PLANNING BOARD MEETING

Lansing Town Hall Board Room
Monday, November 16, 2026
6:30 PM

AGENDA

SUBJECT TO CHANGE

Meeting is open to the public and streamed live on YouTube.

VIEW THE MEETING LIVE - TOWN OF LANSING YOUTUBE CHANNEL

To find our YouTube Channel - Go to *www.lansingtownny.gov*, click on the "YouTube" Icon (red square) located on the bottom left corner of our Home Page.

1. **Call Meeting to Order**
2. **Roll Call**
3. **Action Items**

a. **Project:** Minor Subdivision – 295 Buck Road

Applicant: Kelly Gavitt, Owner

Location: 295 Buck Road TPN 28.-1-48.1

Project Description: Minor Subdivision of 295 Buck Road (14.3 ac) to create Parcel 1 (5 ac), Parcel 2 (5 ac), and Parcel 3 (4.3 ac). This project is located in the RA zoning district.

SEQR: Unlisted/Uncoordinated Action

Anticipated Action: Sketch Review, Set Public Hearing

b. **Project:** Minor Subdivision – 390 Peruville Road

Applicant: Dan Topoleski, Owner

Location: 390 Peruville Road TPN 30.-1-28.213

Project Description: Minor Subdivision of 390 Peruville Road (2.70 ac) to create Lot A (1.1 ac) and Lot B (1.6 ac). This project is located in the AG zoning district.

SEQR: Unlisted/Uncoordinated Action

Anticipated Action: Sketch Review, Set Public Hearing

c. **Project:** Site Plan Review - 430 Peruville Road

Applicant: Scott Gibson

Location: 430 Peruville Road TPN 30.-1-28.212

Project Description: Site Plan Review of existing contractors' yard. This project is located in the AG zoning district.

SEQR: Unlisted/Uncoordinated Action

Anticipated Action: Public Hearing, SEQR

d. **Town Board Liaison Report**

4. Adjourn Meeting

In accordance with the Americans with Disabilities Act, persons who need accommodation to attend or participate in this meeting should contact the Town Clerk's Office at 607-533-4142. Request should be made 72 hours prior to the meeting.

SUBDIVISION PLAT
~ LANDS OF ~
KELLY L. GAVITT
PART OF MILITARY LOT NO. 78
TOWN OF LANSING ~ COUNTY OF TOMPKINS
STATE OF NEW YORK
TAX MAP NO. 28.-1-48.1
REFERENCE DEED: INSTRUMENT NO. 2017-06141

MAGNETIC NORTH PER OUR FILES

SUBJECT TO RIGHTS OF PUBLIC FOR HIGHWAY PURPOSES

BUCK ROAD
(FORMERLY KNOWN AS PETERS ROAD)

RADIUS: 707.60'
ARC: 334.09'
N 79°29'00" E
162.00'
196.93'
30.00'
GRASS APRON
ASSUMED ROAD BOUNDS
TIE: 745'± AS MEASURED ALONG THE CENTERLINE OF BUCK ROAD TO ITS INTERSECTION WITH THE CENTERLINE OF CONLON ROAD.
35.03'
BARN
PORTABLE SHED
8.3'
30.7'
S 10°31'00" E
150.00' TOTAL
120.00' P-P
CENTERLINE OF SWALE
CONC. CULVERT PIPE
O/H E/F.O.
NYSEG POLE LINE EASEMENT INSTRUMENT NO. 509252-005
ELEC. METER PANEL
U/G UTILS.
LOCATION
3.1'
COOP
SHED
4.6'
GRAVEL PARKING
APPROX.
PAVED DRIVEWAY
WELL
PORCH
2 STORY HOUSE NO. 295
PATIO
DECK
72.5'
SEPTIC TANK
ABOVE GROUND POOL
NOTE: COOP & SHED TO BE REMOVED BY GAVITT.
34.53'
500.00' P-P
SHED
28.0'
NICHOLAS A. & BONITA BOLES
~R.O.~
INSTRUMENT NO. 2017-04114

NOTE: CLIFFORD M. BUCK RESERVED LIFE USE OF THIS BARN AND AREA 15' WIDE AROUND IT. SEE INSTRUMENT NO. 489698-001. MR. BUCK DIED ON 05/12/2018 THUS TERMINATING THE LIFE USE RESERVATION.

NOTE: PORTABLE SHED TO BE RELOCATED BY GAVITT

NANCY L. VANWORMER
~R.O.~
L.794/P.316

MILITARY LOT 77
APPROXIMATE LOCATION LOT LINE
MILITARY LOT 78

PROPOSED PARCEL 1

AREA:
5.1 ACRES±
TO CENTERLINE ROAD
~
5.0 ACRES±
NET TO ASSUMED ROAD BOUNDS

PROPOSED PARCEL 2

AREA:
5.0 ACRES±
TO CENTERLINE ROAD
~
5.0 ACRES±
NET TO ASSUMED ROAD BOUNDS

PROPOSED PARCEL 3

AREA:
4.6 ACRES±
TO CENTERLINE ROAD
~
4.3 ACRES±
NET TO ASSUMED ROAD BOUNDS

N 19°29'35" E
555.00' P-P
638.42'± TOTAL
803.81'± TOTAL
720.00' P-P
S 03°00'52" W
S 04°35'45" E
1116.73' P-P
1196.73'± TOTAL
S 11°47'18" W
1198.70'± TOTAL
624.55' P-P

CORN FIELD

FLOW

48.39'±

MARION REYNOLDS
~R.O.~
L.646/P.585

IVY F. & ROBERT C. PRESTHUS
~R.O.~
INSTRUMENT NO. 2025-05535

NORTHWESTERLY ALONG CENTERLINE TOWNLEY CREEK 455'±
CHORD TIE: N 48°09'22" W 439.87'
TOWNLEY CREEK
83.81'±

CONLON ROAD

PETER & AKINA MCKAY
~R.O.~
INSTRUMENT NO. 2017-04608

CENTERLINE TOWNLEY CREEK
NORTHWESTERLY ALONG CENTERLINE TOWNLEY CREEK 373'±
CHORD TIE: N 51°43'12" W 344.03'
50.00'±
39.62'±

JEREMY M. & BILLIE JO DOWNS
~R.O.~
INSTRUMENT NO. 2017-07868

CAROL J. BURNETT & DONNA F. FICARRO
~R.O.~
INSTRUMENT NO. 533291-001

MONROE & JENNIFER MAKOWSKY
~R.O.~
INSTRUMENT NO. 2017-12305

MICHAEL W. EARL
~R.O.~
INSTRUMENT NO. 553127-001

REFERENCE MAP:
"SURVEY MAP LANDS OF CLIFFORD M. BUCK..."
MADE BY REAGAN LAND SURVEYING,
DATED MARCH 24, 2006.

NOTES:
- ABSTRACT OF TITLE NOT REVIEWED. PREMISES SURVEYED ARE SUBJECT TO ANY EASEMENTS, RIGHTS AND/OR RESTRICTIONS OF RECORD THAT AN UP TO DATE SEARCH MAY REVEAL.
- LOTS SHOWN HEREON MAY BE SUBJECT TO NYT CO. EASEMENTS L.475/P.736 & L.577/P.40

LEGEND:

- ● EXISTING IRON MONUMENT AS SHOWN
- ⊙ SET 3/4" REBAR AND SURVEY CAP
- ⌀ UTILITY POLE
- ⊠ UNDERGROUND TEL. RISER
- R.O. REPUTED OWNER
- O/H OVERHEAD UTILITIES
- U/G UNDERGROUND UTILITIES
- ℄ PRESENT CENTERLINE OF PAVEMENT
- —x— FENCE REMNANTS

0' 50' 100' 150'
GRAPHIC SCALE

REAGAN LAND SURVEYING
P.O. Box 1124
Dryden, New York 13053
Phone/Fax (607) 844-8837
EMAIL: office@reaganlandsurveying.com

NOTE: Any revisions to this map must comply with section 7209, Subdivision 2 of the New York State Education Law. All certifications hereon are valid for this map and copies thereof only if said map or copies bear the embossed seal of the licensed land surveyor whose signature appears hereon. This map is not valid when used in conjunction with a "Survey Affidavit" or "Certificate of No-Change".

Date Surveyed: 9/2026	Drawn By: A. PUZO	Scale: 1"=50'	Job No.: 26-221

I hereby certify to: KELLY L. GAVITT;

that I am a licensed land surveyor, New York State License No. 049892 and that this map correctly delineates an actual survey on the ground made by me or under my direct supervision, that it was prepared in accordance with the current code of practice for land title surveys adopted by the New York State Association of Professional Land Surveyors; and that I found no visible encroachments either way across property lines except as shown hereon.

Signed: _____ Dated: SEPT. 1, 2026

"Copyright 2026: All Rights Reserved, Reagan Land Surveying"

AGRICULTURAL DATA STATEMENT

Per § 305-a of the New York State Agriculture and Markets Law, any application for a special use permit, site plan approval, use variance, or subdivision approval requiring municipal review and approval that would occur on property within a New York State Certified Agricultural District containing a farm operation or property with boundaries within 500 feet of a farm operation located in an Agricultural District shall include an Agricultural Data Statement.

A. Name of applicant: Kelly L. Gavitt
Mailing address: 295 Buck Rd.
Lansing NY 14882

B. Description of the proposed project: Subdivide into 3 parcels

C. Project site address: 295 Buck Rd. Lansing Town: Lansing

D. Project site tax map number: 28.-1-48.1 and 48.2

E: The project is located on property:
☐ within an Agricultural District containing a farm operation, or
☐ with boundaries within 500 feet of a farm operation located in an Agricultural District.

F. Number of acres affected by project: 14.3

G. Is any portion of the project site currently being farmed? until land is separated
☒ Yes. If yes, how many acres 5 or square feet _____ ?
☐ No.

H. Name and address of any owner of land containing farm operations within the Agricultural District and is located within 500 feet of the boundary of the property upon which the project is proposed.

I. Attach a copy of the current tax map showing the site of the proposed project relative to the location of farm operations identified in Item H above.

FARM NOTE

Prospective residents should be aware that farm operations may generate dust, odor, smoke, noise, vibration and other conditions that may be objectionable to nearby properties. Local governments shall not unreasonably restrict or regulate farm operations within State Certified Agricultural Districts unless it can be shown that the public health or safety is threatened.

Kelly L. Gavitt
Name and Title of Person Completing Form

9/11/24
Date

Short Environmental Assessment Form
Part 1 - Project Information

Instructions for Completing

Part 1 – Project Information. The applicant or project sponsor is responsible for the completion of Part 1. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification. Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information.

Complete all items in Part 1. You may also provide any additional information you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

Part 1 – Project and Sponsor Information

Name of Action or Project:

Project Location (describe, and attach a location map):
295 Buck Rd Lansing NY 14882

Brief Description of Proposed Action:
Split 14.3 acres into 3 separate parcels

Name of Applicant or Sponsor:	Telephone: 607-351-7313
Kelly L. Gavitt	E-Mail: Kgavitt23@gmail.com

Address:
295 Buck Rd.

City/PO:	State:	Zip Code:
Lansing	NY	14882

	NO	YES
1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation? If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If No, continue to question 2.	☒	☐
2. Does the proposed action require a permit, approval or funding from any other government Agency? If Yes, list agency(s) name and permit or approval:	☒	☐

3. a. Total acreage of the site of the proposed action? 14.3 acres
   b. Total acreage to be physically disturbed? 0 acres
   c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 14.3 acres

4. Check all land uses that occur on, are adjoining or near the proposed action:
   ☐ Urban ☐ Rural (non-agriculture) ☐ Industrial ☐ Commercial ☒ Residential (suburban)
   ☐ Forest ☒ Agriculture ☐ Aquatic ☐ Other(Specify):
   ☐ Parkland

	NO	YES	N/A
5. Is the proposed action,			
a. A permitted use under the zoning regulations?	☐	☒	☐
b. Consistent with the adopted comprehensive plan?	☐	☒	☐

	NO	YES
6. Is the proposed action consistent with the predominant character of the existing built or natural landscape?	☐	☒

	NO	YES
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area?		
If Yes, identify:	☑	☐

	NO	YES
8. a. Will the proposed action result in a substantial increase in traffic above present levels?	☒	☐
b. Are public transportation services available at or near the site of the proposed action?	☒	☐
c. Are any pedestrian accommodations or bicycle routes available on or near the site of the proposed action?	☒	☐

	NO	YES
9. Does the proposed action meet or exceed the state energy code requirements?		
If the proposed action will exceed requirements, describe design features and technologies:	☐	☒

	NO	YES
10. Will the proposed action connect to an existing public/private water supply?		
If No, describe method for providing potable water:	☐	☒

	NO	YES
11. Will the proposed action connect to existing wastewater utilities?		
If No, describe method for providing wastewater treatment:	☒	☐

	NO	YES
12. a. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places?	☑	☐
b. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory?	☑	☐

	NO	YES
13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency?	☐	☑
b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody?	☒	☐
If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres:		

14. Identify the typical habitat types that occur on, or are likely to be found on the project site. Check all that apply:

☐ Shoreline ☐ Forest ☒ Agricultural/grasslands ☐ Early mid-successional

☐ Wetland ☐ Urban ☐ Suburban

	NO	YES
15. Does the site of the proposed action contain any species of animal, or associated habitats, listed by the State or Federal government as threatened or endangered?	☑	☐
16. Is the project site located in the 100-year or 500-year flood plain?	☑	☐
17. Will the proposed action create storm water discharge, either from point or non-point sources? If Yes,	☑	☐
a. Will storm water discharges flow to adjacent properties?	☐	☐
b. Will storm water discharges be directed to established conveyance systems (runoff and storm drains)?	☐	☐
If Yes, briefly describe:		
18. Does the proposed action include construction or other activities that would result in the impoundment of water or other liquids (e.g., retention pond, waste lagoon, dam)? If Yes, explain the purpose and size of the impoundment:	☑	☐
19. Has the site of the proposed action or an adjoining property been the location of an active or closed solid waste management facility? If Yes, describe:	☑	☐
20. Has the site of the proposed action or an adjoining property been the subject of remediation (ongoing or completed) for hazardous waste? If Yes, describe:	☑	☐
21. Is the project located within, or within ½ mile of, a disadvantaged community?	☑	☐
If No, could impacts from the project affect a disadvantaged community?	☑	☐
If Yes to either question in 21, answer the following question.		
a. Identify the potential pollution impacts of the project, either direct or indirect, that may occur within the disadvantaged community (e.g., wastewater discharges, air emissions, noise, odors, solid or hazardous waste generation or management):		

I CERTIFY THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE

Applicant/sponsor/name: Kelly L. Gavitt Date: 9/11/26

Signature: Kelly L. Gavitt Title: Owner

LEGEND
△ – COMPUTED CORNER
○ – UTILITY POLE

REMAINING LANDS OF
PINNEY PROPERTIES, LLC
592955–003
30.–1–28.212

NORTH PER MAP REFERENCE NO. 2

PIN FOUND

S 80°04'40" E 300.00'

PIN FOUND

(1.33a)
Total Flag 1.6a

UNIVERAL FC (R.O.)
2021–14340

81.4'±

97.9'±

56.0'

30.0'

POLE BARN
TOTAL 2128 SQ. FT.

LEAN–TO

144.4'±

193.5'

8.0'

(284.62' P TO P)

DFM MECHANICAL SERVICES, INC.
INSTRUMENT NO. 2022–04330
TAX MAP PARCEL 30.–1–28.213
LOT AREA 117598 SQ. FEET =
2.70 ACRES NET TO
ROAD RIGHT OF WAY

N 10°14'26" E 425.00'

S 10°14'26" W 425.00'

(390.95' P TO P)

GRAVEL DRIVE

(.27a)

SEPTIC
LID ○

1.1a

CONTAINER

PIN FOUND

NYSEG TRIMMING RIGHT OF WAY 401/442

BUILDING
NO.390
2450 SQ. FT.

ASPHALT AND
GRAVEL DRIVE

197.45'

REMAINING LANDS OF
PINNEY PROPERTIES, LLC
592955–003
30.–1–28.212

NYSEG CORPORATION (R.O.)
406/66 & 367/406

103.6'±

CONCRETE WALK

UTILITY BOXES

WELL

(140.38')

R/W

PIN FOUND

O.H.

(34.05')

N 80°04'40" W 300.00'

PRESENT CENTERLINE

60.01 ft

1388.67 TO CENTERLINE
INT. OF SCOFIELD ROAD

N.Y.S. ROUTE 34B – PERUVILLE ROAD

R/W

0 50 100 150

"DEED TO CENTERLINE ROAD EXCEPT AND RESERVE ALL EXISTING PUBLIC HIGHWAY AND UTILITY R.O.W'S"

WARNING
ALTERATION OF THIS MAP NOT CONFORMING TO SECTION 7209, SUBDIVISION 2, NEW YORK STATE EDUCATION LAW, ARE PROHIBITED BY LAW. ALL CERTIFICATIONS HEREON ARE VALID FOR THIS MAP AND COPIES THEREOF ONLY IF SAID MAP OR COPIES BEAR THE IMPRESSION SEAL OF THE LICENSED LAND SURVEYOR WHOSE SIGNATURE APPEARS HEREON.

TITLE:

SITE PLAN

NO. 390 PERUVILLE ROAD,

TOWN OF LANSING, TOMPKINS COUNTY, NEW YORK

REVISED

DATE: 02/05/2024

FILE NO. 24008

SCALE: 1"=50'

AGRICULTURAL DATA STATEMENT

Per § 305-a of the New York State Agriculture and Markets Law, any application for a special use permit, site plan approval, use variance, or subdivision approval requiring municipal review and approval that would occur on property within a New York State Certified Agricultural District containing a farm operation or property with boundaries within 500 feet of a farm operation located in an Agricultural District shall include an Agricultural Data Statement.

A. Name of applicant: Daniel Topoleski

Mailing address: 390 Peruville Rd
Freeville NY 13068

B. Description of the proposed project: Create a flag lot on existing property, pole on East and main lot to rear (N)

C. Project site address: 390 Peruville Rd Town: Lansing

D. Project site tax map number: 30.-1-28.213

E: The project is located on property:
☐ within an Agricultural District containing a farm operation, or
☐ with boundaries within 500 feet of a farm operation located in an Agricultural District.

F. Number of acres affected by project: 2.7

G. Is any portion of the project site currently being farmed?
☐ Yes. If yes, how many acres_____ or square feet_____ ?
☒ No.

H. Name and address of any owner of land containing farm operations within the Agricultural District and is located within 500 feet of the boundary of the property upon which the project is proposed.

n/a

I. Attach a copy of the current tax map showing the site of the proposed project relative to the location of farm operations identified in Item H above.

~ ~ ~

Short Environmental Assessment Form
Part 1 - Project Information

Instructions for Completing

Part 1 – Project Information. The applicant or project sponsor is responsible for the completion of Part 1. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification. Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information.

Complete all items in Part 1. You may also provide any additional information you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

Part 1 – Project and Sponsor Information

DANIEL TOPOLESKI

Name of Action or Project:
PROPOSED FLAG LOT

Project Location (describe, and attach a location map):
390 PERUVILLE ROAD FREEVILLE NY 13068

Brief Description of Proposed Action:
CREATE A FLAG LOT OF 1.33a (POLE NOT INCLUDED OF .27a) TO REAR OF THE EXISTING OFFICE BUILDING

Name of Applicant or Sponsor:	Telephone: 607-533-0284
DANIEL TOPOLESKI	E-Mail: DTTOPOLESKI@GMAIL.COM

Address:
390 PERUVILLE ROAD

City/PO:	State:	Zip Code:
FREEVILLE	NY	13068

	NO	YES
1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation? If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If No, continue to question 2.	☑	☐
2. Does the proposed action require a permit, approval or funding from any other government Agency? If Yes, list agency(s) name and permit or approval:	☑	☐

3. a. Total acreage of the site of the proposed action? 2.7 acres
   b. Total acreage to be physically disturbed? 0 acres
   c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 2.7 acres

4. Check all land uses that occur on, are adjoining or near the proposed action:

☐ Urban ■ Rural (non-agriculture) ☐ Industrial ■ Commercial ☐ Residential (suburban)
☐ Forest ■ Agriculture ☐ Aquatic ☐ Other(Specify):
☐ Parkland

	NO	YES
5. Is the proposed action,		
a. A permitted use under the zoning regulations?	☐	☑
b. Consistent with the adopted comprehensive plan?	☐	☑

	NO	YES
6. Is the proposed action consistent with the predominant character of the existing built or natural landscape?	☐	☑

	NO	YES
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area?		
If Yes, identify:	☑	☐

	NO	YES
8. a. Will the proposed action result in a substantial increase in traffic above present levels?	☑	☐
b. Are public transportation services available at or near the site of the proposed action?	☑	☐
c. Are any pedestrian accommodations or bicycle routes available on or near the site of the proposed action?	☑	☐

	NO	YES
9. Does the proposed action meet or exceed the state energy code requirements?		
If the proposed action will exceed requirements, describe design features and technologies: _____	☐	☑

	NO	YES
10. Will the proposed action connect to an existing public/private water supply?		
If No, describe method for providing potable water: _____	☑	☐

	NO	YES
11. Will the proposed action connect to existing wastewater utilities?		
If No, describe method for providing wastewater treatment: _____	☑	☐

	NO	YES
12. a. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places?	☑	☐
b. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory?	☑	☐

	NO	YES
13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency?	☐	☑
b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody?	☑	☐
If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres: _____		

14. Identify the typical habitat types that occur on, or are likely to be found on the project site. Check all that apply:

☐ Shoreline ☐ Forest ☒ Agricultural/grasslands ☒ Early mid-successional

☐ Wetland ☐ Urban ☐ Suburban

	NO	YES
15. Does the site of the proposed action contain any species of animal, or associated habitats, listed by the State or Federal government as threatened or endangered?	☑	☐
16. Is the project site located in the 100-year or 500-year flood plain?	☑	☐
17. Will the proposed action create storm water discharge, either from point or non-point sources? If Yes,	☑	☐
a. Will storm water discharges flow to adjacent properties?	☐	☐
b. Will storm water discharges be directed to established conveyance systems (runoff and storm drains)?	☐	☐
If Yes, briefly describe: _____		
18. Does the proposed action include construction or other activities that would result in the impoundment of water or other liquids (e.g., retention pond, waste lagoon, dam)? If Yes, explain the purpose and size of the impoundment: _____	☑	☐
19. Has the site of the proposed action or an adjoining property been the location of an active or closed solid waste management facility? If Yes, describe: _____	☑	☐
20. Has the site of the proposed action or an adjoining property been the subject of remediation (ongoing or completed) for hazardous waste? If Yes, describe: _____	☑	☐
21. Is the project located within, or within ½ mile of, a disadvantaged community?	☑	☐
If No, could impacts from the project affect a disadvantaged community?	☑	☐
If Yes to either question in 21, answer the following question.		
a. Identify the potential pollution impacts of the project, either direct or indirect, that may occur within the disadvantaged community (e.g., wastewater discharges, air emissions, noise, odors, solid or hazardous waste generation or management):		

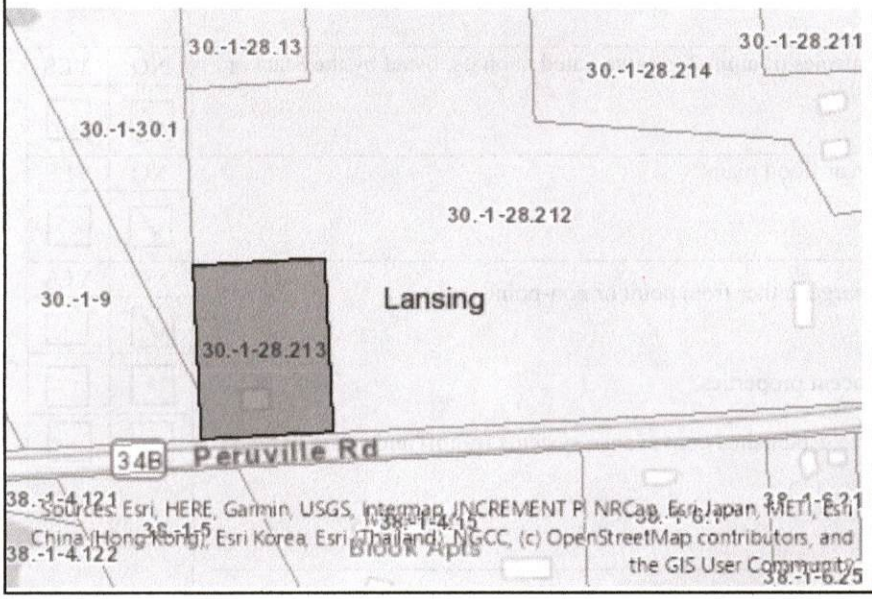
I CERTIFY THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE

Applicant/sponsor/name: DANIEL TOPOLESKI Date: 11/02/2026

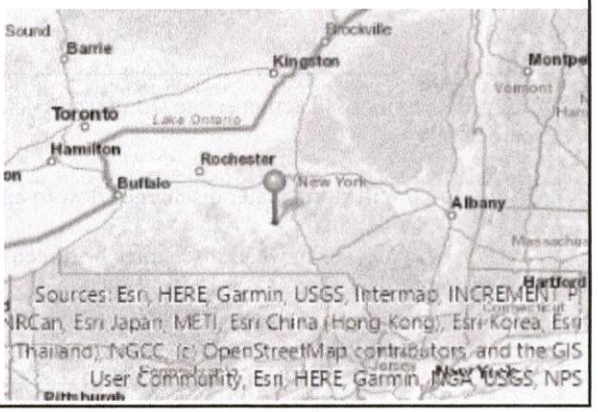
Signature: Daniel Topoleski Title: _____

EAF Mapper Summary Report

Thursday, October 1, 2026



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources to confirm data provided by the Mapper or to obtain data not provided by the Mapper.



Part 1 / Question 7 [Critical Environmental Area]	No
Part 1 / Question 12a [National or State Register of Historic Places or State Eligible Sites]	No
Part 1 / Question 12b [Archeological Sites]	No
Part 1 / Question 13a [Wetlands or Other Regulated Waterbodies]	Yes - Digital mapping information on local, New York State, and federal wetlands and waterbodies is known to be incomplete. Refer to the EAF Workbook.
Part 1 / Question 15 [Threatened or Endangered Animal]	No
Part 1 / Question 16 [100 or 500 Year Floodplain]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
Part 1 / Question 20 [Remediation Site]	No
Part 1 / Question 21 [Disadvantaged Community]	No

Meeting Mintues and Responses

Town of Lansing Planning Board Meeting, July 27, 2026

O'tooles Contractor Yard, Lansing, NY

Comment: The project will require a Full SWPPP.
Response: A Full SWPPP has been provided

Comment: Please provide a strategy on how the site intends to address dust mitigation
Response: Dust mitigation is a component of the Stormwater Pollution Prevention Control (SWPPP) narrative and will be incorporated as such. Asphalt millings are used on the main drive into the site.

Comment: Please provide describe any maintenance procedures used on the storm practice to date.
Response: The storm practice has been historically cleaned once sedimentation has reached a level of between 6" and 1'. The last full cleanout was in the summer of 2024 and it is cleaned approximately every 4-6 years.

Comment: Please provide proof of DEC certification for asphalt storage
Response: DEC certification has been obtained and has been provided to the Planning Board

Comment: The existing asphalt pile appears to encroach setback requirements for the rear of the property (50' near duplex's).
Response: The piles have been pulled back to within 50' of the setback line

Comment: The existing work yard appears to encroach the frontage setback (75') which should be in-line with the existing concrete bunker.
Response: The work yard was pulled back along the lot frontage to meet the 75' setback. The area will be finished graded and seeded by mid September.

Comment: Please confirm the type of materials that will be accepted/used on the property to determine whether they are in concert with the original agreement.

Response: Materials are identified on the stormwater site plan. Because the original apartment complex was never realized, the Owner viewed the stipulations and conditions on the work site as null and void since they related directly to the development.

Comment: Please request a maximum pile height from the Planning Board for discussion.
Response: Pile height will be limited to no higher than the tallest reach of an excavator loader. This is approximately 20 – 25'.

Comment: Please provide a screening plan for the lot frontage(s). Also remove any dead vegetation.
Response: A screening plan has been provided on the stormwater drawings. The site will use arborvitae placed every 4' along the site frontage of Peruville Road.

Comment: Please provide details on the hoop building along with any permitting received for construction.
Response: Building details and permitting are attached. The building is 50' x 80'.

Comment: Please review the November 28, 2016 site conditions resolution and update the project with anticipated hours of operation and site longevity expectations.
Response: Hours of operation will be will be by appointment only and the site will remain in operation until permanent.

Comment: Please identify whether the site has or will require a lighting plan.
Response: There are no plans to illuminate the site.

Comment: Please review and confirm traffic numbers and update if required.
Response: Anticipated traffic will be no different than has been in the area since the work yard has been in operation (2011). In fact, it is likely less since the property is used by appointment only. Actual numbers from 7/13/26 to the present can be made available.

Attachments:

DEC Certification
Hoop House permit (registered with DEC)
Traffic Numbers

NEW YORK STATE | Department of Environmental Conservation

KATHY HOCHUL
Governor

AMANDA LEFTON
Commissioner

July 13, 2026

ATTN: Tracy Pinney
Scott Pinney
6 Otti Drive
Lansing, NY 14882 United States

Re: O'Tooles Stone & Gravel - Lansing
CDDHRF - uncontaminated soil sand gravel rock - registration Registration # 55C60019

Dear Tracy Pinney:

Enclosed is the validated copy of your 6 NYCRR Part 360 registration, which becomes effective on July 13, 2026 and expires on July 12, 2031.

This letter only acknowledges receipt of your registration form and does not, in any way, verify that the information which you provided on the form is true or correct.

You are reminded that 6NYCRR Part 360 contains various requirements that must be followed to warrant your facility's continued status as a registered facility. Enclosed is a list of general requirements for a registered facility described in Section 360.15. Additional requirements of specific registration types may also be enclosed. You are required to keep appropriate records regarding the use of the facility in order to accurately file an annual report as required by Paragraph 360.19(k)(3).

This registration does not exempt or preclude you from complying with any other applicable federal, state, or local laws, rules or regulations. If you have any questions regarding this matter, please contact me at the above telephone number.

Sincerely,

Amy Miller

Amy Miller

Enclosure

NEW YORK STATE | Department of Environmental Conservation

DIVISION OF MATERIALS MANAGEMENT

REGISTRATION FOR A SOLID WASTE MANAGEMENT FACILITY

THIS IS NOT A UPA PERMIT

DATE ISSUED: 07/13/2026
DATE EXPIRES: 07/12/2031

1. FACILITY	2. FACILITY OWNER
O'Tooles Stone & Gravel 430 Peruville Rd Lansing Tompkins (*county*)	Scott Pinney 6 Otti Drive Lansing NY 14882 (607)227-9698
3. FACILITY OPERATOR	**4. SITE OWNER**

5. REGISTERED ACTIVITY

Types	Authorized Waste
CDDHRF - uncontaminated soil sand gravel rock - registration (55C60019) [361-5]	Soil (Clean)
Maximum Throughput Limit: 2000.00 cubic yards/year	
Storage: 4000.00 cubic yards	
6. OPERATIONS SCHEDULE - Normal schedule of operation By appointment only; Monday-Friday 7:30-4	**7. NAME(S) OF ALL MUNICIPALITIES SERVED** - Tompkins(Co)

This registration does not exempt or preclude you from complying with any other applicable federal, state, or local laws, rules or regulations.

NEW YORK STATE | Department of Environmental Conservation

KATHY HOCHUL
Governor

AMANDA LEFTON
Commissioner

July 13, 2026

ATTN: Tracy Pinney
Scott Pinney
6 Otti Drive
Lansing, NY 14882 United States

Re: O'Tooles Stone & Gravel - Lansing
CDDHRF - concrete, rock, brick, asphalt pavement or millings - registration

Registration # 55C90019

Dear Tracy Pinney:

Enclosed is the validated copy of your 6 NYCRR Part 360 registration, which becomes effective on July 13, 2026 and expires on July 12, 2031.

This letter only acknowledges receipt of your registration form and does not, in any way, verify that the information which you provided on the form is true or correct.

You are reminded that 6NYCRR Part 360 contains various requirements that must be followed to warrant your facility's continued status as a registered facility. Enclosed is a list of general requirements for a registered facility described in Section 360.15. Additional requirements of specific registration types may also be enclosed. You are required to keep appropriate records regarding the use of the facility in order to accurately file an annual report as required by Paragraph 360.19(k)(3).

This registration does not exempt or preclude you from complying with any other applicable federal, state, or local laws, rules or regulations. If you have any questions regarding this matter, please contact me at the above telephone number.

Sincerely,

Amy Miller

Amy Miller

Enclosure

NEW YORK STATE | Department of Environmental Conservation

DIVISION OF MATERIALS MANAGEMENT

REGISTRATION FOR A SOLID WASTE MANAGEMENT FACILITY

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3. FACILITY OPERATOR	**4. SITE OWNER**

5. REGISTERED ACTIVITY

Types	Authorized Waste
CDDHRF - concrete, rock, brick, asphalt pavement or millings - registration (55C90019) [361-5]	Asphalt Millings, Asphalt Pavement, Concrete

Maximum Throughput Limit: 7000.00 cubic yards/year

Storage: 12500.00 cubic yards

6. OPERATIONS SCHEDULE - Normal schedule of operation	7. NAME(S) OF ALL MUNICIPALITIES SERVED - Tompkins(Co)
By appointment only; Monday-Friday 7:30-4	

This registration does not exempt or preclude you from complying with any other applicable federal, state, or local laws, rules or regulations.

TOWN of LANSING
"Home of Industry, Agriculture, and Scenic Beauty"

PLANNING AND CODE ENFORCEMENT
Box 186
Lansing, NY 14882
Phone: 607-533-7054
E-mail: tolcodes@lansingtown.com

BUILDING PERMIT

THIS PERMIT HAS BEEN ISSUED TO:

APPLICANT: **CHARLES GUTTMAN**
LANDOWNER: **Pinney Properties, LLC**
TAX MAP#: **30.-1-28.212**
LOCATION OF PROPERTY: **428 Scofield Rd**
WORK TO BE UNDERTAKEN:
SPECIAL CONDITIONS:

1. Please call for the following inspections: framing/attachments, and a final inspection when work is complete.
2. Please note that pictures are not accepted in place of in-person inspections per Town of Lansing Town Code §108.5A.
3. All electrical work is to be inspected by a qualified Independent 3rd party agency/electrical inspector.
4. We need to be notified 24 – 48 hours ahead of time (not including weekends) to make the inspections as outlined above. Please call 607-533-7054 Monday through Thursday 8:00AM to 12:30PM and 8:00AM to 11:45AM Friday to schedule appointments. Inspection appointments are available Monday through Thursday 8:30AM-11:30AM and 1:30PM–3PM. No inspections are completed on Friday, Saturday, or Sunday.

Occupancy: **U** Construction: **VB** Hazard: **N/A**

BY:
Scott Russell

ISSUED: **July 8, 2024**
EXPIRATION DATE:
Permit #: 24-124

"This property may border a farm, as defined in Town of Lansing Local Law No. 2 of the year 1997, a Local Law known as The Right to Farm Law. Residents should be aware that farmers have the right to undertake good or acceptable farm practices which may generate dust, odor, smoke, noise and vibration."

We need to be notified 24 – 48 hours ahead of time to make the inspections as outlined above. Please call Heather Monday through Thursday 8:30AM to 12:30PM and 8:30AM to 11:45AM Friday at 607-533-7054. Inspection appointments are available Monday through Thursday 8:30AM-11:30AM and 1:30PM–3PM. No inspections are completed on Friday, Saturday, or Sunday.

It's the Law

Call UFPO 2 working days

Before You Dig

1-800-962-7962

ENGINEER'S REPORT - September 2026
O'tooles Contractor Yard, 430 Peruville Road, Lansing, NY 14882

Owner, Scott Pinney
6 Otti Road
Lansing, NY 14882

Land Use

An existing contactor's work yard located at the intersection of Scofield and Peruville Roads in the Town of Lansing has been owned and operated by Mr. Scott Pinney since 2011. In 2016, the owner proposed a large townhome development just to the west of the site and a subsequent Full Stormwater Pollution Prevention Plan was approved by the Town of Lansing soon after. As a condition of approval, the Town required Mr. Pinney to prepare a temporary erosion and sediment control plan for the work yard which included the installation of a sedimentation basin to capture and treat runoff. Constraints were also placed on the project to limit the breath and scope of future activity to ensure the protection of planned development below.

In 2020, the townhome portion of the land was sold off, and the project was never realized under its new ownership. Mr. Pinney is desirous in obtaining approval to expand the work yard and developing permanent runoff management.

Soil and Site Conditions
The area is comprised of A & C type soils over brush and scrub type land. The bulk of the site is an existing contractor work yard with hard packed dirt.

Site Soils: The predominant soil types throughout the site are Palmyra, gravely loams (PaC) in the hydrologic soil group A and Kendaia and Conesus (KnA, CfB) gravely loams in the hydrologic soil group C. Data indicates that the A type matrices have moderately high to high permeability rate between 0.57 to 5.95 in/hr and the C matrices at a moderately low to moderately high permeability rate between 0.01 – 1.42 in/hr.

Soils data was obtained from the USDA Web Soil Survey. Site Topography: The site as a whole has a flat uniform slope of between 1-3% primarily moving downhill from northeast to southwest. Site Watershed: Of the 10.32-acre watershed, the area of disturbance will be approximately 4.93-AC.

Transportation

1. There will be no highway dedication associated with this project.
2. There will be no additional driveways or modification to existing driveways.
3. Existing driveway entrances allow for even circulation for existing activity.
4. There is no anticipated increase in vehicular activity or traffic from activity that has occurred on and off over the past 15 years.

Public Services

There is no need for additional public services or change from current activity.

Utility Services
There is no change to existing utilities.

Flood Hazard
All buildings are well above the 100 year flood plain.

Agriculture
This property is not part of an Ag District. The existing activity is well removed from any agriculture or horse rearing activities. There should be no conflict of noise or odors.

Lighting
There are no lighting changes to the property.

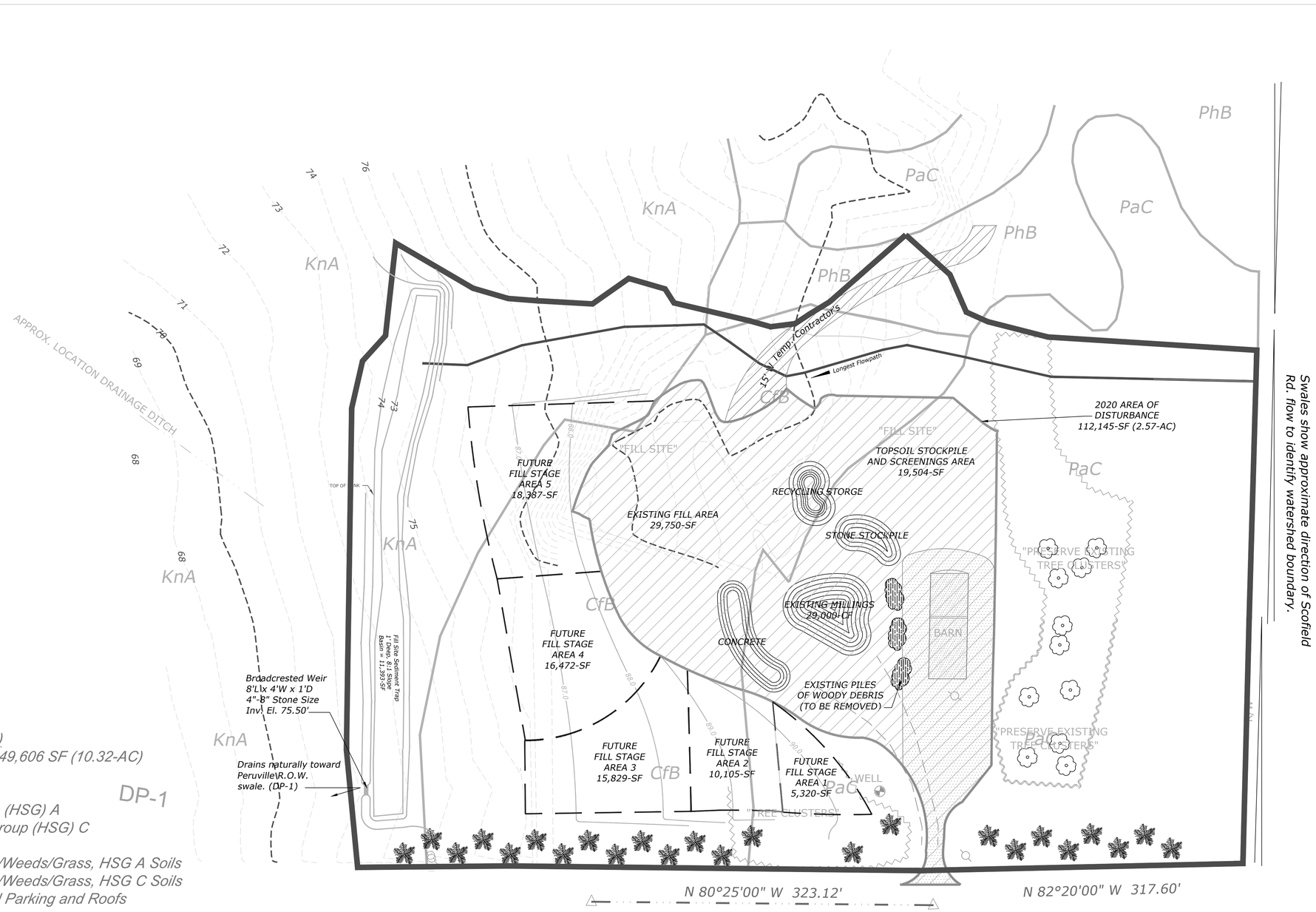
Sewerage
There is no change to existing sewer.

Water System
There is no change to existing water

Stormwater Quality & Quantity
A Full Stormwater Pollution Prevention Plan (SWPPP) was prepared to address any runoff concerns. There is no significant flow for the 1 or 10 years storm. A sedimentation basin captures and treats 100% of the WQv and attenuates runoff to less than existing conditions.

A hydraulic and hydrologic runoff model was prepared to compare 2020 activity with that of planned work in 2026. Recommendations were made to increase the volume of the sedimentation basin so that the project meets the

1, 10, and 100 yr storms since the site had expanded through the years from roughly 2.8-AC to 4.93-AC.



Existing Subcatchment - 1 (ESC-1)
Existing Site Conditions - Area = 449,606 SF (10.32-AC)

Surface Conditions & Soils:
50.0% PaC, Hyrdologic Soil Group (HSG) A
50.0% KnA, CfB Hydrologic Soil Group (HSG) C

Runoff Curve Number = 30, Brush/Weeds/Grass, HSG A Soils
Runoff Curve Number = 65, Brush/Weeds/Grass, HSG C Soils
Runoff Curve Number = 98, Paved Parking and Roofs

Overland Stormwater Runoff - Longest Flowpath = 814 lf +/-
Sheet Flow, Dense Grass - 100 lf @ S = 1.0% avg.
Shallow Concentrated Flow, Grassed Waterway - 714 lf @ S = 3.2% avg.

To Design Point 1 - (DP 1)

ESC-1
10.32-AC

EXISTING SUBCATCHMENT (As of 2020)
REFERENCE HYDROCAD (HYDRAULIC & HYDROLOGIC) MODELING RESULTS PRESENTED WITH THESE PLANS

REVISIONS

No.	Date	SYM.	Description
	6/15/16		Modified ESC-1 and ESC-2 boundary and notes
	01/31/20		New Owner

EXISTING (2020)
HYDRAULIC AND HYDROLOGIC SUBCATCHMENT WORKSHEET

O'TOOLES GRAVEL
(T) LANSING, LANSING, NY

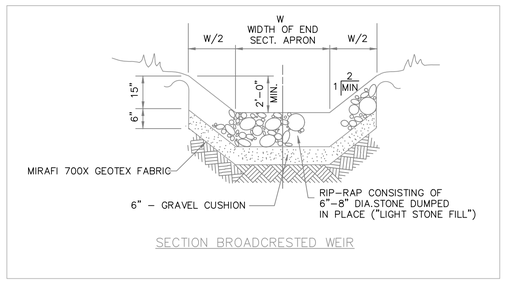
PINNEY GRAVEL SITE EXPANSION
PERUVILLE RD & SCOFIELD RD
(T) LANSING, NY

STATE OF NEW YORK — TIMOTHY C. BUHL — 083176 — LICENSED PROFESSIONAL ENGINEER

TIMOTHY C. BUHL, P.E.
GOODRICH HILL ROAD, LOCKE N.Y. 13092 607 423-1919

DATE: SEPT 18, 2026
SCALE: 1" = 50'
DRAWN: SDG
JOB:
SHEET: S-1

Hydraulic Runoff Modeling Results			
	1 Yr (2.00")	10 Yr (3.41")	100 Yr (5.85")
Existing	0.00 cfs (0.00 af)	0.00 cfs (0.00 af)	6.12 cfs (0.770 af)
Proposed	0.00 cfs (0.00 af)	0.00 cfs (0.00 af)	5.64 cfs (0.946 af)



SECTION BROADCRESTED WEIR

Increase volume of basin by adding an additional foot to volume. Basin floor = 12,395-SF w/8:1 slope

Broadcrested Weir 8'Llx 4'W x 1'D 4"-8" Stone Size Inv. El. 75.50'

Drains naturally toward Peruville R.O.W. swale. (DP-1)

Fill Site Sediment Trap - 2' Deep Basin = 12,395-SF

APPROX. LOCATION DRAINAGE DITCH

S 79°45'35" E 379.71' TOTAL

N 72°59'59" W 584.96'

N 85°18'46" W 235.57'

N 80°25'00" W 323.12'

N 82°20'00" W 317.60'

S 10°34'59" W 470.20'

15'W. Temp. Contractor's

2026 AREA OF DISTURBANCE 214,843-SF (4.93-AC)

Swales show approximate direction of Scofield Rd. flow to identify watershed boundary.

SCOFIELD ROAD

N.Y.S. ROUTE 34B - PERUVILLE ROAD

"ASPHALT MILLINGS"
"LARGE CONCRETE"
"CRUSH GRAVEL"
"SHOT ROCK"
"TOP SOIL"
"MIX"
"#1 STONE"
"SAND"
"BANK RUN"
"GABION"
"BANK RUN"
"#2 STONE"
"NATIVE "CRUSH" LIMESTONE"
"SCREENED GRAVEL"
"TREE CLUSTERS"

TITLE INFORMATION
PINNEY PROPERTIES, LLC
P/O INSTRUMENT NO. 592955-003
TAX MAP PARCEL 30.-1-28.212
TOTAL 26.94 ACRES NET TO
ROAD RIGHT OF WAY

Longest Flowpath

PaC
PhB
KnA
CfB

DP-1

Proposed Subcatchment - 1 (PSC-1)
Proposed Site Conditions - Area = 449,606 SF (10.32-AC)

Surface Conditions & Soils:
50.0% PaC, Hyrdologic Soil Group (HSG) A
50.0% KnA, CfB Hydrologic Soil Group (HSG) C

Runoff Curve Number = 30, Brush/Weeds/Grass, HSG A Soils
Runoff Curve Number = 65, Brush/Weeds/Grass, HSG C Soils
Runoff Curve Number = 98, Paved Parking and Roofs

Overland Stormwater Runoff - Longest Flowpath = 923 lf +/-
Sheet Flow, Dense Grass - 100 lf @ S = 1.0% avg.
Shallow Concentrated Flow, Unpaved - 823 lf @ S = 1.8% avg.

To Design Point 1 - (DP 1)

PSC-1
10.32-AC

PROPOSED SUBCATCHMENT (2026)
REFERENCE HYDROCAD (HYDRAULIC & HYDROLOGIC) MODELING RESULTS PRESENTED WITH THESE PLANS

REVISIONS

No.	Date	SYM.	Description

PROPOSED (2026)
HYDRAULIC AND HYDROLOGIC SUBCATCHMENT WORKSHEET

PINNEY GRAVEL SITE EXPANSION
PERUVILLE RD & SCOFIELD RD
(T) LANSING, NY

O'TOOLES GRAVEL
(T) LANSING, LANSING, NY

STATE OF NEW YORK TIMOTHY C. BUHL 073176 LICENSED PROFESSIONAL ENGINEER

TIMOTHY C. BUHL, P.E.
GOODRICH HILL ROAD, LOCKE N.Y. 13092 607 423-1919

DATE: SEPT 18, 2026
SCALE: 1" = 50'
DRAWN: SDG
JOB:
SHEET: S-2

GENERAL NOTES

NYS STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL, NOVEMBER 2016

1. PHYSICALLY MARK LIMITS OF LAND DISTURBANCE ON THE SITE WITH TAPE, SIGNS, OR ORANGE CONSTRUCTION FENCE, SO THAT WORKERS CAN SEE THE AREAS TO BE PROTECTED.

2. DIVERT OFF-SITE RUNOFF FROM HIGHLY ERODIBLE SOILS AND STEEP SLOPES TO STABLE AREAS.

3. CLEAR ONLY WHAT IS REQUIRED FOR IMMEDIATE CONSTRUCTION ACTIVITY. LARGE PROJECTS SHOULD BE CLEARED AND GRADED AS CONSTRUCTION PROGRESSES. AREAS EXCEEDING TWO ACRES IN SIZE SHOULD NOT BE DISTURBED WITHOUT A SEQUENCING PLAN THAT REQUIRES PRACTICES TO BE INSTALLED AND THE SOIL STABILIZED, AS DISTURBANCE BEYOND THE TWO ACRES CONTINUES. MASS CLEARINGS AND GRADING OF ENTIRE SITE SHOULD BE AVOIDED.

4. RESTABILIZE DISTURBED AREAS AS SOON AS POSSIBLE AFTER CONSTRUCTION IS COMPLETED. ON SITES GREATER THAN TWO ACRES IN SIZE, WAITING UNTIL ALL DISTURBED AREAS ARE READY FOR SEEDING IS UNACCEPTABLE. FOURTEEN DAYS SHALL BE THE MAXIMUM EXPOSURE PERIOD. MAINTENANCE MUST BE PERFORMED AS NECESSARY TO ENSURE CONTINUED STABILIZATION. EXCEPT AS NOTED BELOW, ALL SITES SHALL BE SEEDED AND STABILIZED WITH EROSION CONTROL MATERIALS, SUCH AS STRAW MULCH, JUTE MESH, OR EXCELSIOR, INCLUDING AREAS WHERE CONSTRUCTION HAS BEEN SUSPENDED OR SECTIONS COMPLETED:

A. FOR ACTIVE CONSTRUCTION AREAS SUCH AS BORROW OR STOCKPILE AREAS, ROADWAY IMPROVEMENTS AND AREAS WITHIN 50 FT. OF A BUILDING UNDER CONSTRUCTION, A PERIMETER SEDIMENT CONTROL SYSTEM CONSISTING, FOR EXAMPLE, SILT FENCING, SHALL BE INSTALLED AND MAINTAINED TO CONTAIN SOIL. EXPOSED DISTURBED AREAS ADJACENT TO A CONVEYANCE THAT PROVIDES RAPID OFF-SITE DISCHARGE OF SEDIMENT, SUCH AS A CUT SLOPE AT AN ENTRANCE, SHALL BE COVERED WITH PLASTIC OR, GEOTEXTILE FABRIC TO PREVENT SOIL LOSS UNTIL IT CAN BE STABILIZED. STABILIZED CONSTRUCTION ENTRANCES WILL BE MAINTAINED TO CONTROL VEHICLE TRACKING MATERIAL OFF-SITE.

B. ON THE CUT SIDE OF ROADS, DITCHES SHALL BE STABILIZED IMMEDIATELY WITH ROCK RIP-RAP OR OTHER NON-ERODIBLE LINERS (EG. ROLLED EROSION PRODUCTS), OR WHERE APPROPRIATE, VEGETATIVE MEASURES SUCH AS SOD.

C. PERMANENT SEEDING SHOULD OPTIMALLY BE UNDERTAKEN IN THE SPRING FROM MARCH THROUGH MAY, AND IN LATE SUMMER AND EARLY FALL FROM SEPTEMBER TO OCTOBER 15. DURING THE PEAK SUMMER MONTHS AND IN THE FALL AFTER OCTOBER 15, WHEN SEEDING IS FOUND TO BE IMPRACTICABLE, AN APPROPRIATE TEMPORARY MULCH SHALL BE APPLIED. PERMANENT SEEDING MAY BE UNDERTAKEN DURING THE SUMMER IF PLANS PROVIDE FOR ADEQUATE WATERING. TEMPORARY SEEDING WITH RYE CAN BE UTILIZED THROUGH NOVEMBER.

D. ALL SLOPES STEEPER THAN 3:1 (H:V), OR 33.3%, AS WELL AS PERIMETER DIKES, SEDIMENT BASINS AND TRAPS, AND EMBANKMENTS SHALL, UPON COMPLETION, BE IMMEDIATELY STABILIZED WITH SOD, SEED AND ANCHORED STRAW MULCH, OR OTHER APPROVED STABILIZATION MEASURES. AREAS OUTSIDE OF THE PERIMETER SEDIMENT CONTROL SYSTEM SHALL NOT BE DISTURBED. MAINTENANCE SHALL BE PERFORMED AS NECESSARY TO ENSURE CONTINUED STABILIZATION.

E. TEMPORARY SEDIMENT TRAPPING DEVICES SHALL NOT BE REMOVED UNTIL PERMANENT STABILIZATION IS ESTABLISHED IN ALL CONTIRBUTORY DRAINAGE AREAS. SIMILARLY, STABILIZATION SHALL BE ESTABLISHED PRIOR TO CONVERTING SEDIMENT TRAPS/BASINS INTO PERMANENT (POST-CONSTRUCTION) STORMWATER MANAGEMENT PRACTICES.

5. IF TEMPORARY WORK ROADS OR HAUL ROADS CROSS STREAM CHANNELS, ADEQUATE WATERWAY OPENINGS SHALL BE CONSTRUCTED USING SPANS, CULVERTS, WASHED ROCK BACKFILL, OR OTHER ACCEPTABLE, CLEAN METHODS THAT WILL ENSURE THAT ROAD CONSTRUCTION AND THEIR USE DO NOT RESULT IN TURBIDITY AND SEDIMENT DOWNSTREAM. ALL CROSSING ACTIVITIES AND APPURTENANCES ON STREAMS REGULATED BY ARTICLE 15 OF THE ENVIRONMENTAL CONSERVATION LAW SHALL BE IN COMPLIANCE WITH A PERMIT ISSUED PURSUANT TO ARTICLE 15 OF THE ECL.

6. MAKE SURE THAT ALL CONTRACTORS AND SUB-CONTRACTORS UNDERSTAND THE ESC PLAN AND SIGN THE CERTIFICATION STATEMENT REQUIRED BY NYSDEC GP.

7. DESIGNATE RESPONSIBLITY FOR THE ESC PLAN TO ONE INDIVIDUAL. THIS PERSON SHALL BE NAMED IN THE NOTICE OF INTENT.

8. AN ESC PLAN INSPECTION PROGRAM MEETING THE REQUIREMENTS OF THE NYSDEC GP, IS NECESSARY TO DETERMINE WHEN ESC MEASURES NEED MAINTENANCE OR REPAIR. PAY PARTICULAR ATTENTION TO INSPECTIONS REQUIRED AFTER RAINFALL. THE INSPECTION PROGRAM SHALL ALSO STATE THE COMPLETION OF IDENTIFIED REPAIR AND MAINTENANCE ITEMS.

9. IF CONSTRUCTION ACTIVITIES CONTINUE DURING WINTER, ACCESS POINTS SHOULD BE ENLARGED AND STABILIZED TO PROVIDE FOR SNOW STOCKPILING. IN ADDITION SNOW MANAGEMENT PLAN SHOULD BE PREPARED WITH ADEQUATE STORAGE AND CONTROL OF MELTWATER. A MINIMUM 25 FOOT BUFFER SHALL BE MAINTAINED FROM PERIMETER CONTROLS SUCH AS SILT FENCING. KEEP DRAINAGE STRUCTURES OPEN AND FREE OF SNOW AND ICE DAMS. INSPECTION AND MAINTENANCE ARE NECESSARY TO ENSURE THE FUNCTION OF THESE PRACTICES DURING RUNOFF EVENTS.

LAND GRADING SPECIFICATIONS

1. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC, SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES.

2. ALL FILL TO BE PLACED AND COMPACTED IN LAYERS NOT TO EXCEED 9 INCHES IN THICKNESS.

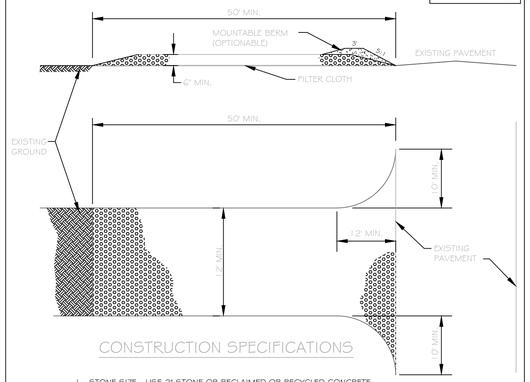
3. FILL MATERIAL SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD, OR OTHER FOREIGN OR OTHER OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS.

4. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD.

5. STOCKPILES, BORROW AREAS AND SPOIL AREAS SHALL BE SHOWN ON THE PLANS AND SHALL BE SUBJECT TO THE PROVISIONS OF THIS STANDARD AND SPECIFICATION.

STABILIZED CONSTRUCTION ENTRANCE

SYMBOL: SCE



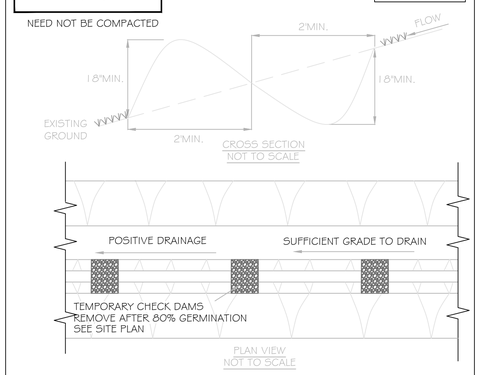
CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 2" STONE OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MIN. LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MIN, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPINGS DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.
10. TEMPORARY CONSTRUCTION ENTRANCES, EXITS AND TEMPORARY ACCESS SHALL BE SUBJECT TO THE APPROVAL OF THE APPROPRIATE AUTHORITIES.

GRASSED/VEGETATED SWALE

SYMBOL: G

NEED NOT BE COMPACTED

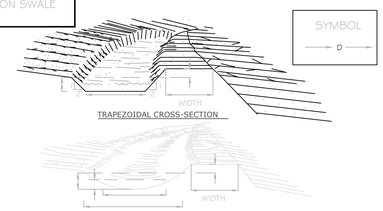


CONSTRUCTION SPECIFICATIONS

1. DRAINAGE AREA SHALL BE LESS THAN 5 ACRES.
2. HEIGHT SHALL BE NO LESS THAN 18-INCHES FROM BOTTOM OF SWALE TO TOP OF DIKE EVENLY DIVIDED BETWEEN DIKE HEIGHT AND SWALE DEPTH.
3. BOTTOM WIDTH OF DIKE SHALL BE NO LESS THAN 2-FEET.
4. WIDTH OF SWALE SHALL BE NO LESS THAN 5-FEET.
5. SWALE SHALL HAVE POSITIVE DRAINAGE TO AN ADEQUATELY STABILIZED OUTLET TO AN UNDISTURBED AREA. MAXIMUM ALLOWABLE GRADE NOT TO EXCEED 8%.
6. THE DISTURBED AREA OF THE DIKE AND SWALE SHALL BE STABILIZED WITHIN 7 DAYS OF INSTALLATION, IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR TEMPORARY SWALES.
7. DIVERTED RUNOFF FROM A DISTURBED OR EXPOSED UPLAND AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE SUCH AS A TRAP, BASIN, OR TO AN AREA PROTECTED BY ANY OF THESE PRACTICES
8. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

DIVERSION SWALE

SYMBOL: D

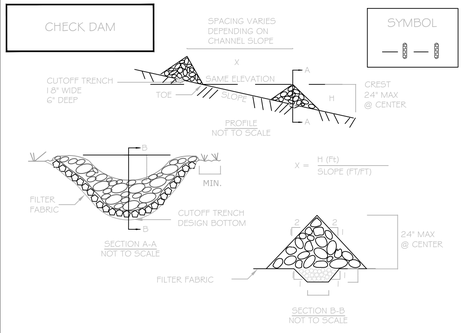


CONSTRUCTION SPECIFICATIONS

1. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE DIVERSION.
2. THE DIVERSION SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN, AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
3. FILLS SHALL BE COMPACTED AS NEEDED TO PREVENT UNEQUAL SETTLEMENT THAT WOULD CAUSE DAMAGE IN THE COMPLETE DIVERSION.
4. ALL EARTH REMOVED AND NOT NEEDED IN CONSTRUCTION SHALL BE SPREAD OR DISPOSED OF SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE DIVERSION.
5. STABILIZATION SHALL BE DONE ACCORDING TO THE APPROPRIATE STANDARD AND SPECIFICATIONS FOR VEGETATIVE PRACTICES.
   A. FOR DESIGN VELOCITIES OF LESS THAN 3.5 FT. PER. SEC., SEEDING AND MULCHING MAY BE USED FOR THE ESTABLISHMENT OF THE VEGETATION. IT IS RECOMMENDED THAT, WHEN CONDITIONS PERMIT, TEMPORARY DIVERSIONS OR OTHER MEANS SHOULD BE USED TO PREVENT WATER FROM ENTERING THE DIVERSION DURING THE ESTABLISHMENT OF THE VEGETATION.
   B. FOR DESIGN VELOCITIES OF MORE THAN 3.5 FT. PER. SEC., THE DIVERSION SHALL BE STABILIZED WITH SOD, WITH SEEDING PROTECTED BY JUTE OR EXCELSIOR MATTING OR WITH SEEDING AND MULCHING INCLUDING TEMPORARY DIVERSION OF THE WATER UNTIL THE VEGETATION IS ESTABLISHED.

CHECK DAM

SYMBOL: — S —



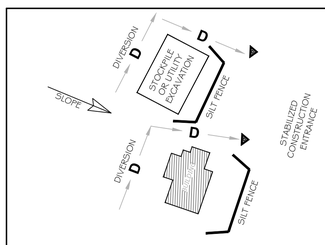
CONSTRUCTION SPECIFICATIONS

1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES AND LOCATIONS SHOWN IN THE PLAN.
2. SET SPACING OF CHECK DAMS TO ASSUME THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.

MAXIMUM DRAINAGE AREA 2 ACRES.

TOP SOILING SPECIFICATIONS

1. PRESERVE EXISTING TOPSOIL IN PLACE WHERE POSSIBLE, THEREBY REDUCING THE NEED FOR ADDED TOPSOIL.
2. AS NEEDED, INSTALL EROSION CONTROL PRACTICES SUCH AS DIVERSIONS, CHANNELS, SEDIMENT TRAPS, AND STABILIZING MEASURES, OR MAINTAIN IF ALREADY INSTALLED.
3. COMPLETE ROUGH GRADING AND FINAL GRADE, ALLOWING FOR DEPTH OF TOPSOIL TO BE ADDED.
4. SCARIFY ALL COMPACT, SLOWLY PERMEABLE, MEDIUM AND FINE TEXTURED SUBSOIL AREAS. SCARIFY AT APPROXIMATELY RIGHT ANGLES TO THE SLOPE DIRECTION IN SOIL AREAS THAT ARE STEEPER THAN 5%. AREAS THAT HAVE BEEN OVERLY COMPACTED SHALL BE DECOMPACTED TO A MINIMUM DEPTH OF 12-INCHES WITH A DEEP RIPPER OR CHISEL PLOW PRIOR TO TOPSOILING.
5. REMOVE REFUSE, WOODY PLANT PARTS, STONES OVER 3-INCHES IN DIAMETER, AND OTHER LITTER.
6. TOPSOIL SHALL HAVE AT LEAST 6% BY WEIGHT OF FINE TEXTURED STABLE ORGANIC MATERIAL, AND NO GREATER THAN 20%. MUCK SOIL SHALL NOT BE CONSIDERED TOPSOIL.
7. TOPSOIL SHALL HAVE NOT LESS THAN 20% FINE TEXTURED MATERIAL (PASSING THE NO. 200 SIEVE) AND NOT MORE THAN 15% CLAY.
8. TOPSOIL TREATED WITH SOIL STERILANTS OR HERBICIDES SHALL BE SO IDENTIFIED TO THE PURCHASER.
9. TOPSOIL SHALL BE RELATIVELY FREE OF STONES OVER 1 1/2-INCHES IN DIAMETER, TRASH, NOXIOUS WEEDS SUCH AS NUT SEDGE AND QUACKGRASS, AND WILL HAVE LESS THAN 10% GRAVEL.
10. TOPSOIL CONTAINING SOLUBLE SALTS GREATER THAN 500 PARTS PER MILLION SHALL NOT BE USED.
11. TOPSOIL SHALL BE DISTRIBUTED TO A UNIFORM DEPTH OVER THE AREA. IT SHALL NOT BE PLACED WHEN IT IS PARTIALLY FROZEN, MUDDY, OR ON FROZEN SLOPES OR OVER ICE, SNOW, OR STANDING WATER PUDDLES.
12. TOPSOIL PLACED AND GRADED ON SLOPES STEEPER THAN 5% SHALL BE PROMPTLY FERTILIZED, SEEDED, MULCHED, AND STABILIZED BY "TRACKING" WITH SUITABLE EQUIPMENT.



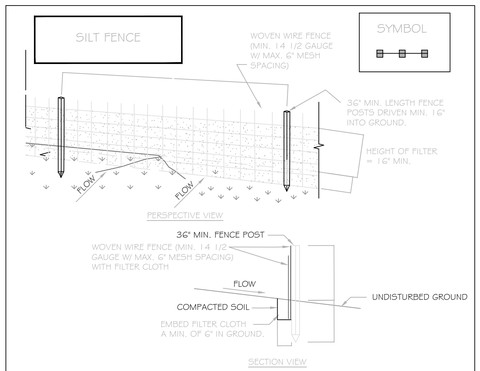
SEDIMENT & EROSION CONTROL MEASURES
TYPICAL
N.T.S.

MATERIAL STOCKPILING

1. FOR RESIDENTIAL CONSTRUCTION, ONE SPECIFIC AREA ON EACH LOT SHALL BE DESIGNATED FOR TEMPORARY STOCKPILING OF TOPSOIL AND ALL OTHER CONSTRUCTION MATERIALS CONTAINING FINES THAT CAN BE MOVED BY RUNOFF. THIS AREA SHALL BE AS SMALL AS PRACTICABLE
2. STOCK PILES WILL HAVE DOWN HILL SIDE PERIMETER SILT FENCING PROTECTION. REFERENCE SILT FENCE DETAILS THESE PLANS.
3. STOCK PILES WILL BE SEEDED AND MULCHED IF ANTICPATED TO BE LEFT IN PLACE 14-DAYS OR MORE. REFERENCE DETAIL SHEET NOTES AND SPECIFICATIONS THIS PLANT SET AND STORMWATER POLLUTION PREVENTION PLAN (SWPPP) ACCOMPANYING THIS PLAN SET.
4. SILT FENCE AND OTHER TEMPORARY CONTROL MEASURES SHALL BE IN PLACE BEFORE STOCKPILING OF MATERIALS.

SILT FENCE

SYMBOL



CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FILTER CLOTH TO BE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 12 1/2 GAUGE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

CONCRETE WASHOUT

CONSTRUCTION SPECIFICATIONS

DESIGN CRITERIA

1. THE WASHOUT FACILITY SHOULD BE SIZED TO CONTAIN SOLIDS, WASHWATER AND RAINFALL AND SIZED TO ALLOW FOR THE EVAPORATION OF THE WASHWATER AND RAINFALL.
2. WASHWATER SHALL BE ESTIMATED AT 7 GALLONS PER CHUTE AND 50 GALLONS PER HOPPER OF CONCRETE PUMP TRUCK AND/OR DISCHARGING DRUM.
3. THE MINIMUM SIZE SHALL BE 8' X 8' AT THE BOTTOM AND 2' DEEP. IF EXCAVATED, THE SIDE SLOPES SHALL BNE 2 HORIZONTAL : 1 VERTICAL.
4. LOCATE THE FACILITY A MINIMUM OF 100' FROM DRAINAGE SWALES, STORM DRAIN INLETS, WETALANDS, STREAMS AND OTHER SURFACE WATERS. PREVENT SURFACE WATER FROM ENTERING THE STRUCTURE EXCEPT FOR THE ACCESS ROAD.
5. PROVIDE APPROPRIATE ACCESS WITH A GRAVEL ACCESS ROAD SLOPED DOWN TO STRUCTURE.
6. SIGNS SHALL BE PLACED TO DIRECT DRIVERS TO THE FACILITY AFTER THEIR LOAD IS DISCHARGED.

THE LINER SHALL BE PLASTIC SHEETING WITH A MIN. THICKNESS OF 10 MILS WITH NO HOLES OR TEARS. ANCHOR THE LINER TO THE TOP OF THE PIT WITH AN EARTHEN BERM, SAND BAGS, STONE, ETC.

MAINTENANCE

1. INSPECT ALL FACILITIES DAILY. REPAIR ALL DAMAGED OR LEAKING WASHOUT STATIONS IMMEDIATELY.
2. PUMP OUT ANY ACCUMULATED RAINWATER OVER HARDENED CONCRETE.
3. ACCUMULATED HARDENED MATERIAL SHALL BE REMOVED WHEN 75% OF THE STORAGE CAPACITY OF THE STRUCTURE IS FILLED.
4. DISPOSE OF HARDENED MATERIAL OFF-SITE IN A C/D LANDFILL. ON-SITE DISPOSAL IS ACCEPTABLE IF IT HAS BEEN APPORVED AND ACCEPTED AS PART OF THE SWPPP.
5. REPLACE THE PLASTIC LINER WITH EACH CLEANING OF WASHOUT FACILITY.
6. INSPECT THE PROJECT SITE FREQUENTLY TO ENSURE THAT NO CONCRETE DISCHARGES ARE TAKING PLACE IN NON-DESIGNATED AREAS.

EXCERPTS FROM NYS STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL
NOVEMBER 2016

REVISIONS

No.	Date	SYM.	Description

EROSION AND SEDIMENT CONTROL DETAILS

O'TOOLES GRAVEL
(T) LANSING, LANSING, NY

PINNEY GRAVEL SITE EXPANSION
PERUVILLE RD & SCOFIELD RD
(T) LANSING, NY

STATE OF NEW YORK — TIMOTHY C. BUHL — 075316 — LICENSED PROFESSIONAL ENGINEER

TIMOTHY C. BUHL, P.E.
GOODRICH HILL ROAD, LOCKE N.Y. 13092 607 423-1919

DATE: SEPT 18, 2026
SCALE: N.T.S.
DRAWN: SDG
JOB:
SHEET: S-3

Storm Water Pollution Prevention Plan
for
O'tooles Contractor Yard

Town of Lansing
Lansing, New York

September 2026

Prepared by:

Timothy C. Buhl, PE
NYSPE#: 053134

For:

Scott Pinney
70 Oak Hill
Moravia, NY 13118

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY 1

2.0 INTRODUCTION 5

3.0 PROJECT DESCRIPTION 8

4.0 RUNOFF REDUCTION VOLUME 8

5.0 STORM WATER POLLUTION PREVENTION MEASURES AND CONTROLS 10

6.0 LOCAL PLANS 13

7.0 STATE HISTORIC PRESERVATION 14

8.0 ENVIRONMENTAL MAPPING 15

9.0 INSPECTIONS AND SYSTEM MAINTENANCE 15

10.0 POST CONSTRUCTION INSPECTION, OPERATION AND MAINTENANCE..... 17

ATTACHMENTS

Attachment A: Notice of Intent, (NOI) and MS4 Acceptance Form (if applicable)

Attachment B: Notice of Termination, (NOT)

Attachment C: Certification Forms

Attachment D: State Historic Preservation Mapping

Attachment E: Environmental Mapping

Attachment F: Inspection Report (Sample Form)

Attachment G: Record of Stabilization and Construction Activity Dates

Attachment H: Vegetative and Structural Measures for Erosion and Sediment Control *New York State Standards & Specifications for Erosion and Sediment Control*

Attachment I: NYSDEC Stormwater Controls Construction Checklist

Attachment J: NYSDEC Controls Operation & Maintenance Check List

Attachment K: Stormwater Management Summary

1.0 EXECUTIVE SUMMARY

The engineer, owner and all contractors involved with construction activity that disturb site soil or who implement pollutant control measures identified in the Storm Water Pollution Prevention Plan (SWPPP) are responsible for complying with the requirements set forth in the New York State Department of Environmental Conservations SPDES General Permit from Construction Activity Permit No. GP-0-25-001 and any local and/or state governing agencies having jurisdiction with regards to erosion and sediment control. The requirements of the SPDES Permit are as follows:

A. **Owner:**

Scott Pinney
70 Oak Hill Road
Moravia, NY 13118
(607) 227-9698

Project Site:

Tax Parcel #30.-1-28.212
Peruville and Scofield Roads
Lansing, NY 14882

This contractor yard is subject to the requirements of a regulated, traditional land use control MS4. Therefore, the following requirements must be met before continued construction activity is authorized to discharge stormwater.

1. An owner or operator that is subject to the requirements of a regulated, traditional land use control MS4, must have its SWPPP reviewed and accepted by the regulated MS4 prior to submitting the NOI to the Department. The owner or operator shall then have the "MS4 SWPPP Acceptance Form," as provided in Attachment A, authorized by the MS4 and submitted to the Department along with the NOI for approval.

2. Complete the Notice of Intent (NOI) provided in Attachment A and forward to the recipients following this section. Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for construction activities with a SWPPP that has been preopared in conformance with the design criteria in the technical standard referenced in Part III.B.1. of the SPDES General Permit and the performance cirteria in the technical standard referenced in Parts III.B., 2 or 3 of the SPDES general permit, for construction activities that require post-construction stormwater management practices pursuant to Part III.C. of the SPDES General Permit; or

3. Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for construction activities with a SWPPP that has not been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for construction activities that require post-construction stormwater management practices pursuant to Part III.C., the performance criteria in the technical standard referenced in Parts III.B., 2 or 3, or;

4. Ten (10) business days from the date the Department receives a complete paper version of the NOI for construction activities with a SWPPP that has not been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for construction activities that require post-construction stormwater.

NYS Department of Environmental Conservation (DEC)
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

Town of Lansing Town Hall
29 Auburn Road
Lansing, New York 14882
(607) 533-4142

All notifications shall be sent via certified mail with return receipt. Copies of mailing receipts shall be kept on record at the project site with the SWPPP and shall be considered part of the contract documents.

The Town's representative shall be included on all correspondence involving changes to the operation or SWPPP. Copies of the SWPPP must be provided to the Town of Lansing once all signatures and attachments are complete.

B. A copy of the General Construction Permit (GP-0-25-001), Notice of Intent (NOI), NOI acknowledgement letter received by the DEC, and MS4 Acceptance Form (if applicable), shall be posted in a prominent place for public viewing at the project site.

C. A complete copy of the SWPPP, NOI, NOI Acknowledgement letter, MS4 Acceptance form (if applicable), including copies of all inspection reports, plan revisions, etc., must be retained at the project site at all times during working hours and kept as part of the permanent project records for a duration of no less than five (5) years following submission of the Notice of Termination (NOT).

D. The site development contractors must provide names and addresses of all subcontractors working on the project who will be involved with the major construction activities that will result in soil disturbance. The Owner shall ensure that each contracting firm identifies one trained individual who will be responsible for implementation of the SWPPP. The owner shall also ensure that at least one trained individual is on site daily when soil disturbance activities are being performed. This information must be retained as part of the SWPPP.

E. The site development contractor(s) and all subcontractors involved with the major work yard activities that disturb site soil must sign a copy of the appropriate certification statement included in Attachment C along with the identity of the appropriate trained individual as described in paragraph D of this section.

F. Regular inspections must be made to determine effectiveness of the SWPPP. It would be modified as needed to prevent pollutants from discharging from the site. The inspector must be a person familiar with the site, the nature of the major construction activities, and qualified to evaluate both overall system performance and individual component performance. Additionally, the inspector must either be someone empowered to implement modifications to the SWPPP and the pollutant control devices, if needed, in order to increase effectiveness to an acceptable level, or someone with the authority to cause such events to happen.

G. This SWPPP must be updated each time there is a significant modification to the pollutant prevention system or a change of contractors working on the project who may disturb site soil. The site development contractor must notify the governing agency(s) as soon as these modifications are implemented.

H. Discharge of oil or other hazardous substances into the storm water is subject to reporting and cleanup requirements. Refer to Part I.B.1.d of the SPDES General Permit for additional information. Copies of the SPDES General Permit and the Notice of Intent Forms may be found on-line.

I. **Notice of Termination (NOT)** - Once the site reaches final stabilization upon completion or closure of the operation, Scott Pinney, as Owner, may terminate coverage of SPDES permit coverage by submitting a Notice of Termination, Form (included in Attachment B), when one or more of the following conditions are met:

1. Total Project Completion - All construction activity identified in the SWPPP has been completed; and all disturbance have achieved final

stabilization and all temporary, structural erosion and sediment control measures have been removed, and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational.

2. Planned shutdown with partial project completion – All soil disturbance activities have ceased; and all areas disturbed as of the project shut down date have achieved final stabilization, and all temporary, structural erosion and sediment control measures have been removed, and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational.

3. A new owner or operator has obtained coverage under the General SPDES Permit in accordance with Part II.E.

4. The owner or operator obtains coverage under an alternative SPDES General Permit or individual SPDES permit.

For construction activities meeting 1.0.I above, the owner or operator shall have a qualified inspector perform a final site inspection prior to submitting the NOT. The qualified inspector shall, by signing the "final stabilization" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all requirements of the SPDES General Permit have been met. Further, construction activities subject to the requirements of a regulated, transitional land use control MS4, must have the MS4 sign the "MS4 acceptance" statement on the NOT, indicating that the project has been constructed in accordance SPDES General Permit requirements.

Lastly, for construction activities that require post-construction stormwater management practices, the owner or operator must, prior to submitting the NOT, ensure one of the following:

1. The post-construction stormwater management practices and any right of ways needed to maintain such practices have been deeded to the municipality in which the practice is located.

2. An executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practices.

3. If the post-constructed management practices are privately owned, the owner or operator must have a mechanism in place that requires operation and maintenance of the practices in accordance with the

operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.

4. If the post-constructed practices are owned by a public or private institution, government agency or authority, or public utility, the owner or operator has policy and procedure in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

J. This SWPPP intends to control water-borne and liquid pollutant discharges by some combination of interception, filtration, and containment. The general contractor and subcontractors implementing this SWPPP must remain alert to the need to periodically refine and update the SWPPP in order to accomplish the intended goals.

K. This SWPPP must be amended as necessary during the course of operations in order to keep it current with the pollutant control measures utilized at the site. Amending the SWPPP does not mean that it has to be reprinted. It is acceptable to add addenda, sketches, new sections, and/or revised drawings.

L. A record of the dates when major grading activities occur, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization measures are initiated must be maintained until the NOT is filed. A log for keeping such records is included in Attachment G. A different form for the log may be substituted if it is found to be more useful.

2.0 INTRODUCTION

This SWPPP has been prepared for major activities associated with the ongoing operation of a contractor work yard in the Town of Lansing. The production originally started in 2011 which was allowed use by right through the Town. In 2016, a full site plan review process was conducted for a conceptual apartment complex located downslope from the facility which included an approved SWPPP. As part of the storm plan, the work yard was allowed continued use by right but several restrictions were placed on the property limiting the size and scope of the work zone while also requiring the installation of a stormwater management sump practice to provide runoff mitigation and attenuation. Because the apartment complex was never realized, the 2016 restrictions became null and void with the exception that the operation would now be required to carry its SWPPP.

The O'tooles Contractor Work Yard is located in the Town of Lansing, New York at Tax Parcel #30.-1-28.212 at the intersection of Peruville and Scofield Roads. The property sits within a drainage area of approximately 10.32-AC of which, the cumulative on-going land disturbance is approximately 4.93 acres. The entire site

is assumed to be impervious given the fact that it is hard packed dirt due to typical work yard activity. The original 2016 project called for a 1' sump to capture and treat on-going runoff from the operation. The modified plan adds an additional 1' of depth to the practice to meet attenuation requirements but the footprint largely remains the same.

Reference the Project Plans for the permanent stormwater management facilities planned. This SWPPP includes the elements necessary to comply with the SPDES General Permit for Stormwater Discharges GP-0-25-001 administered by the New York State Department of Environmental Protection, the U.S. Environmental Protection Agency (EPA) under the National Pollutant Discharge Elimination System (NPDES) program and all local governing agency requirements. This SWPPP must be implemented at the start of construction.

Construction phase pollutant sources anticipated at the site are disturbed (bare) soil, vehicle fuels and lubricants, chemicals associated with various stockpiled materials (asphalt), and general debris. Without adequate control there is the potential for each type of pollutant to be transported by storm water.

Aside from the commercial work site, an asphalt driveway apron, landscape screening, storage bunkers, and a hoop building are on the property. There are no utilities including water, sewer, or electric. Permanent stormwater management facilities are in place including one (1) dry sump. The pond will provide any water quality volume treatment and satisfy requirements for quantity attenuation necessary to control runoff to less than pre-developed conditions as required by the NYSDEC General SPDES Permit. Please see Attachment K for this information.

A. Purpose

The major goal of pollution prevention efforts during operations is to control the migration of soil and pollutants that originate on-site and prevent them from impacting surface waters and the environment. The purpose of this SWPPP is to provide guidelines for achieving that goal. A successful pollution prevention program also relies upon careful inspection and adjustments during the construction process in order to enhance its effectiveness.

B. Scope

This SWPPP must be implemented at all times while operations and soil disturbances are active on-site. It primarily addresses the impact of storm rainfall and runoff in areas of the ground surface disturbed during the work yard. This SWPPP will terminate when disturbed areas are stabilized, construction type activities covered herein have ceased, and a completed

Notice of Termination (NOT) is mailed to the governing agency requiring the NOT. See Section 1.0.I for specific NOT eligibility requirements.

Particular forms are included which are necessary for implementing the SWPPP.

The SPDES General Permit for Storm Water Discharges from Construction Activities prohibits most non-storm water discharges during the construction phase. Allowable non-storm water discharges that could occur during construction on this project, which would therefore be covered by the General Permit, include:

1. Discharges from fire fighting activities;

2. Fire hydrant flushing;

3. Waters to which cleansers or other components have not been added that are used to wash vehicles or control dust;

4. Routine external building washdown which does not use detergents;

5. Irrigation drainage;

6. Uncontaminated discharges from construction site de-watering operations;

7. External building wash down which does not use detergents;

8. Runoff from pavement wash down where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents have not been used;

9. Springs and uncontaminated groundwater; and

10. Foundation or footing drains where flows are not contaminated with process materials such as solvents.

The techniques described in this SWPPP focus on providing control of pollutant discharges with practical approaches that utilize readily available expertise, materials, and equipment.

The Owner/Developer referred to in this SWPPP is Scott Pinney who will be responsible for full development and build-out of the subject parcel.

3.0 PROJECT DESCRIPTION

Described below are the major construction activities that are subject to this SWPPP. The Owner shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the DEC, or, in areas under the jurisdiction of a regulated MS4, authorization by that municipality. They are presented in the order (or sequence) they are expected to begin, but each activity will not necessarily be completed before the next begins. Install erosion and sediment control measures as shown on Drainage, Sediment and Erosion Control Plans, down slope from construction activities that disturb site soil before disturbance of soil;

CONTRACTOR YARD – REQUIRED FOR ON-GOING OPERATIONS

A. Increase volume of existing dry pond (sump) by establishing another foot in depth with side slope of 4:1 and as shown on plan sheets S-1 and S-2.

Note: Sediment barriers such as silt fencing, proper seeding and mulching will be utilized as required to bind the down slope side of the pond and soil stockpiles shall be established as needed;

B. Remove any accumulated sedimentation from the pond as accumulations increase by at least 6"

4.0 RUNOFF REDUCTION VOLUME

This project follows guidelines set forth by the DEC for runoff reduction. Chapter 3 of the New York State Stormwater Management Design Manual requires a five step planning process to document compliance with required processes. However, as this is a contractor yard with operations that have already been in place for the past 15 years, much of this section is exempt from consideration.

Step 1 – Protect natural resources and utilize site hydrology

This planning step is designed to preserve area natural resources by protecting areas, avoiding sensitive locations, and minimizing grading and soil disturbances. There were no erodible soils, critical areas, wetlands, riparian buffer areas, or locally listed protected areas.

Another component of the planning process is an evaluation of all green infrastructure practices that might be acceptable for runoff reduction on site. This project will utilize filter strips.

The selection process is described as follows:

- Conservation of natural areas – Pre-development hydrology and water quality characteristics of undisturbed natural areas remains unaltered.
- Sheetflow to riparian buffers
- Vegetated open swales – Site runoff will be collected and directed to specific treatment practices using the site's existing slope to direct sheet flow.
- Tree planting/tree box
- Disconnection of rooftop runoff
- Stream daylighting for redevelopment projects
- Bioswale
- Green roof
- Stormwater planters
- Rain cistern
- Porous pavement

Step 2 – Determine Overall Water Quality Treatment Volume (WQv)

See Attachment K for the calculation summary.

Step 3 – Runoff reduction by applying green infrastructure technology and standard SMPs.

Runoff reduction was calculated as required. Flow is directed into a dry pond sump which acts as an infiltration practice. 100% of the site water quality volume is captured. As shown in Attachment K, minimum requirements for runoff reduction volume were met.

Step 4 – Provide standard practices to address remaining water quality volume

A dry pond captures 100% of the water quality volume.

Reference Attachment K for the overall treatment calculations.

Step 5 – Apply volume and peak rate control practices if still required

Peak rate control is met using one dry pond. The pond reduces runoff from the operation to less than pre-developed conditions. See modeling report output for further information.

5.0 STORM WATER POLLUTION PREVENTION MEASURES AND CONTROLS

Various erosion and sediment control measures have been incorporated into the design of the project, Reference Stormwater, Sediment and Erosion Control Plans accompanying this SWPPP. These measures will be implemented during operations to minimize soil erosion and to protect the character and integrity of downstream receiving waters. A single dry pond (sump) is used to control the quality and quantity of storm water runoff from the work yard site.

The site owner shall take all appropriate precautions to prevent soil erosion and discharge of sediment and other pollutants to receiving water bodies and wetlands. Specific measures are outlined in this plan. In general, disturbance areas shall be limited to the smallest practical areas at any given time, and the areas are to be reseeded as soon as possible. During construction the measures outlined in this document and shown on the plans are to be installed as described. Additional measures may be warranted or required by site and climatic conditions.

Specific erosion control measures, designed to minimize soil loss, and sediment control measures devised to retain eroded soil and prevent it from reaching water bodies or adjoining properties have been developed in accordance with the New *York State Stormwater Management Design Manual*, 2015, NYSDEC and *New York Standards & Specifications for Erosion and Sedimentation Control*, November 2016. Reference Attachment H for copy of *Vegetative and Structural, Measures for Erosion and Sediment Control, New York State Standards & Specifications for Erosion and Sedimentation Control*. (Vegetative; November 2016, Structural; August 2005)

A variety of storm water pollutant controls are recommended for this project. Some controls are intended to function temporarily and will be used as needed for pollutant control during the operations. These include sediment and erosion control measures as shown on the plans and permanent stormwater facilities including, a dry pond. For all disturbed areas, permanent stabilization will be accomplished by covering the disturbed soil with vegetation, pavement, or commercial structures.

A. Erosion and Sediment Controls

1. Soil Stabilization – The purpose of soil stabilization is to prevent soil from leaving the site. In the natural condition, soil is stabilized by

native vegetation. The primary technique to be used under this project for stabilizing site soil will be to provide a protective cover of turf grass, pavement, or building structure.

a. Temporary Seeding - Where land disturbance is necessary, temporary seeding with fast-germinating temporary seed and a protection of mulch must be used on areas which will be exposed for more than 14 days.

b. Permanent Seeding – All areas at final grade must be seeded and mulched within 7 days after completion of the major activity.

c. Structural Controls – The storm water will be managed on site utilizing proposed site grading and a dry. Their design is shown on the Project Site Stormwater Plan S-1 and S-2.

Final site stabilization is achieved when there is a uniform 80 percent density of permanent vegetation on all previously disturbed soil surfaces, exclusive of areas that have been paved.

B. Other Pollutant Controls

Control of sediments has been described previously. Other aspects of this SWPPP are listed below:

1. Dust Control – Construction traffic must enter and exit the site at the stabilized work yard/driveway entrance. The purpose is to trap dust and mud that would otherwise be carried off-site by construction traffic.

   Dust control must be provided by the owner, and in compliance with applicable local and state dust control regulations. After operations are complete, the site will be stabilized (as described elsewhere), which will reduce the potential for dust generation.

2. Solid Waste Disposal – No solid materials are allowed to be discharged from the site with storm water. All solid waste, including disposable materials incidental to the major work yard activities, must be collected and placed in containers. The containers will be emptied periodically by a contract trash disposal service and hauled away from the site.

   Substances that have the potential for polluting surface and/or groundwater must be controlled by whatever means necessary in order

to ensure that they do not discharge from the site. As an example, special care must be exercised during equipment fueling and servicing operations. If a spill occurs, it must be contained and disposed so that it will not flow from the site or enter groundwater, even if this requires removal, treatment, and disposal of soil. In this regard, potentially polluting substances should be handled in a manner consistent with the impact they represent.

3. Sanitary Facilities – There are no sanitary facilities on-site.

4. Water Source – There are no water sources provided on-site.

5. Long-Term Pollutant Controls – Storm water pollutant control measures installed during construction that will also provide benefits during operations, include one (1) dry pond. Those sediment barriers, such as check dams (if required), that do not interfere with normal operations and appear to provide long-term benefits can be left in place after once operations are completed. All silt fencing must be removed once the site has received proper stabilization.

C. Construction Phase "Best Management Practices"

During the construction phase, the general contractor will implement the following measures:

1. Permanent traffic corridors shall be established and "routes of convenience" shall be avoided;

2. Preservation of existing vegetation as much as possible. Following the completion or closure of work yard operations and activities in any portion of the site permanent vegetation shall be established an all exposed soils;

3. Site preparation activities shall be planned to minimize the area and duration of soil disruption;

4. Minimizing soil erosion and sedimentation by stabilization of disturbed areas and by removing sediment from site discharges;

5. Material resulting from any clearing and grubbing operation will be stockpiled up slope from adequate sedimentation controls.

6. The owner will designate areas for equipment, maintenance, and stockpiling. The areas will be protected by a temporary perimeter berm.

7. Use of detergents for large scale washing is prohibited (i.e., vehicles, buildings, pavement surfaces, etc.)

8. Chemicals, paints, solvents, fertilizers, and other toxic material must be stored in waterproof containers. Except during application, the contents must be kept in trucks or within storage facilities. Runoff containing such material must be collected, removed from the site, treated and disposed at an approved solid waste or chemical disposal facility.

6.0 LOCAL PLANS

In addition to this SWPPP, work yard activities associated with this project must comply with any guidelines set forth by local and state regulatory agencies. Reference Project Plans and the Stormwater Management Design Summary (Attachment K) prepared to meet Local and State requirements for post-development stormwater quantity & quality.

7.0 NYSHPO

A search was conducted on the New York State Parks, Recreation and Historic Preservation Office website to identify whether the subject parcel is listed under natural or historic places registration, or if the area resides within an archaeologically sensitive location. Attachment D, includes a "grey map" indicating that the property is not within a sensitive area.

8.0 ENVIRONMENTAL MAPPING

A search was conducted on the Tompkins County, New York State, and Federal Inventory websites to identify any areas with known wetlands, protected plants or animal species, or any significant environmental concerns that could be impacted by this project. No issues or concerns were noted. Please see Attachment E for screen prints of this review.

9.0 INSPECTIONS AND SYSTEM MAINTENANCE

Between the time this SWPPP is implemented and final site stabilization is achieved, all disturbed areas and pollutant controls must be inspected at least once every seven calendar days by a licensed professional or Qualified Inspector, as identified by the SPDES General Permit. The purpose of site inspections is to

assess performance of pollutant controls. The inspections will be conducted by an independent third party Qualified Inspector to be provided by the Owner using a form similar to the example provided in Attachment F. The Owner/Operator will also be required to arrange for a designated Trained Contractor (as defined by the SPDES General Permit) to be responsible for the management of this SWPPP during construction, while on-site. Based on these inspections, the Trained Contractor will decide whether it is necessary to modify this SWPPP, add or relocate sediment barriers, or whatever else may be needed in order to prevent pollutants from leaving the site via storm water runoff. The Trained Contractor has the duty to cause pollutant control measures to be repaired, modified, maintained, supplemented, or whatever else is necessary in order to achieve effective pollutant control.

Examples of particular items to evaluate during site inspections are listed below. This list is not intended to be comprehensive. During each inspection the inspector must evaluate overall pollutant control system performance as well as particular details of individual system components. Additional factors should be considered as appropriate to the circumstances.

A. Construction of stormwater facilities. Insure facilities are constructed substantially in accordance with the plans. (Also, Reference Attachment I for sample inspection checklist - NYSDEC Stormwater Construction Checklist):

B. Locations where vehicles enter and exit the site must be inspected for evidence of off-site sediment tracking. A stabilized construction entrance will be monitored where vehicles enter and exit. This entrance will be maintained or supplemented as necessary to prevent sediment from leaving the site on vehicles.

C. Sediment barriers must be inspected and, if necessary, they must be enlarged or cleaned in order to provide additional capacity. All material from behind sediment barriers will be stockpiled on the up slope side. Additional sediment barriers must be constructed as needed.

D. Inspections will evaluate disturbed areas and areas used for storing materials that are exposed to rainfall for evidence of, or the potential for, pollutants entering the drainage system. If necessary, the materials must be covered or original covers must be repaired or supplemented. Also, protective berms must be constructed, if needed, in order to contain runoff from material storage areas.

E. Grassed areas will be inspected to confirm that a healthy stand of grass is maintained. The site has achieved final stabilization once all areas are covered with building foundation or pavement, or have a stand of grass with

at least 80 percent density. The density of 80 percent or greater must be maintained to be considered as stabilized. Areas must be watered, fertilized, and reseeded as needed to achieve this goal.

F. All discharge points must be inspected to determine whether erosion control measures are effective in preventing significant impacts to receiving waters.

Based on inspection results, any modification necessary to increase effectiveness of this SWPPP to an acceptable level must be made within seven calendar days of the inspection. The inspection reports must be completed entirely and additional remarks should be included if needed to fully describe a situation. An important aspect of the inspection report is the description of additional measures that need to be taken to enhance plan effectiveness. The inspection report must identify whether the site was in compliance with the SWPPP at the time of inspection and specifically identify all incidents of non-compliance.

Inspection reports must be kept on file by the Trained Contractor as an integral part of this SWPPP for at least five years from the date of completion and filing of NOT for the project.

Ultimately, it is the responsibility of the site Trained Contractor to assure the adequacy of site pollutant discharge controls. Actual physical site conditions or contractor practices could make it necessary to install more structural controls than are shown on the plans. (For example, localized concentrations of runoff could make it necessary to install additional sediment barriers.) Assessing the need for additional controls and implementing them or adjusting existing controls will be a continuing aspect of this SWPPP until the site achieves final stabilization.

10.0 POST CONSTRUCTION INSPECTION, OPERATION AND MAINTENANCE PLAN

A. Maintenance Responsibility

Short and Long term maintenance responsibilities for the dry pond shall lie with the owner, Scott Pinney.

1. Copies of the SWPPP and details about the dry pond practice shall also be forwarded to the Town of Lansing for archival purposes.

B. Sediment & Debris Removal

Silt/sediment shall be removed from the dry pond when the accumulation exceeds 6 inches. The removed sediments shall be disposed in an acceptable manner (ie. Landfill)

C. Inspection & Periodic Maintenance

To ensure the continued operation and long term performance of the proposed stormwater management system(s), inspections shall be conducted periodically for the first few months following any inactivity of the contractor work yard and then on an annual basis. Site inspection should also be performed following major storm events (i.e., intense storms, thunder storms, cloud bursts, etc.). Items to check for include, but are not limited to the following: (Reference Attachment J for complete inspection checklist - NYSDEC Stormwater Operation, Maintenance and Management Inspection Checklists):

i) Embankment & Structural;

- Check basin embankments, outlets and spillways note cracks, bulges, animal burrows, differential settlement, damage to or fatigue of stormwater pipe, structures and permanent erosion control. Components of the system that require repair or replacement should be addressed immediately following identification. Check pipes, channels, grates, inlet structures and spillways to insure design capacity. Look for objects or accumulations of sediments and debris obstructing flow path.

ii) Vegetation;

- Preclude deep rooted woody plant growth on structure embankment by mowing at least once annually.

- Maintain a dense vigorous growth of grass cover. Spot seed, mulch and fertilize where necessary.

Attachment A:
Notice of Intent, (NOI) and
MS4 Acceptance Form (if applicable)

Construction General Permit (CGP) Electronic Notice of Intent (eNOI) GP-0-25-001

version 1.19

(Submission #: HQR-NMYQ-WXG2F, version 1)

Details

Originally Started By	Scott Gibson
Alternate Identifier	O'Tooles Contractor Yard—Region 7
Submission ID	HQR-NMYQ-WXG2F
Status	Draft

Form Input

Eligibility

Disturbance Threshold

1. Will the construction activity involve soil disturbances listed in Part I.A.1 of GP-0-25-001?
Yes

1.a. Will any runoff from the site enter a sewer system classified as a combined sewer?
No

1.b. Is this a remediation project being done under a Department approved work plan (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) with a SWPPP which meets the substantive requirements of GP-0-25-001?
No

1.c. Is the construction activity related to a stormwater discharge that does not require a permit as described in 40 CFR 122.3(e), e.g. non-point source agriculture or silviculture activities?
No

Other SPDES Permits

2. Will the discharge from the construction activity meet all conditions listed in Part I.A.2 of GP-0-25-001?
Yes

Threatened and Endangered Species

3. Will the construction activity potentially adversely affect a species that is endangered or threatened per Part I.A.3.?
No

State Historic Preservation Act (SHPA)

4. Is the construction activity designated by the Commissioner of the Office of Parks, Recreation and Historic Preservation (OPRHP), pursuant to 9 NYCRR §§428.12 or 428.13 as exempt from the SHPA review (see Attachment 2 of the Letter of Resolution between NYSDEC and OPRHP, dated January 9, 2015)?
No

4.a. Will the construction activity:

a) occur within an archeologically sensitive area indicated on the sensitivity map, or

b) have the potential to affect a property that is listed or determined to be eligible for listing on the National or State Registers of Historic Places, or

c) include a new permanent building on the construction site within the following distances from a building, structure, or object that is more than 50 years old and OPRHP, a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined is a historically/archeologically significant building, structure, or object:

- 1-5 acres of disturbance—20 feet
- 5-20 acres of disturbance—50 feet

- 20+ acres of disturbance—100 feet?

No

4.b. Is there documentation at the construction site demonstrating:

a) that the construction activity is not within an archeologically sensitive area indicated on the sensitivity map, and that the construction activity is not immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and

b) that there is no new permanent building to be built on the construction site within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the construction site within those parameters that OPRHP, a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant:

- 1-5 acres of disturbance – 20 feet
- 5-20 acres of disturbance – 50 feet
- 20+ acres of disturbance – 100 feet?

Yes

State Environmental Quality Review (SEQR)

5. Is the construction activity subject to SEQR (Part I.A.5.), or the equivalent environmental review from another NYS or federal agency (Part I.A.6.)?
Yes

5.a. Has the owner/operator obtained documentation that the project review pursuant to SEQR, or the equivalent, has been satisfied per Part I.A.5. or I.A.6. of GP-0-25-001?
Yes

Uniform Procedures Act (UPA) Permits

6. Has the owner/operator obtained all necessary UPA permits from NYSDEC, or the equivalent from another NYS or federal agency per Part I.A.7.a. of GP-0-25-001? Select "Yes" if no UPA permits, or the equivalent, are required for this construction activity.
Yes

Steep Slope

7. Is the construction activity within the watershed of surface waters of the State classified as AA or AA-S identified utilizing the Stormwater Interactive Map on NYSDEC's website?
No

Owner/Operator Information

8. Owner/Operator Name
Scott Pinney

9. Owner/Operator Contact Person Information

First and Last Name	Phone	E-mail
Scott Pinney	607-227-9698	alexcolepave1@gmail.com

10. Owner/Operator Mailing Address

70 Oak Hill Road
Moravia, NY 13118
USA

11. Is the billing contact different from the Owner/Operator Contact?
No

12. What type of organization is the owner/operator?
Individual

Site Information

13. Project/Site Name
O'Tooles Contractor Yard

14. Site Address
Corner of Peruville and Scofield Roads
Lansing, NY 14882
Tompkins

DEC Region
7

15. Site Latitude & Longitude
42.5403700927705,-76.45479573463871

Project Details

16. This eNOI submission is for:
A construction activity not part of a common plan of development or sale in accordance with Part I.D.1.a.

17. Does the project type fall under Table 1 or Table 2 of Appendix B of GP-0-25-001? If any portion of the construction activity falls under Table 2, regardless of the size of the disturbance, select "Table 2".
Table 2

18. Consistent with Part III.B.1.c.i. of GP-0-25-001, provide a concise overview of the project. Describe existing and proposed conditions, and include any other relevant information.
A contractor work yard that has been in operation since 2011. It had consistently received "allowed use by Right" by the Town of Lansing but now requires a Full SWPPP. Nothing will change from the original concept other than an improvement to an existing stormwater practice.

Enter the total project site acreage, the acreage to be disturbed, and the future impervious area (acreage) within the disturbed area, rounded to the nearest tenth of an acre.

19. Total Site Area (acres)
10.3

20. Total Area to be Disturbed (acres)
4.9

21. Existing Impervious Area to be Disturbed (acres)
4.9

22. Future Impervious Area Within Disturbed Area (acres)
0.0

Nature of the project:
Redevelopment with no increase in impervious area

23. Do you plan to disturb more than 5 acres of soil at any one time?
No

---

24. Indicate the percentage (%) of each Hydrologic Soil Group(HSG) at the site.

A (%)
50

B (%)
0

C (%)
50

D (%)
0

25. Enter the planned start and end dates of the disturbance activities.

Start Date
06/01/2026

End Date
06/01/2030

26. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.
18-mile trib/The Gulf trib and tribs - 0301-0058

27. Type of waterbody identified in question 26?
Stream/Creek Off Site

28. Has the surface waterbody in question 26 been identified as a 303(d) segment in Appendix D of GP-0-25-001?
No

29. Is this project located in one of the Watersheds identified in Appendix C of GP-0-25-001?
No

30. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area?
No

31. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)?
Yes

31.a. What is the name of the municipality/entity that owns the separate storm sewer system? If the separate sewer system is owned by an MS4 Operator, enter the MS4 Operator name.
Town of Lansing

32. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law?
No

33. Is this property owned by a state authority, state agency, federal government or local government?
No

Required SWPPP Components

General SWPPP Requirements

34. Has a SWPPP been developed in conformance with the requirements in Part III. of GP-0-25-001?
Yes

35. Does the SWPPP demonstrate consideration of the future physical risks due to climate change pursuant to the CRRA, 6 NYCRR Part 490, and associated guidance per Part III.A.2. of GP-0-25-001?
Yes

36. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)?
Yes

37. Which version of the NYS Stormwater Management Design Manual was used to develop the SWPPP?
2015

37.a. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the NYS Stormwater Management Design Manual?
Yes

38. Has the post-construction stormwater management practice component of the SWPPP been developed by a qualified professional per Part III.A.4.?
Yes

SWPPP Preparer

39. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:
Professional Engineer (P.E.)

40. Name of the person who prepared the SWPPP
Timothy C. Buhl

41. SWPPP Preparer Organization Name
Timothy C. Buhl, PE

42. SWPPP Preparer Contact Information

First and Last Name	Phone	E-mail
Scott Gibson	6072280662	scottgibson198@gmail.com

43. SWPPP Preparer Address
5 Orchard Avenue
Watkins Glen, NY 14891

Download SWPPP Preparer Certification Form

Please take the following steps to prepare and upload your preparer certification form:

1) Click on the link below to download a blank certification form
2) The certified SWPPP preparer should sign this form
3) Upload the completed form
Download SWPPP Preparer Certification Form

44. Please upload the SWPPP Preparer Certification
NONE PROVIDED
Comment
NONE PROVIDED

44.a. Has the SWPPP Preparer Certification Form been signed by the SWPPP preparer in accordance with Part VII.J of GP-0-25-001?
Yes

Erosion & Sediment Control Criteria

45. Has a construction sequence schedule for the planned management practices been prepared?
Yes

Post-Construction Criteria

Site Planning and Soil Restoration

46. Identify all site planning practices that were used to prepare the final site plan/layout for the project.
Preservation of Buffers
Locating Development in Less Sensitive Areas

47. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6 ("Soil Restoration") of the Design Manual.
All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).

Water Quality Criteria

48. Is the reduction in impervious area greater than 25%?
No

49. Water Quality Sizing Criteria

Total WQv required (acre-feet)	Total RRv provided (acre-feet)	Minimum RRv (acre-feet)	Total WQv provided (acre-feet)	Sum of RRv and WQv provided
0.39	0.39			0.39

Water Quantity Criteria

50. Per Section 9.2.1.C.VI and VII of the 2024 Design Manual, is there 0% change to hydrology that increases the discharge rate and volume from the project site?
Yes

Operation and Maintenance

53. Has a long-term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed?
Yes

53.a. Identify the entity responsible for the long-term Operation and Maintenance.
Scott Pinney

Post-Construction SMP Identification

54. Post-Construction RR Techniques and Standard SMPs

RR Techniques and SMPs	Contributing Impervious Area (acres)	Total Contributing Area (acres)
Infiltration Basin (I-2)	4.9	

55. Alternative SMPs

Type of Alternative SMP	Manufacturer of the Alternative SMP	Name of the Alternative SMP	Contributing Impervious Area (acres)
NONE PROVIDED	*NONE PROVIDED*	*NONE PROVIDED*	*NONE PROVIDED*

Other Permits

56. Identify other permits, existing and new, that are required for this project/facility.
None

57. Is this NOI for a change in owner/operator per Part I.G.?
No

MS4 SWPPP Acceptance

59. Will the construction activities be within the municipal boundary(ies) of Traditional Land Use Control MS4 Operator(s) and discharge to the MS4(s)?
Yes

59.a. Which form is required per Part I.D.2.b.ii.?
MS4 SWPPP Acceptance Form

MS4 SWPPP Acceptance Form Download

Download the MS4 SWPPP Acceptance Form from the link below.
MS4 SWPPP Acceptance Form

60. MS4 Acceptance or No Jurisdiction Form Upload
NONE PROVIDED
Comment
NONE PROVIDED

60.a. Has the form been signed by the principal executive officer or ranking elected official—or duly authorized representative of that person—in accordance with Part VII.J. and submitted along with this NOI?
Yes

Owner/Operator Certification

Owner/Operator Certification Form Download

Download the Owner/Operator Certification Form by clicking the link below.
Owner/Operator Certification Form

61. Upload Owner/Operator Certification Form
NONE PROVIDED
Comment
NONE PROVIDED

61.a. Has the Owner/Operator Certification Form from Appendix J been signed by the owner/operator, or a representative of the owner/operator in accordance with Part VII.J of GP-0-25-001 and uploaded to the eNOI?
Yes

Additional Project Information

62. Enter any additional pertinent project information in the text box below.
NONE PROVIDED

NEW YORK STATE | Department of Environmental Conservation

SWPPP Preparer Certification Form

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(In accordance with CGP Part I.D.2.b., the completed form must be attached to the eNOI and submitted to NYSDEC electronically.)

Project/Site Name:	O'Tooles Contractor Yard
eNOI Submission ID:	HQR-NMYQ-WXG2F
Owner/Operator Name:	Scott Pinney

Certification Statement – SWPPP Preparer

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) has been prepared in accordance with the requirements of GP-0-25-001. I certify under penalty of law that the SWPPP and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Timothy	C	Buhl, PE
SWPPP Preparer First Name	MI	SWPPP Preparer Last Name

Signature

Date

MS4 SWPPP Acceptance Form

for construction activities seeking authorization under the

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(In accordance with CGP Part I.D.2.b., the completed form must be attached to the eNOI and submitted to NYSDEC electronically.)

I. Project Owner/Operator Information	
1. Owner/Operator Name:	Scott Pinney
2. Contact Person:	Scott Pinney
3. Street Address:	70 Oak Hill Road
4. City/State/Zip:	Moravia, NY 13118
II. Project Site Information	
5. Project/Site Name:	O'tooles Contractor Yard
6. Street Address:	Corner or Peruville and Scofield Roads
7. City/State/Zip:	Lansing, NY 14882
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information	
8. SWPPP Reviewed by:	
9. Title/Position:	
10. Date Final SWPPP Reviewed and Accepted:	
IV. Regulated MS4 Information	
11. Name of MS4 Operator:	
12. MS4 SPDES Permit Identification Number: NYR20A	
13. Street Address:	
14. City/State/Zip:	
15. Telephone Number:	

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in section II. of this form has been reviewed and meets the substantive requirements in the SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP). Note: The MS4 Operator, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 Operator does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name[1]:

Title/Position:

Signature:

Date:

VI. Additional Information

[1] Printed name of the principal executive officer or ranking elected official for the MS4 Operator or their duly authorized representative in accordance with CGP Part VII.J.2.

(NYSDEC - MS4 SWPPP Acceptance Form - January 2025)

NEW YORK STATE | Department of Environmental Conservation

Owner/Operator Certification Form

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(In accordance with CGP Part I.D.2.b. or Part I.F.2. and 3., the completed form must be attached to the eNOI or the Request to Continue Coverage, and submitted to NYSDEC electronically.

Project/Site Name: O'tooles Contractor Yard

eNOI Submission ID: HQR-NMYQ-WXG2F

eNOI Submitted by: ☐ **Owner/Operator** ☑ **SWPPP Preparer** ☐ **Other**

Certification Statement - Owner/Operator

I hereby certify that I read, and will comply with, the GP-0-25-001 permit requirements. I understand that authorization to discharge under the permit for the project/site named above is dependent on receipt of a Letter of Authorization (LOA) or a Letter of Continued Coverage (LOCC) from the New York State Department of Environmental Conservation (NYSDEC) in accordance with CGP Part I.D.3.b. or Part I.F.4. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Scott		Pinney
Owner/Operator First Name	MI	Owner/Operator Last Name

_____

Signature

_____

Date

Attachment B:
Notice of Termination, (NOT)

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

5. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. ☐ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP.
***Date final stabilization completed** (month/year): _____

9b. ☐ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ___ ___ ___ ___ ___ ___
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. ☐ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? ☐ yes ☐ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed?
☐ yes ☐ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

_____

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? ☐ yes ☐ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

- ☐ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.
- ☐ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).
- ☐ For post-construction stormwater management practices that are privately owned, the deed of record has been modified to include a deed covenant that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.
- ☐ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, college, university), or government agency or authority, policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? ☐ yes ☐ no
(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:
(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:	Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2010)

Attachment C:
Certification Forms

CONTRACTOR and SUBCONTRACTOR CERTIFICATION STATEMENT

for the New York State Department of Environmental Conservation (DEC) State Pollutant Discharge Elimination System Permit for Stormwater Discharges from Construction Activity (GP-0-20-001)

As per *Part III.A.6* on page 13 of *GP-0-20-001* (effective January 29, 2010):

'Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and sub-contractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor*. The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.'

The *owner or operator* shall have each contractor and subcontractor involved in soil disturbance sign a copy of the following certification statement before they commence any *construction activity*:

_____	**NYR** _____	_____
Name of Construction Site	*DEC Permit ID*	*Municipality (MS4)*

"I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

_____ Responsible Corporate Officer/Partner Signature	_____ Date
_____ Name of above Signatory	_____ Name of Company
_____ Title of above Signatory	_____ Mailing Address
_____ Telephone of Company	_____ City, State and Zip

Identify the specific elements of the SWPPP the contractor or subcontractor is responsible for:

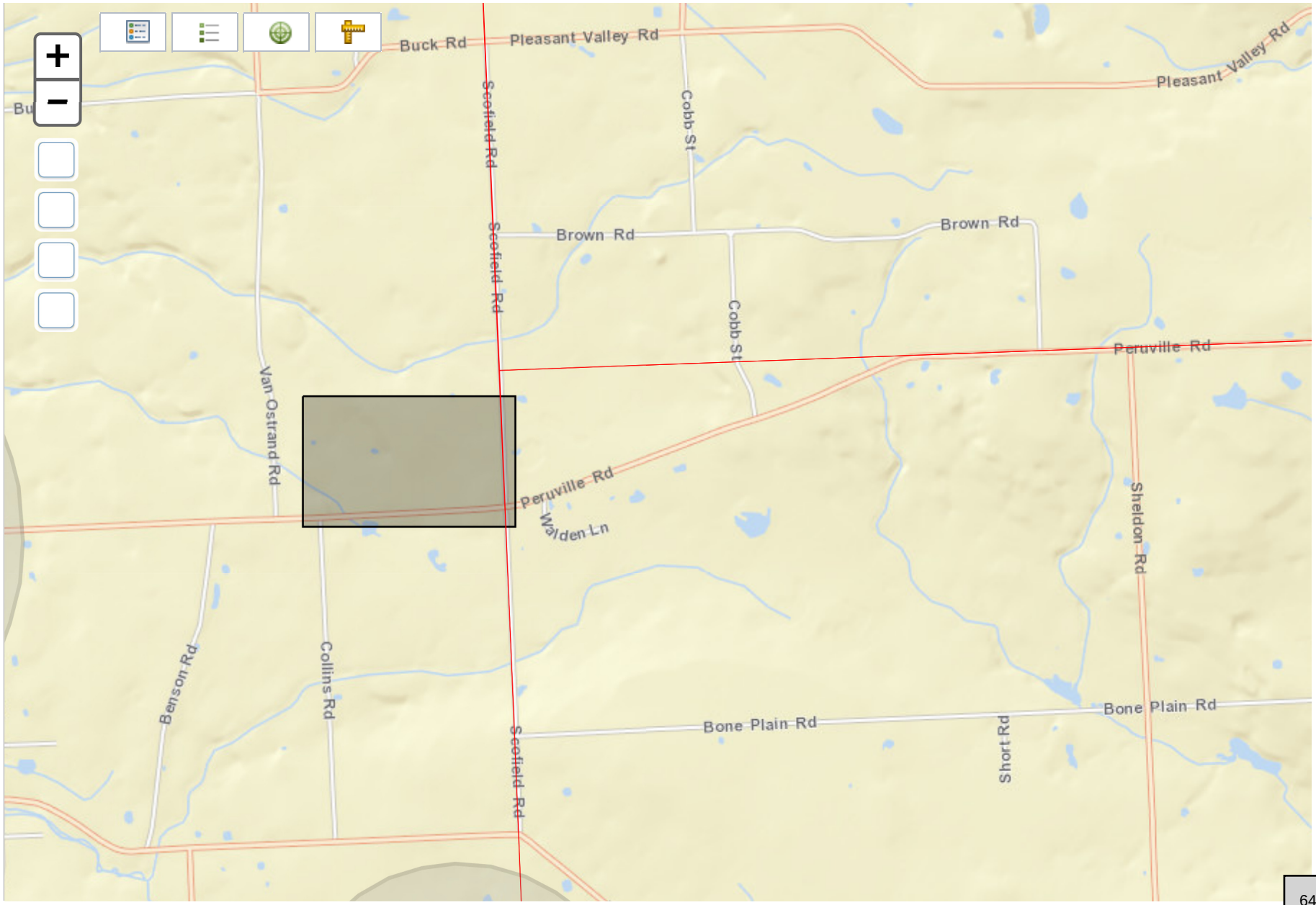
***'TRAINED CONTRACTOR'* FOR THE CERTIFIED CONTRACTOR OR SUBCONTRACTOR**

_____	_____	_____
Name of Trained Employee	*Title of Trained Employee*	*NYSDEC SWT #*

A copy of this signed contractor certification statement must be maintained at the SWPPP on site

Attachment D:
State Historic Preservation Mapping

CRIS NYS Cultural Resource Information System



NEW YORK STATE OF OPPORTUNITY. | Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ROSE HARVEY
Commissioner

October 15, 2015

Mr. Scott Gibson
5 Orchard Avenue
Watkins Glen, NY 14891

Re: DEC
Pinney Duplex Apartments
Town of Lansing, Tompkins County
15PR05870

Dear Mr. Gibson:

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the OPRHP and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the New York State Office of Parks, Recreation and Historic Preservation's opinion that your project will have no impact on archaeological and/or historic resources listed in or eligible for the New York State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

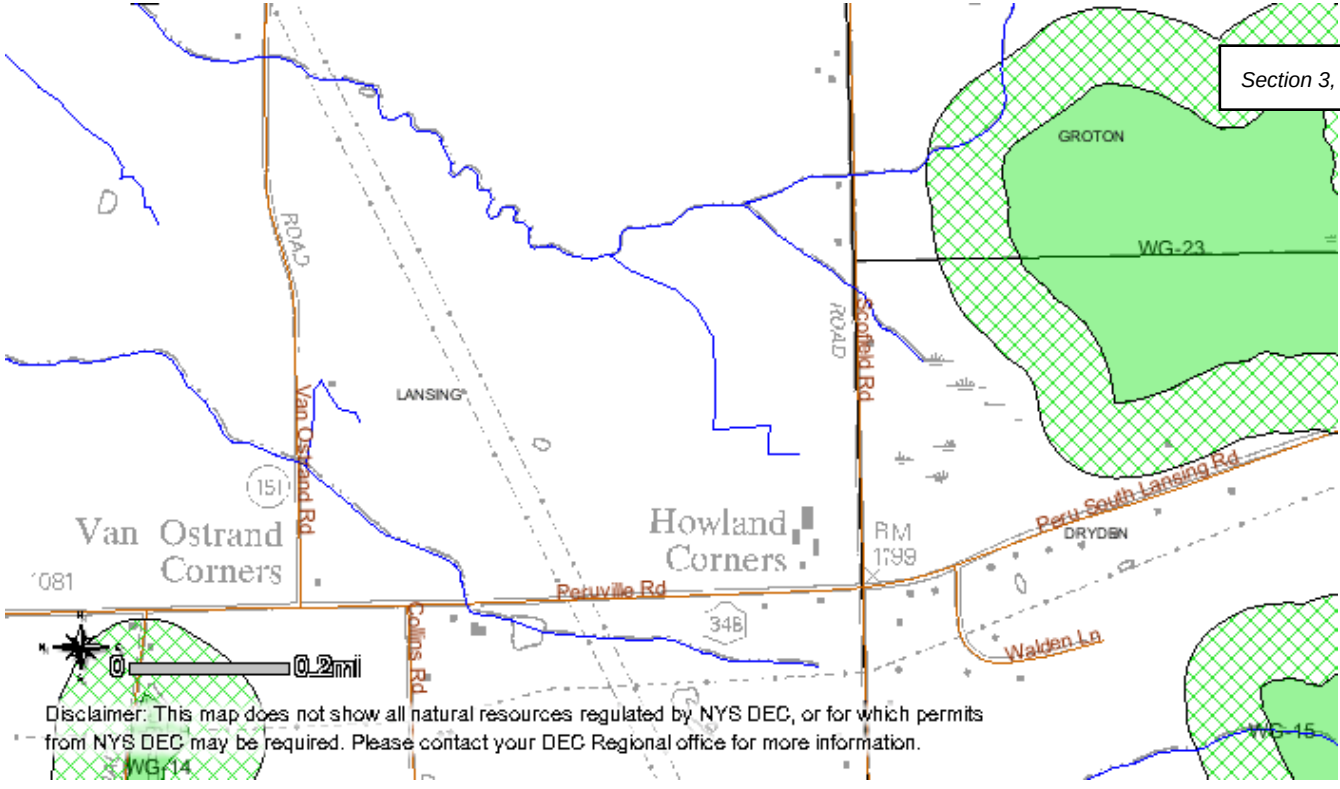
Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont

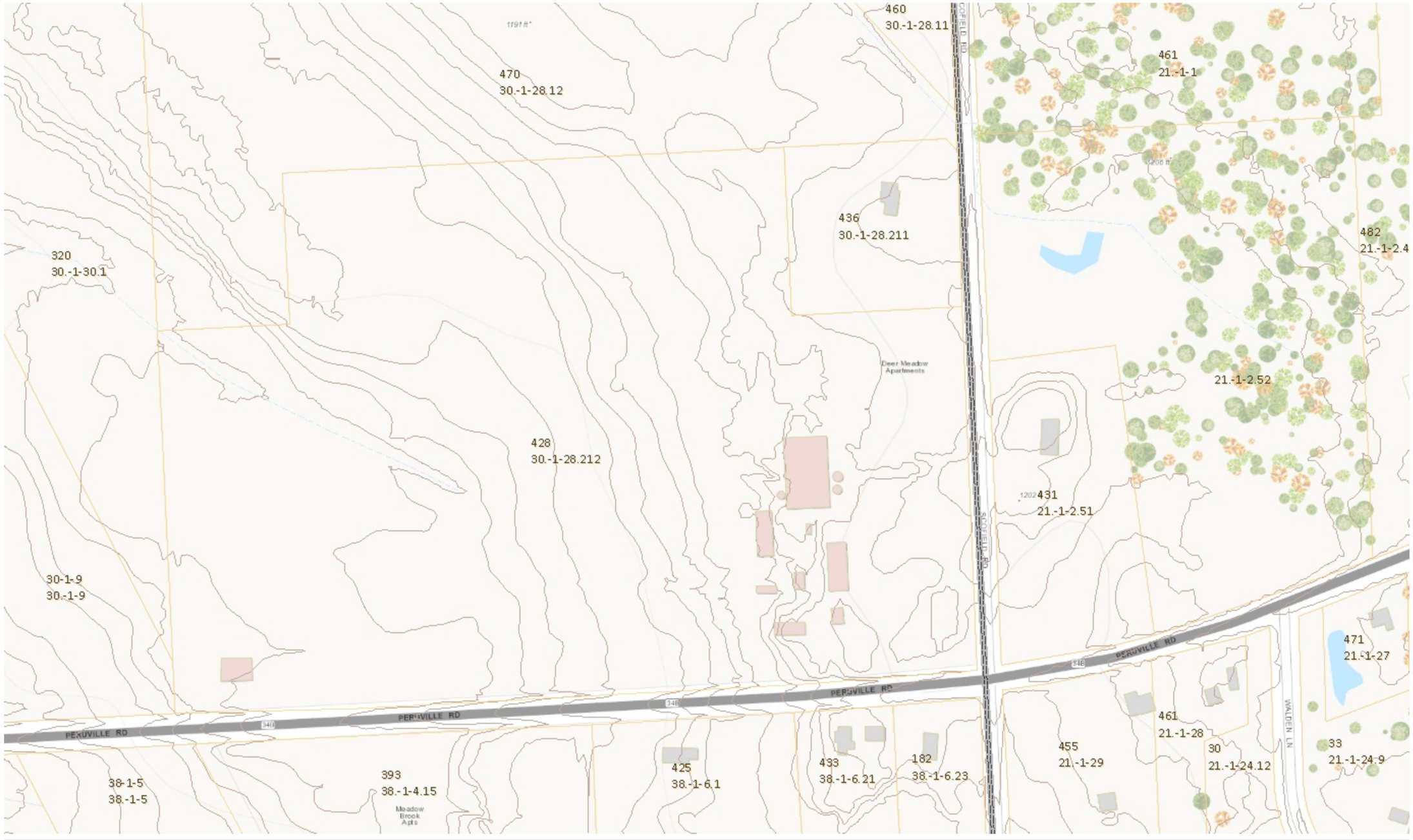
Deputy Commissioner for Historic Preservation

Attachment E:
Environmental Mapping



Pinney - Wetlands Map

Pinney Duplex Project Flood Zone Map



Legend

- Address
- Open Water
- Streams
  - Intermittent Streams
  - Perennial Streams
- PARCELS
- Flood Zones
  - 100 Year
  - 500 Year
  - Not Included in Flood Map
- Building
- Municipalities
- ULY-SE
- ULY-SW
- ULY-NW
- ULY-tNE
- NEW-SW
- NEW-SE
- NEW-NE
- NEW-NW
- LAN2ftSouth
- LAN-NE
- LAN-NW
- LAN2ftMiddle
- GRO-SE
- GRO-SW
- GRO-NE
- GRO-NW
- ENF-SE
- ENF-SW
- ENF-NE
- ENF-NW
- DRY-SE
- DRY-SW
- DRY-NE
- DRY-tNW
- DAN2ftSW
- DAN2ftSE
- DAN2ftNW
- DAN2ftNE
- CAR-SW
- CAR-SE

1: 3,287

547.9 0 273.93 547.9 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere

© Tompkins County GIS 2011

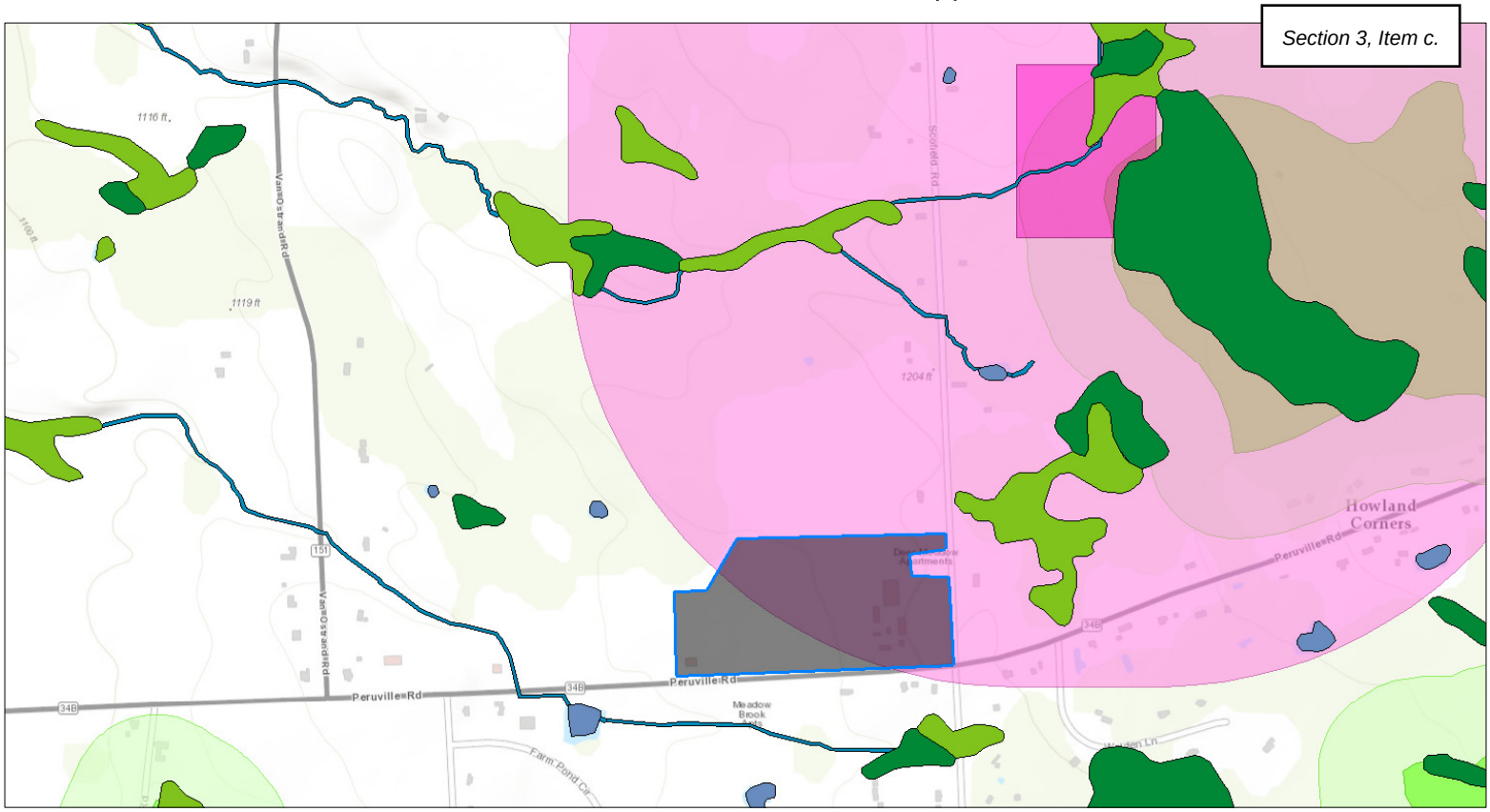
This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Notes

This map was automatically generated using Geocortex Essentials. Your ta[illegible] at work!

Environmental Resource Mapper



November 16, 2016

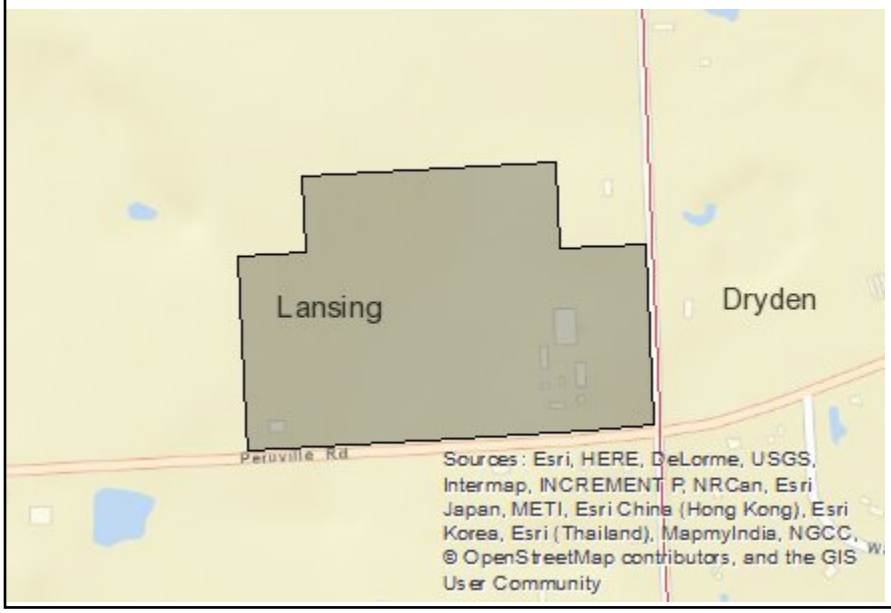
1:9,028

0 0.1 0.2 0.4 mi

0 0.175 0.35 0.7 km

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

NYS Department of Environmental Conservation
Not a legal document



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.



B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	Yes
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.iv [Surface Water Features - Stream Name]	898-239
E.2.h.iv [Surface Water Features - Stream Classification]	C
E.2.h.iv [Surface Water Features - Wetlands Name]	Federal Waters
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.

E.2.j. [100 Year Floodplain]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.2.k. [500 Year Floodplain]	Digital mapping data are not available or are incomplete. Refe Workbook.
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	Yes
E.2.n.i [Natural Communities - Name]	Rich Hemlock-Hardwood Peat Swamp
E.2.n.i [Natural Communities - Acres]	11.0
E.2.o. [Endangered or Threatened Species]	No
E.2.p. [Rare Plants or Animals]	No
E.3.a. [Agricultural District]	Yes
E.3.a. [Agricultural District]	TOMP001
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National Register of Historic Places]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.3.f. [Archeological Sites]	No
E.3.i. [Designated River Corridor]	No

Attachment F:
Inspection Report (Sample Form)

TOWN OF

Construction Stormwater Inspection Report for SPDES General Permit GP-0- 15-002

Project Name and Location:		Date:	Weather:
		Permit # (if any): **NYR10**	
Municipality:	County:	Entry Time:	Exit Time:
Name of SPDES Permittee:	Contacted: Yes ☐ No ☐	Inspection Type:	
Phone Number:		☐ Compliance ☐ Referral ☐ Complaint ☐ NOT	
On-site Representative(s) and Company(s):			
Phone Number(s):			

SPDES Authority

	Yes	No	N/A	
1.	☐	☐	☐	Does the project have permit coverage?
2.	☐	☐	☐	Is a copy of the NOI and Acknowledgment Letter available on site and accessible for viewing?
3.	☐	☐	☐	Is a copy of the MS4 SWPPP Acceptance Form available on site and accessible for viewing?
4.	☐	☐	☐	Is an up-to-date copy of the signed SWPPP retained at the construction site?
5.	☐	☐	☐	Is a copy of the SPDES General Permit retained at the construction site?
6.	☐	☐	☐	Does the NOI accurately report the number of acres to be disturbed?

SWPPP Content

	Yes	No	N/A	
7.	☐	☐	☐	Does the SWPPP describe and identify the erosion and sediment control measures to be employed?
8.	☐	☐	☐	Does the SWPPP provide an inspection schedule and maintenance requirements for the E&SC measures?
9.	☐	☐	☐	Does the SWPPP describe and identify the stormwater management practices to be employed?
10.	☐	☐	☐	Does the SWPPP identify the contractor(s) and subcontractor(s) responsible for each measure?
11.	☐	☐	☐	Does the SWPPP identify at least one trained individual from each contractor(s) and subcontractor(s) companies
12.	☐	☐	☐	Does the SWPPP include all the necessary Contractor Certification Statements and signatures?
13.	☐	☐	☐	Is the SWPPP signed by the permittee?
14.	☐	☐	☐	Is the SWPPP prepared by a qualified professional (if post-construction stormwater management required)?
15.	☐	☐	☐	Do the SMPs conform to the Enhanced Phosphorus Removal Standards (projects in TMDL watersheds)?

Recordkeeping

	Yes	No	N/A	
16.	☐	☐	☐	Are self-inspections performed as required by the permit (weekly, or twice weekly for >5 acres disturbed)?
17.	☐	☐	☐	Are the self-inspections performed by and signed by a qualified inspector and retained on site?
18.	☐	☐	☐	Do the qualified inspector's reports include the minimum reporting requirements?
19.	☐	☐	☐	Do inspection reports identify corrective measures that have not been implemented or are recurring?

Visual Observations

	Yes	No	N/A	
20.	☐	☐	☐	Are all erosion and sediment control measures installed properly?
21.	☐	☐	☐	Are all erosion and sediment control measures being maintained properly?
22.	☐	☐	☐	Was written authorization issued for any disturbance greater than 5 acres?
23.	☐	☐	☐	Have stabilization measures been implemented in inactive areas per Permit (>5 acres) and E&SC Standards?
24.	☐	☐	☐	Are post-construction stormwater management practices constructed/installed correctly?
25.	☐	☐	☐	Has final site stabilization been achieved and temporary E&SC measures removed prior to NOT submittal?
26.	☐	☐	☐	Was there a discharge from the site on the day of inspection?
27.	☐	☐	☐	Is there evidence that a discharge caused or contributed to a violation of water quality standards?

Water Quality Observations

Describe the discharge(s): location, source(s), impact on receiving water(s), etc.

Describe the quality of the receiving water(s) both upstream and downstream of the discharge

Describe any other water quality standards or permit violations

Additional Comments

☐ Photographs attached

Overall Inspection Rating: ☐ Satisfactory ☐ Marginal ☐ Unsatisfactory	
Name/Agency of Lead Inspector:	**Signature of Lead Inspector:**
Names/Agencies of Other Inspectors:	

Attachment G:
Record of Stabilization and Construction Activity Dates
(Sample Form)

SITE STABILIZATION
and
CONSTRUCTION ACTIVITY DATES

A record of dates when major grading activities occur, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization measures are initiated shall be maintained until final site stabilization is achieved and the Notice of Termination is filed. The dates can be entered in the following form, or on a different form.

MAJOR GRADING ACTIVITIES:

Description of Activity: _____
Begin (date): _____ Site Contractor: _____
Location: _____
End (date): _____

Description of Activity: _____
Begin (date): _____ Site Contractor: _____
Location: _____
End (date): _____

Description of Activity: _____
Begin (date): _____ Site Contractor: _____
Location: _____
End (date): _____

Description of Activity: _____
Begin (date): _____ Site Contractor: _____
Location: _____
End (date): _____

Description of Activity: _____
Begin (date): _____ Site Contractor: _____
Location: _____
End (date): _____

Description of Activity: _____
Begin (date): _____ Site Contractor: _____
Location: _____
End (date): _____

Description of Activity: _____
Begin (date): _____ Site Contractor: _____
Location: _____
End (date): _____

Attachment H:
Vegetative and Structural Measures For Erosion and Sediment Control
(NYS Standards & Specifications for Erosion & Sediment Control)
(Reference)

STANDARD AND SPECIFICATIONS FOR MULCHING



Definition and Scope

Applying coarse plant residue or chips, or other suitable materials, to cover the soil surface to provide initial erosion control while a seeding or shrub planting is establishing. Mulch will conserve moisture and modify the surface soil temperature and reduce fluctuation of both. Mulch will prevent soil surface crusting and aid in weed control. Mulch can also be used alone for temporary stabilization in non-growing months. Use of stone as a mulch could be more permanent and should not be limited to non-growing months.

Conditions Where Practice Applies

On soils subject to erosion and on new seedings and shrub plantings. Mulch is useful on soils with low infiltration rates by retarding runoff.

Criteria

Site preparation prior to mulching requires the installation of necessary erosion control or water management practices and drainage systems.

Slope, grade and smooth the site to fit needs of selected mulch products.

Remove all undesirable stones and other debris to meet the needs of the anticipated land use and maintenance required.

Apply mulch after soil amendments and planting is accomplished or simultaneously if hydroseeding is used.

Select appropriate mulch material and application rate or material needs. Hay mulch shall not be used in wetlands or in areas of permanent seeding. Clean straw mulch is preferred alternative in wetland application. Determine local availability.

Select appropriate mulch anchoring material.

NOTE: The best combination for grass/legume establishment is straw (cereal grain) mulch applied at 2 ton/ acre (90 lbs./1000sq.ft.) and anchored with wood fiber mulch (hydromulch) at 500 – 750 lbs./acre (11 – 17 lbs./1000 sq. ft.). The wood fiber mulch must be applied through a hydroseeder immediately after mulching.



Table 4.2
Guide to Mulch Materials, Rates, and Uses

Mulch Material	Quality Standards	per 1000 Sq. Ft.	per Acre	Depth of Application	Remarks
Wood chips or shavings	Air-dried. Free of objectionable coarse material	500-900 lbs.	10-20 tons	2-7"	Used primarily around shrub and tree plantings and recreation trails to inhibit weed competition. Resistant to wind blowing. Decomposes slowly.
Wood fiber cellulose (partly digested wood fibers)	Made from natural wood usually with green dye and dispersing agent	50 lbs.	2,000 lbs.	—	Apply with hydromulcher. No tie down required. Less erosion control provided than 2 tons of hay or straw.
Gravel, Crushed Stone or Slag	Washed; Size 2B or 3A—1 1/2"	9 cu. yds.	405 cu. yds.	3"	Excellent mulch for short slopes and around plants and ornamentals. Use 2B where subject to traffic. (Approximately 2,000 lbs./cu. yd.). Frequently used over filter fabric for better weed control.
Hay or Straw	Air-dried; free of undesirable seeds & coarse materials	90-100 lbs. 2-3 bales	2 tons (100-120 bales)	cover about 90% surface	Use small grain straw where mulch is maintained for more than three months. Subject to wind blowing unless anchored. Most commonly used mulching material. Provides the best micro-environment for germinating seeds.
Jute twisted yarn	Undyed, unbleached plain weave. Warp 78 ends/yd., Weft 41 ends/ yd. 60-90 lbs./roll	48" x 50 yds. or 48" x 75 yds.	—	—	Use without additional mulch. Tie down as per manufacturers specifications. Good for center line of concentrated water flow.
Excelsior wood fiber mats	Interlocking web of excelsior fibers with photodegradable plastic netting	4' x 112.5' or 8' x 112.5'.	—	—	Use without additional mulch. Excellent for seeding establishment. Anchor as per manufacturers specifications. Approximately 72 lbs./roll for excelsior with plastic on both sides. Use two sided plastic for centerline of waterways.
Straw or coconut fiber, or combination	Photodegradable plastic net on one or two sides	Most are 6.5 ft. x 3.5 ft.	81 rolls	—	Designed to tolerate higher velocity water flow, centerlines of waterways, 60 sq. yds. per roll.

Table 4.3
Mulch Anchoring Guide

Anchoring Method or Material	Kind of Mulch to be Anchored	How to Apply
1. Peg and Twine	Hay or straw	After mulching, divide areas into blocks approximately 1 sq. yd. in size. Drive 4-6 pegs per block to within 2" to 3" of soil surface. Secure mulch to surface by stretching twine between pegs in criss-cross pattern on each block. Secure twine around each peg with 2 or more tight turns. Drive pegs flush with soil. Driving stakes into ground tightens the twine.
2. Mulch netting	Hay or straw	Staple the light-weight paper, jute, wood fiber, or plastic nettings to soil surface according to manufacturer's recommendations. Should be biodegradable. Most products are not suitable for foot traffic.
3. Wood cellulose fiber	Hay or straw	Apply with hydroseeder immediately after mulching. Use 500 lbs. wood fiber per acre. Some products contain an adhesive material ("tackifier"), possibly advantageous.
4. Mulch anchoring tool	Hay or straw	Apply mulch and pull a mulch anchoring tool (blunt, straight discs) over mulch as near to the contour as possible. Mulch material should be "tucked" into soil surface about 3".
5. Tackifier	Hay or straw	Mix and apply polymeric and gum tackifiers according to manufacturer's instructions. Avoid application during rain. A 24-hour curing period and a soil temperature higher than 45^0 Fahrenheit are required.

STANDARD AND SPECIFICATIONS FOR PERMANENT CONSTRUCTION AREA PLANTING



Definition & Scope

Establishing **permanent** grasses with other forbs and/or shrubs to provide a minimum 80% perennial vegetative cover on areas disturbed by construction and critical areas to reduce erosion and sediment transport. Critical areas may include but are not limited to steep excavated cut or fill slopes as well as eroding or denuded natural slopes and areas subject to erosion.

Conditions Where Practice Applies

This practice applies to all disturbed areas void of, or having insufficient, cover to prevent erosion and sediment transport. See additional standards for special situations such as sand dunes and sand and gravel pits.

Criteria

All water control measures will be installed as needed prior to final grading and seedbed preparation. Any severely compacted sections will require chiseling or disking to provide an adequate rooting zone, to a minimum depth of 12", see Soil Restoration Standard. The seedbed must be prepared to allow good soil to seed contact, with the soil not too soft and not too compact. Adequate soil moisture must be present to accomplish this. If surface is powder dry or sticky wet, postpone operations until moisture changes to a favorable condition. If seeding is accomplished within 24 hours of final grading, additional scarification is generally not needed, especially on ditch or stream banks. Remove all stones and other debris from the surface that are greater than 4 inches, or that will interfere with future mowing or maintenance.

Soil amendments should be incorporated into the upper 2 inches of soil when feasible. **The soil should be tested to determine the amounts of amendments needed.** Apply ground agricultural limestone to attain a pH of 6.0 in the upper 2 inches of soil. If soil must be fertilized before results of a soil test can be obtained to determine fertilizer needs, apply commercial fertilizer at 600 lbs. per acre of 5-5 -10 or equivalent. If manure is used, apply a quantity to meet the nutrients of the above fertilizer. This requires an appropriate manure analysis prior to applying to the site. Do not use manure on sites to be planted with birdsfoot trefoil or in the path of concentrated water flow.

Seed mixtures may vary depending on location within the state and time of seeding. Generally, warm season grasses should only be seeded during early spring, April to May. These grasses are primarily used for vegetating excessively drained sands and gravels. See Standard and Specification for Sand and Gravel Mine Reclamation. Other grasses may be seeded any time of the year when the soil is not frozen and is workable. When legumes such as birdsfoot trefoil are included, spring seeding is preferred. See Table 4.4, "Permanent Construction Area Planting Mixture Recommendations" for additional seed mixtures.

General Seed Mix:	**Variety**	**lbs./ acre**	**lbs/1000 sq. ft.**
Red Clover[1] OR	Acclaim, Rally, Red Head II, Renegade	8[2]	0.20
Common white clover[1]	Common	8	0.20
PLUS			
Creeping Red Fescue	Common	20	0.45
PLUS			
Smooth Bromegrass OR	Common	2	0.05
Ryegrass (perennial)	Pennfine/Linn	5	0.10

[1] add inoculant immediately prior to seeding
[2] Mix 4 lbs each of Empire and Pardee OR 4 lbs of Birdsfoot and 4 lbs white clover per acre. All seeding rates are given for Pure Live Seed (PLS)

Pure Live Seed, or (PLS) refers to the amount of live seed in a lot of bulk seed. Information on the seed bag label includes the type of seed, supplier, test date, source of seed, purity, and germination. Purity is the percentage of pure seed. Germination is the percentage of pure seed that will produce normal plants when planted under favorable conditions.

To compute Pure Live Seed multiply the "germination percent" times the "purity" and divide that by 100 to get Pure Live Seed.

$$\text{Pure Live Seed (PLS)} = \frac{\%\,\text{Germination} \times \%\,\text{Purity}}{100}$$

For example, the PLS for a lot of Kentucky Blue grass with 75% purity and 96% germination would be calculated as follows:

$$\frac{(96) \times (75)}{100} = 72\%\ \text{Pure Live Seed}$$

For 10lbs of PLS from this lot =

$$\frac{10}{0.72} = 13.9\ \text{lbs}$$

Therefore, 13.9 lbs of seed is the actual weight needed to meet 10lbs PSL from this specific seed lot.

Time of Seeding: The optimum timing for the general seed mixture is early spring. Permanent seedings may be made any time of year if properly mulched and adequate moisture is provided. Late June through early August is not a good time to seed, but may facilitate covering the land without additional disturbance if construction is completed. Portions of the seeding may fail due to drought and heat. These areas may need reseeding in late summer/fall or the following spring.

Method of seeding: Broadcasting, drilling, cultipack type seeding, or hydroseeding are acceptable methods. Proper soil to seed contact is key to successful seedings.

Mulching: Mulching is essential to obtain a uniform stand of seeded plants. Optimum benefits of mulching new seedings are obtained with the use of small grain straw applied at a rate of 2 tons per acre, and anchored with a netting or tackifier. See the Standard and Specifications for Mulching for choices and requirements.

Irrigation: Watering may be essential to establish a new seeding when a drought condition occurs shortly after a new seeding emerges. Irrigation is a specialized practice and care must be taken not to exceed the application rate for the soil or subsoil. When disconnecting irrigation pipe, be sure pipes are drained in a safe manor, not creating an erosion concern.



80% Perennial Vegetative Cover



50% Perennial Vegetative Cover

Table 4.4
Permanent Construction Area Planting Mixture Recommendations

Seed Mixture	Variety	Rate in lbs./acre (PLS)	Rate in lbs./ 1, 000 ft^2
Mix #1			
Creeping red fescue	Ensylva, Pennlawn, Boreal	10	.25
Perennial ryegrass	Pennfine, Linn	10	.25
*This mix is used extensively for shaded areas.			
Mix #2			
Switchgrass	Shelter, Pathfinder, Trailblazer, or Blackwell	20	.50
*This rate is in pure live seed, this would be an excellent choice along the upland edge of a wetland to filter runoff and provide wildlife benefits. In areas where erosion may be a problem, a companion seeding of sand lovegrass should be added to provide quick cover at a rate of 2 lbs. per acre (0.05 lbs. per 1000 sq. ft.).			
Mix #3			
Switchgrass	Shelter, Pathfinder, Trailblazer, or Blackwell	4	.10
Big bluestem	Niagara	4	.10
Little bluestem	Aldous or Camper	2	.05
Indiangrass	Rumsey	4	.10
Coastal panicgrass	Atlantic	2	.05
Sideoats grama	El Reno or Trailway	2	.05
Wildflower mix		.50	.01
*This mix has been successful on sand and gravel plantings. It is very difficult to seed without a warm season grass seeder such as a Truax seed drill. Broadcasting this seed is very difficult due to the fluffy nature of some of the seed, such as bluestems and indiangrass.			
Mix #4			
Switchgrass	Shelter, Pathfinder, Trailblazer, or Blackwell	10	.25
Coastal panicgrass	Atlantic	10	.25
*This mix is salt tolerant, a good choice along the upland edge of tidal areas and roadsides.			
Mix #5			
Saltmeadow cordgrass (Spartina patens)—This grass is used for tidal shoreline protection and tidal marsh restoration. It is planted by vegetative stem divisions. 'Cape' American beachgrass can be planted for sand dune stabilization above the saltmeadow cordgrass zone.			
Mix #6			
Creeping red fescue	Ensylva, Pennlawn, Boreal	20	.45
Chewings Fescue	Common	20	.45
Perennial ryegrass	Pennfine, Linn	5	.10
Red Clover	Common	10	.45
*General purpose erosion control mix. Not to be used for a turf planting or play grounds.			

STANDARD AND SPECIFICATIONS FOR TEMPORARY CONSTRUCTION AREA SEEDING



Definition & Scope

Providing temporary erosion control protection to disturbed areas and/or localized critical areas for an interim period by covering all bare ground that exists as a result of construction activities or a natural event. Critical areas may include but are not limited to steep excavated cut or fill slopes and any disturbed, denuded natural slopes subject to erosion.

Conditions Where Practice Applies

Temporary seedings may be necessary on construction sites to protect an area, or section, where final grading is complete, when preparing for winter work shutdown, or to provide cover when permanent seedings are likely to fail due to mid-summer heat and drought. The intent is to provide temporary protective cover during temporary shutdown of construction and/or while waiting for optimal planting time.

Criteria

Water management practices must be installed as appropriate for site conditions. The area must be rough graded and slopes physically stable. Large debris and rocks are usually removed. Seedbed must be seeded within 24 hours of disturbance or scarification of the soil surface will be necessary prior to seeding.

Fertilizer or lime are not typically used for temporary seedings.

IF: Spring or summer or early fall, then seed the area with ryegrass (annual or perennial) at 30 lbs. per acre (Approximately 0.7 lb./1000 sq. ft. or use 1 lb./1000 sq. ft.).

IF: Late fall or early winter, then seed Certified 'Aroostook' winter rye (cereal rye) at 100 lbs. per acre (2.5 lbs./1000 sq. ft.).

Any seeding method may be used that will provide uniform application of seed to the area and result in relatively good soil to seed contact.

Mulch the area with hay or straw at 2 tons/acre (approx. 90 lbs./1000 sq. ft. or 2 bales). Quality of hay or straw mulch allowable will be determined based on long term use and visual concerns. Mulch anchoring will be required where wind or areas of concentrated water are of concern. Wood fiber hydromulch or other sprayable products approved for erosion control (nylon web or mesh) may be used if applied according to manufacturers' specification. Caution is advised when using nylon or other synthetic products. They may be difficult to remove prior to final seeding and can be a hazard to young wildlife species.

STANDARD AND SPECIFICATIONS FOR TOPSOILING



Definition & Scope

Spreading a specified quality and quantity of topsoil materials on graded or constructed subsoil areas to provide acceptable plant cover growing conditions, thereby reducing erosion; to reduce irrigation water needs; and to reduce the need for nitrogen fertilizer application.

Conditions Where Practice Applies

Topsoil is applied to subsoils that are droughty (low available moisture for plants), stony, slowly permeable, salty or extremely acid. It is also used to backfill around shrub and tree transplants. This standard does not apply to wetland soils.

Design Criteria

1. Preserve existing topsoil in place where possible, thereby reducing the need for added topsoil.
2. Conserve by stockpiling topsoil and friable fine textured subsoils that must be stripped from the excavated site and applied after final grading where vegetation will be established. Topsoil stockpiles must be stabilized. Stockpile surfaces can be stabilized by vegetation, geotextile or plastic covers. This can be aided by orientating the stockpile lengthwise into prevailing winds.
3. Refer to USDA Natural Resource Conservation Service soil surveys or soil interpretation record sheets for further soil texture information for selecting appropriate design topsoil depths.

Site Preparation

1. As needed, install erosion and sediment control practices such as diversions, channels, sediment traps, and stabilizing measures, or maintain if already installed.
2. Complete rough grading and final grade, allowing for depth of topsoil to be added.
3. Scarify all compact, slowly permeable, medium and fine textured subsoil areas. Scarify at approximately right angles to the slope direction in soil areas that are steeper than 5 percent. Areas that have been overly compacted shall be decompacted in accordance with the Soil Restoration Standard.
4. Remove refuse, woody plant parts, stones over 3 inches in diameter, and other litter.

Topsoil Materials

1. Topsoil shall have at least 6 percent by weight of fine textured stable organic material, and no greater than 20 percent. Muck soil shall not be considered topsoil.
2. Topsoil shall have not less than 20 percent fine textured material (passing the NO. 200 sieve) and not more than 15 percent clay.
3. Topsoil treated with soil sterilants or herbicides shall be so identified to the purchaser.
4. Topsoil shall be relatively free of stones over 1 1/2 inches in diameter, trash, noxious weeds such as nut sedge and quackgrass, and will have less than 10 percent gravel.
5. Topsoil containing soluble salts greater than 500 parts per million shall not be used.
6. Topsoil may be manufactured as a mixture of a mineral component and organic material such as compost.

Application and Grading

1. Topsoil shall be distributed to a uniform depth over the area. It shall not be placed when it is partly frozen, muddy, or on frozen slopes or over ice, snow, or standing water puddles.
2. Topsoil placed and graded on slopes steeper than 5 percent shall be promptly fertilized, seeded, mulched, and stabilized by “tracking” with suitable equipment.
3. Apply topsoil in the amounts shown in Table 4.7 below:

Table 4.7 - Topsoil Application Depth		
Site Conditions	**Intended Use**	**Minimum Topsoil Depth**
1. Deep sand or loamy sand	Mowed lawn	6 in.
	Tall legumes, unmowed	2 in.
	Tall grass, unmowed	1 in.
2. Deep sandy loam	Mowed lawn	5 in.
	Tall legumes, unmowed	2 in.
	Tall grass, unmowed	none
3. Six inches or more: silt loam, clay loam, loam, or silt	Mowed lawn	4 in.
	Tall legumes, unmowed	1 in.
	Tall grass, unmowed	1 in.

STRUCTURAL MEASURES FOR EROSION AND SEDIMENT CONTROL

General

Uncontrolled runoff and excess erosion often occurs in urban developments, particularly during the construction stage. This erosion forms rills and gullies; washes out roads; scours cut and fill areas; fills road ditches, storm drains, and streams; and does other damage that is costly to the developers and damaging to land and water users below. Careful inclusion of proven conservation practices in the development plan can prevent or alleviate much of this damage and should be a part of every development plan.

These practices will usually be a combination of vegetative and structural measures. They may be temporary and serve only during the construction stage or they may be permanent in nature and become a part of the completed development. Permanent structural practices should be installed as early as possible in the construction stage. This section deals with the more common structural measures that may be used. Adequate designs, plans, and specification should be prepared for the measures to be used. A number of measures and specifications are included throughout this section. The designer shall determine those elements to be installed to control erosion (Section 2) and follow the criteria included in these standards and specifications.

Introduction

Structural erosion and sediment control practices have been classified as either temporary or permanent, according to how they are used. Temporary structural practices are used during construction to prevent offsite sedimentation. The length of time that temporary practices are functional varies from project to project, since the sediment control strategy may change as construction activity progresses. Permanent structural practices are used to convey surface water runoff to a safe outlet. Permanent structural practices will remain in place and continue to function after the completion of construction.

Regardless of whether the practices are temporary or permanent, runoff control measures should be the first items constructed when grading begins, and be completely functional before downslope land disturbance takes place. Earthen structures such as diversions, dikes, and swales should be stabilized before being considered functional. Only after the runoff control structures are operational and sediment control measures are in place, should clearing and grading on the rest of the construction site begin.

While clearing and grading the site, it is important to minimize the amount of sediment that is produced. In general, it is advantageous to clear only as much area as is necessary to accommodate construction needs. Grade and stabilize large sites in stages whenever possible. Limiting the amount of disturbed area limits the amount of sediment that is generated, thus decreasing the amount of maintenance required on sediment control measures.

Sediment generated during the construction of cut and fill slopes can also be minimized through design and grading techniques. When designing either a cut or fill slope, factors to consider include slope length and steepness, soil type, and upslope drainage area. In general, it is important to leave soil surfaces on disturbed slopes in a roughened condition and to construct a water diversion practice at the top of slopes. Rough soil surfaces do not erode as readily as smooth soil surfaces.

Although design and grading techniques can reduce soil erosion, they cannot eliminate it entirely. Therefore, practices must be installed to prevent offsite sedimentation.

Even though the specific conditions of each site determine what measures are necessary to control erosion and sedimentation, some general principles apply to the selection and placement of sediment control measures.

1. Prevent clean water from becoming turbid, by diverting runoff from upslope areas away from disturbed areas. Earth dikes, temporary swales, perimeter dike/swales, or diversions that outlet in stable areas can be used in this capacity.

2. Remove sediment from turbid water before the water leaves the site. The method of sediment removal depends upon how the water drains from the site. Concentrated flow must be diverted to a trapping device so that suspended sediment can be deposited. Dikes or swales that outlet into traps or basins can accomplish this. A storm drain system may be used to convey concentrated sediment laden water only if the system empties into a trap or basin. Otherwise, all storm drain inlets must be protected so that sediment laden water cannot enter the drainage system before being treated to remove the sediment.

3. Surface runoff draining in sheet flow must be controlled and treated before the water leaves the site. Straw bale dikes, silt fences, or vegetative buffer strips can be used to treat sheet flow.

All practices designed and implemented must be properly maintained in order to remain functional. Sediment accumulated in basins and traps must be removed and disposed of in a manner that stabilizes them on the construction site.

Other factors should be observed during construction in order to make erosion and sediment control measures more effective in pollution control.

These are:

1. Sprinkle or apply dust suppressors. Keep dust down to a tolerable limit on construction sites and haul roads.

2. Use temporary bridges or culverts where fording of streams is objectionable. Avoid borrow areas where pollution from this operation is inevitable.

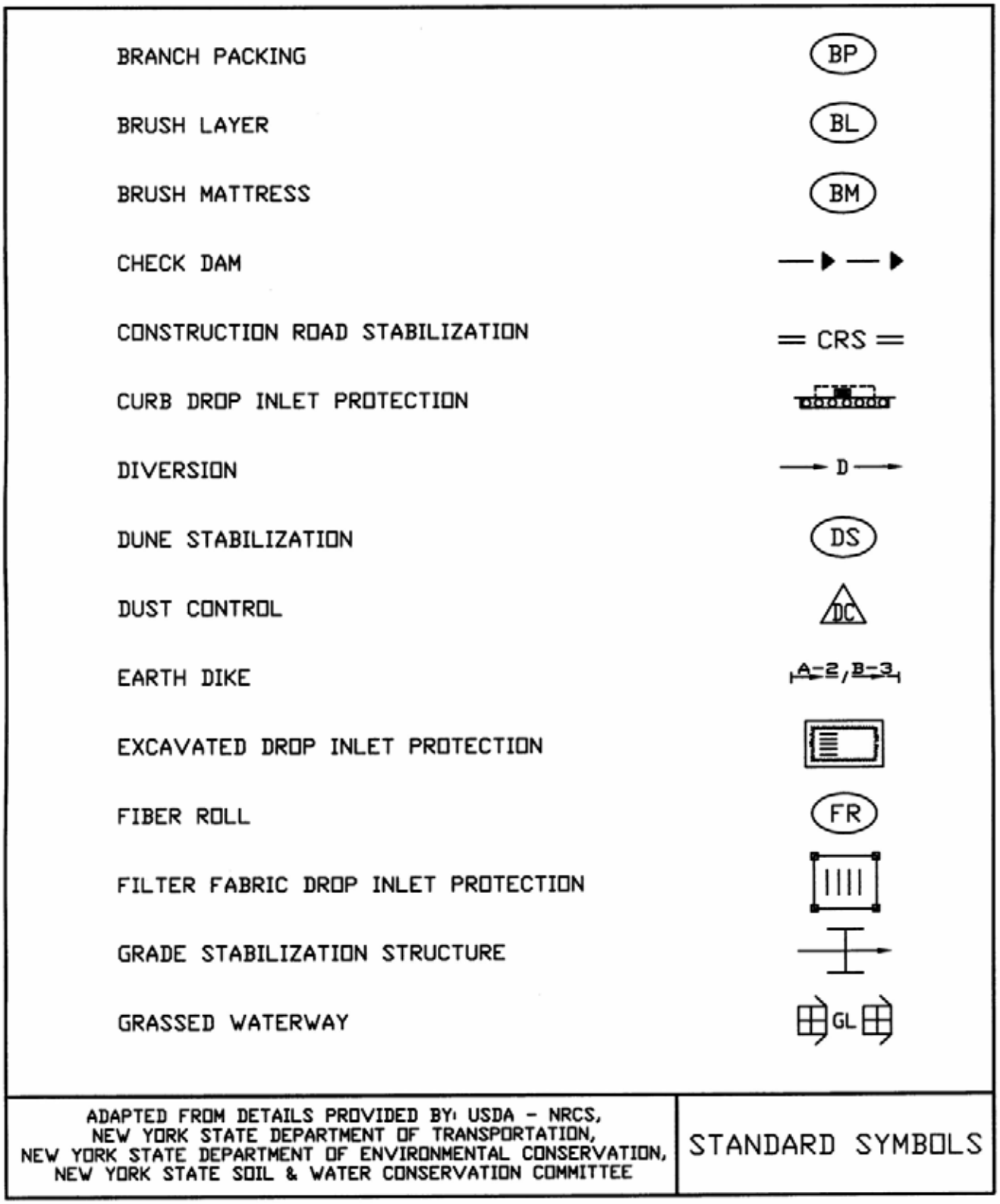
3. Protect streams from chemicals, fuel, lubricants, sewage, or other pollutants.

4. Avoid disposal of fill in floodplains or drainage ways. This reduces the capacity of these areas to pass flood flows.

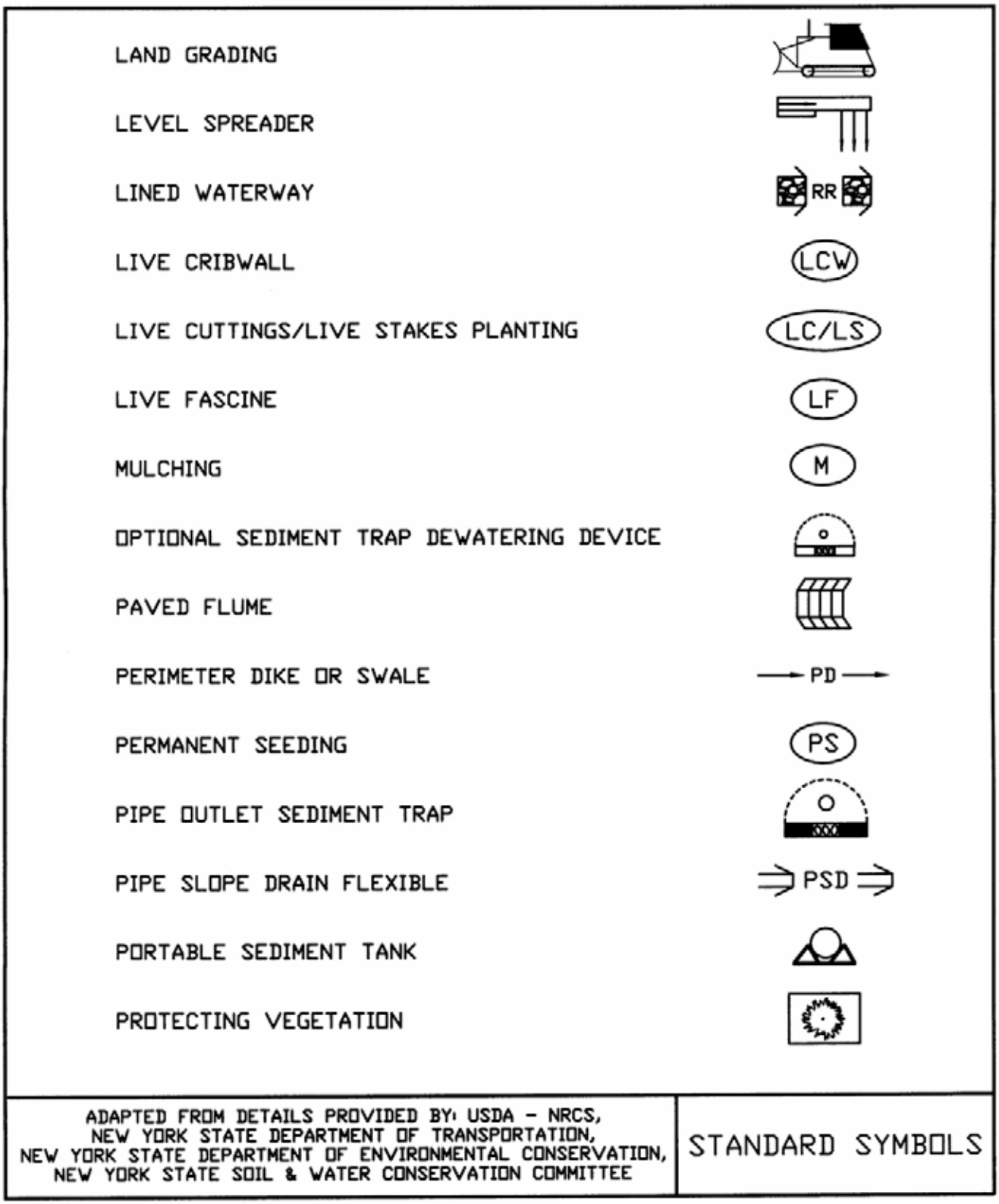
5. Do not locate sanitary facilities over, or adjacent to, waterways, wells, or springs.

6. Locate storage yards and stockpiles where erosion and sediment hazards are slight. Where this is not possible, apply necessary erosion control practices.

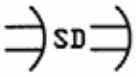
STANDARD SYMBOLS



STANDARD SYMBOLS (cont'd)

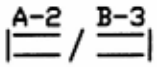
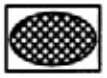
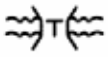


STANDARD SYMBOLS (cont'd)

RECREATION AREA IMPROVEMENT	
RIP RAP OUTLET PROTECTION	
RIP RAP SLOPE PROTECTION	
RIP RAP STREAMBANK PROTECTION	
ROCK DAM	
SEDIMENT BASIN	
SEDIMENT TRAP	
SEGMENTED RETAINING WALL	
SILT FENCE	
SODDING	
STABILIZED CONSTRUCTION ENTRANCE	
STONE & BLOCK DROP INLET PROTECTION STRUCTURE	
STRAW BALE DIKE	
SUBSURFACE DRAIN	
SUMP PIT	

ADAPTED FROM DETAILS PROVIDED BY: USDA – NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	STANDARD SYMBOLS

STANDARD SYMBOLS (cont'd)

SURFACE ROUGHENING	
TEMPORARY SEEDING	
TEMPORARY SWALE	
TOPSOILING	
TREE REVETMENT	
TURBIDITY CURTAIN	
VEGETATED ROCK GABIONS	
WATER BAR	
WATERWAY CROSSING	

ADAPTED FROM DETAILS PROVIDED BY: USDA – NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	STANDARD SYMBOLS

Attachment I:
NYSDEC Stormwater Construction Checklists (Sample Form)

Stormwater/Wetland Pond Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
Pre-Construction/Materials and Equipment		
Pre-construction meeting		
Pipe and appurtenances on-site prior to construction and dimensions checked		
1. Material (including protective coating, if specified)		
2. Diameter		
3. Dimensions of metal riser or pre-cast concrete outlet structure		
4. Required dimensions between water control structures (orifices, weirs, etc.) are in accordance with approved plans		
5. Barrel stub for prefabricated pipe structures at proper angle for design barrel slope		
6. Number and dimensions of prefabricated anti-seep collars		
7. Watertight connectors and gaskets		
8. Outlet drain valve		
Project benchmark near pond site		
Equipment for temporary de-watering		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
2. Subgrade Preparation		
Area beneath embankment stripped of all vegetation, topsoil, and organic matter		
3. Pipe Spillway Installation		
Method of installation detailed on plans		
A. Bed preparation		
Installation trench excavated with specified side slopes		
Stable, uniform, dry subgrade of relatively impervious material (If subgrade is wet, contractor shall have defined steps before proceeding with installation)		
Invert at proper elevation and grade		
B. Pipe placement		
Metal / plastic pipe		
1. Watertight connectors and gaskets properly installed		
2. Anti-seep collars properly spaced and having watertight connections to pipe		
3. Backfill placed and tamped by hand under “haunches” of pipe		
4. Remaining backfill placed in max. 8 inch lifts using small power tamping equipment until 2 feet cover over pipe is reached		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
3. Pipe Spillway Installation		
Concrete pipe		
1. Pipe set on blocks or concrete slab for pouring of low cradle		
2. Pipe installed with rubber gasket joints with no spalling in gasket interface area		
3. Excavation for lower half of anti-seep collar(s) with reinforcing steel set		
4. Entire area where anti-seep collar(s) will come in contact with pipe coated with mastic or other approved waterproof sealant		
5. Low cradle and bottom half of anti-seep collar installed as monolithic pour and of an approved mix		
6. Upper half of anti-seep collar(s) formed with reinforcing steel set		
7. Concrete for collar of an approved mix and vibrated into place (protected from freezing while curing, if necessary)		
8. Forms stripped and collar inspected for honeycomb prior to backfilling. Parge if necessary.		
C. Backfilling		
Fill placed in maximum 8 inch lifts		
Backfill taken minimum 2 feet above top of anti-seep collar elevation before traversing with heavy equipment		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
4. Riser / Outlet Structure Installation		
Riser located within embankment		
A. Metal riser		
Riser base excavated or formed on stable subgrade to design dimensions		
Set on blocks to design elevations and plumbed		
Reinforcing bars placed at right angles and projecting into sides of riser		
Concrete poured so as to fill inside of riser to invert of barrel		
B. Pre-cast concrete structure		
Dry and stable subgrade		
Riser base set to design elevation		
If more than one section, no spalling in gasket interface area; gasket or approved caulking material placed securely		
Watertight and structurally sound collar or gasket joint where structure connects to pipe spillway		
C. Poured concrete structure		
Footing excavated or formed on stable subgrade, to design dimensions with reinforcing steel set		
Structure formed to design dimensions, with reinforcing steel set as per plan		
Concrete of an approved mix and vibrated into place (protected from freezing while curing, if necessary)		
Forms stripped & inspected for “honeycomb” prior to backfilling; parge if necessary		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
5. Embankment Construction		
Fill material		
Compaction		
Embankment		
1. Fill placed in specified lifts and compacted with appropriate equipment		
2. Constructed to design cross-section, side slopes and top width		
3. Constructed to design elevation plus allowance for settlement		
6. Impounded Area Construction		
Excavated / graded to design contours and side slopes		
Inlet pipes have adequate outfall protection		
Forebay(s)		
Pond benches		
7. Earth Emergency Spillway Construction		
Spillway located in cut or structurally stabilized with riprap, gabions, concrete, etc.		
Excavated to proper cross-section, side slopes and bottom width		
Entrance channel, crest, and exit channel constructed to design grades and elevations		

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
8. Outlet Protection		
A. End section		
Securely in place and properly backfilled		
B. Endwall		
Footing excavated or formed on stable subgrade, to design dimensions and reinforcing steel set, if specified		
Endwall formed to design dimensions with reinforcing steel set as per plan		
Concrete of an approved mix and vibrated into place (protected from freezing, if necessary)		
Forms stripped and structure inspected for "honeycomb" prior to backfilling; parge if necessary		
C. Riprap apron / channel		
Apron / channel excavated to design cross-section with proper transition to existing ground		
Filter fabric in place		
Stone sized as per plan and uniformly place at the thickness specified		
9. Vegetative Stabilization		
Approved seed mixture or sod		
Proper surface preparation and required soil amendments		
Excelsior mat or other stabilization, as per plan		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
10. Miscellaneous		
Drain for ponds having a permanent pool		
Trash rack / anti-vortex device secured to outlet structure		
Trash protection for low flow pipes, orifices, etc.		
Fencing (when required)		
Access road		
Set aside for clean-out maintenance		
11. Stormwater Wetlands		
Adequate water balance		
Variety of depth zones present		
Approved pondscaping plan in place Reinforcement budget for additional plantings		
Plants and materials ordered 6 months prior to construction		
Construction planned to allow for adequate planting and establishment of plant community (April-June planting window)		
Wetland buffer area preserved to maximum extent possible		

Comments:

Actions to be Taken:

Open Channel System Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Pre-Construction		
Pre-construction meeting		
Runoff diverted		
Facility location staked out		
2. Excavation		
Size and location		
Side slope stable		
Soil permeability		
Groundwater / bedrock		
Lateral slopes completely level		
Longitudinal slopes within design range		
Excavation does not compact subsoils		
3. Check dams		
Dimensions		
Spacing		
Materials		

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
4. Structural Components		
Underdrain installed correctly		
Inflow installed correctly		
Pretreatment devices installed		
5. Vegetation		
Complies with planting specifications		
Topsoil adequate in composition and placement		
Adequate erosion control measures in place		
6. Final inspection		
Dimensions		
Check dams		
Proper outlet		
Effective stand of vegetation and stabilization		
Contributing watershed stabilized before flow is routed to the factility		

Comments:

Actions to be Taken:

Attachment J:
NYSDEC
Operation & Maintenance
Checklist
(Sample Form)

Stormwater Pond/Wetland Operation, Maintenance and Management Inspection Checklist

Project _____
Location: _____
Site Status: _____

Date: _____
Time: _____

Inspector: _____

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
1. Embankment and emergency spillway (Annual, After Major Storms)		
1. Vegetation and ground cover adequate		
2. Embankment erosion		
3. Animal burrows		
4. Unauthorized planting		
5. Cracking, bulging, or sliding of dam		
a. Upstream face		
b. Downstream face		
c. At or beyond toe		
downstream		
upstream		
d. Emergency spillway		
6.Pond, toe & chimney drains clear and functioning		
7.Seeps/leaks on downstream face		
8.Slope protection or riprap failure		
9. Vertical/horizontal alignment of top of dam “As-Built”		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
10. Emergency spillway clear of obstructions and debris		
11. Other (specify)		
2. Riser and principal spillway (Annual)		
Type: Reinforced concrete _____ Corrugated pipe _____ Masonry _____ 1. Low flow orifice obstructed		
2. Low flow trash rack. a. Debris removal necessary		
b. Corrosion control		
3. Weir trash rack maintenance a. Debris removal necessary		
b. corrosion control		
4. Excessive sediment accumulation insider riser		
5. Concrete/masonry condition riser and barrels a. cracks or displacement		
b. Minor spalling (<1")		
c. Major spalling (rebars exposed)		
d. Joint failures		
e. Water tightness		
6. Metal pipe condition		
7. Control valve a. Operational/exercised		
b. Chained and locked		
8. Pond drain valve a. Operational/exercised		
b. Chained and locked		
9. Outfall channels functioning		
10. Other (specify)		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
3. Permanent Pool (Wet Ponds) (monthly)		
1. Undesirable vegetative growth		
2. Floating or floatable debris removal required		
3. Visible pollution		
4. Shoreline problem		
5. Other (specify)		
4. Sediment Forebays		
1.Sedimentation noted		
2. Sediment cleanout when depth < 50% design depth		
5. Dry Pond Areas		
1. Vegetation adequate		
2. Undesirable vegetative growth		
3. Undesirable woody vegetation		
4. Low flow channels clear of obstructions		
5. Standing water or wet spots		
6. Sediment and / or trash accumulation		
7. Other (specify)		
6. Condition of Outfalls (Annual , After Major Storms)		
1. Riprap failures		
2. Slope erosion		
3. Storm drain pipes		
4.Endwalls / Headwalls		
5. Other (specify)		
7. Other (Monthly)		
1. Encroachment on pond, wetland or easement area		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
2. Complaints from residents		
3.Aesthetics a. Grass growing required		
b. Graffiti removal needed		
c. Other (specify)		
4. Conditions of maintenance access routes.		
5. Signs of hydrocarbon build-up		
6. Any public hazards (specify)		
8. Wetland Vegetation (Annual)		
1. Vegetation healthy and growing Wetland maintaining 50% surface area coverage of wetland plants after the second growing season. (If unsatisfactory, reinforcement plantings needed)		
2. Dominant wetland plants: Survival of desired wetland plant species Distribution according to landscaping plan?		
3. Evidence of invasive species		
4. Maintenance of adequate water depths for desired wetland plant species		
5. Harvesting of emergent plantings needed		
6. Have sediment accumulations reduced pool volume significantly or are plants “choked” with sediment		
7. Eutrophication level of the wetland.		
8. Other (specify)		

Comments:

Actions to be Taken:

Open Channel Operation, Maintenance, and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY/ UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Contributing areas clean of debris		
2. Check Dams or Energy Dissipators (Annual, After Major Storms)		
No evidence of flow going around structures		
No evidence of erosion at downstream toe		
Soil permeability		
Groundwater / bedrock		
3. Vegetation (Monthly)		
Mowing done when needed		
Minimum mowing depth not exceeded		
No evidence of erosion		
Fertilized per specification		
4. Dewatering (Monthly)		
Dewaters between storms		

MAINTENANCE ITEM	SATISFACTORY/ UNSATISFACTORY	COMMENTS
5. Sediment deposition (Annual)		
Clean of sediment		
6. Outlet/Overflow Spillway (Annual)		
Good condition, no need for repairs		
No evidence of erosion		

Comments:

Actions to be Taken:

Attachment K:
Stormwater Management Summary

INDEX

Stormwater Management Summary

Site Date – General 2

Runoff Reduction Management Strategy 4

Design Point 1 Summary (DP-1) 6

Methodology 7

Design Modeling Results 8

Stage Storage Tables 9

Water Quality Volume/Runoff Reduction Volume Worksheets ..... Appendix 1

Hydraulic Modeling Results ..... Appendix 2

Soils ..... Appendix 3

Precipitation Data ..... Appendix 4

STORMWATER MANAGEMENT SUMMARY

SITE DATA - GENERAL

Site Notes: This summary has been prepared for major activities associated with the ongoing operation of a contractor work yard in the Town of Lansing. The production originally started in 2011 which was allowed use by right through the Town. In 2016, a full site plan review process was conducted for a conceptual apartment complex located downslope from the facility which included an approved SWPPP. As part of the storm plan, the work yard was allowed continued use by right but several restrictions were placed on the property limiting the size and scope of the work zone while also requiring the installation of a stormwater management sump practice to provide runoff mitigation and attenuation. Because the apartment complex was never realized, the 2016 restrictions became null and void with the exception that the operation would now be required to carry its own SWPPP.

Subcatchment Evaluation: There is one pre-developed (existing) watershed subcatchments (ESC-1) for this site totaling 449,606-SF (10.32-AC). This area is isolated from eastern upland watershed runoff by a road R.O.W. drainage ditch along Scofield Road and a large berm along the southern parcel line Peruville Road. In as much as flow naturally moves in a northwest direction across the site, this prevents influences onto the parcel from the north. General site runoff is directed toward the west over moderately flat slopes where it terminates into an existing 1' dry pond (sump) sedimentation basin designed to capture and treat flow. Any surge from the practice outlets harmlessly where it eventually finds its way into the Peruville Road R.O.W. swale below. (DP-1).

Because the contractor work yard has been in operation since 2011, this Full Stormwater Pollution Prevention Plan (SWPPP) addresses runoff concerns. As such, the proposed runoff model generally mirrors that of the existing site conditions with the exception that the site has expanded from 2.57-Ac to 4.93-AC through the years. As such the sedimentation basin will need an additional 1' of volume added to ensure that it can continue to meet runoff attenuation requirements from Proposed Subcatchment 1 (PSC-1)

Site Control Methods: This project follows DEC design standards on runoff reduction by applying a sedimentation basin to address runoff concerns.

Site Soils: There are a two soil types in hydrologic soil groups A and C located across the site. Palmyra gravelly loam (PaC) belongs in the hydrologic soil group A with a well drained permeability range of 0.63 – 6.3 inches per hour. Finally, Kendaia (KnA) is a somewhat poorly drained C type soil with a slow permeability of 0.20 inches per hour. See Appendix 3 for more information.

Soils data was obtained from the Tompkins County Soil Survey conducted by the USDA Soil Conservation Service and the on-line Web Soil Survey.

Site Topography: The site as a whole has a varied slope of <1% - 5% primarily moving downhill from east to west.

Site Watershed: Of the 10.32-acre watershed, the area of disturbance will continue to be approximately 4.93-acres. Flow is channeled across the property into a sedimentation basin.

Rainfall: Rainfall data used in the modeling and analysis was taken from www.precipt.net, from the Northeast Regional Climate Center which is an accepted NYSDEC reference. Rainfall data specific to Tompkins County under consideration, for various 24-hour storm events tabled below:

RAINFALL DATA

STORM	24-HOUR RAINFALL
1-year	2.0 inches
10-year	3.41 inches
100-year	5.85 inches

These values were used in modeling for the evaluation of existing and proposed stormwater run-off conditions.

RUNOFF REDUCTION VOLUME MANAGEMENT STRATEGY

(See Appendix 1 for Worksheet Analyses)

1. **Water Quality Volume and Runoff Reduction Stormwater Management Strategy** - *Reference modeling results and WQv/RRv worksheets which follow this summary:*

The total site water quality volume for DP-1 is

DP-1 WQv = 17,000 cu-ft (0.390)

Of this amount, there was no potential for the conservation of natural areas, protection of riparian areas, tree planting, rooftop disconnection, etc. that would lend to a reduction in total WQv.

WQv credit = 0 *cuft (0.00 af)*

The minimum RRv was based on the following calculation:

Soil group for site:

A – 2.47-AC S = 55%
C – 2.47-AC S = 30%

Minimum RRv:

S = 0.43
Impervious Area = 4.93-AC
Precipitation = 1.0 in
Rv = 0.95

Minimum Rv = [(P)(Rv)(A)] /12 = ((1.0 **** 0.95"/AC * 4.93AC**)/12)0.43* =

7,225 cuft or, 0.170-acft

2. **Water Quality Volume Treatment Practices**

A single sedimentation basin dry pond is used to capture and treat runoff. A summary of total runoff reduction volumes is provided in the table below:

Subcatchment	Required RRv (cuft)	RRv Applied (Cuft)	Practice
PSC-1	7,225	17,000	3P

3. Total of RRv

Total RRv provided by practices 17,000 cuft (0.390-AF)
Total Remaining Storage Volume for practices (after RRv) 17000 cuft - 17000 cuft = 0 cuft (0.0af)

Is provided RRv > minimum RRv for all soils from #1? 0.390 acft > 0.170 acft **YES**
Is provided RRv > adjusted WQv from #1? 0.390 acft > 0.390 acft **YES**

Is volume available within standard practices for remaining untreated WQv?

Total WQv 0.390AF
RRv 0.390 AF
Remaining WQv 0.0AF (0-CF)

YES

Is all of the watershed drainage area treated by either area reduction or source control practices? **YES**

Is all of the watershed impervious area treated with either reduction or source control practices? **YES**

Minimum runoff reduction requirements are met for this project.

DP-1

Design Point 1 Summary (DP-1)

CONTROL SIZING

Sedimentation Basin

Please see the attached worksheets to determine bioretention area sizing.

Cpv = 24 hour extended detention of post-developed 1-year, 24-hour Storm event. The required CPv is a summation of the modeled 1 yr runoff output from each untreated subcatchment (**2.0-inch rainfall Tompkins County**) after runoff reduction (RRv). **1 yr Cpv 0.193-AF – RRV 0.390-AF = -0.00-AF (-0.00)-CF**

The **Cpv** Channel Protection Volume is provided by the basin practices as determined by measuring the storage volume allowed between the floor of the practice at (0.0') and the primary outlet (1.5'), less the amount required for RRV.

CPv conditions are met.

Overbank Flood (Qp) – DP1

Qp = Controls the peak discharge from the 10-year storm **(3.41-inch rainfall Tompkins County)** to 10-year predevelopment rates.

Pre-developed max rate = **0.00-CFS**, Total Volume = 0.000AF (0-CF).

The maximum post-developed run-off rate with the bioretention areas in-line is 0-CFS, and the total run-off volume is 0.000-AF (0-CF).

The **Qp** Overbank Flood control criterion is met with the sump area in-line.

Extreme Storm (Qf) – DP1

Control the peak discharge from the 100-year storm **(5.85-inch rainfall Tompkins County)** to 100-year predevelopment rates. Safely pass the 100-year storm event.

Pre-developed max run-off rate = **6.12-CFS**, Total Volume = 0.770-AF (33,541-CF).

The maximum post-developed run-off rate with the structure inline is 5.64-CFS, and the total run-off volume is 0.946-AF (41,208-CF).

The **Qf** Extreme Storm control criterion is met with the sedimentation basin in-line.

METHODOLOGY

The methodology used for the hydrologic and hydraulic analysis was obtained from the United States Department of Agriculture (USDA) Soil Conservation Service's (SCS) Technical Release No. 20, as implemented by the application program HydroCAD. HydroCAD, developed by Applied Microcomputer Systems of Chocorua, New Hampshire, is a Computer-Aided-Design (CAD) program for analyzing the hydrologic and hydraulic characteristics of a given watershed and associated stormwater management facilities. It utilizes the latest modeling techniques to predict the consequences of any given storm.

HydroCAD has the capability of computing hydrographs and routing flows through pipes, streams and ponds. Hydrographs represent discharge rates characteristic of specified watershed conditions, precipitation and geologic factors.

For this analysis, the watershed and drainage system was broken down into a network consisting of three types of components described below:

Subcatchment: A relatively homogeneous area of land, which produces a volume and rate of surface run-off unique to that area.

Reach: Uniform streams, channels or pipes which convey stormwater from one distinct point to another reach or pond.

Pond: Natural or man-made impoundment (ie. pond), which temporarily stores stormwater run-off and empties in a manner determined by its geometry and the hydraulic structure located at its outlet(s).

Subcatchments, reaches and ponds are represented by hexagons, squares and triangles, respectively, on the watershed routing diagrams provided with the computations reference modeling results attached.

Modeling Results Tabled:

(See Appendix 2 for actual modeling data)

DP1

EXISTING
EXISTING FLOW CONDITIONS AT DESIGN POINT (DP1)

STORM EVENT	*PEAK FLOW (CFS)*	*TOTAL VOLUME (AF)*
1-year	*0.00*	*0.000*
10-year	*0.00*	*0.000*
100-year	*6.12*	*0.770*

PROPOSED
WITH SEDIMENTATION BASIN IN-LINE
PROPOSED FLOW CONDITIONS AT DESIGN POINT (DP1)

STORM EVENT	*PEAK FLOW (CFS)*	*TOTAL VOLUME (AF)*
1-year	*0.00*	*0.000*
10-year	*0.00*	*0.000*
100-year	*5.64*	*0.946*

The run-off rates decrease for the 10 and 100 yr storm events as modeled.

Stage Storage Tables:

BASIN 1 STAGE-STORAGE TABLE 3P

STORM EVENT	*PEAK STORAGE (CF)*	*PEAK DEPTH (FT)*
WQv	*17000*	*1.03'*
*1 year (***Cpv***)*	*0*	*0.00'*
10 year	*0*	*0.00'*
100 year	*55,753*	*2.92'*

Notes:
Bottom of Practice El. = 0.00'
8' x 4' Broad Crested Weir Outlet inv. = 2.50'
Top of Embankment Elev. = 3.00'

APPENDIX 1

WATER QUALITY VOLUME/RUNOFF REDUCTION WORKSHEETS

Version 1.6
Last Updated: 03/28/2014

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?.....	No

Design Point:	1	
P=	1.00	*inch*

Manually enter P, Total Area and Impervious Cover.

Breakdown of Subcatchments

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Description
1	4.93	4.93	100%	0.95	17,001	Sedimentation Basin
2						
3						
4						
5						
6						
7						
8						
9						
10						
Subtotal (1-30)	4.93	4.93	100%	0.95	**17,001**	**Subtotal 1**
Total	4.93	4.93	100%	0.95	**17,001**	**Initial WQv**

Identify Runoff Reduction Techniques By Area

Technique	Total Contributing Area *(Acre)*	Contributing Impervious Area *(Acre)*	Notes
Conservation of Natural Areas	0.00	0.00	*minimum 10,000 sf*
Riparian Buffers	0.00	0.00	*maximum contributing length 75 feet to 150 feet*
Filter Strips	0.00	0.00	
Tree Planting	0.00	0.00	*Up to 100 sf directly connected impervious area may be subtracted per tree*
Total	**0.00**	**0.00**	

Recalculate WQv after application of Area Reduction Techniques

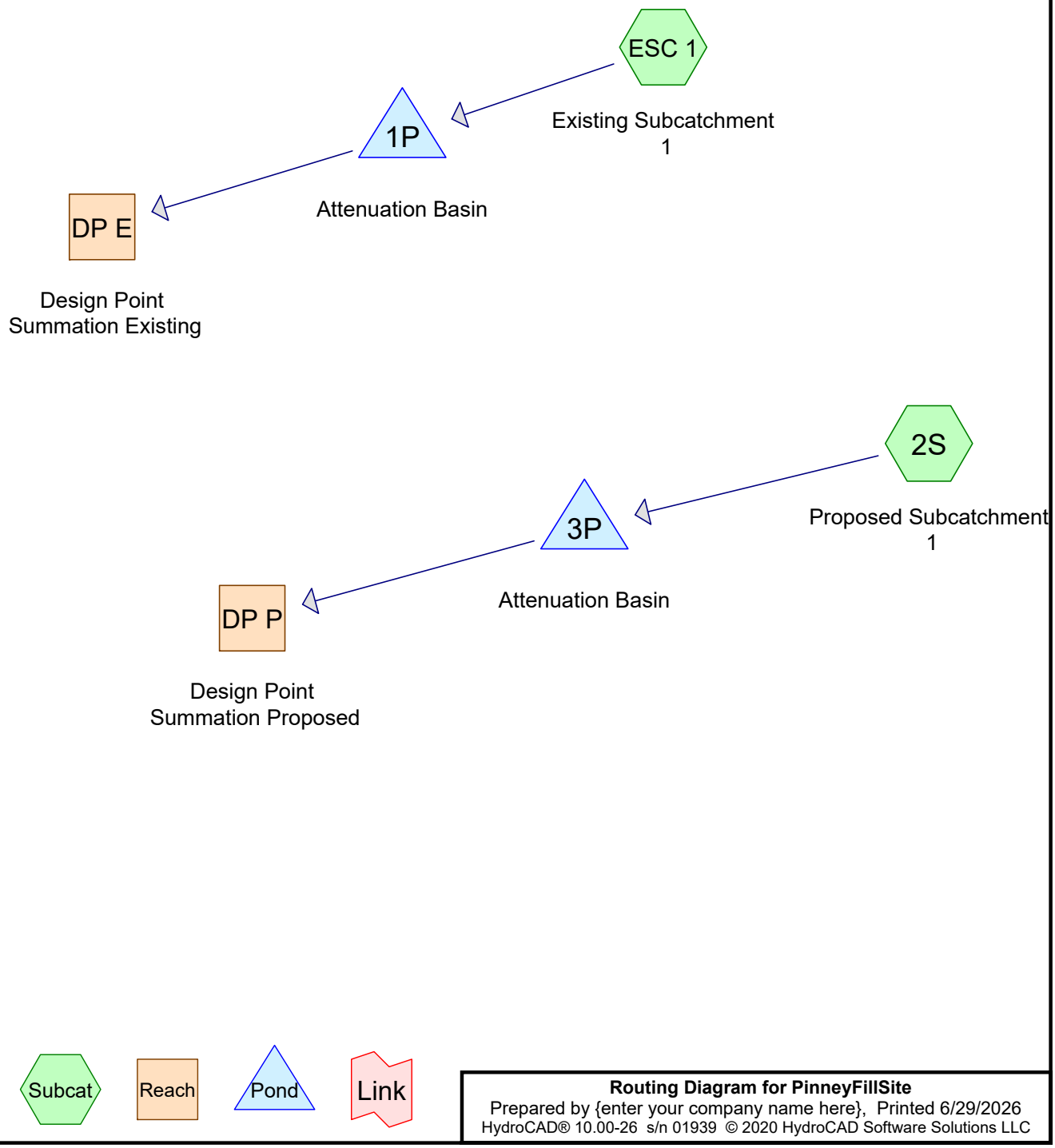
	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Runoff Coefficient Rv	WQv *(ft^3)*
"<<Initial WQv"	4.93	4.93	100%	0.95	17,001
Subtract Area	0.00	0.00			
WQv adjusted after Area Reductions	**4.93**	**4.93**	100%	0.95	17,001
Disconnection of Rooftops		0.00			

Minimum RRv

Enter the Soils Data for the site		
Soil Group	Acres	S
A	2.47	55%
B		40%
C	2.47	30%
D		20%
Total Area	4.94	
Calculate the Minimum RRv		
S =	**0.43**	
Impervious =	4.93	*acre*
Precipitation	1	*in*
Rv	0.95	
Minimum RRv	**7,225**	***ft3***
	0.17	af

APPENDIX 2

HYDRAULIC MODELING DATA



Routing Diagram for PinneyFillSite
Prepared by {enter your company name here}, Printed 6/29/2026
HydroCAD® 10.00-26 s/n 01939 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
5.971	30	Brush, Good, HSG A (2S, ESC 1)
5.648	65	Brush, Good, HSG C (2S, ESC 1)
6.630	98	Compacted Fill Site A & C Soils (2S, ESC 1)
1.328	30	Future Fill Site Brush, Good, HSG A (ESC 1)
0.190	65	Future Fill Site Brush, Good, HSG C (ESC 1)
0.877	98	Paved parking & roofs (2S, ESC 1)
20.643	**65**	**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
5.971	0.000	5.648	0.000	0.000	11.619	Brush, Good	2S, ES C 1
0.000	0.000	0.000	0.000	6.630	6.630	Compacted Fill Site A & C Soils	2S, ES C 1
1.328	0.000	0.190	0.000	0.000	1.518	Future Fill Site Brush, Good	ES C 1
0.000	0.000	0.000	0.000	0.877	0.877	Paved parking & roofs	2S, ES C 1
7.299	**0.000**	**5.838**	**0.000**	**7.507**	**20.643**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Proposed Runoff Area=449,606 sf 47.78% Impervious Runoff Depth>0.22"
Flow Length=932' Tc=26.9 min CN=71 Runoff=1.58 cfs 0.193 af

Subcatchment ESC 1: Existing Runoff Area=449,606 sf 24.94% Impervious Runoff Depth>0.03"
Flow Length=814' Tc=24.9 min CN=58 Runoff=0.04 cfs 0.022 af

Reach DP E: Design Point Summation Existing Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach DP P: Design Point Summation Proposed Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 1P: Attenuation Basin Peak Elev=73.08' Storage=966 cf Inflow=0.04 cfs 0.022 af
Outflow=0.00 cfs 0.000 af

Pond 3P: Attenuation Basin Peak Elev=72.57' Storage=8,402 cf Inflow=1.58 cfs 0.193 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 20.643 ac Runoff Volume = 0.215 af Average Runoff Depth = 0.13"
63.64% Pervious = 13.136 ac 36.36% Impervious = 7.507 ac

PinneyFillSite
Prepared by {enter your company name here}
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Summary for Subcatchment 2S: Proposed Subcatchment 1

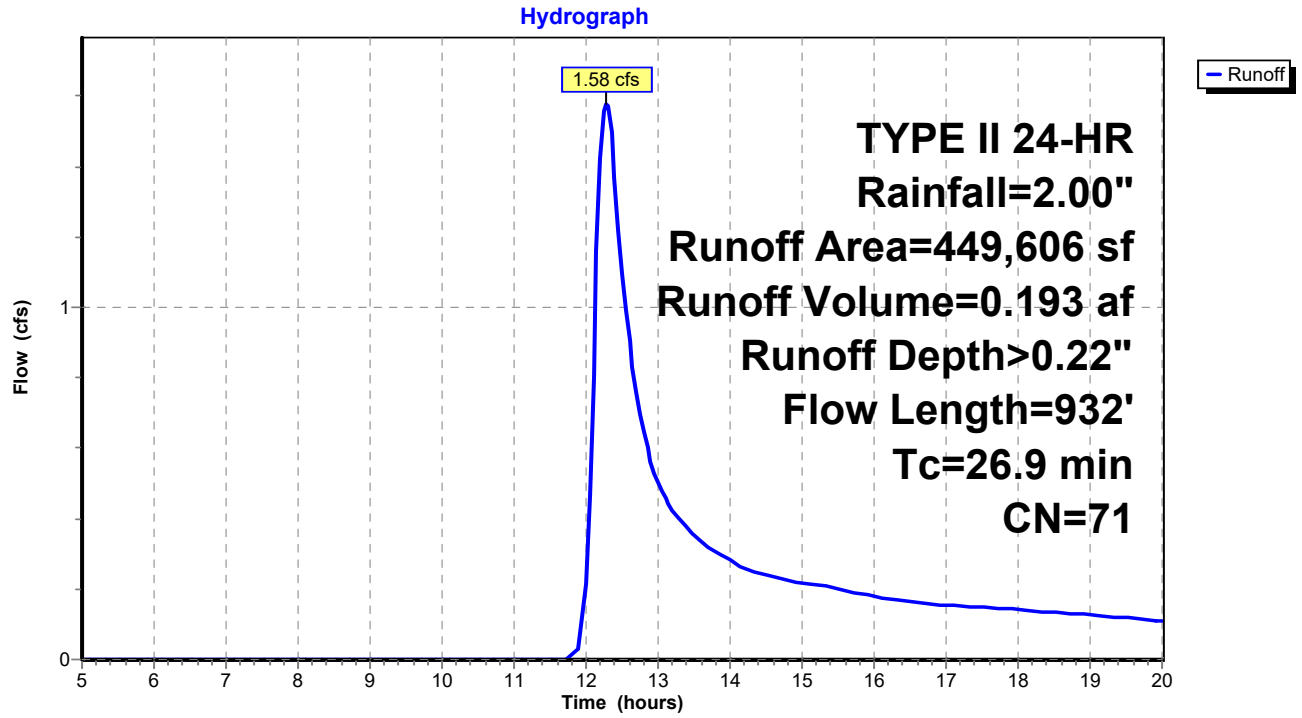
Runoff = 1.58 cfs @ 12.28 hrs, Volume= 0.193 af, Depth> 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=2.00"

	Area (sf)	CN	Description
	113,251	65	Brush, Good, HSG C
	121,512	30	Brush, Good, HSG A
	17,128	98	Paved parking & roofs
*	197,715	98	Compacted Fill Site A & C Soils
	449,606	71	Weighted Average
	234,763		52.22% Pervious Area
	214,843		47.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0100	0.08		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
6.4	832	0.0180	2.16		**Shallow Concentrated Flow, Balance of Longest Flowpath** Unpaved Kv= 16.1 fps
26.9	932	Total			

Subcatchment 2S: Proposed Subcatchment 1



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Summary for Subcatchment ESC 1: Existing Subcatchment 1

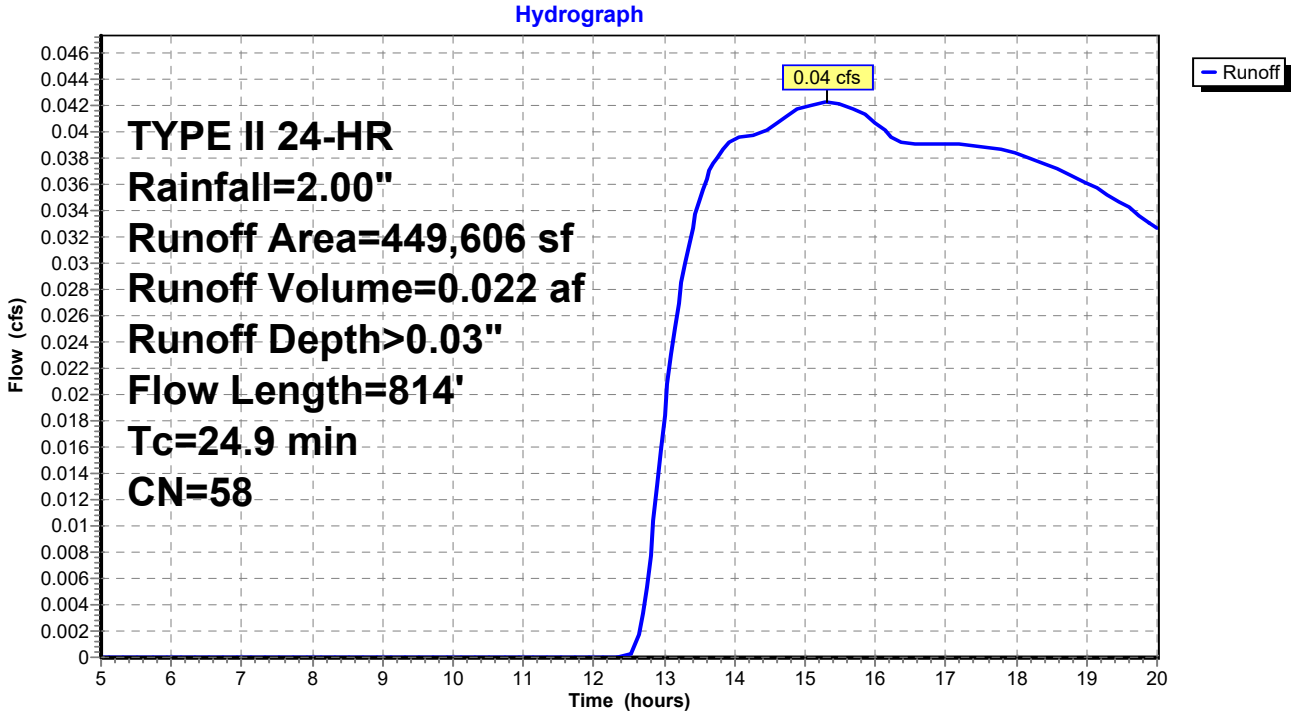
Runoff = 0.04 cfs @ 15.31 hrs, Volume= 0.022 af, Depth> 0.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=2.00"

	Area (sf)	CN	Description
	132,773	65	Brush, Good, HSG C
	138,575	30	Brush, Good, HSG A
	21,061	98	Paved parking & roofs
*	91,084	98	Compacted Fill Site A & C Soils
*	57,845	30	Future Fill Site Brush, Good, HSG A
*	8,268	65	Future Fill Site Brush, Good, HSG C
	449,606	58	Weighted Average
	337,461		75.06% Pervious Area
	112,145		24.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0100	0.08		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
4.4	714	0.0320	2.68		**Shallow Concentrated Flow, Balance of Longest Flowpath** Grassed Waterway Kv= 15.0 fps
24.9	814	Total			

Subcatchment ESC 1: Existing Subcatchment 1



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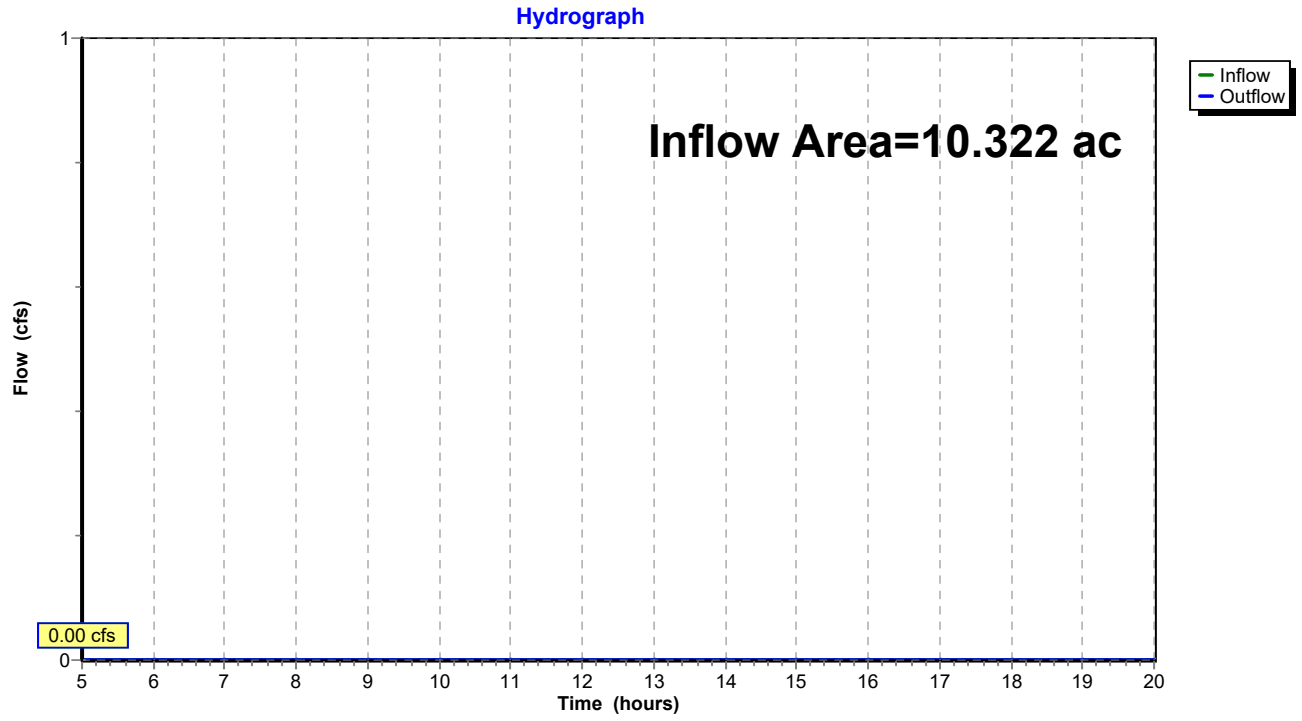
Summary for Reach DP E: Design Point Summation Existing

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 10.322 ac, 24.94% Impervious, Inflow Depth = 0.00"
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP E: Design Point Summation Existing



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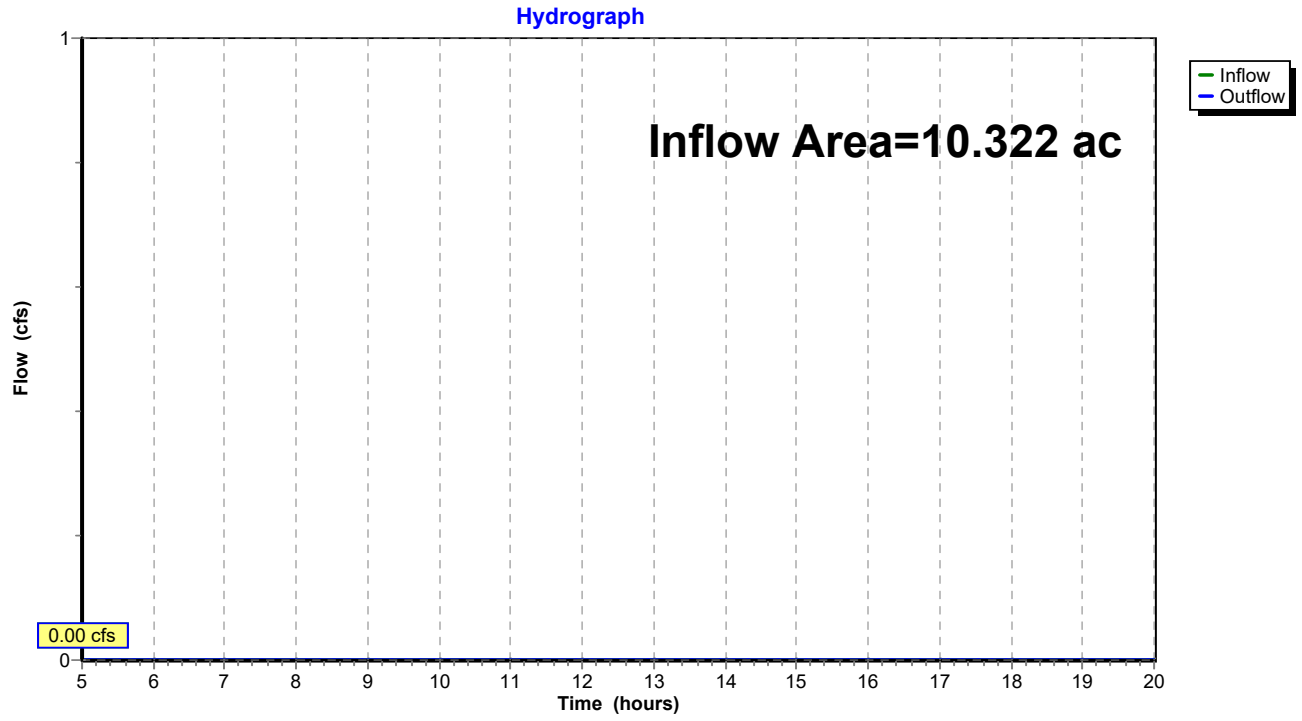
Summary for Reach DP P: Design Point Summation Proposed

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 10.322 ac, 47.78% Impervious, Inflow Depth = 0.00"
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP P: Design Point Summation Proposed



Summary for Pond 1P: Attenuation Basin

Inflow Area = 10.322 ac, 24.94% Impervious, Inflow Depth > 0.03"
Inflow = 0.04 cfs @ 15.31 hrs, Volume= 0.022 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 73.08' @ 20.00 hrs Surf.Area= 11,884 sf Storage= 966 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

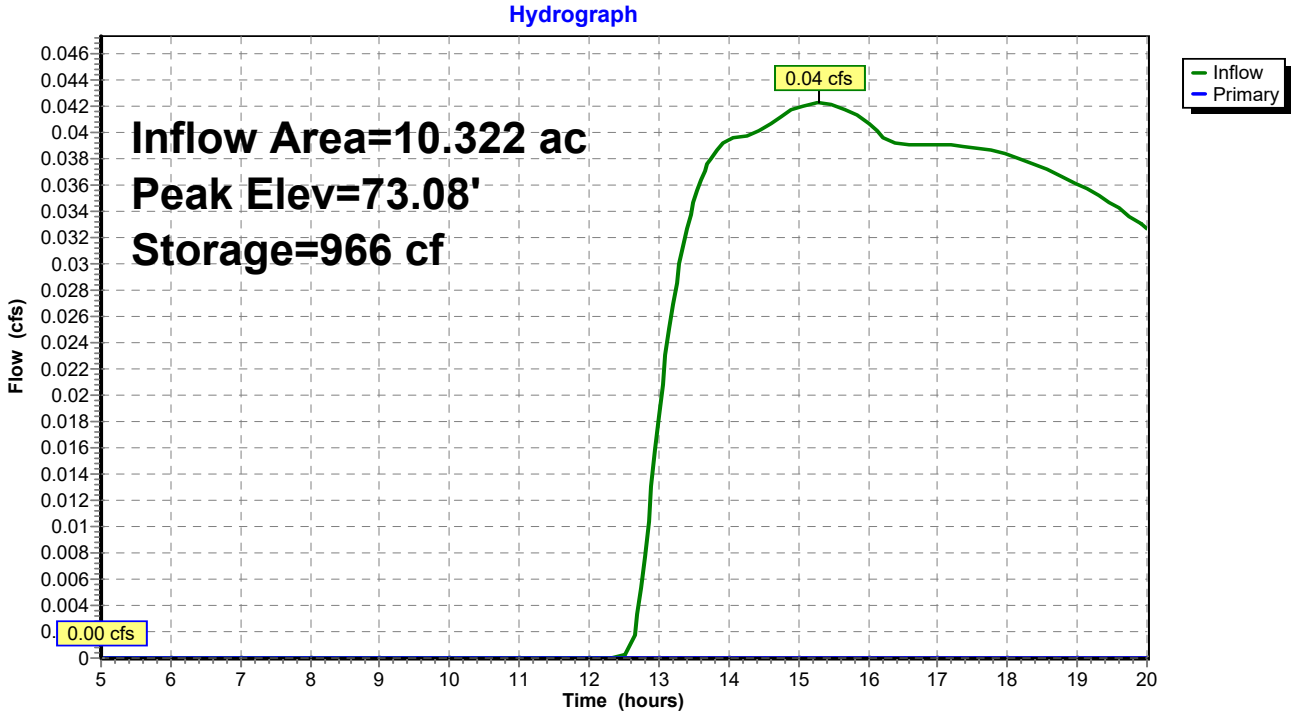
Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	23,317 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	11,363	0	0
74.00	17,635	14,499	14,499
75.00	0	8,818	23,317

Device	Routing	Invert	Outlet Devices
#1	Primary	74.50'	**8.0' long x 4.0' 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 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=73.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: Attenuation Basin



Summary for Pond 3P: Attenuation Basin

Inflow Area = 10.322 ac, 47.78% Impervious, Inflow Depth > 0.22"
Inflow = 1.58 cfs @ 12.28 hrs, Volume= 0.193 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 72.57' @ 20.00 hrs Surf.Area= 17,031 sf Storage= 8,402 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	72.00'	55,838 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

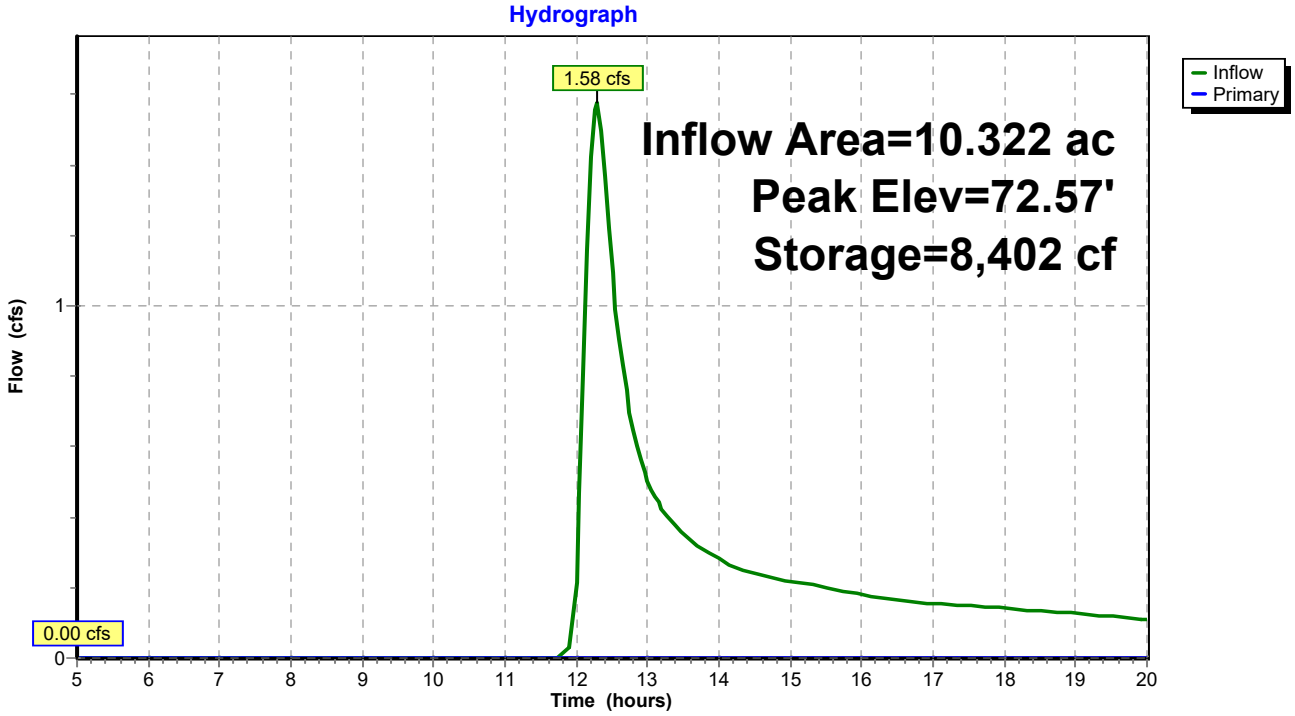
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
72.00	12,395	0	0
73.00	20,512	16,454	16,454
74.00	29,128	24,820	41,274
75.00	0	14,564	55,838

Device	Routing	Invert	Outlet Devices
#1	Primary	74.50'	**8.0' long x 4.0' 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 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=72.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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Pond 3P: Attenuation Basin



Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
5.971	30	Brush, Good, HSG A (2S, ESC 1)
5.648	65	Brush, Good, HSG C (2S, ESC 1)
6.630	98	Compacted Fill Site A & C Soils (2S, ESC 1)
1.328	30	Future Fill Site Brush, Good, HSG A (ESC 1)
0.190	65	Future Fill Site Brush, Good, HSG C (ESC 1)
0.877	98	Paved parking & roofs (2S, ESC 1)
20.643	**65**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
7.299	HSG A	2S, ESC 1
0.000	HSG B	
5.838	HSG C	2S, ESC 1
0.000	HSG D	
7.507	Other	2S, ESC 1
20.643		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
5.971	0.000	5.648	0.000	0.000	11.619	Brush, Good	2S, ES C 1
0.000	0.000	0.000	0.000	6.630	6.630	Compacted Fill Site A & C Soils	2S, ES C 1
1.328	0.000	0.190	0.000	0.000	1.518	Future Fill Site Brush, Good	ES C 1
0.000	0.000	0.000	0.000	0.877	0.877	Paved parking & roofs	2S, ES C 1
7.299	**0.000**	**5.838**	**0.000**	**7.507**	**20.643**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Proposed Runoff Area=449,606 sf 47.78% Impervious Runoff Depth>0.90"
Flow Length=932' Tc=26.9 min CN=71 Runoff=8.79 cfs 0.770 af

Subcatchment ESC 1: Existing Runoff Area=449,606 sf 24.94% Impervious Runoff Depth>0.35"
Flow Length=814' Tc=24.9 min CN=58 Runoff=2.47 cfs 0.303 af

Reach DP E: Design Point Summation Existing Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach DP P: Design Point Summation Proposed Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 1P: Attenuation Basin Peak Elev=73.92' Storage=13,162 cf Inflow=2.47 cfs 0.303 af
Outflow=0.00 cfs 0.000 af

Pond 3P: Attenuation Basin Peak Elev=73.72' Storage=33,508 cf Inflow=8.79 cfs 0.770 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 20.643 ac Runoff Volume = 1.072 af Average Runoff Depth = 0.62"
63.64% Pervious = 13.136 ac 36.36% Impervious = 7.507 ac

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Summary for Subcatchment 2S: Proposed Subcatchment 1

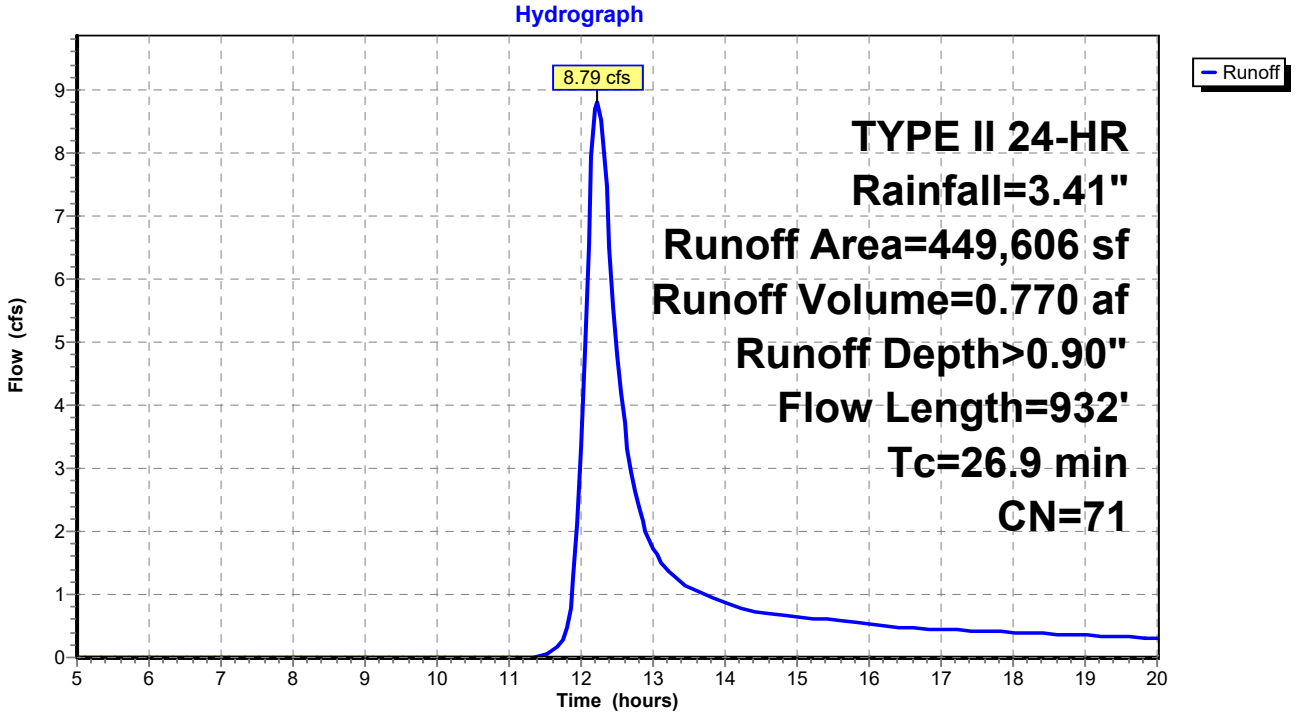
Runoff = 8.79 cfs @ 12.23 hrs, Volume= 0.770 af, Depth> 0.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=3.41"

	Area (sf)	CN	Description
	113,251	65	Brush, Good, HSG C
	121,512	30	Brush, Good, HSG A
	17,128	98	Paved parking & roofs
*	197,715	98	Compacted Fill Site A & C Soils
	449,606	71	Weighted Average
	234,763		52.22% Pervious Area
	214,843		47.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0100	0.08		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
6.4	832	0.0180	2.16		**Shallow Concentrated Flow, Balance of Longest Flowpath** Unpaved Kv= 16.1 fps
26.9	932	Total			

Subcatchment 2S: Proposed Subcatchment 1



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Summary for Subcatchment ESC 1: Existing Subcatchment 1

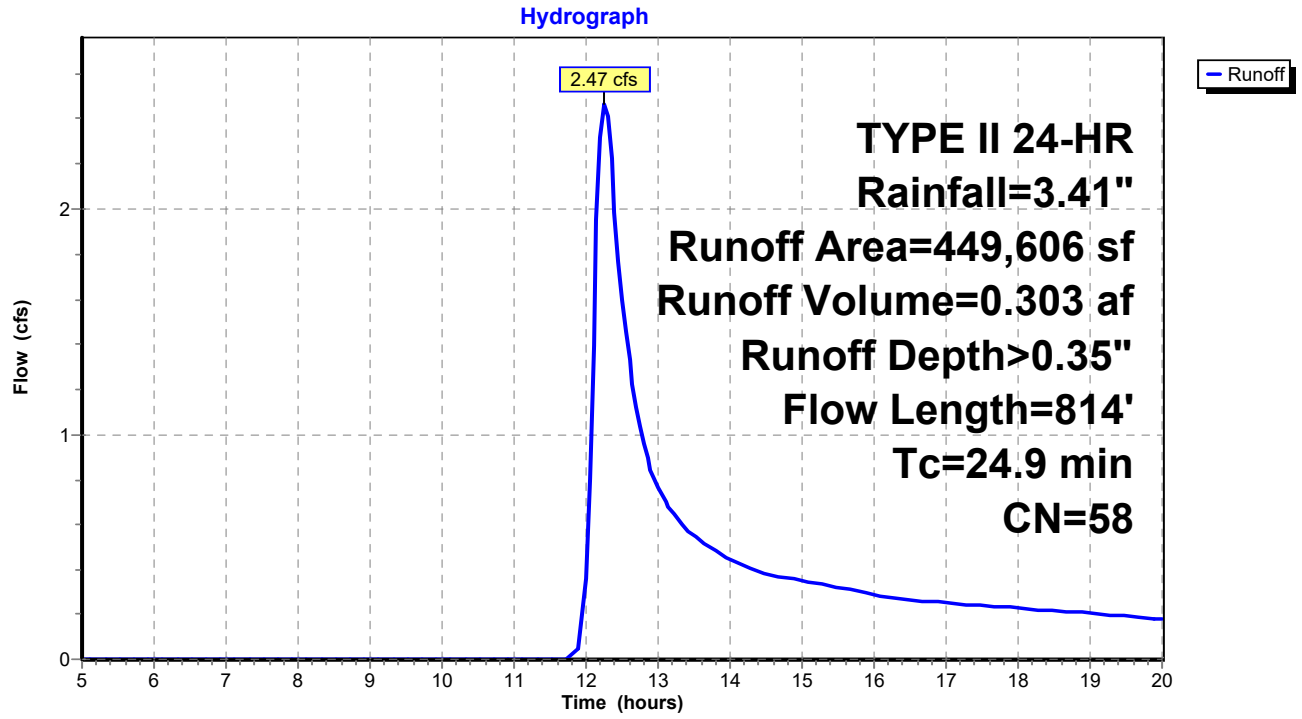
Runoff = 2.47 cfs @ 12.26 hrs, Volume= 0.303 af, Depth> 0.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=3.41"

	Area (sf)	CN	Description
	132,773	65	Brush, Good, HSG C
	138,575	30	Brush, Good, HSG A
	21,061	98	Paved parking & roofs
*	91,084	98	Compacted Fill Site A & C Soils
*	57,845	30	Future Fill Site Brush, Good, HSG A
*	8,268	65	Future Fill Site Brush, Good, HSG C
	449,606	58	Weighted Average
	337,461		75.06% Pervious Area
	112,145		24.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0100	0.08		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
4.4	714	0.0320	2.68		**Shallow Concentrated Flow, Balance of Longest Flowpath** Grassed Waterway Kv= 15.0 fps
24.9	814	Total			

Subcatchment ESC 1: Existing Subcatchment 1



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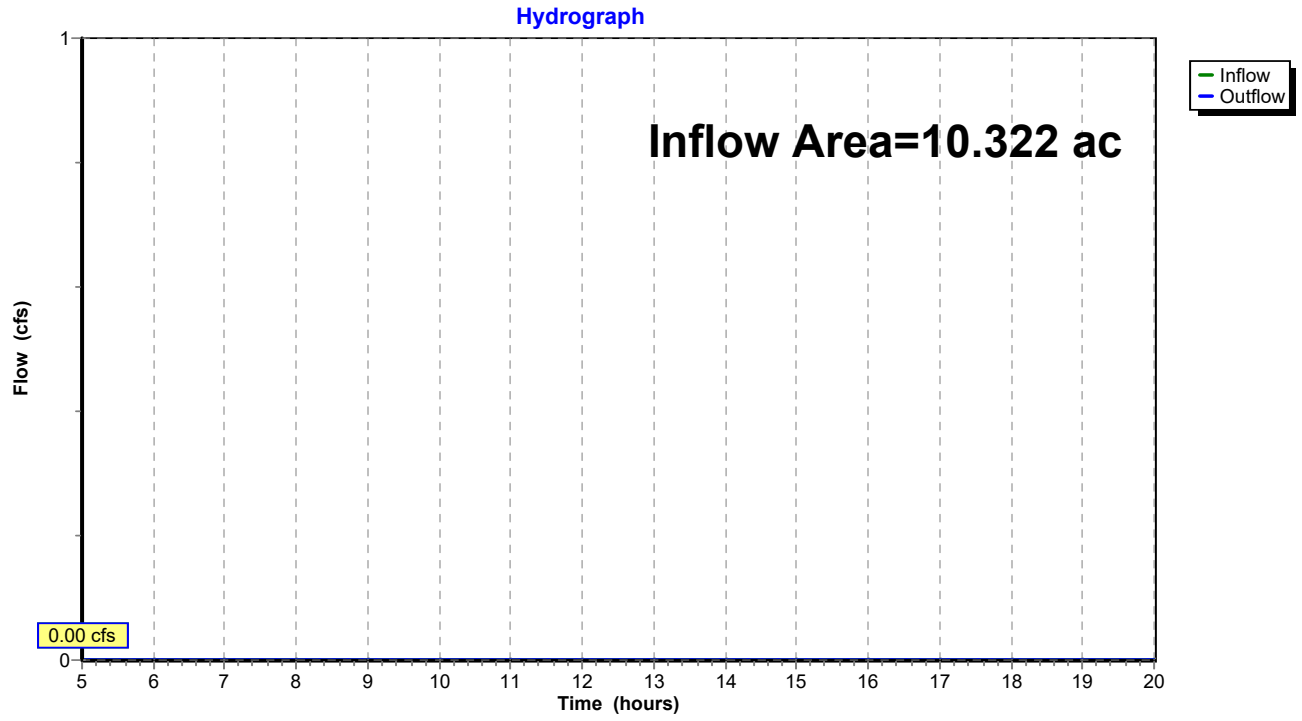
Summary for Reach DP E: Design Point Summation Existing

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 10.322 ac, 24.94% Impervious, Inflow Depth = 0.00"
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP E: Design Point Summation Existing



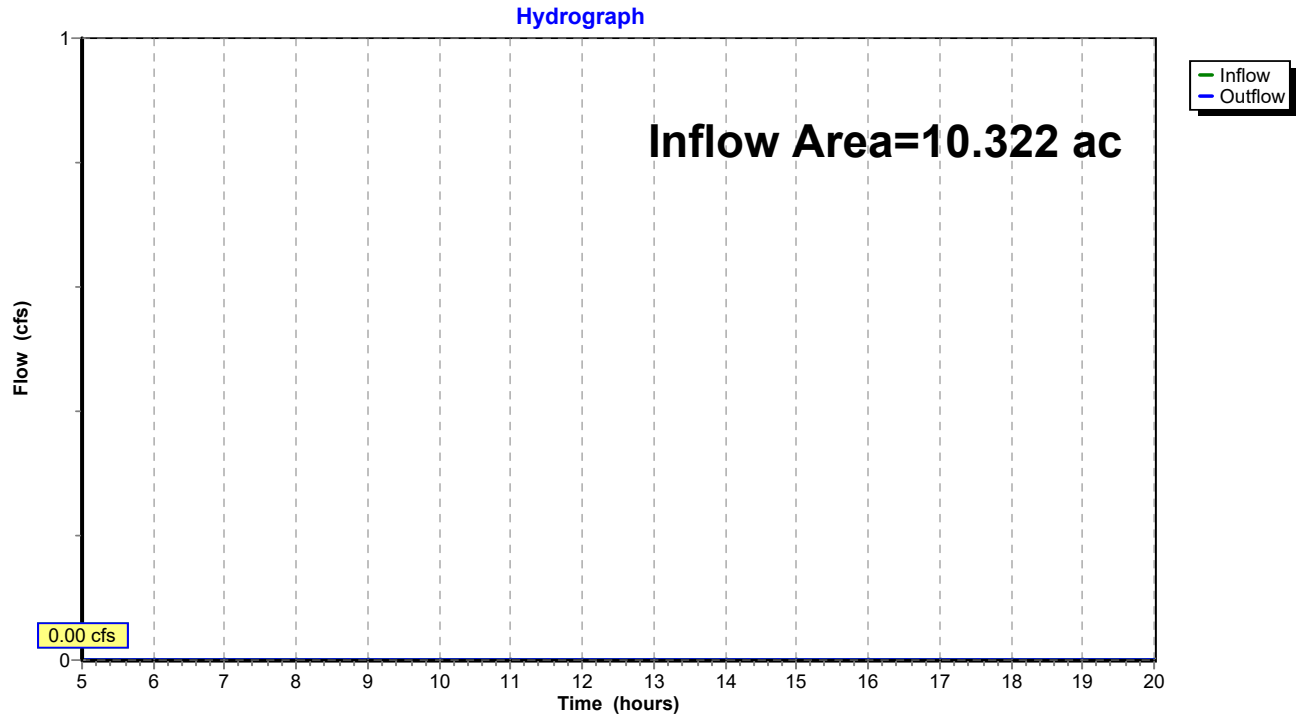
Summary for Reach DP P: Design Point Summation Proposed

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 10.322 ac, 47.78% Impervious, Inflow Depth = 0.00"
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP P: Design Point Summation Proposed



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Summary for Pond 1P: Attenuation Basin

Inflow Area = 10.322 ac, 24.94% Impervious, Inflow Depth > 0.35"
Inflow = 2.47 cfs @ 12.26 hrs, Volume= 0.303 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 73.92' @ 20.00 hrs Surf.Area= 17,153 sf Storage= 13,162 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	23,317 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

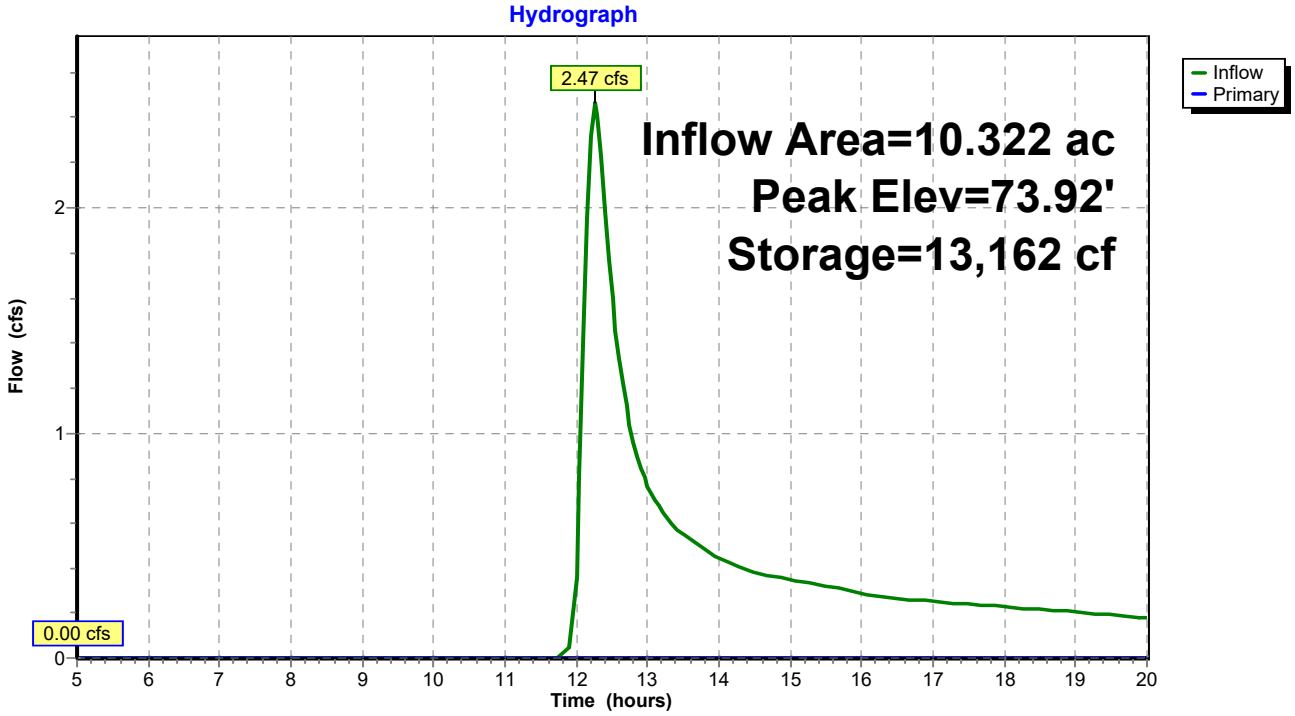
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	11,363	0	0
74.00	17,635	14,499	14,499
75.00	0	8,818	23,317

Device	Routing	Invert	Outlet Devices
#1	Primary	74.50'	**8.0' long x 4.0' 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 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=73.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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Pond 1P: Attenuation Basin



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Summary for Pond 3P: Attenuation Basin

Inflow Area = 10.322 ac, 47.78% Impervious, Inflow Depth > 0.90"
Inflow = 8.79 cfs @ 12.23 hrs, Volume= 0.770 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 73.72' @ 20.00 hrs Surf.Area= 26,733 sf Storage= 33,508 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

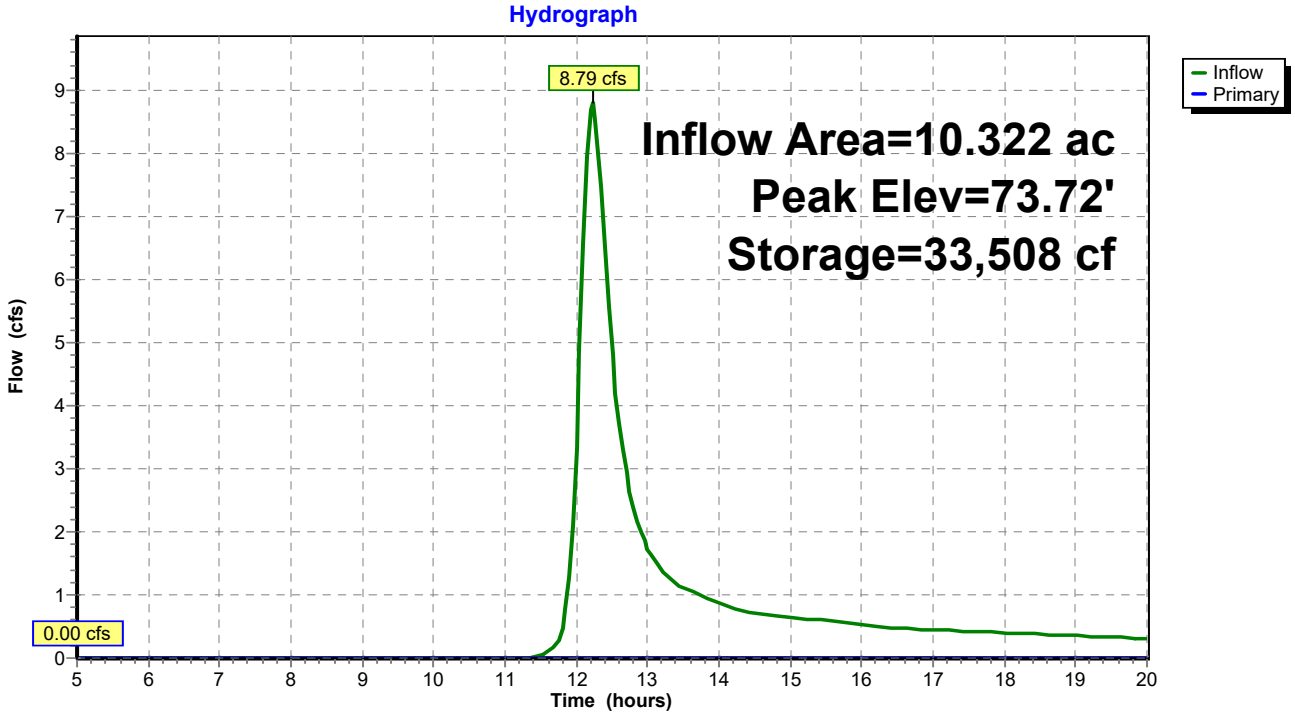
Volume	Invert	Avail.Storage	Storage Description
#1	72.00'	55,838 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
72.00	12,395	0	0
73.00	20,512	16,454	16,454
74.00	29,128	24,820	41,274
75.00	0	14,564	55,838

Device	Routing	Invert	Outlet Devices
#1	Primary	74.50'	**8.0' long x 4.0' 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 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=72.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 3P: Attenuation Basin



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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
5.971	30	Brush, Good, HSG A (2S, ESC 1)
5.648	65	Brush, Good, HSG C (2S, ESC 1)
6.630	98	Compacted Fill Site A & C Soils (2S, ESC 1)
1.328	30	Future Fill Site Brush, Good, HSG A (ESC 1)
0.190	65	Future Fill Site Brush, Good, HSG C (ESC 1)
0.877	98	Paved parking & roofs (2S, ESC 1)
20.643	**65**	**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
5.971	0.000	5.648	0.000	0.000	11.619	Brush, Good	2S, ES C 1
0.000	0.000	0.000	0.000	6.630	6.630	Compacted Fill Site A & C Soils	2S, ES C 1
1.328	0.000	0.190	0.000	0.000	1.518	Future Fill Site Brush, Good	ES C 1
0.000	0.000	0.000	0.000	0.877	0.877	Paved parking & roofs	2S, ES C 1
7.299	**0.000**	**5.838**	**0.000**	**7.507**	**20.643**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: Proposed Runoff Area=449,606 sf 47.78% Impervious Runoff Depth>2.53"
Flow Length=932' Tc=26.9 min CN=71 Runoff=26.36 cfs 2.177 af

Subcatchment ESC 1: Existing Runoff Area=449,606 sf 24.94% Impervious Runoff Depth>1.48"
Flow Length=814' Tc=24.9 min CN=58 Runoff=15.19 cfs 1.271 af

Reach DP E: Design Point Summation Existing Inflow=6.12 cfs 0.770 af
Outflow=6.12 cfs 0.770 af

Reach DP P: Design Point Summation Proposed Inflow=5.64 cfs 0.946 af
Outflow=5.64 cfs 0.946 af

Pond 1P: Attenuation Basin Peak Elev=74.95' Storage=23,290 cf Inflow=15.19 cfs 1.271 af
Outflow=6.12 cfs 0.770 af

Pond 3P: Attenuation Basin Peak Elev=74.92' Storage=55,753 cf Inflow=26.36 cfs 2.177 af
Outflow=5.64 cfs 0.946 af

Total Runoff Area = 20.643 ac Runoff Volume = 3.448 af Average Runoff Depth = 2.00"
63.64% Pervious = 13.136 ac 36.36% Impervious = 7.507 ac

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Summary for Subcatchment 2S: Proposed Subcatchment 1

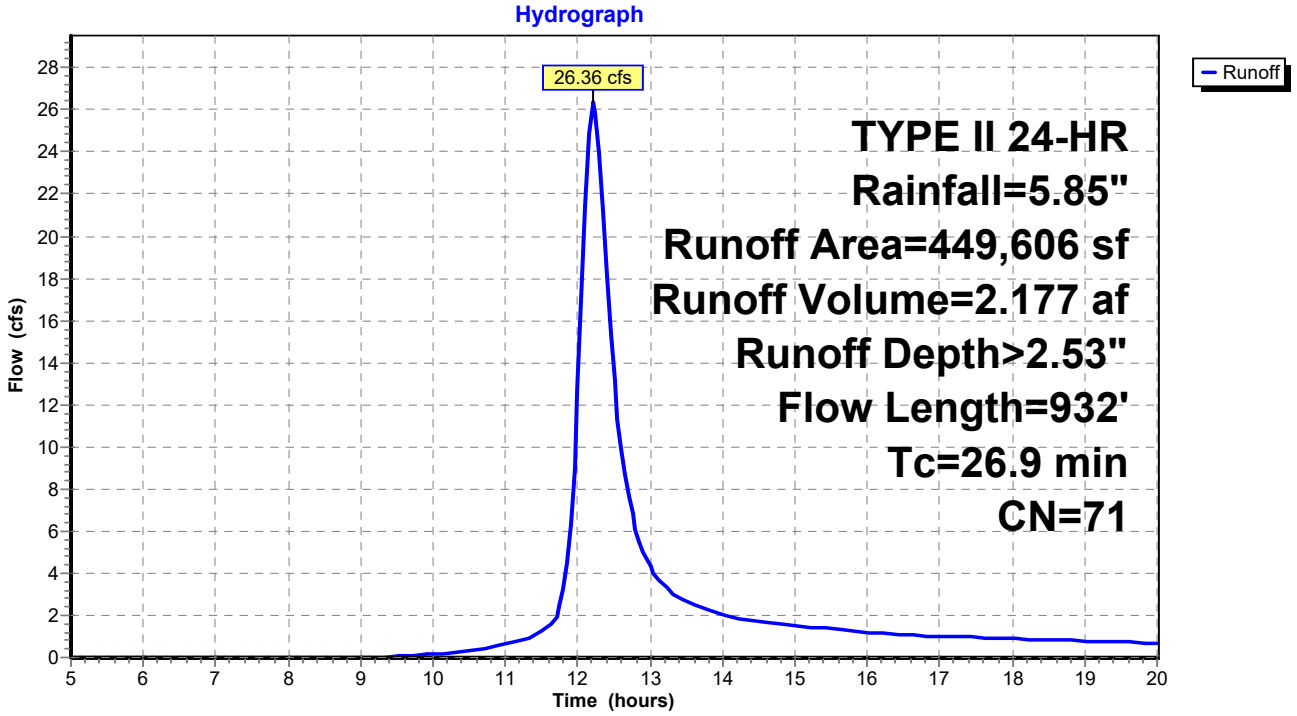
Runoff = 26.36 cfs @ 12.21 hrs, Volume= 2.177 af, Depth> 2.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=5.85"

	Area (sf)	CN	Description
	113,251	65	Brush, Good, HSG C
	121,512	30	Brush, Good, HSG A
	17,128	98	Paved parking & roofs
*	197,715	98	Compacted Fill Site A & C Soils
	449,606	71	Weighted Average
	234,763		52.22% Pervious Area
	214,843		47.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0100	0.08		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
6.4	832	0.0180	2.16		**Shallow Concentrated Flow, Balance of Longest Flowpath** Unpaved Kv= 16.1 fps
26.9	932	Total			

Subcatchment 2S: Proposed Subcatchment 1



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Summary for Subcatchment ESC 1: Existing Subcatchment 1

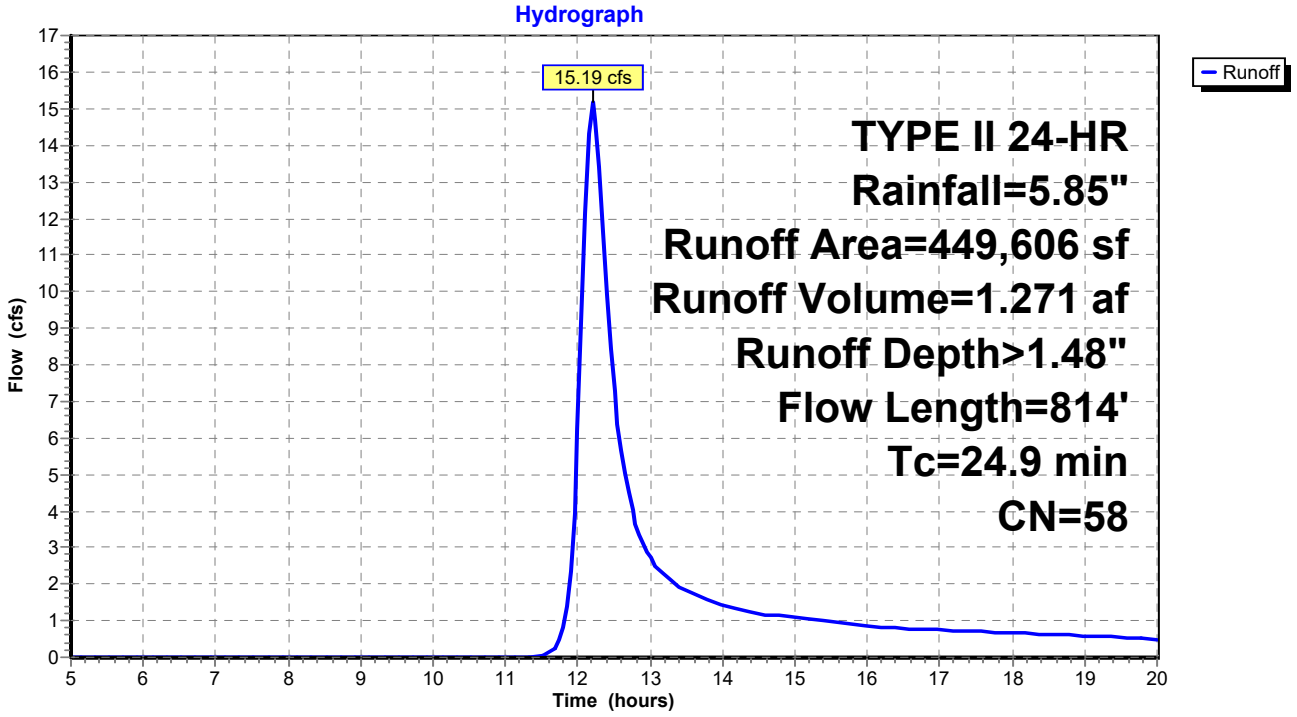
Runoff = 15.19 cfs @ 12.21 hrs, Volume= 1.271 af, Depth> 1.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=5.85"

	Area (sf)	CN	Description
	132,773	65	Brush, Good, HSG C
	138,575	30	Brush, Good, HSG A
	21,061	98	Paved parking & roofs
*	91,084	98	Compacted Fill Site A & C Soils
*	57,845	30	Future Fill Site Brush, Good, HSG A
*	8,268	65	Future Fill Site Brush, Good, HSG C
	449,606	58	Weighted Average
	337,461		75.06% Pervious Area
	112,145		24.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0100	0.08		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
4.4	714	0.0320	2.68		**Shallow Concentrated Flow, Balance of Longest Flowpath** Grassed Waterway Kv= 15.0 fps
24.9	814	Total			

Subcatchment ESC 1: Existing Subcatchment 1



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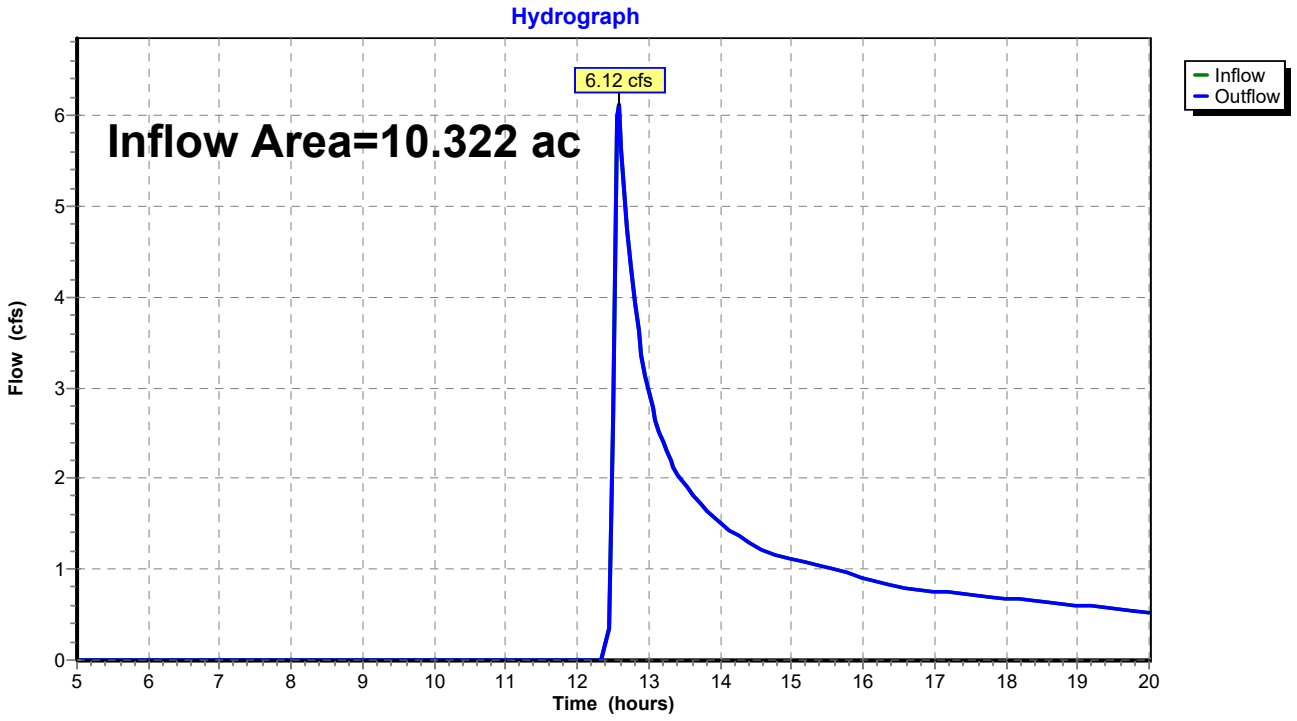
Summary for Reach DP E: Design Point Summation Existing

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 10.322 ac, 24.94% Impervious, Inflow Depth > 0.89"
Inflow = 6.12 cfs @ 12.58 hrs, Volume= 0.770 af
Outflow = 6.12 cfs @ 12.58 hrs, Volume= 0.770 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP E: Design Point Summation Existing



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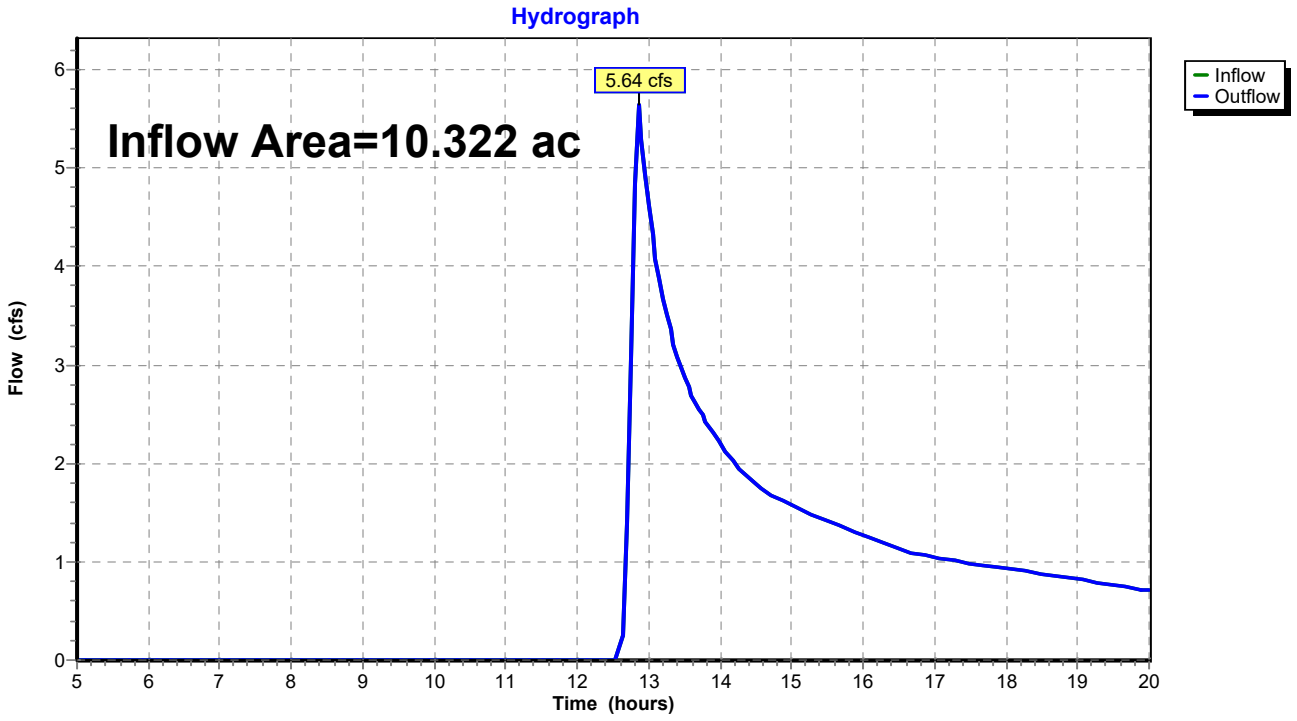
Summary for Reach DP P: Design Point Summation Proposed

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 10.322 ac, 47.78% Impervious, Inflow Depth > 1.10"
Inflow = 5.64 cfs @ 12.86 hrs, Volume= 0.946 af
Outflow = 5.64 cfs @ 12.86 hrs, Volume= 0.946 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP P: Design Point Summation Proposed



Summary for Pond 1P: Attenuation Basin

Inflow Area = 10.322 ac, 24.94% Impervious, Inflow Depth > 1.48"
Inflow = 15.19 cfs @ 12.21 hrs, Volume= 1.271 af
Outflow = 6.12 cfs @ 12.58 hrs, Volume= 0.770 af, Atten= 60%, Lag= 22.2 min
Primary = 6.12 cfs @ 12.58 hrs, Volume= 0.770 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 74.95' @ 12.58 hrs Surf.Area= 961 sf Storage= 23,290 cf

Plug-Flow detention time= 152.1 min calculated for 0.770 af (61% of inflow)
Center-of-Mass det. time= 67.9 min (896.1 - 828.2)

Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	23,317 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

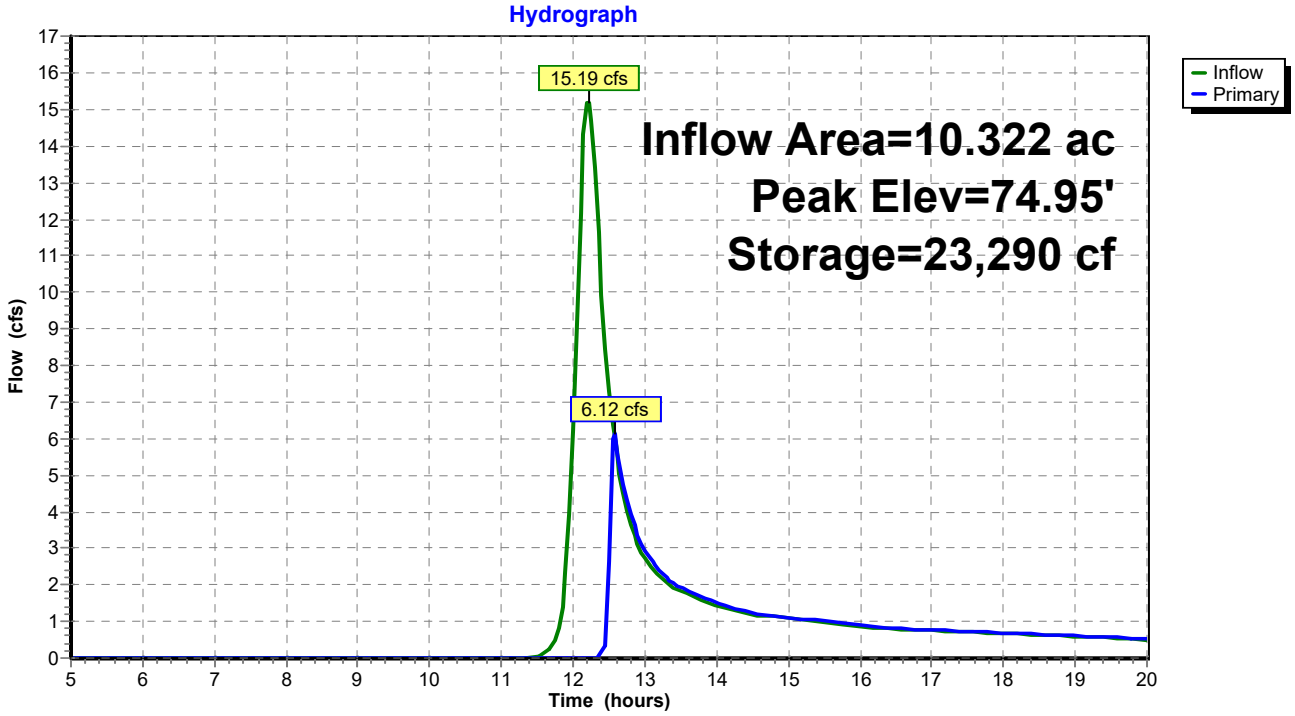
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	11,363	0	0
74.00	17,635	14,499	14,499
75.00	0	8,818	23,317

Device	Routing	Invert	Outlet Devices
#1	Primary	74.50'	**8.0' long x 4.0' 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 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=6.01 cfs @ 12.58 hrs HW=74.94' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 6.01 cfs @ 1.71 fps)

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Pond 1P: Attenuation Basin



Summary for Pond 3P: Attenuation Basin

Inflow Area = 10.322 ac, 47.78% Impervious, Inflow Depth > 2.53"
Inflow = 26.36 cfs @ 12.21 hrs, Volume= 2.177 af
Outflow = 5.64 cfs @ 12.86 hrs, Volume= 0.946 af, Atten= 79%, Lag= 38.8 min
Primary = 5.64 cfs @ 12.86 hrs, Volume= 0.946 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 74.92' @ 12.86 hrs Surf.Area= 2,225 sf Storage= 55,753 cf

Plug-Flow detention time= 190.9 min calculated for 0.946 af (43% of inflow)
Center-of-Mass det. time= 107.5 min (914.3 - 806.8)

Volume	Invert	Avail.Storage	Storage Description
#1	72.00'	55,838 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

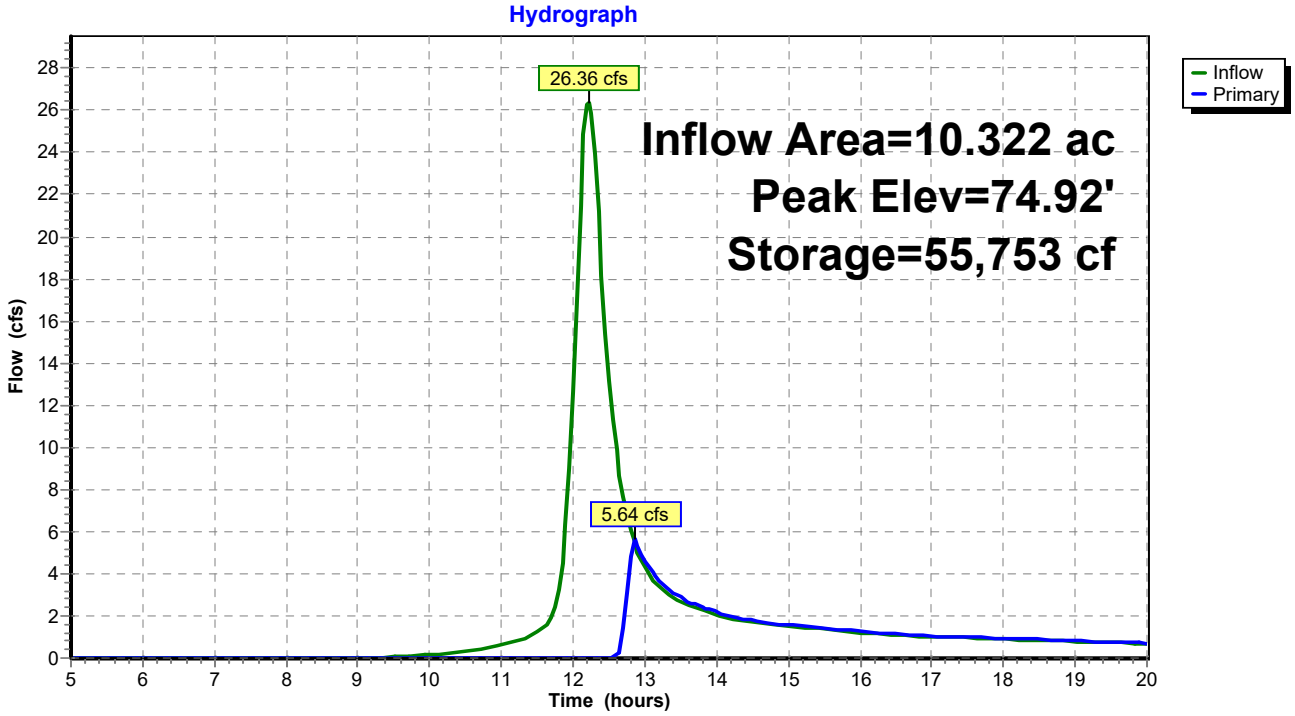
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
72.00	12,395	0	0
73.00	20,512	16,454	16,454
74.00	29,128	24,820	41,274
75.00	0	14,564	55,838

Device	Routing	Invert	Outlet Devices
#1	Primary	74.50'	**8.0' long x 4.0' 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 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=5.55 cfs @ 12.86 hrs HW=74.92' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 5.55 cfs @ 1.65 fps)

PinneyFillSite
Prepared by {enter your company name here}
HydroCAD® 10.00-26 s/n 01939 © 2020 HydroCAD Software Solutions LLC

Pond 3P: Attenuation Basin



APPENDIX 3

SOILS DATA

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Tompkins County, New York

Pinney Duplex Apartments



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

Preface.....2
How Soil Surveys Are Made.....5
Soil Map.....7
Soil Map.....8
Legend.....9
Map Unit Legend.....10
Map Unit Descriptions.....10
Tompkins County, New York.....12
BgC—Bath and Valois soils, 5 to 15 percent slopes.....12
CfB—Conesus gravelly silt loam, 3 to 8 percent slopes.....14
KnA—Kendaia and Lyons soils, 0 to 3 percent slopes.....16
Ly—Lyons soils, 0 to 3 percent slopes.....19
PaC—Palmyra gravelly loam, 5 to 15 percent simple slopes.....21
PhB—Phelps gravelly silt loam, 3 to 8 percent slopes.....22
References.....24

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

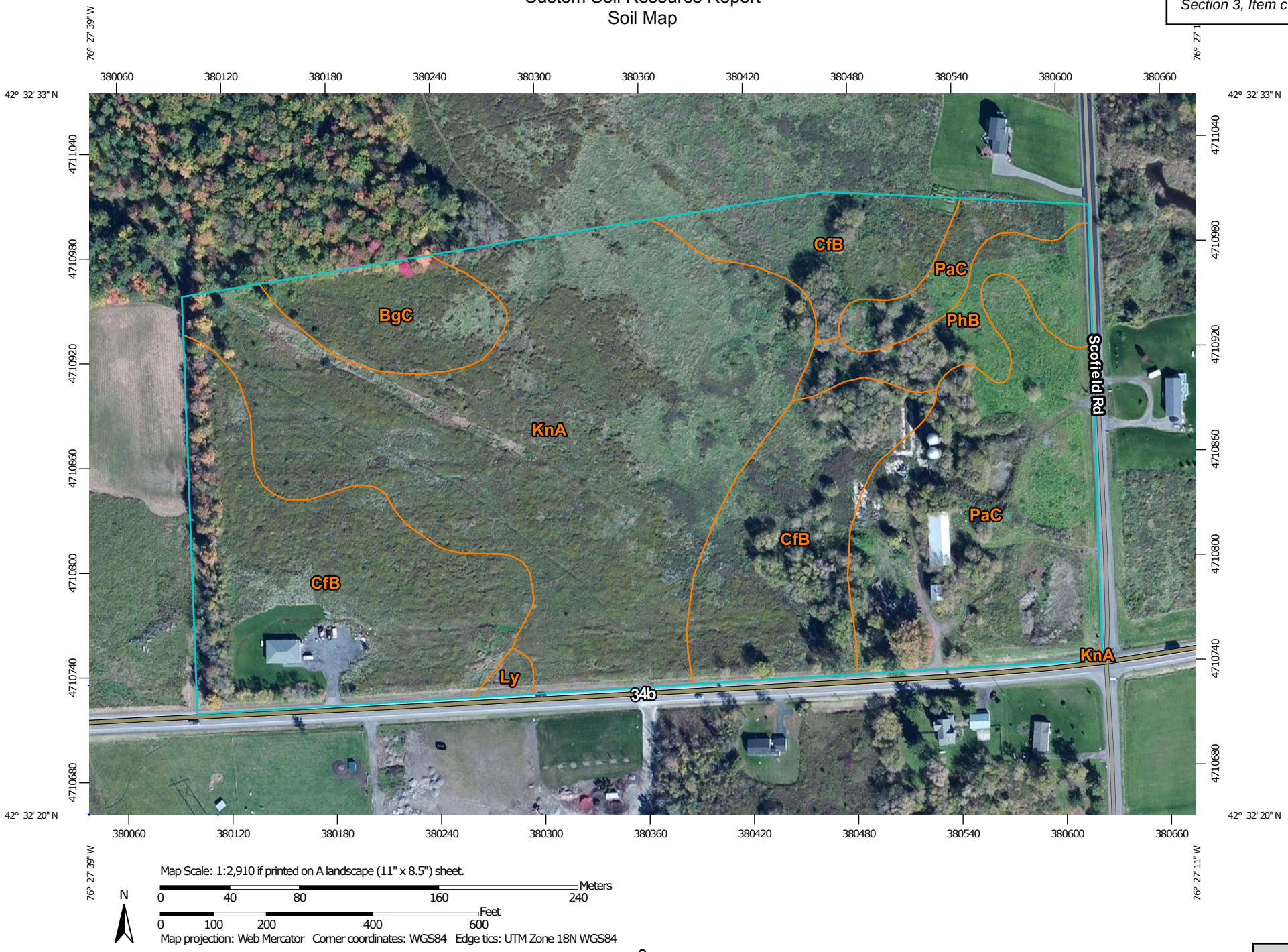
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Tompkins County, New York
Survey Area Data: Version 10, Sep 24, 2015

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

Date(s) aerial images were photographed: Jun 2, 2010—Oct 8, 2010

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

Map Unit Legend

Tompkins County, New York (NY109)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
BgC	Bath and Valois soils, 5 to 15 percent slopes	1.6	4.8%
CfB	Conesus gravelly silt loam, 3 to 8 percent slopes	11.2	33.0%
KnA	Kendaia and Lyons soils, 0 to 3 percent slopes	12.6	37.2%
Ly	Lyons soils, 0 to 3 percent slopes	0.1	0.4%
PaC	Palmyra gravelly loam, 5 to 15 percent simple slopes	6.8	20.0%
PhB	Phelps gravelly silt loam, 3 to 8 percent slopes	1.6	4.6%
Totals for Area of Interest		**33.9**	**100.0%**

Map Unit Descriptions

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

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

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

where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

Tompkins County, New York

BgC—Bath and Valois soils, 5 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2v32c
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Bath and similar soils: 40 percent
Valois and similar soils: 35 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bath

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived mainly from gray and brown siltstone, sandstone, and shale

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw1 - 9 to 15 inches: channery silt loam
Bw2 - 15 to 25 inches: channery loam
E - 25 to 29 inches: channery loam
Bx - 29 to 52 inches: very channery silt loam
C - 52 to 72 inches: very channery silt loam

Properties and qualities

Slope: 5 to 15 percent
Percent of area covered with surface fragments: 0.0 percent
Depth to restrictive feature: 26 to 38 inches to fragipan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C

Description of Valois

Setting

Landform: End moraines, lateral moraines, valley sides
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from sandstone, siltstone, and shale

Typical profile

H1 - 0 to 2 inches: gravelly silt loam
H2 - 2 to 32 inches: gravelly silt loam
H3 - 32 to 49 inches: gravelly silt loam
H4 - 49 to 60 inches: gravelly silt loam

Properties and qualities

Slope: 5 to 15 percent
Depth to restrictive feature: 24 to 36 inches to fragipan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 35 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C

Minor Components

Lordstown

Percent of map unit: 5 percent
Landform: Benches, ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex

Langford

Percent of map unit: 5 percent
Landform: Hills, till plains, drumlinoid ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex

Volusia

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear

Mardin

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex

Erie

Percent of map unit: 5 percent
Landform: Hills, till plains, drumlinoid ridges
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear

CfB—Conesus gravelly silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w3j3
Elevation: 820 to 1,800 feet
Mean annual precipitation: 31 to 57 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 100 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Conesus and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Conesus

Setting

Landform: Drumlins, hills, till plains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Calcareous loamy lodgment till derived from limestone, sandstone, and shale

Typical profile

Ap - 0 to 9 inches: gravelly silt loam
E/B - 9 to 14 inches: gravelly silt loam
Bt/E - 14 to 19 inches: gravelly silt loam
Bt1 - 19 to 25 inches: gravelly silt loam
Bt2 - 25 to 36 inches: gravelly silt loam
C - 36 to 79 inches: gravelly loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Available water storage in profile: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D

Minor Components

Lansing

Percent of map unit: 7 percent
Landform: Drumlins, hills, till plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex

Kendaia

Percent of map unit: 3 percent
Landform: Drumlins, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear

Nunda

Percent of map unit: 2 percent
Landform: Hills, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex

Appleton

Percent of map unit: 2 percent
Landform: Drumlins, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear

Lyons

Percent of map unit: 1 percent
Landform: Depressions, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope

Down-slope shape: Concave
Across-slope shape: Concave

KnA—Kendaia and Lyons soils, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2trwv
Elevation: 430 to 1,510 feet
Mean annual precipitation: 31 to 57 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 100 to 190 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Kendaia and similar soils: 50 percent
Lyons and similar soils: 25 percent
Lyons, frequently ponded, and similar soils: 15 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kendaia

Setting

Landform: Drumlins, ridges, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Calcareous loamy lodgment till derived from limestone, sandstone, and shale

Typical profile

Ap - 0 to 8 inches: silt loam
Bw - 8 to 15 inches: silt loam
Bg - 15 to 20 inches: gravelly silt loam
BCg - 20 to 24 inches: gravelly loam
C - 24 to 79 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Available water storage in profile: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D

Description of Lyons

Setting

Landform: Depressions, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Calcareous loamy lodgment till derived from limestone and shale

Typical profile

Ap - 0 to 10 inches: silt loam
Bg1 - 10 to 19 inches: silt loam
Bg2 - 19 to 25 inches: silty clay loam
BCg - 25 to 34 inches: gravelly silt loam
C - 34 to 79 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Available water storage in profile: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D

Description of Lyons, Frequently Ponded

Setting

Landform: Depressions, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Calcareous loamy lodgment till derived from limestone and shale

Typical profile

Ap - 0 to 10 inches: mucky silt loam
Bg1 - 10 to 19 inches: silt loam
Bg2 - 19 to 25 inches: silty clay loam
BCg - 25 to 34 inches: gravelly silt loam
C - 34 to 79 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 40 percent
Available water storage in profile: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D

Minor Components

Conesus

Percent of map unit: 3 percent
Landform: Hills, till plains, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex

Lima

Percent of map unit: 3 percent
Landform: Drumlins, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex

Palms

Percent of map unit: 2 percent
Landform: Marshes, swamps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave

Ilion

Percent of map unit: 2 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave

Ly—Lyons soils, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2spjy
Elevation: 250 to 1,900 feet
Mean annual precipitation: 31 to 57 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 100 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition

Lyons and similar soils: 75 percent
Lyons, frequently ponded, and similar soils: 15 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lyons

Setting

Landform: Depressions, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Calcareous loamy lodgment till derived from limestone and shale

Typical profile

Ap - 0 to 10 inches: silt loam
Bg1 - 10 to 19 inches: silt loam
Bg2 - 19 to 25 inches: silty clay loam
BCg - 25 to 34 inches: gravelly silt loam
C - 34 to 79 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Available water storage in profile: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D

Description of Lyons, Frequently Ponded

Setting

Landform: Depressions, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Calcareous loamy lodgment till derived from limestone and shale

Typical profile

Ap - 0 to 10 inches: mucky silt loam
Bg1 - 10 to 19 inches: silt loam
Bg2 - 19 to 25 inches: silty clay loam
BCg - 25 to 34 inches: gravelly silt loam
C - 34 to 79 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 40 percent
Available water storage in profile: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D

Minor Components

Canandaigua

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave

Appleton

Percent of map unit: 3 percent
Landform: Drumlins, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear

Kendaia

Percent of map unit: 2 percent
Landform: Drumlins, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear

Ilion

Percent of map unit: 1 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave

Palms

Percent of map unit: 1 percent
Landform: Marshes, swamps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave

PaC—Palmyra gravelly loam, 5 to 15 percent simple slopes

Map Unit Setting

National map unit symbol: 9xnt
Mean annual precipitation: 32 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Palmyra and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Palmyra

Setting

Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy over sandy and gravelly glaciofluvial deposits, derived mainly from limestone and other sedimentary rocks

Typical profile

H1 - 0 to 12 inches: gravelly loam
H2 - 12 to 21 inches: gravelly clay loam
H3 - 21 to 60 inches: stratified extremely gravelly sand

Properties and qualities

Slope: 5 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Available water storage in profile: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A

Minor Components

Fredon

Percent of map unit: 5 percent

Phelps

Percent of map unit: 5 percent

Genesee (hamlin)

Percent of map unit: 5 percent

Howard

Percent of map unit: 5 percent

Honeoye

Percent of map unit: 5 percent

PhB—Phelps gravelly silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9xny
Mean annual precipitation: 32 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 120 to 160 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Phelps and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Phelps

Setting

Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, containing significant amounts of limestone

Typical profile

H1 - 0 to 9 inches: gravelly silt loam
H2 - 9 to 15 inches: gravelly loam
H3 - 15 to 25 inches: silt loam
H4 - 25 to 60 inches: stratified gravelly loam to silt

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 15 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B/D

Minor Components

Howard

Percent of map unit: 5 percent

Palmyra

Percent of map unit: 5 percent

Fredon

Percent of map unit: 5 percent

Arkport

Percent of map unit: 5 percent

Braceville

Percent of map unit: 5 percent

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APPENDIX 4

PRECIPITATION DATA

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	New York
Location	
Longitude	76.457 degrees West
Latitude	42.541 degrees North
Elevation	Unknown/Unavailable
Date/Time	Mon, 05 Oct 2015 10:10:17 -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	0.70	0.87	1.07	**1yr**	0.75	0.95	1.21	1.44	1.70	2.00	2.26	**1yr**	1.77	2.17	2.57	3.10	3.57	**1yr**
2yr	0.32	0.49	0.62	0.81	1.02	1.26	**2yr**	0.88	1.12	1.42	1.70	2.00	2.34	2.61	**2yr**	2.07	2.51	2.95	3.50	4.01	**2yr**
5yr	0.38	0.59	0.74	0.99	1.26	1.56	**5yr**	1.09	1.39	1.77	2.12	2.49	2.90	3.23	**5yr**	2.56	3.11	3.62	4.21	4.81	**5yr**
10yr	0.42	0.66	0.84	1.14	1.48	1.85	**10yr**	1.28	1.63	2.10	2.51	2.94	3.41	3.80	**10yr**	3.01	3.66	4.23	4.84	5.53	**10yr**
25yr	0.50	0.79	1.00	1.38	1.83	2.30	**25yr**	1.58	2.02	2.63	3.13	3.67	4.22	4.72	**25yr**	3.74	4.53	5.21	5.83	6.66	**25yr**
50yr	0.56	0.90	1.15	1.60	2.15	2.72	**50yr**	1.86	2.38	3.11	3.71	4.33	4.97	5.55	**50yr**	4.40	5.34	6.10	6.72	7.66	**50yr**
100yr	0.63	1.01	1.31	1.86	2.53	3.23	**100yr**	2.19	2.80	3.69	4.40	5.12	5.85	6.54	**100yr**	5.18	6.29	7.14	7.74	8.81	**100yr**
200yr	0.72	1.17	1.51	2.16	2.98	3.81	**200yr**	2.58	3.30	4.37	5.20	6.04	6.89	7.70	**200yr**	6.10	7.41	8.36	8.91	10.15	**200yr**
500yr	0.85	1.39	1.82	2.64	3.71	4.76	**500yr**	3.20	4.10	5.46	6.50	7.53	8.56	9.57	**500yr**	7.57	9.20	10.31	10.75	12.22	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.25	0.39	0.47	0.64	0.78	0.82	**1yr**	0.68	0.80	0.94	1.06	1.49	1.86	2.10	**1yr**	1.65	2.02	2.43	2.96	3.33	**1yr**
2yr	0.32	0.49	0.60	0.82	1.01	1.11	**2yr**	0.87	1.09	1.23	1.52	1.85	2.28	2.55	**2yr**	2.02	2.45	2.87	3.42	3.93	**2yr**
5yr	0.36	0.55	0.69	0.94	1.20	1.32	**5yr**	1.03	1.29	1.44	1.78	2.17	2.71	3.03	**5yr**	2.40	2.92	3.41	3.98	4.58	**5yr**
10yr	0.40	0.61	0.76	1.06	1.36	1.50	**10yr**	1.18	1.47	1.63	1.98	2.45	3.09	3.44	**10yr**	2.74	3.31	3.87	4.47	5.14	**10yr**
25yr	0.45	0.69	0.86	1.23	1.61	1.78	**25yr**	1.39	1.74	1.92	2.29	2.85	3.66	4.05	**25yr**	3.24	3.90	4.57	5.20	6.00	**25yr**
50yr	0.50	0.76	0.95	1.36	1.83	2.03	**50yr**	1.58	1.99	2.17	2.56	3.21	4.17	4.59	**50yr**	3.69	4.41	5.18	5.82	6.75	**50yr**
100yr	0.55	0.83	1.04	1.51	2.07	2.33	**100yr**	1.78	2.28	2.46	2.85	3.60	4.74	5.19	**100yr**	4.19	4.99	5.87	6.54	7.59	**100yr**
200yr	0.61	0.92	1.17	1.69	2.36	2.66	**200yr**	2.03	2.60	2.80	3.18	4.05	5.39	5.88	**200yr**	4.77	5.66	6.65	7.32	8.54	**200yr**
500yr	0.72	1.06	1.37	1.99	2.83	3.20	**500yr**	2.44	3.13	3.32	3.67	4.72	6.38	6.92	**500yr**	5.65	6.65	7.85	8.50	9.98	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.30	0.47	0.57	0.77	0.94	1.03	**1yr**	0.81	1.01	1.16	1.44	1.77	2.12	2.38	**1yr**	1.88	2.29	2.72	3.25	3.74	**1yr**
2yr	0.34	0.52	0.64	0.87	1.07	1.18	**2yr**	0.92	1.15	1.31	1.62	1.98	2.41	2.71	**2yr**	2.13	2.60	3.03	3.59	4.11	**2yr**
5yr	0.40	0.62	0.76	1.05	1.33	1.52	**5yr**	1.15	1.49	1.68	2.06	2.53	3.09	3.43	**5yr**	2.73	3.30	3.85	4.44	5.08	**5yr**
10yr	0.46	0.71	0.88	1.23	1.59	1.86	**10yr**	1.37	1.81	2.04	2.48	3.06	3.73	4.14	**10yr**	3.31	3.98	4.62	5.23	5.97	**10yr**
25yr	0.57	0.86	1.07	1.53	2.01	2.41	**25yr**	1.74	2.36	2.63	3.17	3.95	4.81	5.30	**25yr**	4.25	5.10	5.89	6.49	7.42	**25yr**
50yr	0.66	1.00	1.25	1.80	2.42	2.93	**50yr**	2.09	2.87	3.19	3.83	4.79	5.82	6.40	**50yr**	5.15	6.15	7.10	7.65	8.74	**50yr**
100yr	0.77	1.16	1.46	2.11	2.89	3.57	**100yr**	2.49	3.49	3.86	4.64	5.80	7.06	7.72	**100yr**	6.25	7.43	8.56	9.03	10.29	**100yr**
200yr	0.90	1.35	1.71	2.48	3.46	4.35	**200yr**	2.98	4.25	4.69	5.60	7.04	8.56	9.34	**200yr**	7.58	8.98	10.31	10.65	12.13	**200yr**
500yr	1.11	1.65	2.13	3.09	4.40	5.63	**500yr**	3.79	5.51	6.05	7.18	9.12	11.07	12.00	**500yr**	9.79	11.54	13.21	13.25	15.07	**500yr**

Powered by ACIS Northeast Regional Climate Center

ENGINEER'S REPORT - June 2026
O'tooles Contractor Yard, 430 Peruville Road, Lansing, NY 14882

Owner, Scott Pinney
6 Otti Road
Lansing, NY 14882

Land Use

An existing contactor's work yard located at the intersection of Scofield and Peruville Roads in the Town of Lansing has been owned and operated by Mr. Scott Pinney since 2011. In 2016, the owner proposed a large townhome development just to the west of the site and a subsequent Full Stormwater Pollution Prevention Plan was approved by the Town of Lansing soon after. As a condition of approval, the Town required Mr. Pinney to prepare a temporary erosion and sediment control plan for the work yard above which included the installation of a sedimentation basin to capture and treat runoff. Constraints were also placed on the project to limit the breath and scope of future activity to ensure the protection of planned development below.

In 2020, the townhome portion of the land was sold off, and the project was never realized under its new ownership. Activity within the work yard continued and in 2024, Mr. Pinney sought approval for a new on-site storage building prompting the need for an additional site plan review. Since the work yard was no longer bound to 2016 conditions regarding the townhome community, Mr. Pinney is desirous in obtaining approval to expand the work yard and developing permanent runoff management.

Soil and Site Conditions
The area is comprised of A & C type soils over brush and scrub type land. The bulk of the site is an existing contractor work yard with hard packed dirt.

Site Soils: The predominant soil types throughout the site are Palmyra, gravely loams (PaC) in the hydrologic soil group A and Kendaia and Conesus (KnA, CfB) gravely loams in the hydrologic soil group C. Data indicates that the A type matrices have moderately high to high permeability rate between 0.57 to 5.95 in/hr and the C matrices at a moderately low to moderately high permeability rate between 0.01 – 1.42 in/hr.

Soils data was obtained from the USDA Web Soil Survey. Site Topography: The site as a whole has a flat uniform slope of between 1-3% primarily

moving downhill from northeast to southwest. Site Watershed: Of the 10.32-acre watershed, the area of disturbance will be approximately 4.93-AC.

Transportation

1. There will be no highway dedication associated with this project.
2. There will be no additional driveways or modification to existing driveways.
3. Existing driveway entrances allow for even circulation for existing activity.
4. There is no anticipated increase in vehicular activity or traffic.

Public Services

There is no need for additional public services or change from current activity.

Utility Services
There is no change to existing utilities.

Flood Hazard
All buildings are well above the 100 year flood plain.

Agriculture
This property is not part of an Ag District. The existing activity is well removed from any agriculture or horse rearing activities. There should be no conflict of noise or odors.

Lighting
There are no lighting changes to the property.

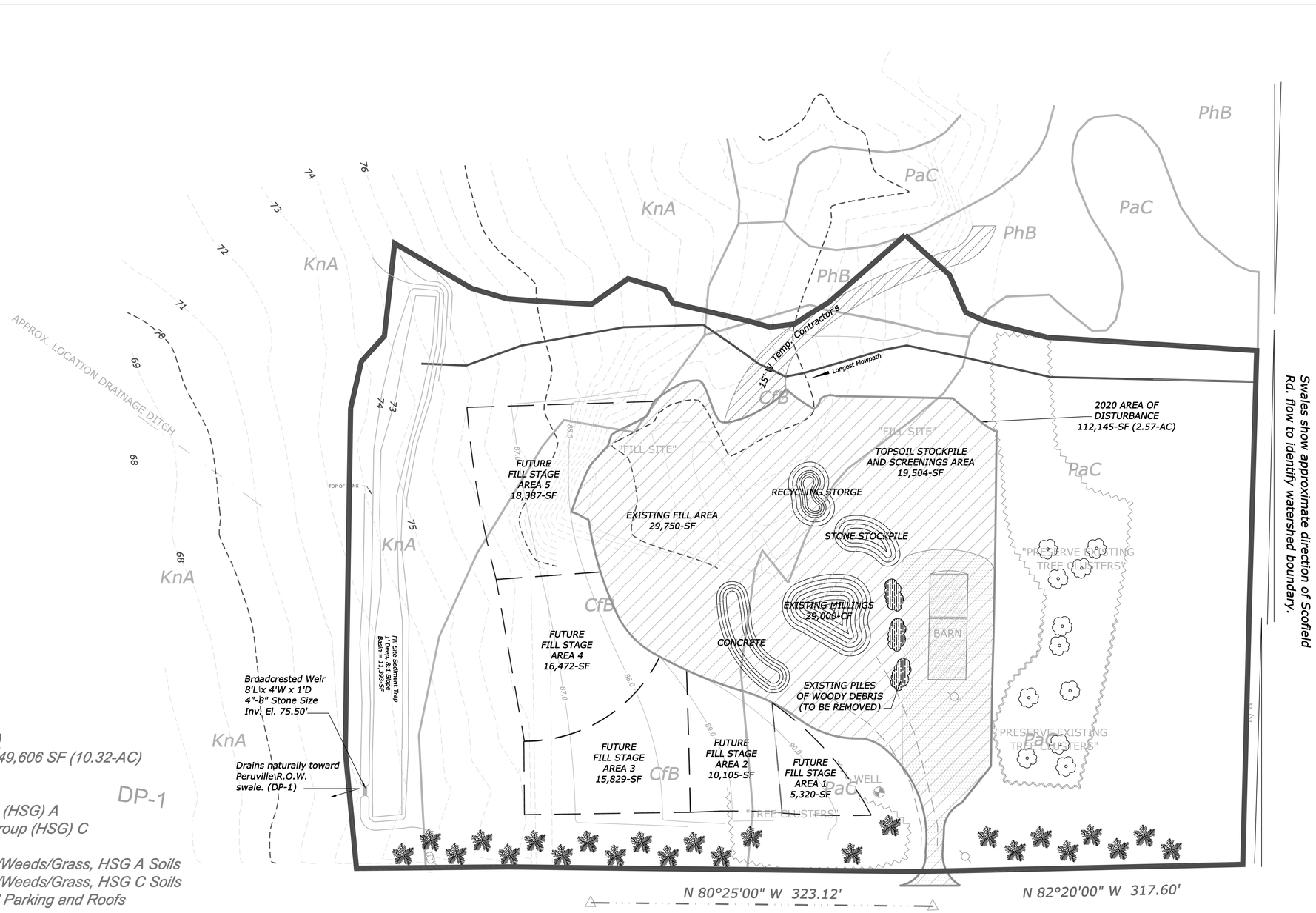
Sewerage
There is no change to existing sewer.

Water System
There is no change to existing water

Stormwater Quality & Quantity
In 2016, a Full Stormwater Pollution Prevention Plan (SWPPP) was prepared for a conceptual town home community just to the west of the contractor's work yard. As a condition of approval, the Town of Lansing required temporary erosion and control measures to control runoff and separate the work yard from the townhome development below. A sedimentation basin was installed and limits were placed on future activities to prevent sprawl.

Because the townhome development was never constructed making those conditions moot, the owner wishes to expand activities into a larger 4.93-AC area.

A hydraulic and hydrologic runoff model was prepared to compare 2020 activity with that of planned work in 2026. Recommendations were made to increase the volume of the sedimentation basin so that the project meets the 1, 10, and 100 yr storms.



Swales show approximate direction of Scofield Rd. flow to identify watershed boundary.

Existing Subcatchment - 1 (ESC-1)
Existing Site Conditions - Area = 449,606 SF (10.32-AC)

Surface Conditions & Soils:
50.0% PaC, Hyrdologic Soil Group (HSG) A
50.0% KnA, CfB Hydrologic Soil Group (HSG) C

Runoff Curve Number = 30, Brush/Weeds/Grass, HSG A Soils
Runoff Curve Number = 65, Brush/Weeds/Grass, HSG C Soils
Runoff Curve Number = 98, Paved Parking and Roofs

Overland Stormwater Runoff - Longest Flowpath = 814 lf +/-
Sheet Flow, Dense Grass - 100 lf @ S = 1.0% avg.
Shallow Concentrated Flow, Grassed Waterway - 714 lf @ S = 3.2% avg.

To Design Point 1 - (DP 1)

EXISTING SUBCATCHMENT (As of 2020)
REFERENCE HYDROCAD (HYDRAULIC & HYDROLOGIC) MODELING RESULTS PRESENTED WITH THESE PLANS

REVISIONS

No.	Date	SYM.	Description
	6/15/16		Modified ESC-1 and ESC-2 boundary and notes
	01/31/20		New Owner

EXISTING (2020)
HYDRAULIC AND HYDROLOGIC SUBCATCHMENT WORKSHEET

O'TOOLES GRAVEL
(T) LANSING, LANSING, NY

PINNEY GRAVEL SITE EXPANSION
PERUVILLE RD & SCOFIELD RD
(T) LANSING, NY

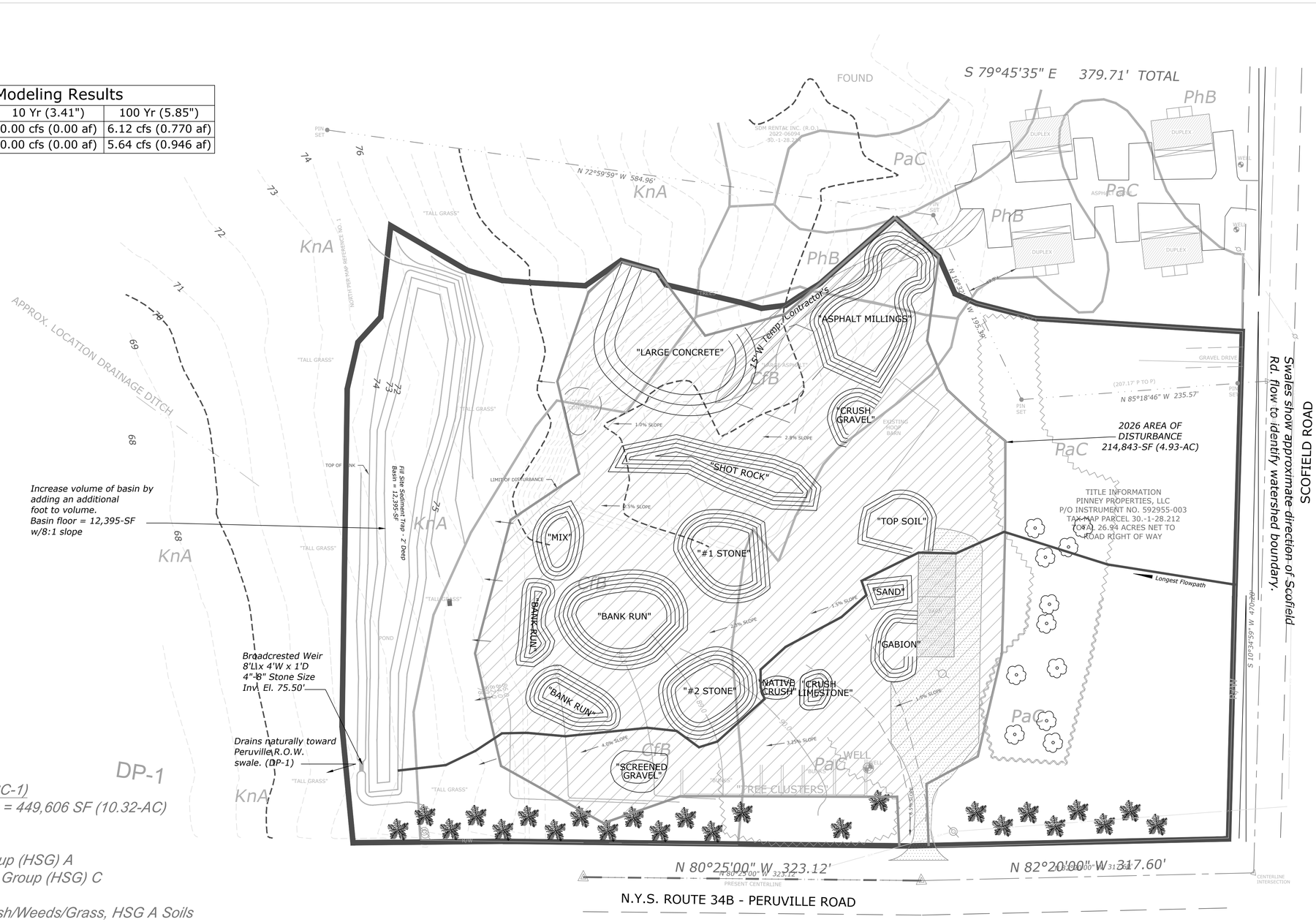
STATE OF NEW YORK TIMOTHY C. BUHL 095314 LICENSED PROFESSIONAL ENGINEER

TIMOTHY C. BUHL, P.E.

GOODRICH HILL ROAD, LOCKE N.Y. 13092 607 423-1919

DATE: JUN 22, 2026
SCALE: 1" = 50'
DRAWN: SDG
JOB:
SHEET: S-1

Hydraulic Runoff Modeling Results			
	1 Yr (2.00")	10 Yr (3.41")	100 Yr (5.85")
Existing	0.00 cfs (0.00 af)	0.00 cfs (0.00 af)	6.12 cfs (0.770 af)
Proposed	0.00 cfs (0.00 af)	0.00 cfs (0.00 af)	5.64 cfs (0.946 af)



Proposed Subcatchment - 1 (PSC-1)
Proposed Site Conditions - Area = 449,606 SF (10.32-AC)

Surface Conditions & Soils:
50.0% PaC, Hyrdologic Soil Group (HSG) A
50.0% KnA, CfB Hydrologic Soil Group (HSG) C

Runoff Curve Number = 30, Brush/Weeds/Grass, HSG A Soils
Runoff Curve Number = 65, Brush/Weeds/Grass, HSG C Soils
Runoff Curve Number = 98, Paved Parking and Roofs

Overland Stormwater Runoff - Longest Flowpath = 923 lf +/-
Sheet Flow, Dense Grass - 100 lf @ S = 1.0% avg.
Shallow Concentrated Flow, Unpaved - 823 lf @ S = 1.8% avg.

To Design Point 1 - (DP 1)

PROPOSED SUBCATCHMENT (2026)
REFERENCE HYDROCAD (HYDRAULIC & HYDROLOGIC) MODELING RESULTS PRESENTED WITH THESE PLANS

REVISIONS

No.	Date	SYM.	Description

PROPOSED (2026)
HYDRAULIC AND HYDROLOGIC SUBCATCHMENT WORKSHEET

PINNEY GRAVEL SITE EXPANSION
PERUVILLE RD & SCOFIELD RD
(T) LANSING, NY

O'TOOLES GRAVEL
(T) LANSING, LANSING, NY

STATE OF NEW YORK — TIMOTHY C. BUHL — 093174 — LICENSED PROFESSIONAL ENGINEER

TIMOTHY C. BUHL, P.E.
GOODRICH HILL ROAD, LOCKE N.Y. 13092 607 423-1919

DATE: JUN 22, 2026
SCALE: 1" = 50'
DRAWN: SDG
JOB:
SHEET: S-2

AGRICULTURAL DATA STATEMENT

Per § 305-a of the New York State Agriculture and Markets Law, any application for a special use permit, site plan approval, use variance, or subdivision approval requiring municipal review and approval that would occur on property within a New York State Certified Agricultural District containing a farm operation or property with boundaries within 500 feet of a farm operation located in an Agricultural District shall include an Agricultural Data Statement.

A. Name of applicant: A. Scott Pinney
Mailing address: 6 Otti Dr.
Lansing, NY 14882

B. Description of the proposed project: Existing Contractors yard

C. Project site address: 430 Peruville Rd. Town: Lansing

D. Project site tax map number: 30-1-28.212

E: The project is located on property:
☒ within an Agricultural District containing a farm operation, or
☐ with boundaries within 500 feet of a farm operation located in an Agricultural District.

F. Number of acres affected by project: 4.93

G. Is any portion of the project site currently being farmed?
☐ Yes. If yes, how many acres_____ or square feet_____ ?
☒ No.

H. Name and address of any owner of land containing farm operations within the Agricultural District and is located within 500 feet of the boundary of the property upon which the project is proposed.

None

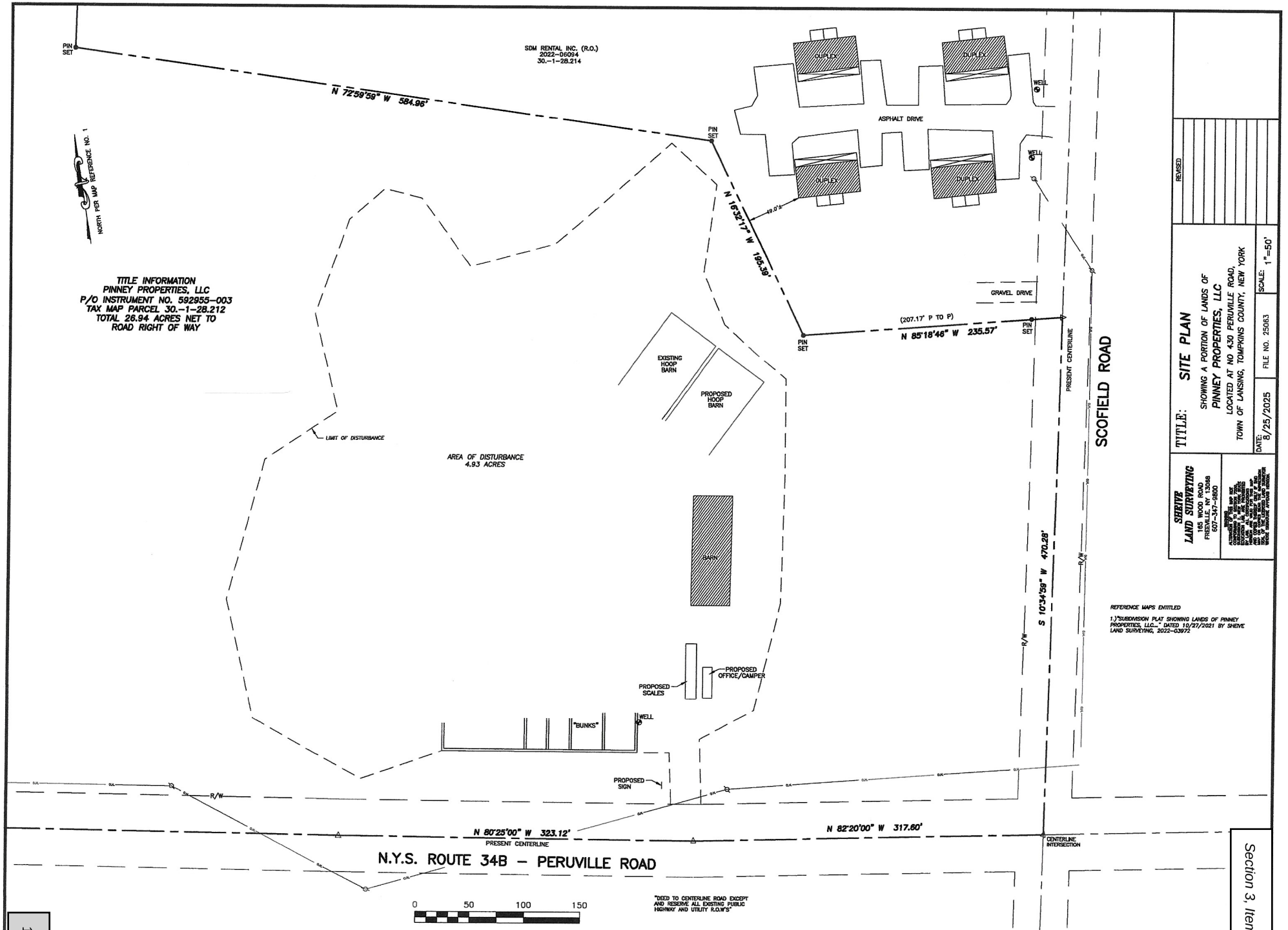
I. Attach a copy of the current tax map showing the site of the proposed project relative to the location of farm operations identified in Item H above.

FARM NOTE

Prospective residents should be aware that farm operations may generate dust, odor, smoke, noise, vibration and other conditions that may be objectionable to nearby properties. Local governments shall not unreasonably restrict or regulate farm operations within State Certified Agricultural Districts unless it can be shown that the public health or safety is threatened.

A. Scott Pinney
Name and Title of Person Completing Form

6/16/2016
Date


PIN SET
SDM RENTAL INC. (R.O.)
2022-06094
30.-1-28.214
N 72°59'59" W 584.96'
PIN SET
N 16°32'17" W 195.59'
PIN SET
(207.17' P TO P)
N 85°18'46" W 235.57'
PIN SET
NORTH PER MAP REFERENCE NO. 1
TITLE INFORMATION
PINNEY PROPERTIES, LLC
P/O INSTRUMENT NO. 592955-003
TAX MAP PARCEL 30.-1-28.212
TOTAL 26.94 ACRES NET TO
ROAD RIGHT OF WAY
DUPLEX
DUPLEX
DUPLEX
DUPLEX
WELL
WELL
ASPHALT DRIVE
19.0'±
GRAVEL DRIVE
EXISTING HOOP BARN
PROPOSED HOOP BARN
LIMIT OF DISTURBANCE
AREA OF DISTURBANCE
4.93 ACRES
BARN
PRESENT CENTERLINE
SCOFIELD ROAD
S 10°34'59" W 470.28'
R/W
PROPOSED OFFICE/CAMPER
PROPOSED SCALES
"BUNKS"
WELL
PROPOSED SIGN
R/W
N 80°25'00" W 323.12'
PRESENT CENTERLINE
N 82°20'00" W 317.60'
CENTERLINE INTERSECTION
N.Y.S. ROUTE 34B – PERUVILLE ROAD
0
50
100
150
"DEED TO CENTERLINE ROAD EXCEPT AND RESERVE ALL EXISTING PUBLIC HIGHWAY AND UTILITY R.O.W'S"
REFERENCE MAPS ENTITLED
1.)"SUBDIVISION PLAT SHOWING LANDS OF PINNEY PROPERTIES, LLC..." DATED 10/27/2021 BY SHEIVE LAND SURVEYING, 2022-03972
REVISED
TITLE: SITE PLAN
SHOWING A PORTION OF LANDS OF
PINNEY PROPERTIES, LLC
LOCATED AT NO 430 PERUVILLE ROAD,
TOWN OF LANSING, TOMPKINS COUNTY, NEW YORK
DATE: 6/25/2025
FILE NO. 25063
SCALE: 1"=50'
SHEIVE
LAND SURVEYING
185 WOOD ROAD
FREEVILLE, NY 13068
607-347-9800

Short Environmental Assessment Form
Part 1 - Project Information

Instructions for Completing

Part 1 – Project Information. The applicant or project sponsor is responsible for the completion of Part 1. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification. Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information.

Complete all items in Part 1. You may also provide any additional information you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

Part 1 – Project and Sponsor Information

Scott Pinney

Name of Action or Project:
O'Tooles Contractor Yard

Project Location (describe, and attach a location map):
430 Peruville Road Groton

Brief Description of Proposed Action:
Existing Contractors Yard

Name of Applicant or Sponsor:	Telephone: 607-227-9698
Scott Pinney	E-Mail: alexcolepave1@gmail.com

Address:
6 Otti Drive

City/PO:	State:	Zip Code:
Lansing	NY	14882

	NO	YES
1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation? If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If No, continue to question 2.	☑	☐
2. Does the proposed action require a permit, approval or funding from any other government Agency? If Yes, list agency(s) name and permit or approval:	☑	☐

3. a. Total acreage of the site of the proposed action? 4.93 acres
   b. Total acreage to be physically disturbed? 0 acres
   c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 26.94 acres

4. Check all land uses that occur on, are adjoining or near the proposed action:
   ☐ Urban ☒ Rural (non-agriculture) ☐ Industrial ☒ Commercial ☒ Residential (suburban)
   ☐ Forest ☐ Agriculture ☐ Aquatic ☐ Other(Specify):
   ☐ Parkland

	NO	YES	N/A
5. Is the proposed action,			
a. A permitted use under the zoning regulations?	☑	☑	☐
b. Consistent with the adopted comprehensive plan?	☑	☑	☐

	NO	YES
6. Is the proposed action consistent with the predominant character of the existing built or natural landscape?	☐	☑

	NO	YES
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area? If Yes, identify:	☑	☐

	NO	YES
8. a. Will the proposed action result in a substantial increase in traffic above present levels?	☑	☐
b. Are public transportation services available at or near the site of the proposed action?	☑	☐
c. Are any pedestrian accommodations or bicycle routes available on or near the site of the proposed action?	☑	☐

	NO	YES
9. Does the proposed action meet or exceed the state energy code requirements? If the proposed action will exceed requirements, describe design features and technologies: _____	☑	☐

	NO	YES
10. Will the proposed action connect to an existing public/private water supply? If No, describe method for providing potable water: _____	☑	☐

	NO	YES
11. Will the proposed action connect to existing wastewater utilities? If No, describe method for providing wastewater treatment: _____	☑	☐

	NO	YES
12. a. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places?	☑	☐
b. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory?	☑	☐

	NO	YES
13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency?	☑	☐
b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody?	☑	☐
If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres: _____		

14. Identify the typical habitat types that occur on, or are likely to be found on the project site. Check all that apply:

☐ Shoreline ☐ Forest ☒ Agricultural/grasslands ☐ Early mid-successional

☐ Wetland ☐ Urban ☐ Suburban

	NO	YES
15. Does the site of the proposed action contain any species of animal, or associated habitats, listed by the State or Federal government as threatened or endangered?	☑	☐
16. Is the project site located in the 100-year or 500-year flood plain?	☑	☐
17. Will the proposed action create storm water discharge, either from point or non-point sources? If Yes,	☑	☐
a. Will storm water discharges flow to adjacent properties?	☑	☐
b. Will storm water discharges be directed to established conveyance systems (runoff and storm drains)?	☑	☐
If Yes, briefly describe: _____		
18. Does the proposed action include construction or other activities that would result in the impoundment of water or other liquids (e.g., retention pond, waste lagoon, dam)? If Yes, explain the purpose and size of the impoundment: _____	☑	☐
19. Has the site of the proposed action or an adjoining property been the location of an active or closed solid waste management facility? If Yes, describe: _____	☑	☐
20. Has the site of the proposed action or an adjoining property been the subject of remediation (ongoing or completed) for hazardous waste? If Yes, describe: _____	☑	☐
21. Is the project located within, or within ½ mile of, a disadvantaged community?	☑	☐
If No, could impacts from the project affect a disadvantaged community?	☐	☐
If Yes to either question in 21, answer the following question.		
a. Identify the potential pollution impacts of the project, either direct or indirect, that may occur within the disadvantaged community (e.g., wastewater discharges, air emissions, noise, odors, solid or hazardous waste generation or management):		

I CERTIFY THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE

Applicant/sponsor/name: A. Scott Pinney Date: 06/16/2026

Signature: A Scott Pinney Title: Owner

Storm Water Pollution Prevention Plan
for

Proposed SDM Rentals Duplex Apartments

Town of Lansing
Lansing, New York

Revised January 2020

Prepared by:

Timothy C. Buhl, PE
NYSPE#: 053134

For:

Scott Morgan
(T) Lansing, Lansing, NY

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY 4

2.0 INTRODUCTION 6

3.0 PROJECT DESCRIPTION 8

4.0 RUNOFF REDUCTION VOLUME 9

5.0 STORMWATER POL PREVENTION MEASURES AND CNTRLS 11

6.0 LOCAL PLANS 15

7.0 WETLANDS, FLOODPLAIN, AND FLOOD LIMITS 15

8.0 NYSHPO 15

9.0 INSPECTIONS AND SYSTEM MAINTENANCE 16

10.0 POST CONSTRUCTION INSPECTION AND MAINTENANCE…… 17

ATTACHMENTS

Attachment A: Notice of Intent, (NOI) and MS4 Acceptance Form

Attachment B: Notice of Termination, (NOT)

Attachment C: Certification Forms

Attachment D: Wetlands and Flood Plain Maps

Attachment E: Circles and Squares Map – NYSSHPO

Attachment F: Inspection Report (Sample Form)

Attachment G: Record of Stabilization and Construction Activity Dates

Attachment H: Vegetative and Structural Measures for Erosion and Sediment Control
Sections 3 and 5 New York Standards & Specifications for Erosion and Sediment Control, August 2005

Attachment I: NYSDEC Stormwater Controls Construction Checklist

Attachment J: NYSDEC Controls Operation & Maintenance Check List

Attachment K: Stormwater Management Summary and Hydraulic Modeling Results

1.0 EXECUTIVE SUMMARY

Notes on Change of Ownership

This SWPPP, including stormwater design, modeling, and accompanying documentation were originally approved by the Town of Lansing on November 28, 2016 under the previous site owner, Scott Pinney. Mr. Pinney subsequently filed for Notice of Intent with the New York State Department of Conservation, and received permit acknowledgement and approval. Construction was never begun and the property since changed ownership to Mr. Scott Morgan of SDM Rentals, LLC. Mr. Morgan intends to complete the original project under the same stormwater pollution prevention plan design, using the same approach for quality treatment and quantity attenuation. As such, this plan is being re-submitted to the Town of Lansing under new ownership only. No changes were made to the original document or design.

Summary

The engineer, owner and all contractors involved with construction activity that disturb site soil or who implement pollutant control measures identified in the Storm Water Pollution Prevention Plan (SWPPP) are responsible for complying with the requirements set forth in the National Discharge Elimination System (NPDES) General Permit and any local and/or state governing agencies having jurisdiction with regards to erosion and sediment control. The requirements of the NPDES are as follows:

A. The owner (Scott Morgan) must complete the Notice of Intent (NOI) provided in Attachment A and forward this document to the following agencies at least 5 days prior to starting any construction activity. If the construction activity is located within a permitted municipal separate storm sewer system (MS4), the local municipality must complete and authorize the attached MS4 Acceptance Form and provide that along with the NOI.

NYS Department of Environmental Conservation (DEC)
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

Town of Lansing – Lansing Town Hall
29 Auburn Road
Lansing, New York 14882
(607) 433-4142

All notifications shall be sent via certified mail with return receipt. Copies of mailing receipts shall be kept on record at the project site with the SWPPP and shall be considered part of the contract documents.

The Town's representative shall be included in the pre-construction meeting. Copies of the SWPPP must be provided to the Town of Lansing once all signatures and attachments are complete.

B. A copy of the General Construction Permit (GP-0-15-002), Notice of Intent (NOI), NOI acknowledgement letter received by the DEC, and MS4 Acceptance Form (if applicable), shall be posted in a prominent place for public viewing at the project site.

C. A complete copy of the SWPPP, including copies of all inspection reports, plan revisions, etc., must be retained at the project site at all times during working hours and kept as part of the permanent project records for a duration of no less than three years following submission of the Notice of Termination (NOT).

D. The site development contractors must provide names and addresses of all subcontractors working on the project who will be involved with the major construction activities that will result in soil disturbance. The Owner shall ensure that each contracting firm identifies one trained individual who will be responsible for implementation of the SWPPP. The owner shall also ensure that at least one trained individual is on site on a daily basis when soil disturbance activities are being performed. This information must be retained as part of the SWPPP.

E. The site development contractor and all subcontractors involved with the major construction activities that disturb site soil must sign a copy of the appropriate certification statement included in Attachment C along with the identity of the appropriate trained individual as described in paragraph D of this section.

F. Regular inspections must be made to determine effectiveness of the SWPPP. It would be modified as needed to prevent pollutants from discharging from the site. The inspector must be a person familiar with the site, the nature of the major construction activities, and qualified to evaluate both overall system performance and individual component performance. Additionally, the inspector must either be someone empowered to implement modifications to the SWPPP and the pollutant control devices, if needed, in order to increase effectiveness to an acceptable level, or someone with the authority to cause such events to happen.

G. This SWPPP must be updated each time there is a significant modification to the pollutant prevention system or a change of contractors working on the project who may disturb site soil. The site development contractor must notify the governing agency(s) as soon as these modifications are implemented.

H. Discharge of oil or other hazardous substances into the storm water is subject to reporting and cleanup requirements. Refer to Part III.B of the NPDES General Permit for additional information. Copies of the NPDES General Permit and the Notice of Intent Forms are available by calling 1-703-821-4823.

I. Once the site reaches final stabilization upon completion of the project, Scott Morgan, as Owner, must complete and submit a Notice of Termination (NOT), Form Included in Attachment B.

J. This SWPPP intends to control water-borne and liquid pollutant discharges by some combination of interception, filtration, and containment. The general contractor and subcontractors implementing this SWPPP must remain alert to the need to periodically refine and update the SWPPP in order to accomplish the intended goals.

K. This SWPPP must be amended as necessary during the course of construction in order to keep it current with the pollutant control measures utilized at the site. Amending the SWPPP does not mean that it has to be reprinted. It is acceptable to add addenda, sketches, new sections, and/or revised drawings.

L. A record of the dates when major grading activities occur, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization measures are initiated must be maintained until the NOT is filed. A log for keeping such records is included in the Attachments. A different form for the log may be substituted if it is found to be more useful.

2.0 INTRODUCTION

This SWPPP has been prepared for major activities associated with the construction of a 15 building duplex apartment subdivision on 35.74-AC of land. The property will include associated asphalt driveways, roads, associated landscaping and public and private utilities. The SDM Rentals Duplex Apartment complex is located in the Town of Lansing, Lansing, New York approximately 8,000 feet east of the intersection of Van Ostrand Road and State Hwy 34b and 1,000 feet west of the intersection of Walden Lane and State Hwy 34b. The property sits on 35.74-acres in area of which, the total land disturbance will be approximately 14.9 acres over a multiple construction phase. The additional total impervious area added to the site will be 6.4% based on the calculated ratio of proposed new impervious surface to existing cover. Reference the Project Plans for the permanent stormwater

management facilities planned. This SWPPP includes the elements necessary to comply with the national baseline general permit for construction activities administered by the U.S. Environmental Protection Agency (EPA) under the National Pollutant Discharge Elimination System (NPDES) program and all local governing agency requirements. This SWPPP must be implemented at the start of construction.

Construction phase pollutant sources anticipated at the site are disturbed (bare) soil, vehicle fuels and lubricants, chemicals associated with building construction, and building materials. Without adequate control there is the potential for each type of pollutant to be transported by storm water.

The project will consist of the construction of 15 duplex apartment buildings consisting of 2,000-SF structures, asphalt driveways, roads, and landscaping. There will be public water, private sewer, as well as connections to other service utilities ie. (gas, electric, phone). Permanent stormwater management facilities are proposed including seven (7) bioretention areas, one (1) dry swale, one (1) pond, and diversion and interceptor swales to improve water quality from proposed impervious areas and provide water quality attenuation to that of pre-developed conditions.

A. Purpose

The major goal of pollution prevention efforts during project construction is to control the migration of soil and pollutants that originate on-site and prevent them from impacting surface waters and the environment. The purpose of this SWPPP is to provide guidelines for achieving that goal. A successful pollution prevention program also relies upon careful inspection and adjustments during the construction process in order to enhance its effectiveness.

B. Scope

This SWPPP must be implemented before construction begins on the site. It primarily addresses the impact of storm rainfall and runoff in areas of the ground surface disturbed during the construction process. In addition, there are recommendations for controlling other sources of pollution that could accompany the major construction activities. This SWPPP will terminate when disturbed areas are stabilized, construction activities covered herein have ceased, and a completed Notice of Termination (NOT) is mailed to the governing agency requiring the NOT.

Particular forms are included which are necessary for implementing the SWPPP.

The national baseline General Permit for Storm Water Discharges from Construction Activities prohibits most non-storm water discharges during the construction phase. Allowable non-storm water discharges that could occur during construction on this project, which would therefore be covered by the General Permit, include:

1. Discharges from fire fighting activities;

2. Fire hydrant flushing;

3. Water used to wash vehicles or control dust;

4. Water flowing from potable sources and water line flushing:

5. Irrigation drainage;

6. External building wash down which does not use detergents;

7. Runoff from pavement wash down where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents have not been used;

8. Air conditioning condensate;

9. Springs and uncontaminated groundwater; and

10. Foundation or footing drains where flows are not contaminated with process materials such as solvents.

The techniques described in this SWPPP focus on providing control of pollutant discharges with practical approaches that utilize readily available expertise, materials, and equipment.

The Owner/Developer referred to in this SWPPP is Scott Morgan who will be responsible for full development and build-out of the subject parcel.

3.0 PROJECT DESCRIPTION

Described below are the major construction activities that are subject to this SWPPP. The Owner shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the DEC, or, in areas under the jurisdiction of a regulated MS4, authorization by that municipality. They are presented in the order (or sequence) they are expected to begin, but each activity will not necessarily be completed before the next begins. Install erosion and sediment control measures as shown on Drainage, Sediment and Erosion Control

Plans, down slope from construction activities that disturb site soil before disturbance of soil;

CONSTRUCTION – EACH PHASE

A. Construction of stabilized construction entrance(s);

B. Placement of silt fence;

C. Construction of grassed diversion swales along the northern property boundary, and at the west end of subcatchment OSC-4 as shown on plans. These will be used as necessary, to channel upstream flow into areas directed by the Erosion and Sediment Control Plan;

D. Downstream stormwater controls must be installed before development takes place within each subcatchment. Individual stormwater practices shall correspond to the localized disturbance area as shown on construction drawings. For example, in anticipation of work planned within subcatchment PSC-2, the Owner shall first complete the installation of the bioretention area, BR-2, and all of its associated interceptor swales. Similarly, the Pond shall be constructed prior to any soil disturbance planned in PSC-7.

E. Construction of development roadway to gain access to each individual construction area.

F. Construction activities for the development of building and associated driveway/parking area:

   a. Install bioretention areas in locations shown on plans ***before*** major construction activities associated with lot development occur.

   b. Construct drainage swales/plumbing to bring local runoff into retention areas.

   c. Ensure that site is graded toward local retention areas;

   d. Construct driveways and individual lot temporary parking;

   e. Construct general utility services (ie. water and sewer piping, storm piping, etc.)

   f. Construct buildings;

   g. Construct other utility service connections (gas, electric, phone);

Note: For all Underground Utilities– Sediment barriers will be utilized as required to bind the down slope side of utility construction and soil stockpiles;

G. Remove any accumulated sedimentation from bioretention swales, dry swale, diversion swales, and pond. Return property to permanent lines and grades;

H. Final Grading Mulching & Seeding – Sediment barriers will be maintained down slope from disturbed soil during these operations;

I. Completion of site stabilization, ie. Vegetative cover, driveway surface. Sediment & Erosion Controls to remain in place until vegetative cover reaches 80% density.

4.0 RUNOFF REDUCTION VOLUME

This project follows the newer guidelines set forth by the DEC for runoff reduction. Chapter 3 or the New York State Stormwater Management Design Manual requires a five step planning process to document compliance with required processes.

Step 1 – Protect natural resources and utilize site hydrology

This planning step is designed to preserve area natural resources by protecting areas, avoiding sensitive locations, and minimizing grading and soil disturbances. There were no erodible soils, critical areas, wetlands, riparian buffer areas, or locally listed protected areas.

Another component of the planning process is an evaluation of all green infrastructure practices that might be acceptable for runoff reduction on site. This project will utilize bioretention areas and a dry swale.

The selection process is described as follows:

- Conservation of natural areas – Pre-development hydrology and water quality characteristics of undisturbed natural areas remains unaltered.
- Sheetflow to riparian buffers – None were available on-site.
- Vegetated open swales – Interceptor/Diversion swales will be used to direct on-site runoff into appropriate treatment practices.
- Tree planting/tree box – This was not a specific reduction practice considered for this project.

- Disconnection of rooftop runoff – There were no low lying natural areas that runoff could be directed to that could be disconnected from the design point. As such, rooftop runoff will be channeled to associated site bioretention areas.

- Stream daylighting for redevelopment projects – None on site.

- Bioswale – Bioretention areas will be utilized to control building and driveway runoff. The basins are designed for quality treatment.

- Green roof – This practice was cost prohibitive to the project and is impractical for individual homes. As such, this option was not considered.

- Stormwater planters – Bioretention areas were utilized to control runoff from rooftop, parking, and driveway areas due to the large surface areas involved.

- Rain cistern – This practice was considered impractical for the overall usage and square footage of the developed parcels. Source control measures like bioretention areas were considered instead.

- Porous pavement - This practice was cost prohibitive to the project and as such, this was not considered.

Step 2 – Determine Overall Water Quality Treatment Volume (WQv)

As required, the project originally planned to meet 100% of the WQv using green infrastructure practices and an infiltration basin was designed to capture and treat approximately 6,900 CF of runoff volume. An infiltration test was conducted at the proposed location of the basin on May 14, 2016 in accordance with Appendix D of the NYSDEC Stormwater Management Design Manual. The soil did not meet the necessary minimum percolation rate (0.5"/hr) and a standard practice to meet the remaining WQv after runoff reduction volume was implemented. See Attachment K for the calculation summary.

Step 3 – Runoff reduction by applying green infrastructure technology and standard SMPs.

Green infrastructure techniques were evaluated to potentially reduce the overall water quality volume. Green infrastructure practices used for this project were identified in Steps 1 and 2. The majority of site controls was through the use of standard infiltration practices including bioretention areas and a dry swale. As shown in Attachment K, minimum requirements for runoff reduction volume were met.

Step 4 – Provide standard practices to address remaining water quality volume

A pond was designed to provide treatment to address the remaining water quality volume after runoff reduction. See Step 2 above for an explanation as to why green infrastructure practices were impractical for this step. Reference Attachment K for the overall treatment calculations.

Step 5 – Apply volume and peak rate control practices if still required

A pond was added to the design to provide quantity attenuation to that of pre-developed conditions.

5.0 STORM WATER POLLUTION PREVENTION MEASURES AND CONTROLS

Various erosion and sediment control measures have been incorporated into the design of the project, Reference Stormwater, Sediment and Erosion Control Plans accompanying this SWPPP. These measures will be implemented during construction to minimize soil erosion and to protect the character and integrity of downstream receiving waters. The bioretention areas, dry swale, pond, and interceptor/diversion swales, will remain upon completion of the project to control the quality and quantity of storm water runoff from the developed site.

The site development contractor shall take all appropriate precautions to prevent soil erosion and discharge of sediment and other pollutants to receiving water bodies and wetlands. Specific measures are outlined in this plan. In general, disturbance areas shall be limited to the smallest practical areas at any given time, and the areas are to be reseeded as soon as possible. During construction the measures outlined in this document and shown on the plans are to be installed as described. Additional measures may be warranted or required by site and climatic conditions.

Specific erosion control measures, designed to minimize soil loss, and sediment control measures devised to retain eroded soil and prevent it from reaching water bodies or adjoining properties have been developed in accordance with the New *York State Stormwater Management Design Manual*, 2010, NYSDEC and *New York Standards & Specifications for Erosion and Sedimentation Control*, August 2005. Reference Attachment H for copy of *Vegetative and Structural, Measures for Erosion and Sediment Control, Sections 3 and 5 of the New York Standards & Specifications for Erosion and Sedimentation Control,* August 2005.

A variety of storm water pollutant controls are recommended for this project. Some controls are intended to function temporarily and will be used as needed for pollutant control during the construction period. These include temporary sediment and erosion control measures as shown on the plans and permanent stormwater facilities including, seven bioretention areas, a dry swale, a pond, and interceptor/diversion swales. For all disturbed areas, permanent stabilization will

be accomplished by covering the disturbed soil with vegetation, pavement, or commercial structures.

A. Erosion and Sediment Controls

1. Soil Stabilization – The purpose of soil stabilization is to prevent soil from leaving the site. In the natural condition, soil is stabilized by native vegetation. The primary technique to be used at this project for stabilizing site soil will be to provide a protective cover of turf grass, pavement, or building structure.

   a. Temporary Seeding - Where land disturbance is necessary, temporary seeding with fast-germinating temporary seed and a protection of mulch must be used on areas which will be exposed for more than 14 days.

   b. Permanent Seeding – All areas at final grade must be seeded and mulched within 7 days after completion of the major activity.

   c. Structural Controls – The storm water will be managed on the site utilizing proposed site grading, bioretention areas, dry swale, pond, and associated swale based drainage systems. Their design is shown on the Project Site Stormwater Plans.

   Final site stabilization is achieved when there is a uniform 80 percent density of permanent vegetation on all previously disturbed soil surfaces, exclusive of areas that have been paved.

B. Other Pollutant Controls

Control of sediments has been described previously. Other aspects of this SWPPP are listed below:

1. Dust Control – Construction traffic must enter and exit the site at the stabilized construction/driveway entrance. The purpose is to trap dust and mud that would otherwise be carried off-site by construction traffic.

   Dust control must be provided by the general contractor to a degree that is acceptable to the Owner, and in compliance with applicable local and state dust control regulations. After construction, the site will be stabilized (as described elsewhere), which will reduce the potential for dust generation.

2. Solid Waste Disposal – No solid materials, including building materials, are allowed to be discharged from the site with storm water.

All solid waste, including disposable materials incidental to the major construction activities, must be collected and placed in containers. The containers will be emptied periodically by a contract trash disposal service and hauled away from the site.

Substances that have the potential for polluting surface and/or groundwater must be controlled by whatever means necessary in order to ensure that they do not discharge from the site. As an example, special care must be exercised during equipment fueling and servicing operations. If a spill occurs, it must be contained and disposed so that it will not flow from the site or enter groundwater, even if this requires removal, treatment, and disposal of soil. In this regard, potentially polluting substances should be handled in a manner consistent with the impact they represent.

3. Sanitary Facilities – All personnel involved with construction activities must comply with state and local sanitary or septic system regulations. Temporary sanitary facilities will be provided at the site throughout the construction phase. They must be utilized by all construction personnel and will be serviced by a commercial contractor.

4. Water Source – Non-storm water components of site discharge must be clean water. Water used for construction, which discharges from the site, must originate from a public water supply or private well approved by the State Health Department. Water used for construction that does not originate from an approved public supply must not discharge from the site. It can be retained in temporary ponds until it infiltrates and evaporates.

5. Long-Term Pollutant Controls – Storm water pollutant control measures installed during construction that will also provide benefits after construction, include seven (7) bioretention areas, one (1) dry swale, one (1) pond, and interceptor/diversion swales. Those sediment barriers that do not interfere with normal operations and appear to provide long-term benefits can be left in place after construction is completed.

C. Construction Phase "Best Management Practices"

During the construction phase, the general contractor will implement the following measures:

1. Permanent traffic corridors shall be established and "routes of convenience" shall be avoided;

2. Preservation of existing vegetation as much as possible. Following the completion of construction activities in any portion of the site permanent vegetation shall be established an all exposed soils;

3. Site preparation activities shall be planned to minimize the area and duration of soil disruption;

4. Minimizing soil erosion and sedimentation by stabilization of disturbed areas and by removing sediment from construction site discharges;

5. Material resulting from the clearing and grubbing operation will be stockpiled up slope from adequate sedimentation controls.

6. The general contractor will designate areas for equipment cleaning, maintenance, and repair. The general contractor and subcontractors will utilize those areas. The areas will be protected by a temporary perimeter berm.

7. Use of detergents for large scale washing is prohibited (i.e., vehicles, buildings, pavement surfaces, etc.)

8. Chemicals, paints, solvents, fertilizers, and other toxic material must be stored in waterproof containers. Except during application, the contents must be kept in trucks or within storage facilities. Runoff containing such material must be collected, removed from the site, treated and disposed at an approved solid waste or chemical disposal facility.

6.0 LOCAL PLANS

In addition to this SWPPP, construction activities associated with this project must comply with any guidelines set forth by local and state regulatory agencies. Reference Project Plans and the Stormwater Management Design Summary (Attachment K) prepared to meet Local and State requirements for post-development stormwater quantity & quality.

7.0 WETLANDS, FLOODPLAINS, AND FLOOD LIMITS

A search was made on the State DEC Environmental Mapper web site to identify any state regulated wetlands in the project vicinity. In addition, a review from the Tompkins County Natural Resources Mapper web site was conducted to evaluate flood plain zones in the area. On both accounts, it appears that the project is well outside of any known target zones, respectively. Please see Attachment D for area mapping.

8.0 NYSHPO

A search was conducted on the New York State Parks, Recreation and Historic Preservation Office (SHPO) website to identify whether the subject parcel is listed under natural or historic places registration, or if the area resides within an archaeologically sensitive location. Attachment E, includes a "circles and squares map" indicating that the property is not found to be within this type of area designation. An application was made to the SHPO office and the project received confirmation on October 15, 2015 regarding the same.

9.0 INSPECTIONS AND SYSTEM MAINTENANCE

Between the time this SWPPP is implemented and final site stabilization is achieved, all disturbed areas and pollutant controls must be inspected at least once every seven calendar days by a licensed professional. The purpose of site inspections is to assess performance of pollutant controls. The inspections will be conducted by a third party professional provided by the Owner. The development contractor will also be required to arrange for a designated trained representative to be responsible for the management of this SWPPP. Based on these inspections, the contractor will decide whether it is necessary to modify this SWPPP, add or relocate sediment barriers, or whatever else may be needed in order to prevent pollutants from leaving the site via storm water runoff. The general contractor has the duty to cause pollutant control measures to be repaired, modified, maintained, supplemented, or whatever else is necessary in order to achieve effective pollutant control.

Examples of particular items to evaluate during site inspections are listed below. This list is not intended to be comprehensive. During each inspection the inspector must evaluate overall pollutant control system performance as well as particular details of individual system components. Additional factors should be considered as appropriate to the circumstances.

A. Construction of stormwater facilities. Insure facilities are constructed substantially in accordance with the plans. (Also, Reference Attachment F for sample inspection checklist - NYSDEC Stormwater Construction Checklist):

B. Locations where vehicles enter and exit the site must be inspected for evidence of off-site sediment tracking. A stabilized construction entrance will be constructed where vehicles enter and exit. This entrance will be maintained or supplemented as necessary to prevent sediment from leaving the site on vehicles.

C. Sediment barriers must be inspected and, if necessary, they must be enlarged or cleaned in order to provide additional capacity. All material from behind sediment barriers will be stockpiled on the up slope side. Additional sediment barriers must be constructed as needed.

D. Inspections will evaluate disturbed areas and areas used for storing materials that are exposed to rainfall for evidence of, or the potential for, pollutants entering the drainage system. If necessary, the materials must be covered or original covers must be repaired or supplemented. Also, protective berms must be constructed, if needed, in order to contain runoff from material storage areas.

E. Grassed areas will be inspected to confirm that a healthy stand of grass is maintained. The site has achieved final stabilization once all areas are covered with building foundation or pavement, or have a stand of grass with at least 80 percent density. The density of 80 percent or greater must be maintained to be considered as stabilized. Areas must be watered, fertilized, and reseeded as needed to achieve this goal.

F. All discharge points must be inspected to determine whether erosion control measures are effective in preventing significant impacts to receiving waters.

Based on inspection results, any modification necessary to increase effectiveness of this SWPPP to an acceptable level must be made within seven calendar days of the inspection. The inspection reports must be completed entirely and additional remarks should be included if needed to fully describe a situation. An important aspect of the inspection report is the description of additional measures that need to be taken to enhance plan effectiveness. The inspection report must identify whether the site was in compliance with the SWPP at the time of inspection and specifically identify all incidents of non-compliance.

Inspection reports must be kept on file by the general contractor as an integral part of this SWPPP for at least three years from the date of completion of the project.

Ultimately, it is the responsibility of the site development contractor to assure the adequacy of site pollutant discharge controls. Actual physical site conditions or contractor practices could make it necessary to install more structural controls than are shown on the plans. (For example, localized concentrations of runoff could make it necessary to install additional sediment barriers.) Assessing the need for additional controls and implementing them or adjusting existing controls will be a continuing aspect of this SWPPP until the site achieves final stabilization.

10.0 POST CONSTRUCTION INSPECTION, OPERATION AND MAINTENANCE PLAN

A. Maintenance Responsibility

Short and long term maintenance responsibilities for the bioretention areas, dry swale, pond, and associated swales and culvert drainage systems will lay with Scott Morgan.

Specifically, Scott Morgan is aware that the following shall be incorporated into the project as part of an O&M post construction management plan:

1. A sign shall be erected in a conspicuous area (ie. close proximity to each developed practice) to identify each stormwater management practice including: the six bioretention areas, dry swale, pond, and diversion swales. The sign shall be of a size not less than 18" x 24" (or 10" x 12" for footprints smaller than 400 SF) bearing the following information:

   STORMWATER MANAGEMENT PRACTICE
   Project Identification (*SPDES Permit* #)
   Bioretention area, pond, dry swale, diversion swales
   Must be maintained in Accordance with O&M Plan

2. A legally binding mechanism shall be used to ensure long term operation and maintenance and protection of the bioretention areas, dry swale, pond, and general diversion swales. This mechanism shall be through execution of an agreement with the Town of Lansing, carried by deed which shall be transferred upon full build-out between Scott Morgan and the Town of Lansing.

3. Copies of the practice designs and details shall be kept on record and be made available at all times. Copies shall also be forwarded to the Town of Lansing for archival purposes.

B. Sediment & Debris Removal

Sediment removal in the retention areas shall occur every five to six years or after 50% of total capacity has been lost. Inspection of the infiltration practices shall take place annually after the spring melt to determine if maintenance is necessary. Sediments excavated from the stormwater controls that have not received runoff from designated hotspots and are generally not considered toxic or hazardous may be safely excavated, transported and used as fill.

C. Inspection & Periodic Maintenance

To ensure the continued operation and long term performance of the proposed stormwater management system, inspections shall be conducted periodically for the first few months following construction and then on an annual basis. Site inspection should also be performed following major storm events (i.e., intense storms, thunder storms, cloud bursts, etc.). Items to check for include, but are not limited to the following: (Reference Attachment I and Attachment J for complete inspection checklist - NYSDEC Stormwater Operation, Maintenance and Management Inspection Checklists):

i) Embankment & Structural;

 Check basin embankments, outlets and spillways note cracks, bulges, animal burrows, differential settlement, damage to or fatigue of stormwater pipe, structures and permanent erosion control. Components of the system that require repair or replacement should be addressed immediately following identification. Check pipes, channels, grates, inlet structures and spillways to insure design capacity. Look for objects or accumulations of sediments and debris obstructing flow path.

ii) Vegetation;

 Preclude deep rooted woody plant growth on pond embankment by mowing at least once annually.

 Maintain a dense vigorous growth of grass cover. Spot seed, mulch and fertilize where necessary.

Attachment A:
Notice of Intent, (NOI) and
MS4 Acceptance Form

NOI for coverage under Stormwater General Permit for Construction Activity

Alternate ID SDM Rentals Duplex Apartments **Submission** HNX-1S7Z-B2SNG **Revision** 1 **Form Version** 1.20

Review

This step allows you to review the form to confirm the form is populated completely and accurately, prior to certification and submission.

Please note: Any work you perform filling out a form will not be accessible by NYSDEC staff or the public until you actually submit the form in the 'Certify & Submit' step.

OWNER/OPERATOR INFORMATION

Owner/Operator Name (Company/Private Owner/Municipality/Agency/Institution, etc.)
SDM Rentals, LLC

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Morgan

Owner/Operator Contact Person First Name
Scott

Owner/Operator Mailing Address
P.O. Box 4925

City
Ithaca

State
NY

Zip
14852

Phone
6072795609

Email
sdmlandscaping@hotmail.com

Federal Tax ID
None Specified

PROJECT LOCATION

Project/Site Name
SDM Rentals Duplex Apartments

Street Address (Not P.O. Box)
Peruville Road

Side of Street
North

City/Town/Village (THAT ISSUES BUILDING PERMIT)
(T) Lansing

State
NY

Zip
14882

County
TOMPKINS

DEC Region
7

Name of Nearest Cross Street
Walton Lane

Distance to Nearest Cross Street (Feet)
1000

Project In Relation to Cross Street
West

Tax Map Numbers Section-Block-Parcel
None Specified

Tax Map Numbers
None Specified

1. Coordinates

Provide the Geographic Coordinates for the project site. The two methods are:
- Navigate to the project location on the map (below) and click to place a marker and obtain the XY coordinates.
- The "Find Me" button will provide the lat/long for the person filling out this form. Then pan the map to the correct location and click the map to place a marker and obtain the XY coordinates.

Navigate to your location and click on the map to get the X,Y coordinates

Latitude	Longitude
42.53999034775728	-76.45904901880583

PROJECT DETAILS

2. What is the nature of this project?
New Construction

3. Select the predominant land use for both pre and post development conditions.

Pre-Development Existing Landuse
Pasture/Open Land

Post-Development Future Land Use
Multifamily Residential

3a. If Single Family Subdivision was selected in question 3, enter the number of subdivision lots.
None Specified

---

4. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area.

*** ROUND TO THE NEAREST TENTH OF AN ACRE. ***

Total Site Area (acres)
35.74

Total Area to be Disturbed (acres)
14.9

Existing Impervious Area to be Disturbed (acres)
0

Future Impervious Area Within Disturbed Area (acres)
2.28

5. Do you plan to disturb more than 5 acres of soil at any one time?
No

6. Indicate the percentage (%) of each Hydrologic Soil Group(HSG) at the site.

A (%)
16

B (%)
3

C (%)
81

D (%)
0

7. Is this a phased project?
Yes

8. Enter the planned start and end dates of the disturbance activities.

Start Date
06/01/2020

End Date
06/01/2022

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.
Class B Stream - #898-238

9a. Type of waterbody identified in question 9?
Stream/Creek Off Site

Other Waterbody Type Off Site Description
None Specified

9b. If "wetland" was selected in 9A, how was the wetland identified?
None Specified

10. Has the surface waterbody(ies in question 9 been identified as a 303(d) segment in Appendix E of GP-0-15-002?
No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-15-002?
No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters?
Yes

If No, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey?
No

If Yes, what is the acreage to be disturbed?
None Specified

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area?
No

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)?
Yes

16. What is the name of the municipality/entity that owns the separate storm sewer system?
Town of Lansing

17. Does any runoff from the site enter a sewer classified as a Combined Sewer?
No

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law?
No

19. Is this property owned by a state authority, state agency, federal government or local government?
No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.)
No

REQUIRED SWPPP COMPONENTS

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)?
Yes

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)?
Yes

If you answered No in question 22, skip question 23 and the Post-construction Criteria and Post-construction SMP Identification sections.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual?
Yes

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:
Professional Engineer (P.E.)

SWPPP Preparer
Timothy C. Buhl

Contact Name (Last, Space, First)
Gibson, Scott

Mailing Address
5 Orchard Avenue

City
Watkins Glen

State
New York

Zip
14891

Phone
6072280662

Email
scottg@stny.rr.com

Download SWPPP Preparer Certification Form

Please take the following steps to prepare and upload your preparer certification form:

1) Click on the link below to download a blank certification form
2) The certified SWPPP preparer should sign this form
3) Scan the signed form
4) Upload the scanned document

Download SWPPP Preparer Certification Form

Please upload the SWPPP Preparer Certification

No files uploaded

Comment
None Specified

At least one file is required.

EROSION & SEDIMENT CONTROL CRITERIA

25. Has a construction sequence schedule for the planned management practices been prepared?
Yes

26. Select all of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

Check Dams
Perimeter Dike/Swale
Sediment Traps
Stabilized Construction Entrance
Silt Fence
Construction Road Stabilization

Biotechnical
None

Vegetative Measures
Grassed Waterway
Mulching
Seeding
Sodding
Topsoiling

Permanent Structural
Diversion

Other
None Specified

POST-CONSTRUCTION CRITERIA

*** IMPORTANT: Completion of Questions 27-39 is not required if response to Question 22 is No.**

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.
Reduction of Clearing and Grading
Roadway Reduction

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (latest version).

All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout). (Acre-feet)

0.232

29. Post-construction SMP Identification

Use the Post-construction SMP Identification section to identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity that were used to reduce the Total WQv Required (#28).

Identify the SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use the Post-Construction SMP Identification section to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29. (acre-feet)

0.068

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28)?

No

If Yes, go to question 36. If No, go to question 32.

32. Provide the Minimum RRv required based on HSG. [Minimum RRv Required = (P) (0.95) (Ai) / 12, Ai=(s) (Aic)] (acre-feet)

0.064

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

Yes

If Yes, go to question 33.

Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. SMPs

Use the Post-construction SMP Identification section to identify the Standard SMPs and, if applicable, the Alternative SMPs to be used to treat the remaining total WQv (=Total WQv Required in #28 - Total RRv Provided in #30).

Also, provide the total impervious area that contributes runoff to each practice selected.

NOTE: Use the Post-construction SMP Identification section to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question #29. (acre-feet)

0.164

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a).

0.232

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)?

Yes

If Yes, go to question 36.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv required and provided or select waiver (#36a), if applicable.

CPv Required (acre-feet)
0.235

CPv Provided (acre-feet)
0.434

36a. The need to provide channel protection has been waived because:
None Specified

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (#37a), if applicable.

Overbank Flood Control Criteria (Qp)

Pre-Development (CFS)
12.35

Post-Development (CFS)
9.43

Total Extreme Flood Control Criteria (Qf)

Pre-Development (CFS)
64.97

Post-Development (CFS)
54.21

37a. The need to meet the Qp and Qf criteria has been waived because:

None Specified

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed?
Yes

If Yes, Identify the entity responsible for the long term Operation and Maintenance
Scott Morgan

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). (See question #32a) This space can also be used for other pertinent project information.
As required, the project originally planned to meet 100% of the WQv using green infiltration practices and an infiltration basin was designed to capture and treat approximately 6,900-CF of runoff volume. A centralized basin was chosen due to site limitations in slope and contour. An infiltration test was conducted at the proposed basin location on May 14, 2016 with testing in accordance with Appendix D of the NYSDEC Stormwater Management Design Manual. The soil did not meet the minimum percolation rate of 0.5"/hr and a standard practice to meet the remaining WQv after minimum RRv was implemented instead.

POST-CONSTRUCTION SMP IDENTIFICATION

Runoff Reduction (RR) Techniques, Standard Stormwater Management Practices (SMPs) and Alternative SMPs

Identify the Post-construction SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

RR Techniques (Area Reduction)

Round to the nearest tenth

Total Contributing Acres for Conservation of Natural Area (RR-1)
None Specified

Total Contributing Impervious Acres for Conservation of Natural Area (RR-1)
None Specified

Total Contributing Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
None Specified

Total Contributing Impervious Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
None Specified

Total Contributing Acres for Tree Planting/Tree Pit (RR-3)
None Specified

Total Contributing Impervious Acres for Tree Planting/Tree Pit (RR-3)
None Specified

Total Contributing Acres for Disconnection of Rooftop Runoff (RR-4)
None Specified

RR Techniques (Volume Reduction)

Total Contributing Impervious Acres for Disconnection of Rooftop Runoff (RR-4)
None Specified

Total Contributing Impervious Acres for Vegetated Swale (RR-5)
None Specified

Total Contributing Impervious Acres for Rain Garden (RR-6)
None Specified

Total Contributing Impervious Acres for Stormwater Planter (RR-7)
None Specified

Total Contributing Impervious Acres for Rain Barrel/Cistern (RR-8)
None Specified

Total Contributing Impervious Acres for Porous Pavement (RR-9)
None Specified

Total Contributing Impervious Acres for Green Roof (RR-10)
None Specified

Standard SMPs with RRv Capacity

Total Contributing Impervious Acres for Infiltration Trench (I-1)
None Specified

Total Contributing Impervious Acres for Infiltration Basin (I-2)
None Specified

Total Contributing Impervious Acres for Dry Well (I-3)
None Specified

Total Contributing Impervious Acres for Underground Infiltration System (I-4)
None Specified

Total Contributing Impervious Acres for Bioretention (F-5)
0.69

Total Contributing Impervious Acres for Dry Swale (O-1)
0.07

Standard SMPs

Total Contributing Impervious Acres for Micropool Extended Detention (P-1)
None Specified

Total Contributing Impervious Acres for Wet Pond (P-2)
1.72

Total Contributing Impervious Acres for Wet Extended Detention (P-3)
None Specified

Total Contributing Impervious Acres for Multiple Pond System (P-4)
None Specified

Total Contributing Impervious Acres for Pocket Pond (P-5)
None Specified

Total Contributing Impervious Acres for Surface Sand Filter (F-1)
None Specified

Total Contributing Impervious Acres for Underground Sand Filter (F-2)
None Specified

Total Contributing Impervious Acres for Perimeter Sand Filter (F-3)
None Specified

Total Contributing Impervious Acres for Organic Filter (F-4)
None Specified

Total Contributing Impervious Acres for Shallow Wetland (W-1)
None Specified

Total Contributing Impervious Acres for Extended Detention Wetland (W-2)
None Specified

Total Contributing Impervious Acres for Pond/Wetland System (W-3)
None Specified

Total Contributing Impervious Acres for Pocket Wetland (W-4)
None Specified

Total Contributing Impervious Acres for Wet Swale (O-2)
None Specified

Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Total Contributing Impervious Area for Hydrodynamic
None Specified

Total Contributing Impervious Area for Wet Vault
None Specified

Total Contributing Impervious Area for Media Filter
None Specified

"Other" Alternative SMP?
None Specified

Total Contributing Impervious Area for "Other"
None Specified

Provide the name and manufaturer of the alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

Manufacturer of Alternative SMP
None Specified

Name of Alternative SMP
None Specified

OTHER PERMITS

40. Identify other DEC permits, existing and new, that are required for this project/facility.
None

If SPDES Multi-Sector GP, then give permit ID
None Specified

If Other, then identify
None Specified

41. Does this project require a US Army Corps of Engineers Wetland Permit?
No

If "Yes," then indicate Size of Impact, in acres, to the nearest tenth
None Specified

42. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned.
None Specified

MS4 SWPPP ACCEPTANCE

43. Is this project subject to the requirements of a regulated, traditional land use control MS4?
Yes - Please attach the MS4 Acceptance form below

If No, skip question 44

44. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI?
Yes

MS4 SWPPP Acceptance Form Download

Download form from the link below. Complete, sign, and upload.

MS4 SWPPP Acceptance Form

MS4 Acceptance Form Upload

No files uploaded

Comment

None Specified

OWNER/OPERATOR CERTIFICATION

The owner/operator must download, sign, and upload the certification form in order to complete this application.

Owner/Operator Certification Form Download

Download the certification form by clicking the link below. Complete, sign, scan, and upload the form.

Owner/Operator Certification Form (PDF, 45KB)

Upload Owner/Operator Certification Form

No files uploaded

Comment

None Specified

At least one file is required.

New York State Department of Environmental Conservation Division of Water 625 Broadway, 4th Floor Albany, New York 12233-3505 MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form for Construction Activities Seeking Authorization Under SPDES General Permit *(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information
1. Owner/Operator Name:
2. Contact Person:
3. Street Address:
4. City/State/Zip:
II. Project Site Information
5. Project/Site Name:
6. Street Address:
7. City/State/Zip:
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information
8. SWPPP Reviewed by:
9. Title/Position:
10. Date Final SWPPP Reviewed and Accepted:
IV. Regulated MS4 Information
11. Name of MS4:
12. MS4 SPDES Permit Identification Number: NYR20A
13. Contact Person:
14. Street Address:
15. City/State/Zip:
16. Telephone Number:

MS4 SWPPP Acceptance Form -continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

Attachment B:
Notice of Termination, (NOT)

New York State Department of Environmental Conservation Division of Water 625 Broadway, 4th Floor Albany, New York 12233-3505 ***(NOTE: Submit completed form to address above)*** **NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity**

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person:	4a.Telephone:

5. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. G All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP.
***Date final stabilization completed** (month/year):

9b. G Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ___ ___ ___ ___ ___ ___ (Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. G Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? G yes G no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? G yes G no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? G yes G no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s): G Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality. G Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s). G For post-construction stormwater management practices that are privately owned, the deed of record has been modified to include a deed covenant that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan. G For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, college, university), or government agency or authority, policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? G yes G no (If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation: (Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:	Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:
VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):	
I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:
IX. Owner or Operator Certification	
I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:

Attachment C:
Certification Forms

CONTRACTOR and SUBCONTRACTOR CERTIFICATION STATEMENT

for the New York State Department of Environmental Conservation (DEC) State Pollutant Discharge Elimination System Permit for Stormwater Discharges from Construction Activity (GP-0-10-001)

As per *Part III.A.6* on page 13 of *GP-0-10-001* (effective January 29, 2010):

'Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and sub-contractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor*. The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.'

The *owner or operator* shall have each contractor and subcontractor involved in soil disturbance sign a copy of the following certification statement before they commence <u>any</u> *construction activity*:

_____	**NYR** _____	_____
Name of Construction Site	*DEC Permit ID*	*Municipality (MS4)*

"I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

_____ Responsible Corporate Officer/Partner Signature	_____ Date
_____ Name of above Signatory	_____ Name of Company
_____ Title of above Signatory	_____ Mailing Address
_____ Telephone of Company	_____ City, State and Zip

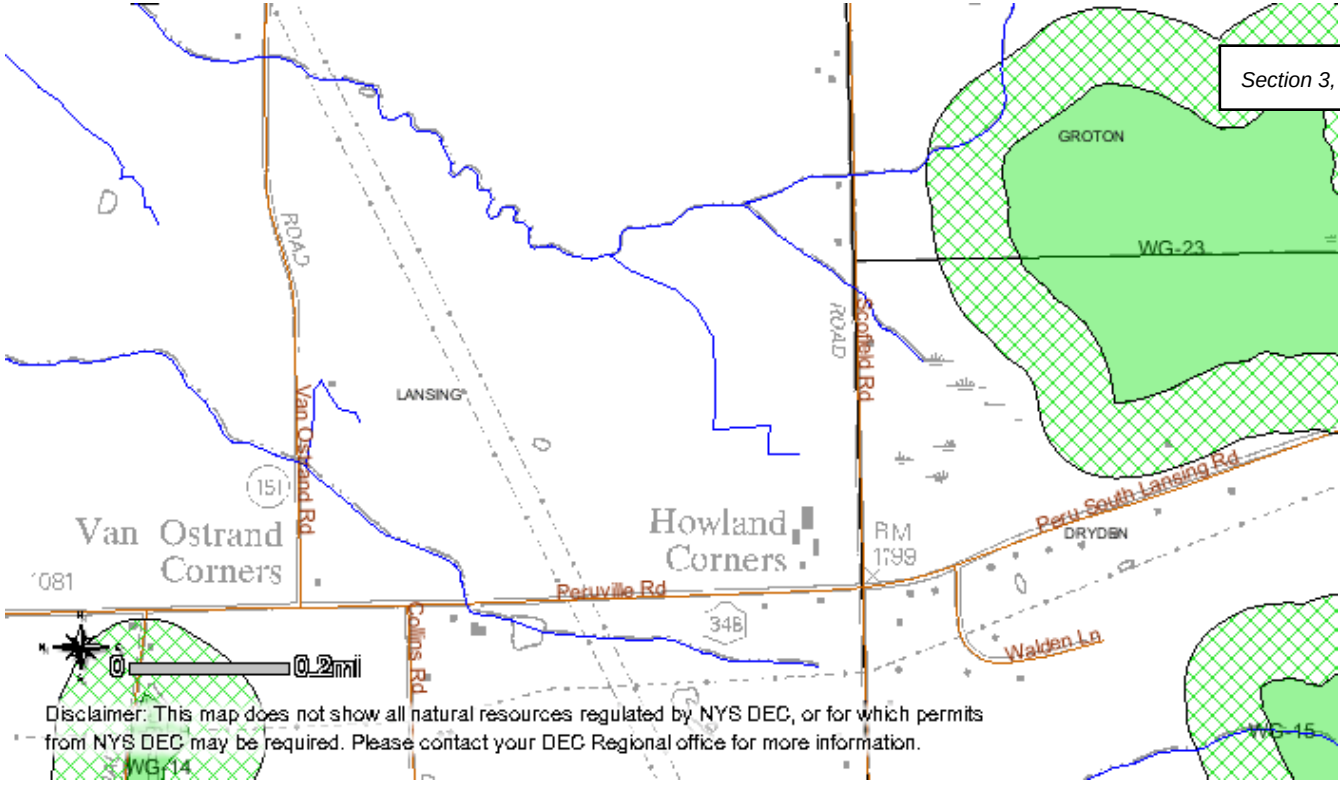
Identify the specific elements of the SWPPP the contractor or subcontractor is responsible for:

***'TRAINED CONTRACTOR'* FOR THE CERTIFIED CONTRACTOR OR SUBCONTRACTOR**

_____	_____	_____
Name of Trained Employee	*Title of Trained Employee*	*NYSDEC SWT #*

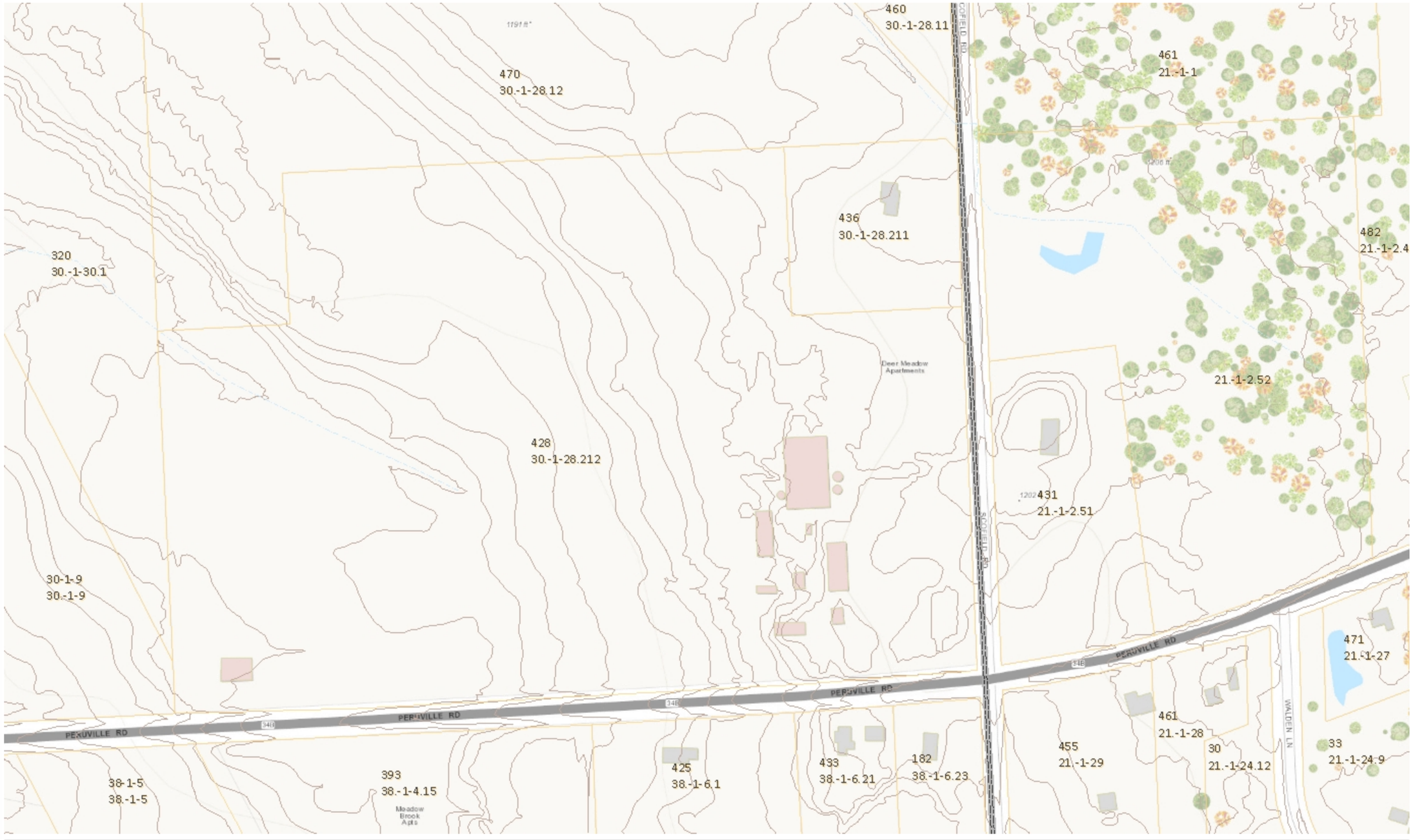
A copy of this signed contractor certification statement must be maintained at the SWPPP on site

Attachment D:
Wetlands and Floodplain Mapping



Pinney - Wetlands Map

Pinney Duplex Project Flood Zone Map



Legend

- Address
- Open Water
- Streams
  - Intermittent Streams
  - Perennial Streams
- PARCELS
- Flood Zones
  - 100 Year
  - 500 Year
  - Not Included in Flood Map
- Building
- Municipalities
- ULY-SE
- ULY-SW
- ULY-NW
- ULY-tNE
- NEW-SW
- NEW-SE
- NEW-NE
- NEW-NW
- LAN2ftSouth
- LAN-NE
- LAN-NW
- LAN2ftMiddle
- GRO-SE
- GRO-SW
- GRO-NE
- GRO-NW
- ENF-SE
- ENF-SW
- ENF-NE
- ENF-NW
- DRY-SE
- DRY-SW
- DRY-NE
- DRY-tNW
- DAN2ftSW
- DAN2ftSE
- DAN2ftNW
- DAN2ftNE
- CAR-SW
- CAR-SE

1: 3,287

547.9 0 273.93 547.9 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere

© Tompkins County GIS 2011

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Notes

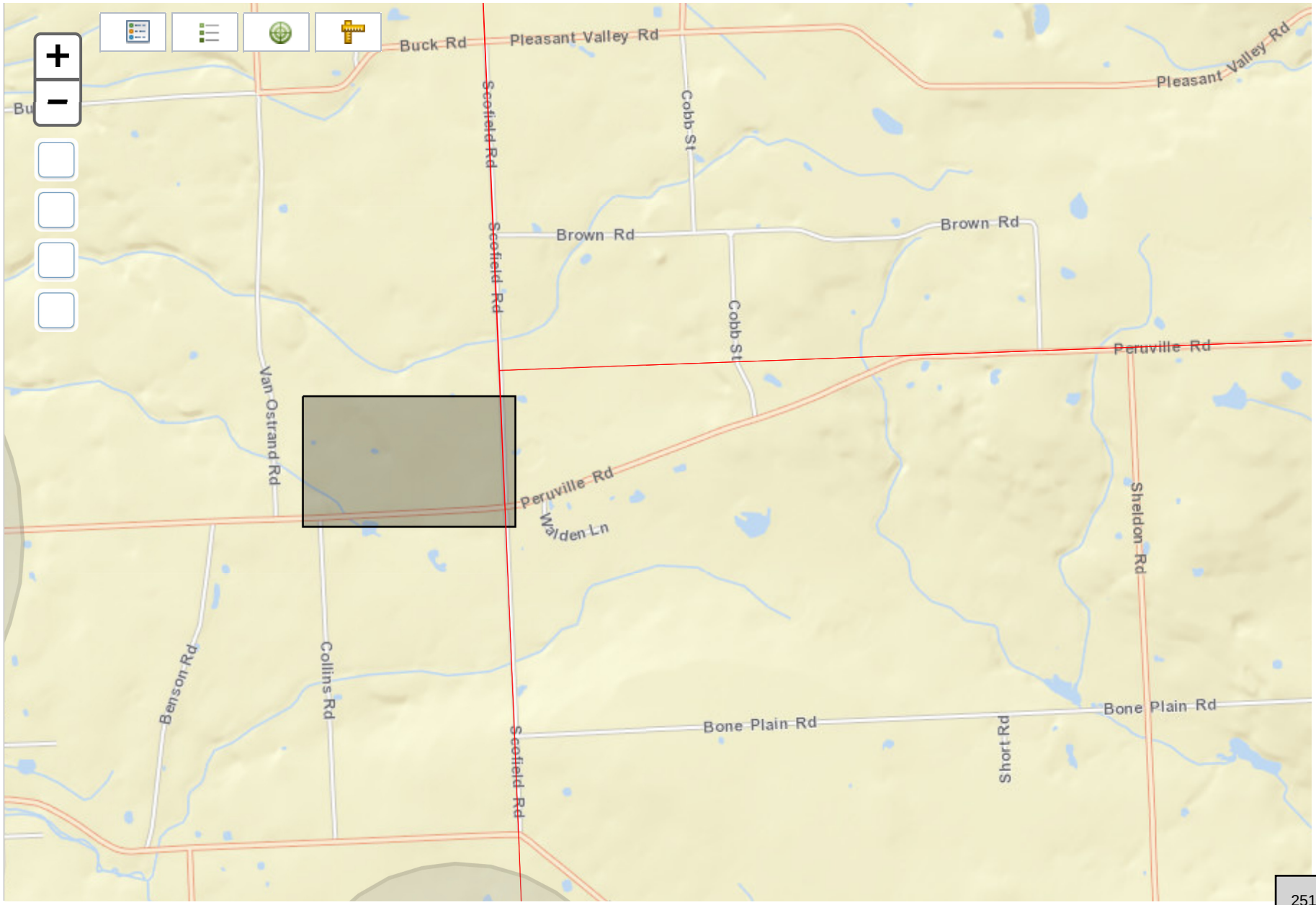
This map was automatically generated using Geocortex Essentials. Your [illegible] at work!

Attachment E:
NYSHPO – Circles and Squares Map

Section 3, Item c.

CRIS NYS Cultural Resource Information System

HOME SUBMIT SEARCH COMMUNICATE



251

NEW YORK STATE OF OPPORTUNITY. | Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ROSE HARVEY
Commissioner

October 15, 2015

Mr. Scott Gibson
5 Orchard Avenue
Watkins Glen, NY 14891

Re: DEC
Pinney Duplex Apartments
Town of Lansing, Tompkins County
15PR05870

Dear Mr. Gibson:

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the OPRHP and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the New York State Office of Parks, Recreation and Historic Preservation's opinion that your project will have no impact on archaeological and/or historic resources listed in or eligible for the New York State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont

Deputy Commissioner for Historic Preservation

Attachment F:
Inspection Report (Sample Form)

INSPECTION REPORT
for
STORM WATER POLLUTION PREVENTION PLAN

PROJECT TITLE: _____

PROJECT LOCATION: _____

INSPECTOR: _____
DATE: _____

SITE CONDITIONS:

POLLUTANT CONTROL	IN CONFORMANCE	EFFECTIVE
Stabilized Construction Entrance	YES/NO (See Below)	YES/NO (See Below)
Silt Fence	YES/NO (See Below)	YES/NO (See Below)
Temporary Seeding & Mulching	YES/NO (See Below)	YES/NO (See Below)
Swales, Ditches, Channels	YES/NO (See Below)	YES/NO (See Below)
Rock Check Dams	YES/NO (See Below)	YES/NO (See Below)
Wet Pond & Forebays	YES/NO (See Below)	YES/NO (See Below)
Material Storage	YES/NO (See Below)	YES/NO (See Below)
Other: _____	YES/NO (See Below)	YES/NO (See Below)

VIOLATION NOTED: (Explain each "NO" circled above) _____

RECOMMENDED REMEDIAL ACTION(S): _____

COMMENTS: _____

Based on the results of the inspection, necessary control modifications shall be implemented within 7 calendar days. These reports shall be kept on file as part of the Storm Water Pollution Prevention Plan for at least three years from the date of completion and submission of the Notice of Termination. A copy of the SWPPP shall be kept at the site at all times during construction.

CERTIFICATION STATEMENT

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person(s) who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonments for knowing violations.

_____ _____
Signature Date

_____
Printed Name

Attachment G:
Record of Stabilization and Construction Activity Dates (Sample Form)

SITE STABILIZATION
and
CONSTRUCTION ACTIVITY DATES

A record of dates when major grading activities occur, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization measures are initiated shall be maintained until final site stabilization is achieved and the Notice of Termination is filed. The dates can be entered in the following form, or on a different form.

MAJOR GRADING ACTIVITIES:

Description of Activity: _____
Begin (date): _____ Site Contractor: _____
Location: _____
End (date): _____

Description of Activity: _____
Begin (date): _____ Site Contractor: _____
Location: _____
End (date): _____

Description of Activity: _____
Begin (date): _____ Site Contractor: _____
Location: _____
End (date): _____

Description of Activity: _____
Begin (date): _____ Site Contractor: _____
Location: _____
End (date): _____

Description of Activity: _____
Begin (date): _____ Site Contractor: _____
Location: _____
End (date): _____

Description of Activity: _____
Begin (date): _____ Site Contractor: _____
Location: _____
End (date): _____

Description of Activity: _____
Begin (date): _____ Site Contractor: _____
Location: _____
End (date): _____

Attachment H:
Vegetative and Structural Measures For Erosion and Sediment Control

(*Sections 3 and 5 NY Standards & Specifications for Erosion & Sediment Control)*

(Reference)

VEGETATIVE MEASURES FOR EROSION AND SEDIMENT CONTROL

Erosion is the gradual wearing away of the land surface as a result of uncontrolled wind and water energy. Sedimentation is the result of transport and delivery of eroded soil particles, deposited at some point. Erosion and sediment control is a complex interaction of soils, engineering water management, agronomic and horticultural practices. Decisions for resolving erosion conditions, both on site and within the upper watershed, are formulated based on surface and subsurface water, soil material, climatic conditions, and anticipated land use. Creating a stable slope is necessary prior to vegetating. Sloughing and slumping are not helpful in establishing a uniform protective cover.

General planning considerations for vegetating a steep slope will include evaluating the soil. Factors such as soil texture and steepness affect the stability of the slope. Texture also influences the permeability and water holding capacity of the soil. Many slopes are stripped of topsoil during the construction phase, leaving an infertile, compacted soil surface, void of valuable organic matter. Topsoil must be reapplied. Overly compacted slopes should be decompacted with appropriate equipment. Soil pH and nutrient level are determined by obtaining a representative soil sample for analysis from an accredited lab. Appropriate plants are selected to meet the final slope and soil conditions for the site.

Liming material sold in New York varies considerably in several ways. The mineral content (calcium and magnesium) of the limestone may be high or low, the fineness or particle sizes vary between suppliers, and the cost varies greatly. Two types of limestone are sold. The most common is limestone high in calcium. Dolomitic limestone contains magnesium (Mg) and calcium (Ca). Limestone sold in NY varies from 0 to 20% Mg while the calcium content of lime varies from 14.7% to 51.5%. Particle size determines how rapidly the calcium and magnesium will react with the acid in the soil. The finer the particle sizes, the quicker the reaction.

When purchasing agricultural limestone, one should state on the order that the amount should be adjusted to 100% effective neutralizing value (ENV). This is the way to compare materials as it adjusts for the reactive Ca and Mg and the particle size. The ENV is stated as the ratio needed to convert a limestone recommendation to 100% ENV. Thus, if the recommendation is 4 tons/acre of 100% ENV lime and the lime being used had an 80% ENV (1/ENV = 1.25), 4 times 1.25 or 5 tons/acre would be required.

The amount of limestone needed can be estimated by using the table below. A soil test is the only way to determine the soil pH. This table is very general, but it is useful for planning.

General lime guidelines (at 100% ENV)

Initial Soil pH	*Sands*	*Sandy Loams*	*Loams and Silt Loams*	*Silty Clay Loams*
		T/A of lime[1]		
4.5	2.5	6.0	9.5	13.0
4.6-4.7	2.5	6.0	9.0	12.5
4.8-4.9	2.5	5.5	8.5	12.0
5.0-5.1	2.0	5.0	7.5	10.5
5.2-5.3	1.5	4.0	6.5	8.5
5.4-5.5	1.0	3.0	4.0	6.0
5.6-5.7	1.0	2.0	3.0	4.5
5.8-5.9	0.7	1.5	2.5	3.5
6.0-6.1	0.6	1.5	2.0	3.0
6.2-6.3	0.4	1.0	1.5	2.0
6.~6.5	0.3	0.7	1.0	1.5
6.6-6.7	0.2	0.5	0.7	1.0

Lime guidelines are in tons per acre and are based on a plow depth of 8.0 inches. Correct rate if plowing to a different depth.

REFERENCE: Cornell Cooperative Extension. 2003 Cornell Guide for Integrated Field Crop Management, Pg. 32.

Fertilizer is sold with an analysis printed on the tag or bag. The first number is the percent of nitrogen (N), the second is phosphorus (P), and the third is potassium (K). Other elements are sometimes included and are listed with these basic three components. For example, a forty pound bag of 5-10-5 contains 2 lbs. N, 4 lbs. P (as P_2O_5), and 2 lbs. of K (as K_20). Select an appropriate analysis to meet the nutrients required for the specific site. Always apply as closely as possible the required amount of fertilizer to meet the requirements of the site. Adding surplus nitrogen may cause pollution of drinking water and saltwater ecosystems. Excessive phosphorus may accelerate the aging process of freshwater ecosystems. Excessive amounts of N and K2O may result in 'burning' the grass and killing it.

Water management on and above potentially eroding sites is extremely important. Large watersheds above a site may require extensive water control measures. Water flow paths must be controlled to allow the safe delivery of the water to an outlet to the side or bottom of the slope. Shallow ditches or diversions across the slope and above the area to be seeded is an effective method of avoiding wash-out of the seed and soil. Diversions may be constructed at a point where surface runoff water is intercepted and carried away from the slope and to a safe outlet. On large slopes,

benching may be necessary for bench drains or future maintenance (see standard for Land Grading). Subsurface drainage is frequently included to prevent long term saturated soil conditions and sloughing.

Conservation plantings need to effectively hold soil and control erosion, and they should enhance and blend with their surroundings. Mature plant size, form, and appearance must be considered along with their functionality to match the anticipated land use. Basic erosion control is accomplished by providing cover to the soil surface utilizing plants and/or mulch. It is the system of seedbed preparation, soil amendments, plant selection, proper timing of planting, and mulching that will optimize the chances of success. Characteristics of grasses such as low growth, horizontal above and below ground stems, leafy growth, and many fine roots for binding soil particles, make them the primary choice for vegetating slopes. Once the grass type is selected, then appropriate forbs, shrubs, or trees may be added to meet site conditions. The use of appropriate mulches will depend on site criteria and should be carefully evaluated. Although some materials are costly, they may prevent the need for more costly reshaping and reseeding.

Selection of proper vegetative materials for site stabilization is critical for environmental success. Species should be selected that are not considered "invasive." A primary list of invasive plants can be found at the website of the Invasive Plant Council of New York State (http://www.ipcnys.org). Any species not on this list but considered suspect should be verified at the appropriate regional or local level for acceptance.

STRUCTURAL MEASURES FOR EROSION AND SEDIMENT CONTROL

General

Uncontrolled runoff and excess erosion often occurs in urban developments, particularly during the construction stage. This erosion forms rills and gullies; washes out roads; scours cut and fill areas; fills road ditches, storm drains, and streams; and does other damage that is costly to the developers and damaging to land and water users below. Careful inclusion of proven conservation practices in the development plan can prevent or alleviate much of this damage and should be a part of every development plan.

These practices will usually be a combination of vegetative and structural measures. They may be temporary and serve only during the construction stage or they may be permanent in nature and become a part of the completed development. Permanent structural practices should be installed as early as possible in the construction stage. This section deals with the more common structural measures that may be used. Adequate designs, plans, and specification should be prepared for the measures to be used. A number of measures and specifications are included throughout this section. The designer shall determine those elements to be installed to control erosion (Section 2) and follow the criteria included in these standards and specifications.

Introduction

Structural erosion and sediment control practices have been classified as either temporary or permanent, according to how they are used. Temporary structural practices are used during construction to prevent offsite sedimentation. The length of time that temporary practices are functional varies from project to project, since the sediment control strategy may change as construction activity progresses. Permanent structural practices are used to convey surface water runoff to a safe outlet. Permanent structural practices will remain in place and continue to function after the completion of construction.

Regardless of whether the practices are temporary or permanent, runoff control measures should be the first items constructed when grading begins, and be completely functional before downslope land disturbance takes place. Earthen structures such as diversions, dikes, and swales should be stabilized before being considered functional. Only after the runoff control structures are operational and sediment control measures are in place, should clearing and grading on the rest of the construction site begin.

While clearing and grading the site, it is important to minimize the amount of sediment that is produced. In general, it is advantageous to clear only as much area as is necessary to accommodate construction needs. Grade and stabilize large sites in stages whenever possible. Limiting the amount of disturbed area limits the amount of sediment that is generated, thus decreasing the amount of maintenance required on sediment control measures.

Sediment generated during the construction of cut and fill slopes can also be minimized through design and grading techniques. When designing either a cut or fill slope, factors to consider include slope length and steepness, soil type, and upslope drainage area. In general, it is important to leave soil surfaces on disturbed slopes in a roughened condition and to construct a water diversion practice at the top of slopes. Rough soil surfaces do not erode as readily as smooth soil surfaces.

Although design and grading techniques can reduce soil erosion, they cannot eliminate it entirely. Therefore, practices must be installed to prevent offsite sedimentation.

Even though the specific conditions of each site determine what measures are necessary to control erosion and sedimentation, some general principles apply to the selection and placement of sediment control measures.

1. Prevent clean water from becoming turbid, by diverting runoff from upslope areas away from disturbed areas. Earth dikes, temporary swales, perimeter dike/swales, or diversions that outlet in stable areas can be used in this capacity.

2. Remove sediment from turbid water before the water leaves the site. The method of sediment removal depends upon how the water drains from the site. Concentrated flow must be diverted to a trapping device so that suspended sediment can be deposited. Dikes or swales that outlet into traps or basins can accomplish this. A storm drain system may be used to convey concentrated sediment laden water only if the system empties into a trap or basin. Otherwise, all storm drain inlets must be protected so that sediment laden water cannot enter the drainage system before being treated to remove the sediment.

3. Surface runoff draining in sheet flow must be controlled and treated before the water leaves the site. Straw bale dikes, silt fences, or vegetative buffer strips can be used to treat sheet flow.

All practices designed and implemented must be properly maintained in order to remain functional. Sediment accumulated in basins and traps must be removed and disposed of in a manner that stabilizes them on the construction site.

Other factors should be observed during construction in order to make erosion and sediment control measures more effective in pollution control.

These are:

1. Sprinkle or apply dust suppressors. Keep dust down to a tolerable limit on construction sites and haul roads.

2. Use temporary bridges or culverts where fording of streams is objectionable. Avoid borrow areas where pollution from this operation is inevitable.

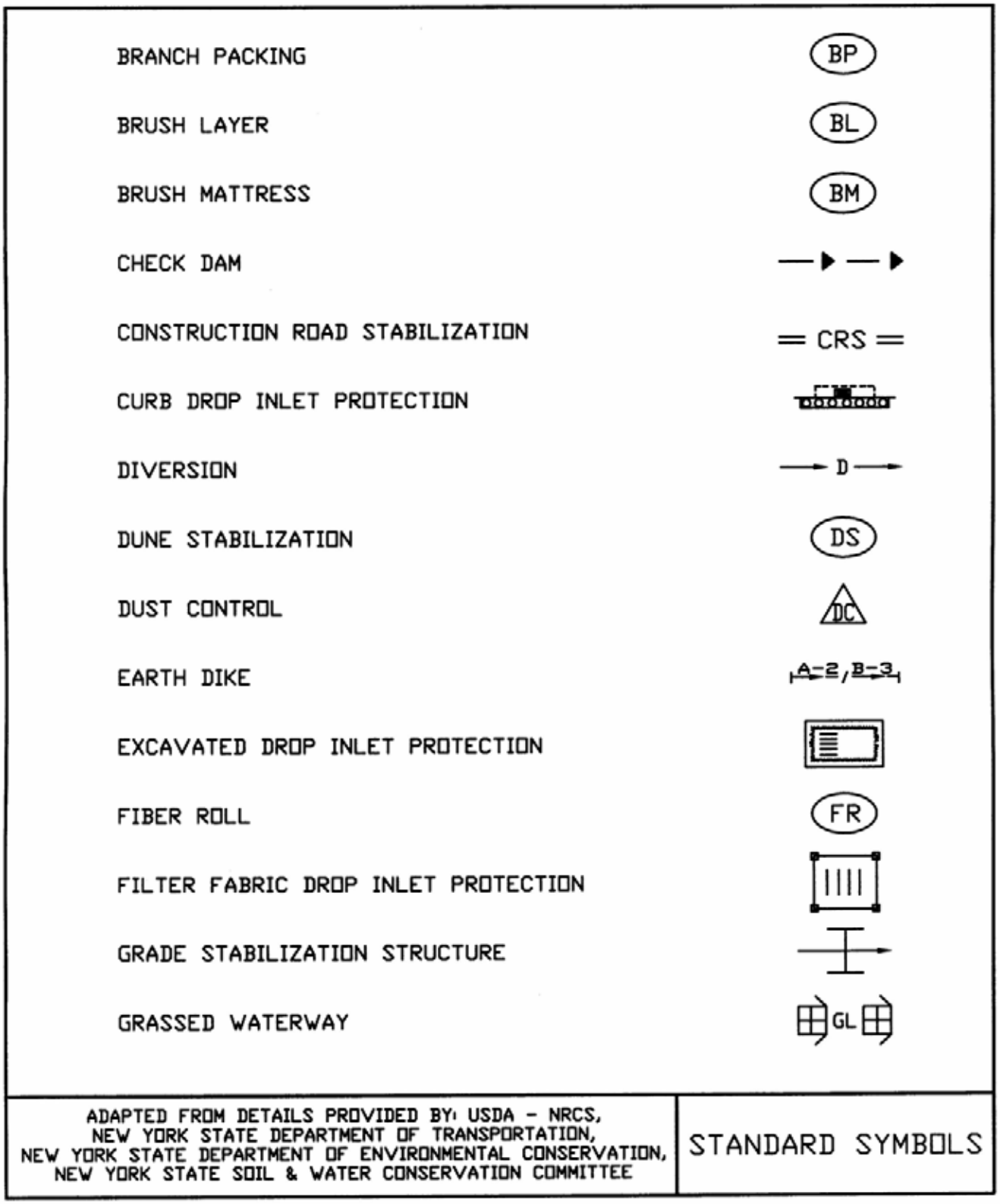
3. Protect streams from chemicals, fuel, lubricants, sewage, or other pollutants.

4. Avoid disposal of fill in floodplains or drainage ways. This reduces the capacity of these areas to pass flood flows.

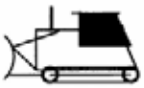
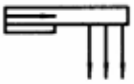
5. Do not locate sanitary facilities over, or adjacent to, waterways, wells, or springs.

6. Locate storage yards and stockpiles where erosion and sediment hazards are slight. Where this is not possible, apply necessary erosion control practices.

STANDARD SYMBOLS

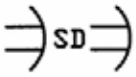


STANDARD SYMBOLS (cont'd)

LAND GRADING	
LEVEL SPREADER	
LINED WATERWAY	
LIVE CRIBWALL	LCW
LIVE CUTTINGS/LIVE STAKES PLANTING	LC/LS
LIVE FASCINE	LF
MULCHING	M
OPTIONAL SEDIMENT TRAP DEWATERING DEVICE	
PAVED FLUME	
PERIMETER DIKE OR SWALE	PD
PERMANENT SEEDING	PS
PIPE OUTLET SEDIMENT TRAP	
PIPE SLOPE DRAIN FLEXIBLE	PSD
PORTABLE SEDIMENT TANK	
PROTECTING VEGETATION	

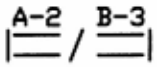
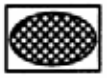
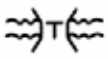
ADAPTED FROM DETAILS PROVIDED BY: USDA – NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	STANDARD SYMBOLS

STANDARD SYMBOLS (cont'd)

RECREATION AREA IMPROVEMENT	
RIP RAP OUTLET PROTECTION	
RIP RAP SLOPE PROTECTION	
RIP RAP STREAMBANK PROTECTION	
ROCK DAM	
SEDIMENT BASIN	
SEDIMENT TRAP	
SEGMENTED RETAINING WALL	
SILT FENCE	
SODDING	
STABILIZED CONSTRUCTION ENTRANCE	
STONE & BLOCK DROP INLET PROTECTION STRUCTURE	
STRAW BALE DIKE	
SUBSURFACE DRAIN	
SUMP PIT	

ADAPTED FROM DETAILS PROVIDED BY: USDA – NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	STANDARD SYMBOLS

STANDARD SYMBOLS (cont'd)

SURFACE ROUGHENING	
TEMPORARY SEEDING	
TEMPORARY SWALE	
TOPSOILING	
TREE REVETMENT	
TURBIDITY CURTAIN	
VEGETATED ROCK GABIONS	
WATER BAR	
WATERWAY CROSSING	

ADAPTED FROM DETAILS PROVIDED BY: USDA – NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	STANDARD SYMBOLS

Attachment I: NYSDEC Stormwater Construction Checklists (Sample Form)

Stormwater/Wetland Pond Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
Pre-Construction/Materials and Equipment		
Pre-construction meeting		
Pipe and appurtenances on-site prior to construction and dimensions checked		
1. Material (including protective coating, if specified)		
2. Diameter		
3. Dimensions of metal riser or pre-cast concrete outlet structure		
4. Required dimensions between water control structures (orifices, weirs, etc.) are in accordance with approved plans		
5. Barrel stub for prefabricated pipe structures at proper angle for design barrel slope		
6. Number and dimensions of prefabricated anti-seep collars		
7. Watertight connectors and gaskets		
8. Outlet drain valve		
Project benchmark near pond site		
Equipment for temporary de-watering		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
2. Subgrade Preparation		
Area beneath embankment stripped of all vegetation, topsoil, and organic matter		
3. Pipe Spillway Installation		
Method of installation detailed on plans		
A. Bed preparation		
Installation trench excavated with specified side slopes		
Stable, uniform, dry subgrade of relatively impervious material (If subgrade is wet, contractor shall have defined steps before proceeding with installation)		
Invert at proper elevation and grade		
B. Pipe placement		
Metal / plastic pipe		
1. Watertight connectors and gaskets properly installed		
2. Anti-seep collars properly spaced and having watertight connections to pipe		
3. Backfill placed and tamped by hand under “haunches” of pipe		
4. Remaining backfill placed in max. 8 inch lifts using small power tamping equipment until 2 feet cover over pipe is reached		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
3. Pipe Spillway Installation		
Concrete pipe		
1. Pipe set on blocks or concrete slab for pouring of low cradle		
2. Pipe installed with rubber gasket joints with no spalling in gasket interface area		
3. Excavation for lower half of anti-seep collar(s) with reinforcing steel set		
4. Entire area where anti-seep collar(s) will come in contact with pipe coated with mastic or other approved waterproof sealant		
5. Low cradle and bottom half of anti-seep collar installed as monolithic pour and of an approved mix		
6. Upper half of anti-seep collar(s) formed with reinforcing steel set		
7. Concrete for collar of an approved mix and vibrated into place (protected from freezing while curing, if necessary)		
8. Forms stripped and collar inspected for honeycomb prior to backfilling. Parge if necessary.		
C. Backfilling		
Fill placed in maximum 8 inch lifts		
Backfill taken minimum 2 feet above top of anti-seep collar elevation before traversing with heavy equipment		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
4. Riser / Outlet Structure Installation		
Riser located within embankment		
A. Metal riser		
Riser base excavated or formed on stable subgrade to design dimensions		
Set on blocks to design elevations and plumbed		
Reinforcing bars placed at right angles and projecting into sides of riser		
Concrete poured so as to fill inside of riser to invert of barrel		
B. Pre-cast concrete structure		
Dry and stable subgrade		
Riser base set to design elevation		
If more than one section, no spalling in gasket interface area; gasket or approved caulking material placed securely		
Watertight and structurally sound collar or gasket joint where structure connects to pipe spillway		
C. Poured concrete structure		
Footing excavated or formed on stable subgrade, to design dimensions with reinforcing steel set		
Structure formed to design dimensions, with reinforcing steel set as per plan		
Concrete of an approved mix and vibrated into place (protected from freezing while curing, if necessary)		
Forms stripped & inspected for “honeycomb” prior to backfilling; parge if necessary		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
5. Embankment Construction		
Fill material		
Compaction		
Embankment		
1. Fill placed in specified lifts and compacted with appropriate equipment		
2. Constructed to design cross-section, side slopes and top width		
3. Constructed to design elevation plus allowance for settlement		
6. Impounded Area Construction		
Excavated / graded to design contours and side slopes		
Inlet pipes have adequate outfall protection		
Forebay(s)		
Pond benches		
7. Earth Emergency Spillway Construction		
Spillway located in cut or structurally stabilized with riprap, gabions, concrete, etc.		
Excavated to proper cross-section, side slopes and bottom width		
Entrance channel, crest, and exit channel constructed to design grades and elevations		

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
8. Outlet Protection		
A. End section		
Securely in place and properly backfilled		
B. Endwall		
Footing excavated or formed on stable subgrade, to design dimensions and reinforcing steel set, if specified		
Endwall formed to design dimensions with reinforcing steel set as per plan		
Concrete of an approved mix and vibrated into place (protected from freezing, if necessary)		
Forms stripped and structure inspected for "honeycomb" prior to backfilling; parge if necessary		
C. Riprap apron / channel		
Apron / channel excavated to design cross-section with proper transition to existing ground		
Filter fabric in place		
Stone sized as per plan and uniformly place at the thickness specified		
9. Vegetative Stabilization		
Approved seed mixture or sod		
Proper surface preparation and required soil amendments		
Excelsior mat or other stabilization, as per plan		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
10. Miscellaneous		
Drain for ponds having a permanent pool		
Trash rack / anti-vortex device secured to outlet structure		
Trash protection for low flow pipes, orifices, etc.		
Fencing (when required)		
Access road		
Set aside for clean-out maintenance		
11. Stormwater Wetlands		
Adequate water balance		
Variety of depth zones present		
Approved pondscaping plan in place Reinforcement budget for additional plantings		
Plants and materials ordered 6 months prior to construction		
Construction planned to allow for adequate planting and establishment of plant community (April-June planting window)		
Wetland buffer area preserved to maximum extent possible		

Comments:

Actions to be Taken:

Bioretention Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
1. Pre-Construction		
Pre-construction meeting		
Runoff diverted		
Facility area cleared		
If designed as exfilter, soil testing for permeability		
Facility location staked out		
2. Excavation		
Size and location		
Lateral slopes completely level		
If designed as exfilter, ensure that excavation does not compact susoils.		
Longitudinal slopes within design range		

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
3. Structural Components		
Stone diaphragm installed correctly		
Outlets installed correctly		
Underdrain		
Pretreatment devices installed		
Soil bed composition and texture		
4. Vegetation		
Complies with planting specs		
Topsoil adequate in composition and placement		
Adequate erosion control measures in place		
5. Final Inspection		
Dimensions		
Proper stone diaphragm		
Proper outlet		
Soil/ filter bed permeability testing		
Effective stand of vegetation and stabilization		
Construction generated sediments removed		
Contributing watershed stabilized before flow is diverted to the practice		

Comments:

Actions to be Taken:

Open Channel System Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Pre-Construction		
Pre-construction meeting		
Runoff diverted		
Facility location staked out		
2. Excavation		
Size and location		
Side slope stable		
Soil permeability		
Groundwater / bedrock		
Lateral slopes completely level		
Longitudinal slopes within design range		
Excavation does not compact subsoils		
3. Check dams		
Dimensions		
Spacing		
Materials		

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
4. Structural Components		
Underdrain installed correctly		
Inflow installed correctly		
Pretreatment devices installed		
5. Vegetation		
Complies with planting specifications		
Topsoil adequate in composition and placement		
Adequate erosion control measures in place		
6. Final inspection		
Dimensions		
Check dams		
Proper outlet		
Effective stand of vegetation and stabilization		
Contributing watershed stabilized before flow is routed to the factility		

Comments:

Actions to be Taken:

Attachment J: NYSDEC Operation & Maintenance Checklist (Sample Form)

Stormwater Pond/Wetland Operation, Maintenance and Management Inspection Checklist

Project _____
Location: _____
Site Status: _____

Date: _____
Time: _____

Inspector: _____

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
1. Embankment and emergency spillway (Annual, After Major Storms)		
1. Vegetation and ground cover adequate		
2. Embankment erosion		
3. Animal burrows		
4. Unauthorized planting		
5. Cracking, bulging, or sliding of dam		
a. Upstream face		
b. Downstream face		
c. At or beyond toe		
downstream		
upstream		
d. Emergency spillway		
6.Pond, toe & chimney drains clear and functioning		
7.Seeps/leaks on downstream face		
8.Slope protection or riprap failure		
9. Vertical/horizontal alignment of top of dam “As-Built”		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
10. Emergency spillway clear of obstructions and debris		
11. Other (specify)		
2. Riser and principal spillway (Annual)		
Type: Reinforced concrete _____ Corrugated pipe _____ Masonry _____ 1. Low flow orifice obstructed		
2. Low flow trash rack. a. Debris removal necessary		
b. Corrosion control		
3. Weir trash rack maintenance a. Debris removal necessary		
b. corrosion control		
4. Excessive sediment accumulation insider riser		
5. Concrete/masonry condition riser and barrels a. cracks or displacement		
b. Minor spalling (<1")		
c. Major spalling (rebars exposed)		
d. Joint failures		
e. Water tightness		
6. Metal pipe condition		
7. Control valve a. Operational/exercised		
b. Chained and locked		
8. Pond drain valve a. Operational/exercised		
b. Chained and locked		
9. Outfall channels functioning		
10. Other (specify)		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
3. Permanent Pool (Wet Ponds) (monthly)		
1. Undesirable vegetative growth		
2. Floating or floatable debris removal required		
3. Visible pollution		
4. Shoreline problem		
5. Other (specify)		
4. Sediment Forebays		
1.Sedimentation noted		
2. Sediment cleanout when depth < 50% design depth		
5. Dry Pond Areas		
1. Vegetation adequate		
2. Undesirable vegetative growth		
3. Undesirable woody vegetation		
4. Low flow channels clear of obstructions		
5. Standing water or wet spots		
6. Sediment and / or trash accumulation		
7. Other (specify)		
6. Condition of Outfalls (Annual , After Major Storms)		
1. Riprap failures		
2. Slope erosion		
3. Storm drain pipes		
4.Endwalls / Headwalls		
5. Other (specify)		
7. Other (Monthly)		
1. Encroachment on pond, wetland or easement area		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
2. Complaints from residents		
3.Aesthetics a. Grass growing required		
b. Graffiti removal needed		
c. Other (specify)		
4. Conditions of maintenance access routes.		
5. Signs of hydrocarbon build-up		
6. Any public hazards (specify)		
8. Wetland Vegetation (Annual)		
1. Vegetation healthy and growing Wetland maintaining 50% surface area coverage of wetland plants after the second growing season. (If unsatisfactory, reinforcement plantings needed)		
2. Dominant wetland plants: Survival of desired wetland plant species Distribution according to landscaping plan?		
3. Evidence of invasive species		
4. Maintenance of adequate water depths for desired wetland plant species		
5. Harvesting of emergent plantings needed		
6. Have sediment accumulations reduced pool volume significantly or are plants “choked” with sediment		
7. Eutrophication level of the wetland.		
8. Other (specify)		

Comments:

Actions to be Taken:

Bioretention Operation, Maintenance and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Bioretention and contributing areas clean of debris		
No dumping of yard wastes into practice		
Litter (branches, etc.) have been removed		
2. Vegetation (Monthly)		
Plant height not less than design water depth		
Fertilized per specifications		
Plant composition according to approved plans		
No placement of inappropriate plants		
Grass height not greater than 6 inches		
No evidence of erosion		
3. Check Dams/Energy Dissipaters/Sumps (Annual, After Major Storms)		
No evidence of sediment buildup		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Sumps should not be more than 50% full of sediment		
No evidence of erosion at downstream toe of drop structure		
4. Dewatering (Monthly)		
Dewaters between storms		
No evidence of standing water		
5. Sediment Deposition (Annual)		
Swale clean of sediments		
Sediments should not be > 20% of swale design depth		
6. Outlet/Overflow Spillway (Annual, After Major Storms)		
Good condition, no need for repair		
No evidence of erosion		
No evidence of any blockages		
7. Integrity of Filter Bed (Annual)		
Filter bed has not been blocked or filled inappropriately		

Comments:

Actions to be Taken:

Open Channel Operation, Maintenance, and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY/ UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Contributing areas clean of debris		
2. Check Dams or Energy Dissipators (Annual, After Major Storms)		
No evidence of flow going around structures		
No evidence of erosion at downstream toe		
Soil permeability		
Groundwater / bedrock		
3. Vegetation (Monthly)		
Mowing done when needed		
Minimum mowing depth not exceeded		
No evidence of erosion		
Fertilized per specification		
4. Dewatering (Monthly)		
Dewaters between storms		

MAINTENANCE ITEM	SATISFACTORY/ UNSATISFACTORY	COMMENTS
5. Sediment deposition (Annual)		
Clean of sediment		
6. Outlet/Overflow Spillway (Annual)		
Good condition, no need for repairs		
No evidence of erosion		

Comments:

Actions to be Taken:

Attachment K:
Stormwater Management Summary and Hydraulic Modeling Results

INDEX

Stormwater Management Summary

Site Date – General 2

Runoff Reduction Management Strategy 5

Design Point 1 Summary (DP-1) 7

Design Point 2 Summary (DP-2) 9

Methodology 11

Design Modeling Results 12

Stage Storage Tables 14

Water Quality Volume/Runoff Reduction Volume Worksheets ..... Appendix 1

Hydraulic Modeling Results ..... Appendix 2

Soils ..... Appendix 3

Precipitation Data ..... Appendix 4

STORMWATER MANAGEMENT SUMMARY

SITE DATA - GENERAL

Site Notes: This summary is for a proposed duplex apartment development consisting of fifteen (15), 2,000-SF buildings, associated asphalt roadway and parking areas, public water and private sewer, sidewalks, and landscaping on a 1,556,932-SF (35.74-AC) parcel in the Town of Lansing, NY. The project will disturb roughly 650,000-SF (14.9-AC) of former brush, weeds, and grassed locations. Of this, there will be 107,584-SF (2.47-AC) of new impervious surfaces which will increase the site total by 7.0%.

Subcatchment Evaluation: There are two (2) pre-developed (existing) watershed subcatchments (ESC-1 through ESC-2) for this site totaling 1,571,206-SF (36.07-AC). These areas are isolated from upland watershed runoff from the east by a road R.O.W. drainage ditch that splits flow to the north and south along the western edge of Scofield Road. To the north, a low lying drainage channel follows the project property line capturing flow from the northeast and diverting it due west preventing it from entering the property. Along the southern line, flow is captured in a R.O.W ditchline along the northern edge of Peruville Road where it is channeled to the west. Finally, a berm prevents site runoff from leaving the property along the western boundary. Flow is directed to the south into the Peruville Road ditch from ESC-1 (DP-1) and to the north into an existing central channel that flows east to west through much of ESC-2 (DP-2).

Approximately 1,093,226-SF (25.10-AC) are areas that are largely outside of the major activities of development and any surfaces that see any temporary soil disturbance during construction will be restored to original condition upon completion of the project. These parcels have been identified as off-site subcatchments OSC-1 through OSC-4 on Proposed Conditions runoff analyses worksheets that have been provided in the stormwater drawings attached to this report.

Generally, the existing topography moves in an east to west direction over gentle slopes (<1% - 5% avg.) where flow eventually finds its way off-site through two distinct design points. The site is located across all soil class types with the majority being hydrologic soil class C.

The proposed development will disturb approximately 650,000-SF (14.9-AC) of land. Drainage areas impacted by construction have been divided into 8 separate subcatchments (PSC 1 – PSC 8) to identify how runoff will be affected by the project. Two diversion swales will be installed to prevent upland neighboring runoff from impacting the future development and the final design volume characteristics of any water quality or quantity treatment practices planned for the site. The property's northern border will capture limited off-site flow from the northeast which would normally flow across PSC-7 and into an existing low lying drainage ditch that runs southeast-northwest through OSC-3 where it continues off site to eventually join the Salmon Creek tributary system. Flow from the new diversion swale will be diverted

around the parcel boundary where it will terminate into the same drainage channel further downstream. Similarly, another swale will be installed on the western edge of OSC-4 to capture flow from the east. Originally, flow would continue westward and terminate in a north south ditch that runs into the Peruville Road R.O.W. ditchline just to the west of the Pinney parcel. The new swale would cut off this runoff approximately 300-lf further east by diverting it due south where it will find its way into the same ditchline slightly upstream. The Pervuville Road ditchline currently runs to the west where it eventually winds its way to the northwest becoming part of the Salmon Creek tributary system.

All proposed subcatchment delineations have been identified as areas in need of water quality and quantity treatment due to impacts from construction and added impervious surfaces. Overall, there are seven (7) bioretention practices, one (1) dry swale, and one (1) pond that have been planned to address runoff reduction volume, remaining water quality volume (after RRv) and attenuation concerns.

Flow to each treatment practice will be directed by a series of new road and local site swales to ensure that runoff will be confined to the subcatchment boundary for which it is intended. As these are infiltration based practices, percolation tests will need to be performed to ensure that they will meet design requirements. All practices will contain a piped underdrain system to ensure that they will not have any prolonged periods of standing water.

Site Control Methods: This project follows the newer DEC design standards on runoff reduction by applying green infrastructure techniques and standard stormwater management practices to provide source control for impervious surfaces. The site incorporates several engineered infiltration structures to meet water quality and quantity needs. Seven bioretention areas and a dry swale basin have been chosen to meet NYSDEC guidance requirements. Although an infiltration basin was originally considered to meet quality, RRv and quantity requirements for PSC-7, the area did not meet the required minimum infiltration testing parameters and a standard practice pond was designed instead.

Site Soils: There are a total of four soil types in hydrologic soil groups A through C located throughout the site. Palmyra gravelly loam (PaC) belongs to the hydrologic soil group A with a well drained permeability range of 0.63 – 6.3 inches per hour. Phelps (PhB), is a gravelly silt loam in the hydrologic soil group B with a moderately well drained permeability of 0.63 – 2.0 inches per hour. Finally, Conesus (CfB) (0.63 – 2.0 in/hr), is a gravelly silt loam with moderately well drained soil and Kendaia (KnA), a somewhat poorly drained soil (0.20 – 2.0 in/hr, make up the hydrologic soil group C has a slow permeability of 0.20 inches per hour. See Appendix 3 for more information.

Soils data was obtained from the Tompkins County Soil Survey conducted by the USDA Soil Conservation Service and the on-line Web Soil Survey.

Site Topography: The site as a whole has a varied slope of <1% - 5% primarily moving downhill from east to west.

Site Watershed: Of the 35.74-acre watershed, the area of disturbance will be approximately 14.9-acres. Diversion swales located along the site's northern property line and lower mid-section have been designed to channel off-site runoff away from the development. Interceptor swales are used throughout the site to channel on-site runoff from to effectively contain flow to the site proper to designated treatment and attenuation systems for water quality and quantity controls.

Rainfall: Rainfall data used in the modeling and analysis was taken from www.precipt.net, from the Northeast Regional Climate Center which is an accepted NYSDEC reference. Rainfall data specific to Tompkins County under consideration, for various 24-hour storm events tabled below:

RAINFALL DATA

STORM	24-HOUR RAINFALL
1-year	2.0 inches
10-year	3.4 inches
100-year	5.85 inches

These values were used in modeling for the evaluation of existing and proposed stormwater run-off conditions.

RUNOFF REDUCTION VOLUME MANAGEMENT STRATEGY

(See Appendix 1 for Worksheet Analyses)

1. **Water Quality Volume and Runoff Reduction Stormwater Management Strategy** - *Reference modeling results and WQv/RRv worksheets which follow this summary:*

The total site water quality volume for DP-1 and DP-2 is

DP-1 WQv = 1,481 cu-ft (0.034af)
DP-2 WQv = 8,629 cu-ft (0.198af)

Total: 10,110 cu-ft (0.232af)

Of this amount, there was no potential for the conservation of natural areas, protection of riparian areas, tree planting, rooftop disconnection, etc. that would lend to a reduction in total WQv.

WQv credit = 0 ***cuft (0.00 af)***

The minimum RRv was based on the following calculation:

Soil group for site:

A – 0.80-AC S = 55%
B – 0.82-AC S = 40%
C – 9.51-AC S = 30%

Minimum RRv:

S = 0.32
Impervious Area = 2.47-AC
Precipitation = 1.0 in
Rv = 0.95

Minimum Rv = [(P)(Rv)(A)] /12 = ((1.0 * ***0.95"/AC * 2.47AC****)/12)0.32* =

2,780 cuft or, 0.064-acft

2. **Water Quality Volume Treatment Practices**

Seven bioretention (BR) practices, and a dry swale (DS) have been designed to the minimum total volume specifications as calculated in the attached practice worksheets. A summary of total runoff reduction volumes is provided in the table below:

Subcatchment	Required RRv (cuft)	RRv Applied (Cuft)	Practice
PSC-1	612	612	BR-1
PSC-4	466	466	BR-4
PSC-5	403	403	BR-5
PSC-2	495	495	BR-2
PSC-3	198	198	BR-3
PSC-6	345	345	BR-6
PSC-7	7,149	0	None
PSC-7A	187	187	BR-7
PSC-8	254	254	DS
	10,110	2,960	

3. Total of RRv

Total RRv provided by practices 2,960 cuft (0.068-AF)
Total Remaining Storage Volume for practices (after RRv) 10,110 cuft - 2,960 cuft = 7,150 cuft (0.164af)

Is provided RRv > minimum RRv for all soils from #1? 0.068 acft > 0.064 acft **YES**
Is provided RRv > adjusted WQv from #1? 0.068 acft > 0.232 acft **NO**

Is volume available within standard practices for remaining untreated WQv?

Total WQv 0.232AF
RRv 0.068 AF
Remaining WQv 0.164AF (7,144-CF)

Additional volume is available in the pond forebay and in the pond permanent pool. The pond forebay has 1,400-CF of storage volume which is at least 10% of the WQv as required. In addition, the storage volume of the pond permanent pool at 4.00' is 5,821-CF, the total of which is more than 100% of the required Water Quality Volume. **YES**

Is all of the watershed drainage area treated by either area reduction or source control practices? **YES**

Is all of the watershed impervious area treated with either reduction or source control practices? **YES**

Minimum runoff reduction requirements are met for this project.

DP-1

Design Point 1 Summary (DP-1)

CONTROL SIZING

Bioretention Areas

Please see the attached worksheets to determine bioretention area sizing.

Cpv = 24 hour extended detention of post-developed 1-year, 24-hour Storm event. The required CPv is a summation of the modeled 1 yr runoff output from each untreated subcatchment (**2.0-inch rainfall Tompkins County**) after runoff reduction (RRv). **1 yr Cpv 0.057-AF – RRV 0.034-AF = 0.023-AF (1,002)-CF**

The **Cpv** Channel Protection Volume is provided by the basin practices as determined by measuring the storage volume allowed through extended detention between the elevation at the bottom of each structure (0.0') and the primary outlet (4.0'), less the amount required for RRV.

BR 1 for PSC-1 = 1,680 – 612 = 1,068-CF of storage
BR 4 for PSC-4 = 1,346 – 466 = 880 CF of storage
BR 5 for PSC-5 = 1,226 – 403 = 823 CF of storage

Total – 2,771 CF

The combined available storage volume between the bioretention areas is 0.064-AF which exceeds the minimum requirement of 0.023. Flow is captured and exfiltrated into the surrounding soil structure and outlet through the underdrain system.

CPv conditions are met.

Overbank Flood (Qp) – DP1

Qp = Controls the peak discharge from the 10-year storm **(3.4-inch rainfall Tompkins County)** to 10-year predevelopment rates.

Pre-developed max rate = **1.86-CFS**, Total Volume = 0.291AF (12,676-CF). Post-developed w/o controls max rate = 3.32-CFS, Total Volume = 0.380-AF (16,553-CF).

The maximum post-developed run-off rate with the bioretention areas in-line is 1.64-CFS, and the total run-off volume is 0.343-AF (14,941-CF).

The **Qp** Overbank Flood control criterion is met with the bioretention areas in-line.

Extreme Storm (Qf) – DP1

Control the peak discharge from the 100-year storm **(5.85-inch rainfall Tompkins County)** to 100-year predevelopment rates. Safely pass the 100-year storm event.

Pre-developed max run-off rate = **12.78-CFS**, Total Volume = 1.294-AF (56,367-CF). Post-developed w/o controls max rate = 10.92-CFS, Total Volume = 1.429 -AF (62,247-CF).

The maximum post-developed run-off rate with the structures inline is 10.79-CFS, and the total run-off volume is 1.389-AF (60,505-CF).

The **Qf** Extreme Storm control criterion is met with the bioretention areas in-line.

DP-2

Design Point 2 Summary (DP-2)

CONTROL SIZING

Bioretention Areas

Please see the attached worksheets to determine bioretention area sizing.

Cpv = 24 hour extended detention of post-developed 1-year, 24-hour Storm event. The required CPv is a summation of the modeled 1 yr runoff output from each untreated subcatchment (**2.0-inch rainfall Tompkins County**) after runoff reduction (RRv). **1 yr Cpv 0.246-AF – RRV 0.034-AF = 0.212-AF (9,235)-CF**

The **Cpv** Channel Protection Volume is provided by the basin practices as determined by measuring the storage volume allowed through extended detention between the elevation at the bottom of each structure (0.0') and the primary outlet (4.0'), less the amount required for RRV.

BR 2 for PSC-2 = 1,680 – 495 = 1,185-CF of storage
BR 3 for PSC-3 = 795 – 198 = 597 CF of storage
BR 6 for PSC-6 = 843 – 345 = 498 CF of storage
BR 7 for PSC-7A = 795 – 187 = 608 CF of storage
DS for PSC-8 = 698 – 254 = 444 CF of storage

Total – 3,332 CF

In addition, the pond provides 12,771-CF between the primary outlet at 5.25' and the 1 yr CPv orifice at 4.0'.

The combined available storage volume between the bioretention areas and pond is **16,103-CF (0.370-AF)** of storage which exceeds the minimum requirement of 0.212. Flow is captured and exfiltrated into the surrounding soil structure and outlet through the underdrain systems.

CPv conditions are met.

Pond 1 *CPv orifice*

1. Determine H – Avg head above centerline of proposed orifice invert for 1 yr storm. H between 4.55 and 4.00 = 0.55/2 = 0.28'

2. Determine Q – Flow over 24 hr period.

   Stage storage table volume between 4.28' and 4.00' = 2,719 cuft

2,719 cuft/day x 1d/24hrs x 1hr/60min x 1 min/60sec = 0.032cfs

3. $A = Q/C_\delta * Sqrt\ (2gH)$

   Where, $C_\delta = 0.6$ and $g = 32.2\ ft/s^2$

   $A = 0.032\ cfs/0.6*(Sqrt\ (2(32.2\ ft/s^2) \times 0.28\ ft) = 0.0125\ ft^2$

4. $A = \pi\ r^2$

   $r^2 = Sqrt(0.0125\ ft^2 / 3.14\ ) * 2 = 0.126$ ft or **1.5"**

Orifice can adequately outlet the 1 yr 24 hour storm

Overbank Flood (Qp) – DP2

Qp = Controls the peak discharge from the 10-year storm **(3.4-inch rainfall Tompkins County)** to 10-year predevelopment rates.

Pre-developed max rate = **10.49-CFS**, Total Volume = 1.169AF (50,922-CF). Post-developed w/o controls max rate = 17.13-CFS, Total Volume = 1.668-AF (72,658-CF).

The maximum post-developed run-off rate with the bioretention areas and pond in-line is 7.79-CFS, and the total run-off volume is 1.225-AF (53,361-CF).

The **Qp** Overbank Flood control criterion is met with the bioretention areas and pond in-line.

Extreme Storm (Qf) – DP2

Control the peak discharge from the 100-year storm **(5.85-inch rainfall Tompkins County)** to 100-year predevelopment rates. Safely pass the 100-year storm event.

Pre-developed max run-off rate = **52.19-CFS**, Total Volume = 4.392-AF (191,316-CF). Post-developed w/o controls max rate = 63.29-CFS, Total Volume = 5.297 -AF (230,737-CF). The bioretention areas and pond attenuate the post-developed 100-year storm event less than or equal to pre-developed 100 year storm event. **The maximum post-developed run-off rate with the structures inline is 43.42-CFS, and the total run-off volume is 4.821-AF (210,003-CF).**

The **Qf** Extreme Storm control criterion is met with the bioretention areas and pond in-line.

METHODOLOGY

The methodology used for the hydrologic and hydraulic analysis was obtained from the United States Department of Agriculture (USDA) Soil Conservation Service's (SCS) Technical Release No. 20, as implemented by the application program HydroCAD. HydroCAD, developed by Applied Microcomputer Systems of Chocorua, New Hampshire, is a Computer-Aided-Design (CAD) program for analyzing the hydrologic and hydraulic characteristics of a given watershed and associated stormwater management facilities. It utilizes the latest modeling techniques to predict the consequences of any given storm.

HydroCAD has the capability of computing hydrographs and routing flows through pipes, streams and ponds. Hydrographs represent discharge rates characteristic of specified watershed conditions, precipitation and geologic factors.

For this analysis, the watershed and drainage system was broken down into a network consisting of three types of components described below:

Subcatchment: A relatively homogeneous area of land, which produces a volume and rate of surface run-off unique to that area.

Reach: Uniform streams, channels or pipes which convey stormwater from one distinct point to another reach or pond.

Pond: Natural or man-made impoundment (ie. pond), which temporarily stores stormwater run-off and empties in a manner determined by its geometry and the hydraulic structure located at its outlet(s).

Subcatchments, reaches and ponds are represented by hexagons, squares and triangles, respectively, on the watershed routing diagrams provided with the computations reference modeling results attached.

Modeling Results Tabled:

(See Appendix 2 for actual modeling data)

DP1

EXISTING
EXISTING FLOW CONDITIONS AT DESIGN POINT (DP1)

STORM EVENT	*PEAK FLOW (CFS)*	*TOTAL VOLUME (AF)*
1-year	*0.03*	*0.017*
10-year	*1.86*	*0.291*
100-year	*12.78*	*1.294*

PROPOSED
WITHOUT STORMWATER MANAGEMENT
FLOW CONDITIONS AT DESIGN POINT (DP1)

STORM EVENT	*PEAK FLOW (CFS)*	*TOTAL VOLUME (AF)*
1-year	*0.95*	*0.066*
10-year	*3.32*	*0.380*
100-year	*10.92*	*1.429*

PROPOSED
WITH BIORETENTION AREAS IN-LINE
PROPOSED FLOW CONDITIONS AT DESIGN POINT (DP1)

STORM EVENT	*PEAK FLOW (CFS)*	*TOTAL VOLUME (AF)*
1-year	*0.07*	*0.031*
10-year	*1.64*	*0.343*
100-year	*10.79*	*1.389*

The run-off rates decrease for the 10 and 100 yr storm events as modeled.

DP2

EXISTING
EXISTING FLOW CONDITIONS AT DESIGN POINT (DP2)

STORM EVENT	*PEAK FLOW (CFS)*	*TOTAL VOLUME (AF)*
1-year	*0.32*	*0.144*
10-year	*10.49*	*1.169*
100-year	*52.19*	*4.392*

PROPOSED
<u>WITHOUT</u> STORMWATER MANAGEMENT
FLOW CONDITIONS AT DESIGN POINT (DP2)

STORM EVENT	*PEAK FLOW (CFS)*	*TOTAL VOLUME (AF)*
1-year	*2.52*	*0.356*
10-year	*17.13*	*1.668*
100-year	*63.29*	*5.297*

PROPOSED
WITH BIORETENTION AREAS AND PONDS IN-LINE
PROPOSED FLOW CONDITIONS AT DESIGN POINT (DP2)

STORM EVENT	*PEAK FLOW (CFS)*	*TOTAL VOLUME (AF)*
1-year	*0.32*	*0.136*
10-year	*7.79*	*1.225*
100-year	*43.42*	*4.821*

The run-off rates decrease for the 10 and 100 yr storm events as modeled.

Stage Storage Tables:

BIORETENTION 1 STAGE-STORAGE TABLE BR-1

STORM EVENT	*PEAK STORAGE (CF)*	*PEAK DEPTH (FT)*
WQv	*612*	*1.75'*
*1 year (***Cpv***)*	*494*	*1.21'*
10 year	*1,481*	*3.86'*
100 year	*2,203*	*4.38'*

Notes:
Invert Washed Stone Drainage Layer 0'
Invert of Drainage Pipe 0.5'
Invert of Soil Drainage Layer 1.0'
Bottom of Swale El. = 3.50'
6'-Broad Crested Weir Outlet inv. = 4.00'
Top of Swale Embankment Elev. = 5.00'

BIORETENTION 2 STAGE-STORAGE TABLE BR-2

STORM EVENT	*PEAK STORAGE (CF)*	*PEAK DEPTH (FT)*
WQv	*495*	*1.21'*
*1 year (***Cpv***)*	*688*	*2.09'*
10 year	*1,050*	*3.54'*
100 year	*1,946*	*4.19'*

Notes:
Invert Washed Stone Drainage Layer 0'
Invert of Drainage Pipe 0.5'
Invert of Soil Drainage Layer 1.0'
Bottom of Swale El. = 3.50'
6'-Broad Crested Weir Outlet inv. = 4.00'
Top of Swale Embankment Elev. = 5.00'

BIORETENTION 3 STAGE-STORAGE TABLE BR-3

STORM EVENT	*PEAK STORAGE (CF)*	*PEAK DEPTH (FT)*
WQv	*198*	*1.00'*
*1 year (***Cpv***)*	*306*	*2.04'*
10 year	*391*	*2.90'*
100 year	*845*	*4.07'*

Notes:
Invert Washed Stone Drainage Layer 0'
Invert of Drainage Pipe 0.5'
Invert of Soil Drainage Layer 1.0'
Bottom of Swale El. = 3.50'
6'-Broad Crested Weir Outlet inv. = 4.00'
Top of Swale Embankment Elev. = 5.00'

BIORETENTION 4 STAGE-STORAGE TABLE BR-4

STORM EVENT	*PEAK STORAGE (CF)*	*PEAK DEPTH (FT)*
WQv	*466*	*1.60'*
*1 year (***Cpv***)*	*688*	*2.86'*
10 year	*1,113*	*3.79'*
100 year	*1,631*	*4.26'*

Notes:
Invert Washed Stone Drainage Layer 0'
Invert of Drainage Pipe 0.5'
Invert of Soil Drainage Layer 1.0'
Bottom of Swale El. = 3.50'
6'-Broad Crested Weir Outlet inv. = 4.00'
Top of Swale Embankment Elev. = 5.00'

BIORETENTION 5 STAGE-STORAGE TABLE BR-5

STORM EVENT	*PEAK STORAGE (CF)*	*PEAK DEPTH (FT)*
WQv	*403*	*1.52'*
*1 year (***Cpv***)*	*348*	*1.17'*
10 year	*719*	*3.51'*
100 year	*1,390*	*4.16'*

Notes:
Invert Washed Stone Drainage Layer 0'
Invert of Drainage Pipe 0.5'
Invert of Soil Drainage Layer 1.0'

Bottom of Swale El. = 3.50'
6'-Broad Crested Weir Outlet inv. = 4.00'
Top of Swale Embankment Elev. = 5.00'

BIORETENTION 6 STAGE-STORAGE TABLE BR-6

STORM EVENT	*PEAK STORAGE (CF)*	*PEAK DEPTH (FT)*
WQv	*345*	*2.78'*
*1 year (***Cpv***)*	*330*	*2.62'*
10 year	*659*	*3.79'*
100 year	*1,034*	*4.22'*

Notes:
Invert Washed Stone Drainage Layer 0'
Invert of Drainage Pipe 0.5'
Invert of Soil Drainage Layer 1.0'
Bottom of Swale El. = 3.50'
6'-Broad Crested Weir Outlet inv. = 4.00'
Top of Swale Embankment Elev. = 5.00'

BIORETENTION 7 STAGE-STORAGE TABLE BR-7A

STORM EVENT	*PEAK STORAGE (CF)*	*PEAK DEPTH (FT)*
WQv	*187*	*0.95'*
*1 year (***Cpv***)*	*294*	*1.92'*
10 year	*354*	*2.52'*
100 year	*708*	*3.87'*

Notes:
Invert Washed Stone Drainage Layer 0'
Invert of Drainage Pipe 0.5'
Invert of Soil Drainage Layer 1.0'
Bottom of Swale El. = 3.50'
6'-Broad Crested Weir Outlet inv. = 4.00'
Top of Swale Embankment Elev. = 5.00'

POND STAGE-STORAGE TABLE P

STORM EVENT	*PEAK STORAGE (CF)*	*PEAK DEPTH (FT)*
WQv	*7,149*	*4.12'*
*1 year (***Cpv***)*	*10,418*	*4.47'*
10 year	*20,998*	*5.43'*
100 year	*38,587*	*6.70'*

Notes:
Notes:
Bottom of Basin El. = 0.00'
1.5" Permanent Pool Orifice = 4.00'
12" 10 Yr Overflow Horizontal Orifice = 5.25'
25' x 6' *100 Yr* Broadcrested Weir = 6.50'
Top of Basin Embankment Elev. = 7.50'

APPENDIX 1

WATER QUALITY VOLUME/RUNOFF REDUCTION WORKSHEETS

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?.....	No

Design Point:	1	
P=	1.00	*inch*

Manually enter P, Total Area and Impervious Cover.

Breakdown of Subcatchments

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Description
1	0.85	0.14	16%	0.20	612	PSC 1 - Bioretention, BR 1
2	0.41	0.12	29%	0.31	466	PSC 4 - Bioretention, BR 4
3	0.24	0.11	46%	0.46	403	PSC 5 - Bioretention, BR 5
4						
5						
6						
7						
8						
9						
10						
Subtotal (1-30)	1.50	0.37	25%	0.27	**1,481**	**Subtotal 1**
Total	1.50	0.37	25%	0.27	**1,481**	**Initial WQv**

Identify Runoff Reduction Techniques By Area

Technique	Total Contributing Area *(Acre)*	Contributing Impervious Area *(Acre)*	Notes
Conservation of Natural Areas	0.00	0.00	*minimum 10,000 sf*
Riparian Buffers	0.00	0.00	*maximum contributing length 75 feet to 150 feet*
Filter Strips	0.00	0.00	
Tree Planting	0.00	0.00	*Up to 100 sf directly connected impervious area may be subtracted per tree*
Total	**0.00**	**0.00**	

Recalculate WQv after application of Area Reduction Techniques

	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Runoff Coefficient Rv	WQv *(ft^3)*
"<<Initial WQv"	1.50	0.37	25%	0.27	1,481
Subtract Area	0.00	0.00			
WQv adjusted after Area Reductions	**1.50**	**0.37**	25%	0.27	1,481
Disconnection of Rooftops		0.00			

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

Adjusted WQv after Area Reduction and Rooftop Disconnect	1.50	0.37	25%	0.27	**1,481**
WQv reduced by Area Reduction techniques					0

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

All Subcatchments						
Catchment	**Total Area** *(Acres)*	**Impervious Cover** *(Acres)*	**Percent Impervious** *%*	**Runoff Coefficient** *Rv*	**WQv** *(ft^3)*	**Description**
1	0.85	0.14	0.16	0.20	611.66	PSC 1 - Bioretention,
2	0.41	0.12	0.29	0.31	466	PSC 4 - Bioretention,
3	0.24	0.11	0.46	0.46	402.93	PSC 5 - Bioretention,
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

Runoff Reduction Volume and Treated volumes						
	Runoff Reduction Techiques/Standard SMPs		**Total Contributing Area**	**Total Contributing Impervious Area**	**WQv Reduced (RRv)**	**WQv Treated**
			(acres)	**(acres)**	**cf**	**cf**
Area/Volume Reduction	Conservation of Natural Areas	RR-1	0.00	0.00		
	Sheetflow to Riparian Buffers/Filter Strips	RR-2	0.00	0.00		
	Tree Planting/Tree Pit	RR-3	0.00	0.00		
	Disconnection of Rooftop Runoff	RR-4		0.00		
	Vegetated Swale	RR-5	0.00	0.00	0	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rain Barrel/Cistern	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Intensive & Extensive)	RR-10	0.00	0.00	0	
Standard SMPs w/RRv Capacity	Infiltration Trench	I-1	0.00	0.00	0	0
	Infiltration Basin	I-2	0.00	0.00	0	0
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4	0.00			
	Bioretention & Infiltration Bioretention	F-5	1.50	0.37	1481	0
	Dry swale	O-1	0.00	0.00	0	0
Standard SMPs	Micropool Extended Detention (P-1)	P-1				
	Wet Pond (P-2)	P-2				
	Wet Extended Detention (P-3)	P-3				
	Multiple Pond system (P-4)	P-4				
	Pocket Pond (p-5)	P-5				
	Surface Sand filter (F-1)	F-1				
	Underground Sand filter (F-2)	F-2				
	Perimeter Sand Filter (F-3)	F-3				
	Organic Filter (F-4	F-4				
	Shallow Wetland (W-1)	W-1				
	Extended Detention Wetland (W-2	W-2				
	Pond/Wetland System (W-3)	W-3				
	Pocket Wetland (W-4)	W-4				
	Wet Swale (O-2)	O-2				
Totals by Area Reduction →			0.00	0.00	0	
Totals by Volume Reduction →			0.00	0.00	0	
Totals by Standard SMP w/RRV →			1.50	0.37	1481	0
Totals by Standard SMP →			0.00	0.00		0
Totals (Area + Volume + all SMPs) →			1.50	0.37	1,481	0
	Impervious Cover √	okay				

Minimum RRv

Enter the Soils Data for the site		
Soil Group	Acres	S
A		55%
B		40%
C	1.50	30%
D		20%
Total Area	1.5	

Calculate the Minimum RRv		
S =	**0.30**	
Impervious =	0.37	*acre*
Precipitation	1	*in*
Rv	0.95	
Minimum RRv	**383**	***ft3***
	0.01	af

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor &

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
1	0.85	0.14	0.16	0.20	611.66	1.00	PSC 1 - Bioretention, BR 1
Enter Impervious Area Reduced by Disconnection of Rooftops			16%	0.20	612	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	C		
Soil Infiltration Rate	0.20	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		612	*ft^3*	
Enter Depth of Soil Media	*df*	2.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**510**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	24	*ft*	
Filter Length	55	*ft*	
Filter Area	1320	*ft^2*	
Actual Volume Provided	1584	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?			Select Practice	
RRv	634			
RRv applied	**612**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	0	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor & Schueler, 1996)

Design Point:	**1**

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
2	0.41	0.12	0.29	0.31	466.46	1.00	PSC 4 - Bioretention, BR 4
Enter Impervious Area Reduced by Disconnection of Rooftops			29%	0.31	466	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	C		
Soil Infiltration Rate	0.20	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		466	*ft^3*	
Enter Depth of Soil Media	*df*	2.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**389**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	22	*ft*	
Filter Length	45	*ft*	
Filter Area	990	*ft^2*	
Actual Volume Provided	1188	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?			Select Practice	
RRv	475			
RRv applied	**466**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	0	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor &

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
3	0.24	0.11	0.46	0.46	402.93	1.00	PSC 5 - Bioretention, BR 5
Enter Impervious Area Reduced by Disconnection of Rooftops			46%	0.46	403	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	C		
Soil Infiltration Rate	0.20	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		403	*ft^3*	
Enter Depth of Soil Media	*df*	2.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**336**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	20	*ft*	
Filter Length	42	*ft*	
Filter Area	840	*ft^2*	
Actual Volume Provided	1008	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?			Select Practice	
RRv	403			
RRv applied	**403**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	0	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

Version 1.6
Last Updated: 03/28/2014

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?.....	No

Design Point:	2	
P=	1.00	*inch*

Manually enter P, Total Area and Impervious Cover.

Breakdown of Subcatchments

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Description
1	0.39	0.13	33%	0.35	495	PSC 2 - Bioretention, BR 2
2	0.19	0.05	26%	0.29	198	PSC 3 - Bioretention, BR 3
3	0.28	0.09	32%	0.34	345	PSC 6 - Bioretention, BR 6
4	8.43	1.72	20%	0.23	7,149	PSC 7 - Standard Practice; Pond
5	0.14	0.07	50%	0.50	254	PSC 8 - DrySwale
6	0.13	0.05	38%	0.40	187	PSC 7A - Bioretention, BR 7
7						
8						
9						
10						
Subtotal (1-30)	9.56	2.11	22%	0.25	**8,629**	**Subtotal 1**
Total	9.56	2.11	22%	0.25	**8,629**	**Initial WQv**

Identify Runoff Reduction Techniques By Area

Technique	Total Contributing Area *(Acre)*	Contributing Impervious Area *(Acre)*	Notes
Conservation of Natural Areas	0.00	0.00	*minimum 10,000 sf*
Riparian Buffers	0.00	0.00	*maximum contributing length 75 feet to 150 feet*
Filter Strips	0.00	0.00	
Tree Planting	0.00	0.00	*Up to 100 sf directly connected impervious area may be subtracted per tree*
Total	**0.00**	**0.00**	

Recalculate WQv after application of Area Reduction Techniques

	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Runoff Coefficient Rv	WQv *(ft^3)*
"<<Initial WQv"	9.56	2.11	22%	0.25	8,629
Subtract Area	0.00	0.00			

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

WQv adjusted after Area Reductions	**9.56**	**2.11**	22%	0.25	8,629
Disconnection of Rooftops		0.00			
Adjusted WQv after Area Reduction and Rooftop Disconnect	9.56	2.11	22%	0.25	**8,629**
WQv reduced by Area Reduction techniques					0

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

All Subcatchments						
Catchment	**Total Area** *(Acres)*	**Impervious Cover** *(Acres)*	**Percent Impervious** *%*	**Runoff Coefficient** *Rv*	**WQv** *(ft^3)*	**Description**
1	0.39	0.13	0.33	0.35	495.50	PSC 2 - Bioretention,
2	0.19	0.05	0.26	0.29	198	PSC 3 - Bioretention,
3	0.28	0.09	0.32	0.34	344.85	PSC 6 - Bioretention,
4	8.43	1.72	0.20	0.23	7149.29	PSC 7 -
5	0.14	0.07	0.50	0.50	254.10	PSC 8 - DrySwale
6	0.13	0.05	0.38	0.40	186.95	PSC 7A -
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

Runoff Reduction Volume and Treated volumes						
	Runoff Reduction Techiques/Standard SMPs		**Total Contributing Area**	**Total Contributing Impervious Area**	**WQv Reduced (RRv)**	**WQv Treated**
			(acres)	**(acres)**	**cf**	**cf**
Area/Volume Reduction	Conservation of Natural Areas	RR-1	0.00	0.00		
	Sheetflow to Riparian Buffers/Filter Strips	RR-2	0.00	0.00		
	Tree Planting/Tree Pit	RR-3	0.00	0.00		
	Disconnection of Rooftop Runoff	RR-4		0.00		
	Vegetated Swale	RR-5	0.00	0.00	0	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rain Barrel/Cistern	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Intensive & Extensive)	RR-10	0.00	0.00	0	
Standard SMPs w/RRv Capacity	Infiltration Trench	I-1	0.00	0.00	0	0
	Infiltration Basin	I-2	0.00	0.00	0	0
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4	0.00			
	Bioretention & Infiltration Bioretention	F-5	0.99	0.32	1225	0
	Dry swale	O-1	0.14	0.07	254	0
Standard SMPs	Micropool Extended Detention (P-1)	P-1				
	Wet Pond (P-2)	P-2	8.46	1.66		7149.000
	Wet Extended Detention (P-3)	P-3				
	Multiple Pond system (P-4)	P-4				
	Pocket Pond (p-5)	P-5				
	Surface Sand filter (F-1)	F-1				
	Underground Sand filter (F-2)	F-2				
	Perimeter Sand Filter (F-3)	F-3				
	Organic Filter (F-4	F-4				
	Shallow Wetland (W-1)	W-1				
	Extended Detention Wetland (W-2	W-2				
	Pond/Wetland System (W-3)	W-3				
	Pocket Wetland (W-4)	W-4				
	Wet Swale (O-2)	O-2				
Totals by Area Reduction →			0.00	0.00	0	
Totals by Volume Reduction →			0.00	0.00	0	
Totals by Standard SMP w/RRV →			1.13	0.39	1479	0
Totals by Standard SMP →			8.46	1.66		7149
Totals (Area + Volume + all SMPs) →			9.59	2.05	1,479	7,149
	Impervious Cover √	error				

Minimum RRv

Enter the Soils Data for the site		
Soil Group	Acres	S
A	0.80	55%
B	0.82	40%
C	7.95	30%
D		20%
Total Area	9.57	

Calculate the Minimum RRv		
S =	**0.33**	
Impervious =	2.11	*acre*
Precipitation	1	*in*
Rv	0.95	
Minimum RRv	**2,397**	***ft3***
	0.06	af

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor &

Design Point:	**2**

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
1	0.39	0.13	0.33	0.35	495.50	1.00	PSC 2 - Bioretention, BR 2
Enter Impervious Area Reduced by Disconnection of Rooftops			33%	0.35	495	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	C		
Soil Infiltration Rate	0.20	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		495	*ft^3*	
Enter Depth of Soil Media	*df*	2.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**413**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	26	*ft*	
Filter Length	40	*ft*	
Filter Area	1040	*ft^2*	
Actual Volume Provided	1248	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?			Select Practice	
RRv	499			
RRv applied	**495**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	0	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor & Schueler, 1996)

Design Point:	**2**

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
2	0.19	0.05	0.26	0.29	197.84	1.00	PSC 3 - Bioretention, BR 3
Enter Impervious Area Reduced by Disconnection of Rooftops			26%	0.29	198	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	C		
Soil Infiltration Rate	0.20	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		198	*ft^3*	
Enter Depth of Soil Media	*df*	2.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**165**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	15	*ft*	
Filter Length	30	*ft*	
Filter Area	450	*ft^2*	
Actual Volume Provided	540	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?			Select Practice	
RRv	216			
RRv applied	**198**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	0	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor &

Design Point:	**2**

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
3	0.28	0.09	0.32	0.34	344.85	1.00	PSC 6 - Bioretention, BR 6
Enter Impervious Area Reduced by Disconnection of Rooftops			32%	0.34	345	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	C		
Soil Infiltration Rate	0.20	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		345	*ft^3*	
Enter Depth of Soil Media	*df*	2.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**287**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	9	*ft*	
Filter Length	80	*ft*	
Filter Area	720	*ft^2*	
Actual Volume Provided	864	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?			Select Practice	
RRv	346			
RRv applied	**345**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	0	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor &

Design Point:	**2**

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
6	0.13	0.05	0.38	0.40	186.95	1.00	PSC 7A - Bioretention, BR 7
Enter Impervious Area Reduced by Disconnection of Rooftops			38%	0.40	187	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	C		
Soil Infiltration Rate	0.20	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		187	*ft^3*	
Enter Depth of Soil Media	*df*	2.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**156**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	15	*ft*	
Filter Length	30	*ft*	
Filter Area	450	*ft^2*	
Actual Volume Provided	540	*ft^3*	

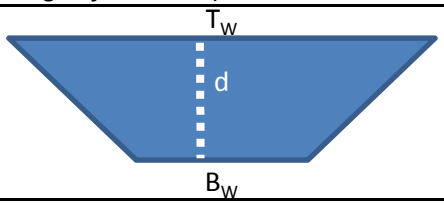
Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?			Select Practice	
RRv	216			
RRv applied	**187**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	0	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

Dry Swale Worksheet

Design Point:	2

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
5	0.14	0.07	0.50	0.50	254.10	1.00	PSC 8 - DrySwale
Enter Impervious Area Reduced by Disconnection of Rooftops			50%	0.50	254	<<WQv after adjusting for Disconnected Rooftops	

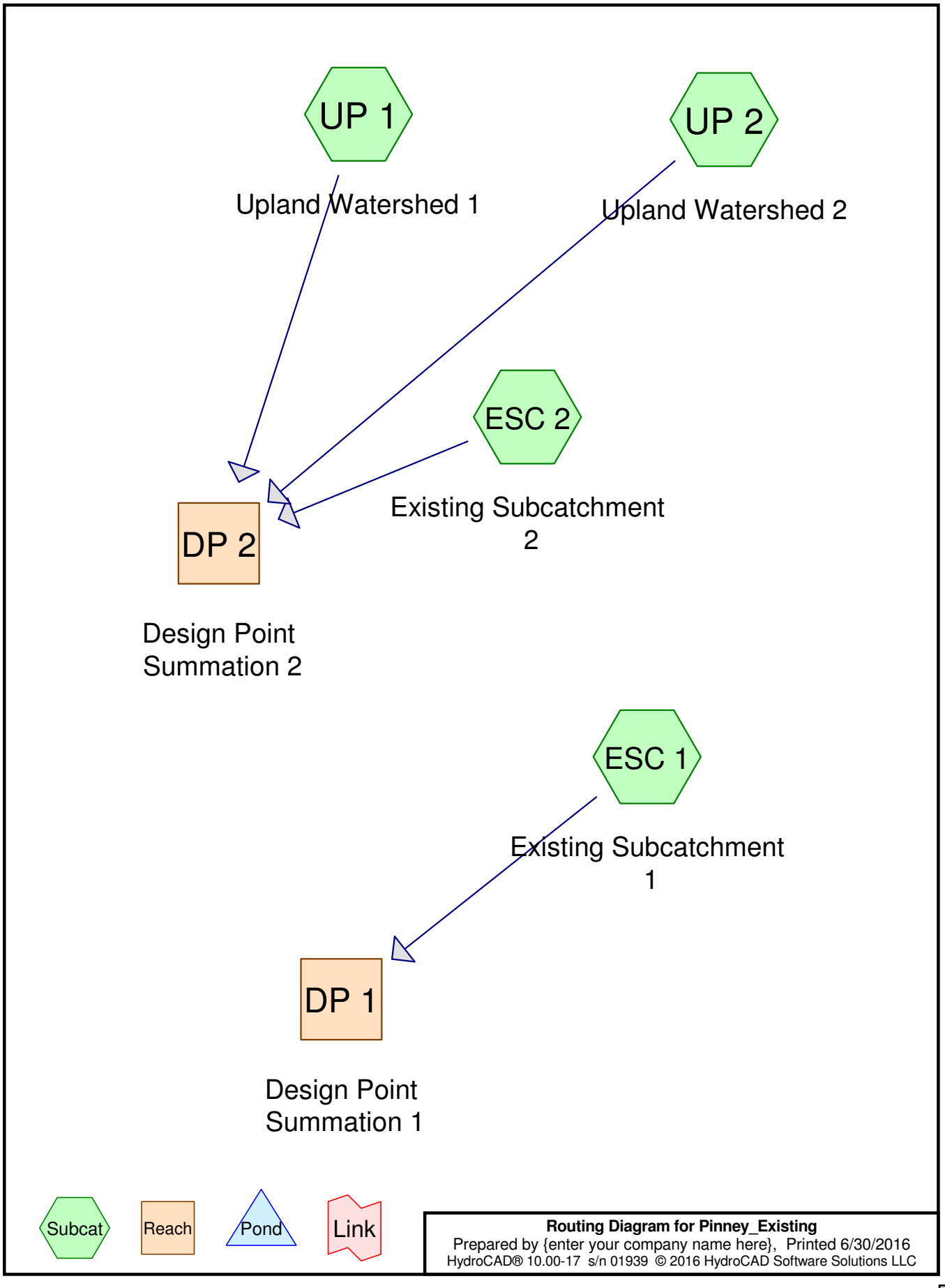
Pretreatment Provided			Pretreatment Technique
Pretreatment (10% of WQv)	25	ft^3	

Calculate Available Storage Capacity			
Bottom Width	4	*ft*	Design with a bottom width no greater than eight feet to avoid potential gullying and channel braiding, but no less than two feet
Side Slope (X:1)	4	*Okay*	Channels shall be designed with moderate side slopes (flatter than 3:1) for most conditions. 2:1 is the absolute maximum side slope
Longitudinal Slope	2%	*Okay*	*Maximum longitudinal slope shall be 4%*
Flow Depth	1	*ft*	*Maximum ponding depth of one foot at the mid-point of the channel, and a maximum depth of 18" at the end point of the channel (for storage of the WQv)*
Top Width	12	*ft*	
Area	8.00	*sf*	
Minimum Length	29	*ft*	
Actual Length	156	*ft*	
End Point Depth check	0.50	*Okay*	*A maximum depth of 18" at the end point of the channel (for storage of the WQv)*
Storage Capacity	1,273	ft^3	
Soil Group (HSG)		C	

Runoff Reduction				
Is the Dry Swale contributing flow to another practice?		No	Select Practice	
RRv	**254**	***ft^3***	**Runnoff Reduction equals 40% in HSG A and B and 20% in HSG C and D up to the WQv**	
Volume Treated	0	ft^3	This is the difference between the WQv calculated and the runoff reduction achieved in the swale	
Volume Directed	0	ft^3	This volume is directed another practice	
Volume √	*Okay*		Check to be sure that channel is long enough to store WQv	

APPENDIX 2

HYDRAULIC MODELING DATA



Routing Diagram for Pinney_Existing
Prepared by {enter your company name here}, Printed 6/30/2016
HydroCAD® 10.00-17 s/n 01939 © 2016 HydroCAD Software Solutions LLC

Pinney_Existing

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
5.827	30	Brush, Good, HSG A (ESC 1, ESC 2)
1.271	48	Brush, Good, HSG B (ESC 2)
34.825	65	Brush, Good, HSG C (ESC 1, ESC 2, UP 1, UP 2)
0.082	98	Paved parking & roofs (ESC 1, ESC 2)
42.006	**60**	**TOTAL AREA**

Pinney_Existing

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
5.827	HSG A	ESC 1, ESC 2
1.271	HSG B	ESC 2
34.825	HSG C	ESC 1, ESC 2, UP 1, UP 2
0.000	HSG D	
0.082	Other	ESC 1, ESC 2
42.006		**TOTAL AREA**

Pinney_Existing

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
5.827	1.271	34.825	0.000	0.000	41.924	Brush, Good	ESC 1, ESC 2, UP 1, UP 2
0.000	0.000	0.000	0.000	0.082	0.082	Paved parking & roofs	ESC 1, ESC 2
5.827	**1.271**	**34.825**	**0.000**	**0.082**	**42.006**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ESC 1: Existing Runoff Area=483,408 sf 0.43% Impervious Runoff Depth>0.02"
Flow Length=1,275' Tc=32.4 min CN=57 Runoff=0.03 cfs 0.017 af

Subcatchment ESC 2: Existing Runoff Area=1,087,798 sf 0.14% Impervious Runoff Depth>0.04"
Flow Length=1,657' Tc=25.6 min CN=60 Runoff=0.19 cfs 0.090 af

Subcatchment UP 1: Upland Watershed 1 Runoff Area=187,023 sf 0.00% Impervious Runoff Depth>0.11"
Flow Length=557' Tc=15.0 min CN=65 Runoff=0.23 cfs 0.039 af

Subcatchment UP 2: Upland Watershed 2 Runoff Area=71,533 sf 0.00% Impervious Runoff Depth>0.11"
Flow Length=410' Slope=0.0300 '/' Tc=14.5 min CN=65 Runoff=0.09 cfs 0.015 af

Reach DP 1: Design Point Summation 1 Inflow=0.03 cfs 0.017 af
Outflow=0.03 cfs 0.017 af

Reach DP 2: Design Point Summation 2 Inflow=0.32 cfs 0.144 af
Outflow=0.32 cfs 0.144 af

Total Runoff Area = 42.006 ac Runoff Volume = 0.161 af Average Runoff Depth = 0.05"
99.80% Pervious = 41.924 ac 0.20% Impervious = 0.082 ac

Pinney_Existing
Prepared by {enter your company name here}
HydroCAD® 10.00-17 s/n 01939 © 2016 HydroCAD Software Solutions LLC

Summary for Subcatchment ESC 1: Existing Subcatchment 1

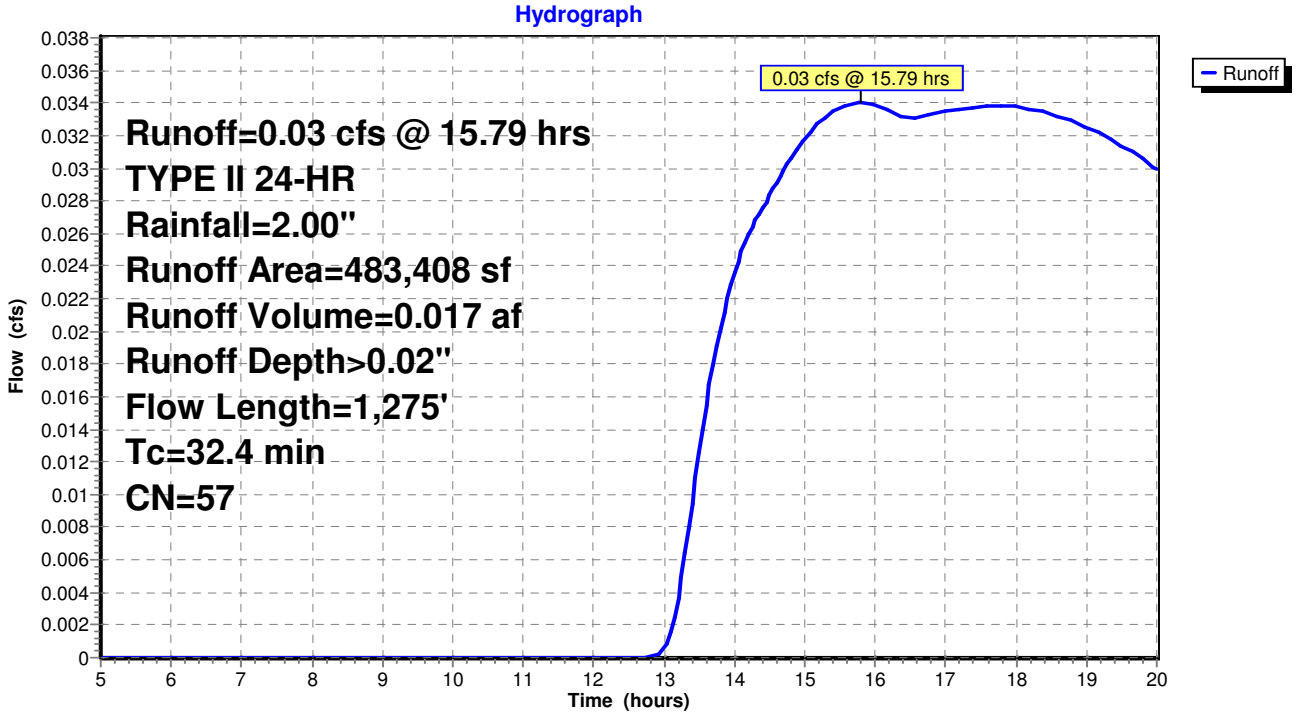
Runoff = 0.03 cfs @ 15.79 hrs, Volume= 0.017 af, Depth> 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=2.00"

Area (sf)	CN	Description
112,111	30	Brush, Good, HSG A
369,232	65	Brush, Good, HSG C
2,065	98	Paved parking & roofs
483,408	57	Weighted Average
481,343		99.57% Pervious Area
2,065		0.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0100	0.08		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
11.9	1,175	0.0120	1.64		**Shallow Concentrated Flow, Balance of Flow to Channel** Grassed Waterway Kv= 15.0 fps
32.4	1,275	Total			

Subcatchment ESC 1: Existing Subcatchment 1



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Summary for Subcatchment ESC 2: Existing Subcatchment 2

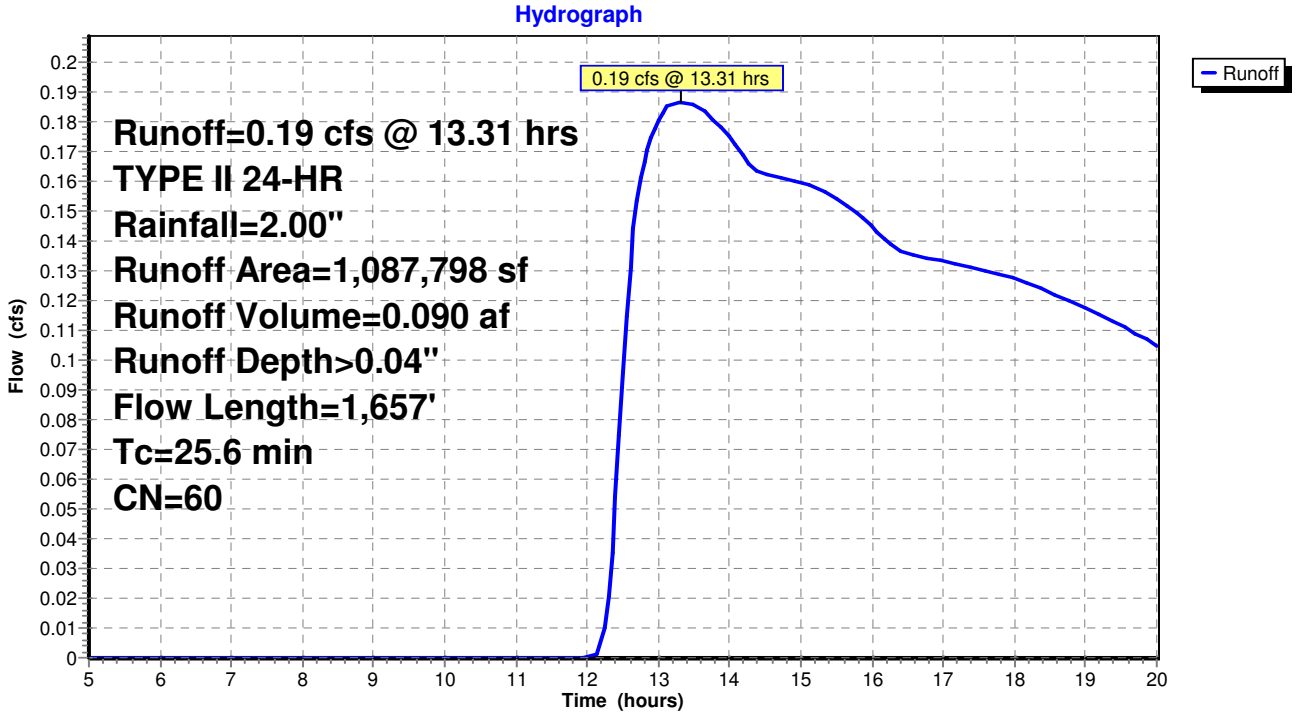
Runoff = 0.19 cfs @ 13.31 hrs, Volume= 0.090 af, Depth> 0.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=2.00"

Area (sf)	CN	Description
141,720	30	Brush, Good, HSG A
55,371	48	Brush, Good, HSG B
889,202	65	Brush, Good, HSG C
1,505	98	Paved parking & roofs
1,087,798	60	Weighted Average
1,086,293		99.86% Pervious Area
1,505		0.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.4	100	0.0150	0.10		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
6.6	957	0.0260	2.42		**Shallow Concentrated Flow, Balance of Flow to Channel** Grassed Waterway Kv= 15.0 fps
1.6	600	0.0100	6.22	124.39	**Trap/Vee/Rect Channel Flow, Balance of Longest Flowpath** Bot.W=4.00' D=2.00' Z= 3.0 '/' Top.W=16.00' n= 0.027
25.6	1,657	Total			

Subcatchment ESC 2: Existing Subcatchment 2



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Summary for Subcatchment UP 1: Upland Watershed 1

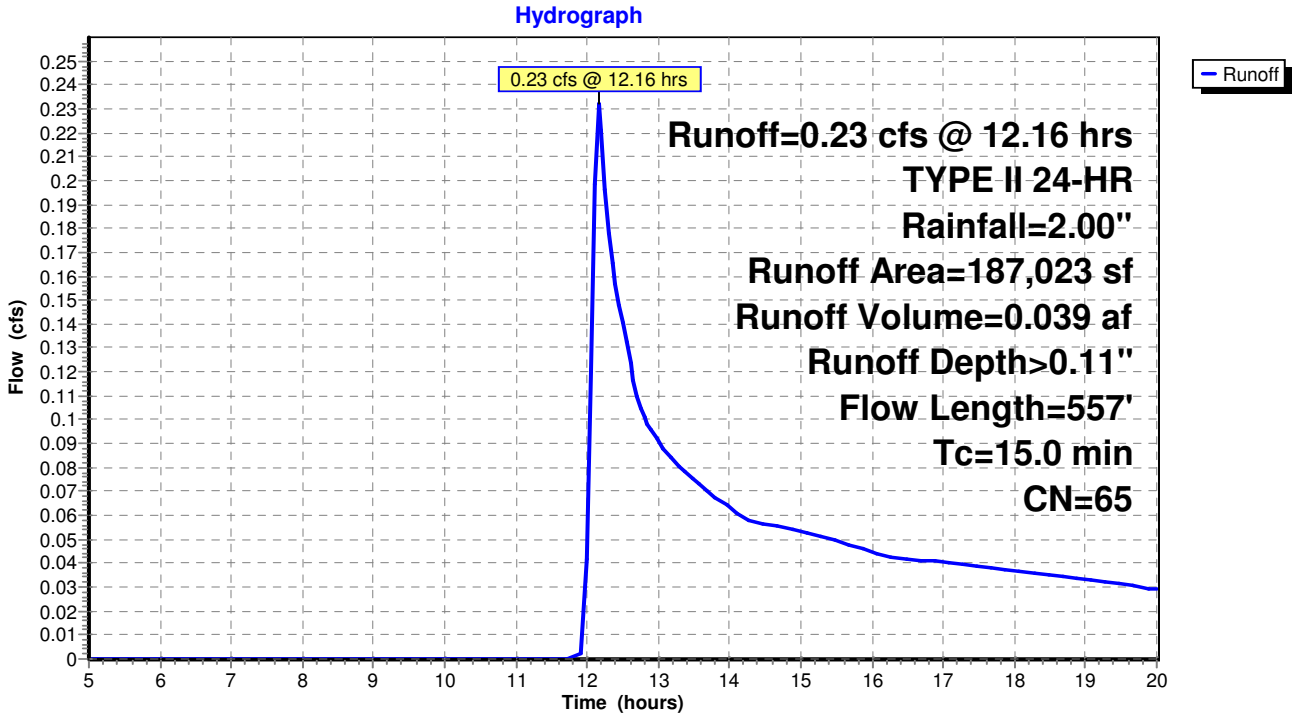
Runoff = 0.23 cfs @ 12.16 hrs, Volume= 0.039 af, Depth> 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=2.00"

Area (sf)	CN	Description
187,023	65	Brush, Good, HSG C
187,023		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0360	0.14		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
2.7	457	0.0350	2.81		**Shallow Concentrated Flow, Balance of Longest Flowpath** Grassed Waterway Kv= 15.0 fps
15.0	557	Total			

Subcatchment UP 1: Upland Watershed 1



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Summary for Subcatchment UP 2: Upland Watershed 2

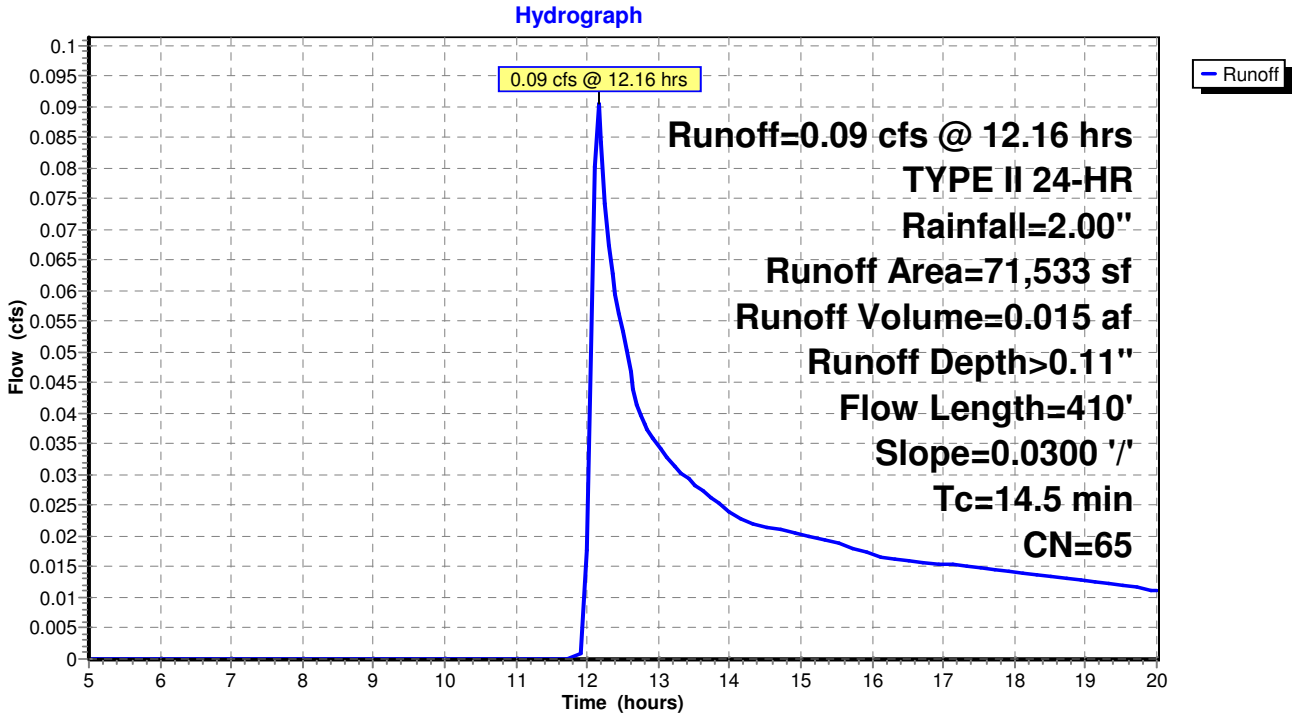
Runoff = 0.09 cfs @ 12.16 hrs, Volume= 0.015 af, Depth> 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=2.00"

Area (sf)	CN	Description
71,533	65	Brush, Good, HSG C
71,533		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	155	0.0300	0.20		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
1.6	255	0.0300	2.60		**Shallow Concentrated Flow, Balance of Longest Flowpath** Grassed Waterway Kv= 15.0 fps
14.5	410	Total			

Subcatchment UP 2: Upland Watershed 2



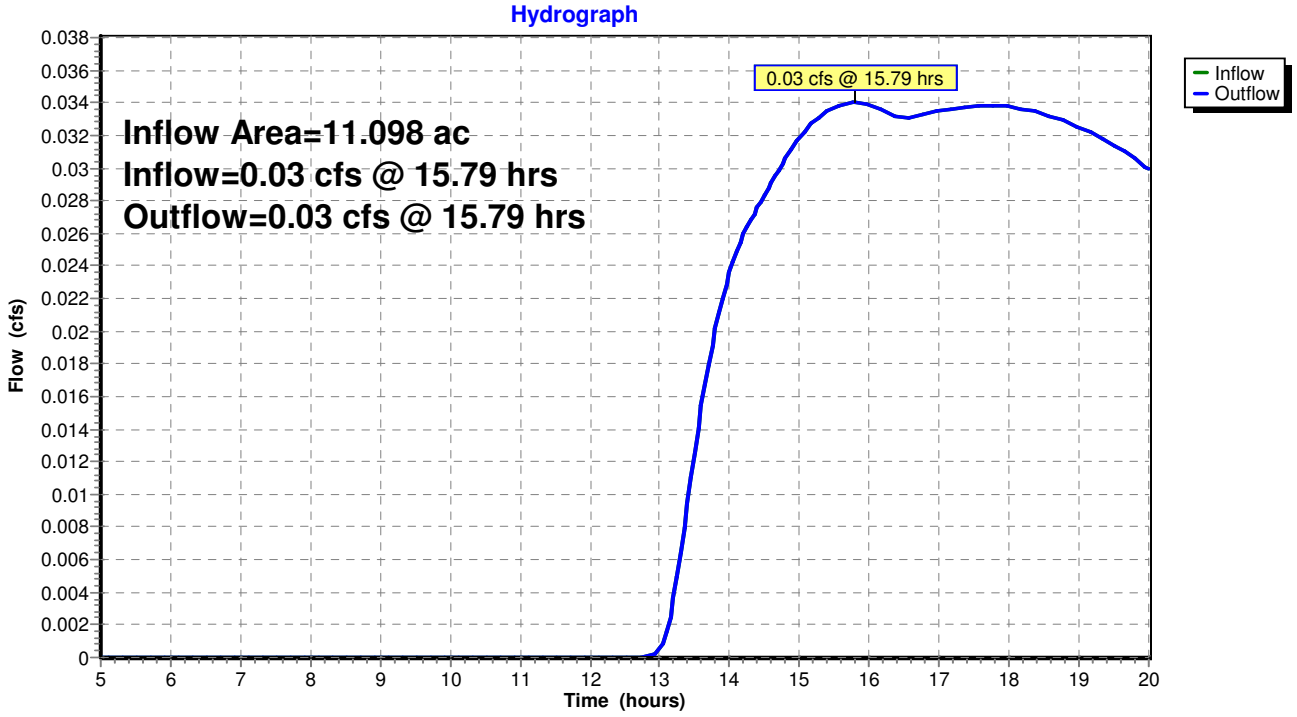
Pinney_Existing
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Summary for Reach DP 1: Design Point Summation 1

Inflow Area = 11.098 ac, 0.43% Impervious, Inflow Depth > 0.02"
Inflow = 0.03 cfs @ 15.79 hrs, Volume= 0.017 af
Outflow = 0.03 cfs @ 15.79 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP 1: Design Point Summation 1



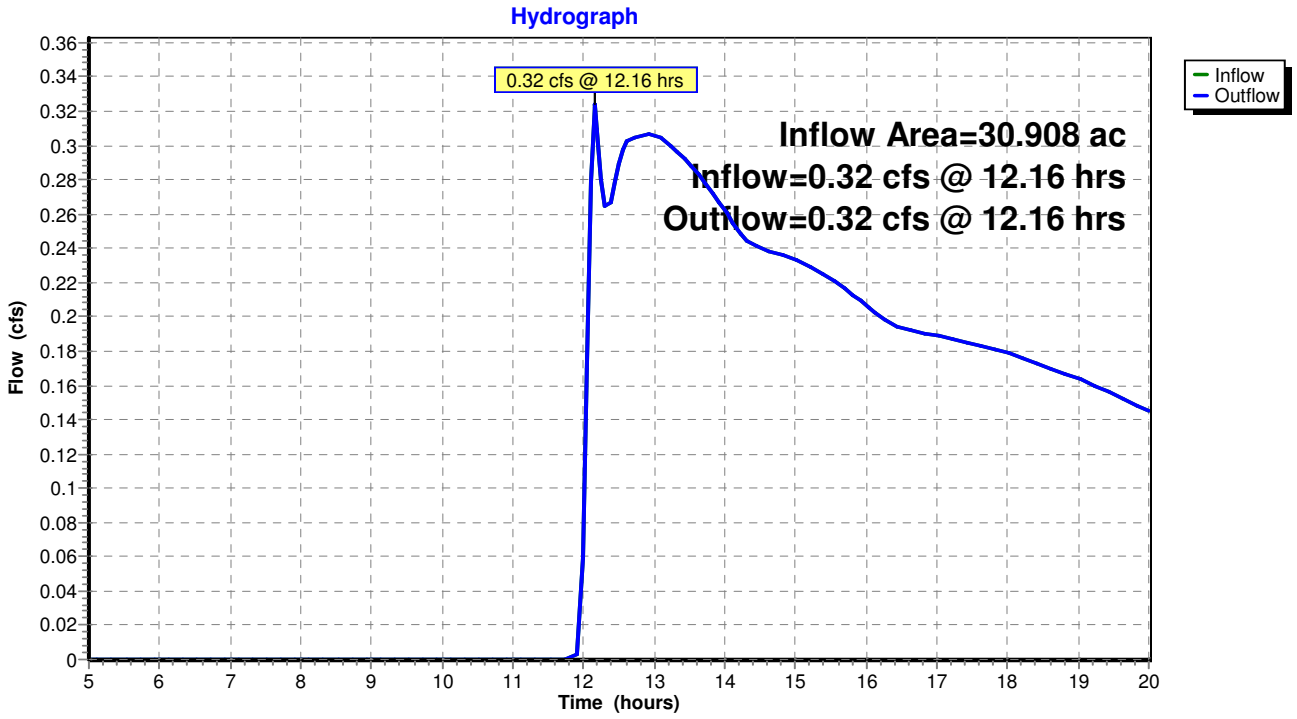
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Summary for Reach DP 2: Design Point Summation 2

Inflow Area = 30.908 ac, 0.11% Impervious, Inflow Depth > 0.06"
Inflow = 0.32 cfs @ 12.16 hrs, Volume= 0.144 af
Outflow = 0.32 cfs @ 12.16 hrs, Volume= 0.144 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP 2: Design Point Summation 2



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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
5.827	30	Brush, Good, HSG A (ESC 1, ESC 2)
1.271	48	Brush, Good, HSG B (ESC 2)
34.825	65	Brush, Good, HSG C (ESC 1, ESC 2, UP 1, UP 2)
0.082	98	Paved parking & roofs (ESC 1, ESC 2)
42.006	**60**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
5.827	HSG A	ESC 1, ESC 2
1.271	HSG B	ESC 2
34.825	HSG C	ESC 1, ESC 2, UP 1, UP 2
0.000	HSG D	
0.082	Other	ESC 1, ESC 2
42.006		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
5.827	1.271	34.825	0.000	0.000	41.924	Brush, Good	ESC 1, ESC 2, UP 1, UP 2
0.000	0.000	0.000	0.000	0.082	0.082	Paved parking & roofs	ESC 1, ESC 2
5.827	**1.271**	**34.825**	**0.000**	**0.082**	**42.006**	**TOTAL AREA**	

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ESC 1: Existing Runoff Area=483,408 sf 0.43% Impervious Runoff Depth>0.31"
Flow Length=1,275' Tc=32.4 min CN=57 Runoff=1.86 cfs 0.291 af

Subcatchment ESC 2: Existing Runoff Area=1,087,798 sf 0.14% Impervious Runoff Depth>0.42"
Flow Length=1,657' Tc=25.6 min CN=60 Runoff=7.70 cfs 0.866 af

Subcatchment UP 1: Upland Watershed 1 Runoff Area=187,023 sf 0.00% Impervious Runoff Depth>0.61"
Flow Length=557' Tc=15.0 min CN=65 Runoff=3.29 cfs 0.220 af

Subcatchment UP 2: Upland Watershed 2 Runoff Area=71,533 sf 0.00% Impervious Runoff Depth>0.61"
Flow Length=410' Slope=0.0300 '/' Tc=14.5 min CN=65 Runoff=1.28 cfs 0.084 af

Reach DP 1: Design Point Summation 1 Inflow=1.86 cfs 0.291 af
Outflow=1.86 cfs 0.291 af

Reach DP 2: Design Point Summation 2 Inflow=10.49 cfs 1.169 af
Outflow=10.49 cfs 1.169 af

Total Runoff Area = 42.006 ac Runoff Volume = 1.460 af Average Runoff Depth = 0.42"
99.80% Pervious = 41.924 ac 0.20% Impervious = 0.082 ac

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Summary for Subcatchment ESC 1: Existing Subcatchment 1

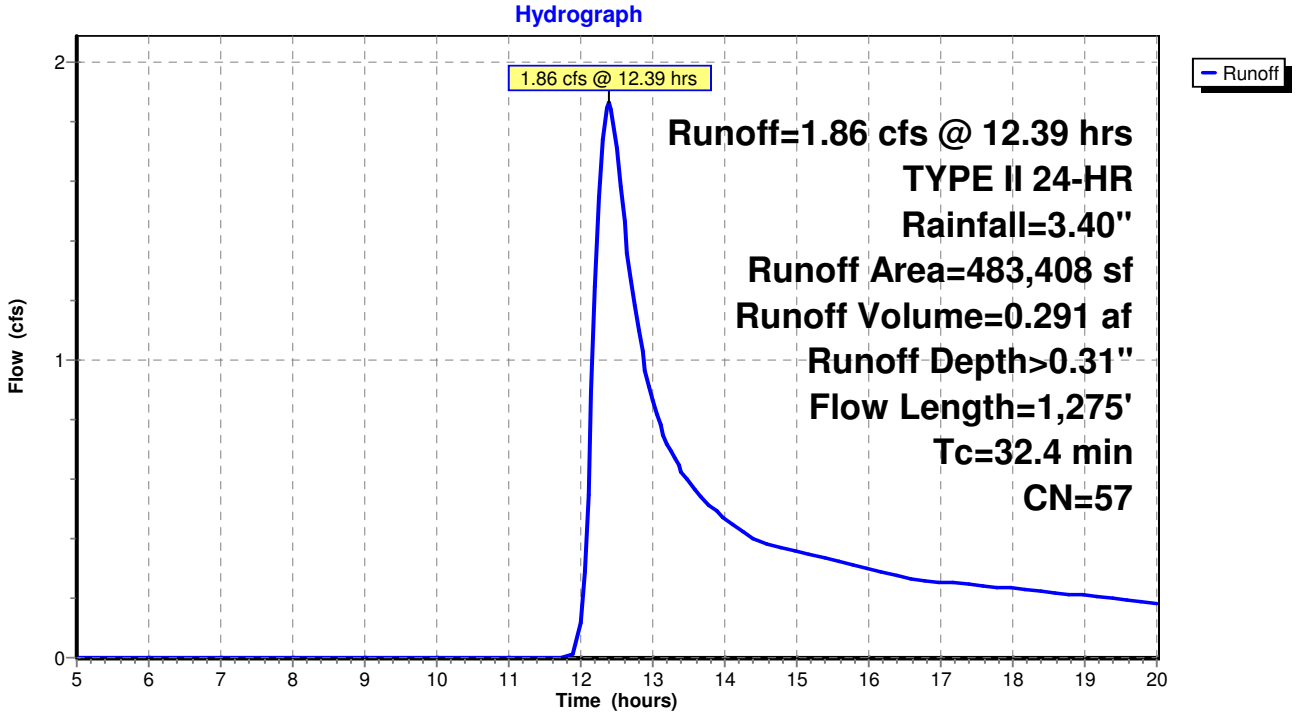
Runoff = 1.86 cfs @ 12.39 hrs, Volume= 0.291 af, Depth> 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=3.40"

Area (sf)	CN	Description
112,111	30	Brush, Good, HSG A
369,232	65	Brush, Good, HSG C
2,065	98	Paved parking & roofs
483,408	57	Weighted Average
481,343		99.57% Pervious Area
2,065		0.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0100	0.08		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
11.9	1,175	0.0120	1.64		**Shallow Concentrated Flow, Balance of Flow to Channel** Grassed Waterway Kv= 15.0 fps
32.4	1,275	Total			

Subcatchment ESC 1: Existing Subcatchment 1



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Summary for Subcatchment ESC 2: Existing Subcatchment 2

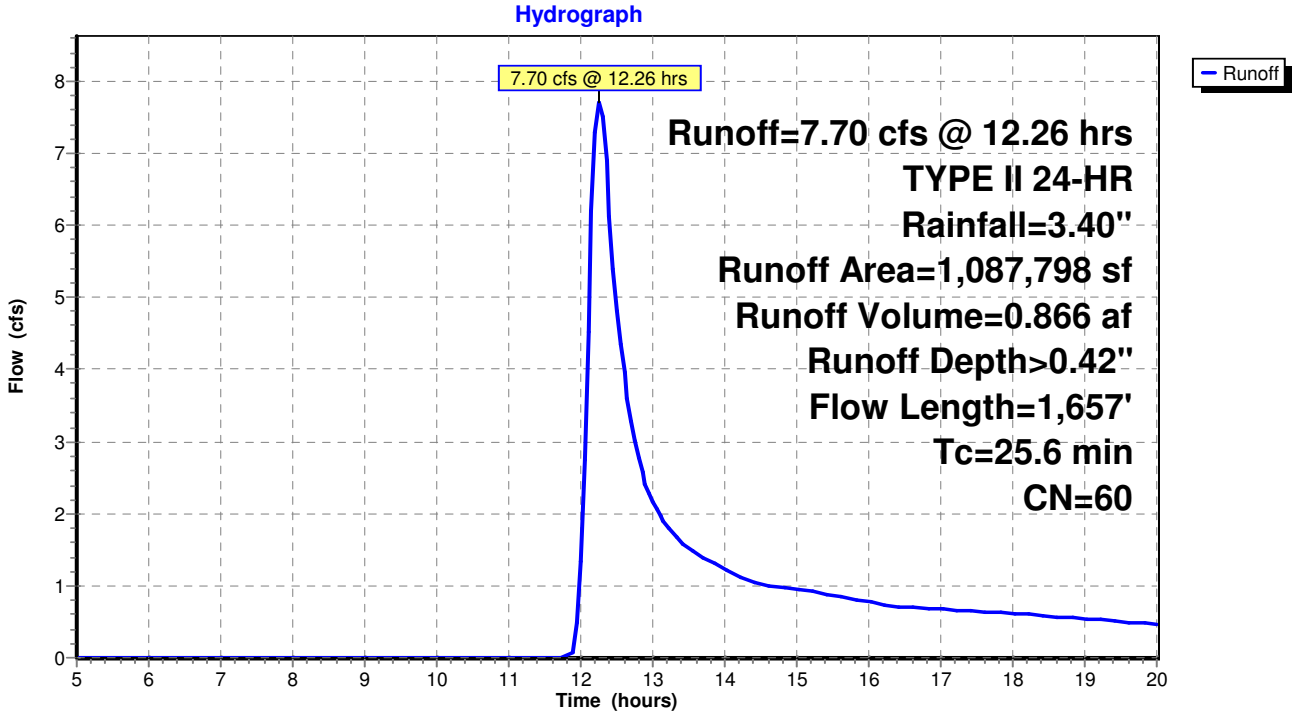
Runoff = 7.70 cfs @ 12.26 hrs, Volume= 0.866 af, Depth> 0.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=3.40"

Area (sf)	CN	Description
141,720	30	Brush, Good, HSG A
55,371	48	Brush, Good, HSG B
889,202	65	Brush, Good, HSG C
1,505	98	Paved parking & roofs
1,087,798	60	Weighted Average
1,086,293		99.86% Pervious Area
1,505		0.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.4	100	0.0150	0.10		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
6.6	957	0.0260	2.42		**Shallow Concentrated Flow, Balance of Flow to Channel** Grassed Waterway Kv= 15.0 fps
1.6	600	0.0100	6.22	124.39	**Trap/Vee/Rect Channel Flow, Balance of Longest Flowpath** Bot.W=4.00' D=2.00' Z= 3.0 '/' Top.W=16.00' n= 0.027
25.6	1,657	Total			

Subcatchment ESC 2: Existing Subcatchment 2



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Summary for Subcatchment UP 1: Upland Watershed 1

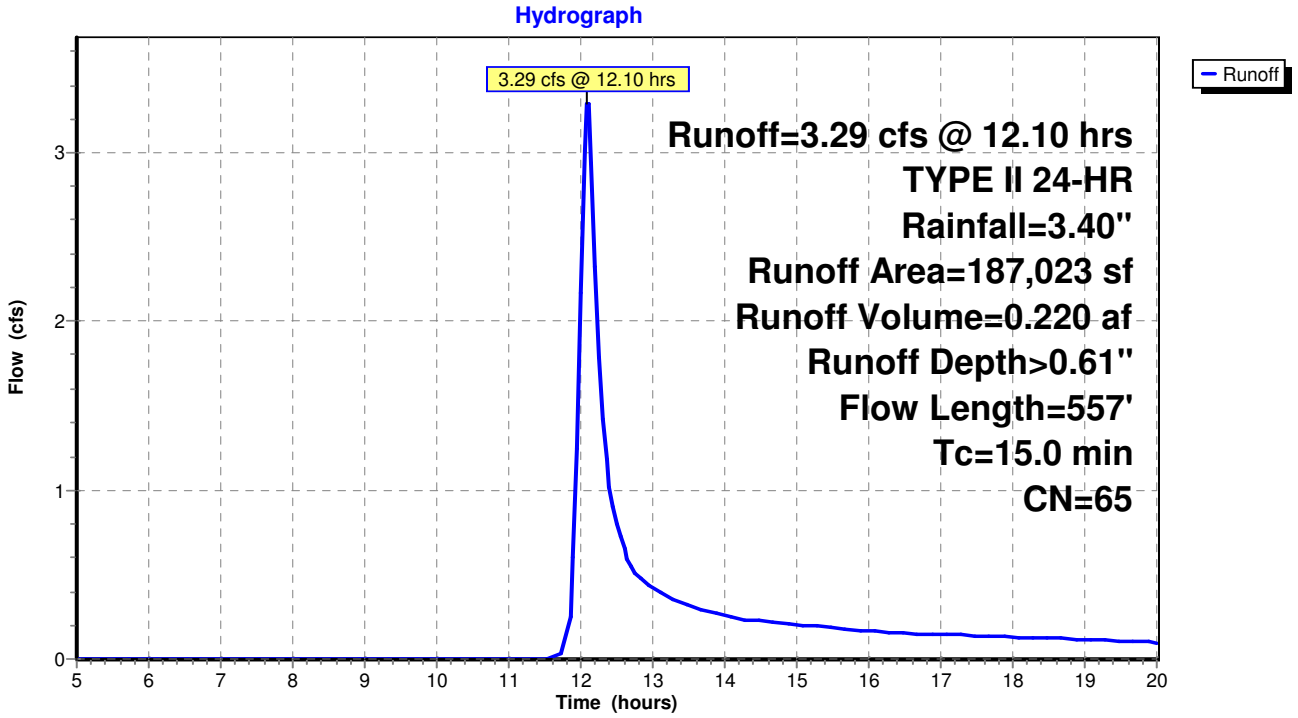
Runoff = 3.29 cfs @ 12.10 hrs, Volume= 0.220 af, Depth> 0.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=3.40"

Area (sf)	CN	Description
187,023	65	Brush, Good, HSG C
187,023		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0360	0.14		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
2.7	457	0.0350	2.81		**Shallow Concentrated Flow, Balance of Longest Flowpath** Grassed Waterway Kv= 15.0 fps
15.0	557	Total			

Subcatchment UP 1: Upland Watershed 1



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Summary for Subcatchment UP 2: Upland Watershed 2

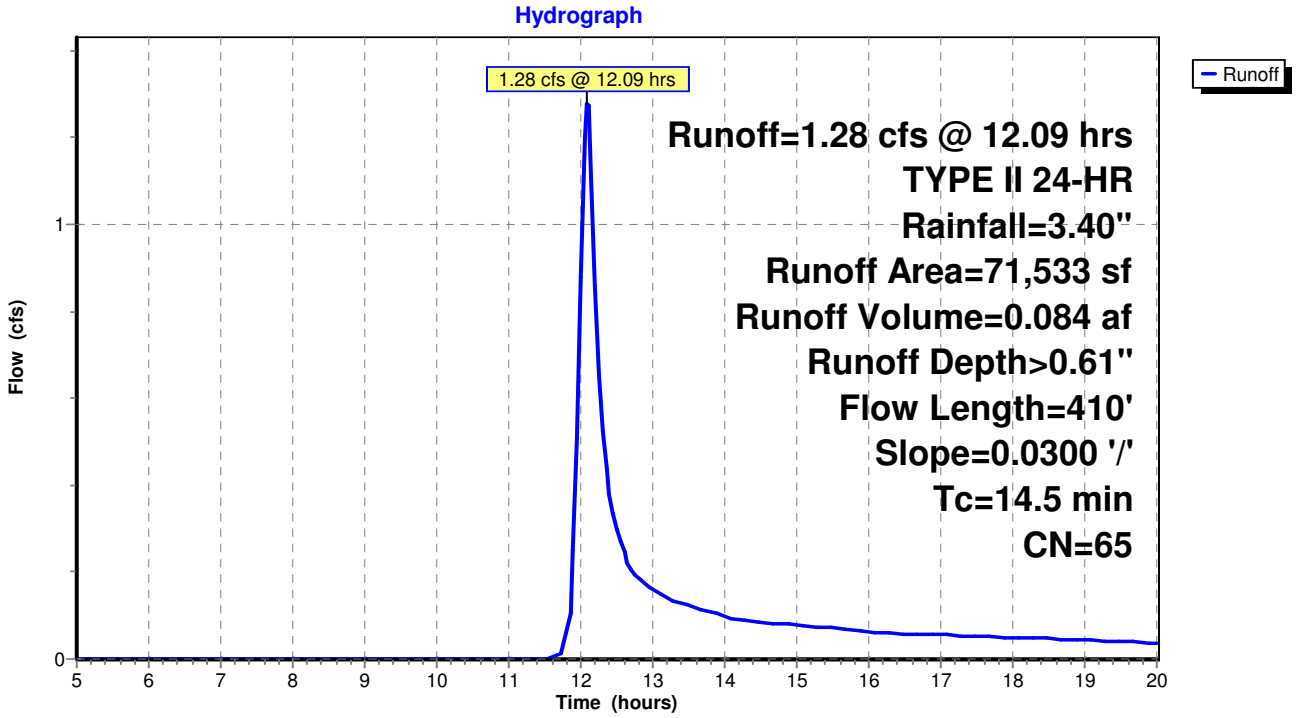
Runoff = 1.28 cfs @ 12.09 hrs, Volume= 0.084 af, Depth> 0.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=3.40"

Area (sf)	CN	Description
71,533	65	Brush, Good, HSG C
71,533		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	155	0.0300	0.20		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
1.6	255	0.0300	2.60		**Shallow Concentrated Flow, Balance of Longest Flowpath** Grassed Waterway Kv= 15.0 fps
14.5	410	Total			

Subcatchment UP 2: Upland Watershed 2



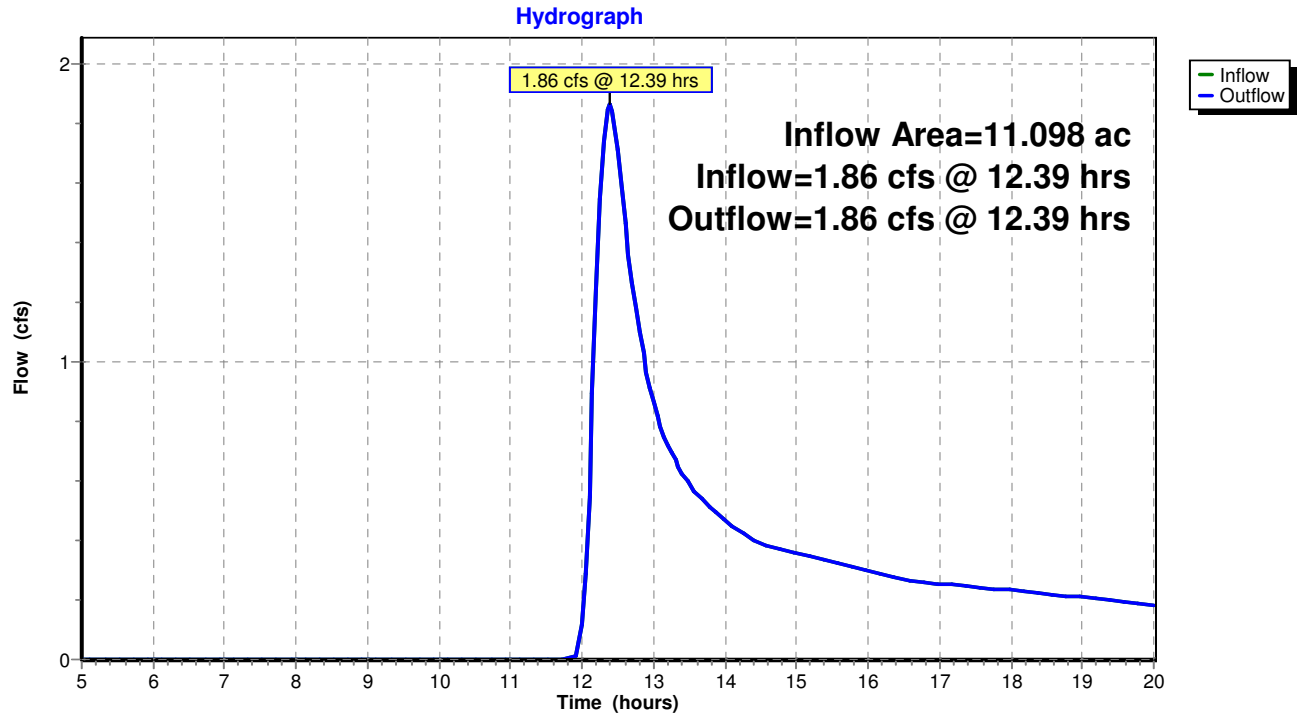
Pinney_Existing
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Summary for Reach DP 1: Design Point Summation 1

Inflow Area = 11.098 ac, 0.43% Impervious, Inflow Depth > 0.31"
Inflow = 1.86 cfs @ 12.39 hrs, Volume= 0.291 af
Outflow = 1.86 cfs @ 12.39 hrs, Volume= 0.291 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP 1: Design Point Summation 1



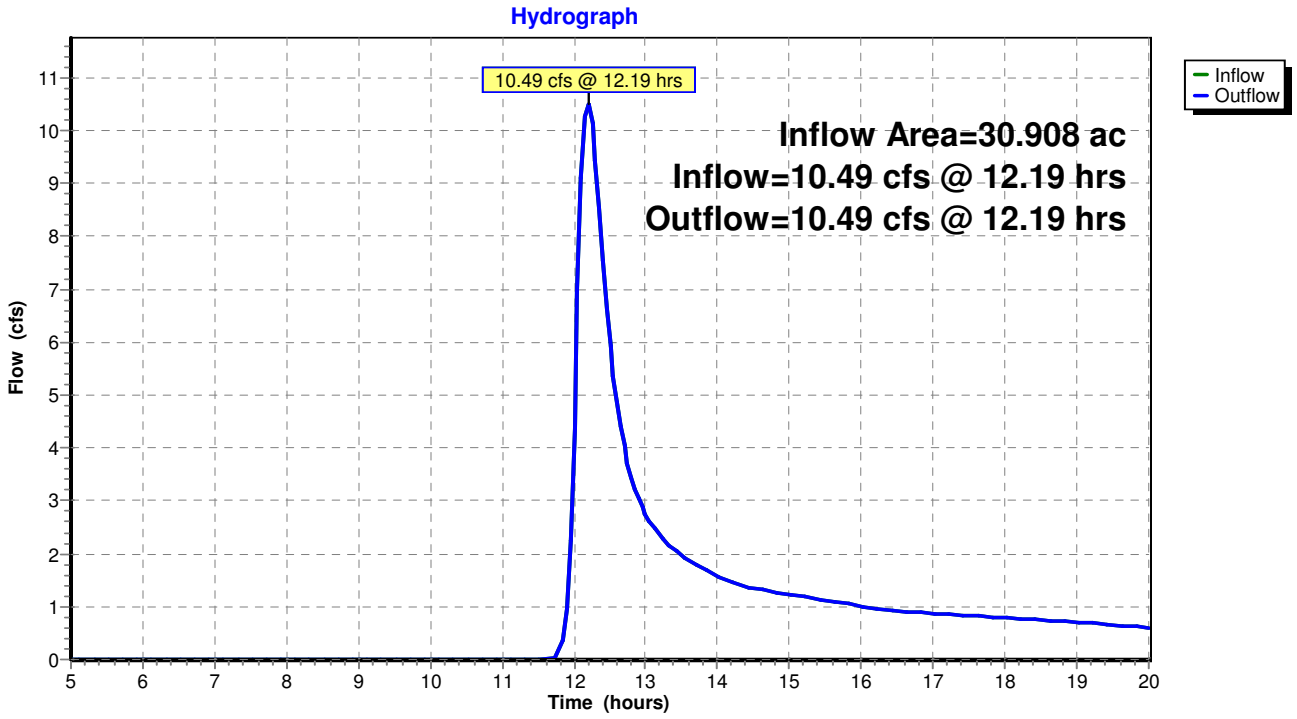
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Summary for Reach DP 2: Design Point Summation 2

Inflow Area = 30.908 ac, 0.11% Impervious, Inflow Depth > 0.45"
Inflow = 10.49 cfs @ 12.19 hrs, Volume= 1.169 af
Outflow = 10.49 cfs @ 12.19 hrs, Volume= 1.169 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP 2: Design Point Summation 2



Pinney_Existing

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
5.827	30	Brush, Good, HSG A (ESC 1, ESC 2)
1.271	48	Brush, Good, HSG B (ESC 2)
34.825	65	Brush, Good, HSG C (ESC 1, ESC 2, UP 1, UP 2)
0.082	98	Paved parking & roofs (ESC 1, ESC 2)
42.006	**60**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
5.827	HSG A	ESC 1, ESC 2
1.271	HSG B	ESC 2
34.825	HSG C	ESC 1, ESC 2, UP 1, UP 2
0.000	HSG D	
0.082	Other	ESC 1, ESC 2
42.006		**TOTAL AREA**

Pinney_Existing

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
5.827	1.271	34.825	0.000	0.000	41.924	Brush, Good	ESC 1, ESC 2, UP 1, UP 2
0.000	0.000	0.000	0.000	0.082	0.082	Paved parking & roofs	ESC 1, ESC 2
5.827	**1.271**	**34.825**	**0.000**	**0.082**	**42.006**	**TOTAL AREA**	

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ESC 1: Existing Runoff Area=483,408 sf 0.43% Impervious Runoff Depth>1.40"
Flow Length=1,275' Tc=32.4 min CN=57 Runoff=12.78 cfs 1.294 af

Subcatchment ESC 2: Existing Runoff Area=1,087,798 sf 0.14% Impervious Runoff Depth>1.63"
Flow Length=1,657' Tc=25.6 min CN=60 Runoff=40.52 cfs 3.387 af

Subcatchment UP 1: Upland Watershed 1 Runoff Area=187,023 sf 0.00% Impervious Runoff Depth>2.03"
Flow Length=557' Tc=15.0 min CN=65 Runoff=12.13 cfs 0.727 af

Subcatchment UP 2: Upland Watershed 2 Runoff Area=71,533 sf 0.00% Impervious Runoff Depth>2.03"
Flow Length=410' Slope=0.0300 '/' Tc=14.5 min CN=65 Runoff=4.73 cfs 0.278 af

Reach DP 1: Design Point Summation 1 Inflow=12.78 cfs 1.294 af
Outflow=12.78 cfs 1.294 af

Reach DP 2: Design Point Summation 2 Inflow=52.19 cfs 4.392 af
Outflow=52.19 cfs 4.392 af

Total Runoff Area = 42.006 ac Runoff Volume = 5.685 af Average Runoff Depth = 1.62"
99.80% Pervious = 41.924 ac 0.20% Impervious = 0.082 ac

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Summary for Subcatchment ESC 1: Existing Subcatchment 1

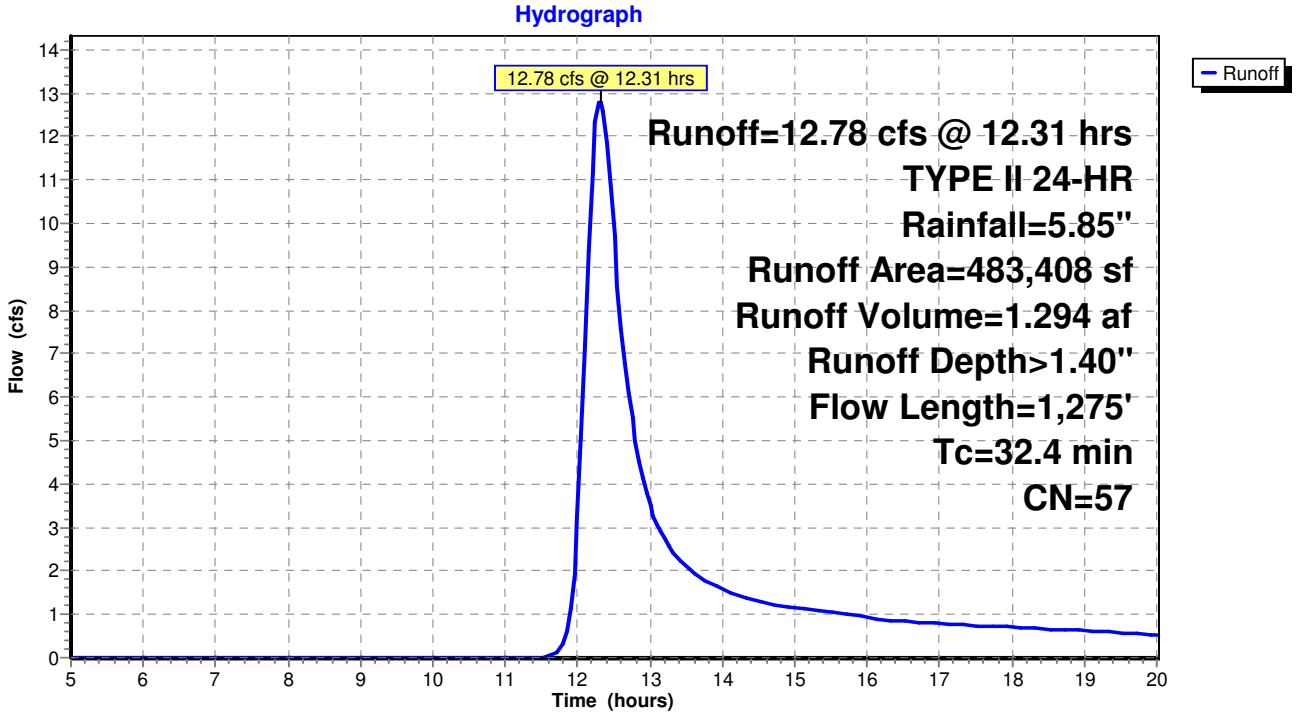
Runoff = 12.78 cfs @ 12.31 hrs, Volume= 1.294 af, Depth> 1.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=5.85"

Area (sf)	CN	Description
112,111	30	Brush, Good, HSG A
369,232	65	Brush, Good, HSG C
2,065	98	Paved parking & roofs
483,408	57	Weighted Average
481,343		99.57% Pervious Area
2,065		0.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0100	0.08		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
11.9	1,175	0.0120	1.64		**Shallow Concentrated Flow, Balance of Flow to Channel** Grassed Waterway Kv= 15.0 fps
32.4	1,275	Total			

Subcatchment ESC 1: Existing Subcatchment 1



Summary for Subcatchment ESC 2: Existing Subcatchment 2

Runoff = 40.52 cfs @ 12.21 hrs, Volume= 3.387 af, Depth> 1.63"

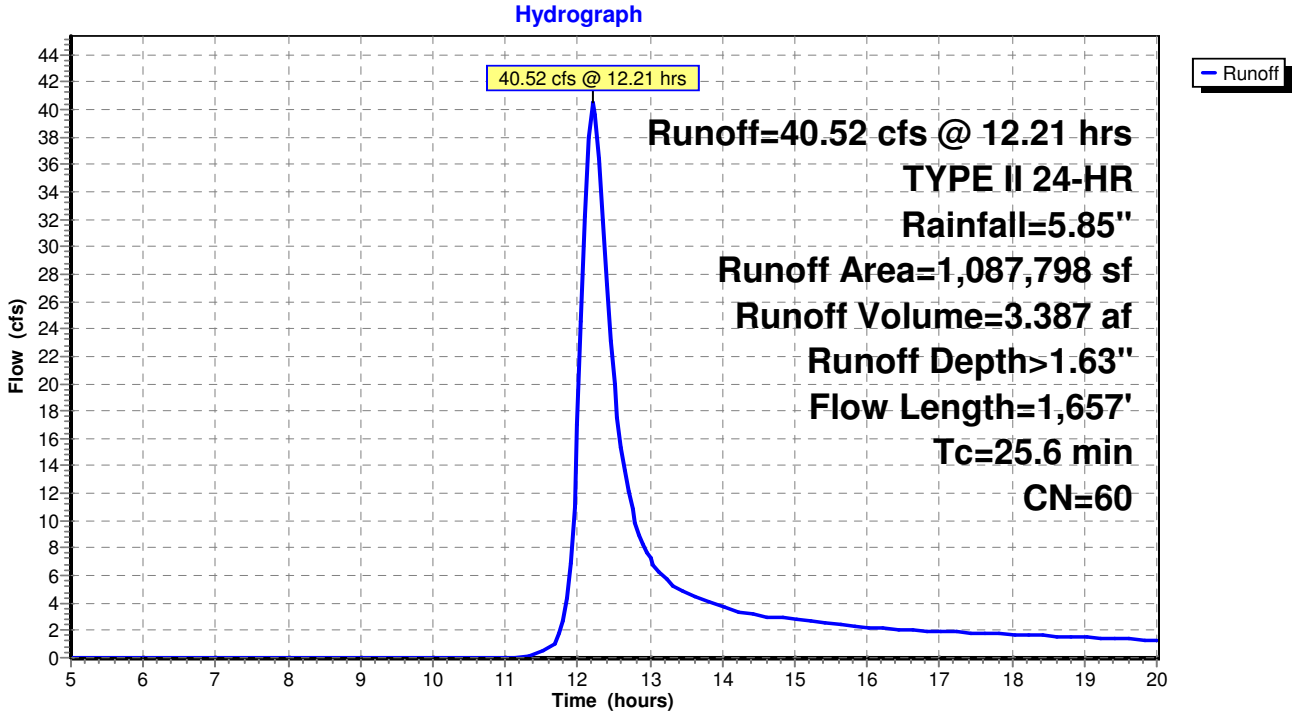
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=5.85"

Area (sf)	CN	Description
141,720	30	Brush, Good, HSG A
55,371	48	Brush, Good, HSG B
889,202	65	Brush, Good, HSG C
1,505	98	Paved parking & roofs
1,087,798	60	Weighted Average
1,086,293		99.86% Pervious Area
1,505		0.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.4	100	0.0150	0.10		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
6.6	957	0.0260	2.42		**Shallow Concentrated Flow, Balance of Flow to Channel** Grassed Waterway Kv= 15.0 fps
1.6	600	0.0100	6.22	124.39	**Trap/Vee/Rect Channel Flow, Balance of Longest Flowpath** Bot.W=4.00' D=2.00' Z= 3.0 '/' Top.W=16.00' n= 0.027
25.6	1,657	Total			

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Subcatchment ESC 2: Existing Subcatchment 2



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Summary for Subcatchment UP 1: Upland Watershed 1

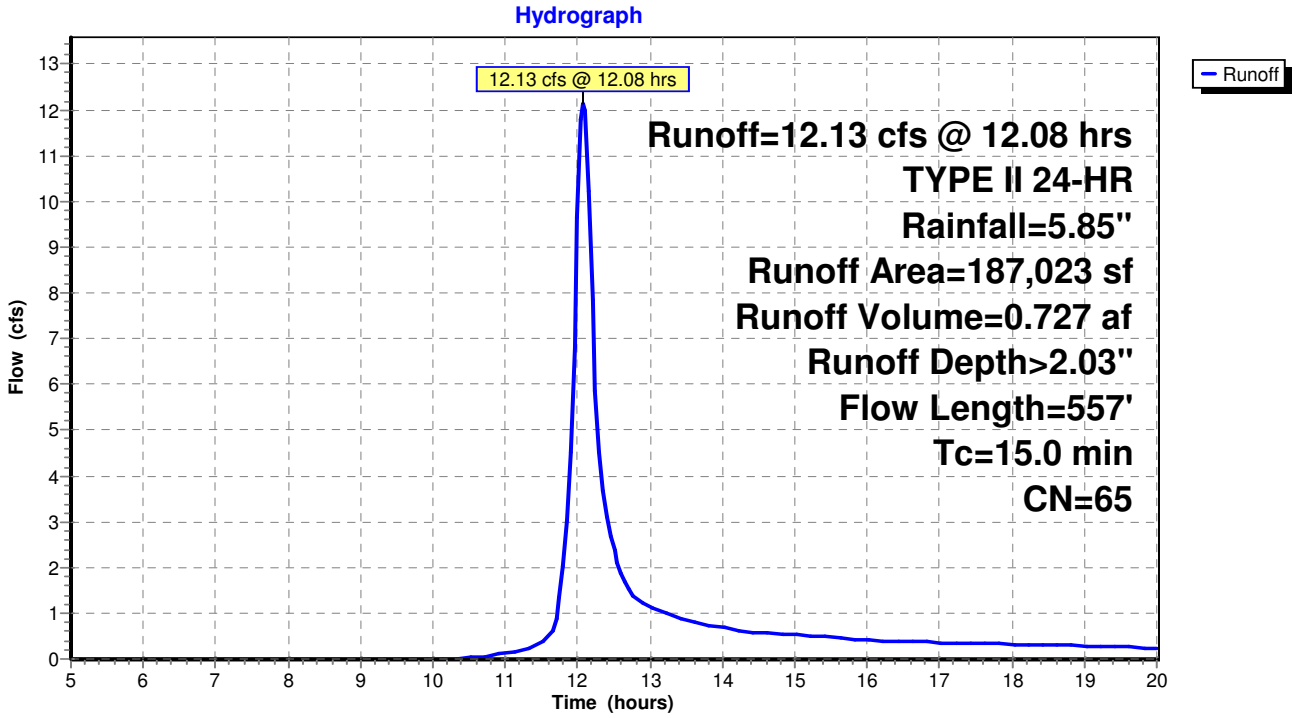
Runoff = 12.13 cfs @ 12.08 hrs, Volume= 0.727 af, Depth> 2.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=5.85"

Area (sf)	CN	Description
187,023	65	Brush, Good, HSG C
187,023		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0360	0.14		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
2.7	457	0.0350	2.81		**Shallow Concentrated Flow, Balance of Longest Flowpath** Grassed Waterway Kv= 15.0 fps
15.0	557	Total			

Subcatchment UP 1: Upland Watershed 1



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Summary for Subcatchment UP 2: Upland Watershed 2

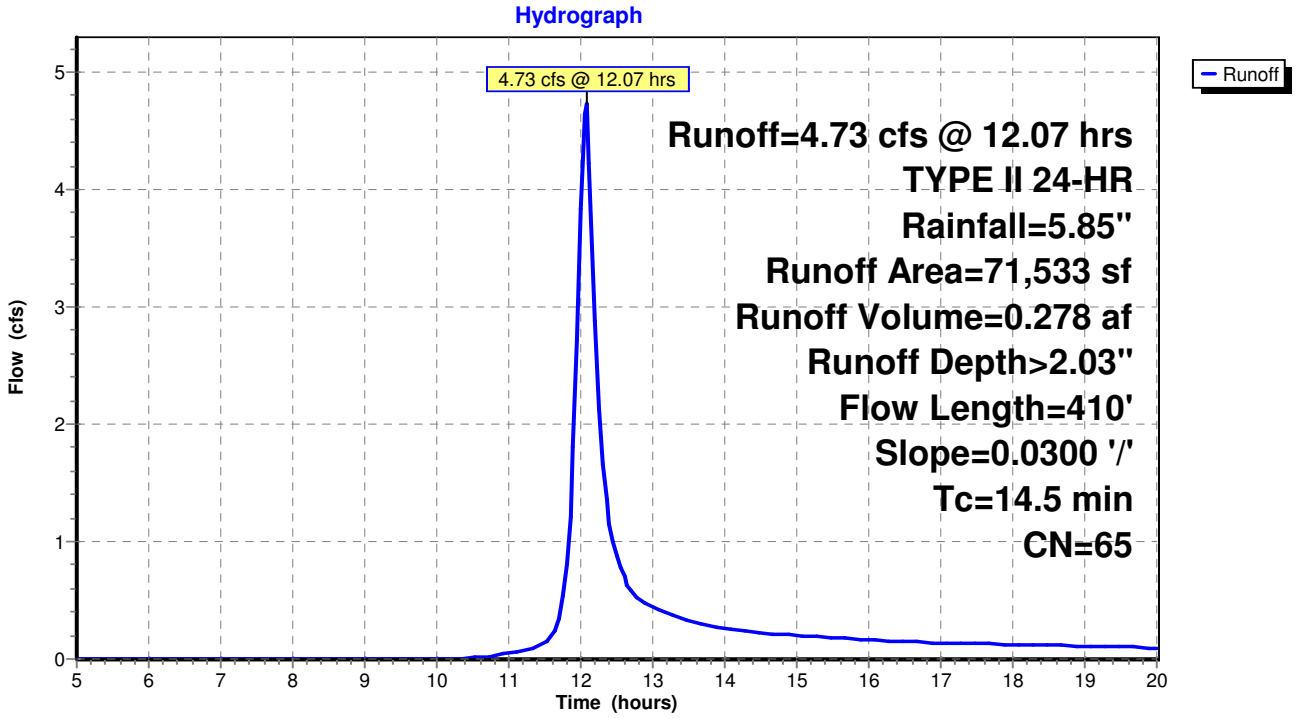
Runoff = 4.73 cfs @ 12.07 hrs, Volume= 0.278 af, Depth> 2.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=5.85"

Area (sf)	CN	Description
71,533	65	Brush, Good, HSG C
71,533		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	155	0.0300	0.20		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
1.6	255	0.0300	2.60		**Shallow Concentrated Flow, Balance of Longest Flowpath** Grassed Waterway Kv= 15.0 fps
14.5	410	Total			

Subcatchment UP 2: Upland Watershed 2



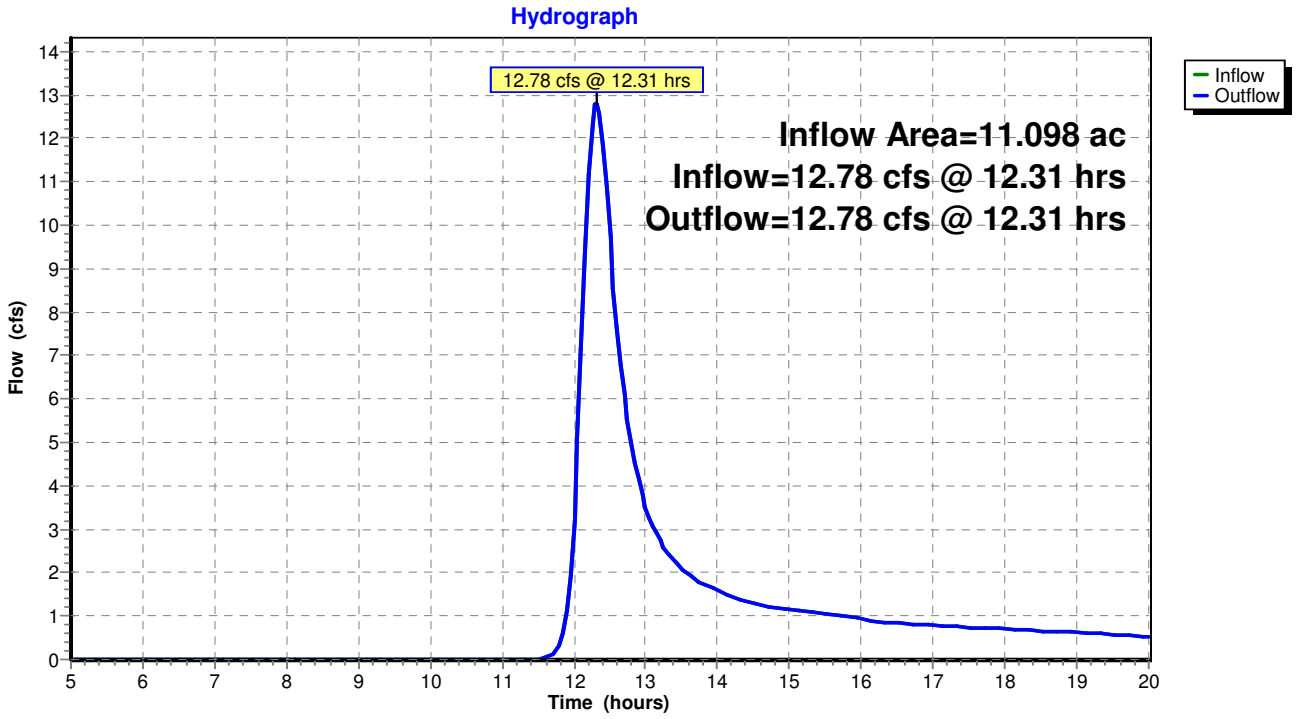
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Summary for Reach DP 1: Design Point Summation 1

Inflow Area = 11.098 ac, 0.43% Impervious, Inflow Depth > 1.40"
Inflow = 12.78 cfs @ 12.31 hrs, Volume= 1.294 af
Outflow = 12.78 cfs @ 12.31 hrs, Volume= 1.294 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP 1: Design Point Summation 1



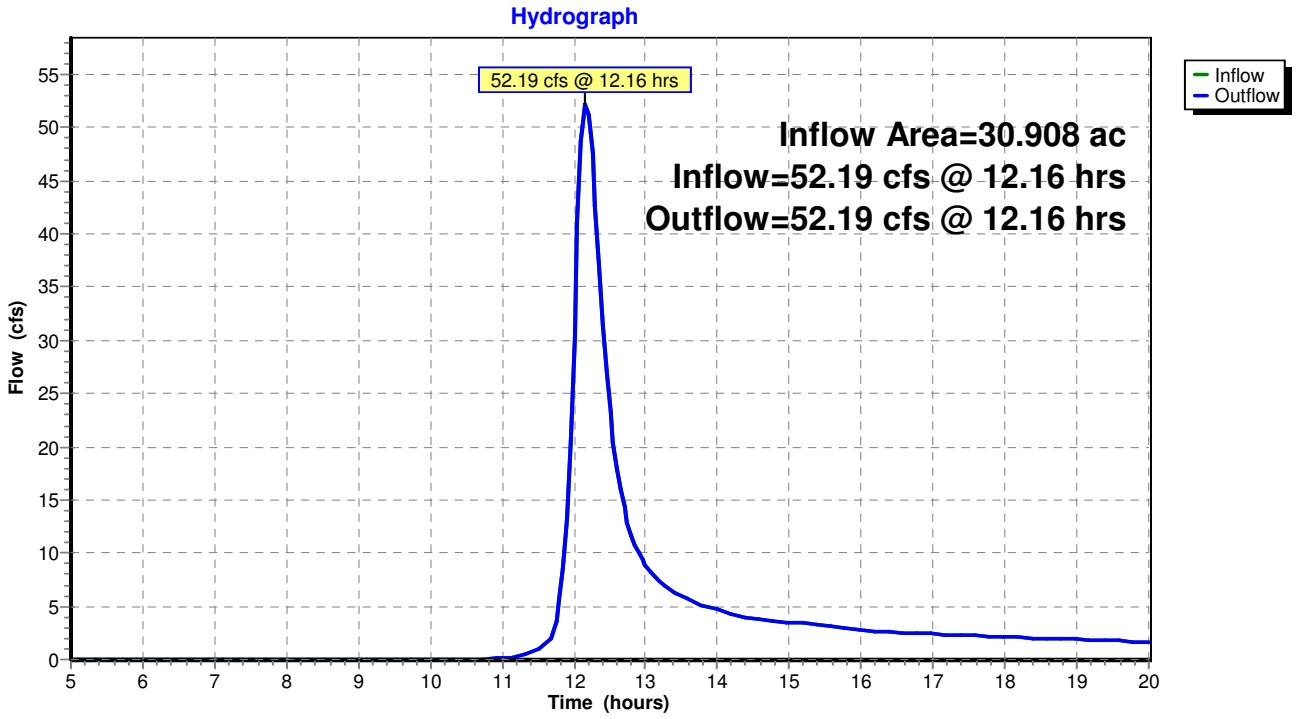
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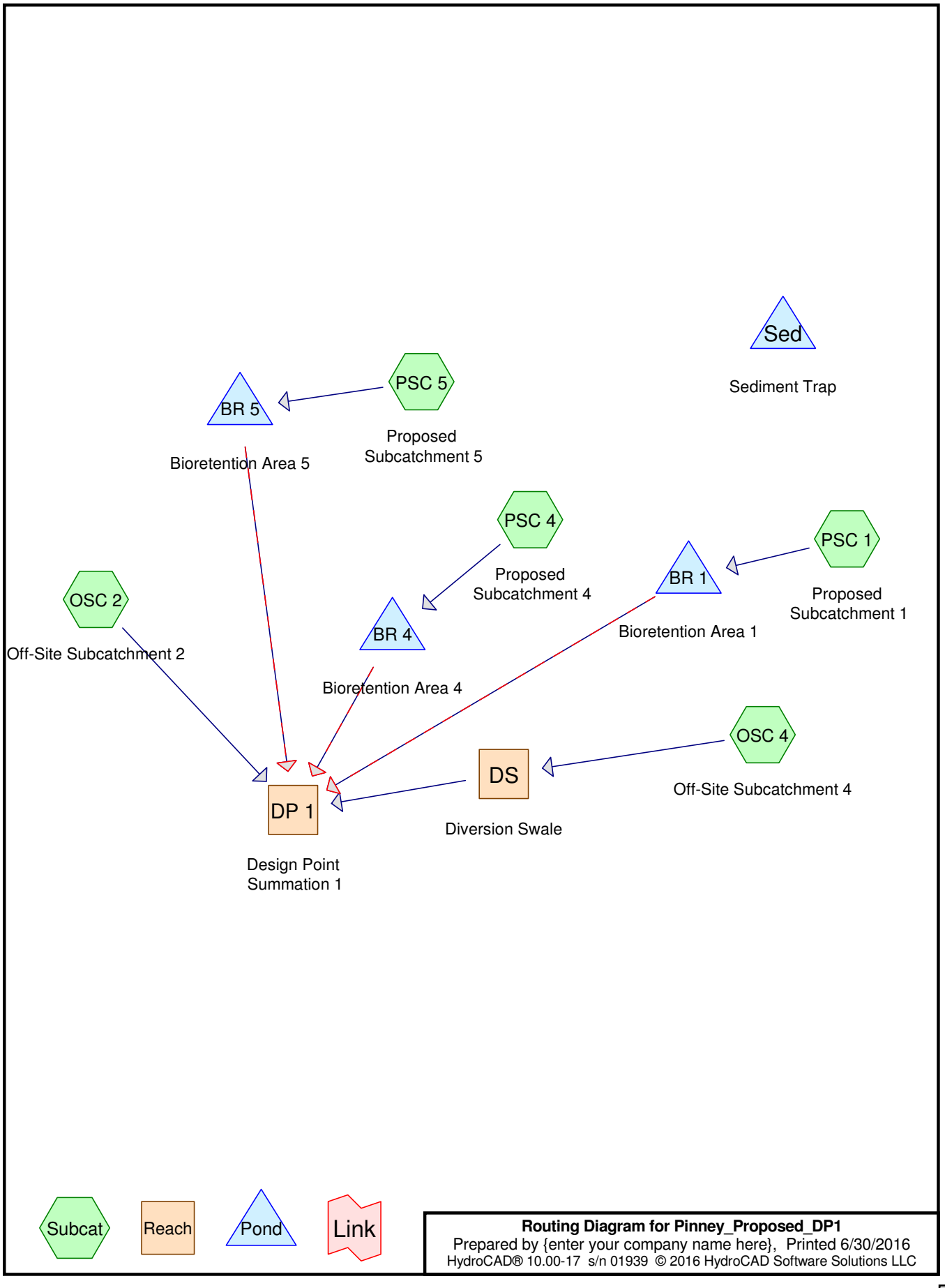
Summary for Reach DP 2: Design Point Summation 2

Inflow Area = 30.908 ac, 0.11% Impervious, Inflow Depth > 1.71"
Inflow = 52.19 cfs @ 12.16 hrs, Volume= 4.392 af
Outflow = 52.19 cfs @ 12.16 hrs, Volume= 4.392 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP 2: Design Point Summation 2





Routing Diagram for Pinney_Proposed_DP1
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.856	74	>75% Grass cover, Good, HSG C (PSC 1, PSC 4, PSC 5)
2.633	30	Brush, Good, HSG A (OSC 4)
7.201	65	Brush, Good, HSG C (OSC 2, OSC 4, PSC 1)
0.364	98	Paved parking & roofs (PSC 1, PSC 4, PSC 5)
0.047	98	Unconnected roofs, HSG A (OSC 4)
11.101	**59**	**TOTAL AREA**

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.681	HSG A	OSC 4
0.000	HSG B	
8.056	HSG C	OSC 2, OSC 4, PSC 1, PSC 4, PSC 5
0.000	HSG D	
0.364	Other	PSC 1, PSC 4, PSC 5
11.101		**TOTAL AREA**

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.856	0.000	0.000	0.856	>75% Grass cover, Good	PSC 1, PSC 4, PSC 5
2.633	0.000	7.201	0.000	0.000	9.834	Brush, Good	OSC 2, OSC 4, PSC 1
0.000	0.000	0.000	0.000	0.364	0.364	Paved parking & roofs	PSC 1, PSC 4, PSC 5
0.047	0.000	0.000	0.000	0.000	0.047	Unconnected roofs	OSC 4
2.681	**0.000**	**8.056**	**0.000**	**0.364**	**11.101**	**TOTAL AREA**	

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	BR 1	1.00	0.50	197.0	0.0025	0.013	4.0	0.0	0.0
2	BR 4	2.75	2.50	157.0	0.0016	0.013	4.0	0.0	0.0
3	BR 5	1.00	0.50	219.0	0.0023	0.013	4.0	0.0	0.0

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment OSC 2: Off-Site Runoff Area=14,274 sf 0.00% Impervious Runoff Depth>0.11"
Flow Length=220' Tc=10.4 min CN=65 Runoff=0.02 cfs 0.003 af

Subcatchment OSC 4: Off-Site Runoff Area=403,901 sf 0.51% Impervious Runoff Depth>0.01"
Flow Length=1,275' Tc=32.4 min CN=55 Runoff=0.02 cfs 0.006 af

Subcatchment PSC 1: Proposed Runoff Area=37,170 sf 16.23% Impervious Runoff Depth>0.33"
Flow Length=327' Tc=10.3 min CN=75 Runoff=0.42 cfs 0.024 af

Subcatchment PSC 4: Proposed Runoff Area=17,938 sf 29.06% Impervious Runoff Depth>0.54"
Flow Length=327' Tc=10.3 min CN=81 Runoff=0.36 cfs 0.019 af

Subcatchment PSC 5: Proposed Runoff Area=10,292 sf 44.84% Impervious Runoff Depth>0.73"
Flow Length=83' Tc=2.8 min CN=85 Runoff=0.37 cfs 0.014 af

Reach DP 1: Design Point Summation 1 Inflow=0.07 cfs 0.031 af
Outflow=0.07 cfs 0.031 af

Reach DS: Diversion Swale Avg. Flow Depth=0.04' Max Vel=0.36 fps Inflow=0.02 cfs 0.006 af
n=0.030 L=318.0' S=0.0063 '/' Capacity=15.57 cfs Outflow=0.02 cfs 0.005 af

Pond BR 1: Bioretention Area 1 Peak Elev=1.21' Storage=494 cf Inflow=0.42 cfs 0.024 af
Primary=0.04 cfs 0.013 af Secondary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.013 af

Pond BR 4: Bioretention Area 4 Peak Elev=2.86' Storage=688 cf Inflow=0.36 cfs 0.019 af
Primary=0.01 cfs 0.003 af Secondary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.003 af

Pond BR 5: Bioretention Area 5 Peak Elev=1.17' Storage=348 cf Inflow=0.37 cfs 0.014 af
Primary=0.03 cfs 0.007 af Secondary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.007 af

Pond Sed: Sediment Trap Peak Elev=0.00' Storage=0 cf
Primary=0.00 cfs 0.000 af

Total Runoff Area = 11.101 ac Runoff Volume = 0.066 af Average Runoff Depth = 0.07"
96.29% Pervious = 10.690 ac 3.71% Impervious = 0.411 ac

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Summary for Subcatchment OSC 2: Off-Site Subcatchment 2

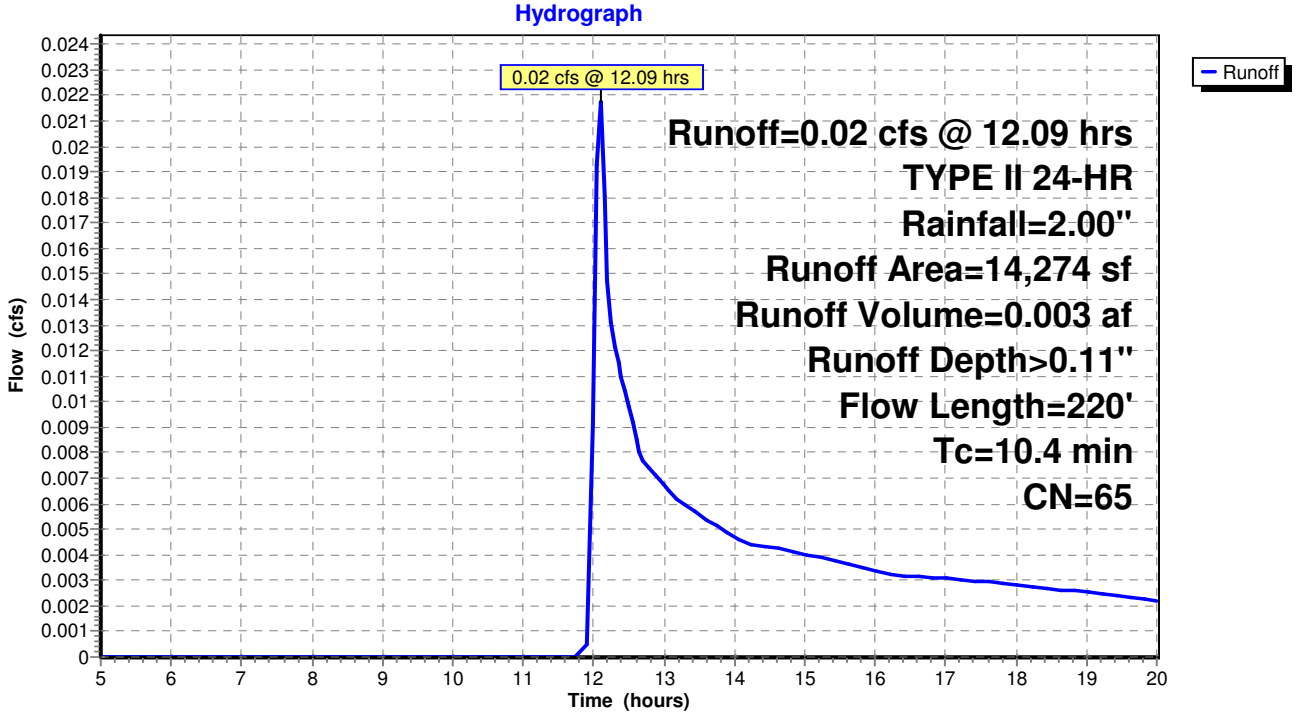
Runoff = 0.02 cfs @ 12.09 hrs, Volume= 0.003 af, Depth> 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=2.00"

Area (sf)	CN	Description
14,274	65	Brush, Good, HSG C
14,274		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	100	0.0350	0.20		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
1.9	120	0.0050	1.06		**Shallow Concentrated Flow, Balance of Flow to Channel** Grassed Waterway Kv= 15.0 fps
10.4	220	Total			

Subcatchment OSC 2: Off-Site Subcatchment 2



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Summary for Subcatchment OSC 4: Off-Site Subcatchment 4

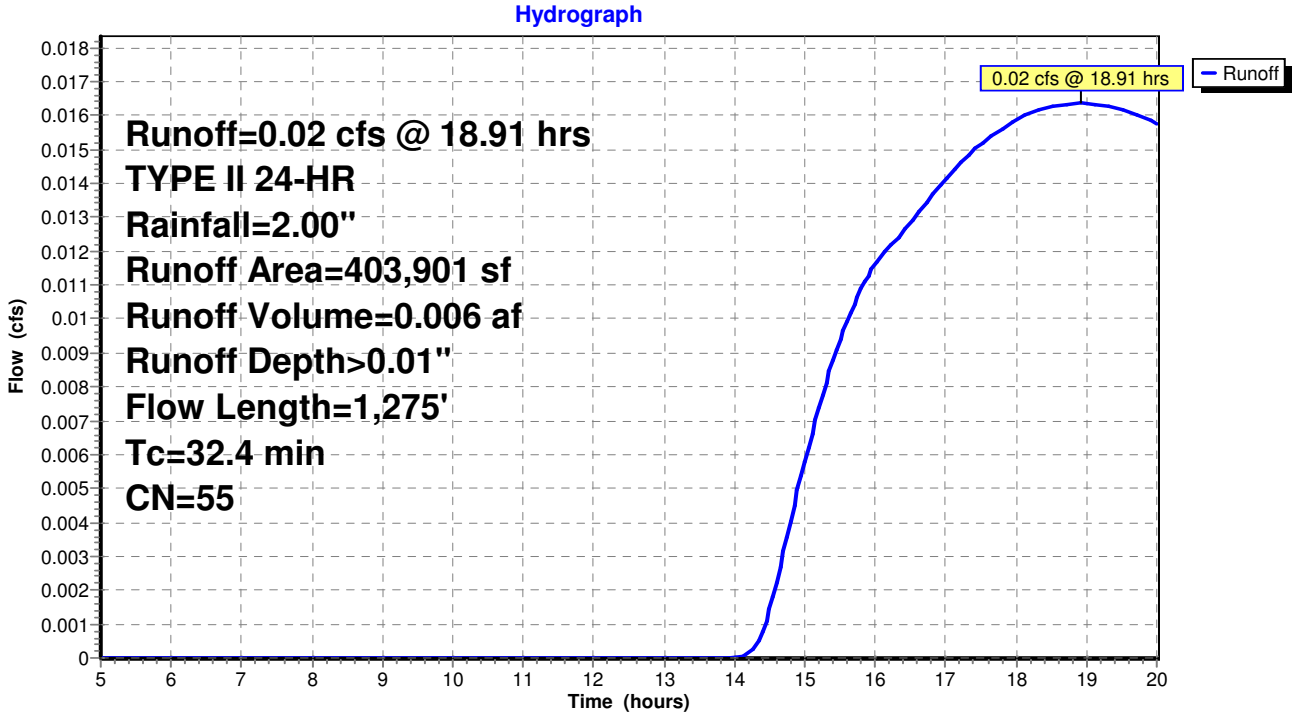
Runoff = 0.02 cfs @ 18.91 hrs, Volume= 0.006 af, Depth> 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=2.00"

Area (sf)	CN	Description
114,714	30	Brush, Good, HSG A
287,122	65	Brush, Good, HSG C
2,065	98	Unconnected roofs, HSG A
403,901	55	Weighted Average
401,836		99.49% Pervious Area
2,065		0.51% Impervious Area
2,065		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0100	0.08		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
11.9	1,175	0.0120	1.64		**Shallow Concentrated Flow, Balance of Flow** Grassed Waterway Kv= 15.0 fps
32.4	1,275	Total			

Subcatchment OSC 4: Off-Site Subcatchment 4



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Summary for Subcatchment PSC 1: Proposed Subcatchment 1

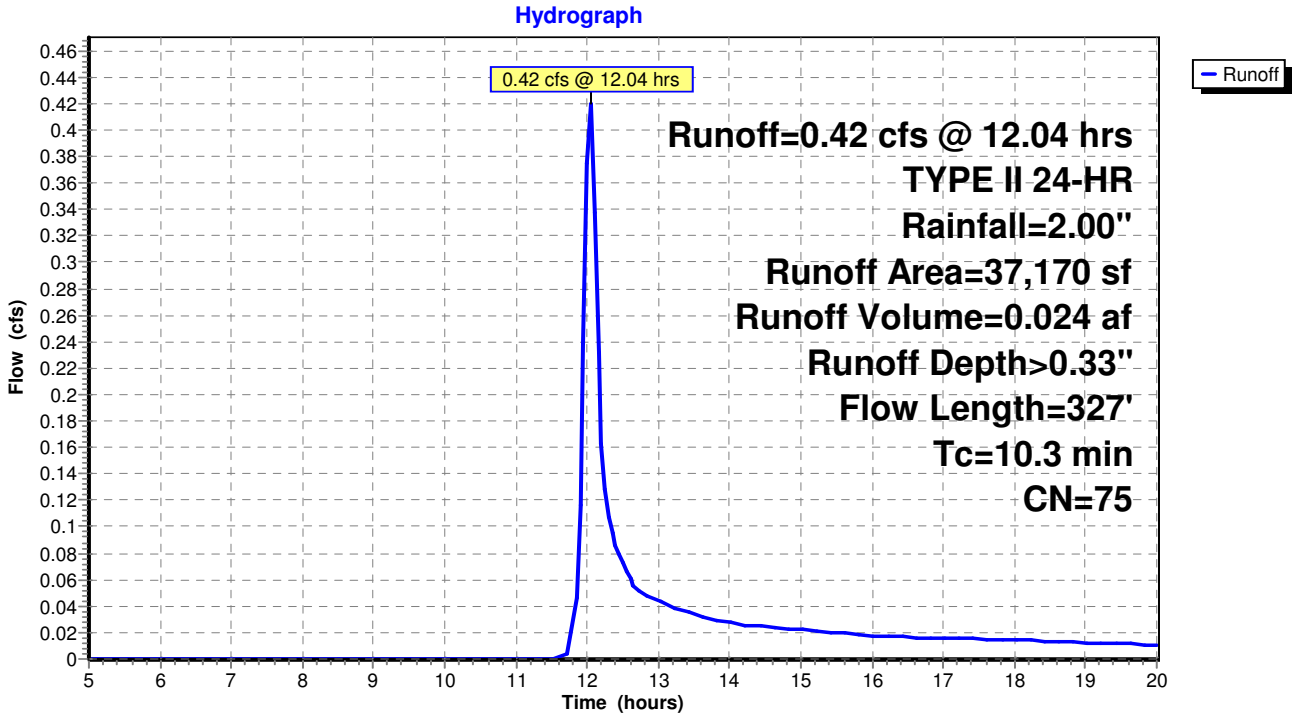
Runoff = 0.42 cfs @ 12.04 hrs, Volume= 0.024 af, Depth> 0.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=2.00"

Area (sf)	CN	Description
6,031	98	Paved parking & roofs
18,864	74	>75% Grass cover, Good, HSG C
12,275	65	Brush, Good, HSG C
37,170	75	Weighted Average
31,139		83.77% Pervious Area
6,031		16.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.0300	0.18		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
0.7	70	0.0140	1.77		**Shallow Concentrated Flow, Balance of Flow to Channel** Grassed Waterway Kv= 15.0 fps
0.5	157	0.0190	5.40	27.00	**Trap/Vee/Rect Channel Flow, Balance of Longest Flowpath** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.027
10.3	327	Total			

Subcatchment PSC 1: Proposed Subcatchment 1



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Summary for Subcatchment PSC 4: Proposed Subcatchment 4

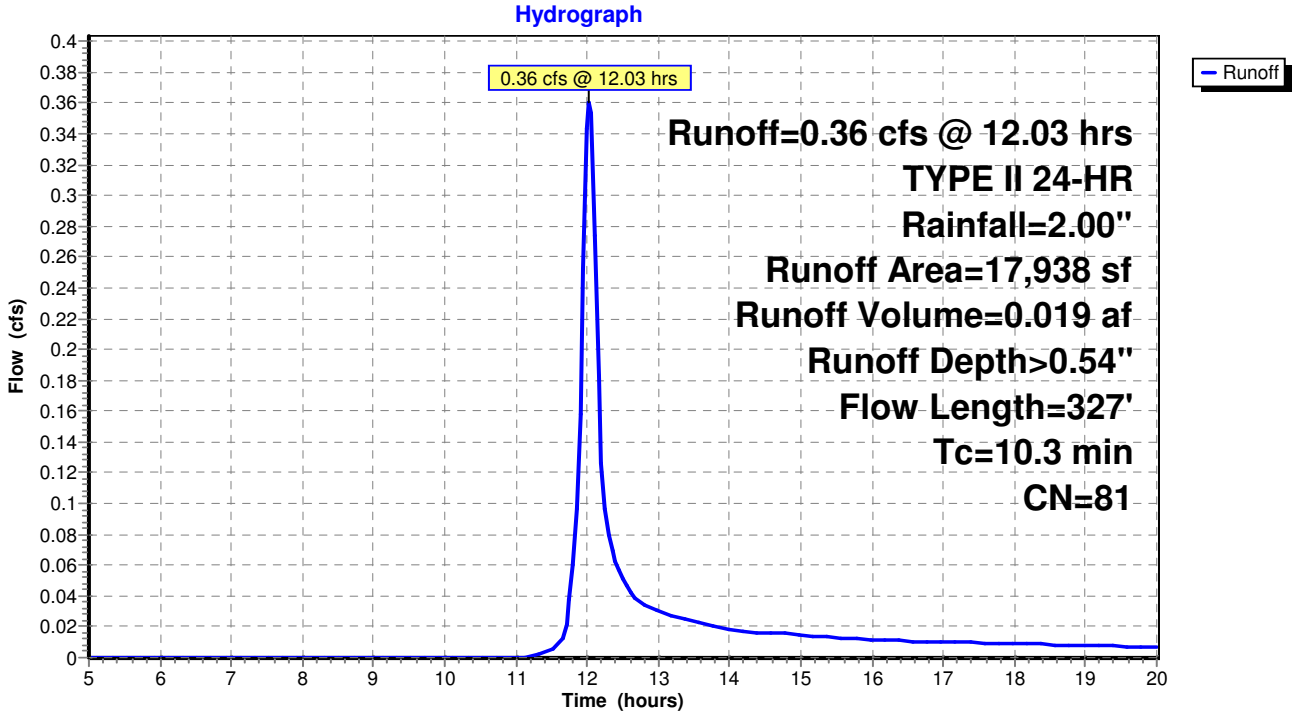
Runoff = 0.36 cfs @ 12.03 hrs, Volume= 0.019 af, Depth> 0.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=2.00"

Area (sf)	CN	Description
5,212	98	Paved parking & roofs
12,726	74	>75% Grass cover, Good, HSG C
17,938	81	Weighted Average
12,726		70.94% Pervious Area
5,212		29.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.0300	0.18		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
0.7	70	0.0140	1.77		**Shallow Concentrated Flow, Balance of Flow to Channel** Grassed Waterway Kv= 15.0 fps
0.5	157	0.0190	5.40	27.00	**Trap/Vee/Rect Channel Flow, Balance of Longest Flowpath** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.027
10.3	327	Total			

Subcatchment PSC 4: Proposed Subcatchment 4



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Summary for Subcatchment PSC 5: Proposed Subcatchment 5

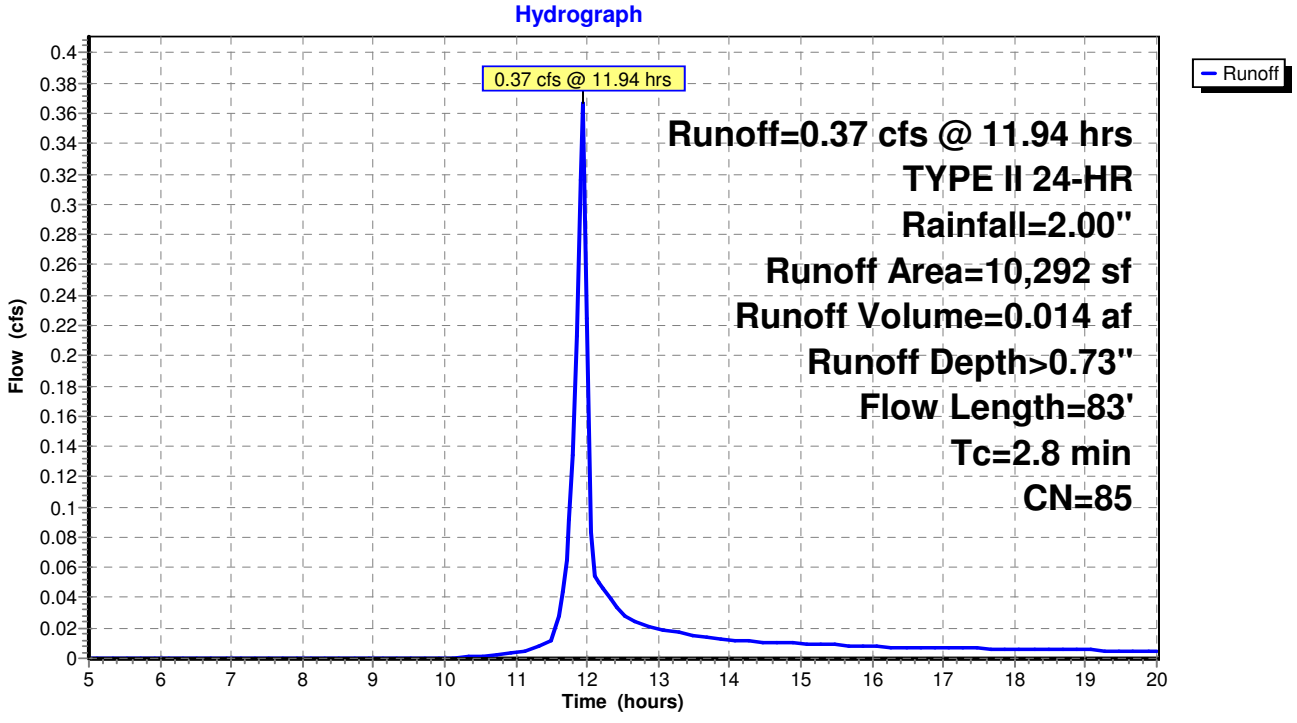
Runoff = 0.37 cfs @ 11.94 hrs, Volume= 0.014 af, Depth> 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=2.00"

Area (sf)	CN	Description
4,615	98	Paved parking & roofs
5,677	74	>75% Grass cover, Good, HSG C
10,292	85	Weighted Average
5,677		55.16% Pervious Area
4,615		44.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	23	0.0860	0.21		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
1.0	60	0.0140	0.99		**Sheet Flow, First 100' Flowpath** Smooth surfaces n= 0.011 P2= 2.70"
2.8	83	Total			

Subcatchment PSC 5: Proposed Subcatchment 5



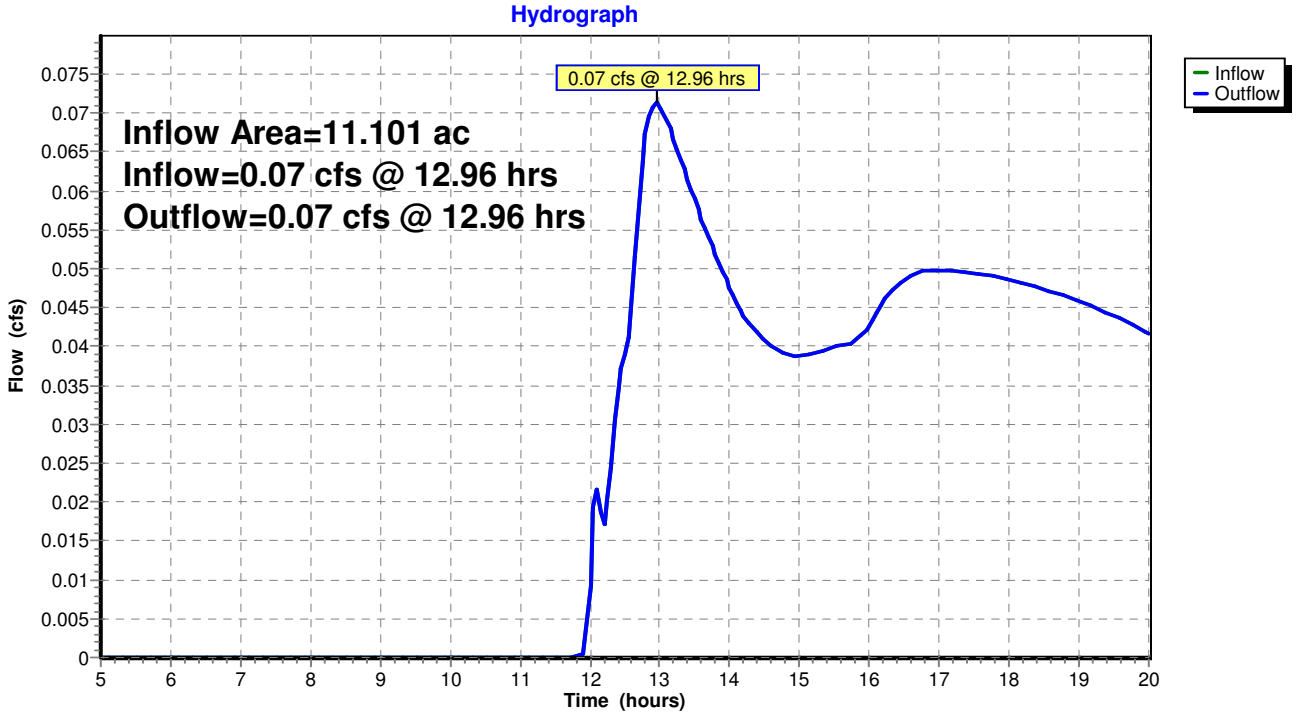
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Summary for Reach DP 1: Design Point Summation 1

Inflow Area = 11.101 ac, 3.71% Impervious, Inflow Depth > 0.03"
Inflow = 0.07 cfs @ 12.96 hrs, Volume= 0.031 af
Outflow = 0.07 cfs @ 12.96 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP 1: Design Point Summation 1



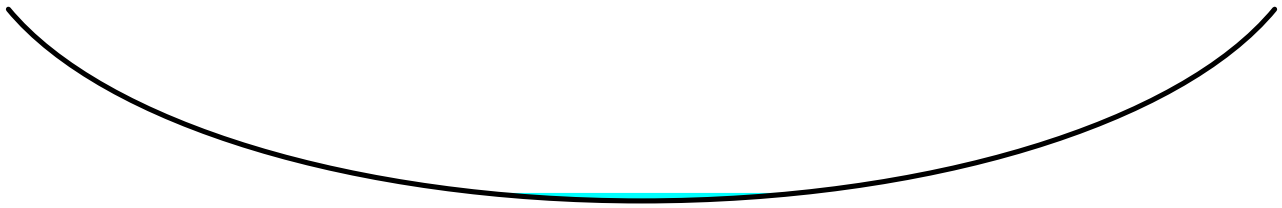
Summary for Reach DS: Diversion Swale

Inflow Area = 9.272 ac, 0.51% Impervious, Inflow Depth > 0.01"
Inflow = 0.02 cfs @ 18.91 hrs, Volume= 0.006 af
Outflow = 0.02 cfs @ 19.34 hrs, Volume= 0.005 af, Atten= 0%, Lag= 26.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.36 fps, Min. Travel Time= 14.7 min
Avg. Velocity = 0.31 fps, Avg. Travel Time= 16.9 min

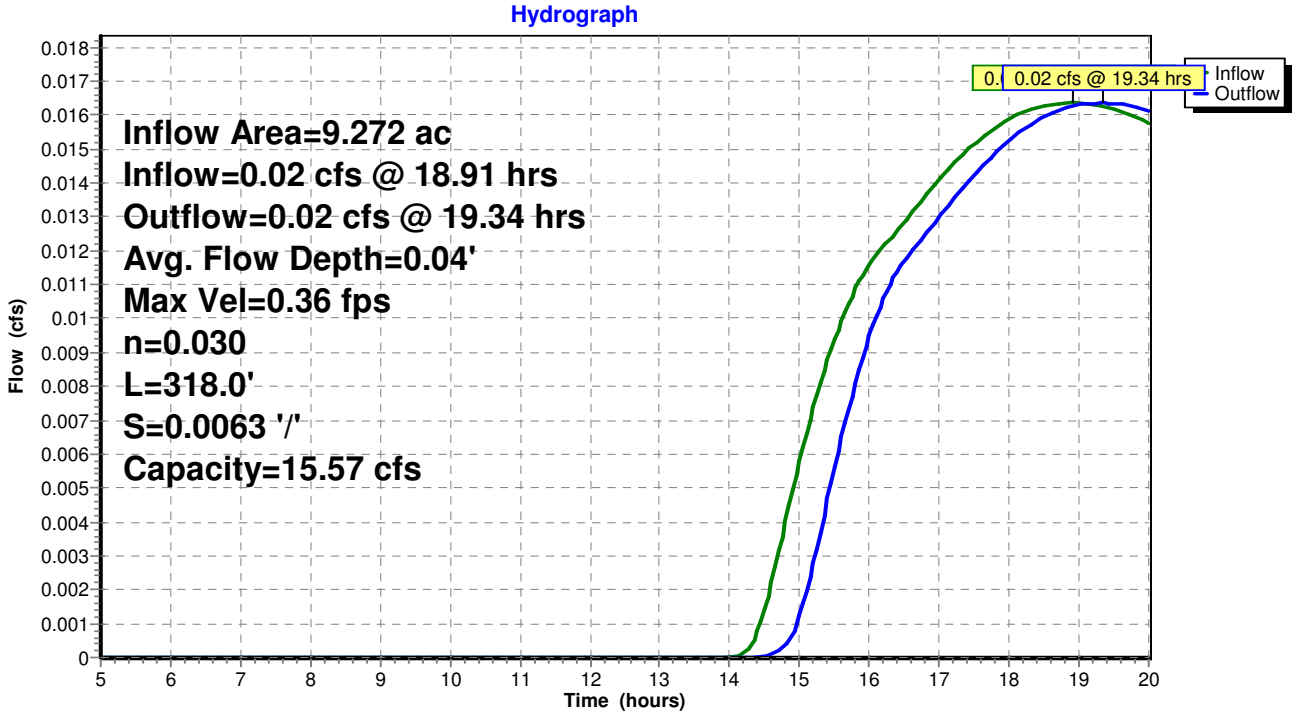
Peak Storage= 14 cf @ 19.10 hrs
Average Depth at Peak Storage= 0.04'
Bank-Full Depth= 1.00' Flow Area= 5.3 sf, Capacity= 15.57 cfs

8.00' x 1.00' deep Parabolic Channel, n= 0.030
Length= 318.0' Slope= 0.0063 '/'
Inlet Invert= 0.00', Outlet Invert= -2.00'



‡

Reach DS: Diversion Swale



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Summary for Pond BR 1: Bioretention Area 1

Inflow Area = 0.853 ac, 16.23% Impervious, Inflow Depth > 0.33"
Inflow = 0.42 cfs @ 12.04 hrs, Volume= 0.024 af
Outflow = 0.04 cfs @ 13.03 hrs, Volume= 0.013 af, Atten= 90%, Lag= 59.3 min
Primary = 0.04 cfs @ 13.03 hrs, Volume= 0.013 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 1.21' @ 13.03 hrs Surf.Area= 219 sf Storage= 494 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 2,454 cf

Plug-Flow detention time= 195.8 min calculated for 0.013 af (54% of inflow)
Center-of-Mass det. time= 95.9 min (930.8 - 834.9)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	2,454 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	438	0	0
1.00	438	438	438
1.10	219	33	471
3.50	219	526	996
3.51	1,094	7	1,003
4.50	1,669	1,368	2,371
4.60	0	83	2,454

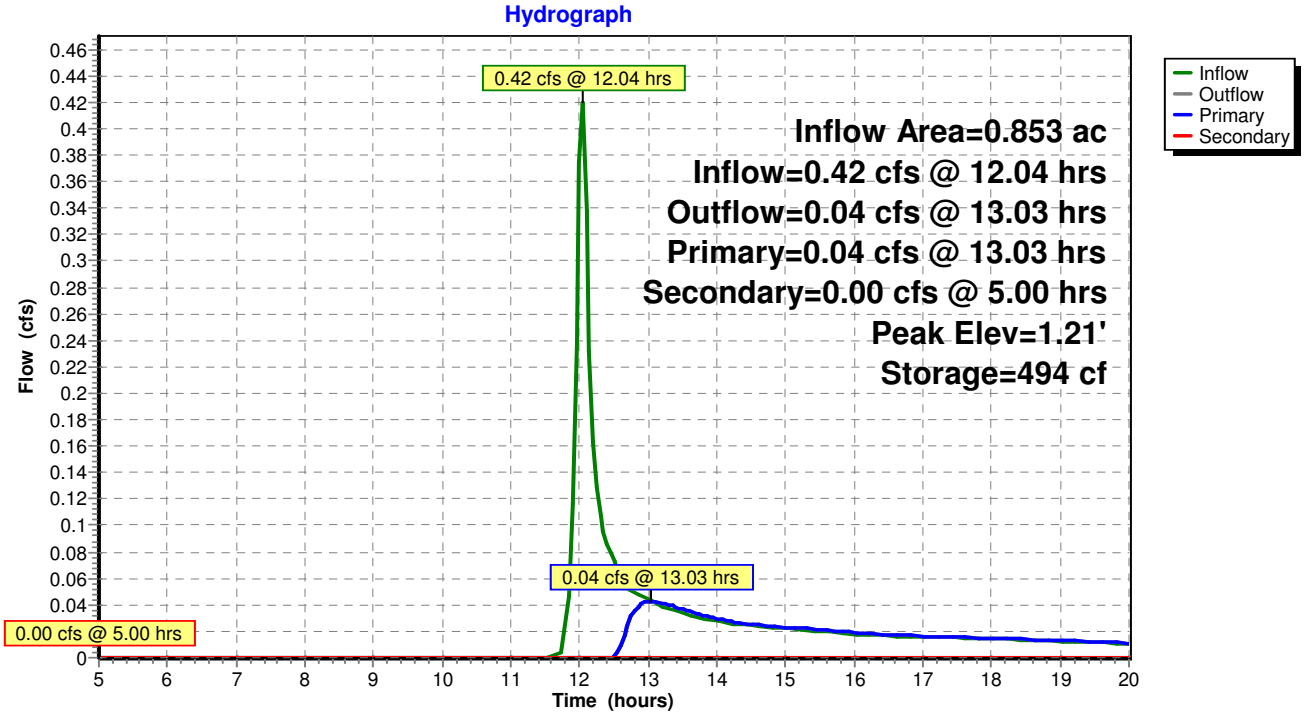
Device	Routing	Invert	Outlet Devices
#1	Secondary	4.00'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	1.00'	**4.0" Round Culvert** L= 197.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1.00' / 0.50' S= 0.0025 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.04 cfs @ 13.03 hrs HW=1.21' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.04 cfs @ 1.08 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=0.00' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Pond BR 1: Bioretention Area 1



Summary for Pond BR 4: Bioretention Area 4

Inflow Area = 0.412 ac, 29.06% Impervious, Inflow Depth > 0.54"
Inflow = 0.36 cfs @ 12.03 hrs, Volume= 0.019 af
Outflow = 0.01 cfs @ 17.02 hrs, Volume= 0.003 af, Atten= 97%, Lag= 299.1 min
Primary = 0.01 cfs @ 17.02 hrs, Volume= 0.003 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 2.86' @ 17.02 hrs Surf.Area= 176 sf Storage= 688 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 1,963 cf

Plug-Flow detention time= 366.5 min calculated for 0.003 af (16% of inflow)
Center-of-Mass det. time= 264.3 min (1,079.1 - 814.8)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	1,963 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	352	0	0
1.00	352	352	352
1.10	176	26	378
3.50	176	422	801
3.51	880	5	806
4.50	1,324	1,091	1,897
4.60	0	66	1,963

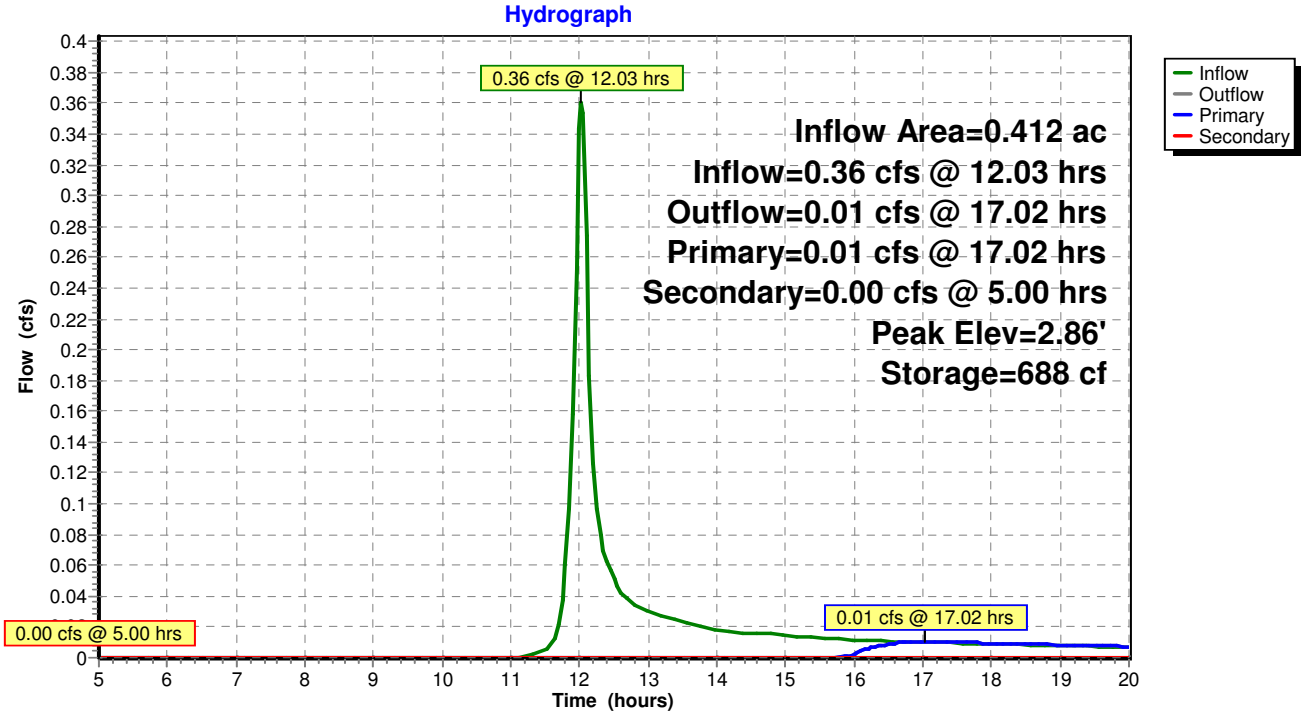
Device	Routing	Invert	Outlet Devices
#1	Secondary	4.00'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	2.75'	**4.0" Round Culvert** L= 157.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2.75' / 2.50' S= 0.0016 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.01 cfs @ 17.02 hrs HW=2.86' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.01 cfs @ 0.62 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=0.00' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Pond BR 4: Bioretention Area 4



Summary for Pond BR 5: Bioretention Area 5

Inflow Area = 0.236 ac, 44.84% Impervious, Inflow Depth > 0.73"
Inflow = 0.37 cfs @ 11.94 hrs, Volume= 0.014 af
Outflow = 0.03 cfs @ 12.52 hrs, Volume= 0.007 af, Atten= 92%, Lag= 35.0 min
Primary = 0.03 cfs @ 12.52 hrs, Volume= 0.007 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 1.17' @ 12.52 hrs Surf.Area= 157 sf Storage= 348 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 1,807 cf

Plug-Flow detention time= 193.2 min calculated for 0.007 af (47% of inflow)
Center-of-Mass det. time= 106.3 min (903.3 - 797.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	1,807 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	314	0	0
1.00	314	314	314
1.10	157	24	338
3.50	157	377	714
3.51	786	5	719
4.50	1,282	1,024	1,743
4.60	0	64	1,807

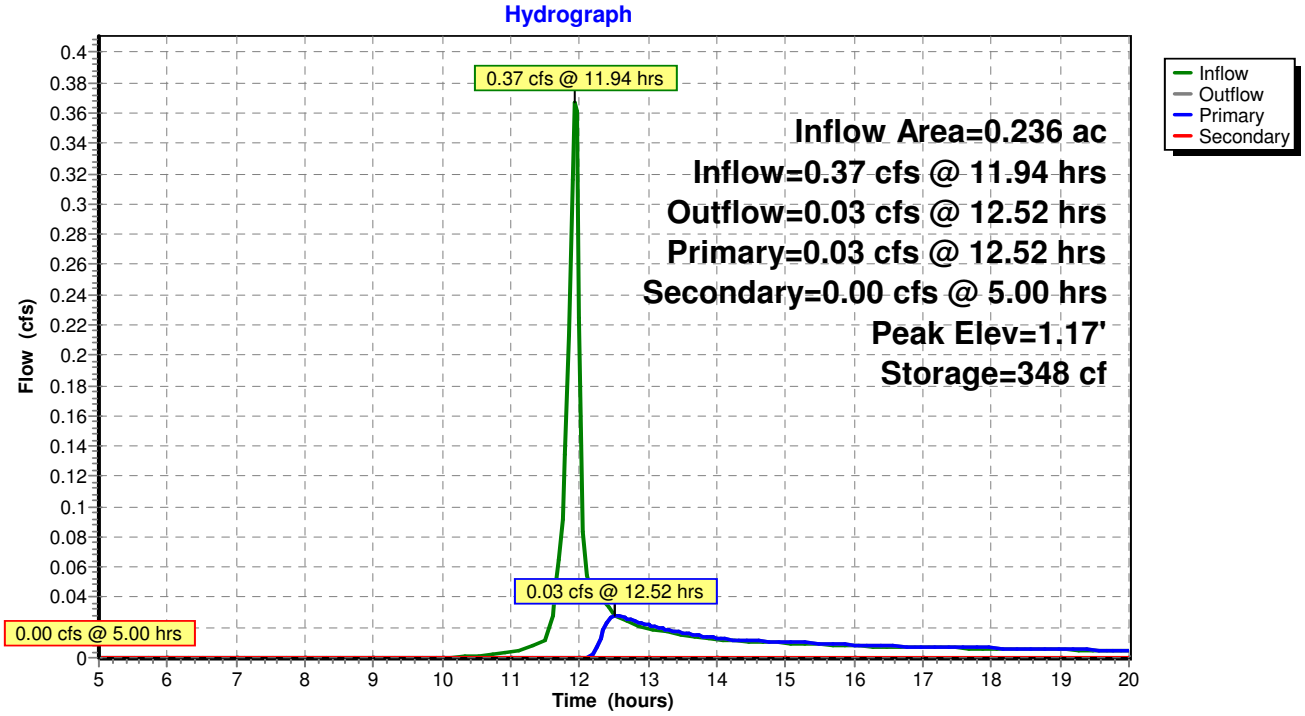
Device	Routing	Invert	Outlet Devices
#1	Secondary	4.00'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	1.00'	**4.0" Round Culvert** L= 219.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1.00' / 0.50' S= 0.0023 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.03 cfs @ 12.52 hrs HW=1.17' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.03 cfs @ 0.92 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=0.00' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Pond BR 5: Bioretention Area 5



Summary for Pond Sed: Sediment Trap

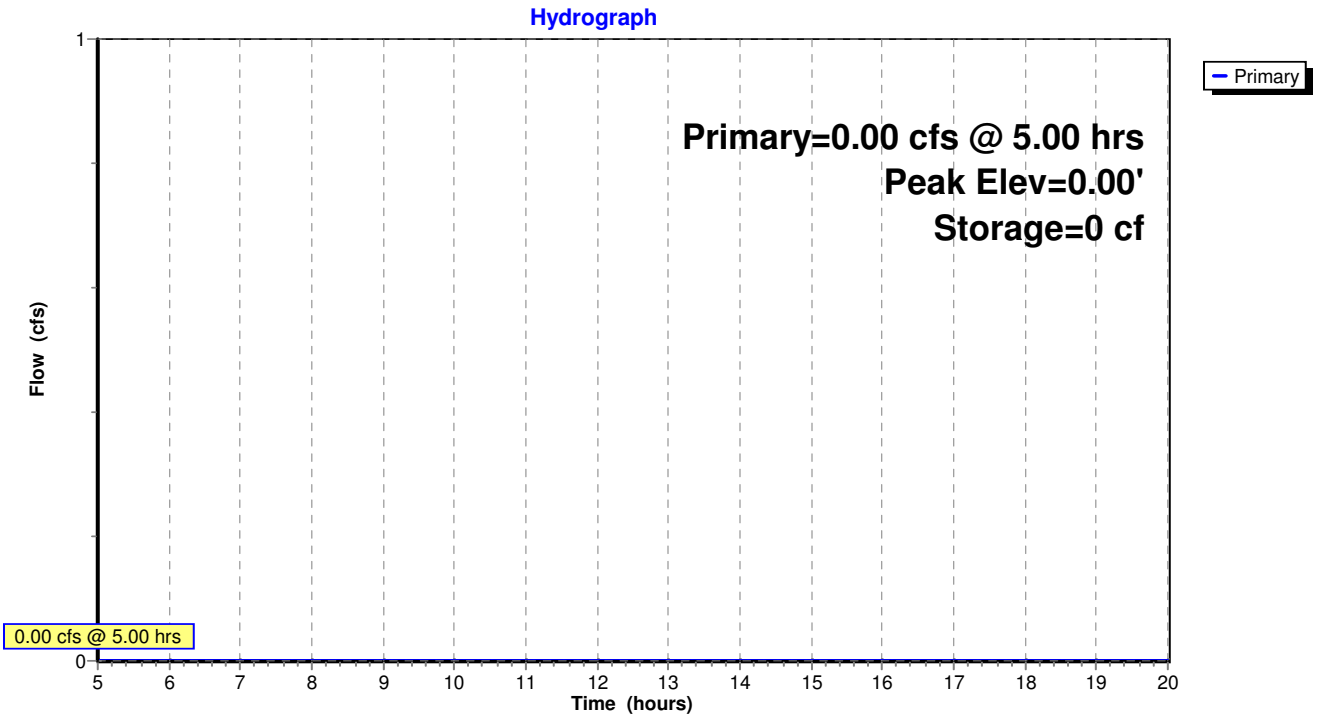
Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	22,831 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	3,425	0	0
1.00	5,874	4,650	4,650
2.00	8,774	7,324	11,974
3.00	11,765	10,270	22,243
3.10	0	588	22,831

Device	Routing	Invert	Outlet Devices
#1	Primary	2.00'	**6.0' long x 4.0' 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 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=0.00' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond Sed: Sediment Trap



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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.856	74	>75% Grass cover, Good, HSG C (PSC 1, PSC 4, PSC 5)
2.633	30	Brush, Good, HSG A (OSC 4)
7.201	65	Brush, Good, HSG C (OSC 2, OSC 4, PSC 1)
0.364	98	Paved parking & roofs (PSC 1, PSC 4, PSC 5)
0.047	98	Unconnected roofs, HSG A (OSC 4)
11.101	**59**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.681	HSG A	OSC 4
0.000	HSG B	
8.056	HSG C	OSC 2, OSC 4, PSC 1, PSC 4, PSC 5
0.000	HSG D	
0.364	Other	PSC 1, PSC 4, PSC 5
11.101		**TOTAL AREA**

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.856	0.000	0.000	0.856	>75% Grass cover, Good	PSC 1, PSC 4, PSC 5
2.633	0.000	7.201	0.000	0.000	9.834	Brush, Good	OSC 2, OSC 4, PSC 1
0.000	0.000	0.000	0.000	0.364	0.364	Paved parking & roofs	PSC 1, PSC 4, PSC 5
0.047	0.000	0.000	0.000	0.000	0.047	Unconnected roofs	OSC 4
2.681	**0.000**	**8.056**	**0.000**	**0.364**	**11.101**	**TOTAL AREA**	

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	BR 1	1.00	0.50	197.0	0.0025	0.013	4.0	0.0	0.0
2	BR 4	2.75	2.50	157.0	0.0016	0.013	4.0	0.0	0.0
3	BR 5	1.00	0.50	219.0	0.0023	0.013	4.0	0.0	0.0

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment OSC 2: Off-Site Runoff Area=14,274 sf 0.00% Impervious Runoff Depth>0.62"
Flow Length=220' Tc=10.4 min CN=65 Runoff=0.30 cfs 0.017 af

Subcatchment OSC 4: Off-Site Runoff Area=403,901 sf 0.51% Impervious Runoff Depth>0.26"
Flow Length=1,275' Tc=32.4 min CN=55 Runoff=1.09 cfs 0.197 af

Subcatchment PSC 1: Proposed Runoff Area=37,170 sf 16.23% Impervious Runoff Depth>1.11"
Flow Length=327' Tc=10.3 min CN=75 Runoff=1.55 cfs 0.079 af

Subcatchment PSC 4: Proposed Runoff Area=17,938 sf 29.06% Impervious Runoff Depth>1.49"
Flow Length=327' Tc=10.3 min CN=81 Runoff=1.00 cfs 0.051 af

Subcatchment PSC 5: Proposed Runoff Area=10,292 sf 44.84% Impervious Runoff Depth>1.79"
Flow Length=83' Tc=2.8 min CN=85 Runoff=0.87 cfs 0.035 af

Reach DP 1: Design Point Summation 1 Inflow=1.64 cfs 0.343 af
Outflow=1.64 cfs 0.343 af

Reach DS: Diversion Swale Avg. Flow Depth=0.29' Max Vel=1.30 fps Inflow=1.09 cfs 0.197 af
n=0.030 L=318.0' S=0.0063 '/' Capacity=15.57 cfs Outflow=1.06 cfs 0.195 af

Pond BR 1: Bioretention Area 1 Peak Elev=3.86' Storage=1,481 cf Inflow=1.55 cfs 0.079 af
Primary=0.23 cfs 0.068 af Secondary=0.00 cfs 0.000 af Outflow=0.23 cfs 0.068 af

Pond BR 4: Bioretention Area 4 Peak Elev=3.79' Storage=1,113 cf Inflow=1.00 cfs 0.051 af
Primary=0.14 cfs 0.035 af Secondary=0.00 cfs 0.000 af Outflow=0.14 cfs 0.035 af

Pond BR 5: Bioretention Area 5 Peak Elev=3.51' Storage=719 cf Inflow=0.87 cfs 0.035 af
Primary=0.20 cfs 0.027 af Secondary=0.00 cfs 0.000 af Outflow=0.20 cfs 0.027 af

Pond Sed: Sediment Trap Peak Elev=0.00' Storage=0 cf
Primary=0.00 cfs 0.000 af

Total Runoff Area = 11.101 ac Runoff Volume = 0.380 af Average Runoff Depth = 0.41"
96.29% Pervious = 10.690 ac 3.71% Impervious = 0.411 ac

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Summary for Subcatchment OSC 2: Off-Site Subcatchment 2

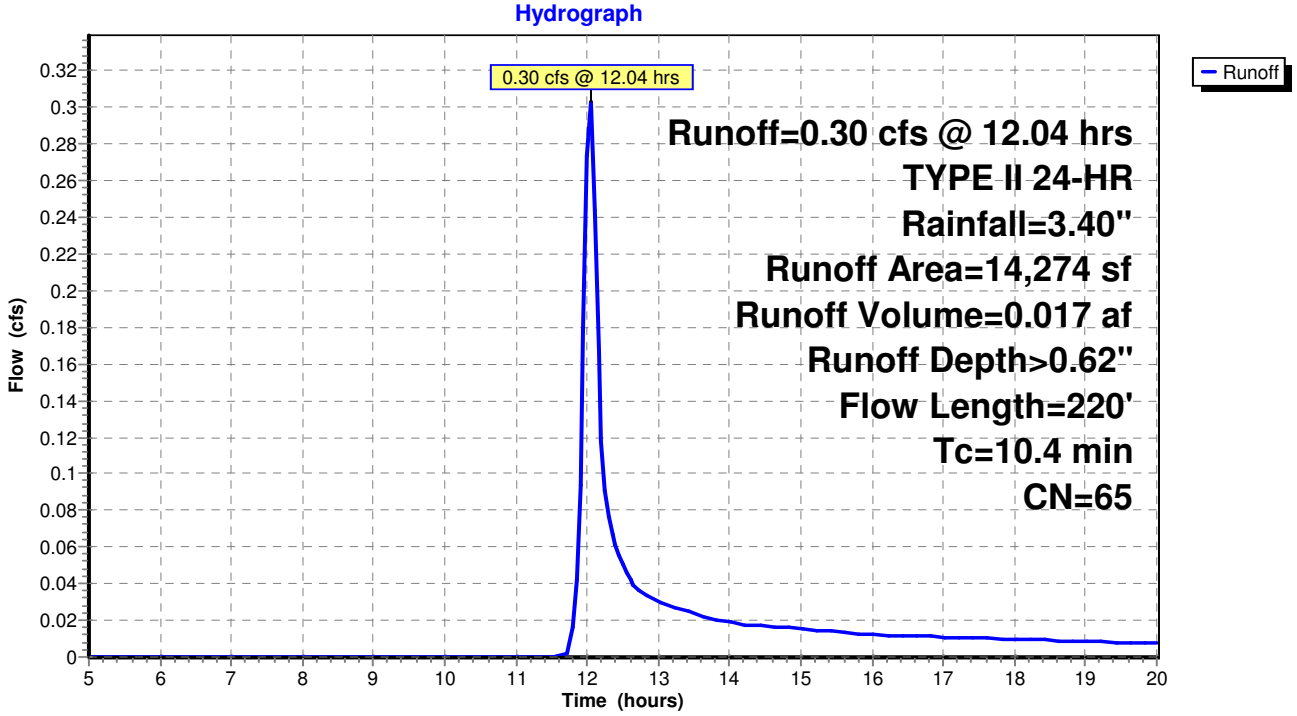
Runoff = 0.30 cfs @ 12.04 hrs, Volume= 0.017 af, Depth> 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=3.40"

Area (sf)	CN	Description
14,274	65	Brush, Good, HSG C
14,274		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	100	0.0350	0.20		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
1.9	120	0.0050	1.06		**Shallow Concentrated Flow, Balance of Flow to Channel** Grassed Waterway Kv= 15.0 fps
10.4	220	Total			

Subcatchment OSC 2: Off-Site Subcatchment 2



Summary for Subcatchment OSC 4: Off-Site Subcatchment 4

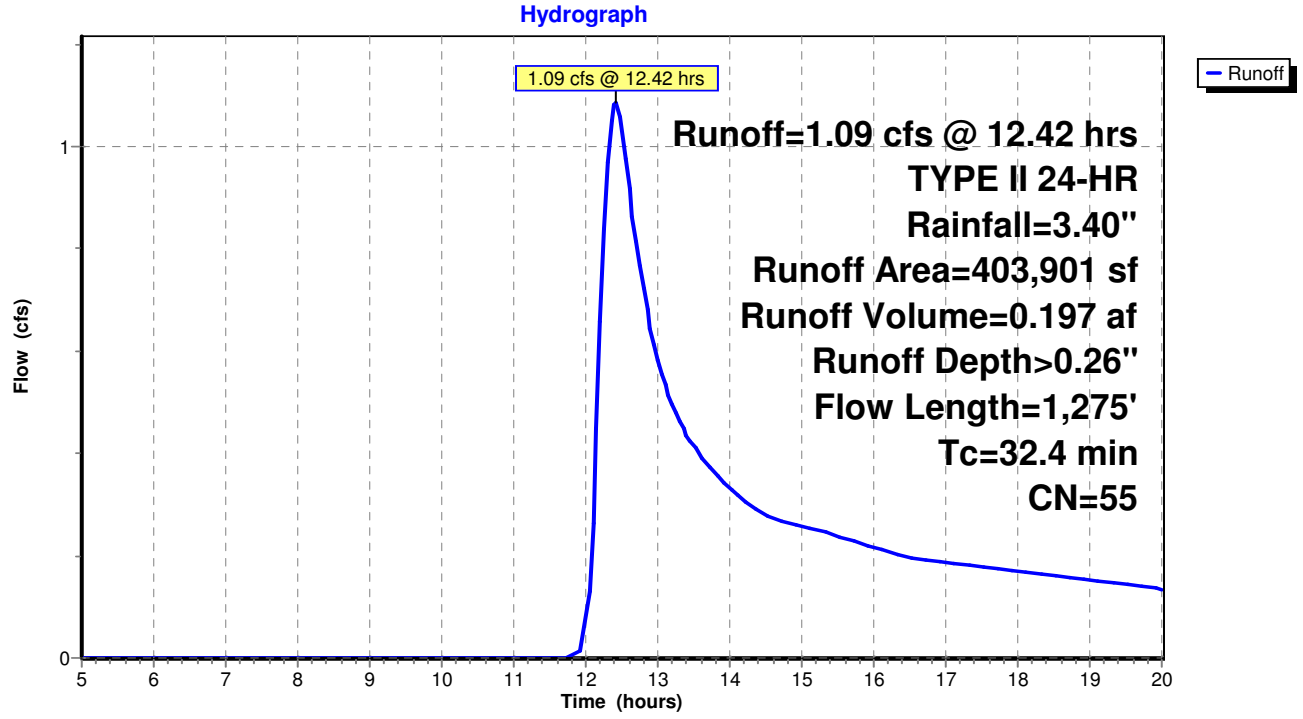
Runoff = 1.09 cfs @ 12.42 hrs, Volume= 0.197 af, Depth> 0.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=3.40"

Area (sf)	CN	Description
114,714	30	Brush, Good, HSG A
287,122	65	Brush, Good, HSG C
2,065	98	Unconnected roofs, HSG A
403,901	55	Weighted Average
401,836		99.49% Pervious Area
2,065		0.51% Impervious Area
2,065		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0100	0.08		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
11.9	1,175	0.0120	1.64		**Shallow Concentrated Flow, Balance of Flow** Grassed Waterway Kv= 15.0 fps
32.4	1,275	Total			

Subcatchment OSC 4: Off-Site Subcatchment 4



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Summary for Subcatchment PSC 1: Proposed Subcatchment 1

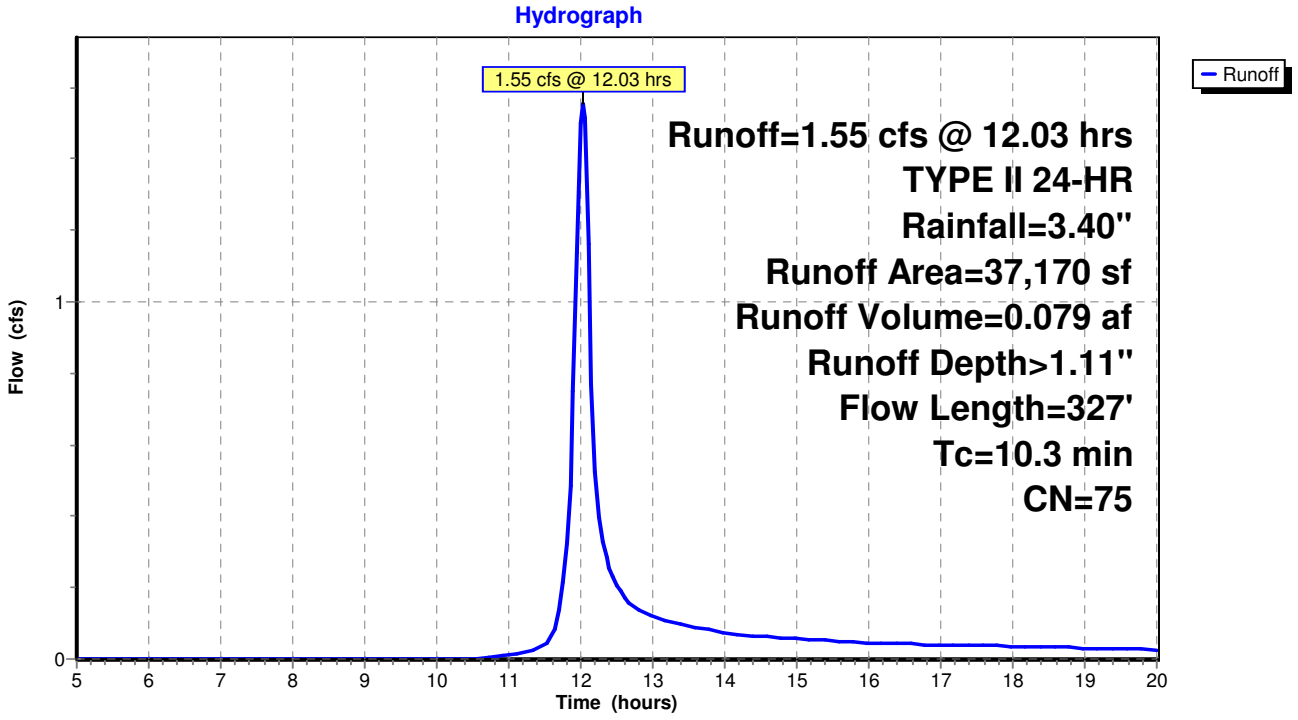
Runoff = 1.55 cfs @ 12.03 hrs, Volume= 0.079 af, Depth> 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=3.40"

Area (sf)	CN	Description
6,031	98	Paved parking & roofs
18,864	74	>75% Grass cover, Good, HSG C
12,275	65	Brush, Good, HSG C
37,170	75	Weighted Average
31,139		83.77% Pervious Area
6,031		16.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.0300	0.18		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
0.7	70	0.0140	1.77		**Shallow Concentrated Flow, Balance of Flow to Channel** Grassed Waterway Kv= 15.0 fps
0.5	157	0.0190	5.40	27.00	**Trap/Vee/Rect Channel Flow, Balance of Longest Flowpath** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.027
10.3	327	Total			

Subcatchment PSC 1: Proposed Subcatchment 1



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Summary for Subcatchment PSC 4: Proposed Subcatchment 4

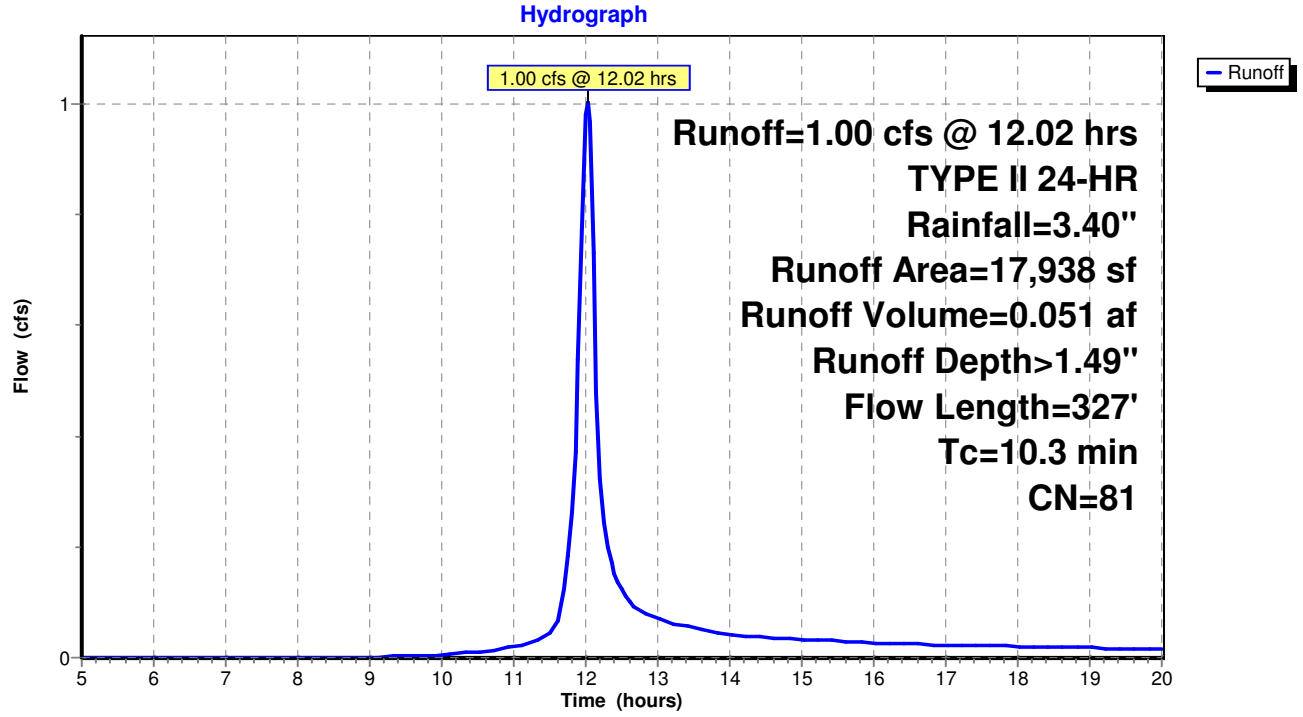
Runoff = 1.00 cfs @ 12.02 hrs, Volume= 0.051 af, Depth> 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=3.40"

Area (sf)	CN	Description
5,212	98	Paved parking & roofs
12,726	74	>75% Grass cover, Good, HSG C
17,938	81	Weighted Average
12,726		70.94% Pervious Area
5,212		29.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.0300	0.18		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
0.7	70	0.0140	1.77		**Shallow Concentrated Flow, Balance of Flow to Channel** Grassed Waterway Kv= 15.0 fps
0.5	157	0.0190	5.40	27.00	**Trap/Vee/Rect Channel Flow, Balance of Longest Flowpath** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.027
10.3	327	Total			

Subcatchment PSC 4: Proposed Subcatchment 4



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Summary for Subcatchment PSC 5: Proposed Subcatchment 5

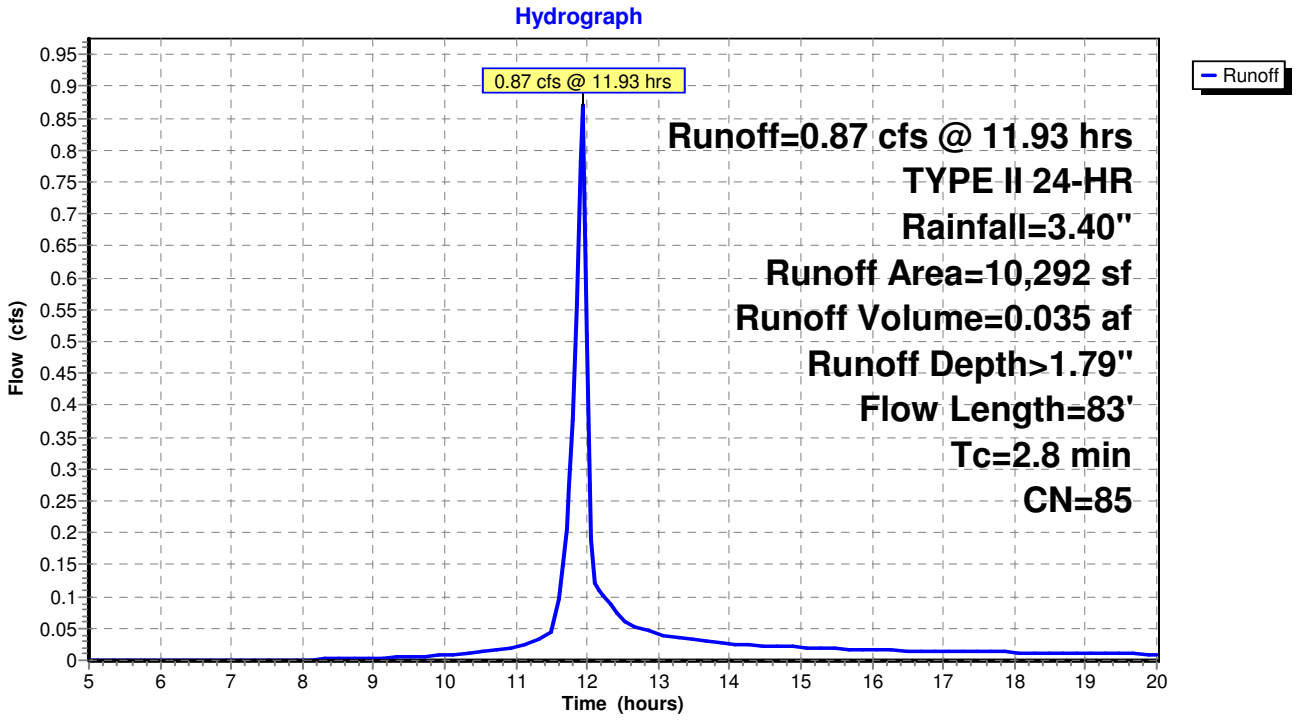
Runoff = 0.87 cfs @ 11.93 hrs, Volume= 0.035 af, Depth> 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=3.40"

Area (sf)	CN	Description
4,615	98	Paved parking & roofs
5,677	74	>75% Grass cover, Good, HSG C
10,292	85	Weighted Average
5,677		55.16% Pervious Area
4,615		44.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	23	0.0860	0.21		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
1.0	60	0.0140	0.99		**Sheet Flow, First 100' Flowpath** Smooth surfaces n= 0.011 P2= 2.70"
2.8	83	Total			

Subcatchment PSC 5: Proposed Subcatchment 5

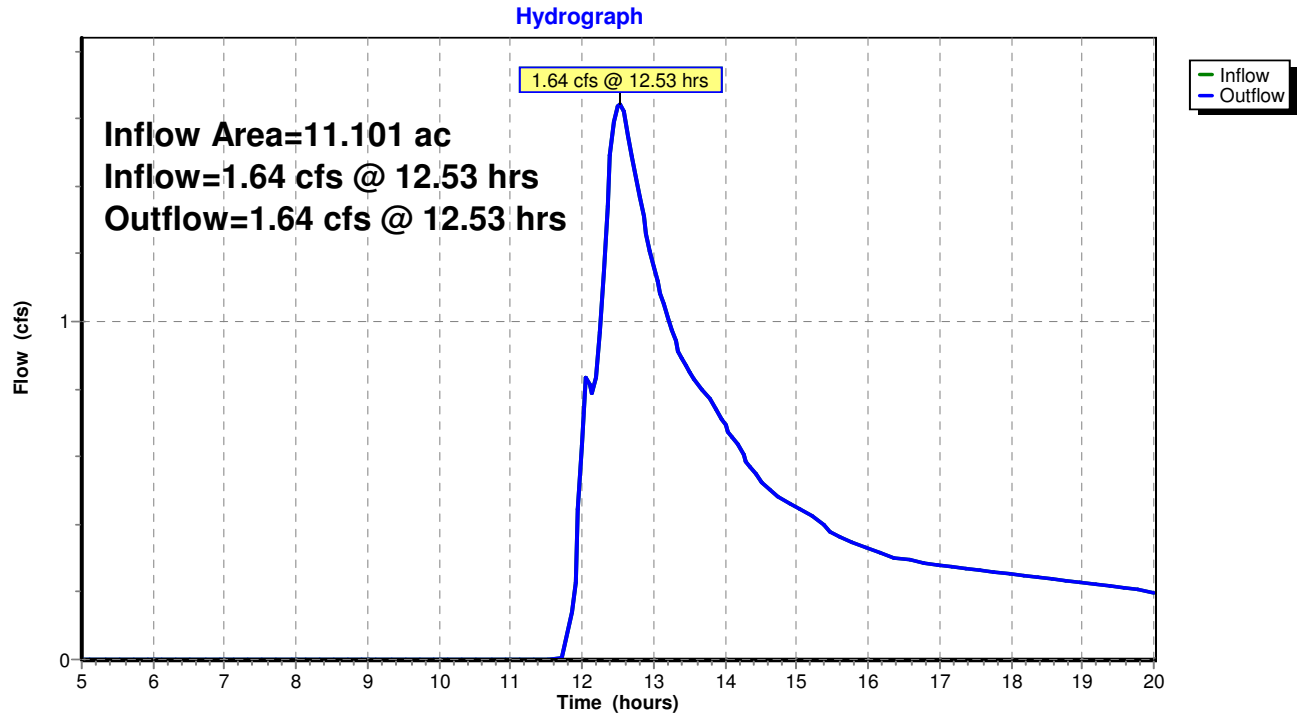


Summary for Reach DP 1: Design Point Summation 1

Inflow Area = 11.101 ac, 3.71% Impervious, Inflow Depth > 0.37"
Inflow = 1.64 cfs @ 12.53 hrs, Volume= 0.343 af
Outflow = 1.64 cfs @ 12.53 hrs, Volume= 0.343 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP 1: Design Point Summation 1



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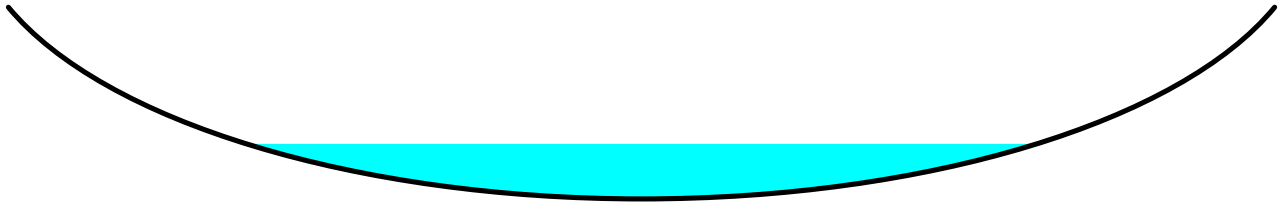
Summary for Reach DS: Diversion Swale

Inflow Area = 9.272 ac, 0.51% Impervious, Inflow Depth > 0.26"
Inflow = 1.09 cfs @ 12.42 hrs, Volume= 0.197 af
Outflow = 1.06 cfs @ 12.54 hrs, Volume= 0.195 af, Atten= 2%, Lag= 7.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.30 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 0.83 fps, Avg. Travel Time= 6.4 min

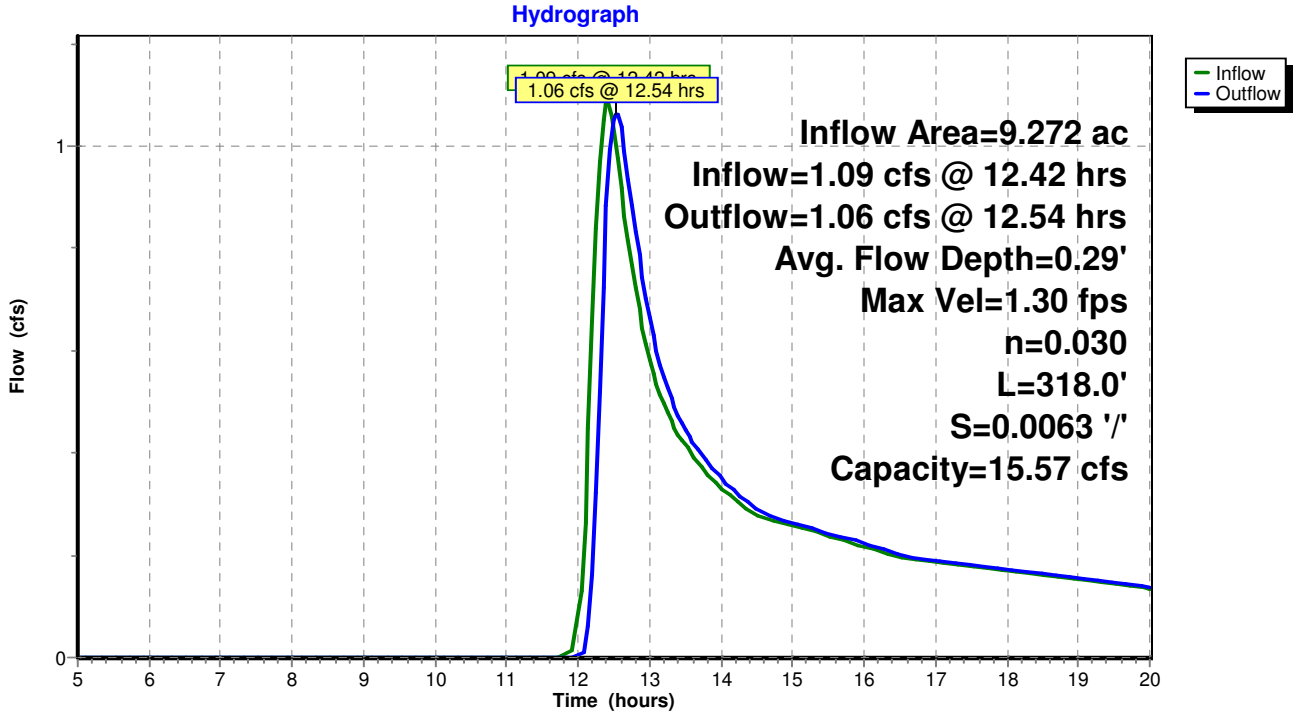
Peak Storage= 262 cf @ 12.47 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00' Flow Area= 5.3 sf, Capacity= 15.57 cfs

8.00' x 1.00' deep Parabolic Channel, n= 0.030
Length= 318.0' Slope= 0.0063 '/'
Inlet Invert= 0.00', Outlet Invert= -2.00'



‡

Reach DS: Diversion Swale



Summary for Pond BR 1: Bioretention Area 1

Inflow Area = 0.853 ac, 16.23% Impervious, Inflow Depth > 1.11"
Inflow = 1.55 cfs @ 12.03 hrs, Volume= 0.079 af
Outflow = 0.23 cfs @ 12.46 hrs, Volume= 0.068 af, Atten= 85%, Lag= 25.7 min
Primary = 0.23 cfs @ 12.46 hrs, Volume= 0.068 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 3.86' @ 12.46 hrs Surf.Area= 1,295 sf Storage= 1,481 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 2,454 cf

Plug-Flow detention time= 97.3 min calculated for 0.068 af (86% of inflow)
Center-of-Mass det. time= 53.7 min (860.7 - 807.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	2,454 cf	**Custom Stage Data (Prismatic)** Listed below

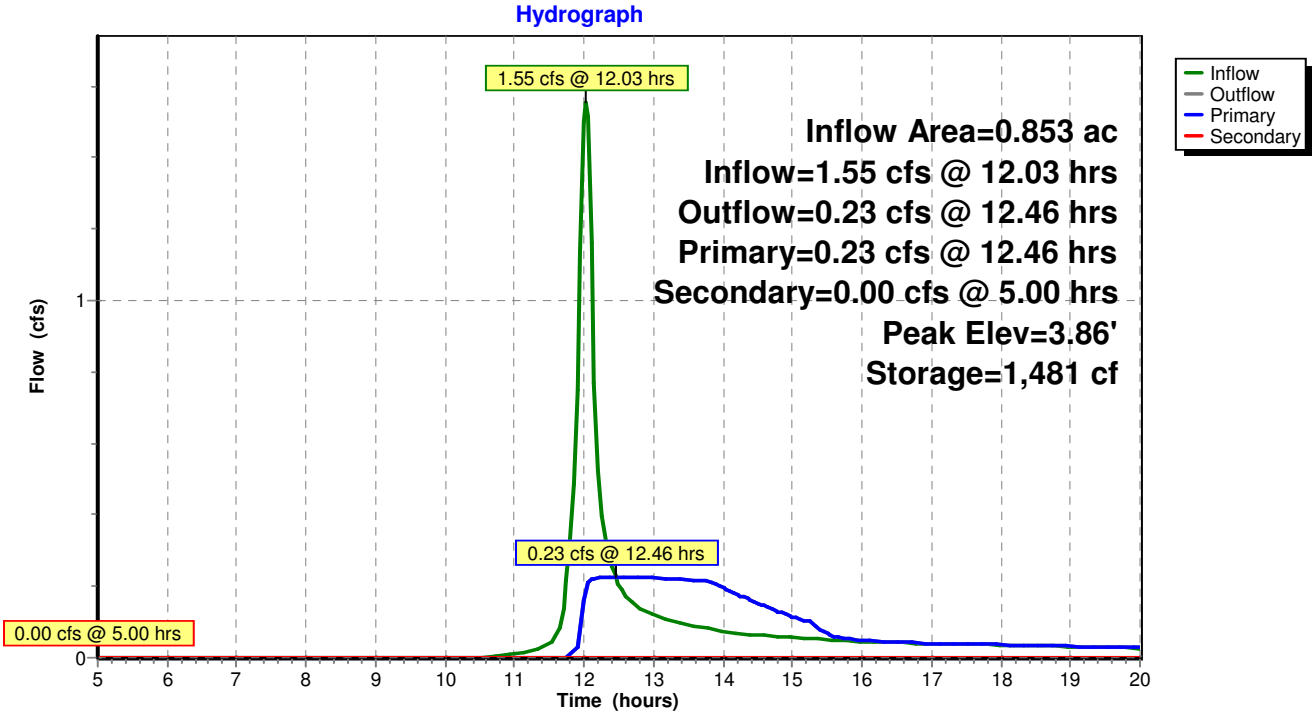
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	438	0	0
1.00	438	438	438
1.10	219	33	471
3.50	219	526	996
3.51	1,094	7	1,003
4.50	1,669	1,368	2,371
4.60	0	83	2,454

Device	Routing	Invert	Outlet Devices
#1	Secondary	4.00'	**6.0' long x 2.0' 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 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	1.00'	**4.0" Round Culvert** L= 197.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1.00' / 0.50' S= 0.0025 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.23 cfs @ 12.46 hrs HW=3.86' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.23 cfs @ 2.61 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=0.00' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond BR 1: Bioretention Area 1



Summary for Pond BR 4: Bioretention Area 4

Inflow Area = 0.412 ac, 29.06% Impervious, Inflow Depth > 1.49"
Inflow = 1.00 cfs @ 12.02 hrs, Volume= 0.051 af
Outflow = 0.14 cfs @ 12.43 hrs, Volume= 0.035 af, Atten= 86%, Lag= 24.6 min
Primary = 0.14 cfs @ 12.43 hrs, Volume= 0.035 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 3.79' @ 12.43 hrs Surf.Area= 1,005 sf Storage= 1,113 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 1,963 cf

Plug-Flow detention time= 133.1 min calculated for 0.035 af (69% of inflow)
Center-of-Mass det. time= 63.8 min (857.4 - 793.6)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	1,963 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	352	0	0
1.00	352	352	352
1.10	176	26	378
3.50	176	422	801
3.51	880	5	806
4.50	1,324	1,091	1,897
4.60	0	66	1,963

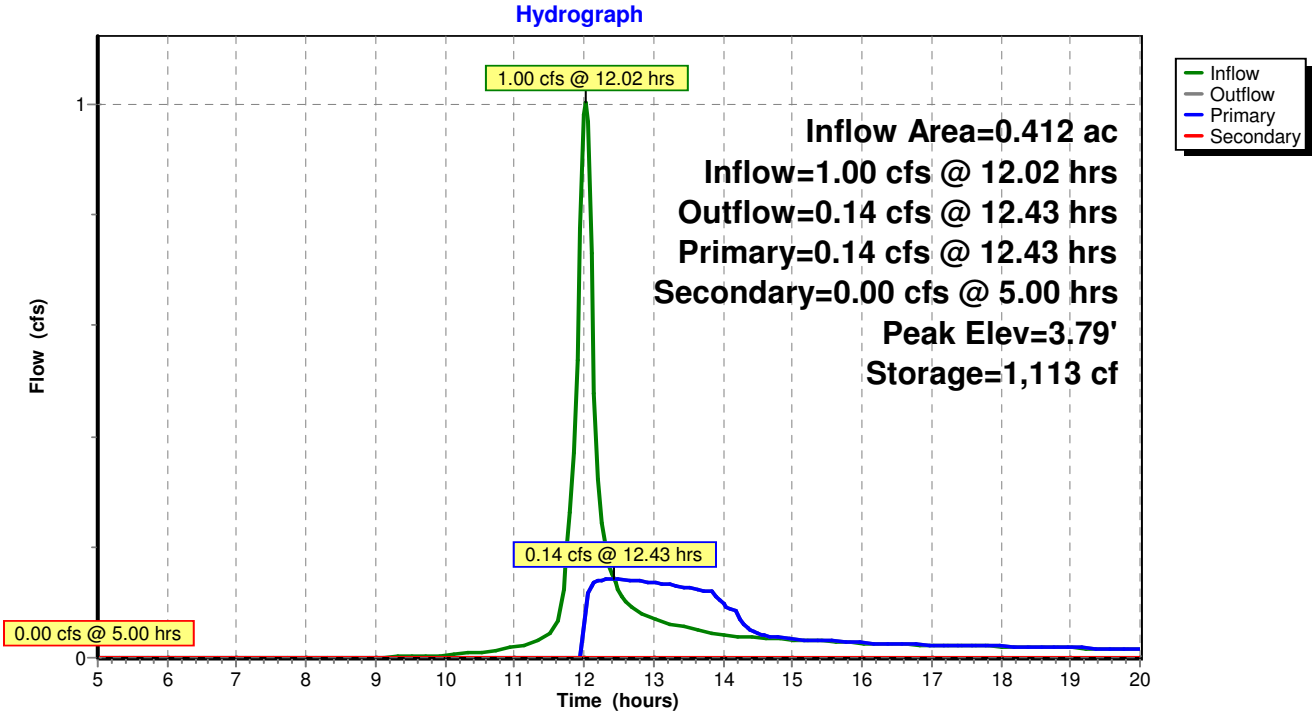
Device	Routing	Invert	Outlet Devices
#1	Secondary	4.00'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	2.75'	**4.0" Round Culvert** L= 157.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2.75' / 2.50' S= 0.0016 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.14 cfs @ 12.43 hrs HW=3.79' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.14 cfs @ 1.63 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=0.00' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Pond BR 4: Bioretention Area 4



Summary for Pond BR 5: Bioretention Area 5

Inflow Area = 0.236 ac, 44.84% Impervious, Inflow Depth > 1.79"
Inflow = 0.87 cfs @ 11.93 hrs, Volume= 0.035 af
Outflow = 0.20 cfs @ 12.06 hrs, Volume= 0.027 af, Atten= 77%, Lag= 7.8 min
Primary = 0.20 cfs @ 12.06 hrs, Volume= 0.027 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 3.51' @ 12.06 hrs Surf.Area= 786 sf Storage= 719 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 1,807 cf

Plug-Flow detention time= 101.7 min calculated for 0.027 af (78% of inflow)
Center-of-Mass det. time= 44.1 min (821.9 - 777.8)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	1,807 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	314	0	0
1.00	314	314	314
1.10	157	24	338
3.50	157	377	714
3.51	786	5	719
4.50	1,282	1,024	1,743
4.60	0	64	1,807

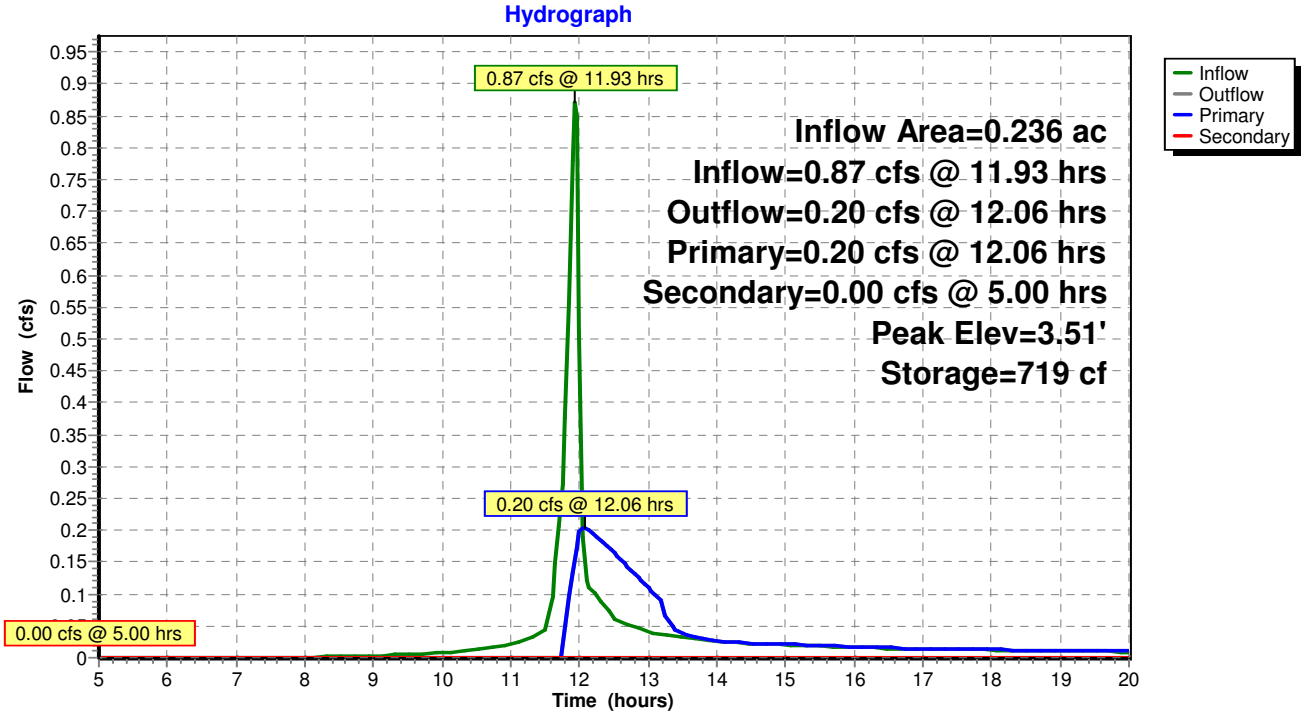
Device	Routing	Invert	Outlet Devices
#1	Secondary	4.00'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	1.00'	**4.0" Round Culvert** L= 219.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1.00' / 0.50' S= 0.0023 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.20 cfs @ 12.06 hrs HW=3.49' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.20 cfs @ 2.32 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=0.00' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Pond BR 5: Bioretention Area 5



Summary for Pond Sed: Sediment Trap

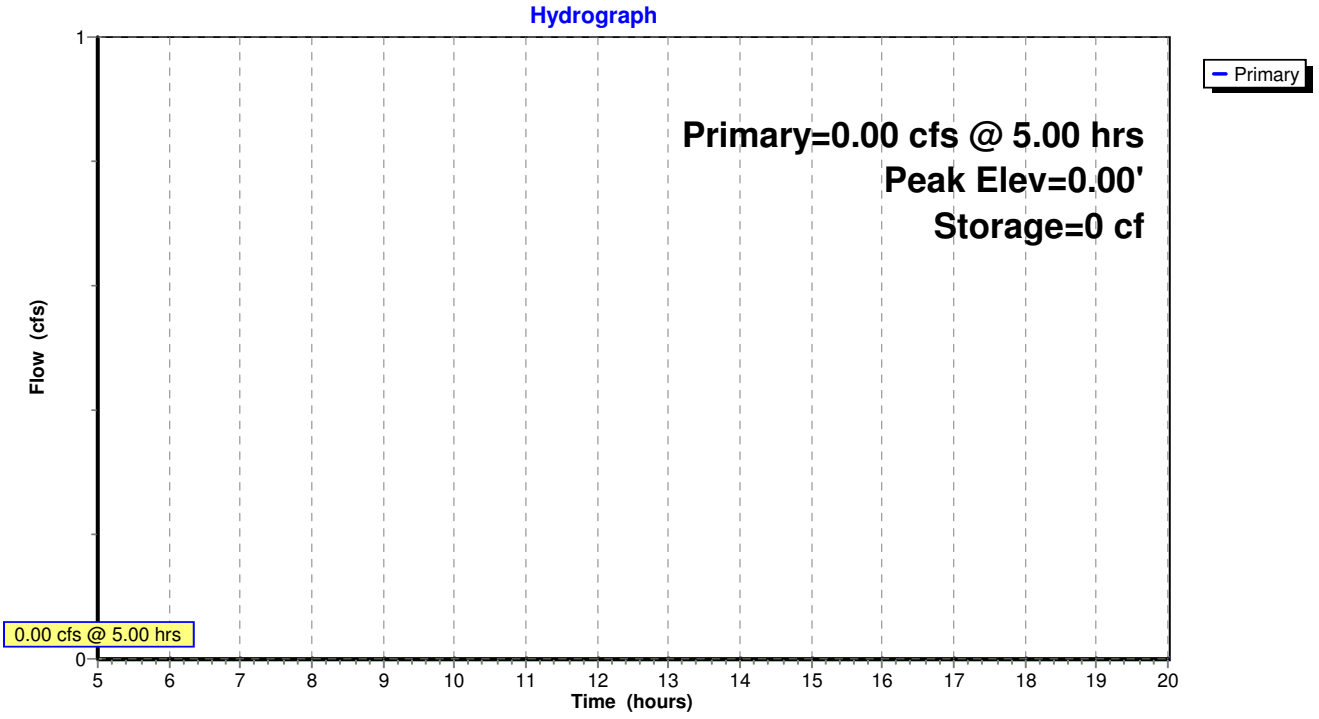
Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	22,831 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	3,425	0	0
1.00	5,874	4,650	4,650
2.00	8,774	7,324	11,974
3.00	11,765	10,270	22,243
3.10	0	588	22,831

Device	Routing	Invert	Outlet Devices
#1	Primary	2.00'	**6.0' long x 4.0' 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 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=0.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond Sed: Sediment Trap



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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.856	74	>75% Grass cover, Good, HSG C (PSC 1, PSC 4, PSC 5)
2.633	30	Brush, Good, HSG A (OSC 4)
7.201	65	Brush, Good, HSG C (OSC 2, OSC 4, PSC 1)
0.364	98	Paved parking & roofs (PSC 1, PSC 4, PSC 5)
0.047	98	Unconnected roofs, HSG A (OSC 4)
11.101	**59**	**TOTAL AREA**

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.681	HSG A	OSC 4
0.000	HSG B	
8.056	HSG C	OSC 2, OSC 4, PSC 1, PSC 4, PSC 5
0.000	HSG D	
0.364	Other	PSC 1, PSC 4, PSC 5
11.101		**TOTAL AREA**

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.856	0.000	0.000	0.856	>75% Grass cover, Good	PSC 1, PSC 4, PSC 5
2.633	0.000	7.201	0.000	0.000	9.834	Brush, Good	OSC 2, OSC 4, PSC 1
0.000	0.000	0.000	0.000	0.364	0.364	Paved parking & roofs	PSC 1, PSC 4, PSC 5
0.047	0.000	0.000	0.000	0.000	0.047	Unconnected roofs	OSC 4
2.681	**0.000**	**8.056**	**0.000**	**0.364**	**11.101**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	BR 1	1.00	0.50	197.0	0.0025	0.013	4.0	0.0	0.0
2	BR 4	2.75	2.50	157.0	0.0016	0.013	4.0	0.0	0.0
3	BR 5	1.00	0.50	219.0	0.0023	0.013	4.0	0.0	0.0

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment OSC 2: Off-Site Runoff Area=14,274 sf 0.00% Impervious Runoff Depth>2.04"
Flow Length=220' Tc=10.4 min CN=65 Runoff=1.09 cfs 0.056 af

Subcatchment OSC 4: Off-Site Runoff Area=403,901 sf 0.51% Impervious Runoff Depth>1.26"
Flow Length=1,275' Tc=32.4 min CN=55 Runoff=9.31 cfs 0.970 af

Subcatchment PSC 1: Proposed Runoff Area=37,170 sf 16.23% Impervious Runoff Depth>2.91"
Flow Length=327' Tc=10.3 min CN=75 Runoff=4.03 cfs 0.207 af

Subcatchment PSC 4: Proposed Runoff Area=17,938 sf 29.06% Impervious Runoff Depth>3.48"
Flow Length=327' Tc=10.3 min CN=81 Runoff=2.28 cfs 0.120 af

Subcatchment PSC 5: Proposed Runoff Area=10,292 sf 44.84% Impervious Runoff Depth>3.90"
Flow Length=83' Tc=2.8 min CN=85 Runoff=1.80 cfs 0.077 af

Reach DP 1: Design Point Summation 1 Inflow=10.79 cfs 1.389 af
Outflow=10.79 cfs 1.389 af

Reach DS: Diversion Swale Avg. Flow Depth=0.78' Max Vel=2.50 fps Inflow=9.31 cfs 0.970 af
n=0.030 L=318.0' S=0.0063 '/' Capacity=15.57 cfs Outflow=9.20 cfs 0.966 af

Pond BR 1: Bioretention Area 1 Peak Elev=4.38' Storage=2,203 cf Inflow=4.03 cfs 0.207 af
Primary=0.25 cfs 0.118 af Secondary=3.64 cfs 0.077 af Outflow=3.89 cfs 0.195 af

Pond BR 4: Bioretention Area 4 Peak Elev=4.26' Storage=1,631 cf Inflow=2.28 cfs 0.120 af
Primary=0.17 cfs 0.065 af Secondary=2.02 cfs 0.039 af Outflow=2.20 cfs 0.103 af

Pond BR 5: Bioretention Area 5 Peak Elev=4.16' Storage=1,390 cf Inflow=1.80 cfs 0.077 af
Primary=0.23 cfs 0.060 af Secondary=0.96 cfs 0.009 af Outflow=1.19 cfs 0.069 af

Pond Sed: Sediment Trap Peak Elev=0.00' Storage=0 cf
Primary=0.00 cfs 0.000 af

Total Runoff Area = 11.101 ac Runoff Volume = 1.429 af Average Runoff Depth = 1.54"
96.29% Pervious = 10.690 ac 3.71% Impervious = 0.411 ac

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Summary for Subcatchment OSC 2: Off-Site Subcatchment 2

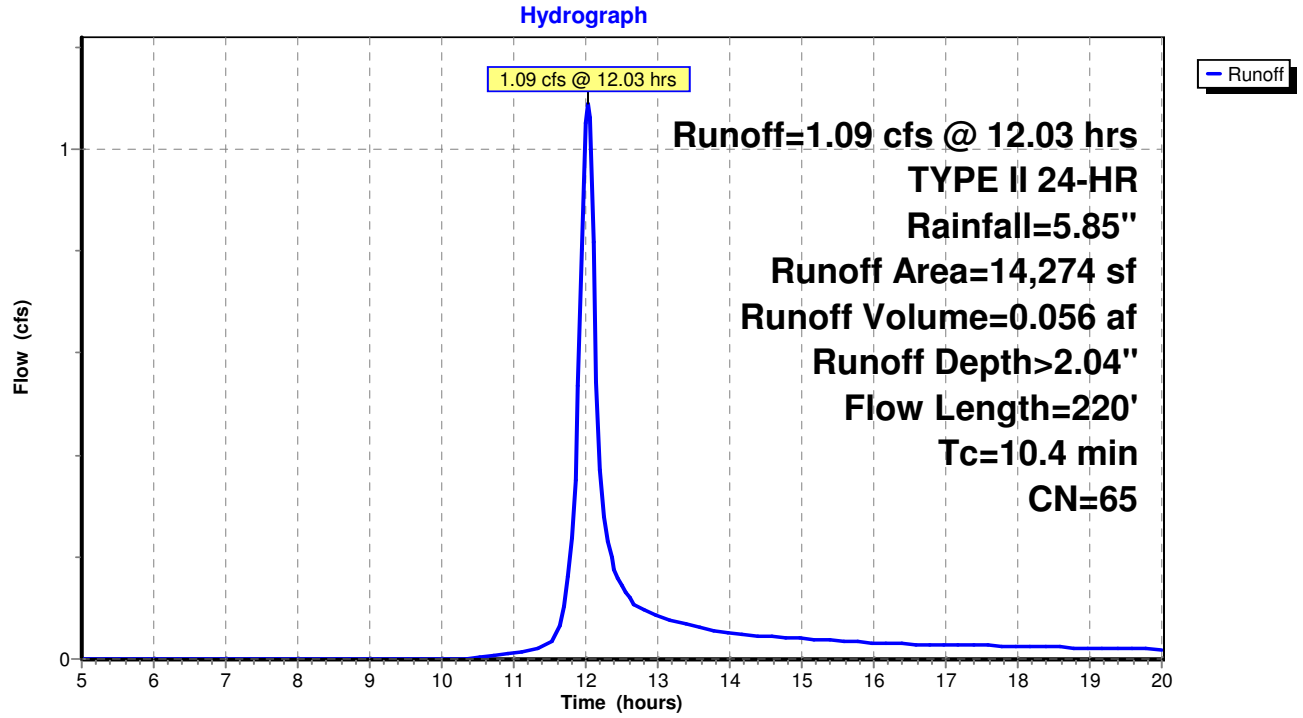
Runoff = 1.09 cfs @ 12.03 hrs, Volume= 0.056 af, Depth> 2.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=5.85"

Area (sf)	CN	Description
14,274	65	Brush, Good, HSG C
14,274		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	100	0.0350	0.20		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
1.9	120	0.0050	1.06		**Shallow Concentrated Flow, Balance of Flow to Channel** Grassed Waterway Kv= 15.0 fps
10.4	220	Total			

Subcatchment OSC 2: Off-Site Subcatchment 2



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Summary for Subcatchment OSC 4: Off-Site Subcatchment 4

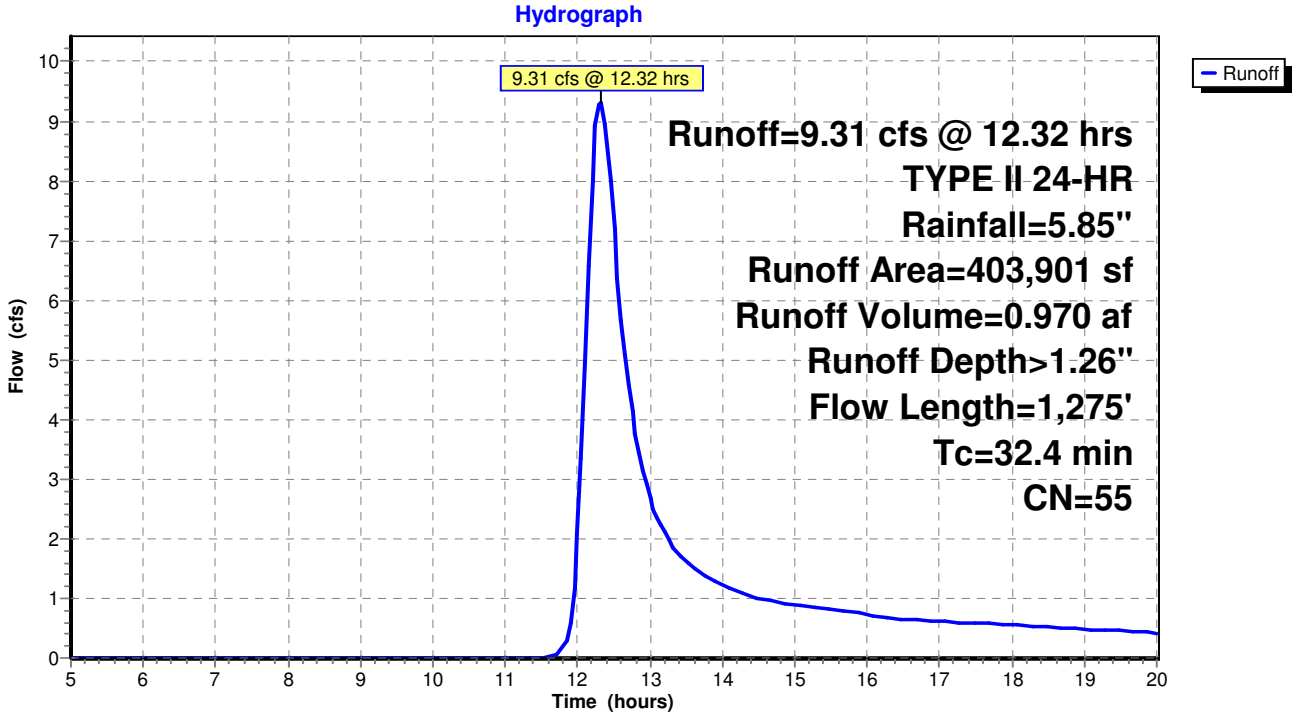
Runoff = 9.31 cfs @ 12.32 hrs, Volume= 0.970 af, Depth> 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=5.85"

Area (sf)	CN	Description
114,714	30	Brush, Good, HSG A
287,122	65	Brush, Good, HSG C
2,065	98	Unconnected roofs, HSG A
403,901	55	Weighted Average
401,836		99.49% Pervious Area
2,065		0.51% Impervious Area
2,065		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0100	0.08		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
11.9	1,175	0.0120	1.64		**Shallow Concentrated Flow, Balance of Flow** Grassed Waterway Kv= 15.0 fps
32.4	1,275	Total			

Subcatchment OSC 4: Off-Site Subcatchment 4



Summary for Subcatchment PSC 1: Proposed Subcatchment 1

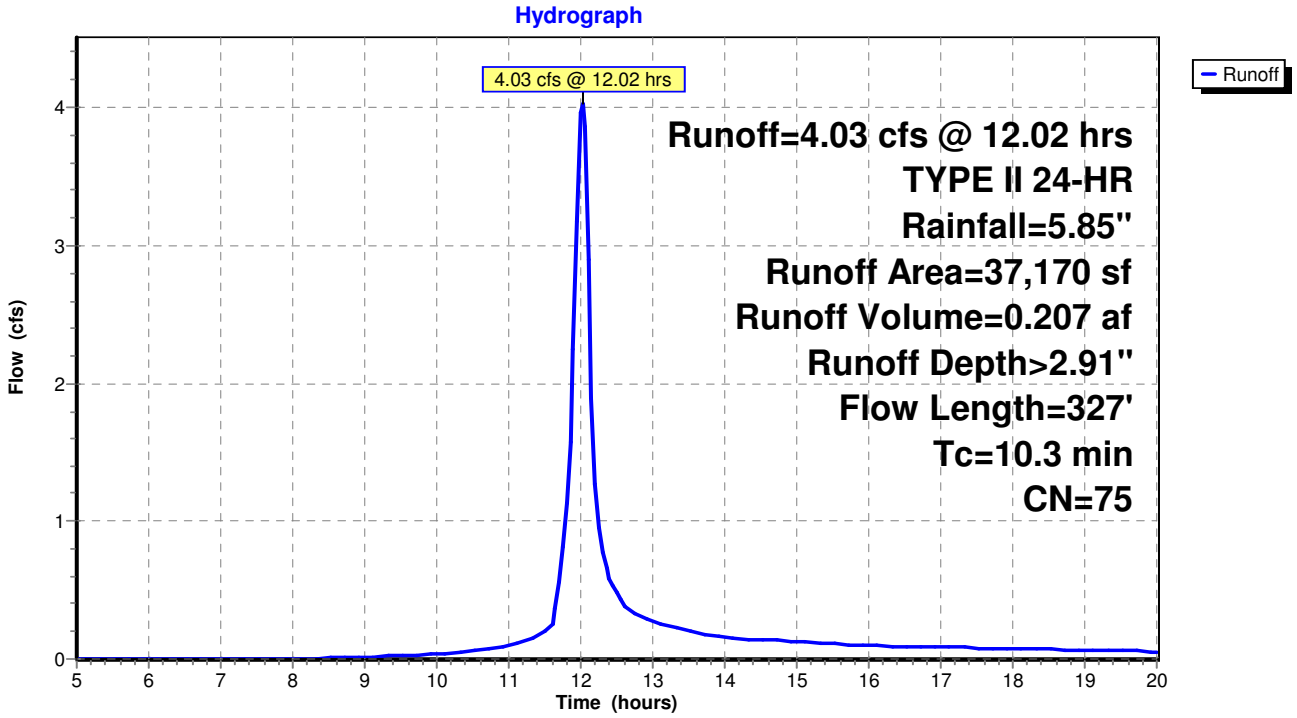
Runoff = 4.03 cfs @ 12.02 hrs, Volume= 0.207 af, Depth> 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=5.85"

Area (sf)	CN	Description
6,031	98	Paved parking & roofs
18,864	74	>75% Grass cover, Good, HSG C
12,275	65	Brush, Good, HSG C
37,170	75	Weighted Average
31,139		83.77% Pervious Area
6,031		16.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.0300	0.18		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
0.7	70	0.0140	1.77		**Shallow Concentrated Flow, Balance of Flow to Channel** Grassed Waterway Kv= 15.0 fps
0.5	157	0.0190	5.40	27.00	**Trap/Vee/Rect Channel Flow, Balance of Longest Flowpath** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.027
10.3	327	Total			

Subcatchment PSC 1: Proposed Subcatchment 1



Summary for Subcatchment PSC 4: Proposed Subcatchment 4

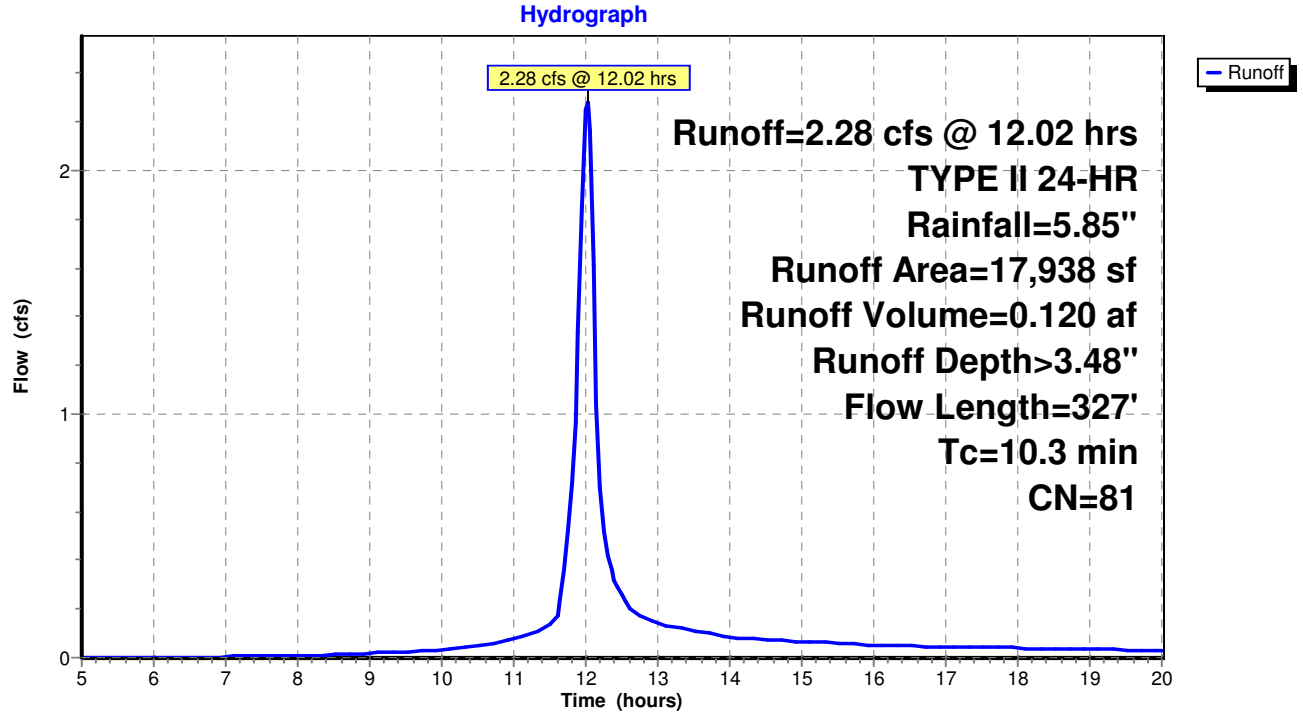
Runoff = 2.28 cfs @ 12.02 hrs, Volume= 0.120 af, Depth> 3.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=5.85"

Area (sf)	CN	Description
5,212	98	Paved parking & roofs
12,726	74	>75% Grass cover, Good, HSG C
17,938	81	Weighted Average
12,726		70.94% Pervious Area
5,212		29.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.0300	0.18		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
0.7	70	0.0140	1.77		**Shallow Concentrated Flow, Balance of Flow to Channel** Grassed Waterway Kv= 15.0 fps
0.5	157	0.0190	5.40	27.00	**Trap/Vee/Rect Channel Flow, Balance of Longest Flowpath** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.027
10.3	327	Total			

Subcatchment PSC 4: Proposed Subcatchment 4



Summary for Subcatchment PSC 5: Proposed Subcatchment 5

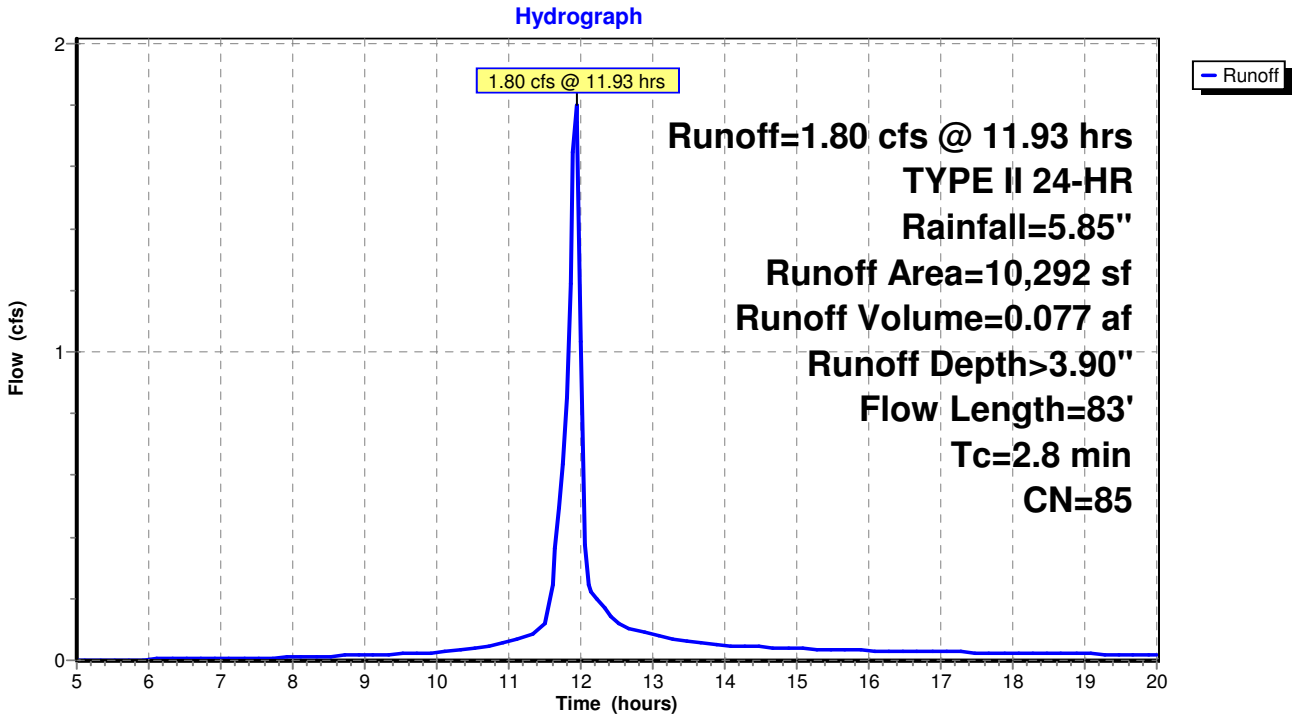
Runoff = 1.80 cfs @ 11.93 hrs, Volume= 0.077 af, Depth> 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=5.85"

Area (sf)	CN	Description
4,615	98	Paved parking & roofs
5,677	74	>75% Grass cover, Good, HSG C
10,292	85	Weighted Average
5,677		55.16% Pervious Area
4,615		44.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	23	0.0860	0.21		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
1.0	60	0.0140	0.99		**Sheet Flow, First 100' Flowpath** Smooth surfaces n= 0.011 P2= 2.70"
2.8	83	Total			

Subcatchment PSC 5: Proposed Subcatchment 5



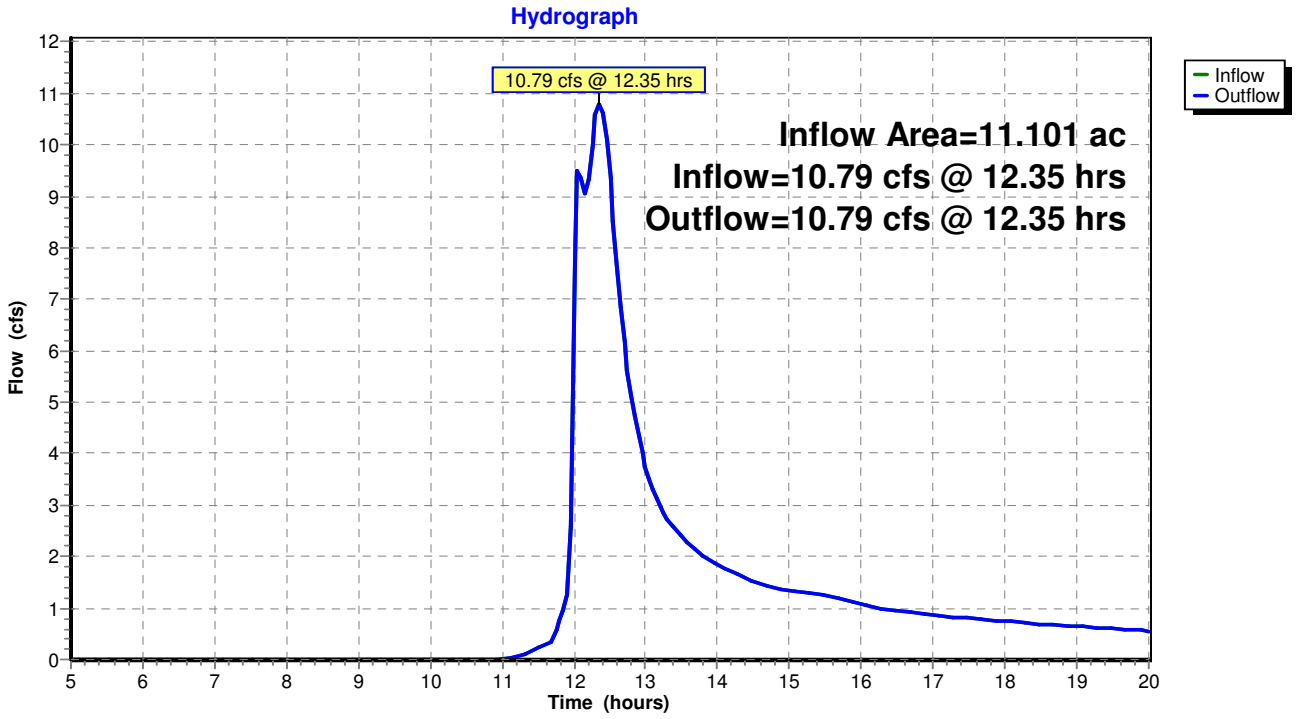
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Summary for Reach DP 1: Design Point Summation 1

Inflow Area = 11.101 ac, 3.71% Impervious, Inflow Depth > 1.50"
Inflow = 10.79 cfs @ 12.35 hrs, Volume= 1.389 af
Outflow = 10.79 cfs @ 12.35 hrs, Volume= 1.389 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP 1: Design Point Summation 1



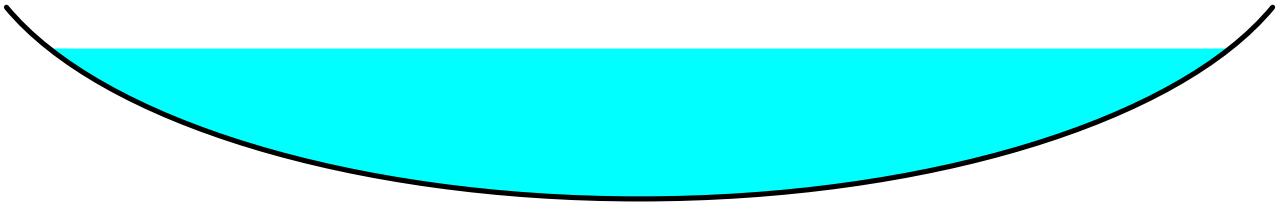
Summary for Reach DS: Diversion Swale

Inflow Area = 9.272 ac, 0.51% Impervious, Inflow Depth > 1.26"
Inflow = 9.31 cfs @ 12.32 hrs, Volume= 0.970 af
Outflow = 9.20 cfs @ 12.38 hrs, Volume= 0.966 af, Atten= 1%, Lag= 3.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.50 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 1.25 fps, Avg. Travel Time= 4.2 min

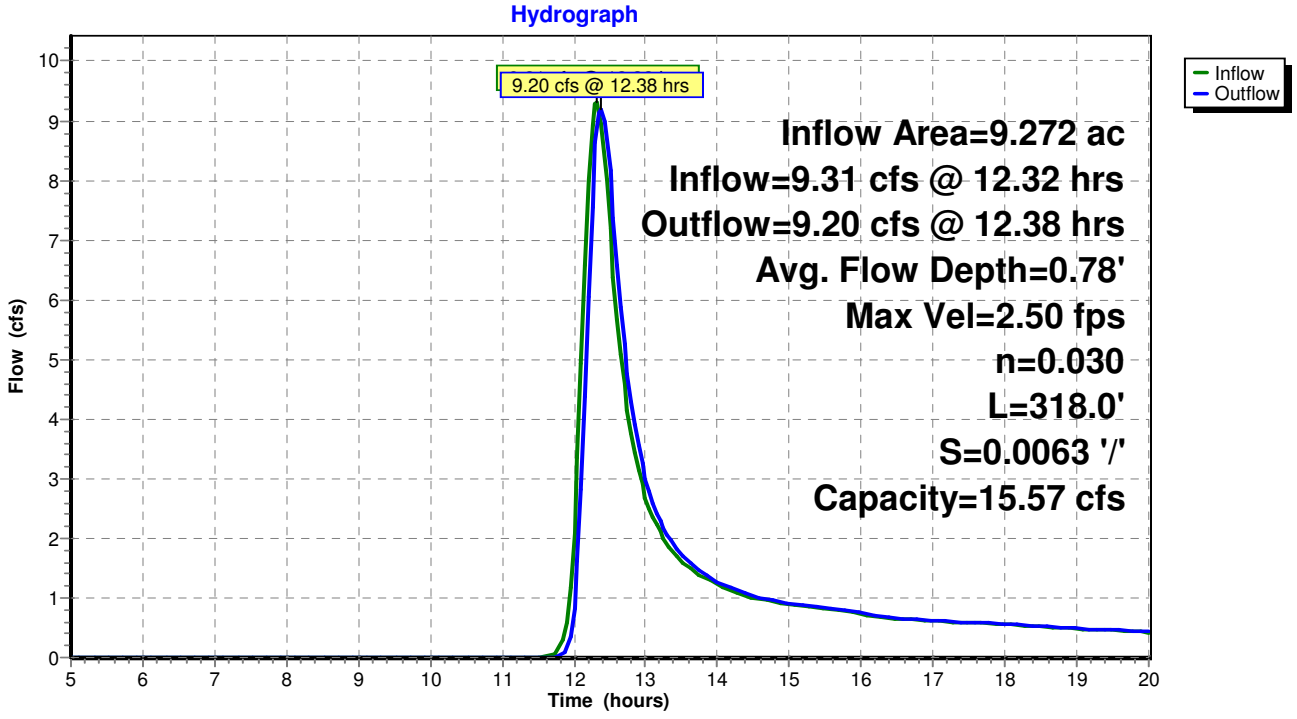
Peak Storage= 1,178 cf @ 12.34 hrs
Average Depth at Peak Storage= 0.78'
Bank-Full Depth= 1.00' Flow Area= 5.3 sf, Capacity= 15.57 cfs

8.00' x 1.00' deep Parabolic Channel, n= 0.030
Length= 318.0' Slope= 0.0063 '/'
Inlet Invert= 0.00', Outlet Invert= -2.00'



‡

Reach DS: Diversion Swale



Summary for Pond BR 1: Bioretention Area 1

Inflow Area = 0.853 ac, 16.23% Impervious, Inflow Depth > 2.91"
Inflow = 4.03 cfs @ 12.02 hrs, Volume= 0.207 af
Outflow = 3.89 cfs @ 12.06 hrs, Volume= 0.195 af, Atten= 3%, Lag= 2.2 min
Primary = 0.25 cfs @ 12.06 hrs, Volume= 0.118 af
Secondary = 3.64 cfs @ 12.06 hrs, Volume= 0.077 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 4.38' @ 12.06 hrs Surf.Area= 1,598 sf Storage= 2,203 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 2,454 cf

Plug-Flow detention time= 61.9 min calculated for 0.195 af (94% of inflow)
Center-of-Mass det. time= 41.6 min (828.4 - 786.8)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	2,454 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	438	0	0
1.00	438	438	438
1.10	219	33	471
3.50	219	526	996
3.51	1,094	7	1,003
4.50	1,669	1,368	2,371
4.60	0	83	2,454

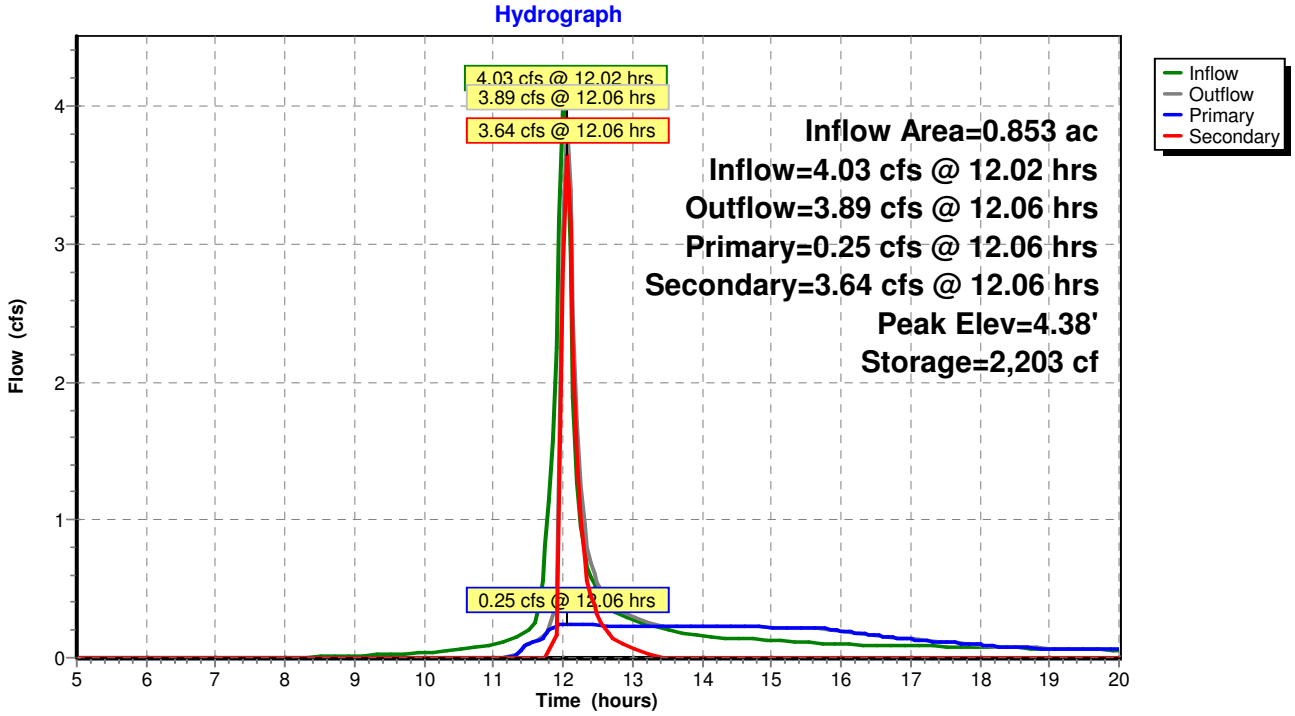
Device	Routing	Invert	Outlet Devices
#1	Secondary	4.00'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	1.00'	**4.0" Round Culvert** L= 197.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1.00' / 0.50' S= 0.0025 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.25 cfs @ 12.06 hrs HW=4.37' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.25 cfs @ 2.82 fps)

Secondary OutFlow Max=3.56 cfs @ 12.06 hrs HW=4.37' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 3.56 cfs @ 1.59 fps)

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Pond BR 1: Bioretention Area 1



Summary for Pond BR 4: Bioretention Area 4

Inflow Area = 0.412 ac, 29.06% Impervious, Inflow Depth > 3.48"
Inflow = 2.28 cfs @ 12.02 hrs, Volume= 0.120 af
Outflow = 2.20 cfs @ 12.06 hrs, Volume= 0.103 af, Atten= 4%, Lag= 2.5 min
Primary = 0.17 cfs @ 12.06 hrs, Volume= 0.065 af
Secondary = 2.02 cfs @ 12.06 hrs, Volume= 0.039 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 4.26' @ 12.06 hrs Surf.Area= 1,216 sf Storage= 1,631 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 1,963 cf

Plug-Flow detention time= 88.3 min calculated for 0.103 af (86% of inflow)
Center-of-Mass det. time= 47.0 min (822.1 - 775.1)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	1,963 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	352	0	0
1.00	352	352	352
1.10	176	26	378
3.50	176	422	801
3.51	880	5	806
4.50	1,324	1,091	1,897
4.60	0	66	1,963

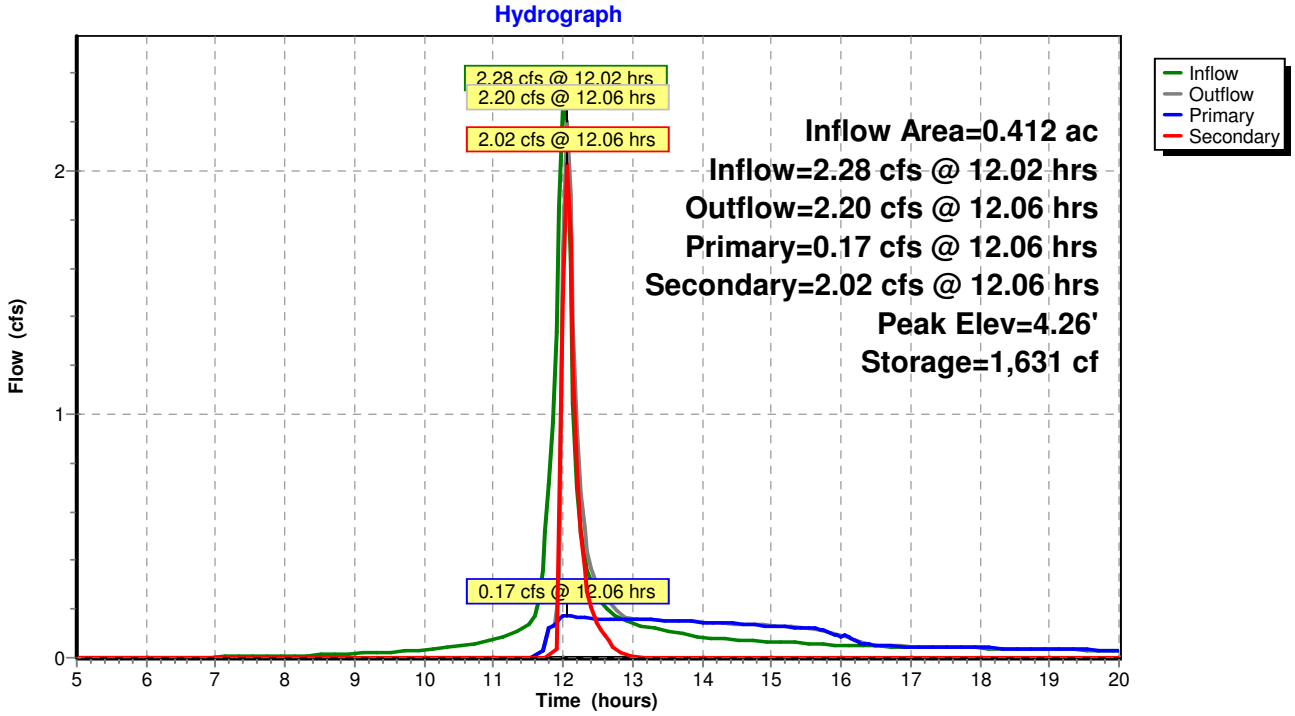
Device	Routing	Invert	Outlet Devices
#1	Secondary	4.00'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	2.75'	**4.0" Round Culvert** L= 157.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2.75' / 2.50' S= 0.0016 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.17 cfs @ 12.06 hrs HW=4.25' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.17 cfs @ 1.98 fps)

Secondary OutFlow Max=1.97 cfs @ 12.06 hrs HW=4.25' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 1.97 cfs @ 1.29 fps)

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Pond BR 4: Bioretention Area 4



Summary for Pond BR 5: Bioretention Area 5

Inflow Area = 0.236 ac, 44.84% Impervious, Inflow Depth > 3.90"
Inflow = 1.80 cfs @ 11.93 hrs, Volume= 0.077 af
Outflow = 1.19 cfs @ 12.01 hrs, Volume= 0.069 af, Atten= 34%, Lag= 4.6 min
Primary = 0.23 cfs @ 12.01 hrs, Volume= 0.060 af
Secondary = 0.96 cfs @ 12.01 hrs, Volume= 0.009 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 4.16' @ 12.01 hrs Surf.Area= 1,111 sf Storage= 1,390 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 1,807 cf

Plug-Flow detention time= 85.2 min calculated for 0.069 af (90% of inflow)
Center-of-Mass det. time= 49.9 min (809.8 - 759.9)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	1,807 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	314	0	0
1.00	314	314	314
1.10	157	24	338
3.50	157	377	714
3.51	786	5	719
4.50	1,282	1,024	1,743
4.60	0	64	1,807

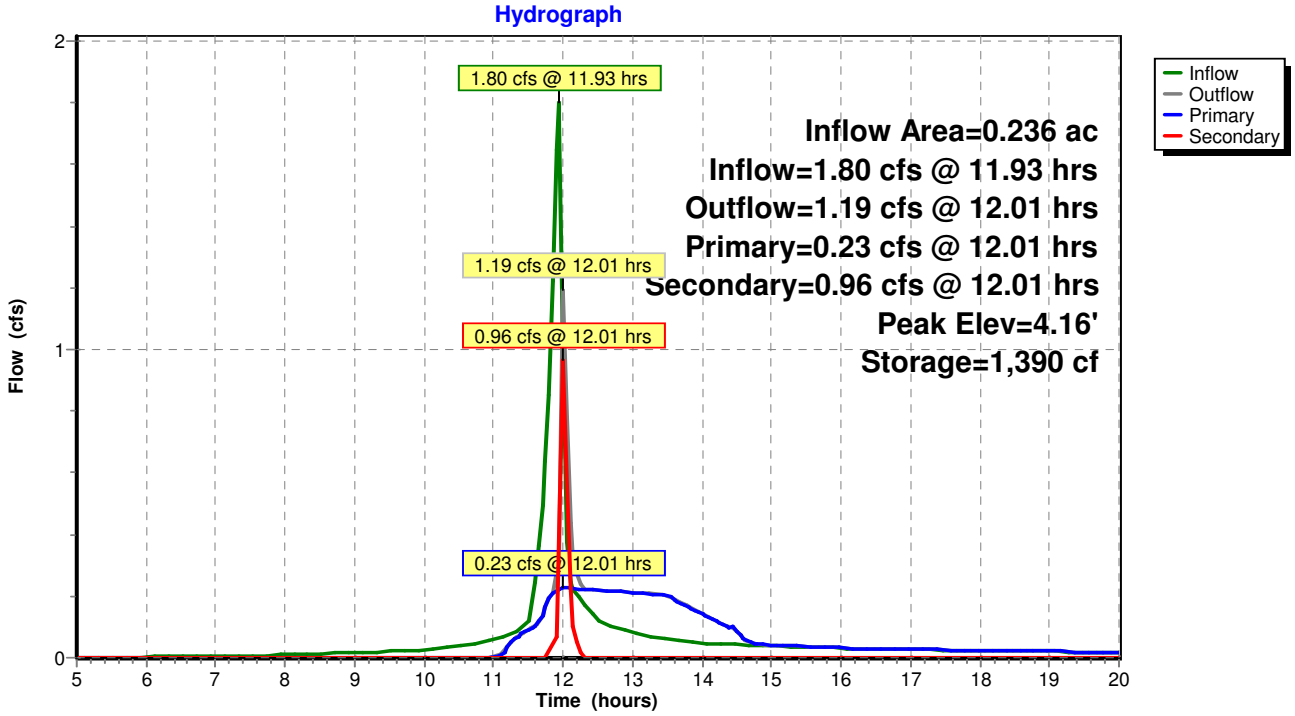
Device	Routing	Invert	Outlet Devices
#1	Secondary	4.00'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	1.00'	**4.0" Round Culvert** L= 219.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1.00' / 0.50' S= 0.0023 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.23 cfs @ 12.01 hrs HW=4.15' (Free Discharge)
↑**2=Culvert** (Barrel Controls 0.23 cfs @ 2.60 fps)

Secondary OutFlow Max=0.88 cfs @ 12.01 hrs HW=4.15' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.88 cfs @ 0.98 fps)

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Pond BR 5: Bioretention Area 5



Summary for Pond Sed: Sediment Trap

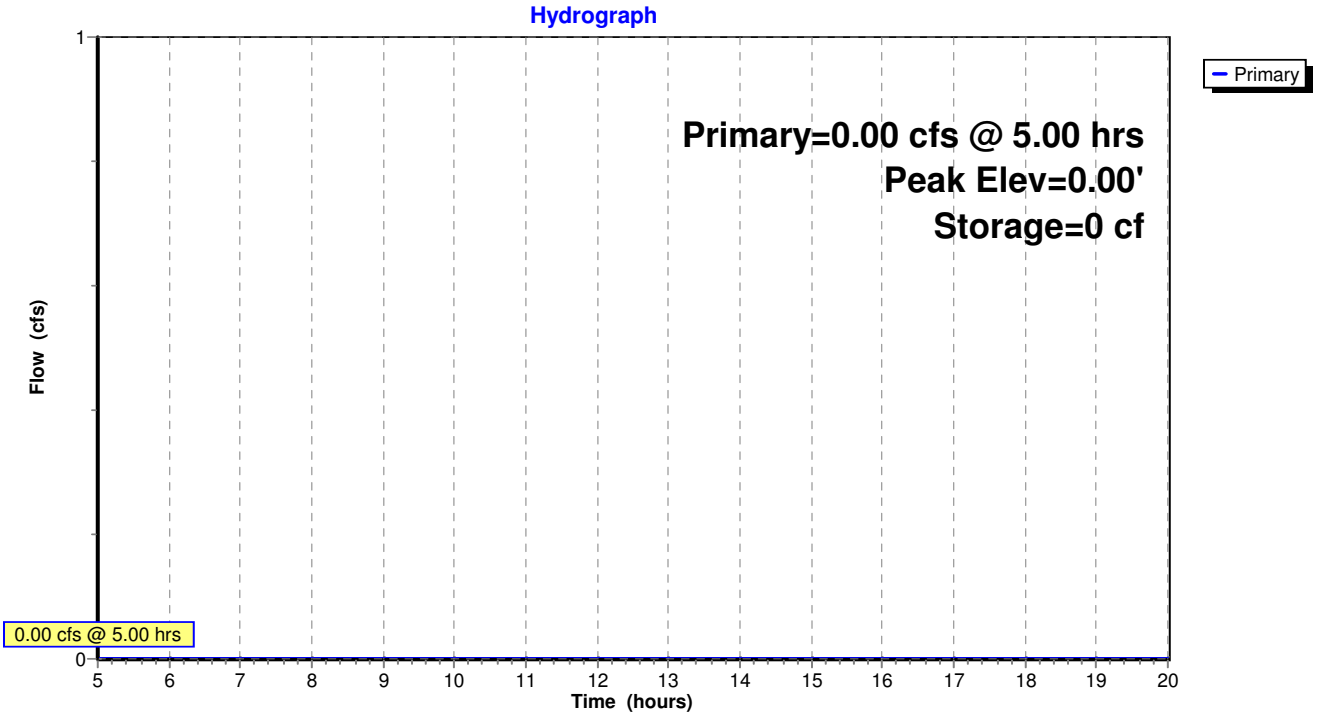
Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	22,831 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

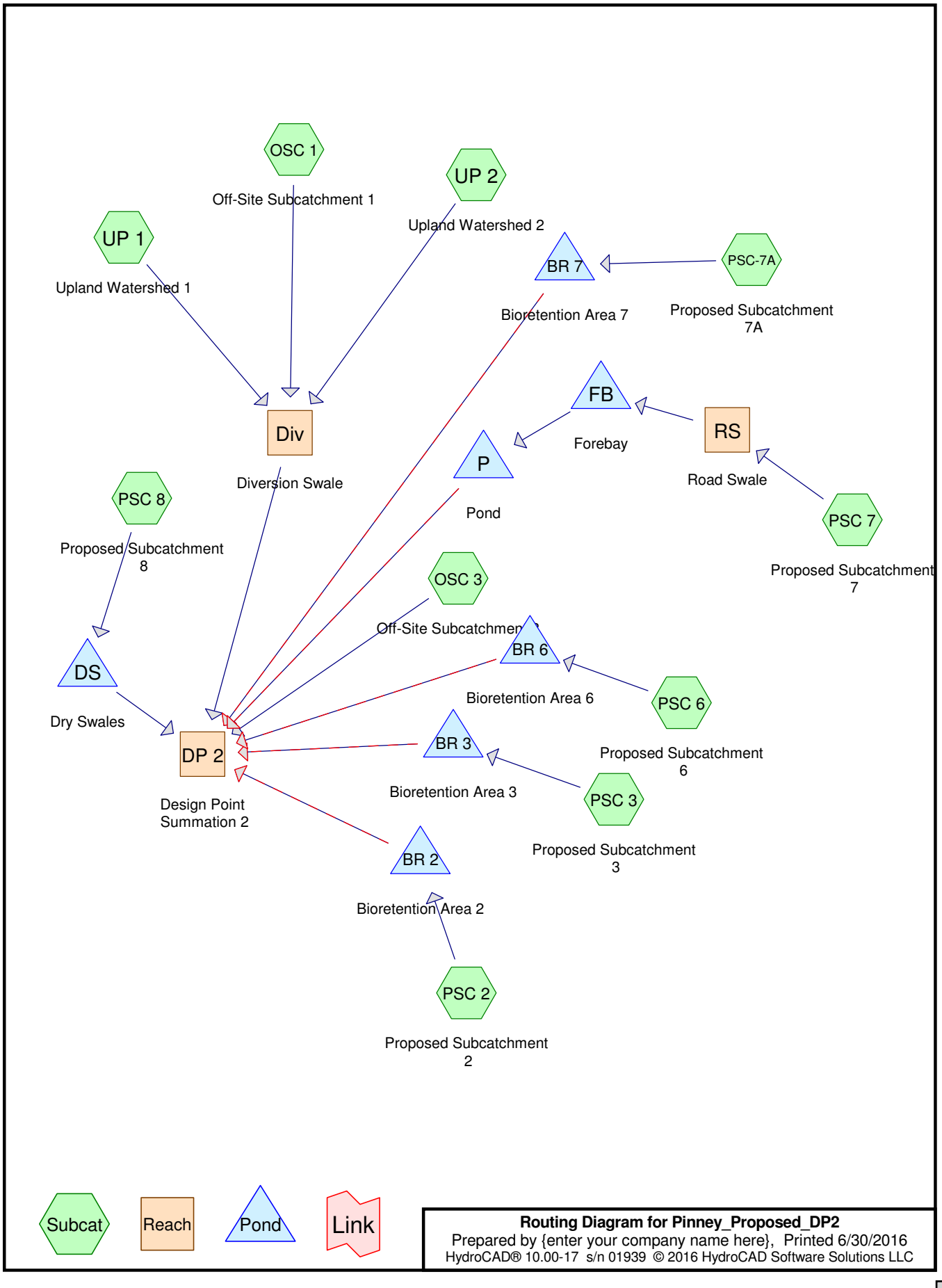
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	3,425	0	0
1.00	5,874	4,650	4,650
2.00	8,774	7,324	11,974
3.00	11,765	10,270	22,243
3.10	0	588	22,831

Device	Routing	Invert	Outlet Devices
#1	Primary	2.00'	**6.0' long x 4.0' 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 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=0.00' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond Sed: Sediment Trap





Routing Diagram for Pinney_Proposed_DP2
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.519	39	>75% Grass cover, Good, HSG A (PSC 7)
0.491	61	>75% Grass cover, Good, HSG B (PSC 7)
3.449	74	>75% Grass cover, Good, HSG C (PSC 2, PSC 3, PSC 6, PSC 7, PSC-7A)
2.435	30	Brush, Good, HSG A (OSC 3)
0.360	48	Brush, Good, HSG B (OSC 3)
21.522	65	Brush, Good, HSG C (OSC 1, OSC 3, PSC 7, PSC 8, UP 1, UP 2)
2.059	98	Paved parking & roofs (PSC 2, PSC 3, PSC 6, PSC 7, PSC 8)
0.046	98	Roofs, HSG C (PSC-7A)
0.035	98	Unconnected roofs, HSG A (OSC 3)
30.917	**65**	**TOTAL AREA**

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.989	HSG A	OSC 3, PSC 7
0.851	HSG B	OSC 3, PSC 7
25.018	HSG C	OSC 1, OSC 3, PSC 2, PSC 3, PSC 6, PSC 7, PSC 8, PSC-7A, UP 1, UP 2
0.000	HSG D	
2.059	Other	PSC 2, PSC 3, PSC 6, PSC 7, PSC 8
30.917		**TOTAL AREA**

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.519	0.491	3.449	0.000	0.000	4.460	>75% Grass cover, Good	PSC 2, PSC 3, PSC 6, PSC 7, PSC-7A
2.435	0.360	21.522	0.000	0.000	24.317	Brush, Good	OSC 1, OSC 3, PSC 7, PSC 8, UP 1, UP 2
0.000	0.000	0.000	0.000	2.059	2.059	Paved parking & roofs	PSC 2, PSC 3, PSC 6, PSC 7, PSC 8
0.000	0.000	0.046	0.000	0.000	0.046	Roofs	PSC-7A
0.035	0.000	0.000	0.000	0.000	0.035	Unconnected roofs	OSC 3
2.989	**0.851**	**25.018**	**0.000**	**2.059**	**30.917**	**TOTAL AREA**	

Pinney_Proposed_DP2

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	BR 2	2.00	1.50	177.0	0.0028	0.013	4.0	0.0	0.0
2	BR 3	2.00	1.50	57.0	0.0088	0.013	4.0	0.0	0.0
3	BR 6	2.50	2.00	132.0	0.0038	0.013	4.0	0.0	0.0
4	BR 7	2.00	1.50	57.0	0.0088	0.013	4.0	0.0	0.0
5	DS	0.00	-0.50	127.0	0.0039	0.013	4.0	0.0	0.0
6	P	0.00	-1.00	104.0	0.0096	0.013	12.0	0.0	0.0

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment OSC 1: Off-Site Runoff Area=143,197 sf 0.00% Impervious Runoff Depth>0.11"
Flow Length=2,079' Slope=0.0170 '/' Tc=4.6 min CN=65 Runoff=0.33 cfs 0.030 af

Subcatchment OSC 3: Off-Site Runoff Area=529,093 sf 0.28% Impervious Runoff Depth>0.03"
Flow Length=1,570' Tc=19.6 min CN=58 Runoff=0.05 cfs 0.026 af

Subcatchment PSC 2: Proposed Runoff Area=16,829 sf 34.86% Impervious Runoff Depth>0.58"
Flow Length=170' Tc=14.8 min CN=82 Runoff=0.31 cfs 0.019 af

Subcatchment PSC 3: Proposed Runoff Area=8,226 sf 24.51% Impervious Runoff Depth>0.50"
Flow Length=146' Tc=8.0 min CN=80 Runoff=0.17 cfs 0.008 af

Subcatchment PSC 6: Proposed Runoff Area=12,258 sf 31.15% Impervious Runoff Depth>0.54"
Flow Length=49' Tc=4.1 min CN=81 Runoff=0.31 cfs 0.013 af

Subcatchment PSC 7: Proposed Runoff Area=366,995 sf 20.46% Impervious Runoff Depth>0.27"
Flow Length=1,566' Tc=25.5 min CN=73 Runoff=1.83 cfs 0.193 af

Subcatchment PSC 8: Proposed Runoff Area=5,995 sf 48.99% Impervious Runoff Depth>0.54"
Flow Length=148' Slope=0.0500 '/' Tc=1.1 min CN=81 Runoff=0.16 cfs 0.006 af

Subcatchment PSC-7A: Proposed Runoff Area=5,604 sf 35.97% Impervious Runoff Depth>0.63"
Flow Length=35' Slope=0.0100 '/' Tc=0.8 min CN=83 Runoff=0.18 cfs 0.007 af

Subcatchment UP 1: Upland Watershed 1 Runoff Area=187,023 sf 0.00% Impervious Runoff Depth>0.11"
Flow Length=557' Tc=15.0 min CN=65 Runoff=0.23 cfs 0.039 af

Subcatchment UP 2: Upland Watershed 2 Runoff Area=71,533 sf 0.00% Impervious Runoff Depth>0.11"
Flow Length=410' Slope=0.0300 '/' Tc=14.5 min CN=65 Runoff=0.09 cfs 0.015 af

Reach Div: Diversion Swale Avg. Flow Depth=0.14' Max Vel=1.32 fps Inflow=0.44 cfs 0.084 af
n=0.030 L=2,079.0' S=0.0168 '/' Capacity=75.76 cfs Outflow=0.27 cfs 0.078 af

Reach DP 2: Design Point Summation 2 Inflow=0.32 cfs 0.136 af
Outflow=0.32 cfs 0.136 af

Reach RS: Road Swale Avg. Flow Depth=0.28' Max Vel=2.43 fps Inflow=1.83 cfs 0.193 af
n=0.027 L=1,232.0' S=0.0187 '/' Capacity=56.90 cfs Outflow=1.56 cfs 0.189 af

Pond BR 2: Bioretention Area 2 Peak Elev=2.09' Storage=688 cf Inflow=0.31 cfs 0.019 af
Primary=0.01 cfs 0.003 af Secondary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.003 af

Pond BR 3: Bioretention Area 3 Peak Elev=2.04' Storage=306 cf Inflow=0.17 cfs 0.008 af
Primary=0.00 cfs 0.001 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.001 af

Pond BR 6: Bioretention Area 6 Peak Elev=2.62' Storage=330 cf Inflow=0.31 cfs 0.013 af
Primary=0.02 cfs 0.005 af Secondary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.005 af

Pond BR 7: Bioretention Area 7 Peak Elev=1.92' Storage=294 cf Inflow=0.18 cfs 0.007 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond DS: Dry Swales Peak Elev=0.35' Storage=49 cf Inflow=0.16 cfs 0.006 af
Outflow=0.12 cfs 0.006 af

Pond FB: Forebay Peak Elev=4.17' Storage=2,928 cf Inflow=1.56 cfs 0.189 af
Outflow=1.03 cfs 0.122 af

Pond P: Pond Peak Elev=4.47' Storage=10,418 cf Inflow=1.03 cfs 0.122 af
Primary=0.04 cfs 0.017 af Secondary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.017 af

Total Runoff Area = 30.917 ac Runoff Volume = 0.356 af Average Runoff Depth = 0.14"
93.08% Pervious = 28.777 ac 6.92% Impervious = 2.140 ac

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Summary for Subcatchment OSC 1: Off-Site Subcatchment 1

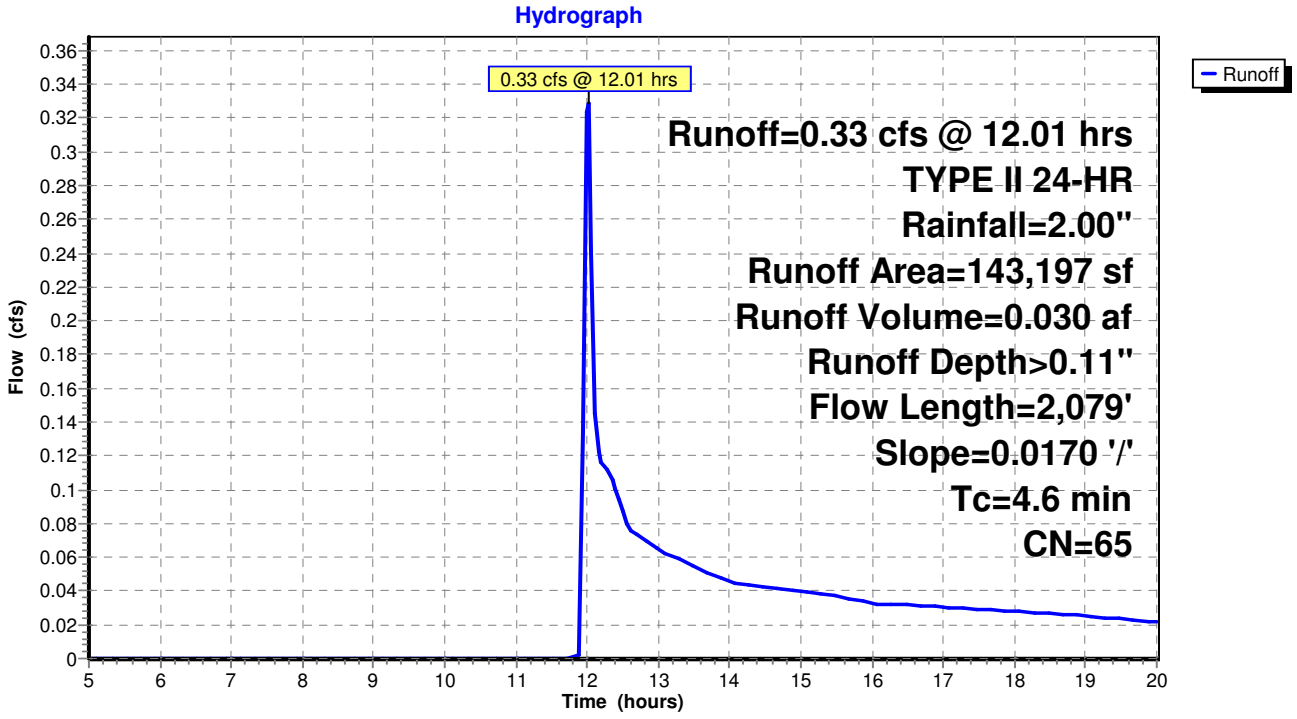
Runoff = 0.33 cfs @ 12.01 hrs, Volume= 0.030 af, Depth> 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=2.00"

Area (sf)	CN	Description
143,197	65	Brush, Good, HSG C
143,197		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	2,079	0.0170	7.61	121.77	**Trap/Vee/Rect Channel Flow, Balance of Longest Flowpath** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.027

Subcatchment OSC 1: Off-Site Subcatchment 1



Summary for Subcatchment OSC 3: Off-Site Subcatchment 3

Runoff = 0.05 cfs @ 15.22 hrs, Volume= 0.026 af, Depth> 0.03"

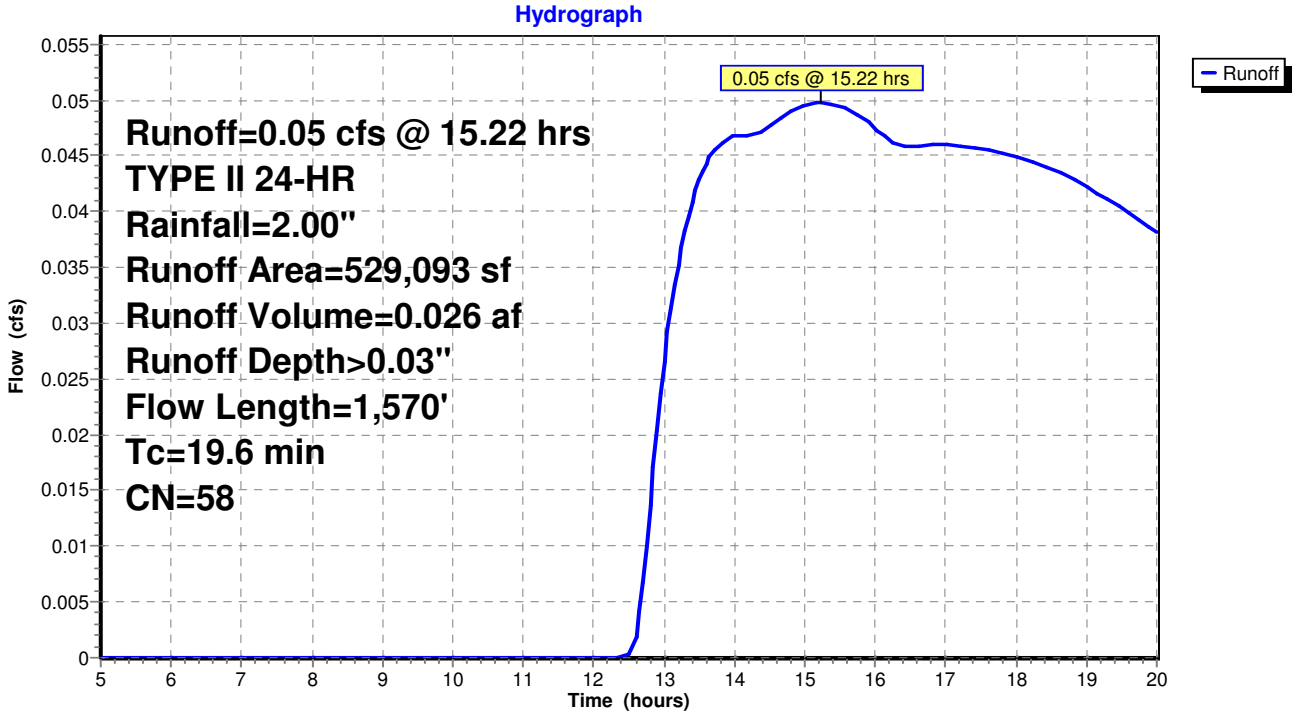
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=2.00"

Area (sf)	CN	Description
106,079	30	Brush, Good, HSG A
15,682	48	Brush, Good, HSG B
405,827	65	Brush, Good, HSG C
1,505	98	Unconnected roofs, HSG A
529,093	58	Weighted Average
527,588		99.72% Pervious Area
1,505		0.28% Impervious Area
1,505		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0400	0.14		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
6.8	1,064	0.0300	2.60		**Shallow Concentrated Flow, Balance of Flow to Channel** Grassed Waterway Kv= 15.0 fps
1.0	406	0.0110	6.52	130.46	**Trap/Vee/Rect Channel Flow, Balance of Flowpath** Bot.W=4.00' D=2.00' Z= 3.0 '/' Top.W=16.00' n= 0.027
19.6	1,570	Total			

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Subcatchment OSC 3: Off-Site Subcatchment 3



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Summary for Subcatchment PSC 2: Proposed Subcatchment 2

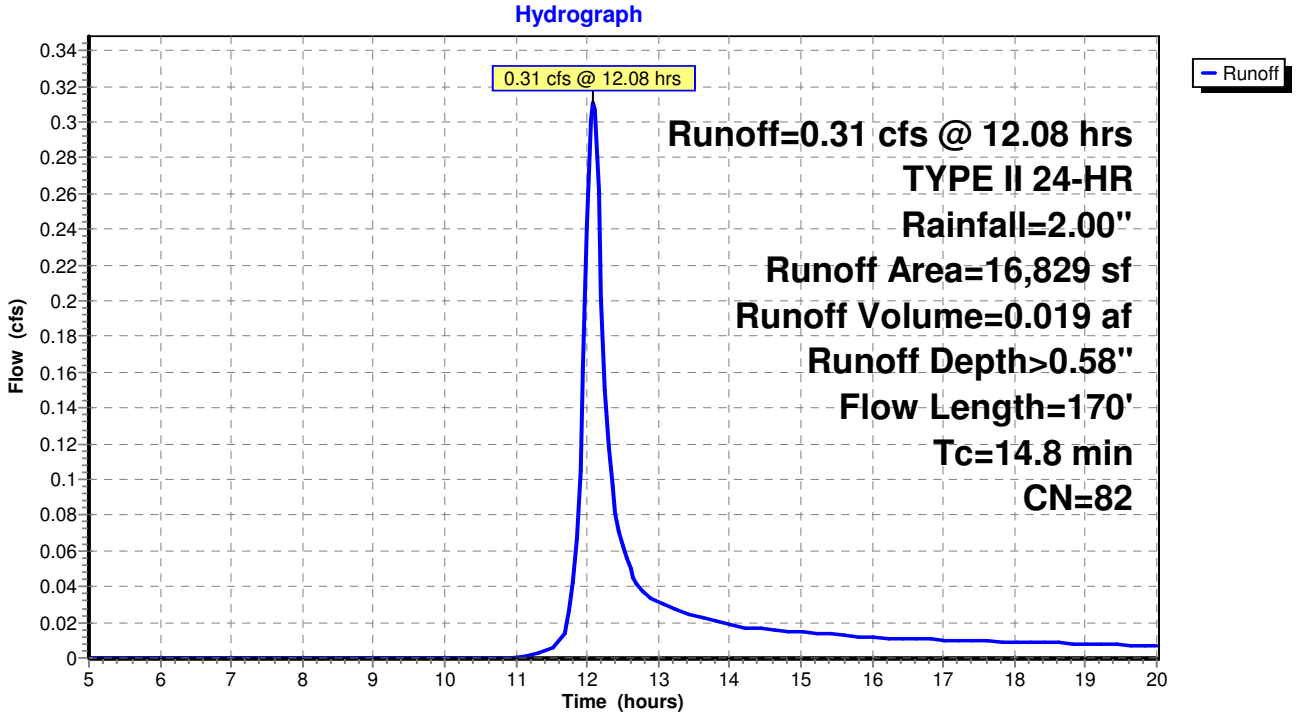
Runoff = 0.31 cfs @ 12.08 hrs, Volume= 0.019 af, Depth> 0.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=2.00"

Area (sf)	CN	Description
5,866	98	Paved parking & roofs
10,963	74	>75% Grass cover, Good, HSG C
16,829	82	Weighted Average
10,963		65.14% Pervious Area
5,866		34.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0100	0.12		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
0.6	65	0.0070	1.70		**Shallow Concentrated Flow, Balance of Flow to Channel** Paved Kv= 20.3 fps
0.1	5	0.0070	1.25		**Shallow Concentrated Flow, Balance of Longest Flowpath** Grassed Waterway Kv= 15.0 fps
14.8	170	Total			

Subcatchment PSC 2: Proposed Subcatchment 2



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Summary for Subcatchment PSC 3: Proposed Subcatchment 3

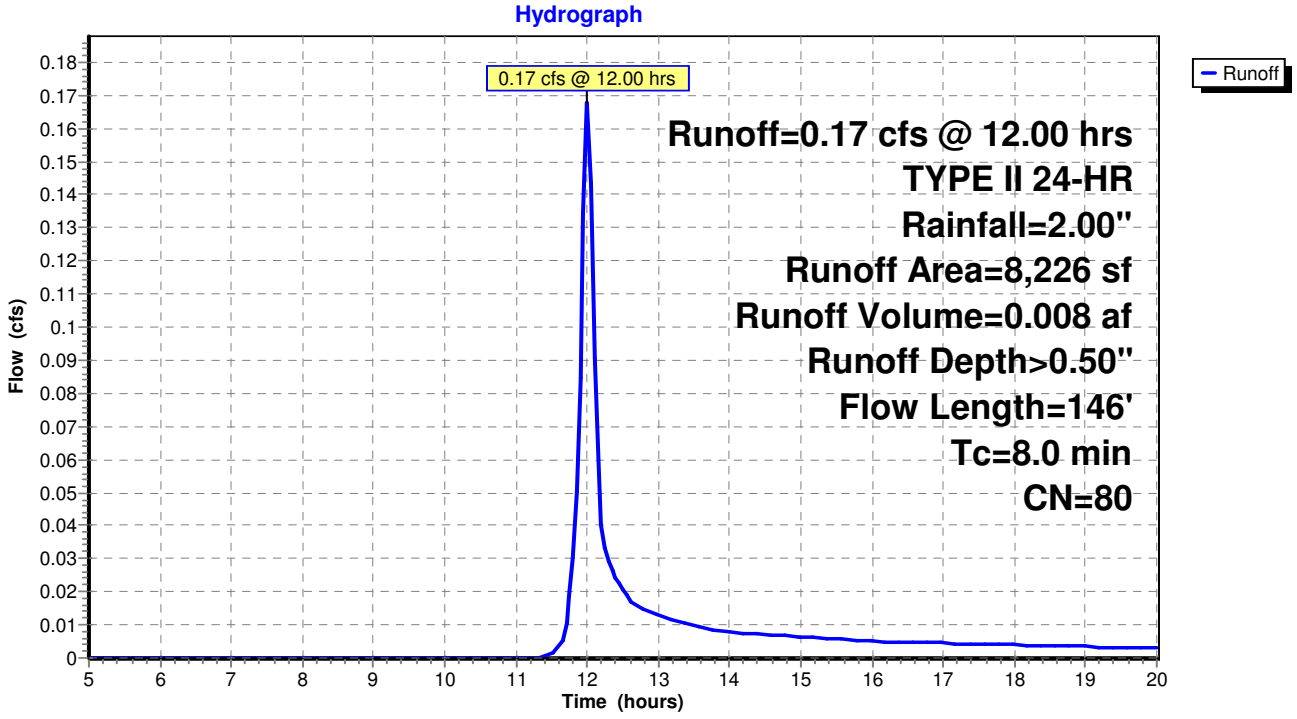
Runoff = 0.17 cfs @ 12.00 hrs, Volume= 0.008 af, Depth> 0.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=2.00"

Area (sf)	CN	Description
2,016	98	Paved parking & roofs
6,210	74	>75% Grass cover, Good, HSG C
8,226	80	Weighted Average
6,210		75.49% Pervious Area
2,016		24.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	76	0.0300	0.17		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
0.6	65	0.0070	1.70		**Shallow Concentrated Flow, Balance of Flow to Channel** Paved Kv= 20.3 fps
0.1	5	0.0070	1.25		**Shallow Concentrated Flow, Balance of Longest Flowpath** Grassed Waterway Kv= 15.0 fps
8.0	146	Total			

Subcatchment PSC 3: Proposed Subcatchment 3



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Summary for Subcatchment PSC 6: Proposed Subcatchment 6

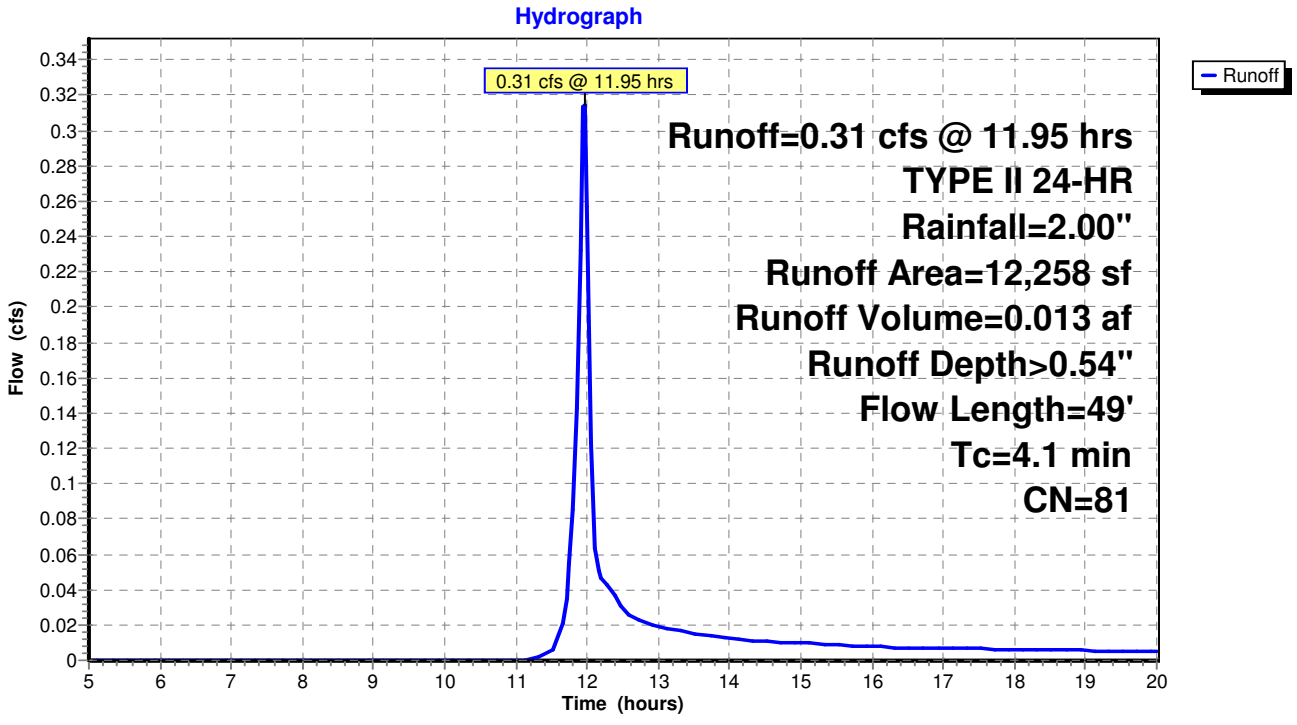
Runoff = 0.31 cfs @ 11.95 hrs, Volume= 0.013 af, Depth> 0.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=2.00"

Area (sf)	CN	Description
3,818	98	Paved parking & roofs
8,440	74	>75% Grass cover, Good, HSG C
12,258	81	Weighted Average
8,440		68.85% Pervious Area
3,818		31.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	23	0.0200	0.12		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
0.8	26	0.0050	0.55		**Sheet Flow, Balance of Longest Flowpath** Smooth surfaces n= 0.011 P2= 2.70"
4.1	49	Total			

Subcatchment PSC 6: Proposed Subcatchment 6



Summary for Subcatchment PSC 7: Proposed Subcatchment 7

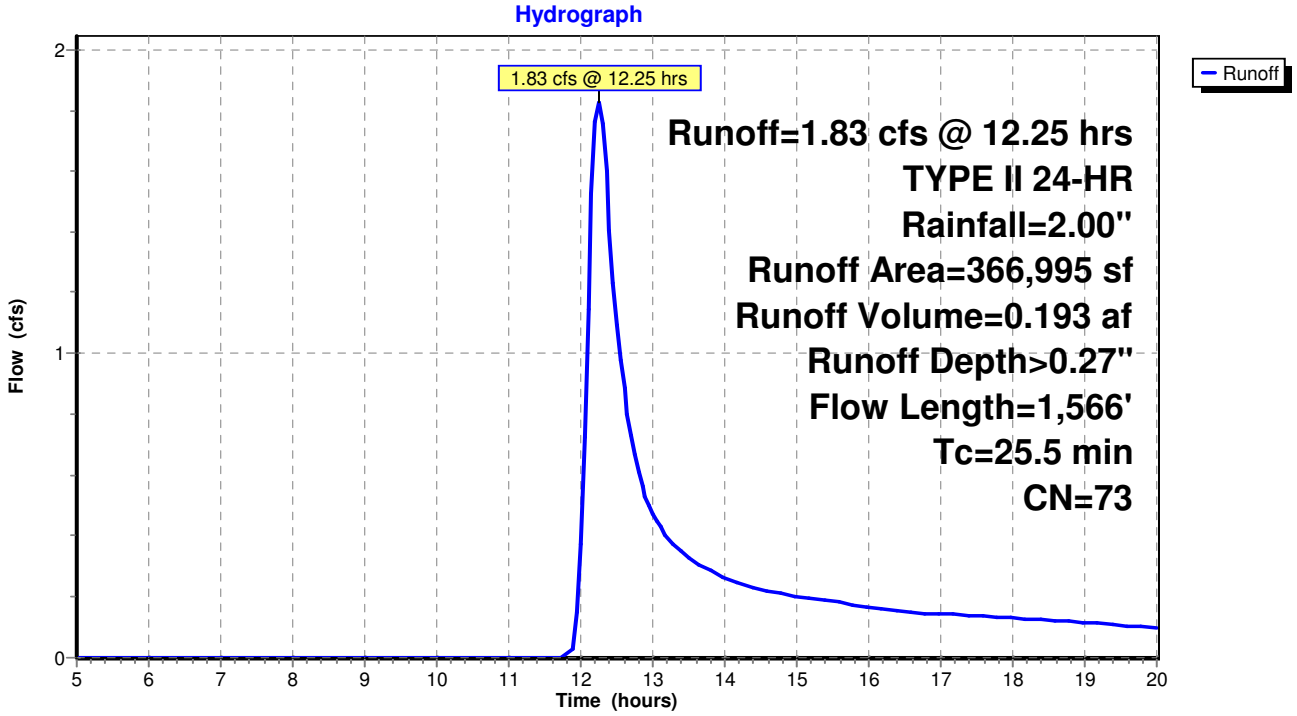
Runoff = 1.83 cfs @ 12.25 hrs, Volume= 0.193 af, Depth> 0.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=2.00"

Area (sf)	CN	Description
10,696	98	Paved parking & roofs
22,613	39	>75% Grass cover, Good, HSG A
14,492	98	Paved parking & roofs
21,401	61	>75% Grass cover, Good, HSG B
31,721	98	Paved parking & roofs
18,164	98	Paved parking & roofs
121,053	74	>75% Grass cover, Good, HSG C
126,855	65	Brush, Good, HSG C
366,995	73	Weighted Average
291,922		79.54% Pervious Area
75,073		20.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0100	0.08		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
2.5	350	0.0240	2.32		**Shallow Concentrated Flow, Balance of Flow to Road** Grassed Waterway Kv= 15.0 fps
0.1	16	0.0100	2.03		**Shallow Concentrated Flow, Balance of Flow to Swale** Paved Kv= 20.3 fps
2.4	1,100	0.0170	7.61	121.77	**Trap/Vee/Rect Channel Flow, Balance of Longest Flowpath** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.027
25.5	1,566	Total			

Subcatchment PSC 7: Proposed Subcatchment 7



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Summary for Subcatchment PSC 8: Proposed Subcatchment 8

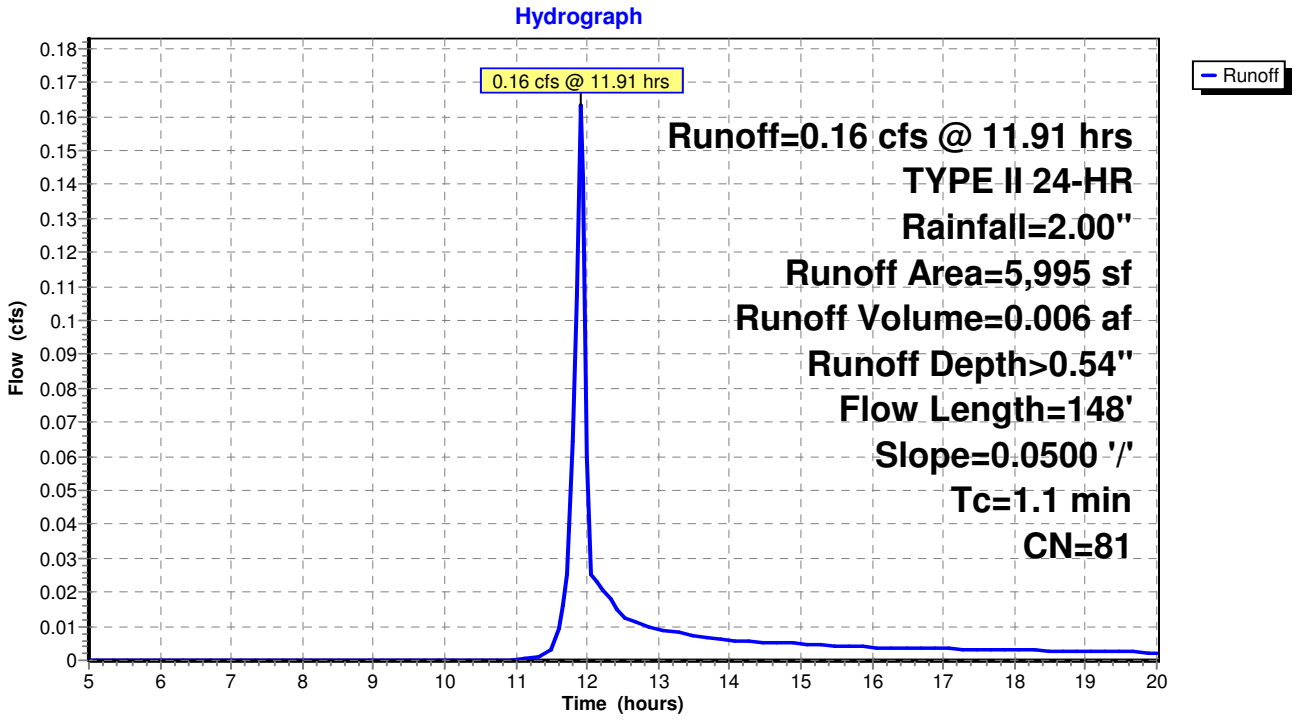
Runoff = 0.16 cfs @ 11.91 hrs, Volume= 0.006 af, Depth> 0.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=2.00"

Area (sf)	CN	Description
2,937	98	Paved parking & roofs
3,058	65	Brush, Good, HSG C
5,995	81	Weighted Average
3,058		51.01% Pervious Area
2,937		48.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0500	1.82		**Sheet Flow, First 100' Flowpath** Smooth surfaces n= 0.011 P2= 2.70"
0.2	48	0.0500	4.54		**Shallow Concentrated Flow, Balance of Flow to Channel** Paved Kv= 20.3 fps
1.1	148	Total			

Subcatchment PSC 8: Proposed Subcatchment 8



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Summary for Subcatchment PSC-7A: Proposed Subcatchment 7A

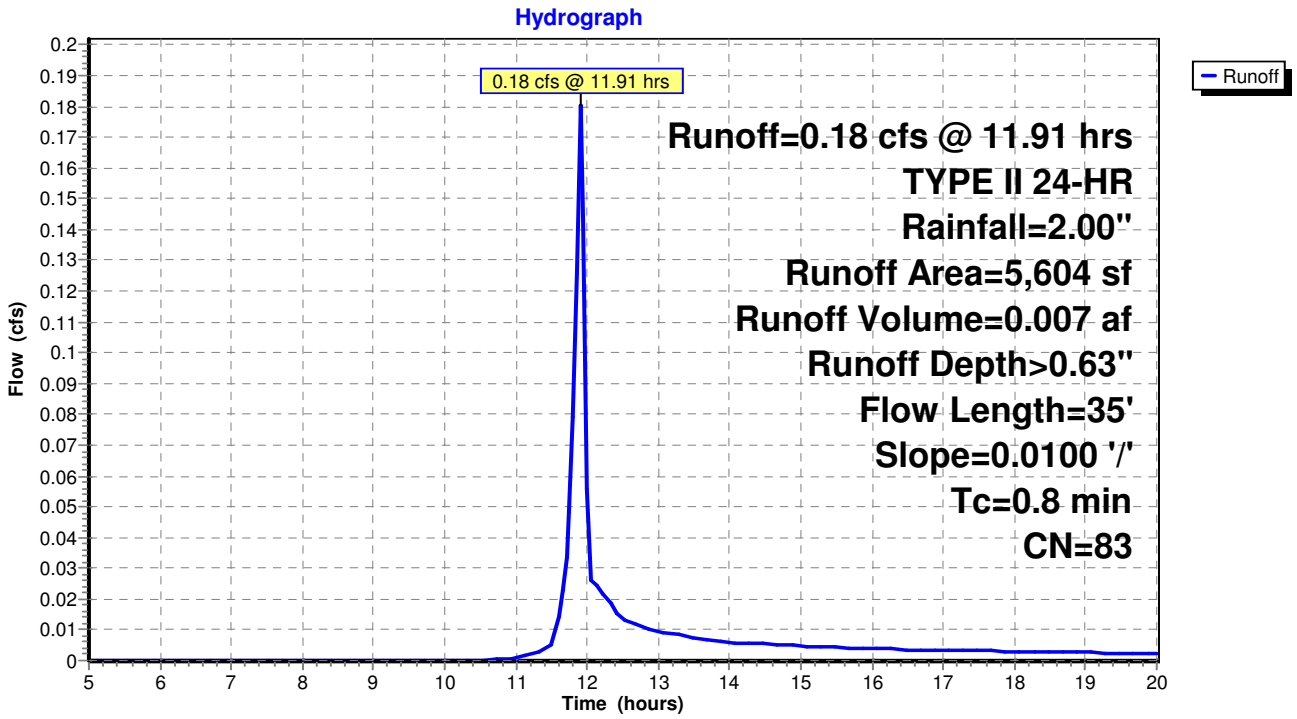
Runoff = 0.18 cfs @ 11.91 hrs, Volume= 0.007 af, Depth> 0.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=2.00"

Area (sf)	CN	Description
3,588	74	>75% Grass cover, Good, HSG C
2,016	98	Roofs, HSG C
5,604	83	Weighted Average
3,588		64.03% Pervious Area
2,016		35.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	35	0.0100	0.78		**Sheet Flow, Balance of Longest Flowpath** Smooth surfaces n= 0.011 P2= 2.70"

Subcatchment PSC-7A: Proposed Subcatchment 7A



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Summary for Subcatchment UP 1: Upland Watershed 1

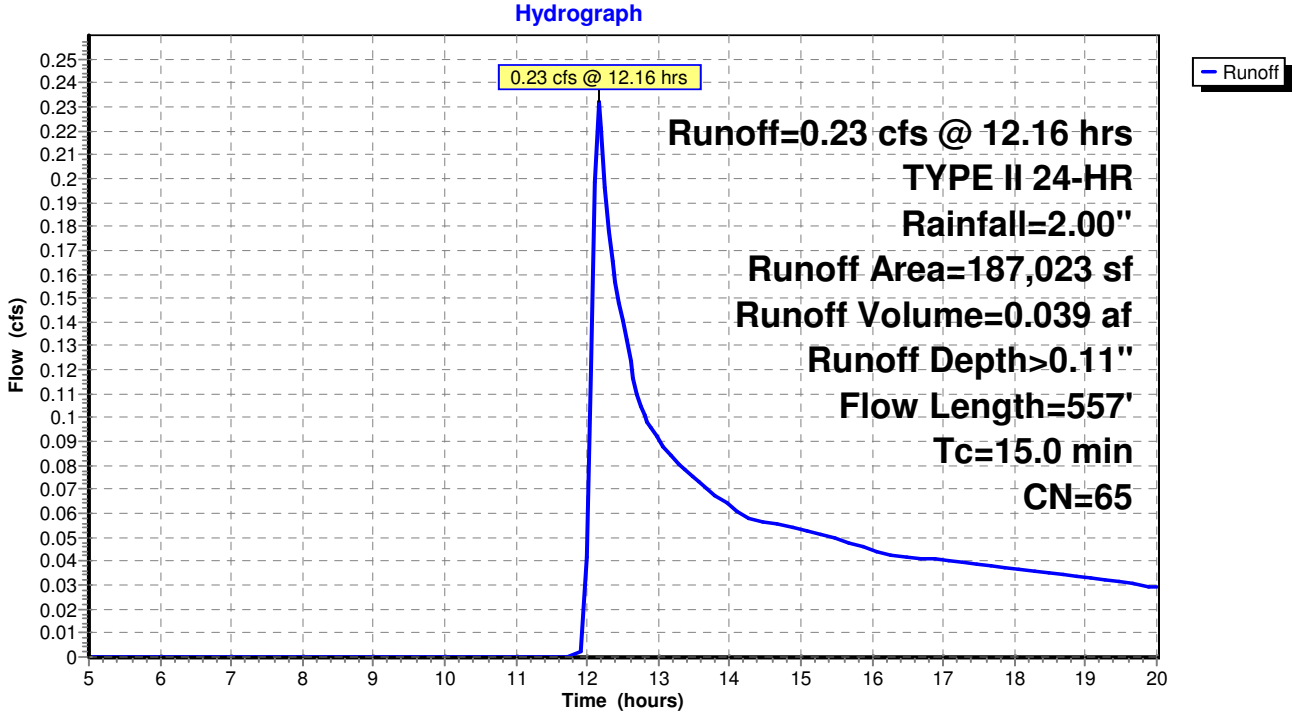
Runoff = 0.23 cfs @ 12.16 hrs, Volume= 0.039 af, Depth> 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=2.00"

Area (sf)	CN	Description
187,023	65	Brush, Good, HSG C
187,023		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0360	0.14		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
2.7	457	0.0350	2.81		**Shallow Concentrated Flow, Balance of Longest Flowpath** Grassed Waterway Kv= 15.0 fps
15.0	557	Total			

Subcatchment UP 1: Upland Watershed 1



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Summary for Subcatchment UP 2: Upland Watershed 2

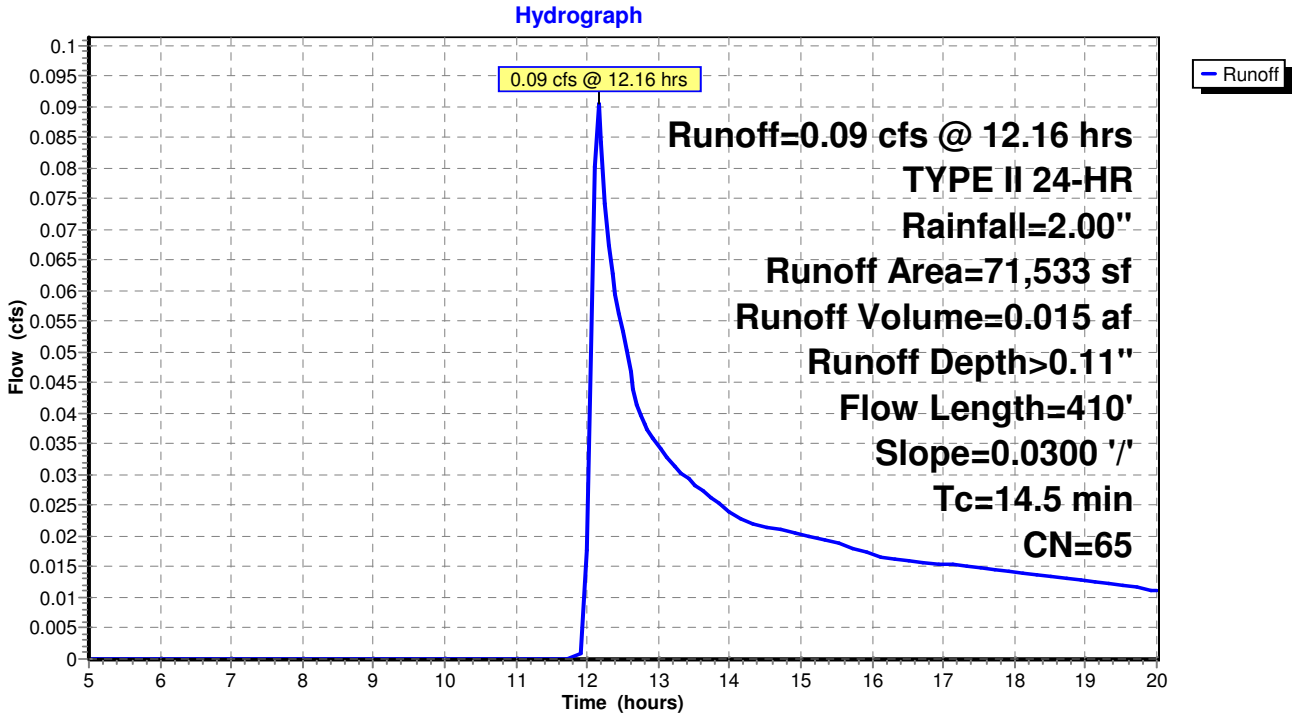
Runoff = 0.09 cfs @ 12.16 hrs, Volume= 0.015 af, Depth> 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=2.00"

Area (sf)	CN	Description
71,533	65	Brush, Good, HSG C
71,533		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	155	0.0300	0.20		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
1.6	255	0.0300	2.60		**Shallow Concentrated Flow, Balance of Longest Flowpath** Grassed Waterway Kv= 15.0 fps
14.5	410	Total			

Subcatchment UP 2: Upland Watershed 2



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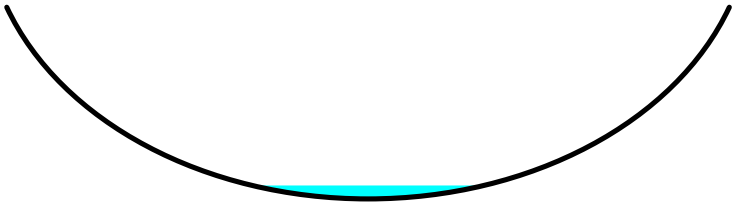
Summary for Reach Div: Diversion Swale

Inflow Area = 9.223 ac, 0.00% Impervious, Inflow Depth > 0.11"
Inflow = 0.44 cfs @ 12.15 hrs, Volume= 0.084 af
Outflow = 0.27 cfs @ 12.98 hrs, Volume= 0.078 af, Atten= 40%, Lag= 49.9 min

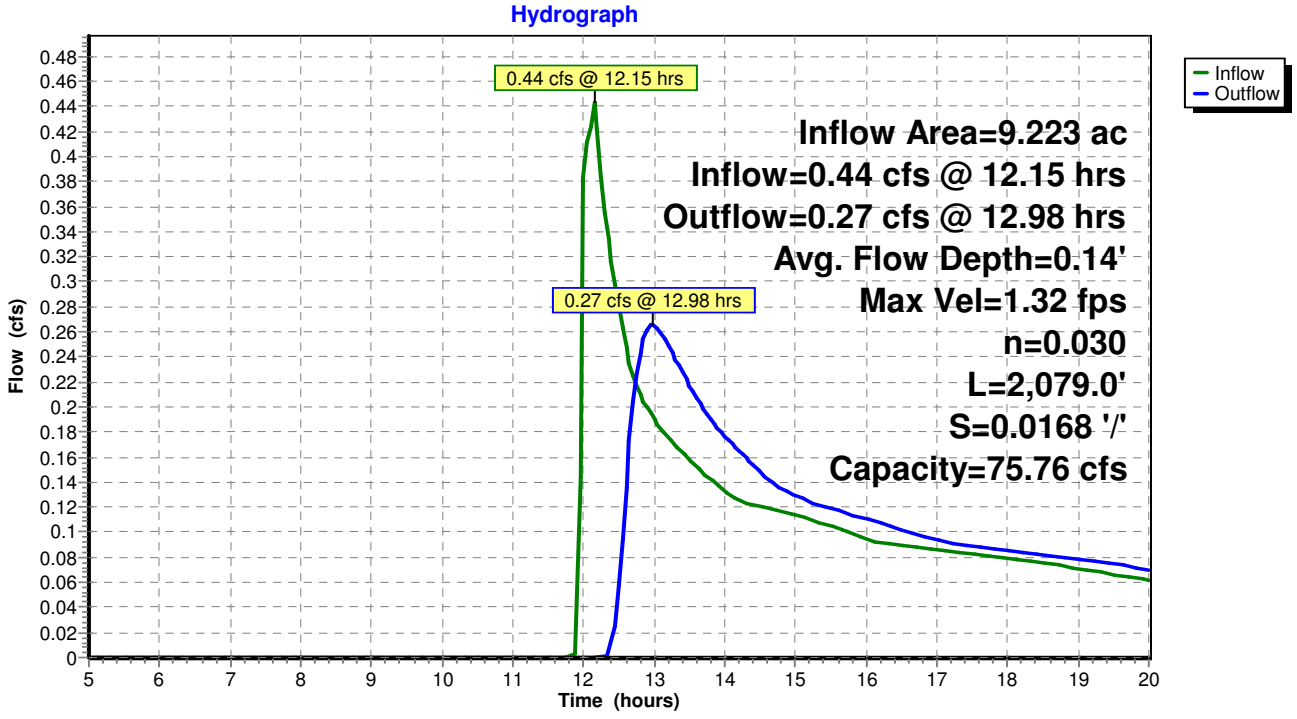
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.32 fps, Min. Travel Time= 26.2 min
Avg. Velocity = 1.01 fps, Avg. Travel Time= 34.2 min

Peak Storage= 418 cf @ 12.54 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 2.00' Flow Area= 10.7 sf, Capacity= 75.76 cfs

8.00' x 2.00' deep Parabolic Channel, n= 0.030
Length= 2,079.0' Slope= 0.0168 '/'
Inlet Invert= 0.00', Outlet Invert= -35.00'



Reach Div: Diversion Swale



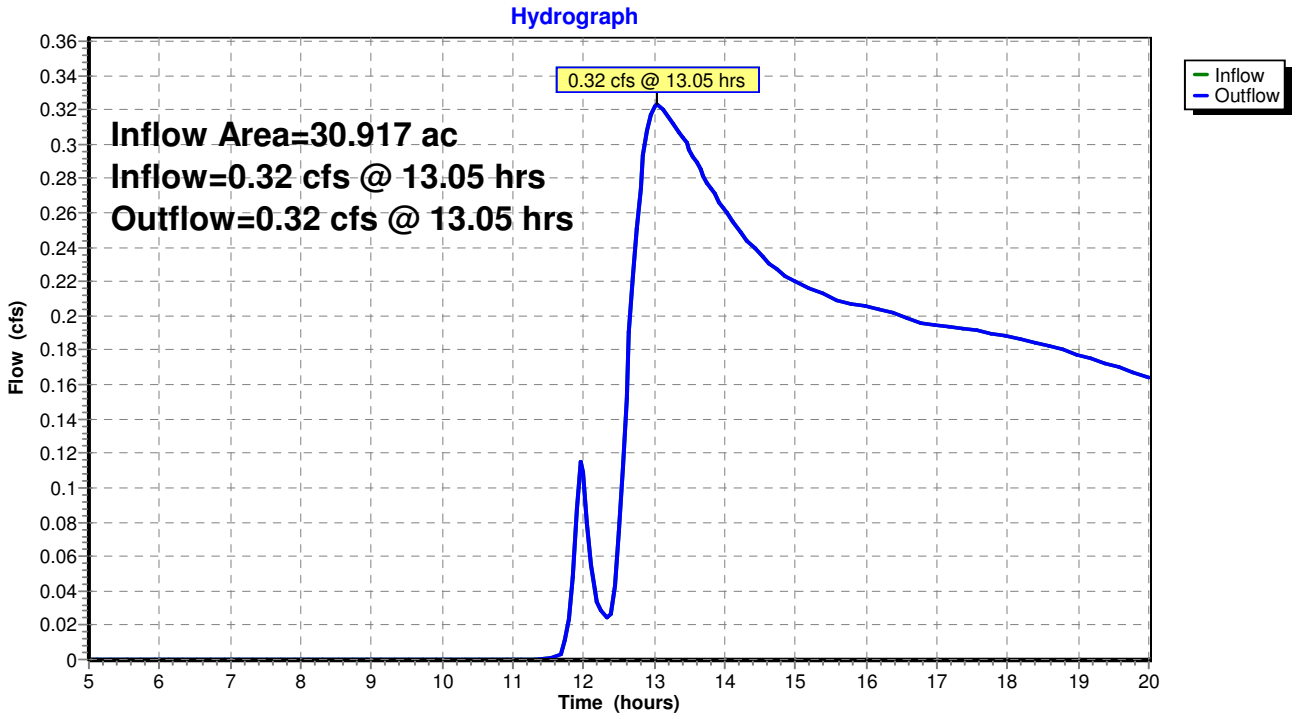
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Summary for Reach DP 2: Design Point Summation 2

Inflow Area = 30.917 ac, 6.92% Impervious, Inflow Depth > 0.05"
Inflow = 0.32 cfs @ 13.05 hrs, Volume= 0.136 af
Outflow = 0.32 cfs @ 13.05 hrs, Volume= 0.136 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP 2: Design Point Summation 2



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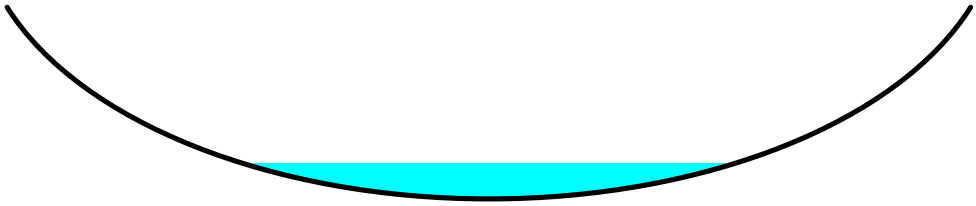
Summary for Reach RS: Road Swale

Inflow Area = 8.425 ac, 20.46% Impervious, Inflow Depth > 0.27"
Inflow = 1.83 cfs @ 12.25 hrs, Volume= 0.193 af
Outflow = 1.56 cfs @ 12.51 hrs, Volume= 0.189 af, Atten= 15%, Lag= 15.4 min

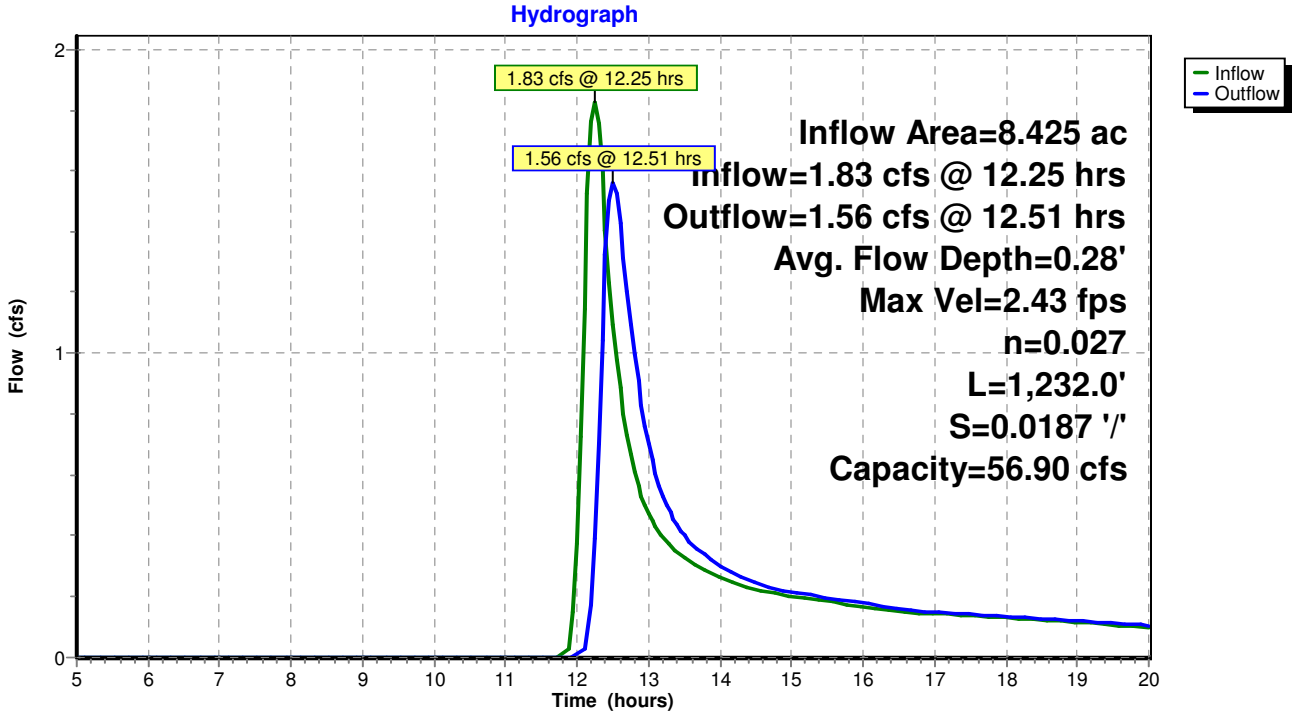
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.43 fps, Min. Travel Time= 8.5 min
Avg. Velocity = 1.33 fps, Avg. Travel Time= 15.4 min

Peak Storage= 795 cf @ 12.36 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.50' Flow Area= 8.0 sf, Capacity= 56.90 cfs

8.00' x 1.50' deep Parabolic Channel, n= 0.027
Length= 1,232.0' Slope= 0.0187 '/'
Inlet Invert= 0.00', Outlet Invert= -23.00'



Reach RS: Road Swale



Summary for Pond BR 2: Bioretention Area 2

Inflow Area = 0.386 ac, 34.86% Impervious, Inflow Depth > 0.58"
Inflow = 0.31 cfs @ 12.08 hrs, Volume= 0.019 af
Outflow = 0.01 cfs @ 16.95 hrs, Volume= 0.003 af, Atten= 97%, Lag= 292.4 min
Primary = 0.01 cfs @ 16.95 hrs, Volume= 0.003 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 2.09' @ 16.95 hrs Surf.Area= 219 sf Storage= 688 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 2,454 cf

Plug-Flow detention time= 357.9 min calculated for 0.003 af (16% of inflow)
Center-of-Mass det. time= 257.6 min (1,072.8 - 815.2)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	2,454 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	438	0	0
1.00	438	438	438
1.10	219	33	471
3.50	219	526	996
3.51	1,094	7	1,003
4.50	1,669	1,368	2,371
4.60	0	83	2,454

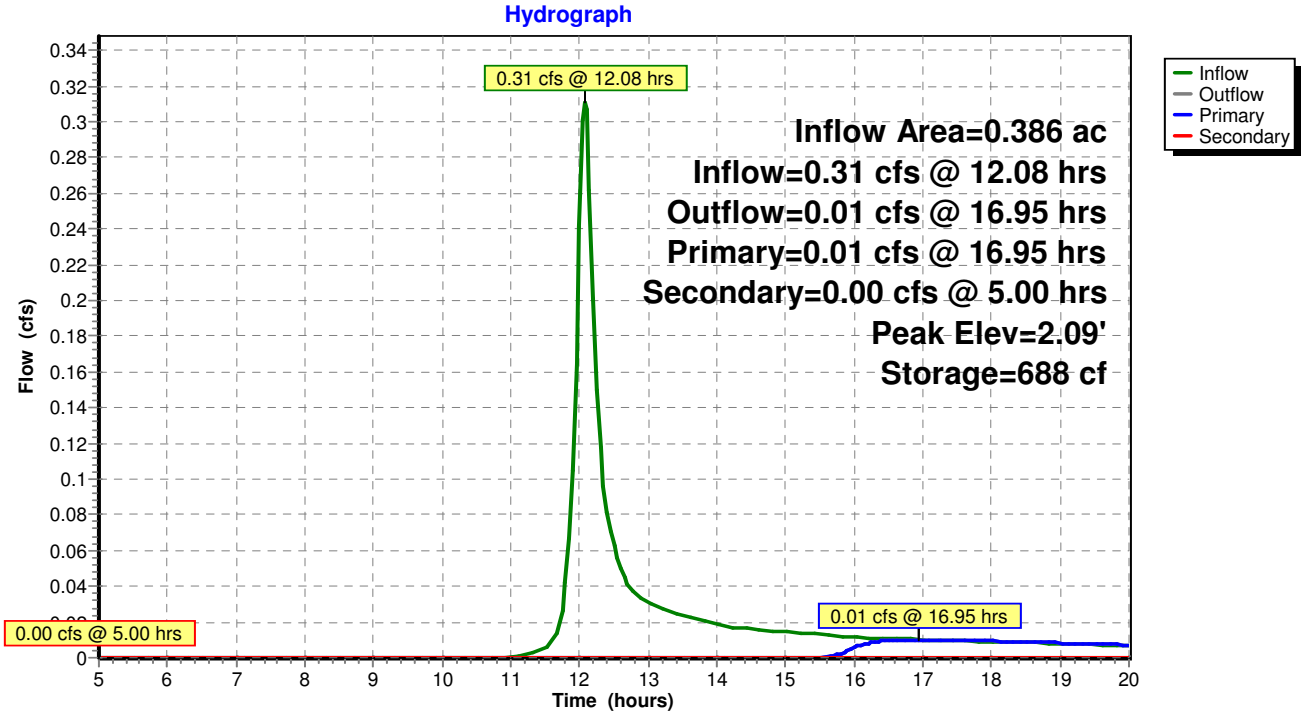
Device	Routing	Invert	Outlet Devices
#1	Secondary	4.00'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	2.00'	**4.0" Round Culvert** L= 177.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2.00' / 1.50' S= 0.0028 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.01 cfs @ 16.95 hrs HW=2.09' (Free Discharge)
↑**2=Culvert** (Barrel Controls 0.01 cfs @ 0.74 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=0.00' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Pond BR 2: Bioretention Area 2



Summary for Pond BR 3: Bioretention Area 3

Inflow Area = 0.189 ac, 24.51% Impervious, Inflow Depth > 0.50"
Inflow = 0.17 cfs @ 12.00 hrs, Volume= 0.008 af
Outflow = 0.00 cfs @ 17.88 hrs, Volume= 0.001 af, Atten= 98%, Lag= 352.8 min
Primary = 0.00 cfs @ 17.88 hrs, Volume= 0.001 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 2.04' @ 17.88 hrs Surf.Area= 99 sf Storage= 306 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 1,189 cf

Plug-Flow detention time= 398.0 min calculated for 0.001 af (12% of inflow)
Center-of-Mass det. time= 292.8 min (1,109.0 - 816.2)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	1,189 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	198	0	0
1.00	198	198	198
1.10	99	15	213
3.50	99	238	450
3.51	495	3	453
4.50	901	691	1,144
4.60	0	45	1,189

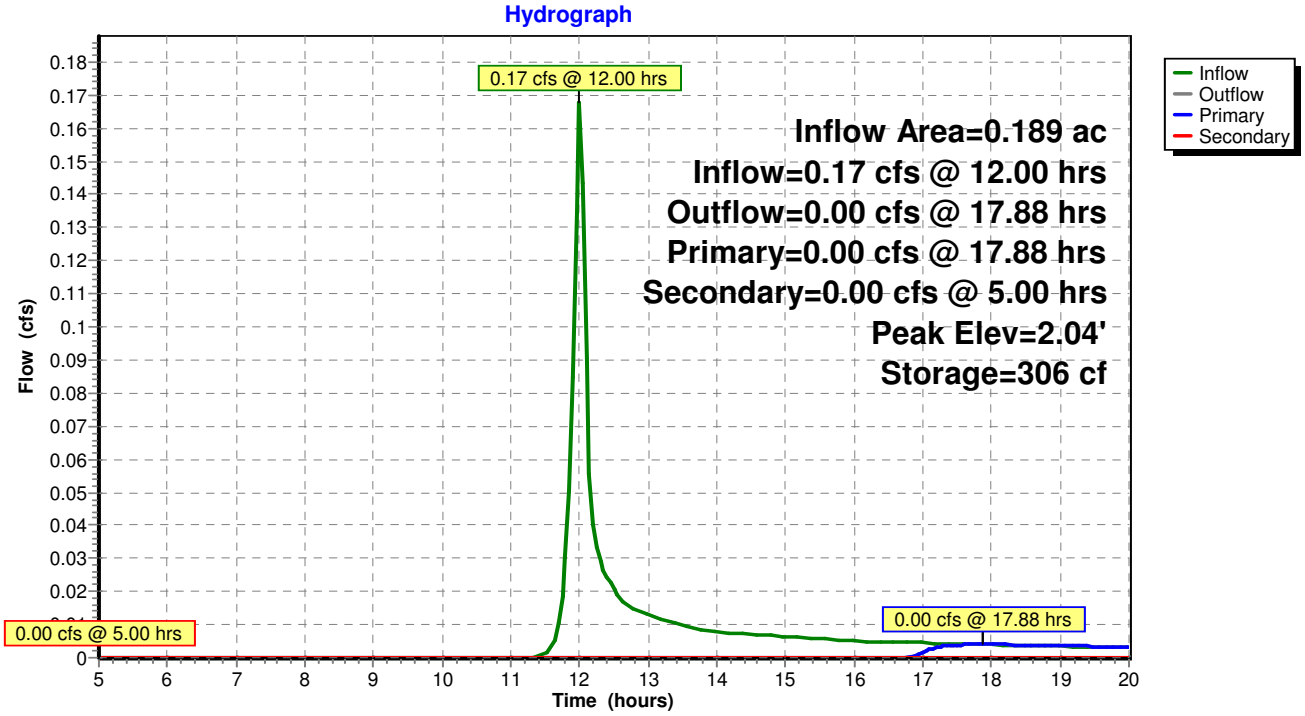
Device	Routing	Invert	Outlet Devices
#1	Secondary	4.00'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	2.00'	**4.0" Round Culvert** L= 57.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2.00' / 1.50' S= 0.0088 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.00 cfs @ 17.88 hrs HW=2.04' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.00 cfs @ 0.80 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=0.00' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Pond BR 3: Bioretention Area 3



Summary for Pond BR 6: Bioretention Area 6

Inflow Area = 0.281 ac, 31.15% Impervious, Inflow Depth > 0.54"
Inflow = 0.31 cfs @ 11.95 hrs, Volume= 0.013 af
Outflow = 0.02 cfs @ 13.05 hrs, Volume= 0.005 af, Atten= 94%, Lag= 66.0 min
Primary = 0.02 cfs @ 13.05 hrs, Volume= 0.005 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 2.62' @ 13.05 hrs Surf.Area= 90 sf Storage= 330 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 1,348 cf

Plug-Flow detention time= 222.2 min calculated for 0.005 af (41% of inflow)
Center-of-Mass det. time= 127.3 min (937.5 - 810.2)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	1,348 cf	**Custom Stage Data (Prismatic)** Listed below

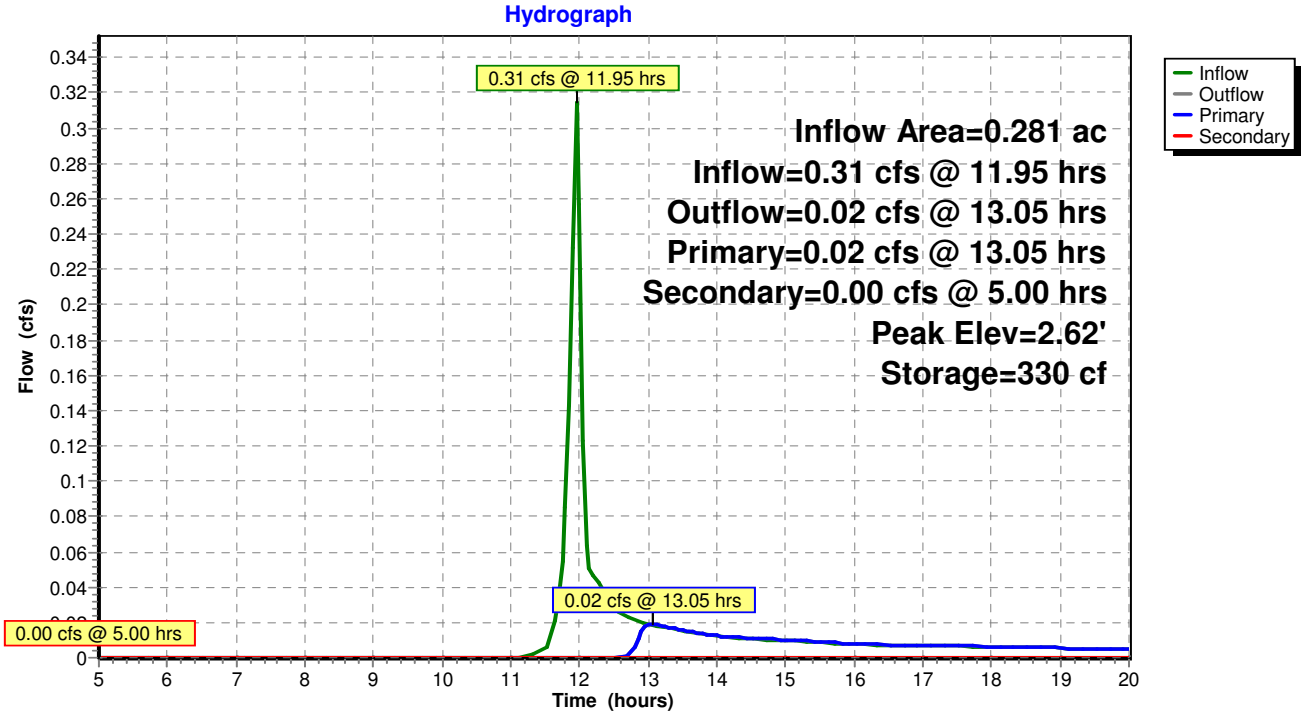
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	180	0	0
1.00	180	180	180
1.10	90	14	194
3.50	90	216	410
3.51	451	3	412
4.50	1,307	870	1,282
4.60	0	65	1,348

Device	Routing	Invert	Outlet Devices
#1	Secondary	4.00'	**6.0' long x 2.0' 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 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	2.50'	**4.0" Round Culvert** L= 132.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2.50' / 2.00' S= 0.0038 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.02 cfs @ 13.05 hrs HW=2.62' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.02 cfs @ 0.97 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=0.00' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond BR 6: Bioretention Area 6



Summary for Pond BR 7: Bioretention Area 7

Inflow Area = 0.129 ac, 35.97% Impervious, Inflow Depth > 0.63"
Inflow = 0.18 cfs @ 11.91 hrs, Volume= 0.007 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 1.92' @ 20.00 hrs Surf.Area= 99 sf Storage= 294 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 1,189 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	1,189 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	198	0	0
1.00	198	198	198
1.10	99	15	213
3.50	99	238	450
3.51	495	3	453
4.50	901	691	1,144
4.60	0	45	1,189

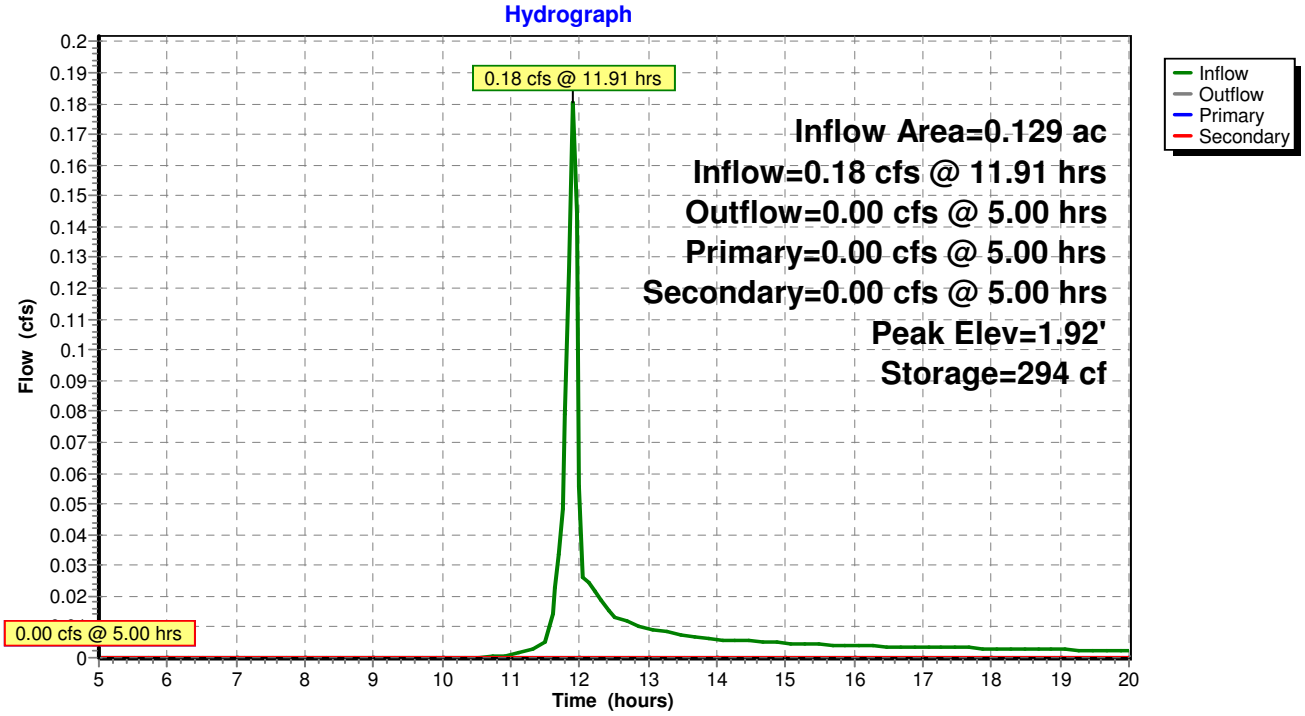
Device	Routing	Invert	Outlet Devices
#1	Secondary	4.00'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	2.00'	**4.0" Round Culvert** L= 57.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2.00' / 1.50' S= 0.0088 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=0.00' (Free Discharge)
2=Culvert (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=0.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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Pond BR 7: Bioretention Area 7



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Summary for Pond DS: Dry Swales

Inflow Area = 0.138 ac, 48.99% Impervious, Inflow Depth > 0.54"
Inflow = 0.16 cfs @ 11.91 hrs, Volume= 0.006 af
Outflow = 0.12 cfs @ 11.97 hrs, Volume= 0.006 af, Atten= 28%, Lag= 3.3 min
Primary = 0.12 cfs @ 11.97 hrs, Volume= 0.006 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 0.35' @ 11.97 hrs Surf.Area= 350 sf Storage= 49 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 1,146 cf

Plug-Flow detention time= 18.0 min calculated for 0.006 af (98% of inflow)
Center-of-Mass det. time= 10.5 min (818.5 - 808.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	573 cf	**Custom Stage Data (Prismatic)** Listed below
		573 cf	x 2.00 = 1,146 cf Total Available Storage

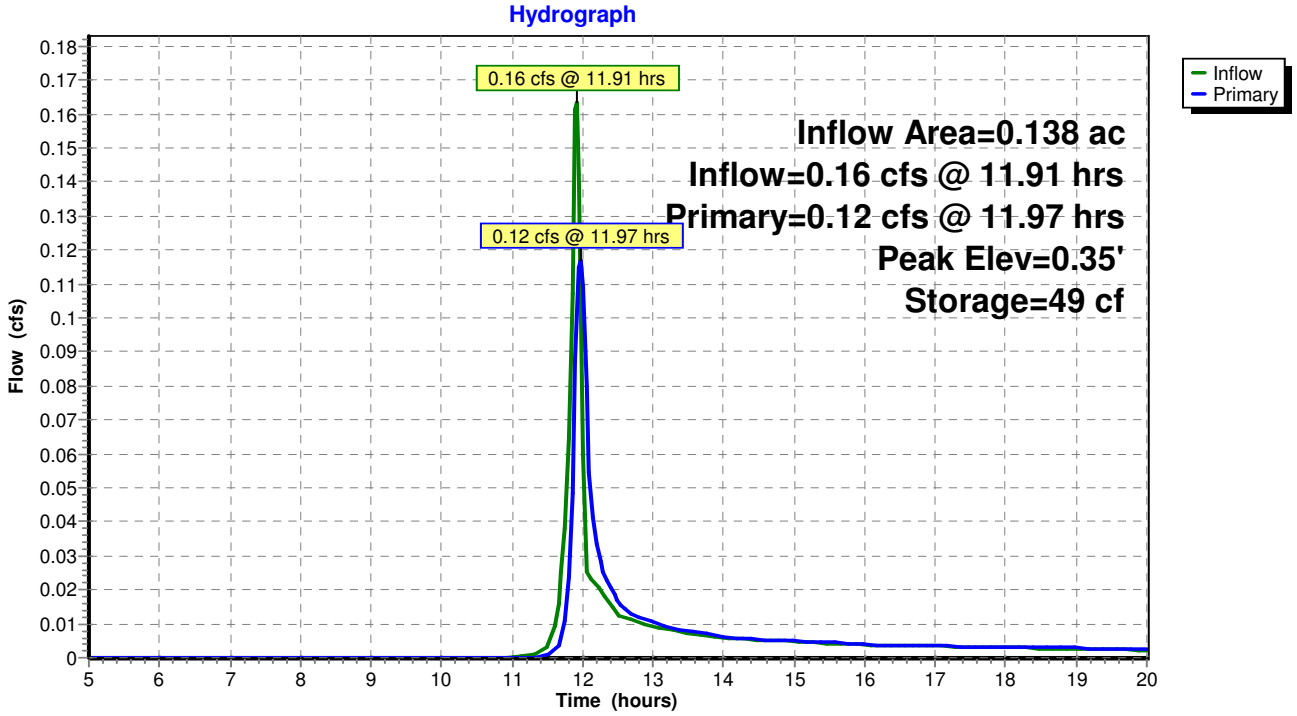
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	175	0.0	0	0
1.00	175	40.0	70	70
1.10	175	20.0	4	74
3.50	175	20.0	84	158
3.51	175	100.0	2	159
4.50	600	100.0	384	543
4.60	0	100.0	30	573

Device	Routing	Invert	Outlet Devices
#1	Primary	4.00'	**6.0' long x 2.0' 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 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	0.00'	**4.0" Round Culvert** L= 127.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 0.00' / -0.50' S= 0.0039 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.11 cfs @ 11.97 hrs HW=0.34' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
└**2=Culvert** (Barrel Controls 0.11 cfs @ 1.57 fps)

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Pond DS: Dry Swales



Summary for Pond FB: Forebay

Inflow Area = 8.425 ac, 20.46% Impervious, Inflow Depth > 0.27"
Inflow = 1.56 cfs @ 12.51 hrs, Volume= 0.189 af
Outflow = 1.03 cfs @ 13.00 hrs, Volume= 0.122 af, Atten= 34%, Lag= 29.6 min
Primary = 1.03 cfs @ 13.00 hrs, Volume= 0.122 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 4.17' @ 13.00 hrs Surf.Area= 0 sf Storage= 2,928 cf
Flood Elev= 4.00' Surf.Area= 1,536 sf Storage= 2,852 cf

Plug-Flow detention time= 146.8 min calculated for 0.122 af (65% of inflow)
Center-of-Mass det. time= 62.8 min (930.8 - 868.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	2,928 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	113	0	0
1.00	345	229	229
2.00	633	489	718
3.00	1,049	841	1,559
4.00	1,536	1,293	2,852
4.10	0	77	2,928

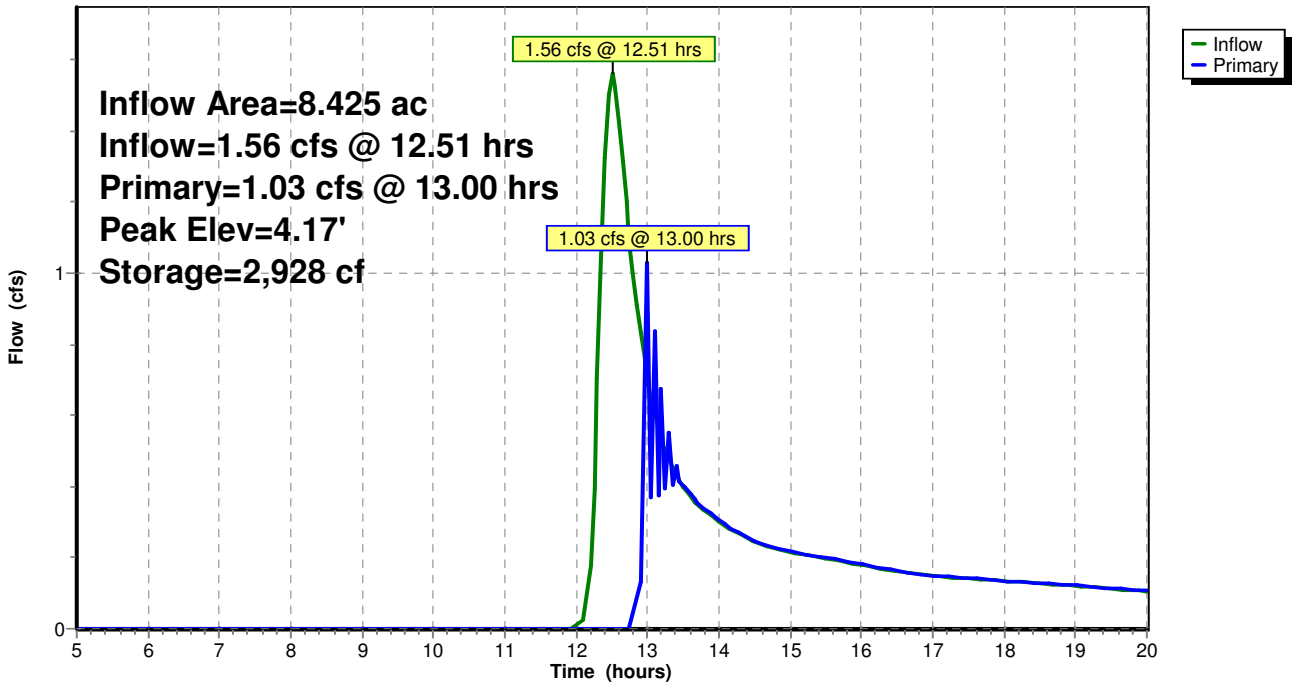
Device	Routing	Invert	Outlet Devices
#1	Primary	4.00'	**6.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=1.02 cfs @ 13.00 hrs HW=4.17' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 1.02 cfs @ 0.99 fps)

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Pond FB: Forebay

Hydrograph



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Summary for Pond P: Pond

Inflow Area = 8.425 ac, 20.46% Impervious, Inflow Depth > 0.17"
Inflow = 1.03 cfs @ 13.00 hrs, Volume= 0.122 af
Outflow = 0.04 cfs @ 20.00 hrs, Volume= 0.017 af, Atten= 96%, Lag= 420.0 min
Primary = 0.04 cfs @ 20.00 hrs, Volume= 0.017 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Starting Elev= 4.00' Surf.Area= 7,635 sf Storage= 5,821 cf
Peak Elev= 4.47' @ 20.00 hrs Surf.Area= 9,601 sf Storage= 10,418 cf (4,597 cf above start)
Flood Elev= 7.50' Surf.Area= 0 sf Storage= 46,941 cf (41,120 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 92.9 min (1,023.8 - 930.8)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	46,941 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	113	0	0
1.00	314	214	214
2.00	616	465	679
3.00	1,017	817	1,495
4.00	7,635	4,326	5,821
5.00	11,788	9,712	15,533
6.00	13,709	12,749	28,281
7.00	15,740	14,725	43,006
7.50	0	3,935	46,941

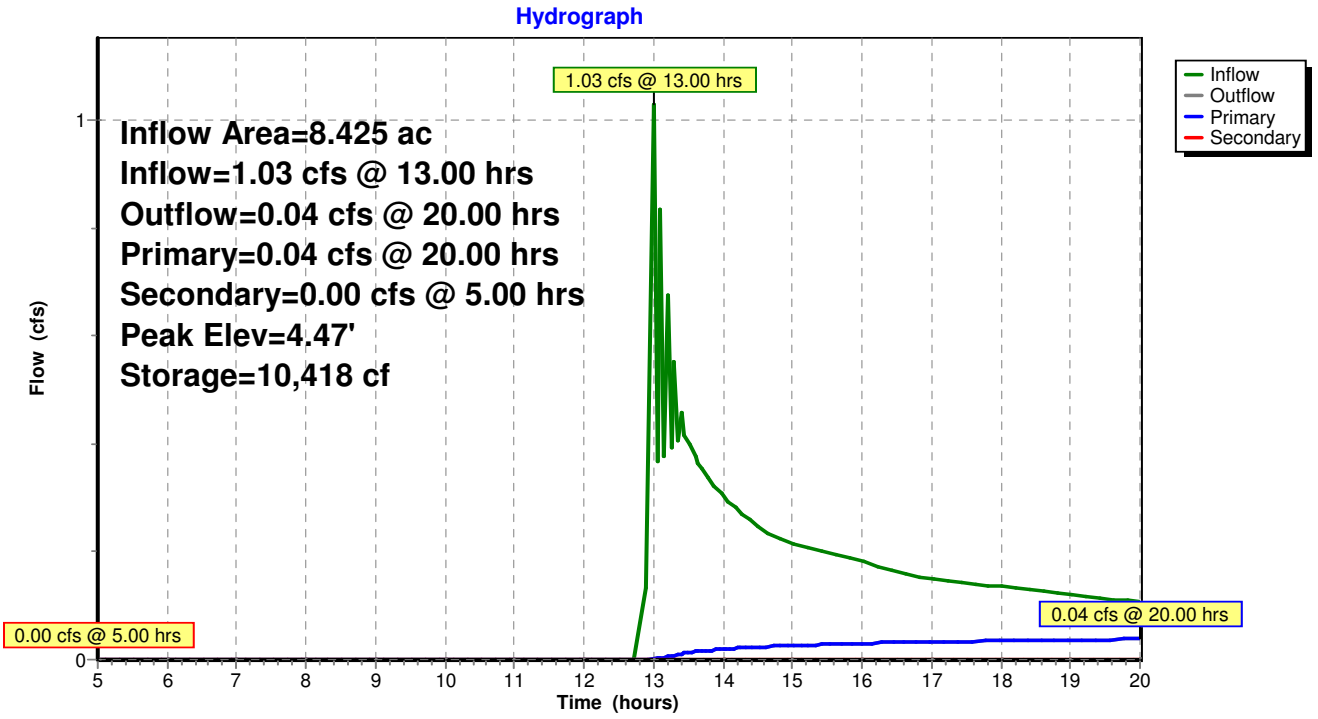
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**12.0" Round Culvert** L= 104.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 0.00' / -1.00' S= 0.0096 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	4.00'	**1.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	5.25'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	6.50'	**25.0' long x 6.0' 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 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

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Primary OutFlow Max=0.04 cfs @ 20.00 hrs HW=4.47' (Free Discharge)
└**1=Culvert** (Passes 0.04 cfs of 5.87 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 3.09 fps)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=4.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P: Pond



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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.519	39	>75% Grass cover, Good, HSG A (PSC 7)
0.491	61	>75% Grass cover, Good, HSG B (PSC 7)
3.449	74	>75% Grass cover, Good, HSG C (PSC 2, PSC 3, PSC 6, PSC 7, PSC-7A)
2.435	30	Brush, Good, HSG A (OSC 3)
0.360	48	Brush, Good, HSG B (OSC 3)
21.522	65	Brush, Good, HSG C (OSC 1, OSC 3, PSC 7, PSC 8, UP 1, UP 2)
2.059	98	Paved parking & roofs (PSC 2, PSC 3, PSC 6, PSC 7, PSC 8)
0.046	98	Roofs, HSG C (PSC-7A)
0.035	98	Unconnected roofs, HSG A (OSC 3)
30.917	**65**	**TOTAL AREA**

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.989	HSG A	OSC 3, PSC 7
0.851	HSG B	OSC 3, PSC 7
25.018	HSG C	OSC 1, OSC 3, PSC 2, PSC 3, PSC 6, PSC 7, PSC 8, PSC-7A, UP 1, UP 2
0.000	HSG D	
2.059	Other	PSC 2, PSC 3, PSC 6, PSC 7, PSC 8
30.917		**TOTAL AREA**

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.519	0.491	3.449	0.000	0.000	4.460	>75% Grass cover, Good	PSC 2, PSC 3, PSC 6, PSC 7, PSC-7A
2.435	0.360	21.522	0.000	0.000	24.317	Brush, Good	OSC 1, OSC 3, PSC 7, PSC 8, UP 1, UP 2
0.000	0.000	0.000	0.000	2.059	2.059	Paved parking & roofs	PSC 2, PSC 3, PSC 6, PSC 7, PSC 8
0.000	0.000	0.046	0.000	0.000	0.046	Roofs	PSC-7A
0.035	0.000	0.000	0.000	0.000	0.035	Unconnected roofs	OSC 3
2.989	**0.851**	**25.018**	**0.000**	**2.059**	**30.917**	**TOTAL AREA**	

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	BR 2	2.00	1.50	177.0	0.0028	0.013	4.0	0.0	0.0
2	BR 3	2.00	1.50	57.0	0.0088	0.013	4.0	0.0	0.0
3	BR 6	2.50	2.00	132.0	0.0038	0.013	4.0	0.0	0.0
4	BR 7	2.00	1.50	57.0	0.0088	0.013	4.0	0.0	0.0
5	DS	0.00	-0.50	127.0	0.0039	0.013	4.0	0.0	0.0
6	P	0.00	-1.00	104.0	0.0096	0.013	12.0	0.0	0.0

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment OSC 1: Off-Site Runoff Area=143,197 sf 0.00% Impervious Runoff Depth>0.62"
Flow Length=2,079' Slope=0.0170 '/' Tc=4.6 min CN=65 Runoff=3.87 cfs 0.169 af

Subcatchment OSC 3: Off-Site Runoff Area=529,093 sf 0.28% Impervious Runoff Depth>0.35"
Flow Length=1,570' Tc=19.6 min CN=58 Runoff=3.37 cfs 0.354 af

Subcatchment PSC 2: Proposed Runoff Area=16,829 sf 34.86% Impervious Runoff Depth>1.56"
Flow Length=170' Tc=14.8 min CN=82 Runoff=0.85 cfs 0.050 af

Subcatchment PSC 3: Proposed Runoff Area=8,226 sf 24.51% Impervious Runoff Depth>1.43"
Flow Length=146' Tc=8.0 min CN=80 Runoff=0.48 cfs 0.022 af

Subcatchment PSC 6: Proposed Runoff Area=12,258 sf 31.15% Impervious Runoff Depth>1.50"
Flow Length=49' Tc=4.1 min CN=81 Runoff=0.86 cfs 0.035 af

Subcatchment PSC 7: Proposed Runoff Area=366,995 sf 20.46% Impervious Runoff Depth>1.00"
Flow Length=1,566' Tc=25.5 min CN=73 Runoff=8.45 cfs 0.699 af

Subcatchment PSC 8: Proposed Runoff Area=5,995 sf 48.99% Impervious Runoff Depth>1.50"
Flow Length=148' Slope=0.0500 '/' Tc=1.1 min CN=81 Runoff=0.45 cfs 0.017 af

Subcatchment PSC-7A: Proposed Runoff Area=5,604 sf 35.97% Impervious Runoff Depth>1.64"
Flow Length=35' Slope=0.0100 '/' Tc=0.8 min CN=83 Runoff=0.46 cfs 0.018 af

Subcatchment UP 1: Upland Watershed 1 Runoff Area=187,023 sf 0.00% Impervious Runoff Depth>0.61"
Flow Length=557' Tc=15.0 min CN=65 Runoff=3.29 cfs 0.220 af

Subcatchment UP 2: Upland Watershed 2 Runoff Area=71,533 sf 0.00% Impervious Runoff Depth>0.61"
Flow Length=410' Slope=0.0300 '/' Tc=14.5 min CN=65 Runoff=1.28 cfs 0.084 af

Reach Div: Diversion Swale Avg. Flow Depth=0.53' Max Vel=3.14 fps Inflow=6.63 cfs 0.473 af
n=0.030 L=2,079.0' S=0.0168 '/' Capacity=75.76 cfs Outflow=4.59 cfs 0.461 af

Reach DP 2: Design Point Summation 2 Inflow=7.79 cfs 1.225 af
Outflow=7.79 cfs 1.225 af

Reach RS: Road Swale Avg. Flow Depth=0.60' Max Vel=3.96 fps Inflow=8.45 cfs 0.699 af
n=0.027 L=1,232.0' S=0.0187 '/' Capacity=56.90 cfs Outflow=7.91 cfs 0.692 af

Pond BR 2: Bioretention Area 2 Peak Elev=3.54' Storage=1,050 cf Inflow=0.85 cfs 0.050 af
Primary=0.18 cfs 0.034 af Secondary=0.00 cfs 0.000 af Outflow=0.18 cfs 0.034 af

Pond BR 3: Bioretention Area 3 Peak Elev=2.90' Storage=391 cf Inflow=0.48 cfs 0.022 af
Primary=0.23 cfs 0.015 af Secondary=0.00 cfs 0.000 af Outflow=0.23 cfs 0.015 af

Pond BR 6: Bioretention Area 6 Peak Elev=3.79' Storage=659 cf Inflow=0.86 cfs 0.035 af
Primary=0.19 cfs 0.028 af Secondary=0.00 cfs 0.000 af Outflow=0.19 cfs 0.028 af

Pond BR 7: Bioretention Area 7 Peak Elev=2.52' Storage=354 cf Inflow=0.46 cfs 0.018 af
Primary=0.19 cfs 0.011 af Secondary=0.00 cfs 0.000 af Outflow=0.19 cfs 0.011 af

Pond DS: Dry Swales Peak Elev=1.46' Storage=172 cf Inflow=0.45 cfs 0.017 af
Outflow=0.20 cfs 0.017 af

Pond FB: Forebay Peak Elev=4.80' Storage=2,928 cf Inflow=7.91 cfs 0.692 af
Outflow=11.55 cfs 0.625 af

Pond P: Pond Peak Elev=5.43' Storage=20,998 cf Inflow=11.55 cfs 0.625 af
Primary=0.86 cfs 0.305 af Secondary=0.00 cfs 0.000 af Outflow=0.86 cfs 0.305 af

Total Runoff Area = 30.917 ac Runoff Volume = 1.668 af Average Runoff Depth = 0.65"
93.08% Pervious = 28.777 ac 6.92% Impervious = 2.140 ac

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Summary for Subcatchment OSC 1: Off-Site Subcatchment 1

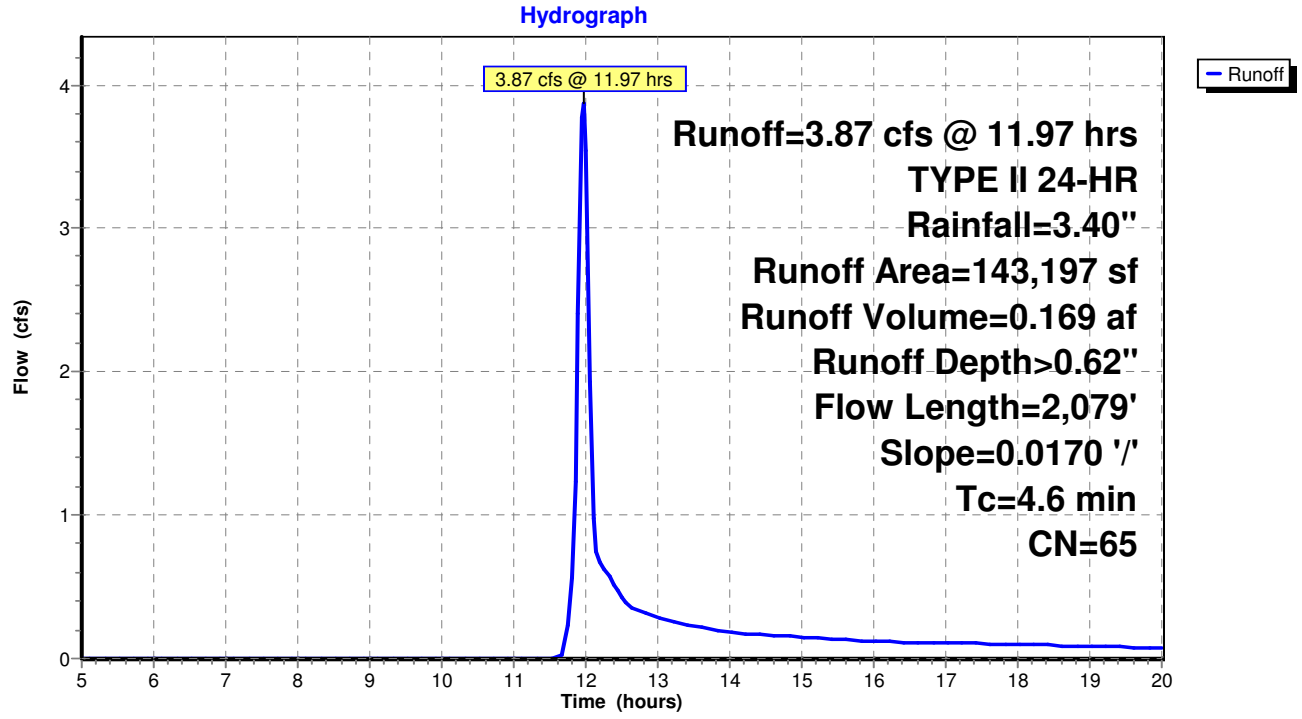
Runoff = 3.87 cfs @ 11.97 hrs, Volume= 0.169 af, Depth> 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=3.40"

Area (sf)	CN	Description
143,197	65	Brush, Good, HSG C
143,197		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	2,079	0.0170	7.61	121.77	**Trap/Vee/Rect Channel Flow, Balance of Longest Flowpath** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.027

Subcatchment OSC 1: Off-Site Subcatchment 1



Summary for Subcatchment OSC 3: Off-Site Subcatchment 3

Runoff = 3.37 cfs @ 12.18 hrs, Volume= 0.354 af, Depth> 0.35"

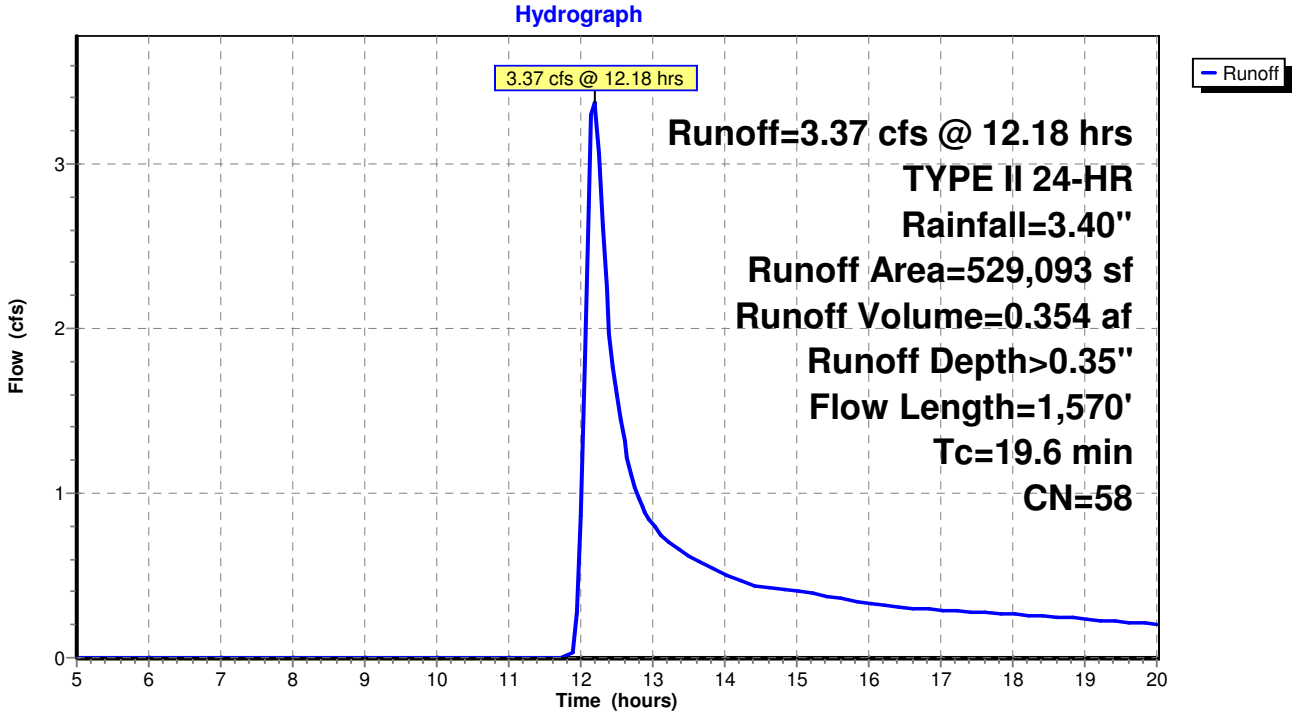
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=3.40"

Area (sf)	CN	Description
106,079	30	Brush, Good, HSG A
15,682	48	Brush, Good, HSG B
405,827	65	Brush, Good, HSG C
1,505	98	Unconnected roofs, HSG A
529,093	58	Weighted Average
527,588		99.72% Pervious Area
1,505		0.28% Impervious Area
1,505		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0400	0.14		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
6.8	1,064	0.0300	2.60		**Shallow Concentrated Flow, Balance of Flow to Channel** Grassed Waterway Kv= 15.0 fps
1.0	406	0.0110	6.52	130.46	**Trap/Vee/Rect Channel Flow, Balance of Flowpath** Bot.W=4.00' D=2.00' Z= 3.0 '/' Top.W=16.00' n= 0.027
19.6	1,570	Total			

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Subcatchment OSC 3: Off-Site Subcatchment 3



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Summary for Subcatchment PSC 2: Proposed Subcatchment 2

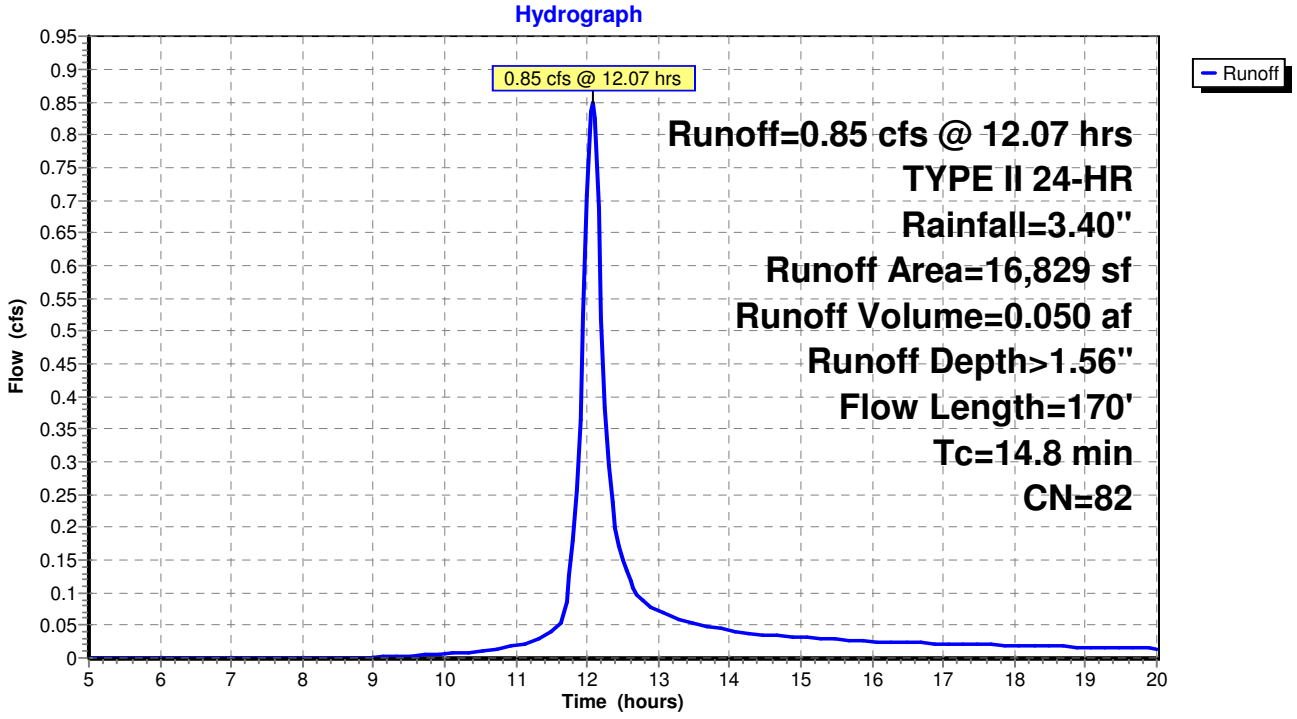
Runoff = 0.85 cfs @ 12.07 hrs, Volume= 0.050 af, Depth> 1.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=3.40"

Area (sf)	CN	Description
5,866	98	Paved parking & roofs
10,963	74	>75% Grass cover, Good, HSG C
16,829	82	Weighted Average
10,963		65.14% Pervious Area
5,866		34.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0100	0.12		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
0.6	65	0.0070	1.70		**Shallow Concentrated Flow, Balance of Flow to Channel** Paved Kv= 20.3 fps
0.1	5	0.0070	1.25		**Shallow Concentrated Flow, Balance of Longest Flowpath** Grassed Waterway Kv= 15.0 fps
14.8	170	Total			

Subcatchment PSC 2: Proposed Subcatchment 2



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Summary for Subcatchment PSC 3: Proposed Subcatchment 3

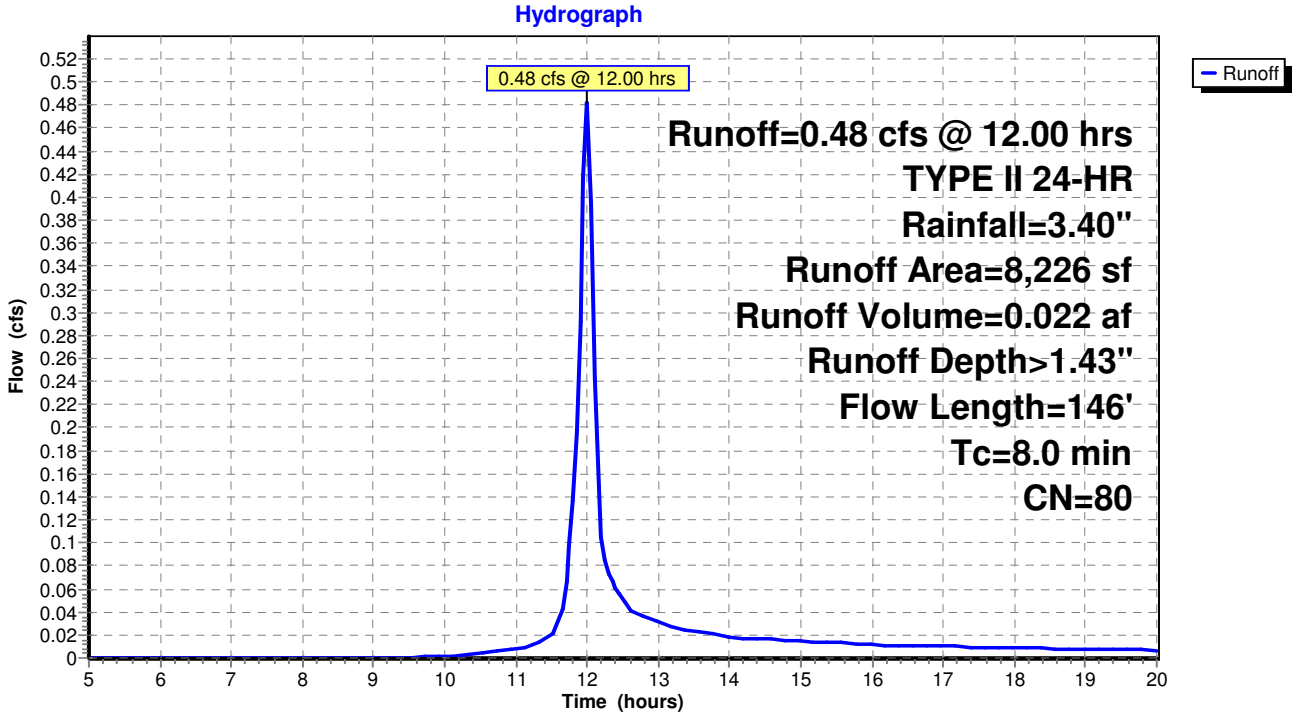
Runoff = 0.48 cfs @ 12.00 hrs, Volume= 0.022 af, Depth> 1.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=3.40"

Area (sf)	CN	Description
2,016	98	Paved parking & roofs
6,210	74	>75% Grass cover, Good, HSG C
8,226	80	Weighted Average
6,210		75.49% Pervious Area
2,016		24.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	76	0.0300	0.17		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
0.6	65	0.0070	1.70		**Shallow Concentrated Flow, Balance of Flow to Channel** Paved Kv= 20.3 fps
0.1	5	0.0070	1.25		**Shallow Concentrated Flow, Balance of Longest Flowpath** Grassed Waterway Kv= 15.0 fps
8.0	146	Total			

Subcatchment PSC 3: Proposed Subcatchment 3



Summary for Subcatchment PSC 6: Proposed Subcatchment 6

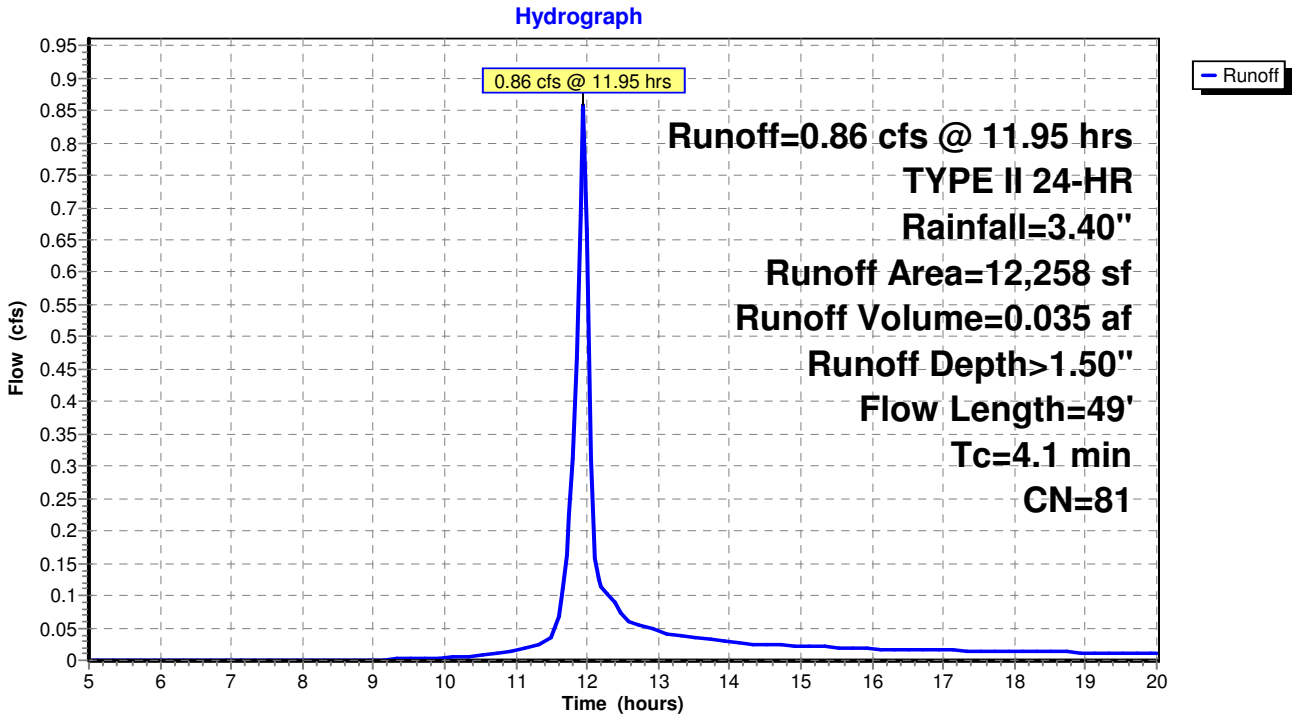
Runoff = 0.86 cfs @ 11.95 hrs, Volume= 0.035 af, Depth> 1.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=3.40"

Area (sf)	CN	Description
3,818	98	Paved parking & roofs
8,440	74	>75% Grass cover, Good, HSG C
12,258	81	Weighted Average
8,440		68.85% Pervious Area
3,818		31.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	23	0.0200	0.12		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
0.8	26	0.0050	0.55		**Sheet Flow, Balance of Longest Flowpath** Smooth surfaces n= 0.011 P2= 2.70"
4.1	49	Total			

Subcatchment PSC 6: Proposed Subcatchment 6



Summary for Subcatchment PSC 7: Proposed Subcatchment 7

Runoff = 8.45 cfs @ 12.21 hrs, Volume= 0.699 af, Depth> 1.00"

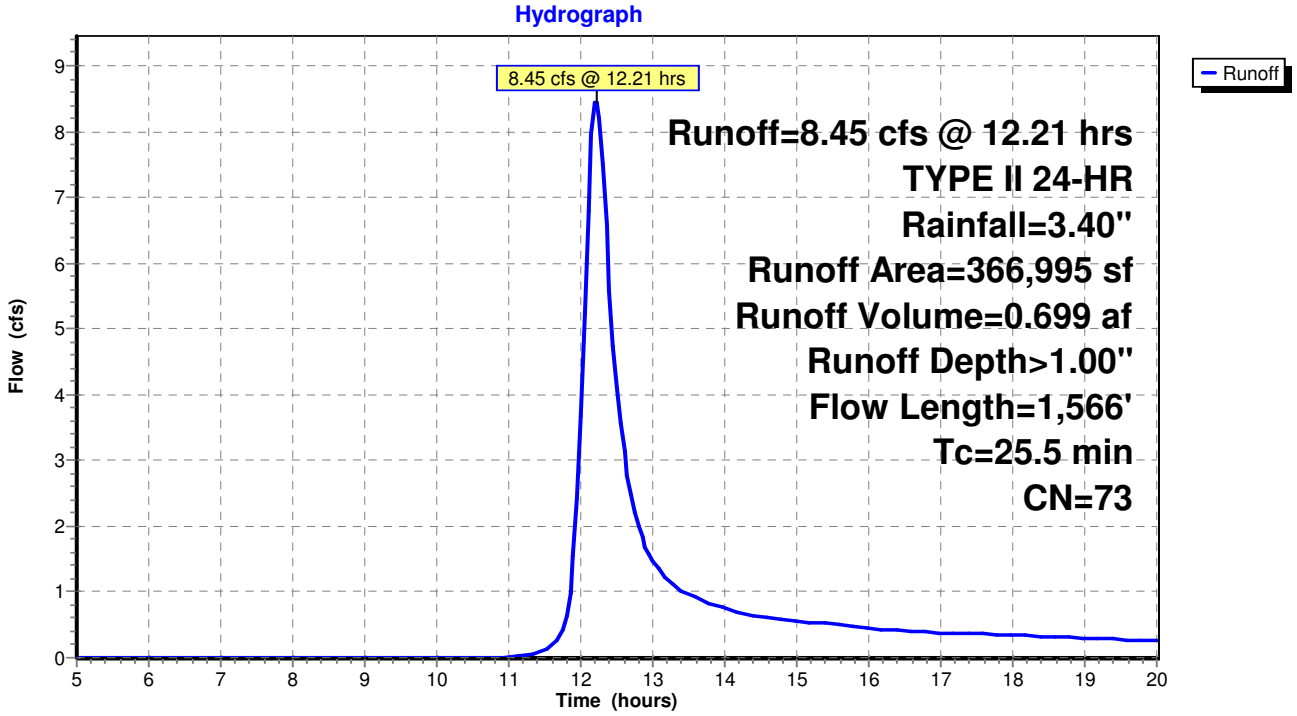
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=3.40"

Area (sf)	CN	Description
10,696	98	Paved parking & roofs
22,613	39	>75% Grass cover, Good, HSG A
14,492	98	Paved parking & roofs
21,401	61	>75% Grass cover, Good, HSG B
31,721	98	Paved parking & roofs
18,164	98	Paved parking & roofs
121,053	74	>75% Grass cover, Good, HSG C
126,855	65	Brush, Good, HSG C
366,995	73	Weighted Average
291,922		79.54% Pervious Area
75,073		20.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0100	0.08		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
2.5	350	0.0240	2.32		**Shallow Concentrated Flow, Balance of Flow to Road** Grassed Waterway Kv= 15.0 fps
0.1	16	0.0100	2.03		**Shallow Concentrated Flow, Balance of Flow to Swale** Paved Kv= 20.3 fps
2.4	1,100	0.0170	7.61	121.77	**Trap/Vee/Rect Channel Flow, Balance of Longest Flowpath** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.027
25.5	1,566	Total			

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Subcatchment PSC 7: Proposed Subcatchment 7



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Summary for Subcatchment PSC 8: Proposed Subcatchment 8

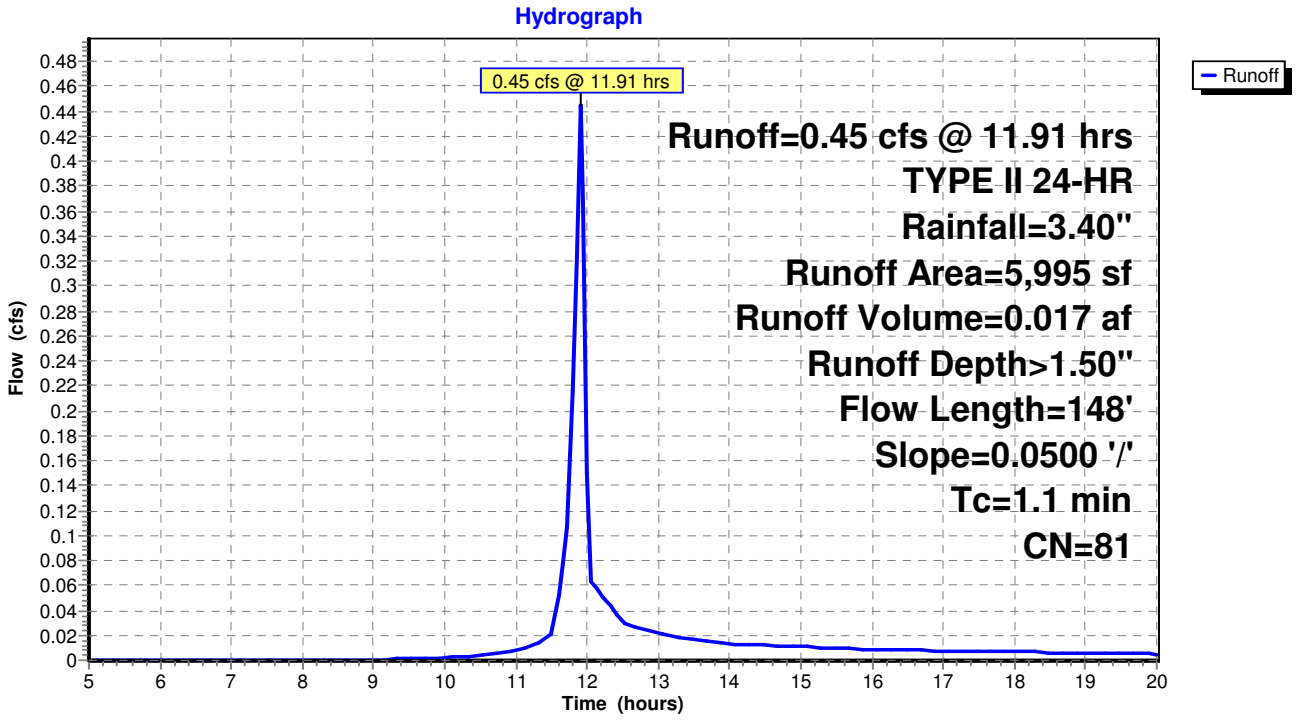
Runoff = 0.45 cfs @ 11.91 hrs, Volume= 0.017 af, Depth> 1.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=3.40"

Area (sf)	CN	Description
2,937	98	Paved parking & roofs
3,058	65	Brush, Good, HSG C
5,995	81	Weighted Average
3,058		51.01% Pervious Area
2,937		48.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0500	1.82		**Sheet Flow, First 100' Flowpath** Smooth surfaces n= 0.011 P2= 2.70"
0.2	48	0.0500	4.54		**Shallow Concentrated Flow, Balance of Flow to Channel** Paved Kv= 20.3 fps
1.1	148	Total			

Subcatchment PSC 8: Proposed Subcatchment 8



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Summary for Subcatchment PSC-7A: Proposed Subcatchment 7A

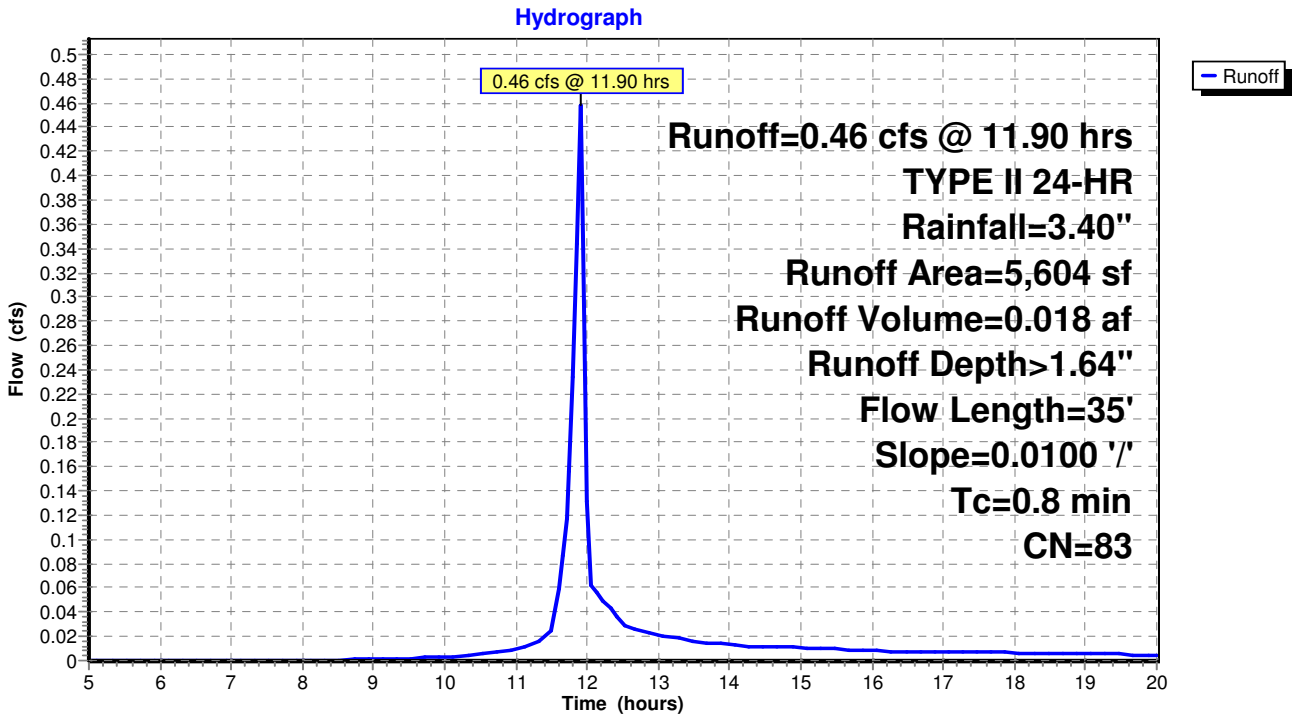
Runoff = 0.46 cfs @ 11.90 hrs, Volume= 0.018 af, Depth> 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=3.40"

Area (sf)	CN	Description
3,588	74	>75% Grass cover, Good, HSG C
2,016	98	Roofs, HSG C
5,604	83	Weighted Average
3,588		64.03% Pervious Area
2,016		35.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	35	0.0100	0.78		**Sheet Flow, Balance of Longest Flowpath** Smooth surfaces n= 0.011 P2= 2.70"

Subcatchment PSC-7A: Proposed Subcatchment 7A



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Summary for Subcatchment UP 1: Upland Watershed 1

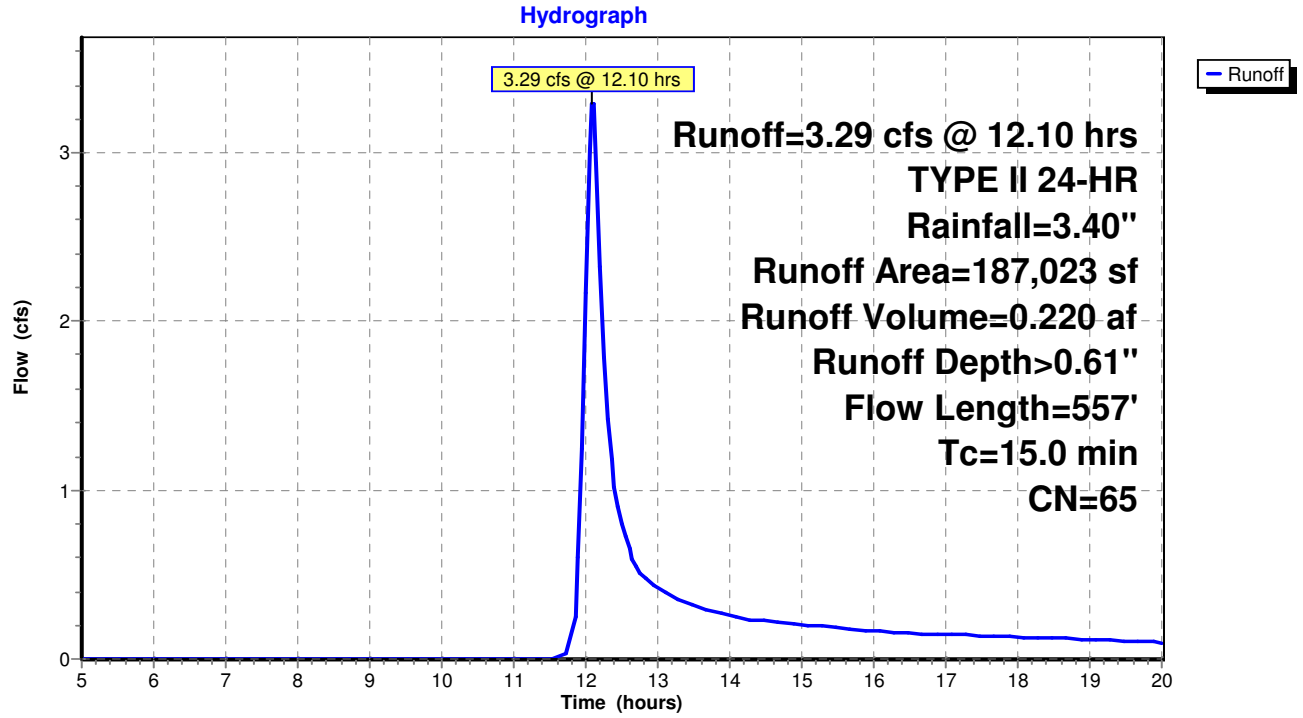
Runoff = 3.29 cfs @ 12.10 hrs, Volume= 0.220 af, Depth> 0.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=3.40"

Area (sf)	CN	Description
187,023	65	Brush, Good, HSG C
187,023		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0360	0.14		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
2.7	457	0.0350	2.81		**Shallow Concentrated Flow, Balance of Longest Flowpath** Grassed Waterway Kv= 15.0 fps
15.0	557	Total			

Subcatchment UP 1: Upland Watershed 1



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Summary for Subcatchment UP 2: Upland Watershed 2

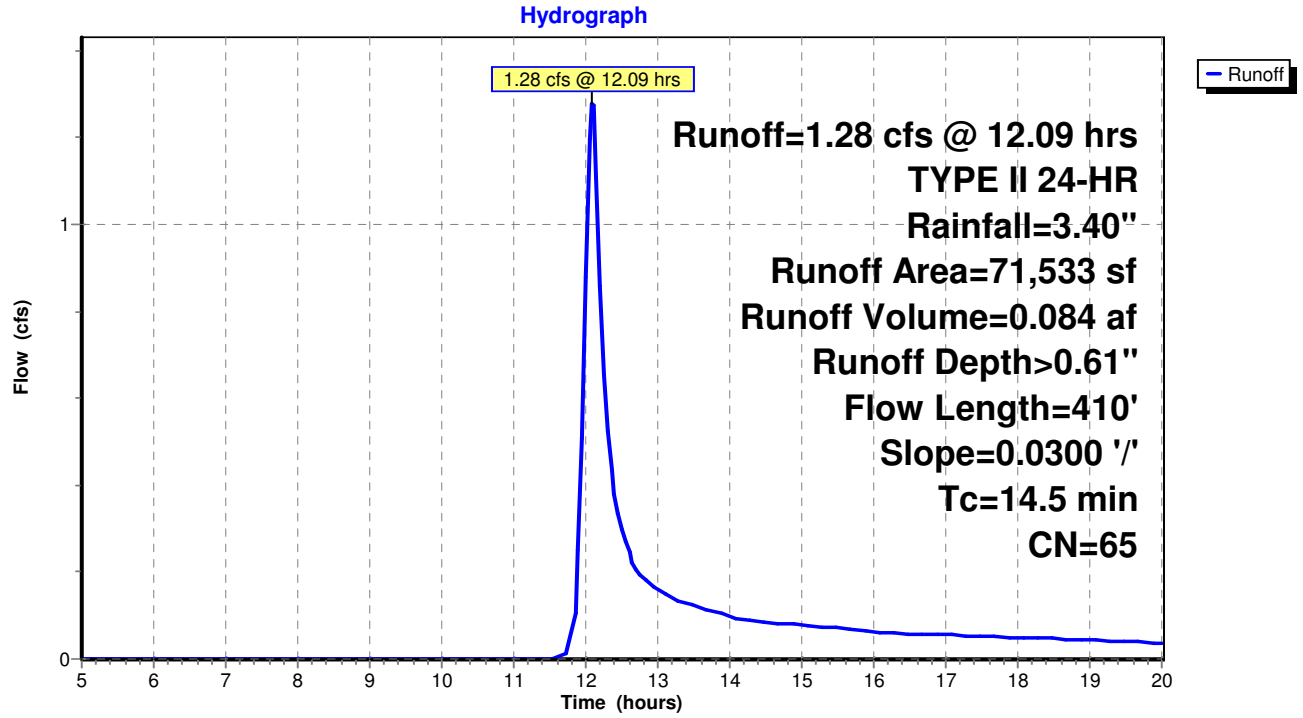
Runoff = 1.28 cfs @ 12.09 hrs, Volume= 0.084 af, Depth> 0.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=3.40"

Area (sf)	CN	Description
71,533	65	Brush, Good, HSG C
71,533		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	155	0.0300	0.20		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
1.6	255	0.0300	2.60		**Shallow Concentrated Flow, Balance of Longest Flowpath** Grassed Waterway Kv= 15.0 fps
14.5	410	Total			

Subcatchment UP 2: Upland Watershed 2



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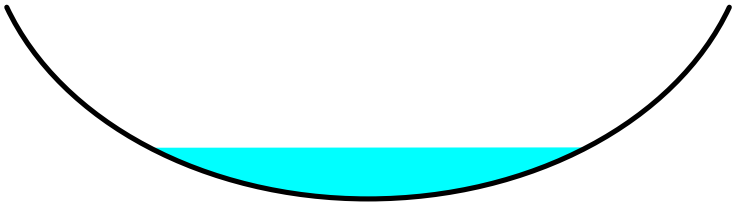
Summary for Reach Div: Diversion Swale

Inflow Area = 9.223 ac, 0.00% Impervious, Inflow Depth > 0.62"
Inflow = 6.63 cfs @ 12.01 hrs, Volume= 0.473 af
Outflow = 4.59 cfs @ 12.35 hrs, Volume= 0.461 af, Atten= 31%, Lag= 20.3 min

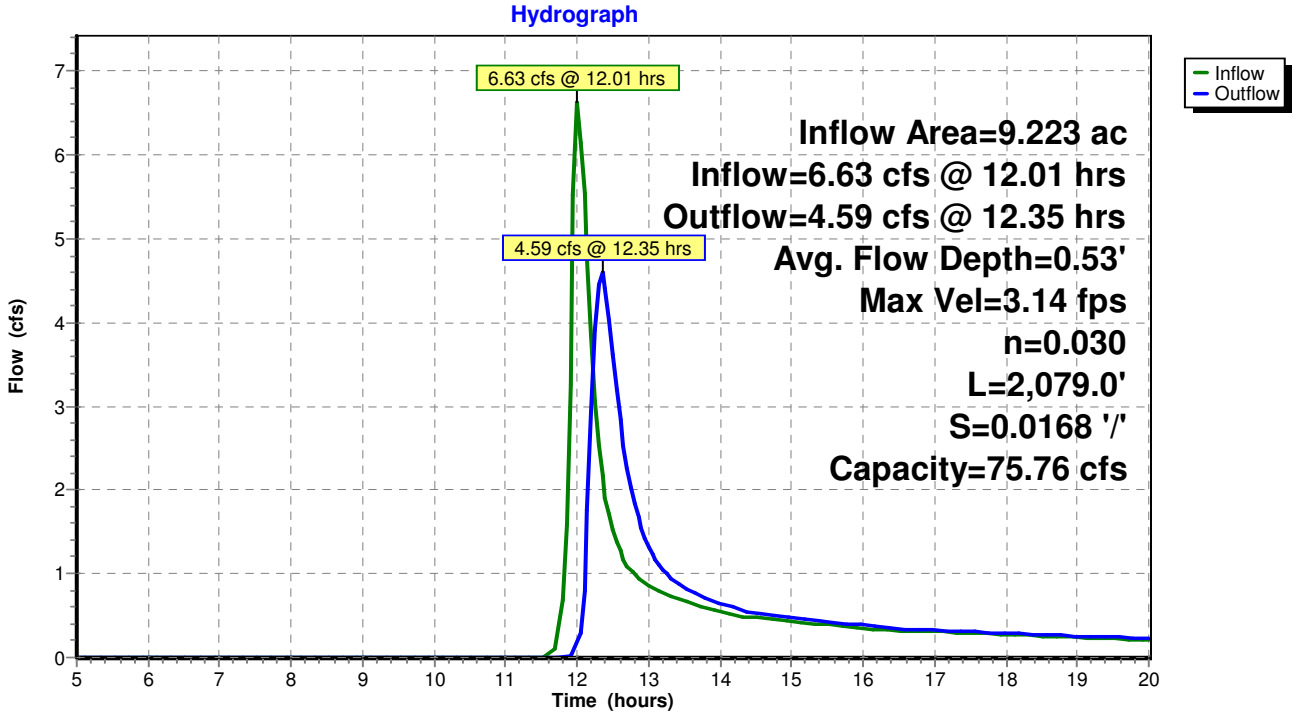
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.14 fps, Min. Travel Time= 11.0 min
Avg. Velocity = 1.60 fps, Avg. Travel Time= 21.6 min

Peak Storage= 3,066 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.53'
Bank-Full Depth= 2.00' Flow Area= 10.7 sf, Capacity= 75.76 cfs

8.00' x 2.00' deep Parabolic Channel, n= 0.030
Length= 2,079.0' Slope= 0.0168 '/'
Inlet Invert= 0.00', Outlet Invert= -35.00'



Reach Div: Diversion Swale

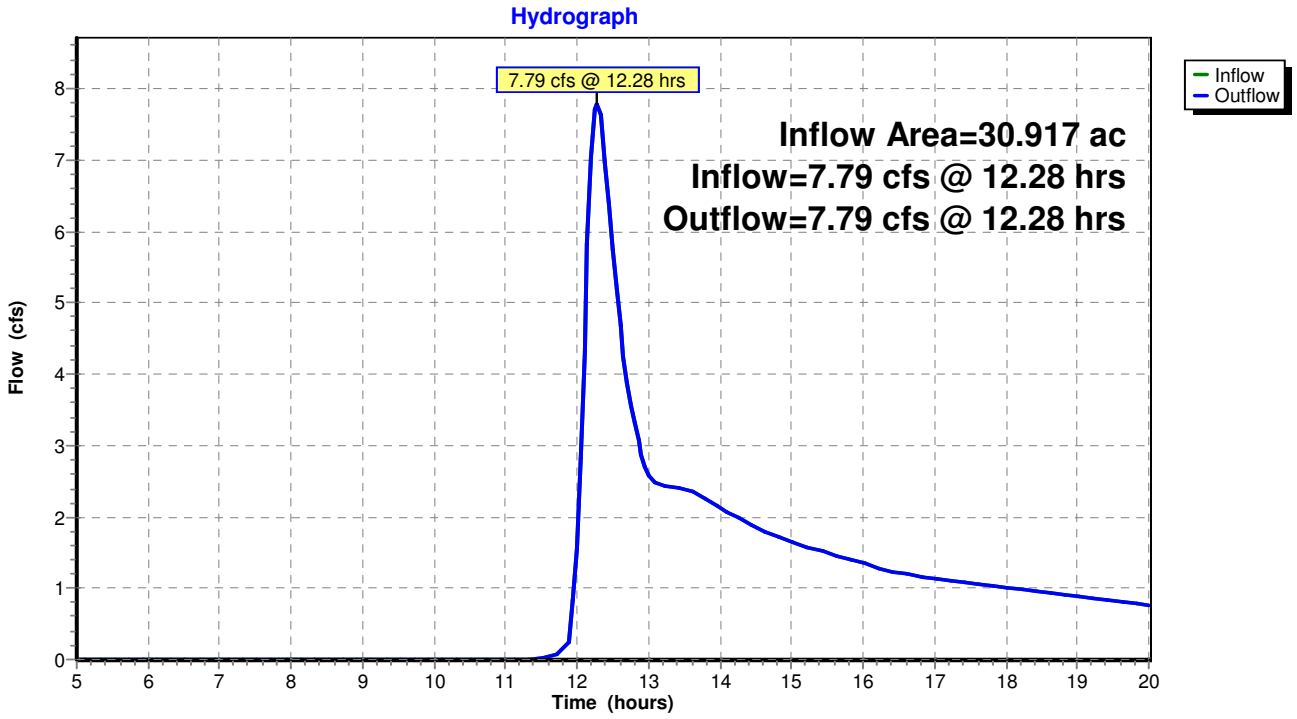


Summary for Reach DP 2: Design Point Summation 2

Inflow Area = 30.917 ac, 6.92% Impervious, Inflow Depth > 0.48"
Inflow = 7.79 cfs @ 12.28 hrs, Volume= 1.225 af
Outflow = 7.79 cfs @ 12.28 hrs, Volume= 1.225 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP 2: Design Point Summation 2



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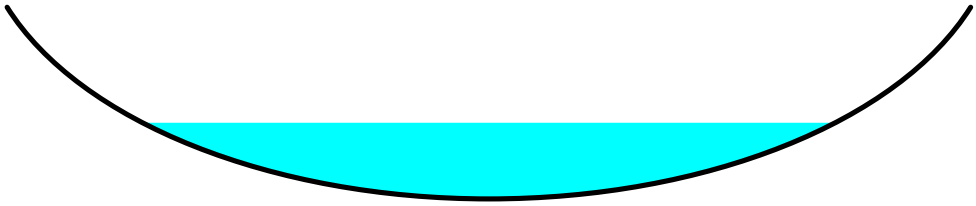
Summary for Reach RS: Road Swale

Inflow Area = 8.425 ac, 20.46% Impervious, Inflow Depth > 1.00"
Inflow = 8.45 cfs @ 12.21 hrs, Volume= 0.699 af
Outflow = 7.91 cfs @ 12.36 hrs, Volume= 0.692 af, Atten= 6%, Lag= 9.3 min

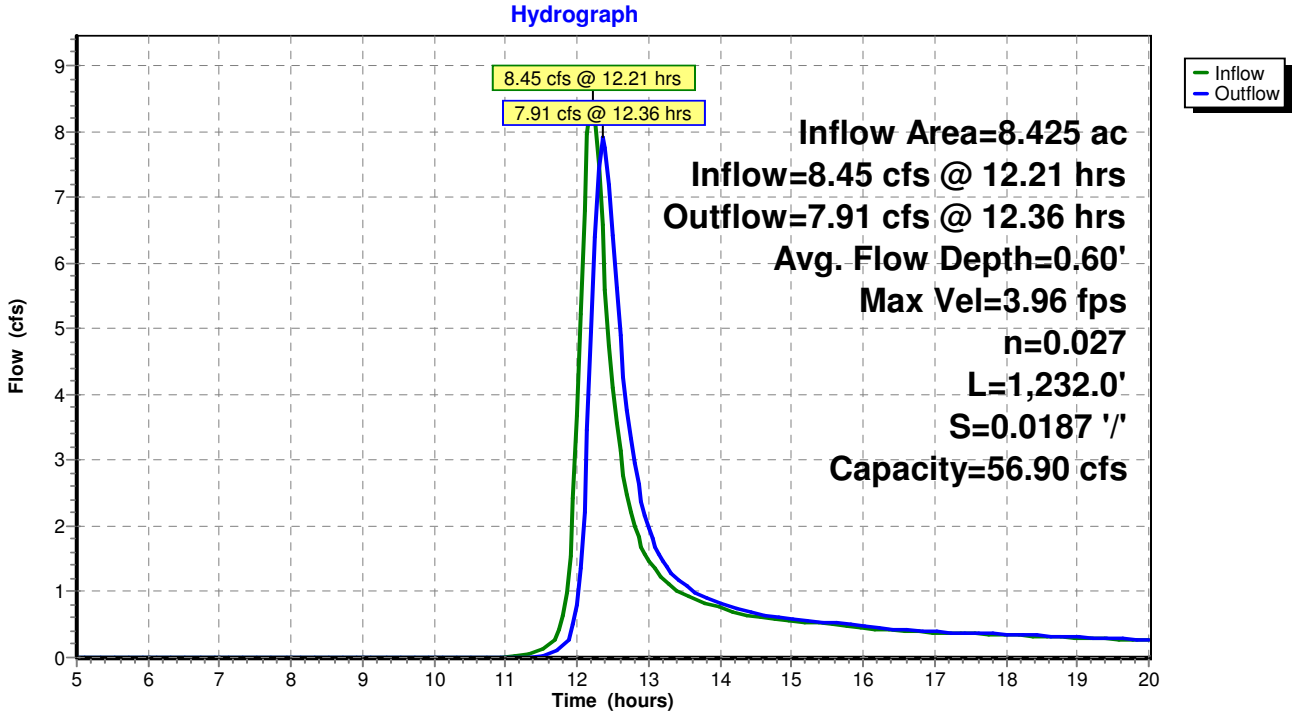
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.96 fps, Min. Travel Time= 5.2 min
Avg. Velocity = 1.78 fps, Avg. Travel Time= 11.5 min

Peak Storage= 2,470 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.60'
Bank-Full Depth= 1.50' Flow Area= 8.0 sf, Capacity= 56.90 cfs

8.00' x 1.50' deep Parabolic Channel, n= 0.027
Length= 1,232.0' Slope= 0.0187 '/'
Inlet Invert= 0.00', Outlet Invert= -23.00'



Reach RS: Road Swale



Summary for Pond BR 2: Bioretention Area 2

Inflow Area = 0.386 ac, 34.86% Impervious, Inflow Depth > 1.56"
Inflow = 0.85 cfs @ 12.07 hrs, Volume= 0.050 af
Outflow = 0.18 cfs @ 12.43 hrs, Volume= 0.034 af, Atten= 79%, Lag= 21.9 min
Primary = 0.18 cfs @ 12.43 hrs, Volume= 0.034 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 3.54' @ 12.43 hrs Surf.Area= 1,114 sf Storage= 1,050 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 2,454 cf

Plug-Flow detention time= 127.1 min calculated for 0.034 af (68% of inflow)
Center-of-Mass det. time= 57.5 min (852.2 - 794.7)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	2,454 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	438	0	0
1.00	438	438	438
1.10	219	33	471
3.50	219	526	996
3.51	1,094	7	1,003
4.50	1,669	1,368	2,371
4.60	0	83	2,454

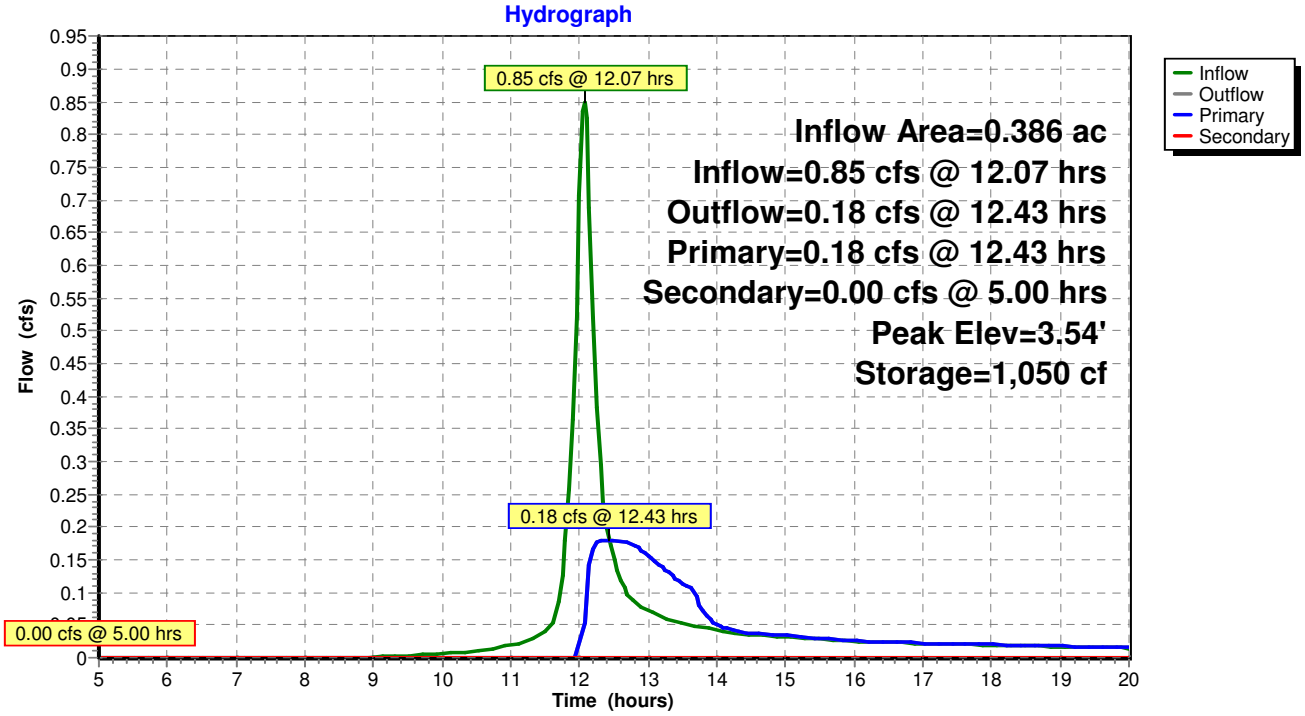
Device	Routing	Invert	Outlet Devices
#1	Secondary	4.00'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	2.00'	**4.0" Round Culvert** L= 177.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2.00' / 1.50' S= 0.0028 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.18 cfs @ 12.43 hrs HW=3.54' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.18 cfs @ 2.06 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=0.00' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Pond BR 2: Bioretention Area 2



Summary for Pond BR 3: Bioretention Area 3

Inflow Area = 0.189 ac, 24.51% Impervious, Inflow Depth > 1.43"
Inflow = 0.48 cfs @ 12.00 hrs, Volume= 0.022 af
Outflow = 0.23 cfs @ 12.11 hrs, Volume= 0.015 af, Atten= 52%, Lag= 7.0 min
Primary = 0.23 cfs @ 12.11 hrs, Volume= 0.015 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 2.90' @ 12.11 hrs Surf.Area= 99 sf Storage= 391 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 1,189 cf

Plug-Flow detention time= 116.1 min calculated for 0.015 af (69% of inflow)
Center-of-Mass det. time= 44.6 min (838.7 - 794.1)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	1,189 cf	**Custom Stage Data (Prismatic)** Listed below

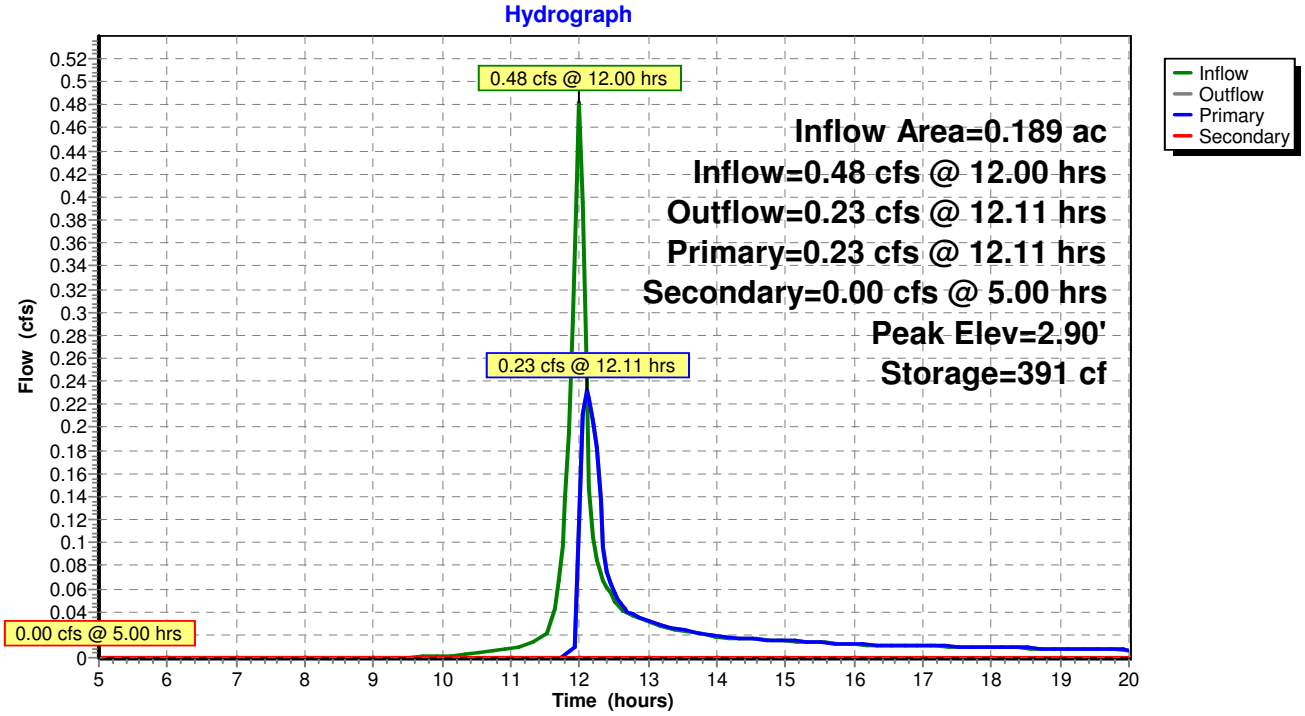
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	198	0	0
1.00	198	198	198
1.10	99	15	213
3.50	99	238	450
3.51	495	3	453
4.50	901	691	1,144
4.60	0	45	1,189

Device	Routing	Invert	Outlet Devices
#1	Secondary	4.00'	**6.0' long x 2.0' 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 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	2.00'	**4.0" Round Culvert** L= 57.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2.00' / 1.50' S= 0.0088 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.23 cfs @ 12.11 hrs HW=2.87' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.23 cfs @ 2.64 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=0.00' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond BR 3: Bioretention Area 3



Summary for Pond BR 6: Bioretention Area 6

Inflow Area = 0.281 ac, 31.15% Impervious, Inflow Depth > 1.50"
Inflow = 0.86 cfs @ 11.95 hrs, Volume= 0.035 af
Outflow = 0.19 cfs @ 12.10 hrs, Volume= 0.028 af, Atten= 78%, Lag= 9.0 min
Primary = 0.19 cfs @ 12.10 hrs, Volume= 0.028 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 3.79' @ 12.10 hrs Surf.Area= 693 sf Storage= 659 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 1,348 cf

Plug-Flow detention time= 95.8 min calculated for 0.027 af (78% of inflow)
Center-of-Mass det. time= 37.9 min (826.7 - 788.7)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	1,348 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	180	0	0
1.00	180	180	180
1.10	90	14	194
3.50	90	216	410
3.51	451	3	412
4.50	1,307	870	1,282
4.60	0	65	1,348

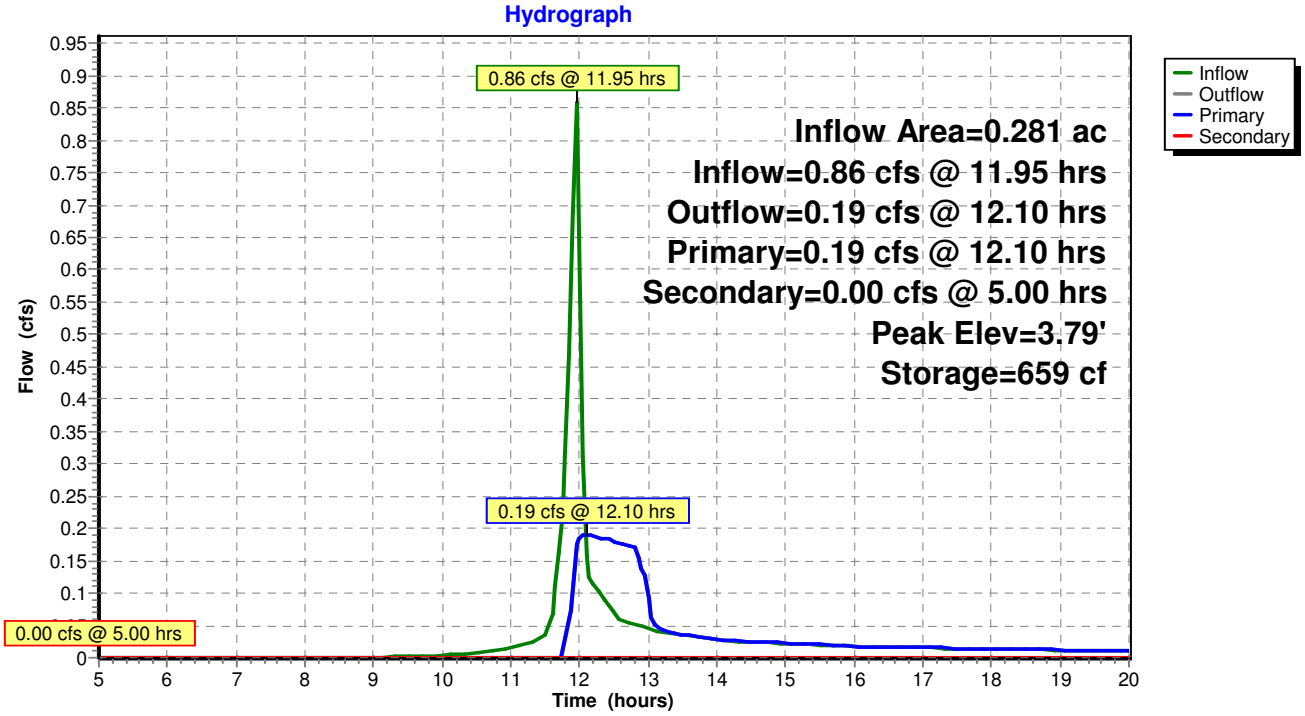
Device	Routing	Invert	Outlet Devices
#1	Secondary	4.00'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	2.50'	**4.0" Round Culvert** L= 132.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2.50' / 2.00' S= 0.0038 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.19 cfs @ 12.10 hrs HW=3.79' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.19 cfs @ 2.18 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=0.00' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Pond BR 6: Bioretention Area 6



Summary for Pond BR 7: Bioretention Area 7

Inflow Area = 0.129 ac, 35.97% Impervious, Inflow Depth > 1.64"
Inflow = 0.46 cfs @ 11.90 hrs, Volume= 0.018 af
Outflow = 0.19 cfs @ 12.00 hrs, Volume= 0.011 af, Atten= 59%, Lag= 5.8 min
Primary = 0.19 cfs @ 12.00 hrs, Volume= 0.011 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 2.52' @ 12.00 hrs Surf.Area= 99 sf Storage= 354 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 1,189 cf

Plug-Flow detention time= 136.6 min calculated for 0.011 af (60% of inflow)
Center-of-Mass det. time= 60.1 min (841.5 - 781.3)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	1,189 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	198	0	0
1.00	198	198	198
1.10	99	15	213
3.50	99	238	450
3.51	495	3	453
4.50	901	691	1,144
4.60	0	45	1,189

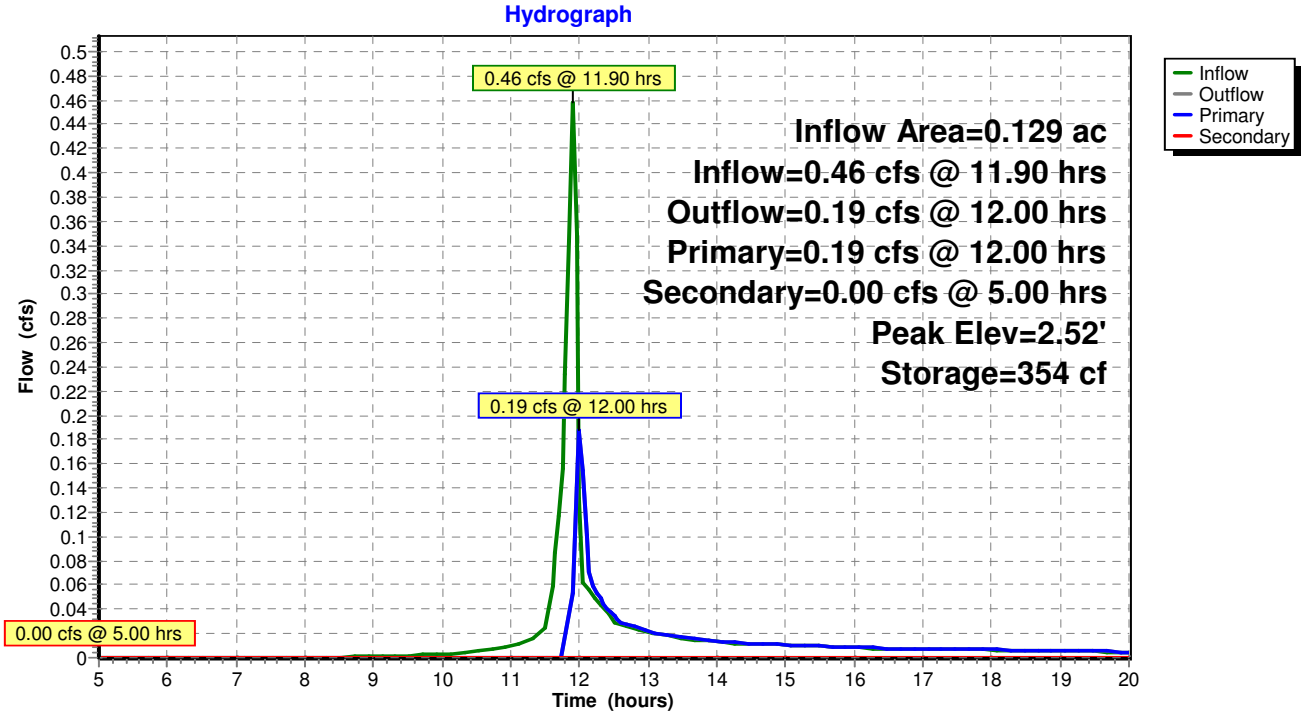
Device	Routing	Invert	Outlet Devices
#1	Secondary	4.00'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	2.00'	**4.0" Round Culvert** L= 57.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2.00' / 1.50' S= 0.0088 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.19 cfs @ 12.00 hrs HW=2.52' (Free Discharge)
2=Culvert (Barrel Controls 0.19 cfs @ 2.14 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=0.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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Pond BR 7: Bioretention Area 7



Summary for Pond DS: Dry Swales

Inflow Area = 0.138 ac, 48.99% Impervious, Inflow Depth > 1.50"
Inflow = 0.45 cfs @ 11.91 hrs, Volume= 0.017 af
Outflow = 0.20 cfs @ 11.99 hrs, Volume= 0.017 af, Atten= 54%, Lag= 5.3 min
Primary = 0.20 cfs @ 11.99 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 1.46' @ 11.99 hrs Surf.Area= 350 sf Storage= 172 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 1,146 cf

Plug-Flow detention time= 14.2 min calculated for 0.017 af (99% of inflow)
Center-of-Mass det. time= 9.8 min (796.2 - 786.4)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	573 cf	**Custom Stage Data (Prismatic)** Listed below
		573 cf	x 2.00 = 1,146 cf Total Available Storage

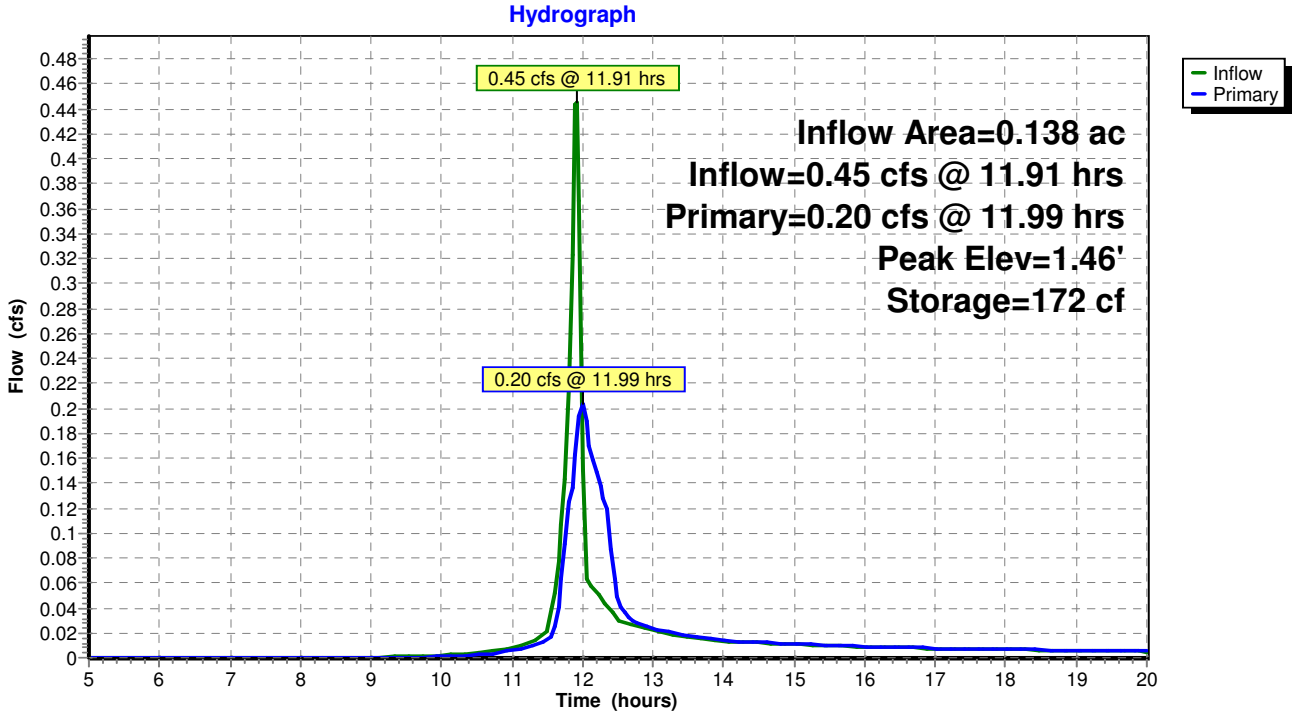
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	175	0.0	0	0
1.00	175	40.0	70	70
1.10	175	20.0	4	74
3.50	175	20.0	84	158
3.51	175	100.0	2	159
4.50	600	100.0	384	543
4.60	0	100.0	30	573

Device	Routing	Invert	Outlet Devices
#1	Primary	4.00'	**6.0' long x 2.0' 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 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	0.00'	**4.0" Round Culvert** L= 127.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 0.00' / -0.50' S= 0.0039 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.20 cfs @ 11.99 hrs HW=1.44' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
└**2=Culvert** (Barrel Controls 0.20 cfs @ 2.33 fps)

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Pond DS: Dry Swales



Summary for Pond FB: Forebay

Inflow Area = 8.425 ac, 20.46% Impervious, Inflow Depth > 0.99"
Inflow = 7.91 cfs @ 12.36 hrs, Volume= 0.692 af
Outflow = 11.55 cfs @ 12.40 hrs, Volume= 0.625 af, Atten= 0%, Lag= 2.1 min
Primary = 11.55 cfs @ 12.40 hrs, Volume= 0.625 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 4.80' @ 12.40 hrs Surf.Area= 0 sf Storage= 2,928 cf
Flood Elev= 4.00' Surf.Area= 1,536 sf Storage= 2,852 cf

Plug-Flow detention time= 42.4 min calculated for 0.625 af (90% of inflow)
Center-of-Mass det. time= 11.4 min (844.0 - 832.6)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	2,928 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	113	0	0
1.00	345	229	229
2.00	633	489	718
3.00	1,049	841	1,559
4.00	1,536	1,293	2,852
4.10	0	77	2,928

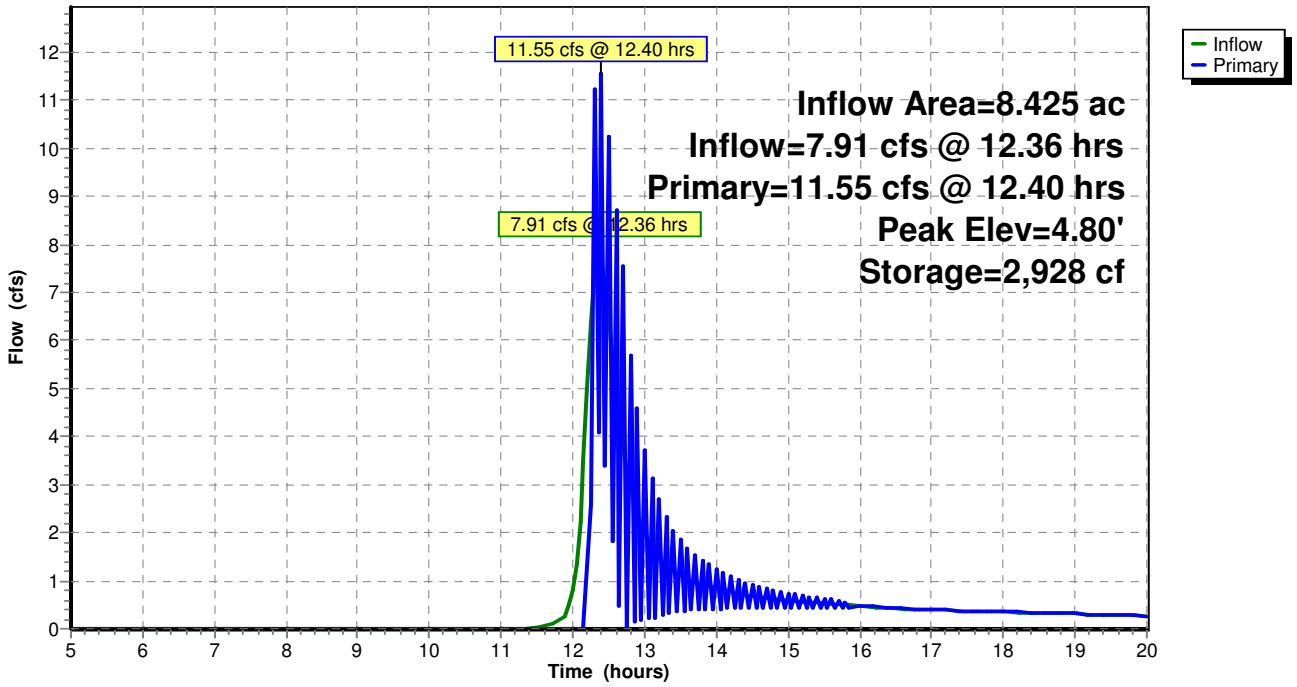
Device	Routing	Invert	Outlet Devices
#1	Primary	4.00'	**6.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=11.37 cfs @ 12.40 hrs HW=4.79' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 11.37 cfs @ 2.39 fps)

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Pond FB: Forebay

Hydrograph



Summary for Pond P: Pond

Inflow Area = 8.425 ac, 20.46% Impervious, Inflow Depth > 0.89"
Inflow = 11.55 cfs @ 12.40 hrs, Volume= 0.625 af
Outflow = 0.86 cfs @ 13.94 hrs, Volume= 0.305 af, Atten= 93%, Lag= 92.7 min
Primary = 0.86 cfs @ 13.94 hrs, Volume= 0.305 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Starting Elev= 4.00' Surf.Area= 7,635 sf Storage= 5,821 cf
Peak Elev= 5.43' @ 13.94 hrs Surf.Area= 12,612 sf Storage= 20,998 cf (15,177 cf above start)
Flood Elev= 7.50' Surf.Area= 0 sf Storage= 46,941 cf (41,120 cf above start)

Plug-Flow detention time= 296.5 min calculated for 0.171 af (27% of inflow)
Center-of-Mass det. time= 111.7 min (955.8 - 844.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	46,941 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	113	0	0
1.00	314	214	214
2.00	616	465	679
3.00	1,017	817	1,495
4.00	7,635	4,326	5,821
5.00	11,788	9,712	15,533
6.00	13,709	12,749	28,281
7.00	15,740	14,725	43,006
7.50	0	3,935	46,941

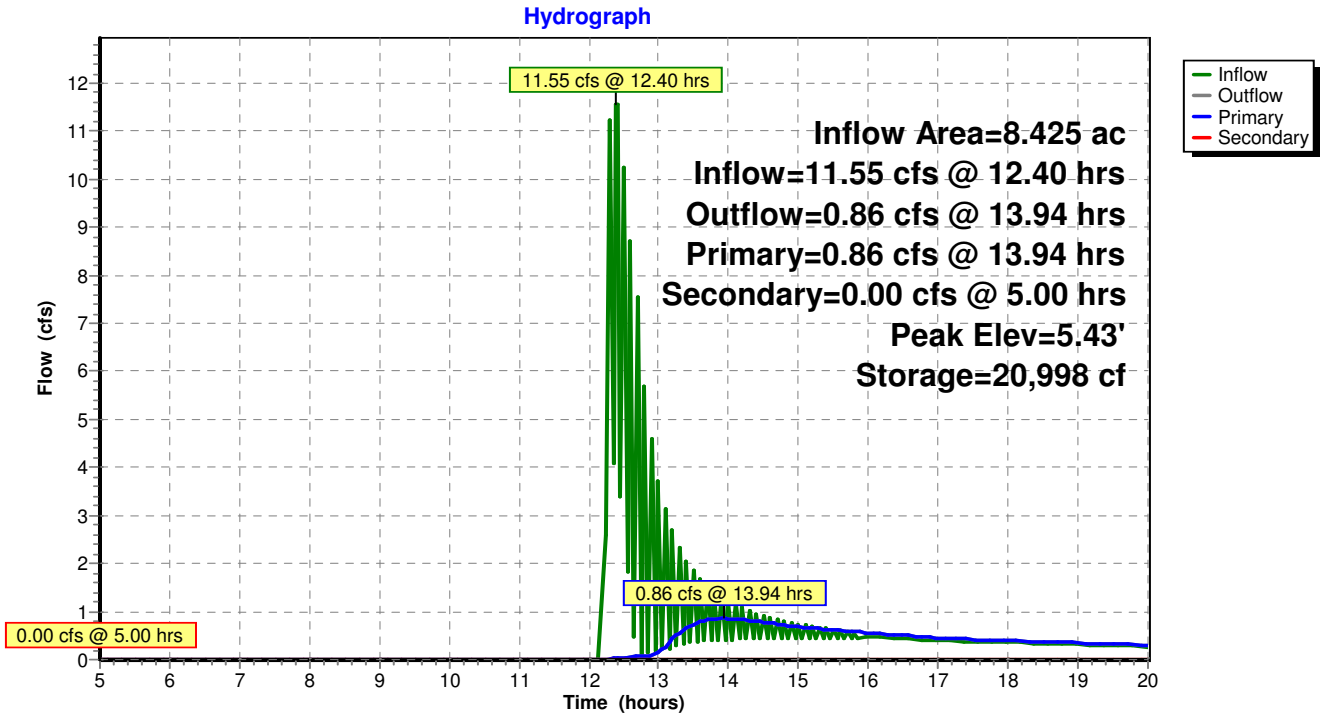
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**12.0" Round Culvert** L= 104.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 0.00' / -1.00' S= 0.0096 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	4.00'	**1.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	5.25'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	6.50'	**25.0' long x 6.0' 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 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

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Primary OutFlow Max=0.85 cfs @ 13.94 hrs HW=5.43' (Free Discharge)
└**1=Culvert** (Passes 0.85 cfs of 6.46 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.07 cfs @ 5.63 fps)
  └**3=Orifice/Grate** (Weir Controls 0.78 cfs @ 1.38 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=4.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P: Pond



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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.519	39	>75% Grass cover, Good, HSG A (PSC 7)
0.491	61	>75% Grass cover, Good, HSG B (PSC 7)
3.449	74	>75% Grass cover, Good, HSG C (PSC 2, PSC 3, PSC 6, PSC 7, PSC-7A)
2.435	30	Brush, Good, HSG A (OSC 3)
0.360	48	Brush, Good, HSG B (OSC 3)
21.522	65	Brush, Good, HSG C (OSC 1, OSC 3, PSC 7, PSC 8, UP 1, UP 2)
2.059	98	Paved parking & roofs (PSC 2, PSC 3, PSC 6, PSC 7, PSC 8)
0.046	98	Roofs, HSG C (PSC-7A)
0.035	98	Unconnected roofs, HSG A (OSC 3)
30.917	**65**	**TOTAL AREA**

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.989	HSG A	OSC 3, PSC 7
0.851	HSG B	OSC 3, PSC 7
25.018	HSG C	OSC 1, OSC 3, PSC 2, PSC 3, PSC 6, PSC 7, PSC 8, PSC-7A, UP 1, UP 2
0.000	HSG D	
2.059	Other	PSC 2, PSC 3, PSC 6, PSC 7, PSC 8
30.917		**TOTAL AREA**

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.519	0.491	3.449	0.000	0.000	4.460	>75% Grass cover, Good	PSC 2, PSC 3, PSC 6, PSC 7, PSC-7A
2.435	0.360	21.522	0.000	0.000	24.317	Brush, Good	OSC 1, OSC 3, PSC 7, PSC 8, UP 1, UP 2
0.000	0.000	0.000	0.000	2.059	2.059	Paved parking & roofs	PSC 2, PSC 3, PSC 6, PSC 7, PSC 8
0.000	0.000	0.046	0.000	0.000	0.046	Roofs	PSC-7A
0.035	0.000	0.000	0.000	0.000	0.035	Unconnected roofs	OSC 3
2.989	**0.851**	**25.018**	**0.000**	**2.059**	**30.917**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	BR 2	2.00	1.50	177.0	0.0028	0.013	4.0	0.0	0.0
2	BR 3	2.00	1.50	57.0	0.0088	0.013	4.0	0.0	0.0
3	BR 6	2.50	2.00	132.0	0.0038	0.013	4.0	0.0	0.0
4	BR 7	2.00	1.50	57.0	0.0088	0.013	4.0	0.0	0.0
5	DS	0.00	-0.50	127.0	0.0039	0.013	4.0	0.0	0.0
6	P	0.00	-1.00	104.0	0.0096	0.013	12.0	0.0	0.0

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment OSC 1: Off-Site Runoff Area=143,197 sf 0.00% Impervious Runoff Depth>2.04"
Flow Length=2,079' Slope=0.0170 '/' Tc=4.6 min CN=65 Runoff=13.52 cfs 0.559 af

Subcatchment OSC 3: Off-Site Runoff Area=529,093 sf 0.28% Impervious Runoff Depth>1.48"
Flow Length=1,570' Tc=19.6 min CN=58 Runoff=20.84 cfs 1.500 af

Subcatchment PSC 2: Proposed Runoff Area=16,829 sf 34.86% Impervious Runoff Depth>3.58"
Flow Length=170' Tc=14.8 min CN=82 Runoff=1.90 cfs 0.115 af

Subcatchment PSC 3: Proposed Runoff Area=8,226 sf 24.51% Impervious Runoff Depth>3.39"
Flow Length=146' Tc=8.0 min CN=80 Runoff=1.11 cfs 0.053 af

Subcatchment PSC 6: Proposed Runoff Area=12,258 sf 31.15% Impervious Runoff Depth>3.49"
Flow Length=49' Tc=4.1 min CN=81 Runoff=1.92 cfs 0.082 af

Subcatchment PSC 7: Proposed Runoff Area=366,995 sf 20.46% Impervious Runoff Depth>2.71"
Flow Length=1,566' Tc=25.5 min CN=73 Runoff=23.85 cfs 1.903 af

Subcatchment PSC 8: Proposed Runoff Area=5,995 sf 48.99% Impervious Runoff Depth>3.49"
Flow Length=148' Slope=0.0500 '/' Tc=1.1 min CN=81 Runoff=1.00 cfs 0.040 af

Subcatchment PSC-7A: Proposed Runoff Area=5,604 sf 35.97% Impervious Runoff Depth>3.69"
Flow Length=35' Slope=0.0100 '/' Tc=0.8 min CN=83 Runoff=0.98 cfs 0.040 af

Subcatchment UP 1: Upland Watershed 1 Runoff Area=187,023 sf 0.00% Impervious Runoff Depth>2.03"
Flow Length=557' Tc=15.0 min CN=65 Runoff=12.13 cfs 0.727 af

Subcatchment UP 2: Upland Watershed 2 Runoff Area=71,533 sf 0.00% Impervious Runoff Depth>2.03"
Flow Length=410' Slope=0.0300 '/' Tc=14.5 min CN=65 Runoff=4.73 cfs 0.278 af

Reach Div: Diversion Swale Avg. Flow Depth=1.08' Max Vel=4.89 fps Inflow=25.04 cfs 1.564 af
n=0.030 L=2,079.0' S=0.0168 '/' Capacity=75.76 cfs Outflow=20.53 cfs 1.543 af

Reach DP 2: Design Point Summation 2 Inflow=43.42 cfs 4.821 af
Outflow=43.42 cfs 4.821 af

Reach RS: Road Swale Avg. Flow Depth=0.98' Max Vel=5.46 fps Inflow=23.85 cfs 1.903 af
n=0.027 L=1,232.0' S=0.0187 '/' Capacity=56.90 cfs Outflow=22.96 cfs 1.891 af

Pond BR 2: Bioretention Area 2 Peak Elev=4.19' Storage=1,945 cf Inflow=1.90 cfs 0.115 af
Primary=0.21 cfs 0.074 af Secondary=1.28 cfs 0.025 af Outflow=1.49 cfs 0.099 af

Pond BR 3: Bioretention Area 3 Peak Elev=4.07' Storage=845 cf Inflow=1.11 cfs 0.053 af
Primary=0.34 cfs 0.044 af Secondary=0.30 cfs 0.002 af Outflow=0.64 cfs 0.046 af

Pond BR 6: Bioretention Area 6 Peak Elev=4.22' Storage=1,034 cf Inflow=1.92 cfs 0.082 af
Primary=0.22 cfs 0.055 af Secondary=1.54 cfs 0.020 af Outflow=1.76 cfs 0.074 af

Pond BR 7: Bioretention Area 7 Peak Elev=3.87' Storage=708 cf Inflow=0.98 cfs 0.040 af
Primary=0.32 cfs 0.033 af Secondary=0.00 cfs 0.000 af Outflow=0.32 cfs 0.033 af

Pond DS: Dry Swales Peak Elev=3.73' Storage=491 cf Inflow=1.00 cfs 0.040 af
Outflow=0.32 cfs 0.040 af

Pond FB: Forebay Peak Elev=5.28' Storage=2,928 cf Inflow=22.96 cfs 1.891 af
Outflow=23.15 cfs 1.824 af

Pond P: Pond Peak Elev=6.70' Storage=38,587 cf Inflow=23.15 cfs 1.824 af
Primary=4.65 cfs 1.325 af Secondary=5.39 cfs 0.160 af Outflow=10.04 cfs 1.486 af

Total Runoff Area = 30.917 ac Runoff Volume = 5.297 af Average Runoff Depth = 2.06"
93.08% Pervious = 28.777 ac 6.92% Impervious = 2.140 ac

Summary for Subcatchment OSC 1: Off-Site Subcatchment 1

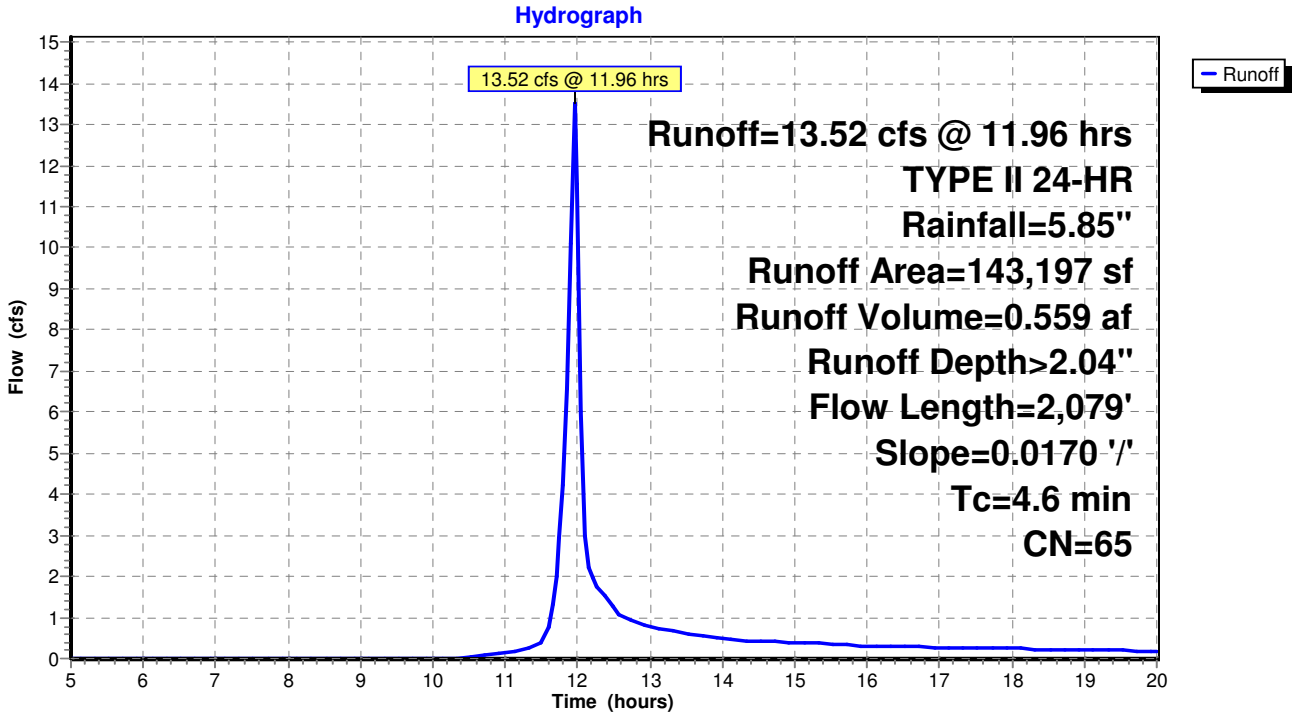
Runoff = 13.52 cfs @ 11.96 hrs, Volume= 0.559 af, Depth> 2.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=5.85"

Area (sf)	CN	Description
143,197	65	Brush, Good, HSG C
143,197		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	2,079	0.0170	7.61	121.77	**Trap/Vee/Rect Channel Flow, Balance of Longest Flowpath** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.027

Subcatchment OSC 1: Off-Site Subcatchment 1



Summary for Subcatchment OSC 3: Off-Site Subcatchment 3

Runoff = 20.84 cfs @ 12.14 hrs, Volume= 1.500 af, Depth> 1.48"

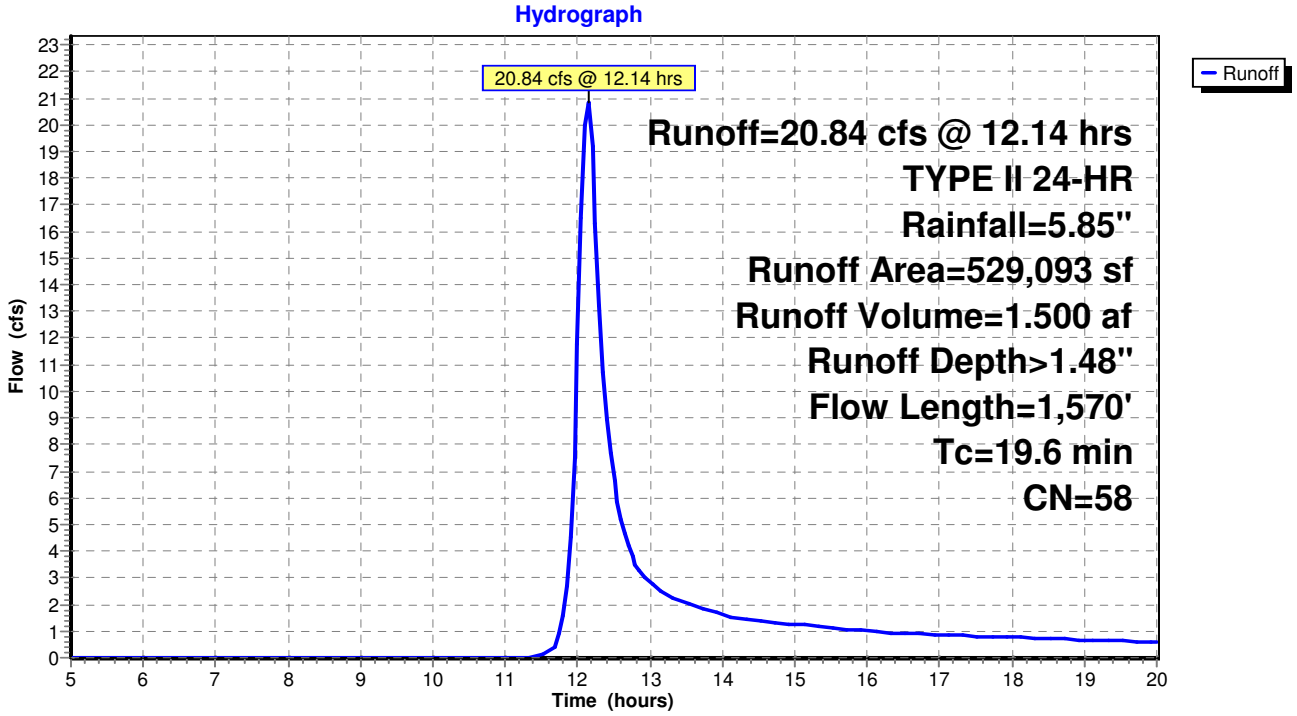
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=5.85"

Area (sf)	CN	Description
106,079	30	Brush, Good, HSG A
15,682	48	Brush, Good, HSG B
405,827	65	Brush, Good, HSG C
1,505	98	Unconnected roofs, HSG A
529,093	58	Weighted Average
527,588		99.72% Pervious Area
1,505		0.28% Impervious Area
1,505		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0400	0.14		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
6.8	1,064	0.0300	2.60		**Shallow Concentrated Flow, Balance of Flow to Channel** Grassed Waterway Kv= 15.0 fps
1.0	406	0.0110	6.52	130.46	**Trap/Vee/Rect Channel Flow, Balance of Flowpath** Bot.W=4.00' D=2.00' Z= 3.0 '/' Top.W=16.00' n= 0.027
19.6	1,570	Total			

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Subcatchment OSC 3: Off-Site Subcatchment 3



Summary for Subcatchment PSC 2: Proposed Subcatchment 2

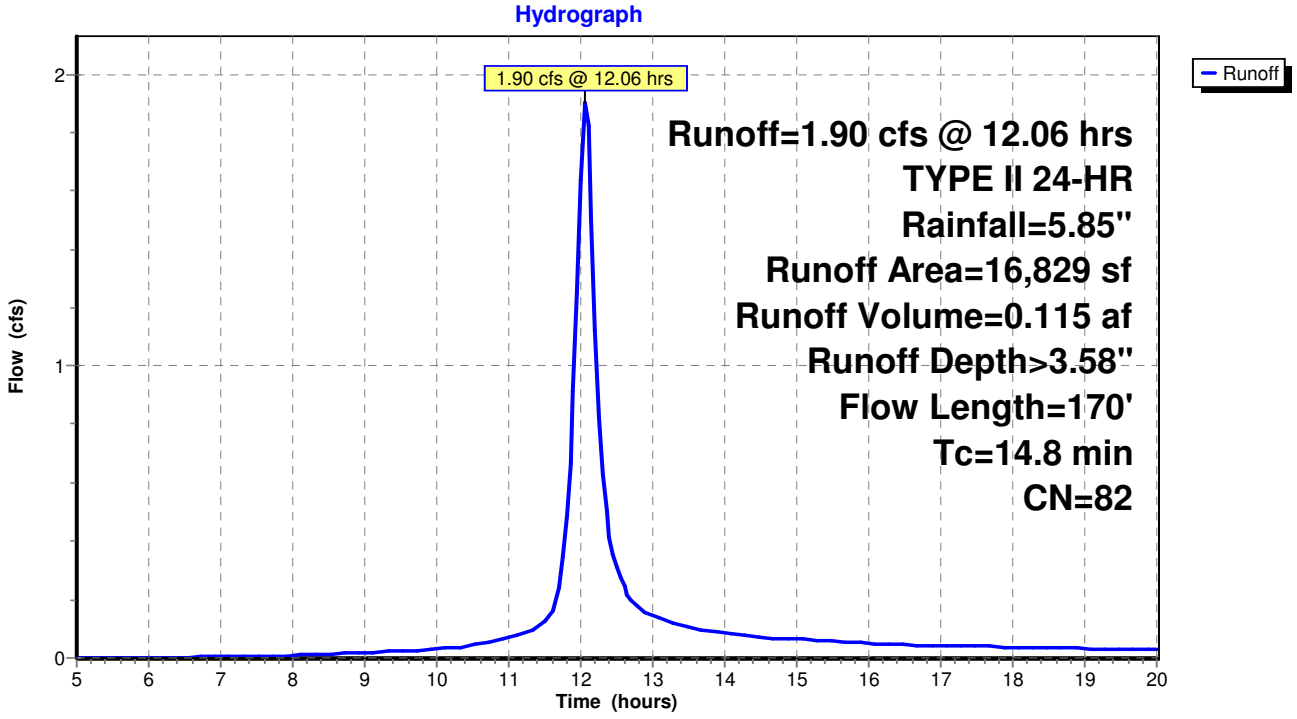
Runoff = 1.90 cfs @ 12.06 hrs, Volume= 0.115 af, Depth> 3.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=5.85"

Area (sf)	CN	Description
5,866	98	Paved parking & roofs
10,963	74	>75% Grass cover, Good, HSG C
16,829	82	Weighted Average
10,963		65.14% Pervious Area
5,866		34.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0100	0.12		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
0.6	65	0.0070	1.70		**Shallow Concentrated Flow, Balance of Flow to Channel** Paved Kv= 20.3 fps
0.1	5	0.0070	1.25		**Shallow Concentrated Flow, Balance of Longest Flowpath** Grassed Waterway Kv= 15.0 fps
14.8	170	Total			

Subcatchment PSC 2: Proposed Subcatchment 2



Summary for Subcatchment PSC 3: Proposed Subcatchment 3

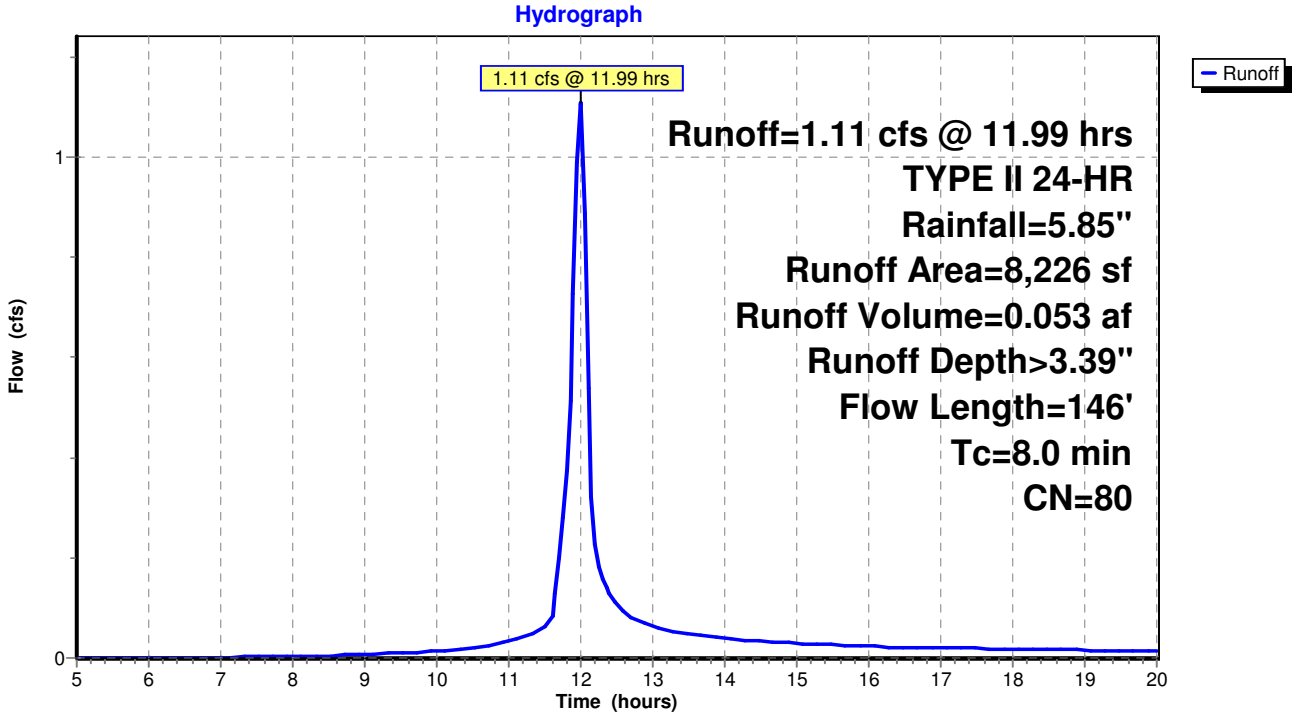
Runoff = 1.11 cfs @ 11.99 hrs, Volume= 0.053 af, Depth> 3.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=5.85"

Area (sf)	CN	Description
2,016	98	Paved parking & roofs
6,210	74	>75% Grass cover, Good, HSG C
8,226	80	Weighted Average
6,210		75.49% Pervious Area
2,016		24.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	76	0.0300	0.17		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
0.6	65	0.0070	1.70		**Shallow Concentrated Flow, Balance of Flow to Channel** Paved Kv= 20.3 fps
0.1	5	0.0070	1.25		**Shallow Concentrated Flow, Balance of Longest Flowpath** Grassed Waterway Kv= 15.0 fps
8.0	146	Total			

Subcatchment PSC 3: Proposed Subcatchment 3



Summary for Subcatchment PSC 6: Proposed Subcatchment 6

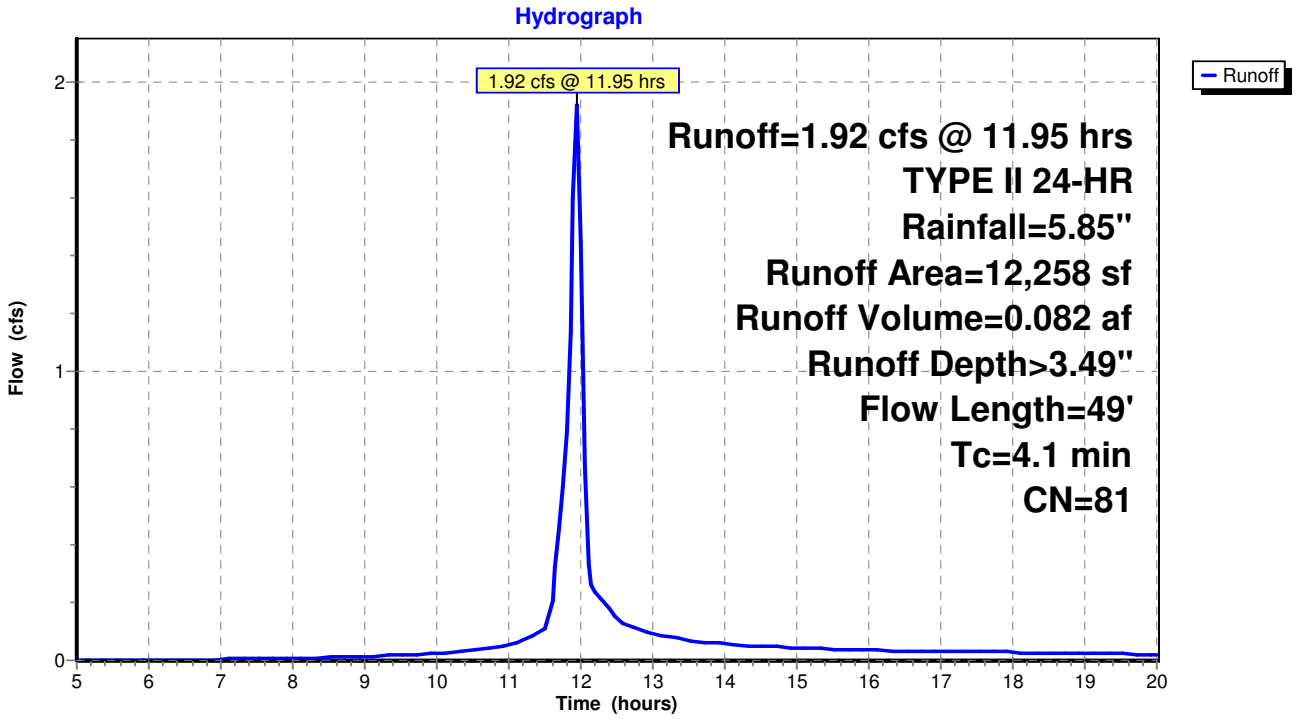
Runoff = 1.92 cfs @ 11.95 hrs, Volume= 0.082 af, Depth> 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=5.85"

Area (sf)	CN	Description
3,818	98	Paved parking & roofs
8,440	74	>75% Grass cover, Good, HSG C
12,258	81	Weighted Average
8,440		68.85% Pervious Area
3,818		31.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	23	0.0200	0.12		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
0.8	26	0.0050	0.55		**Sheet Flow, Balance of Longest Flowpath** Smooth surfaces n= 0.011 P2= 2.70"
4.1	49	Total			

Subcatchment PSC 6: Proposed Subcatchment 6



Summary for Subcatchment PSC 7: Proposed Subcatchment 7

Runoff = 23.85 cfs @ 12.19 hrs, Volume= 1.903 af, Depth> 2.71"

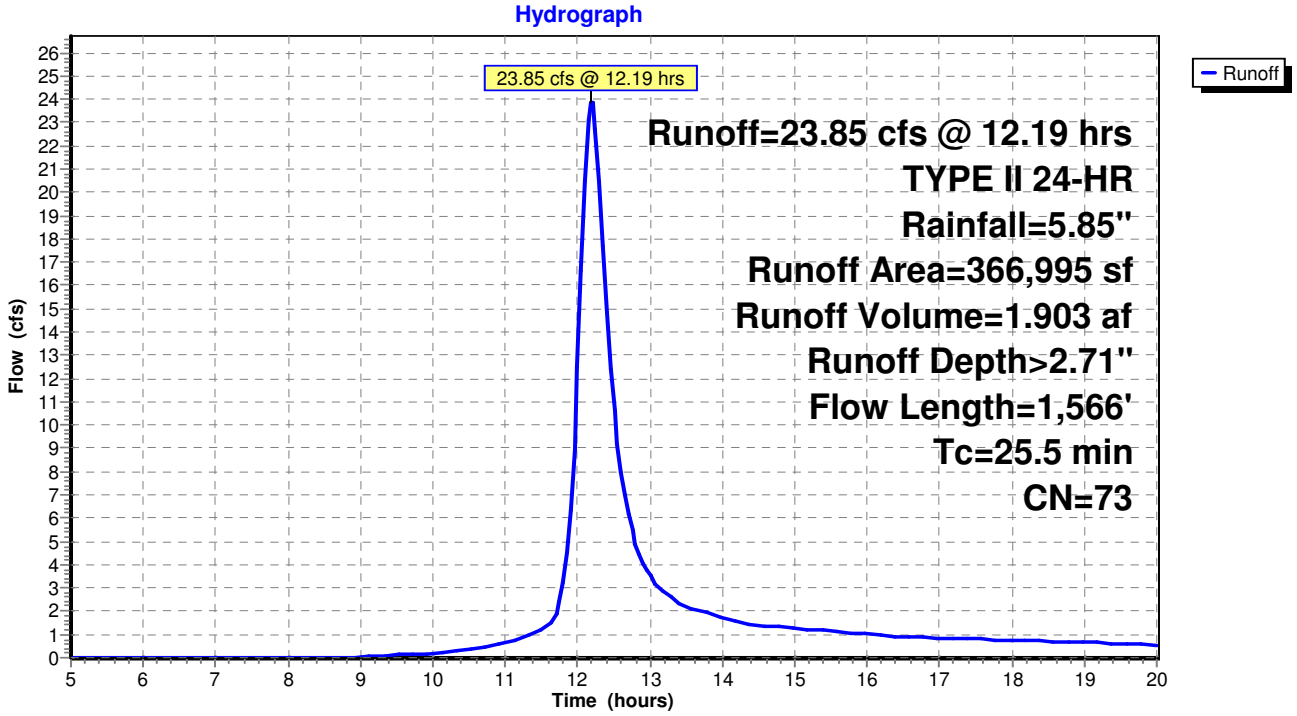
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=5.85"

Area (sf)	CN	Description
10,696	98	Paved parking & roofs
22,613	39	>75% Grass cover, Good, HSG A
14,492	98	Paved parking & roofs
21,401	61	>75% Grass cover, Good, HSG B
31,721	98	Paved parking & roofs
18,164	98	Paved parking & roofs
121,053	74	>75% Grass cover, Good, HSG C
126,855	65	Brush, Good, HSG C
366,995	73	Weighted Average
291,922		79.54% Pervious Area
75,073		20.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0100	0.08		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
2.5	350	0.0240	2.32		**Shallow Concentrated Flow, Balance of Flow to Road** Grassed Waterway Kv= 15.0 fps
0.1	16	0.0100	2.03		**Shallow Concentrated Flow, Balance of Flow to Swale** Paved Kv= 20.3 fps
2.4	1,100	0.0170	7.61	121.77	**Trap/Vee/Rect Channel Flow, Balance of Longest Flowpath** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.027
25.5	1,566	Total			

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Subcatchment PSC 7: Proposed Subcatchment 7



Summary for Subcatchment PSC 8: Proposed Subcatchment 8

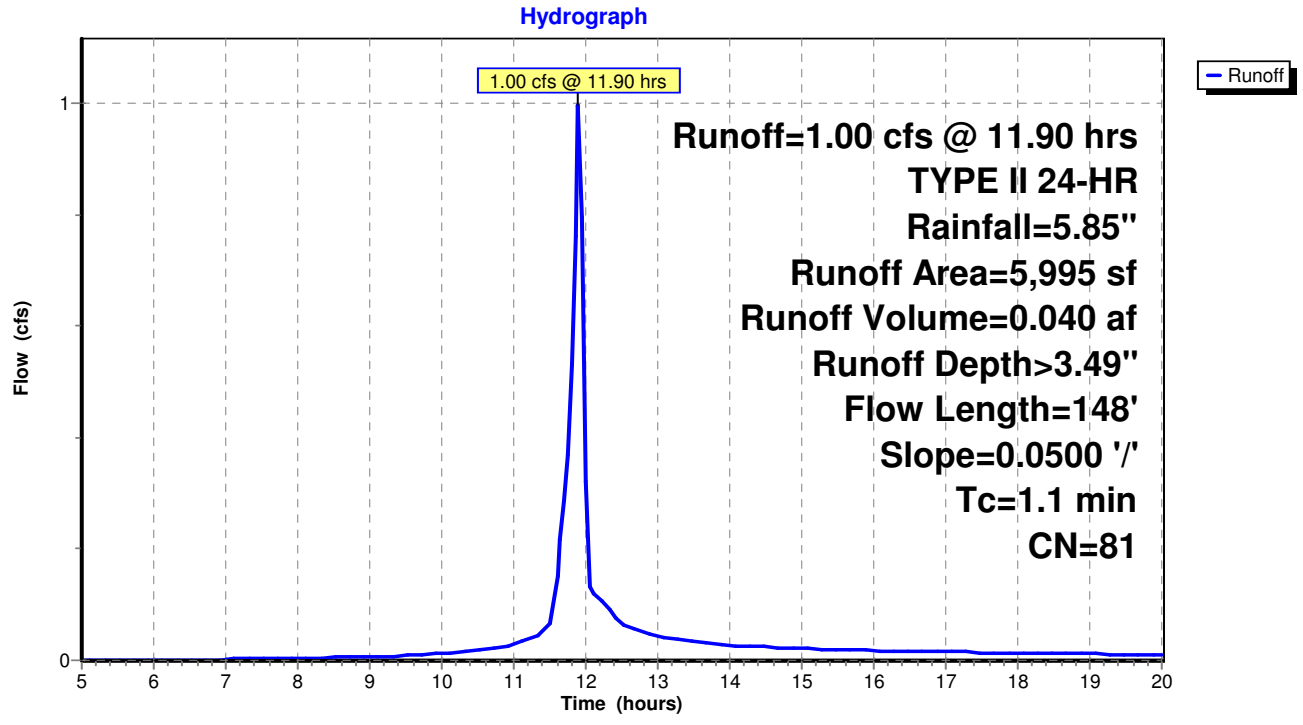
Runoff = 1.00 cfs @ 11.90 hrs, Volume= 0.040 af, Depth> 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=5.85"

Area (sf)	CN	Description
2,937	98	Paved parking & roofs
3,058	65	Brush, Good, HSG C
5,995	81	Weighted Average
3,058		51.01% Pervious Area
2,937		48.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0500	1.82		**Sheet Flow, First 100' Flowpath** Smooth surfaces n= 0.011 P2= 2.70"
0.2	48	0.0500	4.54		**Shallow Concentrated Flow, Balance of Flow to Channel** Paved Kv= 20.3 fps
1.1	148	Total			

Subcatchment PSC 8: Proposed Subcatchment 8



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Summary for Subcatchment PSC-7A: Proposed Subcatchment 7A

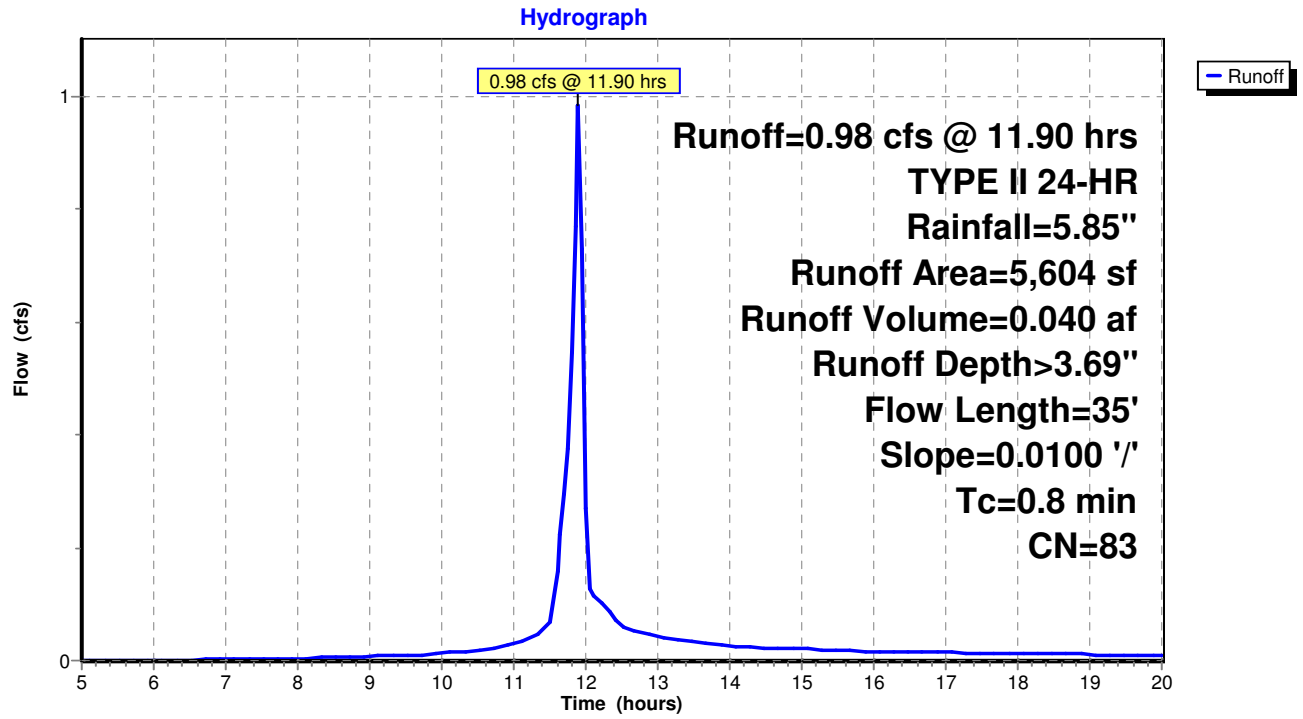
Runoff = 0.98 cfs @ 11.90 hrs, Volume= 0.040 af, Depth> 3.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=5.85"

Area (sf)	CN	Description
3,588	74	>75% Grass cover, Good, HSG C
2,016	98	Roofs, HSG C
5,604	83	Weighted Average
3,588		64.03% Pervious Area
2,016		35.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	35	0.0100	0.78		**Sheet Flow, Balance of Longest Flowpath** Smooth surfaces n= 0.011 P2= 2.70"

Subcatchment PSC-7A: Proposed Subcatchment 7A



Summary for Subcatchment UP 1: Upland Watershed 1

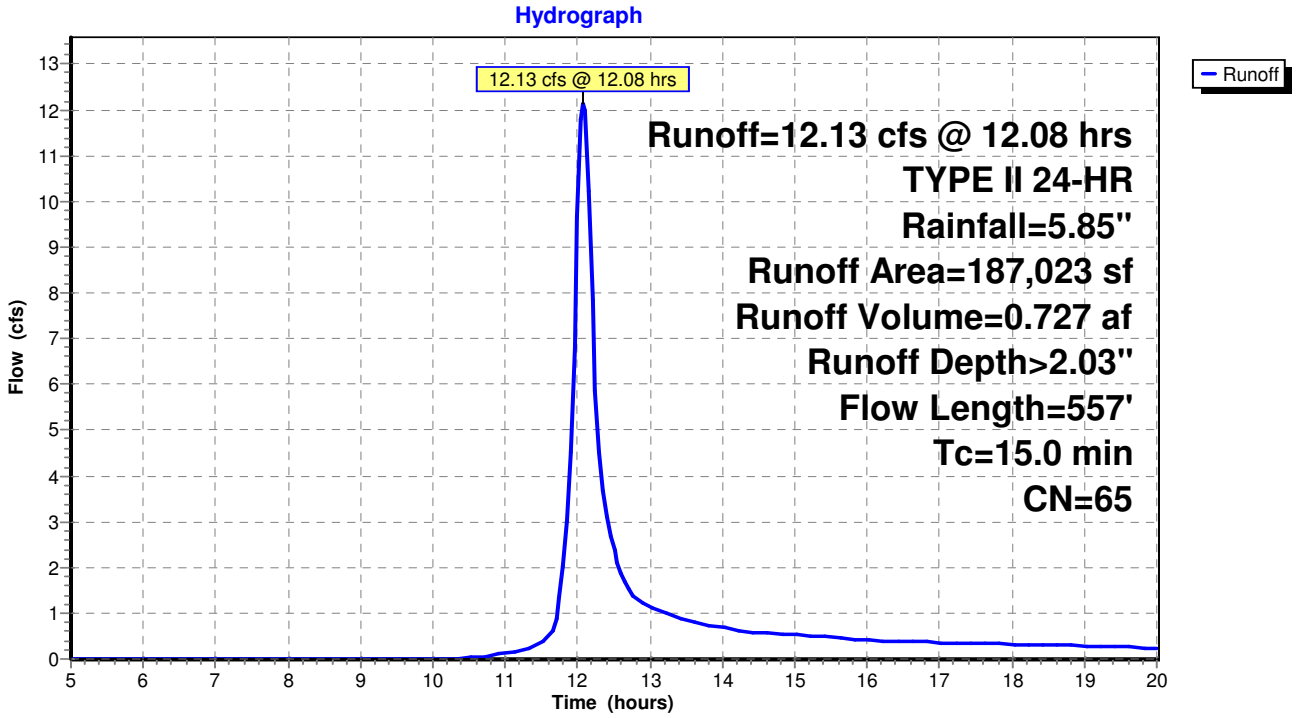
Runoff = 12.13 cfs @ 12.08 hrs, Volume= 0.727 af, Depth> 2.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=5.85"

Area (sf)	CN	Description
187,023	65	Brush, Good, HSG C
187,023		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0360	0.14		**Sheet Flow, First 100' Flowpath** Grass: Dense n= 0.240 P2= 2.70"
2.7	457	0.0350	2.81		**Shallow Concentrated Flow, Balance of Longest Flowpath** Grassed Waterway Kv= 15.0 fps
15.0	557	Total			

Subcatchment UP 1: Upland Watershed 1



Summary for Subcatchment UP 2: Upland Watershed 2

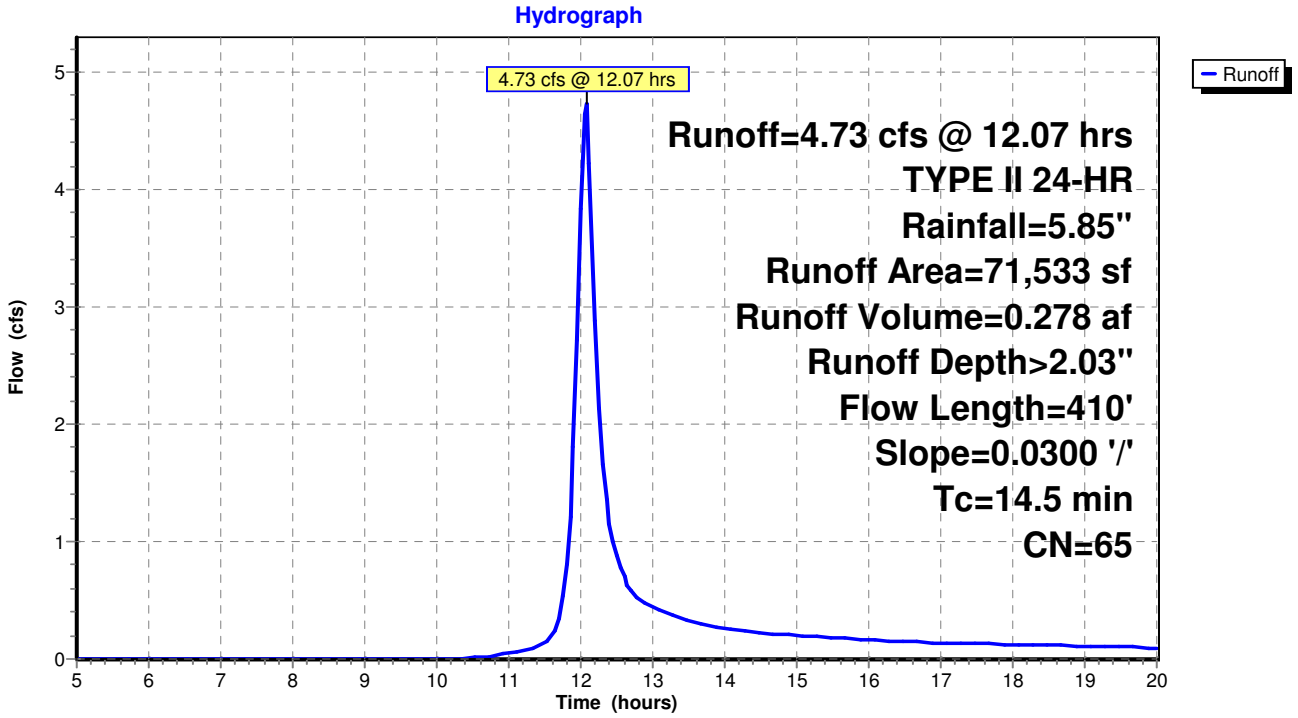
Runoff = 4.73 cfs @ 12.07 hrs, Volume= 0.278 af, Depth> 2.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
TYPE II 24-HR Rainfall=5.85"

Area (sf)	CN	Description
71,533	65	Brush, Good, HSG C
71,533		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	155	0.0300	0.20		**Sheet Flow, First 100' Flowpath** Grass: Short n= 0.150 P2= 2.70"
1.6	255	0.0300	2.60		**Shallow Concentrated Flow, Balance of Longest Flowpath** Grassed Waterway Kv= 15.0 fps
14.5	410	Total			

Subcatchment UP 2: Upland Watershed 2



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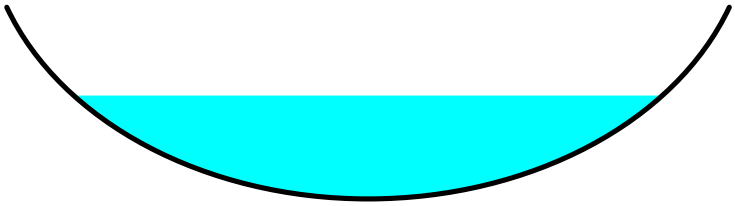
Summary for Reach Div: Diversion Swale

Inflow Area = 9.223 ac, 0.00% Impervious, Inflow Depth > 2.04"
Inflow = 25.04 cfs @ 12.00 hrs, Volume= 1.564 af
Outflow = 20.53 cfs @ 12.21 hrs, Volume= 1.543 af, Atten= 18%, Lag= 12.6 min

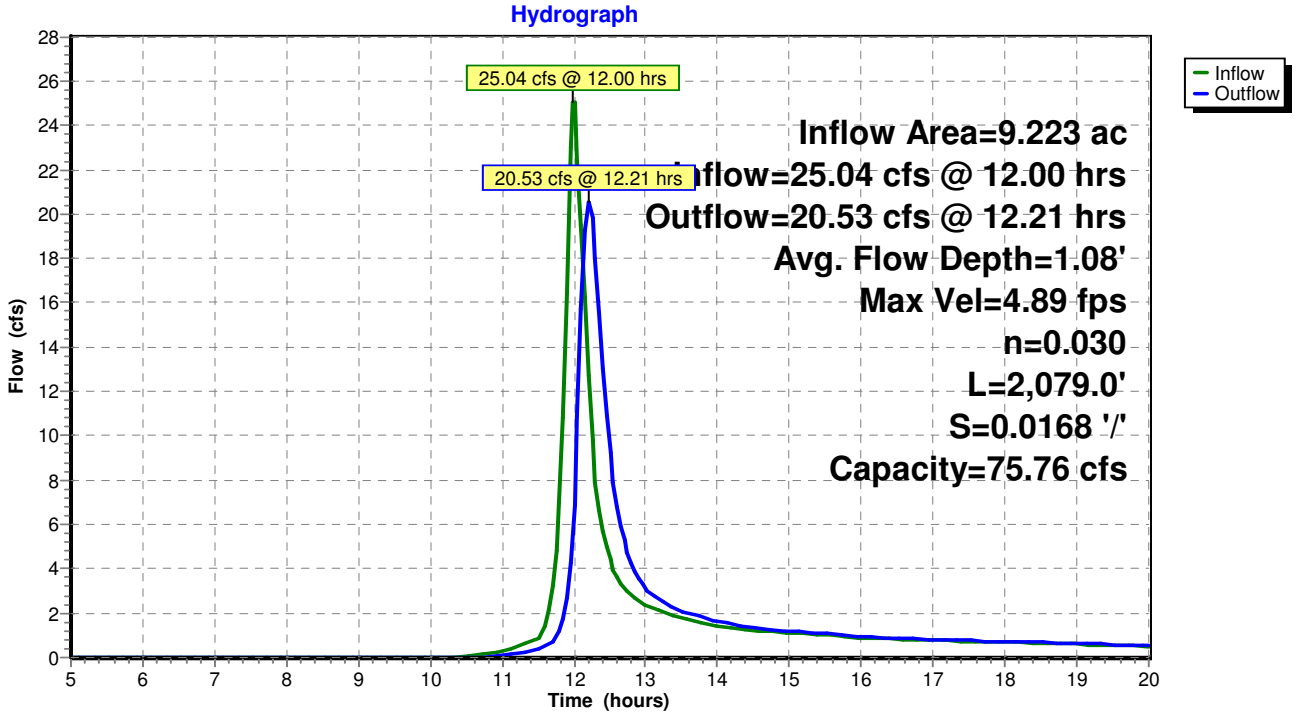
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.89 fps, Min. Travel Time= 7.1 min
Avg. Velocity = 2.03 fps, Avg. Travel Time= 17.1 min

Peak Storage= 8,794 cf @ 12.09 hrs
Average Depth at Peak Storage= 1.08'
Bank-Full Depth= 2.00' Flow Area= 10.7 sf, Capacity= 75.76 cfs

8.00' x 2.00' deep Parabolic Channel, n= 0.030
Length= 2,079.0' Slope= 0.0168 '/'
Inlet Invert= 0.00', Outlet Invert= -35.00'



Reach Div: Diversion Swale

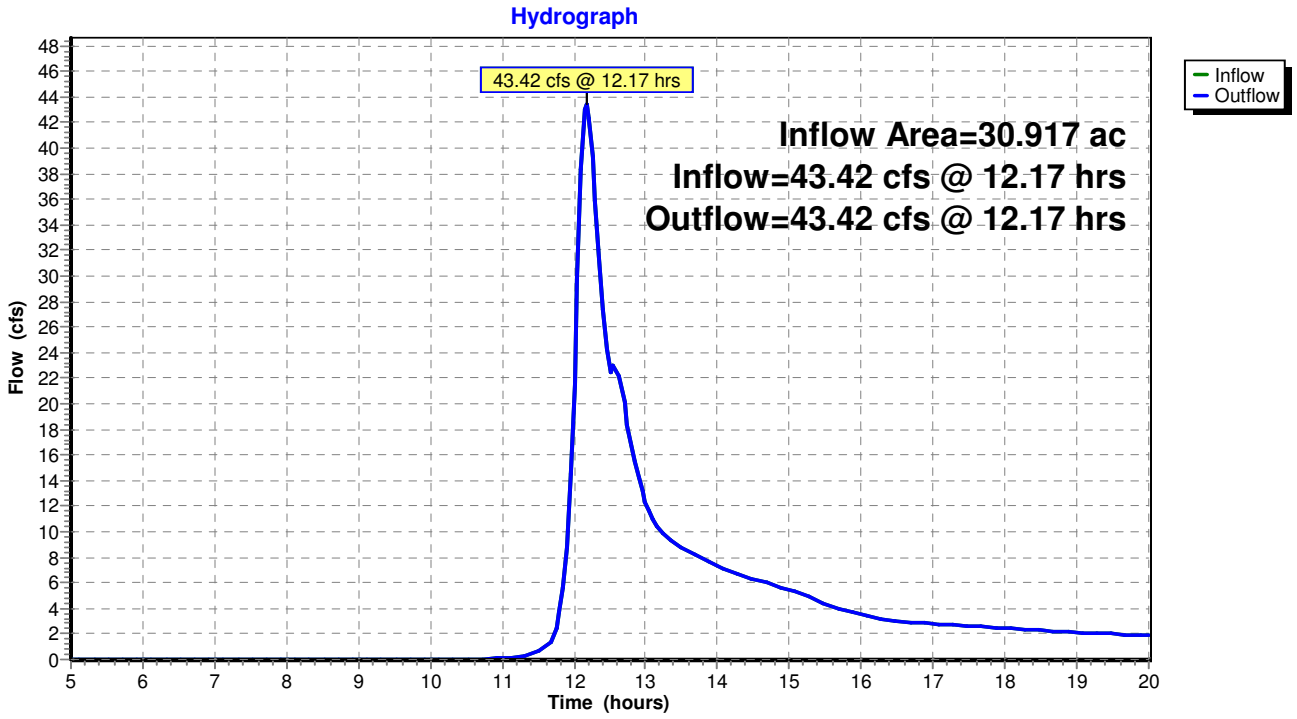


Summary for Reach DP 2: Design Point Summation 2

Inflow Area = 30.917 ac, 6.92% Impervious, Inflow Depth > 1.87"
Inflow = 43.42 cfs @ 12.17 hrs, Volume= 4.821 af
Outflow = 43.42 cfs @ 12.17 hrs, Volume= 4.821 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP 2: Design Point Summation 2



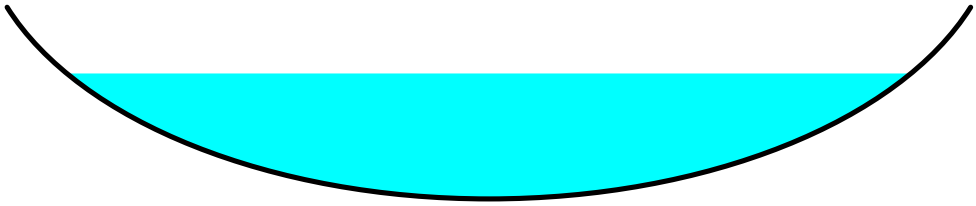
Summary for Reach RS: Road Swale

Inflow Area = 8.425 ac, 20.46% Impervious, Inflow Depth > 2.71"
Inflow = 23.85 cfs @ 12.19 hrs, Volume= 1.903 af
Outflow = 22.96 cfs @ 12.31 hrs, Volume= 1.891 af, Atten= 4%, Lag= 6.7 min

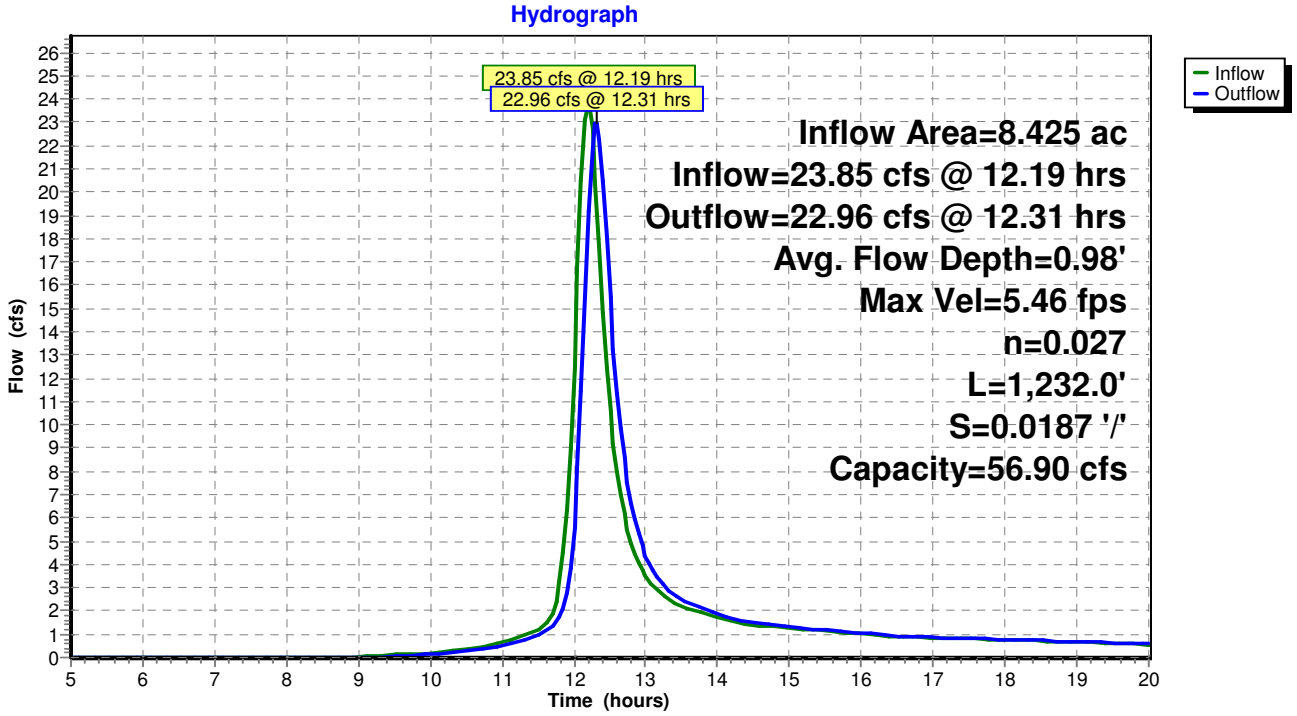
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.46 fps, Min. Travel Time= 3.8 min
Avg. Velocity = 2.13 fps, Avg. Travel Time= 9.6 min

Peak Storage= 5,217 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.98'
Bank-Full Depth= 1.50' Flow Area= 8.0 sf, Capacity= 56.90 cfs

8.00' x 1.50' deep Parabolic Channel, n= 0.027
Length= 1,232.0' Slope= 0.0187 '/'
Inlet Invert= 0.00', Outlet Invert= -23.00'



Reach RS: Road Swale



Summary for Pond BR 2: Bioretention Area 2

Inflow Area = 0.386 ac, 34.86% Impervious, Inflow Depth > 3.58"
Inflow = 1.90 cfs @ 12.06 hrs, Volume= 0.115 af
Outflow = 1.49 cfs @ 12.17 hrs, Volume= 0.099 af, Atten= 21%, Lag= 6.2 min
Primary = 0.21 cfs @ 12.17 hrs, Volume= 0.074 af
Secondary = 1.28 cfs @ 12.17 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 4.19' @ 12.17 hrs Surf.Area= 1,490 sf Storage= 1,945 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 2,454 cf

Plug-Flow detention time= 98.8 min calculated for 0.099 af (86% of inflow)
Center-of-Mass det. time= 56.7 min (833.1 - 776.5)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	2,454 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	438	0	0
1.00	438	438	438
1.10	219	33	471
3.50	219	526	996
3.51	1,094	7	1,003
4.50	1,669	1,368	2,371
4.60	0	83	2,454

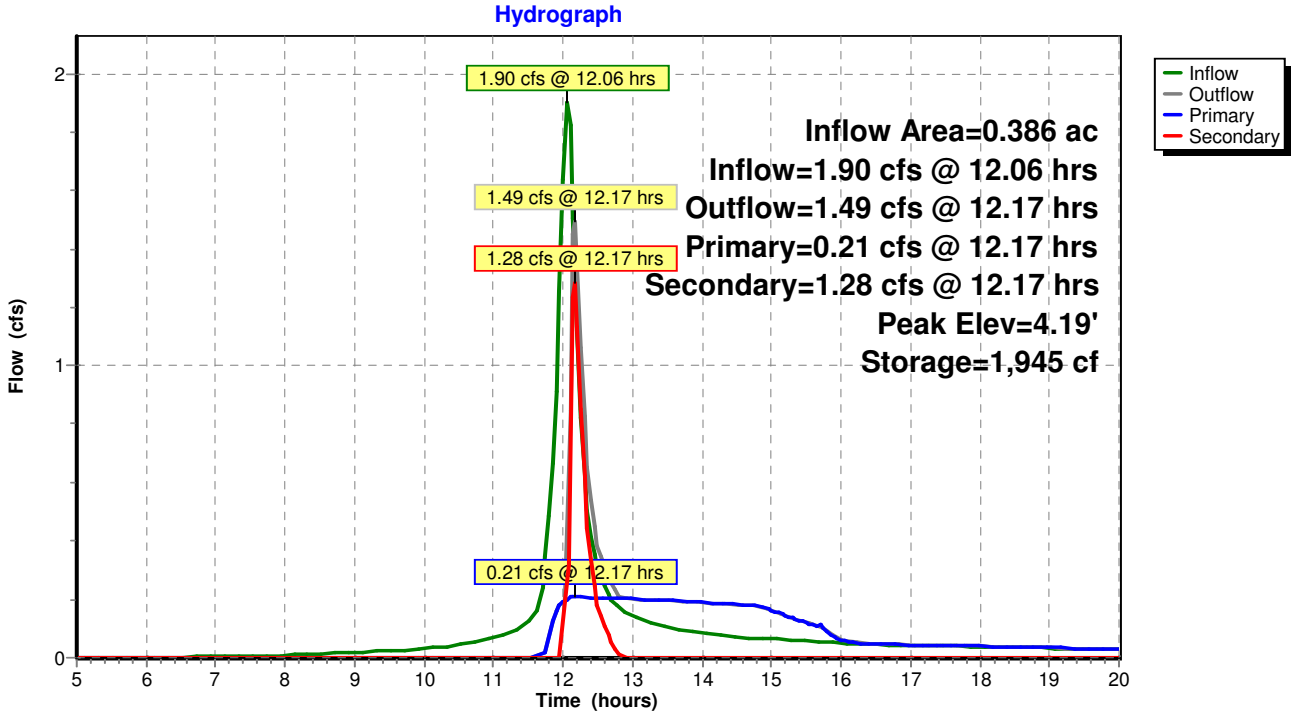
Device	Routing	Invert	Outlet Devices
#1	Secondary	4.00'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	2.00'	**4.0" Round Culvert** L= 177.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2.00' / 1.50' S= 0.0028 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.21 cfs @ 12.17 hrs HW=4.18' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.21 cfs @ 2.42 fps)

Secondary OutFlow Max=1.19 cfs @ 12.17 hrs HW=4.18' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 1.19 cfs @ 1.09 fps)

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Pond BR 2: Bioretention Area 2



Summary for Pond BR 3: Bioretention Area 3

Inflow Area = 0.189 ac, 24.51% Impervious, Inflow Depth > 3.39"
Inflow = 1.11 cfs @ 11.99 hrs, Volume= 0.053 af
Outflow = 0.64 cfs @ 12.10 hrs, Volume= 0.046 af, Atten= 42%, Lag= 6.7 min
Primary = 0.34 cfs @ 12.11 hrs, Volume= 0.044 af
Secondary = 0.30 cfs @ 12.10 hrs, Volume= 0.002 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 4.07' @ 12.11 hrs Surf.Area= 725 sf Storage= 845 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 1,189 cf

Plug-Flow detention time= 72.4 min calculated for 0.046 af (87% of inflow)
Center-of-Mass det. time= 30.6 min (805.9 - 775.3)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	1,189 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	198	0	0
1.00	198	198	198
1.10	99	15	213
3.50	99	238	450
3.51	495	3	453
4.50	901	691	1,144
4.60	0	45	1,189

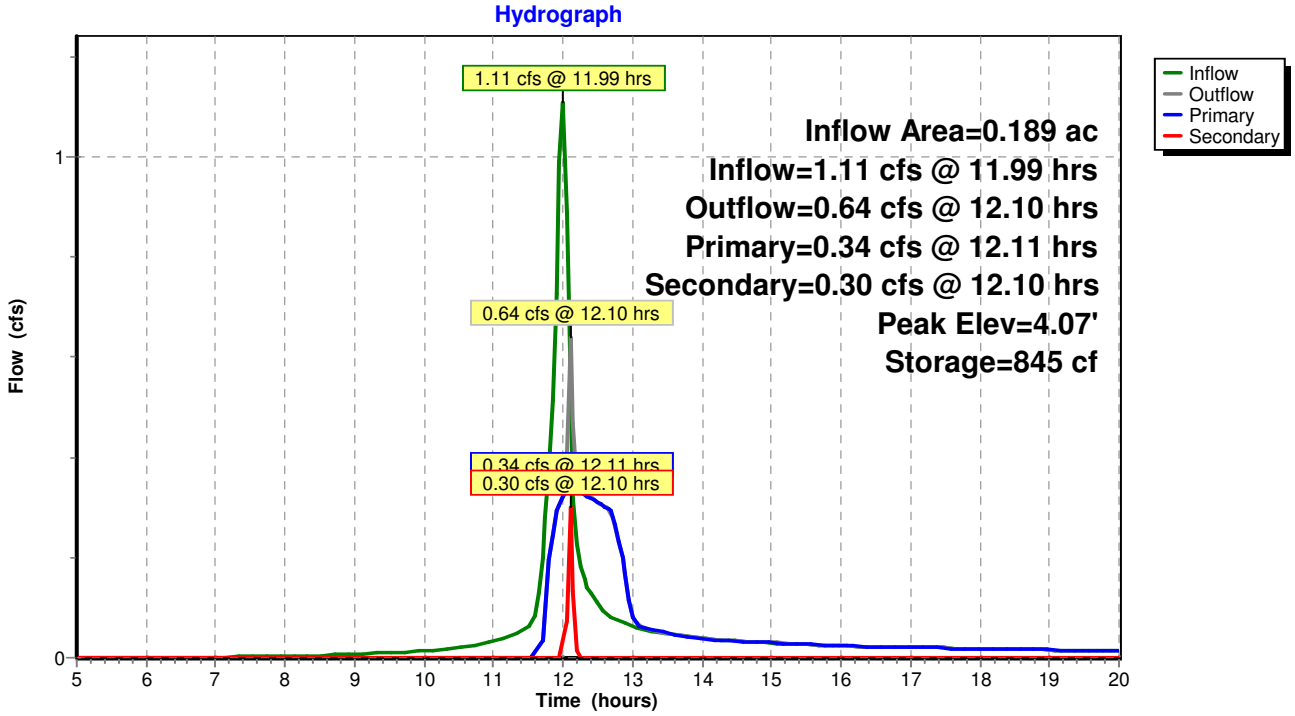
Device	Routing	Invert	Outlet Devices
#1	Secondary	4.00'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	2.00'	**4.0" Round Culvert** L= 57.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2.00' / 1.50' S= 0.0088 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.34 cfs @ 12.11 hrs HW=4.07' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.34 cfs @ 3.86 fps)

Secondary OutFlow Max=0.27 cfs @ 12.10 hrs HW=4.07' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 0.27 cfs @ 0.66 fps)

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Pond BR 3: Bioretention Area 3



Summary for Pond BR 6: Bioretention Area 6

Inflow Area = 0.281 ac, 31.15% Impervious, Inflow Depth > 3.49"
Inflow = 1.92 cfs @ 11.95 hrs, Volume= 0.082 af
Outflow = 1.76 cfs @ 11.98 hrs, Volume= 0.074 af, Atten= 9%, Lag= 1.9 min
Primary = 0.22 cfs @ 11.98 hrs, Volume= 0.055 af
Secondary = 1.54 cfs @ 11.98 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 4.22' @ 11.98 hrs Surf.Area= 1,062 sf Storage= 1,034 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 1,348 cf

Plug-Flow detention time= 63.2 min calculated for 0.074 af (91% of inflow)
Center-of-Mass det. time= 31.3 min (801.5 - 770.1)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	1,348 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	180	0	0
1.00	180	180	180
1.10	90	14	194
3.50	90	216	410
3.51	451	3	412
4.50	1,307	870	1,282
4.60	0	65	1,348

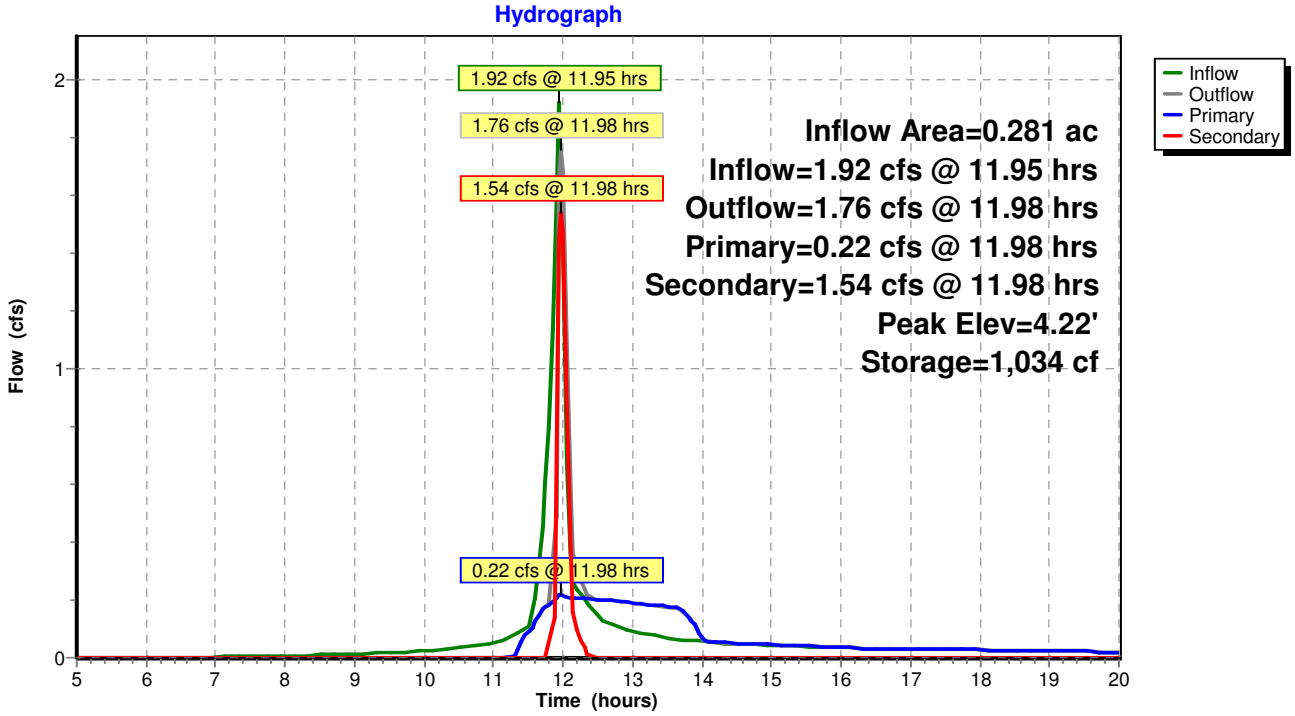
Device	Routing	Invert	Outlet Devices
#1	Secondary	4.00'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	2.50'	**4.0" Round Culvert** L= 132.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2.50' / 2.00' S= 0.0038 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.22 cfs @ 11.98 hrs HW=4.21' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.22 cfs @ 2.47 fps)

Secondary OutFlow Max=1.45 cfs @ 11.98 hrs HW=4.21' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 1.45 cfs @ 1.16 fps)

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Pond BR 6: Bioretention Area 6



Summary for Pond BR 7: Bioretention Area 7

Inflow Area = 0.129 ac, 35.97% Impervious, Inflow Depth > 3.69"
Inflow = 0.98 cfs @ 11.90 hrs, Volume= 0.040 af
Outflow = 0.32 cfs @ 12.00 hrs, Volume= 0.033 af, Atten= 67%, Lag= 6.4 min
Primary = 0.32 cfs @ 12.00 hrs, Volume= 0.033 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 3.87' @ 12.00 hrs Surf.Area= 645 sf Storage= 708 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 1,189 cf

Plug-Flow detention time= 86.5 min calculated for 0.032 af (82% of inflow)
Center-of-Mass det. time= 36.1 min (799.2 - 763.1)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	1,189 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	198	0	0
1.00	198	198	198
1.10	99	15	213
3.50	99	238	450
3.51	495	3	453
4.50	901	691	1,144
4.60	0	45	1,189

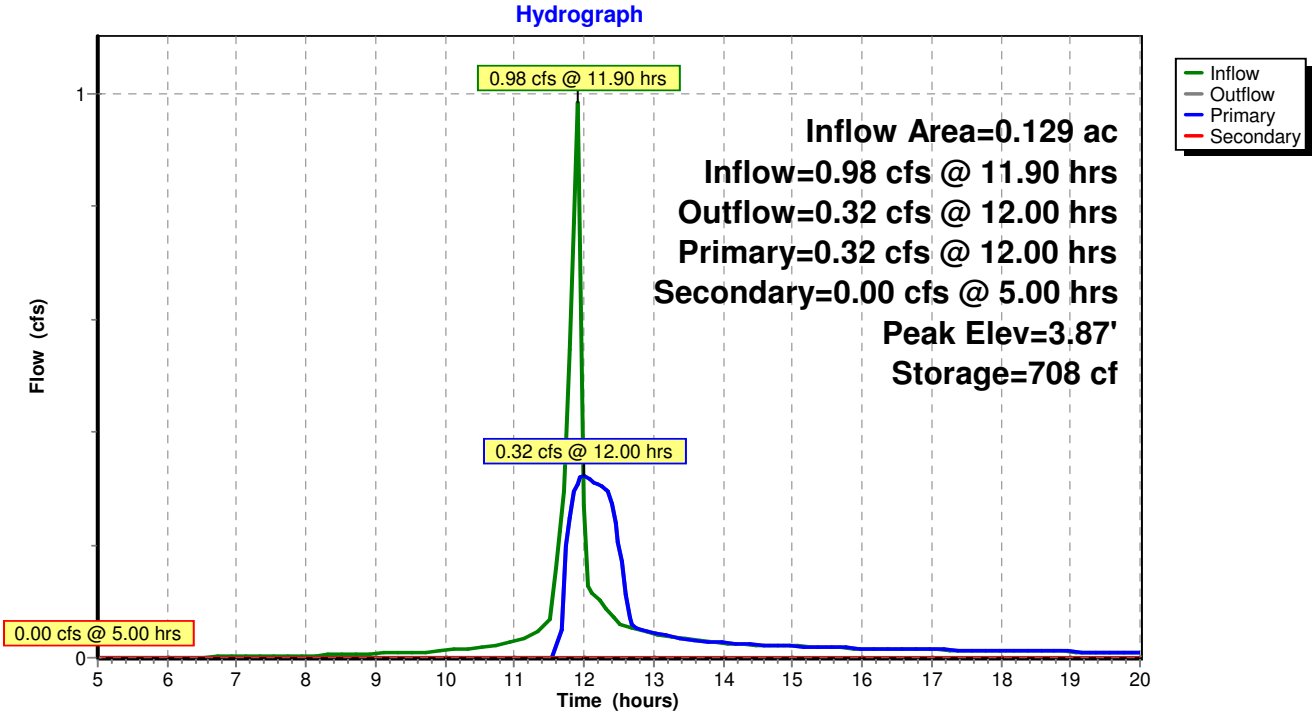
Device	Routing	Invert	Outlet Devices
#1	Secondary	4.00'	**6.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	2.00'	**4.0" Round Culvert** L= 57.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 2.00' / 1.50' S= 0.0088 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.32 cfs @ 12.00 hrs HW=3.87' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.32 cfs @ 3.69 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=0.00' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Pond BR 7: Bioretention Area 7



Summary for Pond DS: Dry Swales

Inflow Area = 0.138 ac, 48.99% Impervious, Inflow Depth > 3.49"
Inflow = 1.00 cfs @ 11.90 hrs, Volume= 0.040 af
Outflow = 0.32 cfs @ 12.01 hrs, Volume= 0.040 af, Atten= 68%, Lag= 6.6 min
Primary = 0.32 cfs @ 12.01 hrs, Volume= 0.040 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 3.73' @ 12.01 hrs Surf.Area= 542 sf Storage= 491 cf
Flood Elev= 5.00' Surf.Area= 0 sf Storage= 1,146 cf

Plug-Flow detention time= 15.8 min calculated for 0.040 af (99% of inflow)
Center-of-Mass det. time= 13.0 min (780.7 - 767.7)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	573 cf	**Custom Stage Data (Prismatic)** Listed below
		573 cf	x 2.00 = 1,146 cf Total Available Storage

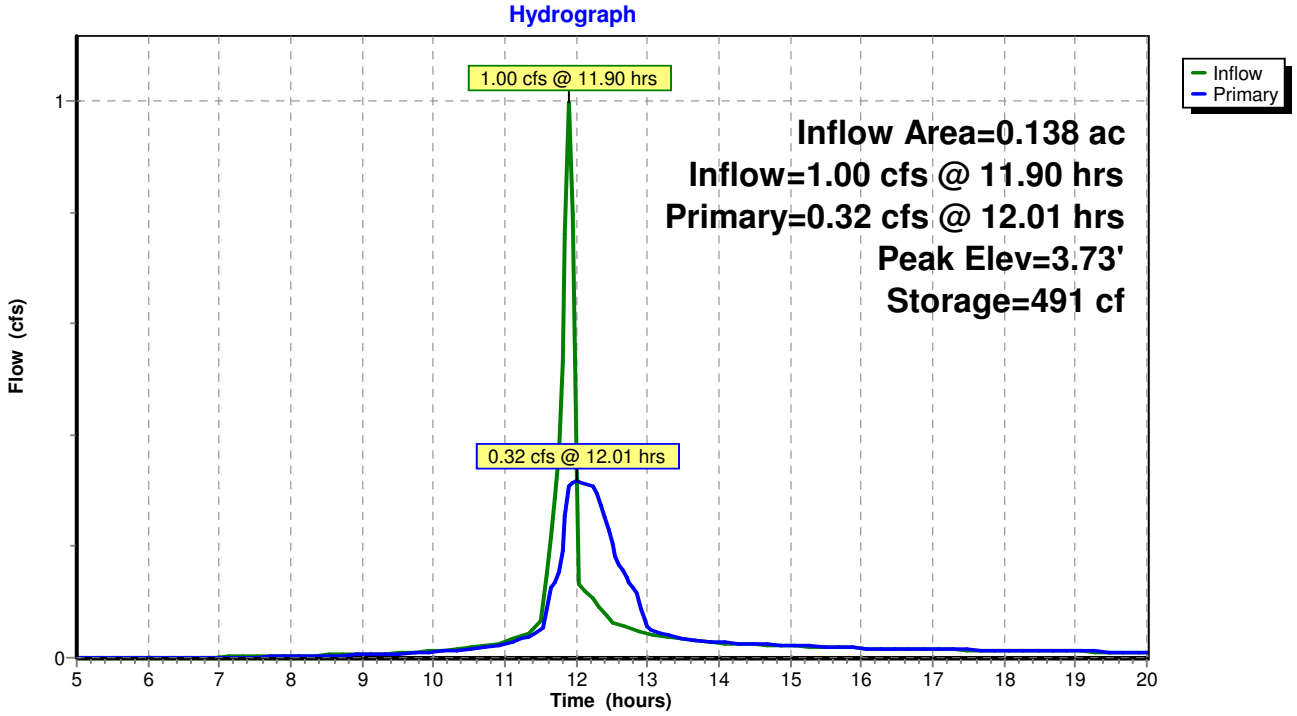
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	175	0.0	0	0
1.00	175	40.0	70	70
1.10	175	20.0	4	74
3.50	175	20.0	84	158
3.51	175	100.0	2	159
4.50	600	100.0	384	543
4.60	0	100.0	30	573

Device	Routing	Invert	Outlet Devices
#1	Primary	4.00'	**6.0' long x 2.0' 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 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	0.00'	**4.0" Round Culvert** L= 127.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 0.00' / -0.50' S= 0.0039 '/' Cc= 0.900 n= 0.013, Flow Area= 0.09 sf

Primary OutFlow Max=0.32 cfs @ 12.01 hrs HW=3.73' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
└**2=Culvert** (Barrel Controls 0.32 cfs @ 3.62 fps)

Pinney_Proposed_DP2
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Pond DS: Dry Swales



Summary for Pond FB: Forebay

Inflow Area = 8.425 ac, 20.46% Impervious, Inflow Depth > 2.69"
Inflow = 22.96 cfs @ 12.31 hrs, Volume= 1.891 af
Outflow = 23.15 cfs @ 12.33 hrs, Volume= 1.824 af, Atten= 0%, Lag= 1.7 min
Primary = 23.15 cfs @ 12.33 hrs, Volume= 1.824 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 5.28' @ 12.33 hrs Surf.Area= 0 sf Storage= 2,928 cf
Flood Elev= 4.00' Surf.Area= 1,536 sf Storage= 2,852 cf

Plug-Flow detention time= 18.2 min calculated for 1.818 af (96% of inflow)
Center-of-Mass det. time= 5.6 min (815.5 - 809.9)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	2,928 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	113	0	0
1.00	345	229	229
2.00	633	489	718
3.00	1,049	841	1,559
4.00	1,536	1,293	2,852
4.10	0	77	2,928

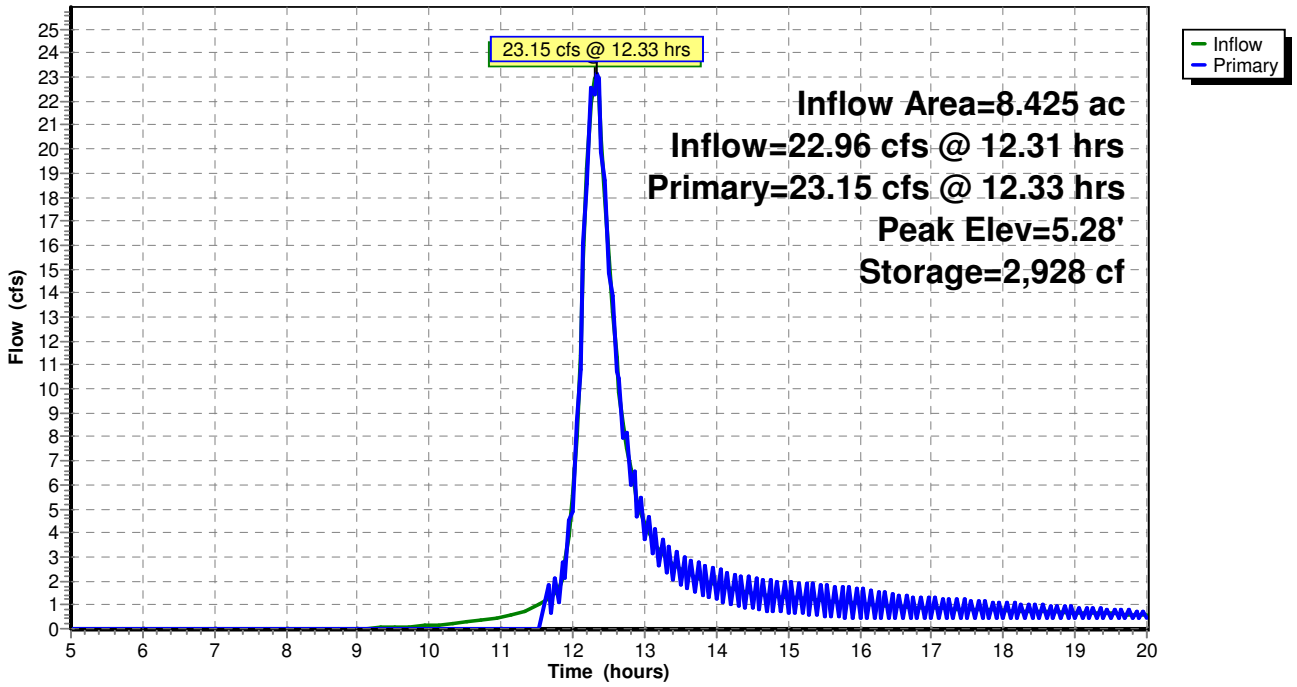
Device	Routing	Invert	Outlet Devices
#1	Primary	4.00'	**6.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=22.73 cfs @ 12.33 hrs HW=5.26' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 22.73 cfs @ 3.00 fps)

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Pond FB: Forebay

Hydrograph



Summary for Pond P: Pond

Inflow Area = 8.425 ac, 20.46% Impervious, Inflow Depth > 2.60"
Inflow = 23.15 cfs @ 12.33 hrs, Volume= 1.824 af
Outflow = 10.04 cfs @ 12.65 hrs, Volume= 1.486 af, Atten= 57%, Lag= 19.1 min
Primary = 4.65 cfs @ 12.65 hrs, Volume= 1.325 af
Secondary = 5.39 cfs @ 12.65 hrs, Volume= 0.160 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Starting Elev= 4.00' Surf.Area= 7,635 sf Storage= 5,821 cf
Peak Elev= 6.70' @ 12.65 hrs Surf.Area= 15,131 sf Storage= 38,587 cf (32,766 cf above start)
Flood Elev= 7.50' Surf.Area= 0 sf Storage= 46,941 cf (41,120 cf above start)

Plug-Flow detention time= 127.6 min calculated for 1.348 af (74% of inflow)
Center-of-Mass det. time= 54.0 min (869.6 - 815.5)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	46,941 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	113	0	0
1.00	314	214	214
2.00	616	465	679
3.00	1,017	817	1,495
4.00	7,635	4,326	5,821
5.00	11,788	9,712	15,533
6.00	13,709	12,749	28,281
7.00	15,740	14,725	43,006
7.50	0	3,935	46,941

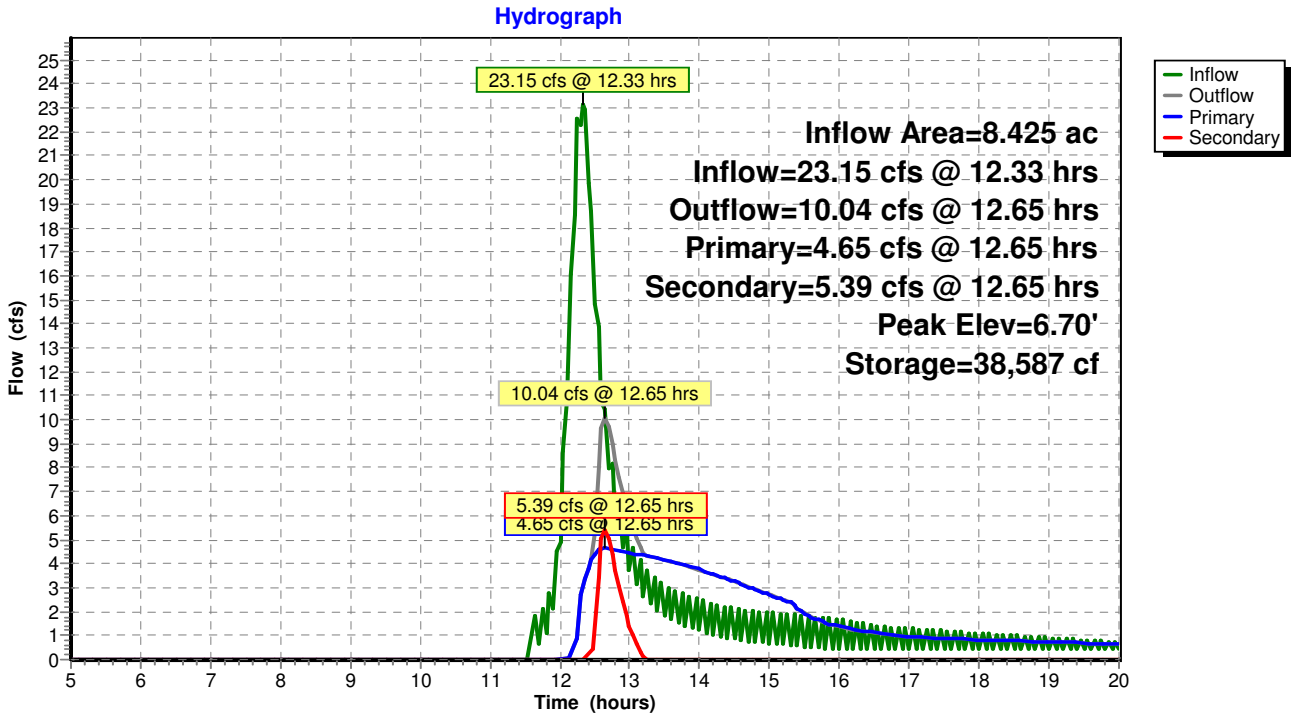
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**12.0" Round Culvert** L= 104.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 0.00' / -1.00' S= 0.0096 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	4.00'	**1.5" Vert. Orifice/Grate** C= 0.600
#3	Device 1	5.25'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	6.50'	**25.0' long x 6.0' 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 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

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Primary OutFlow Max=4.65 cfs @ 12.65 hrs HW=6.70' (Free Discharge)
└**1=Culvert** (Passes 4.65 cfs of 7.18 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.10 cfs @ 7.82 fps)
  └**3=Orifice/Grate** (Orifice Controls 4.55 cfs @ 5.80 fps)

Secondary OutFlow Max=5.29 cfs @ 12.65 hrs HW=6.70' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 5.29 cfs @ 1.06 fps)

Pond P: Pond



APPENDIX 3

SOILS DATA

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Tompkins County, New York

Pinney Duplex Apartments



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

Preface.....2
How Soil Surveys Are Made.....5
Soil Map.....7
Soil Map.....8
Legend.....9
Map Unit Legend.....10
Map Unit Descriptions.....10
Tompkins County, New York.....12
BgC—Bath and Valois soils, 5 to 15 percent slopes.....12
CfB—Conesus gravelly silt loam, 3 to 8 percent slopes.....14
KnA—Kendaia and Lyons soils, 0 to 3 percent slopes.....16
Ly—Lyons soils, 0 to 3 percent slopes.....19
PaC—Palmyra gravelly loam, 5 to 15 percent simple slopes.....21
PhB—Phelps gravelly silt loam, 3 to 8 percent slopes.....22
References.....24

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

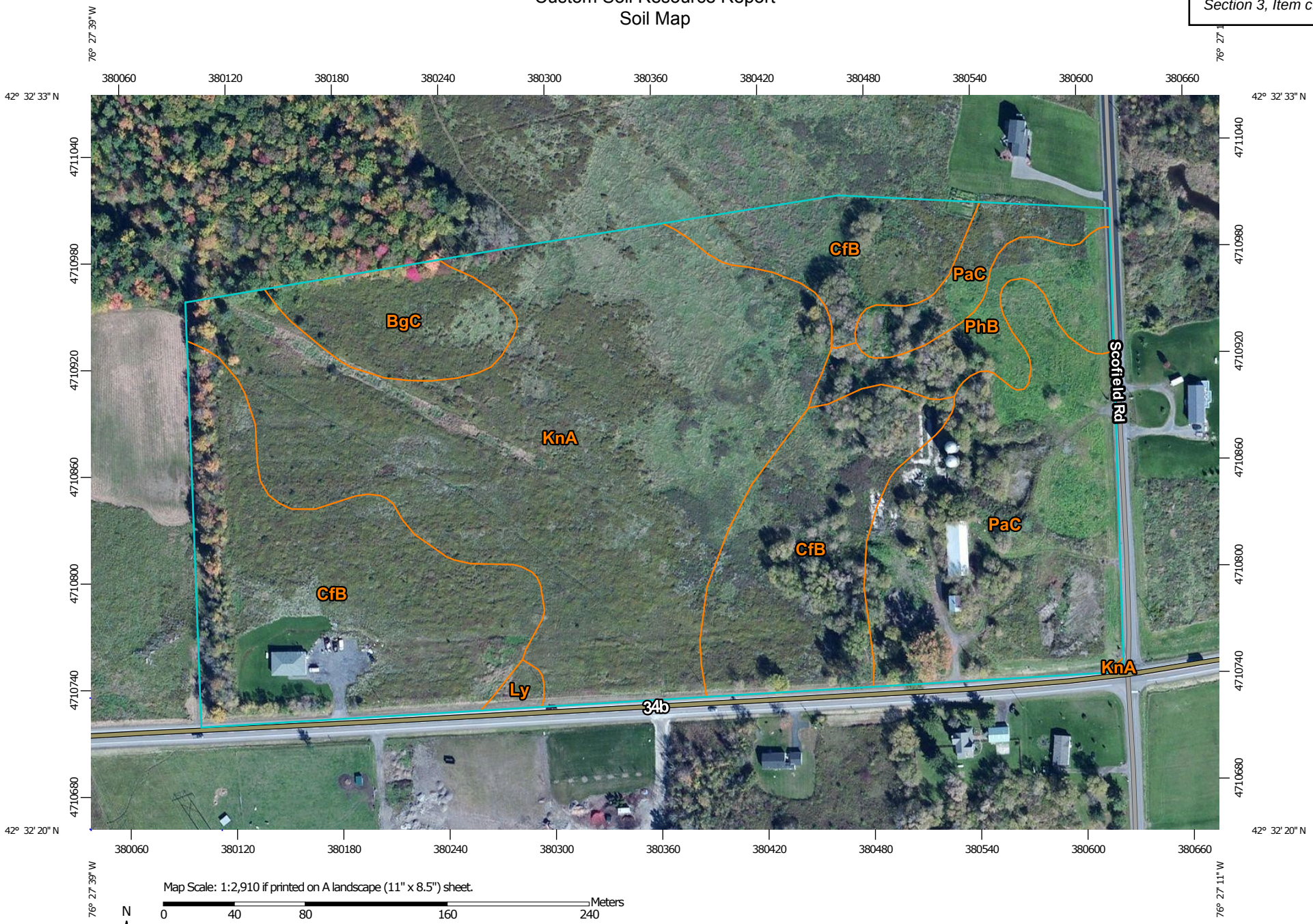
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:2,910 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 40 80 160 240

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Tompkins County, New York
Survey Area Data: Version 10, Sep 24, 2015

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

Date(s) aerial images were photographed: Jun 2, 2010—Oct 8, 2010

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

Map Unit Legend

Tompkins County, New York (NY109)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
BgC	Bath and Valois soils, 5 to 15 percent slopes	1.6	4.8%
CfB	Conesus gravelly silt loam, 3 to 8 percent slopes	11.2	33.0%
KnA	Kendaia and Lyons soils, 0 to 3 percent slopes	12.6	37.2%
Ly	Lyons soils, 0 to 3 percent slopes	0.1	0.4%
PaC	Palmyra gravelly loam, 5 to 15 percent simple slopes	6.8	20.0%
PhB	Phelps gravelly silt loam, 3 to 8 percent slopes	1.6	4.6%
Totals for Area of Interest		**33.9**	**100.0%**

Map Unit Descriptions

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

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

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

where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

Tompkins County, New York

BgC—Bath and Valois soils, 5 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2v32c
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Bath and similar soils: 40 percent
Valois and similar soils: 35 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bath

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived mainly from gray and brown siltstone, sandstone, and shale

Typical profile

Ap - 0 to 9 inches: channery silt loam
Bw1 - 9 to 15 inches: channery silt loam
Bw2 - 15 to 25 inches: channery loam
E - 25 to 29 inches: channery loam
Bx - 29 to 52 inches: very channery silt loam
C - 52 to 72 inches: very channery silt loam

Properties and qualities

Slope: 5 to 15 percent
Percent of area covered with surface fragments: 0.0 percent
Depth to restrictive feature: 26 to 38 inches to fragipan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C

Description of Valois

Setting

Landform: End moraines, lateral moraines, valley sides
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from sandstone, siltstone, and shale

Typical profile

H1 - 0 to 2 inches: gravelly silt loam
H2 - 2 to 32 inches: gravelly silt loam
H3 - 32 to 49 inches: gravelly silt loam
H4 - 49 to 60 inches: gravelly silt loam

Properties and qualities

Slope: 5 to 15 percent
Depth to restrictive feature: 24 to 36 inches to fragipan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 35 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C

Minor Components

Lordstown

Percent of map unit: 5 percent
Landform: Benches, ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex

Langford

Percent of map unit: 5 percent
Landform: Hills, till plains, drumlinoid ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex

Volusia

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear

Mardin

Percent of map unit: 5 percent
Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex

Erie

Percent of map unit: 5 percent
Landform: Hills, till plains, drumlinoid ridges
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear

CfB—Conesus gravelly silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w3j3
Elevation: 820 to 1,800 feet
Mean annual precipitation: 31 to 57 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 100 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Conesus and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Conesus

Setting

Landform: Drumlins, hills, till plains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Calcareous loamy lodgment till derived from limestone, sandstone, and shale

Typical profile

Ap - 0 to 9 inches: gravelly silt loam
E/B - 9 to 14 inches: gravelly silt loam
Bt/E - 14 to 19 inches: gravelly silt loam
Bt1 - 19 to 25 inches: gravelly silt loam
Bt2 - 25 to 36 inches: gravelly silt loam
C - 36 to 79 inches: gravelly loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Available water storage in profile: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D

Minor Components

Lansing

Percent of map unit: 7 percent
Landform: Drumlins, hills, till plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex

Kendaia

Percent of map unit: 3 percent
Landform: Drumlins, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear

Nunda

Percent of map unit: 2 percent
Landform: Hills, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex

Appleton

Percent of map unit: 2 percent
Landform: Drumlins, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear

Lyons

Percent of map unit: 1 percent
Landform: Depressions, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope

Down-slope shape: Concave
Across-slope shape: Concave

KnA—Kendaia and Lyons soils, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2trwv
Elevation: 430 to 1,510 feet
Mean annual precipitation: 31 to 57 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 100 to 190 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Kendaia and similar soils: 50 percent
Lyons and similar soils: 25 percent
Lyons, frequently ponded, and similar soils: 15 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kendaia

Setting

Landform: Drumlins, ridges, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Calcareous loamy lodgment till derived from limestone, sandstone, and shale

Typical profile

Ap - 0 to 8 inches: silt loam
Bw - 8 to 15 inches: silt loam
Bg - 15 to 20 inches: gravelly silt loam
BCg - 20 to 24 inches: gravelly loam
C - 24 to 79 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Available water storage in profile: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D

Description of Lyons

Setting

Landform: Depressions, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Calcareous loamy lodgment till derived from limestone and shale

Typical profile

Ap - 0 to 10 inches: silt loam
Bg1 - 10 to 19 inches: silt loam
Bg2 - 19 to 25 inches: silty clay loam
BCg - 25 to 34 inches: gravelly silt loam
C - 34 to 79 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Available water storage in profile: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D

Description of Lyons, Frequently Ponded

Setting

Landform: Depressions, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Calcareous loamy lodgment till derived from limestone and shale

Typical profile

Ap - 0 to 10 inches: mucky silt loam
Bg1 - 10 to 19 inches: silt loam
Bg2 - 19 to 25 inches: silty clay loam
BCg - 25 to 34 inches: gravelly silt loam
C - 34 to 79 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 40 percent
Available water storage in profile: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D

Minor Components

Conesus

Percent of map unit: 3 percent
Landform: Hills, till plains, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex

Lima

Percent of map unit: 3 percent
Landform: Drumlins, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex

Palms

Percent of map unit: 2 percent
Landform: Marshes, swamps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave

Ilion

Percent of map unit: 2 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave

Ly—Lyons soils, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2spjy
Elevation: 250 to 1,900 feet
Mean annual precipitation: 31 to 57 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 100 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition

Lyons and similar soils: 75 percent
Lyons, frequently ponded, and similar soils: 15 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lyons

Setting

Landform: Depressions, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Calcareous loamy lodgment till derived from limestone and shale

Typical profile

Ap - 0 to 10 inches: silt loam
Bg1 - 10 to 19 inches: silt loam
Bg2 - 19 to 25 inches: silty clay loam
BCg - 25 to 34 inches: gravelly silt loam
C - 34 to 79 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Available water storage in profile: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D

Description of Lyons, Frequently Ponded

Setting

Landform: Depressions, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Calcareous loamy lodgment till derived from limestone and shale

Typical profile

Ap - 0 to 10 inches: mucky silt loam
Bg1 - 10 to 19 inches: silt loam
Bg2 - 19 to 25 inches: silty clay loam
BCg - 25 to 34 inches: gravelly silt loam
C - 34 to 79 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 40 percent
Available water storage in profile: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D

Minor Components

Canandaigua

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave

Appleton

Percent of map unit: 3 percent
Landform: Drumlins, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear

Kendaia

Percent of map unit: 2 percent
Landform: Drumlins, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear

Ilion

Percent of map unit: 1 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave

Palms

Percent of map unit: 1 percent
Landform: Marshes, swamps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave

PaC—Palmyra gravelly loam, 5 to 15 percent simple slopes

Map Unit Setting

National map unit symbol: 9xnt
Mean annual precipitation: 32 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Palmyra and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Palmyra

Setting

Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy over sandy and gravelly glaciofluvial deposits, derived mainly from limestone and other sedimentary rocks

Typical profile

H1 - 0 to 12 inches: gravelly loam
H2 - 12 to 21 inches: gravelly clay loam
H3 - 21 to 60 inches: stratified extremely gravelly sand

Properties and qualities

Slope: 5 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Available water storage in profile: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A

Minor Components

Fredon

Percent of map unit: 5 percent

Phelps

Percent of map unit: 5 percent

Genesee (hamlin)

Percent of map unit: 5 percent

Howard

Percent of map unit: 5 percent

Honeoye

Percent of map unit: 5 percent

PhB—Phelps gravelly silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9xny
Mean annual precipitation: 32 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 120 to 160 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Phelps and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Phelps

Setting

Landform: Terraces, valley trains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, containing significant amounts of limestone

Typical profile

H1 - 0 to 9 inches: gravelly silt loam
H2 - 9 to 15 inches: gravelly loam
H3 - 15 to 25 inches: silt loam
H4 - 25 to 60 inches: stratified gravelly loam to silt

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 15 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B/D

Minor Components

Howard

Percent of map unit: 5 percent

Palmyra

Percent of map unit: 5 percent

Fredon

Percent of map unit: 5 percent

Arkport

Percent of map unit: 5 percent

Braceville

Percent of map unit: 5 percent

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APPENDIX 4

PRECIPITATION DATA

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	New York
Location	
Longitude	76.457 degrees West
Latitude	42.541 degrees North
Elevation	Unknown/Unavailable
Date/Time	Mon, 05 Oct 2015 10:10:17 -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	0.70	0.87	1.07	**1yr**	0.75	0.95	1.21	1.44	1.70	2.00	2.26	**1yr**	1.77	2.17	2.57	3.10	3.57	**1yr**
2yr	0.32	0.49	0.62	0.81	1.02	1.26	**2yr**	0.88	1.12	1.42	1.70	2.00	2.34	2.61	**2yr**	2.07	2.51	2.95	3.50	4.01	**2yr**
5yr	0.38	0.59	0.74	0.99	1.26	1.56	**5yr**	1.09	1.39	1.77	2.12	2.49	2.90	3.23	**5yr**	2.56	3.11	3.62	4.21	4.81	**5yr**
10yr	0.42	0.66	0.84	1.14	1.48	1.85	**10yr**	1.28	1.63	2.10	2.51	2.94	3.41	3.80	**10yr**	3.01	3.66	4.23	4.84	5.53	**10yr**
25yr	0.50	0.79	1.00	1.38	1.83	2.30	**25yr**	1.58	2.02	2.63	3.13	3.67	4.22	4.72	**25yr**	3.74	4.53	5.21	5.83	6.66	**25yr**
50yr	0.56	0.90	1.15	1.60	2.15	2.72	**50yr**	1.86	2.38	3.11	3.71	4.33	4.97	5.55	**50yr**	4.40	5.34	6.10	6.72	7.66	**50yr**
100yr	0.63	1.01	1.31	1.86	2.53	3.23	**100yr**	2.19	2.80	3.69	4.40	5.12	5.85	6.54	**100yr**	5.18	6.29	7.14	7.74	8.81	**100yr**
200yr	0.72	1.17	1.51	2.16	2.98	3.81	**200yr**	2.58	3.30	4.37	5.20	6.04	6.89	7.70	**200yr**	6.10	7.41	8.36	8.91	10.15	**200yr**
500yr	0.85	1.39	1.82	2.64	3.71	4.76	**500yr**	3.20	4.10	5.46	6.50	7.53	8.56	9.57	**500yr**	7.57	9.20	10.31	10.75	12.22	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.25	0.39	0.47	0.64	0.78	0.82	**1yr**	0.68	0.80	0.94	1.06	1.49	1.86	2.10	**1yr**	1.65	2.02	2.43	2.96	3.33	**1yr**
2yr	0.32	0.49	0.60	0.82	1.01	1.11	**2yr**	0.87	1.09	1.23	1.52	1.85	2.28	2.55	**2yr**	2.02	2.45	2.87	3.42	3.93	**2yr**
5yr	0.36	0.55	0.69	0.94	1.20	1.32	**5yr**	1.03	1.29	1.44	1.78	2.17	2.71	3.03	**5yr**	2.40	2.92	3.41	3.98	4.58	**5yr**
10yr	0.40	0.61	0.76	1.06	1.36	1.50	**10yr**	1.18	1.47	1.63	1.98	2.45	3.09	3.44	**10yr**	2.74	3.31	3.87	4.47	5.14	**10yr**
25yr	0.45	0.69	0.86	1.23	1.61	1.78	**25yr**	1.39	1.74	1.92	2.29	2.85	3.66	4.05	**25yr**	3.24	3.90	4.57	5.20	6.00	**25yr**
50yr	0.50	0.76	0.95	1.36	1.83	2.03	**50yr**	1.58	1.99	2.17	2.56	3.21	4.17	4.59	**50yr**	3.69	4.41	5.18	5.82	6.75	**50yr**
100yr	0.55	0.83	1.04	1.51	2.07	2.33	**100yr**	1.78	2.28	2.46	2.85	3.60	4.74	5.19	**100yr**	4.19	4.99	5.87	6.54	7.59	**100yr**
200yr	0.61	0.92	1.17	1.69	2.36	2.66	**200yr**	2.03	2.60	2.80	3.18	4.05	5.39	5.88	**200yr**	4.77	5.66	6.65	7.32	8.54	**200yr**
500yr	0.72	1.06	1.37	1.99	2.83	3.20	**500yr**	2.44	3.13	3.32	3.67	4.72	6.38	6.92	**500yr**	5.65	6.65	7.85	8.50	9.98	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.30	0.47	0.57	0.77	0.94	1.03	**1yr**	0.81	1.01	1.16	1.44	1.77	2.12	2.38	**1yr**	1.88	2.29	2.72	3.25	3.74	**1yr**
2yr	0.34	0.52	0.64	0.87	1.07	1.18	**2yr**	0.92	1.15	1.31	1.62	1.98	2.41	2.71	**2yr**	2.13	2.60	3.03	3.59	4.11	**2yr**
5yr	0.40	0.62	0.76	1.05	1.33	1.52	**5yr**	1.15	1.49	1.68	2.06	2.53	3.09	3.43	**5yr**	2.73	3.30	3.85	4.44	5.08	**5yr**
10yr	0.46	0.71	0.88	1.23	1.59	1.86	**10yr**	1.37	1.81	2.04	2.48	3.06	3.73	4.14	**10yr**	3.31	3.98	4.62	5.23	5.97	**10yr**
25yr	0.57	0.86	1.07	1.53	2.01	2.41	**25yr**	1.74	2.36	2.63	3.17	3.95	4.81	5.30	**25yr**	4.25	5.10	5.89	6.49	7.42	**25yr**
50yr	0.66	1.00	1.25	1.80	2.42	2.93	**50yr**	2.09	2.87	3.19	3.83	4.79	5.82	6.40	**50yr**	5.15	6.15	7.10	7.65	8.74	**50yr**
100yr	0.77	1.16	1.46	2.11	2.89	3.57	**100yr**	2.49	3.49	3.86	4.64	5.80	7.06	7.72	**100yr**	6.25	7.43	8.56	9.03	10.29	**100yr**
200yr	0.90	1.35	1.71	2.48	3.46	4.35	**200yr**	2.98	4.25	4.69	5.60	7.04	8.56	9.34	**200yr**	7.58	8.98	10.31	10.65	12.13	**200yr**
500yr	1.11	1.65	2.13	3.09	4.40	5.63	**500yr**	3.79	5.51	6.05	7.18	9.12	11.07	12.00	**500yr**	9.79	11.54	13.21	13.25	15.07	**500yr**

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