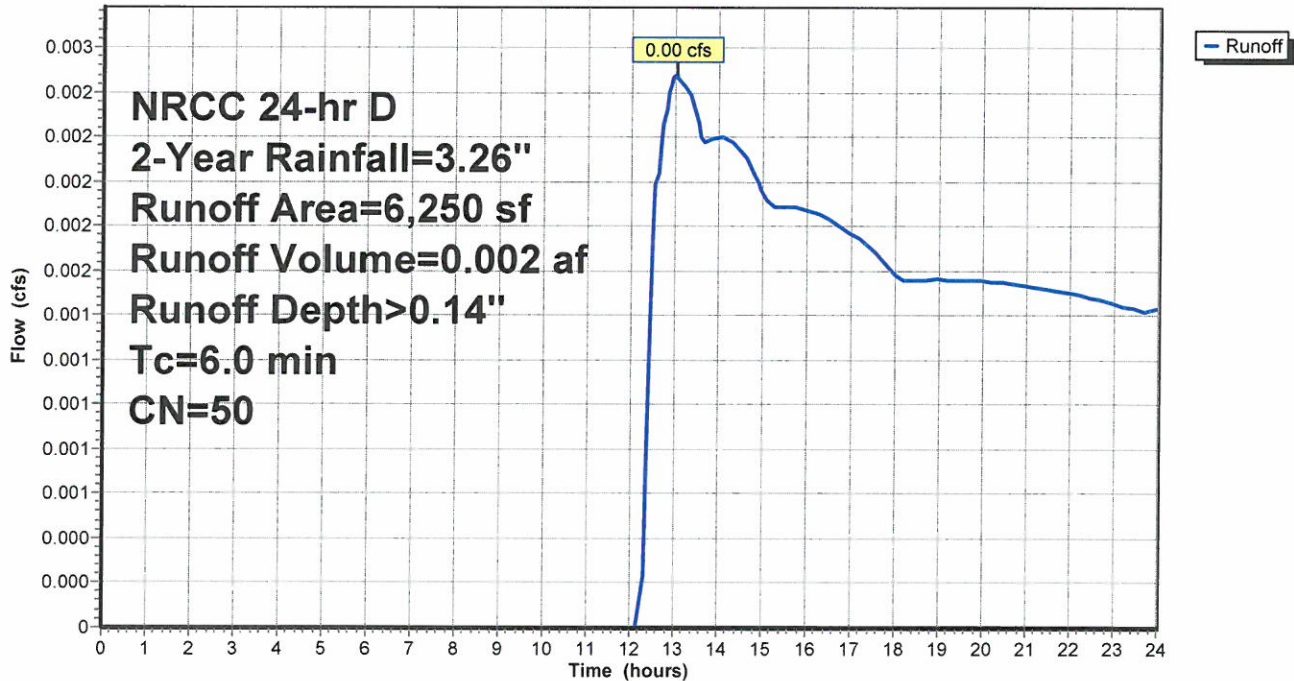
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.26"

Area (sf)	CN	Description
796	98	Roofs, HSG A
350	98	Paved parking, HSG A
5,104	39	>75% Grass cover, Good, HSG A
6,250	50	Weighted Average
5,104		81.66% Pervious Area
1,146		18.34% Impervious Area

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

Subcatchment 1S: 874 E 6th Existing

Hydrograph



3793-874 east sixth

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874 East Sixth Street

NRCC 24-hr D 2-Year Rainfall=3.26"

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Page 6

Hydrograph for Subcatchment 1S: 874 E 6th Existing

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	12.75	2.26	0.01	0.00
0.25	0.01	0.00	0.00	13.00	2.33	0.01	0.00
0.50	0.02	0.00	0.00	13.25	2.39	0.01	0.00
0.75	0.04	0.00	0.00	13.50	2.45	0.02	0.00
1.00	0.05	0.00	0.00	13.75	2.49	0.02	0.00
1.25	0.06	0.00	0.00	14.00	2.53	0.03	0.00
1.50	0.07	0.00	0.00	14.25	2.57	0.03	0.00
1.75	0.09	0.00	0.00	14.50	2.60	0.03	0.00
2.00	0.10	0.00	0.00	14.75	2.63	0.04	0.00
2.25	0.11	0.00	0.00	15.00	2.66	0.04	0.00
2.50	0.12	0.00	0.00	15.25	2.69	0.04	0.00
2.75	0.14	0.00	0.00	15.50	2.71	0.05	0.00
3.00	0.15	0.00	0.00	15.75	2.74	0.05	0.00
3.25	0.17	0.00	0.00	16.00	2.76	0.05	0.00
3.50	0.18	0.00	0.00	16.25	2.79	0.06	0.00
3.75	0.20	0.00	0.00	16.50	2.81	0.06	0.00
4.00	0.21	0.00	0.00	16.75	2.83	0.06	0.00
4.25	0.23	0.00	0.00	17.00	2.85	0.07	0.00
4.50	0.24	0.00	0.00	17.25	2.87	0.07	0.00
4.75	0.26	0.00	0.00	17.50	2.89	0.07	0.00
5.00	0.27	0.00	0.00	17.75	2.91	0.08	0.00
5.25	0.29	0.00	0.00	18.00	2.92	0.08	0.00
5.50	0.30	0.00	0.00	18.25	2.94	0.08	0.00
5.75	0.32	0.00	0.00	18.50	2.96	0.08	0.00
6.00	0.34	0.00	0.00	18.75	2.97	0.09	0.00
6.25	0.35	0.00	0.00	19.00	2.99	0.09	0.00
6.50	0.37	0.00	0.00	19.25	3.00	0.09	0.00
6.75	0.39	0.00	0.00	19.50	3.02	0.09	0.00
7.00	0.41	0.00	0.00	19.75	3.03	0.10	0.00
7.25	0.43	0.00	0.00	20.00	3.05	0.10	0.00
7.50	0.45	0.00	0.00	20.25	3.06	0.10	0.00
7.75	0.47	0.00	0.00	20.50	3.08	0.11	0.00
8.00	0.50	0.00	0.00	20.75	3.09	0.11	0.00
8.25	0.52	0.00	0.00	21.00	3.11	0.11	0.00
8.50	0.55	0.00	0.00	21.25	3.12	0.11	0.00
8.75	0.57	0.00	0.00	21.50	3.14	0.12	0.00
9.00	0.60	0.00	0.00	21.75	3.15	0.12	0.00
9.25	0.63	0.00	0.00	22.00	3.16	0.12	0.00
9.50	0.66	0.00	0.00	22.25	3.17	0.12	0.00
9.75	0.69	0.00	0.00	22.50	3.19	0.13	0.00
10.00	0.73	0.00	0.00	22.75	3.20	0.13	0.00
10.25	0.77	0.00	0.00	23.00	3.21	0.13	0.00
10.50	0.81	0.00	0.00	23.25	3.22	0.13	0.00
10.75	0.87	0.00	0.00	23.50	3.24	0.14	0.00
11.00	0.93	0.00	0.00	23.75	3.25	0.14	0.00
11.25	1.00	0.00	0.00	24.00	3.26	0.14	0.00
11.50	1.09	0.00	0.00				
11.75	1.23	0.00	0.00				
12.00	1.56	0.00	0.00				
12.25	2.03	0.00	0.00				
12.50	2.17	0.00	0.00				

3793-874 east sixth

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874 East Sixth Street
 NRCC 24-hr D 10-Year Rainfall=4.90"

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 Page 7

Summary for Subcatchment 1S: 874 E 6th Existing

Runoff = 0.07 cfs @ 12.15 hrs, Volume= 0.008 af, Depth> 0.65"

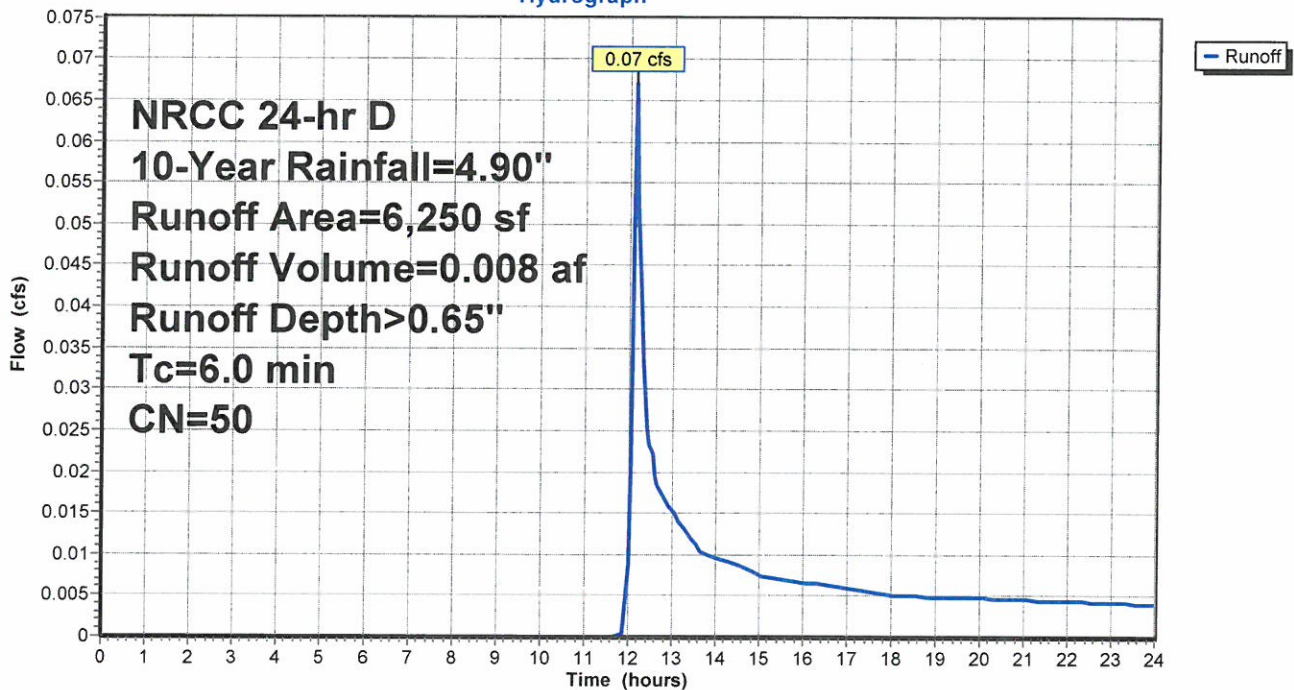
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 NRCC 24-hr D 10-Year Rainfall=4.90"

Area (sf)	CN	Description
796	98	Roofs, HSG A
350	98	Paved parking, HSG A
5,104	39	>75% Grass cover, Good, HSG A
6,250	50	Weighted Average
5,104		81.66% Pervious Area
1,146		18.34% Impervious Area

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

Subcatchment 1S: 874 E 6th Existing

Hydrograph



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874 East Sixth Street
NRCC 24-hr D 10-Year Rainfall=4.90"

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Page 8

Hydrograph for Subcatchment 1S: 874 E 6th Existing

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	12.75	3.39	0.17	0.02
0.25	0.02	0.00	0.00	13.00	3.51	0.20	0.02
0.50	0.04	0.00	0.00	13.25	3.60	0.22	0.01
0.75	0.05	0.00	0.00	13.50	3.68	0.24	0.01
1.00	0.07	0.00	0.00	13.75	3.74	0.26	0.01
1.25	0.09	0.00	0.00	14.00	3.80	0.27	0.01
1.50	0.11	0.00	0.00	14.25	3.86	0.29	0.01
1.75	0.13	0.00	0.00	14.50	3.91	0.31	0.01
2.00	0.15	0.00	0.00	14.75	3.96	0.32	0.01
2.25	0.17	0.00	0.00	15.00	4.00	0.33	0.01
2.50	0.19	0.00	0.00	15.25	4.04	0.35	0.01
2.75	0.21	0.00	0.00	15.50	4.08	0.36	0.01
3.00	0.23	0.00	0.00	15.75	4.12	0.37	0.01
3.25	0.25	0.00	0.00	16.00	4.15	0.38	0.01
3.50	0.27	0.00	0.00	16.25	4.19	0.39	0.01
3.75	0.29	0.00	0.00	16.50	4.22	0.40	0.01
4.00	0.32	0.00	0.00	16.75	4.25	0.41	0.01
4.25	0.34	0.00	0.00	17.00	4.28	0.42	0.01
4.50	0.36	0.00	0.00	17.25	4.31	0.43	0.01
4.75	0.38	0.00	0.00	17.50	4.34	0.44	0.01
5.00	0.41	0.00	0.00	17.75	4.37	0.45	0.01
5.25	0.43	0.00	0.00	18.00	4.40	0.46	0.01
5.50	0.46	0.00	0.00	18.25	4.42	0.47	0.01
5.75	0.48	0.00	0.00	18.50	4.44	0.48	0.00
6.00	0.50	0.00	0.00	18.75	4.47	0.49	0.00
6.25	0.53	0.00	0.00	19.00	4.49	0.50	0.00
6.50	0.56	0.00	0.00	19.25	4.52	0.51	0.00
6.75	0.59	0.00	0.00	19.50	4.54	0.51	0.00
7.00	0.62	0.00	0.00	19.75	4.56	0.52	0.00
7.25	0.65	0.00	0.00	20.00	4.58	0.53	0.00
7.50	0.68	0.00	0.00	20.25	4.61	0.54	0.00
7.75	0.71	0.00	0.00	20.50	4.63	0.55	0.00
8.00	0.75	0.00	0.00	20.75	4.65	0.56	0.00
8.25	0.78	0.00	0.00	21.00	4.67	0.56	0.00
8.50	0.82	0.00	0.00	21.25	4.69	0.57	0.00
8.75	0.86	0.00	0.00	21.50	4.71	0.58	0.00
9.00	0.90	0.00	0.00	21.75	4.73	0.59	0.00
9.25	0.94	0.00	0.00	22.00	4.75	0.59	0.00
9.50	0.99	0.00	0.00	22.25	4.77	0.60	0.00
9.75	1.04	0.00	0.00	22.50	4.79	0.61	0.00
10.00	1.10	0.00	0.00	22.75	4.81	0.62	0.00
10.25	1.16	0.00	0.00	23.00	4.83	0.62	0.00
10.50	1.22	0.00	0.00	23.25	4.85	0.63	0.00
10.75	1.30	0.00	0.00	23.50	4.86	0.64	0.00
11.00	1.39	0.00	0.00	23.75	4.88	0.64	0.00
11.25	1.51	0.00	0.00	24.00	4.90	0.65	0.00
11.50	1.64	0.00	0.00				
11.75	1.85	0.00	0.00				
12.00	2.35	0.01	0.01				
12.25	3.05	0.10	0.04				
12.50	3.26	0.14	0.02				

3793-874 east sixth

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874 East Sixth Street
NRCC 24-hr D 25-Year Rainfall=6.19"

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Page 9

Summary for Subcatchment 1S: 874 E 6th Existing

Runoff = 0.16 cfs @ 12.14 hrs, Volume= 0.015 af, Depth> 1.23"

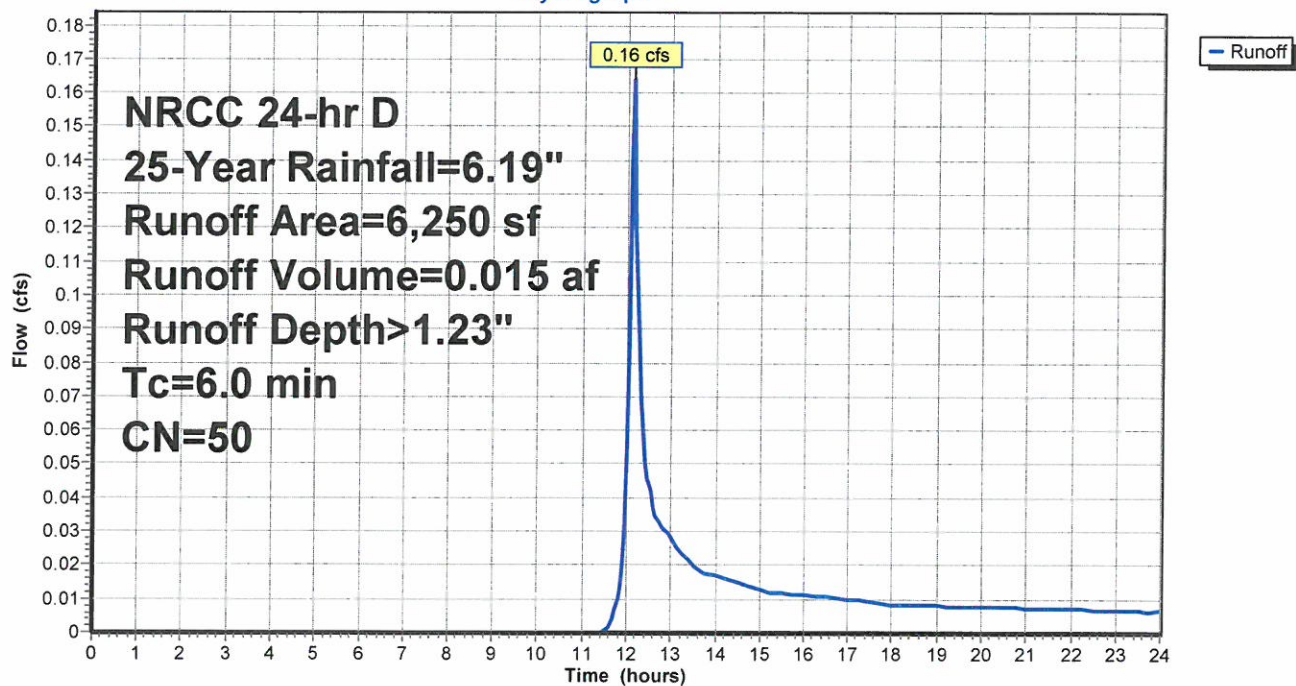
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=6.19"

Area (sf)	CN	Description
796	98	Roofs, HSG A
350	98	Paved parking, HSG A
5,104	39	>75% Grass cover, Good, HSG A
6,250	50	Weighted Average
5,104		81.66% Pervious Area
1,146		18.34% Impervious Area

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

Subcatchment 1S: 874 E 6th Existing

Hydrograph



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874 East Sixth Street
NRCC 24-hr D 25-Year Rainfall=6.19"

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Page 10

Hydrograph for Subcatchment 1S: 874 E 6th Existing

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	12.75	4.29	0.43	0.03
0.25	0.02	0.00	0.00	13.00	4.43	0.48	0.03
0.50	0.04	0.00	0.00	13.25	4.55	0.52	0.02
0.75	0.07	0.00	0.00	13.50	4.64	0.55	0.02
1.00	0.09	0.00	0.00	13.75	4.73	0.58	0.02
1.25	0.11	0.00	0.00	14.00	4.80	0.61	0.02
1.50	0.14	0.00	0.00	14.25	4.87	0.64	0.02
1.75	0.16	0.00	0.00	14.50	4.94	0.67	0.02
2.00	0.19	0.00	0.00	14.75	5.00	0.69	0.01
2.25	0.21	0.00	0.00	15.00	5.05	0.71	0.01
2.50	0.24	0.00	0.00	15.25	5.10	0.74	0.01
2.75	0.26	0.00	0.00	15.50	5.15	0.76	0.01
3.00	0.29	0.00	0.00	15.75	5.20	0.78	0.01
3.25	0.32	0.00	0.00	16.00	5.25	0.80	0.01
3.50	0.34	0.00	0.00	16.25	5.29	0.81	0.01
3.75	0.37	0.00	0.00	16.50	5.33	0.83	0.01
4.00	0.40	0.00	0.00	16.75	5.37	0.85	0.01
4.25	0.43	0.00	0.00	17.00	5.41	0.87	0.01
4.50	0.46	0.00	0.00	17.25	5.45	0.88	0.01
4.75	0.49	0.00	0.00	17.50	5.49	0.90	0.01
5.00	0.51	0.00	0.00	17.75	5.52	0.92	0.01
5.25	0.54	0.00	0.00	18.00	5.55	0.93	0.01
5.50	0.58	0.00	0.00	18.25	5.58	0.95	0.01
5.75	0.61	0.00	0.00	18.50	5.61	0.96	0.01
6.00	0.64	0.00	0.00	18.75	5.65	0.97	0.01
6.25	0.67	0.00	0.00	19.00	5.68	0.99	0.01
6.50	0.70	0.00	0.00	19.25	5.70	1.00	0.01
6.75	0.74	0.00	0.00	19.50	5.73	1.02	0.01
7.00	0.78	0.00	0.00	19.75	5.76	1.03	0.01
7.25	0.82	0.00	0.00	20.00	5.79	1.04	0.01
7.50	0.86	0.00	0.00	20.25	5.82	1.06	0.01
7.75	0.90	0.00	0.00	20.50	5.85	1.07	0.01
8.00	0.94	0.00	0.00	20.75	5.87	1.08	0.01
8.25	0.99	0.00	0.00	21.00	5.90	1.09	0.01
8.50	1.04	0.00	0.00	21.25	5.93	1.11	0.01
8.75	1.09	0.00	0.00	21.50	5.95	1.12	0.01
9.00	1.14	0.00	0.00	21.75	5.98	1.13	0.01
9.25	1.19	0.00	0.00	22.00	6.00	1.14	0.01
9.50	1.25	0.00	0.00	22.25	6.03	1.16	0.01
9.75	1.32	0.00	0.00	22.50	6.05	1.17	0.01
10.00	1.39	0.00	0.00	22.75	6.08	1.18	0.01
10.25	1.46	0.00	0.00	23.00	6.10	1.19	0.01
10.50	1.55	0.00	0.00	23.25	6.12	1.20	0.01
10.75	1.64	0.00	0.00	23.50	6.15	1.21	0.01
11.00	1.76	0.00	0.00	23.75	6.17	1.23	0.01
11.25	1.90	0.00	0.00	24.00	6.19	1.24	0.01
11.50	2.07	0.00	0.00				
11.75	2.34	0.01	0.01				
12.00	2.97	0.08	0.05				
12.25	3.85	0.29	0.09				
12.50	4.12	0.37	0.04				

3793-874 east sixth

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874 East Sixth Street
NRCC 24-hr D 100-Year Rainfall=8.83"

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Summary for Subcatchment 1S: 874 E 6th Existing

Runoff = 0.41 cfs @ 12.14 hrs, Volume= 0.033 af, Depth> 2.77"

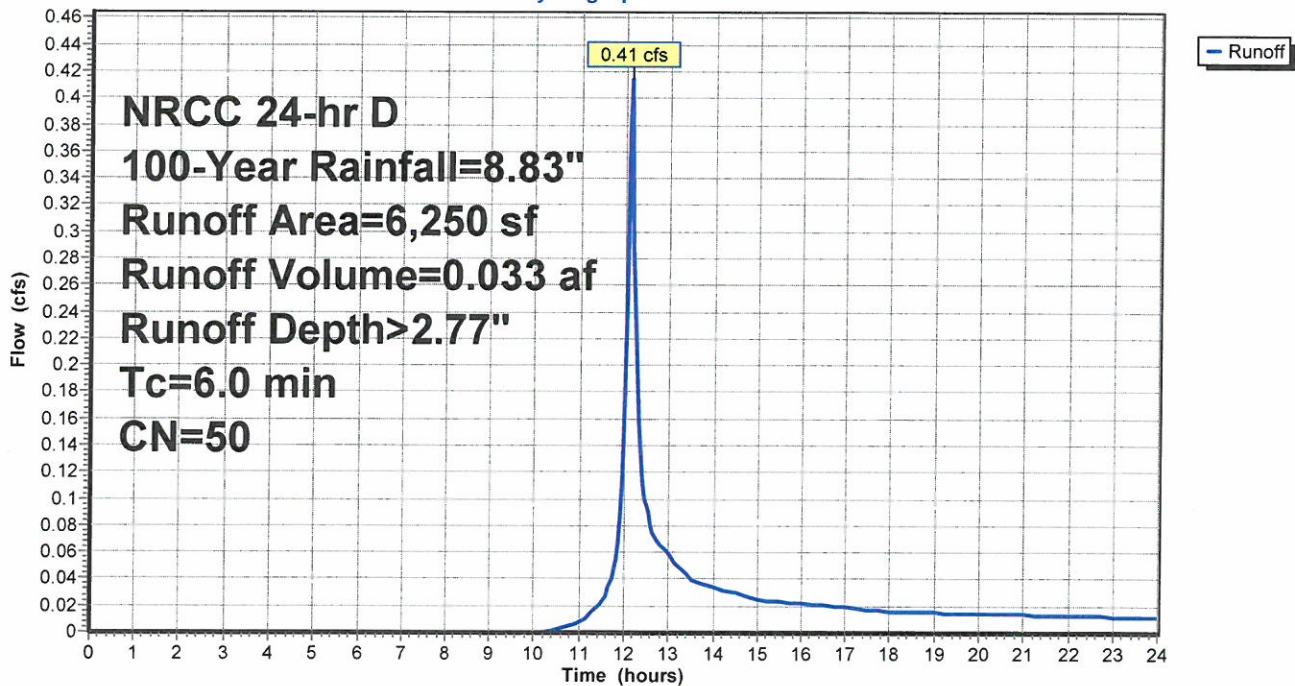
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=8.83"

Area (sf)	CN	Description
796	98	Roofs, HSG A
350	98	Paved parking, HSG A
5,104	39	>75% Grass cover, Good, HSG A
6,250	50	Weighted Average
5,104		81.66% Pervious Area
1,146		18.34% Impervious Area

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

Subcatchment 1S: 874 E 6th Existing

Hydrograph



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874 East Sixth Street

NRCC 24-hr D 100-Year Rainfall=8.83"

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Hydrograph for Subcatchment 1S: 874 E 6th Existing

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	12.75	6.12	1.20	0.07
0.25	0.03	0.00	0.00	13.00	6.32	1.30	0.06
0.50	0.06	0.00	0.00	13.25	6.49	1.39	0.05
0.75	0.10	0.00	0.00	13.50	6.62	1.46	0.04
1.00	0.13	0.00	0.00	13.75	6.74	1.52	0.04
1.25	0.16	0.00	0.00	14.00	6.85	1.58	0.03
1.50	0.20	0.00	0.00	14.25	6.95	1.64	0.03
1.75	0.23	0.00	0.00	14.50	7.05	1.69	0.03
2.00	0.27	0.00	0.00	14.75	7.13	1.74	0.03
2.25	0.30	0.00	0.00	15.00	7.21	1.78	0.03
2.50	0.34	0.00	0.00	15.25	7.28	1.83	0.02
2.75	0.38	0.00	0.00	15.50	7.35	1.87	0.02
3.00	0.41	0.00	0.00	15.75	7.42	1.90	0.02
3.25	0.45	0.00	0.00	16.00	7.48	1.94	0.02
3.50	0.49	0.00	0.00	16.25	7.55	1.98	0.02
3.75	0.53	0.00	0.00	16.50	7.61	2.01	0.02
4.00	0.57	0.00	0.00	16.75	7.67	2.05	0.02
4.25	0.61	0.00	0.00	17.00	7.72	2.08	0.02
4.50	0.65	0.00	0.00	17.25	7.77	2.11	0.02
4.75	0.69	0.00	0.00	17.50	7.83	2.14	0.02
5.00	0.73	0.00	0.00	17.75	7.87	2.17	0.02
5.25	0.78	0.00	0.00	18.00	7.92	2.20	0.02
5.50	0.82	0.00	0.00	18.25	7.97	2.23	0.02
5.75	0.86	0.00	0.00	18.50	8.01	2.26	0.02
6.00	0.91	0.00	0.00	18.75	8.05	2.28	0.02
6.25	0.96	0.00	0.00	19.00	8.10	2.31	0.02
6.50	1.00	0.00	0.00	19.25	8.14	2.33	0.02
6.75	1.06	0.00	0.00	19.50	8.18	2.36	0.01
7.00	1.11	0.00	0.00	19.75	8.22	2.39	0.01
7.25	1.16	0.00	0.00	20.00	8.26	2.41	0.01
7.50	1.22	0.00	0.00	20.25	8.30	2.44	0.01
7.75	1.28	0.00	0.00	20.50	8.34	2.46	0.01
8.00	1.35	0.00	0.00	20.75	8.38	2.48	0.01
8.25	1.41	0.00	0.00	21.00	8.42	2.51	0.01
8.50	1.48	0.00	0.00	21.25	8.45	2.53	0.01
8.75	1.55	0.00	0.00	21.50	8.49	2.56	0.01
9.00	1.62	0.00	0.00	21.75	8.53	2.58	0.01
9.25	1.70	0.00	0.00	22.00	8.56	2.60	0.01
9.50	1.78	0.00	0.00	22.25	8.60	2.62	0.01
9.75	1.88	0.00	0.00	22.50	8.63	2.65	0.01
10.00	1.98	0.00	0.00	22.75	8.67	2.67	0.01
10.25	2.09	0.00	0.00	23.00	8.70	2.69	0.01
10.50	2.21	0.00	0.00	23.25	8.73	2.71	0.01
10.75	2.34	0.01	0.00	23.50	8.77	2.73	0.01
11.00	2.51	0.02	0.01	23.75	8.80	2.75	0.01
11.25	2.71	0.05	0.01	24.00	8.83	2.77	0.01
11.50	2.96	0.08	0.02				
11.75	3.34	0.16	0.04				
12.00	4.23	0.41	0.17				
12.25	5.49	0.90	0.20				
12.50	5.87	1.08	0.10				

3793-874 east sixth

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874 East Sixth Street
NRCC 24-hr D Custom Rainfall=1.00"

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Summary for Subcatchment 1S: 874 E 6th Existing

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

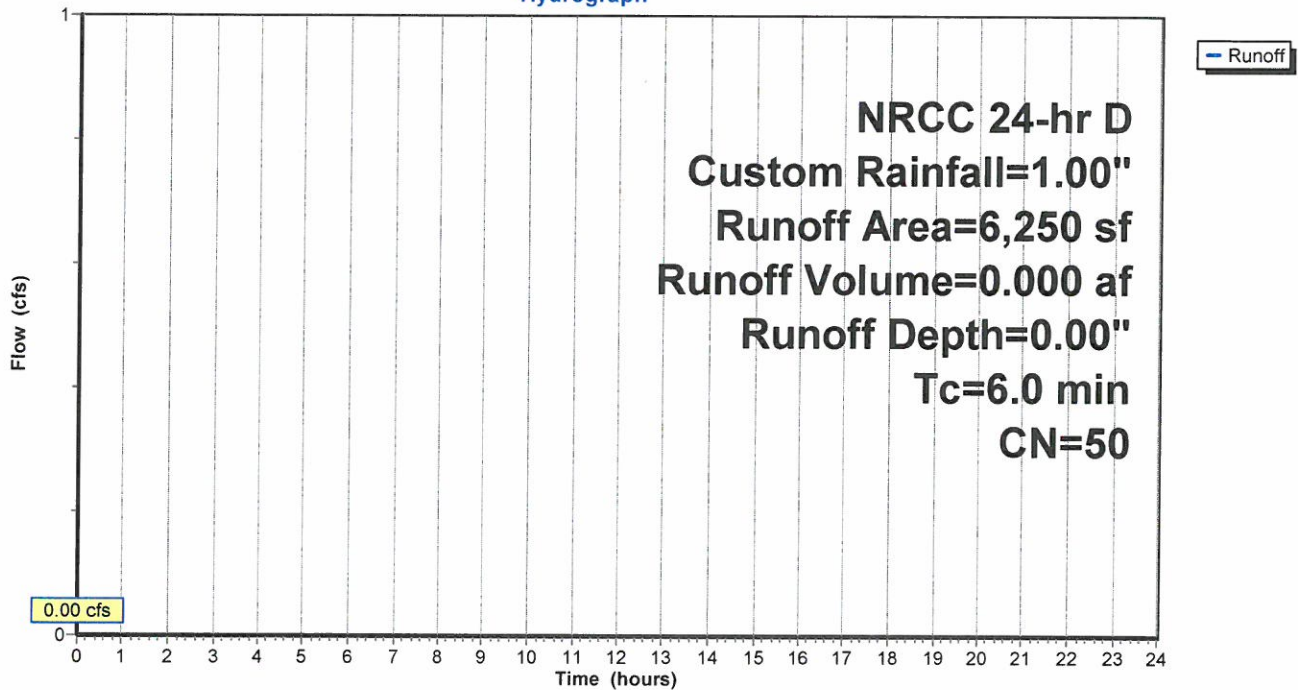
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr D Custom Rainfall=1.00"

Area (sf)	CN	Description
796	98	Roofs, HSG A
350	98	Paved parking, HSG A
5,104	39	>75% Grass cover, Good, HSG A
6,250	50	Weighted Average
5,104		81.66% Pervious Area
1,146		18.34% Impervious Area

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

Subcatchment 1S: 874 E 6th Existing

Hydrograph



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874 East Sixth Street

NRCC 24-hr D Custom Rainfall=1.00"

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Hydrograph for Subcatchment 1S: 874 E 6th Existing

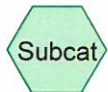
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	12.75	0.69	0.00	0.00
0.25	0.00	0.00	0.00	13.00	0.72	0.00	0.00
0.50	0.01	0.00	0.00	13.25	0.73	0.00	0.00
0.75	0.01	0.00	0.00	13.50	0.75	0.00	0.00
1.00	0.01	0.00	0.00	13.75	0.76	0.00	0.00
1.25	0.02	0.00	0.00	14.00	0.78	0.00	0.00
1.50	0.02	0.00	0.00	14.25	0.79	0.00	0.00
1.75	0.03	0.00	0.00	14.50	0.80	0.00	0.00
2.00	0.03	0.00	0.00	14.75	0.81	0.00	0.00
2.25	0.03	0.00	0.00	15.00	0.82	0.00	0.00
2.50	0.04	0.00	0.00	15.25	0.82	0.00	0.00
2.75	0.04	0.00	0.00	15.50	0.83	0.00	0.00
3.00	0.05	0.00	0.00	15.75	0.84	0.00	0.00
3.25	0.05	0.00	0.00	16.00	0.85	0.00	0.00
3.50	0.06	0.00	0.00	16.25	0.85	0.00	0.00
3.75	0.06	0.00	0.00	16.50	0.86	0.00	0.00
4.00	0.06	0.00	0.00	16.75	0.87	0.00	0.00
4.25	0.07	0.00	0.00	17.00	0.87	0.00	0.00
4.50	0.07	0.00	0.00	17.25	0.88	0.00	0.00
4.75	0.08	0.00	0.00	17.50	0.89	0.00	0.00
5.00	0.08	0.00	0.00	17.75	0.89	0.00	0.00
5.25	0.09	0.00	0.00	18.00	0.90	0.00	0.00
5.50	0.09	0.00	0.00	18.25	0.90	0.00	0.00
5.75	0.10	0.00	0.00	18.50	0.91	0.00	0.00
6.00	0.10	0.00	0.00	18.75	0.91	0.00	0.00
6.25	0.11	0.00	0.00	19.00	0.92	0.00	0.00
6.50	0.11	0.00	0.00	19.25	0.92	0.00	0.00
6.75	0.12	0.00	0.00	19.50	0.93	0.00	0.00
7.00	0.13	0.00	0.00	19.75	0.93	0.00	0.00
7.25	0.13	0.00	0.00	20.00	0.94	0.00	0.00
7.50	0.14	0.00	0.00	20.25	0.94	0.00	0.00
7.75	0.15	0.00	0.00	20.50	0.94	0.00	0.00
8.00	0.15	0.00	0.00	20.75	0.95	0.00	0.00
8.25	0.16	0.00	0.00	21.00	0.95	0.00	0.00
8.50	0.17	0.00	0.00	21.25	0.96	0.00	0.00
8.75	0.18	0.00	0.00	21.50	0.96	0.00	0.00
9.00	0.18	0.00	0.00	21.75	0.97	0.00	0.00
9.25	0.19	0.00	0.00	22.00	0.97	0.00	0.00
9.50	0.20	0.00	0.00	22.25	0.97	0.00	0.00
9.75	0.21	0.00	0.00	22.50	0.98	0.00	0.00
10.00	0.22	0.00	0.00	22.75	0.98	0.00	0.00
10.25	0.24	0.00	0.00	23.00	0.99	0.00	0.00
10.50	0.25	0.00	0.00	23.25	0.99	0.00	0.00
10.75	0.27	0.00	0.00	23.50	0.99	0.00	0.00
11.00	0.28	0.00	0.00	23.75	1.00	0.00	0.00
11.25	0.31	0.00	0.00	24.00	1.00	0.00	0.00
11.50	0.33	0.00	0.00				
11.75	0.38	0.00	0.00				
12.00	0.48	0.00	0.00				
12.25	0.62	0.00	0.00				
12.50	0.66	0.00	0.00				

PROPOSED CONDITIONS - HYDROCAD



874 E 6th proposed

4 1000 GALLON
DRYWELLS



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Page 2**Area Listing (selected nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
0.012	39	>75% Grass cover, Good, HSG A (2S)
0.041	98	Paved parking, HSG A (2S)
0.091	98	Roofs, HSG A (2S)
0.143	93	TOTAL AREA

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Page 3

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.143	HSG A	2S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.143		TOTAL AREA

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 Page 4

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.012	0.000	0.000	0.000	0.000	0.012	>75% Grass cover, Good	2S
0.041	0.000	0.000	0.000	0.000	0.041	Paved parking	2S
0.091	0.000	0.000	0.000	0.000	0.091	Roofs	2S
0.143	0.000	0.000	0.000	0.000	0.143	TOTAL AREA	

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Page 5**Pipe Listing (selected nodes)**

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	3P	3.09	2.36	84.0	0.0087	0.010	6.0	0.0	0.0

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874 East Sixth Street proposed
NRCC 24-hr D 2-Year Rainfall=3.26"

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Page 6

Summary for Subcatchment 2S: 874 E 6th proposed

Runoff = 0.37 cfs @ 12.13 hrs, Volume= 0.030 af, Depth> 2.50"

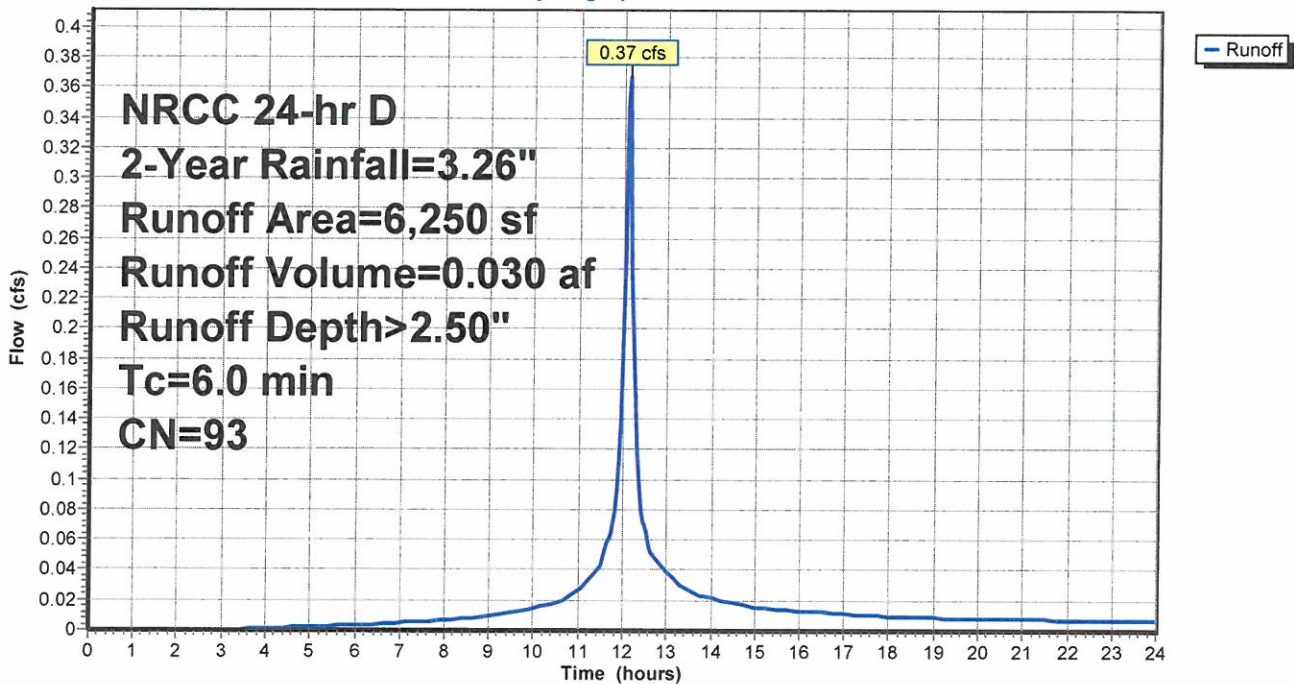
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.26"

Area (sf)	CN	Description
3,972	98	Roofs, HSG A
1,769	98	Paved parking, HSG A
509	39	>75% Grass cover, Good, HSG A
6,250	93	Weighted Average
509		8.14% Pervious Area
5,741		91.86% Impervious Area

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

Subcatchment 2S: 874 E 6th proposed

Hydrograph



3793-874 east sixth

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Hydrograph for Subcatchment 2S: 874 E 6th proposed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	12.75	2.26	1.55	0.05
0.25	0.01	0.00	0.00	13.00	2.33	1.62	0.04
0.50	0.02	0.00	0.00	13.25	2.39	1.68	0.03
0.75	0.04	0.00	0.00	13.50	2.45	1.73	0.03
1.00	0.05	0.00	0.00	13.75	2.49	1.77	0.02
1.25	0.06	0.00	0.00	14.00	2.53	1.81	0.02
1.50	0.07	0.00	0.00	14.25	2.57	1.84	0.02
1.75	0.09	0.00	0.00	14.50	2.60	1.87	0.02
2.00	0.10	0.00	0.00	14.75	2.63	1.90	0.02
2.25	0.11	0.00	0.00	15.00	2.66	1.93	0.02
2.50	0.12	0.00	0.00	15.25	2.69	1.96	0.01
2.75	0.14	0.00	0.00	15.50	2.71	1.98	0.01
3.00	0.15	0.00	0.00	15.75	2.74	2.01	0.01
3.25	0.17	0.00	0.00	16.00	2.76	2.03	0.01
3.50	0.18	0.00	0.00	16.25	2.79	2.05	0.01
3.75	0.20	0.00	0.00	16.50	2.81	2.07	0.01
4.00	0.21	0.00	0.00	16.75	2.83	2.09	0.01
4.25	0.23	0.01	0.00	17.00	2.85	2.11	0.01
4.50	0.24	0.01	0.00	17.25	2.87	2.13	0.01
4.75	0.26	0.01	0.00	17.50	2.89	2.15	0.01
5.00	0.27	0.02	0.00	17.75	2.91	2.17	0.01
5.25	0.29	0.02	0.00	18.00	2.92	2.18	0.01
5.50	0.30	0.03	0.00	18.25	2.94	2.20	0.01
5.75	0.32	0.03	0.00	18.50	2.96	2.21	0.01
6.00	0.34	0.04	0.00	18.75	2.97	2.23	0.01
6.25	0.35	0.04	0.00	19.00	2.99	2.24	0.01
6.50	0.37	0.05	0.00	19.25	3.00	2.26	0.01
6.75	0.39	0.06	0.00	19.50	3.02	2.27	0.01
7.00	0.41	0.07	0.01	19.75	3.03	2.29	0.01
7.25	0.43	0.08	0.01	20.00	3.05	2.30	0.01
7.50	0.45	0.09	0.01	20.25	3.06	2.32	0.01
7.75	0.47	0.10	0.01	20.50	3.08	2.33	0.01
8.00	0.50	0.11	0.01	20.75	3.09	2.34	0.01
8.25	0.52	0.12	0.01	21.00	3.11	2.36	0.01
8.50	0.55	0.14	0.01	21.25	3.12	2.37	0.01
8.75	0.57	0.15	0.01	21.50	3.14	2.38	0.01
9.00	0.60	0.17	0.01	21.75	3.15	2.40	0.01
9.25	0.63	0.18	0.01	22.00	3.16	2.41	0.01
9.50	0.66	0.20	0.01	22.25	3.17	2.42	0.01
9.75	0.69	0.23	0.01	22.50	3.19	2.43	0.01
10.00	0.73	0.25	0.01	22.75	3.20	2.45	0.01
10.25	0.77	0.28	0.02	23.00	3.21	2.46	0.01
10.50	0.81	0.31	0.02	23.25	3.22	2.47	0.01
10.75	0.87	0.35	0.02	23.50	3.24	2.48	0.01
11.00	0.93	0.39	0.03	23.75	3.25	2.49	0.01
11.25	1.00	0.45	0.03	24.00	3.26	2.50	0.01
11.50	1.09	0.52	0.04				
11.75	1.23	0.64	0.07				
12.00	1.56	0.92	0.19				
12.25	2.03	1.34	0.16				
12.50	2.17	1.47	0.07				

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874 East Sixth Street proposed
NRCC 24-hr D 2-Year Rainfall=3.26"
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Summary for Pond 3P: 4 1000 GALLON DRYWELLS

Inflow Area = 0.143 ac, 91.86% Impervious, Inflow Depth > 2.50" for 2-Year event
Inflow = 0.37 cfs @ 12.13 hrs, Volume= 0.030 af
Outflow = 0.11 cfs @ 11.95 hrs, Volume= 0.030 af, Atten= 71%, Lag= 0.0 min
Discarded = 0.11 cfs @ 11.95 hrs, Volume= 0.030 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 0.16' @ 12.33 hrs Surf.Area= 0.013 ac Storage= 0.004 af

Plug-Flow detention time= 7.1 min calculated for 0.030 af (100% of inflow)
Center-of-Mass det. time= 6.8 min (811.0 - 804.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	-0.91'	0.014 af	38.67'W x 14.50'L x 4.83'H Field A 0.062 af Overall - 0.015 af Embedded = 0.047 af x 30.0% Voids
#2A	1.09'	0.012 af	Shea Dry Well 1000gal x 4 Inside #1 Inside= 62.0"W x 30.0"H => 12.86 sf x 10.00'L = 128.6 cf Outside= 68.0"W x 34.0"H => 15.80 sf x 10.50'L = 165.9 cf 4 Chambers in 4 Rows
		0.026 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	-0.91'	8.270 in/hr Exfiltration over Surface area
#2	Primary	3.09'	6.0" Round Culvert L= 84.0' Ke= 0.500 Inlet / Outlet Invert= 3.09' / 2.36' S= 0.0087 '/ Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.11 cfs @ 11.95 hrs HW=-0.84' (Free Discharge)
↑1=Exfiltration (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=-0.91' (Free Discharge)
↑2=Culvert (Controls 0.00 cfs)

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Pond 3P: 4 1000 GALLON DRYWELLS - Chamber Wizard Field A

Chamber Model = Shea Dry Well 1000gal (Shea Jumbo Rectagular Dry Well)

Inside= 62.0"W x 30.0"H => 12.86 sf x 10.00'L = 128.6 cf

Outside= 68.0"W x 34.0"H => 15.80 sf x 10.50'L = 165.9 cf

68.0" Wide + 48.0" Spacing = 116.0" C-C Row Spacing

1 Chambers/Row x 10.50' Long = 10.50' Row Length +24.0" End Stone x 2 = 14.50' Base Length

4 Rows x 68.0" Wide + 48.0" Spacing x 3 + 24.0" Side Stone x 2 = 38.67' Base Width

24.0" Base + 34.0" Chamber Height = 4.83' Field Height

4 Chambers x 128.6 cf = 514.4 cf Chamber Storage

4 Chambers x 165.9 cf = 663.7 cf Displacement

2,708.1 cf Field - 663.7 cf Chambers = 2,044.4 cf Stone x 30.0% Voids = 613.3 cf Stone Storage

Chamber Storage + Stone Storage = 1,127.8 cf = 0.026 af

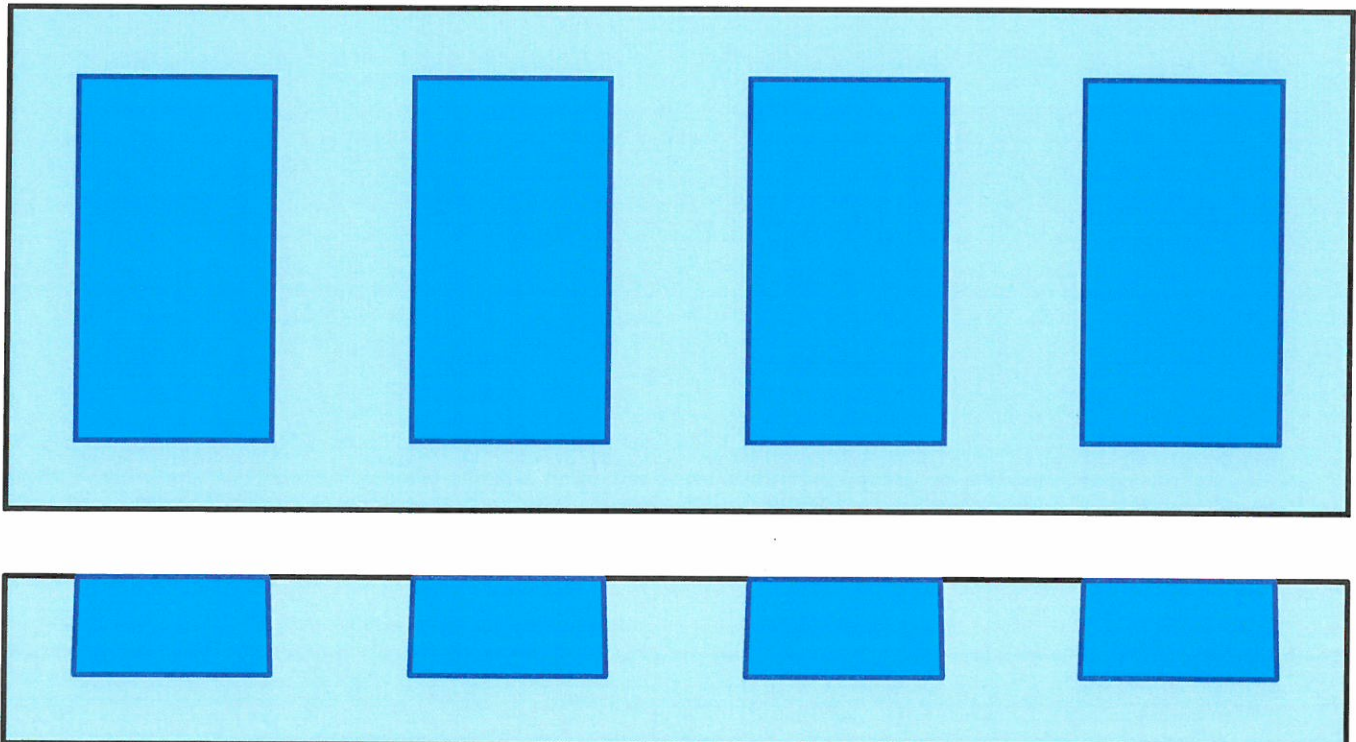
Overall Storage Efficiency = 41.6%

Overall System Size = 14.50' x 38.67' x 4.83'

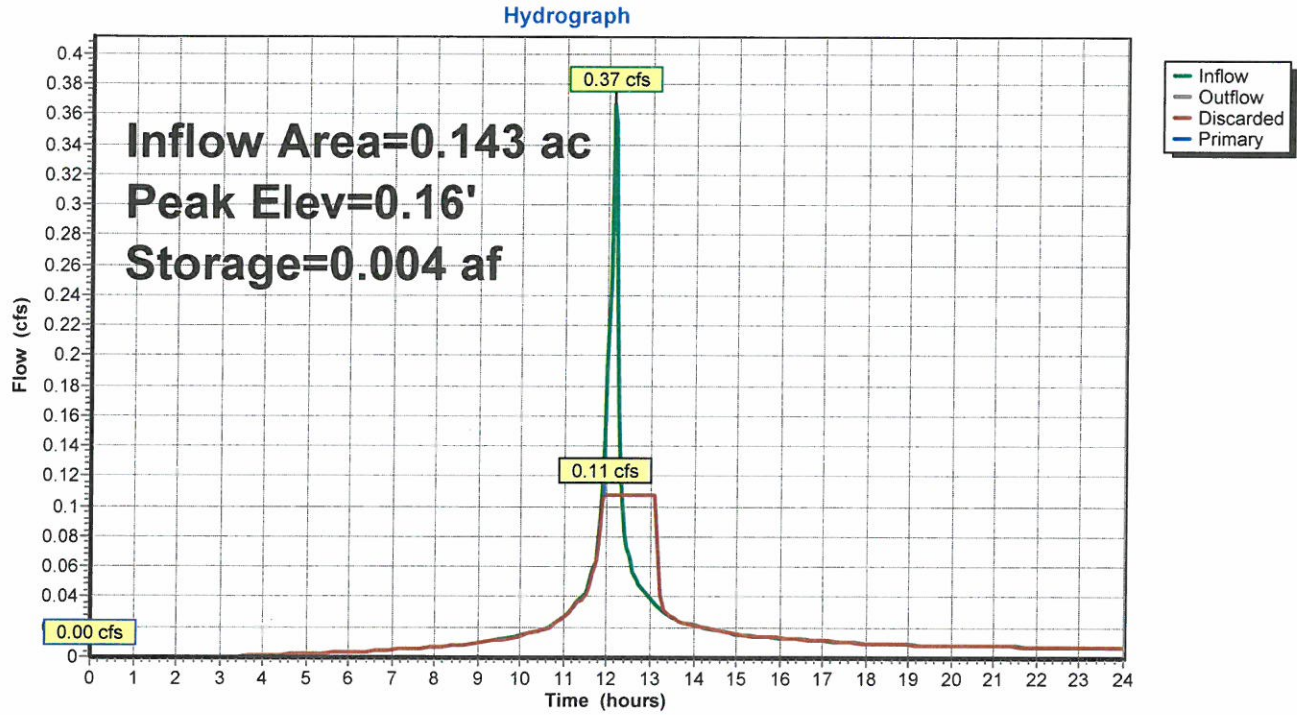
4 Chambers

100.3 cy Field

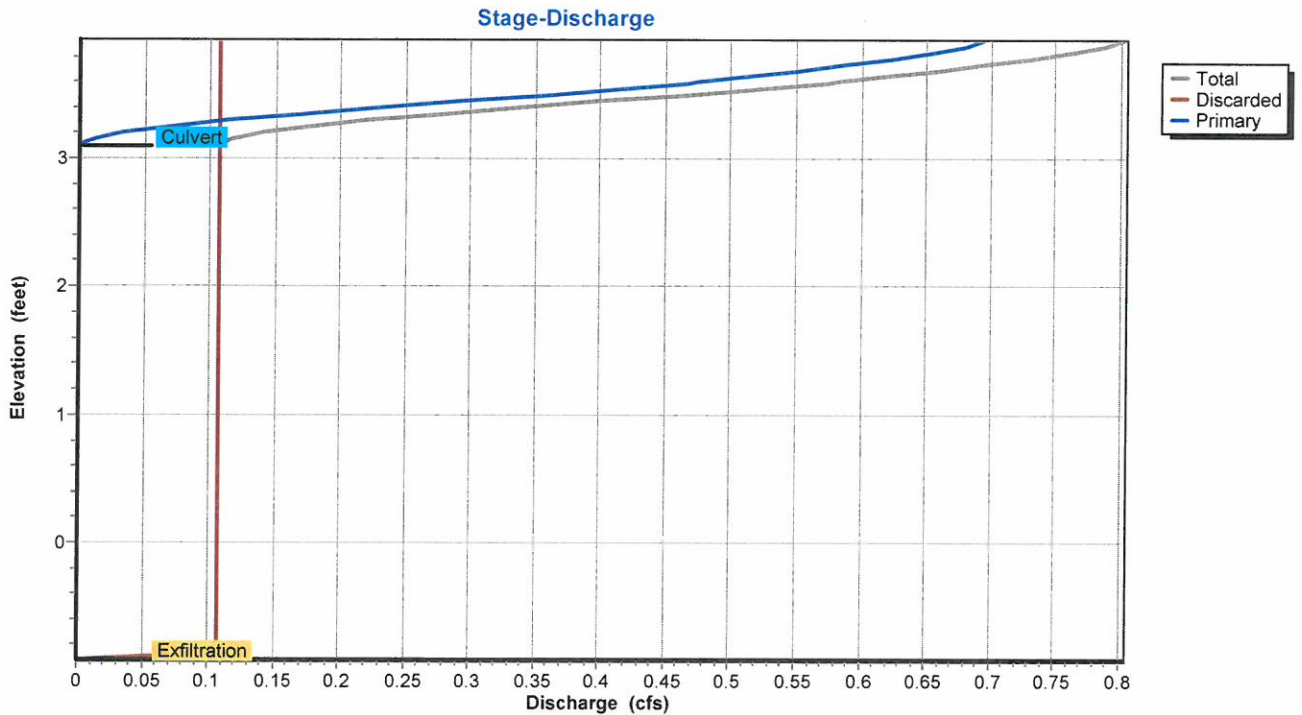
75.7 cy Stone



Pond 3P: 4 1000 GALLON DRYWELLS



Pond 3P: 4 1000 GALLON DRYWELLS



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Hydrograph for Pond 3P: 4 1000 GALLON DRYWELLS

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.000	-0.91	0.00	0.00	0.00
0.50	0.00	0.000	-0.91	0.00	0.00	0.00
1.00	0.00	0.000	-0.91	0.00	0.00	0.00
1.50	0.00	0.000	-0.91	0.00	0.00	0.00
2.00	0.00	0.000	-0.91	0.00	0.00	0.00
2.50	0.00	0.000	-0.91	0.00	0.00	0.00
3.00	0.00	0.000	-0.91	0.00	0.00	0.00
3.50	0.00	0.000	-0.91	0.00	0.00	0.00
4.00	0.00	0.000	-0.91	0.00	0.00	0.00
4.50	0.00	0.000	-0.91	0.00	0.00	0.00
5.00	0.00	0.000	-0.91	0.00	0.00	0.00
5.50	0.00	0.000	-0.91	0.00	0.00	0.00
6.00	0.00	0.000	-0.91	0.00	0.00	0.00
6.50	0.00	0.000	-0.91	0.00	0.00	0.00
7.00	0.01	0.000	-0.91	0.00	0.00	0.00
7.50	0.01	0.000	-0.91	0.01	0.01	0.00
8.00	0.01	0.000	-0.91	0.01	0.01	0.00
8.50	0.01	0.000	-0.91	0.01	0.01	0.00
9.00	0.01	0.000	-0.91	0.01	0.01	0.00
9.50	0.01	0.000	-0.90	0.01	0.01	0.00
10.00	0.01	0.000	-0.90	0.01	0.01	0.00
10.50	0.02	0.000	-0.90	0.02	0.02	0.00
11.00	0.03	0.000	-0.90	0.03	0.03	0.00
11.50	0.04	0.000	-0.89	0.04	0.04	0.00
12.00	0.19	0.001	-0.78	0.11	0.11	0.00
12.50	0.07	0.004	0.07	0.11	0.11	0.00
13.00	0.04	0.001	-0.54	0.11	0.11	0.00
13.50	0.03	0.000	-0.90	0.03	0.03	0.00
14.00	0.02	0.000	-0.90	0.02	0.02	0.00
14.50	0.02	0.000	-0.90	0.02	0.02	0.00
15.00	0.02	0.000	-0.90	0.02	0.02	0.00
15.50	0.01	0.000	-0.90	0.01	0.01	0.00
16.00	0.01	0.000	-0.90	0.01	0.01	0.00
16.50	0.01	0.000	-0.90	0.01	0.01	0.00
17.00	0.01	0.000	-0.90	0.01	0.01	0.00
17.50	0.01	0.000	-0.91	0.01	0.01	0.00
18.00	0.01	0.000	-0.91	0.01	0.01	0.00
18.50	0.01	0.000	-0.91	0.01	0.01	0.00
19.00	0.01	0.000	-0.91	0.01	0.01	0.00
19.50	0.01	0.000	-0.91	0.01	0.01	0.00
20.00	0.01	0.000	-0.91	0.01	0.01	0.00
20.50	0.01	0.000	-0.91	0.01	0.01	0.00
21.00	0.01	0.000	-0.91	0.01	0.01	0.00
21.50	0.01	0.000	-0.91	0.01	0.01	0.00
22.00	0.01	0.000	-0.91	0.01	0.01	0.00
22.50	0.01	0.000	-0.91	0.01	0.01	0.00
23.00	0.01	0.000	-0.91	0.01	0.01	0.00
23.50	0.01	0.000	-0.91	0.01	0.01	0.00
24.00	0.01	0.000	-0.91	0.01	0.01	0.00

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Stage-Discharge for Pond 3P: 4 1000 GALLON DRYWELLS

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
-0.91	0.00	0.00	0.00	1.64	0.11	0.11	0.00
-0.86	0.11	0.11	0.00	1.69	0.11	0.11	0.00
-0.81	0.11	0.11	0.00	1.74	0.11	0.11	0.00
-0.76	0.11	0.11	0.00	1.79	0.11	0.11	0.00
-0.71	0.11	0.11	0.00	1.84	0.11	0.11	0.00
-0.66	0.11	0.11	0.00	1.89	0.11	0.11	0.00
-0.61	0.11	0.11	0.00	1.94	0.11	0.11	0.00
-0.56	0.11	0.11	0.00	1.99	0.11	0.11	0.00
-0.51	0.11	0.11	0.00	2.04	0.11	0.11	0.00
-0.46	0.11	0.11	0.00	2.09	0.11	0.11	0.00
-0.41	0.11	0.11	0.00	2.14	0.11	0.11	0.00
-0.36	0.11	0.11	0.00	2.19	0.11	0.11	0.00
-0.31	0.11	0.11	0.00	2.24	0.11	0.11	0.00
-0.26	0.11	0.11	0.00	2.29	0.11	0.11	0.00
-0.21	0.11	0.11	0.00	2.34	0.11	0.11	0.00
-0.16	0.11	0.11	0.00	2.39	0.11	0.11	0.00
-0.11	0.11	0.11	0.00	2.44	0.11	0.11	0.00
-0.06	0.11	0.11	0.00	2.49	0.11	0.11	0.00
-0.01	0.11	0.11	0.00	2.54	0.11	0.11	0.00
0.04	0.11	0.11	0.00	2.59	0.11	0.11	0.00
0.09	0.11	0.11	0.00	2.64	0.11	0.11	0.00
0.14	0.11	0.11	0.00	2.69	0.11	0.11	0.00
0.19	0.11	0.11	0.00	2.74	0.11	0.11	0.00
0.24	0.11	0.11	0.00	2.79	0.11	0.11	0.00
0.29	0.11	0.11	0.00	2.84	0.11	0.11	0.00
0.34	0.11	0.11	0.00	2.89	0.11	0.11	0.00
0.39	0.11	0.11	0.00	2.94	0.11	0.11	0.00
0.44	0.11	0.11	0.00	2.99	0.11	0.11	0.00
0.49	0.11	0.11	0.00	3.04	0.11	0.11	0.00
0.54	0.11	0.11	0.00	3.09	0.11	0.11	0.00
0.59	0.11	0.11	0.00	3.14	0.11	0.11	0.01
0.64	0.11	0.11	0.00	3.19	0.14	0.11	0.03
0.69	0.11	0.11	0.00	3.24	0.17	0.11	0.07
0.74	0.11	0.11	0.00	3.29	0.22	0.11	0.11
0.79	0.11	0.11	0.00	3.34	0.27	0.11	0.17
0.84	0.11	0.11	0.00	3.39	0.34	0.11	0.23
0.89	0.11	0.11	0.00	3.44	0.40	0.11	0.30
0.94	0.11	0.11	0.00	3.49	0.47	0.11	0.36
0.99	0.11	0.11	0.00	3.54	0.53	0.11	0.43
1.04	0.11	0.11	0.00	3.59	0.58	0.11	0.47
1.09	0.11	0.11	0.00	3.64	0.63	0.11	0.52
1.14	0.11	0.11	0.00	3.69	0.67	0.11	0.56
1.19	0.11	0.11	0.00	3.74	0.71	0.11	0.60
1.24	0.11	0.11	0.00	3.79	0.74	0.11	0.63
1.29	0.11	0.11	0.00	3.84	0.78	0.11	0.67
1.34	0.11	0.11	0.00	3.89	0.79	0.11	0.69
1.39	0.11	0.11	0.00				
1.44	0.11	0.11	0.00				
1.49	0.11	0.11	0.00				
1.54	0.11	0.11	0.00				
1.59	0.11	0.11	0.00				

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NRCC 24-hr D 10-Year Rainfall=4.90"

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Summary for Subcatchment 2S: 874 E 6th proposed

Runoff = 0.58 cfs @ 12.13 hrs, Volume= 0.049 af, Depth> 4.09"

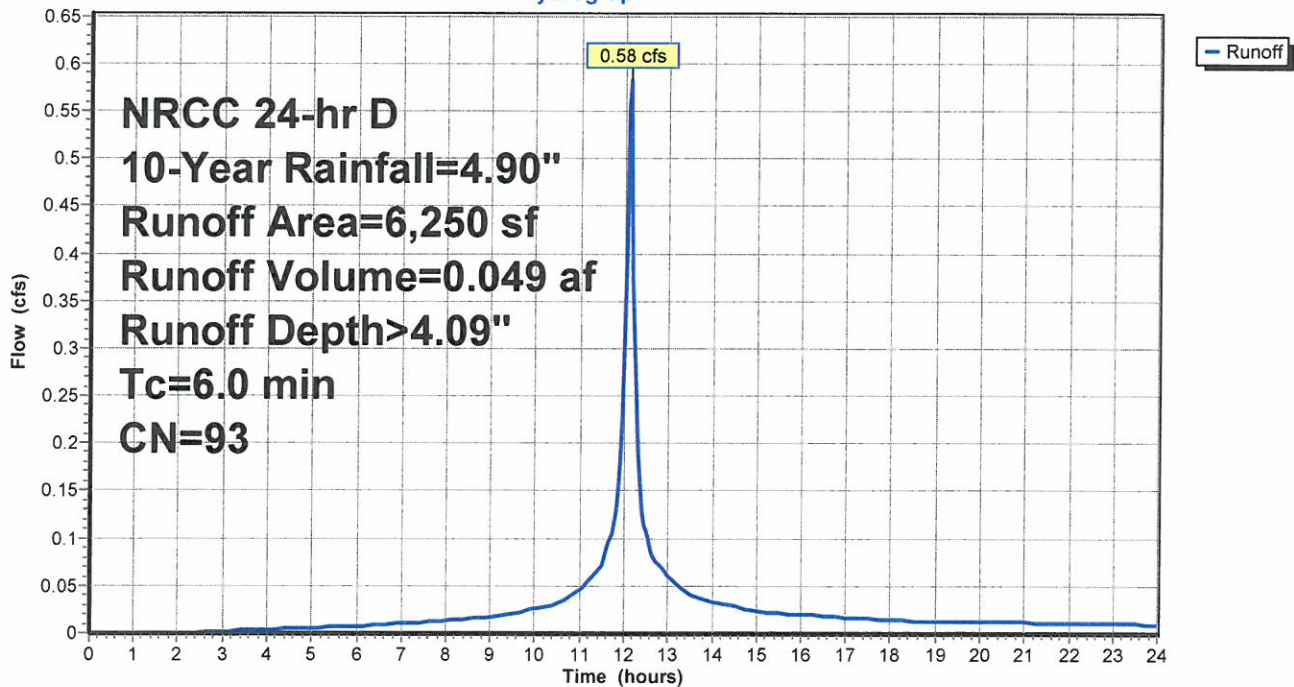
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.90"

Area (sf)	CN	Description
3,972	98	Roofs, HSG A
1,769	98	Paved parking, HSG A
509	39	>75% Grass cover, Good, HSG A
6,250	93	Weighted Average
509		8.14% Pervious Area
5,741		91.86% Impervious Area

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

Subcatchment 2S: 874 E 6th proposed

Hydrograph



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Hydrograph for Subcatchment 2S: 874 E 6th proposed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	12.75	3.39	2.63	0.07
0.25	0.02	0.00	0.00	13.00	3.51	2.74	0.06
0.50	0.04	0.00	0.00	13.25	3.60	2.83	0.05
0.75	0.05	0.00	0.00	13.50	3.68	2.91	0.04
1.00	0.07	0.00	0.00	13.75	3.74	2.97	0.04
1.25	0.09	0.00	0.00	14.00	3.80	3.03	0.03
1.50	0.11	0.00	0.00	14.25	3.86	3.08	0.03
1.75	0.13	0.00	0.00	14.50	3.91	3.13	0.03
2.00	0.15	0.00	0.00	14.75	3.96	3.18	0.03
2.25	0.17	0.00	0.00	15.00	4.00	3.22	0.02
2.50	0.19	0.00	0.00	15.25	4.04	3.26	0.02
2.75	0.21	0.00	0.00	15.50	4.08	3.30	0.02
3.00	0.23	0.01	0.00	15.75	4.12	3.33	0.02
3.25	0.25	0.01	0.00	16.00	4.15	3.37	0.02
3.50	0.27	0.02	0.00	16.25	4.19	3.40	0.02
3.75	0.29	0.02	0.00	16.50	4.22	3.44	0.02
4.00	0.32	0.03	0.00	16.75	4.25	3.47	0.02
4.25	0.34	0.04	0.00	17.00	4.28	3.50	0.02
4.50	0.36	0.05	0.01	17.25	4.31	3.53	0.02
4.75	0.38	0.06	0.01	17.50	4.34	3.55	0.02
5.00	0.41	0.07	0.01	17.75	4.37	3.58	0.02
5.25	0.43	0.08	0.01	18.00	4.40	3.61	0.01
5.50	0.46	0.09	0.01	18.25	4.42	3.63	0.01
5.75	0.48	0.10	0.01	18.50	4.44	3.65	0.01
6.00	0.50	0.11	0.01	18.75	4.47	3.68	0.01
6.25	0.53	0.13	0.01	19.00	4.49	3.70	0.01
6.50	0.56	0.14	0.01	19.25	4.52	3.72	0.01
6.75	0.59	0.16	0.01	19.50	4.54	3.75	0.01
7.00	0.62	0.18	0.01	19.75	4.56	3.77	0.01
7.25	0.65	0.20	0.01	20.00	4.58	3.79	0.01
7.50	0.68	0.22	0.01	20.25	4.61	3.81	0.01
7.75	0.71	0.24	0.01	20.50	4.63	3.83	0.01
8.00	0.75	0.26	0.01	20.75	4.65	3.85	0.01
8.25	0.78	0.29	0.01	21.00	4.67	3.88	0.01
8.50	0.82	0.32	0.02	21.25	4.69	3.90	0.01
8.75	0.86	0.34	0.02	21.50	4.71	3.92	0.01
9.00	0.90	0.37	0.02	21.75	4.73	3.94	0.01
9.25	0.94	0.41	0.02	22.00	4.75	3.95	0.01
9.50	0.99	0.44	0.02	22.25	4.77	3.97	0.01
9.75	1.04	0.48	0.02	22.50	4.79	3.99	0.01
10.00	1.10	0.53	0.03	22.75	4.81	4.01	0.01
10.25	1.16	0.58	0.03	23.00	4.83	4.03	0.01
10.50	1.22	0.63	0.03	23.25	4.85	4.05	0.01
10.75	1.30	0.70	0.04	23.50	4.86	4.07	0.01
11.00	1.39	0.77	0.05	23.75	4.88	4.08	0.01
11.25	1.51	0.87	0.06	24.00	4.90	4.10	0.01
11.50	1.64	0.99	0.07				
11.75	1.85	1.18	0.11				
12.00	2.35	1.64	0.31				
12.25	3.05	2.30	0.25				
12.50	3.26	2.50	0.11				

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Summary for Pond 3P: 4 1000 GALLON DRYWELLS

Inflow Area = 0.143 ac, 91.86% Impervious, Inflow Depth > 4.09" for 10-Year event
 Inflow = 0.58 cfs @ 12.13 hrs, Volume= 0.049 af
 Outflow = 0.11 cfs @ 11.80 hrs, Volume= 0.049 af, Atten= 82%, Lag= 0.0 min
 Discarded = 0.11 cfs @ 11.80 hrs, Volume= 0.049 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 1.34' @ 12.51 hrs Surf.Area= 0.013 ac Storage= 0.009 af

Plug-Flow detention time= 18.9 min calculated for 0.049 af (100% of inflow)
 Center-of-Mass det. time= 18.6 min (806.1 - 787.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	-0.91'	0.014 af	38.67'W x 14.50'L x 4.83'H Field A 0.062 af Overall - 0.015 af Embedded = 0.047 af x 30.0% Voids
#2A	1.09'	0.012 af	Shea Dry Well 1000gal x 4 Inside #1 Inside= 62.0"W x 30.0"H => 12.86 sf x 10.00'L = 128.6 cf Outside= 68.0"W x 34.0"H => 15.80 sf x 10.50'L = 165.9 cf 4 Chambers in 4 Rows
		0.026 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	-0.91'	8.270 in/hr Exfiltration over Surface area
#2	Primary	3.09'	6.0" Round Culvert L= 84.0' Ke= 0.500 Inlet / Outlet Invert= 3.09' / 2.36' S= 0.0087 '/ Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.11 cfs @ 11.80 hrs HW=-0.85' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=-0.91' (Free Discharge)

↑2=Culvert (Controls 0.00 cfs)

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NRCC 24-hr D 10-Year Rainfall=4.90"

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Pond 3P: 4 1000 GALLON DRYWELLS - Chamber Wizard Field A

Chamber Model = Shea Dry Well 1000gal (Shea Jumbo Rectagular Dry Well)

Inside= 62.0"W x 30.0"H => 12.86 sf x 10.00'L = 128.6 cf

Outside= 68.0"W x 34.0"H => 15.80 sf x 10.50'L = 165.9 cf

68.0" Wide + 48.0" Spacing = 116.0" C-C Row Spacing

1 Chambers/Row x 10.50' Long = 10.50' Row Length +24.0" End Stone x 2 = 14.50' Base Length

4 Rows x 68.0" Wide + 48.0" Spacing x 3 + 24.0" Side Stone x 2 = 38.67' Base Width

24.0" Base + 34.0" Chamber Height = 4.83' Field Height

4 Chambers x 128.6 cf = 514.4 cf Chamber Storage

4 Chambers x 165.9 cf = 663.7 cf Displacement

2,708.1 cf Field - 663.7 cf Chambers = 2,044.4 cf Stone x 30.0% Voids = 613.3 cf Stone Storage

Chamber Storage + Stone Storage = 1,127.8 cf = 0.026 af

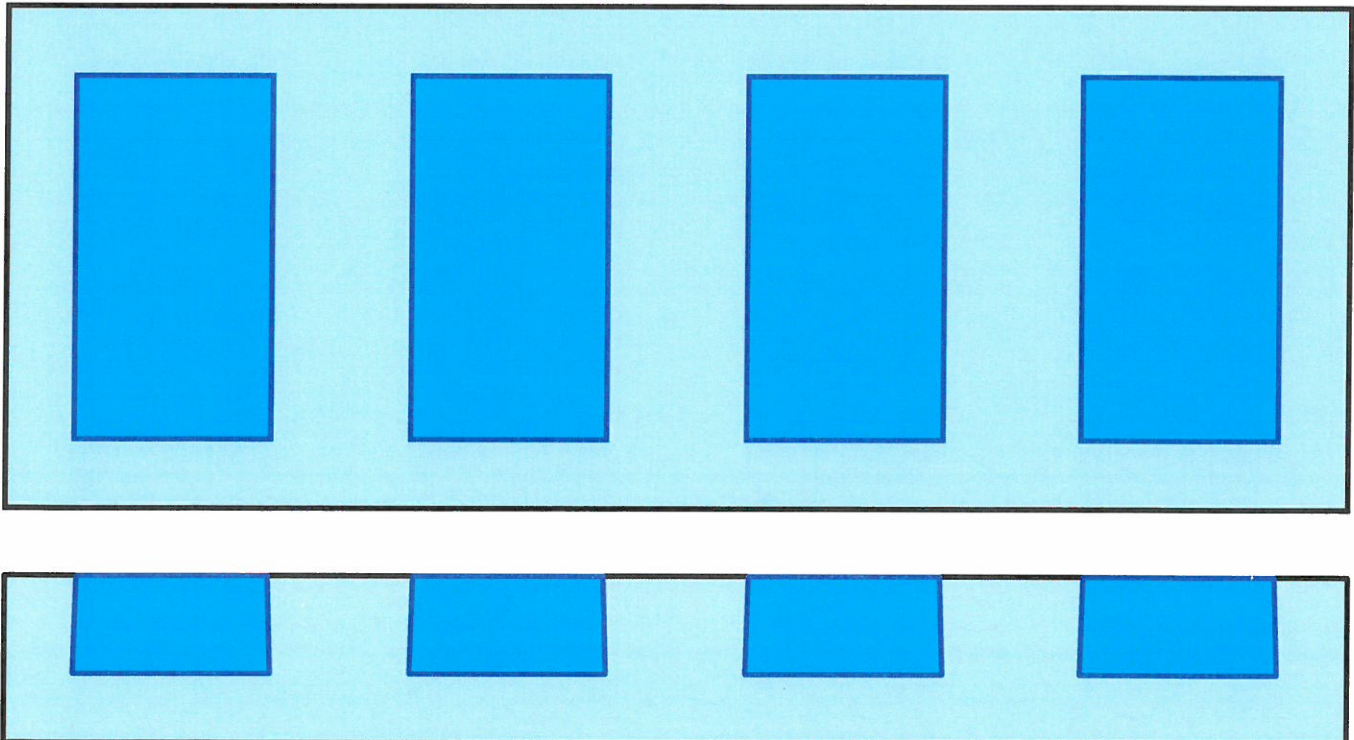
Overall Storage Efficiency = 41.6%

Overall System Size = 14.50' x 38.67' x 4.83'

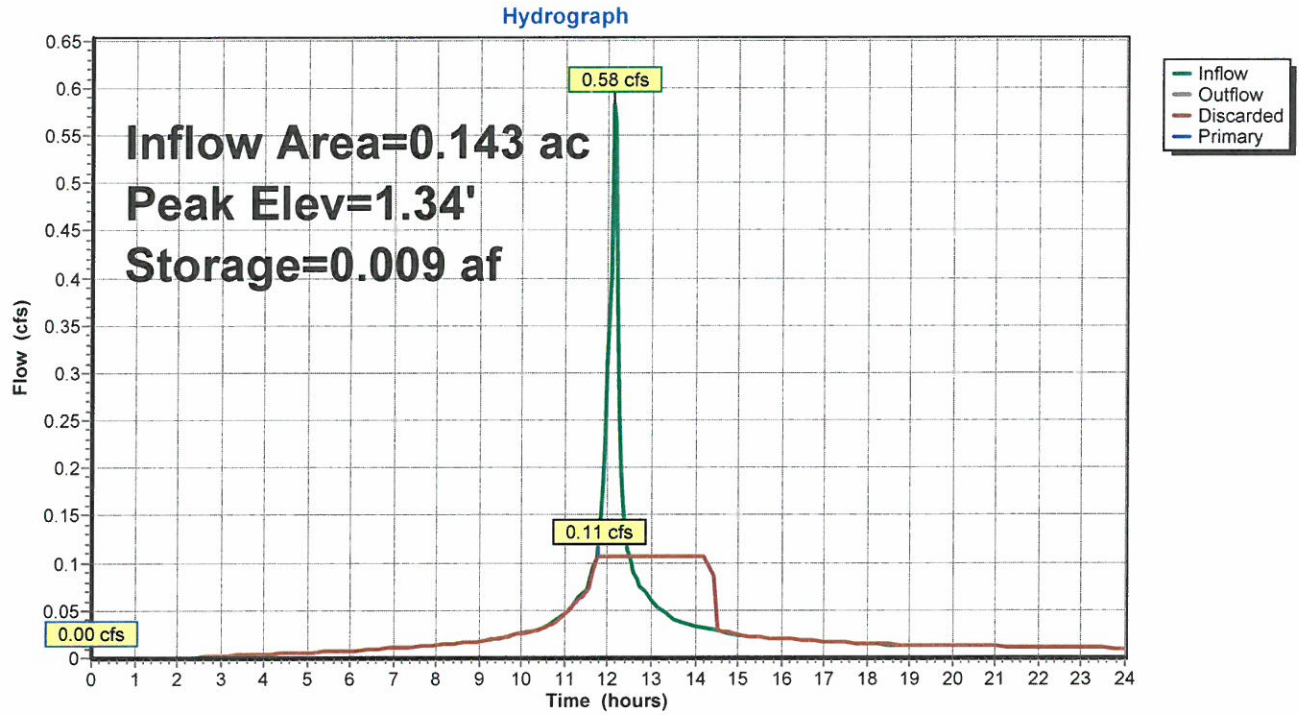
4 Chambers

100.3 cy Field

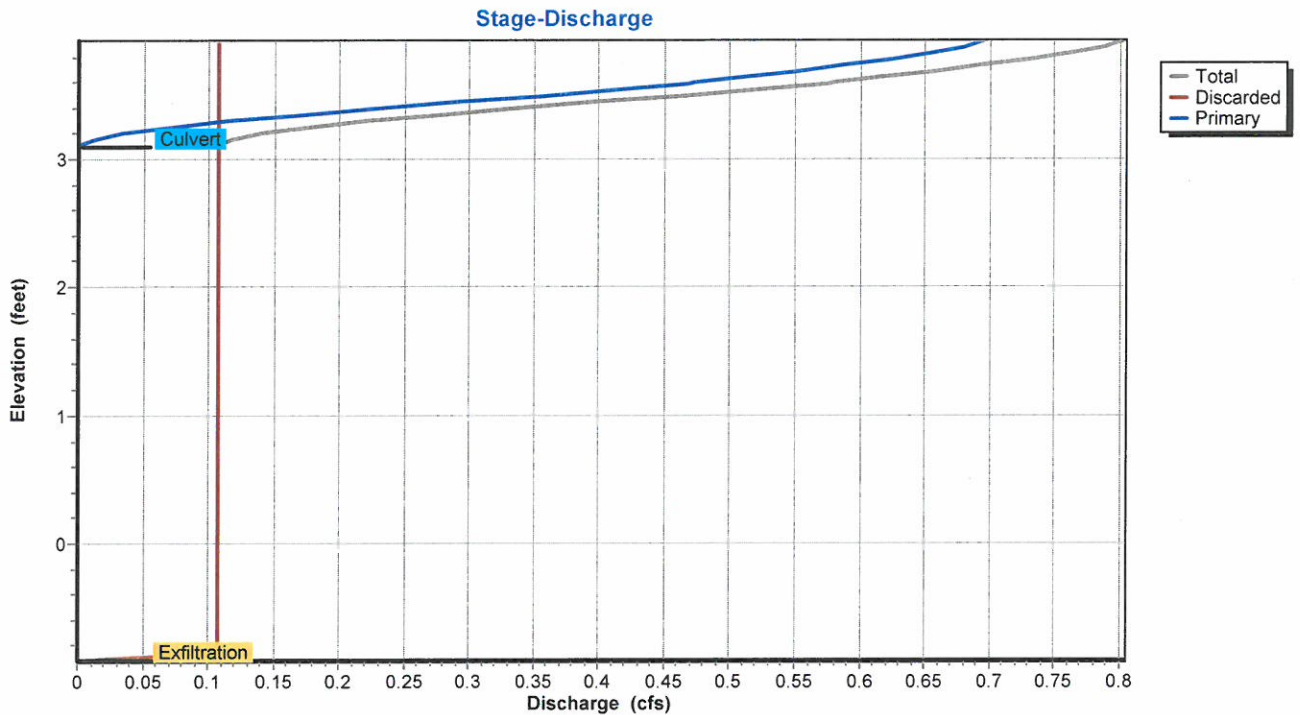
75.7 cy Stone



Pond 3P: 4 1000 GALLON DRYWELLS



Pond 3P: 4 1000 GALLON DRYWELLS



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Hydrograph for Pond 3P: 4 1000 GALLON DRYWELLS

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.000	-0.91	0.00	0.00	0.00
0.50	0.00	0.000	-0.91	0.00	0.00	0.00
1.00	0.00	0.000	-0.91	0.00	0.00	0.00
1.50	0.00	0.000	-0.91	0.00	0.00	0.00
2.00	0.00	0.000	-0.91	0.00	0.00	0.00
2.50	0.00	0.000	-0.91	0.00	0.00	0.00
3.00	0.00	0.000	-0.91	0.00	0.00	0.00
3.50	0.00	0.000	-0.91	0.00	0.00	0.00
4.00	0.00	0.000	-0.91	0.00	0.00	0.00
4.50	0.01	0.000	-0.91	0.00	0.00	0.00
5.00	0.01	0.000	-0.91	0.01	0.01	0.00
5.50	0.01	0.000	-0.91	0.01	0.01	0.00
6.00	0.01	0.000	-0.91	0.01	0.01	0.00
6.50	0.01	0.000	-0.91	0.01	0.01	0.00
7.00	0.01	0.000	-0.91	0.01	0.01	0.00
7.50	0.01	0.000	-0.90	0.01	0.01	0.00
8.00	0.01	0.000	-0.90	0.01	0.01	0.00
8.50	0.02	0.000	-0.90	0.02	0.02	0.00
9.00	0.02	0.000	-0.90	0.02	0.02	0.00
9.50	0.02	0.000	-0.90	0.02	0.02	0.00
10.00	0.03	0.000	-0.90	0.03	0.03	0.00
10.50	0.03	0.000	-0.90	0.03	0.03	0.00
11.00	0.05	0.000	-0.89	0.05	0.05	0.00
11.50	0.07	0.000	-0.88	0.07	0.07	0.00
12.00	0.31	0.002	-0.47	0.11	0.11	0.00
12.50	0.11	0.009	1.34	0.11	0.11	0.00
13.00	0.06	0.008	1.17	0.11	0.11	0.00
13.50	0.04	0.006	0.63	0.11	0.11	0.00
14.00	0.03	0.003	-0.13	0.11	0.11	0.00
14.50	0.03	0.000	-0.90	0.02	0.02	0.00
15.00	0.02	0.000	-0.90	0.02	0.02	0.00
15.50	0.02	0.000	-0.90	0.02	0.02	0.00
16.00	0.02	0.000	-0.90	0.02	0.02	0.00
16.50	0.02	0.000	-0.90	0.02	0.02	0.00
17.00	0.02	0.000	-0.90	0.02	0.02	0.00
17.50	0.02	0.000	-0.90	0.02	0.02	0.00
18.00	0.01	0.000	-0.90	0.01	0.01	0.00
18.50	0.01	0.000	-0.90	0.01	0.01	0.00
19.00	0.01	0.000	-0.90	0.01	0.01	0.00
19.50	0.01	0.000	-0.90	0.01	0.01	0.00
20.00	0.01	0.000	-0.90	0.01	0.01	0.00
20.50	0.01	0.000	-0.90	0.01	0.01	0.00
21.00	0.01	0.000	-0.90	0.01	0.01	0.00
21.50	0.01	0.000	-0.90	0.01	0.01	0.00
22.00	0.01	0.000	-0.90	0.01	0.01	0.00
22.50	0.01	0.000	-0.91	0.01	0.01	0.00
23.00	0.01	0.000	-0.91	0.01	0.01	0.00
23.50	0.01	0.000	-0.91	0.01	0.01	0.00
24.00	0.01	0.000	-0.91	0.01	0.01	0.00

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Stage-Discharge for Pond 3P: 4 1000 GALLON DRYWELLS

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
-0.91	0.00	0.00	0.00	1.64	0.11	0.11	0.00
-0.86	0.11	0.11	0.00	1.69	0.11	0.11	0.00
-0.81	0.11	0.11	0.00	1.74	0.11	0.11	0.00
-0.76	0.11	0.11	0.00	1.79	0.11	0.11	0.00
-0.71	0.11	0.11	0.00	1.84	0.11	0.11	0.00
-0.66	0.11	0.11	0.00	1.89	0.11	0.11	0.00
-0.61	0.11	0.11	0.00	1.94	0.11	0.11	0.00
-0.56	0.11	0.11	0.00	1.99	0.11	0.11	0.00
-0.51	0.11	0.11	0.00	2.04	0.11	0.11	0.00
-0.46	0.11	0.11	0.00	2.09	0.11	0.11	0.00
-0.41	0.11	0.11	0.00	2.14	0.11	0.11	0.00
-0.36	0.11	0.11	0.00	2.19	0.11	0.11	0.00
-0.31	0.11	0.11	0.00	2.24	0.11	0.11	0.00
-0.26	0.11	0.11	0.00	2.29	0.11	0.11	0.00
-0.21	0.11	0.11	0.00	2.34	0.11	0.11	0.00
-0.16	0.11	0.11	0.00	2.39	0.11	0.11	0.00
-0.11	0.11	0.11	0.00	2.44	0.11	0.11	0.00
-0.06	0.11	0.11	0.00	2.49	0.11	0.11	0.00
-0.01	0.11	0.11	0.00	2.54	0.11	0.11	0.00
0.04	0.11	0.11	0.00	2.59	0.11	0.11	0.00
0.09	0.11	0.11	0.00	2.64	0.11	0.11	0.00
0.14	0.11	0.11	0.00	2.69	0.11	0.11	0.00
0.19	0.11	0.11	0.00	2.74	0.11	0.11	0.00
0.24	0.11	0.11	0.00	2.79	0.11	0.11	0.00
0.29	0.11	0.11	0.00	2.84	0.11	0.11	0.00
0.34	0.11	0.11	0.00	2.89	0.11	0.11	0.00
0.39	0.11	0.11	0.00	2.94	0.11	0.11	0.00
0.44	0.11	0.11	0.00	2.99	0.11	0.11	0.00
0.49	0.11	0.11	0.00	3.04	0.11	0.11	0.00
0.54	0.11	0.11	0.00	3.09	0.11	0.11	0.00
0.59	0.11	0.11	0.00	3.14	0.11	0.11	0.01
0.64	0.11	0.11	0.00	3.19	0.14	0.11	0.03
0.69	0.11	0.11	0.00	3.24	0.17	0.11	0.07
0.74	0.11	0.11	0.00	3.29	0.22	0.11	0.11
0.79	0.11	0.11	0.00	3.34	0.27	0.11	0.17
0.84	0.11	0.11	0.00	3.39	0.34	0.11	0.23
0.89	0.11	0.11	0.00	3.44	0.40	0.11	0.30
0.94	0.11	0.11	0.00	3.49	0.47	0.11	0.36
0.99	0.11	0.11	0.00	3.54	0.53	0.11	0.43
1.04	0.11	0.11	0.00	3.59	0.58	0.11	0.47
1.09	0.11	0.11	0.00	3.64	0.63	0.11	0.52
1.14	0.11	0.11	0.00	3.69	0.67	0.11	0.56
1.19	0.11	0.11	0.00	3.74	0.71	0.11	0.60
1.24	0.11	0.11	0.00	3.79	0.74	0.11	0.63
1.29	0.11	0.11	0.00	3.84	0.78	0.11	0.67
1.34	0.11	0.11	0.00	3.89	0.79	0.11	0.69
1.39	0.11	0.11	0.00				
1.44	0.11	0.11	0.00				
1.49	0.11	0.11	0.00				
1.54	0.11	0.11	0.00				
1.59	0.11	0.11	0.00				

3793-874 east sixth

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874 East Sixth Street proposed
NRCC 24-hr D 25-Year Rainfall=6.19"

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Summary for Subcatchment 2S: 874 E 6th proposed

Runoff = 0.75 cfs @ 12.13 hrs, Volume= 0.064 af, Depth> 5.36"

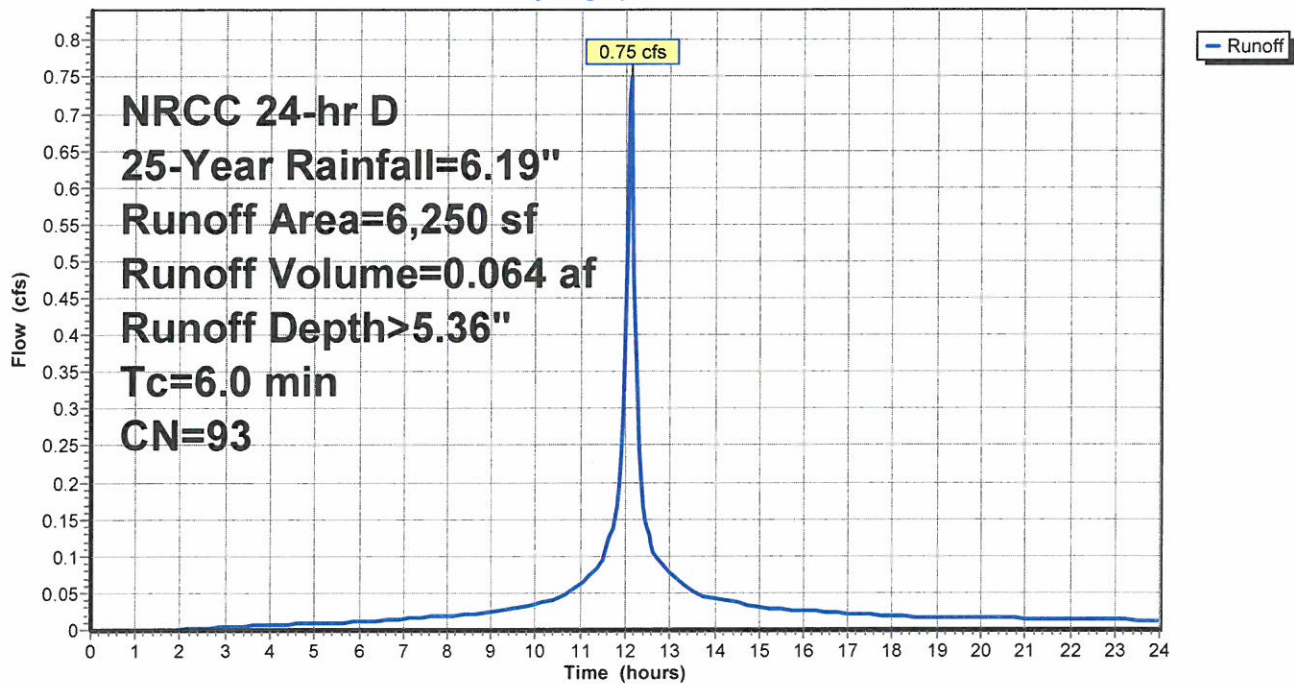
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=6.19"

Area (sf)	CN	Description
3,972	98	Roofs, HSG A
1,769	98	Paved parking, HSG A
509	39	>75% Grass cover, Good, HSG A
6,250	93	Weighted Average
509		8.14% Pervious Area
5,741		91.86% Impervious Area

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

Subcatchment 2S: 874 E 6th proposed

Hydrograph



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874 East Sixth Street proposed
NRCC 24-hr D 25-Year Rainfall=6.19"

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Hydrograph for Subcatchment 2S: 874 E 6th proposed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	12.75	4.29	3.50	0.10
0.25	0.02	0.00	0.00	13.00	4.43	3.64	0.08
0.50	0.04	0.00	0.00	13.25	4.55	3.75	0.06
0.75	0.07	0.00	0.00	13.50	4.64	3.85	0.05
1.00	0.09	0.00	0.00	13.75	4.73	3.93	0.05
1.25	0.11	0.00	0.00	14.00	4.80	4.00	0.04
1.50	0.14	0.00	0.00	14.25	4.87	4.07	0.04
1.75	0.16	0.00	0.00	14.50	4.94	4.14	0.04
2.00	0.19	0.00	0.00	14.75	5.00	4.20	0.03
2.25	0.21	0.00	0.00	15.00	5.05	4.25	0.03
2.50	0.24	0.01	0.00	15.25	5.10	4.30	0.03
2.75	0.26	0.01	0.00	15.50	5.15	4.35	0.03
3.00	0.29	0.02	0.00	15.75	5.20	4.39	0.03
3.25	0.32	0.03	0.00	16.00	5.25	4.44	0.03
3.50	0.34	0.04	0.01	16.25	5.29	4.48	0.02
3.75	0.37	0.05	0.01	16.50	5.33	4.52	0.02
4.00	0.40	0.06	0.01	16.75	5.37	4.56	0.02
4.25	0.43	0.07	0.01	17.00	5.41	4.60	0.02
4.50	0.46	0.09	0.01	17.25	5.45	4.64	0.02
4.75	0.49	0.10	0.01	17.50	5.49	4.68	0.02
5.00	0.51	0.12	0.01	17.75	5.52	4.71	0.02
5.25	0.54	0.14	0.01	18.00	5.55	4.74	0.02
5.50	0.58	0.15	0.01	18.25	5.58	4.77	0.02
5.75	0.61	0.17	0.01	18.50	5.61	4.80	0.02
6.00	0.64	0.19	0.01	18.75	5.65	4.83	0.02
6.25	0.67	0.21	0.01	19.00	5.68	4.86	0.02
6.50	0.70	0.23	0.01	19.25	5.70	4.89	0.02
6.75	0.74	0.26	0.01	19.50	5.73	4.92	0.02
7.00	0.78	0.28	0.02	19.75	5.76	4.95	0.02
7.25	0.82	0.31	0.02	20.00	5.79	4.98	0.02
7.50	0.86	0.34	0.02	20.25	5.82	5.00	0.02
7.75	0.90	0.37	0.02	20.50	5.85	5.03	0.02
8.00	0.94	0.41	0.02	20.75	5.87	5.06	0.02
8.25	0.99	0.44	0.02	21.00	5.90	5.08	0.02
8.50	1.04	0.48	0.02	21.25	5.93	5.11	0.02
8.75	1.09	0.52	0.02	21.50	5.95	5.14	0.01
9.00	1.14	0.56	0.02	21.75	5.98	5.16	0.01
9.25	1.19	0.60	0.03	22.00	6.00	5.19	0.01
9.50	1.25	0.65	0.03	22.25	6.03	5.21	0.01
9.75	1.32	0.71	0.03	22.50	6.05	5.23	0.01
10.00	1.39	0.77	0.04	22.75	6.08	5.26	0.01
10.25	1.46	0.84	0.04	23.00	6.10	5.28	0.01
10.50	1.55	0.91	0.04	23.25	6.12	5.30	0.01
10.75	1.64	0.99	0.05	23.50	6.15	5.33	0.01
11.00	1.76	1.10	0.06	23.75	6.17	5.35	0.01
11.25	1.90	1.22	0.08	24.00	6.19	5.37	0.01
11.50	2.07	1.38	0.09				
11.75	2.34	1.63	0.14				
12.00	2.97	2.22	0.41				
12.25	3.85	3.07	0.33				
12.50	4.12	3.33	0.14				

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NRCC 24-hr D 25-Year Rainfall=6.19"

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Summary for Pond 3P: 4 1000 GALLON DRYWELLS

Inflow Area = 0.143 ac, 91.86% Impervious, Inflow Depth > 5.36" for 25-Year event
 Inflow = 0.75 cfs @ 12.13 hrs, Volume= 0.064 af
 Outflow = 0.11 cfs @ 11.60 hrs, Volume= 0.064 af, Atten= 86%, Lag= 0.0 min
 Discarded = 0.11 cfs @ 11.60 hrs, Volume= 0.064 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 2.07' @ 12.64 hrs Surf.Area= 0.013 ac Storage= 0.015 af

Plug-Flow detention time= 31.8 min calculated for 0.064 af (100% of inflow)
 Center-of-Mass det. time= 31.6 min (810.5 - 779.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	-0.91'	0.014 af	38.67'W x 14.50'L x 4.83'H Field A 0.062 af Overall - 0.015 af Embedded = 0.047 af x 30.0% Voids
#2A	1.09'	0.012 af	Shea Dry Well 1000gal x 4 Inside #1 Inside= 62.0"W x 30.0"H => 12.86 sf x 10.00'L = 128.6 cf Outside= 68.0"W x 34.0"H => 15.80 sf x 10.50'L = 165.9 cf 4 Chambers in 4 Rows
		0.026 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	-0.91'	8.270 in/hr Exfiltration over Surface area
#2	Primary	3.09'	6.0" Round Culvert L= 84.0' Ke= 0.500 Inlet / Outlet Invert= 3.09' / 2.36' S= 0.0087 '/ Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.11 cfs @ 11.60 hrs HW=-0.86' (Free Discharge)

↳1=Exfiltration (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=-0.91' (Free Discharge)

↳2=Culvert (Controls 0.00 cfs)

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Pond 3P: 4 1000 GALLON DRYWELLS - Chamber Wizard Field A

Chamber Model = Shea Dry Well 1000gal (Shea Jumbo Rectagular Dry Well)

Inside= 62.0"W x 30.0"H => 12.86 sf x 10.00'L = 128.6 cf

Outside= 68.0"W x 34.0"H => 15.80 sf x 10.50'L = 165.9 cf

68.0" Wide + 48.0" Spacing = 116.0" C-C Row Spacing

1 Chambers/Row x 10.50' Long = 10.50' Row Length +24.0" End Stone x 2 = 14.50' Base Length

4 Rows x 68.0" Wide + 48.0" Spacing x 3 + 24.0" Side Stone x 2 = 38.67' Base Width

24.0" Base + 34.0" Chamber Height = 4.83' Field Height

4 Chambers x 128.6 cf = 514.4 cf Chamber Storage

4 Chambers x 165.9 cf = 663.7 cf Displacement

2,708.1 cf Field - 663.7 cf Chambers = 2,044.4 cf Stone x 30.0% Voids = 613.3 cf Stone Storage

Chamber Storage + Stone Storage = 1,127.8 cf = 0.026 af

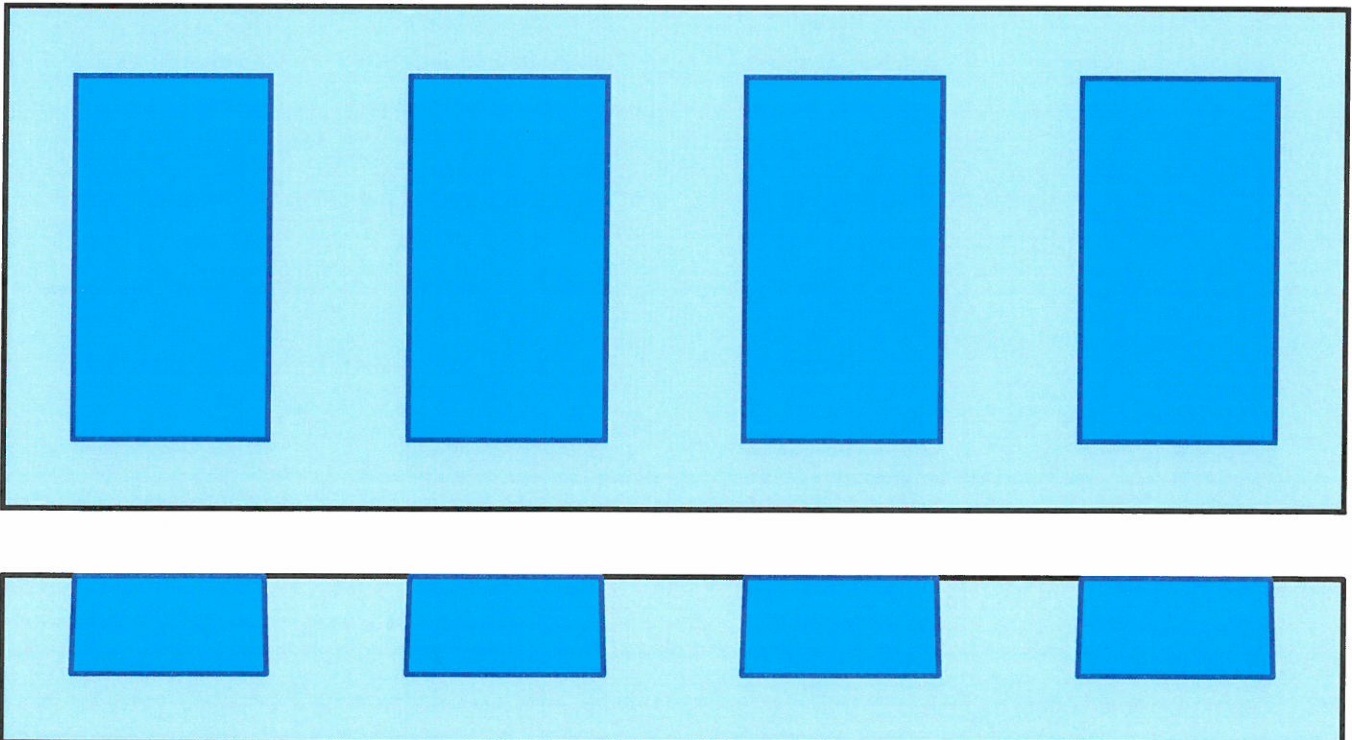
Overall Storage Efficiency = 41.6%

Overall System Size = 14.50' x 38.67' x 4.83'

4 Chambers

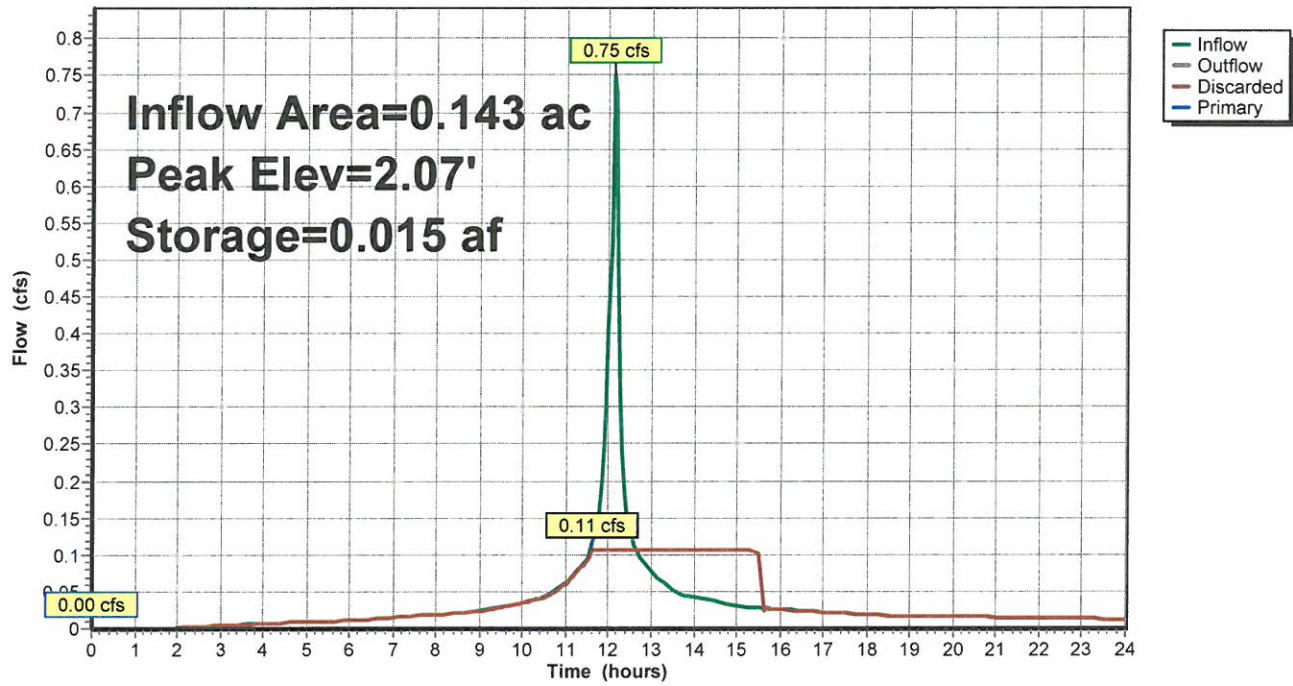
100.3 cy Field

75.7 cy Stone



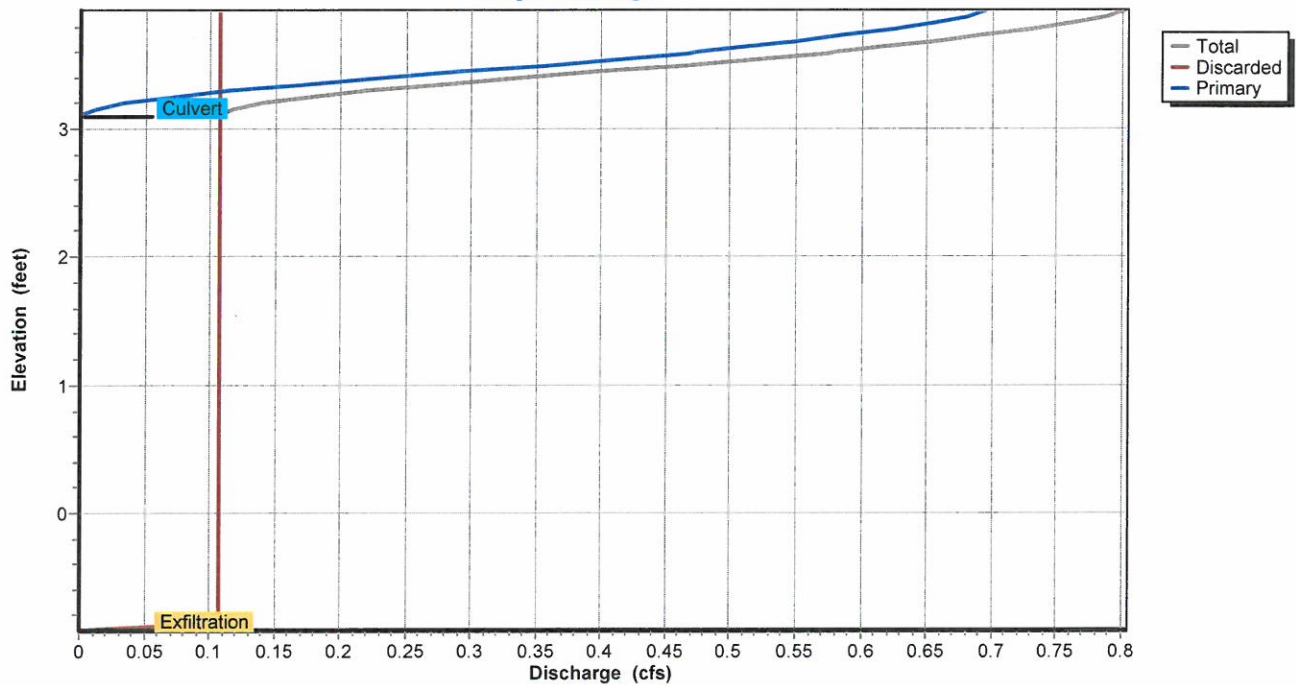
Pond 3P: 4 1000 GALLON DRYWELLS

Hydrograph



Pond 3P: 4 1000 GALLON DRYWELLS

Stage-Discharge



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Hydrograph for Pond 3P: 4 1000 GALLON DRYWELLS

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.000	-0.91	0.00	0.00	0.00
0.50	0.00	0.000	-0.91	0.00	0.00	0.00
1.00	0.00	0.000	-0.91	0.00	0.00	0.00
1.50	0.00	0.000	-0.91	0.00	0.00	0.00
2.00	0.00	0.000	-0.91	0.00	0.00	0.00
2.50	0.00	0.000	-0.91	0.00	0.00	0.00
3.00	0.00	0.000	-0.91	0.00	0.00	0.00
3.50	0.01	0.000	-0.91	0.01	0.01	0.00
4.00	0.01	0.000	-0.91	0.01	0.01	0.00
4.50	0.01	0.000	-0.91	0.01	0.01	0.00
5.00	0.01	0.000	-0.91	0.01	0.01	0.00
5.50	0.01	0.000	-0.91	0.01	0.01	0.00
6.00	0.01	0.000	-0.90	0.01	0.01	0.00
6.50	0.01	0.000	-0.90	0.01	0.01	0.00
7.00	0.02	0.000	-0.90	0.02	0.02	0.00
7.50	0.02	0.000	-0.90	0.02	0.02	0.00
8.00	0.02	0.000	-0.90	0.02	0.02	0.00
8.50	0.02	0.000	-0.90	0.02	0.02	0.00
9.00	0.02	0.000	-0.90	0.02	0.02	0.00
9.50	0.03	0.000	-0.90	0.03	0.03	0.00
10.00	0.04	0.000	-0.89	0.04	0.04	0.00
10.50	0.04	0.000	-0.89	0.04	0.04	0.00
11.00	0.06	0.000	-0.88	0.06	0.06	0.00
11.50	0.09	0.000	-0.87	0.09	0.09	0.00
12.00	0.41	0.003	-0.11	0.11	0.11	0.00
12.50	0.14	0.014	2.04	0.11	0.11	0.00
13.00	0.08	0.014	2.00	0.11	0.11	0.00
13.50	0.05	0.012	1.74	0.11	0.11	0.00
14.00	0.04	0.010	1.39	0.11	0.11	0.00
14.50	0.04	0.007	0.91	0.11	0.11	0.00
15.00	0.03	0.004	0.12	0.11	0.11	0.00
15.50	0.03	0.001	-0.72	0.11	0.11	0.00
16.00	0.03	0.000	-0.90	0.03	0.03	0.00
16.50	0.02	0.000	-0.90	0.02	0.02	0.00
17.00	0.02	0.000	-0.90	0.02	0.02	0.00
17.50	0.02	0.000	-0.90	0.02	0.02	0.00
18.00	0.02	0.000	-0.90	0.02	0.02	0.00
18.50	0.02	0.000	-0.90	0.02	0.02	0.00
19.00	0.02	0.000	-0.90	0.02	0.02	0.00
19.50	0.02	0.000	-0.90	0.02	0.02	0.00
20.00	0.02	0.000	-0.90	0.02	0.02	0.00
20.50	0.02	0.000	-0.90	0.02	0.02	0.00
21.00	0.02	0.000	-0.90	0.02	0.02	0.00
21.50	0.01	0.000	-0.90	0.01	0.01	0.00
22.00	0.01	0.000	-0.90	0.01	0.01	0.00
22.50	0.01	0.000	-0.90	0.01	0.01	0.00
23.00	0.01	0.000	-0.90	0.01	0.01	0.00
23.50	0.01	0.000	-0.90	0.01	0.01	0.00
24.00	0.01	0.000	-0.90	0.01	0.01	0.00

Stage-Discharge for Pond 3P: 4 1000 GALLON DRYWELLS

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
-0.91	0.00	0.00	0.00	1.64	0.11	0.11	0.00
-0.86	0.11	0.11	0.00	1.69	0.11	0.11	0.00
-0.81	0.11	0.11	0.00	1.74	0.11	0.11	0.00
-0.76	0.11	0.11	0.00	1.79	0.11	0.11	0.00
-0.71	0.11	0.11	0.00	1.84	0.11	0.11	0.00
-0.66	0.11	0.11	0.00	1.89	0.11	0.11	0.00
-0.61	0.11	0.11	0.00	1.94	0.11	0.11	0.00
-0.56	0.11	0.11	0.00	1.99	0.11	0.11	0.00
-0.51	0.11	0.11	0.00	2.04	0.11	0.11	0.00
-0.46	0.11	0.11	0.00	2.09	0.11	0.11	0.00
-0.41	0.11	0.11	0.00	2.14	0.11	0.11	0.00
-0.36	0.11	0.11	0.00	2.19	0.11	0.11	0.00
-0.31	0.11	0.11	0.00	2.24	0.11	0.11	0.00
-0.26	0.11	0.11	0.00	2.29	0.11	0.11	0.00
-0.21	0.11	0.11	0.00	2.34	0.11	0.11	0.00
-0.16	0.11	0.11	0.00	2.39	0.11	0.11	0.00
-0.11	0.11	0.11	0.00	2.44	0.11	0.11	0.00
-0.06	0.11	0.11	0.00	2.49	0.11	0.11	0.00
-0.01	0.11	0.11	0.00	2.54	0.11	0.11	0.00
0.04	0.11	0.11	0.00	2.59	0.11	0.11	0.00
0.09	0.11	0.11	0.00	2.64	0.11	0.11	0.00
0.14	0.11	0.11	0.00	2.69	0.11	0.11	0.00
0.19	0.11	0.11	0.00	2.74	0.11	0.11	0.00
0.24	0.11	0.11	0.00	2.79	0.11	0.11	0.00
0.29	0.11	0.11	0.00	2.84	0.11	0.11	0.00
0.34	0.11	0.11	0.00	2.89	0.11	0.11	0.00
0.39	0.11	0.11	0.00	2.94	0.11	0.11	0.00
0.44	0.11	0.11	0.00	2.99	0.11	0.11	0.00
0.49	0.11	0.11	0.00	3.04	0.11	0.11	0.00
0.54	0.11	0.11	0.00	3.09	0.11	0.11	0.00
0.59	0.11	0.11	0.00	3.14	0.11	0.11	0.01
0.64	0.11	0.11	0.00	3.19	0.14	0.11	0.03
0.69	0.11	0.11	0.00	3.24	0.17	0.11	0.07
0.74	0.11	0.11	0.00	3.29	0.22	0.11	0.11
0.79	0.11	0.11	0.00	3.34	0.27	0.11	0.17
0.84	0.11	0.11	0.00	3.39	0.34	0.11	0.23
0.89	0.11	0.11	0.00	3.44	0.40	0.11	0.30
0.94	0.11	0.11	0.00	3.49	0.47	0.11	0.36
0.99	0.11	0.11	0.00	3.54	0.53	0.11	0.43
1.04	0.11	0.11	0.00	3.59	0.58	0.11	0.47
1.09	0.11	0.11	0.00	3.64	0.63	0.11	0.52
1.14	0.11	0.11	0.00	3.69	0.67	0.11	0.56
1.19	0.11	0.11	0.00	3.74	0.71	0.11	0.60
1.24	0.11	0.11	0.00	3.79	0.74	0.11	0.63
1.29	0.11	0.11	0.00	3.84	0.78	0.11	0.67
1.34	0.11	0.11	0.00	3.89	0.79	0.11	0.69
1.39	0.11	0.11	0.00				
1.44	0.11	0.11	0.00				
1.49	0.11	0.11	0.00				
1.54	0.11	0.11	0.00				
1.59	0.11	0.11	0.00				

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874 East Sixth Street proposed
NRCC 24-hr D 100-Year Rainfall=8.83"

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Summary for Subcatchment 2S: 874 E 6th proposed

Runoff = 1.09 cfs @ 12.13 hrs, Volume= 0.095 af, Depth> 7.98"

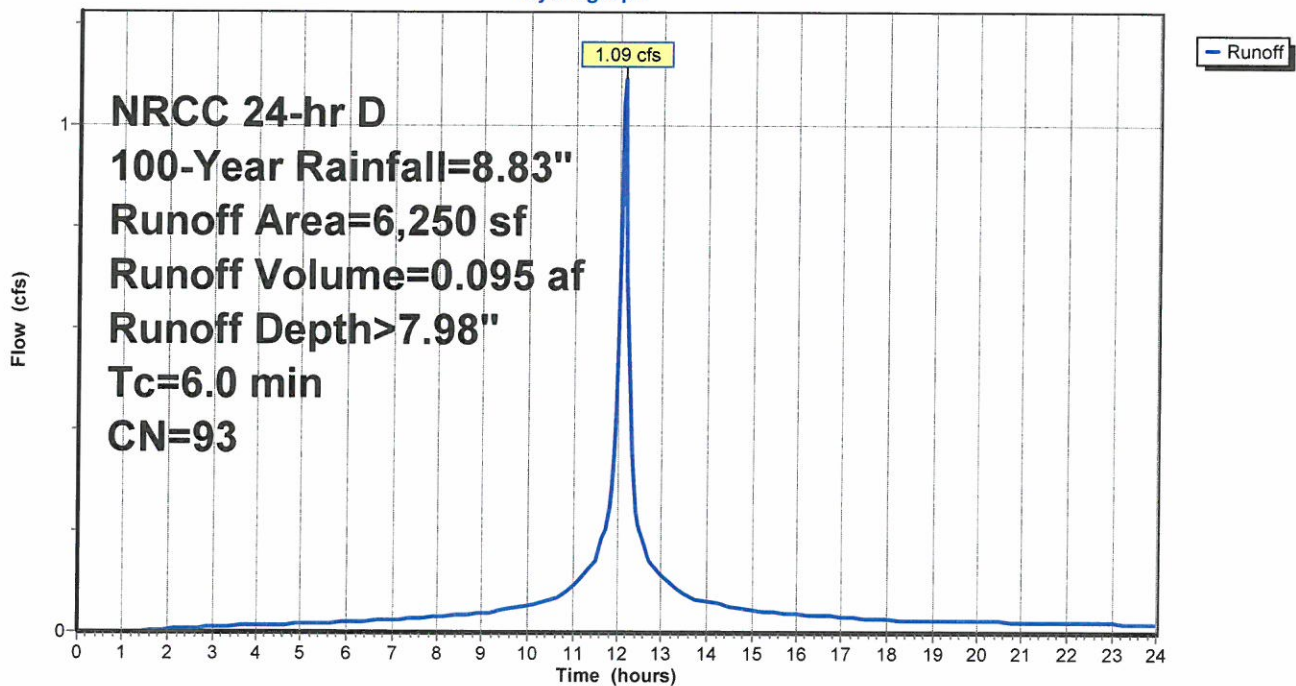
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=8.83"

Area (sf)	CN	Description
3,972	98	Roofs, HSG A
1,769	98	Paved parking, HSG A
509	39	>75% Grass cover, Good, HSG A
6,250	93	Weighted Average
509		8.14% Pervious Area
5,741		91.86% Impervious Area

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

Subcatchment 2S: 874 E 6th proposed

Hydrograph



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874 East Sixth Street proposed
NRCC 24-hr D 100-Year Rainfall=8.83"

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Hydrograph for Subcatchment 2S: 874 E 6th proposed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	12.75	6.12	5.30	0.14
0.25	0.03	0.00	0.00	13.00	6.32	5.50	0.11
0.50	0.06	0.00	0.00	13.25	6.49	5.66	0.09
0.75	0.10	0.00	0.00	13.50	6.62	5.80	0.08
1.00	0.13	0.00	0.00	13.75	6.74	5.91	0.07
1.25	0.16	0.00	0.00	14.00	6.85	6.02	0.06
1.50	0.20	0.00	0.00	14.25	6.95	6.12	0.06
1.75	0.23	0.01	0.00	14.50	7.05	6.22	0.05
2.00	0.27	0.02	0.00	14.75	7.13	6.30	0.05
2.25	0.30	0.03	0.01	15.00	7.21	6.38	0.04
2.50	0.34	0.04	0.01	15.25	7.28	6.45	0.04
2.75	0.38	0.05	0.01	15.50	7.35	6.52	0.04
3.00	0.41	0.07	0.01	15.75	7.42	6.59	0.04
3.25	0.45	0.09	0.01	16.00	7.48	6.65	0.04
3.50	0.49	0.11	0.01	16.25	7.55	6.71	0.04
3.75	0.53	0.13	0.01	16.50	7.61	6.77	0.03
4.00	0.57	0.15	0.01	16.75	7.67	6.83	0.03
4.25	0.61	0.17	0.01	17.00	7.72	6.89	0.03
4.50	0.65	0.20	0.02	17.25	7.77	6.94	0.03
4.75	0.69	0.23	0.02	17.50	7.83	6.99	0.03
5.00	0.73	0.26	0.02	17.75	7.87	7.04	0.03
5.25	0.78	0.28	0.02	18.00	7.92	7.08	0.03
5.50	0.82	0.32	0.02	18.25	7.97	7.13	0.03
5.75	0.86	0.35	0.02	18.50	8.01	7.17	0.03
6.00	0.91	0.38	0.02	18.75	8.05	7.21	0.02
6.25	0.96	0.42	0.02	19.00	8.10	7.26	0.02
6.50	1.00	0.45	0.02	19.25	8.14	7.30	0.02
6.75	1.06	0.49	0.02	19.50	8.18	7.34	0.02
7.00	1.11	0.54	0.02	19.75	8.22	7.38	0.02
7.25	1.16	0.58	0.03	20.00	8.26	7.42	0.02
7.50	1.22	0.63	0.03	20.25	8.30	7.46	0.02
7.75	1.28	0.68	0.03	20.50	8.34	7.50	0.02
8.00	1.35	0.73	0.03	20.75	8.38	7.54	0.02
8.25	1.41	0.79	0.03	21.00	8.42	7.58	0.02
8.50	1.48	0.85	0.03	21.25	8.45	7.61	0.02
8.75	1.55	0.91	0.04	21.50	8.49	7.65	0.02
9.00	1.62	0.97	0.04	21.75	8.53	7.69	0.02
9.25	1.70	1.04	0.04	22.00	8.56	7.72	0.02
9.50	1.78	1.12	0.05	22.25	8.60	7.76	0.02
9.75	1.88	1.20	0.05	22.50	8.63	7.79	0.02
10.00	1.98	1.30	0.05	22.75	8.67	7.83	0.02
10.25	2.09	1.40	0.06	23.00	8.70	7.86	0.02
10.50	2.21	1.50	0.06	23.25	8.73	7.89	0.02
10.75	2.34	1.63	0.08	23.50	8.77	7.92	0.02
11.00	2.51	1.79	0.09	23.75	8.80	7.96	0.02
11.25	2.71	1.98	0.11	24.00	8.83	7.99	0.02
11.50	2.96	2.21	0.14				
11.75	3.34	2.58	0.21				
12.00	4.23	3.44	0.60				
12.25	5.49	4.68	0.47				
12.50	5.87	5.06	0.20				

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NRCC 24-hr D 100-Year Rainfall=8.83"

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Summary for Pond 3P: 4 1000 GALLON DRYWELLS

Inflow Area = 0.143 ac, 91.86% Impervious, Inflow Depth > 7.98" for 100-Year event
 Inflow = 1.09 cfs @ 12.13 hrs, Volume= 0.095 af
 Outflow = 0.25 cfs @ 12.40 hrs, Volume= 0.095 af, Atten= 77%, Lag= 16.3 min
 Discarded = 0.11 cfs @ 11.20 hrs, Volume= 0.091 af
 Primary = 0.15 cfs @ 12.40 hrs, Volume= 0.005 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 3.32' @ 12.40 hrs Surf.Area= 0.013 ac Storage= 0.023 af

Plug-Flow detention time= 51.6 min calculated for 0.095 af (100% of inflow)
 Center-of-Mass det. time= 51.3 min (818.9 - 767.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	-0.91'	0.014 af	38.67'W x 14.50'L x 4.83'H Field A 0.062 af Overall - 0.015 af Embedded = 0.047 af x 30.0% Voids
#2A	1.09'	0.012 af	Shea Dry Well 1000gal x 4 Inside #1 Inside= 62.0"W x 30.0"H => 12.86 sf x 10.00'L = 128.6 cf Outside= 68.0"W x 34.0"H => 15.80 sf x 10.50'L = 165.9 cf 4 Chambers in 4 Rows
		0.026 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	-0.91'	8.270 in/hr Exfiltration over Surface area
#2	Primary	3.09'	6.0" Round Culvert L= 84.0' Ke= 0.500 Inlet / Outlet Invert= 3.09' / 2.36' S= 0.0087 ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.11 cfs @ 11.20 hrs HW=-0.86' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.11 cfs)**Primary OutFlow** Max=0.14 cfs @ 12.40 hrs HW=3.32' (Free Discharge)↑**2=Culvert** (Inlet Controls 0.14 cfs @ 1.63 fps)

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Pond 3P: 4 1000 GALLON DRYWELLS - Chamber Wizard Field A

Chamber Model = Shea Dry Well 1000gal (Shea Jumbo Rectagular Dry Well)

Inside= 62.0"W x 30.0"H => 12.86 sf x 10.00'L = 128.6 cf

Outside= 68.0"W x 34.0"H => 15.80 sf x 10.50'L = 165.9 cf

68.0" Wide + 48.0" Spacing = 116.0" C-C Row Spacing

1 Chambers/Row x 10.50' Long = 10.50' Row Length +24.0" End Stone x 2 = 14.50' Base Length

4 Rows x 68.0" Wide + 48.0" Spacing x 3 + 24.0" Side Stone x 2 = 38.67' Base Width

24.0" Base + 34.0" Chamber Height = 4.83' Field Height

4 Chambers x 128.6 cf = 514.4 cf Chamber Storage

4 Chambers x 165.9 cf = 663.7 cf Displacement

2,708.1 cf Field - 663.7 cf Chambers = 2,044.4 cf Stone x 30.0% Voids = 613.3 cf Stone Storage

Chamber Storage + Stone Storage = 1,127.8 cf = 0.026 af

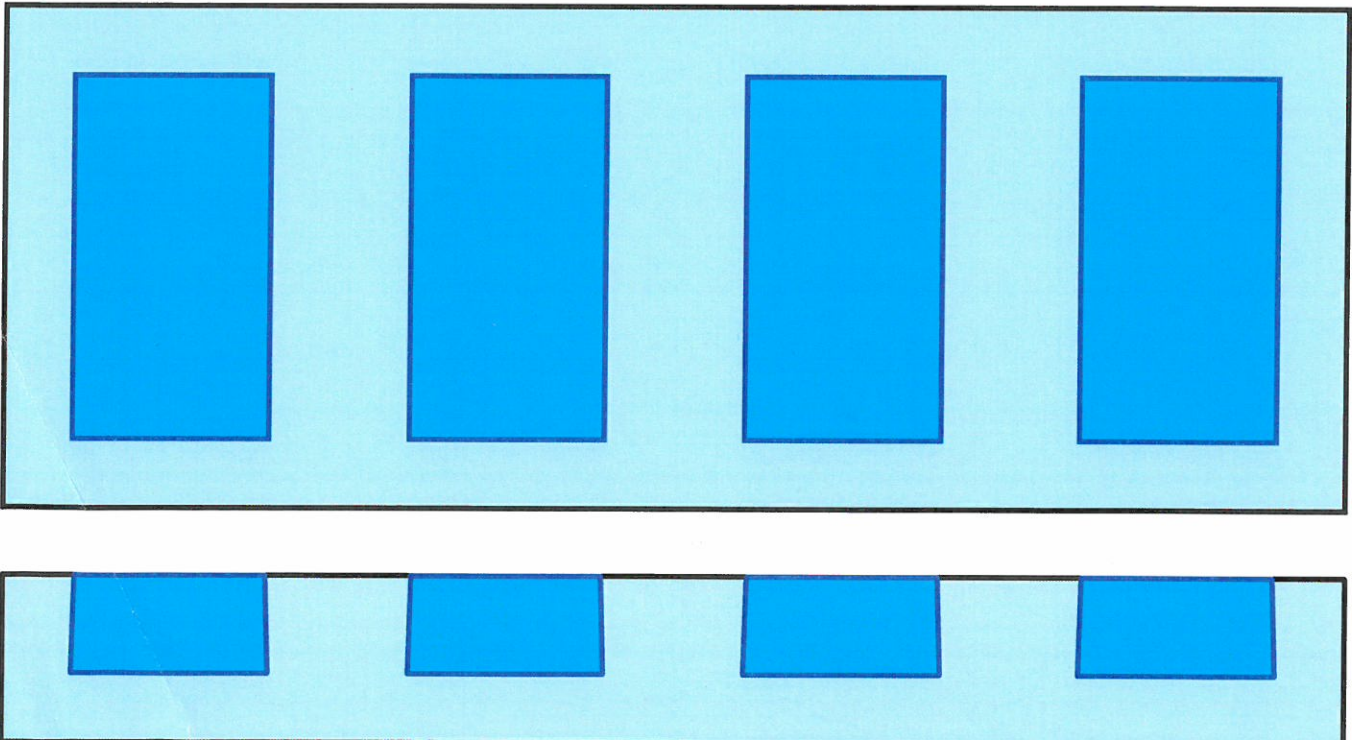
Overall Storage Efficiency = 41.6%

Overall System Size = 14.50' x 38.67' x 4.83'

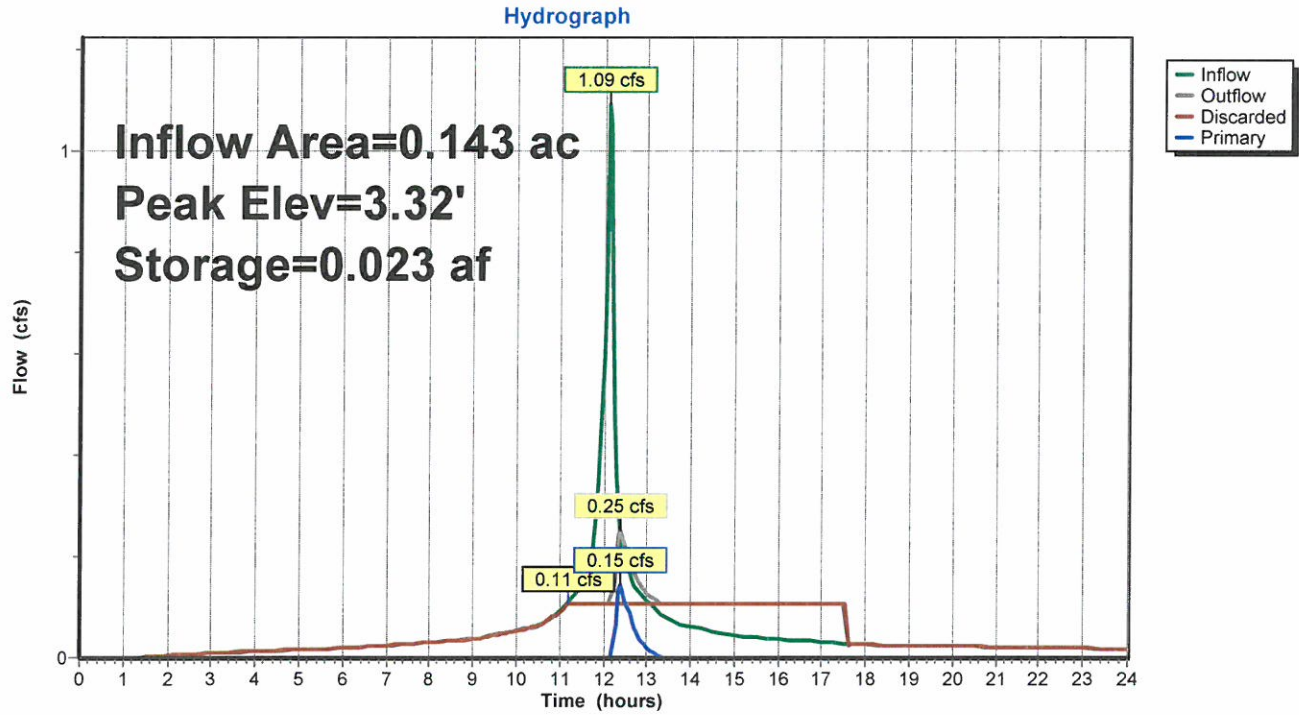
4 Chambers

100.3 cy Field

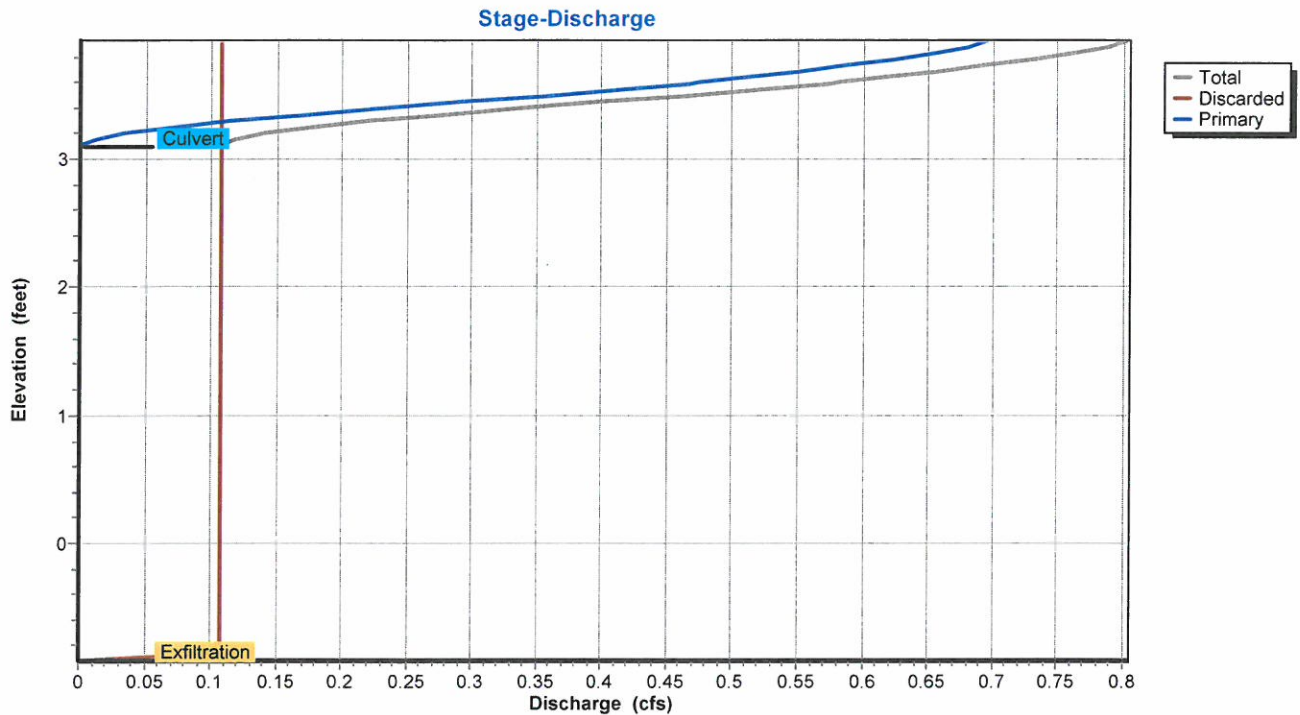
75.7 cy Stone



Pond 3P: 4 1000 GALLON DRYWELLS



Pond 3P: 4 1000 GALLON DRYWELLS



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Hydrograph for Pond 3P: 4 1000 GALLON DRYWELLS

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.000	-0.91	0.00	0.00	0.00
0.50	0.00	0.000	-0.91	0.00	0.00	0.00
1.00	0.00	0.000	-0.91	0.00	0.00	0.00
1.50	0.00	0.000	-0.91	0.00	0.00	0.00
2.00	0.00	0.000	-0.91	0.00	0.00	0.00
2.50	0.01	0.000	-0.91	0.01	0.01	0.00
3.00	0.01	0.000	-0.91	0.01	0.01	0.00
3.50	0.01	0.000	-0.90	0.01	0.01	0.00
4.00	0.01	0.000	-0.90	0.01	0.01	0.00
4.50	0.02	0.000	-0.90	0.01	0.01	0.00
5.00	0.02	0.000	-0.90	0.02	0.02	0.00
5.50	0.02	0.000	-0.90	0.02	0.02	0.00
6.00	0.02	0.000	-0.90	0.02	0.02	0.00
6.50	0.02	0.000	-0.90	0.02	0.02	0.00
7.00	0.02	0.000	-0.90	0.02	0.02	0.00
7.50	0.03	0.000	-0.90	0.03	0.03	0.00
8.00	0.03	0.000	-0.90	0.03	0.03	0.00
8.50	0.03	0.000	-0.89	0.03	0.03	0.00
9.00	0.04	0.000	-0.89	0.04	0.04	0.00
9.50	0.05	0.000	-0.89	0.04	0.04	0.00
10.00	0.05	0.000	-0.89	0.05	0.05	0.00
10.50	0.06	0.000	-0.88	0.06	0.06	0.00
11.00	0.09	0.000	-0.87	0.09	0.09	0.00
11.50	0.14	0.001	-0.75	0.11	0.11	0.00
12.00	0.60	0.007	0.88	0.11	0.11	0.00
12.50	0.20	0.023	3.29	0.22	0.11	0.12
13.00	0.11	0.022	3.17	0.13	0.11	0.02
13.50	0.08	0.021	3.05	0.11	0.11	0.00
14.00	0.06	0.020	2.81	0.11	0.11	0.00
14.50	0.05	0.018	2.51	0.11	0.11	0.00
15.00	0.04	0.015	2.17	0.11	0.11	0.00
15.50	0.04	0.013	1.78	0.11	0.11	0.00
16.00	0.04	0.010	1.37	0.11	0.11	0.00
16.50	0.03	0.007	0.83	0.11	0.11	0.00
17.00	0.03	0.004	0.04	0.11	0.11	0.00
17.50	0.03	0.000	-0.78	0.11	0.11	0.00
18.00	0.03	0.000	-0.90	0.03	0.03	0.00
18.50	0.03	0.000	-0.90	0.03	0.03	0.00
19.00	0.02	0.000	-0.90	0.02	0.02	0.00
19.50	0.02	0.000	-0.90	0.02	0.02	0.00
20.00	0.02	0.000	-0.90	0.02	0.02	0.00
20.50	0.02	0.000	-0.90	0.02	0.02	0.00
21.00	0.02	0.000	-0.90	0.02	0.02	0.00
21.50	0.02	0.000	-0.90	0.02	0.02	0.00
22.00	0.02	0.000	-0.90	0.02	0.02	0.00
22.50	0.02	0.000	-0.90	0.02	0.02	0.00
23.00	0.02	0.000	-0.90	0.02	0.02	0.00
23.50	0.02	0.000	-0.90	0.02	0.02	0.00
24.00	0.02	0.000	-0.90	0.02	0.02	0.00

Stage-Discharge for Pond 3P: 4 1000 GALLON DRYWELLS

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
-0.91	0.00	0.00	0.00	1.64	0.11	0.11	0.00
-0.86	0.11	0.11	0.00	1.69	0.11	0.11	0.00
-0.81	0.11	0.11	0.00	1.74	0.11	0.11	0.00
-0.76	0.11	0.11	0.00	1.79	0.11	0.11	0.00
-0.71	0.11	0.11	0.00	1.84	0.11	0.11	0.00
-0.66	0.11	0.11	0.00	1.89	0.11	0.11	0.00
-0.61	0.11	0.11	0.00	1.94	0.11	0.11	0.00
-0.56	0.11	0.11	0.00	1.99	0.11	0.11	0.00
-0.51	0.11	0.11	0.00	2.04	0.11	0.11	0.00
-0.46	0.11	0.11	0.00	2.09	0.11	0.11	0.00
-0.41	0.11	0.11	0.00	2.14	0.11	0.11	0.00
-0.36	0.11	0.11	0.00	2.19	0.11	0.11	0.00
-0.31	0.11	0.11	0.00	2.24	0.11	0.11	0.00
-0.26	0.11	0.11	0.00	2.29	0.11	0.11	0.00
-0.21	0.11	0.11	0.00	2.34	0.11	0.11	0.00
-0.16	0.11	0.11	0.00	2.39	0.11	0.11	0.00
-0.11	0.11	0.11	0.00	2.44	0.11	0.11	0.00
-0.06	0.11	0.11	0.00	2.49	0.11	0.11	0.00
-0.01	0.11	0.11	0.00	2.54	0.11	0.11	0.00
0.04	0.11	0.11	0.00	2.59	0.11	0.11	0.00
0.09	0.11	0.11	0.00	2.64	0.11	0.11	0.00
0.14	0.11	0.11	0.00	2.69	0.11	0.11	0.00
0.19	0.11	0.11	0.00	2.74	0.11	0.11	0.00
0.24	0.11	0.11	0.00	2.79	0.11	0.11	0.00
0.29	0.11	0.11	0.00	2.84	0.11	0.11	0.00
0.34	0.11	0.11	0.00	2.89	0.11	0.11	0.00
0.39	0.11	0.11	0.00	2.94	0.11	0.11	0.00
0.44	0.11	0.11	0.00	2.99	0.11	0.11	0.00
0.49	0.11	0.11	0.00	3.04	0.11	0.11	0.00
0.54	0.11	0.11	0.00	3.09	0.11	0.11	0.00
0.59	0.11	0.11	0.00	3.14	0.11	0.11	0.01
0.64	0.11	0.11	0.00	3.19	0.14	0.11	0.03
0.69	0.11	0.11	0.00	3.24	0.17	0.11	0.07
0.74	0.11	0.11	0.00	3.29	0.22	0.11	0.11
0.79	0.11	0.11	0.00	3.34	0.27	0.11	0.17
0.84	0.11	0.11	0.00	3.39	0.34	0.11	0.23
0.89	0.11	0.11	0.00	3.44	0.40	0.11	0.30
0.94	0.11	0.11	0.00	3.49	0.47	0.11	0.36
0.99	0.11	0.11	0.00	3.54	0.53	0.11	0.43
1.04	0.11	0.11	0.00	3.59	0.58	0.11	0.47
1.09	0.11	0.11	0.00	3.64	0.63	0.11	0.52
1.14	0.11	0.11	0.00	3.69	0.67	0.11	0.56
1.19	0.11	0.11	0.00	3.74	0.71	0.11	0.60
1.24	0.11	0.11	0.00	3.79	0.74	0.11	0.63
1.29	0.11	0.11	0.00	3.84	0.78	0.11	0.67
1.34	0.11	0.11	0.00	3.89	0.79	0.11	0.69
1.39	0.11	0.11	0.00				
1.44	0.11	0.11	0.00				
1.49	0.11	0.11	0.00				
1.54	0.11	0.11	0.00				
1.59	0.11	0.11	0.00				

3793-874 east sixth

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874 East Sixth Street proposed
 NRCC 24-hr D Custom Rainfall=1.00"
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Summary for Subcatchment 2S: 874 E 6th proposed

Runoff = 0.07 cfs @ 12.13 hrs, Volume= 0.005 af, Depth> 0.45"

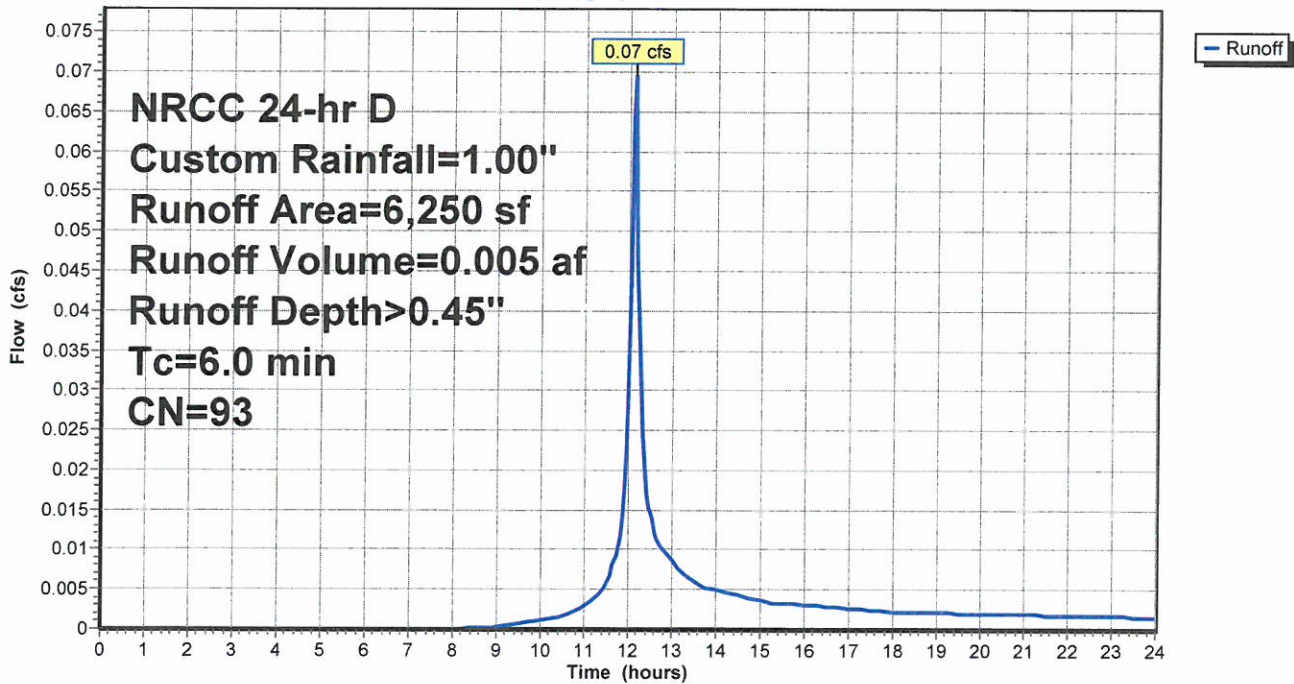
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 NRCC 24-hr D Custom Rainfall=1.00"

Area (sf)	CN	Description
3,972	98	Roofs, HSG A
1,769	98	Paved parking, HSG A
509	39	>75% Grass cover, Good, HSG A
6,250	93	Weighted Average
509		8.14% Pervious Area
5,741		91.86% Impervious Area

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

Subcatchment 2S: 874 E 6th proposed

Hydrograph



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874 East Sixth Street proposed
NRCC 24-hr D Custom Rainfall=1.00"

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Hydrograph for Subcatchment 2S: 874 E 6th proposed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	12.75	0.69	0.23	0.01
0.25	0.00	0.00	0.00	13.00	0.72	0.24	0.01
0.50	0.01	0.00	0.00	13.25	0.73	0.26	0.01
0.75	0.01	0.00	0.00	13.50	0.75	0.27	0.01
1.00	0.01	0.00	0.00	13.75	0.76	0.28	0.01
1.25	0.02	0.00	0.00	14.00	0.78	0.28	0.00
1.50	0.02	0.00	0.00	14.25	0.79	0.29	0.00
1.75	0.03	0.00	0.00	14.50	0.80	0.30	0.00
2.00	0.03	0.00	0.00	14.75	0.81	0.31	0.00
2.25	0.03	0.00	0.00	15.00	0.82	0.31	0.00
2.50	0.04	0.00	0.00	15.25	0.82	0.32	0.00
2.75	0.04	0.00	0.00	15.50	0.83	0.32	0.00
3.00	0.05	0.00	0.00	15.75	0.84	0.33	0.00
3.25	0.05	0.00	0.00	16.00	0.85	0.34	0.00
3.50	0.06	0.00	0.00	16.25	0.85	0.34	0.00
3.75	0.06	0.00	0.00	16.50	0.86	0.35	0.00
4.00	0.06	0.00	0.00	16.75	0.87	0.35	0.00
4.25	0.07	0.00	0.00	17.00	0.87	0.35	0.00
4.50	0.07	0.00	0.00	17.25	0.88	0.36	0.00
4.75	0.08	0.00	0.00	17.50	0.89	0.36	0.00
5.00	0.08	0.00	0.00	17.75	0.89	0.37	0.00
5.25	0.09	0.00	0.00	18.00	0.90	0.37	0.00
5.50	0.09	0.00	0.00	18.25	0.90	0.38	0.00
5.75	0.10	0.00	0.00	18.50	0.91	0.38	0.00
6.00	0.10	0.00	0.00	18.75	0.91	0.38	0.00
6.25	0.11	0.00	0.00	19.00	0.92	0.39	0.00
6.50	0.11	0.00	0.00	19.25	0.92	0.39	0.00
6.75	0.12	0.00	0.00	19.50	0.93	0.39	0.00
7.00	0.13	0.00	0.00	19.75	0.93	0.40	0.00
7.25	0.13	0.00	0.00	20.00	0.94	0.40	0.00
7.50	0.14	0.00	0.00	20.25	0.94	0.40	0.00
7.75	0.15	0.00	0.00	20.50	0.94	0.41	0.00
8.00	0.15	0.00	0.00	20.75	0.95	0.41	0.00
8.25	0.16	0.00	0.00	21.00	0.95	0.41	0.00
8.50	0.17	0.00	0.00	21.25	0.96	0.42	0.00
8.75	0.18	0.00	0.00	21.50	0.96	0.42	0.00
9.00	0.18	0.00	0.00	21.75	0.97	0.42	0.00
9.25	0.19	0.00	0.00	22.00	0.97	0.43	0.00
9.50	0.20	0.00	0.00	22.25	0.97	0.43	0.00
9.75	0.21	0.00	0.00	22.50	0.98	0.43	0.00
10.00	0.22	0.01	0.00	22.75	0.98	0.44	0.00
10.25	0.24	0.01	0.00	23.00	0.99	0.44	0.00
10.50	0.25	0.01	0.00	23.25	0.99	0.44	0.00
10.75	0.27	0.02	0.00	23.50	0.99	0.44	0.00
11.00	0.28	0.02	0.00	23.75	1.00	0.45	0.00
11.25	0.31	0.03	0.00	24.00	1.00	0.45	0.00
11.50	0.33	0.04	0.01				
11.75	0.38	0.05	0.01				
12.00	0.48	0.10	0.03				
12.25	0.62	0.18	0.03				
12.50	0.66	0.21	0.01				

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Summary for Pond 3P: 4 1000 GALLON DRYWELLS

Inflow Area = 0.143 ac, 91.86% Impervious, Inflow Depth > 0.45" for Custom event
 Inflow = 0.07 cfs @ 12.13 hrs, Volume= 0.005 af
 Outflow = 0.07 cfs @ 12.15 hrs, Volume= 0.005 af, Atten= 4%, Lag= 1.1 min
 Discarded = 0.07 cfs @ 12.15 hrs, Volume= 0.005 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= -0.88' @ 12.15 hrs Surf.Area= 0.013 ac Storage= 0.000 af

Plug-Flow detention time= 1.3 min calculated for 0.005 af (100% of inflow)
 Center-of-Mass det. time= 1.0 min (868.1 - 867.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	-0.91'	0.014 af	38.67'W x 14.50'L x 4.83'H Field A 0.062 af Overall - 0.015 af Embedded = 0.047 af x 30.0% Voids
#2A	1.09'	0.012 af	Shea Dry Well 1000gal x 4 Inside #1 Inside= 62.0"W x 30.0"H => 12.86 sf x 10.00'L = 128.6 cf Outside= 68.0"W x 34.0"H => 15.80 sf x 10.50'L = 165.9 cf 4 Chambers in 4 Rows
		0.026 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	-0.91'	8.270 in/hr Exfiltration over Surface area
#2	Primary	3.09'	6.0" Round Culvert L= 84.0' Ke= 0.500 Inlet / Outlet Invert= 3.09' / 2.36' S= 0.0087 ' / Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.11 cfs @ 12.15 hrs HW=-0.88' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=-0.91' (Free Discharge)

↑**2=Culvert** (Controls 0.00 cfs)

Pond 3P: 4 1000 GALLON DRYWELLS - Chamber Wizard Field A

Chamber Model = Shea Dry Well 1000gal (Shea Jumbo Rectagular Dry Well)

Inside= 62.0"W x 30.0"H => 12.86 sf x 10.00'L = 128.6 cf

Outside= 68.0"W x 34.0"H => 15.80 sf x 10.50'L = 165.9 cf

68.0" Wide + 48.0" Spacing = 116.0" C-C Row Spacing

1 Chambers/Row x 10.50' Long = 10.50' Row Length +24.0" End Stone x 2 = 14.50' Base Length

4 Rows x 68.0" Wide + 48.0" Spacing x 3 + 24.0" Side Stone x 2 = 38.67' Base Width

24.0" Base + 34.0" Chamber Height = 4.83' Field Height

4 Chambers x 128.6 cf = 514.4 cf Chamber Storage

4 Chambers x 165.9 cf = 663.7 cf Displacement

2,708.1 cf Field - 663.7 cf Chambers = 2,044.4 cf Stone x 30.0% Voids = 613.3 cf Stone Storage

Chamber Storage + Stone Storage = 1,127.8 cf = 0.026 af

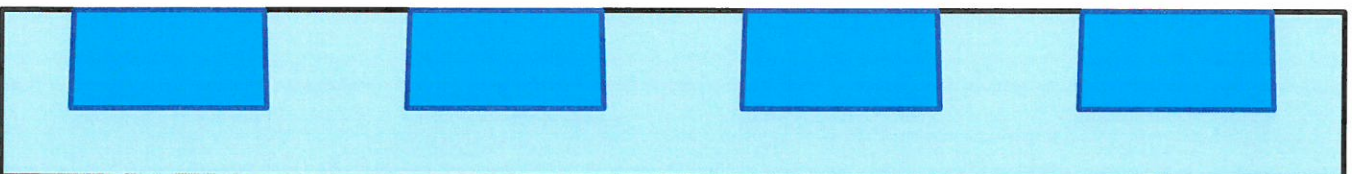
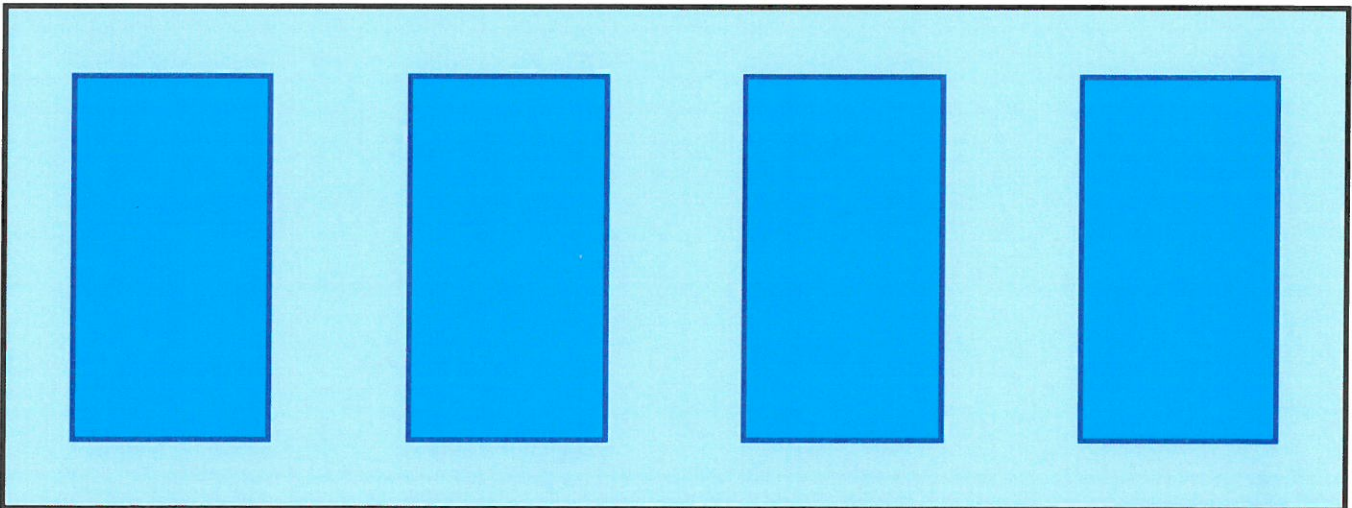
Overall Storage Efficiency = 41.6%

Overall System Size = 14.50' x 38.67' x 4.83'

4 Chambers

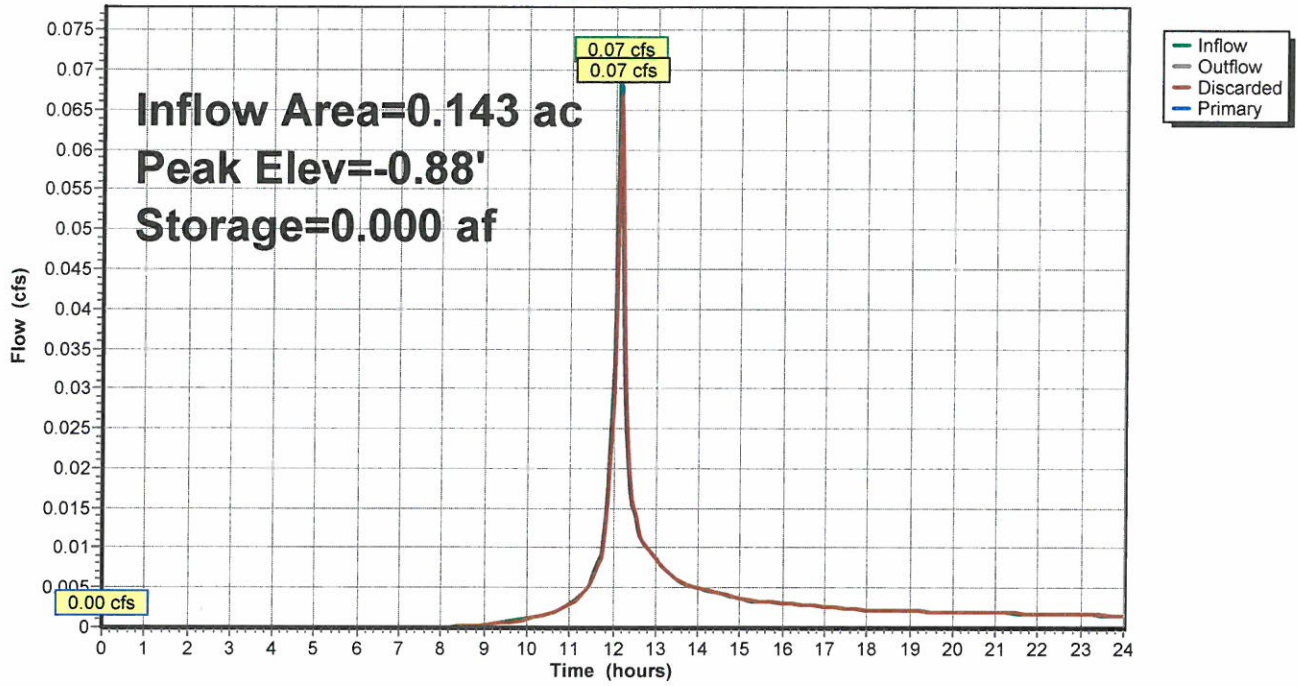
100.3 cy Field

75.7 cy Stone



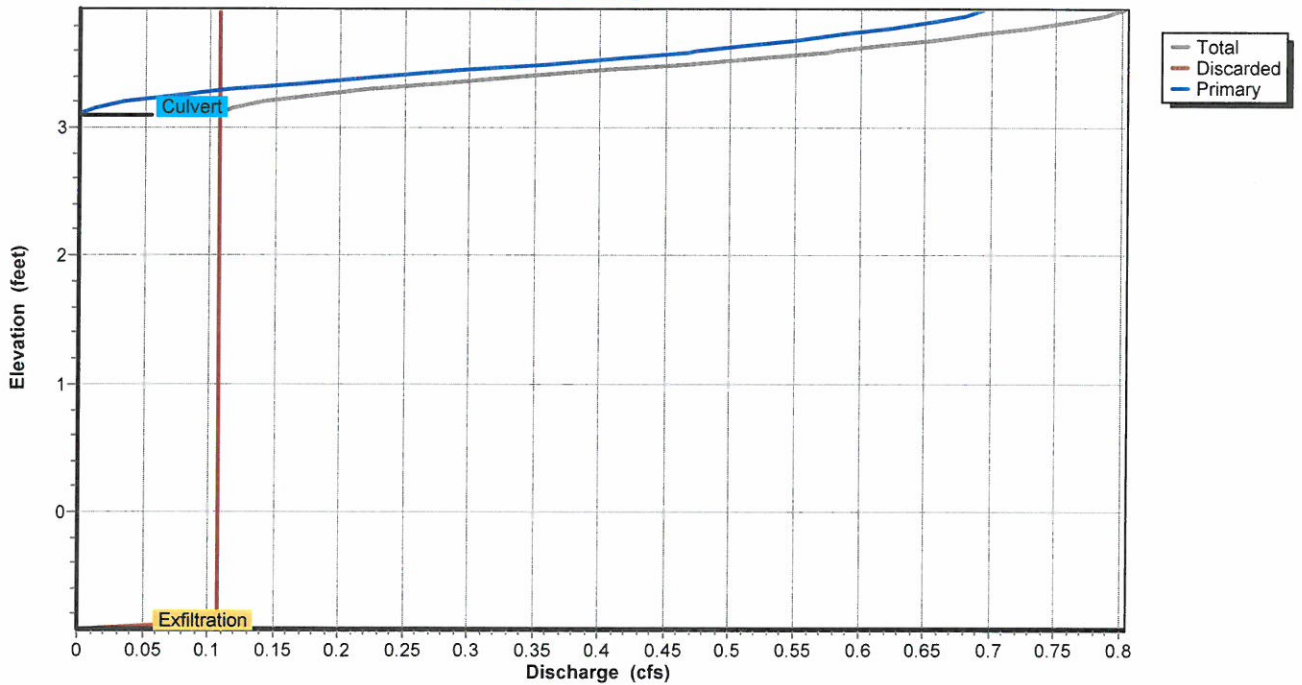
Pond 3P: 4 1000 GALLON DRYWELLS

Hydrograph



Pond 3P: 4 1000 GALLON DRYWELLS

Stage-Discharge



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Hydrograph for Pond 3P: 4 1000 GALLON DRYWELLS

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.000	-0.91	0.00	0.00	0.00
0.50	0.00	0.000	-0.91	0.00	0.00	0.00
1.00	0.00	0.000	-0.91	0.00	0.00	0.00
1.50	0.00	0.000	-0.91	0.00	0.00	0.00
2.00	0.00	0.000	-0.91	0.00	0.00	0.00
2.50	0.00	0.000	-0.91	0.00	0.00	0.00
3.00	0.00	0.000	-0.91	0.00	0.00	0.00
3.50	0.00	0.000	-0.91	0.00	0.00	0.00
4.00	0.00	0.000	-0.91	0.00	0.00	0.00
4.50	0.00	0.000	-0.91	0.00	0.00	0.00
5.00	0.00	0.000	-0.91	0.00	0.00	0.00
5.50	0.00	0.000	-0.91	0.00	0.00	0.00
6.00	0.00	0.000	-0.91	0.00	0.00	0.00
6.50	0.00	0.000	-0.91	0.00	0.00	0.00
7.00	0.00	0.000	-0.91	0.00	0.00	0.00
7.50	0.00	0.000	-0.91	0.00	0.00	0.00
8.00	0.00	0.000	-0.91	0.00	0.00	0.00
8.50	0.00	0.000	-0.91	0.00	0.00	0.00
9.00	0.00	0.000	-0.91	0.00	0.00	0.00
9.50	0.00	0.000	-0.91	0.00	0.00	0.00
10.00	0.00	0.000	-0.91	0.00	0.00	0.00
10.50	0.00	0.000	-0.91	0.00	0.00	0.00
11.00	0.00	0.000	-0.91	0.00	0.00	0.00
11.50	0.01	0.000	-0.91	0.01	0.01	0.00
12.00	0.03	0.000	-0.90	0.03	0.03	0.00
12.50	0.01	0.000	-0.90	0.01	0.01	0.00
13.00	0.01	0.000	-0.91	0.01	0.01	0.00
13.50	0.01	0.000	-0.91	0.01	0.01	0.00
14.00	0.00	0.000	-0.91	0.00	0.00	0.00
14.50	0.00	0.000	-0.91	0.00	0.00	0.00
15.00	0.00	0.000	-0.91	0.00	0.00	0.00
15.50	0.00	0.000	-0.91	0.00	0.00	0.00
16.00	0.00	0.000	-0.91	0.00	0.00	0.00
16.50	0.00	0.000	-0.91	0.00	0.00	0.00
17.00	0.00	0.000	-0.91	0.00	0.00	0.00
17.50	0.00	0.000	-0.91	0.00	0.00	0.00
18.00	0.00	0.000	-0.91	0.00	0.00	0.00
18.50	0.00	0.000	-0.91	0.00	0.00	0.00
19.00	0.00	0.000	-0.91	0.00	0.00	0.00
19.50	0.00	0.000	-0.91	0.00	0.00	0.00
20.00	0.00	0.000	-0.91	0.00	0.00	0.00
20.50	0.00	0.000	-0.91	0.00	0.00	0.00
21.00	0.00	0.000	-0.91	0.00	0.00	0.00
21.50	0.00	0.000	-0.91	0.00	0.00	0.00
22.00	0.00	0.000	-0.91	0.00	0.00	0.00
22.50	0.00	0.000	-0.91	0.00	0.00	0.00
23.00	0.00	0.000	-0.91	0.00	0.00	0.00
23.50	0.00	0.000	-0.91	0.00	0.00	0.00
24.00	0.00	0.000	-0.91	0.00	0.00	0.00

Stage-Discharge for Pond 3P: 4 1000 GALLON DRYWELLS

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
-0.91	0.00	0.00	0.00	1.64	0.11	0.11	0.00
-0.86	0.11	0.11	0.00	1.69	0.11	0.11	0.00
-0.81	0.11	0.11	0.00	1.74	0.11	0.11	0.00
-0.76	0.11	0.11	0.00	1.79	0.11	0.11	0.00
-0.71	0.11	0.11	0.00	1.84	0.11	0.11	0.00
-0.66	0.11	0.11	0.00	1.89	0.11	0.11	0.00
-0.61	0.11	0.11	0.00	1.94	0.11	0.11	0.00
-0.56	0.11	0.11	0.00	1.99	0.11	0.11	0.00
-0.51	0.11	0.11	0.00	2.04	0.11	0.11	0.00
-0.46	0.11	0.11	0.00	2.09	0.11	0.11	0.00
-0.41	0.11	0.11	0.00	2.14	0.11	0.11	0.00
-0.36	0.11	0.11	0.00	2.19	0.11	0.11	0.00
-0.31	0.11	0.11	0.00	2.24	0.11	0.11	0.00
-0.26	0.11	0.11	0.00	2.29	0.11	0.11	0.00
-0.21	0.11	0.11	0.00	2.34	0.11	0.11	0.00
-0.16	0.11	0.11	0.00	2.39	0.11	0.11	0.00
-0.11	0.11	0.11	0.00	2.44	0.11	0.11	0.00
-0.06	0.11	0.11	0.00	2.49	0.11	0.11	0.00
-0.01	0.11	0.11	0.00	2.54	0.11	0.11	0.00
0.04	0.11	0.11	0.00	2.59	0.11	0.11	0.00
0.09	0.11	0.11	0.00	2.64	0.11	0.11	0.00
0.14	0.11	0.11	0.00	2.69	0.11	0.11	0.00
0.19	0.11	0.11	0.00	2.74	0.11	0.11	0.00
0.24	0.11	0.11	0.00	2.79	0.11	0.11	0.00
0.29	0.11	0.11	0.00	2.84	0.11	0.11	0.00
0.34	0.11	0.11	0.00	2.89	0.11	0.11	0.00
0.39	0.11	0.11	0.00	2.94	0.11	0.11	0.00
0.44	0.11	0.11	0.00	2.99	0.11	0.11	0.00
0.49	0.11	0.11	0.00	3.04	0.11	0.11	0.00
0.54	0.11	0.11	0.00	3.09	0.11	0.11	0.00
0.59	0.11	0.11	0.00	3.14	0.11	0.11	0.01
0.64	0.11	0.11	0.00	3.19	0.14	0.11	0.03
0.69	0.11	0.11	0.00	3.24	0.17	0.11	0.07
0.74	0.11	0.11	0.00	3.29	0.22	0.11	0.11
0.79	0.11	0.11	0.00	3.34	0.27	0.11	0.17
0.84	0.11	0.11	0.00	3.39	0.34	0.11	0.23
0.89	0.11	0.11	0.00	3.44	0.40	0.11	0.30
0.94	0.11	0.11	0.00	3.49	0.47	0.11	0.36
0.99	0.11	0.11	0.00	3.54	0.53	0.11	0.43
1.04	0.11	0.11	0.00	3.59	0.58	0.11	0.47
1.09	0.11	0.11	0.00	3.64	0.63	0.11	0.52
1.14	0.11	0.11	0.00	3.69	0.67	0.11	0.56
1.19	0.11	0.11	0.00	3.74	0.71	0.11	0.60
1.24	0.11	0.11	0.00	3.79	0.74	0.11	0.63
1.29	0.11	0.11	0.00	3.84	0.78	0.11	0.67
1.34	0.11	0.11	0.00	3.89	0.79	0.11	0.69
1.39	0.11	0.11	0.00				
1.44	0.11	0.11	0.00				
1.49	0.11	0.11	0.00				
1.54	0.11	0.11	0.00				
1.59	0.11	0.11	0.00				

**STORMWATER
TREATMENT &
FACILITIES
OPERATION &
MAINTENANCE**

LONG TERM POLLUTION PREVENTION PLAN

- Good housekeeping practices will be standard operating procedures in order to maintain occupancy requirements including regular scheduled cleaning and maintenance
- Requirements for routine inspection and maintenance of stormwater BMP's are included in the O & M section of this report.
- No hazardous chemicals or petroleum products will be stored on site.
- A professional lawn and yard maintenance company will be hired for all exterior maintenance.
- No herbicides, high nitrogen fertilizers, or pesticides will be stored or used on the premises.
- Sanitary waste will be handled by connection to the municipal sewer.
- Trash removal will be by private hauler.
- Only non-toxic Calcium Chloride or similar snow melt materials will be used on parking lots and walks. Sand use will be professionally applied only as necessary under icy conditions.
- An Operation and Maintenance Manual and Pollution Prevention Plan will be prepared and made part of the training for all personnel (employees and contractors) who will have responsibility O & M and Pollution Prevention.
- A list of emergency contacts will be included in the O & M and Pollution Prevention Manual.

APPENDIX O & M

FACILITY

- CLEAN SEDIMENT FROM INFILTRATORS (2) APRIL & NOVEMBER
- MOW LAWNS (1) APRIL & NOVEMBER
- TRIM TREES & SHRUBS (1) AS NECESSARY - WITH SEDIMENT OR DEBRIS BUILD-UP
- SWEEP PARKING LOT/ DRIVEWAY(2)

SCHEDULE

- INSPECT CATCHBASINS WEEKLY IN SEASON
- CLEAN CATCHBASINS (2) SPRING & FALL
- ADSORB FLOATING OIL & DISPOSAL (3) APRIL & NOVEMBER
- PUMP OUT SEDIMENT (2) 4 TIMES / YEAR
- INSPECT INFILTRATORS 4 TIMES / YEAR INCLUDING APRIL & NOVEMBER

RESPONSIBILITY

- LANDSCAPE MAINTENANCE CO.
- LANDSCAPE MAINTENANCE CO.
- LANDSCAPE MAINTENANCE CO.
- LANDSCAPE MAINTENANCE CO.
- VACUUM PUMPING CO.
- VACUUM PUMPING CO.

VACUUM PUMPING CO.

ON LAWN TO
REDUCE NEED FOR
FERTILIZER EXCESS
GRASS AND TREE &
SHRUB CLIPPINGS
TO BE DISPOSED OF
AT A COMPOST
FACILITY

VACUUM PUMPING CO.

VACUUM PUMPING CO.

VACUUM PUMPING CO.

(2) INFILTRATOR
SEDIMENT TO BE
DISPOSED OF AT A
LANDFILL

(3) ADSORBED OIL TO
BE DISPOSED OF BY
A LIQUID WASTE
HAULER

(1) LAWN CLIPPINGS TO
BE MULCHED & LEFT