



# **Level II Site Plan Application**

To:

**City of Portland**

## **Moody's Collision Centers**

495 Presumpscot Street; Portland, Maine 04103

Prepared for:

Real Estate Holdings, LLC  
200 Narragansett Street  
Gorham, Maine 04038

Prepared by:

Sebago Technics, Inc.  
75 John Roberts Road, Suite 1A  
South Portland, Maine 04106

July 2015



July 13, 2015  
07548

Barbara Barhydt, Development Review Services Manager  
City of Portland Planning Division  
389 Congress Street  
Portland, ME 04101-3509

**Level II Site Plan Application**  
**Moody's Collision Center, 495 Presumpscot Street**

Dear Barbara:

On behalf of Real Estate Holdings, LLC, we are pleased to submit the enclosed Level II Site Plan Application for the proposed parking expansion of the existing Moody's Collision Center off Presumpscot Street. On May 24, 2012, the City approved a Level I Site Alteration Application for 19 additional parking spaces which were constructed using Stormcrete Panels.

As this facility location has sustained significant business and there is a need for additional parking which will be utilized for employee parking to free up parking adjacent to the building for vehicles requiring repair services. As the proposed parking expansion will create a permanent parking area in excess of 7,500 square-feet and serves less than 75 vehicles, the proposed expansion is required to submit a Level II Site Plan Application, requiring a Stormwater Management Plan per City Code Chapter 32, Storm Water.

**Existing Site:**

The existing site includes a vegetated area along Presumpscot Street with a wooded area to the northeast portion of the site. The site runs adjacent to the Presumpscot River. A 25 foot stream buffer has been placed to prevent any disturbance beyond the buffer. All existing buildings and parking areas are located on the site plan.

**Proposed Development:**

The expanded parking area will primarily be located in the grass area that exists along Presumpscot Street in the northwest portion of the site. A total of 21 parking spaces are proposed; however the access aisle will displace 3 existing parking spaces resulting in a net increase of 18 parking spaces. No additional improvements are proposed relative to the building or existing parking spaces to remain.

**Easements:**

There are no existing or proposed easements associated with the project.

**Shadow Analysis:**

A shadow analysis will not be required since the proposed development will not be generating any built structures that could block the sun from the land.

**Signage Plan:**

There exists a single free standing sign which will not be altered by the proposed development. No signage plan will be required.

**Utilities:**

No expansion of utilities is proposed as part of the project. Site lighting is not being proposed as the proposed parking lot is used for employee parking for Moody's Collision and will be in use during normal business hours. A concrete dumpster pad is currently located on the existing site south of the existing Moody's Collision building.

**Soils:**

A Natural Resources Conservation Service (NRCS) Web Soil Survey has been attached as part of the submittal which determines that the area of the proposed site contains soils in the Hydrologic Soil Group D.

We are hopeful that the enclosed submission, along with the \$400.00 application fee, provides the required information to allow the review process to proceed. Upon your review of this submission, however, please call with any questions or if you require additional information. Thank you for your consideration.

Sincerely,

SEBAGO TECHNICS, INC.



Shawn M. Frank, P.E.  
Senior Project Manager

SMF:pdo/lfg

cc: Shawn Moody, Moody's Collision Center



Jeff Levine, AICP, Director  
 Planning & Urban Development Department

### Electronic Signature and Fee Payment Confirmation

Notice: Your electronic signature is considered a legal signature per state law.

By digitally signing the attached document(s), you are signifying your understanding this is a legal document and your electronic signature is considered a **legal signature** per Maine state law. You are also signifying your intent on paying your fees by the opportunities below.

I, the undersigned, intend and acknowledge that no Site Plan or Historic Preservation Applications can be reviewed until payment of appropriate application fees are **paid in full** to the Inspections Office, City of Portland Maine by method noted below:

- Within 24-48 hours, once my complete application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.
- Within 24-48 hours, once my application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.
- I intend to deliver a payment method through the U.S. Postal Service mail once my application paperwork has been electronically delivered.

Applicant Signature: \_\_\_\_\_

Date: \_\_\_\_\_

I have provided digital copies and sent them on: \_\_\_\_\_

Date: \_\_\_\_\_

NOTE: All electronic paperwork must be delivered to [buildinginspections@portlandmaine.gov](mailto:buildinginspections@portlandmaine.gov) or by physical means i.e. a thumb drive or CD to the Inspections Office, City Hall, 3<sup>rd</sup> Floor, Room 315.



## Level II – Preliminary and Final Site Plans Development Review Application Portland, Maine

Planning and Urban Development Department  
Planning Division

Portland's Planning and Urban Development Department coordinates the development review process for site plan, subdivision and other applications under the City's Land Use Code. Attached is the application form for a Level II: Preliminary or Final Site Plan. Please note that Portland has delegated review from the State of Maine for reviews under the Site Location of Development Act, Chapter 500 Stormwater Permits, and Traffic Movement Permits.

### Level II: Site Plan Development includes:

- New construction of structures with a total floor area of less than 10,000 sq. ft. in all zones, except in Industrial Zones.
- New construction of structures with a total floor area of less than 20,000 sq. ft. in Industrial Zones.
- Any new temporary or permanent parking area, paving of an existing unpaved surface parking area in excess of 7,500 sq. ft. and serving less than 75 vehicles, or creation of other impervious surface area greater than 7,500 sq. ft.
- Building addition(s) with a total floor area of less than 10,000 sq. ft. (cumulatively within a 3 year period) in any zone, except in Industrial Zones.
- Building addition(s) with a total floor area of less than 20,000 sq. ft. in Industrial Zones.
- Park improvements: New structures or buildings with a total floor area of less than 10,000 sq. ft., facilities encompassing an area of greater than 7,500 sq. ft. and less than 20,000 sq. ft. (excludes rehabilitation or replacement of existing facilities).
- New construction of piers, docks, wharves, bridges, retaining walls, and other structures within the Shoreland Zone.
- Land disturbance between 1 and 3 acres that are stripped, graded, grubbed, filled or excavated.
- A change in the use of a total floor area between 10,000 and 20,000 sq. ft. in any existing building (cumulatively within a 3 year period).
- Lodging house, bed and breakfast facility, emergency shelter or special needs independent living unit.
- Signage subject to approval pursuant to Section 14-526 (d) 8.a. of the Land Use Code.
- Any new major or minor auto service station with less than 10,000 sq. ft. of building area in any permitted zone other than the B-2 or B-5 zones.
- The creation of day care or home babysitting facilities to serve more than 12 children in a residential zone (not permitted as a home occupation under section 14-410) in any principal structure that has not been used as a residence within the 5 years preceding the application.
- Any drive-through facility that is not otherwise reviewed as a conditional use under Article III.

Portland's development review process and requirements are outlined in the Land Use Code (Chapter 14) which is available on our website:

Land Use Code: <http://me-portland.civicplus.com/DocumentCenter/Home/View/1080>

Design Manual: <http://me-portland.civicplus.com/DocumentCenter/View/2355>

Technical Manual: <http://me-portland.civicplus.com/DocumentCenter/View/2356>

**Planning Division**  
Fourth Floor, City Hall  
389 Congress Street  
(207) 874-8719

**Office Hours**  
Monday thru Friday  
8:00 a.m. – 4:30 p.m.

**PROJECT NAME:** Moody's Collision Center

**PROPOSED DEVELOPMENT ADDRESS:**  
495 Presumpscot Street

**PROJECT DESCRIPTION:**  
Construct additional parking spaces, net increase of 18 spaces, as a result of  
sustained business.

**CHART/BLOCK/LOT:** 415, B009  
418A, C001 **PRELIMINARY PLAN** \_\_\_\_\_ (date)  
419, A005 **FINAL PLAN** \_\_\_\_\_ (date)  
419A, A007,A008

**CONTACT INFORMATION:**

<b>Applicant – must be owner, Lessee or Buyer</b> Name: Real Estate Holdings, LLC Business Name, if applicable: Address: 200 Narragansett Street City/State: Gorham, ME Zip Code: 04038	<b>Applicant Contact Information</b> E-mail: shawn@moodys.pro Home #: Work #: 207-839-2500 Cell #: Fax#: 207-839-5330
<b>Owner – (if different from Applicant)</b> Name: Address: City/State : Zip Code:	<b>Owner Contact Information</b> E-mail: Home #: Work #: Cell #: Fax#:
<b>Agent/ Representative</b> Name: Shawn Frank PE, Sebago Technics Address: 75 John Roberts Road, Ste 1A City/State : So, Portland, ME Zip Code: 04106	<b>Agent/Representative Contact information</b> E-mail: sfrank@sebagotechnics.com Home #: Work #: 207-200-2062 Cell #: Fax#: 207-856-2206
<b>Billing Information</b> Name: Shawn Moody Address: 200 Narragansett Street City/State : Gorham, ME Zip Code: 04038	<b>Billing Information</b> E-mail: shawn@moodys.pro Home #: Work #: 207-839-2500 Cell #: Fax#: 207-839-5330

<b>Engineer</b> Name: Shawn Frank PE, Sebago Technics Address: 75 John Roberts Rd, Ste 1A City/State : So. Portland, ME Zip Code: 04106	<b>Engineer Contact Information</b> E-mail: sfrank@sebagotechnics.com Home #: Work #: 207-200-2062 Cell #: Fax#: 207-856-2206
<b>Surveyor</b> Name: Matthew EK PLS, Sebago Technics Address: 75 John Roberts Rd, Ste 1A City/State So. Portland, ME Zip Code: 04106	<b>Surveyor Contact Information</b> E-mail: mek@sebagotechnics.com Home #: Work #: 207-200-2058 Cell #: Fax#: 207-856-2206
<b>Architect</b> Name: Address: City/State : Zip Code:	<b>Architect Contact Information</b> E-mail: Home #: Work #: Cell #: Fax#:
<b>Attorney</b> Name: Address: City/State : Zip Code:	<b>Attorney Contact Information</b> E-mail: Home #: Work #: Cell #: Fax#:

**APPLICATION FEES:**

**Check all reviews that apply. (Payment may be made by Credit Card, Cash or Check payable to the City of Portland.)**

<b>Level II Development (check applicable reviews)</b> <input checked="" type="checkbox"/> Less than 10,000 sq. ft. (\$400) <input type="checkbox"/> After-the-fact Review (\$1,000 plus applicable application fee) <hr/> The City invoices separately for the following: <ul style="list-style-type: none"> <li>• Notices (\$.75 each)</li> <li>• Legal Ad (% of total Ad)</li> <li>• Planning Review (\$40.00 hour)</li> <li>• Legal Review (\$75.00 hour)</li> </ul> Third party review fees are assessed separately. Any outside reviews or analysis requested from the Applicant as part of the development review, are the responsibility of the Applicant and are separate from any application or invoice fees.	<b>Other Reviews (check applicable reviews)</b> <input type="checkbox"/> Traffic Movement (\$1,000) <input type="checkbox"/> Stormwater Quality (\$250) <input type="checkbox"/> Site Location (\$3,000, except for residential projects which shall be \$200/lot) # of Lots ___ x \$200/lot = _____ <input type="checkbox"/> Other _____ <input type="checkbox"/> Change of Use <input type="checkbox"/> Flood Plain <input type="checkbox"/> Shoreland <input type="checkbox"/> Design Review <input type="checkbox"/> Housing Replacement <input type="checkbox"/> Historic Preservation
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**APPLICATION SUBMISSION:**

1. All site plans and written application materials must be submitted electronically on a CD or thumb drive with each plan submitted as separate files, with individual file which can be found on the **Electronic Plan and Document Submittal** page of the City's website at <http://me-portland.civicplus.com/764/Electronic-Plan-and-Documents-Submittal>
2. In addition, one (1) paper set of the plans (full size), one (1) paper set of plans (11 x 17), paper copy of written materials, and the application fee must be submitted to the Building Inspections Office to start the review process.

The application must be complete, including but not limited to the contact information, project data, application checklists, wastewater capacity, plan for fire department review, and applicant signature. The submissions shall include one (1) paper packet with folded plans containing the following materials:

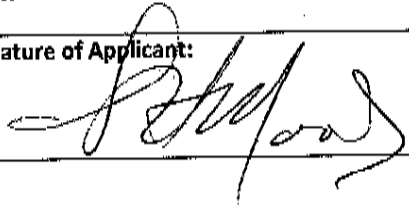
1. One (1) full size site plans that must be folded.
2. One (1) copy of all written materials or as follows, unless otherwise noted:
  - a. Application form that is completed and signed.
  - b. Cover letter stating the nature of the project.
  - c. All Written Submittals (Sec. 14-527 (c)), including evidence of right, title and interest.
3. A stamped standard boundary survey prepared by a registered land surveyor at a scale not less than one inch to 50 feet.
4. Plans and maps based upon the boundary survey and containing the information found in the attached sample plan checklist.
5. One (1) set of plans reduced to 11 x 17.

Please refer to the application checklist (attached) for a detailed list of submission requirements.

**APPLICANT SIGNATURE:**

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Planning Authority and Code Enforcement's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

**This application is for a Level II Site Plan review. It is not a permit to begin construction. An approved site plan, a Performance Guarantee, Inspection Fee, Building Permit, and associated fees will be required prior to construction. Other Federal, State or local permits may be required prior to construction, which are the responsibility of the applicant to obtain.**

Signature of Applicant: 	Date: 7/8/15
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## PROJECT DATA

The following information is required where applicable, in order to complete the application.

<b>Total Area of Site</b>	360,808	sq. ft.
<b>Proposed Total Disturbed Area of the Site</b>	18,500	sq. ft.
If the proposed disturbance is greater than one acre, then the applicant shall apply for a Maine Construction General Permit (MCGP) with DEP and a Stormwater Management Permit, Chapter 500, with the City of Portland		
<b>Impervious Surface Area</b>		
Impervious Area (Total Existing)	66,075	sq. ft.
Impervious Area (Total Proposed)	+7,253	sq. ft.
<b>Building Ground Floor Area and Total Floor Area</b>		
Building Footprint (Total Existing)	18,336	sq. ft.
Building Footprint (Total Proposed)	0	sq. ft.
Building Floor Area (Total Existing)	18,336	sq. ft.
Building Floor Area (Total Proposed)	0	sq. ft.
<b>Zoning</b>		
Existing	Industrial Moderate Impact	
Proposed, if applicable	N/A	
<b>Land Use</b>		
Existing	Repair Service, vehicle	
Proposed	Same	
<b>Residential, If applicable</b>		
# of Residential Units (Total Existing)	N/A	
# of Residential Units (Total Proposed)	N/A	
# of Lots (Total Proposed)	N/A	
# of Affordable Housing Units (Total Proposed)	N/A	
<b>Proposed Bedroom Mix</b>		
# of Efficiency Units (Total Proposed)	N/A	
# of One-Bedroom Units (Total Proposed)	N/A	
# of Two-Bedroom Units (Total Proposed)	N/A	
# of Three-Bedroom Units (Total Proposed)	N/A	
<b>Parking Spaces</b>		
# of Parking Spaces (Total Existing)	85	
# of Parking Spaces (Total Proposed)	+18	
# of Handicapped Spaces (Total Proposed)	0	
<b>Bicycle Parking Spaces</b>		
# of Bicycle Spaces (Total Existing)	0	
# of Bicycle Spaces (Total Proposed)	0	
<b>Estimated Cost of Project</b>	\$55,000	

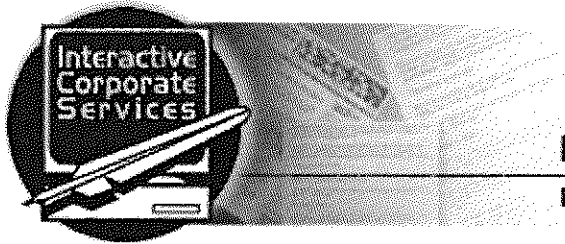
<b>PRELIMINARY PLAN (Optional) - Level II Site Plan</b>			
<b>Applicant Checklist</b>	<b>Planner Checklist</b>	<b># of Copies</b>	<b>GENERAL WRITTEN SUBMISSIONS CHECKLIST</b>
		1	Completed Application form
		1	Application fees
		1	Written description of project
		1	Evidence of right, title and interest
		1	Evidence of state and/or federal approvals, if applicable
		1	Written assessment of proposed project's compliance with applicable zoning requirements
		1	Summary of existing and/or proposed easement, covenants, public or private rights-of-way, or other burdens on the site
		1	Written requests for waivers from site plan or technical standards, if applicable.
		1	Evidence of financial and technical capacity
		1	Traffic Analysis (may be preliminary, in nature, during the preliminary plan phase)
<b>Applicant Checklist</b>	<b>Planner Checklist</b>	<b># of Copies</b>	<b>SITE PLAN SUBMISSIONS CHECKLIST</b>
		1	Boundary Survey meeting the requirements of Section 13 of the City of Portland's Technical Manual
		1	<b>Preliminary Site Plan including the following: (information provided may be preliminary in nature during preliminary plan phase)</b>
			Proposed grading and contours;
			Existing structures with distances from property line;
			Proposed site layout and dimensions for all proposed structures (including piers, docks or wharves in Shoreland Zone), paved areas, and pedestrian and vehicle access ways;
			Preliminary design of proposed stormwater management system in accordance with Section 5 of the Technical Manual (note that Portland has a separate applicability section);
			Preliminary infrastructure improvements;
			Preliminary Landscape Plan in accordance with Section 4 of the Technical Manual;
			Location of significant natural features (including wetlands, ponds, watercourses, floodplains, significant wildlife habitats and fisheries or other important natural features) located on the site as defined in Section 14-526 (b) (1);
			Proposed buffers and preservation measures for significant natural features, as defined in Section 14-526 (b) (1);
			Location , dimensions and ownership of easements, public or private rights of way, both existing and proposed;
			Exterior building elevations.

<b>FINAL PLAN - Level II Site Plan</b>			
<b>Applicant Checklist</b>	<b>Planner Checklist</b>	<b># of Copies</b>	<b>GENERAL WRITTEN SUBMISSIONS CHECKLIST (* If applicant chooses to submit a Preliminary Plan, then the * items were submitted for that phase and only updates are required)</b>
✓		1	* Completed Application form
✓		1	* Application fees
✓		1	* Written description of project
✓		1	* Evidence of right, title and interest
N/A		1	* Evidence of state and/or federal permits
✓		1	* Written assessment of proposed project's specific compliance with applicable Zoning requirements
N/A		1	* Summary of existing and/or proposed easements, covenants, public or private rights-of-way, or other burdens on the site
✓		1	* Evidence of financial and technical capacity
✓		1	Construction Management Plan
N/A		1	A traffic study and other applicable transportation plans in accordance with Section 1 of the technical Manual, where applicable.
N/A		1	Written summary of significant natural features located on the site (Section 14-526 (b) (a))
✓		1	Stormwater management plan and stormwater calculations, including description of project, hydrology and impervious area.
		1	Written summary of project's consistency with related city master plans
N/A		1	Evidence of utility capacity to serve
N/A		1	Written summary of solid waste generation and proposed management of solid waste
N/A		1	A code summary referencing NFPA 1 and all Fire Department technical standards
		1	Where applicable, an assessment of the development's consistency with any applicable design standards contained in Section 14-526 and in City of Portland Design Manual
N/A		1	Manufacturer's verification that all proposed HVAC and manufacturing equipment meets applicable state and federal emissions requirements.

Applicant Checklist	Planner Checklist	# of Copies	<b>SITE PLAN SUBMISSIONS CHECKLIST</b> (* If applicant chooses to submit a Preliminary Plan, then the * Items were submitted for that phase and only updates are required)
✓		1	* Boundary Survey meeting the requirements of Section 13 of the City of Portland's Technical Manual
✓		1	<b>Final Site Plans including the following:</b>
✓			Existing and proposed structures, as applicable, and distance from property line (including location of proposed piers, docks or wharves if in Shoreland Zone);
✓			Existing and proposed structures on parcels abutting site;
✓			All streets and intersections adjacent to the site and any proposed geometric modifications to those streets or intersections;
✓			Location, dimensions and materials of all existing and proposed driveways, vehicle and pedestrian access ways, and bicycle access ways, with corresponding curb lines;
✓			Engineered construction specifications and cross-sectional drawings for all proposed driveways, paved areas, sidewalks;
✓			Location and dimensions of all proposed loading areas including turning templates for applicable design delivery vehicles;
N/A			Existing and proposed public transit infrastructure with applicable dimensions and engineering specifications;
✓			Location of existing and proposed vehicle and bicycle parking spaces with applicable dimensional and engineering information;
✓			Location of all snow storage areas and/or a snow removal plan;
N/A			A traffic control plan as detailed in Section 1 of the Technical Manual;
✓			Proposed buffers and preservation measures for significant natural features, where applicable, as defined in Section 14-526(b)(1);
N/A			Location and proposed alteration to any watercourse;
N/A			A delineation of wetlands boundaries prepared by a qualified professional as detailed in Section 8 of the Technical Manual;
N/A			Proposed buffers and preservation measures for wetlands;
✓			Existing soil conditions and location of test pits and test borings;
✓			Existing vegetation to be preserved, proposed site landscaping, screening and proposed street trees, as applicable;
✓			A stormwater management and drainage plan, in accordance with Section 5 of the Technical Manual;
✓			Grading plan;
N/A			Ground water protection measures;
✓			Existing and proposed sewer mains and connections;
✓			Location of all existing and proposed fire hydrants and a life safety plan in accordance with Section 3 of the Technical Manual;
✓			Location, sizing, and directional flows of all existing and proposed utilities within the project site and on all abutting streets;

- Continued on next page -

N/A		Location and dimensions of off-premises public or publicly accessible infrastructure immediately adjacent to the site;
✓		Location and size of all on site solid waste receptacles, including on site storage containers for recyclable materials for any commercial or industrial property;
✓		Plans showing the location, ground floor area, floor plans and grade elevations for all buildings;
N/A		A shadow analysis as described in Section 11 of the Technical Manual, if applicable;
N/A		A note on the plan identifying the Historic Preservation designation and a copy of the Application for Certificate of Appropriateness, if applicable, as specified in Section Article IX, the Historic Preservation Ordinance;
N/A		Location and dimensions of all existing and proposed HVAC and mechanical equipment and all proposed screening, where applicable;
✓		An exterior lighting plan in accordance with Section 12 of the Technical Manual;
N/A		A signage plan showing the location, dimensions, height and setback of all existing and proposed signs;
N/A		Location, dimensions and ownership of easements, public or private rights of way, both existing and proposed.



# MAINE

Department of the Secretary of State  
Bureau of Corporations, Elections and Commissions

Corporate Name Search

## Information Summary

Subscriber activity report

This record contains information from the CEC database and is accurate as of: Wed Jul 08 2015 11:21:04. Please print or save for your records.

Legal Name	Charter Number	Filing Type	Status
REAL ESTATE HOLDINGS, LLC	20000951DC	LIMITED LIABILITY COMPANY (DOMESTIC)	GOOD STANDING

Filing Date	Expiration Date	Jurisdiction
03/28/2000	N/A	MAINE

**Other Names** (A=Assumed ; F=Former)  
NONE

### Clerk/Registered Agent

PETER B. WEBSTER  
ONE PORTLAND SQUARE  
P.O. BOX 586  
PORTLAND, ME 04112 0586

[Back to previous screen](#)

[New Search](#)

Click on a link to obtain additional information.

List of Filings

[View list of filings](#)

Obtain additional information:

Certificate of Existence [\(more info\)](#)

<a href="#">Short Form without amendments</a>	<a href="#">Long Form with amendments</a>
(\$30.00)	(\$30.00)

You will need Adobe Acrobat version 3.0 or higher in order to view PDF files. If you encounter problems, visit the [troubleshooting page](#).



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Application Form

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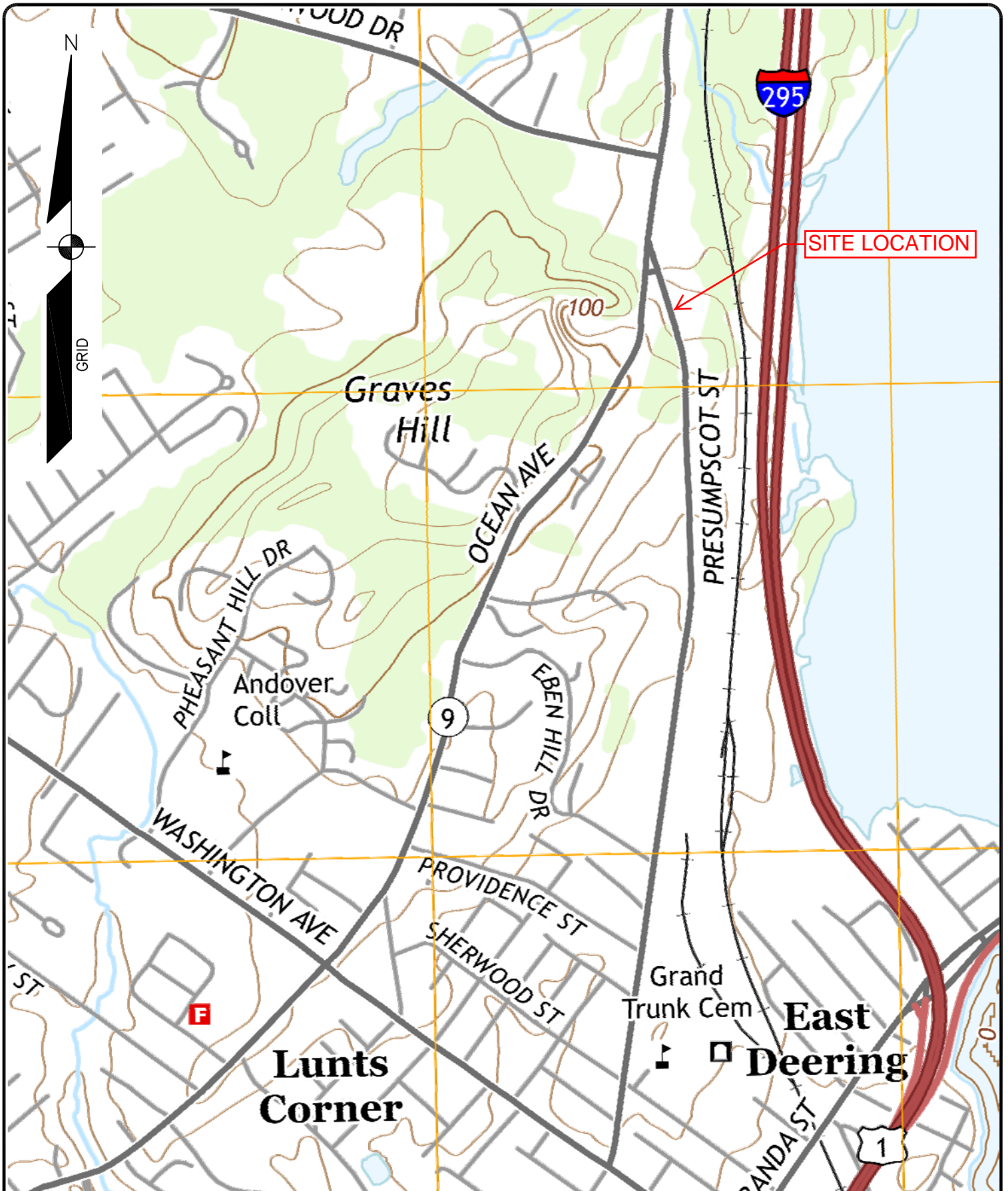
Section 6                      Stormwater Narrative

# **Section 1**

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## **Site Location Map and Tax Map**





**SEBAGO**  
TECHNICS

WWW.SEBAGOTECHNICS.COM

75 John Roberts Rd. Suite 1A South Portland, ME 04106 Tel. 207-200-2100  
250 Goddard Rd. Suite B Lewiston, ME 04240 Tel. 207-783-5656

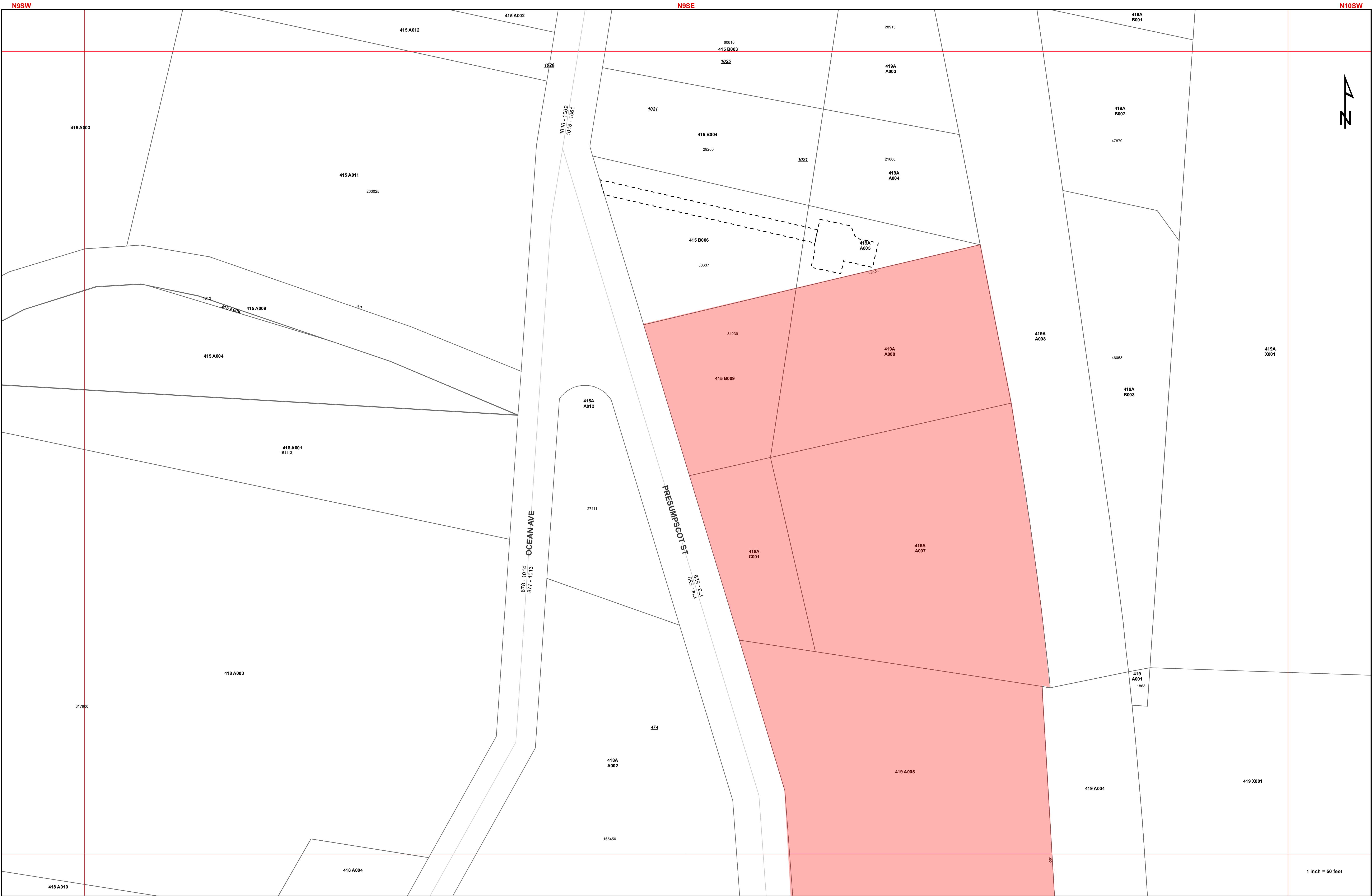
SITE LOCATION MAP  
MOODY'S COLLISION CENTER: PORTLAND

LOCATION:  
MOODY'S COLLISION CENTER  
495 PRESUMPCOT STREET

FOR: REAL ESTATE HOLDINGS, LLC  
200 NARRAGANSETT STREET  
GORHAM, ME 04038

SCALE: 1"=900'  
DATE: 7-06-15

SHEET:  
1 OF 1



## **Section 2**

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**Title, Right, Interest**

# WARRANTY DEED

## Maine Statutory Short Form

Know all men by these presents that, STJ, Inc., a Maine corporation, with a place of business in Buxton, York County, Maine, and a mailing address of 939 Parker Farm Road, Buxton, Maine 04093, for consideration paid, grants to **Real Estate Holdings, LLC**, a Maine limited liability company, with a place of business in Gorham, Cumberland County, Maine, and a mailing address of 200 Narragansett Street, Gorham, Maine 04038, with warranty covenants, the real property in **Portland**, Cumberland County, Maine, described as follows:

A certain lot or parcel of land located on the easterly side of Presumpscot Street in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at a point on the easterly sideline of Presumpscot Street, being the southwesterly corner of land now or formerly of Sawdust Investments, LLC as recorded in the Cumberland County Registry of Deeds in Book 17173, Page 310; thence South  $83^{\circ} - 03' - 24''$  East a distance of four hundred ten and  $90/100$  (410.90) feet by said Sawdust Investments to a point at the center of a metal culvert running under the Canadian National Railroad; thence south by said Canadian National Railroad land on a curve to the right with a radius of five thousand seven hundred twenty-nine and  $65/100$  (5,729.65) feet and an arc distance of three hundred fifty-eight and  $24/100$  (358.24) feet to a rebar and land of Interstate Brands Corp., as recorded in said Registry in Book 13543, Page 188; thence, North  $61^{\circ} - 37' - 27''$  West a distance of three hundred ninety-two and  $19/100$  (392.19) feet by said land of Interstate Brands Corp. to the easterly side of Presumpscot Street; thence North  $02^{\circ} - 51' - 03''$  East a distance of two hundred thirteen and  $98/100$  (213.98) feet by said easterly sideline of Presumpscot Street to the point of beginning.

Reference is made to Boundary Survey for 469 Presumpscot Street, LLC, by Back Bay Boundary, Inc., dated March 6, 2003, and recorded in said Registry in Plan Book 204, Page 626.

Being the premises conveyed to STJ, Inc. by warranty deed of 469 Doten, LLC dated June 6, 2005 and recorded in the Cumberland County Registry of Deeds in Book 22789, Page 161.

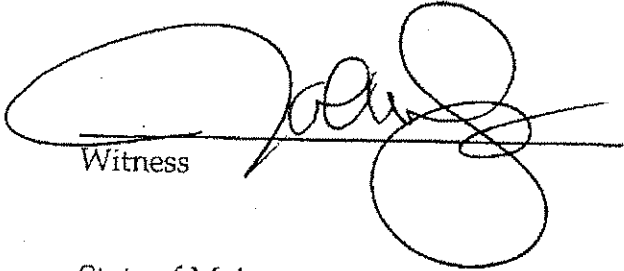
This conveyance is made subject to municipal zoning and land use ordinances, utility easements of record, and real estate taxes payable to the local municipalities for the current tax year.

MAINE REAL ESTATE TAX PAID


Also hereby conveying all rights, easements, privileges and appurtenances belonging to the premises hereinabove described.

In witness whereof, I, Thomas P. Shaw, the duly authorized President of STJ, Inc., have hereunto set my hand and seal this March 13, 2008.

Signed, sealed and delivered  
in presence of

  
Witness

STJ, Inc.

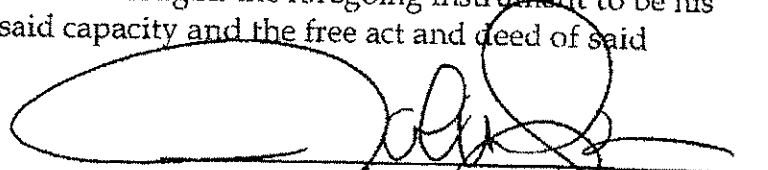
  
By Thomas P. Shaw, Its President


State of Maine  
Cumberland, ss.

March 13, 2008

Then personally appeared before me the above named Thomas P. Shaw, the duly authorized President of STJ, Inc., and acknowledged the foregoing instrument to be his or her free act and deed in his or her said capacity and the free act and deed of said Grantor corporation.

My commission expires:  
\_\_\_\_\_

  
~~Notary Public~~ / Maine Attorney at Law  
JOHN W. SAWYER  
Printed name

Mail to:   
Real Estate Holdings, LLC  
P.O. Box 834  
Scarborough, Maine 04070

Received  
Recorded Register of Deeds  
Mar 18, 2008 02:20:42P  
Cumberland County  
Pamela E. Lovley

**QUITCLAIM DEED WITH COVENANT**  
(Maine Statutory Short Form)

KNOW ALL BY THESE PRESENTS, that T/S DEVELOPMENT GROUP LLC, a Maine limited liability company having a place of business in Portland, County of Cumberland, and State of Maine, for consideration paid, GRANTS to REAL ESTATE HOLDINGS, LLC, a Maine limited liability company, the mailing address of which is 200 Narragansett Street, Gorham, Maine 04038, with QUITCLAIM COVENANT, certain real estate located in Portland, County of Cumberland and State of Maine, which is more particularly described in Exhibit A attached hereto and made a part hereof.

This conveyance is made SUBJECT, HOWEVER, to real estate taxes which are not yet due and payable, which, by acceptance hereof, Grantee assumes and agrees to pay.

IN WITNESS WHEREOF, T/S DEVELOPMENT GROUP LLC has caused this instrument to be executed on its behalf by its duly authorized undersigned representative this 27<sup>th</sup> day of December, 2011.

MAINE REAL ESTATE TAX PAID

Diana Morigesi  
\_\_\_\_\_  
Witness

T/S DEVELOPMENT GROUP LLC  
By: J. Roger Trettel  
Printed Name: J. Roger Trettel  
Its: Manager

STATE OF New York  
County of Erise

December 27<sup>th</sup>, 2011

Then personally appeared the above-named J. Roger Trettel, Manager of T/S DEVELOPMENT GROUP LLC and acknowledged the foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of said T/S DEVELOPMENT GROUP LLC.

Before me,  
Shelley Coon  
Notary Public  
Printed Name: Shelley Coon

SHELLEY COON  
Lic #01008238829  
Notary Public-State of New York  
Qualified in Erise County  
My Commission Expires MARCH 07, 2015



**EXHIBIT A**  
Legal Description

A certain lot or parcel of land with any improvements located thereon, situated on the easterly side of Presumpscot Street, so-called, in the City of **Portland**, County of Cumberland and State of Maine, and being shown on a Plan entitled "**Existing Conditions Survey Plan of 413 Presumpscot Street Property, Portland, Maine for Interstate Brands Corporation, Kansas City, MO**," dated July 6, 1999, revised through July 19, 1999 by Sebago Technics, Inc., Westbrook, ME, STI File No. 99230 (hereinafter referred to as the "Plan"). Said lot being more particularly bounded and described as follows:

**Beginning** at a found 5/8 inch rebar, 8 inches high in the easterly sideline of said Presumpscot Street at the northwesterly corner of the parcel being described herein, said found rebar also being at the southwest corner of land now or formerly of Cook Concrete Company described in a deed recorded in the Cumberland County Registry of Deeds in Book 3064, Page 756; thence South  $64^{\circ} - 53' - 11''$  East by and along the southerly line of said Cook Concrete land, passing through a 6" x 6" concrete monument as shown on the Plan, a distance of three hundred ninety-two and 26/100 (392.26) feet to a found 5/8 inch rebar in the westerly sideline of the Canadian National Railroad property; thence southwest by and along the westerly line of said Canadian National Railroad along a curve to the right an arc distance of forty-three and 39/100 (43.39) feet to a set iron rod in the northerly line of land now or formerly of Corenco as described in a deed recorded in said Registry of Deeds in Book 1578, Page 306, said curve having a radius of five thousand seven hundred twenty-nine and 65/100 (5,729.65) feet, a delta angle of  $0^{\circ} - 26' - 02''$  and a chord bearing and distance of South  $10^{\circ} - 42' - 02''$  West, forty-three and 39/100 (43.39) feet; thence North  $79^{\circ} - 10' - 32''$  West by and along the northerly line of said Corenco a distance of ten and 18/100 (10.18) feet to a set iron rod; thence South  $15^{\circ} - 55' - 50''$  West by and along the westerly line of said Corenco land passing through a found 5/8 inch rebar with Cap RLS 1273 as shown on the Plan a distance of three hundred ninety and 00/100 (390.00) feet to a set iron rod at the southwest corner of said Corenco and the northerly line of an area previously retained by Interstate Brands Corporation as shown on the Plan; thence North  $87^{\circ} - 40' - 57''$  West by and along the northerly line of said area previously retained a distance of three hundred nineteen and 39/100 (319.39) feet to a set iron rod in the easterly side of said Presumpscot Street, said point being North  $14^{\circ} - 40' - 59''$  East a distance of three hundred twenty-eight and 55/100 (328.55) feet from a found 6" x 6" concrete monument two inches below grade as shown on the Plan; thence North  $14^{\circ} - 40' - 59''$  East by and along the easterly line of said Presumpscot Street a distance of two hundred nineteen and 34/100 (219.34) feet to a set iron rod; thence North  $12^{\circ} - 11' - 47''$  East by and along the easterly sideline of Presumpscot Street passing through a found 5/8 inch rebar with Cap RLS No. 1273 as shown on the Plan a distance of one hundred sixty-five and 92/100 (165.92) feet to a found 5/8 inch rebar 8 inches high; thence North  $00^{\circ} - 28' - 12''$  West by and along the easterly sideline of Presumpscot Street a distance of one hundred ninety-four and 97/100 (194.97) feet to a found 5/8 inch rebar at the point of beginning.

Meaning and intending to describe a parcel of land containing 3.78 acres, more or less, being a portion of the same premises conveyed to Interstate Brands Corporation by deed from John J. Nissen Baking Company dated December 24, 1997 and recorded in the Cumberland County

Registry of Deeds in Book 13543, Page 188; said parcel described herein being shown as Proposed Lot to Be Conveyed on the Plan.

Bearings herein are magnetic north as referenced to the Plan.

Being the premises described in a certain warranty deed from Interstate Brands Corporation to T/S Development Group, LLC dated July 27, 1999 and recorded in the Cumberland County Registry of Deeds in Book 14942, Page 91.

This conveyance is made subject to all easements, rights-of-way, restrictions and encumbrances of record and/or as may be shown or noted on the Plan including, but not limited to, the following:

1. Multiple Services Agreement between Portland Water District and John J. Nissen Baking Company dated November 17, 1974 and recorded in said Registry of Deeds in Book 3630, Page 328.
2. Certificate of Taking by the City of Portland dated April 7, 1975 and recorded in said Registry of Deeds in Book 3673, Page 290.
3. Rights and easements granted to Central Maine Power Company and New England Telephone and Telegraph Company in an instrument dated January 10, 1933 and recorded in said Registry of Deeds in Book 6133, Page 105.
4. Multiple Services Agreement between Portland Water District and John J. Nissen Baking Company dated November 18, 1987 and recorded in said Registry of Deeds in Book 8226, Page 252.
5. Rights and easements granted to Central Maine Power Company and New England Telephone and Telegraph Company in an instrument dated November 8, 1989 and recorded in said Registry of Deeds in Book 9052, Page 53.
6. Easement excepted and reserved in deed from Orlando Leighton to Frederick Storer dated April 12, 1874 and recorded in said Registry of Deeds in Book 410, Page 317.
7. Restrictions, covenants and conditions set forth in deed from Corenco Corporation to John J. Nissen Baking Company dated October 13, 1971 and recorded in said Registry of Deeds in Book 3195, Page 558.

Received  
 Recorded Register of Deeds  
 Jan 06, 2012 12:03:38P  
 Cumberland County  
 Pamela E. Lovley



# **Section 3**

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## **Financial Capacity**



June 30, 2015

City of Portland, Maine  
Planning Department  
389 Congress Street  
Portland, ME 04101

Re: Shawn Moody/Moody's Collision Centers, Inc./Real Estate Holdings, LLC  
Parking Lot Project, Presumpscot Street, Portland

To Whom It May Concern:

This letter is to verify for the City of Portland Planning Department that, based on our understanding of the project, Norway Savings Bank believes that Shawn Moody and his various business entities identified above are financially capable of completing the project.

While this letter is in no way to be construed as a commitment to lend funds, Shawn Moody has been a customer of Norway Savings Bank since July of 2003 and we have worked successfully with Mr. Moody on many similar projects in the past.

I hope this letter meets your needs and expectations, but should you require any additional information please don't hesitate to call me at 482-7902.

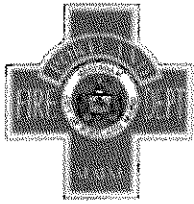
Sincerely,

  
Richard R. Flagg  
Vice President, Commercial Lending

# Section 4

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## Portland Fire Department Checklist



PORTLAND FIRE DEPARTMENT  
SITE REVIEW  
FIRE DEPARTMENT CHECKLIST



A separate drawing[s] shall be provided as part of the site plan application for the Portland Fire Department's review.

1. Name, address, telephone number of applicant
2. Name address, telephone number of architect
3. Proposed uses of any structures [NFPA and IBC classification]
4. Square footage of all structures [total and per story]
5. Elevation of all structures
6. Proposed fire protection of all structures
  - **As of September 16, 2010 all new construction of one and two family homes are required to be sprinkled in compliance with NFPA 13D. This is required by City Code. (NFPA 101 2009 ed.)**
7. Hydrant locations
8. Water main[s] size and location
9. Access to all structures [min. 2 sides]
10. A code summary shall be included referencing NFPA 1 and all fire department. Technical standards.

Some structures may require Fire flows using annex H of NFPA 1

## Portland Fire Department Checklist

1. **Name, address, telephone number of applicant**

The applicant for the project is:

Moody's Collision Center  
200 Narragansett Street  
Gorham, Maine  
207-839-2500

2. **Name Address, telephone number of architect**

There is no architect associated with the project.

3. **Proposed uses of any structures [NFPA and IBC classification]**

The project is an expansion of parking for an existing automotive repair center.

4. **Square footage of all structures [total and per story]**

There are no proposed structures or expansion to an existing structure. The existing structure is a single story, 17,930 square-foot structure.

5. **Elevation of all structures**

No new structures or expansion to an existing structure are proposed.

6. **Proposed fire protection of all structures**

The existing facility has a fire service.

7. **Hydrant Locations**

There is an existing hydrant located 560 south of the site on Presumpscot Street. No new hydrants are proposed.

8. **Water main[s] size and location**

There is an existing water main located within Presumpscot Street along the site frontage. No new services are proposed.

9. **Access to all structures [min 2 sides]**

The existing structure has a paved access which surrounds the structure on all four sides.

10. **A code summary shall be included referencing NFPA 1 and all fire department technical standards**

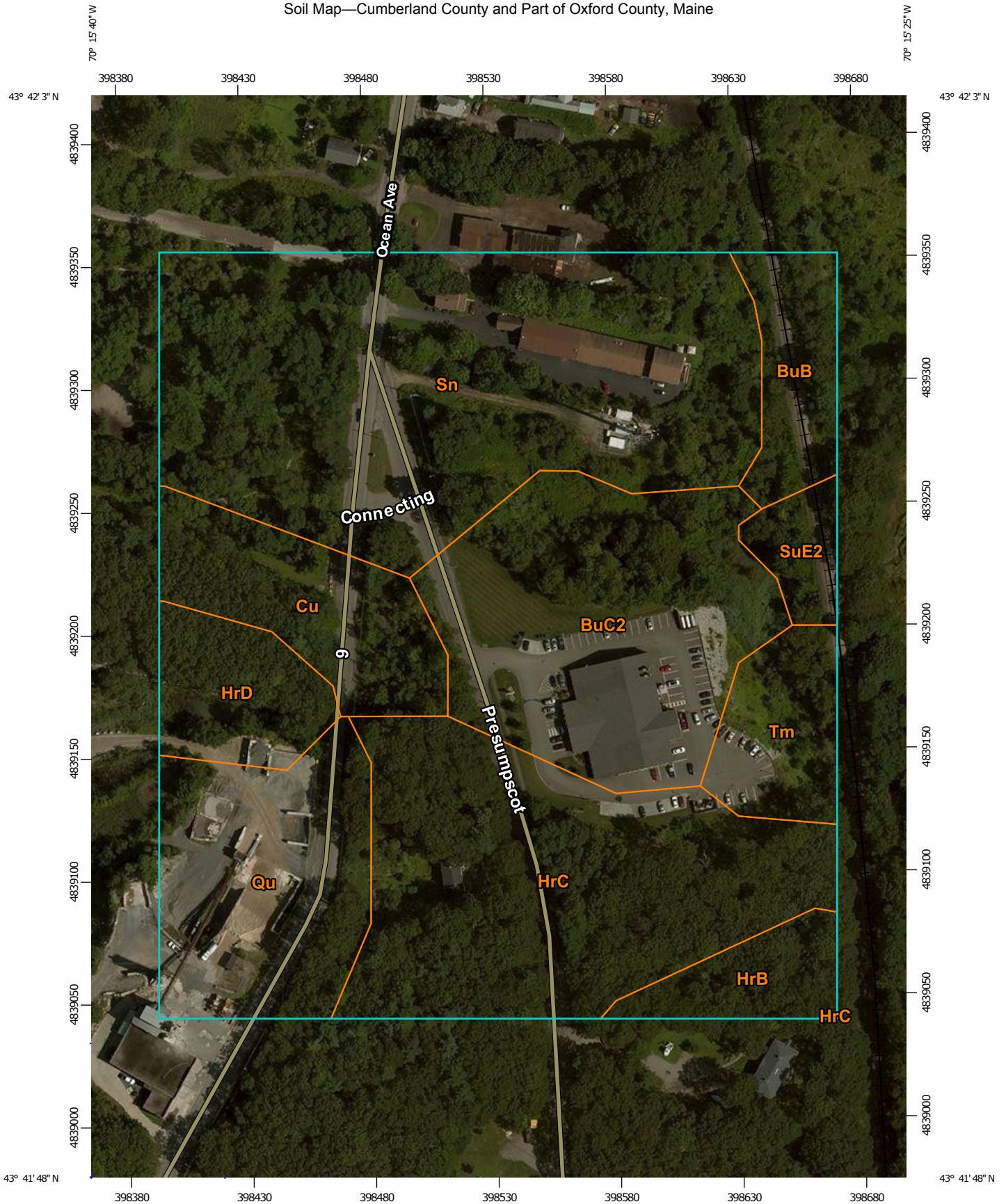
No new structures are proposed.

# Section 5

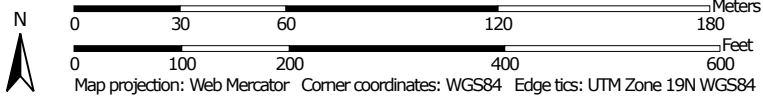
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## NRCS Soils Map

Soil Map—Cumberland County and Part of Oxford County, Maine



Map Scale: 1:2,140 if printed on A portrait (8.5" x 11") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N 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 1:24,000.

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: Cumberland County and Part of Oxford County, Maine

Survey Area Data: Version 9, Sep 13, 2014

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

Date(s) aerial images were photographed: Jul 31, 2013—Aug 11, 2013

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

Cumberland County and Part of Oxford County, Maine (ME005)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BuB	Buxton silt loam, 3 to 8 percent slopes	0.8	3.8%
BuC2	Buxton silt loam, 8 to 15 percent slopes, eroded	3.5	16.3%
Cu	Cut and fill land	1.5	6.8%
HrB	Hollis fine sandy loam, 3 to 8 percent slopes	0.6	2.9%
HrC	Hollis fine sandy loam, 8 to 15 percent slopes	4.2	19.6%
HrD	Hollis fine sandy loam, 15 to 25 percent slopes	0.9	4.3%
Qu	Quarry	2.2	10.4%
Sn	Scantic silt loam, 0 to 3 percent slopes	6.4	29.9%
SuE2	Suffield silt loam, 25 to 45 percent slopes, eroded	0.4	1.9%
Tm	Tidal marsh	0.9	4.1%
<b>Totals for Area of Interest</b>		<b>21.4</b>	<b>100.0%</b>

# Section 6

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## Stormwater Narrative

# STORMWATER MANAGEMENT REPORT

## Moody's Collision Center Presumpscot Street Portland, Maine

### General

This Stormwater Management Report has been prepared for Moody's Collision Center, Inc. to present the results of a stormwater runoff analysis for the proposed parking expansion of their existing facility off Presumpscot Street. The project includes a proposed parking lot with 21 spaces located on the 8.29-acre parcel. In 2012, a 19 space parking expansion was undertaken with the spaces being constructed from Stormcrete panels.

The site is mostly developed area with the existing building and parking area used for Moody's Collision. The site of the proposed parking expansion is primarily lawn area, with a portion of woods at the easterly edge of the proposed parking lot.

The project site is located within the watershed of the Presumpscot River, which eventually drains directly to the ocean. The Presumpscot River is not defined as a watershed most at risk from new development or an urban impaired stream by the Maine Department of Environmental Protection (MDEP).

The proposed drainage infrastructure for the project includes one catch basin, riprap protected outlets and a proposed underdrained soil filter to treat the runoff from the proposed parking area.

### Site Characteristics

The project site occupies an 8.29-acre parcel in Portland, Maine in Cumberland County. The parcel abuts Presumpscot Street to the west, undeveloped wooded areas to the north and south and railroad tracks to the east. The central portion of the project site currently developed with the existing Moody's Collision Center with associated parking. A man-made, approximate 3 to 1, fill slope in the eastern portion of the property directs runoff from the existing development easterly to an onsite wetland adjacent to the existing railroad property. A raised railroad bed impounds water in the eastern portion of the site. A 60" culvert located at the northerly property corner conveys stormwater runoff underneath the railroad bed to the Presumpscot River and ultimately the ocean. The northwest portion of the parcel consists of vegetated and wooded area. The runoff from this portion of the site flows down a slope that leads to the Presumpscot River as well. The majority of the project site is tributary to this eastern drainage area.

The watershed maps attached to this report depict the general drainage patterns and infrastructure in the project area for the Pre-development, Current Development, and Post-development conditions.

### **Soils**

Soil classifications within the project area were referenced from the Cumberland County Medium Intensity Soil Survey. The soil is comprised of Hollis fine sandy loam, Buxton silt loam, and Tidal Marsh. The soils within the project site are considered Hydraulic Soil Group (HSG) D.

### **Drainage Characteristics and Study Points**

Two study points have been established to evaluate pre-development and post-development runoff associated with the project site.

Study Point 1 is located along the western property boundary. Runoff from the current constructed project site leaves the property line and enters the abutting lawn area for the proposed parking lot to the north. Runoff from this area is then conveyed easterly to the 60" culvert located in the northeast corner of the current property line. The northwestern portion of the existing parcel is tributary to this Study Point in the pre-development and post-development conditions. Subcatchment 1 (pre-development) and Subcatchment 10 (post-development) are tributary to Study Point 1. It should be noted that in the post-development condition the tributary area to this Study Point is reduced.

Study Point 2 is located at the northeastern corner of the property where runoff from the existing site and project site is conveyed via a 60" culvert underneath the railroad bed. Subcatchment 2 (pre-development) and Subcatchments 3, 20, 30, 40, 50, 60, and 70 (post-development) are tributary to Study Point 2.

### **Stormwater Quantity Management**

In order to evaluate drainage characteristics in pre- and post-development conditions, a quantitative analysis was performed to determine peak rates of runoff for the 2, 10, and 25-year storm events. Runoff calculations were performed following the methodology outlined in the Natural Resource Conservation Service USDA Soil Conservation Service's "Urban Hydrology for Small Watersheds, Technical Release #55" and HydroCAD Stormwater Modeling System software.

A Type III rainfall distribution was applied in accordance with MDEP and NRCS Standards. The 24-hour rainfall values utilized in the hydrologic model for Cumberland County are as follows.

Storm Frequency Precipitation (in./24 hr)	
2-year	3.0
10-year	4.7
25-year	5.5

In the post-development condition, Subcatchment 70 represents the area proposed for the parking lot expansion.

The subcatchment areas and times of concentration of the post-development watersheds vary from the existing conditions based on the proposed site development and grading. Table 1 summarizes the results of the hydrologic analysis of the project under pre-development and post-development conditions.

Study Point	Total Watershed Area (acres)		Peak Rates of Runoff (cfs)								
			2-Year			10-Year			25-Year		
	Post 2012	Post 2015	Pre	Post		Pre	Post		Pre	Post	
			2012	2015		2012	2015		2012	2015	
1	0.11	0.11	0.6	0.3	0.3	1.1	0.5	0.5	1.3	0.6	0.58
2	3.71	3.71	6.5	7.7	7.2	12.4	13.9	14.2	15.2	16.9	17.2

The results of the analysis at Study Point 1 indicate the peak rates of runoff in the post-developed condition will be less than the pre-developed condition for the 2-year, 10-year, 25-year storm events. The decrease in post-development runoff at Study Point 1 is a result of a reduction of the area tributary to this Study Point.

The results of the analysis at Study Point 2 indicate an increase in the peak rate of runoff for all three storm events. The model indicates a 0.7 cfs increase in the 2-year storm event, a 1.8 cfs increase in the 10-year storm event, and a 2.0 cfs increase in the 25-year storm event. The increase in runoff at this study point is a result of the change from a combined grassed and wooded surface to the impervious parking area.

## **Stormwater Quality**

As the project is required to receive a Level II Site Plan Permit from the City of Portland, the project must comply with Chapter 5 – Stormwater Management Standards of the Technical Manual, which requires the project to meet the Basic, General, and Flooding Standards. Stormwater treatment for the newly created impervious area will be treated via an underdrained soil filter, which will also provide for some detention. The unit has been sized to treat one-inch of runoff from the project’s proposed paved impervious area and 0.4-inch of runoff from the project’s proposed landscaped areas. Supporting calculations are attached with this submission. The underdrain soil filter will treat 98.6% of the newly created impervious surface and 82.5% of the newly created developed area.

No alterations are proposed to the current on-site stormwater quality treatment system of a vortex separator, which is located in the southeast corner of the existing parking lot.

## **Summary**

As indicated in the Stormwater analysis the peak rate of runoff in the developed condition will be less than the pre-development peak rates of runoff at Study Point 1.

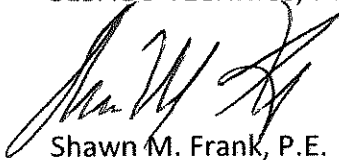
As indicated in the analysis the peak rate of runoff in the developed condition will be greater than the pre-development runoff for all three storm events at Study Point 2. Since the increase in the peak rate of runoff is conveyed via a 60” culvert to the Presumpscot River and ultimately the ocean, Sebago Technics is requesting a waiver on the increase for Study Point 2 under Section 5.III.4.E.(2).(a) – discharge to the ocean, great pond or a major river segment.

Stormwater runoff from the proposed impervious areas of the site will be treated utilizing an underdrained soil filter treatment unit to meet the City’s requirement for treating parking areas. The unit has been sized to treat the first inch of runoff off the proposed impervious areas and the first 0.4-inch off the proposed landscaped area.

An Erosion & Sedimentation Control Plan will be implemented to address erosion and sediment control during construction and the post-construction stabilization of the site. These construction requirements have been developed following Best Management Practice guidelines and have been placed directly on the design plans for construction reference.

Prepared by:

SEBAGO TECHNICS, INC.



Shawn M. Frank, P.E.  
Senior Project Manager

djs:  
July 8, 2015



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## **Stormwater Quality Calculations**

**SEBAGO TECHNICS, INC.**

75 John Roberts Road Suite 1A  
 South Portland, Maine 04106  
 Tel. (207) 200-2100

JOB 07548 - Moody's Collision Portland

SHEET NO. 1 OF 1  
 CALCULATED BY SRP DATE 6/26/2015  
 FILE NAME PRINT DATE 7/8/2015

**UNDERDRAINED SOIL FILTER**

Task: Calculate water quality volume per MDEP chapter 500 regulations

- References
1. Maine DEP Chapter 500, Section 4.B.(2)(b)
    - a. "must detain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"
  2. Maine DEP Best Management Practices Stormwater Manual, Section 7.1
    - a. "surface should represent 5% of impervious area and 2% of landscaped area"

Tributary to Underdrained Filter (new development)	#1	Not Tributary to Underdrained Filter (new development)	Percent Treatment	
Landscaped Area	5,022.00 SF	Landscaped Area	2,567.50 SF	
Impervious Area	7,561.00 SF	Impervious Area	104.00 SF	98.64%
Developed Area	12,583.00 SF	Developed Area	2,671.50 SF	82.49%

Minimum Surface Area

Required (2% X Landscaped + 5% X Impervious)

Total Landscaped Area	5,022.00 SF	Area	100.4 SF
Total Impervious Area	7,561.00 SF	Area	378.1 SF
Required Minimum Surface Area			478.5 SF
Provided Surface Area			544.0 SF

Channel Protection Volume (CPV)

Required (0.4" X Landscaped + 1.0" X Impervious)

Landscaped Area	5,022.00 SF	Volume	167.4
Impervious Area	7,561.00 SF	Volume	630.1
CPV Required		797.5 CF	0.018 AF
Provided CPV		804.0 CF	(Elevation 36.0 to 37)

Sediment Pre-Treatment

Per Reference 2, Chapter 7.13 "Pretreatment devices shall be provided to minimize discharge of sediment to the soil filter"

Annual Sediment Load:	50 cubic feet per acre per year of sanded area		
Area to be sanded:	7,561.00 SF		
Sediment Volume:	9 CF		
Provided	9 CF	9 Inch Deep Forebay with area of	12 sf



**Area Listing (selected nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
0.165	80	>75% Grass cover, Good, HSG D (70)
0.174	98	Paved parking, HSG D (70)
<b>0.339</b>	<b>89</b>	<b>TOTAL AREA</b>

**Summary for Subcatchment 70:**

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.018 af, Depth= 0.63"

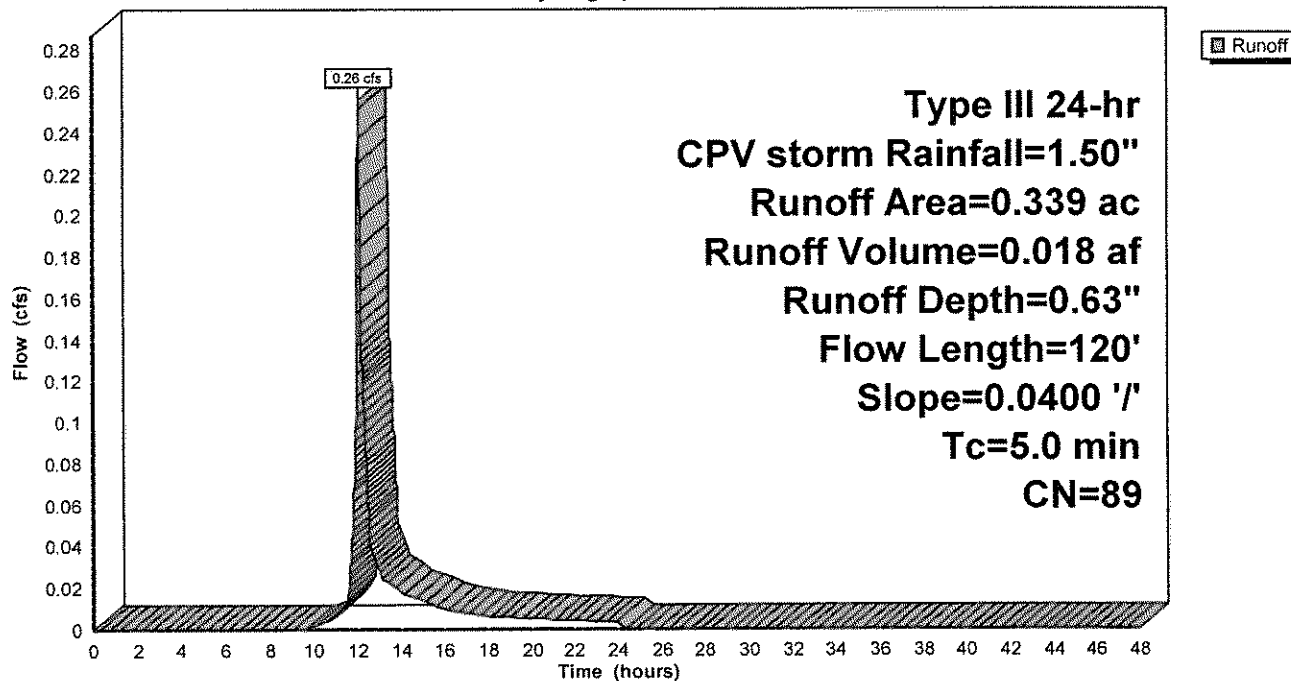
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Type III 24-hr CPV storm Rainfall=1.50"

Area (ac)	CN	Description
0.174	98	Paved parking, HSG D
0.165	80	>75% Grass cover, Good, HSG D
0.339	89	Weighted Average
0.165		48.67% Pervious Area
0.174		51.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	120	0.0400	1.82		Sheet Flow, A to B Smooth surfaces n= 0.011 P2= 3.00"
3.9					Direct Entry,
5.0	120	Total			

**Subcatchment 70:**

**Hydrograph**



**Summary for Pond USF1:**

Inflow Area = 0.339 ac, 51.33% Impervious, Inflow Depth = 0.63" for CPV storm event  
 Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.018 af  
 Outflow = 0.02 cfs @ 14.45 hrs, Volume= 0.018 af, Atten= 94%, Lag= 142.2 min  
 Primary = 0.02 cfs @ 14.45 hrs, Volume= 0.018 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 36.52' @ 14.45 hrs Surf.Area= 809 sf Storage= 352 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 228.5 min ( 1,073.1 - 844.6 )

Volume	Invert	Avail.Storage	Storage Description			
#1	36.00'	2,194 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
36.00	540	174.0	0	0	540	
37.00	1,100	212.0	804	804	1,723	
38.00	1,702	235.0	1,390	2,194	2,571	

Device	Routing	Invert	Outlet Devices			
#1	Primary	33.50'	<b>12.0" Round Culvert</b> L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 33.50' / 33.35' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf			
#2	Device 1	33.67'	<b>0.6" Vert. Orifice/Grate</b> C= 0.600			
#3	Device 1	37.00'	<b>0.5" x 9.0" Horiz. Orifice/Grate X 36.00</b> C= 0.600 in 30.0" Grate (23% open area)			
#4	Secondary	37.50'	<b>10.0' long x 12.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64			

**Primary OutFlow** Max=0.02 cfs @ 14.45 hrs HW=36.52' TW=0.00' (Dynamic Tailwater)

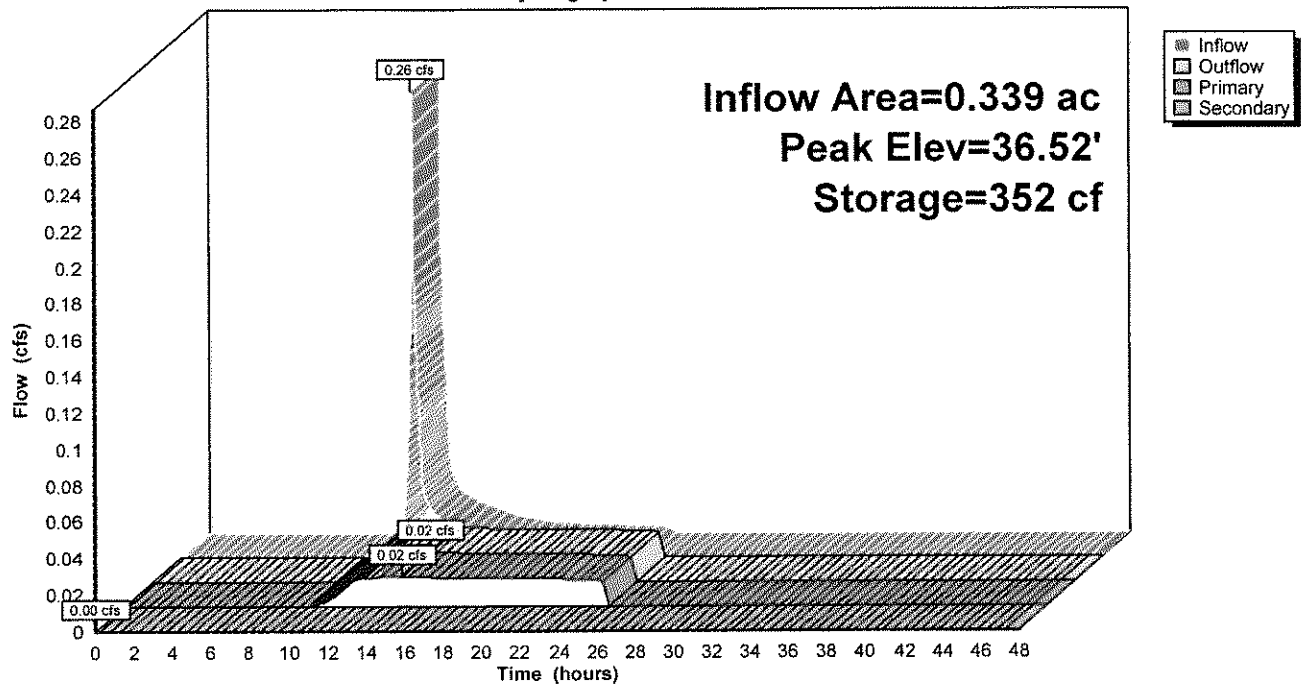
- ↑ 1=Culvert (Passes 0.02 cfs of 5.95 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 0.02 cfs @ 8.10 fps)
- ↑ 3=Orifice/Grate ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=36.00' TW=0.00' (Dynamic Tailwater)

- ↑ 4=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Pond USF1:**

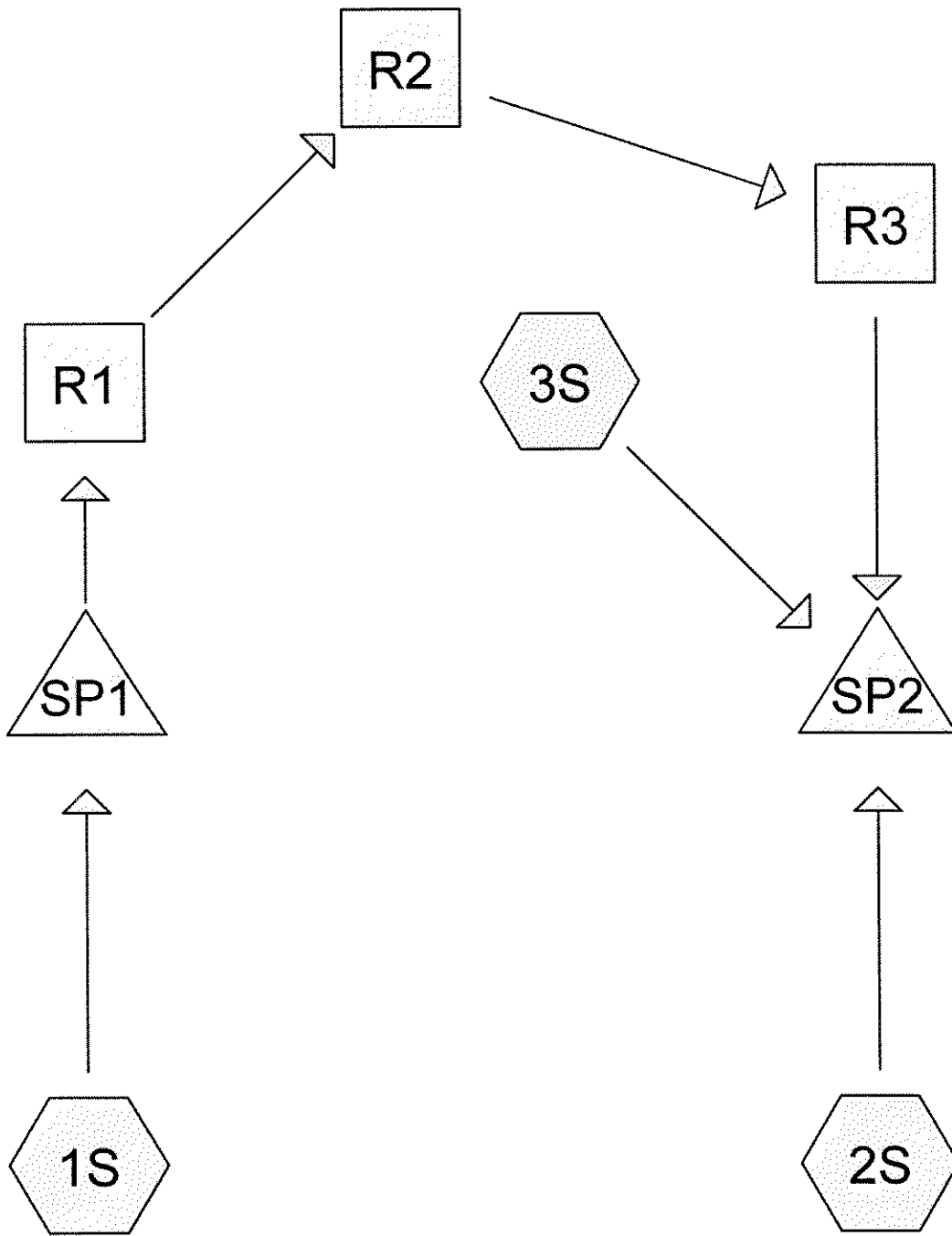
**Hydrograph**



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**Pre-development HydroCAD Output**





**Area Listing (all nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
0.357	80	>75% Grass cover, Good, HSG D (3S)
0.090	77	Brush, Fair, HSG D (1S)
0.210	73	Brush, Good, HSG D (2S)
2.340	89	GRAVEL FILL (1S, 2S)
0.114	98	ROAD (1S, 3S)
0.580	77	Woods, Good, HSG D (3S)
<b>3.691</b>	<b>85</b>	<b>TOTAL AREA</b>

**Summary for Subcatchment 1S:**

Runoff = 0.59 cfs @ 12.07 hrs, Volume= 0.041 af, Depth= 1.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-YR Rainfall=3.00"

Area (ac)	CN	Description
0.060	98	ROAD
0.130	89	GRAVEL FILL
0.090	77	Brush, Fair, HSG D
0.280	87	Weighted Average
0.220		78.57% Pervious Area
0.060		21.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	16	0.0200	0.92		<b>Sheet Flow, A TO B</b> Smooth surfaces n= 0.011 P2= 3.00"
3.9	52	0.0570	0.22		<b>Sheet Flow, B TO C</b> Grass: Short n= 0.150 P2= 3.00"
0.6	146	0.0320	4.31	56.08	<b>Trap/Vee/Rect Channel Flow, C TO D</b> Bot.W=3.00' D=1.00' Z= 10.0 '/' Top.W=23.00' n= 0.042
0.2					<b>Direct Entry,</b>
5.0	214	Total			

**Summary for Subcatchment 2S:**

Runoff = 5.34 cfs @ 12.07 hrs, Volume= 0.367 af, Depth= 1.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-YR Rainfall=3.00"

Area (ac)	CN	Description
2.210	89	GRAVEL FILL
0.210	73	Brush, Good, HSG D
2.420	88	Weighted Average
2.420		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	150	0.0700	2.38		<b>Sheet Flow, A TO B</b> Smooth surfaces n= 0.011 P2= 3.00"
0.5	136	0.0600	4.97		<b>Shallow Concentrated Flow, B TO C</b> Paved Kv= 20.3 fps
0.1	72	0.3330	9.29		<b>Shallow Concentrated Flow, C TO D</b> Unpaved Kv= 16.1 fps
1.8	163	0.0100	1.50		<b>Shallow Concentrated Flow, D TO E</b> Grassed Waterway Kv= 15.0 fps
1.6					<b>Direct Entry,</b>
5.0	521	Total			

**Summary for Subcatchment 3S:**

Runoff = 1.11 cfs @ 12.17 hrs, Volume= 0.098 af, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-YR Rainfall=3.00"

Area (ac)	CN	Description
* 0.054	98	ROAD
0.580	77	Woods, Good, HSG D
0.357	80	>75% Grass cover, Good, HSG D
0.991	79	Weighted Average
0.937		94.55% Pervious Area
0.054		5.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	62	0.0160	0.14		<b>Sheet Flow, A to B</b> Grass: Short n= 0.150 P2= 3.00"
0.7	59	0.0400	1.40		<b>Shallow Concentrated Flow, B to C</b> Short Grass Pasture Kv= 7.0 fps
0.2	146	0.1670	10.39	25.96	<b>Trap/Vee/Rect Channel Flow, C to D</b> Bot.W=0.00' D=1.00' Z= 3.0 & 2.0 '/' Top.W=5.00' n= 0.035 Earth, dense weeds
3.6	430	0.0050	2.01	6.03	<b>Trap/Vee/Rect Channel Flow, D to E</b> Bot.W=1.00' D=1.00' Z= 2.0 '/' Top.W=5.00' n= 0.035 Earth, dense weeds
12.0	697	Total			

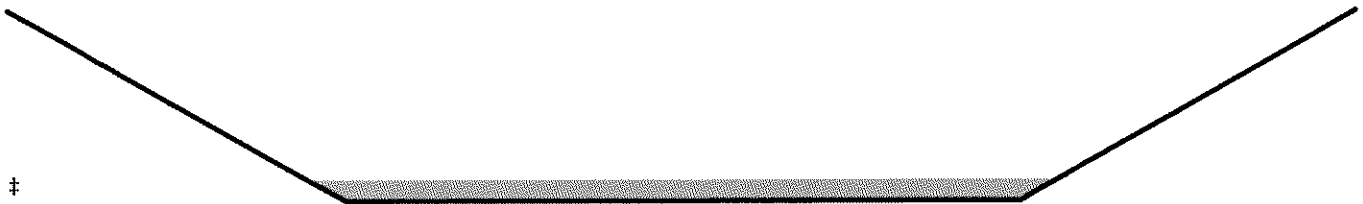
**Summary for Reach R1:**

Inflow Area = 0.280 ac, 21.43% Impervious, Inflow Depth = 1.74" for 2-YR event  
 Inflow = 0.59 cfs @ 12.07 hrs, Volume= 0.041 af  
 Outflow = 0.57 cfs @ 12.10 hrs, Volume= 0.041 af, Atten= 4%, Lag= 1.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Max. Velocity= 0.95 fps, Min. Travel Time= 2.1 min  
 Avg. Velocity = 0.26 fps, Avg. Travel Time= 7.6 min

Peak Storage= 72 cf @ 12.10 hrs  
 Average Depth at Peak Storage= 0.06'  
 Bank-Full Depth= 0.50' Flow Area= 7.5 sf, Capacity= 26.14 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds  
 Side Slope Z-value= 10.0 '/' Top Width= 20.00'  
 Length= 120.0' Slope= 0.0250 '/'  
 Inlet Invert= 46.00', Outlet Invert= 43.00'



**Summary for Reach R2:**

Inflow Area = 0.280 ac, 21.43% Impervious, Inflow Depth = 1.74" for 2-YR event  
 Inflow = 0.57 cfs @ 12.10 hrs, Volume= 0.041 af  
 Outflow = 0.56 cfs @ 12.11 hrs, Volume= 0.041 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Max. Velocity= 2.79 fps, Min. Travel Time= 0.9 min  
 Avg. Velocity = 0.84 fps, Avg. Travel Time= 2.9 min

Peak Storage= 29 cf @ 12.11 hrs  
 Average Depth at Peak Storage= 0.09'  
 Bank-Full Depth= 1.00' Flow Area= 4.5 sf, Capacity= 48.16 cfs

2.00' x 1.00' deep channel, n= 0.035  
 Side Slope Z-value= 3.0 2.0 '/' Top Width= 7.00'  
 Length= 146.0' Slope= 0.1233 '/'  
 Inlet Invert= 43.00', Outlet Invert= 25.00'



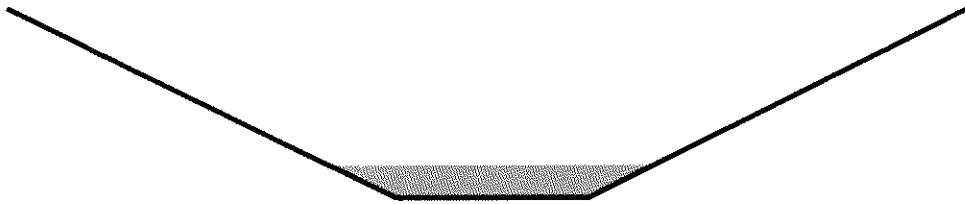
**Summary for Reach R3:**

Inflow Area = 0.280 ac, 21.43% Impervious, Inflow Depth = 1.74" for 2-YR event  
 Inflow = 0.56 cfs @ 12.11 hrs, Volume= 0.041 af  
 Outflow = 0.52 cfs @ 12.14 hrs, Volume= 0.041 af, Atten= 8%, Lag= 2.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Max. Velocity= 2.24 fps, Min. Travel Time= 3.2 min  
 Avg. Velocity = 0.68 fps, Avg. Travel Time= 10.5 min

Peak Storage= 100 cf @ 12.14 hrs  
 Average Depth at Peak Storage= 0.17'  
 Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 17.46 cfs

1.00' x 1.00' deep channel, n= 0.035  
 Side Slope Z-value= 2.0 '/' Top Width= 5.00'  
 Length= 430.0' Slope= 0.0419 '/'  
 Inlet Invert= 25.00', Outlet Invert= 7.00'

**Summary for Pond SP1:**

Inflow Area = 0.280 ac, 21.43% Impervious, Inflow Depth = 1.74" for 2-YR event  
 Inflow = 0.59 cfs @ 12.07 hrs, Volume= 0.041 af  
 Primary = 0.59 cfs @ 12.07 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4

**Summary for Pond SP2:**

Inflow Area = 3.691 ac, 3.09% Impervious, Inflow Depth = 1.64" for 2-YR event  
 Inflow = 6.52 cfs @ 12.08 hrs, Volume= 0.505 af  
 Primary = 6.52 cfs @ 12.08 hrs, Volume= 0.505 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4

**Summary for Subcatchment 1S:**

Runoff = 1.10 cfs @ 12.07 hrs, Volume= 0.077 af, Depth= 3.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-YR Rainfall=4.70"

Area (ac)	CN	Description
0.060	98	ROAD
0.130	89	GRAVEL FILL
0.090	77	Brush, Fair, HSG D
0.280	87	Weighted Average
0.220		78.57% Pervious Area
0.060		21.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	16	0.0200	0.92		<b>Sheet Flow, A TO B</b> Smooth surfaces n= 0.011 P2= 3.00"
3.9	52	0.0570	0.22		<b>Sheet Flow, B TO C</b> Grass: Short n= 0.150 P2= 3.00"
0.6	146	0.0320	4.31	56.08	<b>Trap/Vee/Rect Channel Flow, C TO D</b> Bot.W=3.00' D=1.00' Z= 10.0 '/' Top.W=23.00' n= 0.042
0.2					<b>Direct Entry,</b>
5.0	214	Total			

**Summary for Subcatchment 2S:**

Runoff = 9.76 cfs @ 12.07 hrs, Volume= 0.683 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-YR Rainfall=4.70"

Area (ac)	CN	Description
2.210	89	GRAVEL FILL
0.210	73	Brush, Good, HSG D
2.420	88	Weighted Average
2.420		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	150	0.0700	2.38		<b>Sheet Flow, A TO B</b> Smooth surfaces n= 0.011 P2= 3.00"
0.5	136	0.0600	4.97		<b>Shallow Concentrated Flow, B TO C</b> Paved Kv= 20.3 fps
0.1	72	0.3330	9.29		<b>Shallow Concentrated Flow, C TO D</b> Unpaved Kv= 16.1 fps
1.8	163	0.0100	1.50		<b>Shallow Concentrated Flow, D TO E</b> Grassed Waterway Kv= 15.0 fps
1.6					<b>Direct Entry,</b>
5.0	521	Total			

**Summary for Subcatchment 3S:**

Runoff = 2.43 cfs @ 12.17 hrs, Volume= 0.210 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YR Rainfall=4.70"

Area (ac)	CN	Description
* 0.054	98	ROAD
0.580	77	Woods, Good, HSG D
0.357	80	>75% Grass cover, Good, HSG D
0.991	79	Weighted Average
0.937		94.55% Pervious Area
0.054		5.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	62	0.0160	0.14		<b>Sheet Flow, A to B</b> Grass: Short n= 0.150 P2= 3.00"
0.7	59	0.0400	1.40		<b>Shallow Concentrated Flow, B to C</b> Short Grass Pasture Kv= 7.0 fps
0.2	146	0.1670	10.39	25.96	<b>Trap/Vee/Rect Channel Flow, C to D</b> Bot.W=0.00' D=1.00' Z= 3.0 & 2.0 '/' Top.W=5.00' n= 0.035 Earth, dense weeds
3.6	430	0.0050	2.01	6.03	<b>Trap/Vee/Rect Channel Flow, D to E</b> Bot.W=1.00' D=1.00' Z= 2.0 '/' Top.W=5.00' n= 0.035 Earth, dense weeds
12.0	697	Total			

**Summary for Reach R1:**

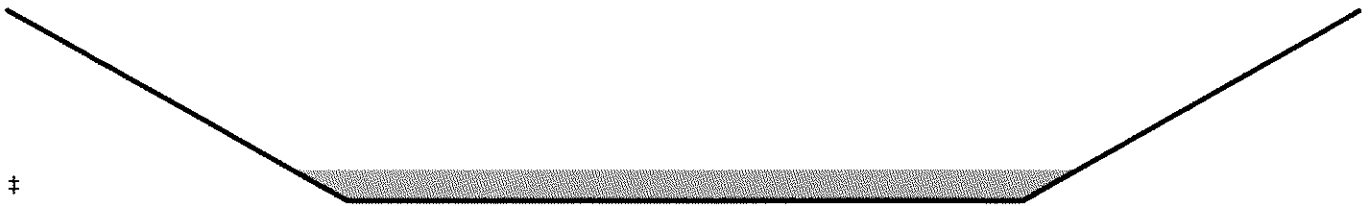
Inflow Area = 0.280 ac, 21.43% Impervious, Inflow Depth = 3.29" for 10-YR event  
 Inflow = 1.10 cfs @ 12.07 hrs, Volume= 0.077 af  
 Outflow = 1.07 cfs @ 12.09 hrs, Volume= 0.077 af, Atten= 3%, Lag= 1.1 min



Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
Max. Velocity= 1.21 fps, Min. Travel Time= 1.7 min  
Avg. Velocity = 0.31 fps, Avg. Travel Time= 6.5 min

Peak Storage= 107 cf @ 12.09 hrs  
Average Depth at Peak Storage= 0.08'  
Bank-Full Depth= 0.50' Flow Area= 7.5 sf, Capacity= 26.14 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds  
Side Slope Z-value= 10.0 '/' Top Width= 20.00'  
Length= 120.0' Slope= 0.0250 '/'  
Inlet Invert= 46.00', Outlet Invert= 43.00'



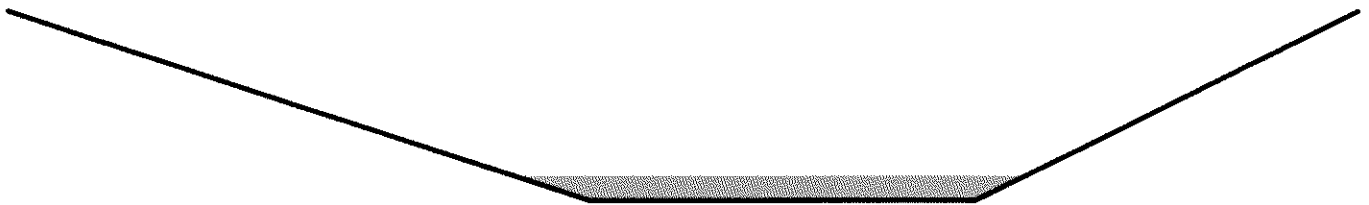
**Summary for Reach R2:**

Inflow Area = 0.280 ac, 21.43% Impervious, Inflow Depth = 3.29" for 10-YR event  
Inflow = 1.07 cfs @ 12.09 hrs, Volume= 0.077 af  
Outflow = 1.07 cfs @ 12.10 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
Max. Velocity= 3.49 fps, Min. Travel Time= 0.7 min  
Avg. Velocity = 0.96 fps, Avg. Travel Time= 2.5 min

Peak Storage= 45 cf @ 12.10 hrs  
Average Depth at Peak Storage= 0.13'  
Bank-Full Depth= 1.00' Flow Area= 4.5 sf, Capacity= 48.16 cfs

2.00' x 1.00' deep channel, n= 0.035  
Side Slope Z-value= 3.0 2.0 '/' Top Width= 7.00'  
Length= 146.0' Slope= 0.1233 '/'  
Inlet Invert= 43.00', Outlet Invert= 25.00'



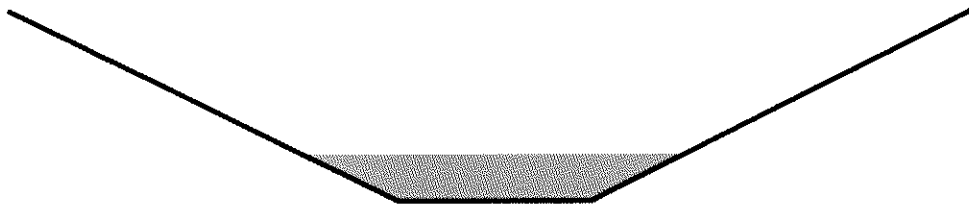
**Summary for Reach R3:**

Inflow Area = 0.280 ac, 21.43% Impervious, Inflow Depth = 3.29" for 10-YR event  
 Inflow = 1.07 cfs @ 12.10 hrs, Volume= 0.077 af  
 Outflow = 1.00 cfs @ 12.13 hrs, Volume= 0.077 af, Atten= 6%, Lag= 1.8 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Max. Velocity= 2.72 fps, Min. Travel Time= 2.6 min  
 Avg. Velocity = 0.80 fps, Avg. Travel Time= 8.9 min

Peak Storage= 158 cf @ 12.13 hrs  
 Average Depth at Peak Storage= 0.25'  
 Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 17.46 cfs

1.00' x 1.00' deep channel, n= 0.035  
 Side Slope Z-value= 2.0 '/' Top Width= 5.00'  
 Length= 430.0' Slope= 0.0419 '/'  
 Inlet Invert= 25.00', Outlet Invert= 7.00'

**Summary for Pond SP1:**

Inflow Area = 0.280 ac, 21.43% Impervious, Inflow Depth = 3.29" for 10-YR event  
 Inflow = 1.10 cfs @ 12.07 hrs, Volume= 0.077 af  
 Primary = 1.10 cfs @ 12.07 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4

**Summary for Pond SP2:**

Inflow Area = 3.691 ac, 3.09% Impervious, Inflow Depth = 3.15" for 10-YR event  
 Inflow = 12.37 cfs @ 12.08 hrs, Volume= 0.969 af  
 Primary = 12.37 cfs @ 12.08 hrs, Volume= 0.969 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4

**Summary for Subcatchment 1S:**

Runoff = 1.34 cfs @ 12.07 hrs, Volume= 0.094 af, Depth= 4.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-YR Rainfall=5.50"

Area (ac)	CN	Description
0.060	98	ROAD
0.130	89	GRAVEL FILL
0.090	77	Brush, Fair, HSG D
0.280	87	Weighted Average
0.220		78.57% Pervious Area
0.060		21.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	16	0.0200	0.92		<b>Sheet Flow, A TO B</b> Smooth surfaces n= 0.011 P2= 3.00"
3.9	52	0.0570	0.22		<b>Sheet Flow, B TO C</b> Grass: Short n= 0.150 P2= 3.00"
0.6	146	0.0320	4.31	56.08	<b>Trap/Vee/Rect Channel Flow, C TO D</b> Bot.W=3.00' D=1.00' Z= 10.0 '/' Top.W=23.00' n= 0.042
0.2					<b>Direct Entry,</b>
5.0	214	Total			

**Summary for Subcatchment 2S:**

Runoff = 11.84 cfs @ 12.07 hrs, Volume= 0.836 af, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-YR Rainfall=5.50"

Area (ac)	CN	Description
2.210	89	GRAVEL FILL
0.210	73	Brush, Good, HSG D
2.420	88	Weighted Average
2.420		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	150	0.0700	2.38		<b>Sheet Flow, A TO B</b> Smooth surfaces n= 0.011 P2= 3.00"
0.5	136	0.0600	4.97		<b>Shallow Concentrated Flow, B TO C</b> Paved Kv= 20.3 fps
0.1	72	0.3330	9.29		<b>Shallow Concentrated Flow, C TO D</b> Unpaved Kv= 16.1 fps
1.8	163	0.0100	1.50		<b>Shallow Concentrated Flow, D TO E</b> Grassed Waterway Kv= 15.0 fps
1.6					<b>Direct Entry,</b>
5.0	521	Total			

**Summary for Subcatchment 3S:**

Runoff = 3.09 cfs @ 12.17 hrs, Volume= 0.267 af, Depth= 3.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-YR Rainfall=5.50"

Area (ac)	CN	Description
* 0.054	98	ROAD
0.580	77	Woods, Good, HSG D
0.357	80	>75% Grass cover, Good, HSG D
0.991	79	Weighted Average
0.937		94.55% Pervious Area
0.054		5.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	62	0.0160	0.14		<b>Sheet Flow, A to B</b> Grass: Short n= 0.150 P2= 3.00"
0.7	59	0.0400	1.40		<b>Shallow Concentrated Flow, B to C</b> Short Grass Pasture Kv= 7.0 fps
0.2	146	0.1670	10.39	25.96	<b>Trap/Vee/Rect Channel Flow, C to D</b> Bot.W=0.00' D=1.00' Z= 3.0 & 2.0 '/' Top.W=5.00' n= 0.035 Earth, dense weeds
3.6	430	0.0050	2.01	6.03	<b>Trap/Vee/Rect Channel Flow, D to E</b> Bot.W=1.00' D=1.00' Z= 2.0 '/' Top.W=5.00' n= 0.035 Earth, dense weeds
12.0	697	Total			

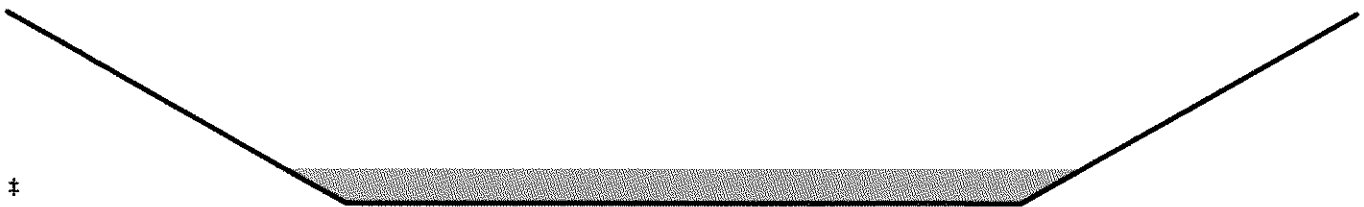
**Summary for Reach R1:**

Inflow Area = 0.280 ac, 21.43% Impervious, Inflow Depth = 4.04" for 25-YR event  
 Inflow = 1.34 cfs @ 12.07 hrs, Volume= 0.094 af  
 Outflow = 1.31 cfs @ 12.09 hrs, Volume= 0.094 af, Atten= 2%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
Max. Velocity= 1.30 fps, Min. Travel Time= 1.5 min  
Avg. Velocity = 0.33 fps, Avg. Travel Time= 6.1 min

Peak Storage= 121 cf @ 12.09 hrs  
Average Depth at Peak Storage= 0.09'  
Bank-Full Depth= 0.50' Flow Area= 7.5 sf, Capacity= 26.14 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds  
Side Slope Z-value= 10.0 '/' Top Width= 20.00'  
Length= 120.0' Slope= 0.0250 '/'  
Inlet Invert= 46.00', Outlet Invert= 43.00'



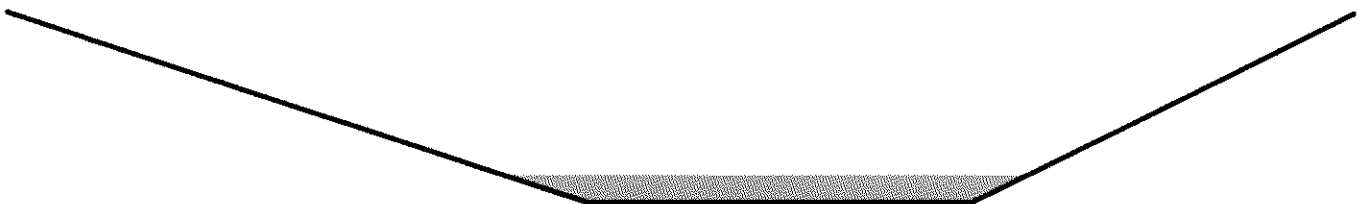
**Summary for Reach R2:**

Inflow Area = 0.280 ac, 21.43% Impervious, Inflow Depth = 4.04" for 25-YR event  
Inflow = 1.31 cfs @ 12.09 hrs, Volume= 0.094 af  
Outflow = 1.31 cfs @ 12.10 hrs, Volume= 0.094 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
Max. Velocity= 3.73 fps, Min. Travel Time= 0.7 min  
Avg. Velocity = 1.01 fps, Avg. Travel Time= 2.4 min

Peak Storage= 51 cf @ 12.10 hrs  
Average Depth at Peak Storage= 0.15'  
Bank-Full Depth= 1.00' Flow Area= 4.5 sf, Capacity= 48.16 cfs

2.00' x 1.00' deep channel, n= 0.035  
Side Slope Z-value= 3.0 2.0 '/' Top Width= 7.00'  
Length= 146.0' Slope= 0.1233 '/'  
Inlet Invert= 43.00', Outlet Invert= 25.00'



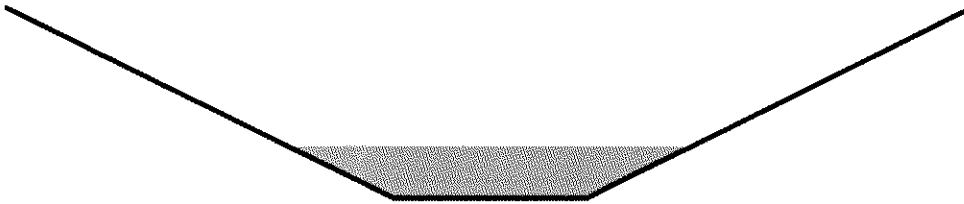
**Summary for Reach R3:**

Inflow Area = 0.280 ac, 21.43% Impervious, Inflow Depth = 4.04" for 25-YR event  
 Inflow = 1.31 cfs @ 12.10 hrs, Volume= 0.094 af  
 Outflow = 1.23 cfs @ 12.12 hrs, Volume= 0.094 af, Atten= 6%, Lag= 1.7 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Max. Velocity= 2.88 fps, Min. Travel Time= 2.5 min  
 Avg. Velocity = 0.85 fps, Avg. Travel Time= 8.4 min

Peak Storage= 183 cf @ 12.12 hrs  
 Average Depth at Peak Storage= 0.28'  
 Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 17.46 cfs

1.00' x 1.00' deep channel, n= 0.035  
 Side Slope Z-value= 2.0 '/' Top Width= 5.00'  
 Length= 430.0' Slope= 0.0419 '/'  
 Inlet Invert= 25.00', Outlet Invert= 7.00'

**Summary for Pond SP1:**

Inflow Area = 0.280 ac, 21.43% Impervious, Inflow Depth = 4.04" for 25-YR event  
 Inflow = 1.34 cfs @ 12.07 hrs, Volume= 0.094 af  
 Primary = 1.34 cfs @ 12.07 hrs, Volume= 0.094 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4

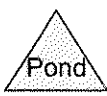
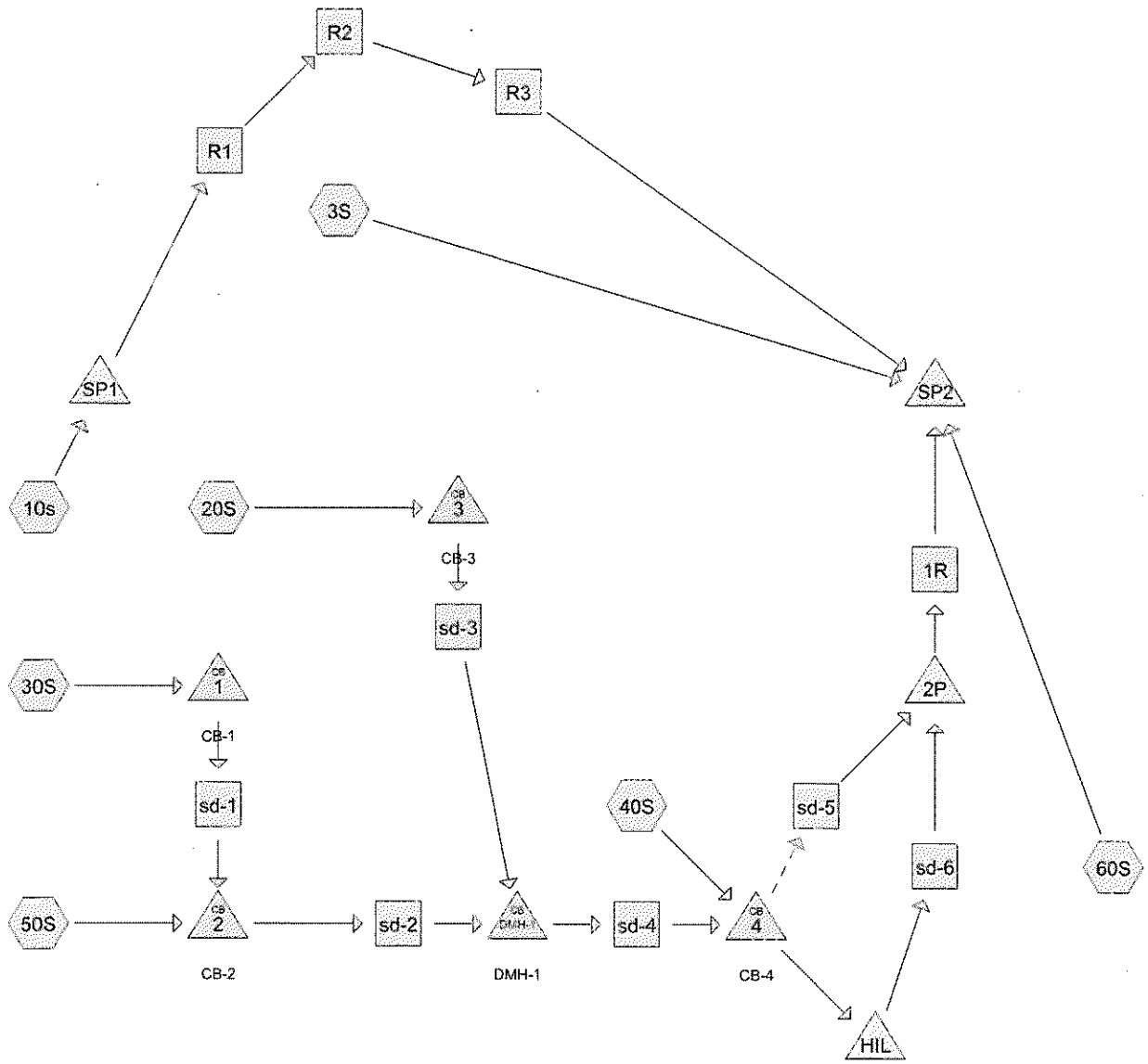
**Summary for Pond SP2:**

Inflow Area = 3.691 ac, 3.09% Impervious, Inflow Depth = 3.89" for 25-YR event  
 Inflow = 15.17 cfs @ 12.08 hrs, Volume= 1.198 af  
 Primary = 15.17 cfs @ 12.08 hrs, Volume= 1.198 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4

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## **Current-development HydroCAD Output**



**Routing Diagram for 07548-CURRENT-2015**  
 Prepared by Sebago Technics, Printed 7/8/2015  
 HydroCAD® 10.00-15 s/n 01856 © 2015 HydroCAD Software Solutions LLC



**07548-CURRENT-2015**

Prepared by Sebago Technics

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**Area Listing (all nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
1.356	80	>75% Grass cover, Good, HSG D (3S, 10s, 30S, 40S, 50S, 60S)
1.490	98	Paved parking & roofs (20S, 30S, 40S, 50S)
0.140	91	RIP RAP (GRAVEL HSG D) (60S)
0.054	98	ROAD (3S)
0.090	98	ROAD AND SIDEWALK (10s)
0.580	77	Woods, Good, HSG D (3S)
<b>3.710</b>	<b>88</b>	<b>TOTAL AREA</b>

**Summary for Subcatchment 3S:**

Runoff = 1.27 cfs @ 12.11 hrs, Volume= 0.098 af, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
* 0.054	98	ROAD
0.580	77	Woods, Good, HSG D
0.355	80	>75% Grass cover, Good, HSG D
0.989	79	Weighted Average
0.935		94.54% Pervious Area
0.054		5.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	38	0.0630	0.21		<b>Sheet Flow, A to B</b> Grass: Short n= 0.150 P2= 3.00"
0.9	52	0.0200	0.99		<b>Shallow Concentrated Flow, B to C</b> Short Grass Pasture Kv= 7.0 fps
0.2	146	0.1670	10.39	25.96	<b>Trap/Vee/Rect Channel Flow, C to D</b> Bot.W=0.00' D=1.00' Z= 3.0 & 2.0 '/' Top.W=5.00' n= 0.035 Earth, dense weeds
3.6	430	0.0050	2.01	6.03	<b>Trap/Vee/Rect Channel Flow, D to E</b> Bot.W=1.00' D=1.00' Z= 2.0 '/' Top.W=5.00' n= 0.035 Earth, dense weeds
7.6	666	Total			

**Summary for Subcatchment 10s:**

Runoff = 0.30 cfs @ 12.07 hrs, Volume= 0.022 af, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
* 0.090	98	ROAD AND SIDEWALK
0.016	80	>75% Grass cover, Good, HSG D
0.106	95	Weighted Average
0.016		15.09% Pervious Area
0.090		84.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	16	0.0200	0.92		<b>Sheet Flow, A TO B</b> Smooth surfaces n= 0.011 P2= 3.00"
1.2	134	0.0400	1.86		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
0.2	53	0.0400	4.06		<b>Shallow Concentrated Flow, C TO D</b> Paved Kv= 20.3 fps
3.3					<b>Direct Entry,</b>
5.0	203	Total			

**Summary for Subcatchment 20S:**

Runoff = 1.16 cfs @ 12.07 hrs, Volume= 0.089 af, Depth= 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.386	98	Paved parking & roofs
0.386		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	141	0.0310	1.70		<b>Sheet Flow, A TO B</b> Smooth surfaces n= 0.011 P2= 3.00"
0.6	130	0.0300	3.52		<b>Shallow Concentrated Flow, B TO C</b> Paved Kv= 20.3 fps
3.0					<b>Direct Entry,</b>
5.0	271	Total			

**Summary for Subcatchment 30S:**

Runoff = 0.66 cfs @ 12.07 hrs, Volume= 0.047 af, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.180	98	Paved parking & roofs
0.069	80	>75% Grass cover, Good, HSG D
0.249	93	Weighted Average
0.069		27.71% Pervious Area
0.180		72.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	23	0.0170	0.12		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
0.7	48	0.0200	1.15		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
1.0					<b>Direct Entry,</b>
5.0	71	Total			

**Summary for Subcatchment 40S:**

Runoff = 2.28 cfs @ 12.07 hrs, Volume= 0.167 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.714	98	Paved parking & roofs
0.072	80	>75% Grass cover, Good, HSG D
0.786	96	Weighted Average
0.072		9.16% Pervious Area
0.714		90.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	18	0.0200	0.12		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
1.6	122	0.0170	1.30		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
0.3	46	0.0200	2.87		<b>Shallow Concentrated Flow, C TO D</b> Paved Kv= 20.3 fps
0.5					<b>Direct Entry,</b>
5.0	186	Total			

**Summary for Subcatchment 50S:**

Runoff = 0.78 cfs @ 12.08 hrs, Volume= 0.056 af, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.210	98	Paved parking & roofs
0.088	80	>75% Grass cover, Good, HSG D
0.298	93	Weighted Average
0.088		29.53% Pervious Area
0.210		70.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	36	0.0170	0.13		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
0.6	37	0.0200	1.09		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
5.4	73	Total			

**Summary for Subcatchment 60S:**

Runoff = 1.50 cfs @ 12.08 hrs, Volume= 0.103 af, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.756	80	>75% Grass cover, Good, HSG D
0.140	91	RIP RAP (GRAVEL HSG D)
0.896	82	Weighted Average
0.896		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	50	0.0560	0.22		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
0.5	338	0.0870	10.82	216.31	<b>Trap/Vee/Rect Channel Flow, B TO C</b> Bot.W=0.00' D=2.00' Z= 5.0 '/ Top.W=20.00' n= 0.040
0.5					<b>Direct Entry,</b>
4.9	388	Total			

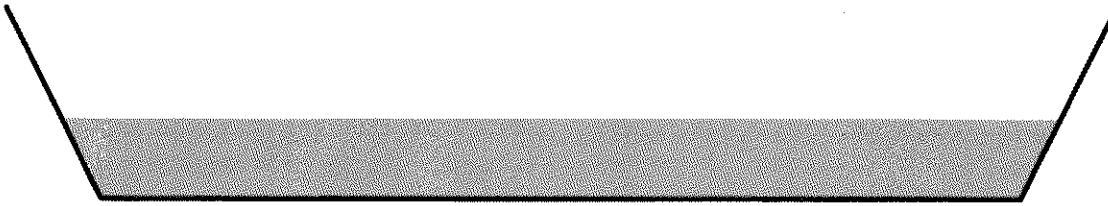
**Summary for Reach 1R:**

Inflow Area = 1.719 ac, 86.68% Impervious, Inflow Depth = 2.50" for 2-YEAR event  
Inflow = 4.81 cfs @ 12.08 hrs, Volume= 0.358 af  
Outflow = 4.78 cfs @ 12.09 hrs, Volume= 0.358 af, Atten= 1%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
Max. Velocity= 1.45 fps, Min. Travel Time= 0.8 min  
Avg. Velocity = 0.35 fps, Avg. Travel Time= 3.3 min

Peak Storage= 230 cf @ 12.09 hrs  
Average Depth at Peak Storage= 0.53'  
Bank-Full Depth= 1.25' Flow Area= 8.3 sf, Capacity= 19.42 cfs

6.00' x 1.25' deep channel, n= 0.300  
Side Slope Z-value= 0.5 '/ Top Width= 7.25'  
Length= 70.0' Slope= 0.2429 '/  
Inlet Invert= 33.00', Outlet Invert= 16.00'



**Summary for Reach R1:**

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 2.45" for 2-YEAR event  
 Inflow = 0.30 cfs @ 12.07 hrs, Volume= 0.022 af  
 Outflow = 0.28 cfs @ 12.10 hrs, Volume= 0.022 af, Atten= 6%, Lag= 1.6 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Max. Velocity= 0.73 fps, Min. Travel Time= 2.7 min  
 Avg. Velocity = 0.22 fps, Avg. Travel Time= 9.0 min

Peak Storage= 46 cf @ 12.10 hrs  
 Average Depth at Peak Storage= 0.04'  
 Bank-Full Depth= 0.50' Flow Area= 7.5 sf, Capacity= 26.14 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds  
 Side Slope Z-value= 10.0 '/' Top Width= 20.00'  
 Length= 120.0' Slope= 0.0250 '/'  
 Inlet Invert= 46.00', Outlet Invert= 43.00'



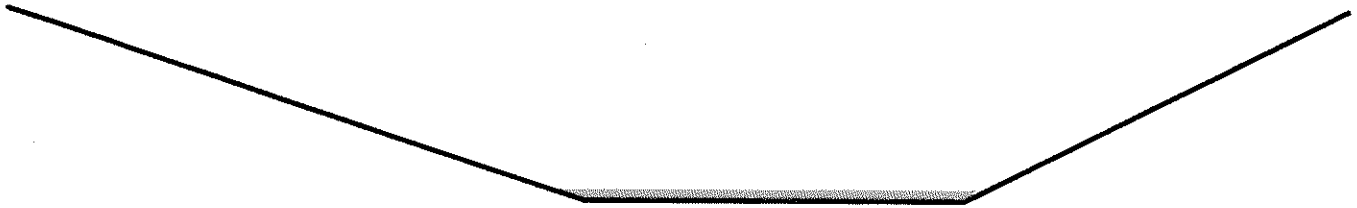
**Summary for Reach R2:**

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 2.45" for 2-YEAR event  
 Inflow = 0.28 cfs @ 12.10 hrs, Volume= 0.022 af  
 Outflow = 0.28 cfs @ 12.11 hrs, Volume= 0.022 af, Atten= 1%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Max. Velocity= 2.17 fps, Min. Travel Time= 1.1 min  
 Avg. Velocity = 0.74 fps, Avg. Travel Time= 3.3 min

Peak Storage= 19 cf @ 12.11 hrs  
 Average Depth at Peak Storage= 0.06'  
 Bank-Full Depth= 1.00' Flow Area= 4.5 sf, Capacity= 48.16 cfs

2.00' x 1.00' deep channel, n= 0.035  
 Side Slope Z-value= 3.0 2.0 '/' Top Width= 7.00'  
 Length= 146.0' Slope= 0.1233 '/'  
 Inlet Invert= 43.00', Outlet Invert= 25.00'



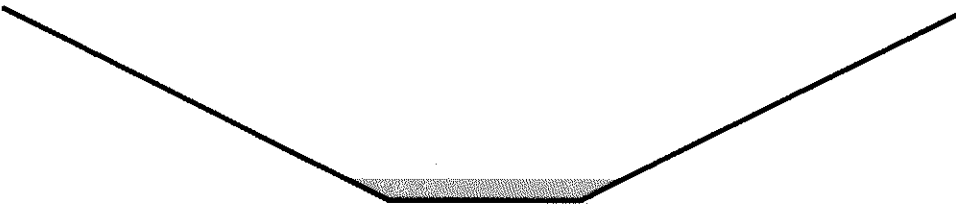
### Summary for Reach R3:

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 2.45" for 2-YEAR event  
 Inflow = 0.28 cfs @ 12.11 hrs, Volume= 0.022 af  
 Outflow = 0.25 cfs @ 12.15 hrs, Volume= 0.022 af, Atten= 10%, Lag= 2.4 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Max. Velocity= 1.79 fps, Min. Travel Time= 4.0 min  
 Avg. Velocity = 0.53 fps, Avg. Travel Time= 13.6 min

Peak Storage= 61 cf @ 12.15 hrs  
 Average Depth at Peak Storage= 0.11'  
 Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 17.46 cfs

1.00' x 1.00' deep channel, n= 0.035  
 Side Slope Z-value= 2.0 '/' Top Width= 5.00'  
 Length= 430.0' Slope= 0.0419 '/'  
 Inlet Invert= 25.00', Outlet Invert= 7.00'



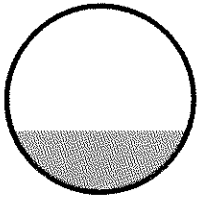
### Summary for Reach sd-1:

Inflow Area = 0.249 ac, 72.29% Impervious, Inflow Depth = 2.25" for 2-YEAR event  
 Inflow = 0.66 cfs @ 12.07 hrs, Volume= 0.047 af  
 Outflow = 0.66 cfs @ 12.08 hrs, Volume= 0.047 af, Atten= 1%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Max. Velocity= 2.91 fps, Min. Travel Time= 0.7 min  
 Avg. Velocity = 0.95 fps, Avg. Travel Time= 2.0 min

Peak Storage= 26 cf @ 12.08 hrs  
 Average Depth at Peak Storage= 0.33'  
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.79 cfs

12.0" Round Pipe  
n= 0.012  
Length= 115.0' Slope= 0.0052 '/'  
Inlet Invert= 39.80', Outlet Invert= 39.20'



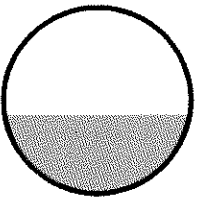
**Summary for Reach sd-2:**

Inflow Area = 0.547 ac, 71.30% Impervious, Inflow Depth = 2.25" for 2-YEAR event  
Inflow = 1.44 cfs @ 12.08 hrs, Volume= 0.103 af  
Outflow = 1.43 cfs @ 12.09 hrs, Volume= 0.103 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
Max. Velocity= 4.55 fps, Min. Travel Time= 0.8 min  
Avg. Velocity = 1.49 fps, Avg. Travel Time= 2.5 min

Peak Storage= 69 cf @ 12.09 hrs  
Average Depth at Peak Storage= 0.42'  
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe  
n= 0.012  
Length= 221.0' Slope= 0.0100 '/'  
Inlet Invert= 39.10', Outlet Invert= 36.89'



**Summary for Reach sd-3:**

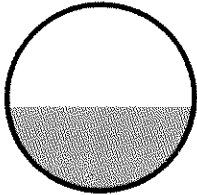
Inflow Area = 0.386 ac, 100.00% Impervious, Inflow Depth = 2.77" for 2-YEAR event  
Inflow = 1.16 cfs @ 12.07 hrs, Volume= 0.089 af  
Outflow = 1.14 cfs @ 12.08 hrs, Volume= 0.089 af, Atten= 2%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
Max. Velocity= 3.32 fps, Min. Travel Time= 1.1 min  
Avg. Velocity = 1.08 fps, Avg. Travel Time= 3.4 min

Peak Storage= 76 cf @ 12.08 hrs  
Average Depth at Peak Storage= 0.45'  
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.73 cfs



12.0" Round Pipe  
n= 0.012  
Length= 220.0' Slope= 0.0050 '/'  
Inlet Invert= 38.00', Outlet Invert= 36.90'



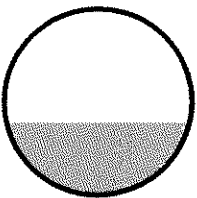
**Summary for Reach sd-4:**

Inflow Area = 0.933 ac, 83.17% Impervious, Inflow Depth = 2.47" for 2-YEAR event  
Inflow = 2.57 cfs @ 12.09 hrs, Volume= 0.192 af  
Outflow = 2.57 cfs @ 12.09 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
Max. Velocity= 9.10 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 2.84 fps, Avg. Travel Time= 0.4 min

Peak Storage= 19 cf @ 12.09 hrs  
Average Depth at Peak Storage= 0.39'  
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 8.03 cfs

12.0" Round Pipe  
n= 0.012  
Length= 67.0' Slope= 0.0433 '/'  
Inlet Invert= 36.80', Outlet Invert= 33.90'



**Summary for Reach sd-5:**

Inflow = 2.67 cfs @ 12.08 hrs, Volume= 0.033 af  
Outflow = 2.67 cfs @ 12.08 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
Max. Velocity= 6.62 fps, Min. Travel Time= 0.0 min  
Avg. Velocity = 4.56 fps, Avg. Travel Time= 0.0 min

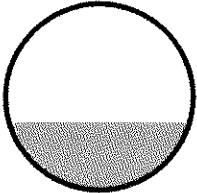
Peak Storage= 4 cf @ 12.08 hrs  
Average Depth at Peak Storage= 0.46'  
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.44 cfs

15.0" Round Pipe

n= 0.012

Length= 11.0' Slope= 0.0182 '/'

Inlet Invert= 33.80', Outlet Invert= 33.60'



#### Summary for Reach sd-6:

Inflow Area = 1.719 ac, 86.68% Impervious, Inflow Depth = 2.27" for 2-YEAR event  
 Inflow = 2.15 cfs @ 12.08 hrs, Volume= 0.326 af  
 Outflow = 2.15 cfs @ 12.08 hrs, Volume= 0.326 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4

Max. Velocity= 7.20 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 2.83 fps, Avg. Travel Time= 0.1 min

Peak Storage= 7 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.40'

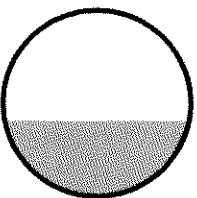
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.23 cfs

12.0" Round Pipe

n= 0.012

Length= 23.0' Slope= 0.0261 '/'

Inlet Invert= 34.20', Outlet Invert= 33.60'



#### Summary for Pond 1: CB-1

Inflow Area = 0.249 ac, 72.29% Impervious, Inflow Depth = 2.25" for 2-YEAR event  
 Inflow = 0.66 cfs @ 12.07 hrs, Volume= 0.047 af  
 Outflow = 0.66 cfs @ 12.07 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min  
 Primary = 0.66 cfs @ 12.07 hrs, Volume= 0.047 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4

Peak Elev= 40.27' @ 12.07 hrs

Flood Elev= 42.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	39.80'	12.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.66 cfs @ 12.07 hrs HW=40.27' TW=40.13' (Dynamic Tailwater)  
 ↑1=Orifice/Grate (Orifice Controls 0.66 cfs @ 1.82 fps)

**Summary for Pond 2: CB-2**

Inflow Area = 0.547 ac, 71.30% Impervious, Inflow Depth = 2.25" for 2-YEAR event  
 Inflow = 1.44 cfs @ 12.08 hrs, Volume= 0.103 af  
 Outflow = 1.44 cfs @ 12.08 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.44 cfs @ 12.08 hrs, Volume= 0.103 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 39.79' @ 12.08 hrs  
 Flood Elev= 42.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	39.10'	12.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=1.44 cfs @ 12.08 hrs HW=39.79' TW=39.52' (Dynamic Tailwater)  
 ↑1=Orifice/Grate (Orifice Controls 1.44 cfs @ 2.50 fps)

**Summary for Pond 2P:**

Inflow Area = 1.719 ac, 86.68% Impervious, Inflow Depth = 2.51" for 2-YEAR event  
 Inflow = 4.82 cfs @ 12.08 hrs, Volume= 0.359 af  
 Outflow = 4.81 cfs @ 12.08 hrs, Volume= 0.358 af, Atten= 0%, Lag= 0.1 min  
 Primary = 4.81 cfs @ 12.08 hrs, Volume= 0.358 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 33.84' @ 12.08 hrs Surf.Area= 67 sf Storage= 92 cf

Plug-Flow detention time= 3.7 min calculated for 0.358 af (100% of inflow)  
 Center-of-Mass det. time= 2.0 min ( 779.4 - 777.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	140 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
32.00	32	0	0
34.50	80	140	140

Device	Routing	Invert	Outlet Devices
#1	Primary	33.00'	3.0' long x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Primary OutFlow** Max=4.80 cfs @ 12.08 hrs HW=33.84' TW=33.52' (Dynamic Tailwater)

↑1=Broad-Crested Rectangular Weir (Weir Controls 4.80 cfs @ 1.90 fps)

**Summary for Pond 3: CB-3**

Inflow Area = 0.386 ac, 100.00% Impervious, Inflow Depth = 2.77" for 2-YEAR event  
 Inflow = 1.16 cfs @ 12.07 hrs, Volume= 0.089 af  
 Outflow = 1.16 cfs @ 12.07 hrs, Volume= 0.089 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.16 cfs @ 12.07 hrs, Volume= 0.089 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 38.65' @ 12.08 hrs  
 Flood Elev= 41.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.00'	12.0" Vert. Orifice/Grate C= 0.600

**Primary OutFlow** Max=1.16 cfs @ 12.07 hrs HW=38.65' TW=38.45' (Dynamic Tailwater)

↑1=Orifice/Grate (Orifice Controls 1.16 cfs @ 2.16 fps)

**Summary for Pond 4: CB-4**

Inflow Area = 1.719 ac, 86.68% Impervious, Inflow Depth = 2.51" for 2-YEAR event  
 Inflow = 4.82 cfs @ 12.08 hrs, Volume= 0.359 af  
 Outflow = 4.82 cfs @ 12.08 hrs, Volume= 0.359 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.15 cfs @ 12.08 hrs, Volume= 0.326 af  
 Secondary = 2.67 cfs @ 12.08 hrs, Volume= 0.033 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 35.76' @ 12.08 hrs  
 Flood Elev= 39.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	8.0" Vert. Orifice/Grate C= 0.600
#2	Device 3	35.50'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 1.6' Crest Height
#3	Secondary	33.80'	15.0" Vert. Orifice/Grate C= 0.600

**Primary OutFlow** Max=2.15 cfs @ 12.08 hrs HW=35.76' TW=0.00' (Dynamic Tailwater)

↑1=Orifice/Grate (Orifice Controls 2.15 cfs @ 6.15 fps)

**Secondary OutFlow** Max=2.67 cfs @ 12.08 hrs HW=35.76' TW=34.25' (Dynamic Tailwater)

↑3=Orifice/Grate (Passes 2.67 cfs of 6.83 cfs potential flow)

↑2=Sharp-Crested Rectangular Weir (Weir Controls 2.67 cfs @ 1.71 fps)

**Summary for Pond DMH-1: DMH-1**

Inflow Area = 0.933 ac, 83.17% Impervious, Inflow Depth = 2.47" for 2-YEAR event  
 Inflow = 2.57 cfs @ 12.09 hrs, Volume= 0.192 af  
 Outflow = 2.57 cfs @ 12.09 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.57 cfs @ 12.09 hrs, Volume= 0.192 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 37.75' @ 12.09 hrs  
 Flood Elev= 41.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.80'	12.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=2.57 cfs @ 12.09 hrs HW=37.75' TW=37.19' (Dynamic Tailwater)  
 ↑1=Orifice/Grate (Orifice Controls 2.57 cfs @ 3.32 fps)

**Summary for Pond HIL:**

Inflow Area = 1.719 ac, 86.68% Impervious, Inflow Depth = 2.27" for 2-YEAR event  
 Inflow = 2.15 cfs @ 12.08 hrs, Volume= 0.326 af  
 Primary = 2.15 cfs @ 12.08 hrs, Volume= 0.326 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4

**Summary for Pond SP1:**

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 2.45" for 2-YEAR event  
 Inflow = 0.30 cfs @ 12.07 hrs, Volume= 0.022 af  
 Primary = 0.30 cfs @ 12.07 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4

**Summary for Pond SP2:**

Inflow Area = 3.710 ac, 44.04% Impervious, Inflow Depth = 1.88" for 2-YEAR event  
 Inflow = 7.69 cfs @ 12.09 hrs, Volume= 0.581 af  
 Primary = 7.69 cfs @ 12.09 hrs, Volume= 0.581 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4

**Summary for Subcatchment 3S:**

Runoff = 2.79 cfs @ 12.11 hrs, Volume= 0.210 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YEAR Rainfall=4.70"

Area (ac)	CN	Description
* 0.054	98	ROAD
0.580	77	Woods, Good, HSG D
0.355	80	>75% Grass cover, Good, HSG D
0.989	79	Weighted Average
0.935		94.54% Pervious Area
0.054		5.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	38	0.0630	0.21		<b>Sheet Flow, A to B</b> Grass: Short n= 0.150 P2= 3.00"
0.9	52	0.0200	0.99		<b>Shallow Concentrated Flow, B to C</b> Short Grass Pasture Kv= 7.0 fps
0.2	146	0.1670	10.39	25.96	<b>Trap/Vee/Rect Channel Flow, C to D</b> Bot.W=0.00' D=1.00' Z= 3.0 & 2.0 '/' Top.W=5.00' n= 0.035 Earth, dense weeds
3.6	430	0.0050	2.01	6.03	<b>Trap/Vee/Rect Channel Flow, D to E</b> Bot.W=1.00' D=1.00' Z= 2.0 '/' Top.W=5.00' n= 0.035 Earth, dense weeds
7.6	666	Total			

**Summary for Subcatchment 10s:**

Runoff = 0.49 cfs @ 12.07 hrs, Volume= 0.036 af, Depth= 4.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YEAR Rainfall=4.70"

Area (ac)	CN	Description
* 0.090	98	ROAD AND SIDEWALK
0.016	80	>75% Grass cover, Good, HSG D
0.106	95	Weighted Average
0.016		15.09% Pervious Area
0.090		84.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	16	0.0200	0.92		<b>Sheet Flow, A TO B</b> Smooth surfaces n= 0.011 P2= 3.00"
1.2	134	0.0400	1.86		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
0.2	53	0.0400	4.06		<b>Shallow Concentrated Flow, C TO D</b> Paved Kv= 20.3 fps
3.3					<b>Direct Entry,</b>
5.0	203	Total			

**Summary for Subcatchment 20S:**

Runoff = 1.84 cfs @ 12.07 hrs, Volume= 0.144 af, Depth> 4.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YEAR Rainfall=4.70"

Area (ac)	CN	Description
0.386	98	Paved parking & roofs
0.386		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	141	0.0310	1.70		<b>Sheet Flow, A TO B</b> Smooth surfaces n= 0.011 P2= 3.00"
0.6	130	0.0300	3.52		<b>Shallow Concentrated Flow, B TO C</b> Paved Kv= 20.3 fps
3.0					<b>Direct Entry,</b>
5.0	271	Total			

**Summary for Subcatchment 30S:**

Runoff = 1.11 cfs @ 12.07 hrs, Volume= 0.081 af, Depth= 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YEAR Rainfall=4.70"

Area (ac)	CN	Description
0.180	98	Paved parking & roofs
0.069	80	>75% Grass cover, Good, HSG D
0.249	93	Weighted Average
0.069		27.71% Pervious Area
0.180		72.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	23	0.0170	0.12		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
0.7	48	0.0200	1.15		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
1.0					<b>Direct Entry,</b>
5.0	71	Total			

**Summary for Subcatchment 40S:**

Runoff = 3.67 cfs @ 12.07 hrs, Volume= 0.277 af, Depth= 4.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YEAR Rainfall=4.70"

Area (ac)	CN	Description
0.714	98	Paved parking & roofs
0.072	80	>75% Grass cover, Good, HSG D
0.786	96	Weighted Average
0.072		9.16% Pervious Area
0.714		90.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	18	0.0200	0.12		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
1.6	122	0.0170	1.30		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
0.3	46	0.0200	2.87		<b>Shallow Concentrated Flow, C TO D</b> Paved Kv= 20.3 fps
0.5					<b>Direct Entry,</b>
5.0	186	Total			

**Summary for Subcatchment 50S:**

Runoff = 1.31 cfs @ 12.08 hrs, Volume= 0.097 af, Depth= 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YEAR Rainfall=4.70"

Area (ac)	CN	Description
0.210	98	Paved parking & roofs
0.088	80	>75% Grass cover, Good, HSG D
0.298	93	Weighted Average
0.088		29.53% Pervious Area
0.210		70.47% Impervious Area



Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	36	0.0170	0.13		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
0.6	37	0.0200	1.09		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
5.4	73	Total			

**Summary for Subcatchment 60S:**

Runoff = 3.07 cfs @ 12.07 hrs, Volume= 0.210 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YEAR Rainfall=4.70"

Area (ac)	CN	Description
0.756	80	>75% Grass cover, Good, HSG D
0.140	91	RIP RAP (GRAVEL HSG D)
0.896	82	Weighted Average
0.896		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	50	0.0560	0.22		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
0.5	338	0.0870	10.82	216.31	<b>Trap/Vee/Rect Channel Flow, B TO C</b> Bot.W=0.00' D=2.00' Z= 5.0 '/' Top.W=20.00' n= 0.040
0.5					<b>Direct Entry,</b>
4.9	388	Total			

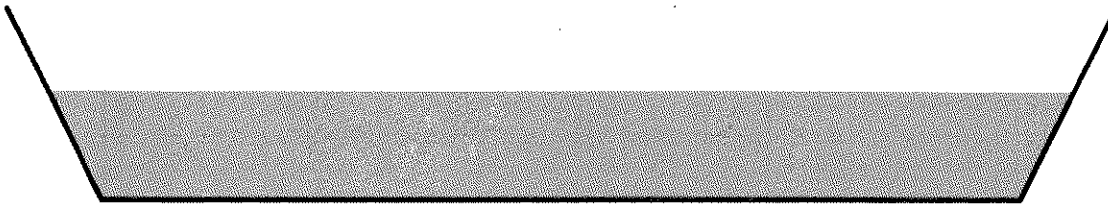
**Summary for Reach 1R:**

Inflow Area = 1.719 ac, 86.68% Impervious, Inflow Depth = 4.17" for 10-YEAR event  
Inflow = 7.84 cfs @ 12.08 hrs, Volume= 0.598 af  
Outflow = 7.80 cfs @ 12.09 hrs, Volume= 0.598 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
Max. Velocity= 1.73 fps, Min. Travel Time= 0.7 min  
Avg. Velocity = 0.42 fps, Avg. Travel Time= 2.8 min

Peak Storage= 316 cf @ 12.09 hrs  
Average Depth at Peak Storage= 0.71'  
Bank-Full Depth= 1.25' Flow Area= 8.3 sf, Capacity= 19.42 cfs

6.00' x 1.25' deep channel, n= 0.300  
Side Slope Z-value= 0.5 '/' Top Width= 7.25'  
Length= 70.0' Slope= 0.2429 '/'  
Inlet Invert= 33.00', Outlet Invert= 16.00'



**Summary for Reach R1:**

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 4.12" for 10-YEAR event  
 Inflow = 0.49 cfs @ 12.07 hrs, Volume= 0.036 af  
 Outflow = 0.47 cfs @ 12.09 hrs, Volume= 0.036 af, Atten= 4%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Max. Velocity= 0.89 fps, Min. Travel Time= 2.3 min  
 Avg. Velocity = 0.24 fps, Avg. Travel Time= 8.3 min

Peak Storage= 63 cf @ 12.09 hrs  
 Average Depth at Peak Storage= 0.05'  
 Bank-Full Depth= 0.50' Flow Area= 7.5 sf, Capacity= 26.14 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds  
 Side Slope Z-value= 10.0 '/' Top Width= 20.00'  
 Length= 120.0' Slope= 0.0250 '/'  
 Inlet Invert= 46.00', Outlet Invert= 43.00'



**Summary for Reach R2:**

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 4.12" for 10-YEAR event  
 Inflow = 0.47 cfs @ 12.09 hrs, Volume= 0.036 af  
 Outflow = 0.46 cfs @ 12.10 hrs, Volume= 0.036 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Max. Velocity= 2.61 fps, Min. Travel Time= 0.9 min  
 Avg. Velocity = 0.79 fps, Avg. Travel Time= 3.1 min

Peak Storage= 26 cf @ 12.10 hrs  
 Average Depth at Peak Storage= 0.08'  
 Bank-Full Depth= 1.00' Flow Area= 4.5 sf, Capacity= 48.16 cfs

2.00' x 1.00' deep channel, n= 0.035  
 Side Slope Z-value= 3.0 2.0 '/' Top Width= 7.00'  
 Length= 146.0' Slope= 0.1233 '/'  
 Inlet Invert= 43.00', Outlet Invert= 25.00'



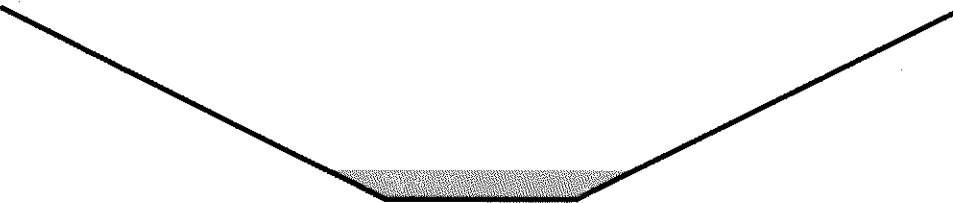
**Summary for Reach R3:**

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 4.12" for 10-YEAR event  
 Inflow = 0.46 cfs @ 12.10 hrs, Volume= 0.036 af  
 Outflow = 0.43 cfs @ 12.14 hrs, Volume= 0.036 af, Atten= 8%, Lag= 2.2 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Max. Velocity= 2.11 fps, Min. Travel Time= 3.4 min  
 Avg. Velocity = 0.61 fps, Avg. Travel Time= 11.8 min

Peak Storage= 87 cf @ 12.14 hrs  
 Average Depth at Peak Storage= 0.15'  
 Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 17.46 cfs

1.00' x 1.00' deep channel, n= 0.035  
 Side Slope Z-value= 2.0 '/' Top Width= 5.00'  
 Length= 430.0' Slope= 0.0419 '/'  
 Inlet Invert= 25.00', Outlet Invert= 7.00'



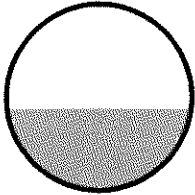
**Summary for Reach sd-1:**

Inflow Area = 0.249 ac, 72.29% Impervious, Inflow Depth = 3.90" for 10-YEAR event  
 Inflow = 1.11 cfs @ 12.07 hrs, Volume= 0.081 af  
 Outflow = 1.11 cfs @ 12.08 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Max. Velocity= 3.35 fps, Min. Travel Time= 0.6 min  
 Avg. Velocity = 1.09 fps, Avg. Travel Time= 1.8 min

Peak Storage= 38 cf @ 12.08 hrs  
 Average Depth at Peak Storage= 0.44'  
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.79 cfs

12.0" Round Pipe  
n= 0.012  
Length= 115.0' Slope= 0.0052 '/'  
Inlet Invert= 39.80', Outlet Invert= 39.20'



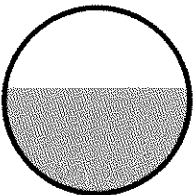
**Summary for Reach sd-2:**

Inflow Area = 0.547 ac, 71.30% Impervious, Inflow Depth = 3.90" for 10-YEAR event  
Inflow = 2.42 cfs @ 12.08 hrs, Volume= 0.178 af  
Outflow = 2.41 cfs @ 12.09 hrs, Volume= 0.178 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
Max. Velocity= 5.18 fps, Min. Travel Time= 0.7 min  
Avg. Velocity = 1.72 fps, Avg. Travel Time= 2.1 min

Peak Storage= 103 cf @ 12.09 hrs  
Average Depth at Peak Storage= 0.57'  
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe  
n= 0.012  
Length= 221.0' Slope= 0.0100 '/'  
Inlet Invert= 39.10', Outlet Invert= 36.89'



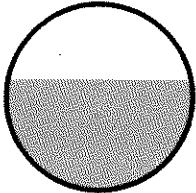
**Summary for Reach sd-3:**

Inflow Area = 0.386 ac, 100.00% Impervious, Inflow Depth > 4.46" for 10-YEAR event  
Inflow = 1.84 cfs @ 12.07 hrs, Volume= 0.144 af  
Outflow = 1.81 cfs @ 12.08 hrs, Volume= 0.144 af, Atten= 1%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
Max. Velocity= 3.72 fps, Min. Travel Time= 1.0 min  
Avg. Velocity = 1.25 fps, Avg. Travel Time= 2.9 min

Peak Storage= 107 cf @ 12.08 hrs  
Average Depth at Peak Storage= 0.60'  
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.73 cfs

12.0" Round Pipe  
n= 0.012  
Length= 220.0' Slope= 0.0050 '/'  
Inlet Invert= 38.00', Outlet Invert= 36.90'



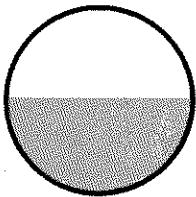
**Summary for Reach sd-4:**

Inflow Area = 0.933 ac, 83.17% Impervious, Inflow Depth = 4.14" for 10-YEAR event  
Inflow = 4.22 cfs @ 12.08 hrs, Volume= 0.322 af  
Outflow = 4.22 cfs @ 12.09 hrs, Volume= 0.322 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
Max. Velocity= 10.35 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 3.32 fps, Avg. Travel Time= 0.3 min

Peak Storage= 27 cf @ 12.09 hrs  
Average Depth at Peak Storage= 0.51'  
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 8.03 cfs

12.0" Round Pipe  
n= 0.012  
Length= 67.0' Slope= 0.0433 '/'  
Inlet Invert= 36.80', Outlet Invert= 33.90'



**Summary for Reach sd-5:**

Inflow = 5.59 cfs @ 12.08 hrs, Volume= 0.104 af  
Outflow = 5.59 cfs @ 12.08 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
Max. Velocity= 8.01 fps, Min. Travel Time= 0.0 min  
Avg. Velocity = 5.23 fps, Avg. Travel Time= 0.0 min

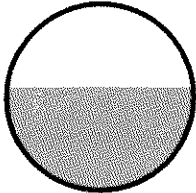
Peak Storage= 8 cf @ 12.08 hrs  
Average Depth at Peak Storage= 0.69'  
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.44 cfs

15.0" Round Pipe

n= 0.012

Length= 11.0' Slope= 0.0182 1/'

Inlet Invert= 33.80', Outlet Invert= 33.60'



**Summary for Reach sd-6:**

Inflow Area = 1.719 ac, 86.68% Impervious, Inflow Depth = 3.45" for 10-YEAR event  
 Inflow = 2.25 cfs @ 12.08 hrs, Volume= 0.495 af  
 Outflow = 2.25 cfs @ 12.08 hrs, Volume= 0.495 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Max. Velocity= 7.30 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 3.29 fps, Avg. Travel Time= 0.1 min

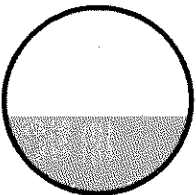
Peak Storage= 7 cf @ 12.08 hrs  
 Average Depth at Peak Storage= 0.42'  
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.23 cfs

12.0" Round Pipe

n= 0.012

Length= 23.0' Slope= 0.0261 1/'

Inlet Invert= 34.20', Outlet Invert= 33.60'



**Summary for Pond 1: CB-1**

Inflow Area = 0.249 ac, 72.29% Impervious, Inflow Depth = 3.90" for 10-YEAR event  
 Inflow = 1.11 cfs @ 12.07 hrs, Volume= 0.081 af  
 Outflow = 1.11 cfs @ 12.07 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.11 cfs @ 12.07 hrs, Volume= 0.081 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 40.43' @ 12.07 hrs  
 Flood Elev= 42.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	39.80'	12.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=1.11 cfs @ 12.07 hrs HW=40.43' TW=40.24' (Dynamic Tailwater)

↳1=Orifice/Grate (Orifice Controls 1.11 cfs @ 2.13 fps)

**Summary for Pond 2: CB-2**

Inflow Area = 0.547 ac, 71.30% Impervious, Inflow Depth = 3.90" for 10-YEAR event  
 Inflow = 2.42 cfs @ 12.08 hrs, Volume= 0.178 af  
 Outflow = 2.42 cfs @ 12.08 hrs, Volume= 0.178 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.42 cfs @ 12.08 hrs, Volume= 0.178 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 40.08' @ 12.08 hrs  
 Flood Elev= 42.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	39.10'	12.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=2.42 cfs @ 12.08 hrs HW=40.08' TW=39.67' (Dynamic Tailwater)

↳1=Orifice/Grate (Orifice Controls 2.42 cfs @ 3.09 fps)

**Summary for Pond 2P:**

Inflow Area = 1.719 ac, 86.68% Impervious, Inflow Depth = 4.18" for 10-YEAR event  
 Inflow = 7.85 cfs @ 12.08 hrs, Volume= 0.599 af  
 Outflow = 7.84 cfs @ 12.08 hrs, Volume= 0.598 af, Atten= 0%, Lag= 0.1 min  
 Primary = 7.84 cfs @ 12.08 hrs, Volume= 0.598 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 34.16' @ 12.08 hrs Surf.Area= 74 sf Storage= 114 cf

Plug-Flow detention time= 2.4 min calculated for 0.598 af (100% of inflow)  
 Center-of-Mass det. time= 1.4 min ( 766.9 - 765.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	140 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
32.00	32	0	0
34.50	80	140	140

Device	Routing	Invert	Outlet Devices
#1	Primary	33.00'	3.0' long x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Primary OutFlow** Max=7.83 cfs @ 12.08 hrs HW=34.16' TW=33.71' (Dynamic Tailwater)

↑1=Broad-Crested Rectangular Weir (Weir Controls 7.83 cfs @ 2.24 fps)

**Summary for Pond 3: CB-3**

Inflow Area = 0.386 ac, 100.00% Impervious, Inflow Depth > 4.46" for 10-YEAR event  
 Inflow = 1.84 cfs @ 12.07 hrs, Volume= 0.144 af  
 Outflow = 1.84 cfs @ 12.07 hrs, Volume= 0.144 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.84 cfs @ 12.07 hrs, Volume= 0.144 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 38.87' @ 12.08 hrs  
 Flood Elev= 41.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.00'	12.0" Vert. Orifice/Grate C= 0.600

**Primary OutFlow** Max=1.84 cfs @ 12.07 hrs HW=38.87' TW=38.59' (Dynamic Tailwater)

↑1=Orifice/Grate (Orifice Controls 1.84 cfs @ 2.54 fps)

**Summary for Pond 4: CB-4**

Inflow Area = 1.719 ac, 86.68% Impervious, Inflow Depth = 4.18" for 10-YEAR event  
 Inflow = 7.85 cfs @ 12.08 hrs, Volume= 0.599 af  
 Outflow = 7.85 cfs @ 12.08 hrs, Volume= 0.599 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.25 cfs @ 12.08 hrs, Volume= 0.495 af  
 Secondary = 5.59 cfs @ 12.08 hrs, Volume= 0.104 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 35.93' @ 12.08 hrs  
 Flood Elev= 39.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	8.0" Vert. Orifice/Grate C= 0.600
#2	Device 3	35.50'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 1.6' Crest Height
#3	Secondary	33.80'	15.0" Vert. Orifice/Grate C= 0.600

**Primary OutFlow** Max=2.25 cfs @ 12.08 hrs HW=35.93' TW=0.00' (Dynamic Tailwater)

↑1=Orifice/Grate (Orifice Controls 2.25 cfs @ 6.45 fps)

**Secondary OutFlow** Max=5.59 cfs @ 12.08 hrs HW=35.93' TW=34.49' (Dynamic Tailwater)

↑3=Orifice/Grate (Passes 5.59 cfs of 7.08 cfs potential flow)

↑2=Sharp-Crested Rectangular Weir (Weir Controls 5.59 cfs @ 2.21 fps)



**Summary for Pond DMH-1: DMH-1**

Inflow Area = 0.933 ac, 83.17% Impervious, Inflow Depth = 4.14" for 10-YEAR event  
 Inflow = 4.22 cfs @ 12.08 hrs, Volume= 0.322 af  
 Outflow = 4.22 cfs @ 12.08 hrs, Volume= 0.322 af, Atten= 0%, Lag= 0.0 min  
 Primary = 4.22 cfs @ 12.08 hrs, Volume= 0.322 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 38.56' @ 12.08 hrs  
 Flood Elev= 41.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.80'	12.0" Vert. Orifice/Grate C= 0.600

**Primary OutFlow** Max=4.21 cfs @ 12.08 hrs HW=38.55' TW=37.31' (Dynamic Tailwater)  
 ↑1=Orifice/Grate (Orifice Controls 4.21 cfs @ 5.36 fps)

**Summary for Pond HIL:**

Inflow Area = 1.719 ac, 86.68% Impervious, Inflow Depth = 3.45" for 10-YEAR event  
 Inflow = 2.25 cfs @ 12.08 hrs, Volume= 0.495 af  
 Primary = 2.25 cfs @ 12.08 hrs, Volume= 0.495 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4

**Summary for Pond SP1:**

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 4.12" for 10-YEAR event  
 Inflow = 0.49 cfs @ 12.07 hrs, Volume= 0.036 af  
 Primary = 0.49 cfs @ 12.07 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4

**Summary for Pond SP2:**

Inflow Area = 3.710 ac, 44.04% Impervious, Inflow Depth = 3.41" for 10-YEAR event  
 Inflow = 13.88 cfs @ 12.09 hrs, Volume= 1.054 af  
 Primary = 13.88 cfs @ 12.09 hrs, Volume= 1.054 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4

**Summary for Subcatchment 3S:**

Runoff = 3.55 cfs @ 12.11 hrs, Volume= 0.267 af, Depth= 3.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=5.50"

Area (ac)	CN	Description
* 0.054	98	ROAD
0.580	77	Woods, Good, HSG D
0.355	80	>75% Grass cover, Good, HSG D
0.989	79	Weighted Average
0.935		94.54% Pervious Area
0.054		5.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	38	0.0630	0.21		<b>Sheet Flow, A to B</b> Grass: Short n= 0.150 P2= 3.00"
0.9	52	0.0200	0.99		<b>Shallow Concentrated Flow, B to C</b> Short Grass Pasture Kv= 7.0 fps
0.2	146	0.1670	10.39	25.96	<b>Trap/Vee/Rect Channel Flow, C to D</b> Bot.W=0.00' D=1.00' Z= 3.0 & 2.0 '/' Top.W=5.00' n= 0.035 Earth, dense weeds
3.6	430	0.0050	2.01	6.03	<b>Trap/Vee/Rect Channel Flow, D to E</b> Bot.W=1.00' D=1.00' Z= 2.0 '/' Top.W=5.00' n= 0.035 Earth, dense weeds
7.6	666	Total			

**Summary for Subcatchment 10s:**

Runoff = 0.58 cfs @ 12.07 hrs, Volume= 0.043 af, Depth= 4.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=5.50"

Area (ac)	CN	Description
* 0.090	98	ROAD AND SIDEWALK
0.016	80	>75% Grass cover, Good, HSG D
0.106	95	Weighted Average
0.016		15.09% Pervious Area
0.090		84.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	16	0.0200	0.92		<b>Sheet Flow, A TO B</b> Smooth surfaces n= 0.011 P2= 3.00"
1.2	134	0.0400	1.86		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
0.2	53	0.0400	4.06		<b>Shallow Concentrated Flow, C TO D</b> Paved Kv= 20.3 fps
3.3					<b>Direct Entry,</b>
5.0	203	Total			

**Summary for Subcatchment 20S:**

Runoff = 2.15 cfs @ 12.07 hrs, Volume= 0.169 af, Depth> 5.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=5.50"

Area (ac)	CN	Description
0.386	98	Paved parking & roofs
0.386		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	141	0.0310	1.70		<b>Sheet Flow, A TO B</b> Smooth surfaces n= 0.011 P2= 3.00"
0.6	130	0.0300	3.52		<b>Shallow Concentrated Flow, B TO C</b> Paved Kv= 20.3 fps
3.0					<b>Direct Entry,</b>
5.0	271	Total			

**Summary for Subcatchment 30S:**

Runoff = 1.32 cfs @ 12.07 hrs, Volume= 0.097 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=5.50"

Area (ac)	CN	Description
0.180	98	Paved parking & roofs
0.069	80	>75% Grass cover, Good, HSG D
0.249	93	Weighted Average
0.069		27.71% Pervious Area
0.180		72.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	23	0.0170	0.12		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
0.7	48	0.0200	1.15		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
1.0					<b>Direct Entry,</b>
5.0	71	Total			

**Summary for Subcatchment 40S:**

Runoff = 4.33 cfs @ 12.07 hrs, Volume= 0.329 af, Depth= 5.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=5.50"

Area (ac)	CN	Description
0.714	98	Paved parking & roofs
0.072	80	>75% Grass cover, Good, HSG D
0.786	96	Weighted Average
0.072		9.16% Pervious Area
0.714		90.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	18	0.0200	0.12		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
1.6	122	0.0170	1.30		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
0.3	46	0.0200	2.87		<b>Shallow Concentrated Flow, C TO D</b> Paved Kv= 20.3 fps
0.5					<b>Direct Entry,</b>
5.0	186	Total			

**Summary for Subcatchment 50S:**

Runoff = 1.56 cfs @ 12.08 hrs, Volume= 0.116 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=5.50"

Area (ac)	CN	Description
0.210	98	Paved parking & roofs
0.088	80	>75% Grass cover, Good, HSG D
0.298	93	Weighted Average
0.088		29.53% Pervious Area
0.210		70.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	36	0.0170	0.13		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
0.6	37	0.0200	1.09		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
5.4	73	Total			

**Summary for Subcatchment 60S:**

Runoff = 3.84 cfs @ 12.07 hrs, Volume= 0.264 af, Depth= 3.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=5.50"

Area (ac)	CN	Description
0.756	80	>75% Grass cover, Good, HSG D
0.140	91	RIP RAP (GRAVEL HSG D)
0.896	82	Weighted Average
0.896		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	50	0.0560	0.22		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
0.5	338	0.0870	10.82	216.31	<b>Trap/Vee/Rect Channel Flow, B TO C</b> Bot.W=0.00' D=2.00' Z= 5.0 '/' Top.W=20.00' n= 0.040
0.5					<b>Direct Entry,</b>
4.9	388	Total			

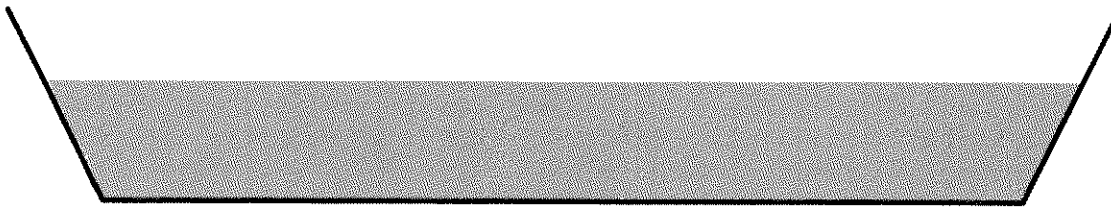
**Summary for Reach 1R:**

Inflow Area = 1.719 ac, 86.68% Impervious, Inflow Depth = 4.97" for 25-year event  
Inflow = 9.25 cfs @ 12.08 hrs, Volume= 0.712 af  
Outflow = 9.21 cfs @ 12.09 hrs, Volume= 0.712 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
Max. Velocity= 1.83 fps, Min. Travel Time= 0.6 min  
Avg. Velocity = 0.44 fps, Avg. Travel Time= 2.6 min

Peak Storage= 352 cf @ 12.09 hrs  
Average Depth at Peak Storage= 0.79'  
Bank-Full Depth= 1.25' Flow Area= 8.3 sf, Capacity= 19.42 cfs

6.00' x 1.25' deep channel, n= 0.300  
Side Slope Z-value= 0.5 '/' Top Width= 7.25'  
Length= 70.0' Slope= 0.2429 '/'  
Inlet Invert= 33.00', Outlet Invert= 16.00'



**Summary for Reach R1:**

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 4.92" for 25-year event  
 Inflow = 0.58 cfs @ 12.07 hrs, Volume= 0.043 af  
 Outflow = 0.56 cfs @ 12.09 hrs, Volume= 0.043 af, Atten= 4%, Lag= 1.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Max. Velocity= 0.95 fps, Min. Travel Time= 2.1 min  
 Avg. Velocity = 0.25 fps, Avg. Travel Time= 8.0 min

Peak Storage= 70 cf @ 12.09 hrs  
 Average Depth at Peak Storage= 0.06'  
 Bank-Full Depth= 0.50' Flow Area= 7.5 sf, Capacity= 26.14 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds  
 Side Slope Z-value= 10.0 '/' Top Width= 20.00'  
 Length= 120.0' Slope= 0.0250 '/'  
 Inlet Invert= 46.00', Outlet Invert= 43.00'



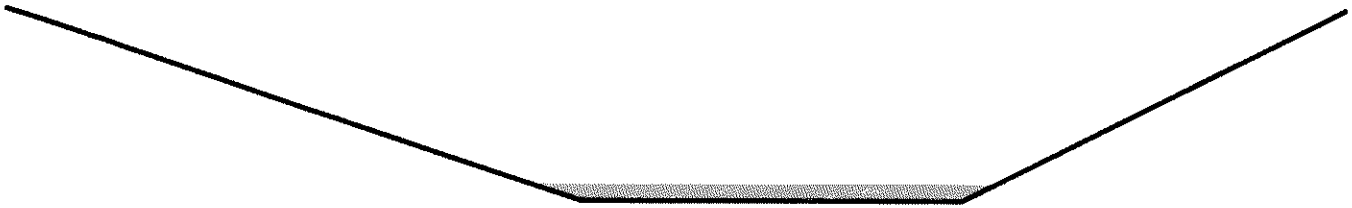
**Summary for Reach R2:**

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 4.92" for 25-year event  
 Inflow = 0.56 cfs @ 12.09 hrs, Volume= 0.043 af  
 Outflow = 0.55 cfs @ 12.10 hrs, Volume= 0.043 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Max. Velocity= 2.77 fps, Min. Travel Time= 0.9 min  
 Avg. Velocity = 0.81 fps, Avg. Travel Time= 3.0 min

Peak Storage= 29 cf @ 12.10 hrs  
 Average Depth at Peak Storage= 0.09'  
 Bank-Full Depth= 1.00' Flow Area= 4.5 sf, Capacity= 48.16 cfs

2.00' x 1.00' deep channel, n= 0.035  
 Side Slope Z-value= 3.0 2.0 '/' Top Width= 7.00'  
 Length= 146.0' Slope= 0.1233 '/'  
 Inlet Invert= 43.00', Outlet Invert= 25.00'



**Summary for Reach R3:**

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 4.92" for 25-year event  
 Inflow = 0.55 cfs @ 12.10 hrs, Volume= 0.043 af  
 Outflow = 0.51 cfs @ 12.14 hrs, Volume= 0.043 af, Atten= 8%, Lag= 2.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Max. Velocity= 2.23 fps, Min. Travel Time= 3.2 min  
 Avg. Velocity = 0.64 fps, Avg. Travel Time= 11.2 min

Peak Storage= 98 cf @ 12.14 hrs  
 Average Depth at Peak Storage= 0.17'  
 Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 17.46 cfs

1.00' x 1.00' deep channel, n= 0.035  
 Side Slope Z-value= 2.0 '/' Top Width= 5.00'  
 Length= 430.0' Slope= 0.0419 '/'  
 Inlet Invert= 25.00', Outlet Invert= 7.00'



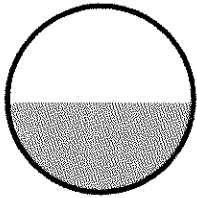
**Summary for Reach sd-1:**

Inflow Area = 0.249 ac, 72.29% Impervious, Inflow Depth = 4.69" for 25-year event  
 Inflow = 1.32 cfs @ 12.07 hrs, Volume= 0.097 af  
 Outflow = 1.32 cfs @ 12.08 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Max. Velocity= 3.50 fps, Min. Travel Time= 0.5 min  
 Avg. Velocity = 1.15 fps, Avg. Travel Time= 1.7 min

Peak Storage= 43 cf @ 12.08 hrs  
 Average Depth at Peak Storage= 0.48'  
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.79 cfs

12.0" Round Pipe  
n= 0.012  
Length= 115.0' Slope= 0.0052 '/'  
Inlet Invert= 39.80', Outlet Invert= 39.20'



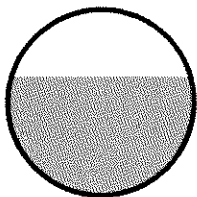
**Summary for Reach sd-2:**

Inflow Area = 0.547 ac, 71.30% Impervious, Inflow Depth = 4.69" for 25-year event  
Inflow = 2.88 cfs @ 12.08 hrs, Volume= 0.214 af  
Outflow = 2.86 cfs @ 12.09 hrs, Volume= 0.214 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
Max. Velocity= 5.38 fps, Min. Travel Time= 0.7 min  
Avg. Velocity = 1.81 fps, Avg. Travel Time= 2.0 min

Peak Storage= 118 cf @ 12.09 hrs  
Average Depth at Peak Storage= 0.64'  
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe  
n= 0.012  
Length= 221.0' Slope= 0.0100 '/'  
Inlet Invert= 39.10', Outlet Invert= 36.89'



**Summary for Reach sd-3:**

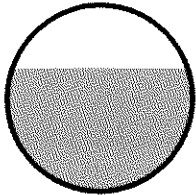
Inflow Area = 0.386 ac, 100.00% Impervious, Inflow Depth > 5.26" for 25-year event  
Inflow = 2.15 cfs @ 12.07 hrs, Volume= 0.169 af  
Outflow = 2.12 cfs @ 12.08 hrs, Volume= 0.169 af, Atten= 1%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
Max. Velocity= 3.84 fps, Min. Travel Time= 1.0 min  
Avg. Velocity = 1.31 fps, Avg. Travel Time= 2.8 min

Peak Storage= 122 cf @ 12.08 hrs  
Average Depth at Peak Storage= 0.66'  
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.73 cfs



12.0" Round Pipe  
n= 0.012  
Length= 220.0' Slope= 0.0050 '/'  
Inlet Invert= 38.00', Outlet Invert= 36.90'



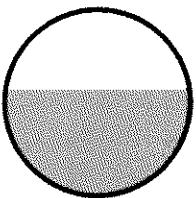
**Summary for Reach sd-4:**

Inflow Area = 0.933 ac, 83.17% Impervious, Inflow Depth = 4.93" for 25-year event  
Inflow = 4.98 cfs @ 12.08 hrs, Volume= 0.383 af  
Outflow = 4.98 cfs @ 12.09 hrs, Volume= 0.383 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
Max. Velocity= 10.77 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 3.51 fps, Avg. Travel Time= 0.3 min

Peak Storage= 31 cf @ 12.09 hrs  
Average Depth at Peak Storage= 0.57'  
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 8.03 cfs

12.0" Round Pipe  
n= 0.012  
Length= 67.0' Slope= 0.0433 '/'  
Inlet Invert= 36.80', Outlet Invert= 33.90'



**Summary for Reach sd-5:**

Inflow = 6.96 cfs @ 12.08 hrs, Volume= 0.144 af  
Outflow = 6.96 cfs @ 12.08 hrs, Volume= 0.144 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
Max. Velocity= 8.41 fps, Min. Travel Time= 0.0 min  
Avg. Velocity = 5.62 fps, Avg. Travel Time= 0.0 min

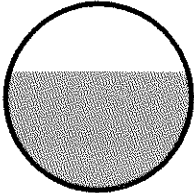
Peak Storage= 9 cf @ 12.08 hrs  
Average Depth at Peak Storage= 0.80'  
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.44 cfs

15.0" Round Pipe

n= 0.012

Length= 11.0' Slope= 0.0182 1/'

Inlet Invert= 33.80', Outlet Invert= 33.60'



**Summary for Reach sd-6:**

Inflow Area = 1.719 ac, 86.68% Impervious, Inflow Depth = 3.97" for 25-year event  
 Inflow = 2.29 cfs @ 12.08 hrs, Volume= 0.569 af  
 Outflow = 2.29 cfs @ 12.08 hrs, Volume= 0.569 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Max. Velocity= 7.33 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 3.47 fps, Avg. Travel Time= 0.1 min

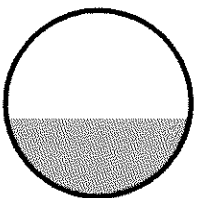
Peak Storage= 7 cf @ 12.08 hrs  
 Average Depth at Peak Storage= 0.42'  
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.23 cfs

12.0" Round Pipe

n= 0.012

Length= 23.0' Slope= 0.0261 1/'

Inlet Invert= 34.20', Outlet Invert= 33.60'



**Summary for Pond 1: CB-1**

Inflow Area = 0.249 ac, 72.29% Impervious, Inflow Depth = 4.69" for 25-year event  
 Inflow = 1.32 cfs @ 12.07 hrs, Volume= 0.097 af  
 Outflow = 1.32 cfs @ 12.07 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.32 cfs @ 12.07 hrs, Volume= 0.097 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 40.50' @ 12.07 hrs  
 Flood Elev= 42.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	39.80'	12.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=1.32 cfs @ 12.07 hrs HW=40.50' TW=40.28' (Dynamic Tailwater)  
 ↳1=Orifice/Grate (Orifice Controls 1.32 cfs @ 2.25 fps)

**Summary for Pond 2: CB-2**

Inflow Area = 0.547 ac, 71.30% Impervious, Inflow Depth = 4.69" for 25-year event  
 Inflow = 2.88 cfs @ 12.08 hrs, Volume= 0.214 af  
 Outflow = 2.88 cfs @ 12.08 hrs, Volume= 0.214 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.88 cfs @ 12.08 hrs, Volume= 0.214 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 40.32' @ 12.08 hrs  
 Flood Elev= 42.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	39.10'	12.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=2.88 cfs @ 12.08 hrs HW=40.32' TW=39.74' (Dynamic Tailwater)  
 ↳1=Orifice/Grate (Orifice Controls 2.88 cfs @ 3.66 fps)

**Summary for Pond 2P:**

Inflow Area = 1.719 ac, 86.68% Impervious, Inflow Depth = 4.97" for 25-year event  
 Inflow = 9.26 cfs @ 12.08 hrs, Volume= 0.712 af  
 Outflow = 9.25 cfs @ 12.08 hrs, Volume= 0.712 af, Atten= 0%, Lag= 0.1 min  
 Primary = 9.25 cfs @ 12.08 hrs, Volume= 0.712 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 34.30' @ 12.08 hrs Surf.Area= 76 sf Storage= 124 cf

Plug-Flow detention time= 2.1 min calculated for 0.712 af (100% of inflow)  
 Center-of-Mass det. time= 1.2 min ( 763.1 - 761.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	140 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
32.00	32	0	0
34.50	80	140	140

Device	Routing	Invert	Outlet Devices
#1	Primary	33.00'	3.0' long x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Primary OutFlow** Max=9.24 cfs @ 12.08 hrs HW=34.30' TW=33.79' (Dynamic Tailwater)

↑1=Broad-Crested Rectangular Weir (Weir Controls 9.24 cfs @ 2.37 fps)

### Summary for Pond 3: CB-3

Inflow Area = 0.386 ac, 100.00% Impervious, Inflow Depth > 5.26" for 25-year event  
 Inflow = 2.15 cfs @ 12.07 hrs, Volume= 0.169 af  
 Outflow = 2.15 cfs @ 12.07 hrs, Volume= 0.169 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.15 cfs @ 12.07 hrs, Volume= 0.169 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 38.99' @ 12.08 hrs  
 Flood Elev= 41.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.00'	12.0" Vert. Orifice/Grate C= 0.600

**Primary OutFlow** Max=2.15 cfs @ 12.07 hrs HW=38.98' TW=38.66' (Dynamic Tailwater)

↑1=Orifice/Grate (Orifice Controls 2.15 cfs @ 2.75 fps)

### Summary for Pond 4: CB-4

Inflow Area = 1.719 ac, 86.68% Impervious, Inflow Depth = 4.97" for 25-year event  
 Inflow = 9.26 cfs @ 12.08 hrs, Volume= 0.712 af  
 Outflow = 9.26 cfs @ 12.08 hrs, Volume= 0.712 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.29 cfs @ 12.08 hrs, Volume= 0.569 af  
 Secondary = 6.96 cfs @ 12.08 hrs, Volume= 0.144 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 35.99' @ 12.08 hrs  
 Flood Elev= 39.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	8.0" Vert. Orifice/Grate C= 0.600
#2	Device 3	35.50'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 1.6' Crest Height
#3	Secondary	33.80'	15.0" Vert. Orifice/Grate C= 0.600

**Primary OutFlow** Max=2.29 cfs @ 12.08 hrs HW=35.99' TW=0.00' (Dynamic Tailwater)

↑1=Orifice/Grate (Orifice Controls 2.29 cfs @ 6.57 fps)

**Secondary OutFlow** Max=6.96 cfs @ 12.08 hrs HW=35.99' TW=34.60' (Dynamic Tailwater)

↑3=Orifice/Grate (Passes 6.96 cfs of 6.98 cfs potential flow)

↑2=Sharp-Crested Rectangular Weir (Weir Controls 6.96 cfs @ 2.39 fps)

**Summary for Pond DMH-1: DMH-1**

Inflow Area = 0.933 ac, 83.17% Impervious, Inflow Depth = 4.93" for 25-year event  
 Inflow = 4.98 cfs @ 12.08 hrs, Volume= 0.383 af  
 Outflow = 4.98 cfs @ 12.08 hrs, Volume= 0.383 af, Atten= 0%, Lag= 0.0 min  
 Primary = 4.98 cfs @ 12.08 hrs, Volume= 0.383 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 39.11' @ 12.08 hrs  
 Flood Elev= 41.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.80'	12.0" Vert. Orifice/Grate C= 0.600

**Primary OutFlow** Max=4.97 cfs @ 12.08 hrs HW=39.10' TW=37.37' (Dynamic Tailwater)  
 1=Orifice/Grate (Orifice Controls 4.97 cfs @ 6.33 fps)

**Summary for Pond HIL:**

Inflow Area = 1.719 ac, 86.68% Impervious, Inflow Depth = 3.97" for 25-year event  
 Inflow = 2.29 cfs @ 12.08 hrs, Volume= 0.569 af  
 Primary = 2.29 cfs @ 12.08 hrs, Volume= 0.569 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4

**Summary for Pond SP1:**

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 4.92" for 25-year event  
 Inflow = 0.58 cfs @ 12.07 hrs, Volume= 0.043 af  
 Primary = 0.58 cfs @ 12.07 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4

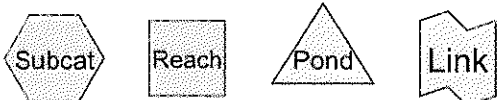
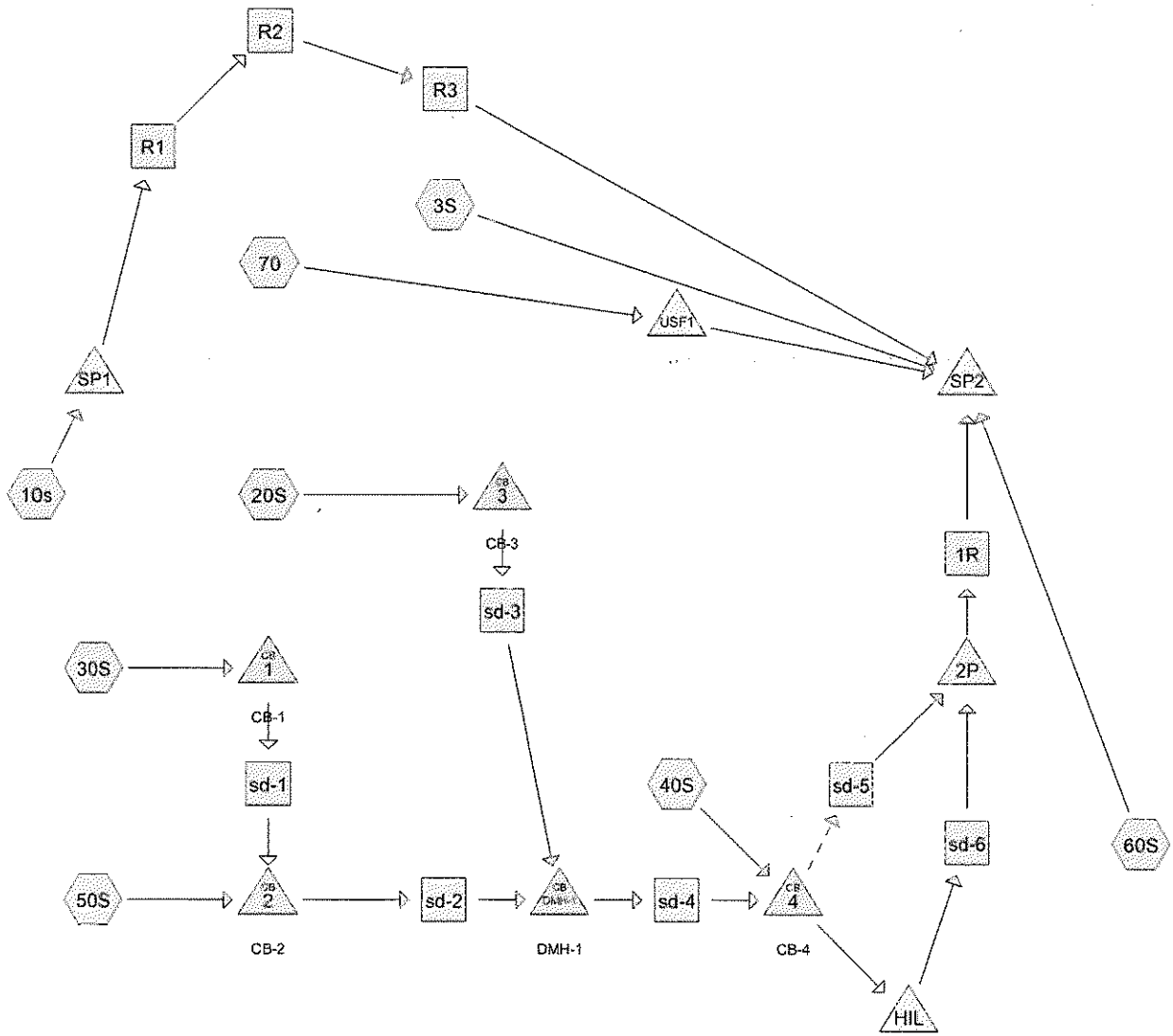
**Summary for Pond SP2:**

Inflow Area = 3.710 ac, 44.04% Impervious, Inflow Depth = 4.16" for 25-year event  
 Inflow = 16.86 cfs @ 12.09 hrs, Volume= 1.285 af  
 Primary = 16.86 cfs @ 12.09 hrs, Volume= 1.285 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 4

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## **Post-development HydroCAD Output**



**Routing Diagram for 07548-POST-2015**  
 Prepared by Sebago Technics, Printed 7/8/2015  
 HydroCAD® 10.00-15 s/n 01856 © 2015 HydroCAD Software Solutions LLC

**Area Listing (all nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
1.304	80	>75% Grass cover, Good, HSG D (3S, 10s, 30S, 40S, 50S, 60S, 70)
1.483	98	Paved parking & roofs (20S, 30S, 40S, 50S)
0.228	98	Paved parking, HSG D (3S, 70)
0.140	91	RIP RAP (GRAVEL HSG D) (60S)
0.090	98	ROAD AND SIDEWALK (10s)
0.465	77	Woods, Good, HSG D (3S)
<b>3.710</b>	<b>89</b>	<b>TOTAL AREA</b>



**Soil Listing (all nodes)**

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
2.137	HSG D	3S, 10s, 30S, 40S, 50S, 60S, 70
1.573	Other	10s, 20S, 30S, 40S, 50S

**Summary for Subcatchment 3S:**

Runoff = 0.94 cfs @ 12.11 hrs, Volume= 0.072 af, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
* 0.054	98	Paved parking, HSG D
0.465	77	Woods, Good, HSG D
0.210	80	>75% Grass cover, Good, HSG D
0.729	79	Weighted Average
0.675		92.59% Pervious Area
0.054		7.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	38	0.0630	0.21		<b>Sheet Flow, A to B</b> Grass: Short n= 0.150 P2= 3.00"
0.9	52	0.0200	0.99		<b>Shallow Concentrated Flow, B to C</b> Short Grass Pasture Kv= 7.0 fps
0.2	146	0.1670	10.39	25.96	<b>Trap/Vee/Rect Channel Flow, C to D</b> Bot.W=0.00' D=1.00' Z= 3.0 & 2.0 '/' Top.W=5.00' n= 0.035
3.6	430	0.0050	2.01	6.03	<b>Trap/Vee/Rect Channel Flow, D to E</b> Bot.W=1.00' D=1.00' Z= 2.0 '/' Top.W=5.00' n= 0.035
7.6	666	Total			

**Summary for Subcatchment 10s:**

Runoff = 0.30 cfs @ 12.07 hrs, Volume= 0.022 af, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
* 0.090	98	ROAD AND SIDEWALK
0.016	80	>75% Grass cover, Good, HSG D
0.106	95	Weighted Average
0.016		15.09% Pervious Area
0.090		84.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	16	0.0200	0.92		<b>Sheet Flow, A TO B</b> Smooth surfaces n= 0.011 P2= 3.00"
1.2	134	0.0400	1.86		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
0.2	53	0.0400	4.06		<b>Shallow Concentrated Flow, C TO D</b> Paved Kv= 20.3 fps
3.3					<b>Direct Entry,</b>
5.0	203	Total			

**Summary for Subcatchment 20S:**

Runoff = 1.14 cfs @ 12.07 hrs, Volume= 0.087 af, Depth= 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.379	98	Paved parking & roofs
0.379		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	151	0.0310	1.72		<b>Sheet Flow, A TO B</b> Smooth surfaces n= 0.011 P2= 3.00"
0.6	130	0.0300	3.52		<b>Shallow Concentrated Flow, B TO C</b> Paved Kv= 20.3 fps
2.9					<b>Direct Entry,</b>
5.0	281	Total			

**Summary for Subcatchment 30S:**

Runoff = 0.66 cfs @ 12.07 hrs, Volume= 0.047 af, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.180	98	Paved parking & roofs
0.069	80	>75% Grass cover, Good, HSG D
0.249	93	Weighted Average
0.069		27.71% Pervious Area
0.180		72.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	23	0.0170	0.12		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
0.7	48	0.0200	1.15		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
1.0					<b>Direct Entry,</b>
5.0	71	Total			

**Summary for Subcatchment 40S:**

Runoff = 2.28 cfs @ 12.07 hrs, Volume= 0.167 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.714	98	Paved parking & roofs
0.072	80	>75% Grass cover, Good, HSG D
0.786	96	Weighted Average
0.072		9.16% Pervious Area
0.714		90.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	18	0.0200	0.12		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
1.6	122	0.0170	1.30		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
0.3	46	0.0200	2.87		<b>Shallow Concentrated Flow, C TO D</b> Paved Kv= 20.3 fps
0.5					<b>Direct Entry,</b>
5.0	186	Total			

**Summary for Subcatchment 50S:**

Runoff = 0.78 cfs @ 12.08 hrs, Volume= 0.056 af, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.210	98	Paved parking & roofs
0.088	80	>75% Grass cover, Good, HSG D
0.298	93	Weighted Average
0.088		29.53% Pervious Area
0.210		70.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	36	0.0170	0.13		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
0.6	37	0.0200	1.09		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
5.4	73	Total			

**Summary for Subcatchment 60S:**

Runoff = 1.38 cfs @ 12.08 hrs, Volume= 0.095 af, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.684	80	>75% Grass cover, Good, HSG D
0.140	91	RIP RAP (GRAVEL HSG D)
0.824	82	Weighted Average
0.824		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	50	0.0560	0.22		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
0.5	338	0.0870	10.82	216.31	<b>Trap/Vee/Rect Channel Flow, B TO C</b> Bot.W=0.00' D=2.00' Z= 5.0 '/' Top.W=20.00' n= 0.040
0.5					<b>Direct Entry,</b>
4.9	388	Total			

**Summary for Subcatchment 70:**

Runoff = 0.78 cfs @ 12.07 hrs, Volume= 0.054 af, Depth= 1.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.174	98	Paved parking, HSG D
0.165	80	>75% Grass cover, Good, HSG D
0.339	89	Weighted Average
0.165		48.67% Pervious Area
0.174		51.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	120	0.0400	1.82		<b>Sheet Flow, A to B</b> Smooth surfaces n= 0.011 P2= 3.00"
3.9					<b>Direct Entry,</b>
5.0	120	Total			

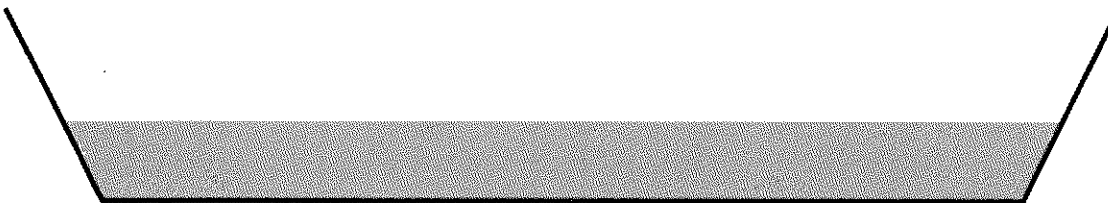
**Summary for Reach 1R:**

Inflow Area = 1.712 ac, 86.62% Impervious, Inflow Depth = 2.50" for 2-YEAR event  
 Inflow = 4.79 cfs @ 12.08 hrs, Volume= 0.356 af  
 Outflow = 4.76 cfs @ 12.09 hrs, Volume= 0.356 af, Atten= 1%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 1.45 fps, Min. Travel Time= 0.8 min  
 Avg. Velocity = 0.35 fps, Avg. Travel Time= 3.3 min

Peak Storage= 230 cf @ 12.09 hrs  
 Average Depth at Peak Storage= 0.52'  
 Bank-Full Depth= 1.25' Flow Area= 8.3 sf, Capacity= 19.42 cfs

6.00' x 1.25' deep channel, n= 0.300  
 Side Slope Z-value= 0.5 '/' Top Width= 7.25'  
 Length= 70.0' Slope= 0.2429 '/'  
 Inlet Invert= 33.00', Outlet Invert= 16.00'



**Summary for Reach R1:**

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 2.45" for 2-YEAR event  
 Inflow = 0.30 cfs @ 12.07 hrs, Volume= 0.022 af  
 Outflow = 0.28 cfs @ 12.10 hrs, Volume= 0.022 af, Atten= 6%, Lag= 1.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 0.73 fps, Min. Travel Time= 2.7 min  
 Avg. Velocity = 0.22 fps, Avg. Travel Time= 9.0 min

Peak Storage= 46 cf @ 12.10 hrs  
 Average Depth at Peak Storage= 0.04'  
 Bank-Full Depth= 0.50' Flow Area= 7.5 sf, Capacity= 26.14 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds  
 Side Slope Z-value= 10.0 '/' Top Width= 20.00'  
 Length= 120.0' Slope= 0.0250 '/'  
 Inlet Invert= 46.00', Outlet Invert= 43.00'



**Summary for Reach R2:**

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 2.45" for 2-YEAR event  
 Inflow = 0.28 cfs @ 12.10 hrs, Volume= 0.022 af  
 Outflow = 0.28 cfs @ 12.11 hrs, Volume= 0.022 af, Atten= 1%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 2.17 fps, Min. Travel Time= 1.1 min  
 Avg. Velocity = 0.74 fps, Avg. Travel Time= 3.3 min

Peak Storage= 19 cf @ 12.11 hrs  
 Average Depth at Peak Storage= 0.06'  
 Bank-Full Depth= 1.00' Flow Area= 4.5 sf, Capacity= 48.16 cfs

2.00' x 1.00' deep channel, n= 0.035  
 Side Slope Z-value= 3.0 2.0 '/' Top Width= 7.00'  
 Length= 146.0' Slope= 0.1233 '/'  
 Inlet Invert= 43.00', Outlet Invert= 25.00'



**Summary for Reach R3:**

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 2.45" for 2-YEAR event  
 Inflow = 0.28 cfs @ 12.11 hrs, Volume= 0.022 af  
 Outflow = 0.25 cfs @ 12.15 hrs, Volume= 0.022 af, Atten= 10%, Lag= 2.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 1.79 fps, Min. Travel Time= 4.0 min  
 Avg. Velocity = 0.53 fps, Avg. Travel Time= 13.6 min

Peak Storage= 61 cf @ 12.15 hrs  
 Average Depth at Peak Storage= 0.11'  
 Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 17.46 cfs

1.00' x 1.00' deep channel, n= 0.035  
Side Slope Z-value= 2.0 '/' Top Width= 5.00'  
Length= 430.0' Slope= 0.0419 '/'  
Inlet Invert= 25.00', Outlet Invert= 7.00'



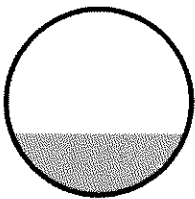
**Summary for Reach sd-1:**

Inflow Area = 0.249 ac, 72.29% Impervious, Inflow Depth = 2.25" for 2-YEAR event  
Inflow = 0.66 cfs @ 12.07 hrs, Volume= 0.047 af  
Outflow = 0.66 cfs @ 12.08 hrs, Volume= 0.047 af, Atten= 1%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Max. Velocity= 2.91 fps, Min. Travel Time= 0.7 min  
Avg. Velocity = 0.95 fps, Avg. Travel Time= 2.0 min

Peak Storage= 26 cf @ 12.08 hrs  
Average Depth at Peak Storage= 0.33'  
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.79 cfs

12.0" Round Pipe  
n= 0.012  
Length= 115.0' Slope= 0.0052 '/'  
Inlet Invert= 39.80', Outlet Invert= 39.20'



**Summary for Reach sd-2:**

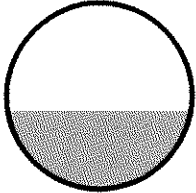
Inflow Area = 0.547 ac, 71.30% Impervious, Inflow Depth = 2.25" for 2-YEAR event  
Inflow = 1.44 cfs @ 12.08 hrs, Volume= 0.103 af  
Outflow = 1.43 cfs @ 12.09 hrs, Volume= 0.103 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Max. Velocity= 4.55 fps, Min. Travel Time= 0.8 min  
Avg. Velocity = 1.49 fps, Avg. Travel Time= 2.5 min

Peak Storage= 69 cf @ 12.09 hrs  
Average Depth at Peak Storage= 0.42'  
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs



12.0" Round Pipe  
n= 0.012  
Length= 221.0' Slope= 0.0100 '/'  
Inlet Invert= 39.10', Outlet Invert= 36.89'



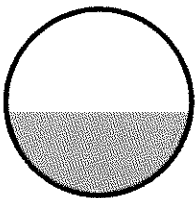
**Summary for Reach sd-3:**

Inflow Area = 0.379 ac, 100.00% Impervious, Inflow Depth = 2.77" for 2-YEAR event  
Inflow = 1.14 cfs @ 12.07 hrs, Volume= 0.087 af  
Outflow = 1.12 cfs @ 12.08 hrs, Volume= 0.087 af, Atten= 2%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Max. Velocity= 3.30 fps, Min. Travel Time= 1.1 min  
Avg. Velocity = 1.08 fps, Avg. Travel Time= 3.4 min

Peak Storage= 75 cf @ 12.08 hrs  
Average Depth at Peak Storage= 0.45'  
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.73 cfs

12.0" Round Pipe  
n= 0.012  
Length= 220.0' Slope= 0.0050 '/'  
Inlet Invert= 38.00', Outlet Invert= 36.90'



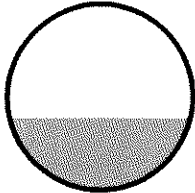
**Summary for Reach sd-4:**

Inflow Area = 0.926 ac, 83.05% Impervious, Inflow Depth = 2.46" for 2-YEAR event  
Inflow = 2.55 cfs @ 12.09 hrs, Volume= 0.190 af  
Outflow = 2.55 cfs @ 12.09 hrs, Volume= 0.190 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Max. Velocity= 9.08 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 2.83 fps, Avg. Travel Time= 0.4 min

Peak Storage= 19 cf @ 12.09 hrs  
 Average Depth at Peak Storage= 0.39'  
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 8.03 cfs

12.0" Round Pipe  
 n= 0.012  
 Length= 67.0' Slope= 0.0433 1/'  
 Inlet Invert= 36.80', Outlet Invert= 33.90'



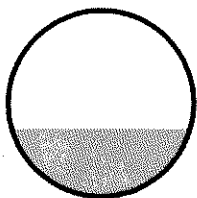
**Summary for Reach sd-5:**

Inflow = 2.65 cfs @ 12.08 hrs, Volume= 0.033 af  
 Outflow = 2.65 cfs @ 12.08 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 6.60 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 4.53 fps, Avg. Travel Time= 0.0 min

Peak Storage= 4 cf @ 12.08 hrs  
 Average Depth at Peak Storage= 0.45'  
 Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.44 cfs

15.0" Round Pipe  
 n= 0.012  
 Length= 11.0' Slope= 0.0182 1/'  
 Inlet Invert= 33.80', Outlet Invert= 33.60'



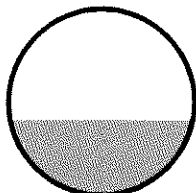
**Summary for Reach sd-6:**

Inflow Area = 1.712 ac, 86.62% Impervious, Inflow Depth = 2.27" for 2-YEAR event  
 Inflow = 2.14 cfs @ 12.08 hrs, Volume= 0.325 af  
 Outflow = 2.14 cfs @ 12.08 hrs, Volume= 0.325 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 7.20 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 2.82 fps, Avg. Travel Time= 0.1 min

Peak Storage= 7 cf @ 12.08 hrs  
 Average Depth at Peak Storage= 0.40'  
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.23 cfs

12.0" Round Pipe  
 n= 0.012  
 Length= 23.0' Slope= 0.0261 '/'  
 Inlet Invert= 34.20', Outlet Invert= 33.60'



**Summary for Pond 1: CB-1**

Inflow Area = 0.249 ac, 72.29% Impervious, Inflow Depth = 2.25" for 2-YEAR event  
 Inflow = 0.66 cfs @ 12.07 hrs, Volume= 0.047 af  
 Outflow = 0.66 cfs @ 12.07 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min  
 Primary = 0.66 cfs @ 12.07 hrs, Volume= 0.047 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 40.27' @ 12.08 hrs  
 Flood Elev= 42.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	39.80'	12.0" Vert. Orifice/Grate C= 0.600

**Primary OutFlow** Max=0.65 cfs @ 12.07 hrs HW=40.27' TW=40.13' (Dynamic Tailwater)  
 ↳1=Orifice/Grate (Orifice Controls 0.65 cfs @ 1.80 fps)

**Summary for Pond 2: CB-2**

Inflow Area = 0.547 ac, 71.30% Impervious, Inflow Depth = 2.25" for 2-YEAR event  
 Inflow = 1.44 cfs @ 12.08 hrs, Volume= 0.103 af  
 Outflow = 1.44 cfs @ 12.08 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.44 cfs @ 12.08 hrs, Volume= 0.103 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 39.79' @ 12.08 hrs  
 Flood Elev= 42.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	39.10'	12.0" Vert. Orifice/Grate C= 0.600

**Primary OutFlow** Max=1.42 cfs @ 12.08 hrs HW=39.78' TW=39.52' (Dynamic Tailwater)  
 ↳1=Orifice/Grate (Orifice Controls 1.42 cfs @ 2.48 fps)

**Summary for Pond 2P:**

Inflow Area = 1.712 ac, 86.62% Impervious, Inflow Depth = 2.50" for 2-YEAR event  
 Inflow = 4.80 cfs @ 12.08 hrs, Volume= 0.357 af  
 Outflow = 4.79 cfs @ 12.08 hrs, Volume= 0.356 af, Atten= 0%, Lag= 0.1 min  
 Primary = 4.79 cfs @ 12.08 hrs, Volume= 0.356 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 33.84' @ 12.09 hrs Surf.Area= 67 sf Storage= 91 cf

Plug-Flow detention time= 3.7 min calculated for 0.356 af (100% of inflow)  
 Center-of-Mass det. time= 2.0 min ( 779.5 - 777.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	140 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
32.00	32	0	0
34.50	80	140	140

Device	Routing	Invert	Outlet Devices
#1	Primary	33.00'	<b>3.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b> 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Primary OutFlow** Max=4.74 cfs @ 12.08 hrs HW=33.84' TW=33.52' (Dynamic Tailwater)  
 ↳1=Broad-Crested Rectangular Weir (Weir Controls 4.74 cfs @ 1.89 fps)

**Summary for Pond 3: CB-3**

Inflow Area = 0.379 ac,100.00% Impervious, Inflow Depth = 2.77" for 2-YEAR event  
 Inflow = 1.14 cfs @ 12.07 hrs, Volume= 0.087 af  
 Outflow = 1.14 cfs @ 12.07 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.14 cfs @ 12.07 hrs, Volume= 0.087 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 38.64' @ 12.08 hrs  
 Flood Elev= 41.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.00'	12.0" Vert. Orifice/Grate C= 0.600

**Primary OutFlow** Max=1.12 cfs @ 12.07 hrs HW=38.64' TW=38.44' (Dynamic Tailwater)  
 ↳1=Orifice/Grate (Orifice Controls 1.12 cfs @ 2.12 fps)

**Summary for Pond 4: CB-4**

Inflow Area = 1.712 ac, 86.62% Impervious, Inflow Depth = 2.50" for 2-YEAR event  
 Inflow = 4.80 cfs @ 12.08 hrs, Volume= 0.357 af  
 Outflow = 4.80 cfs @ 12.08 hrs, Volume= 0.357 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.14 cfs @ 12.08 hrs, Volume= 0.325 af  
 Secondary = 2.65 cfs @ 12.08 hrs, Volume= 0.033 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 35.76' @ 12.08 hrs  
 Flood Elev= 39.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	8.0" Vert. Orifice/Grate C= 0.600
#2	Device 3	35.50'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 1.6' Crest Height
#3	Secondary	33.80'	15.0" Vert. Orifice/Grate C= 0.600

**Primary OutFlow** Max=2.14 cfs @ 12.08 hrs HW=35.76' TW=0.00' (Dynamic Tailwater)  
 ↑1=Orifice/Grate (Orifice Controls 2.14 cfs @ 6.14 fps)

**Secondary OutFlow** Max=2.65 cfs @ 12.08 hrs HW=35.76' TW=34.25' (Dynamic Tailwater)  
 ↑3=Orifice/Grate (Passes 2.65 cfs of 6.83 cfs potential flow)  
 ↑2=Sharp-Crested Rectangular Weir (Weir Controls 2.65 cfs @ 1.71 fps)

**Summary for Pond DMH-1: DMH-1**

Inflow Area = 0.926 ac, 83.05% Impervious, Inflow Depth = 2.46" for 2-YEAR event  
 Inflow = 2.55 cfs @ 12.09 hrs, Volume= 0.190 af  
 Outflow = 2.55 cfs @ 12.09 hrs, Volume= 0.190 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.55 cfs @ 12.09 hrs, Volume= 0.190 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 37.75' @ 12.09 hrs  
 Flood Elev= 41.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.80'	12.0" Vert. Orifice/Grate C= 0.600

**Primary OutFlow** Max=2.55 cfs @ 12.09 hrs HW=37.75' TW=37.19' (Dynamic Tailwater)  
 ↑1=Orifice/Grate (Orifice Controls 2.55 cfs @ 3.31 fps)

**Summary for Pond HIL:**

Inflow Area = 1.712 ac, 86.62% Impervious, Inflow Depth = 2.27" for 2-YEAR event  
 Inflow = 2.14 cfs @ 12.08 hrs, Volume= 0.325 af  
 Primary = 2.14 cfs @ 12.08 hrs, Volume= 0.325 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

**Summary for Pond SP1:**

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 2.45" for 2-YEAR event  
 Inflow = 0.30 cfs @ 12.07 hrs, Volume= 0.022 af  
 Primary = 0.30 cfs @ 12.07 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

**Summary for Pond SP2:**

Inflow Area = 3.710 ac, 48.54% Impervious, Inflow Depth = 1.94" for 2-YEAR event  
 Inflow = 7.24 cfs @ 12.09 hrs, Volume= 0.599 af  
 Primary = 7.24 cfs @ 12.09 hrs, Volume= 0.599 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

**Summary for Pond USF1:**

Inflow Area = 0.339 ac, 51.33% Impervious, Inflow Depth = 1.90" for 2-YEAR event  
 Inflow = 0.78 cfs @ 12.07 hrs, Volume= 0.054 af  
 Outflow = 0.48 cfs @ 12.18 hrs, Volume= 0.054 af, Atten= 38%, Lag= 6.7 min  
 Primary = 0.48 cfs @ 12.18 hrs, Volume= 0.054 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 37.01' @ 12.18 hrs Surf.Area= 1,103 sf Storage= 810 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 343.2 min ( 1,155.9 - 812.7 )

Volume	Invert	Avail.Storage	Storage Description		
#1	36.00'	2,194 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
36.00	540	174.0	0	0	540
37.00	1,100	212.0	804	804	1,723
38.00	1,702	235.0	1,390	2,194	2,571

Device	Routing	Invert	Outlet Devices
#1	Primary	33.50'	<b>12.0" Round Culvert</b> L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 33.50' / 33.35' S= 0.0050 '/ Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	33.67'	<b>0.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	37.00'	<b>0.5" x 9.0" Horiz. Orifice/Grate X 36.00</b> C= 0.600 in 30.0" Grate (23% open area)
#4	Secondary	37.50'	<b>10.0' long x 12.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

**Primary OutFlow** Max=0.44 cfs @ 12.18 hrs HW=37.01' TW=0.00' (Dynamic Tailwater)

- ↑1=Culvert (Passes 0.44 cfs of 6.56 cfs potential flow)
- ↑2=Orifice/Grate (Orifice Controls 0.02 cfs @ 8.76 fps)
- ↑3=Orifice/Grate (Orifice Controls 0.42 cfs @ 0.38 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=36.00' TW=0.00' (Dynamic Tailwater)

- ↑4=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Subcatchment 3S:**

Runoff = 2.06 cfs @ 12.11 hrs, Volume= 0.155 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-YEAR Rainfall=4.70"

Area (ac)	CN	Description
* 0.054	98	Paved parking, HSG D
0.465	77	Woods, Good, HSG D
0.210	80	>75% Grass cover, Good, HSG D
0.729	79	Weighted Average
0.675		92.59% Pervious Area
0.054		7.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	38	0.0630	0.21		<b>Sheet Flow, A to B</b> Grass: Short n= 0.150 P2= 3.00"
0.9	52	0.0200	0.99		<b>Shallow Concentrated Flow, B to C</b> Short Grass Pasture Kv= 7.0 fps
0.2	146	0.1670	10.39	25.96	<b>Trap/Vee/Rect Channel Flow, C to D</b> Bot.W=0.00' D=1.00' Z= 3.0 & 2.0 '/' Top.W=5.00' n= 0.035
3.6	430	0.0050	2.01	6.03	<b>Trap/Vee/Rect Channel Flow, D to E</b> Bot.W=1.00' D=1.00' Z= 2.0 '/' Top.W=5.00' n= 0.035
7.6	666	Total			

**Summary for Subcatchment 10s:**

Runoff = 0.49 cfs @ 12.07 hrs, Volume= 0.036 af, Depth= 4.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-YEAR Rainfall=4.70"

Area (ac)	CN	Description
* 0.090	98	ROAD AND SIDEWALK
0.016	80	>75% Grass cover, Good, HSG D
0.106	95	Weighted Average
0.016		15.09% Pervious Area
0.090		84.91% Impervious Area



Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	16	0.0200	0.92		<b>Sheet Flow, A TO B</b> Smooth surfaces n= 0.011 P2= 3.00"
1.2	134	0.0400	1.86		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
0.2	53	0.0400	4.06		<b>Shallow Concentrated Flow, C TO D</b> Paved Kv= 20.3 fps
3.3					<b>Direct Entry,</b>
5.0	203	Total			

**Summary for Subcatchment 20S:**

Runoff = 1.80 cfs @ 12.07 hrs, Volume= 0.141 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YEAR Rainfall=4.70"

Area (ac)	CN	Description
0.379	98	Paved parking & roofs
0.379		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	151	0.0310	1.72		<b>Sheet Flow, A TO B</b> Smooth surfaces n= 0.011 P2= 3.00"
0.6	130	0.0300	3.52		<b>Shallow Concentrated Flow, B TO C</b> Paved Kv= 20.3 fps
2.9					<b>Direct Entry,</b>
5.0	281	Total			

**Summary for Subcatchment 30S:**

Runoff = 1.11 cfs @ 12.07 hrs, Volume= 0.081 af, Depth= 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YEAR Rainfall=4.70"

Area (ac)	CN	Description
0.180	98	Paved parking & roofs
0.069	80	>75% Grass cover, Good, HSG D
0.249	93	Weighted Average
0.069		27.71% Pervious Area
0.180		72.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	23	0.0170	0.12		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
0.7	48	0.0200	1.15		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
1.0					<b>Direct Entry,</b>
5.0	71	Total			

**Summary for Subcatchment 40S:**

Runoff = 3.67 cfs @ 12.07 hrs, Volume= 0.277 af, Depth= 4.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YEAR Rainfall=4.70"

Area (ac)	CN	Description
0.714	98	Paved parking & roofs
0.072	80	>75% Grass cover, Good, HSG D
0.786	96	Weighted Average
0.072		9.16% Pervious Area
0.714		90.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	18	0.0200	0.12		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
1.6	122	0.0170	1.30		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
0.3	46	0.0200	2.87		<b>Shallow Concentrated Flow, C TO D</b> Paved Kv= 20.3 fps
0.5					<b>Direct Entry,</b>
5.0	186	Total			

**Summary for Subcatchment 50S:**

Runoff = 1.31 cfs @ 12.08 hrs, Volume= 0.097 af, Depth= 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YEAR Rainfall=4.70"

Area (ac)	CN	Description
0.210	98	Paved parking & roofs
0.088	80	>75% Grass cover, Good, HSG D
0.298	93	Weighted Average
0.088		29.53% Pervious Area
0.210		70.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	36	0.0170	0.13		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
0.6	37	0.0200	1.09		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
5.4	73	Total			

**Summary for Subcatchment 60S:**

Runoff = 2.82 cfs @ 12.07 hrs, Volume= 0.193 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YEAR Rainfall=4.70"

Area (ac)	CN	Description
0.684	80	>75% Grass cover, Good, HSG D
0.140	91	RIP RAP (GRAVEL HSG D)
0.824	82	Weighted Average
0.824		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	50	0.0560	0.22		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
0.5	338	0.0870	10.82	216.31	<b>Trap/Vee/Rect Channel Flow, B TO C</b> Bot.W=0.00' D=2.00' Z= 5.0 '/' Top.W=20.00' n= 0.040
0.5					<b>Direct Entry,</b>
4.9	388	Total			

**Summary for Subcatchment 70:**

Runoff = 1.40 cfs @ 12.07 hrs, Volume= 0.098 af, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YEAR Rainfall=4.70"

Area (ac)	CN	Description
0.174	98	Paved parking, HSG D
0.165	80	>75% Grass cover, Good, HSG D
0.339	89	Weighted Average
0.165		48.67% Pervious Area
0.174		51.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	120	0.0400	1.82		<b>Sheet Flow, A to B</b> Smooth surfaces n= 0.011 P2= 3.00"
3.9					<b>Direct Entry,</b>
5.0	120	Total			

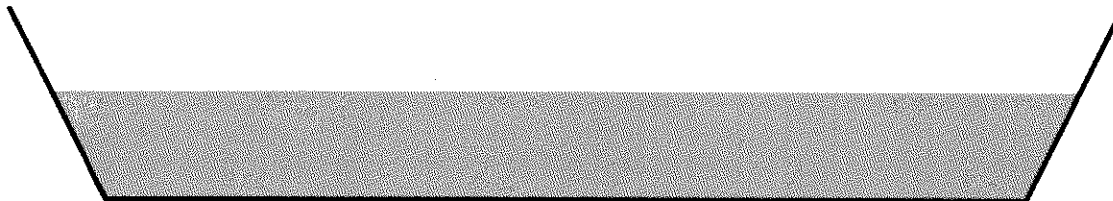
**Summary for Reach 1R:**

Inflow Area = 1.712 ac, 86.62% Impervious, Inflow Depth = 4.17" for 10-YEAR event  
 Inflow = 7.80 cfs @ 12.08 hrs, Volume= 0.595 af  
 Outflow = 7.76 cfs @ 12.09 hrs, Volume= 0.595 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 1.72 fps, Min. Travel Time= 0.7 min  
 Avg. Velocity = 0.42 fps, Avg. Travel Time= 2.8 min

Peak Storage= 315 cf @ 12.09 hrs  
 Average Depth at Peak Storage= 0.71'  
 Bank-Full Depth= 1.25' Flow Area= 8.3 sf, Capacity= 19.42 cfs

6.00' x 1.25' deep channel, n= 0.300  
 Side Slope Z-value= 0.5 '/' Top Width= 7.25'  
 Length= 70.0' Slope= 0.2429 '/'  
 Inlet Invert= 33.00', Outlet Invert= 16.00'



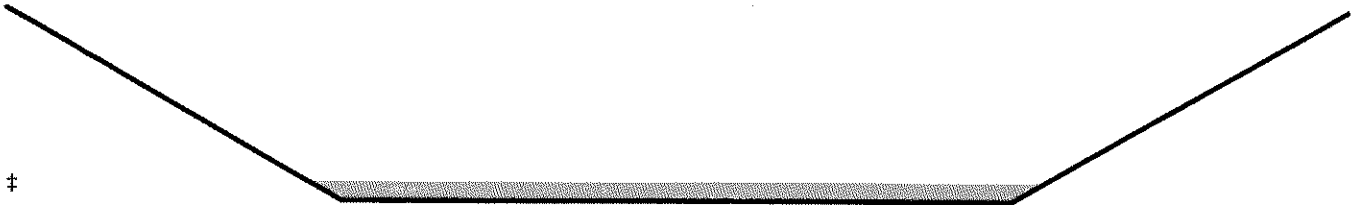
**Summary for Reach R1:**

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 4.12" for 10-YEAR event  
 Inflow = 0.49 cfs @ 12.07 hrs, Volume= 0.036 af  
 Outflow = 0.47 cfs @ 12.09 hrs, Volume= 0.036 af, Atten= 4%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 0.89 fps, Min. Travel Time= 2.3 min  
 Avg. Velocity = 0.24 fps, Avg. Travel Time= 8.3 min

Peak Storage= 63 cf @ 12.09 hrs  
 Average Depth at Peak Storage= 0.05'  
 Bank-Full Depth= 0.50' Flow Area= 7.5 sf, Capacity= 26.14 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds  
 Side Slope Z-value= 10.0 '/' Top Width= 20.00'  
 Length= 120.0' Slope= 0.0250 '/'  
 Inlet Invert= 46.00', Outlet Invert= 43.00'



### Summary for Reach R2:

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 4.12" for 10-YEAR event  
 Inflow = 0.47 cfs @ 12.09 hrs, Volume= 0.036 af  
 Outflow = 0.46 cfs @ 12.10 hrs, Volume= 0.036 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 2.61 fps, Min. Travel Time= 0.9 min  
 Avg. Velocity = 0.79 fps, Avg. Travel Time= 3.1 min

Peak Storage= 26 cf @ 12.10 hrs  
 Average Depth at Peak Storage= 0.08'  
 Bank-Full Depth= 1.00' Flow Area= 4.5 sf, Capacity= 48.16 cfs

2.00' x 1.00' deep channel, n= 0.035  
 Side Slope Z-value= 3.0 2.0 '/' Top Width= 7.00'  
 Length= 146.0' Slope= 0.1233 '/'  
 Inlet Invert= 43.00', Outlet Invert= 25.00'



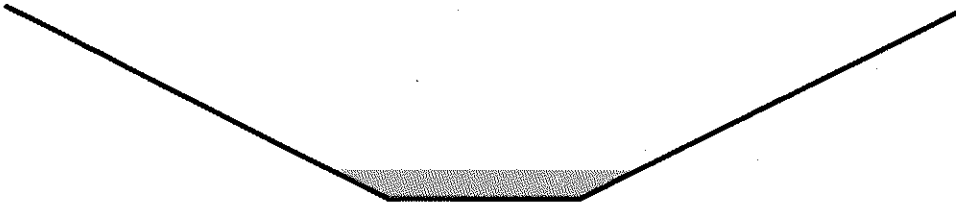
### Summary for Reach R3:

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 4.12" for 10-YEAR event  
 Inflow = 0.46 cfs @ 12.10 hrs, Volume= 0.036 af  
 Outflow = 0.43 cfs @ 12.14 hrs, Volume= 0.036 af, Atten= 8%, Lag= 2.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 2.11 fps, Min. Travel Time= 3.4 min  
 Avg. Velocity = 0.61 fps, Avg. Travel Time= 11.8 min

Peak Storage= 87 cf @ 12.14 hrs  
 Average Depth at Peak Storage= 0.15'  
 Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 17.46 cfs

1.00' x 1.00' deep channel,  $n = 0.035$   
 Side Slope Z-value= 2.0 '/' Top Width= 5.00'  
 Length= 430.0' Slope= 0.0419 '/'  
 Inlet Invert= 25.00', Outlet Invert= 7.00'



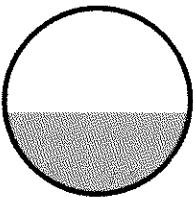
### Summary for Reach sd-1:

Inflow Area = 0.249 ac, 72.29% Impervious, Inflow Depth = 3.90" for 10-YEAR event  
 Inflow = 1.11 cfs @ 12.07 hrs, Volume= 0.081 af  
 Outflow = 1.11 cfs @ 12.08 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 3.35 fps, Min. Travel Time= 0.6 min  
 Avg. Velocity = 1.09 fps, Avg. Travel Time= 1.8 min

Peak Storage= 38 cf @ 12.08 hrs  
 Average Depth at Peak Storage= 0.44'  
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.79 cfs

12.0" Round Pipe  
 $n = 0.012$   
 Length= 115.0' Slope= 0.0052 '/'  
 Inlet Invert= 39.80', Outlet Invert= 39.20'



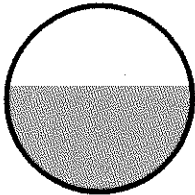
### Summary for Reach sd-2:

Inflow Area = 0.547 ac, 71.30% Impervious, Inflow Depth = 3.90" for 10-YEAR event  
 Inflow = 2.42 cfs @ 12.08 hrs, Volume= 0.178 af  
 Outflow = 2.41 cfs @ 12.09 hrs, Volume= 0.178 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 5.18 fps, Min. Travel Time= 0.7 min  
 Avg. Velocity = 1.72 fps, Avg. Travel Time= 2.1 min

Peak Storage= 103 cf @ 12.09 hrs  
 Average Depth at Peak Storage= 0.57'  
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe  
n= 0.012  
Length= 221.0' Slope= 0.0100 '/'  
Inlet Invert= 39.10', Outlet Invert= 36.89'



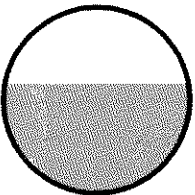
**Summary for Reach sd-3:**

Inflow Area = 0.379 ac, 100.00% Impervious, Inflow Depth = 4.46" for 10-YEAR event  
Inflow = 1.80 cfs @ 12.07 hrs, Volume= 0.141 af  
Outflow = 1.78 cfs @ 12.08 hrs, Volume= 0.141 af, Atten= 1%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Max. Velocity= 3.70 fps, Min. Travel Time= 1.0 min  
Avg. Velocity = 1.24 fps, Avg. Travel Time= 3.0 min

Peak Storage= 106 cf @ 12.08 hrs  
Average Depth at Peak Storage= 0.59'  
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.73 cfs

12.0" Round Pipe  
n= 0.012  
Length= 220.0' Slope= 0.0050 '/'  
Inlet Invert= 38.00', Outlet Invert= 36.90'



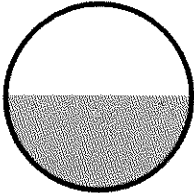
**Summary for Reach sd-4:**

Inflow Area = 0.926 ac, 83.05% Impervious, Inflow Depth = 4.13" for 10-YEAR event  
Inflow = 4.18 cfs @ 12.08 hrs, Volume= 0.319 af  
Outflow = 4.18 cfs @ 12.09 hrs, Volume= 0.319 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Max. Velocity= 10.33 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 3.31 fps, Avg. Travel Time= 0.3 min

Peak Storage= 27 cf @ 12.09 hrs  
Average Depth at Peak Storage= 0.51'  
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 8.03 cfs

12.0" Round Pipe  
n= 0.012  
Length= 67.0' Slope= 0.0433 '/'  
Inlet Invert= 36.80', Outlet Invert= 33.90'



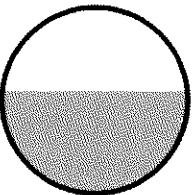
**Summary for Reach sd-5:**

Inflow = 5.56 cfs @ 12.08 hrs, Volume= 0.103 af  
Outflow = 5.56 cfs @ 12.08 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Max. Velocity= 8.00 fps, Min. Travel Time= 0.0 min  
Avg. Velocity = 5.20 fps, Avg. Travel Time= 0.0 min

Peak Storage= 8 cf @ 12.08 hrs  
Average Depth at Peak Storage= 0.69'  
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.44 cfs

15.0" Round Pipe  
n= 0.012  
Length= 11.0' Slope= 0.0182 '/'  
Inlet Invert= 33.80', Outlet Invert= 33.60'



**Summary for Reach sd-6:**

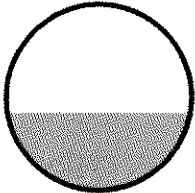
Inflow Area = 1.712 ac, 86.62% Impervious, Inflow Depth = 3.46" for 10-YEAR event  
Inflow = 2.25 cfs @ 12.08 hrs, Volume= 0.493 af  
Outflow = 2.25 cfs @ 12.08 hrs, Volume= 0.493 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Max. Velocity= 7.29 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 3.28 fps, Avg. Travel Time= 0.1 min



Peak Storage= 7 cf @ 12.08 hrs  
 Average Depth at Peak Storage= 0.42'  
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.23 cfs

12.0" Round Pipe  
 n= 0.012  
 Length= 23.0' Slope= 0.0261 1/'  
 Inlet Invert= 34.20', Outlet Invert= 33.60'



**Summary for Pond 1: CB-1**

Inflow Area = 0.249 ac, 72.29% Impervious, Inflow Depth = 3.90" for 10-YEAR event  
 Inflow = 1.11 cfs @ 12.07 hrs, Volume= 0.081 af  
 Outflow = 1.11 cfs @ 12.07 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.11 cfs @ 12.07 hrs, Volume= 0.081 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 40.43' @ 12.08 hrs  
 Flood Elev= 42.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	39.80'	12.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=1.10 cfs @ 12.07 hrs HW=40.43' TW=40.24' (Dynamic Tailwater)  
 ↑1=Orifice/Grate (Orifice Controls 1.10 cfs @ 2.11 fps)

**Summary for Pond 2: CB-2**

Inflow Area = 0.547 ac, 71.30% Impervious, Inflow Depth = 3.90" for 10-YEAR event  
 Inflow = 2.42 cfs @ 12.08 hrs, Volume= 0.178 af  
 Outflow = 2.42 cfs @ 12.08 hrs, Volume= 0.178 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.42 cfs @ 12.08 hrs, Volume= 0.178 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 40.08' @ 12.08 hrs  
 Flood Elev= 42.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	39.10'	12.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=2.39 cfs @ 12.08 hrs HW=40.08' TW=39.67' (Dynamic Tailwater)  
 ↑1=Orifice/Grate (Orifice Controls 2.39 cfs @ 3.07 fps)

**Summary for Pond 2P:**

Inflow Area = 1.712 ac, 86.62% Impervious, Inflow Depth = 4.18" for 10-YEAR event  
 Inflow = 7.81 cfs @ 12.08 hrs, Volume= 0.596 af  
 Outflow = 7.80 cfs @ 12.08 hrs, Volume= 0.595 af, Atten= 0%, Lag= 0.1 min  
 Primary = 7.80 cfs @ 12.08 hrs, Volume= 0.595 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 34.16' @ 12.09 hrs Surf.Area= 73 sf Storage= 114 cf

Plug-Flow detention time= 2.5 min calculated for 0.595 af (100% of inflow)  
 Center-of-Mass det. time= 1.4 min ( 767.0 - 765.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	140 cf	<b>Custom Stage Data (Prismatic) Listed below (Recalc)</b>
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
32.00	32	0	0
34.50	80	140	140

Device	Routing	Invert	Outlet Devices
#1	Primary	33.00'	<b>3.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b> 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Primary OutFlow** Max=7.74 cfs @ 12.08 hrs HW=34.16' TW=33.71' (Dynamic Tailwater)  
 ↳1=Broad-Crested Rectangular Weir (Weir Controls 7.74 cfs @ 2.23 fps)

**Summary for Pond 3: CB-3**

Inflow Area = 0.379 ac, 100.00% Impervious, Inflow Depth = 4.46" for 10-YEAR event  
 Inflow = 1.80 cfs @ 12.07 hrs, Volume= 0.141 af  
 Outflow = 1.80 cfs @ 12.07 hrs, Volume= 0.141 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.80 cfs @ 12.07 hrs, Volume= 0.141 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 38.85' @ 12.08 hrs  
 Flood Elev= 41.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.00'	<b>12.0" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=1.77 cfs @ 12.07 hrs HW=38.85' TW=38.58' (Dynamic Tailwater)  
 ↳1=Orifice/Grate (Orifice Controls 1.77 cfs @ 2.48 fps)

**Summary for Pond 4: CB-4**

Inflow Area = 1.712 ac, 86.62% Impervious, Inflow Depth = 4.18" for 10-YEAR event  
 Inflow = 7.81 cfs @ 12.08 hrs, Volume= 0.596 af  
 Outflow = 7.81 cfs @ 12.08 hrs, Volume= 0.596 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.25 cfs @ 12.08 hrs, Volume= 0.493 af  
 Secondary = 5.56 cfs @ 12.08 hrs, Volume= 0.103 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 35.93' @ 12.08 hrs  
 Flood Elev= 39.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	8.0" Vert. Orifice/Grate C= 0.600
#2	Device 3	35.50'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 1.6' Crest Height
#3	Secondary	33.80'	15.0" Vert. Orifice/Grate C= 0.600

**Primary OutFlow** Max=2.25 cfs @ 12.08 hrs HW=35.93' TW=0.00' (Dynamic Tailwater)  
 ↳1=Orifice/Grate (Orifice Controls 2.25 cfs @ 6.45 fps)

**Secondary OutFlow** Max=5.56 cfs @ 12.08 hrs HW=35.93' TW=34.49' (Dynamic Tailwater)  
 ↳3=Orifice/Grate (Passes 5.56 cfs of 7.08 cfs potential flow)  
 ↳2=Sharp-Crested Rectangular Weir (Weir Controls 5.56 cfs @ 2.20 fps)

**Summary for Pond DMH-1: DMH-1**

Inflow Area = 0.926 ac, 83.05% Impervious, Inflow Depth = 4.13" for 10-YEAR event  
 Inflow = 4.18 cfs @ 12.08 hrs, Volume= 0.319 af  
 Outflow = 4.18 cfs @ 12.08 hrs, Volume= 0.319 af, Atten= 0%, Lag= 0.0 min  
 Primary = 4.18 cfs @ 12.08 hrs, Volume= 0.319 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 38.53' @ 12.09 hrs  
 Flood Elev= 41.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.80'	12.0" Vert. Orifice/Grate C= 0.600

**Primary OutFlow** Max=4.17 cfs @ 12.08 hrs HW=38.53' TW=37.31' (Dynamic Tailwater)  
 ↳1=Orifice/Grate (Orifice Controls 4.17 cfs @ 5.31 fps)

**Summary for Pond HIL:**

Inflow Area = 1.712 ac, 86.62% Impervious, Inflow Depth = 3.46" for 10-YEAR event  
 Inflow = 2.25 cfs @ 12.08 hrs, Volume= 0.493 af  
 Primary = 2.25 cfs @ 12.08 hrs, Volume= 0.493 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

**Summary for Pond SP1:**

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 4.12" for 10-YEAR event  
 Inflow = 0.49 cfs @ 12.07 hrs, Volume= 0.036 af  
 Primary = 0.49 cfs @ 12.07 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

**Summary for Pond SP2:**

Inflow Area = 3.710 ac, 48.54% Impervious, Inflow Depth = 3.49" for 10-YEAR event  
 Inflow = 14.22 cfs @ 12.09 hrs, Volume= 1.078 af  
 Primary = 14.22 cfs @ 12.09 hrs, Volume= 1.078 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

**Summary for Pond USF1:**

Inflow Area = 0.339 ac, 51.33% Impervious, Inflow Depth = 3.49" for 10-YEAR event  
 Inflow = 1.40 cfs @ 12.07 hrs, Volume= 0.098 af  
 Outflow = 1.34 cfs @ 12.10 hrs, Volume= 0.098 af, Atten= 4%, Lag= 1.4 min  
 Primary = 1.34 cfs @ 12.10 hrs, Volume= 0.098 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Peak Elev= 37.06' @ 12.10 hrs Surf.Area= 1,132 sf Storage= 870 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 218.3 min ( 1,014.0 - 795.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	36.00'	2,194 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
36.00	540	174.0	0	0	540
37.00	1,100	212.0	804	804	1,723
38.00	1,702	235.0	1,390	2,194	2,571

Device	Routing	Invert	Outlet Devices
#1	Primary	33.50'	<b>12.0" Round Culvert</b> L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 33.50' / 33.35' S= 0.0050 '/ Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	33.67'	<b>0.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	37.00'	<b>0.5" x 9.0" Horiz. Orifice/Grate X 36.00</b> C= 0.600 in 30.0" Grate (23% open area)
#4	Secondary	37.50'	<b>10.0' long x 12.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

**Primary OutFlow** Max=1.34 cfs @ 12.10 hrs HW=37.06' TW=0.00' (Dynamic Tailwater)

↑ 1=Culvert (Passes 1.34 cfs of 6.61 cfs potential flow)

↑ 2=Orifice/Grate (Orifice Controls 0.02 cfs @ 8.83 fps)

↑ 3=Orifice/Grate (Orifice Controls 1.32 cfs @ 1.17 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=36.00' TW=0.00' (Dynamic Tailwater)

↑ 4=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Subcatchment 3S:**

Runoff = 2.61 cfs @ 12.11 hrs, Volume= 0.197 af, Depth= 3.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-year Rainfall=5.50"

Area (ac)	CN	Description
* 0.054	98	Paved parking, HSG D
0.465	77	Woods, Good, HSG D
0.210	80	>75% Grass cover, Good, HSG D
0.729	79	Weighted Average
0.675		92.59% Pervious Area
0.054		7.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	38	0.0630	0.21		<b>Sheet Flow, A to B</b> Grass: Short n= 0.150 P2= 3.00"
0.9	52	0.0200	0.99		<b>Shallow Concentrated Flow, B to C</b> Short Grass Pasture Kv= 7.0 fps
0.2	146	0.1670	10.39	25.96	<b>Trap/Vee/Rect Channel Flow, C to D</b> Bot.W=0.00' D=1.00' Z= 3.0 & 2.0 '/' Top.W=5.00' n= 0.035
3.6	430	0.0050	2.01	6.03	<b>Trap/Vee/Rect Channel Flow, D to E</b> Bot.W=1.00' D=1.00' Z= 2.0 '/' Top.W=5.00' n= 0.035
7.6	666	Total			

**Summary for Subcatchment 10s:**

Runoff = 0.58 cfs @ 12.07 hrs, Volume= 0.043 af, Depth= 4.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-year Rainfall=5.50"

Area (ac)	CN	Description
* 0.090	98	ROAD AND SIDEWALK
0.016	80	>75% Grass cover, Good, HSG D
0.106	95	Weighted Average
0.016		15.09% Pervious Area
0.090		84.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	16	0.0200	0.92		<b>Sheet Flow, A TO B</b> Smooth surfaces n= 0.011 P2= 3.00"
1.2	134	0.0400	1.86		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
0.2	53	0.0400	4.06		<b>Shallow Concentrated Flow, C TO D</b> Paved Kv= 20.3 fps
3.3					<b>Direct Entry,</b>
5.0	203	Total			

**Summary for Subcatchment 20S:**

Runoff = 2.11 cfs @ 12.07 hrs, Volume= 0.166 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Type III 24-hr 25-year Rainfall=5.50"

Area (ac)	CN	Description
0.379	98	Paved parking & roofs
0.379		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	151	0.0310	1.72		<b>Sheet Flow, A TO B</b> Smooth surfaces n= 0.011 P2= 3.00"
0.6	130	0.0300	3.52		<b>Shallow Concentrated Flow, B TO C</b> Paved Kv= 20.3 fps
2.9					<b>Direct Entry,</b>
5.0	281	Total			

**Summary for Subcatchment 30S:**

Runoff = 1.32 cfs @ 12.07 hrs, Volume= 0.097 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Type III 24-hr 25-year Rainfall=5.50"

Area (ac)	CN	Description
0.180	98	Paved parking & roofs
0.069	80	>75% Grass cover, Good, HSG D
0.249	93	Weighted Average
0.069		27.71% Pervious Area
0.180		72.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	23	0.0170	0.12		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
0.7	48	0.0200	1.15		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
1.0					<b>Direct Entry,</b>
5.0	71	Total			

**Summary for Subcatchment 40S:**

Runoff = 4.33 cfs @ 12.07 hrs, Volume= 0.329 af, Depth= 5.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=5.50"

Area (ac)	CN	Description
0.714	98	Paved parking & roofs
0.072	80	>75% Grass cover, Good, HSG D
0.786	96	Weighted Average
0.072		9.16% Pervious Area
0.714		90.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	18	0.0200	0.12		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
1.6	122	0.0170	1.30		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
0.3	46	0.0200	2.87		<b>Shallow Concentrated Flow, C TO D</b> Paved Kv= 20.3 fps
0.5					<b>Direct Entry,</b>
5.0	186	Total			

**Summary for Subcatchment 50S:**

Runoff = 1.56 cfs @ 12.08 hrs, Volume= 0.116 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=5.50"

Area (ac)	CN	Description
0.210	98	Paved parking & roofs
0.088	80	>75% Grass cover, Good, HSG D
0.298	93	Weighted Average
0.088		29.53% Pervious Area
0.210		70.47% Impervious Area



Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	36	0.0170	0.13		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
0.6	37	0.0200	1.09		<b>Sheet Flow, B TO C</b> Smooth surfaces n= 0.011 P2= 3.00"
5.4	73	Total			

**Summary for Subcatchment 60S:**

Runoff = 3.53 cfs @ 12.07 hrs, Volume= 0.242 af, Depth= 3.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=5.50"

Area (ac)	CN	Description
0.684	80	>75% Grass cover, Good, HSG D
0.140	91	RIP RAP (GRAVEL HSG D)
0.824	82	Weighted Average
0.824		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	50	0.0560	0.22		<b>Sheet Flow, A TO B</b> Grass: Short n= 0.150 P2= 3.00"
0.5	338	0.0870	10.82	216.31	<b>Trap/Vee/Rect Channel Flow, B TO C</b> Bot.W=0.00' D=2.00' Z= 5.0 '/' Top.W=20.00' n= 0.040
0.5					<b>Direct Entry,</b>
4.9	388	Total			

**Summary for Subcatchment 70:**

Runoff = 1.69 cfs @ 12.07 hrs, Volume= 0.120 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=5.50"

Area (ac)	CN	Description
0.174	98	Paved parking, HSG D
0.165	80	>75% Grass cover, Good, HSG D
0.339	89	Weighted Average
0.165		48.67% Pervious Area
0.174		51.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	120	0.0400	1.82		<b>Sheet Flow, A to B</b> Smooth surfaces n= 0.011 P2= 3.00"
3.9					<b>Direct Entry,</b>
5.0	120	Total			

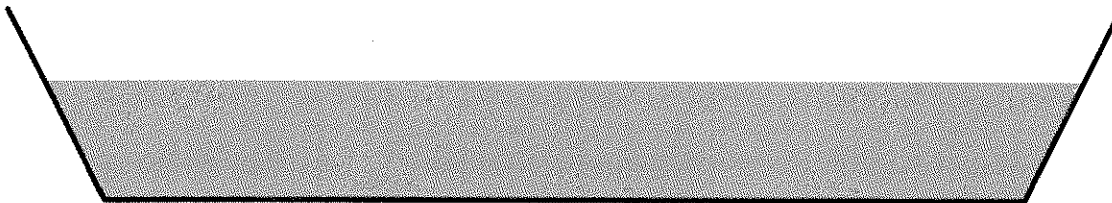
**Summary for Reach 1R:**

Inflow Area = 1.712 ac, 86.62% Impervious, Inflow Depth = 4.97" for 25-year event  
 Inflow = 9.20 cfs @ 12.08 hrs, Volume= 0.708 af  
 Outflow = 9.17 cfs @ 12.09 hrs, Volume= 0.708 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 1.83 fps, Min. Travel Time= 0.6 min  
 Avg. Velocity = 0.44 fps, Avg. Travel Time= 2.6 min

Peak Storage= 351 cf @ 12.09 hrs  
 Average Depth at Peak Storage= 0.79'  
 Bank-Full Depth= 1.25' Flow Area= 8.3 sf, Capacity= 19.42 cfs

6.00' x 1.25' deep channel, n= 0.300  
 Side Slope Z-value= 0.5 '/' Top Width= 7.25'  
 Length= 70.0' Slope= 0.2429 '/'  
 Inlet Invert= 33.00', Outlet Invert= 16.00'



**Summary for Reach R1:**

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 4.92" for 25-year event  
 Inflow = 0.58 cfs @ 12.07 hrs, Volume= 0.043 af  
 Outflow = 0.56 cfs @ 12.09 hrs, Volume= 0.043 af, Atten= 4%, Lag= 1.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 0.95 fps, Min. Travel Time= 2.1 min  
 Avg. Velocity = 0.25 fps, Avg. Travel Time= 8.0 min

Peak Storage= 70 cf @ 12.09 hrs  
 Average Depth at Peak Storage= 0.06'  
 Bank-Full Depth= 0.50' Flow Area= 7.5 sf, Capacity= 26.14 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds  
 Side Slope Z-value= 10.0 '/' Top Width= 20.00'  
 Length= 120.0' Slope= 0.0250 '/'  
 Inlet Invert= 46.00', Outlet Invert= 43.00'



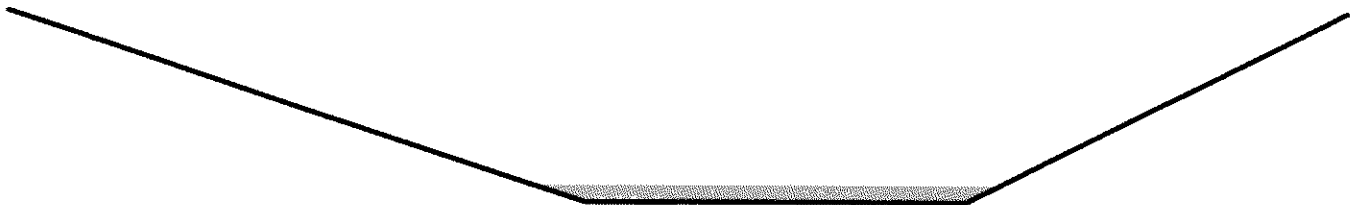
### Summary for Reach R2:

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 4.92" for 25-year event  
 Inflow = 0.56 cfs @ 12.09 hrs, Volume= 0.043 af  
 Outflow = 0.55 cfs @ 12.10 hrs, Volume= 0.043 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 2.77 fps, Min. Travel Time= 0.9 min  
 Avg. Velocity = 0.81 fps, Avg. Travel Time= 3.0 min

Peak Storage= 29 cf @ 12.10 hrs  
 Average Depth at Peak Storage= 0.09'  
 Bank-Full Depth= 1.00' Flow Area= 4.5 sf, Capacity= 48.16 cfs

2.00' x 1.00' deep channel, n= 0.035  
 Side Slope Z-value= 3.0 2.0 '/' Top Width= 7.00'  
 Length= 146.0' Slope= 0.1233 '/'  
 Inlet Invert= 43.00', Outlet Invert= 25.00'



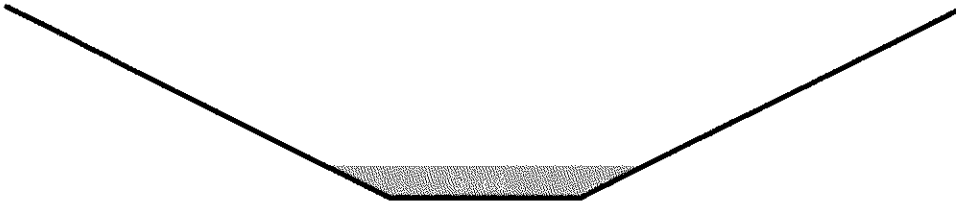
### Summary for Reach R3:

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 4.92" for 25-year event  
 Inflow = 0.55 cfs @ 12.10 hrs, Volume= 0.043 af  
 Outflow = 0.51 cfs @ 12.14 hrs, Volume= 0.043 af, Atten= 8%, Lag= 2.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 2.23 fps, Min. Travel Time= 3.2 min  
 Avg. Velocity = 0.64 fps, Avg. Travel Time= 11.2 min

Peak Storage= 98 cf @ 12.14 hrs  
 Average Depth at Peak Storage= 0.17'  
 Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 17.46 cfs

1.00' x 1.00' deep channel, n= 0.035  
Side Slope Z-value= 2.0 '/' Top Width= 5.00'  
Length= 430.0' Slope= 0.0419 '/'  
Inlet Invert= 25.00', Outlet Invert= 7.00'



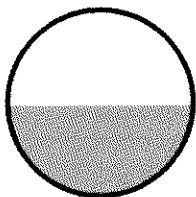
**Summary for Reach sd-1:**

Inflow Area = 0.249 ac, 72.29% Impervious, Inflow Depth = 4.69" for 25-year event  
Inflow = 1.32 cfs @ 12.07 hrs, Volume= 0.097 af  
Outflow = 1.32 cfs @ 12.08 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Max. Velocity= 3.50 fps, Min. Travel Time= 0.5 min  
Avg. Velocity = 1.15 fps, Avg. Travel Time= 1.7 min

Peak Storage= 43 cf @ 12.08 hrs  
Average Depth at Peak Storage= 0.48'  
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.79 cfs

12.0" Round Pipe  
n= 0.012  
Length= 115.0' Slope= 0.0052 '/'  
Inlet Invert= 39.80', Outlet Invert= 39.20'



**Summary for Reach sd-2:**

Inflow Area = 0.547 ac, 71.30% Impervious, Inflow Depth = 4.69" for 25-year event  
Inflow = 2.88 cfs @ 12.08 hrs, Volume= 0.214 af  
Outflow = 2.86 cfs @ 12.09 hrs, Volume= 0.214 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Max. Velocity= 5.38 fps, Min. Travel Time= 0.7 min  
Avg. Velocity = 1.81 fps, Avg. Travel Time= 2.0 min

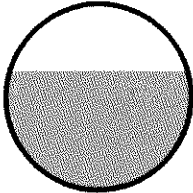
Peak Storage= 118 cf @ 12.09 hrs  
Average Depth at Peak Storage= 0.64'  
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 221.0' Slope= 0.0100 '/'

Inlet Invert= 39.10', Outlet Invert= 36.89'



### Summary for Reach sd-3:

Inflow Area = 0.379 ac, 100.00% Impervious, Inflow Depth = 5.26" for 25-year event  
 Inflow = 2.11 cfs @ 12.07 hrs, Volume= 0.166 af  
 Outflow = 2.08 cfs @ 12.08 hrs, Volume= 0.166 af, Atten= 1%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Max. Velocity= 3.83 fps, Min. Travel Time= 1.0 min

Avg. Velocity = 1.30 fps, Avg. Travel Time= 2.8 min

Peak Storage= 120 cf @ 12.08 hrs

Average Depth at Peak Storage= 0.65'

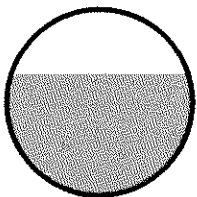
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.73 cfs

12.0" Round Pipe

n= 0.012

Length= 220.0' Slope= 0.0050 '/'

Inlet Invert= 38.00', Outlet Invert= 36.90'



### Summary for Reach sd-4:

Inflow Area = 0.926 ac, 83.05% Impervious, Inflow Depth = 4.92" for 25-year event  
 Inflow = 4.95 cfs @ 12.08 hrs, Volume= 0.380 af  
 Outflow = 4.94 cfs @ 12.09 hrs, Volume= 0.380 af, Atten= 0%, Lag= 0.1 min

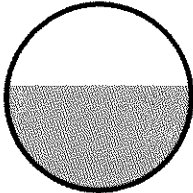
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Max. Velocity= 10.75 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 3.49 fps, Avg. Travel Time= 0.3 min

Peak Storage= 31 cf @ 12.09 hrs  
Average Depth at Peak Storage= 0.57'  
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 8.03 cfs

12.0" Round Pipe  
n= 0.012  
Length= 67.0' Slope= 0.0433 '/'  
Inlet Invert= 36.80', Outlet Invert= 33.90'



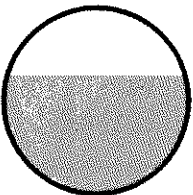
Summary for Reach sd-5:

Inflow = 6.93 cfs @ 12.08 hrs, Volume= 0.143 af  
Outflow = 6.93 cfs @ 12.08 hrs, Volume= 0.143 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Max. Velocity= 8.40 fps, Min. Travel Time= 0.0 min  
Avg. Velocity = 5.60 fps, Avg. Travel Time= 0.0 min

Peak Storage= 9 cf @ 12.08 hrs  
Average Depth at Peak Storage= 0.80'  
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.44 cfs

15.0" Round Pipe  
n= 0.012  
Length= 11.0' Slope= 0.0182 '/'  
Inlet Invert= 33.80', Outlet Invert= 33.60'



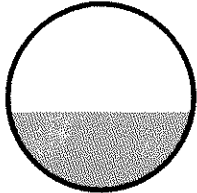
Summary for Reach sd-6:

Inflow Area = 1.712 ac, 86.62% Impervious, Inflow Depth = 3.97" for 25-year event  
Inflow = 2.29 cfs @ 12.08 hrs, Volume= 0.567 af  
Outflow = 2.29 cfs @ 12.08 hrs, Volume= 0.567 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Max. Velocity= 7.33 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 3.45 fps, Avg. Travel Time= 0.1 min

Peak Storage= 7 cf @ 12.08 hrs  
 Average Depth at Peak Storage= 0.42'  
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.23 cfs

12.0" Round Pipe  
 n= 0.012  
 Length= 23.0' Slope= 0.0261 1/1'  
 Inlet Invert= 34.20', Outlet Invert= 33.60'



**Summary for Pond 1: CB-1**

Inflow Area = 0.249 ac, 72.29% Impervious, Inflow Depth = 4.69" for 25-year event  
 Inflow = 1.32 cfs @ 12.07 hrs, Volume= 0.097 af  
 Outflow = 1.32 cfs @ 12.07 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.32 cfs @ 12.07 hrs, Volume= 0.097 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 40.50' @ 12.08 hrs  
 Flood Elev= 42.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	39.80'	12.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=1.31 cfs @ 12.07 hrs HW=40.50' TW=40.28' (Dynamic Tailwater)  
 ↳1=Orifice/Grate (Orifice Controls 1.31 cfs @ 2.23 fps)

**Summary for Pond 2: CB-2**

Inflow Area = 0.547 ac, 71.30% Impervious, Inflow Depth = 4.69" for 25-year event  
 Inflow = 2.88 cfs @ 12.08 hrs, Volume= 0.214 af  
 Outflow = 2.88 cfs @ 12.08 hrs, Volume= 0.214 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.88 cfs @ 12.08 hrs, Volume= 0.214 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 40.31' @ 12.08 hrs  
 Flood Elev= 42.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	39.10'	12.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=2.85 cfs @ 12.08 hrs HW=40.31' TW=39.74' (Dynamic Tailwater)  
 ↳1=Orifice/Grate (Orifice Controls 2.85 cfs @ 3.63 fps)

**Summary for Pond 2P:**

Inflow Area = 1.712 ac, 86.62% Impervious, Inflow Depth = 4.97" for 25-year event  
 Inflow = 9.22 cfs @ 12.08 hrs, Volume= 0.709 af  
 Outflow = 9.20 cfs @ 12.08 hrs, Volume= 0.708 af, Atten= 0%, Lag= 0.1 min  
 Primary = 9.20 cfs @ 12.08 hrs, Volume= 0.708 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 34.29' @ 12.08 hrs Surf.Area= 76 sf Storage= 124 cf

Plug-Flow detention time= 2.1 min calculated for 0.708 af (100% of inflow)  
 Center-of-Mass det. time= 1.2 min ( 763.1 - 761.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	32.00'	140 cf	<b>Custom Stage Data (Prismatic) Listed below (Recalc)</b>
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
32.00	32	0	0
34.50	80	140	140

Device	Routing	Invert	Outlet Devices
#1	Primary	33.00'	<b>3.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b> 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

**Primary OutFlow** Max=9.14 cfs @ 12.08 hrs HW=34.29' TW=33.78' (Dynamic Tailwater)  
 ↳1=Broad-Crested Rectangular Weir (Weir Controls 9.14 cfs @ 2.36 fps)

**Summary for Pond 3: CB-3**

Inflow Area = 0.379 ac,100.00% Impervious, Inflow Depth = 5.26" for 25-year event  
 Inflow = 2.11 cfs @ 12.07 hrs, Volume= 0.166 af  
 Outflow = 2.11 cfs @ 12.07 hrs, Volume= 0.166 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.11 cfs @ 12.07 hrs, Volume= 0.166 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 38.96' @ 12.08 hrs  
 Flood Elev= 41.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.00'	<b>12.0" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=2.07 cfs @ 12.07 hrs HW=38.96' TW=38.65' (Dynamic Tailwater)  
 ↳1=Orifice/Grate (Orifice Controls 2.07 cfs @ 2.67 fps)



**Summary for Pond 4: CB-4**

Inflow Area = 1.712 ac, 86.62% Impervious, Inflow Depth = 4.97" for 25-year event  
 Inflow = 9.22 cfs @ 12.08 hrs, Volume= 0.709 af  
 Outflow = 9.22 cfs @ 12.08 hrs, Volume= 0.709 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.29 cfs @ 12.08 hrs, Volume= 0.567 af  
 Secondary = 6.93 cfs @ 12.08 hrs, Volume= 0.143 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 35.99' @ 12.08 hrs  
 Flood Elev= 39.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	8.0" Vert. Orifice/Grate C= 0.600
#2	Device 3	35.50'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 1.6' Crest Height
#3	Secondary	33.80'	15.0" Vert. Orifice/Grate C= 0.600

**Primary OutFlow** Max=2.29 cfs @ 12.08 hrs HW=35.99' TW=0.00' (Dynamic Tailwater)  
 ↑1=Orifice/Grate (Orifice Controls 2.29 cfs @ 6.57 fps)

**Secondary OutFlow** Max=6.92 cfs @ 12.08 hrs HW=35.99' TW=34.60' (Dynamic Tailwater)  
 ↑3=Orifice/Grate (Passes 6.92 cfs of 6.98 cfs potential flow)  
 ↑2=Sharp-Crested Rectangular Weir (Weir Controls 6.92 cfs @ 2.38 fps)

**Summary for Pond DMH-1: DMH-1**

Inflow Area = 0.926 ac, 83.05% Impervious, Inflow Depth = 4.92" for 25-year event  
 Inflow = 4.95 cfs @ 12.08 hrs, Volume= 0.380 af  
 Outflow = 4.95 cfs @ 12.08 hrs, Volume= 0.380 af, Atten= 0%, Lag= 0.0 min  
 Primary = 4.95 cfs @ 12.08 hrs, Volume= 0.380 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 39.07' @ 12.09 hrs  
 Flood Elev= 41.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.80'	12.0" Vert. Orifice/Grate C= 0.600

**Primary OutFlow** Max=4.93 cfs @ 12.08 hrs HW=39.07' TW=37.37' (Dynamic Tailwater)  
 ↑1=Orifice/Grate (Orifice Controls 4.93 cfs @ 6.28 fps)

**Summary for Pond HIL:**

Inflow Area = 1.712 ac, 86.62% Impervious, Inflow Depth = 3.97" for 25-year event  
 Inflow = 2.29 cfs @ 12.08 hrs, Volume= 0.567 af  
 Primary = 2.29 cfs @ 12.08 hrs, Volume= 0.567 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

**Summary for Pond SP1:**

Inflow Area = 0.106 ac, 84.91% Impervious, Inflow Depth = 4.92" for 25-year event  
 Inflow = 0.58 cfs @ 12.07 hrs, Volume= 0.043 af  
 Primary = 0.58 cfs @ 12.07 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

**Summary for Pond SP2:**

Inflow Area = 3.710 ac, 48.54% Impervious, Inflow Depth = 4.24" for 25-year event  
 Inflow = 17.19 cfs @ 12.09 hrs, Volume= 1.311 af  
 Primary = 17.19 cfs @ 12.09 hrs, Volume= 1.311 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

**Summary for Pond USF1:**

Inflow Area = 0.339 ac, 51.33% Impervious, Inflow Depth = 4.25" for 25-year event  
 Inflow = 1.69 cfs @ 12.07 hrs, Volume= 0.120 af  
 Outflow = 1.59 cfs @ 12.10 hrs, Volume= 0.120 af, Atten= 6%, Lag= 1.6 min  
 Primary = 1.59 cfs @ 12.10 hrs, Volume= 0.120 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 37.08' @ 12.10 hrs Surf.Area= 1,146 sf Storage= 899 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 185.0 min ( 975.2 - 790.2 )

Volume	Invert	Avail.Storage	Storage Description		
#1	36.00'	2,194 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
36.00	540	174.0	0	0	540
37.00	1,100	212.0	804	804	1,723
38.00	1,702	235.0	1,390	2,194	2,571

Device	Routing	Invert	Outlet Devices
#1	Primary	33.50'	<b>12.0" Round Culvert</b> L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 33.50' / 33.35' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	33.67'	<b>0.6" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	37.00'	<b>0.5" x 9.0" Horiz. Orifice/Grate X 36.00</b> C= 0.600 in 30.0" Grate (23% open area)
#4	Secondary	37.50'	<b>10.0' long x 12.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

**Primary OutFlow** Max=1.59 cfs @ 12.10 hrs HW=37.08' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 1.59 cfs of 6.64 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.02 cfs @ 8.86 fps)
- 3=Orifice/Grate (Orifice Controls 1.58 cfs @ 1.40 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=36.00' TW=0.00' (Dynamic Tailwater)

- 4=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

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## **Inspection, Maintenance and Housekeeping**

## INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN

### Moody's Collision Center Portland, ME

#### Introduction

The owner of the development is Real Estate Holdings, LLC. The owner's address is 200 Narragansett Street, Gorham, Maine 04038; the telephone number is (207) 839-2500. The owner of the proposed project will be responsible for the maintenance of all stormwater management structures, the establishment of any contract services required to implement the program, and the keeping of records and maintenance logbook. The owner will assure that the following maintenance program will be adhered to.

Records of all inspections and maintenance work accomplished must be kept on file and retained for a minimum 5-year time span. The maintenance logbook will be made available to the Maine Department of Environmental Protection (MDEP) and the City of Portland upon request. At a minimum, the appropriate and relevant activities for each of the stormwater management systems will be performed on the prescribed schedule.

The following plan outlines the anticipated inspection, maintenance, and housekeeping procedures for the erosion and sedimentation controls as well as stormwater management devices for the project site. Also, this plan outlines several housekeeping requirements that shall be followed during and after construction. These procedures should be followed in order to ensure the intended function of the designed measures and to prevent unreasonable adverse impacts to the surrounding environment.

The procedures outlined in the Inspection, Maintenance, and Housekeeping Plan are provided as an overview of the anticipated practices to be used on this site. In some instances, additional measures may be required due to unexpected conditions. For additional details on any of the erosion and sedimentation control measures or stormwater management devices to be utilized on this project, refer to the most recently revised edition of the "Maine Erosion and Sedimentation Control BMP" manual and/or the "Stormwater Management for Maine: Best Management Practices" manual as published by the MDEP.

#### During Construction

1. **Inspection:** During the construction process, it is the Contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section. These responsibilities include inspecting disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well

as before and after a storm event, and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in any applicable permits, shall conduct the inspections.

2. **Maintenance:** All measures shall be maintained in an effective operating condition until areas are permanently stabilized. If Best Management Practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within seven (7) calendar days and prior to any storm event (rainfall).
3. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained on-site. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, material storage areas, and vehicle access points to the site. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken.

The log must be made accessible to the appropriate regulatory agency upon request. The permittee shall retain a copy of the log for a period of at least three (3) years from the completion of permanent stabilization.

4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

A. Sediment Barriers:

- Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.
- If the fabric on a silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
- Sediment deposits should be removed after each storm event. They must be removed before deposits reach approximately one-half the height of the barrier.
- Filter berms shall be reshaped as needed.

- Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared, and seeded.
- B. Temporary Seed and Mulch:
- Mulched areas should be inspected after rain events to check for rill erosion.
  - If less than 90% of the soil surface is covered by mulch, additional mulch shall be applied in bare areas.
  - In applications where seeding and mulch have been applied in conjunction with erosion control blankets, the blankets must be inspected after rain events for dislocation or undercutting.
  - Mulch shall continue to be reapplied until 95% of the soil surface has established temporary vegetative cover.
5. **Housekeeping:** The following general performance standards apply to the proposed project.
- A. Spill Prevention: Controls must be used to prevent pollutants from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation.
- B. Groundwater Protection: During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors, accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.
- C. Fugitive Sediment and Dust: Actions must be taken to insure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control.
- D. Debris and Other Materials: Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.
- E. Trench or Foundation Dewatering: Trench dewatering is the removal of water from trenches, foundations, cofferdams, ponds, and other areas within the construction area that retain water after excavation. In most cases, the collected water is

heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved.

### **After Construction**

1. **Inspection:** After construction, the owner or operator shall hire a qualified post-construction stormwater inspector to at least annually, inspect the BMPs, in accordance with all municipal and state inspection, cleaning and maintenance requirements of the approved post-construction stormwater management plan.
2. **Maintenance, and repair:** If a BMP requires maintenance, repair or replacement to function as intended by the approved post-construction stormwater management plan, the owner or operator shall take corrective actions to address the deficiency or deficiencies as soon as possible after the deficiency is discovered and shall provide a record of the deficiency and corrective actions to the Department of Public Services (DPS). The following is a list of permanent erosion control and stormwater management measures and the inspection, maintenance, and housekeeping tasks to be performed after construction.
  - A. **Vegetated Areas:**
    - Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems.
    - Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.
  - B. **Winter Sanding:**
    - Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring.
    - Accumulations on pavement may be removed by pavement sweeping.
    - Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader or other acceptable method.
  - C. **Catch Basins:**
    - Inspect and, if required, clean-out catch basins at least once a year, preferably in early spring.



- Clean out must include the removal and legal disposal of accumulated sediments and debris at the bottom of the basin, at any inlet grates, at any inflow channels to the basin, and at any pipes between basins.

D. Culverts:

- Inspect culverts in the spring, in the late fall, and after heavy rains to remove any obstructions to flow.
- Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit.
- Inspect and repair any erosion damage at the culvert's inlet and outlet.
- Inspect embankment for erosion, settling, and structural failure.

E. Porous Concrete:

- Pervious concrete surfaces shall be swept or vacuum swept at least annually in the spring to remove winter sand. The adjacent bituminous pavement should be swept prior to or concurrently with sweeping the pervious concrete.
- If inspection reveals that clogging has deteriorated the pervious concrete's infiltration performance, the pervious concrete may be power washed to force foreign material from the voids in the concrete.
- The pervious concrete surfaces shall be inspected twice annually, in the spring and fall. Inspection shall include a visual inspection of the concrete during a storm event to identify if clogging has occurred.

F. Underdrained Grass Filter:

- The inlet and outlet of the BMP shall be checked periodically to ensure that flow structures are not blocked by debris. Inspections should be conducted monthly during wet weather conditions from March to November.
- Debris and sediment buildup shall be removed from the forebay and basin upon reaching a 6-inch accumulation within the forebay and 2 inches within the basin, but not less than annually.
- Mowing of grass may be conducted semiannually to a height of no less than 6-inches, with hand held trimmers or push mowers
- Grass filters shall be inspected annually for erosion, destabilization of

sideslopes, embankment settling and other signs of structural failure. Corrective action should be taken immediately upon identification of problems.

- Rototill top of filter bed when ponding exceeds 48 hours
  - Replace top several inches of filter material when ponding exceeds 72 hours
3. **Annual Report:** The owner or operator or a qualified post-construction stormwater inspector hired by that person, shall, on or by June 30 of each year, provide a completed and signed certification that the person has inspected the BMPs and that they are adequately maintained and functioning as intended by the approved post-construction stormwater management plan, or that they require maintenance or repair, including the record of the deficiency and corrective actions taken.
4. **Duration of Maintenance:** Perform maintenance as described and required for any associated permits unless and until the system is formally accepted by a municipality or quasi-municipal district, or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system. If a municipality or quasi-municipal district chooses to accept a stormwater management system, or a component of a stormwater system, it must provide a letter to the MDEP stating that it assumes responsibility for the system. The letter must specify the components of the system for which the municipality or district will assume responsibility, and that the municipality or district agrees to maintain those components of the system in compliance with MDEP standards. Upon such assumption of responsibility, and approval by the MDEP, the municipality, quasi-municipal district, or association becomes a co-permittee for this purpose only and must comply with all terms and conditions of the permit.

#### **Attachments**

Attachment 1 – Sample Stormwater Inspection and Maintenance Form

July 8, 2015

## Sample Stormwater Inspection and Maintenance Form

### Moody's Collision Center Portland, ME Attachment 1

This log is intended to accompany the stormwater Inspection, Maintenance and Housekeeping Plan for Moody's Collision Center. The following items shall be checked, cleaned and maintained on a regular basis as specified in the Maintenance Plan and as described in the table below. This log shall be kept on file for a minimum of five (5) years and shall be available for review. Qualified personnel familiar with drainage systems and soils shall perform all inspections. Attached is a copy of the construction and post-construction maintenance logs.

Item	Maintenance Required & Frequency	Date Completed	Maintenance Personnel	Comments
Ditches and Swales	Inspect after major rainfall event producing greater than 3" of rain in 2 hours.			
	Repair erosion or damage immediately.			
Catch Basins and Culverts	Remove accumulated sediment and debris			
	Sump depth			
Vegetated Areas	Inspect Slopes			
	Replant Bare Areas			
	Check after Major Storms			
Winter Sanding	Clean annually (Spring)			
	Remove sand and sediment from roadway shoulders			
Porous Concrete	Inspect for evidence of clogging			
	Sweep or vacuum sweep			
	Power wash if necessary			
Underdrained Grass Filter	Inspect inlets/outlets to ensure no blockage from debris			
	Inspect sideslopes annually for erosion, destabilization, and embankment settling.			