GRAZ Engineering, L.L.C.

323 West Lake Road • Fitzwilliam, NH 03447 • Telephone (603) 585-6959 • Fax (603) 585-6960

Transmittal

To: Conservation Commission
Company: Town of Leicester
Address: 3 Washburn Square
City/State: Leicester, MA 01524

Subject: Parker Street (North) Definitive Subdivision NOI Application
Date: August 24, 2021
Transmitted: ☐ **Mail** ☑ **Email** ☑ **Hand**

☑ **For Your Approval**	☑ **Which You requested**
☑ **For Your Review**	☐ **Approved**
☐ **For Your Signature**	☐ **Approved As Noted**
☑ **For Your Information**	☐ **Revise And Resubmit**
☐ **For Your Files**	☐ **Not Approved**

1	**copy**	**WPA Form 3, NOI Application, & associated documents**
1	**copy**	**Parker Street (North) Definitive Subdivision Plans – dated 08/24/21, Sheets 1-8, (24x36)**
2	**checks**	**NOI Town Share & Local Filing Fee Checks (see fee breakdown below)**
1	**email**	**PDF Digital Copy of Submittal Materials**
	copy	

Comments: Enclosed is the NOI submittal for the Parker Street (North) Definitive Subdivision prepared for Schold Development, LLC (Matt Schold) for the property located on the existing portion of Parker Street located off from Pine Street and being depicted on Assessors Map 42 as Parcels A1.0 & B1.0. I trust that this submittal meets the requirements of the Commission and look forward to discussing this project at the public hearing.

The fee breakdown for the filing check is as follows:

Total NOI Project Fee:	$ 2,825.00
NOI State Share:	$1,400.00
NOI Town Share:	$ 1,425.00
Local Bylaw Fee:	$ 1,412.50
Total Local Fees:	$ 2,837.50

Should you have any questions or require any additional information, please call my cell at 508-769-9084.

Respectfully yours,
GRAZ Engineering, L.L.C.

Brian MacEwen, PLS, BSCE
Project Manager

cc: Matt Schold, Applicant/Owner

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

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

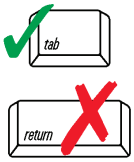
Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Leicester
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):

Parker Street, located off from Pine Street — a. Street Address
Leicester — b. City/Town
01524 — c. Zip Code

Latitude and Longitude:
42.214444 N — d. Latitude
71.941111 W — e. Longitude

42 — f. Assessors Map/Plat Number
A1.0 & B1.0 — g. Parcel /Lot Number

2. Applicant:

Matt — a. First Name
Schold — b. Last Name
Schold Development, LLC — c. Organization
77 Chickering Street — d. Street Address
Spencer — e. City/Town
MA — f. State
01562 — g. Zip Code
805-612-8777 — h. Phone Number
i. Fax Number
ScholdDev@gmail.com — j. Email Address

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

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):

Brian — a. First Name
MacEwen — b. Last Name
GRAZ Engineering, LLC — c. Company
323 West Lake Road — d. Street Address
Fitzwilliam — e. City/Town
MA — f. State
03477 — g. Zip Code
508-769-9084 — h. Phone Number
i. Fax Number
Brian@GrazEngineering.com — j. Email address

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

2,825.00 — a. Total Fee Paid
1,400.00 — b. State Fee Paid
1,425.00 — c. City/Town Fee Paid

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

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

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A. General Information (continued)

6. General Project Description:

Three (3) lot residential subdivision with ±520 existing gravel roadway upgrade/improvements and ±950' of roadway extension to a the proposed dead end cul-de-sac with "country style" roadway drainage.

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:

a. County	b. Certificate # (if registered land)
Worcester	
c. Book	d. Page Number
60004	48

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

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

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

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

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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. ☐ Bank	1. linear feet	2. linear feet
b. ☐ Bordering Vegetated Wetland	1. square feet	2. square feet
c. ☐ Land Under Waterbodies and Waterways	1. square feet 3. cubic yards dredged	2. square feet

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. ☐ Bordering Land Subject to Flooding	1. square feet	2. square feet
	3. cubic feet of flood storage lost	4. cubic feet replaced
e. ☐ Isolated Land Subject to Flooding	1. square feet	
	2. cubic feet of flood storage lost	3. cubic feet replaced
f. ☒ Riverfront Area	Bartons Brook - Inland 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: 25,961 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.
25,961	14,996	10,965

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.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

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

Provided by MassDEP:

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Leicester
City/Town

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. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. ☐ Land Under the Ocean	1. square feet 2. cubic yards dredged	
c. ☐ Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. ☐ Coastal Beaches	1. square feet	2. cubic yards beach nourishment
e. ☐ Coastal Dunes	1. square feet	2. cubic yards dune nourishment

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
f. ☐ Coastal Banks	1. linear feet	
g. ☐ Rocky Intertidal Shores	1. square feet	
h. ☐ Salt Marshes	1. square feet	2. sq ft restoration, rehab., creation
i. ☐ Land Under Salt Ponds	1. square feet 2. cubic yards dredged	
j. ☐ Land Containing Shellfish	1. square feet	
k. ☐ Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above 1. cubic yards dredged	
l. ☐ Land Subject to Coastal Storm Flowage	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

Massachusetts Department of Environmental Protection
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Provided by MassDEP:
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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

   August 1, 2021
   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 https://www.mass.gov/ma-endangered-species-act-mesa-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.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
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C. Other Applicable Standards and Requirements (cont'd)

(c) ☐ MESA filing fee (fee information available at https://www.mass.gov/how-to/how-to-file-for-a-mesa-project-review).
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, https://www.mass.gov/service-details/exemptions-from-review-for-projectsactivities-in-priority-habitat; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)

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

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

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

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

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

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

Division of Marine Fisheries -
Southeast Marine Fisheries Station
Attn: Environmental Reviewer
836 South Rodney French Blvd.
New Bedford, MA 02744
Email: dmf.envreview-south@mass.gov

North Shore - Hull to New Hampshire border:

Division of Marine Fisheries -
North Shore Office
Attn: Environmental Reviewer
30 Emerson Avenue
Gloucester, MA 01930
Email: dmf.envreview-north@mass.gov

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.

c. ☐ Is this an aquaculture project? d. ☐ Yes ☐ No

If yes, include a copy of the Division of Marine Fisheries Certification Letter (M.G.L. c. 130, § 57).

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 3 – Notice of Intent
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
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C. Other Applicable Standards and Requirements (cont'd)

4. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?

a. ☐ Yes ☒ No If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations). **Note:** electronic filers click on Website.

b. ACEC

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

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.

Massachusetts Department of Environmental Protection
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Leicester
City/Town

D. Additional Information (cont'd)

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

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

Parker Street (North) Definitive Subdivsion, Leicester, MA
a. Plan Title

GRAZ Engineering, LLC
b. Prepared By

Paul F. Grasewicz, PE
c. Signed and Stamped by

August 24, 2021
d. Final Revision Date

1" = 40"
e. Scale

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:

2674
2. Municipal Check Number

8/25/21
3. Check date

2673
4. State Check Number

8/25/21
5. Check date

Schold Development, LLC
6. Payor name on check: First Name

7. Payor name on check: Last Name

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

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

Provided by MassDEP:

MassDEP File Number

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Leicester
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: 8/24/21

3. Signature of Property Owner (if different)

4. Date

5. Signature of Representative (if any)

6. Date: 8/24/21

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

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

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

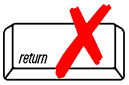
The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

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

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



A. Applicant Information

1. Location of Project:

Parker Street, located off from Pine Street	Leicester
a. Street Address	b. City/Town
2673	1,400.00
c. Check number	d. Fee amount

2. Applicant Mailing Address:

Matt		Schold
a. First Name		b. Last Name
Schold Development, LLC		
c. Organization		
77 Chickering Road		
d. Mailing Address		
Spencer	MA	01562
e. City/Town	f. State	g. Zip Code
508-612-8777		ScholdDev@gmail.com
h. Phone Number	i. Fax Number	j. Email Address

3. Property Owner (if different):

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

B. Fees

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

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

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

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

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

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

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

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

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

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

B. Fees (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
Cat. 2.g, Stormwater Discharges	1	500 x 1.5	750.00
Cat. 2.g, Stormwater Discharge	1	500	500.00
Cat. 3.c, Roadway Construction	1	1,050 x 1.5	1,575.00

Step 5/Total Project Fee: 2,825.00

Step 6/Fee Payments:

Total Project Fee:	2,825.00 (a. Total Fee from Step 5)
State share of filing Fee:	1,400.00 (b. 1/2 Total Fee **less $**12.50)
City/Town share of filling Fee:	1,425.00 (c. 1/2 Total Fee **plus** $12.50)

C. Submittal Requirements

a.) Complete pages 1 and 2 and send with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts.

Department of Environmental Protection
Box 4062
Boston, MA 02211

b.) **To the Conservation Commission:** Send the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and the city/town fee payment.

To MassDEP Regional Office (see Instructions): Send a copy of the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and a **copy** of the state fee payment. (E-filers of Notices of Intent may submit these electronically.)

SCHOLD DEVELOPMENT LLC
77 CHICKERING ROAD
SPENCER, MA 01562-2822

2673
53-8659/2113

8-25-21 Date

Pay to the Order of COMMONWEALTH OF MASSACHUSETTS $ 1,400.00

Fourteen hundred 00/100 Dollars

Photo Safe Deposit

WEBSTER FIRST FEDERAL CREDIT UNION
Webster, MA 01570

For MA DEP; PARKER PERMIT

[redacted] 2673

Harland Clarke

GUARDIAN SAFETY® YELLOW

SCHOLD DEVELOPMENT LLC
77 CHICKERING ROAD
SPENCER, MA 01562-2822

2674
53-8659/2113

8-25-21
Date

CHECK ARMOR FRAUD PROTECTION

Pay to the Order of TOWN OF LEICESTER $ 1425.-

Fourteen hundred twenty-five -0/100 Dollars

Photo Safe Deposit® Details on back

WEBSTER FIRST FEDERAL CREDIT UNION
Webster, MA 01570

For Permit, Town Site Fee

[redacted]

2674

MP

Harland Clarke

GUARDIAN SAFETY® YELLOW

SCHOLD DEVELOPMENT LLC
77 CHICKERING ROAD
SPENCER, MA 01562-2822

2675
53-8659/2113

8.25.21
Date

CHECK ARMOR FRAUD PROTECTION

Pay to the Order of Town of Leicester $ 1,412.50

Fourteen hundred twelve 50/100 Dollars

Photo Safe Deposit® Details on back

WEBSTER FIRST FEDERAL CREDIT UNION
Webster, MA 01570

For Permit; Town Con Com

[redacted]

2675

MP

Harland Clarke

GUARDIAN SAFETY® YELLOW

GRAZ Engineering, L.L.C.

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August 25, 2021

Conservation Commission
Town of Leicester
3 Washburn Square
Leicester, MA 01524

Subject: Project Narrative
Parker Street (North, off Pine Street)
Definitive Subdivision Plan

Dear Board Members:

Project Overview

In accordance with the Town of Leicester Zoning Bylaws, the Planning Board's Subdivision Rules and Regulations, and the Planning Board's Preliminary Plan approval dated August 4, 2020, Schold Development, LLC (Owner/Applicant) proposes a three (3) lot subdivision on Parker Street along the existing way which is currently comprised of a gravel and dirt road that is an extension to the south of the existing portion of Parker Street that was improved and laid out by the Town of Leicester in 2004 as depicted in Worcester District Registry of Deeds Plan Book 807, Plan 10. The approximate 72.7 acre site is currently depicted as Parcels A1.0 & B1.0 on Assessors Map 42 and currently with addresses of Parker Street and 89 Parker Street respectively.

For this submittal, the Applicant proposes only three (3) frontage lots, with two (2) of lots having sufficient frontages and areas to be further subdivided into two (2) additional lots. Therefore, the proposed roadway improvement and extension shall be limited to a maximum of only five (5) building lots total.

Existing Site Conditions

The existing property is a ±72.7 acre undeveloped woodland currently divided by a gravel and dirt cart road (right-of-way status unknown) named Parker Street that extends southerly from the southerly sideline of Pine Street to the northerly sideline of Baldwin Street.

The project site is the land described as recorded in the Worcester District Registry of Deeds (WDRD) in Book 60004, Page 48, and depicted as Parcels A and C in Plan Book 800, Plan 29. The entire project site is located in the Suburban/Agriculture (SA) zoning district.

The northerly boundary of the project site is bounded by lands owned by the Y.W.C.A., the easterly & southerly boundaries are bounded by multiple private owners, and the westerly boundary is bounded by the easterly edge of Stiles Lake. The site consists of a mix of oak, maple, and pine trees along with various mixed hard and soft woods as well as mountain laurel. The site generally slopes uphill in a south to southeasterly direction from the southerly end of the improved portion of Parker Street near the Stiles Lake spillway. There are several Bordering Vegetated Wetlands (BVW) located adjacent to and within portions of the project site.

The proposed work for the roadway improvement beginning at the end of the improved portion of Parker Street is within the 100-foot buffer zone adjacent wetlands. Therefore the project will be subject

to the jurisdiction of the MADEP Wetlands Protection Act and the Leicester Conservation Commission local wetlands regulations. Therefore, a Notice of Intent will be required for the project.

Proposed Site Conditions

The proposed lots will be provided with private septic systems & domestic water wells with overhead electrical and communication services from the existing public utilities located in the improved northerly portion of Parker Street. In addition to those utilities a proposed "country drainage" stormwater management system has been designed to conform to the maximum feasible extent of the Massachusetts DEP Stormwater Management Standards that have been incorporated in the Wetlands Protection Act Regulations. The existing graveled/dirt travelled way currently known as Parker Street shall be laid out and developed into a dead-end cul-de-sac (±1,480') right-of-way and roadway that shall meet the minimum requirements as set forth in the LPB for acceptance as a public way upon completion.

The majority of the remaining land lot shall remain as wooded upland. As depicted on the plans, ground cover for the majority of the proposed developed lots site will be residential lawns with the remainder being the proposed dwellings, driveways, roadway, and undisturbed woodlands.

I trust that this information will assist the Planning Board in their review of the Applicant's Definitive Subdivision Application submittal. Should you require further information, please contact us as soon as possible.

Respectfully yours,
GRAZ Engineering, L.L.C.

Brian MacEwen, PLS, BSCE
Project Manager

Paul Grasewicz, PE, PLS

BCM/PFG/bcm

cc: Matt Schold, Schold Development, LLC (Owner/Applicant)
Paul Grasewicz, GRAZ Engineering, LLC

Town of Leicester
Abutters List

CONCOM / PLANNING

ParcelID	Location	Owner	Co-Owner	Mailing Address	City	State	Zip
41 B6.2 0	RIVER ST	LARSON JR CHARLES G		317 RIVER STREET	LEICESTER	MA	01524
41 B7 0	PARKER ST	YWCA		1 SALEM SQ	WORCESTER	MA	01608
41 C3 0	PARKER ST	STILES LAKE WATER DISTRICT		PO BOX 401	ROCHDALE	MA	01542-0401
41 C4 0	PARKER ST	YWCA		1 SALEM SQ	WORCESTER	MA	01608
42 A2 0	49 SALMINEN DR	DOLAN MARK MARIE TRUSTEES	DOLAN LIVING TRUST	22 PONNAKIN HILL RD	CHARLTON	MA	01507
42 A3.5 0	PARKER ST	GENERELLI JR THOMAS A		7 BULLARD AV	WORCESTER	MA	01605
42 A4 0	57 PARKER ST	BLANCHARD MATTHEW C	BLANCHARD MARCIA L	57 PARKER ST	LEICESTER	MA	01524
42 A4.1 0	59 PARKER ST	GIFFEN BRIAN M	GIFFEN LISA M	34 HILLTOP DR	BELLINGHAM	MA	02019
42 A5 0	55 PARKER ST	GORGIEVSKI MICHAEL J		55 PARKER STREEET	LEICESTER	MA	01524-2200
42 B10.1 0	RIVER ST	ROBIDOUX PARE ROSE		301 RIVER ST	LEICESTER	MA	01524-1717
42 B10.2 0	RIVER ST	ETHIER RICHARD	ETHIER VICTORIA R	303 RIVER STREET	LEICESTER	MA	01524
42 B2 0	PARKER ST	BLANCHARD TRUST	BLANCHARD MARCIA L TRU	57 PARKER STREET	LEICESTER	MA	01524-2200
42 B3 0	62 PARKER ST	BLANCHARD TRUST	BLANCHARD MARCIA L TRU	57 PARKER STREET	LEICESTER	MA	01524-2200
42 B4 0	64 PARKER ST	BLANCHARD TRUST	BLANCHARD MARCIA L TRU	57 PARKER STREET	LEICESTER	MA	01524-2200
42 B4.1 0	58 PARKER ST	KINNEY DENA A		58 PARKER STREET	LEICESTER	MA	01524
42 B4.2 0	60 PARKER ST	BLANCHARD TRUST	BLANCHARD MARCIA L TRU	57 PARKER STREET	LEICESTER	MA	01524-2200
42 B5 0	190 BALDWIN ST	BROWN LINDA L		190 BALDWIN STREET	LEICESTER	MA	01524
42 B5.1 0	56 PARKER ST	USHER JOSEPH A		56 PARKER STREET	LEICESTER	MA	01524
42 B5.2 0	54 PARKER ST	MARCO WILLIAM J		54 PARKER STREET	LEICESTER	MA	01524
42 B5.4 0	164 BALDWIN ST	GRAHN STEVEN K	GRAHN MICHELLE R	164 BALDWIN ST	LEICESTER	MA	01524
42 B5.5 0	162 BALDWIN ST	PARISSI THOMAS F TRUSTEE	PARISSI ELIZABETH A TRUS	162 BALDWIN ST	LEICESTER	MA	01524
42 B6.1 0	BALDWIN ST	MUTUAL BUILDERS INC		660 PARK AVENUE	WORCESTER	MA	01603
42 B6.11 0	160 BALDWIN ST	LABRECQUE ROBERT J	LABRECQUE JUDITH M	BOX 207	ROCHDALE	MA	01542-0207
42 B6.12 0	144 BALDWIN ST	DURKIN JR JAMES P	KELLEY KRISTINE M	144 BALDWIN ST	LEICESTER	MA	01524
42 C4.1 0	189 BALDWIN ST	FULGINITI ROBERT F	FULGINITI DONNA M	189 BALDWIN ST	LEICESTER	MA	01524
42A B1 0	48 SALMINEN AV	MERCER MICHAEL E	MERCER KATELYN D	127 MANNVILLE ST	LEICESTER	MA	01524
42A B2 0	44 SALMINEN AV	HANNON JOHN P	MOISAN CHERYL A	44 SALMINEN AVE	LEICESTER	MA	01524
48 C12.4 0	191 BALDWIN ST	BURKS REDUS D	BURKS BONNY L	P O BOX 125	LEICESTER	MA	01524-0125

End of Report

Above is a certified list of abutters and abutters to abutters within 300 feet of subject.
Subject property: Parker Street, Assessors Map 42-A1-0, Deed Ref. 60004/48
Subject property: 89 Parker Street, Assessors Map 42-B1-0, Deed Ref. 60004/48
Subject owner(s): Schold Development LLC

Sandy Genna, Principal Assessor
Prepared by: Kathleen Asquith, Assistant

AFFIDAVIT OF SERVICE

Under the Massachusetts Wetlands Protection Act

(To be submitted to the Massachusetts Department of Environmental Protection and the Conservation Commission when filing a Notice of Intent)

I, Brian C. MacEwen , hereby certify under the pains and penalties of perjury that on August 26, 2021 I gave notification to the abutters in connection with the following matter:

A Notice of Intent filed under the Massachusetts Wetlands Protection Act by

Schold Development, LLC (Matt Schold, Applicant/Owner) with the

Leicester Conservation Commission on August 25, 2021 for property located at

Parker Street, Map 42, Parcels A1.0 & B1.0, Leicester, MA.

(address of proposed work)

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

Signature

August 25, 2021

Date

(Revised 2/07)

Town of Leicester
Abutters List

CONCOM / PLANNING

ParcelID	Location	Owner	Co-Owner	Mailing Address	City	State	Zip
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Subject owner(s): Schold Development LLC

Sandy Genna, Principal Assessor
Prepared by: Kathleen Asquith, Assistant

Notification to Abutters Under the
Massachusetts Wetlands Protection Act & the
Town of Leicester Wetland Bylaw

In accordance with the second paragraph Massachusetts General Laws Chapter131, Section 40, you are hereby notified of the following:

A. A **Notice of Intent** has been filed with the **Leicester Conservation Commission** for construction of a subdivision development off from Pine Street at the location of a currently named Parker Street in an Area Subject to Protection under the Wetlands Protection Act (General Laws Chapter 131, Section 40) and the Leicester Wetland Bylaw.

B. The name of the Applicant is **Schold Development, LLC.**

C. The project location is at **Off Parker Street (North), Map 42, Parcels A1.0 & B1.0.**

D. The submitted documents may be viewed **Monday, Wednesday, Thursday, 8 AM to 5 PM** and **Tuesday, 8 AM to 7 PM** in the **Leicester Town Clerk's Office.**

E. Copies of the submittal or more information may be obtained from the **Applicant's Representative (GRAZ Engineering, LLC)** by calling **508-769-9084** between the hours of **9 AM to 4 PM Monday through Friday**.

F. Further information regarding the date, time, and place of the Public Hearing may be obtained from: **Leicester Conservation Commission office** by calling **508-892-7007 Monday, Wednesday, Thursday, 8 AM to 5 PM** and **Tuesday, 8 AM to 7 PM**.

G. Notice of the Public Hearing, including its date, time, and place, will be published at least five (5) days in advance in the **Worcester Telegram & Gazette**.

H. Notice of the Public Hearing including its date, time, and place will be posted in the Town Hall not less than forty-eight (48) hours in advance.

Note: You also may contact your local Conservation Commission or the nearest Department of Environmental Protection Regional Office for more information about this application or the Wetlands Protection Act. To contact DEP, call: Central Region: 508-792-7650

Proposed
PARKER STREET
DEFINITIVE SUBDIVISION

Off Pine Street
Leicester, Massachusetts

HYDROLOGY &
STORMWATER REPORT

For Leicester Planning Board Definitive Subdivision Approval
Leicester Conservation Commission Notice of Intent
Submittals

June 8, 2021
Revised August 24, 2021

PREPARED FOR:

Schold Development, LLC
77 Chickering Road
Spencer, MA 01562

PREPARED BY:

GRAZ Engineering, L.L.C.
323 West Lake Road
Fitzwilliam, NH 03447

Proposed
PARKER STREET
DEFINITIVE SUBDIVISION

Off Pine Street, Leicester, MA

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June 8, 2021
Revised August 24, 2021

STORMWATER REPORT SUMMARY

Project Overview

In accordance with the preliminary subdivision plan approval by the Leicester Planning Board on August 4, 2020 of the "Preliminary Plan – Parker Street (North)" dated June 30, 2020 and in compliance with the Board's conditions of approval, the current Town of Leicester "Rules & Regulations Governing the Subdivision of Land", and the "Zoning Bylaws" the Applicant and Owner, Schold Development, LLC proposes a three (3) lot subdivision of the land located on Parker Street along the existing way which is currently comprised of a gravel and dirt road that is an extension to the south of the existing portion of Parker Street that was improved and laid out by the Town of Leicester in 2004 as depicted in Worcester District Registry of Deeds Plan Book 807, Plan 10. This portion of Parker Street is located off the southerly side of Pine Street.

Existing Site Conditions

The existing property is a ±72.7 acre undeveloped woodland currently divided by a gravel and dirt cart road (right-of-way status unknown) named Parker Street that extends southerly from the southerly sideline of Pine Street to the northerly sideline of Baldwin Street.

The project site is the land described as recorded in the Worcester District Registry of Deeds (WDRD) in Book 60004, Page 48, and depicted as Parcels A and C in Plan Book 800, Plan 29. The entire project site is located in the Suburban/Agriculture (SA) zoning district.

The northerly boundary of the project site is bounded by lands owned by the Y.W.C.A., the easterly & southerly boundaries are bounded by multiple private owners, and the westerly boundary is bounded by the easterly edge of Stiles Lake. The site consists of a mix of oak, maple, and pine trees along with various mixed hard and soft woods as well as mountain laurel. The site generally slopes uphill in a south to southeasterly direction from the southerly end of the improved portion of Parker Street near the Stiles Lake spillway. There are several Bordering Vegetated Wetlands (BVW) located adjacent to and within portions of the project site. The site is bounded on the west by the shoreline of Stiles Lake, the north by undeveloped lands currently owned by the Y.W.C.A., the east by undeveloped lands of Larson & Mutual Builders, and south by several existing residential lots bordering on the southerly portion of Parker Street, Baldwin Street, and Salminen Avenue.

A review of the NCRS Soil Survey mappings indicates that the site soils are comprised of "C" soils for the majority of the upland areas while the portions of the adjacent wetlands are classified as "D" soils. Field investigation of the soils has not been performed to date.

Portions of the proposed roadway improvement work and the stormwater for the roadway and site development are within the 100-foot buffer zone of the said wetlands. Therefore the project is under the under the jurisdiction of the MADEP Wetlands Protection Act and the Leicester Conservation Commission local wetlands regulations. A Notice of Intent for the project will be submitted separately.

Proposed Site Conditions

The proposed lot sites will be provided with private septic systems & domestic water wells with overhead electrical and communication services from the existing public utilities located in improved northerly portion of Parker Street. In addition to those utilities a proposed "country drainage" stormwater system has been designed to provide control and treatment to the maximum feasible extent of the Massachusetts DEP Stormwater Management Standards. The existing graveled/dirt travelled way currently known as Parker Street shall be laid out into a dead-end cul-de-sac (±1,480') right-of-way and the roadway shall be improved such that it shall meet the minimum requirements as set forth by the LPB for acceptance as a public way upon completion.

The majority of the remaining land lot shall remain as a wooded upland. As depicted on the plans, ground cover for the majority of the proposed developed lot sites shall be residential lawns with the remainder being covered by the proposed dwellings, driveways, roadway, and undisturbed woodlands.

The proposed site has been designed to the maximum feasible extent to mimic as close as possible the existing conditions stormwater flows utilizing a "country minimum of stormwater management practices and to minimize releases and to treat runoff, thereby minimizing environmental impact. Several techniques were utilized from the Massachusetts Department of Environmental Protections' (DEP) revised Stormwater Management handbooks to help maintain and provide better water quality, minimize runoff, and to provide groundwater recharge. These techniques include the "country drainage" swale with stone check dams intermittently spaced along its length, sediment forebay, and detention/infiltration basin with rip-rapped outlet aprons.

Standard 1: No Untreated Discharges or Erosion to Wetlands

All discharges from the proposed site have been treated to the maximum feasible extent given the nature of the existing gravel roadway and right-of-way width limitations and availability for additional drainage mitigation infrastructure on the adjacent privately owned lands. We would note that the level of treatment for the improved roadway portion of the project is consistent and exceeds the level of stormwater management that was provided for the most northerly section of the Parker Street as improved under by the Town of Leicester in 2004. Calculations for water quality have been provided under Standard 4.

Note that the majority of the proposed roadway improvement area will be collected via the "country drainage" swale located on the easterly side of the roadway and discharged to a combination sediment forebay and detention/infiltration basin to be located on the lands of the Y.W.C.A. The discharge from the detention/infiltration basin is to the adjacent wetland area similar to the current untreated gravel roadway runoff discharge point. Outlets have been lined with riprap and sizes based on a reference from the Erosion and Sediment Control Handbook, Fig 7.45, Design of riprap outlet protection from a round pipe flowing full; minimum tailwater conditions.

Standard 2: Peak Rate Attenuation

The analyses were made using SCS hydrological groups C soils of sandy clay loam and silty clay loam using HydroCAD Software Solutions system for modeling the hydrology and hydraulics of stormwater runoff. The stormwater management system is designed to attenuate the 2 and 10-year frequency storms as required by the DEP Stormwater Management Guidelines, Standard 2. The 25-year storm has also been evaluated as required by the Town of Leicester for the design of the drainage pipe network. In addition, the 100-year frequency storm was analyzed and determined to have no adverse off-site impacts.

For the purpose of analyzing pre- and post-development stormwater peak rates of runoff, two (2) analysis points (AP-1, Wetlands to the Northeast) and (AP-2, Stiles Lake) have been selected based on existing topographic conditions which were used for both the pre- and the post-peak rate calculations. The following table summarizes the pre versus post peak runoff rates for the above cited storm events for the various discharge points from the site with the respective HydroCAD node listings.

Table No. 1 - Analysis Point 1 (AP-1): Wetlands to the Northeast

Storm Event	*Pre-Development (cfs)*	*Post Development (cfs)*	*Net Change (cfs)*
2	*9.85*	*7.84*	*-2.01*
10	*23.60*	*22.42*	*-1.18*
25	*35.83*	*33.72*	*-2.11*
100	*62.54*	*52.87*	*-9.67*

Table No. 2 - Analysis Point 2 (AP-2): Stiles Lake

Storm Event	*Pre-Development (cfs)*	*Post Development (cfs)*	*Net Change (cfs)*
2	*8.32*	*7.54*	*-0.78*
10	*19.53*	*17.25*	*-2.28*
25	*29.40*	*29.33*	*-0.07*
100	*50.79*	*51.00*	*0.21*

Standard 3: Recharge

Prior to visiting the site a review of the NRCS Soil Survey was made to identify the soils and hydrologic groups. The majority of the upland site is mapped as Montauk fine sandy loam (C soils) with the wetland area along the northerly side of Baldwin Street being Whitman fine sandy loam (D soils). As the proposed storm water management basin is proposed adjacent to wetlands, the soil conditions have been evaluated by on-site deep hole soil testing to determine the estimated seasonal high groundwater table elevation. Using the "Static Method" the required storage volumes of the infiltration basin (Pond B1) as determined for the additional impervious areas proposed by this project. The recharge volume provided by Pond B1 along with the proposed roof runoff drywells exceeds the required recharge volume for the entire developed site. A mounding analysis has been provided for Pond B1. The calculations for the proposed recharge volume including the drawdown time calculation for Pond B1 have been included with this report.

Site Recharge to Groundwater ***"Static Method"***

Soil type: C Rawls Rate: 0.27 In./Hr.
Impervious Area (A1): 55,072 s.f.

Hydrologic Group	Target Depth Factor (F)	
A	0.60	inches
B	0.35	inches
C	0.25	inches
D	0.1	inches

Determine the required recharge volume:

Rv = F x impervious area

Rv = Required Recharge Volume
F = Target Depth Factor

$$Rv = \frac{F"HSGC" \times A1}{12 \text{ in. / ft.}} = \frac{13{,}768}{12} = 1{,}147 \text{ Cu.Ft.}$$

From Hydrocad determine the elevation that will hold back the required recharge volume:

Below is a excerpt from the stage storage table of Infiltration Pond B1.
Required Site Rv= 1,147 Cu.Ft., the minimum low level outlet required = 857.21

Stage Storage Volumes

Elevation (Ft.)	Surface Area (Sq.Ft.)	Cum. Storage (Cu. Ft.)	
856.5	0	0	
856.7	884	88	
856.9	1,769	354	
857.1	2,749	801	857.21 El. At Rv Min.
857.3	3,825	1,458	1,458 Rv at LLO
857.5	4,902	2,331	

The Low Level Outlet (LLO) has been designed at elevation: 857.30

Determine if the infiltration BMP will drain completely within 72 hours:

$$\text{Time drawdown} = \frac{Rv}{(K)\ (\text{Bottom Area})}$$

Rv = Storage Volume at Low Level Outlet (LLO) Elevation
K = Saturated Hydraulic Conductivity (Rawls Rate)
Bottom area = Bottom surface area not including sidewall

$$\text{Time drawdown} = \frac{857.21}{\frac{0.27}{12 \text{ in. / ft.}} * 2{,}211} = 17 \text{ hours}$$

Result is satisfactory for design purposes 17 hrs. < 72 hrs.

Standard 4: Water Quality

The sediment forebay (SF1) has been sized based on calculations using a ½-inch of runoff times the total impervious area of the post development project site. Calculations for the water quality volume and total suspended solids removal are provided.

The total site impervious area is 55,072 s.f., therefore the amount of volume to be treated for water quality is 2,295 c.f. The total supplied water quality volume from the sediment forebay is 2,378 c.f. which is greater than the requirement for the project.

Stormwater runoff volumes to be treated for water quality

- Stormwater Policy Standard 4: 1/2-inch of runoff x total impervious area of post-development site

Sediment Forebay 1P

Required Water Quality Volume:

Subcatchment	Impervious Area (SF)	Imp. Area x 0.5 in runoff (Cu.Ft.)	
P1.1	36,982		
P1.2	14,157		
P2.1	3,933		
	55,072	**2,295**	**Required W.Q.V.**

From Hydrocad determine the elevation that will hold back the required Water Quality Volume (WQV):

Below is a excerpt from the stage storage table of Sediment Forebay (SF1).
From Hydrocad determine the elevation that will hold back the required Water Quality Volume (WQV):

2,295 Cu.Ft., the min. W.Q.V. storage elevation required = 860.26

Stage Storage Volumes

Elevation (Ft.)	Surface Area (Sq.Ft.)	Cum. Storage (Cu. Ft.)		
857.8	0	0		
858	416	42		
859	804	652		
860	1,588	1,848	860.26	El. At Req. W.Q.V
861	2,784	4,034	860.3	W.Q.V.at Weir El.
861.5	3,456	5,594		

The Weir Elevation has been designed at elevation: 860.30

Supplied Water Quality Volume: 2,378 Cu.Ft.

STORMWATER MANAGEMENT

Weighted 80% TSS REMOVAL

BMP'S			***% Removal***
- CB's = Catch Basin w/ 4' sump and outlet tee			25%
- SF/DB = Detention Basin with Sediment Forebay			80%
- SF/IB = Infiltration Basin with Sediment Forebay			80%
- GSW = Grassed Swale with stone check dams @ 20' O.C.			70%
- N = No treatment			0%
AREAS	***BMP***	***IMP. AREA (SF)***	***TSS Removal***
P1.1	GSW, SF/DB	36,982	94.0%
P1.2	GSW	14,157	70.0%
P2.1	N	3,933	0.0%
TOTAL IMPERVIOUS AREA (SF)		***55,072***	
TOTAL WEIGHTED TSS REMOVAL			***81.1%***

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

System

The proposed Parker Street Subdivision drainage system consists of a drainage network that collects and attenuates peak flows that will be generated from the proposed site development to the maximum extent possible. The network includes "country drainage" swales; sediment forebay; and a detention/infiltration basin. Ultimately the flow discharges toward both Stile Lake to the west and the wetlands located to the north and east of the site.

Responsible Parties

The proposed roadway stormwater management system shall be operated and maintained by the developer during construction. Once the development is complete and the town accepts the roadway, the Town of Leicester will take responsibility for the roadway drainage system.

Construction Operation and Maintenance

Sedimentation and erosion controls, such as haybales, siltfence, and the stabilized construction entrance shall be installed prior to the commencement of construction. The maintenance of the sedimentation and erosion controls during the construction and until the site is fully stabilized shall be the responsibility of the Owner through the site contractor.

Sedimentation and erosion controls shall be inspected on an ongoing basis and repaired and/or replaced as necessary throughout construction. Upon completion of construction, the sedimentation and erosion controls shall be maintained until the disturbed areas of the construction site are fully stabilized.

The stabilized construction entrance shall be maintained to prevent tracking and washing of sediment onto existing paved surfaces until the installation of the roadway bituminous concrete binder course. The entrance shall be top dressed with additional stone or length extended as necessary. Roads adjacent to the site shall be left clean at the end of each day by the removal of any sediment spilled, tracked, or washed onto the existing pavement.

All site runoff shall be routed through permanent drainage facilities where available. Temporary sediment basins shall be constructed to control disturbed area runoff where the permanent system is not in place. The controls shall be constructed and maintained to minimize erosion and sediment transport. Maintenance shall be weekly or as necessary.

Modified rock check dams shall be added to the drainage channels at 20’ intervals during construction. They shall be inspected on an ongoing basis and repaired and/or replaced as necessary throughout construction. As part of the mosquito prevention they shall be inspected 72 hours after storms for standing water ponding behind them. Take corrective action if standing water is found.

The infiltration basins shall not be used as temporary sediment traps. The sediment forebay shall be excavated to one-foot above finish grade until the site has become fully stabilized. After the site is stabilized the basin shall be excavated to the finished grade.

The Contractor shall control airborne dust with the use of sprayed water as required minimize the impacts to neighboring properties. The use of calcium chloride or other chemicals are prohibited.

Mosquito Control**:** During construction the contractor is responsible for maintenance to see that larvicides are applied as necessary to the following stormwater treatment practices, which include but are not limited to: catch basins, drainage channels with check dams, sediment forebays, and infiltration basins. larvicides shall be applied by a licensed pesticide applicator in full compliance with all pesticide label requirements and any requirements that the Town of Leicester may have including types of larvicides and times of application.

Construction Period Pollution Prevention Measures

The Construction Period Pollution Prevention measures implemented under the Construction Erosion and Sedimentation Control will focus on developing, implementing, and enforcing a program that will reduce or eliminate the impacts of storm water runoff from the construction site. They focus predominately on temporary pollution prevention practices and address long-term or permanent pollution prevention measures that are implemented during the construction phase.

As described previously, sedimentation and erosion controls, such as straw wattles, siltfence, and stabilized construction entrances will be installed prior to the commencement of construction. Temporary sediment traps and detention basins will be installed as required. Check dams have been added to the drainage channels to help prevent erosion and help with the water quality. Inspections and maintenance of these controls have been well documented in the Operation and Maintenance Plan. With the addition of the Construction Inspection and Maintenance Log Form the contractor can incorporate a regimented schedule that will aid in the prevention of sedimentation pollution throughout the construction phase.

Standard 9: Operation and Maintenance Plan

Long Term Operation and Long Term Maintenance

Riprap Outlets: Riprap outlets shall be inspected annually to determine if high flows have caused scour beneath the riprap and/or filter fabric or dislodged any of the riprap or filter fabric materials. Replace riprap and/or repair/replace filter fabric as required. Any tree growth or accumulated sediments shall be removed.

Check Dams: Inspect check dams after every significant rainfall event. Repair damage and remove sediment as needed. Coordinate inspections with the drainage channel cycle.

Drainage Channels and Culvert inlets and outlets: Initially, the drainage channel should be inspected after the first few months to make sure there is no rilling or gullying, and that vegetation in the channels is adequate. Thereafter, inspect the channel twice a year for slope integrity, soil moisture, vegetative health, soil stability, soil compaction, soil erosion, ponding, and sediment accumulation. Regular maintenance includes mowing, fertilizing, liming, watering, pruning, weeding, and pest control. Mow channels at least once annually. Grass heights shall be no greater than 6 inches and mower blade depth shall be no lower than 3 to 4 inches. Excessive mowing may cause an increase in the design flow velocity. Remove all trash and debris at least once per year. Re-seed periodically to maintain the dense growth of grass vegetation.

Sediment Forebay: Sediments and associated pollutants are removed only when sediment forebays are actually cleaned out, so regular maintenance is essential. Sediment markers have been added as a quick reference. Frequently removing accumulated sediments will make it less likely that sediments will be resuspended. Inspect and clean sediment forebays at least twice per year. Stabilize the floor and sidewalls of the sediment forebay before making it operational, otherwise the practice will discharge excess amounts of suspended sediments. When mowing grasses, keep the grass height no greater than 6 inches. Set mower blades no lower than 3 to 4 inches. Check for signs of rilling and gullying and repair as needed. After removing the sediment, replace any vegetation damaged during the clean-out by either reseeding or resodding. When reseeding, incorporate practices such as hydroseeding with a tackifier, blanket, or similar practice to ensure that no scour occurs in the forebay, while the seeds germinate and develop roots.

Infiltration/Detention Basin: An important part of the maintenance of the infiltration basin is the maintenance of the sediment forebay. The infiltration basin shall be inspected and maintained at least twice a year, and after every time drainage discharges through the high outlet orifice. Once the basin is in use, inspect it after every major storm for the first few months to ensure it is stabilized and functioning properly and if necessary take corrective action. Note how long water remains standing in the basin after a storm; standing water within the basin 48 to 72 hours after a storm indicates that the infiltration capacity may have been overestimated. If the ponding is due to clogging, immediately address the reasons for the clogging (such as upland sediment erosion, excessive compaction of soils, or low spots). Dewatering trench valves are located in the outlet control on each infiltration basin. Sediment markers have also been added as a quick reference. Thereafter, inspect the infiltration basin at least twice per year. Important items to check during the inspection include: Signs of differential settlement; Cracking; Erosion; Leakage in the embankments; Tree growth on the embankments; Condition of riprap; Sediment accumulation and the health of the turf. At least twice a year, mow the buffer area, side slopes, and basin bottom. Remove grass clippings and accumulated organic matter to prevent an impervious organic mat from forming. Remove trash and debris at the same time. Use deep tilling to break up clogged surfaces, and revegetate immediately. Remove sediment from the basin as necessary, but wait until the floor of the basin is thoroughly dry. Use light equipment to remove the top layer so as to not compact the underlying soil. Deeply till the remaining soil, and revegetate as soon as possible. Inspect and clean pretreatment devices associated with basins at least twice a year, and ideally every other month.

Public Safety Features: Fencing will be provided around all basins to limit access to these areas. The basins have been designed to preclude standing water which will be a deterrent to mosquito breeding.

Standard 10: Prohibition of Illicit Discharges

Long-Term Period Pollution Prevention Plan

As part of an effort to reduce or eliminate the negative impacts of stormwater runoff, Long-Term Period Pollution Prevention measures must be implemented. A long term Operation and Maintenance Plan has been described under Standard 9 for ongoing inspection and maintenance. In addition, an Operation and Maintenance Log Form was created to assist the owner. in a specific maintenance schedule.

Long-Term Period Pollution Prevention Plan

As part of an effort to reduce or eliminate the negative impacts of stormwater runoff, Long-Term Period Pollution Prevention measures must be implemented. A long term Operation and Maintenance Plan has been described under Standard 9 for ongoing inspection and maintenance. In addition, an Operation and Maintenance Log Form was created to assist the owner in a specific maintenance schedule.

Many people are not aware of Nonpoint-Source Pollution (NPS) and the effect it has on the environment. The owner will receive this report and be made aware of this information about NPS pollution prevention.

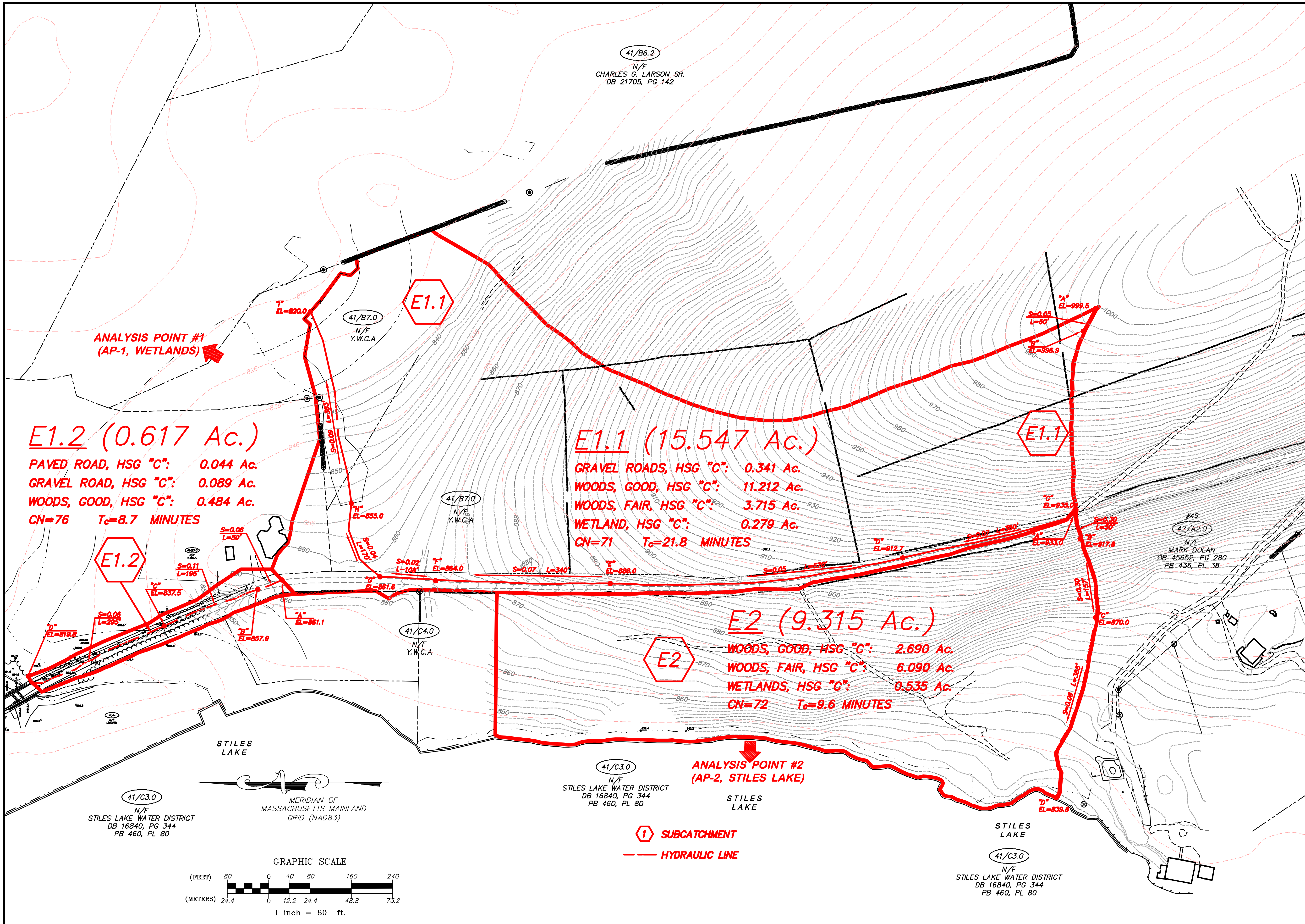
What you can do to prevent NPS pollution

Urban Stormwater Runoff

- Keep litter, pet wastes, leaves, and debris out of street gutters and storm drains--these outlets drain directly to lake, streams, rivers, and wetlands.
- Apply lawn and garden chemicals sparingly and according to directions.
- Dispose of used oil, antifreeze, paints, and other household chemicals properly, not in storm sewers or drains. If your community does not already have a program for collecting household hazardous wastes, ask your local government to establish one.
- Clean up spilled brake fluid, oil, grease, and antifreeze. Do not hose them into the street or parking lot where they can eventually reach local streams and lakes.
- Control soil erosion on your property by planting ground cover and stabilizing erosion-prone areas.

- Encourage local government officials to develop construction erosion/sediment control ordinances in your community.
- Purchase detergents and cleaners that are low in phosphorous to reduce the amount of nutrients discharged into our lakes, streams and coastal waters.

PRE-DEVELOPMENT ANALYSIS



GRAZ Engineering, L.L.C.

323 West Lake Road, Fitzwilliam, NH 03447
Phone: (603) 585-6959 Fax: (603) 585-6960

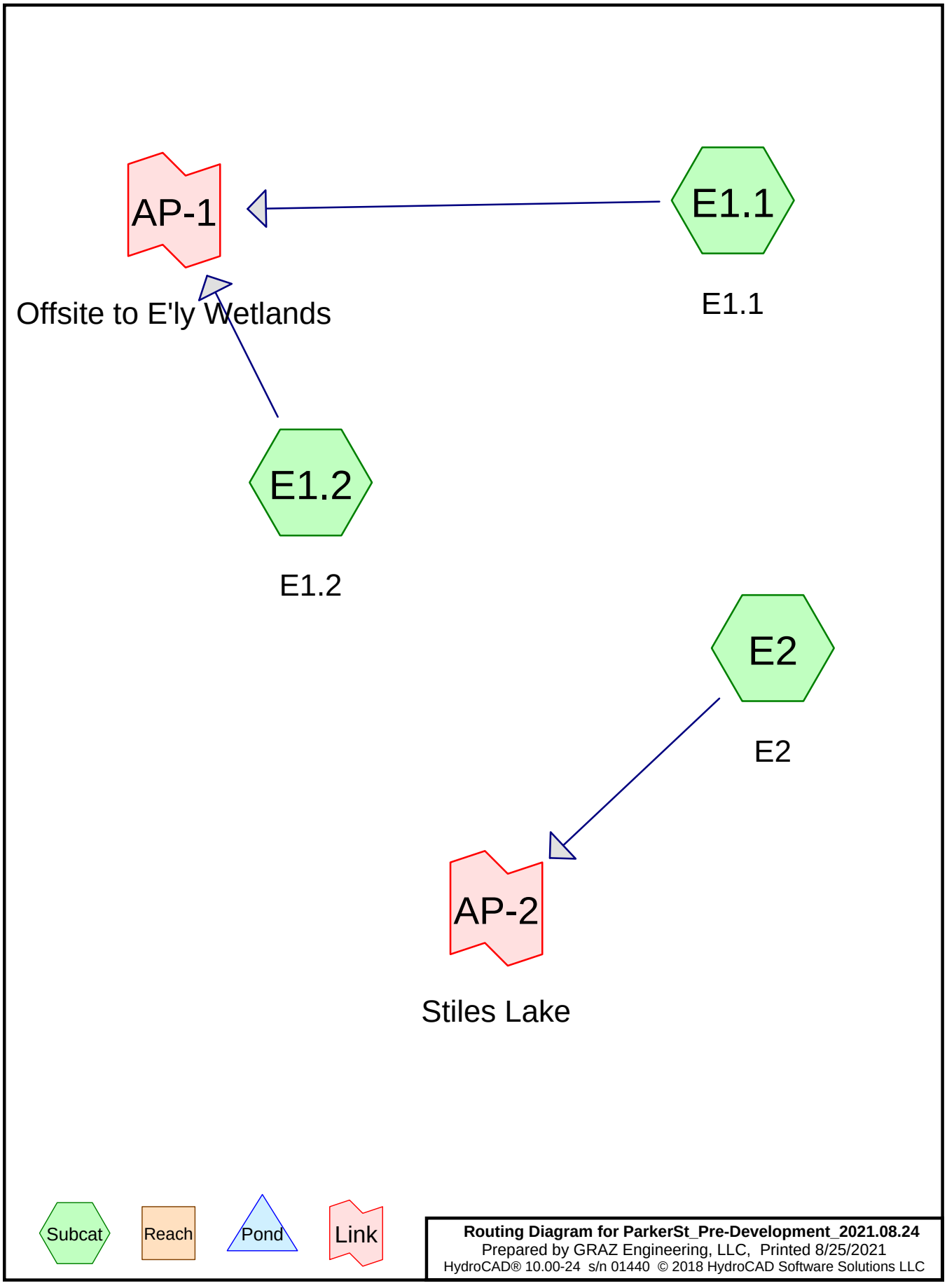
PARKKER STREET (NORTH) - DEFINITIVE SUBDIVISION
LEICESTER, MASSACHUSETTS

PRE DEVELOPMENT WATERSHED PLAN
PREPARED FOR: SCHOLD DEVELOPMENT, LLC (OWNER/APPLICANT)
77 CHICKERING ROAD, SPENCER, MA 01562

REV.	DATE	DESCRIPTION	BY
1	8/24/21	REVS PER QUINN ENG. TECH. REVIEW & LPB	BCM

SCALE: AS NOTED | DRAWN: BCM | CHECKED: PFG & BCM | PLAN DATE: JUNE 8, 2021

SHEET 1 OF 1



Routing Diagram for ParkerSt_Pre-Development_2021.08.24
Prepared by GRAZ Engineering, LLC, Printed 8/25/2021
HydroCAD® 10.00-24 s/n 01440 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
18,731	96	Gravel surface, HSG C (E1.1, E1.2)
1,917	98	Roadway, HSG C (E1.2)
35,458	77	Wooded Wetlands, HSG C (E1.1, E2)
427,106	73	Woods, Fair, HSG C (E1.1, E2)
626,654	70	Woods, Good, HSG C (E1.1, E1.2, E2)

Summary for Subcatchment E1.1: E1.1

Runoff = 9.49 cfs @ 12.33 hrs, Volume= 49,579 cf, Depth> 0.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.21"

	Area (ac)	CN	Description
	0.341	96	Gravel surface, HSG C
	11.212	70	Woods, Good, HSG C
	3.715	73	Woods, Fair, HSG C
*	0.279	77	Wooded Wetlands, HSG C
	15.547	71	Weighted Average
	15.547		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	50	0.0500	0.09		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
2.7	350	0.1800	2.12		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.7	325	0.0700	7.75	23.26	**Channel Flow, C-D, Ditch** Area= 3.0 sf Perim= 10.5' r= 0.29' n= 0.022 Earth, clean & straight
1.4	570	0.0500	6.55	19.66	**Channel Flow, D-E, Ditch** Area= 3.0 sf Perim= 10.5' r= 0.29' n= 0.022 Earth, clean & straight
0.7	340	0.0700	7.75	23.26	**Channel Flow, E-F, Ditch** Area= 3.0 sf Perim= 10.5' r= 0.29' n= 0.022 Earth, clean & straight
0.4	108	0.0200	4.14	12.43	**Channel Flow, F-G, Ditch** Area= 3.0 sf Perim= 10.5' r= 0.29' n= 0.022 Earth, clean & straight
2.8	170	0.0400	1.00		**Shallow Concentrated Flow, G-H** Woodland Kv= 5.0 fps
4.3	383	0.0900	1.50		**Shallow Concentrated Flow, H-I** Woodland Kv= 5.0 fps
21.8	2,296	Total			

Summary for Subcatchment E1.2: E1.2

Runoff = 0.84 cfs @ 12.08 hrs, Volume= 2,593 cf, Depth> 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.21"

	Area (ac)	CN	Description
*	0.044	98	Roadway, HSG C
	0.089	96	Gravel surface, HSG C
	0.484	70	Woods, Good, HSG C
	0.617	76	Weighted Average
	0.573		92.87% Pervious Area
	0.044		7.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	650		2.17		**Direct Entry, Minimum Tc**

Summary for Subcatchment E2: E2

Runoff = 8.32 cfs @ 12.15 hrs, Volume= 31,562 cf, Depth> 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.21"

	Area (ac)	CN	Description
	2.690	70	Woods, Good, HSG C
	6.090	73	Woods, Fair, HSG C
*	0.535	77	Wooded Wetlands, HSG C
	9.315	72	Weighted Average
	9.315		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.3000	0.19		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.0	157	0.3000	2.74		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
4.3	365	0.0800	1.41		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
9.6	572	Total			

Summary for Link AP-1: Offsite to E'ly Wetlands

Inflow Area = 704,104 sf, 0.27% Impervious, Inflow Depth > 0.89" for 2 yr event
Inflow = 9.85 cfs @ 12.33 hrs, Volume= 52,172 cf
Primary = 9.85 cfs @ 12.33 hrs, Volume= 52,172 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.00 hrs, dt= 0.01 hrs

Summary for Link AP-2: Stiles Lake

Inflow Area = 405,761 sf, 0.00% Impervious, Inflow Depth > 0.93" for 2 yr event
Inflow = 8.32 cfs @ 12.15 hrs, Volume= 31,562 cf
Primary = 8.32 cfs @ 12.15 hrs, Volume= 31,562 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.00 hrs, dt= 0.01 hrs

Summary for Subcatchment E1.1: E1.1

Runoff = 22.88 cfs @ 12.32 hrs, Volume= 110,816 cf, Depth> 1.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.81"

	Area (ac)	CN	Description
	0.341	96	Gravel surface, HSG C
	11.212	70	Woods, Good, HSG C
	3.715	73	Woods, Fair, HSG C
*	0.279	77	Wooded Wetlands, HSG C
	15.547	71	Weighted Average
	15.547		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	50	0.0500	0.09		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
2.7	350	0.1800	2.12		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.7	325	0.0700	7.75	23.26	**Channel Flow, C-D, Ditch** Area= 3.0 sf Perim= 10.5' r= 0.29' n= 0.022 Earth, clean & straight
1.4	570	0.0500	6.55	19.66	**Channel Flow, D-E, Ditch** Area= 3.0 sf Perim= 10.5' r= 0.29' n= 0.022 Earth, clean & straight
0.7	340	0.0700	7.75	23.26	**Channel Flow, E-F, Ditch** Area= 3.0 sf Perim= 10.5' r= 0.29' n= 0.022 Earth, clean & straight
0.4	108	0.0200	4.14	12.43	**Channel Flow, F-G, Ditch** Area= 3.0 sf Perim= 10.5' r= 0.29' n= 0.022 Earth, clean & straight
2.8	170	0.0400	1.00		**Shallow Concentrated Flow, G-H** Woodland Kv= 5.0 fps
4.3	383	0.0900	1.50		**Shallow Concentrated Flow, H-I** Woodland Kv= 5.0 fps
21.8	2,296	Total			

Summary for Subcatchment E1.2: E1.2

Runoff = 1.78 cfs @ 12.08 hrs, Volume= 5,325 cf, Depth> 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.81"

	Area (ac)	CN	Description
*	0.044	98	Roadway, HSG C
	0.089	96	Gravel surface, HSG C
	0.484	70	Woods, Good, HSG C
	0.617	76	Weighted Average
	0.573		92.87% Pervious Area
	0.044		7.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	650		2.17		**Direct Entry, Minimum Tc**

Summary for Subcatchment E2: E2

Runoff = 19.53 cfs @ 12.14 hrs, Volume= 69,253 cf, Depth> 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.81"

	Area (ac)	CN	Description
	2.690	70	Woods, Good, HSG C
	6.090	73	Woods, Fair, HSG C
*	0.535	77	Wooded Wetlands, HSG C
	9.315	72	Weighted Average
	9.315		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.3000	0.19		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.0	157	0.3000	2.74		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
4.3	365	0.0800	1.41		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
9.6	572	Total			

Summary for Link AP-1: Offsite to E'ly Wetlands

Inflow Area = 704,104 sf, 0.27% Impervious, Inflow Depth > 1.98" for 10 yr event
Inflow = 23.60 cfs @ 12.31 hrs, Volume= 116,141 cf
Primary = 23.60 cfs @ 12.31 hrs, Volume= 116,141 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.00 hrs, dt= 0.01 hrs

Summary for Link AP-2: Stiles Lake

Inflow Area = 405,761 sf, 0.00% Impervious, Inflow Depth > 2.05" for 10 yr event
Inflow = 19.53 cfs @ 12.14 hrs, Volume= 69,253 cf
Primary = 19.53 cfs @ 12.14 hrs, Volume= 69,253 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.00 hrs, dt= 0.01 hrs

Summary for Subcatchment E1.1: E1.1

Runoff = 34.81 cfs @ 12.31 hrs, Volume= 165,979 cf, Depth> 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=6.07"

	Area (ac)	CN	Description
	0.341	96	Gravel surface, HSG C
	11.212	70	Woods, Good, HSG C
	3.715	73	Woods, Fair, HSG C
*	0.279	77	Wooded Wetlands, HSG C
	15.547	71	Weighted Average
	15.547		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	50	0.0500	0.09		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
2.7	350	0.1800	2.12		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.7	325	0.0700	7.75	23.26	**Channel Flow, C-D, Ditch** Area= 3.0 sf Perim= 10.5' r= 0.29' n= 0.022 Earth, clean & straight
1.4	570	0.0500	6.55	19.66	**Channel Flow, D-E, Ditch** Area= 3.0 sf Perim= 10.5' r= 0.29' n= 0.022 Earth, clean & straight
0.7	340	0.0700	7.75	23.26	**Channel Flow, E-F, Ditch** Area= 3.0 sf Perim= 10.5' r= 0.29' n= 0.022 Earth, clean & straight
0.4	108	0.0200	4.14	12.43	**Channel Flow, F-G, Ditch** Area= 3.0 sf Perim= 10.5' r= 0.29' n= 0.022 Earth, clean & straight
2.8	170	0.0400	1.00		**Shallow Concentrated Flow, G-H** Woodland Kv= 5.0 fps
4.3	383	0.0900	1.50		**Shallow Concentrated Flow, H-I** Woodland Kv= 5.0 fps
21.8	2,296	Total			

Summary for Subcatchment E1.2: E1.2

Runoff = 2.58 cfs @ 12.07 hrs, Volume= 7,699 cf, Depth> 3.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=6.07"

	Area (ac)	CN	Description
*	0.044	98	Roadway, HSG C
	0.089	96	Gravel surface, HSG C
	0.484	70	Woods, Good, HSG C
	0.617	76	Weighted Average
	0.573		92.87% Pervious Area
	0.044		7.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	650		2.17		**Direct Entry, Minimum Tc**

Summary for Subcatchment E2: E2

Runoff = 29.40 cfs @ 12.14 hrs, Volume= 102,943 cf, Depth> 3.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=6.07"

	Area (ac)	CN	Description
	2.690	70	Woods, Good, HSG C
	6.090	73	Woods, Fair, HSG C
*	0.535	77	Wooded Wetlands, HSG C
	9.315	72	Weighted Average
	9.315		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.3000	0.19		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.0	157	0.3000	2.74		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
4.3	365	0.0800	1.41		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
9.6	572	Total			

Summary for Link AP-1: Offsite to E'ly Wetlands

Inflow Area = 704,104 sf, 0.27% Impervious, Inflow Depth > 2.96" for 25 yr event
Inflow = 35.83 cfs @ 12.30 hrs, Volume= 173,678 cf
Primary = 35.83 cfs @ 12.30 hrs, Volume= 173,678 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.00 hrs, dt= 0.01 hrs

Summary for Link AP-2: Stiles Lake

Inflow Area = 405,761 sf, 0.00% Impervious, Inflow Depth > 3.04" for 25 yr event
Inflow = 29.40 cfs @ 12.14 hrs, Volume= 102,943 cf
Primary = 29.40 cfs @ 12.14 hrs, Volume= 102,943 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.00 hrs, dt= 0.01 hrs

Summary for Subcatchment E1.1: E1.1

Runoff = 60.87 cfs @ 12.30 hrs, Volume= 288,813 cf, Depth> 5.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=8.64"

	Area (ac)	CN	Description
	0.341	96	Gravel surface, HSG C
	11.212	70	Woods, Good, HSG C
	3.715	73	Woods, Fair, HSG C
*	0.279	77	Wooded Wetlands, HSG C
	15.547	71	Weighted Average
	15.547		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	50	0.0500	0.09		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
2.7	350	0.1800	2.12		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.7	325	0.0700	7.75	23.26	**Channel Flow, C-D, Ditch** Area= 3.0 sf Perim= 10.5' r= 0.29' n= 0.022 Earth, clean & straight
1.4	570	0.0500	6.55	19.66	**Channel Flow, D-E, Ditch** Area= 3.0 sf Perim= 10.5' r= 0.29' n= 0.022 Earth, clean & straight
0.7	340	0.0700	7.75	23.26	**Channel Flow, E-F, Ditch** Area= 3.0 sf Perim= 10.5' r= 0.29' n= 0.022 Earth, clean & straight
0.4	108	0.0200	4.14	12.43	**Channel Flow, F-G, Ditch** Area= 3.0 sf Perim= 10.5' r= 0.29' n= 0.022 Earth, clean & straight
2.8	170	0.0400	1.00		**Shallow Concentrated Flow, G-H** Woodland Kv= 5.0 fps
4.3	383	0.0900	1.50		**Shallow Concentrated Flow, H-I** Woodland Kv= 5.0 fps
21.8	2,296	Total			

Summary for Subcatchment E1.2: E1.2

Runoff = 4.27 cfs @ 12.07 hrs, Volume= 12,853 cf, Depth> 5.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=8.64"

	Area (ac)	CN	Description
*	0.044	98	Roadway, HSG C
	0.089	96	Gravel surface, HSG C
	0.484	70	Woods, Good, HSG C
	0.617	76	Weighted Average
	0.573		92.87% Pervious Area
	0.044		7.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	650		2.17		**Direct Entry, Minimum Tc**

Summary for Subcatchment E2: E2

Runoff = 50.79 cfs @ 12.13 hrs, Volume= 177,549 cf, Depth> 5.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=8.64"

	Area (ac)	CN	Description
	2.690	70	Woods, Good, HSG C
	6.090	73	Woods, Fair, HSG C
*	0.535	77	Wooded Wetlands, HSG C
	9.315	72	Weighted Average
	9.315		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.3000	0.19		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.0	157	0.3000	2.74		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
4.3	365	0.0800	1.41		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
9.6	572	Total			

Summary for Link AP-1: Offsite to E'ly Wetlands

Inflow Area = 704,104 sf, 0.27% Impervious, Inflow Depth > 5.14" for 100 yr event
Inflow = 62.54 cfs @ 12.29 hrs, Volume= 301,666 cf
Primary = 62.54 cfs @ 12.29 hrs, Volume= 301,666 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.00 hrs, dt= 0.01 hrs

Summary for Link AP-2: Stiles Lake

Inflow Area = 405,761 sf, 0.00% Impervious, Inflow Depth > 5.25" for 100 yr event
Inflow = 50.79 cfs @ 12.13 hrs, Volume= 177,549 cf
Primary = 50.79 cfs @ 12.13 hrs, Volume= 177,549 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.00 hrs, dt= 0.01 hrs

POST-DEVELOPMENT ANALYSIS

41/B6.2
N/F
CHARLES G. LARSON SR.
DB 21705, PG 142

P1.1 (15.423 Ac.)

IMPERVIOUS – ROAD, DRIVES, & ROOFS, HSG "C":	0.849 Ac.
GRAVEL – NO ROW, HSG "C":	0.229 Ac.
GRASS, GOOD, HSG "C":	3.764 Ac.
WOODS, GOOD, HSG "C":	7.843 Ac.
WOODS, FAIR, HSG "C":	2.459 Ac.
WETLAND, WOODED, HSG "C":	0.279 Ac.

CN=74 T_c=24.3 MINUTES

P1.2 (0.863 Ac.)

IMPERVIOUS – ROAD, HSG "C": 0.325 Ac.
GRASS, GOOD, HSG "C": 0.538 Ac.
CN=83 T_c=5 MINUTES (DIRECT ENTRY)

P2.1 (6.259 Ac.)

IMPERVIOUS – ROAD, DRIVES, & ROOFS, HSG "C":	0.205 Ac.
GRASS, GOOD, HSG "C":	2.494 Ac.
WOODS, GOOD, HSG "C":	1.131 Ac.
WOODS, FAIR, HSG "C":	2.072 Ac.
WETLAND, WOODED, HSG "C":	0.357 Ac.

CN=74 T_c=10.5 MINUTES

P2.2 (1.556 Ac.)

WOODS, GOOD, HSG "C":	0.953
WOODS, FAIR, HSG "C":	0.468
WETLAND, WOODED, HSG "C":	0.135

CN=72 T_c=10.8 MINUTES

P2.3 (1.478 Ac.)

GRAVEL ROAD, HSG "C":	0.044 Ac.
WOODS, FAIR, HSG "C":	1.434 Ac.

CN=74 T_c=6.1 MINUTES

ANALYSIS POINT #1
(AP-1, WETLANDS)

ANALYSIS POINT #2
(AP-2, STILES LAKE)

REMAINING LAND

LOT 1

LOT 2

RESERVED FOR LAKE ACCESS

STILES LAKE

41/B7.0
N/F
Y.W.C.A

41/C4.0
N/F
Y.W.C.A

41/C3.0
N/F
STILES LAKE WATER DISTRICT
DB 16840, PG 344
PB 460, PL 80

#49
42/A2.0
N/F
MARK DOLAN
DB 45652, PG 280
PB 436, PL 38

MERIDIAN OF
MASSACHUSETTS MAINLAND
GRID (NAD83)

1 SUBCATCHMENT
POND
REACH
HYDRAULIC LINE

GRAPHIC SCALE
(FEET) 80 0 40 80 160 240
(METERS) 24.4 0 12.2 24.4 48.8 73.2
1 inch = 80 ft.

GRAZ Engineering, L.L.C.
323 West Lake Road, Tilton, NH 03447
Phone: (603) 585-4959 Fax: (603) 585-4960

PARKKER STREET (NORTH) - DEFINITIVE SUBDIVISION
LEICESTER, MASSACHUSETTS

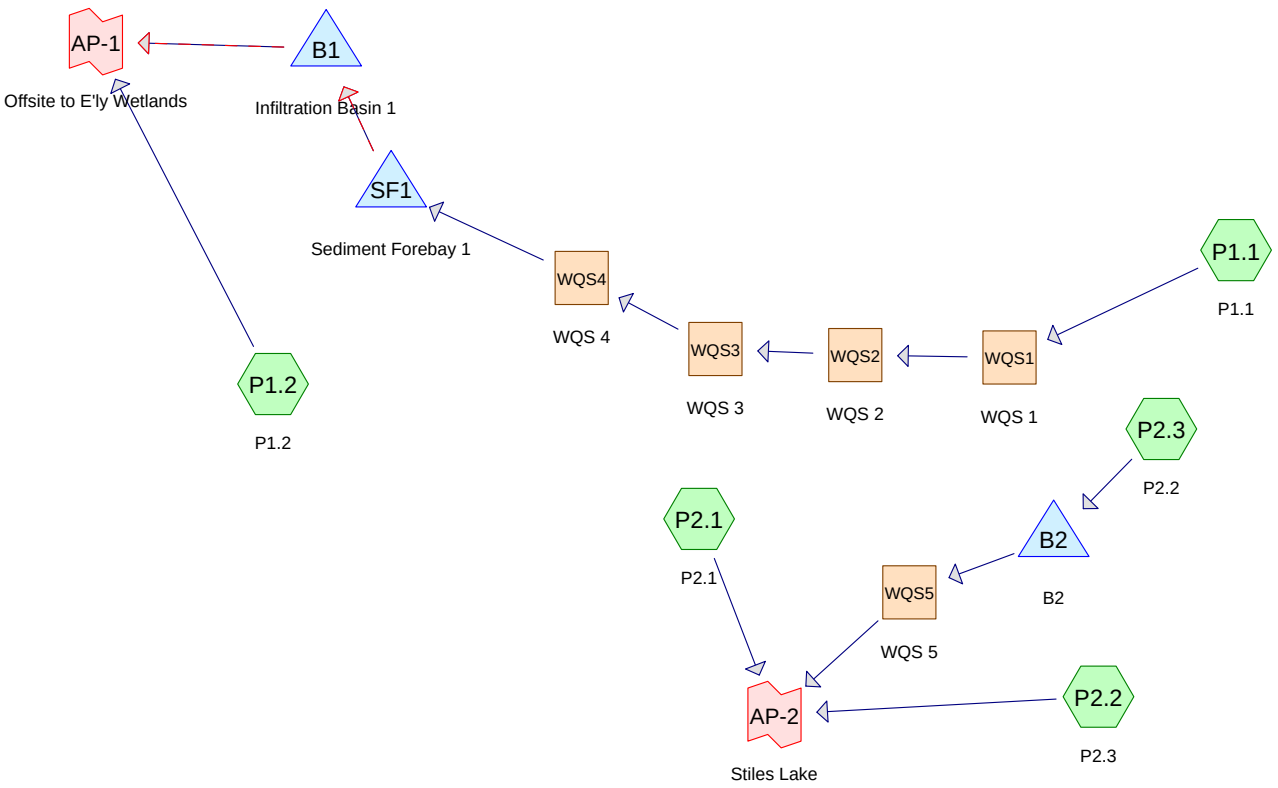
POST DEVELOPMENT WATERSHED PLAN
PREPARED FOR: SCHOLD DEVELOPMENT, LLC (OWNER/APPLICANT)
77 CHICKERING ROAD, SPENCER, MA 01562

REV	DATE	DESCRIPTION	BY
1	8/24/21	REVS PER QUINN, ENG. TECH. REVIEW & LPB	BCM

SCALE: AS NOTED
DRAWN: BCM
CHECKED: PFG & BCM
PLAN DATE: JUNE 8, 2021

PAUL F. GRASSIEWICZ
No. 9746
REGISTERED PROFESSIONAL ENGINEER

SHEET 1 OF 1



Subcat Reach Pond Link

Routing Diagram for ParkerSt_Post-Development_2021.08.24
Prepared by GRAZ Engineering, LLC, Printed 8/25/2021
HydroCAD® 10.00-24 s/n 01440 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
296,034	74	>75% Grass cover, Good, HSG C (P1.1, P1.2, P2.1)
1,917	96	Gravel road, HSG C (P2.3)
9,975	96	Gravel surface, HSG C (P1.1)
14,157	98	Paved Roadway, HSG C (P1.2)
45,912	98	Pavement & Roofs, HSG C (P1.1, P2.1)
33,585	77	Wooded Wetlands, HSG C (P1.1, P2.1, P2.2)
280,221	73	Woods, Fair, HSG C (P1.1, P2.1, P2.2, P2.3)
432,420	70	Woods, Good, HSG C (P1.1, P2.1, P2.2)

Summary for Subcatchment P1.1: P1.1

Runoff = 11.05 cfs @ 12.37 hrs, Volume= 58,456 cf, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.21"

	Area (ac)	CN	Description
*	0.849	98	Pavement & Roofs, HSG C
	0.229	96	Gravel surface, HSG C
	3.764	74	>75% Grass cover, Good, HSG C
	7.843	70	Woods, Good, HSG C
	2.459	73	Woods, Fair, HSG C
*	0.279	77	Wooded Wetlands, HSG C
	15.423	74	Weighted Average
	14.574		94.50% Pervious Area
	0.849		5.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	92	0.0400	0.10		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.3	702	0.1000	9.33	27.98	**Channel Flow, B-C, Ditch** Area= 3.0 sf Perim= 10.4' r= 0.29' n= 0.022 Earth, clean & straight
0.7	325	0.0600	7.22	21.67	**Channel Flow, C-D, Ditch** Area= 3.0 sf Perim= 10.4' r= 0.29' n= 0.022 Earth, clean & straight
0.7	250	0.0400	5.90	17.69	**Channel Flow, D-E, Ditch** Area= 3.0 sf Perim= 10.4' r= 0.29' n= 0.022 Earth, clean & straight
0.5	211	0.0300	6.71	73.82	**Channel Flow, E-F, Swale** Area= 11.0 sf Perim= 20.9' r= 0.53' n= 0.025 Earth, clean & winding
0.7	462	0.0700	11.65	128.15	**Channel Flow, F-G, Swale** Area= 11.0 sf Perim= 20.9' r= 0.53' n= 0.022 Earth, clean & straight
0.3	135	0.0400	8.81	96.87	**Channel Flow, G-H, Swale** Area= 11.0 sf Perim= 20.9' r= 0.53' n= 0.022 Earth, clean & straight
4.4	372	0.0800	1.41		**Shallow Concentrated Flow, J-K, Wetland** Woodland Kv= 5.0 fps
24.3	2,549	Total			

Summary for Subcatchment P1.2: P1.2

Runoff = 1.63 cfs @ 12.09 hrs, Volume= 5,067 cf, Depth= 1.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.21"

	Area (ac)	CN	Description
*	0.325	98	Paved Roadway, HSG C
	0.538	74	>75% Grass cover, Good, HSG C
	0.863	83	Weighted Average
	0.538		62.34% Pervious Area
	0.325		37.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	650		1.81		**Direct Entry, Minimum Tc**

Summary for Subcatchment P2.1: P2.1

Runoff = 6.21 cfs @ 12.16 hrs, Volume= 23,723 cf, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.21"

	Area (sf)	CN	Description
*	8,930	98	Pavement & Roofs, HSG C
	108,639	74	>75% Grass cover, Good, HSG C
	49,266	70	Woods, Good, HSG C
	90,256	73	Woods, Fair, HSG C
*	15,551	77	Wooded Wetlands, HSG C
	272,642	74	Weighted Average
	263,712		96.72% Pervious Area
	8,930		3.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.1000	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.3	178	0.2000	2.24		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.4	70	0.3100	2.78		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
2.1	181	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.5	479	Total			

Summary for Subcatchment P2.2: P2.3

Runoff = 1.34 cfs @ 12.16 hrs, Volume= 5,286 cf, Depth= 0.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.21"

	Area (ac)	CN	Description
	0.953	70	Woods, Good, HSG C
	0.468	73	Woods, Fair, HSG C
*	0.135	77	Wooded Wetlands, HSG C
	1.556	72	Weighted Average
	1.556		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0800	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
3.5	300	0.0800	1.41		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
10.8	350	Total			

Summary for Subcatchment P2.3: P2.2

Runoff = 1.71 cfs @ 12.10 hrs, Volume= 5,602 cf, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.21"

	Area (ac)	CN	Description
*	0.044	96	Gravel road, HSG C
	1.434	73	Woods, Fair, HSG C
	1.478	74	Weighted Average
	1.478		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.3000	0.19		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.0	157	0.3000	2.74		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.8	65	0.0800	1.41		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
6.1	272	Total			

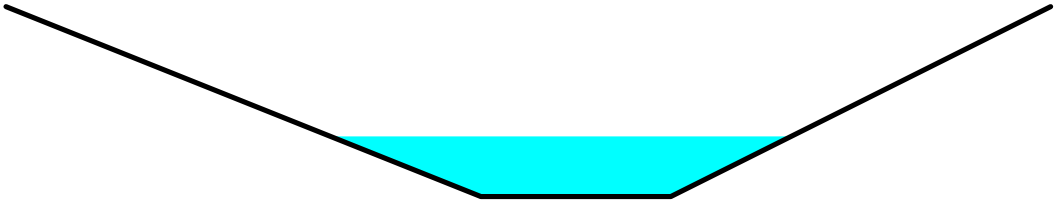
Summary for Reach WQS1: WQS 1

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 1.04" for 2 yr event
Inflow = 11.05 cfs @ 12.37 hrs, Volume= 58,456 cf
Outflow = 11.04 cfs @ 12.37 hrs, Volume= 58,456 cf, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.09 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 2.12 fps, Avg. Travel Time= 1.7 min

Peak Storage= 458 cf @ 12.37 hrs
Average Depth at Peak Storage= 0.63'
Defined Flood Depth= 898.00' Flow Area= 9,828.7 sf, Capacity= 125,865.46 cfs
Bank-Full Depth= 2.00' Flow Area= 13.0 sf, Capacity= 124.71 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.5 2.0 '/' Top Width= 11.00'
Length= 211.0' Slope= 0.0332 '/'
Inlet Invert= 903.00', Outlet Invert= 896.00'



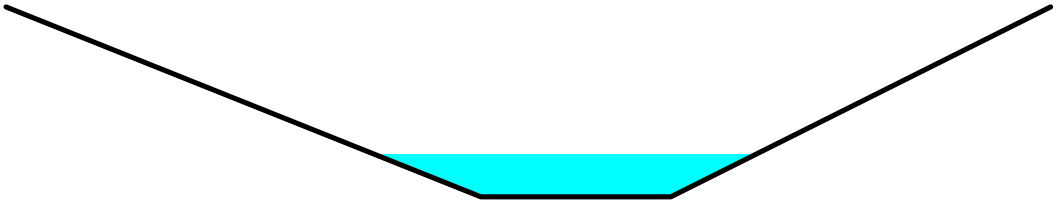
Summary for Reach WQS2: WQS 2

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 1.04" for 2 yr event
Inflow = 11.04 cfs @ 12.37 hrs, Volume= 58,456 cf
Outflow = 11.03 cfs @ 12.39 hrs, Volume= 58,456 cf, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 8.10 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 3.26 fps, Avg. Travel Time= 2.4 min

Peak Storage= 630 cf @ 12.39 hrs
Average Depth at Peak Storage= 0.45'
Defined Flood Depth= 868.00' Flow Area= 9,500.0 sf, Capacity= 232,092.86 cfs
Bank-Full Depth= 2.00' Flow Area= 13.0 sf, Capacity= 237.91 cfs

2.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 2.5 2.0 '/' Top Width= 11.00'
Length= 462.0' Slope= 0.0649 '/'
Inlet Invert= 896.00', Outlet Invert= 866.00'



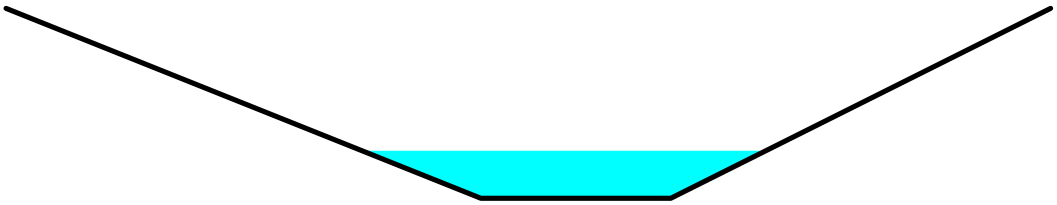
Summary for Reach WQS3: WQS 3

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 1.04" for 2 yr event
Inflow = 11.03 cfs @ 12.39 hrs, Volume= 58,456 cf
Outflow = 11.03 cfs @ 12.39 hrs, Volume= 58,456 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.07 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.86 fps, Avg. Travel Time= 0.8 min

Peak Storage= 211 cf @ 12.39 hrs
Average Depth at Peak Storage= 0.50'
Defined Flood Depth= 862.00' Flow Area= 9,434.3 sf, Capacity= 190,684.13 cfs
Bank-Full Depth= 2.00' Flow Area= 13.0 sf, Capacity= 196.83 cfs

2.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 2.5 2.0 '/' Top Width= 11.00'
Length= 135.0' Slope= 0.0444 '/'
Inlet Invert= 866.00', Outlet Invert= 860.00'



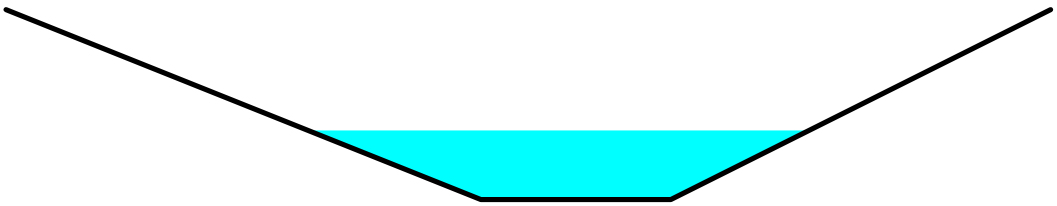
Summary for Reach WQS4: WQS 4

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 1.04" for 2 yr event
Inflow = 11.03 cfs @ 12.39 hrs, Volume= 58,456 cf
Outflow = 11.03 cfs @ 12.40 hrs, Volume= 58,456 cf, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.17 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.74 fps, Avg. Travel Time= 0.9 min

Peak Storage= 257 cf @ 12.40 hrs
Average Depth at Peak Storage= 0.73'
Defined Flood Depth= 861.00' Flow Area= 9,423.3 sf, Capacity= 91,730.80 cfs
Bank-Full Depth= 2.00' Flow Area= 13.0 sf, Capacity= 94.80 cfs

2.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 2.5 2.0 '/' Top Width= 11.00'
Length= 97.0' Slope= 0.0103 '/'
Inlet Invert= 860.00', Outlet Invert= 859.00'



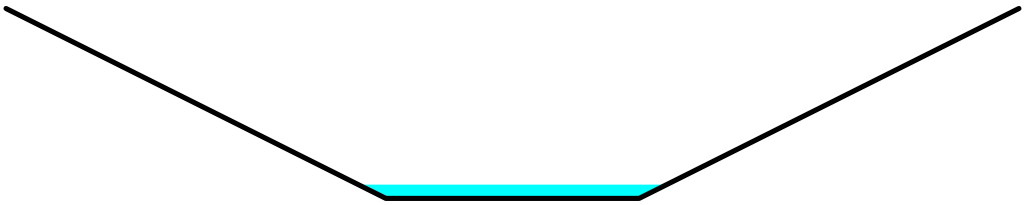
Summary for Reach WQS5: WQS 5

Inflow Area = 64,382 sf, 0.00% Impervious, Inflow Depth = 0.27" for 2 yr event
Inflow = 0.10 cfs @ 14.54 hrs, Volume= 1,436 cf
Outflow = 0.10 cfs @ 14.57 hrs, Volume= 1,436 cf, Atten= 0%, Lag= 2.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.73 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 1.08 fps, Avg. Travel Time= 4.6 min

Peak Storage= 18 cf @ 14.57 hrs
Average Depth at Peak Storage= 0.05'
Defined Flood Depth= 898.00' Flow Area= 3,577.4 sf, Capacity= 35,446.98 cfs
Bank-Full Depth= 0.75' Flow Area= 1.9 sf, Capacity= 13.84 cfs

1.00' x 0.75' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.0 '/' Top Width= 4.00'
Length= 300.0' Slope= 0.0683 '/'
Inlet Invert= 860.00', Outlet Invert= 839.50'



Summary for Pond B1: Infiltration Basin 1

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 1.00" for 2 yr event
Inflow = 10.99 cfs @ 12.42 hrs, Volume= 56,079 cf
Outflow = 7.67 cfs @ 12.69 hrs, Volume= 54,597 cf, Atten= 30%, Lag= 16.1 min
Discarded = 0.05 cfs @ 12.69 hrs, Volume= 2,612 cf
Primary = 7.62 cfs @ 12.69 hrs, Volume= 51,985 cf
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 858.66' @ 12.69 hrs Surf.Area= 8,637 sf Storage= 10,812 cf
Flood Elev= 862.30' Surf.Area= 30,981 sf Storage= 57,262 cf

Plug-Flow detention time= 65.5 min calculated for 54,597 cf (97% of inflow)
Center-of-Mass det. time= 50.7 min (944.1 - 893.3)

Volume	Invert	Avail.Storage	Storage Description
#1	856.50'	57,262 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
856.50	0	0	0
857.00	2,211	553	553
858.00	7,592	4,902	5,454
859.00	9,175	8,384	13,838
860.00	10,816	9,996	23,833
861.00	12,512	11,664	35,497
862.00	16,710	14,611	50,108
862.30	30,981	7,154	57,262

Device	Routing	Invert	Outlet Devices
#1	Primary	851.20'	**24.0" Round Culvert** L= 74.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 851.20' / 850.00' S= 0.0162 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	857.30'	**70.0 deg x 2.30' rise Sharp-Crested Vee/Trap Weir X 2.00** Cv= 2.52 (C= 3.15)
#3	Device 1	860.60'	**1.2" x 7.3" Horiz. Orifice/Grate X 3.00 columns** X 11 rows C= 0.600 in 25.7" x 25.7" Grate (44% open area) Limited to weir flow at low heads
#4	Secondary	860.60'	**170.5 deg x 5.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir** Cv= 2.46 (C= 3.08)
#5	Discarded	856.50'	**0.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.05 cfs @ 12.69 hrs HW=858.66' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=7.61 cfs @ 12.69 hrs HW=858.66' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 7.61 cfs of 38.45 cfs potential flow)
  ├**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 7.61 cfs @ 2.94 fps)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=856.50' TW=0.00' (Dynamic Tailwater)
└**4=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Summary for Pond B2: B2

Inflow Area = 64,382 sf, 0.00% Impervious, Inflow Depth = 1.04" for 2 yr event
Inflow = 1.71 cfs @ 12.10 hrs, Volume= 5,602 cf
Outflow = 0.12 cfs @ 14.54 hrs, Volume= 2,801 cf, Atten= 93%, Lag= 146.6 min
Discarded = 0.02 cfs @ 14.54 hrs, Volume= 1,365 cf
Primary = 0.10 cfs @ 14.54 hrs, Volume= 1,436 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 861.44' @ 14.54 hrs Surf.Area= 3,109 sf Storage= 3,420 cf
Flood Elev= 862.50' Surf.Area= 4,538 sf Storage= 7,477 cf

Plug-Flow detention time= 433.7 min calculated for 2,801 cf (50% of inflow)
Center-of-Mass det. time= 302.8 min (1,164.7 - 862.0)

Volume	Invert	Avail.Storage	Storage Description
#1	859.50'	7,477 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
859.50	0	0	0
860.00	1,226	307	307
862.00	3,848	5,074	5,381
862.50	4,538	2,097	7,477

Device	Routing	Invert	Outlet Devices
#1	Primary	861.40'	**6.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Discarded	859.50'	**0.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 14.54 hrs HW=861.44' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.10 cfs @ 14.54 hrs HW=861.44' TW=860.05' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.10 cfs @ 0.48 fps)

Summary for Pond SF1: Sediment Forebay 1

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 1.04" for 2 yr event
Inflow = 11.03 cfs @ 12.40 hrs, Volume= 58,456 cf
Outflow = 10.99 cfs @ 12.42 hrs, Volume= 56,079 cf, Atten= 0%, Lag= 1.3 min
Primary = 10.99 cfs @ 12.42 hrs, Volume= 56,079 cf
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 860.83' @ 12.42 hrs Surf.Area= 2,579 sf Storage= 3,573 cf
Flood Elev= 862.00' Surf.Area= 4,327 sf Storage= 7,539 cf

Plug-Flow detention time= 32.5 min calculated for 56,060 cf (96% of inflow)
Center-of-Mass det. time= 10.4 min (893.3 - 882.9)

Volume	Invert	Avail.Storage	Storage Description
#1	857.80'	7,539 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
857.80	0	0	0
858.00	416	42	42
859.00	804	610	652
860.00	1,588	1,196	1,848
861.00	2,784	2,186	4,034
861.50	3,456	1,560	5,594
862.00	4,327	1,946	7,539

Device	Routing	Invert	Outlet Devices
#1	Primary	860.30'	**143.1 deg x 8.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.47 (C= 3.09)
#2	Secondary	861.30'	**12.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=10.99 cfs @ 12.42 hrs HW=860.83' TW=858.27' (Dynamic Tailwater)
└**1=Sharp-Crested Vee/Trap Weir** (Weir Controls 10.99 cfs @ 2.17 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=857.80' TW=856.50' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link AP-1: Offsite to E'ly Wetlands

Inflow Area = 709,418 sf, 7.21% Impervious, Inflow Depth = 0.97" for 2 yr event
Inflow = 7.84 cfs @ 12.68 hrs, Volume= 57,052 cf
Primary = 7.84 cfs @ 12.68 hrs, Volume= 57,052 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs

Summary for Link AP-2: Stiles Lake

Inflow Area = 404,803 sf, 2.21% Impervious, Inflow Depth = 0.90" for 2 yr event
Inflow = 7.54 cfs @ 12.16 hrs, Volume= 30,445 cf
Primary = 7.54 cfs @ 12.16 hrs, Volume= 30,445 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs

Summary for Subcatchment P1.1: P1.1

Runoff = 24.66 cfs @ 12.34 hrs, Volume= 123,933 cf, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.81"

	Area (ac)	CN	Description
*	0.849	98	Pavement & Roofs, HSG C
	0.229	96	Gravel surface, HSG C
	3.764	74	>75% Grass cover, Good, HSG C
	7.843	70	Woods, Good, HSG C
	2.459	73	Woods, Fair, HSG C
*	0.279	77	Wooded Wetlands, HSG C
	15.423	74	Weighted Average
	14.574		94.50% Pervious Area
	0.849		5.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	92	0.0400	0.10		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.3	702	0.1000	9.33	27.98	**Channel Flow, B-C, Ditch** Area= 3.0 sf Perim= 10.4' r= 0.29' n= 0.022 Earth, clean & straight
0.7	325	0.0600	7.22	21.67	**Channel Flow, C-D, Ditch** Area= 3.0 sf Perim= 10.4' r= 0.29' n= 0.022 Earth, clean & straight
0.7	250	0.0400	5.90	17.69	**Channel Flow, D-E, Ditch** Area= 3.0 sf Perim= 10.4' r= 0.29' n= 0.022 Earth, clean & straight
0.5	211	0.0300	6.71	73.82	**Channel Flow, E-F, Swale** Area= 11.0 sf Perim= 20.9' r= 0.53' n= 0.025 Earth, clean & winding
0.7	462	0.0700	11.65	128.15	**Channel Flow, F-G, Swale** Area= 11.0 sf Perim= 20.9' r= 0.53' n= 0.022 Earth, clean & straight
0.3	135	0.0400	8.81	96.87	**Channel Flow, G-H, Swale** Area= 11.0 sf Perim= 20.9' r= 0.53' n= 0.022 Earth, clean & straight
4.4	372	0.0800	1.41		**Shallow Concentrated Flow, J-K, Wetland** Woodland Kv= 5.0 fps
24.3	2,549	Total			

Summary for Subcatchment P1.2: P1.2

Runoff = 3.03 cfs @ 12.09 hrs, Volume= 9,407 cf, Depth= 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.81"

	Area (ac)	CN	Description
*	0.325	98	Paved Roadway, HSG C
	0.538	74	>75% Grass cover, Good, HSG C
	0.863	83	Weighted Average
	0.538		62.34% Pervious Area
	0.325		37.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	650		1.81		**Direct Entry, Minimum Tc**

Summary for Subcatchment P2.1: P2.1

Runoff = 13.85 cfs @ 12.15 hrs, Volume= 50,295 cf, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.81"

	Area (sf)	CN	Description
*	8,930	98	Pavement & Roofs, HSG C
	108,639	74	>75% Grass cover, Good, HSG C
	49,266	70	Woods, Good, HSG C
	90,256	73	Woods, Fair, HSG C
*	15,551	77	Wooded Wetlands, HSG C
	272,642	74	Weighted Average
	263,712		96.72% Pervious Area
	8,930		3.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.1000	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.3	178	0.2000	2.24		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.4	70	0.3100	2.78		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
2.1	181	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.5	479	Total			

Summary for Subcatchment P2.2: P2.3

Runoff = 3.14 cfs @ 12.16 hrs, Volume= 11,594 cf, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.81"

	Area (ac)	CN	Description
	0.953	70	Woods, Good, HSG C
	0.468	73	Woods, Fair, HSG C
*	0.135	77	Wooded Wetlands, HSG C
	1.556	72	Weighted Average
	1.556		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0800	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
3.5	300	0.0800	1.41		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
10.8	350	Total			

Summary for Subcatchment P2.3: P2.2

Runoff = 3.80 cfs @ 12.09 hrs, Volume= 11,877 cf, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=4.81"

	Area (ac)	CN	Description
*	0.044	96	Gravel road, HSG C
	1.434	73	Woods, Fair, HSG C
	1.478	74	Weighted Average
	1.478		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.3000	0.19		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.0	157	0.3000	2.74		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.8	65	0.0800	1.41		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
6.1	272	Total			

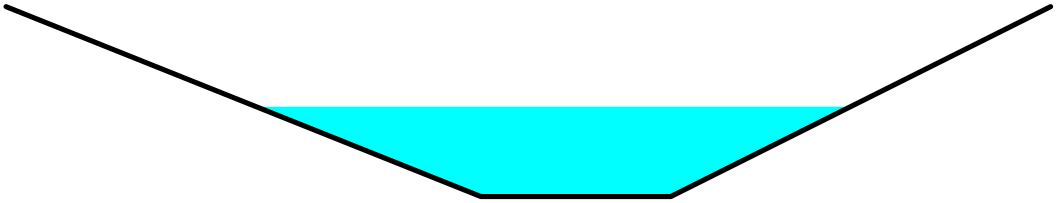
Summary for Reach WQS1: WQS 1

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 2.21" for 10 yr event
Inflow = 24.66 cfs @ 12.34 hrs, Volume= 123,933 cf
Outflow = 24.63 cfs @ 12.35 hrs, Volume= 123,933 cf, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.32 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.55 fps, Avg. Travel Time= 1.4 min

Peak Storage= 823 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.94'
Defined Flood Depth= 898.00' Flow Area= 9,828.7 sf, Capacity= 125,865.46 cfs
Bank-Full Depth= 2.00' Flow Area= 13.0 sf, Capacity= 124.71 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.5 2.0 '/' Top Width= 11.00'
Length= 211.0' Slope= 0.0332 '/'
Inlet Invert= 903.00', Outlet Invert= 896.00'



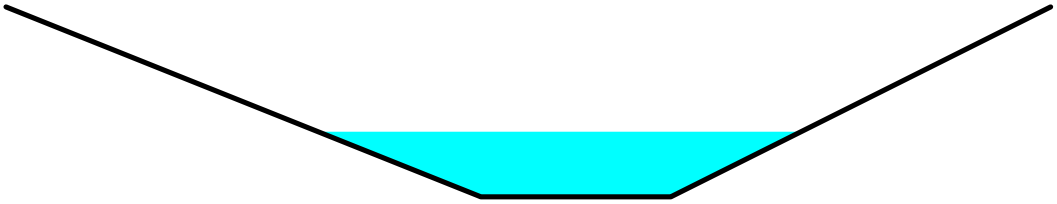
Summary for Reach WQS2: WQS 2

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 2.21" for 10 yr event
Inflow = 24.63 cfs @ 12.35 hrs, Volume= 123,933 cf
Outflow = 24.60 cfs @ 12.36 hrs, Volume= 123,933 cf, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 10.13 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 3.94 fps, Avg. Travel Time= 2.0 min

Peak Storage= 1,122 cf @ 12.36 hrs
Average Depth at Peak Storage= 0.69'
Defined Flood Depth= 868.00' Flow Area= 9,500.0 sf, Capacity= 232,092.86 cfs
Bank-Full Depth= 2.00' Flow Area= 13.0 sf, Capacity= 237.91 cfs

2.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 2.5 2.0 '/' Top Width= 11.00'
Length= 462.0' Slope= 0.0649 '/'
Inlet Invert= 896.00', Outlet Invert= 866.00'



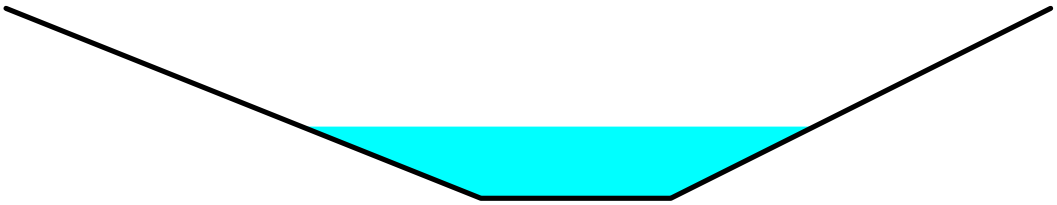
Summary for Reach WQS3: WQS 3

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 2.21" for 10 yr event
Inflow = 24.60 cfs @ 12.36 hrs, Volume= 123,933 cf
Outflow = 24.60 cfs @ 12.36 hrs, Volume= 123,933 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 8.82 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.46 fps, Avg. Travel Time= 0.7 min

Peak Storage= 376 cf @ 12.36 hrs
Average Depth at Peak Storage= 0.75'
Defined Flood Depth= 862.00' Flow Area= 9,434.3 sf, Capacity= 190,684.13 cfs
Bank-Full Depth= 2.00' Flow Area= 13.0 sf, Capacity= 196.83 cfs

2.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 2.5 2.0 '/' Top Width= 11.00'
Length= 135.0' Slope= 0.0444 '/'
Inlet Invert= 866.00', Outlet Invert= 860.00'



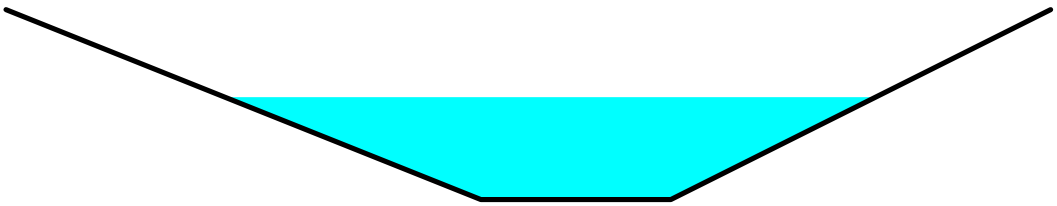
Summary for Reach WQS4: WQS 4

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 2.21" for 10 yr event
Inflow = 24.60 cfs @ 12.36 hrs, Volume= 123,933 cf
Outflow = 24.59 cfs @ 12.37 hrs, Volume= 123,933 cf, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.16 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.08 fps, Avg. Travel Time= 0.8 min

Peak Storage= 462 cf @ 12.37 hrs
Average Depth at Peak Storage= 1.08'
Defined Flood Depth= 861.00' Flow Area= 9,423.3 sf, Capacity= 91,730.80 cfs
Bank-Full Depth= 2.00' Flow Area= 13.0 sf, Capacity= 94.80 cfs

2.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 2.5 2.0 '/' Top Width= 11.00'
Length= 97.0' Slope= 0.0103 '/'
Inlet Invert= 860.00', Outlet Invert= 859.00'



Summary for Reach WQS5: WQS 5

Inflow Area = 64,382 sf, 0.00% Impervious, Inflow Depth = 1.42" for 10 yr event
Inflow = 1.75 cfs @ 12.30 hrs, Volume= 7,630 cf
Outflow = 1.74 cfs @ 12.31 hrs, Volume= 7,630 cf, Atten= 0%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.24 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.68 fps, Avg. Travel Time= 3.0 min

Peak Storage= 123 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.27'
Defined Flood Depth= 898.00' Flow Area= 3,577.4 sf, Capacity= 35,446.98 cfs
Bank-Full Depth= 0.75' Flow Area= 1.9 sf, Capacity= 13.84 cfs

1.00' x 0.75' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.0 '/' Top Width= 4.00'
Length= 300.0' Slope= 0.0683 '/'
Inlet Invert= 860.00', Outlet Invert= 839.50'

Summary for Pond B1: Infiltration Basin 1

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 2.17" for 10 yr event
Inflow = 24.51 cfs @ 12.39 hrs, Volume= 121,555 cf
Outflow = 21.81 cfs @ 12.51 hrs, Volume= 120,041 cf, Atten= 11%, Lag= 7.6 min
Discarded = 0.06 cfs @ 12.51 hrs, Volume= 2,912 cf
Primary = 21.75 cfs @ 12.51 hrs, Volume= 117,129 cf
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 859.37' @ 12.51 hrs Surf.Area= 9,782 sf Storage= 17,342 cf
Flood Elev= 862.30' Surf.Area= 30,981 sf Storage= 57,262 cf

Plug-Flow detention time= 40.2 min calculated for 120,041 cf (99% of inflow)
Center-of-Mass det. time= 32.8 min (899.2 - 866.4)

Volume	Invert	Avail.Storage	Storage Description
#1	856.50'	57,262 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
856.50	0	0	0
857.00	2,211	553	553
858.00	7,592	4,902	5,454
859.00	9,175	8,384	13,838
860.00	10,816	9,996	23,833
861.00	12,512	11,664	35,497
862.00	16,710	14,611	50,108
862.30	30,981	7,154	57,262

Device	Routing	Invert	Outlet Devices
#1	Primary	851.20'	**24.0" Round Culvert** L= 74.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 851.20' / 850.00' S= 0.0162 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	857.30'	**70.0 deg x 2.30' rise Sharp-Crested Vee/Trap Weir X 2.00** Cv= 2.52 (C= 3.15)
#3	Device 1	860.60'	**1.2" x 7.3" Horiz. Orifice/Grate X 3.00 columns** X 11 rows C= 0.600 in 25.7" x 25.7" Grate (44% open area) Limited to weir flow at low heads
#4	Secondary	860.60'	**170.5 deg x 5.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir** Cv= 2.46 (C= 3.08)
#5	Discarded	856.50'	**0.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.06 cfs @ 12.51 hrs HW=859.37' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=21.75 cfs @ 12.51 hrs HW=859.37' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 21.75 cfs of 40.50 cfs potential flow)
  ├**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 21.75 cfs @ 3.63 fps)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=856.50' TW=0.00' (Dynamic Tailwater)
└**4=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Summary for Pond B2: B2

Inflow Area = 64,382 sf, 0.00% Impervious, Inflow Depth = 2.21" for 10 yr event
Inflow = 3.80 cfs @ 12.09 hrs, Volume= 11,877 cf
Outflow = 1.77 cfs @ 12.30 hrs, Volume= 9,062 cf, Atten= 53%, Lag= 12.2 min
Discarded = 0.02 cfs @ 12.30 hrs, Volume= 1,432 cf
Primary = 1.75 cfs @ 12.30 hrs, Volume= 7,630 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 861.64' @ 12.30 hrs Surf.Area= 3,374 sf Storage= 4,074 cf
Flood Elev= 862.50' Surf.Area= 4,538 sf Storage= 7,477 cf

Plug-Flow detention time= 193.6 min calculated for 9,060 cf (76% of inflow)
Center-of-Mass det. time= 106.3 min (945.8 - 839.4)

Volume	Invert	Avail.Storage	Storage Description
#1	859.50'	7,477 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
859.50	0	0	0
860.00	1,226	307	307
862.00	3,848	5,074	5,381
862.50	4,538	2,097	7,477

Device	Routing	Invert	Outlet Devices
#1	Primary	861.40'	**6.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Discarded	859.50'	**0.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 12.30 hrs HW=861.64' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=1.75 cfs @ 12.30 hrs HW=861.64' TW=860.27' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 1.75 cfs @ 1.22 fps)

Summary for Pond SF1: Sediment Forebay 1

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 2.21" for 10 yr event
Inflow = 24.59 cfs @ 12.37 hrs, Volume= 123,933 cf
Outflow = 24.51 cfs @ 12.39 hrs, Volume= 121,555 cf, Atten= 0%, Lag= 1.1 min
Primary = 24.51 cfs @ 12.39 hrs, Volume= 121,555 cf
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 861.15' @ 12.39 hrs Surf.Area= 2,992 sf Storage= 4,480 cf
Flood Elev= 862.00' Surf.Area= 4,327 sf Storage= 7,539 cf

Plug-Flow detention time= 17.9 min calculated for 121,516 cf (98% of inflow)
Center-of-Mass det. time= 6.8 min (866.4 - 859.6)

Volume	Invert	Avail.Storage	Storage Description
#1	857.80'	7,539 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
857.80	0	0	0
858.00	416	42	42
859.00	804	610	652
860.00	1,588	1,196	1,848
861.00	2,784	2,186	4,034
861.50	3,456	1,560	5,594
862.00	4,327	1,946	7,539

Device	Routing	Invert	Outlet Devices
#1	Primary	860.30'	**143.1 deg x 8.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.47 (C= 3.09)
#2	Secondary	861.30'	**12.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=24.51 cfs @ 12.39 hrs HW=861.15' TW=859.24' (Dynamic Tailwater)
└**1=Sharp-Crested Vee/Trap Weir** (Weir Controls 24.51 cfs @ 2.72 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=857.80' TW=856.50' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link AP-1: Offsite to E'ly Wetlands

Inflow Area = 709,418 sf, 7.21% Impervious, Inflow Depth = 2.14" for 10 yr event
Inflow = 22.42 cfs @ 12.50 hrs, Volume= 126,536 cf
Primary = 22.42 cfs @ 12.50 hrs, Volume= 126,536 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs

Summary for Link AP-2: Stiles Lake

Inflow Area = 404,803 sf, 2.21% Impervious, Inflow Depth = 2.06" for 10 yr event
Inflow = 17.25 cfs @ 12.17 hrs, Volume= 69,519 cf
Primary = 17.25 cfs @ 12.17 hrs, Volume= 69,519 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs

Summary for Subcatchment P1.1: P1.1

Runoff = 36.45 cfs @ 12.34 hrs, Volume= 181,608 cf, Depth= 3.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=6.07"

	Area (ac)	CN	Description
*	0.849	98	Pavement & Roofs, HSG C
	0.229	96	Gravel surface, HSG C
	3.764	74	>75% Grass cover, Good, HSG C
	7.843	70	Woods, Good, HSG C
	2.459	73	Woods, Fair, HSG C
*	0.279	77	Wooded Wetlands, HSG C
	15.423	74	Weighted Average
	14.574		94.50% Pervious Area
	0.849		5.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	92	0.0400	0.10		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.3	702	0.1000	9.33	27.98	**Channel Flow, B-C, Ditch** Area= 3.0 sf Perim= 10.4' r= 0.29' n= 0.022 Earth, clean & straight
0.7	325	0.0600	7.22	21.67	**Channel Flow, C-D, Ditch** Area= 3.0 sf Perim= 10.4' r= 0.29' n= 0.022 Earth, clean & straight
0.7	250	0.0400	5.90	17.69	**Channel Flow, D-E, Ditch** Area= 3.0 sf Perim= 10.4' r= 0.29' n= 0.022 Earth, clean & straight
0.5	211	0.0300	6.71	73.82	**Channel Flow, E-F, Swale** Area= 11.0 sf Perim= 20.9' r= 0.53' n= 0.025 Earth, clean & winding
0.7	462	0.0700	11.65	128.15	**Channel Flow, F-G, Swale** Area= 11.0 sf Perim= 20.9' r= 0.53' n= 0.022 Earth, clean & straight
0.3	135	0.0400	8.81	96.87	**Channel Flow, G-H, Swale** Area= 11.0 sf Perim= 20.9' r= 0.53' n= 0.022 Earth, clean & straight
4.4	372	0.0800	1.41		**Shallow Concentrated Flow, J-K, Wetland** Woodland Kv= 5.0 fps
24.3	2,549	Total			

Summary for Subcatchment P1.2: P1.2

Runoff = 4.15 cfs @ 12.09 hrs, Volume= 13,021 cf, Depth= 4.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=6.07"

	Area (ac)	CN	Description
*	0.325	98	Paved Roadway, HSG C
	0.538	74	>75% Grass cover, Good, HSG C
	0.863	83	Weighted Average
	0.538		62.34% Pervious Area
	0.325		37.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	650		1.81		**Direct Entry, Minimum Tc**

Summary for Subcatchment P2.1: P2.1

Runoff = 20.46 cfs @ 12.15 hrs, Volume= 73,700 cf, Depth= 3.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=6.07"

	Area (sf)	CN	Description
*	8,930	98	Pavement & Roofs, HSG C
	108,639	74	>75% Grass cover, Good, HSG C
	49,266	70	Woods, Good, HSG C
	90,256	73	Woods, Fair, HSG C
*	15,551	77	Wooded Wetlands, HSG C
	272,642	74	Weighted Average
	263,712		96.72% Pervious Area
	8,930		3.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.1000	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.3	178	0.2000	2.24		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.4	70	0.3100	2.78		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
2.1	181	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.5	479	Total			

Summary for Subcatchment P2.2: P2.3

Runoff = 4.73 cfs @ 12.15 hrs, Volume= 17,230 cf, Depth= 3.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=6.07"

	Area (ac)	CN	Description
	0.953	70	Woods, Good, HSG C
	0.468	73	Woods, Fair, HSG C
*	0.135	77	Wooded Wetlands, HSG C
	1.556	72	Weighted Average
	1.556		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0800	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
3.5	300	0.0800	1.41		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
10.8	350	Total			

Summary for Subcatchment P2.3: P2.2

Runoff = 5.60 cfs @ 12.09 hrs, Volume= 17,404 cf, Depth= 3.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=6.07"

	Area (ac)	CN	Description
*	0.044	96	Gravel road, HSG C
	1.434	73	Woods, Fair, HSG C
	1.478	74	Weighted Average
	1.478		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.3000	0.19		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.0	157	0.3000	2.74		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.8	65	0.0800	1.41		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
6.1	272	Total			

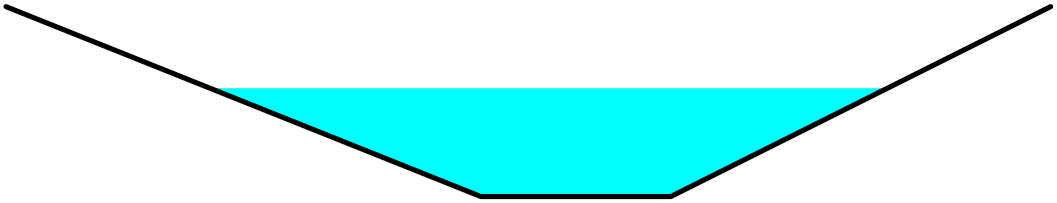
Summary for Reach WQS1: WQS 1

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 3.24" for 25 yr event
Inflow = 36.45 cfs @ 12.34 hrs, Volume= 181,608 cf
Outflow = 36.41 cfs @ 12.35 hrs, Volume= 181,608 cf, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.00 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.79 fps, Avg. Travel Time= 1.3 min

Peak Storage= 1,098 cf @ 12.35 hrs
Average Depth at Peak Storage= 1.14'
Defined Flood Depth= 898.00' Flow Area= 9,828.7 sf, Capacity= 125,865.46 cfs
Bank-Full Depth= 2.00' Flow Area= 13.0 sf, Capacity= 124.71 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.5 2.0 '/' Top Width= 11.00'
Length= 211.0' Slope= 0.0332 '/'
Inlet Invert= 903.00', Outlet Invert= 896.00'



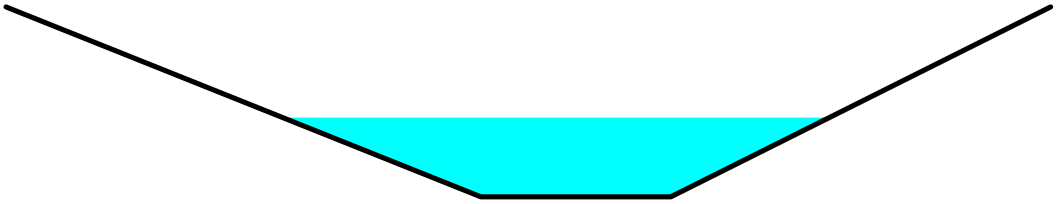
Summary for Reach WQS2: WQS 2

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 3.24" for 25 yr event
Inflow = 36.41 cfs @ 12.35 hrs, Volume= 181,608 cf
Outflow = 36.37 cfs @ 12.35 hrs, Volume= 181,608 cf, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 11.26 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 4.33 fps, Avg. Travel Time= 1.8 min

Peak Storage= 1,493 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.83'
Defined Flood Depth= 868.00' Flow Area= 9,500.0 sf, Capacity= 232,092.86 cfs
Bank-Full Depth= 2.00' Flow Area= 13.0 sf, Capacity= 237.91 cfs

2.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 2.5 2.0 '/' Top Width= 11.00'
Length= 462.0' Slope= 0.0649 '/'
Inlet Invert= 896.00', Outlet Invert= 866.00'



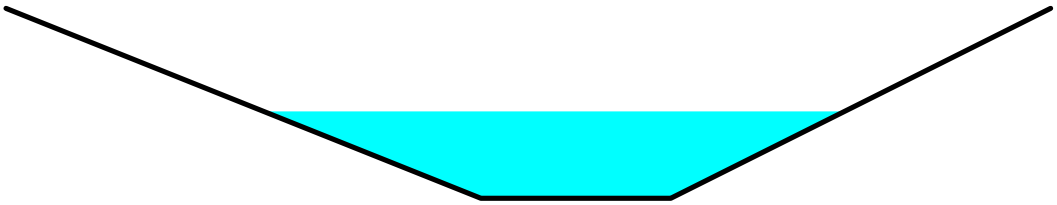
Summary for Reach WQS3: WQS 3

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 3.24" for 25 yr event
Inflow = 36.37 cfs @ 12.35 hrs, Volume= 181,608 cf
Outflow = 36.37 cfs @ 12.36 hrs, Volume= 181,608 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.79 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.80 fps, Avg. Travel Time= 0.6 min

Peak Storage= 501 cf @ 12.36 hrs
Average Depth at Peak Storage= 0.91'
Defined Flood Depth= 862.00' Flow Area= 9,434.3 sf, Capacity= 190,684.13 cfs
Bank-Full Depth= 2.00' Flow Area= 13.0 sf, Capacity= 196.83 cfs

2.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 2.5 2.0 '/' Top Width= 11.00'
Length= 135.0' Slope= 0.0444 '/'
Inlet Invert= 866.00', Outlet Invert= 860.00'



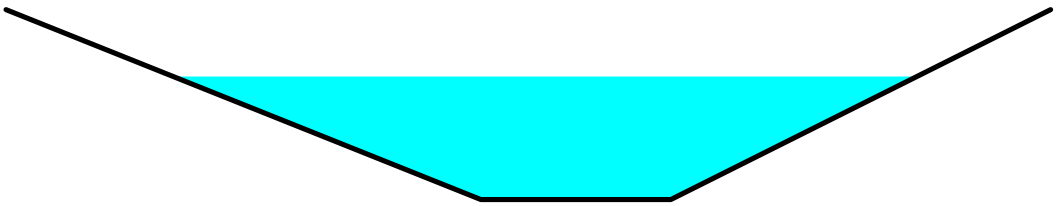
Summary for Reach WQS4: WQS 4

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 3.24" for 25 yr event
Inflow = 36.37 cfs @ 12.36 hrs, Volume= 181,608 cf
Outflow = 36.36 cfs @ 12.36 hrs, Volume= 181,608 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.71 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.28 fps, Avg. Travel Time= 0.7 min

Peak Storage= 618 cf @ 12.36 hrs
Average Depth at Peak Storage= 1.30'
Defined Flood Depth= 861.00' Flow Area= 9,423.3 sf, Capacity= 91,730.80 cfs
Bank-Full Depth= 2.00' Flow Area= 13.0 sf, Capacity= 94.80 cfs

2.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 2.5 2.0 '/' Top Width= 11.00'
Length= 97.0' Slope= 0.0103 '/'
Inlet Invert= 860.00', Outlet Invert= 859.00'



Summary for Reach WQS5: WQS 5

Inflow Area = 64,382 sf, 0.00% Impervious, Inflow Depth = 2.44" for 25 yr event
Inflow = 4.28 cfs @ 12.16 hrs, Volume= 13,106 cf
Outflow = 4.25 cfs @ 12.17 hrs, Volume= 13,106 cf, Atten= 1%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.42 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.93 fps, Avg. Travel Time= 2.6 min

Peak Storage= 235 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.42'
Defined Flood Depth= 898.00' Flow Area= 3,577.4 sf, Capacity= 35,446.98 cfs
Bank-Full Depth= 0.75' Flow Area= 1.9 sf, Capacity= 13.84 cfs

1.00' x 0.75' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.0 '/' Top Width= 4.00'
Length= 300.0' Slope= 0.0683 '/'
Inlet Invert= 860.00', Outlet Invert= 839.50'

Summary for Pond B1: Infiltration Basin 1

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 3.20" for 25 yr event
Inflow = 36.29 cfs @ 12.37 hrs, Volume= 179,230 cf
Outflow = 32.79 cfs @ 12.49 hrs, Volume= 177,701 cf, Atten= 10%, Lag= 6.9 min
Discarded = 0.07 cfs @ 12.49 hrs, Volume= 3,145 cf
Primary = 32.72 cfs @ 12.49 hrs, Volume= 174,556 cf
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 859.79' @ 12.49 hrs Surf.Area= 10,466 sf Storage= 21,565 cf
Flood Elev= 862.30' Surf.Area= 30,981 sf Storage= 57,262 cf

Plug-Flow detention time= 32.6 min calculated for 177,701 cf (99% of inflow)
Center-of-Mass det. time= 27.4 min (881.3 - 853.9)

Volume	Invert	Avail.Storage	Storage Description
#1	856.50'	57,262 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
856.50	0	0	0
857.00	2,211	553	553
858.00	7,592	4,902	5,454
859.00	9,175	8,384	13,838
860.00	10,816	9,996	23,833
861.00	12,512	11,664	35,497
862.00	16,710	14,611	50,108
862.30	30,981	7,154	57,262

Device	Routing	Invert	Outlet Devices
#1	Primary	851.20'	**24.0" Round Culvert** L= 74.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 851.20' / 850.00' S= 0.0162 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	857.30'	**70.0 deg x 2.30' rise Sharp-Crested Vee/Trap Weir X 2.00** Cv= 2.52 (C= 3.15)
#3	Device 1	860.60'	**1.2" x 7.3" Horiz. Orifice/Grate X 3.00 columns** X 11 rows C= 0.600 in 25.7" x 25.7" Grate (44% open area) Limited to weir flow at low heads
#4	Secondary	860.60'	**170.5 deg x 5.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir** Cv= 2.46 (C= 3.08)
#5	Discarded	856.50'	**0.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.07 cfs @ 12.49 hrs HW=859.79' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=32.72 cfs @ 12.49 hrs HW=859.79' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 32.72 cfs of 41.66 cfs potential flow)
  ├**2=Sharp-Crested Vee/Trap Weir** (Orifice Controls 32.72 cfs @ 4.42 fps)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=856.50' TW=0.00' (Dynamic Tailwater)
└**4=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Summary for Pond B2: B2

Inflow Area = 64,382 sf, 0.00% Impervious, Inflow Depth = 3.24" for 25 yr event
Inflow = 5.60 cfs @ 12.09 hrs, Volume= 17,404 cf
Outflow = 4.30 cfs @ 12.16 hrs, Volume= 14,584 cf, Atten= 23%, Lag= 4.1 min
Discarded = 0.02 cfs @ 12.16 hrs, Volume= 1,478 cf
Primary = 4.28 cfs @ 12.16 hrs, Volume= 13,106 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 861.82' @ 12.16 hrs Surf.Area= 3,618 sf Storage= 4,725 cf
Flood Elev= 862.50' Surf.Area= 4,538 sf Storage= 7,477 cf

Plug-Flow detention time= 139.7 min calculated for 14,579 cf (84% of inflow)
Center-of-Mass det. time= 71.5 min (899.8 - 828.4)

Volume	Invert	Avail.Storage	Storage Description
#1	859.50'	7,477 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
859.50	0	0	0
860.00	1,226	307	307
862.00	3,848	5,074	5,381
862.50	4,538	2,097	7,477

Device	Routing	Invert	Outlet Devices
#1	Primary	861.40'	**6.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Discarded	859.50'	**0.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 12.16 hrs HW=861.82' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=4.27 cfs @ 12.16 hrs HW=861.82' TW=860.42' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 4.27 cfs @ 1.68 fps)

Summary for Pond SF1: Sediment Forebay 1

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 3.24" for 25 yr event
Inflow = 36.36 cfs @ 12.36 hrs, Volume= 181,608 cf
Outflow = 36.29 cfs @ 12.37 hrs, Volume= 179,230 cf, Atten= 0%, Lag= 0.8 min
Primary = 35.77 cfs @ 12.37 hrs, Volume= 178,977 cf
Secondary = 0.53 cfs @ 12.37 hrs, Volume= 252 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 861.36' @ 12.37 hrs Surf.Area= 3,273 sf Storage= 5,137 cf
Flood Elev= 862.00' Surf.Area= 4,327 sf Storage= 7,539 cf

Plug-Flow detention time= 13.5 min calculated for 179,172 cf (99% of inflow)
Center-of-Mass det. time= 5.7 min (853.9 - 848.2)

Volume	Invert	Avail.Storage	Storage Description
#1	857.80'	7,539 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
857.80	0	0	0
858.00	416	42	42
859.00	804	610	652
860.00	1,588	1,196	1,848
861.00	2,784	2,186	4,034
861.50	3,456	1,560	5,594
862.00	4,327	1,946	7,539

Device	Routing	Invert	Outlet Devices
#1	Primary	860.30'	**143.1 deg x 8.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.47 (C= 3.09)
#2	Secondary	861.30'	**12.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=35.76 cfs @ 12.37 hrs HW=861.36' TW=859.66' (Dynamic Tailwater)
└**1=Sharp-Crested Vee/Trap Weir** (Weir Controls 35.76 cfs @ 3.00 fps)

Secondary OutFlow Max=0.52 cfs @ 12.37 hrs HW=861.36' TW=859.66' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.52 cfs @ 0.68 fps)

Summary for Link AP-1: Offsite to E'ly Wetlands

Inflow Area = 709,418 sf, 7.21% Impervious, Inflow Depth = 3.17" for 25 yr event
Inflow = 33.72 cfs @ 12.48 hrs, Volume= 187,577 cf
Primary = 33.72 cfs @ 12.48 hrs, Volume= 187,577 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs

Summary for Link AP-2: Stiles Lake

Inflow Area = 404,803 sf, 2.21% Impervious, Inflow Depth = 3.08" for 25 yr event
Inflow = 29.33 cfs @ 12.15 hrs, Volume= 104,037 cf
Primary = 29.33 cfs @ 12.15 hrs, Volume= 104,037 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs

Summary for Subcatchment P1.1: P1.1

Runoff = 61.69 cfs @ 12.34 hrs, Volume= 308,024 cf, Depth= 5.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=8.64"

	Area (ac)	CN	Description
*	0.849	98	Pavement & Roofs, HSG C
	0.229	96	Gravel surface, HSG C
	3.764	74	>75% Grass cover, Good, HSG C
	7.843	70	Woods, Good, HSG C
	2.459	73	Woods, Fair, HSG C
*	0.279	77	Wooded Wetlands, HSG C
	15.423	74	Weighted Average
	14.574		94.50% Pervious Area
	0.849		5.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	92	0.0400	0.10		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.3	702	0.1000	9.33	27.98	**Channel Flow, B-C, Ditch** Area= 3.0 sf Perim= 10.4' r= 0.29' n= 0.022 Earth, clean & straight
0.7	325	0.0600	7.22	21.67	**Channel Flow, C-D, Ditch** Area= 3.0 sf Perim= 10.4' r= 0.29' n= 0.022 Earth, clean & straight
0.7	250	0.0400	5.90	17.69	**Channel Flow, D-E, Ditch** Area= 3.0 sf Perim= 10.4' r= 0.29' n= 0.022 Earth, clean & straight
0.5	211	0.0300	6.71	73.82	**Channel Flow, E-F, Swale** Area= 11.0 sf Perim= 20.9' r= 0.53' n= 0.025 Earth, clean & winding
0.7	462	0.0700	11.65	128.15	**Channel Flow, F-G, Swale** Area= 11.0 sf Perim= 20.9' r= 0.53' n= 0.022 Earth, clean & straight
0.3	135	0.0400	8.81	96.87	**Channel Flow, G-H, Swale** Area= 11.0 sf Perim= 20.9' r= 0.53' n= 0.022 Earth, clean & straight
4.4	372	0.0800	1.41		**Shallow Concentrated Flow, J-K, Wetland** Woodland Kv= 5.0 fps
24.3	2,549	Total			

Summary for Subcatchment P1.2: P1.2

Runoff = 6.46 cfs @ 12.09 hrs, Volume= 20,645 cf, Depth= 6.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=8.64"

	Area (ac)	CN	Description
*	0.325	98	Paved Roadway, HSG C
	0.538	74	>75% Grass cover, Good, HSG C
	0.863	83	Weighted Average
	0.538		62.34% Pervious Area
	0.325		37.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	650		1.81		**Direct Entry, Minimum Tc**

Summary for Subcatchment P2.1: P2.1

Runoff = 34.60 cfs @ 12.14 hrs, Volume= 125,003 cf, Depth= 5.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=8.64"

	Area (sf)	CN	Description
*	8,930	98	Pavement & Roofs, HSG C
	108,639	74	>75% Grass cover, Good, HSG C
	49,266	70	Woods, Good, HSG C
	90,256	73	Woods, Fair, HSG C
*	15,551	77	Wooded Wetlands, HSG C
	272,642	74	Weighted Average
	263,712		96.72% Pervious Area
	8,930		3.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.1000	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.3	178	0.2000	2.24		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.4	70	0.3100	2.78		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
2.1	181	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.5	479	Total			

Summary for Subcatchment P2.2: P2.3

Runoff = 8.16 cfs @ 12.15 hrs, Volume= 29,712 cf, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=8.64"

	Area (ac)	CN	Description
	0.953	70	Woods, Good, HSG C
	0.468	73	Woods, Fair, HSG C
*	0.135	77	Wooded Wetlands, HSG C
	1.556	72	Weighted Average
	1.556		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0800	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
3.5	300	0.0800	1.41		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
10.8	350	Total			

Summary for Subcatchment P2.3: P2.2

Runoff = 9.46 cfs @ 12.09 hrs, Volume= 29,518 cf, Depth= 5.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 yr Rainfall=8.64"

	Area (ac)	CN	Description
*	0.044	96	Gravel road, HSG C
	1.434	73	Woods, Fair, HSG C
	1.478	74	Weighted Average
	1.478		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.3000	0.19		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.0	157	0.3000	2.74		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.8	65	0.0800	1.41		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
6.1	272	Total			

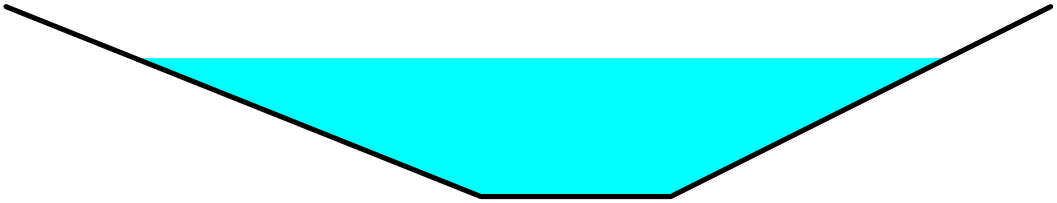
Summary for Reach WQS1: WQS 1

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 5.50" for 100 yr event
Inflow = 61.69 cfs @ 12.34 hrs, Volume= 308,024 cf
Outflow = 61.64 cfs @ 12.34 hrs, Volume= 308,024 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 8.02 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 3.15 fps, Avg. Travel Time= 1.1 min

Peak Storage= 1,622 cf @ 12.34 hrs
Average Depth at Peak Storage= 1.46'
Defined Flood Depth= 898.00' Flow Area= 9,828.7 sf, Capacity= 125,865.46 cfs
Bank-Full Depth= 2.00' Flow Area= 13.0 sf, Capacity= 124.71 cfs

2.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.5 2.0 '/' Top Width= 11.00'
Length= 211.0' Slope= 0.0332 '/'
Inlet Invert= 903.00', Outlet Invert= 896.00'



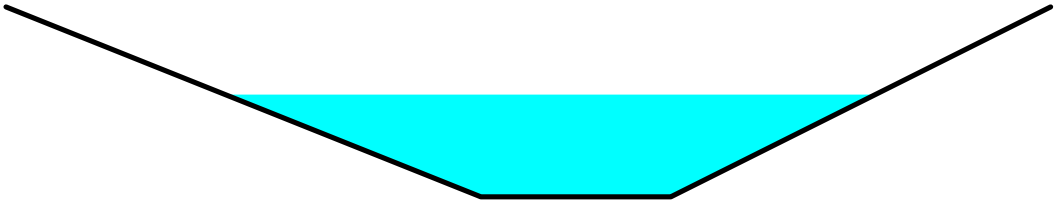
Summary for Reach WQS2: WQS 2

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 5.50" for 100 yr event
Inflow = 61.64 cfs @ 12.34 hrs, Volume= 308,024 cf
Outflow = 61.60 cfs @ 12.35 hrs, Volume= 308,024 cf, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 12.94 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 4.92 fps, Avg. Travel Time= 1.6 min

Peak Storage= 2,200 cf @ 12.35 hrs
Average Depth at Peak Storage= 1.08'
Defined Flood Depth= 868.00' Flow Area= 9,500.0 sf, Capacity= 232,092.86 cfs
Bank-Full Depth= 2.00' Flow Area= 13.0 sf, Capacity= 237.91 cfs

2.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 2.5 2.0 '/' Top Width= 11.00'
Length= 462.0' Slope= 0.0649 '/'
Inlet Invert= 896.00', Outlet Invert= 866.00'



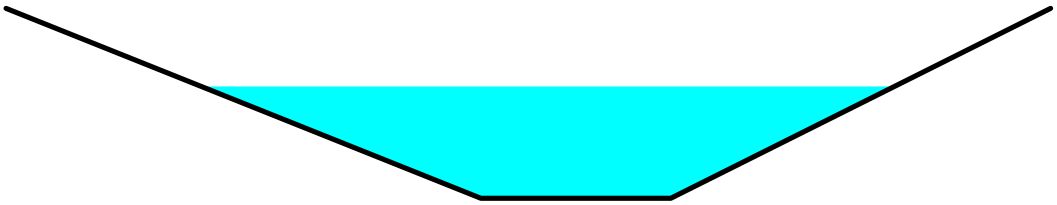
Summary for Reach WQS3: WQS 3

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 5.50" for 100 yr event
Inflow = 61.60 cfs @ 12.35 hrs, Volume= 308,024 cf
Outflow = 61.59 cfs @ 12.35 hrs, Volume= 308,024 cf, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 11.24 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.31 fps, Avg. Travel Time= 0.5 min

Peak Storage= 739 cf @ 12.35 hrs
Average Depth at Peak Storage= 1.18'
Defined Flood Depth= 862.00' Flow Area= 9,434.3 sf, Capacity= 190,684.13 cfs
Bank-Full Depth= 2.00' Flow Area= 13.0 sf, Capacity= 196.83 cfs

2.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 2.5 2.0 '/' Top Width= 11.00'
Length= 135.0' Slope= 0.0444 '/'
Inlet Invert= 866.00', Outlet Invert= 860.00'



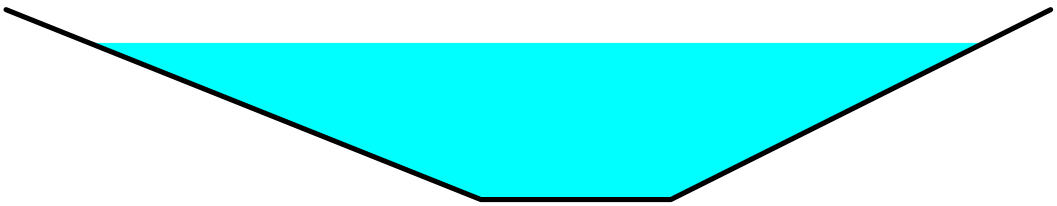
Summary for Reach WQS4: WQS 4

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 5.50" for 100 yr event
Inflow = 61.59 cfs @ 12.35 hrs, Volume= 308,024 cf
Outflow = 61.58 cfs @ 12.35 hrs, Volume= 308,024 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.53 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.57 fps, Avg. Travel Time= 0.6 min

Peak Storage= 914 cf @ 12.35 hrs
Average Depth at Peak Storage= 1.65'
Defined Flood Depth= 861.00' Flow Area= 9,423.3 sf, Capacity= 91,730.80 cfs
Bank-Full Depth= 2.00' Flow Area= 13.0 sf, Capacity= 94.80 cfs

2.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 2.5 2.0 '/' Top Width= 11.00'
Length= 97.0' Slope= 0.0103 '/'
Inlet Invert= 860.00', Outlet Invert= 859.00'



Summary for Reach WQS5: WQS 5

Inflow Area = 64,382 sf, 0.00% Impervious, Inflow Depth = 4.68" for 100 yr event
Inflow = 8.28 cfs @ 12.13 hrs, Volume= 25,122 cf
Outflow = 8.24 cfs @ 12.14 hrs, Volume= 25,122 cf, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.46 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.30 fps, Avg. Travel Time= 2.2 min

Peak Storage= 383 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.59'
Defined Flood Depth= 898.00' Flow Area= 3,577.4 sf, Capacity= 35,446.98 cfs
Bank-Full Depth= 0.75' Flow Area= 1.9 sf, Capacity= 13.84 cfs

1.00' x 0.75' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.0 '/' Top Width= 4.00'
Length= 300.0' Slope= 0.0683 '/'
Inlet Invert= 860.00', Outlet Invert= 839.50'

Summary for Pond B1: Infiltration Basin 1

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 5.46" for 100 yr event
Inflow = 61.42 cfs @ 12.36 hrs, Volume= 305,646 cf
Outflow = 51.61 cfs @ 12.51 hrs, Volume= 304,100 cf, Atten= 16%, Lag= 9.2 min
Discarded = 0.08 cfs @ 12.51 hrs, Volume= 3,539 cf
Primary = 44.86 cfs @ 12.51 hrs, Volume= 295,930 cf
Secondary = 6.67 cfs @ 12.51 hrs, Volume= 4,631 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 860.99' @ 12.51 hrs Surf.Area= 12,501 sf Storage= 35,416 cf
Flood Elev= 862.30' Surf.Area= 30,981 sf Storage= 57,262 cf

Plug-Flow detention time= 25.6 min calculated for 304,100 cf (99% of inflow)
Center-of-Mass det. time= 22.5 min (859.6 - 837.2)

Volume	Invert	Avail.Storage	Storage Description
#1	856.50'	57,262 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
856.50	0	0	0
857.00	2,211	553	553
858.00	7,592	4,902	5,454
859.00	9,175	8,384	13,838
860.00	10,816	9,996	23,833
861.00	12,512	11,664	35,497
862.00	16,710	14,611	50,108
862.30	30,981	7,154	57,262

Device	Routing	Invert	Outlet Devices
#1	Primary	851.20'	**24.0" Round Culvert** L= 74.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 851.20' / 850.00' S= 0.0162 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	857.30'	**70.0 deg x 2.30' rise Sharp-Crested Vee/Trap Weir X 2.00** Cv= 2.52 (C= 3.15)
#3	Device 1	860.60'	**1.2" x 7.3" Horiz. Orifice/Grate X 3.00 columns** X 11 rows C= 0.600 in 25.7" x 25.7" Grate (44% open area) Limited to weir flow at low heads
#4	Secondary	860.60'	**170.5 deg x 5.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir** Cv= 2.46 (C= 3.08)
#5	Discarded	856.50'	**0.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.08 cfs @ 12.51 hrs HW=860.99' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=44.86 cfs @ 12.51 hrs HW=860.99' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 44.86 cfs @ 14.28 fps)
  ├**2=Sharp-Crested Vee/Trap Weir** (Passes < 51.05 cfs potential flow)
  └**3=Orifice/Grate** (Passes < 6.06 cfs potential flow)

Secondary OutFlow Max=6.67 cfs @ 12.51 hrs HW=860.99' TW=0.00' (Dynamic Tailwater)
└**4=Sharp-Crested Vee/Trap Weir** (Weir Controls 6.67 cfs @ 1.74 fps)

Summary for Pond B2: B2

Inflow Area = 64,382 sf, 0.00% Impervious, Inflow Depth = 5.50" for 100 yr event
Inflow = 9.46 cfs @ 12.09 hrs, Volume= 29,518 cf
Outflow = 8.30 cfs @ 12.13 hrs, Volume= 26,692 cf, Atten= 12%, Lag= 2.7 min
Discarded = 0.02 cfs @ 12.13 hrs, Volume= 1,570 cf
Primary = 8.28 cfs @ 12.13 hrs, Volume= 25,122 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 862.04' @ 12.13 hrs Surf.Area= 3,902 sf Storage= 5,533 cf
Flood Elev= 862.50' Surf.Area= 4,538 sf Storage= 7,477 cf

Plug-Flow detention time= 94.0 min calculated for 26,684 cf (90% of inflow)
Center-of-Mass det. time= 47.2 min (860.5 - 813.2)

Volume	Invert	Avail.Storage	Storage Description
#1	859.50'	7,477 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
859.50	0	0	0
860.00	1,226	307	307
862.00	3,848	5,074	5,381
862.50	4,538	2,097	7,477

Device	Routing	Invert	Outlet Devices
#1	Primary	861.40'	**6.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Discarded	859.50'	**0.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 12.13 hrs HW=862.04' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=8.27 cfs @ 12.13 hrs HW=862.04' TW=860.59' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 8.27 cfs @ 2.16 fps)

Summary for Pond SF1: Sediment Forebay 1

Inflow Area = 671,826 sf, 5.50% Impervious, Inflow Depth = 5.50" for 100 yr event
Inflow = 61.58 cfs @ 12.35 hrs, Volume= 308,024 cf
Outflow = 61.42 cfs @ 12.36 hrs, Volume= 305,646 cf, Atten= 0%, Lag= 0.4 min
Primary = 54.55 cfs @ 12.36 hrs, Volume= 297,008 cf
Secondary = 6.89 cfs @ 12.37 hrs, Volume= 8,639 cf

Routing by Dyn-Stor-Ind method, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 861.66' @ 12.37 hrs Surf.Area= 3,726 sf Storage= 6,151 cf
Flood Elev= 862.00' Surf.Area= 4,327 sf Storage= 7,539 cf

Plug-Flow detention time= 9.3 min calculated for 305,548 cf (99% of inflow)
Center-of-Mass det. time= 4.5 min (837.2 - 832.7)

Volume	Invert	Avail.Storage	Storage Description
#1	857.80'	7,539 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
857.80	0	0	0
858.00	416	42	42
859.00	804	610	652
860.00	1,588	1,196	1,848
861.00	2,784	2,186	4,034
861.50	3,456	1,560	5,594
862.00	4,327	1,946	7,539

Device	Routing	Invert	Outlet Devices
#1	Primary	860.30'	**143.1 deg x 8.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.47 (C= 3.09)
#2	Secondary	861.30'	**12.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=54.41 cfs @ 12.36 hrs HW=861.65' TW=860.54' (Dynamic Tailwater)
└─**1=Sharp-Crested Vee/Trap Weir** (Weir Controls 54.41 cfs @ 3.33 fps)

Secondary OutFlow Max=6.89 cfs @ 12.37 hrs HW=861.66' TW=860.63' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 6.89 cfs @ 1.62 fps)

Summary for Link AP-1: Offsite to E'ly Wetlands

Inflow Area = 709,418 sf, 7.21% Impervious, Inflow Depth = 5.43" for 100 yr event
Inflow = 52.87 cfs @ 12.51 hrs, Volume= 321,206 cf
Primary = 52.87 cfs @ 12.51 hrs, Volume= 321,206 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs

Summary for Link AP-2: Stiles Lake

Inflow Area = 404,803 sf, 2.21% Impervious, Inflow Depth = 5.33" for 100 yr event
Inflow = 51.00 cfs @ 12.14 hrs, Volume= 179,837 cf
Primary = 51.00 cfs @ 12.14 hrs, Volume= 179,837 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-32.00 hrs, dt= 0.01 hrs

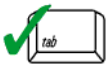
APPENDIX A
MA - DEP Stormwater Checklist

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

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 8[2]
- 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.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

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.

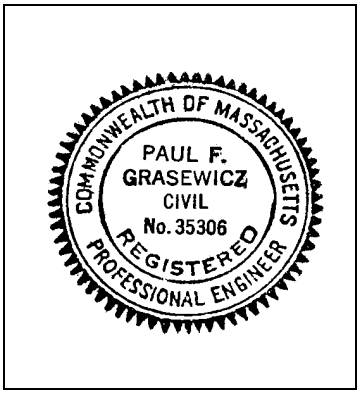
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the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



8/24/21
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:

- [X] No disturbance to any Wetland Resource Areas
- [ ] Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- [ ] Reduced Impervious Area (Redevelopment Only)
- [X] Minimizing disturbance to existing trees and shrubs
- [ ] LID Site Design Credit Requested:
  - [ ] Credit 1
  - [ ] Credit 2
  - [ ] Credit 3
- [X] 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
- [X] Water Quality Swale
- [ ] Grass Channel
- [ ] Green Roof
- [ ] Other (describe): _____

Standard 1: No New Untreated Discharges

- [X] No new untreated discharges
- [X] Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- [X] 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 Field[1]

☐ 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 propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

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

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

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.

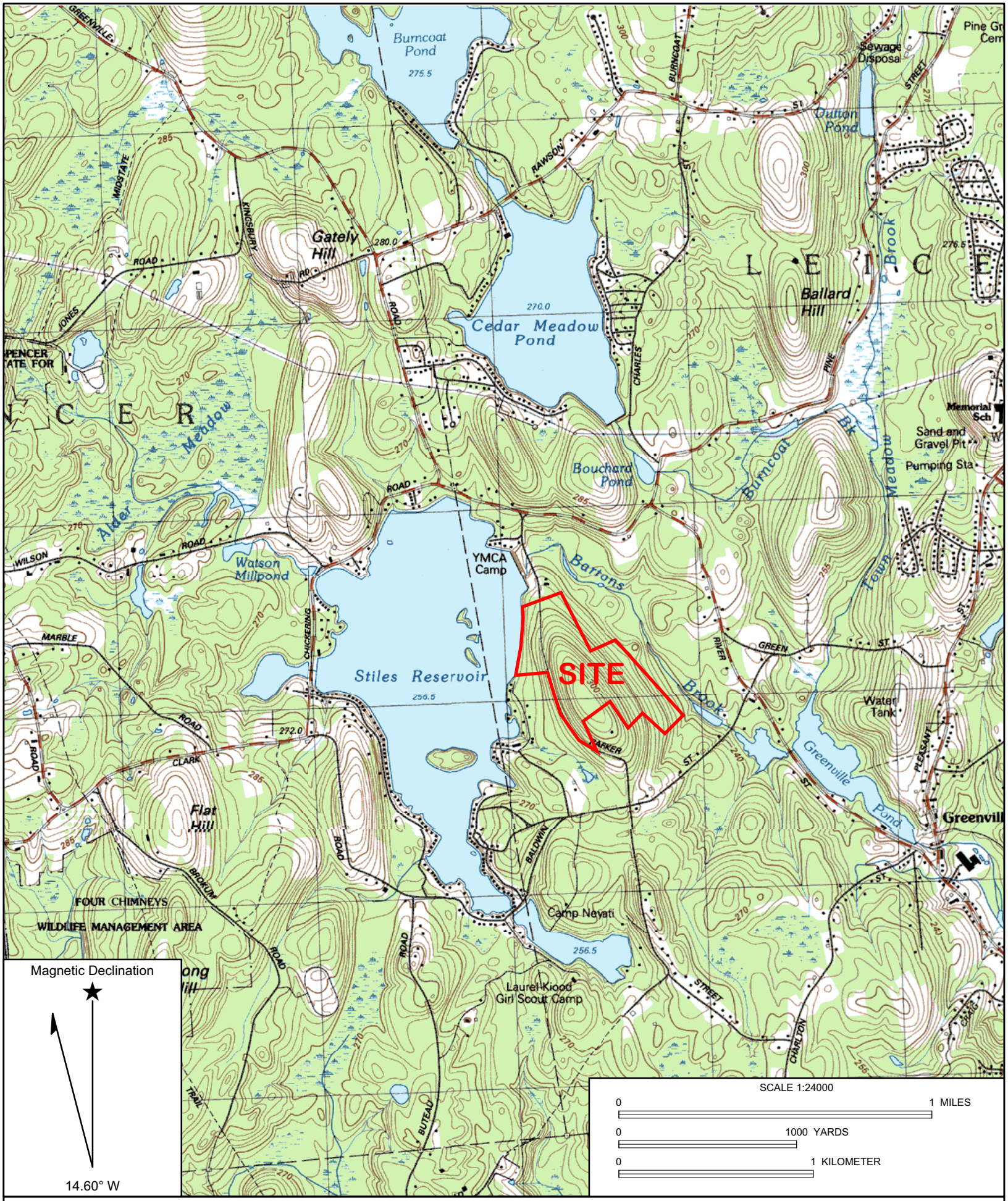
Standard 10: Prohibition of Illicit Discharges

☒ 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.

APPENDIX B
USGS MAP



Name: WORCESTER SOUTH
Date: 8/25/2021
Scale: 1 inch equals 2000 feet

Location: 2903367 ft. N 536085 ft. E NAD83
Caption: Parker Street, Leicester, MA

Copyright (C) 2008, MyTopo

APPENDIX C
FEMA Flood Map

National Flood Hazard Layer FIRMette

FEMA

71°56'44"W 42°13'2"N

71°56'7"W 42°12'35"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

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, Areas 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
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 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

N

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 8/25/2021 at 9:10 AM 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.

APPENDIX D
Soil Test Pit Data

PARKER STREET (NORTH) - LEICESTER, MA

TABLE OF SOIL TEST PIT DATA

Testing Date: 08/16/21

Performed by: Brian MacEwen, SE#1430, GRAZ Engineering, LLC

TP#	LOCATION	DEPTH	HORIZON	TEXTURE	ESHWT	NOTES
		(inches)			(inches)	
1	B1	0-5	A	F.S.L.		
		5-22	Bc	F.S.L.		
		22-48	Cd	F.S.L.	28	Moist, No Refusal
2	B1	0-7	A	F.S.L.		
		7-21	Bc	F.S.L.		
		21-46	Cd	F.S.L.	34	Moist, No Refusal
3	SF1	0-6	A	F.S.L.		
		6-26	Bc	F.S.L.		
		26-40	Cd	F.S.L.	32	Moist, No Refusal

APPENDIX E

NRCS Soils Map Overlay
&
NRCC Cornell Extreme Precipitation Table

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	Massachusetts
Location	Parker Street, Leicester, MA
Longitude	71.941 degrees West
Latitude	42.213 degrees North
Elevation	0 feet
Date/Time	Sun, 22 Aug 2021 14:51:00 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.69	0.87	1.09	**1yr**	0.75	1.06	1.27	1.61	2.05	2.62	2.90	**1yr**	2.32	2.79	3.19	3.86	4.48	**1yr**
2yr	0.35	0.53	0.66	0.87	1.10	1.39	**2yr**	0.95	1.26	1.61	2.02	2.54	3.21	3.49	**2yr**	2.84	3.36	3.87	4.58	5.21	**2yr**
5yr	0.41	0.63	0.80	1.06	1.36	1.74	**5yr**	1.18	1.57	2.02	2.55	3.21	4.04	4.45	**5yr**	3.58	4.28	4.90	5.74	6.46	**5yr**
10yr	0.46	0.72	0.91	1.23	1.60	2.06	**10yr**	1.38	1.84	2.41	3.05	3.84	4.81	5.35	**10yr**	4.26	5.14	5.86	6.81	7.59	**10yr**
25yr	0.54	0.86	1.09	1.50	1.99	2.58	**25yr**	1.72	2.28	3.03	3.85	4.85	6.07	6.83	**25yr**	5.37	6.56	7.43	8.55	9.41	**25yr**
50yr	0.60	0.97	1.24	1.74	2.35	3.08	**50yr**	2.02	2.69	3.63	4.61	5.80	7.24	8.22	**50yr**	6.41	7.91	8.90	10.16	11.08	**50yr**
100yr	0.69	1.12	1.44	2.03	2.77	3.66	**100yr**	2.39	3.17	4.32	5.50	6.93	8.64	9.91	**100yr**	7.65	9.53	10.66	12.07	13.04	**100yr**
200yr	0.78	1.27	1.65	2.37	3.27	4.35	**200yr**	2.82	3.73	5.15	6.58	8.28	10.32	11.96	**200yr**	9.13	11.50	12.78	14.36	15.35	**200yr**
500yr	0.93	1.53	2.00	2.91	4.08	5.47	**500yr**	3.52	4.64	6.50	8.32	10.49	13.07	15.36	**500yr**	11.56	14.77	16.25	18.06	19.07	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.22	0.34	0.41	0.55	0.68	0.98	**1yr**	0.59	0.95	1.12	1.48	1.91	2.32	2.31	**1yr**	2.06	2.23	2.80	3.23	3.94	**1yr**
2yr	0.34	0.52	0.64	0.87	1.07	1.25	**2yr**	0.92	1.23	1.43	1.89	2.43	3.12	3.39	**2yr**	2.76	3.26	3.76	4.43	5.04	**2yr**
5yr	0.38	0.59	0.73	1.00	1.28	1.49	**5yr**	1.10	1.46	1.71	2.23	2.85	3.77	4.04	**5yr**	3.34	3.89	4.49	5.23	5.90	**5yr**
10yr	0.42	0.65	0.81	1.13	1.46	1.70	**10yr**	1.26	1.67	1.94	2.52	3.19	4.35	4.58	**10yr**	3.85	4.41	5.10	5.87	6.59	**10yr**
25yr	0.49	0.75	0.93	1.33	1.74	2.03	**25yr**	1.51	1.98	2.30	2.98	3.72	5.28	5.95	**25yr**	4.68	5.72	6.04	7.24	7.81	**25yr**
50yr	0.54	0.83	1.03	1.48	2.00	2.31	**50yr**	1.72	2.26	2.62	3.39	4.19	6.13	6.97	**50yr**	5.43	6.70	6.85	8.31	8.80	**50yr**
100yr	0.61	0.93	1.16	1.67	2.30	2.64	**100yr**	1.98	2.58	2.98	3.85	4.71	7.13	8.21	**100yr**	6.31	7.90	7.74	9.56	9.91	**100yr**
200yr	0.68	1.03	1.31	1.89	2.64	3.03	**200yr**	2.28	2.96	3.40	4.40	5.31	8.30	9.72	**200yr**	7.34	9.35	8.75	10.97	11.16	**200yr**
500yr	0.81	1.21	1.55	2.26	3.21	3.63	**500yr**	2.77	3.55	4.06	5.25	6.24	10.16	12.17	**500yr**	8.99	11.70	12.40	13.25	13.06	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.31	0.48	0.58	0.78	0.96	1.18	**1yr**	0.83	1.15	1.37	1.75	2.33	2.85	3.22	**1yr**	2.53	3.09	3.52	4.17	4.92	**1yr**
2yr	0.36	0.55	0.68	0.92	1.14	1.33	**2yr**	0.98	1.30	1.54	2.00	2.58	3.32	3.63	**2yr**	2.94	3.49	4.03	4.76	5.51	**2yr**
5yr	0.43	0.67	0.83	1.14	1.44	1.72	**5yr**	1.25	1.68	1.97	2.54	3.21	4.34	4.87	**5yr**	3.84	4.68	5.33	6.31	7.08	**5yr**
10yr	0.50	0.77	0.96	1.34	1.73	2.08	**10yr**	1.50	2.03	2.40	3.05	3.81	5.32	6.00	**10yr**	4.71	5.77	6.61	7.81	8.70	**10yr**
25yr	0.62	0.95	1.18	1.68	2.21	2.68	**25yr**	1.91	2.62	3.11	3.88	4.78	6.97	7.86	**25yr**	6.17	7.55	8.84	9.96	11.03	**25yr**
50yr	0.73	1.11	1.38	1.98	2.67	3.25	**50yr**	2.30	3.18	3.79	4.66	5.68	8.54	9.70	**50yr**	7.56	9.33	11.01	12.20	13.43	**50yr**
100yr	0.86	1.30	1.62	2.35	3.22	3.94	**100yr**	2.78	3.86	4.61	5.59	6.74	10.45	12.00	**100yr**	9.25	11.53	13.72	14.94	16.35	**100yr**
200yr	1.01	1.52	1.92	2.78	3.88	4.79	**200yr**	3.35	4.68	5.62	6.70	8.00	12.81	14.83	**200yr**	11.33	14.26	17.11	18.28	19.91	**200yr**
500yr	1.27	1.88	2.43	3.52	5.01	6.19	**500yr**	4.32	6.05	7.30	8.53	10.03	16.74	19.59	**500yr**	14.81	18.83	20.94	23.86	25.83	**500yr**

Powered by ACIS Northeast Regional Climate Center

317B
(C-SOILS)

73A
(D-SOILS)

310B
(C/D-SOILS)

41/B6.2
N/F
CHARLES G. LARSON SR.
DB 21705, PG 142

307E
(C-SOILS)

HYDROLOGIC SOIL GROUP (HSG) DIVISION LINE

307C
(C-SOILS)

REMAINING LAND

307B
(C-SOILS)

41/B7.0
N/F
Y.W.C.A

307E
(C-SOILS)

73A
(D-SOILS)

307C
(C-SOILS)

300B
(C-SOILS)

41/B7.0
N/F
Y.W.C.A

LOT 2

#49
42/A2.0
N/F
MARK DOLAN
DB 45652, PG 280
PB 436, PL 38

41/B7.0
N/F
Y.W.C.A

41/C4.0
N/F
Y.W.C.A

RESERVED FOR LAKE ACCESS

LOT 1

307E
(C-SOILS)

41/–
N/F
UNKOWN

STILES LAKE

41/C3.0
N/F
STILES LAKE WATER DISTRICT
DB 16840, PG 344
PB 460, PL 80

MERIDIAN OF
MASSACHUSETTS MAINLAND
GRID (NAD83)

41/C3.0
N/F
STILES LAKE WATER DISTRICT
DB 16840, PG 344
PB 460, PL 80

312B
(C/D-SOILS)

STILES LAKE

41/C3.0
N/F
STILES LAKE WATER DISTRICT
DB 16840, PG 344
PB 460, PL 80

GRAPHIC SCALE

(FEET) 80 0 40 80 160 240

(METERS) 24.4 0 12.2 24.4 48.8 73.2

1 inch = 80 ft.

NOTE

1) THE NRCS HYDROLOGIC SOIL GROUP DELINEATION LINES DEPICTED HEREON ARE BASED ON THE SHAPEFILES OBTAINED FROM THE THE MASS GIS OLIVER ONLINE MAPPING WEBSITE.

GRAZ Engineering, L.L.C.
323 West Lake Road, Fitzwilliam, NH 03447
Phone: (603) 585-4959 Fax: (603) 585-4960

PARKKER STREET (NORTH) - DEFINITIVE SUBDIVISION
LEICESTER, MASSACHUSETTS

NRCS SOILS MAP OVERLAY
PREPARED FOR: SCHOLD DEVELOPMENT, LLC (OWNER/APPLICANT)
77 CHICKERING ROAD, SPENCER, MA 01562

SCALE: AS NOTED	DRAWN: BCM	CHECKED: PPG & BCM	PLAN DATE: JUNE 6, 2021	BY
REV.	DATE	DESCRIPTION		
1	8/23/21	REVS. PER QUINN ENG. TECH. REVIEW & LPB		BCM

SHEET 1 OF 1