



# Guerriere & Halnon, Inc.

ENGINEERING & LAND SURVEYING

[www.gandhengineering.com](http://www.gandhengineering.com)

*Est. 1972*

**Milford Office**  
333 West Street, P. O. Box 235  
Milford, MA 01757-0235  
(508) 473-6630/Fax (508) 473-8243

**Franklin Office**  
55 West Central Street  
Franklin, MA 02038-2101  
(508) 528-3221/Fax (508) 528-7921

**Whitinsville Office**  
1029 Providence Road  
Whitinsville, MA 01588-2121  
(508) 234-6834/Fax (508) 234-6723

F-4383

January 24, 2024

Town of Franklin  
Planning Board  
355 East Central Street  
Franklin, MA 02038

***RE: 515 West Central Street Permeable Pavement Field Change Stormwater Compliance***

Dear Members of the Board:

On behalf of our client, Franklin Learning RE LLC, Guerriere & Halnon, Inc. has prepared this memorandum to address the drainage impacts of the proposed field change to substitute permeable pavement for the approved pervious pavers. Due to the presence of ledge and persistent high groundwater beneath the rear access road, installation of an underdrain is proposed, which is to be connected to the existing combined surface/subsurface infiltration basin on the adjacent Wendy's site. The impacts of this connection to the project's compliance with the stormwater management standards are as follows:

***Standard 1: No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.***

Paved area runoff from the approved design sheet flows across the pavement areas, accumulate into hooded catch basins on site, and is conveyed to the existing infiltration basin & chamber system on the abutting Wendy's property for treatment, detention, and infiltration. The proposed underdrain will connect to this system. No new discharges are proposed as part of this field change and the proposed underdrain will connect to the existing infrastructure on the Wendy's property as originally designed.

***Standard 2: Stormwater management systems shall be designed so that the post-development peak discharge rates do not exceed pre-development peak discharge rates.***

Peak discharge rates were calculated and evaluated at three locations – at the existing 24" headwall, at the existing piped connection to West Central Street, and at the property line of the adjacent Tedeschi's gas station. The points of evaluations are shown on the approved watershed plans. The permeable pavers in the approved design were modeled in subcatchment "7S" as ">75% Grass cover, good, HSG C" with a CN of 74. The routing in the updated calculations remains the same, and the CN has been revised to 98 to reflect the underdrain connection to basin "4P".

In summary of the attached drainage analysis (HydroCAD), the peak discharge rates and volumes leaving the point of evaluation "IP#2" in cubic feet per second(cfs) and acre-feet[af] are as follows;

Interest Point 2 24" connection to West Central Street	Storm Events	Run off				
		Pre-dev. (cfs)[af]	Approved (cfs)[af]	Proposed 2021 (cfs)[af]	2023 Field Change (cfs)[af]	Change (cfs)[af]
	2-year	(11.08)[.64]	(10.05)[.55]	(9.49)[.52]	(9.84)[.54]	(-1.24)[-10]
	10-year	(24.35)[1.83]	(22.89)[1.31]	(22.35)[1.28]	(22.64)[1.30]	(-1.71)[-53]
	100-year	(42.57)[2.53]	(40.17)[2.39]	(39.51)[2.37]	(39.64)[2.39]	(-2.93)[-14]

As shown above, the field change results in negligible increases from the approved design, and flow rates and volumes remain less than the pre-development condition.

*Standard 3: Loss of annual recharge to ground water shall be eliminated or minimized through the use of environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.*

The 2011 stormwater report specifies a proposed total impervious area of 2.18 acres, generating a required recharge volume of 1,978 cu.ft. The required volume of recharge for the 2023 post-development conditions is calculated as follows;

#### Required Recharge Volume

0.60" x 1' /12" x	sf = _____ cf	(A soils)
0.35" x 1' /12" x	sf = _____ cf	(B soils)
0.25" x 1' /12" x 87,251	sf = <u>1,818</u> cf	(C soils)
0.10" x 1' /12" x	sf = _____ cf	(D soils)
<b>TOTAL</b>	<b><u>1,818</u> cf</b>	

The 2023 total site impervious area is approximately 1.88 acres, generating a required recharge volume of 1,703 cu.ft. The approximate total storage volume below the lowest inverts of the existing ponds is as follows:

- Basin 1: 482 cu.ft. @ 292.0
- Basin 2: 3598 cu.ft. @ 291.0
- Basin 3: 1,011 cu.ft. @ 275.5
- Basin 4: 1,712 cu.ft. @ 272.0

Total storage volume provided below all basins lowest inverts = 6,803 cu.ft.

To ensure the project is compliant with the towns new MS4 stormwater bylaw, the site was evaluated to determine if the runoff retention requirements specified in § 153-16 (B)(1)(a) are met by the existing stormwater system. The total site impervious area, including roofs, for all three parcels and the private road is 87,251 square feet. A portion of the site (1.35Ac) was constructed prior to implementation of the MS4 bylaw, and this portion was evaluated using the 0.8" redevelopment target. The equivalent 0.8" of runoff from these surfaces is 3920.4 cubic feet. The new construction portion of the site (0.65Ac) was evaluated using the 1.0" retention target. the equivalent 1.0" of runoff from these surfaces is 2359.5 cubic feet, with a minimum retention volume of 6,280 cu.ft. As shown above, the combined total storage volume provided below the basins lowest inverts is 6,803 cu.ft. The existing stormwater systems retain the stormwater volume required by the towns MS4 bylaw.

#### Soils

Soils underlying the site are defined as map unit 103B Charlton-Hollis-Rock outcrop complex, 104C Hollis-Rock Outcrop- Charlton complex, and 602 Urban Land. We have estimated the soil as hydrologic group "C" for the

majority of the site based on Web Soil Survey USDA/NRCS Soil. Test Pits depicted the underlying soil C layer material to be Sandy Loam. The infiltration design is based on a Type B Soil "1982 Rawls Rates" hydraulic conductivity of 1.02 in/hr for the proposed infiltration chambers.

**Standard 4: Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This standard is met when:**

- a) *Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained;*
- b) *Structural stormwater best management practices are sized to capture the required water quality volume as determined in accordance with the Massachusetts Stormwater Handbook; and*
- c) *Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.*

The Water Quality Volume requiring 80% TSS removal, is calculated as follows:

The required water quality volume is based on 0.5" as the site does not fall within an area which is defined as a critical area as defined by Standard 6 of the stormwater management handbook. The water quality volume equals 0.5 inches of runoff times the increased impervious area of the post-development site, and 44% pretreatment must be provided prior to discharging to the infiltration BMP.

2011 Site Total Impervious Area to basin 4 = 2.09 Acres

2023 Site Total Impervious Area to basin 4 = **2.00 Acres (includes pervious pavement)**

Total volume to be treated:

Area Developed before MS4: 0.5" x 1'/12" x 1.35 Ac x 43,560 = **2,450 cf Water Quality Volume Required**

Area Developed after MS4: 1" x 1'/12" x 0.65 Ac x 43,560 = **2,359.5 cf Water Quality Volume Required**

**Total WQV Required = 2,450cf + 2,359.5cf = 4,809.5cf**

**Standard 5: For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable.**

The proposed project is not a use with higher potential pollutant loads, Compliance with this standard is not altered by the proposed field change.

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

The subject property does not discharge stormwater within the Zone II of a public water supply, IWPA, or any other critical area as defined by the Massachusetts Stormwater Handbook. compliance with this standard is not altered by the proposed field change.

**Standard 7: A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable:**

This project does not qualify as a redevelopment project and all applicable stormwater management standards are being met. Compliance with this standard is not altered by the proposed field change.

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

**During land disturbance and construction activities, project proponents must implement controls that prevent erosion, control sediment movement, and stabilize exposed soils to prevent pollutants from moving offsite or**

*entering wetlands or waters. Land disturbance activities include demolition, construction, clearing, excavation, grading, filling, and reconstruction.*

Construction Period Pollution Prevention Plan and Erosion and Sedimentation Control.  
EPA NPDES – Storm Water Pollution Prevention Plan (SWPPP)

A. Names of Persons or Entities Responsible for Plan Compliance

Franklin Learning RE LLC.  
206 Great Road  
Littleton, MA 01460  
Tel: 703-856-5240  
Email: manoj@nvklearning.com

B. Construction Period Pollution Prevention Measures

1. Inventory materials to be present on site during construction.
2. Train employees and subcontractors in prevention and clean up procedures.
3. All materials stored on site will be stored in their appropriate containers and if possible under a roof or covered.
4. Follow manufacturer's recommendation for disposal of used containers.
5. Store only enough products on site to do the job.
6. On site equipment, fueling and maintenance measures:
  - a. Inspect on-site vehicles and equipment daily for leaks.
  - b. Conduct all vehicle and equipment maintenance and refueling away from storm drains.
  - c. Perform major repairs and maintenance off site.
  - d. Use drip pans, drip cloths or absorbent pads when replacing spent fuels.
  - e. Collect spent fuels and remove from site, per Local and State regulations.
  - f. Maintain a clean construction entrance; install a crushed stone apron where truck traffic is frequent to reduce soil compaction constant sweeping is required and limit tracking of sediment into streets, sweeping street when silt is observed on street.
7. A temporary concrete washout station and equipment wash station shall be located on the site. Areas shall be surrounded with a silt fence and or Filter Mitt to contain materials and provide ease of cleanup.
8. Stock pile materials, and maintain Erosion Control around the materials where it can easily be accessed. Maintain easy access to clean up materials to include brooms, mops, rags gloves, goggles, sand, sawdust, plastic and metal trash containers.
9. Clean up spills.
  - a. Never hose down "dirty" pavement or impermeable surfaces where fluids have spilled. Use dry cleanup methods (sawdust, cat litter and/or rags and absorbent pads).
  - b. Sweep up dry materials immediately. Never wash them away or bury them.
  - c. Clean up spills on dirt areas by digging up and properly disposing of contaminated soil in a certified container and notify a certified hauler for removal.
  - d. Report significant spills to the Fire Department.
10. It is the responsibility of the site superintendent or employees designated by the Applicant to inspect erosion control and repair as needed, also to inspect all on site vehicles for leaks and check all containers on site that may contain hazardous materials daily.

C. Site Development Plans

1. See Site Plan "Site Plan Modification 505 West Central Street Lot 3 (515 West Central Street) Franklin, Massachusetts" dated October 21, 2020 and revised through 4/15/2021, with Field Change Plan revised through 1/5/2024, prepared by Guerriere & Halnon, Inc.

D. Construction Erosion and Sedimentation Control Plan:

1. See Site Plan "Site Plan Modification 505 West Central Street Lot 3 (515 West Central Street) Franklin, Massachusetts" dated October 21, 2020 and revised through 4/15/2021, with Field Change Plan revised through 1/5/2024, prepared by Guerriere & Halnon, Inc.

E. Plans

1. Construction Sequencing Plan – Actual sequence of construction activities to be determined by the site contractor.
  - a. Prior to any work on the site including tree/brush clearing, the approved limit of clearing as well as the location of the proposed erosion control devices (such as silt fence/straw bales, etc.) must be staked on the ground under the direction of a Massachusetts registered Professional Land Surveyor.
  - b. Install erosion control barrier at locations depicted on the plans.
  - c. Strip off top and subsoil. Stockpile material to be reused, remove excess material from the site. Install and maintain erosion control barrier around stockpile.
  - d. Rough grade site, maintaining temporary low areas/sediment traps in the south side of the property and as needed to adequately control sedimentation during construction.
  - e. Install underground utilities; protect all open drainage structures with erosion/siltation control devices.
  - f. Install binder course of bituminous asphalt.
  - g. Install wearing course of asphalt, and striping (where required).
  - h. Maintain all erosion control devices until site is stabilized.
  - i. The Contractor shall be responsible to schedule any required inspections of his/her work.
2. Construction Waste Management Plan
  - a. Dumpster for trash and bulk waste collection shall be provided separately for construction.
  - b. Recycle materials whenever possible (paper, plaster cardboard, metal cans). Separate containers for material are recommended.
  - c. Segregate and provide containers for disposal options for waste.
  - d. Do not bury waste and debris on site.
  - e. Certified haulers will be hired to remove the dumpster container waste as needed. Recycling products will also be removed off site weekly.

F. Operation and Maintenance of Erosion and Sedimentation Controls

The operation and maintenance of sedimentation control shall be the responsibility of the contractor. The inspection and maintenance of the storm water component shall be performed as noted below. The contractor shall, at all times have erosion control in place. The contractor, based on future weather reports shall prepare and inspect all erosion control devices; cleaning, repairing and upgrading is a priority so that the devices perform as per design. Inspect the site during rain events. **Don't stay away from the site.** At a minimum, there should be inspection to assure the devices are not clogged or plugged, or that devices have not been destroyed or damaged during the rain event. After a storm event inspection is required to clean and repair any damage components. Immediate repair is required.

G. Inspection and Maintenance Schedules

1. Inspection must be conducted at least once every 7 days and within 24 hours prior to and after the end of a storm event 0.5 inches or greater.
2. Inspection frequency can be reduced to once a month if:
  - a. The site is temporarily stabilized.
  - b. Runoff is unlikely due to winter conditions, when site is covered with snow or ice.
3. Inspections must be conducted by qualified personnel, "qualified personnel" means a person knowledgeable in the principles and practice of erosion and sediment controls and who possess the skills to assess the conditions and take measures to maintain and ensure proper operation, also to conclude if the erosion control methods selected are effective.
4. For each inspection, the inspection report must include:
  - a. The inspection date.
  - b. Names, titles of personnel making the inspection.
  - c. Weather information for the period since the last inspection.
  - d. Weather information at the time of the inspection.
  - e. Locations of discharges of sediment from the site, if any.
  - f. Locations of BMP's that need to be maintained.

- g. Locations where additional BMP's may be required.
  - h. Corrective action required or any changes to the SWPPP that may be necessary.
5. Qualified personnel shall inspect the following in-place work;

Inspection Schedule:

Erosion Control	Weekly
Catch Basins	Weekly
Temporary Sedimentation Traps/Basins	Weekly
Pavement Sweeping	Weekly
Pervious Pavement	Weekly

Please Note: Special inspections shall also be made after a significant rainfall event.

Maintenance Schedule

Erosion Control Devices Failure	Immediately
Temporary Sedimentation Traps/Basins	As needed
Pervious Pavement	Vacuum Sweeping & Jetwashing 4 times per year
Pavement Sweeping	14 days minimum and prior to any significant rain event.

Please Note: Special maintenance shall also be made after a significant rainfall event.

H. Inspection and Maintenance Log Form.

- 1. See Construction Phase Inspection and Maintenance Form attached

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

The following shall serve as the (O&M) Plan required by Standard 9, as well as the Long-Term Pollution Prevention Plan required by Standard 4.

A. Names of Persons or Entities Responsible for Plan Compliance:

Franklin Learning RE LLC.  
 206 Great Road  
 Littleton, MA 01460  
 Tel: 703-856-5240  
 Email: manoj@nvkllearning.com

It is the intent of the Applicant to have the site completed and released by the various town Departments and Boards.

B. Good housekeeping practices

- 1. Maintain site, landscaping and vegetation.
- 2. Sweep and pick up litter on pavements and grounds.
- 3. Deliveries shall be monitored by owners or representative to ensure that if any spillage occurs, it shall be contained and cleaned up immediately.
- 4. Maintain pavement and curbing in good repair.

C. Requirements for routine inspections and maintenance of stormwater BMPs

- 1. Plans: The storm water Operation and Maintenance Plan shall consist of all Plans, documents and all local state and federal approvals as required for the subject property.
- 2. Record Keeping:
  - a. Maintain a log of all operation and maintenance activities for at least three years following construction, including inspections, repairs, replacement and disposal (for disposal, the log shall indicate the type of material and the disposal location);
- 3. Descriptions and Designs: The Best Management Practices (BMP) incorporated into the design include the following;

- a. Pavement Sweeping – Stipulated within the Construction Period Pollution Prevention Plan, the Long Term Pollution Prevention Plan, and the Operation and Maintenance Plan. As the amount of TSS removal is discretionary, no credit was taken within the calculations for this BMP.
  - b. Pervious Pavement Vacuum Sweeping- Stipulated within the Construction Period Pollution Prevention Plan, the Long Term Pollution Prevention Plan, and the Operation and Maintenance Plan. Vacuum Sweeping to be performed monthly in accordance with the stormwater handbook.
  - c. Deep sump catch basins with hoods installed to promote TSS Removal of solids and control floatable pollutants. This BMP has a design rate of 25% TSS Removal.
  - d. Spill Containment Kit to contain and clean-up spills that could occur on site.
4. BMP Maintenance: After construction it is the responsibility of the owner to perform maintenance. The cleaning of the components of the stormwater management system shall generally be as follows:
    - a. Pavement: The owner shall keep the pavement swept with a mechanical sweeper or hand swept semi-annually at a minimum.
    - b. Pervious Pavement: The owner shall keep the pavement swept and vacuumed in accordance with the requirements of the stormwater handbook. Vacuum Sweeping and Jetwashing should be done quarterly at a minimum.
    - c. Catch Basins: Shall be cleaned by excavating, pumping or vacuuming. The sediment shall be disposed of off-site by the Owner. Inspect quarterly, remove silt when ¼ full.
  5. Access Provisions: All of the components of the storm water system will be accessible by the Owner

D. Spill prevention and response plans

1. Train employees and subcontractors in prevention and clean up procedures.
2. All materials stored on site will be stored in their appropriate containers under a roof or in the approved underground storage tanks.
3. Follow manufacturer’s recommendation for disposal of used containers.
4. On site equipment, fueling and maintenance measures:
  - a. Inspect on-site vehicles and equipment daily for leaks.
  - b. Conduct all vehicle and equipment maintenance off Site and refueling in one location, away from storm drains.
5. Clean up spills.
  - a. Never hose down “dirty” pavement or impermeable surfaces where fluids have spilled. Use dry clean-up methods (sawdust, cat litter and/or rags and absorbent pads).
  - b. Sweep up dry materials immediately. Never wash them away or bury them.
  - c. Clean up spills on dirt areas by digging up and properly disposing of contaminated soil.
  - d. Report significant spills to the Fire Department, Conservation Commission and Board of Health.

E. Requirements for storage and use of herbicides, and pesticides

The application of herbicides or pesticides will be done by professional certified contractor.

F. Provisions for solid waste management

1. Waste Management Plan

- a. Recycle materials whenever possible (paper, plaster cardboard, metal cans). Separate containers for material is recommended.
- b. Do not bury waste and debris on site.
- c. Certified haulers will be hired to remove the dumpster container waste as needed. Recycling products will also be removed off site weekly.

G. Snow disposal and plowing plans

Snow storage is adequate around the site for large storm events, see site plan

H. Winter Road Salt and/or Sand Use and Storage restrictions

No sand, salt, or chemicals for de-icing will be stored outside.

- I. Pavement sweeping schedules  
Sweeping, the act of cleaning pavement can be done by mechanical sweepers, vacuum sweeper or hand sweeper. The quantity of sand is a direct correlation with the treatment of ice and snow and the types of chemicals and spreaders that are being used on site to manage snow. If a liquid de-icer such as calcium chloride is used as a pretreatment to new events the amount of sand is minimized. Sweeping for this site should be done semi-annually at a minimum. Collecting the particulate before it enters the catch basins is cheaper and more environmentally friendly than in a catch basin mixing with oils and greases in the surface water runoff in catch basins. Sanding of pervious pavement is strictly prohibited to avoid clogging. Pervious pavement must be swept quarterly by vacuum sweeper.
- J. Provisions for prevention of illicit discharges to the stormwater management system  
The discharge into the stormwater system is not being violated, see attachment for illicit discharges compliance.
- K. Training the staff or personnel involved with implementing Long-Term Pollution Prevention Plan  
The owner shall develop policies and procedures for containing the illicit spilling of oils, soda, beer, paper and litter. These wastes provide a degrading of the water quality. The placement of signs and trash barrels with lids around the site would contribute to a clean water quality site conditions.
- L. List of Emergency contacts for implementing Long-Term Pollution Prevention Plan:

Franklin Learning RE LLC.  
206 Great Road  
Littleton, MA 01460  
Tel: 703-856-5240  
Email: manoj@nvklearning.com

<u>BMP</u>	<u>Estimated Maintenance Cost</u>
Pavement sweeping	\$ 400 per year
Vacuum Sweeping of Pervious Pavement	\$ 2,000 per year
Catch basin cleaning	\$ 200 per catch basin per cleaning
Spill Containment Kit	\$ 750 purchase price

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

An illicit discharge compliance statement was included with the approved project filing. No new illicit discharges are proposed. Compliance with this standard is not altered by the proposed change.

Should you have any questions or require additional information, please contact our office at (508) 528-3221.

Sincerely,  
GUERRIERE & HALNON, INC.

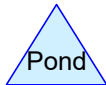
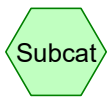
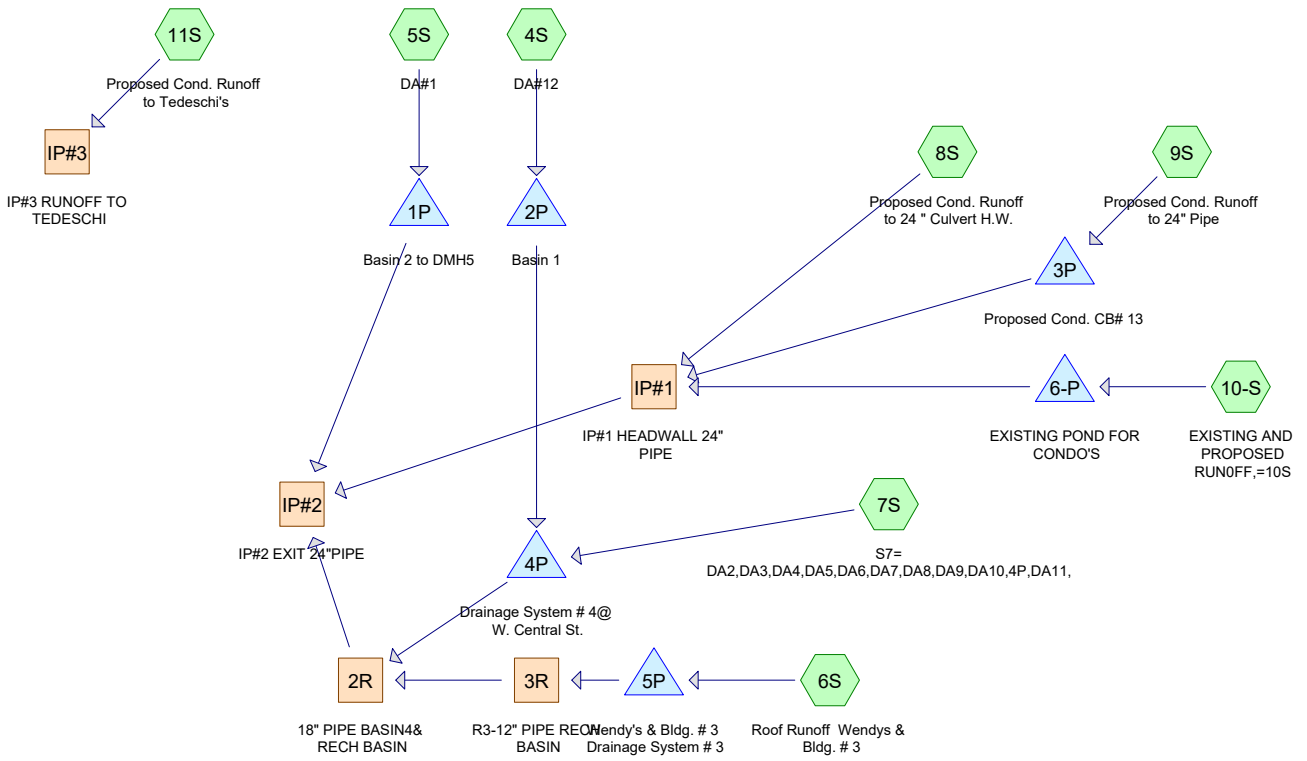


Michael Hassett  
Project Engineer

Attachments

cc:





**Routing Diagram for F4383 POST-DEV REV 9-11-23**  
 Prepared by {enter your company name here}, Printed 1/4/2024  
 HydroCAD® 10.00-21 s/n 10299 © 2018 HydroCAD Software Solutions LLC

**F4383 POST-DEV REV 9-11-23**

Prepared by {enter your company name here}

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**Area Listing (selected nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
1.483	74	>75% Grass cover, Good, HSG C (4S, 5S, 7S, 10-S, 11S)
0.040	98	Detention Basin (4S)
0.060	74	Detention Basin (5S)
0.040	98	Detention area (7S)
1.360	98	Paved parking (7S)
0.770	98	Paved parking & roofs (4S, 5S, 10-S)
0.215	98	Roofs (6S)
0.158	98	Stormcrete Pervious Concrete, HSG C (7S)
0.530	98	WETLANDS (8S)
13.095	70	Woods, Good, HSG C (8S, 9S, 10-S)
<b>17.751</b>	<b>75</b>	<b>TOTAL AREA</b>

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**Soil Listing (selected nodes)**

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
14.736	HSG C	4S, 5S, 7S, 8S, 9S, 10-S, 11S
0.000	HSG D	
3.015	Other	4S, 5S, 6S, 7S, 8S, 10-S
<b>17.751</b>		<b>TOTAL AREA</b>

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**Ground Covers (selected nodes)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	1.483	0.000	0.000	1.483	>75% Grass cover, Good	4S, 5S, 7S, 10- S, 11S
0.000	0.000	0.000	0.000	0.100	0.100	Detention Basin	4S, 5S
0.000	0.000	0.000	0.000	0.040	0.040	Detention area	7S
0.000	0.000	0.000	0.000	1.360	1.360	Paved parking	7S
0.000	0.000	0.000	0.000	0.770	0.770	Paved parking & roofs	4S, 5S, 10- S
0.000	0.000	0.000	0.000	0.215	0.215	Roofs	6S
0.000	0.000	0.158	0.000	0.000	0.158	Stormcrete Pervious Concrete	7S
0.000	0.000	0.000	0.000	0.530	0.530	WETLANDS	8S
0.000	0.000	13.095	0.000	0.000	13.095	Woods, Good	8S, 9S, 10- S
<b>0.000</b>	<b>0.000</b>	<b>14.736</b>	<b>0.000</b>	<b>3.015</b>	<b>17.751</b>	<b>TOTAL AREA</b>	

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**Pipe Listing (selected nodes)**

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	2R	271.90	270.00	130.0	0.0146	0.013	18.0	0.0	0.0
2	3R	274.50	272.40	109.0	0.0193	0.013	12.0	0.0	0.0
3	1P	287.50	287.10	35.0	0.0114	0.013	12.0	0.0	0.0
4	2P	292.00	285.22	43.0	0.1577	0.013	6.0	0.0	0.0
5	4P	272.00	271.30	20.0	0.0350	0.013	12.0	0.0	0.0
6	4P	272.50	271.80	20.0	0.0350	0.013	15.0	0.0	0.0
7	6-P	326.00	325.30	70.0	0.0100	0.013	12.0	0.0	0.0

Time span=11.00-13.00 hrs, dt=0.01 hrs, 201 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

**Subcatchment4S: DA#12** Runoff Area=9,147 sf 90.48% Impervious Runoff Depth>1.51"  
Tc=5.0 min CN=96 Runoff=0.65 cfs 0.026 af

**Subcatchment5S: DA#1** Runoff Area=23,523 sf 22.22% Impervious Runoff Depth>0.74"  
Tc=5.0 min CN=79 Runoff=0.86 cfs 0.033 af

**Subcatchment6S: Roof Runoff Wendys &** Runoff Area=9,365 sf 100.00% Impervious Runoff Depth>1.57"  
Tc=5.0 min CN=98 Runoff=0.69 cfs 0.028 af

**Subcatchment7S: S7=** Runoff Area=98,035 sf 69.22% Impervious Runoff Depth>1.29"  
Tc=5.0 min CN=91 Runoff=6.07 cfs 0.241 af

**Subcatchment8S: Proposed Cond. Runoff** Runoff Area=7.130 ac 7.43% Impervious Runoff Depth>0.44"  
Tc=16.4 min CN=72 Runoff=5.19 cfs 0.263 af

**Subcatchment9S: Proposed Cond. Runoff** Runoff Area=0.405 ac 0.00% Impervious Runoff Depth>0.39"  
Flow Length=400' Tc=8.2 min CN=70 Runoff=0.32 cfs 0.013 af

**Subcatchment10-S: EXISTING AND** Runoff Area=6.890 ac 7.26% Impervious Runoff Depth>0.46"  
Flow Length=350' Tc=8.4 min CN=72 Runoff=6.36 cfs 0.265 af

**Subcatchment11S: Proposed Cond. Runoff** Runoff Area=0.110 ac 0.00% Impervious Runoff Depth>0.54"  
Tc=5.0 min CN=74 Runoff=0.13 cfs 0.005 af

**Reach 2R: 18" PIPE BASIN4& RECH** Avg. Flow Depth=0.52' Max Vel=6.00 fps Inflow=3.22 cfs 0.135 af  
18.0" Round Pipe n=0.013 L=130.0' S=0.0146 '/' Capacity=12.70 cfs Outflow=3.22 cfs 0.134 af

**Reach 3R: R3-12" PIPE RECH BASIN** Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af  
12.0" Round Pipe n=0.013 L=109.0' S=0.0193 '/' Capacity=4.95 cfs Outflow=0.00 cfs 0.000 af

**Reach IP#1: IP#1 HEADWALL24" PIPE** Inflow=6.86 cfs 0.405 af  
Outflow=6.86 cfs 0.405 af

**Reach IP#2: IP#2 EXIT 24"PIPE** Inflow=9.84 cfs 0.539 af  
Outflow=9.84 cfs 0.539 af

**Reach IP#3: IP#3 RUNOFF TO TEDESCHI** Inflow=0.13 cfs 0.005 af  
Outflow=0.13 cfs 0.005 af

**Pond 1P: Basin 2 to DMH5** Peak Elev=289.29' Storage=1,136 cf Inflow=0.86 cfs 0.033 af  
Discarded=0.06 cfs 0.007 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.007 af

**Pond 2P: Basin 1** Peak Elev=292.29' Storage=703 cf Inflow=0.65 cfs 0.026 af  
Discarded=0.02 cfs 0.002 af Primary=0.22 cfs 0.011 af Outflow=0.24 cfs 0.013 af

**Pond 3P: Proposed Cond. CB# 13** Peak Elev=288.07' Storage=17 cf Inflow=0.32 cfs 0.013 af  
Outflow=0.32 cfs 0.013 af

**F4383 POST-DEV REV 9-11-23**

*Type III 24-hr 2- Year Rainfall=3.20"*

Prepared by {enter your company name here}

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**Pond 4P: Drainage System # 4@ W. Central** Peak Elev=272.91' Storage=4,242 cf Inflow=6.09 cfs 0.252 af  
Discarded=0.39 cfs 0.056 af Primary=3.22 cfs 0.135 af Outflow=3.61 cfs 0.190 af

**Pond 5P: Wendy's & Bldg. # 3 Drainage** Peak Elev=274.82' Storage=460 cf Inflow=0.69 cfs 0.028 af  
Discarded=0.17 cfs 0.022 af Primary=0.00 cfs 0.000 af Outflow=0.17 cfs 0.022 af

**Pond 6-P: EXISTING POND FOR CONDO'S** Peak Elev=326.80' Storage=0.159 af Inflow=6.36 cfs 0.265 af  
12.0" Round Culvert n=0.013 L=70.0' S=0.0100 '/ Outflow=2.01 cfs 0.128 af

**Total Runoff Area = 17.751 ac Runoff Volume = 0.876 af Average Runoff Depth = 0.59"**  
**82.46% Pervious = 14.638 ac 17.54% Impervious = 3.113 ac**

**Summary for Subcatchment 4S: DA#12**

Runoff = 0.65 cfs @ 12.07 hrs, Volume= 0.026 af, Depth> 1.51"

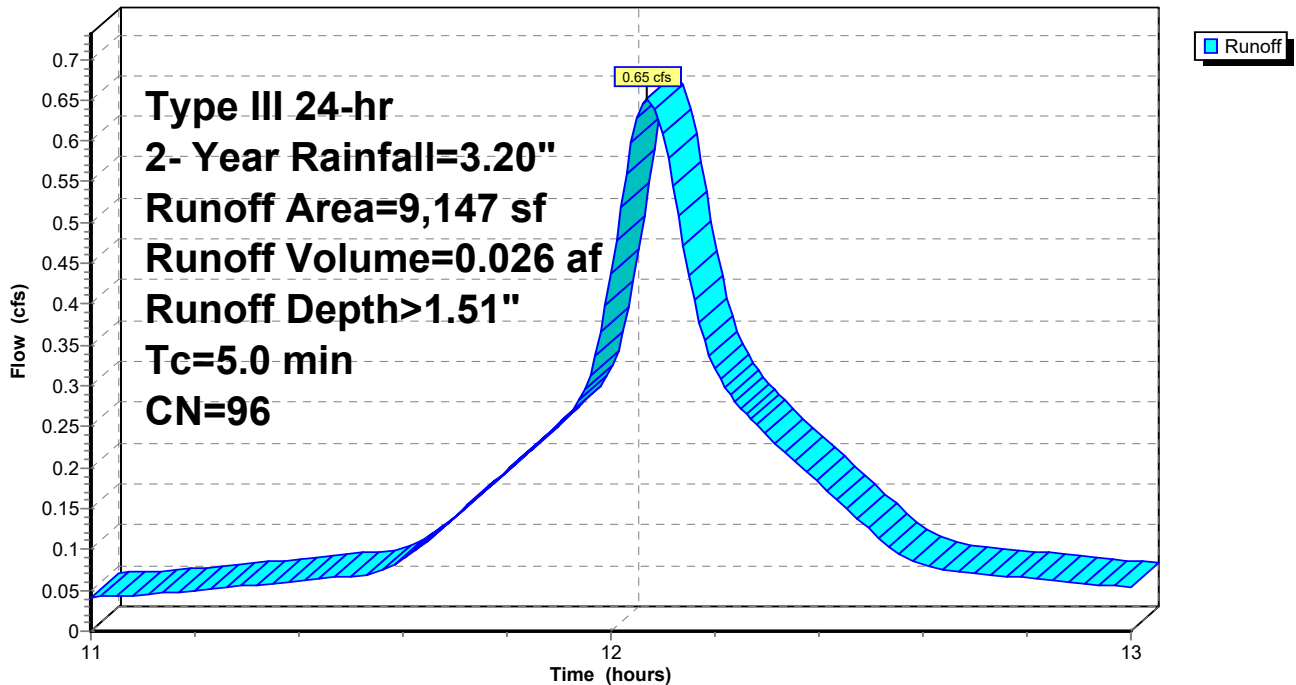
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2- Year Rainfall=3.20"

Area (sf)	CN	Description
6,534	98	Paved parking & roofs
871	74	>75% Grass cover, Good, HSG C
* 1,742	98	Detention Basin
9,147	96	Weighted Average
871		9.52% Pervious Area
8,276		90.48% Impervious Area

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

**Subcatchment 4S: DA#12**

Hydrograph





**Summary for Subcatchment 5S: DA#1**

Runoff = 0.86 cfs @ 12.08 hrs, Volume= 0.033 af, Depth> 0.74"

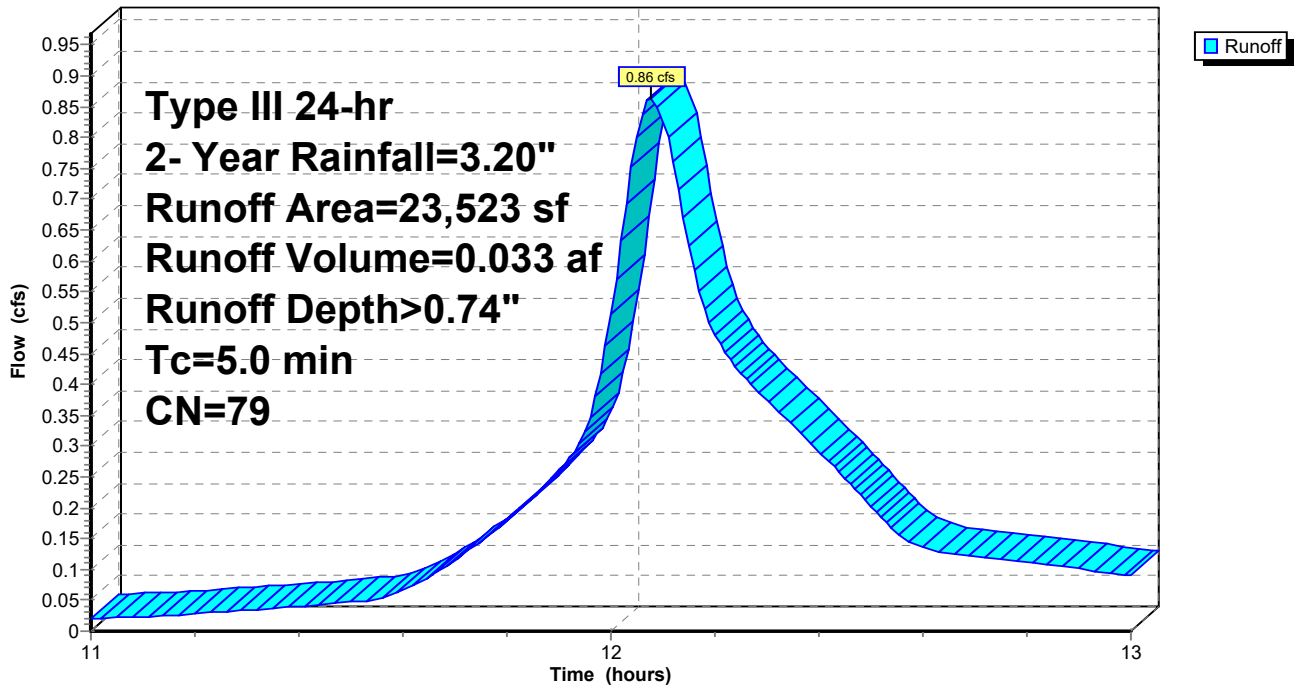
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2- Year Rainfall=3.20"

Area (sf)	CN	Description
5,227	98	Paved parking & roofs
15,682	74	>75% Grass cover, Good, HSG C
* 2,614	74	Detention Basin
23,523	79	Weighted Average
18,296		77.78% Pervious Area
5,227		22.22% Impervious Area

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

**Subcatchment 5S: DA#1**

Hydrograph



**Summary for Subcatchment 6S: Roof Runoff Wendys & Bldg. # 3**

Runoff = 0.69 cfs @ 12.07 hrs, Volume= 0.028 af, Depth> 1.57"

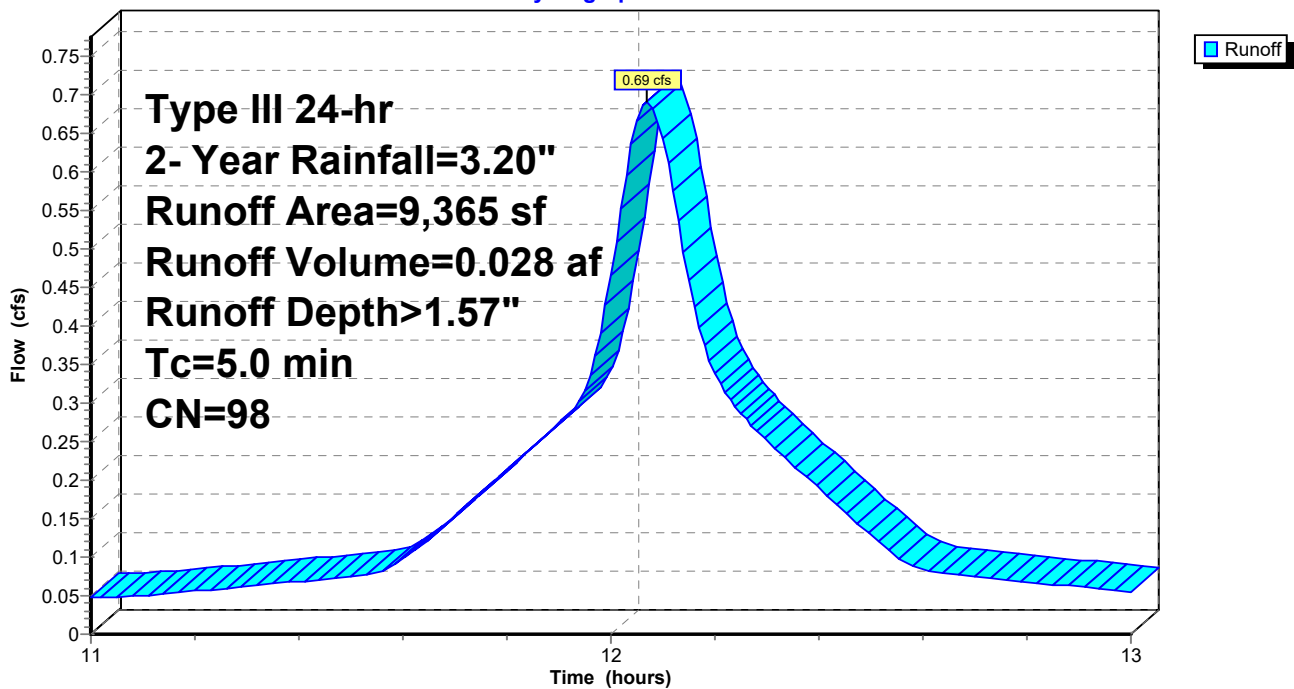
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2- Year Rainfall=3.20"

Area (sf)	CN	Description
* 9,365	98	Roofs
9,365		100.00% Impervious Area

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

**Subcatchment 6S: Roof Runoff Wendys & Bldg. # 3**

Hydrograph



**Summary for Subcatchment 7S: S7= DA2,DA3,DA4,DA5,DA6,DA7,DA8,DA9,DA10,4P,DA11,**

Runoff = 6.07 cfs @ 12.07 hrs, Volume= 0.241 af, Depth> 1.29"

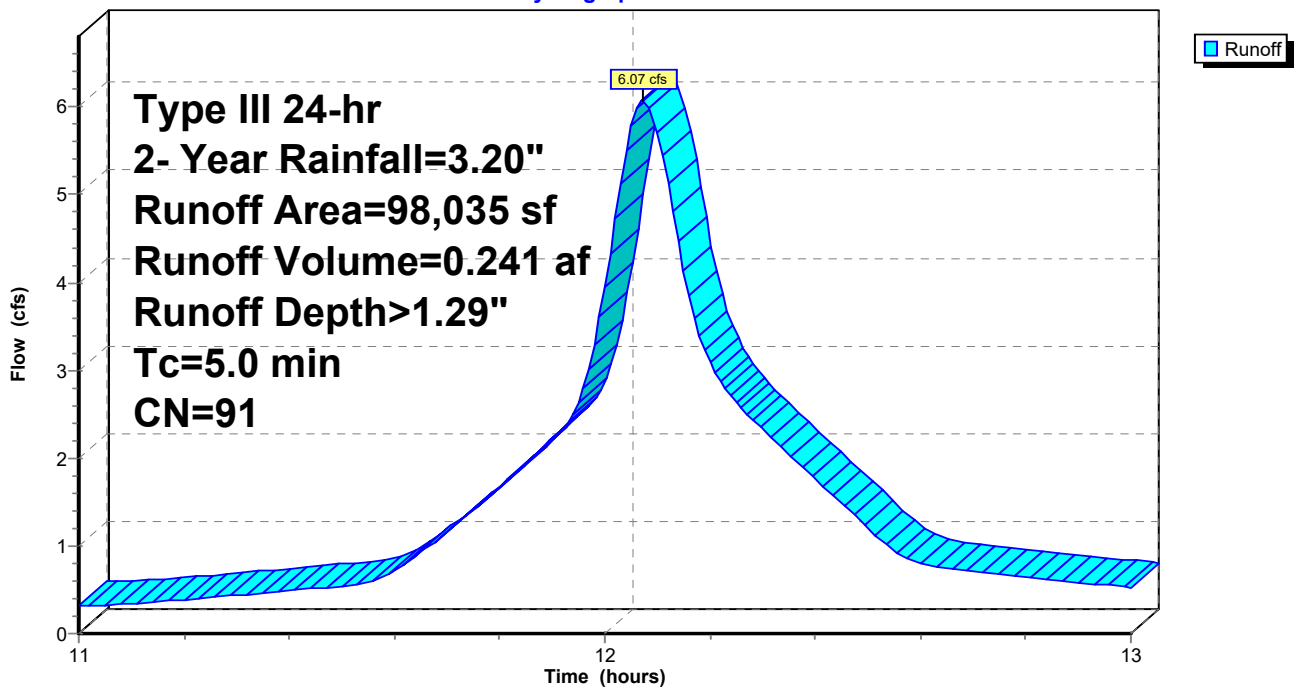
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2- Year Rainfall=3.20"

	Area (sf)	CN	Description
*	59,240	98	Paved parking
	30,179	74	>75% Grass cover, Good, HSG C
*	1,742	98	Detention area
*	6,874	98	Stormcrete Pervious Concrete, HSG C
	98,035	91	Weighted Average
	30,179		30.78% Pervious Area
	67,856		69.22% Impervious Area

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

**Subcatchment 7S: S7= DA2,DA3,DA4,DA5,DA6,DA7,DA8,DA9,DA10,4P,DA11,**

Hydrograph



**Summary for Subcatchment 8S: Proposed Cond. Runoff to 24 " Culvert H.W.**

Runoff = 5.19 cfs @ 12.25 hrs, Volume= 0.263 af, Depth> 0.44"

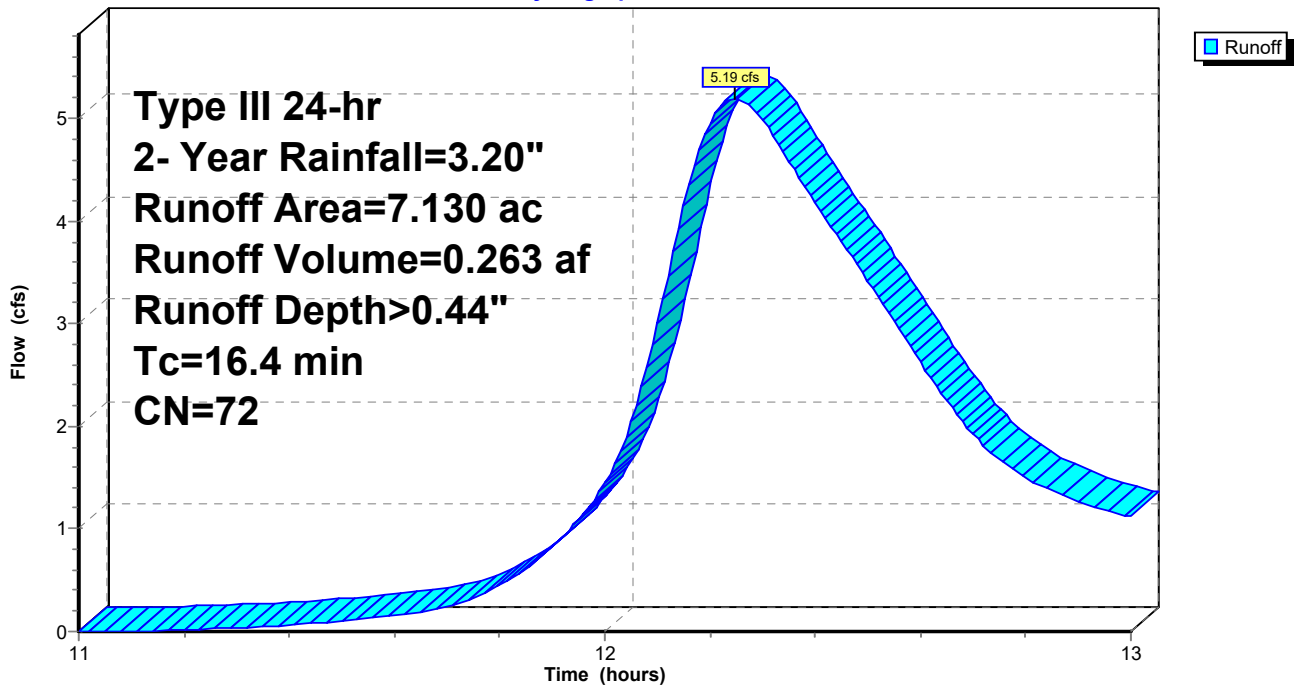
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2- Year Rainfall=3.20"

Area (ac)	CN	Description
6.600	70	Woods, Good, HSG C
* 0.530	98	WETLANDS
7.130	72	Weighted Average
6.600		92.57% Pervious Area
0.530		7.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4					Direct Entry, Overland Same as Existing

**Subcatchment 8S: Proposed Cond. Runoff to 24 " Culvert H.W.**

Hydrograph



**Summary for Subcatchment 9S: Proposed Cond. Runoff to 24" Pipe**

Runoff = 0.32 cfs @ 12.13 hrs, Volume= 0.013 af, Depth> 0.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2- Year Rainfall=3.20"

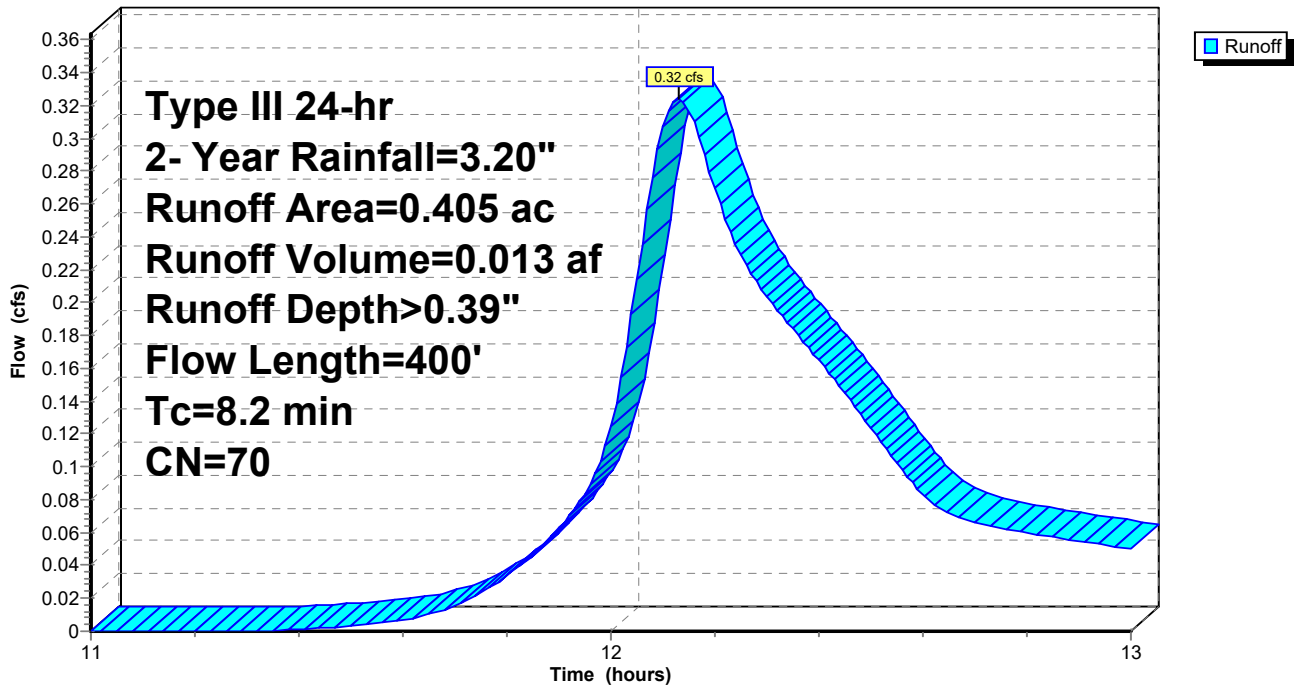
Area (ac)	CN	Description
0.405	70	Woods, Good, HSG C
0.405		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	50	0.1000	0.13		<b>Sheet Flow, Overland</b> Woods: Light underbrush n= 0.400 P2= 3.20"
1.5	150	0.1100	1.66		<b>Shallow Concentrated Flow, Overland</b> Woodland Kv= 5.0 fps
0.2	200	0.0600	13.40	66.99	<b>Parabolic Channel, Grass Swale</b> W=5.00' D=1.50' Area=5.0 sf Perim=6.0' n= 0.024
8.2	400	Total			

**Subcatchment 9S: Proposed Cond. Runoff to 24" Pipe**

Hydrograph



**Summary for Subcatchment 10-S: EXISTING AND PROPOSED RUNOFF,=10S**

Runoff = 6.36 cfs @ 12.13 hrs, Volume= 0.265 af, Depth> 0.46"

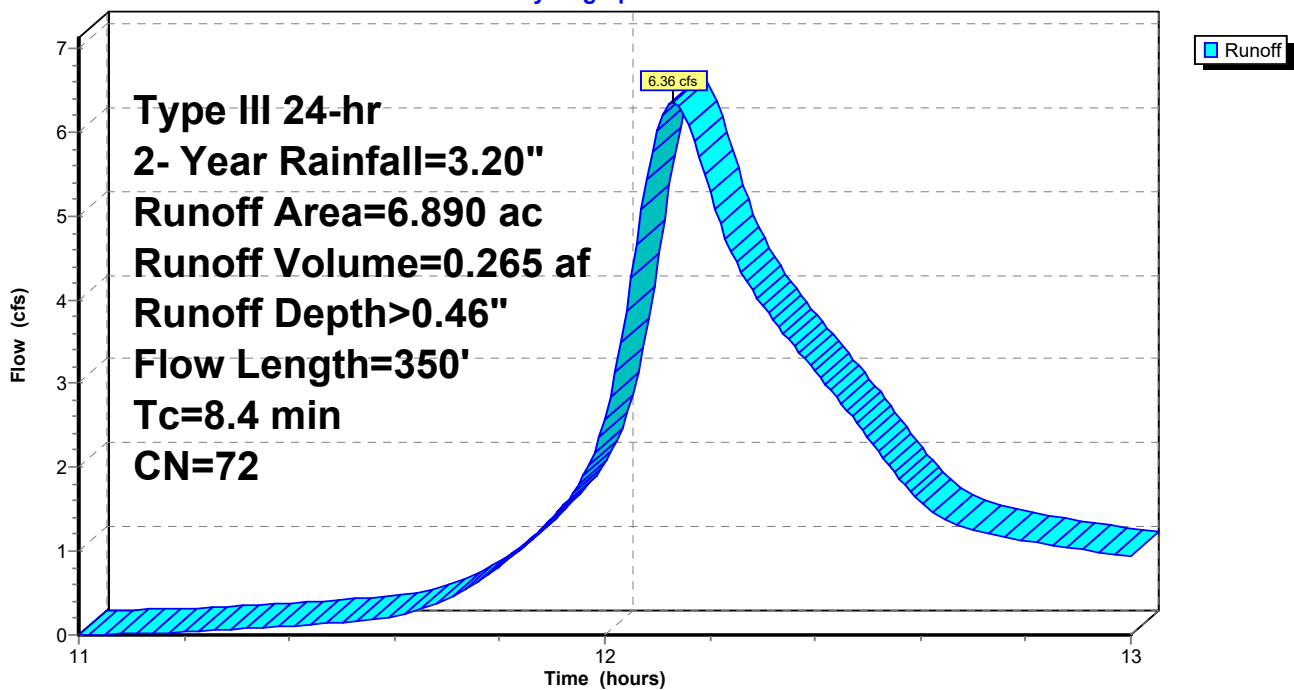
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2- Year Rainfall=3.20"

Area (ac)	CN	Description
0.500	98	Paved parking & roofs
0.300	74	>75% Grass cover, Good, HSG C
6.090	70	Woods, Good, HSG C
6.890	72	Weighted Average
6.390		92.74% Pervious Area
0.500		7.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	50	0.0800	0.18		<b>Sheet Flow, SHEET FLOW</b> Grass: Dense n= 0.240 P2= 3.20"
3.3	240	0.0600	1.22		<b>Shallow Concentrated Flow, SHALLOW CONCENTRATED FLOW</b> Woodland Kv= 5.0 fps
0.4	60	0.2500	2.50		<b>Shallow Concentrated Flow, SHALLOW CONCENTRATED FLOW</b> Woodland Kv= 5.0 fps
8.4	350	Total			

**Subcatchment 10-S: EXISTING AND PROPOSED RUNOFF,=10S**

Hydrograph



**Summary for Subcatchment 11S: Proposed Cond. Runoff to Tedeschi's**

Runoff = 0.13 cfs @ 12.08 hrs, Volume= 0.005 af, Depth> 0.54"

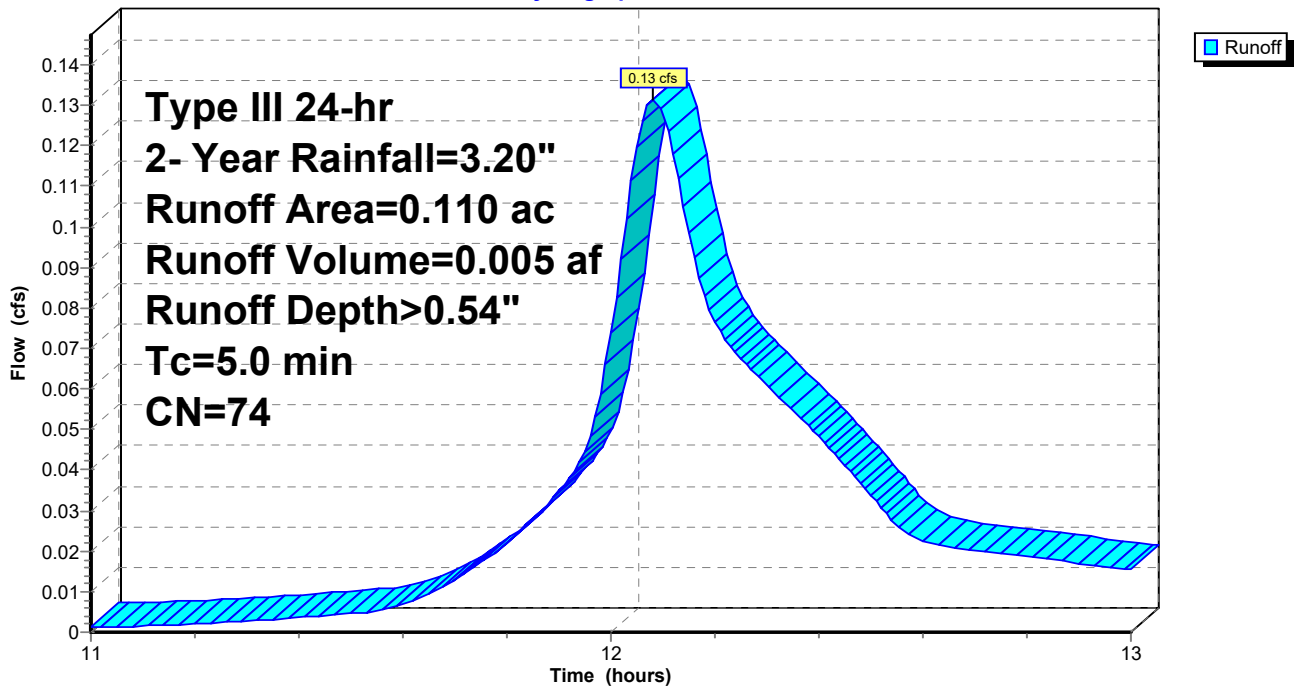
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2- Year Rainfall=3.20"

Area (ac)	CN	Description
0.110	74	>75% Grass cover, Good, HSG C
0.110		100.00% Pervious Area

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

**Subcatchment 11S: Proposed Cond. Runoff to Tedeschi's**

Hydrograph



Summary for Reach 2R: 18" PIPE BASIN4& RECH BASIN

[52] Hint: Inlet/Outlet conditions not evaluated

[62] Hint: Exceeded Reach 3R OUTLET depth by 0.02' @ 12.18 hrs

[79] Warning: Submerged Pond 4P Primary device # 2 INLET by 0.42'

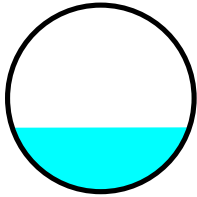
[79] Warning: Submerged Pond 4P Primary device # 3 OUTLET by 0.62'

Inflow Area =	2.676 ac, 73.36% Impervious, Inflow Depth > 0.60"	for 2- Year event
Inflow =	3.22 cfs @ 12.18 hrs, Volume=	0.135 af
Outflow =	3.22 cfs @ 12.18 hrs, Volume=	0.134 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 6.00 fps, Min. Travel Time= 0.4 min  
 Avg. Velocity = 4.48 fps, Avg. Travel Time= 0.5 min

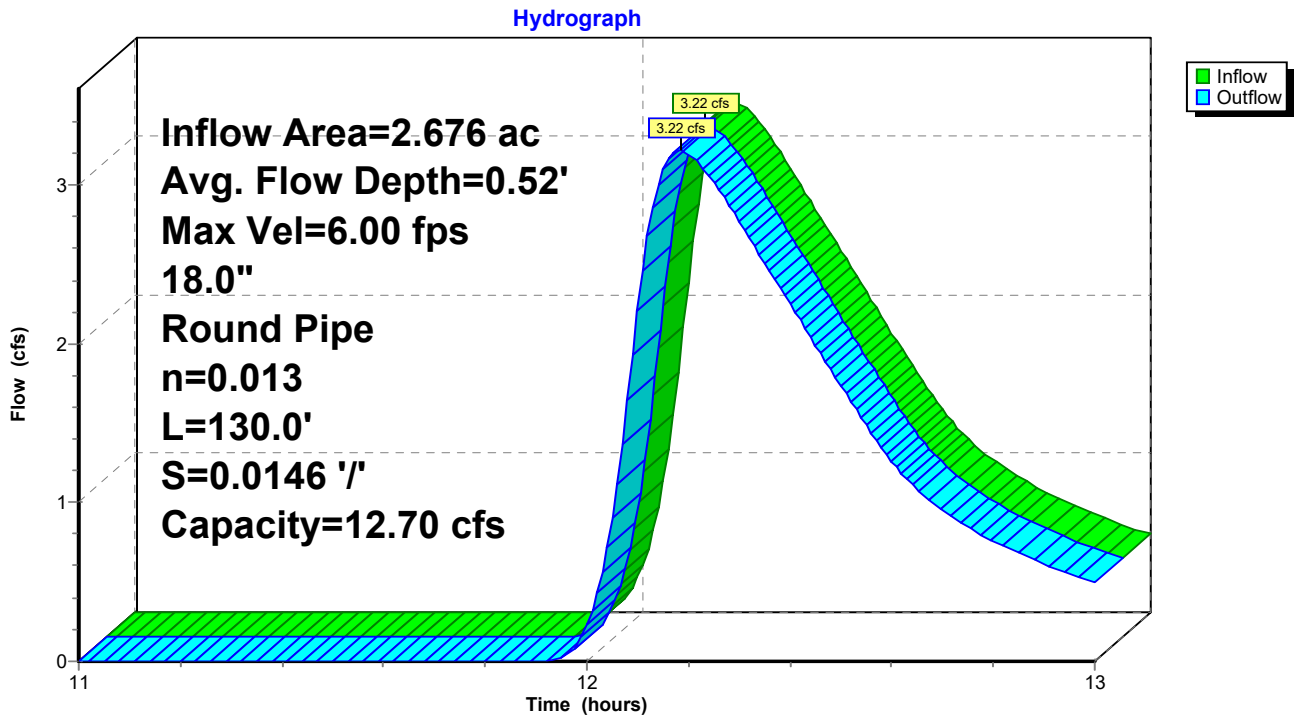
Peak Storage= 70 cf @ 12.18 hrs  
 Average Depth at Peak Storage= 0.52'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.70 cfs

18.0" Round Pipe  
 n= 0.013  
 Length= 130.0' Slope= 0.0146 '  
 Inlet Invert= 271.90', Outlet Invert= 270.00'





### Reach 2R: 18" PIPE BASIN4& RECH BASIN



### Summary for Reach 3R: R3-12" PIPE RECH BASIN

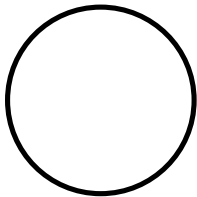
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.215 ac, 100.00% Impervious, Inflow Depth = 0.00" for 2- Year event  
 Inflow = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

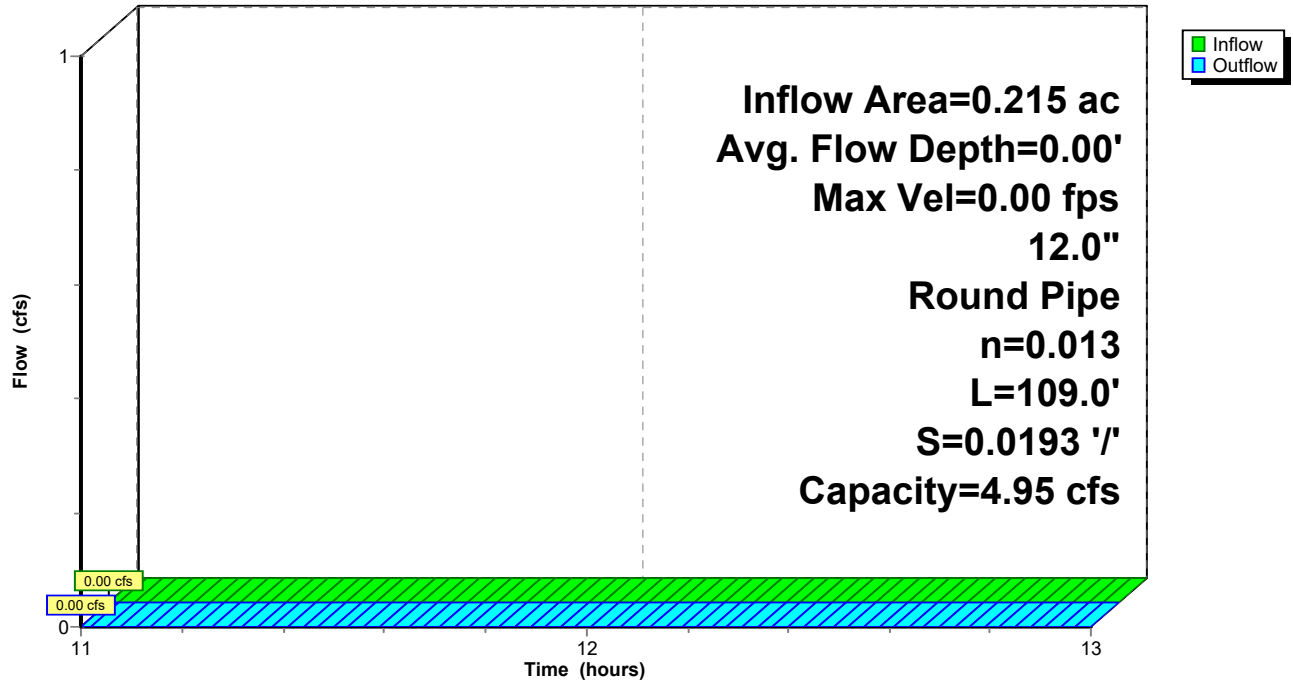
Peak Storage= 0 cf @ 11.00 hrs  
 Average Depth at Peak Storage= 0.00'  
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.95 cfs

12.0" Round Pipe  
 n= 0.013  
 Length= 109.0' Slope= 0.0193 '/'  
 Inlet Invert= 274.50', Outlet Invert= 272.40'



### Reach 3R: R3-12" PIPE RECH BASIN

Hydrograph



### Summary for Reach IP#1: IP#1 HEADWALL 24" PIPE

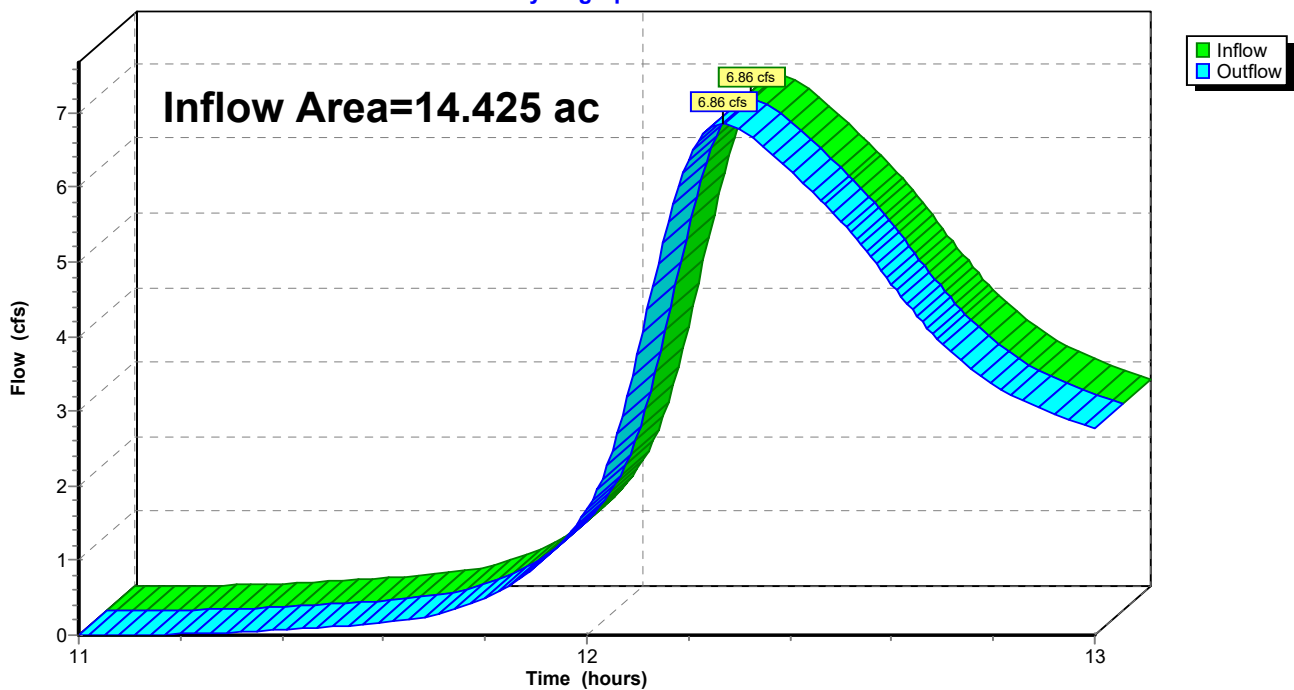
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 14.425 ac, 7.14% Impervious, Inflow Depth > 0.34" for 2- Year event  
Inflow = 6.86 cfs @ 12.27 hrs, Volume= 0.405 af  
Outflow = 6.86 cfs @ 12.27 hrs, Volume= 0.405 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs

### Reach IP#1: IP#1 HEADWALL 24" PIPE

Hydrograph



### Summary for Reach IP#2: IP#2 EXIT 24"PIPE

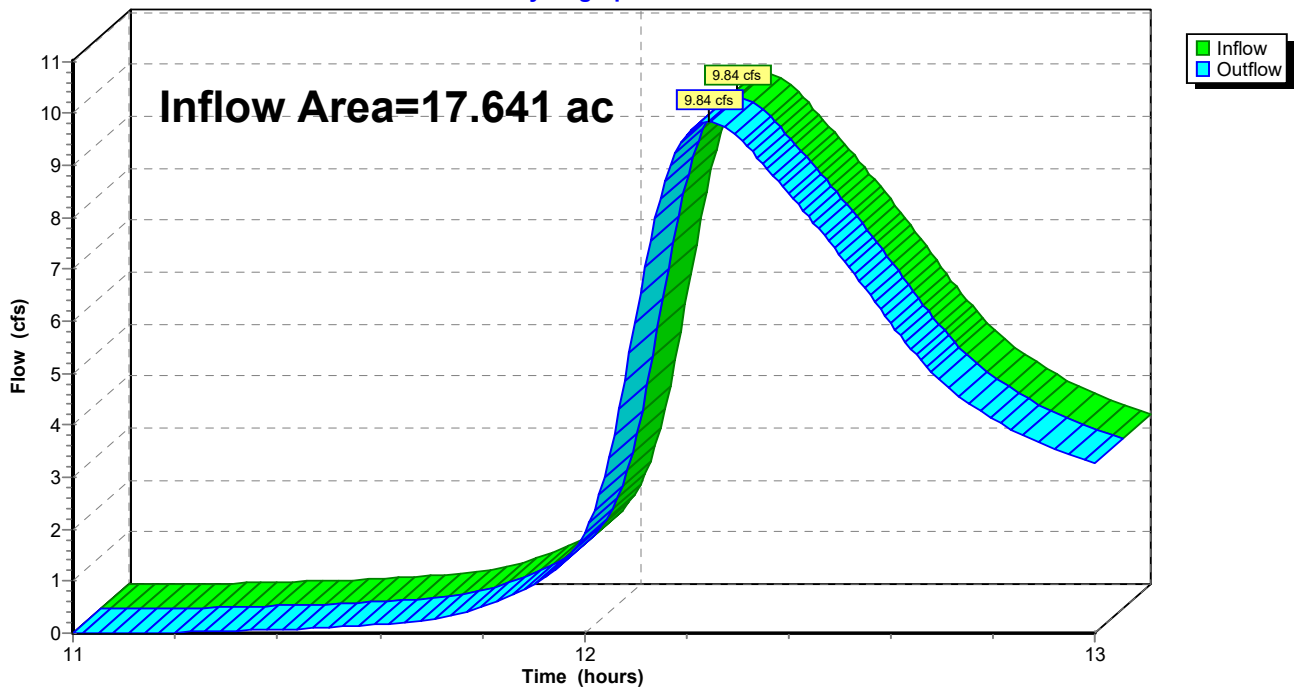
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 17.641 ac, 17.65% Impervious, Inflow Depth > 0.37" for 2- Year event  
Inflow = 9.84 cfs @ 12.24 hrs, Volume= 0.539 af  
Outflow = 9.84 cfs @ 12.24 hrs, Volume= 0.539 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs

### Reach IP#2: IP#2 EXIT 24"PIPE

Hydrograph



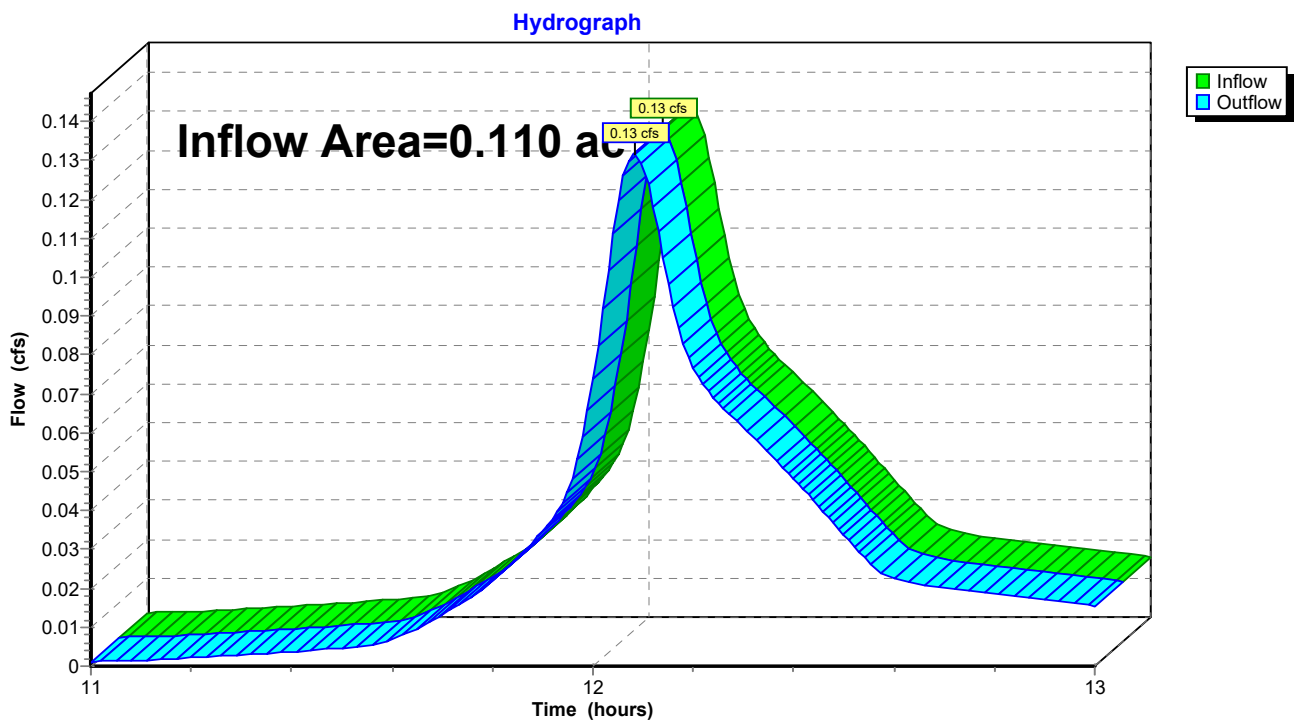
### Summary for Reach IP#3: IP#3 RUNOFF TO TEDESCHI

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

Inflow Area = 0.110 ac, 0.00% Impervious, Inflow Depth > 0.54" for 2- Year event  
Inflow = 0.13 cfs @ 12.08 hrs, Volume= 0.005 af  
Outflow = 0.13 cfs @ 12.08 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs

### Reach IP#3: IP#3 RUNOFF TO TEDESCHI



**Summary for Pond 1P: Basin 2 to DMH5**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.540 ac, 22.22% Impervious, Inflow Depth > 0.74" for 2- Year event  
 Inflow = 0.86 cfs @ 12.08 hrs, Volume= 0.033 af  
 Outflow = 0.06 cfs @ 13.00 hrs, Volume= 0.007 af, Atten= 93%, Lag= 55.3 min  
 Discarded = 0.06 cfs @ 13.00 hrs, Volume= 0.007 af  
 Primary = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Peak Elev= 289.29' @ 13.00 hrs Surf.Area= 1,094 sf Storage= 1,136 cf

Plug-Flow detention time= 30.5 min calculated for 0.007 af (21% of inflow)  
 Center-of-Mass det. time= 3.4 min ( 733.2 - 729.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	288.00'	5,745 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
288.00	665	0	0
290.00	1,330	1,995	1,995
292.00	2,420	3,750	5,745

Device	Routing	Invert	Outlet Devices
#1	Primary	287.50'	<b>12.0" Round Culvert</b> L= 35.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 287.50' / 287.10' S= 0.0114 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	291.00'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Discarded	288.00'	<b>2.410 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.06 cfs @ 13.00 hrs HW=289.29' (Free Discharge)

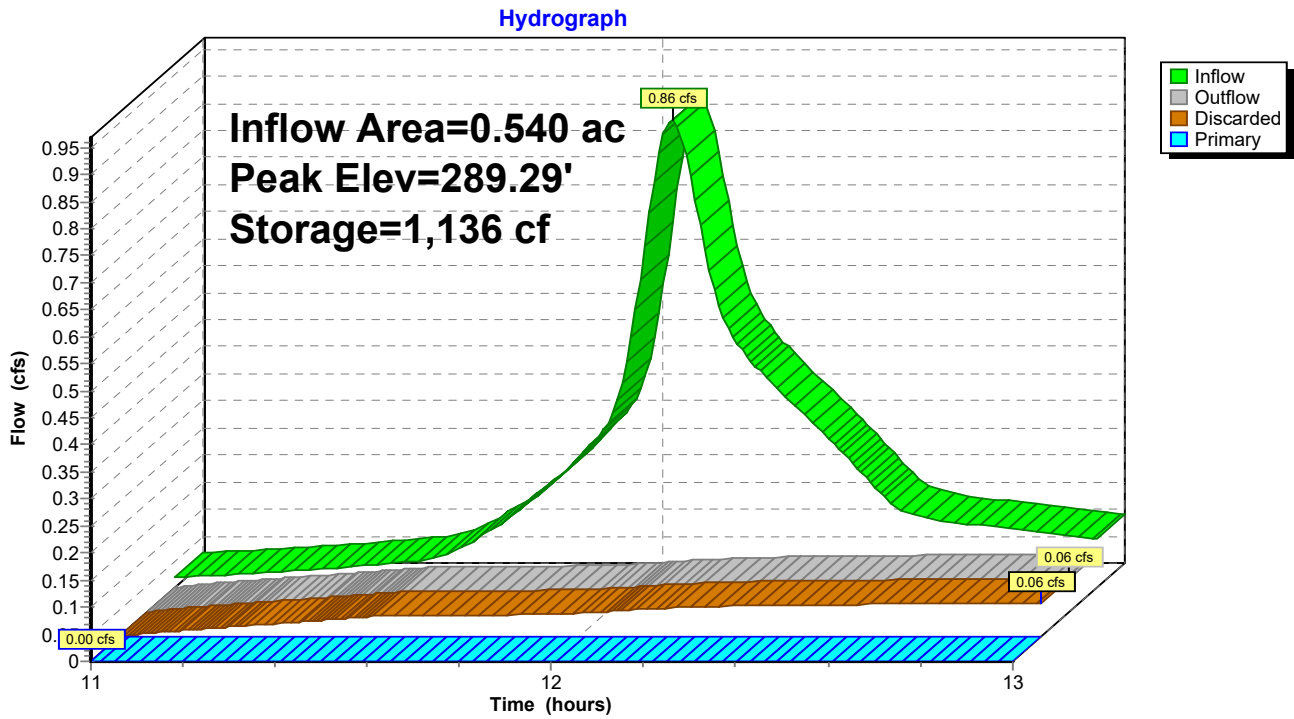
↑**3=Exfiltration** (Exfiltration Controls 0.06 cfs)

**Primary OutFlow** Max=0.00 cfs @ 11.00 hrs HW=288.00' (Free Discharge)

↑**1=Culvert** (Passes 0.00 cfs of 0.98 cfs potential flow)

↑**2=Orifice/Grate** ( Controls 0.00 cfs)

### Pond 1P: Basin 2 to DMH5



**Summary for Pond 2P: Basin 1**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.210 ac, 90.48% Impervious, Inflow Depth > 1.51" for 2- Year event  
 Inflow = 0.65 cfs @ 12.07 hrs, Volume= 0.026 af  
 Outflow = 0.24 cfs @ 12.30 hrs, Volume= 0.013 af, Atten= 63%, Lag= 13.7 min  
 Discarded = 0.02 cfs @ 12.30 hrs, Volume= 0.002 af  
 Primary = 0.22 cfs @ 12.30 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Peak Elev= 292.29' @ 12.30 hrs Surf.Area= 846 sf Storage= 703 cf

Plug-Flow detention time= 38.1 min calculated for 0.013 af (49% of inflow)  
 Center-of-Mass det. time= 21.1 min ( 745.1 - 724.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	291.00'	2,932 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
291.00	293	0	0
292.00	670	482	482
293.00	1,270	970	1,452
294.00	1,690	1,480	2,932

Device	Routing	Invert	Outlet Devices
#1	Primary	292.00'	<b>6.0" Round Culvert</b> L= 43.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 292.00' / 285.22' S= 0.1577 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Discarded	291.00'	<b>1.020 in/hr Exfiltration over Surface area</b>

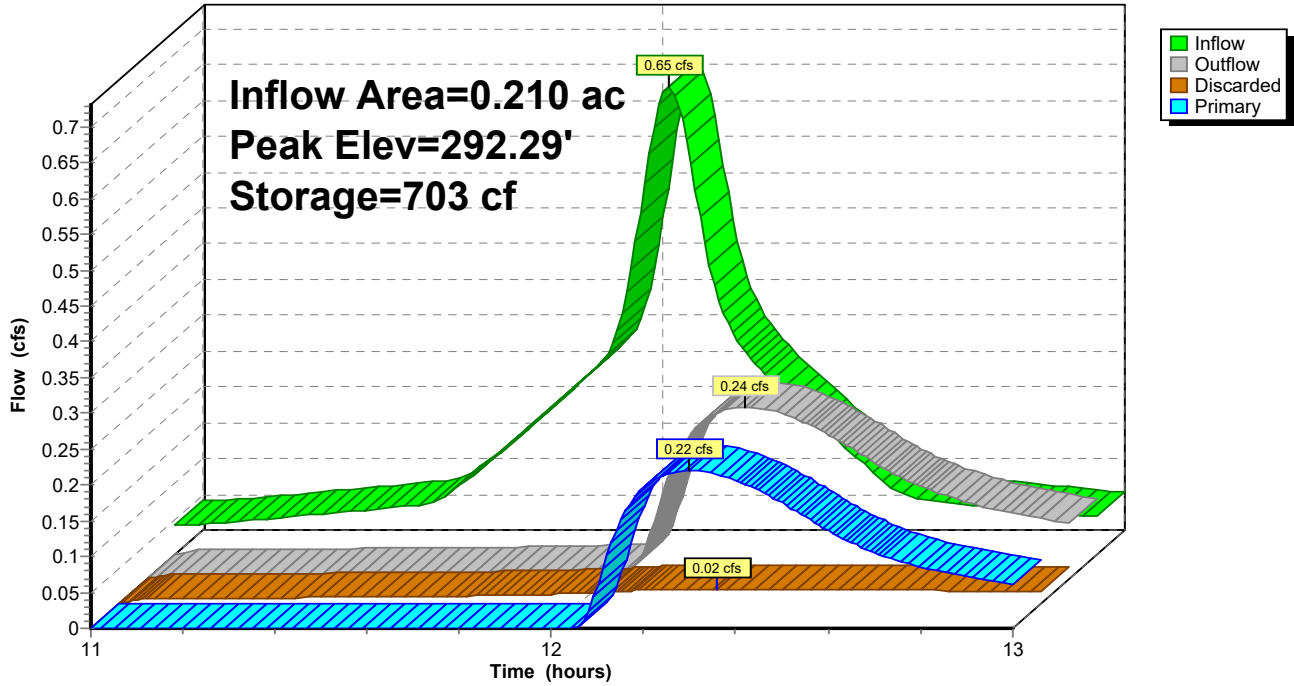
**Discarded OutFlow** Max=0.02 cfs @ 12.30 hrs HW=292.29' (Free Discharge)  
 ↑**2=Exfiltration** (Exfiltration Controls 0.02 cfs)

**Primary OutFlow** Max=0.22 cfs @ 12.30 hrs HW=292.29' (Free Discharge)  
 ↑**1=Culvert** (Inlet Controls 0.22 cfs @ 1.84 fps)



### Pond 2P: Basin 1

Hydrograph



**Summary for Pond 3P: Proposed Cond. CB# 13**

Inflow Area = 0.405 ac, 0.00% Impervious, Inflow Depth > 0.39" for 2- Year event  
 Inflow = 0.32 cfs @ 12.13 hrs, Volume= 0.013 af  
 Outflow = 0.32 cfs @ 12.14 hrs, Volume= 0.013 af, Atten= 1%, Lag= 0.6 min  
 Primary = 0.32 cfs @ 12.14 hrs, Volume= 0.013 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Peak Elev= 288.07' @ 12.14 hrs Surf.Area= 0 sf Storage= 17 cf

Plug-Flow detention time= 1.1 min calculated for 0.013 af (99% of inflow)  
 Center-of-Mass det. time= 0.8 min ( 738.4 - 737.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	288.00'	427 cf	<b>Custom Stage Data</b> Listed below

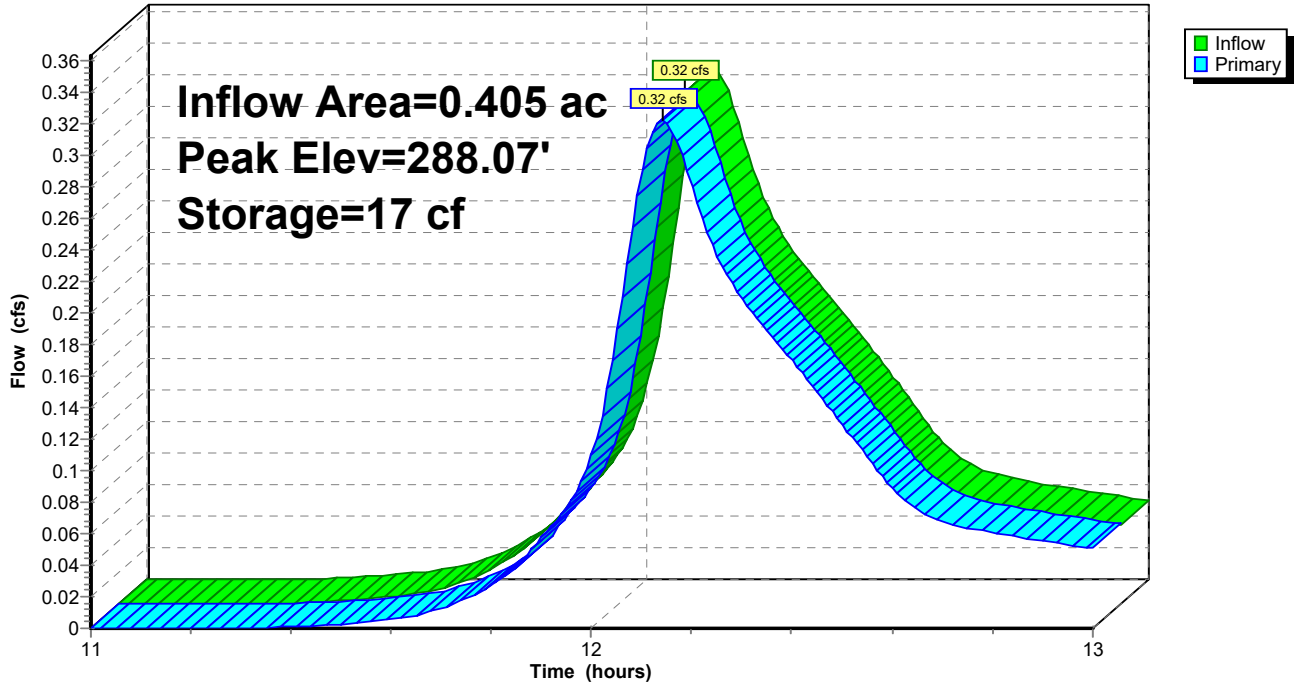
Elevation (feet)	Cum.Store (cubic-feet)
288.00	0
289.00	225
290.00	427

Device	Routing	Invert	Outlet Devices
#1	Primary	288.00'	<b>14.4" x 14.4" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Primary OutFlow** Max=0.32 cfs @ 12.14 hrs HW=288.07' (Free Discharge)  
 ↑**1=Orifice/Grate** (Weir Controls 0.32 cfs @ 0.89 fps)

### Pond 3P: Proposed Cond. CB# 13

Hydrograph



**Summary for Pond 4P: Drainage System # 4@ W. Central St.**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 2.461 ac, 71.03% Impervious, Inflow Depth > 1.23" for 2- Year event  
 Inflow = 6.09 cfs @ 12.07 hrs, Volume= 0.252 af  
 Outflow = 3.61 cfs @ 12.18 hrs, Volume= 0.190 af, Atten= 41%, Lag= 6.3 min  
 Discarded = 0.39 cfs @ 11.68 hrs, Volume= 0.056 af  
 Primary = 3.22 cfs @ 12.18 hrs, Volume= 0.135 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Peak Elev= 272.91' @ 12.18 hrs Surf.Area= 0 sf Storage= 4,242 cf

Plug-Flow detention time= 21.3 min calculated for 0.190 af (76% of inflow)  
 Center-of-Mass det. time= 12.1 min ( 738.5 - 726.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	271.00'	8,163 cf	<b>Custom Stage Data</b> Listed below

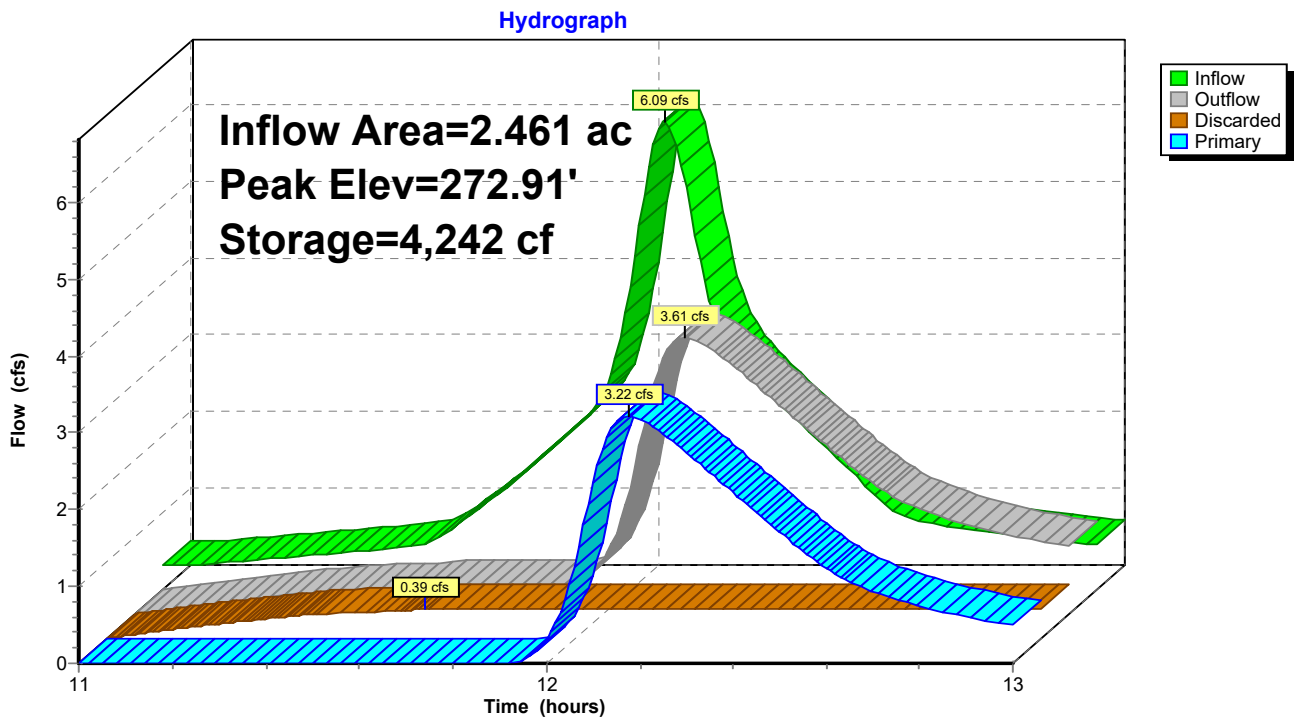
Elevation (feet)	Cum.Store (cubic-feet)
271.00	0
271.50	367
272.00	1,712
272.50	3,109
273.00	4,480
273.50	6,223
274.00	7,796
274.50	8,163

Device	Routing	Invert	Outlet Devices
#1	Discarded	271.00'	<b>Special &amp; User-Defined</b> Elev. (feet) 271.00 271.10 271.60 274.50 Disch. (cfs) 0.000 0.060 0.390 0.390
#2	Primary	272.00'	<b>12.0" Round Culvert</b> L= 20.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 272.00' / 271.30' S= 0.0350 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#3	Primary	272.50'	<b>15.0" Round Culvert</b> L= 20.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 272.50' / 271.80' S= 0.0350 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

**Discarded OutFlow** Max=0.39 cfs @ 11.68 hrs HW=271.60' (Free Discharge)  
 ↑1=**Special & User-Defined** (Custom Controls 0.39 cfs)

**Primary OutFlow** Max=3.22 cfs @ 12.18 hrs HW=272.91' (Free Discharge)  
 ↑2=**Culvert** (Inlet Controls 2.45 cfs @ 3.25 fps)  
 ↑3=**Culvert** (Inlet Controls 0.77 cfs @ 2.19 fps)

Pond 4P: Drainage System # 4@ W. Central St.



**Summary for Pond 5P: Wendy's & Bldg. # 3 Drainage System # 3**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.215 ac, 100.00% Impervious, Inflow Depth > 1.57" for 2- Year event  
 Inflow = 0.69 cfs @ 12.07 hrs, Volume= 0.028 af  
 Outflow = 0.17 cfs @ 11.79 hrs, Volume= 0.022 af, Atten= 75%, Lag= 0.0 min  
 Discarded = 0.17 cfs @ 11.79 hrs, Volume= 0.022 af  
 Primary = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Peak Elev= 274.82' @ 12.43 hrs Surf.Area= 0 sf Storage= 460 cf

Plug-Flow detention time= 17.5 min calculated for 0.022 af (77% of inflow)  
 Center-of-Mass det. time= 8.8 min ( 732.3 - 723.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	274.00'	2,197 cf	<b>Custom Stage Data</b> Listed below

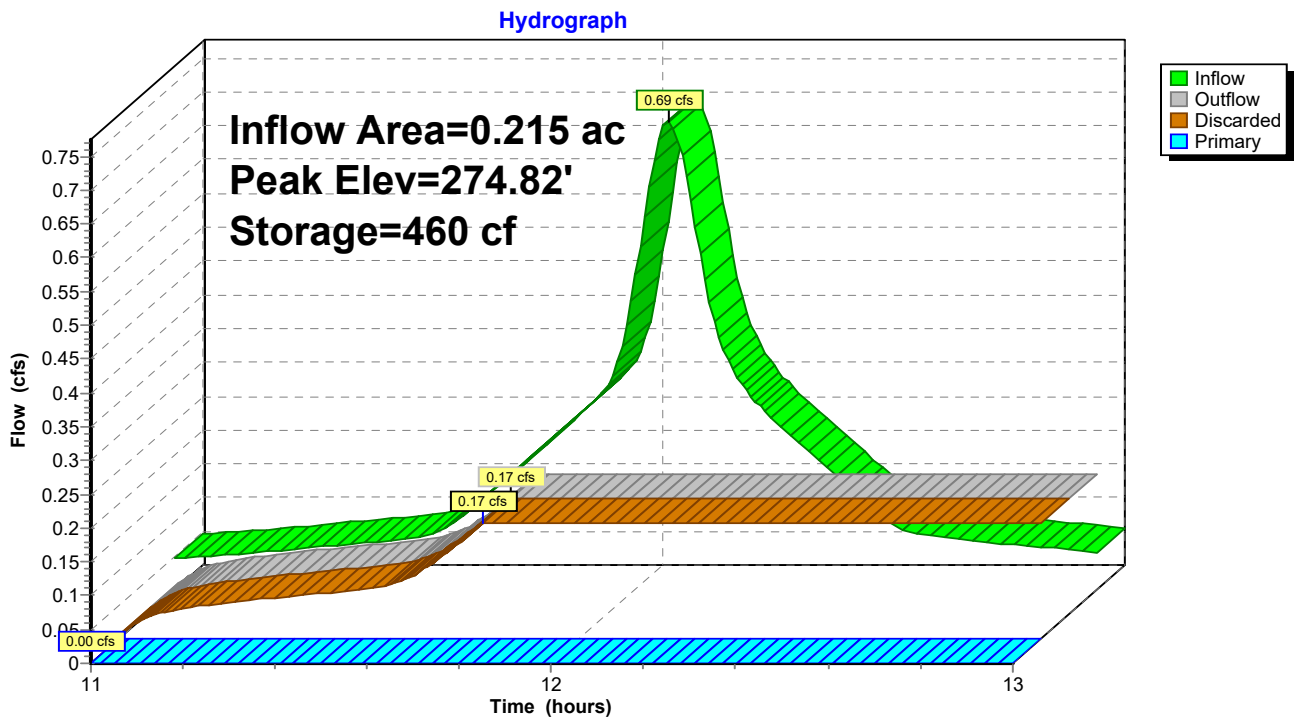
Elevation (feet)	Cum.Store (cubic-feet)
274.00	0
274.50	190
275.00	608
275.50	1,011
276.00	1,401
276.50	1,748
277.00	2,007
277.50	2,197

Device	Routing	Invert	Outlet Devices
#1	Discarded	274.00'	<b>Special &amp; User-Defined</b> Elev. (feet) 274.00 274.10 277.50 Disch. (cfs) 0.000 0.170 0.170
#2	Primary	275.50'	<b>6.0" Vert. Orifice/Grate</b> C= 0.600

**Discarded OutFlow** Max=0.17 cfs @ 11.79 hrs HW=274.10' (Free Discharge)  
 ↑1=**Special & User-Defined** (Custom Controls 0.17 cfs)

**Primary OutFlow** Max=0.00 cfs @ 11.00 hrs HW=274.00' (Free Discharge)  
 ↑2=**Orifice/Grate** ( Controls 0.00 cfs)

### Pond 5P: Wendy's & Bldg. # 3 Drainage System # 3



**Summary for Pond 6-P: EXISTING POND FOR CONDO'S**

Inflow Area = 6.890 ac, 7.26% Impervious, Inflow Depth > 0.46" for 2- Year event  
 Inflow = 6.36 cfs @ 12.13 hrs, Volume= 0.265 af  
 Outflow = 2.01 cfs @ 12.54 hrs, Volume= 0.128 af, Atten= 68%, Lag= 24.7 min  
 Primary = 2.01 cfs @ 12.54 hrs, Volume= 0.128 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Peak Elev= 326.80' @ 12.54 hrs Surf.Area= 0.000 ac Storage= 0.159 af

Plug-Flow detention time= 31.9 min calculated for 0.128 af (48% of inflow)  
 Center-of-Mass det. time= 17.9 min ( 754.1 - 736.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	326.00'	2.340 af	<b>Custom Stage Data</b> Listed below

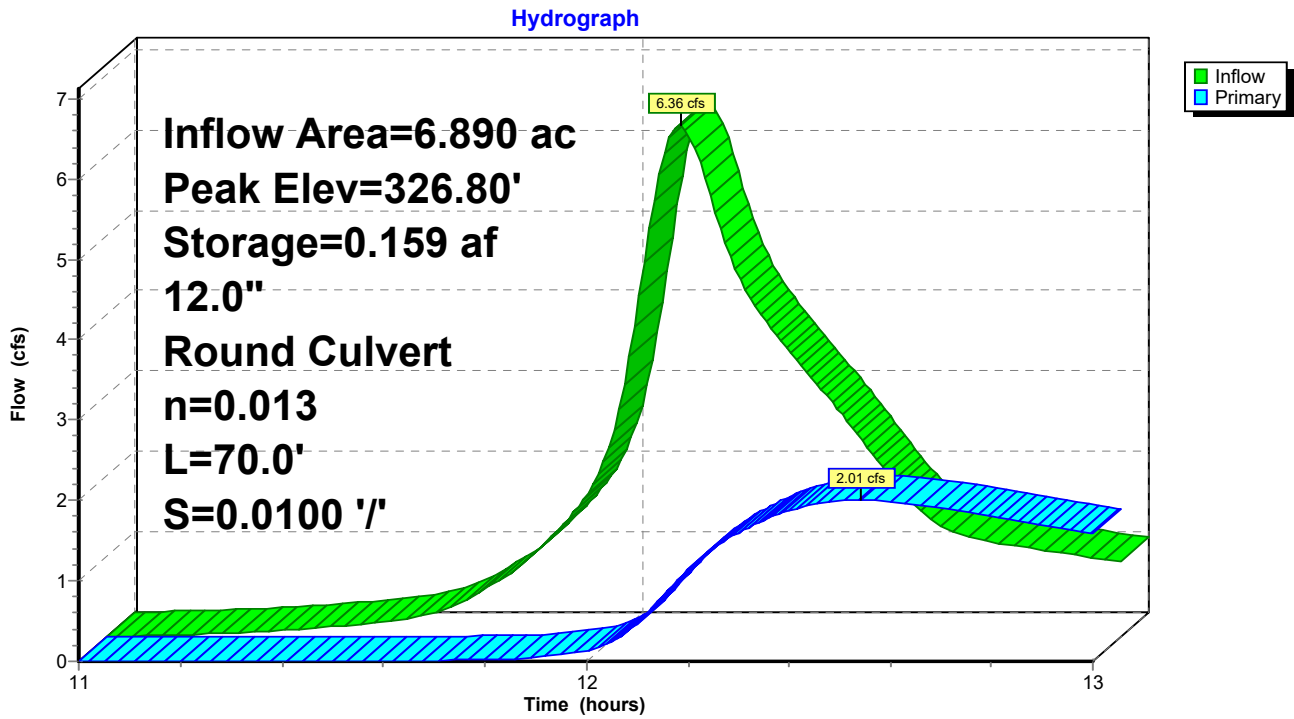
Elevation (feet)	Cum.Store (acre-feet)
326.00	0.000
328.00	0.400
330.00	0.920
332.00	1.570
334.00	2.340

Device	Routing	Invert	Outlet Devices
#1	Primary	326.00'	<b>12.0" Round Culvert</b> L= 70.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 326.00' / 325.30' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=2.01 cfs @ 12.54 hrs HW=326.80' (Free Discharge)  
 ↑1=Culvert (Barrel Controls 2.01 cfs @ 4.12 fps)



### Pond 6-P: EXISTING POND FOR CONDO'S



Time span=11.00-13.00 hrs, dt=0.01 hrs, 201 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

**Subcatchment4S: DA#12** Runoff Area=9,147 sf 90.48% Impervious Runoff Depth>2.33"  
Tc=5.0 min CN=96 Runoff=1.00 cfs 0.041 af

**Subcatchment5S: DA#1** Runoff Area=23,523 sf 22.22% Impervious Runoff Depth>1.50"  
Tc=5.0 min CN=79 Runoff=1.73 cfs 0.067 af

**Subcatchment6S: Roof Runoff Wendys &** Runoff Area=9,365 sf 100.00% Impervious Runoff Depth>2.38"  
Tc=5.0 min CN=98 Runoff=1.05 cfs 0.043 af

**Subcatchment7S: S7=** Runoff Area=98,035 sf 69.22% Impervious Runoff Depth>2.13"  
Tc=5.0 min CN=91 Runoff=9.94 cfs 0.399 af

**Subcatchment8S: Proposed Cond. Runoff** Runoff Area=7.130 ac 7.43% Impervious Runoff Depth>1.09"  
Tc=16.4 min CN=72 Runoff=12.29 cfs 0.648 af

**Subcatchment9S: Proposed Cond. Runoff** Runoff Area=0.405 ac 0.00% Impervious Runoff Depth>1.02"  
Flow Length=400' Tc=8.2 min CN=70 Runoff=0.81 cfs 0.034 af

**Subcatchment10-S: EXISTING AND** Runoff Area=6.890 ac 7.26% Impervious Runoff Depth>1.12"  
Flow Length=350' Tc=8.4 min CN=72 Runoff=14.99 cfs 0.644 af

**Subcatchment11S: Proposed Cond. Runoff** Runoff Area=0.110 ac 0.00% Impervious Runoff Depth>1.24"  
Tc=5.0 min CN=74 Runoff=0.29 cfs 0.011 af

**Reach 2R: 18" PIPE BASIN4& RECH** Avg. Flow Depth=0.77' Max Vel=7.28 fps Inflow=6.71 cfs 0.293 af  
18.0" Round Pipe n=0.013 L=130.0' S=0.0146 '/' Capacity=12.70 cfs Outflow=6.71 cfs 0.293 af

**Reach 3R: R3-12" PIPE RECH BASIN** Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af  
12.0" Round Pipe n=0.013 L=109.0' S=0.0193 '/' Capacity=4.95 cfs Outflow=0.00 cfs 0.000 af

**Reach IP#1: IP#1 HEADWALL24" PIPE** Inflow=16.49 cfs 1.004 af  
Outflow=16.49 cfs 1.004 af

**Reach IP#2: IP#2 EXIT 24"PIPE** Inflow=22.64 cfs 1.297 af  
Outflow=22.64 cfs 1.297 af

**Reach IP#3: IP#3 RUNOFF TO TEDESCHI** Inflow=0.29 cfs 0.011 af  
Outflow=0.29 cfs 0.011 af

**Pond 1P: Basin 2 to DMH5** Peak Elev=290.37' Storage=2,518 cf Inflow=1.73 cfs 0.067 af  
Discarded=0.09 cfs 0.010 af Primary=0.00 cfs 0.000 af Outflow=0.09 cfs 0.010 af

**Pond 2P: Basin 1** Peak Elev=292.52' Storage=906 cf Inflow=1.00 cfs 0.041 af  
Discarded=0.02 cfs 0.003 af Primary=0.49 cfs 0.024 af Outflow=0.51 cfs 0.027 af

**Pond 3P: Proposed Cond. CB# 13** Peak Elev=288.14' Storage=31 cf Inflow=0.81 cfs 0.034 af  
Outflow=0.81 cfs 0.034 af

**Pond 4P: Drainage System # 4@W. Central** Peak Elev=273.41' Storage=5,906 cf Inflow=10.28 cfs 0.423 af  
Discarded=0.39 cfs 0.060 af Primary=6.71 cfs 0.293 af Outflow=7.10 cfs 0.353 af

**Pond 5P: Wendy's & Bldg. # 3 Drainage** Peak Elev=275.40' Storage=929 cf Inflow=1.05 cfs 0.043 af  
Discarded=0.17 cfs 0.024 af Primary=0.00 cfs 0.000 af Outflow=0.17 cfs 0.024 af

**Pond 6-P: EXISTING POND FOR CONDO'S** Peak Elev=327.90' Storage=0.379 af Inflow=14.99 cfs 0.644 af  
12.0" Round Culvert n=0.013 L=70.0' S=0.0100 '/ Outflow=4.14 cfs 0.322 af

**Total Runoff Area = 17.751 ac Runoff Volume = 1.888 af Average Runoff Depth = 1.28"**  
**82.46% Pervious = 14.638 ac 17.54% Impervious = 3.113 ac**

**Summary for Subcatchment 4S: DA#12**

Runoff = 1.00 cfs @ 12.07 hrs, Volume= 0.041 af, Depth> 2.33"

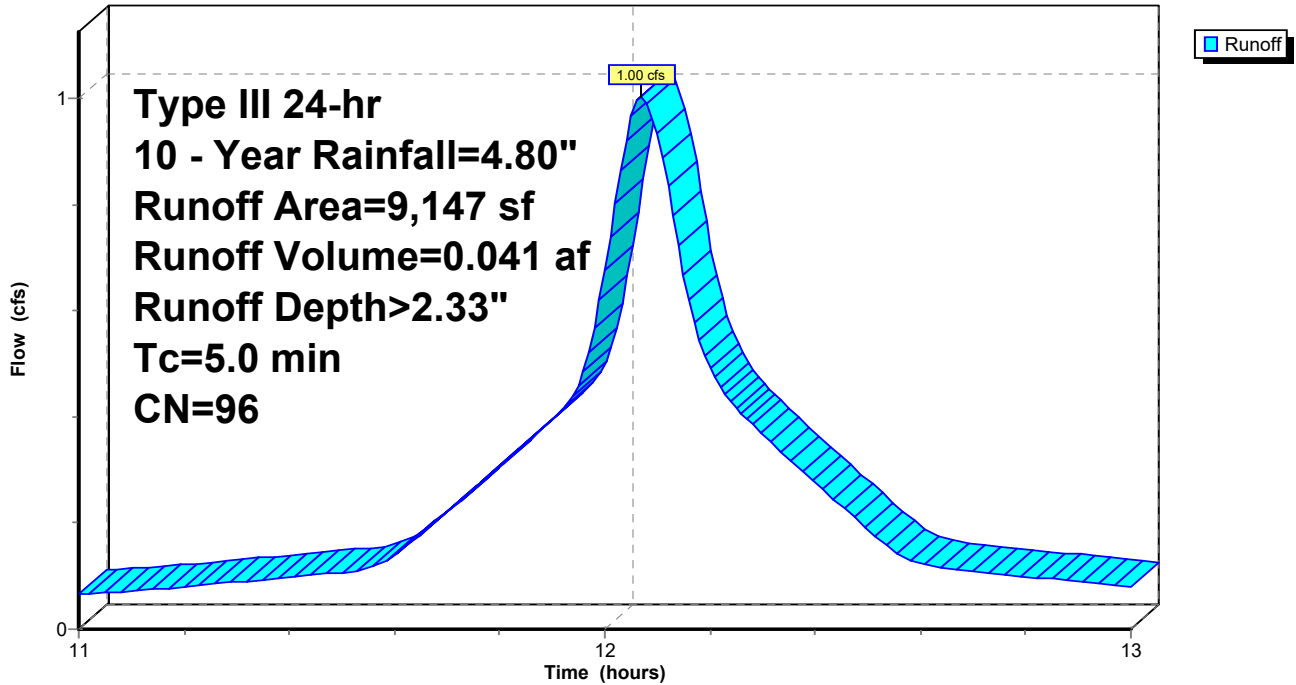
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10 - Year Rainfall=4.80"

Area (sf)	CN	Description
6,534	98	Paved parking & roofs
871	74	>75% Grass cover, Good, HSG C
* 1,742	98	Detention Basin
9,147	96	Weighted Average
871		9.52% Pervious Area
8,276		90.48% Impervious Area

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

**Subcatchment 4S: DA#12**

Hydrograph



**Summary for Subcatchment 5S: DA#1**

Runoff = 1.73 cfs @ 12.08 hrs, Volume= 0.067 af, Depth> 1.50"

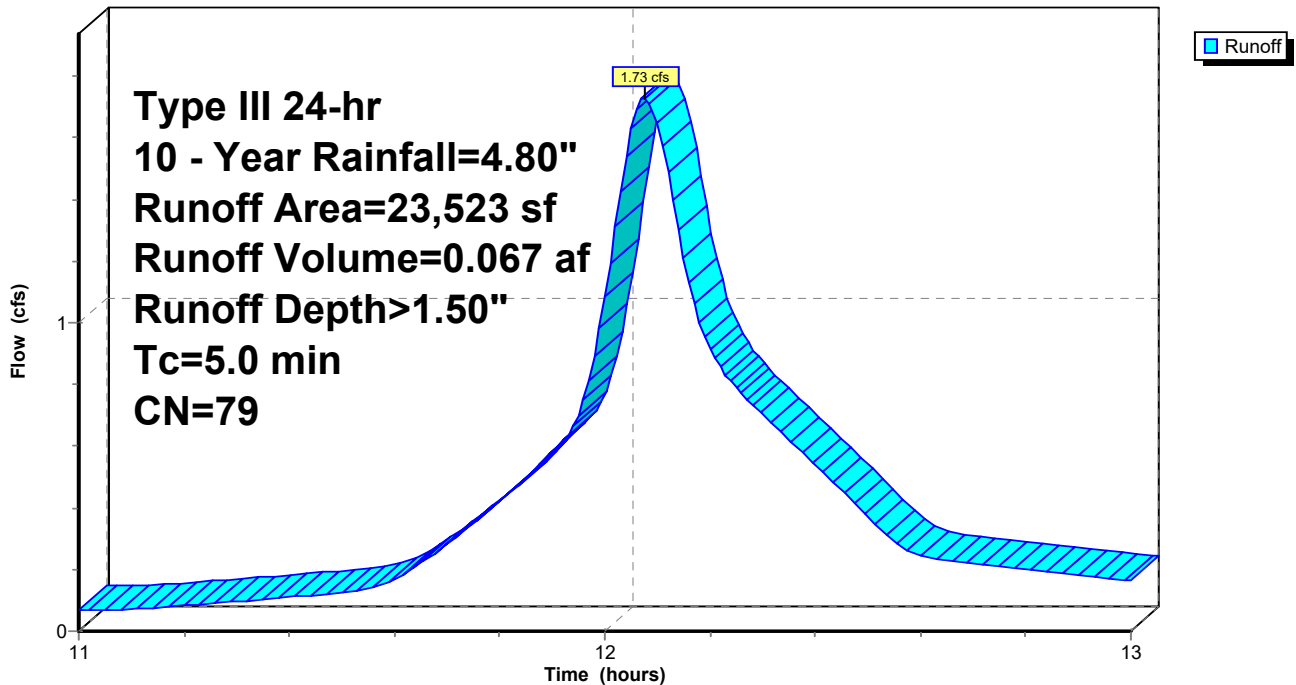
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 - Year Rainfall=4.80"

Area (sf)	CN	Description
5,227	98	Paved parking & roofs
15,682	74	>75% Grass cover, Good, HSG C
* 2,614	74	Detention Basin
23,523	79	Weighted Average
18,296		77.78% Pervious Area
5,227		22.22% Impervious Area

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

**Subcatchment 5S: DA#1**

Hydrograph



**Summary for Subcatchment 6S: Roof Runoff Wendys & Bldg. # 3**

Runoff = 1.05 cfs @ 12.07 hrs, Volume= 0.043 af, Depth> 2.38"

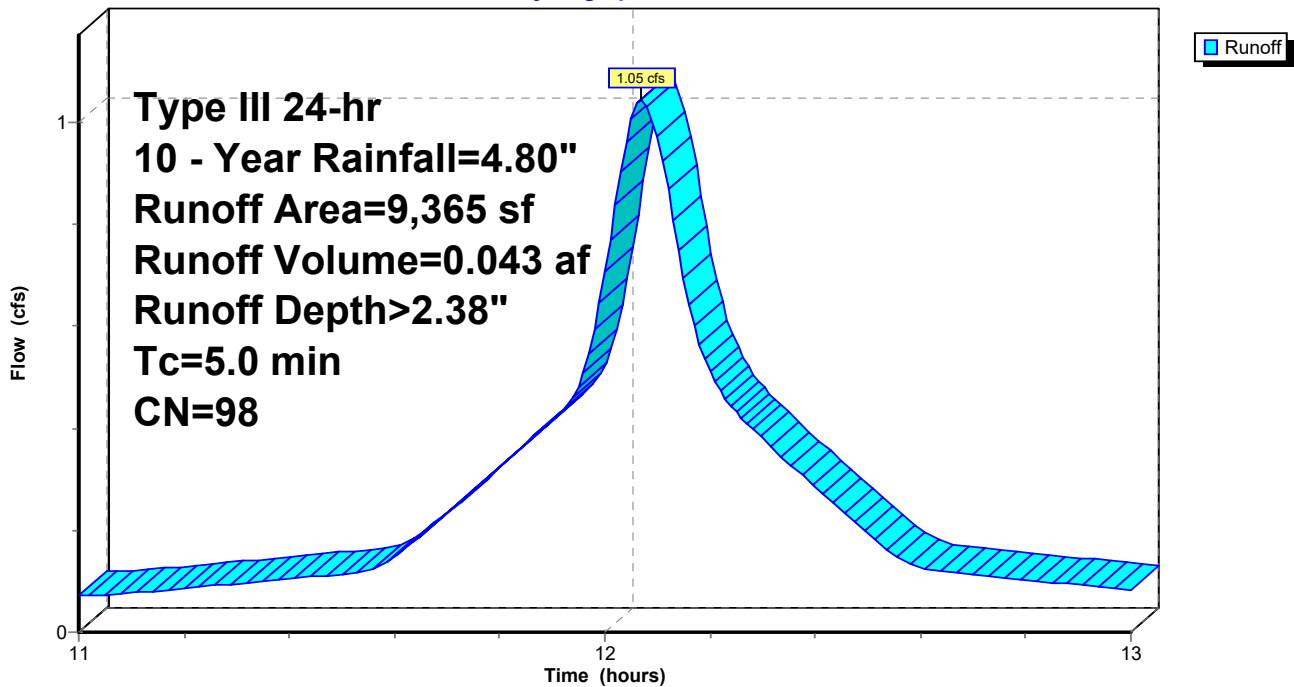
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10 - Year Rainfall=4.80"

Area (sf)	CN	Description
* 9,365	98	Roofs
9,365		100.00% Impervious Area

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

**Subcatchment 6S: Roof Runoff Wendys & Bldg. # 3**

Hydrograph



**Summary for Subcatchment 7S: S7= DA2,DA3,DA4,DA5,DA6,DA7,DA8,DA9,DA10,4P,DA11,**

Runoff = 9.94 cfs @ 12.07 hrs, Volume= 0.399 af, Depth> 2.13"

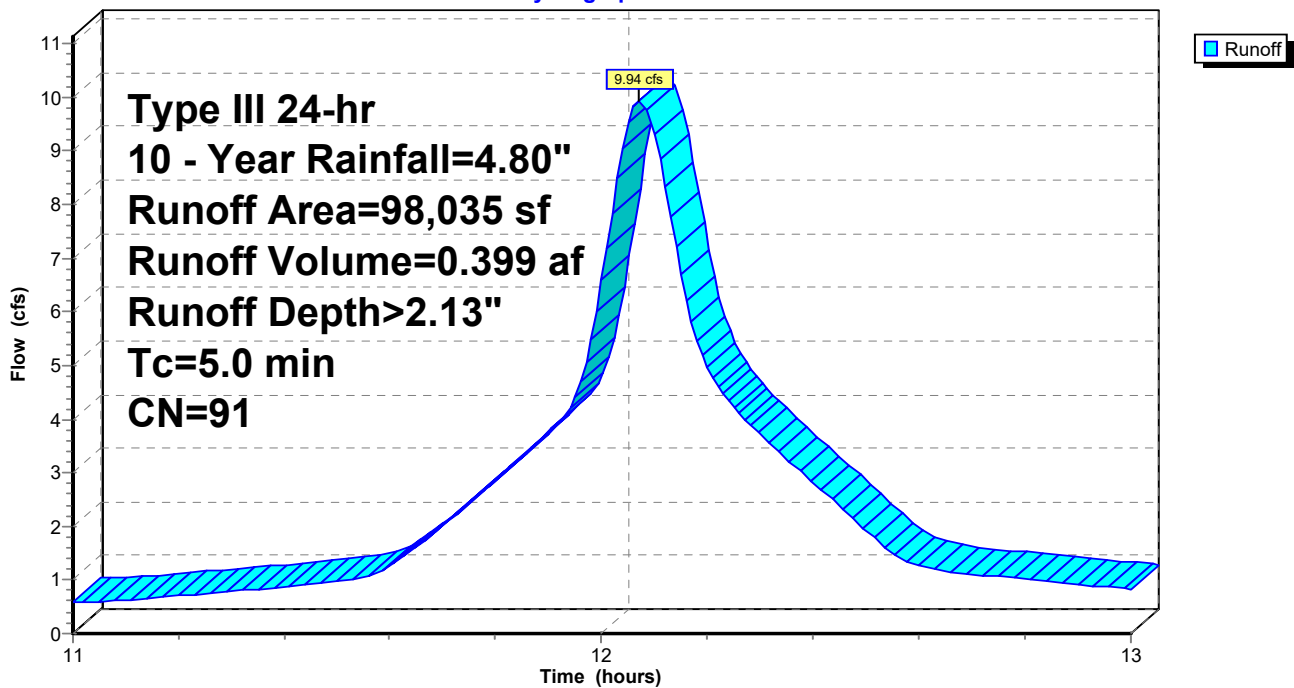
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10 - Year Rainfall=4.80"

	Area (sf)	CN	Description
*	59,240	98	Paved parking
	30,179	74	>75% Grass cover, Good, HSG C
*	1,742	98	Detention area
*	6,874	98	Stormcrete Pervious Concrete, HSG C
	98,035	91	Weighted Average
	30,179		30.78% Pervious Area
	67,856		69.22% Impervious Area

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

**Subcatchment 7S: S7= DA2,DA3,DA4,DA5,DA6,DA7,DA8,DA9,DA10,4P,DA11,**

Hydrograph



**Summary for Subcatchment 8S: Proposed Cond. Runoff to 24 " Culvert H.W.**

Runoff = 12.29 cfs @ 12.23 hrs, Volume= 0.648 af, Depth> 1.09"

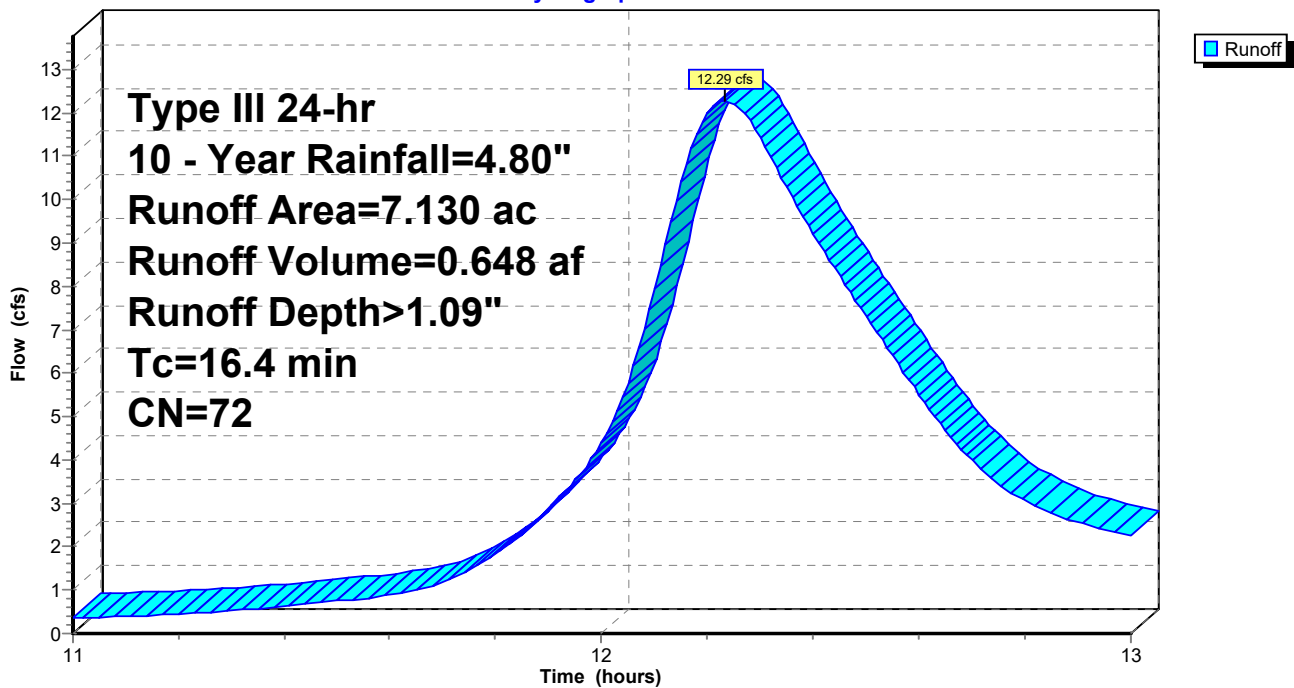
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10 - Year Rainfall=4.80"

Area (ac)	CN	Description
6.600	70	Woods, Good, HSG C
* 0.530	98	WETLANDS
7.130	72	Weighted Average
6.600		92.57% Pervious Area
0.530		7.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4					Direct Entry, Overland Same as Existing

**Subcatchment 8S: Proposed Cond. Runoff to 24 " Culvert H.W.**

Hydrograph





**Summary for Subcatchment 9S: Proposed Cond. Runoff to 24" Pipe**

Runoff = 0.81 cfs @ 12.12 hrs, Volume= 0.034 af, Depth> 1.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 - Year Rainfall=4.80"

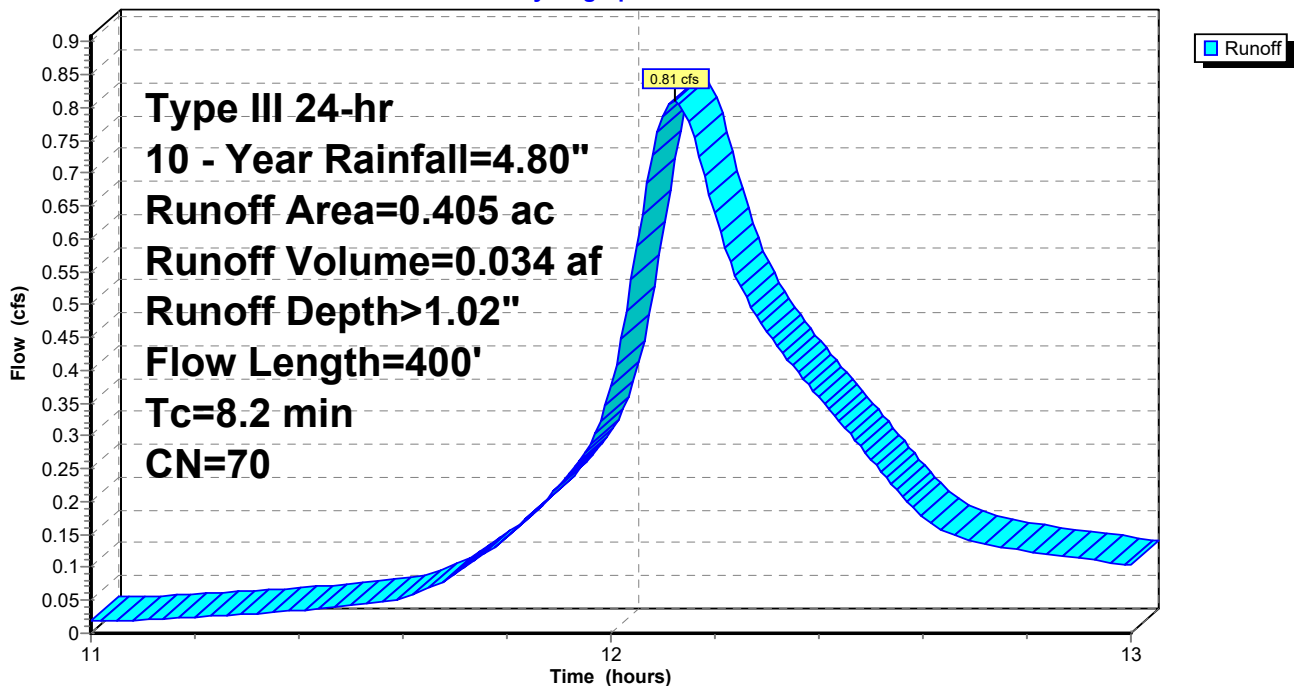
Area (ac)	CN	Description
0.405	70	Woods, Good, HSG C
0.405		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	50	0.1000	0.13		<b>Sheet Flow, Overland</b> Woods: Light underbrush n= 0.400 P2= 3.20"
1.5	150	0.1100	1.66		<b>Shallow Concentrated Flow, Overland</b> Woodland Kv= 5.0 fps
0.2	200	0.0600	13.40	66.99	<b>Parabolic Channel, Grass Swale</b> W=5.00' D=1.50' Area=5.0 sf Perim=6.0' n= 0.024
8.2	400	Total			

**Subcatchment 9S: Proposed Cond. Runoff to 24" Pipe**

Hydrograph



**Summary for Subcatchment 10-S: EXISTING AND PROPOSED RUNOFF,=10S**

Runoff = 14.99 cfs @ 12.12 hrs, Volume= 0.644 af, Depth> 1.12"

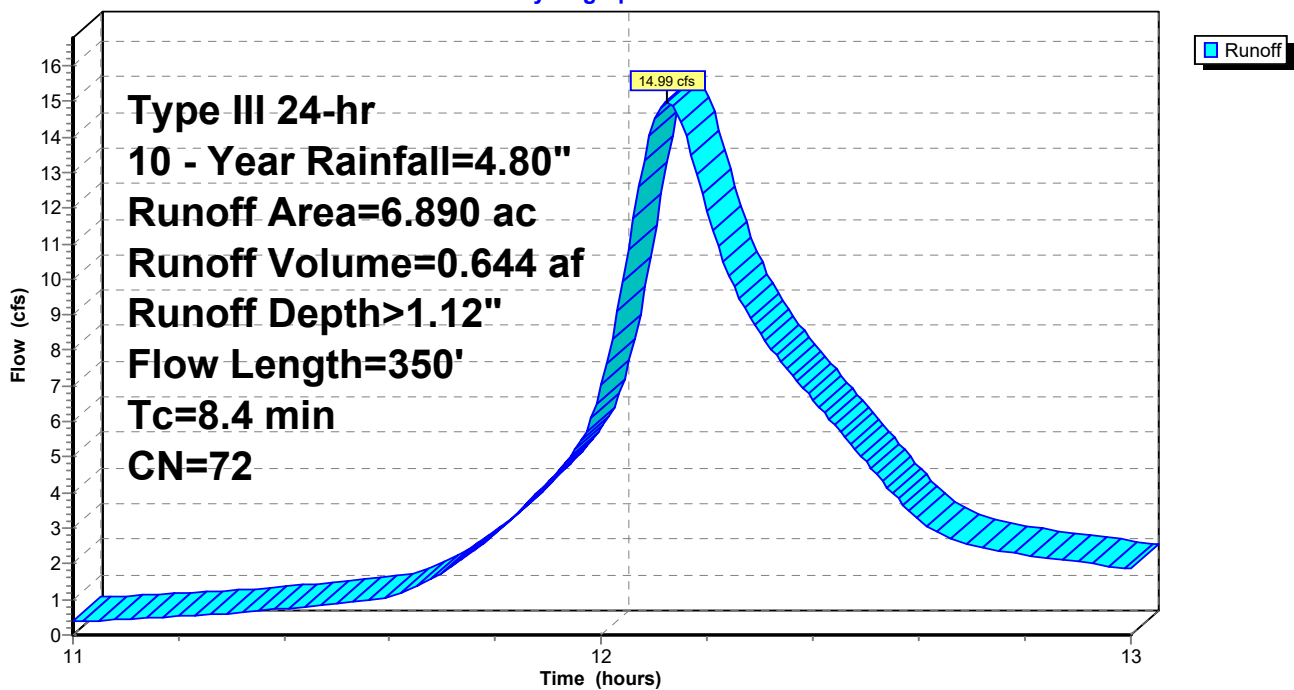
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 - Year Rainfall=4.80"

Area (ac)	CN	Description
0.500	98	Paved parking & roofs
0.300	74	>75% Grass cover, Good, HSG C
6.090	70	Woods, Good, HSG C
6.890	72	Weighted Average
6.390		92.74% Pervious Area
0.500		7.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	50	0.0800	0.18		<b>Sheet Flow, SHEET FLOW</b> Grass: Dense n= 0.240 P2= 3.20"
3.3	240	0.0600	1.22		<b>Shallow Concentrated Flow, SHALLOW CONCENTRATED FLOW</b> Woodland Kv= 5.0 fps
0.4	60	0.2500	2.50		<b>Shallow Concentrated Flow, SHALLOW CONCENTRATED FLOW</b> Woodland Kv= 5.0 fps
8.4	350	Total			

**Subcatchment 10-S: EXISTING AND PROPOSED RUNOFF,=10S**

Hydrograph



**Summary for Subcatchment 11S: Proposed Cond. Runoff to Tedeschi's**

Runoff = 0.29 cfs @ 12.08 hrs, Volume= 0.011 af, Depth> 1.24"

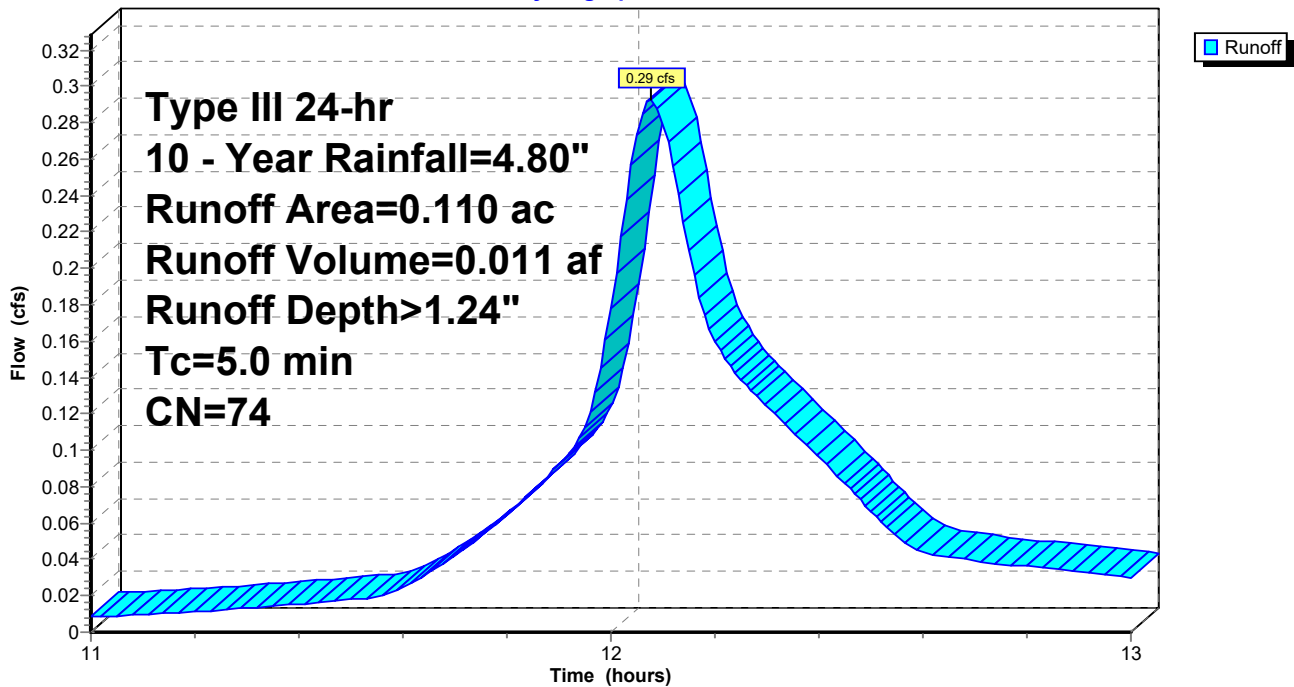
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10 - Year Rainfall=4.80"

Area (ac)	CN	Description
0.110	74	>75% Grass cover, Good, HSG C
0.110		100.00% Pervious Area

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

**Subcatchment 11S: Proposed Cond. Runoff to Tedeschi's**

Hydrograph



**Summary for Reach 2R: 18" PIPE BASIN4& RECH BASIN**

[52] Hint: Inlet/Outlet conditions not evaluated

[62] Hint: Exceeded Reach 3R OUTLET depth by 0.27' @ 12.16 hrs

[79] Warning: Submerged Pond 4P Primary device # 2 INLET by 0.67'

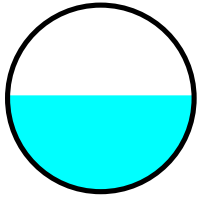
[79] Warning: Submerged Pond 4P Primary device # 3 INLET by 0.17'

Inflow Area =	2.676 ac, 73.36% Impervious, Inflow Depth > 1.31"	for 10 - Year event
Inflow =	6.71 cfs @ 12.15 hrs, Volume=	0.293 af
Outflow =	6.71 cfs @ 12.16 hrs, Volume=	0.293 af, Atten= 0%, Lag= 0.2 min

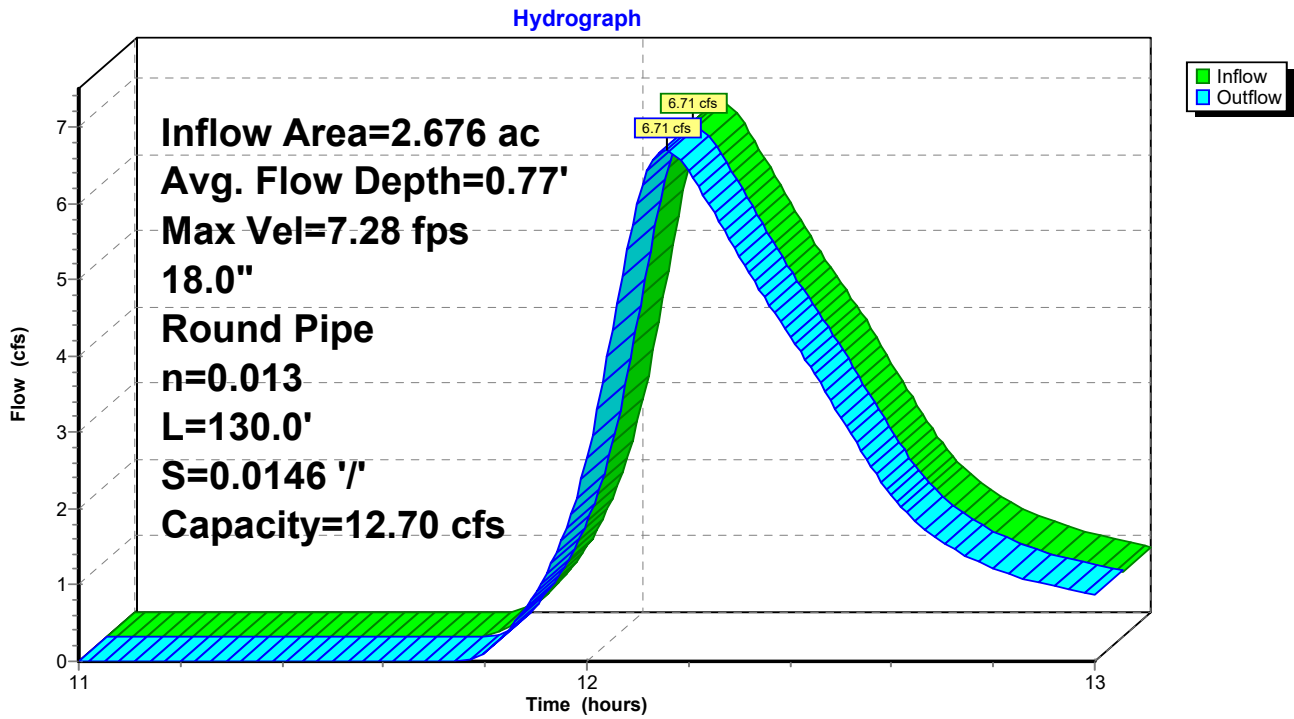
Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 7.28 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 5.28 fps, Avg. Travel Time= 0.4 min

Peak Storage= 120 cf @ 12.16 hrs  
 Average Depth at Peak Storage= 0.77'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.70 cfs

18.0" Round Pipe  
 n= 0.013  
 Length= 130.0' Slope= 0.0146 '  
 Inlet Invert= 271.90', Outlet Invert= 270.00'



### Reach 2R: 18" PIPE BASIN4& RECH BASIN



### Summary for Reach 3R: R3-12" PIPE RECH BASIN

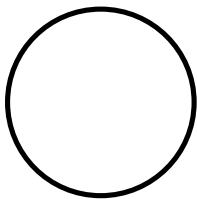
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.215 ac, 100.00% Impervious, Inflow Depth = 0.00" for 10 - Year event  
 Inflow = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

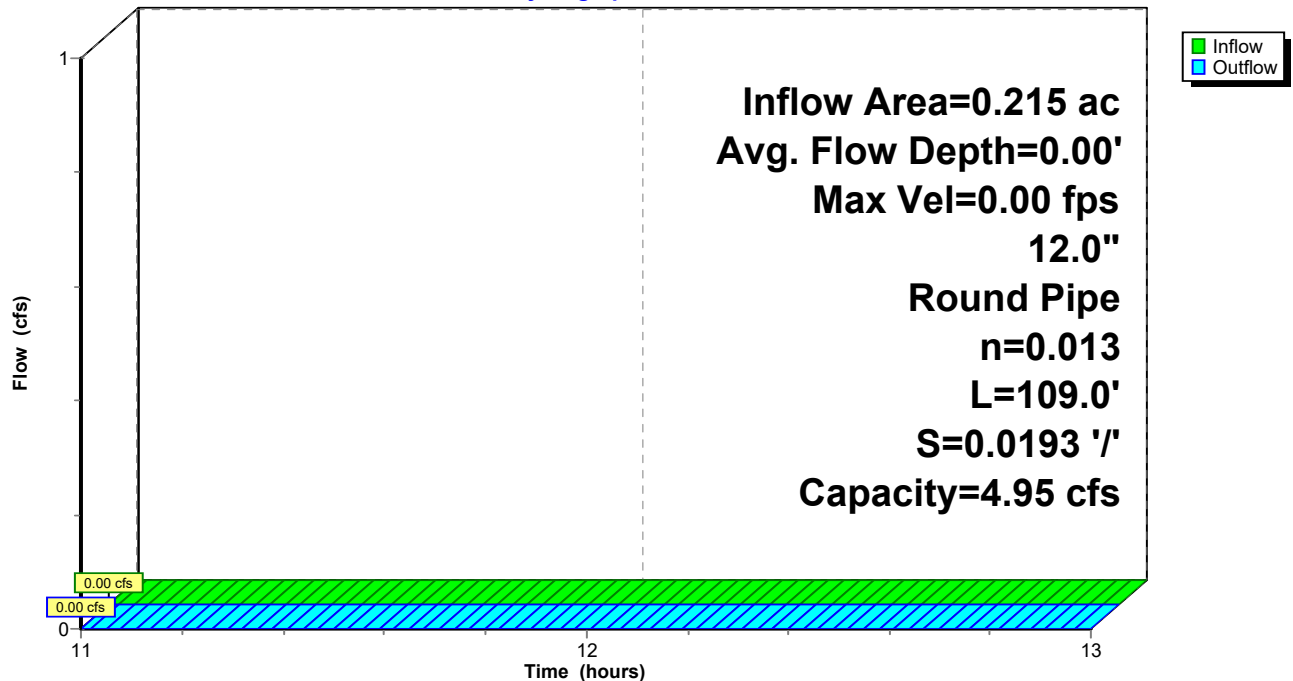
Peak Storage= 0 cf @ 11.00 hrs  
 Average Depth at Peak Storage= 0.00'  
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.95 cfs

12.0" Round Pipe  
 n= 0.013  
 Length= 109.0' Slope= 0.0193 '/'  
 Inlet Invert= 274.50', Outlet Invert= 272.40'



### Reach 3R: R3-12" PIPE RECH BASIN

Hydrograph



### Summary for Reach IP#1: IP#1 HEADWALL 24" PIPE

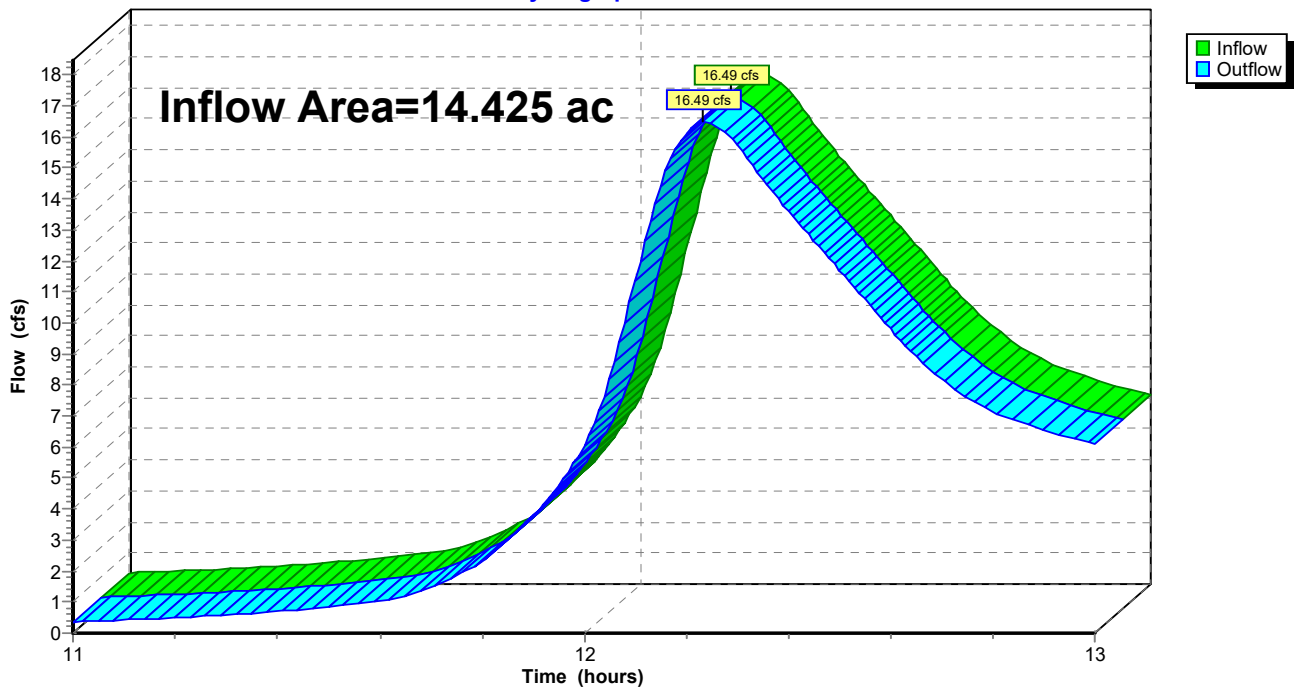
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 14.425 ac, 7.14% Impervious, Inflow Depth > 0.84" for 10 - Year event  
Inflow = 16.49 cfs @ 12.23 hrs, Volume= 1.004 af  
Outflow = 16.49 cfs @ 12.23 hrs, Volume= 1.004 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs

### Reach IP#1: IP#1 HEADWALL 24" PIPE

Hydrograph



### Summary for Reach IP#2: IP#2 EXIT 24"PIPE

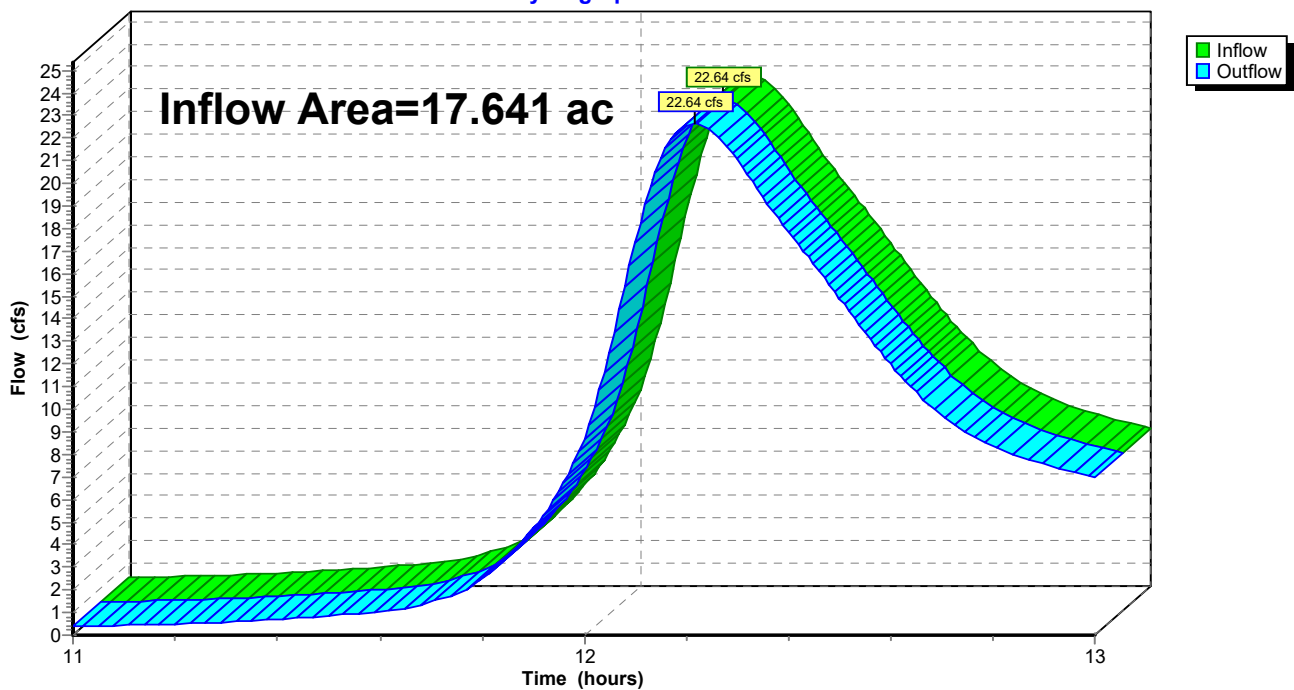
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 17.641 ac, 17.65% Impervious, Inflow Depth > 0.88" for 10 - Year event  
Inflow = 22.64 cfs @ 12.22 hrs, Volume= 1.297 af  
Outflow = 22.64 cfs @ 12.22 hrs, Volume= 1.297 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs

### Reach IP#2: IP#2 EXIT 24"PIPE

Hydrograph





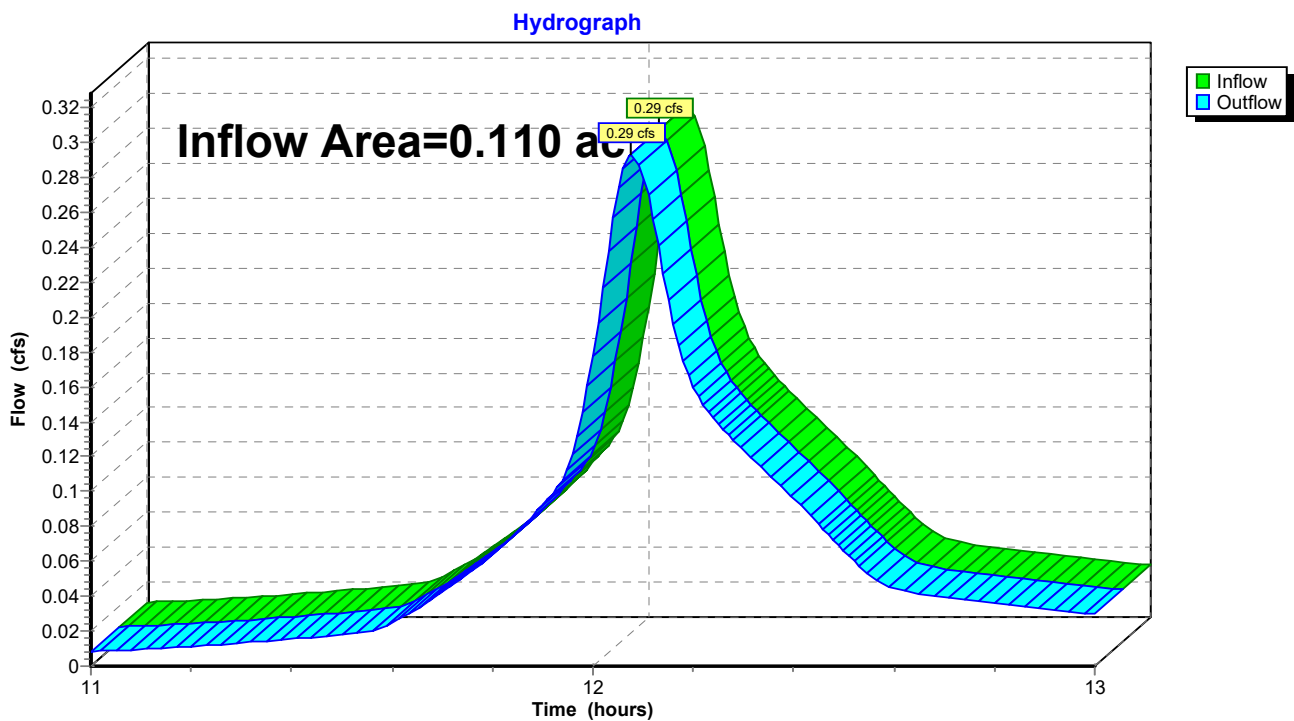
### Summary for Reach IP#3: IP#3 RUNOFF TO TEDESCHI

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

Inflow Area = 0.110 ac, 0.00% Impervious, Inflow Depth > 1.24" for 10 - Year event  
Inflow = 0.29 cfs @ 12.08 hrs, Volume= 0.011 af  
Outflow = 0.29 cfs @ 12.08 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs

### Reach IP#3: IP#3 RUNOFF TO TEDESCHI



**Summary for Pond 1P: Basin 2 to DMH5**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.540 ac, 22.22% Impervious, Inflow Depth > 1.50" for 10 - Year event  
 Inflow = 1.73 cfs @ 12.08 hrs, Volume= 0.067 af  
 Outflow = 0.09 cfs @ 13.00 hrs, Volume= 0.010 af, Atten= 95%, Lag= 55.5 min  
 Discarded = 0.09 cfs @ 13.00 hrs, Volume= 0.010 af  
 Primary = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Peak Elev= 290.37' @ 13.00 hrs Surf.Area= 1,529 sf Storage= 2,518 cf

Plug-Flow detention time= 41.0 min calculated for 0.010 af (14% of inflow)  
 Center-of-Mass det. time= 4.8 min ( 732.2 - 727.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	288.00'	5,745 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
288.00	665	0	0
290.00	1,330	1,995	1,995
292.00	2,420	3,750	5,745

Device	Routing	Invert	Outlet Devices
#1	Primary	287.50'	<b>12.0" Round Culvert</b> L= 35.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 287.50' / 287.10' S= 0.0114 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	291.00'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Discarded	288.00'	<b>2.410 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.09 cfs @ 13.00 hrs HW=290.37' (Free Discharge)

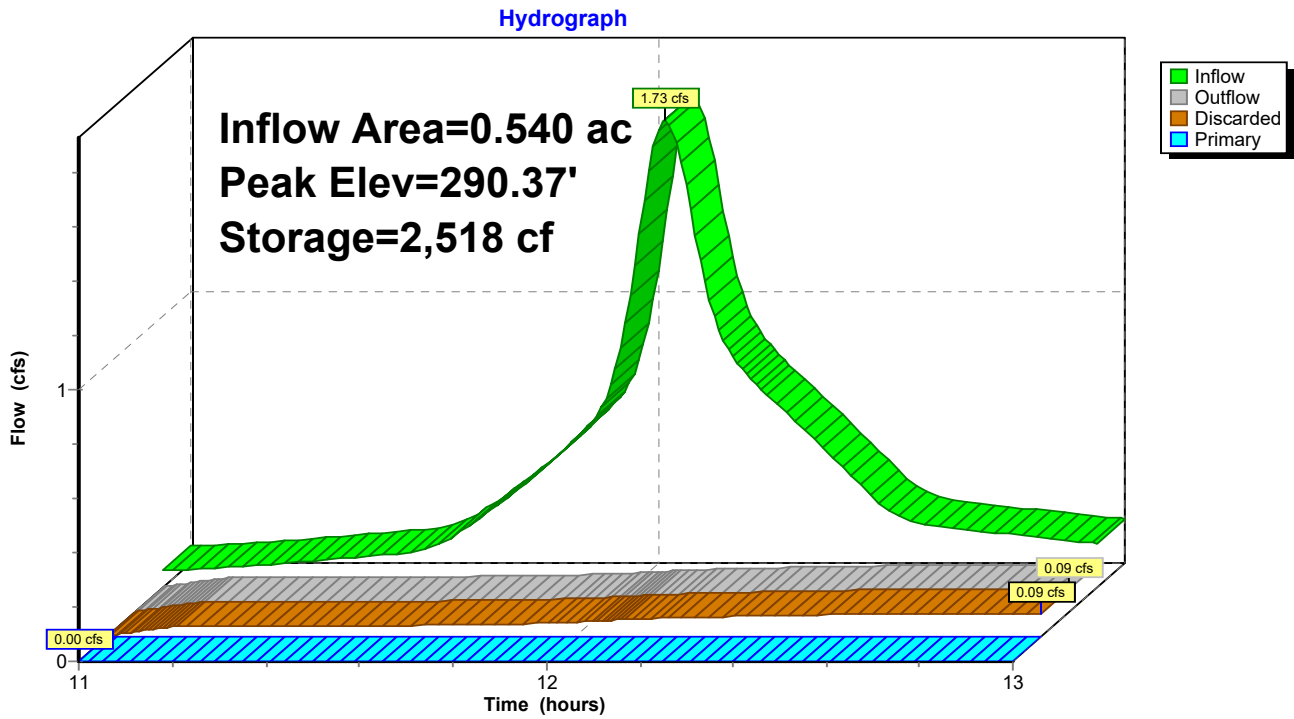
↑**3=Exfiltration** (Exfiltration Controls 0.09 cfs)

**Primary OutFlow** Max=0.00 cfs @ 11.00 hrs HW=288.00' (Free Discharge)

↑**1=Culvert** (Passes 0.00 cfs of 0.99 cfs potential flow)

↑**2=Orifice/Grate** ( Controls 0.00 cfs)

### Pond 1P: Basin 2 to DMH5



**Summary for Pond 2P: Basin 1**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.210 ac, 90.48% Impervious, Inflow Depth > 2.33" for 10 - Year event  
 Inflow = 1.00 cfs @ 12.07 hrs, Volume= 0.041 af  
 Outflow = 0.51 cfs @ 12.19 hrs, Volume= 0.027 af, Atten= 49%, Lag= 7.3 min  
 Discarded = 0.02 cfs @ 12.19 hrs, Volume= 0.003 af  
 Primary = 0.49 cfs @ 12.19 hrs, Volume= 0.024 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Peak Elev= 292.52' @ 12.19 hrs Surf.Area= 979 sf Storage= 906 cf

Plug-Flow detention time= 30.8 min calculated for 0.027 af (65% of inflow)  
 Center-of-Mass det. time= 18.7 min ( 742.3 - 723.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	291.00'	2,932 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
291.00	293	0	0
292.00	670	482	482
293.00	1,270	970	1,452
294.00	1,690	1,480	2,932

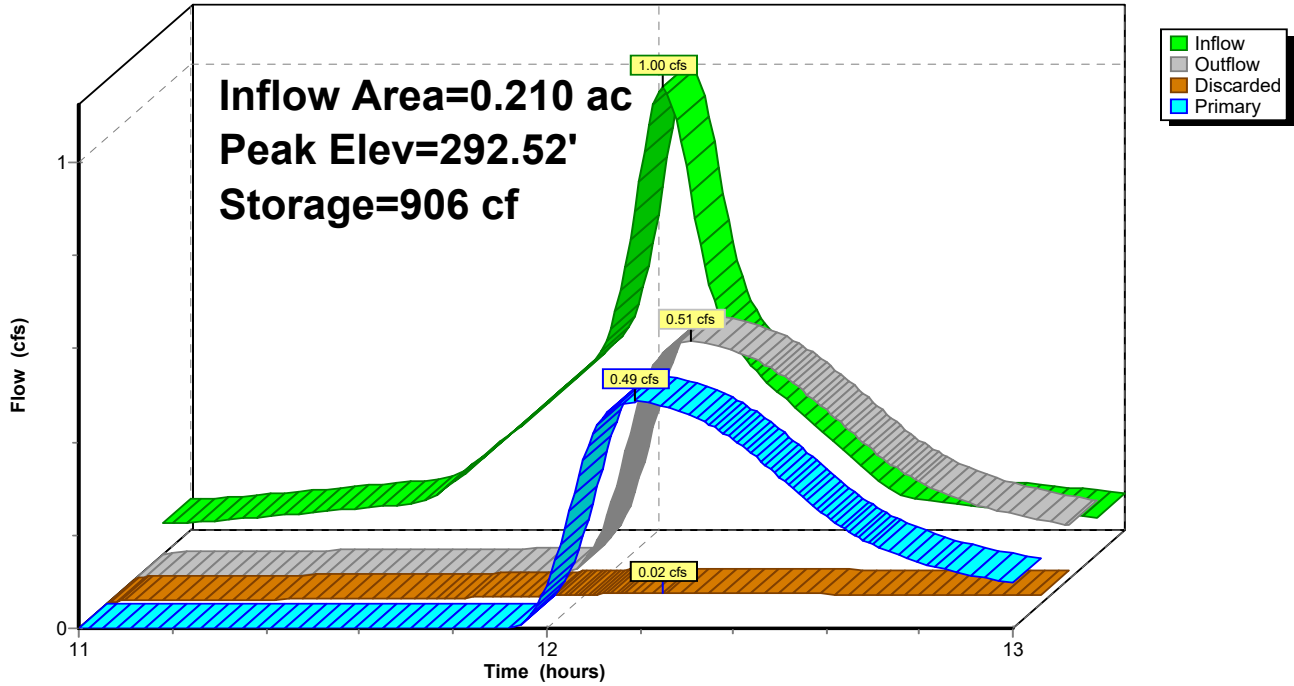
Device	Routing	Invert	Outlet Devices
#1	Primary	292.00'	<b>6.0" Round Culvert</b> L= 43.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 292.00' / 285.22' S= 0.1577 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Discarded	291.00'	<b>1.020 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.02 cfs @ 12.19 hrs HW=292.52' (Free Discharge)  
 ↑**2=Exfiltration** (Exfiltration Controls 0.02 cfs)

**Primary OutFlow** Max=0.49 cfs @ 12.19 hrs HW=292.52' (Free Discharge)  
 ↑**1=Culvert** (Inlet Controls 0.49 cfs @ 2.48 fps)

### Pond 2P: Basin 1

Hydrograph



**Summary for Pond 3P: Proposed Cond. CB# 13**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.405 ac, 0.00% Impervious, Inflow Depth > 1.02" for 10 - Year event  
 Inflow = 0.81 cfs @ 12.12 hrs, Volume= 0.034 af  
 Outflow = 0.81 cfs @ 12.13 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.4 min  
 Primary = 0.81 cfs @ 12.13 hrs, Volume= 0.034 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Peak Elev= 288.14' @ 12.13 hrs Surf.Area= 0 sf Storage= 31 cf

Plug-Flow detention time= 0.9 min calculated for 0.034 af (99% of inflow)  
 Center-of-Mass det. time= 0.6 min ( 733.2 - 732.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	288.00'	427 cf	<b>Custom Stage Data</b> Listed below

Elevation (feet)	Cum.Store (cubic-feet)
288.00	0
289.00	225
290.00	427

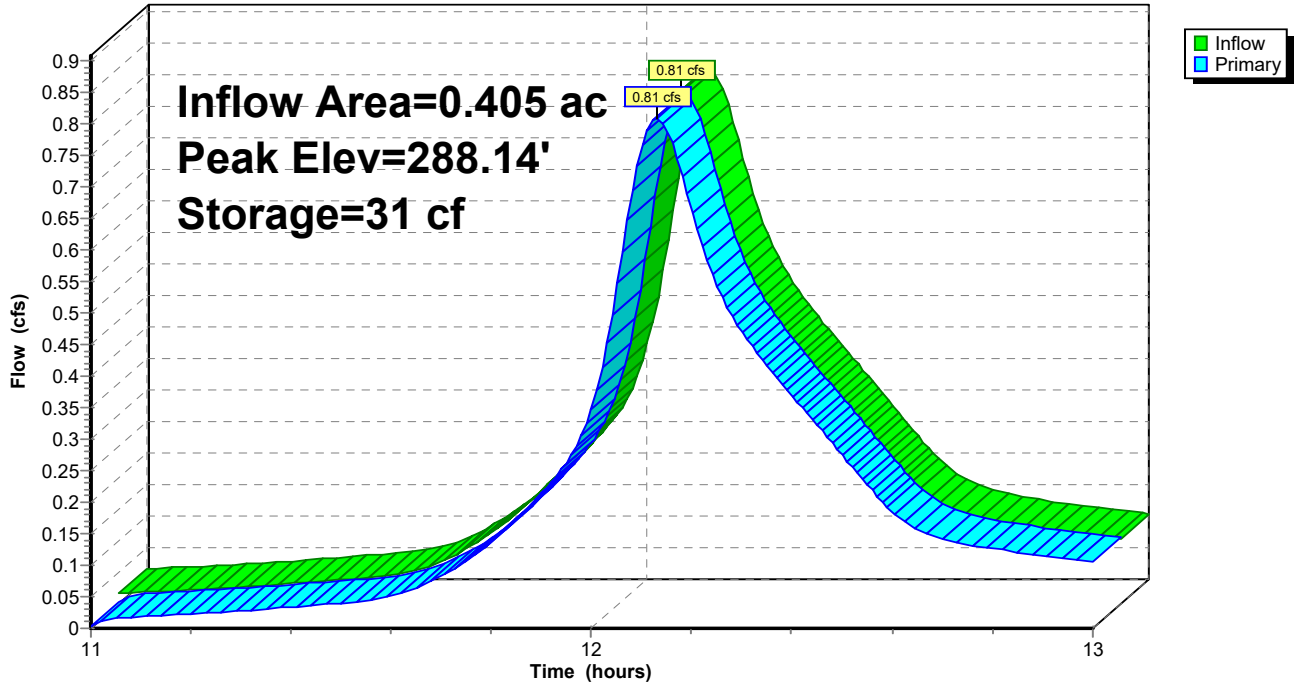
Device	Routing	Invert	Outlet Devices
#1	Primary	288.00'	<b>14.4" x 14.4" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Primary OutFlow** Max=0.81 cfs @ 12.13 hrs HW=288.14' (Free Discharge)

↑**1=Orifice/Grate** (Weir Controls 0.81 cfs @ 1.22 fps)

### Pond 3P: Proposed Cond. CB# 13

Hydrograph



**Summary for Pond 4P: Drainage System # 4@ W. Central St.**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 2.461 ac, 71.03% Impervious, Inflow Depth > 2.06" for 10 - Year event  
 Inflow = 10.28 cfs @ 12.07 hrs, Volume= 0.423 af  
 Outflow = 7.10 cfs @ 12.15 hrs, Volume= 0.353 af, Atten= 31%, Lag= 4.7 min  
 Discarded = 0.39 cfs @ 11.39 hrs, Volume= 0.060 af  
 Primary = 6.71 cfs @ 12.15 hrs, Volume= 0.293 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Peak Elev= 273.41' @ 12.15 hrs Surf.Area= 0 sf Storage= 5,906 cf

Plug-Flow detention time= 17.7 min calculated for 0.353 af (84% of inflow)  
 Center-of-Mass det. time= 10.9 min ( 736.6 - 725.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	271.00'	8,163 cf	<b>Custom Stage Data</b> Listed below

Elevation (feet)	Cum.Store (cubic-feet)
271.00	0
271.50	367
272.00	1,712
272.50	3,109
273.00	4,480
273.50	6,223
274.00	7,796
274.50	8,163

Device	Routing	Invert	Outlet Devices
#1	Discarded	271.00'	<b>Special &amp; User-Defined</b> Elev. (feet) 271.00 271.10 271.60 274.50 Disch. (cfs) 0.000 0.060 0.390 0.390
#2	Primary	272.00'	<b>12.0" Round Culvert</b> L= 20.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 272.00' / 271.30' S= 0.0350 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#3	Primary	272.50'	<b>15.0" Round Culvert</b> L= 20.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 272.50' / 271.80' S= 0.0350 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

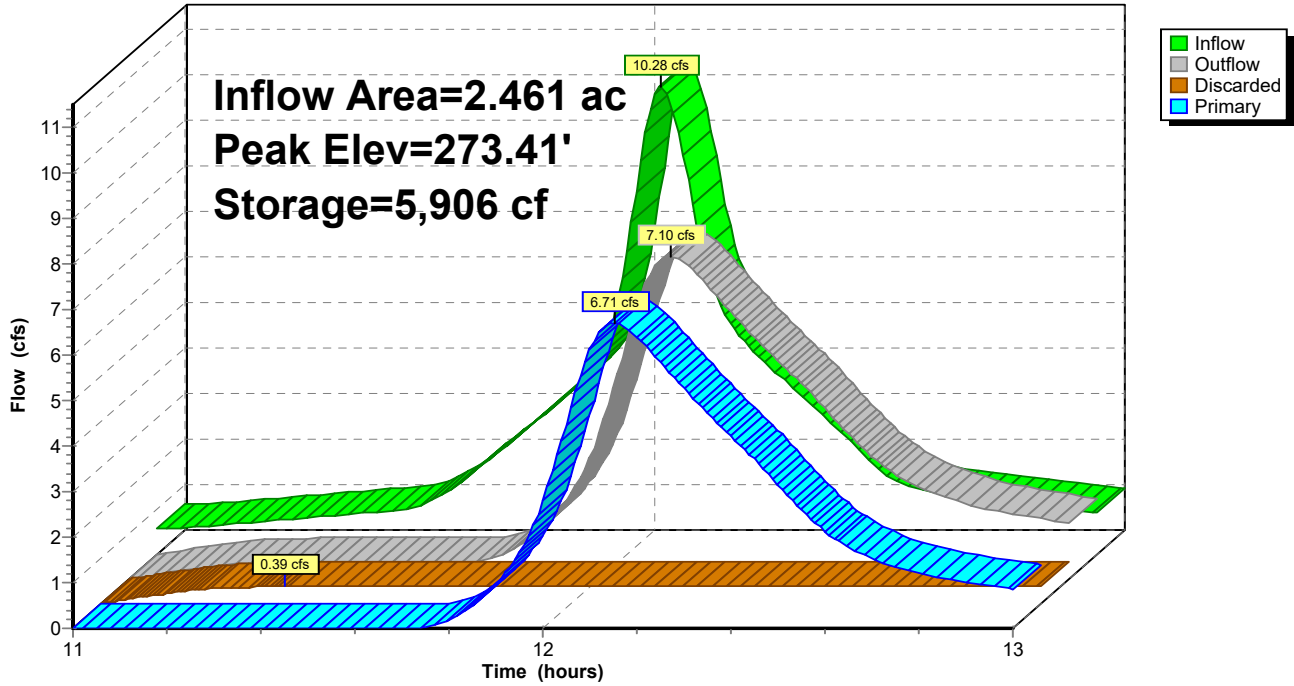
**Discarded OutFlow** Max=0.39 cfs @ 11.39 hrs HW=271.60' (Free Discharge)  
 ↑1=**Special & User-Defined** (Custom Controls 0.39 cfs)

**Primary OutFlow** Max=6.71 cfs @ 12.15 hrs HW=273.41' (Free Discharge)  
 ↑2=**Culvert** (Inlet Controls 3.61 cfs @ 4.59 fps)  
 ↑3=**Culvert** (Inlet Controls 3.10 cfs @ 3.25 fps)



**Pond 4P: Drainage System # 4@ W. Central St.**

Hydrograph



**Summary for Pond 5P: Wendy's & Bldg. # 3 Drainage System # 3**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.215 ac, 100.00% Impervious, Inflow Depth > 2.38" for 10 - Year event  
 Inflow = 1.05 cfs @ 12.07 hrs, Volume= 0.043 af  
 Outflow = 0.17 cfs @ 11.68 hrs, Volume= 0.024 af, Atten= 84%, Lag= 0.0 min  
 Discarded = 0.17 cfs @ 11.68 hrs, Volume= 0.024 af  
 Primary = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Peak Elev= 275.40' @ 12.53 hrs Surf.Area= 0 sf Storage= 929 cf

Plug-Flow detention time= 20.0 min calculated for 0.024 af (56% of inflow)  
 Center-of-Mass det. time= 5.0 min ( 728.4 - 723.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	274.00'	2,197 cf	<b>Custom Stage Data</b> Listed below

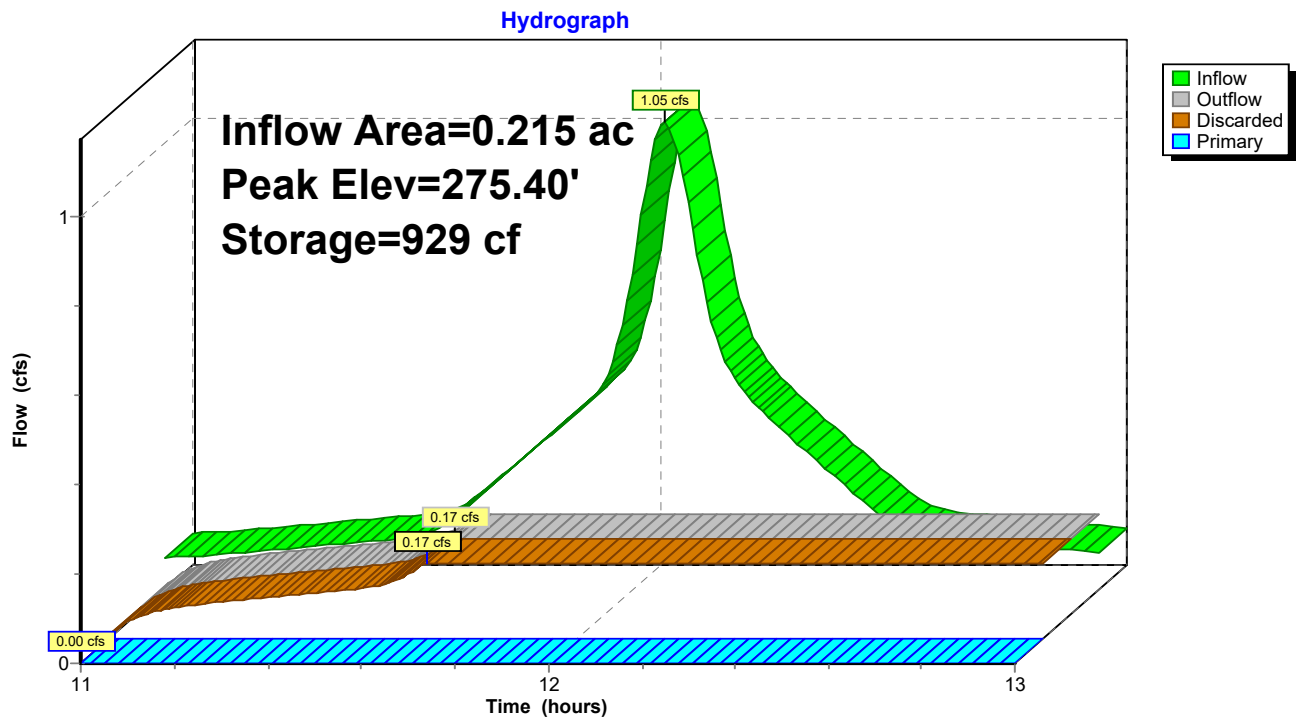
Elevation (feet)	Cum.Store (cubic-feet)
274.00	0
274.50	190
275.00	608
275.50	1,011
276.00	1,401
276.50	1,748
277.00	2,007
277.50	2,197

Device	Routing	Invert	Outlet Devices
#1	Discarded	274.00'	<b>Special &amp; User-Defined</b> Elev. (feet) 274.00 274.10 277.50 Disch. (cfs) 0.000 0.170 0.170
#2	Primary	275.50'	<b>6.0" Vert. Orifice/Grate</b> C= 0.600

**Discarded OutFlow** Max=0.17 cfs @ 11.68 hrs HW=274.10' (Free Discharge)  
 ↑1=**Special & User-Defined** (Custom Controls 0.17 cfs)

**Primary OutFlow** Max=0.00 cfs @ 11.00 hrs HW=274.00' (Free Discharge)  
 ↑2=**Orifice/Grate** ( Controls 0.00 cfs)

### Pond 5P: Wendy's & Bldg. # 3 Drainage System # 3



**Summary for Pond 6-P: EXISTING POND FOR CONDO'S**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 6.890 ac, 7.26% Impervious, Inflow Depth > 1.12" for 10 - Year event  
 Inflow = 14.99 cfs @ 12.12 hrs, Volume= 0.644 af  
 Outflow = 4.14 cfs @ 12.54 hrs, Volume= 0.322 af, Atten= 72%, Lag= 25.1 min  
 Primary = 4.14 cfs @ 12.54 hrs, Volume= 0.322 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Peak Elev= 327.90' @ 12.54 hrs Surf.Area= 0.000 ac Storage= 0.379 af

Plug-Flow detention time= 33.4 min calculated for 0.322 af (50% of inflow)  
 Center-of-Mass det. time= 18.1 min ( 750.0 - 731.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	326.00'	2.340 af	<b>Custom Stage Data</b> Listed below

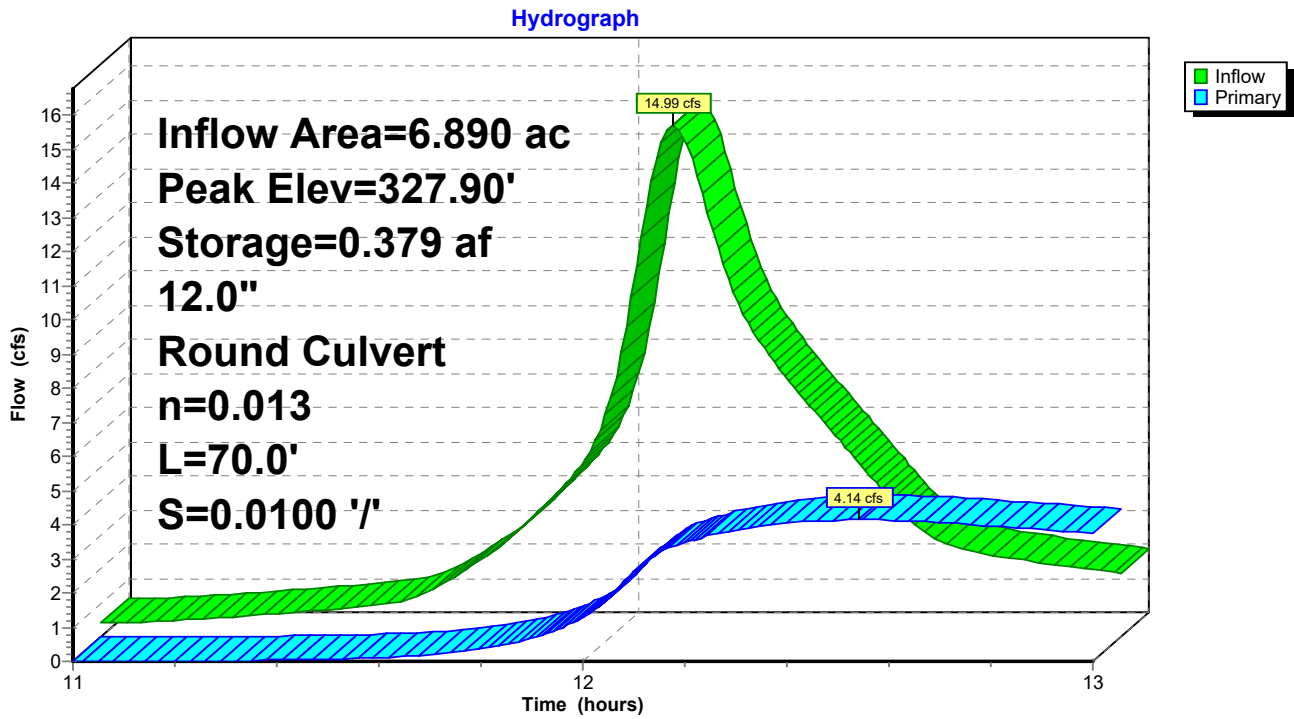
Elevation (feet)	Cum.Store (acre-feet)
326.00	0.000
328.00	0.400
330.00	0.920
332.00	1.570
334.00	2.340

Device	Routing	Invert	Outlet Devices
#1	Primary	326.00'	<b>12.0" Round Culvert</b> L= 70.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 326.00' / 325.30' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=4.14 cfs @ 12.54 hrs HW=327.90' (Free Discharge)

↑**1=Culvert** (Barrel Controls 4.14 cfs @ 5.27 fps)

### Pond 6-P: EXISTING POND FOR CONDO'S



Time span=11.00-13.00 hrs, dt=0.01 hrs, 201 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

**Subcatchment4S: DA#12** Runoff Area=9,147 sf 90.48% Impervious Runoff Depth>3.45"  
Tc=5.0 min CN=96 Runoff=1.48 cfs 0.060 af

**Subcatchment5S: DA#1** Runoff Area=23,523 sf 22.22% Impervious Runoff Depth>2.62"  
Tc=5.0 min CN=79 Runoff=2.99 cfs 0.118 af

**Subcatchment6S: Roof Runoff Wendys &** Runoff Area=9,365 sf 100.00% Impervious Runoff Depth>3.49"  
Tc=5.0 min CN=98 Runoff=1.53 cfs 0.062 af

**Subcatchment7S: S7=** Runoff Area=98,035 sf 69.22% Impervious Runoff Depth>3.27"  
Tc=5.0 min CN=91 Runoff=15.20 cfs 0.614 af

**Subcatchment8S: Proposed Cond. Runoff** Runoff Area=7.130 ac 7.43% Impervious Runoff Depth>2.12"  
Tc=16.4 min CN=72 Runoff=23.41 cfs 1.260 af

**Subcatchment9S: Proposed Cond. Runoff** Runoff Area=0.405 ac 0.00% Impervious Runoff Depth>2.04"  
Flow Length=400' Tc=8.2 min CN=70 Runoff=1.59 cfs 0.069 af

**Subcatchment10-S: EXISTING AND** Runoff Area=6.890 ac 7.26% Impervious Runoff Depth>2.17"  
Flow Length=350' Tc=8.4 min CN=72 Runoff=28.48 cfs 1.244 af

**Subcatchment11S: Proposed Cond. Runoff** Runoff Area=0.110 ac 0.00% Impervious Runoff Depth>2.31"  
Tc=5.0 min CN=74 Runoff=0.54 cfs 0.021 af

**Reach 2R: 18" PIPE BASIN4&RECH** Avg. Flow Depth=1.07' Max Vel=8.08 fps Inflow=10.96 cfs 0.528 af  
18.0" Round Pipe n=0.013 L=130.0' S=0.0146 '/' Capacity=12.70 cfs Outflow=10.95 cfs 0.527 af

**Reach 3R: R3-12" PIPE RECH BASIN** Avg. Flow Depth=0.17' Max Vel=3.57 fps Inflow=0.33 cfs 0.012 af  
12.0" Round Pipe n=0.013 L=109.0' S=0.0193 '/' Capacity=4.95 cfs Outflow=0.33 cfs 0.012 af

**Reach IP#1: IP#1 HEADWALL24" PIPE** Inflow=29.71 cfs 1.841 af  
Outflow=29.71 cfs 1.841 af

**Reach IP#2: IP#2 EXIT 24"PIPE** Inflow=39.64 cfs 2.390 af  
Outflow=39.64 cfs 2.390 af

**Reach IP#3: IP#3 RUNOFF TO TEDESCHI** Inflow=0.54 cfs 0.021 af  
Outflow=0.54 cfs 0.021 af

**Pond 1P: Basin 2 to DMH5** Peak Elev=291.09' Storage=3,771 cf Inflow=2.99 cfs 0.118 af  
Discarded=0.11 cfs 0.012 af Primary=0.73 cfs 0.022 af Outflow=0.84 cfs 0.034 af

**Pond 2P: Basin 1** Peak Elev=292.80' Storage=1,209 cf Inflow=1.48 cfs 0.060 af  
Discarded=0.03 cfs 0.003 af Primary=0.70 cfs 0.042 af Outflow=0.73 cfs 0.045 af

**Pond 3P: Proposed Cond. CB# 13** Peak Elev=288.22' Storage=49 cf Inflow=1.59 cfs 0.069 af  
Outflow=1.59 cfs 0.069 af

**Pond 4P: Drainage System # 4@ W. Central** Peak Elev=274.17' Storage=7,924 cf Inflow=15.77 cfs 0.656 af  
Discarded=0.39 cfs 0.062 af Primary=10.94 cfs 0.516 af Outflow=11.33 cfs 0.579 af

**Pond 5P: Wendy's & Bldg. # 3 Drainage** Peak Elev=275.87' Storage=1,302 cf Inflow=1.53 cfs 0.062 af  
Discarded=0.17 cfs 0.026 af Primary=0.33 cfs 0.012 af Outflow=0.50 cfs 0.038 af

**Pond 6-P: EXISTING POND FOR CONDO'S** Peak Elev=329.50' Storage=0.790 af Inflow=28.48 cfs 1.244 af  
12.0" Round Culvert n=0.013 L=70.0' S=0.0100 '/ Outflow=5.86 cfs 0.512 af

**Total Runoff Area = 17.751 ac Runoff Volume = 3.449 af Average Runoff Depth = 2.33"**  
**82.46% Pervious = 14.638 ac 17.54% Impervious = 3.113 ac**

### Summary for Subcatchment 4S: DA#12

Runoff = 1.48 cfs @ 12.07 hrs, Volume= 0.060 af, Depth> 3.45"

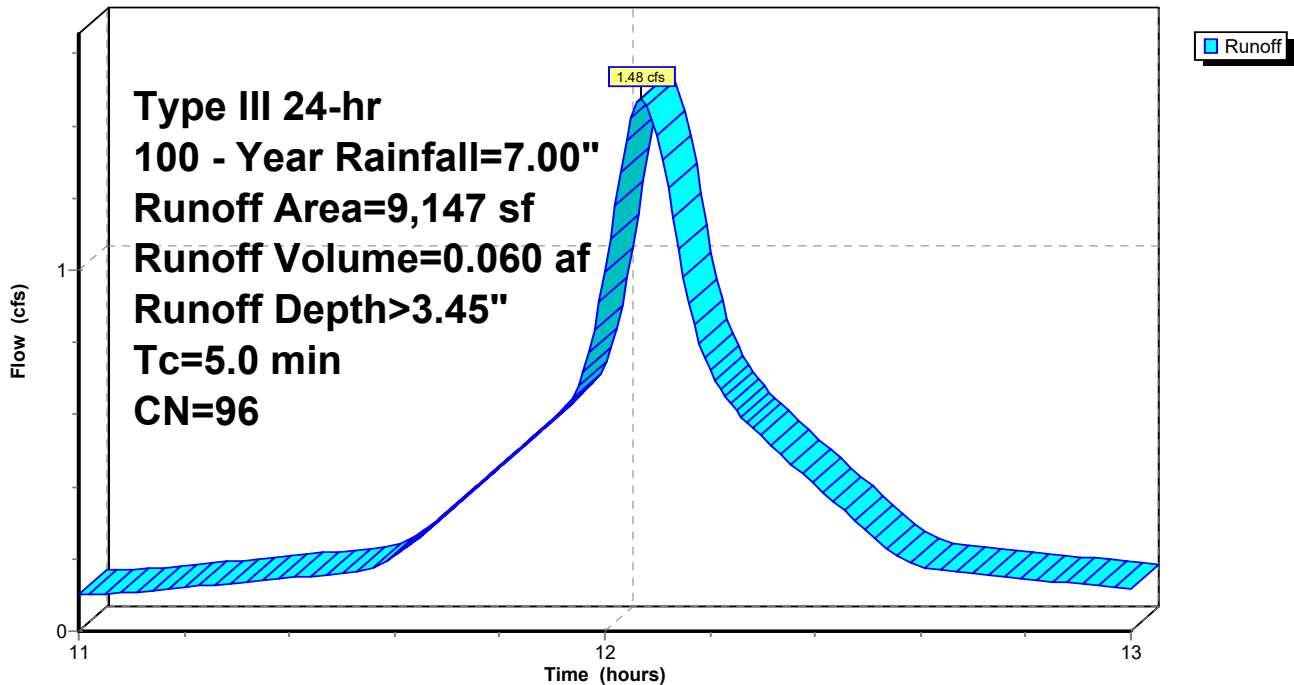
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100 - Year Rainfall=7.00"

Area (sf)	CN	Description
6,534	98	Paved parking & roofs
871	74	>75% Grass cover, Good, HSG C
* 1,742	98	Detention Basin
9,147	96	Weighted Average
871		9.52% Pervious Area
8,276		90.48% Impervious Area

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

### Subcatchment 4S: DA#12

Hydrograph





**Summary for Subcatchment 5S: DA#1**

Runoff = 2.99 cfs @ 12.07 hrs, Volume= 0.118 af, Depth> 2.62"

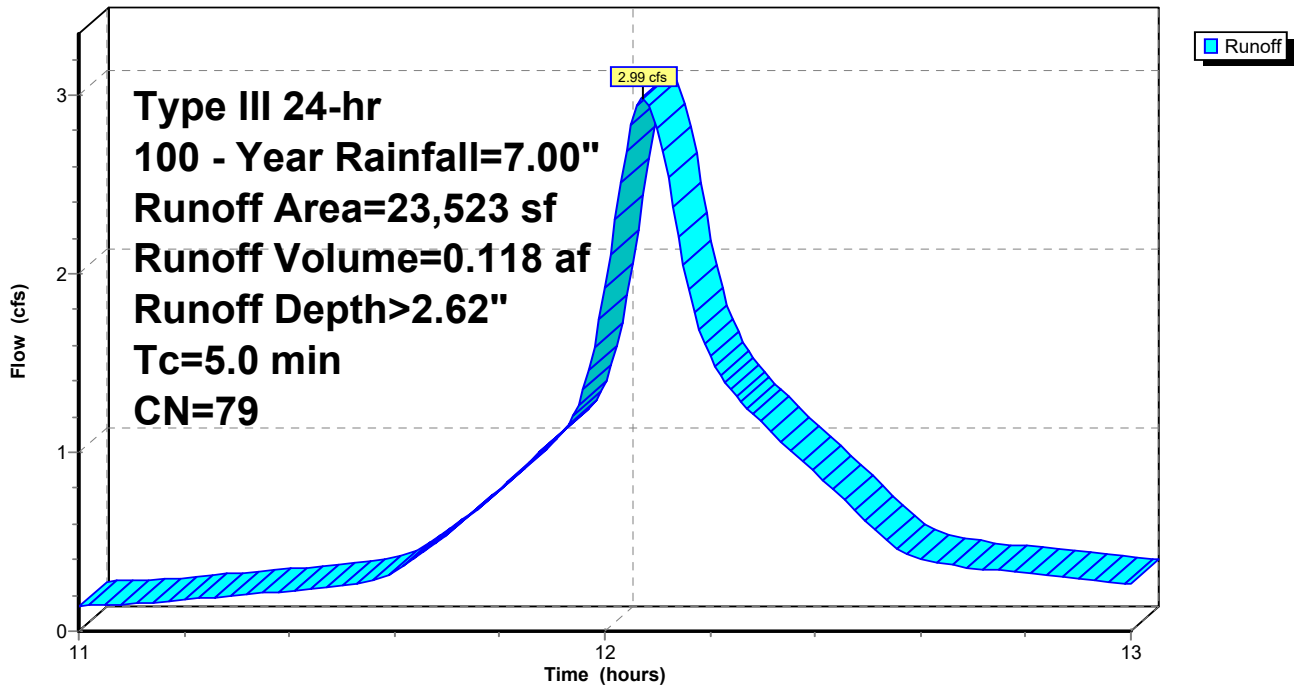
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100 - Year Rainfall=7.00"

Area (sf)	CN	Description
5,227	98	Paved parking & roofs
15,682	74	>75% Grass cover, Good, HSG C
* 2,614	74	Detention Basin
23,523	79	Weighted Average
18,296		77.78% Pervious Area
5,227		22.22% Impervious Area

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

**Subcatchment 5S: DA#1**

Hydrograph



**Summary for Subcatchment 6S: Roof Runoff Wendys & Bldg. # 3**

Runoff = 1.53 cfs @ 12.07 hrs, Volume= 0.062 af, Depth> 3.49"

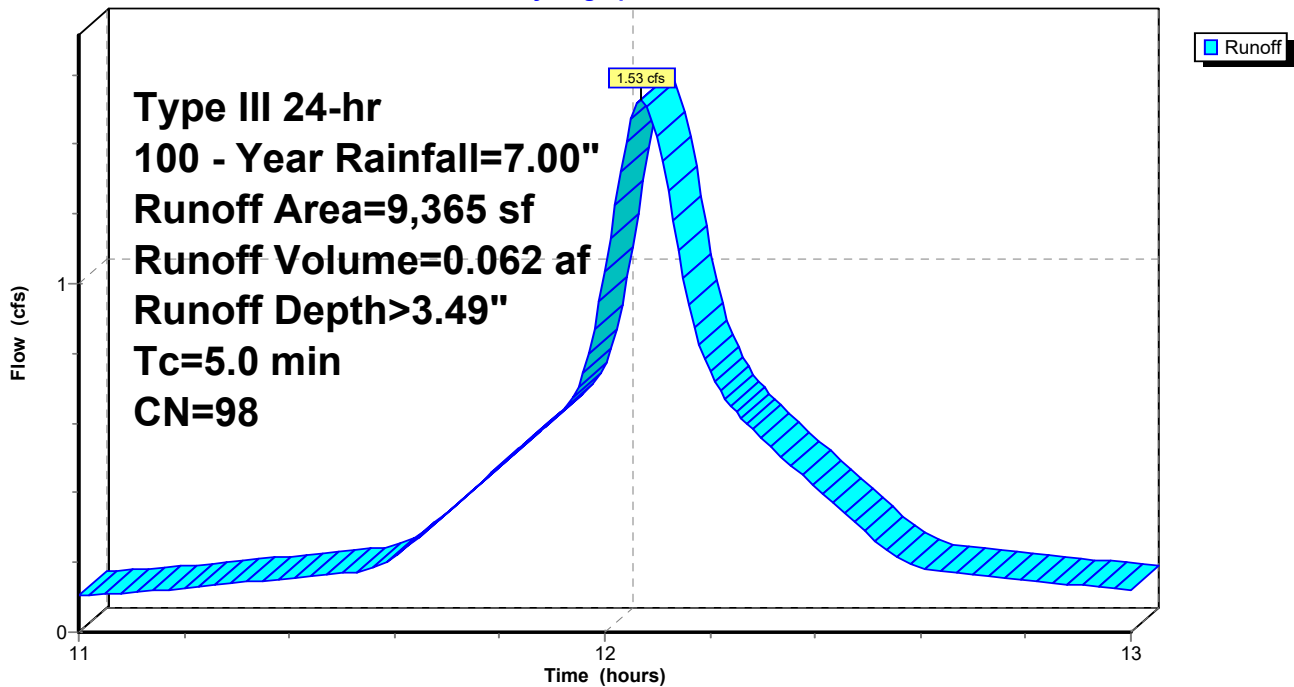
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100 - Year Rainfall=7.00"

Area (sf)	CN	Description
* 9,365	98	Roofs
9,365		100.00% Impervious Area

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

**Subcatchment 6S: Roof Runoff Wendys & Bldg. # 3**

Hydrograph



**Summary for Subcatchment 7S: S7= DA2,DA3,DA4,DA5,DA6,DA7,DA8,DA9,DA10,4P,DA11,**

Runoff = 15.20 cfs @ 12.07 hrs, Volume= 0.614 af, Depth> 3.27"

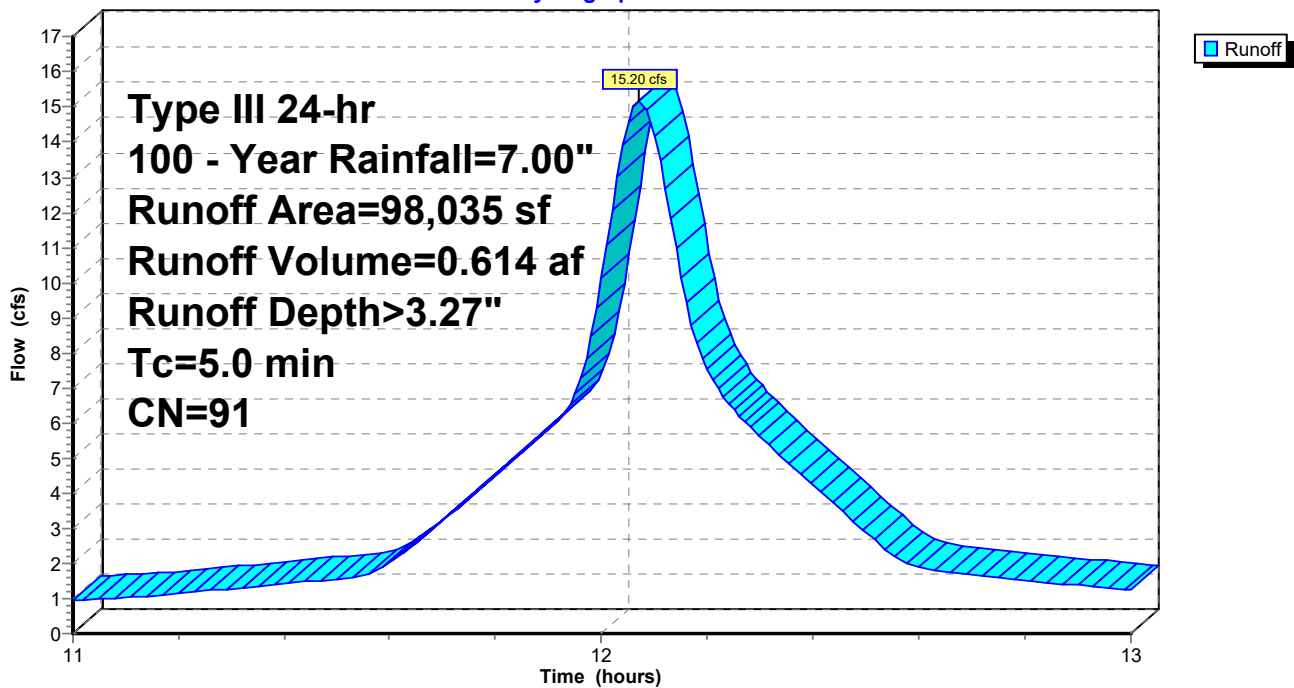
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100 - Year Rainfall=7.00"

	Area (sf)	CN	Description
*	59,240	98	Paved parking
	30,179	74	>75% Grass cover, Good, HSG C
*	1,742	98	Detention area
*	6,874	98	Stormcrete Pervious Concrete, HSG C
	98,035	91	Weighted Average
	30,179		30.78% Pervious Area
	67,856		69.22% Impervious Area

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

**Subcatchment 7S: S7= DA2,DA3,DA4,DA5,DA6,DA7,DA8,DA9,DA10,4P,DA11,**

Hydrograph



**Summary for Subcatchment 8S: Proposed Cond. Runoff to 24 " Culvert H.W.**

Runoff = 23.41 cfs @ 12.23 hrs, Volume= 1.260 af, Depth> 2.12"

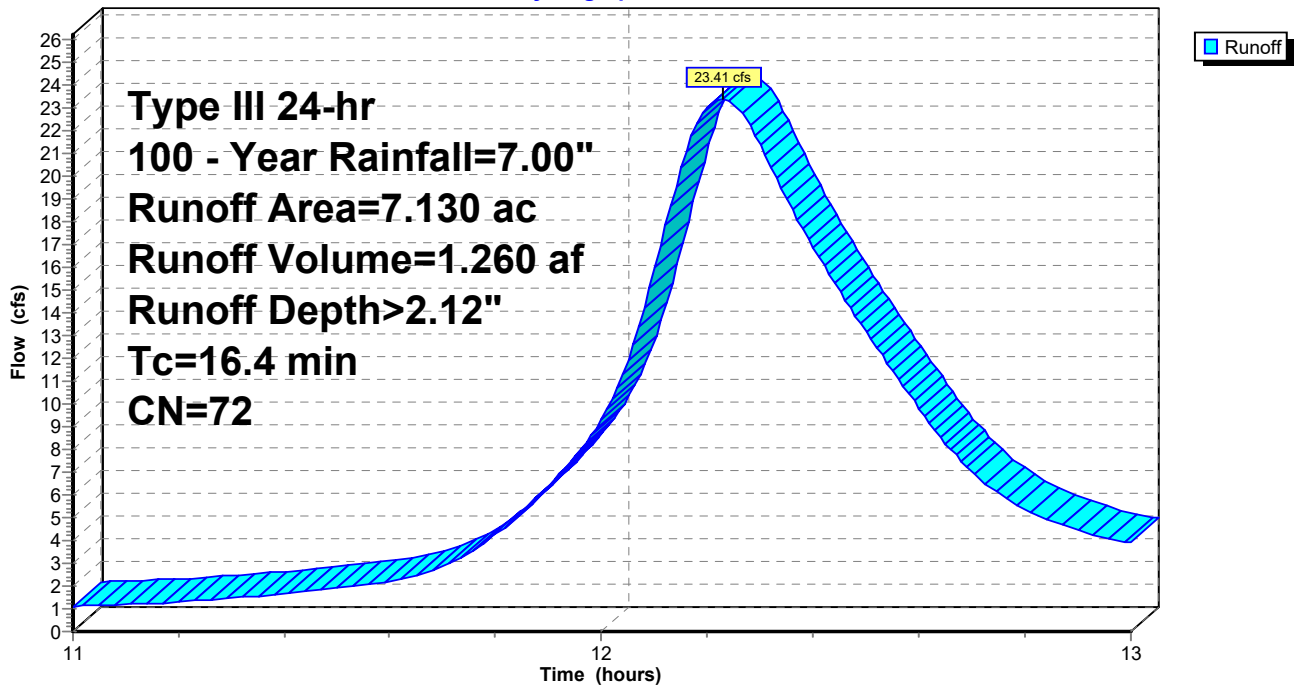
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100 - Year Rainfall=7.00"

Area (ac)	CN	Description
6.600	70	Woods, Good, HSG C
* 0.530	98	WETLANDS
7.130	72	Weighted Average
6.600		92.57% Pervious Area
0.530		7.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4					Direct Entry, Overland Same as Existing

**Subcatchment 8S: Proposed Cond. Runoff to 24 " Culvert H.W.**

Hydrograph



**Summary for Subcatchment 9S: Proposed Cond. Runoff to 24" Pipe**

Runoff = 1.59 cfs @ 12.12 hrs, Volume= 0.069 af, Depth> 2.04"

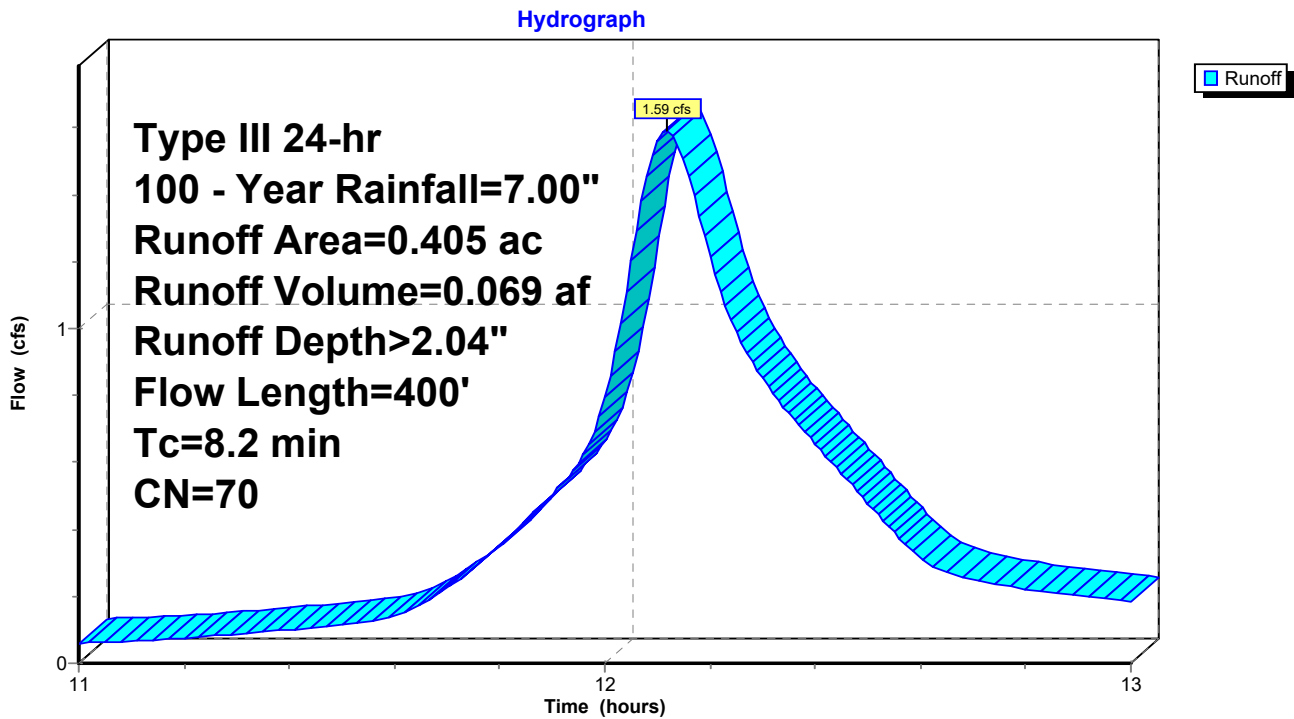
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100 - Year Rainfall=7.00"

Area (ac)	CN	Description
0.405	70	Woods, Good, HSG C
0.405		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	50	0.1000	0.13		<b>Sheet Flow, Overland</b> Woods: Light underbrush n= 0.400 P2= 3.20"
1.5	150	0.1100	1.66		<b>Shallow Concentrated Flow, Overland</b> Woodland Kv= 5.0 fps
0.2	200	0.0600	13.40	66.99	<b>Parabolic Channel, Grass Swale</b> W=5.00' D=1.50' Area=5.0 sf Perim=6.0' n= 0.024
8.2	400	Total			

**Subcatchment 9S: Proposed Cond. Runoff to 24" Pipe**



**Summary for Subcatchment 10-S: EXISTING AND PROPOSED RUNOFF,=10S**

Runoff = 28.48 cfs @ 12.12 hrs, Volume= 1.244 af, Depth> 2.17"

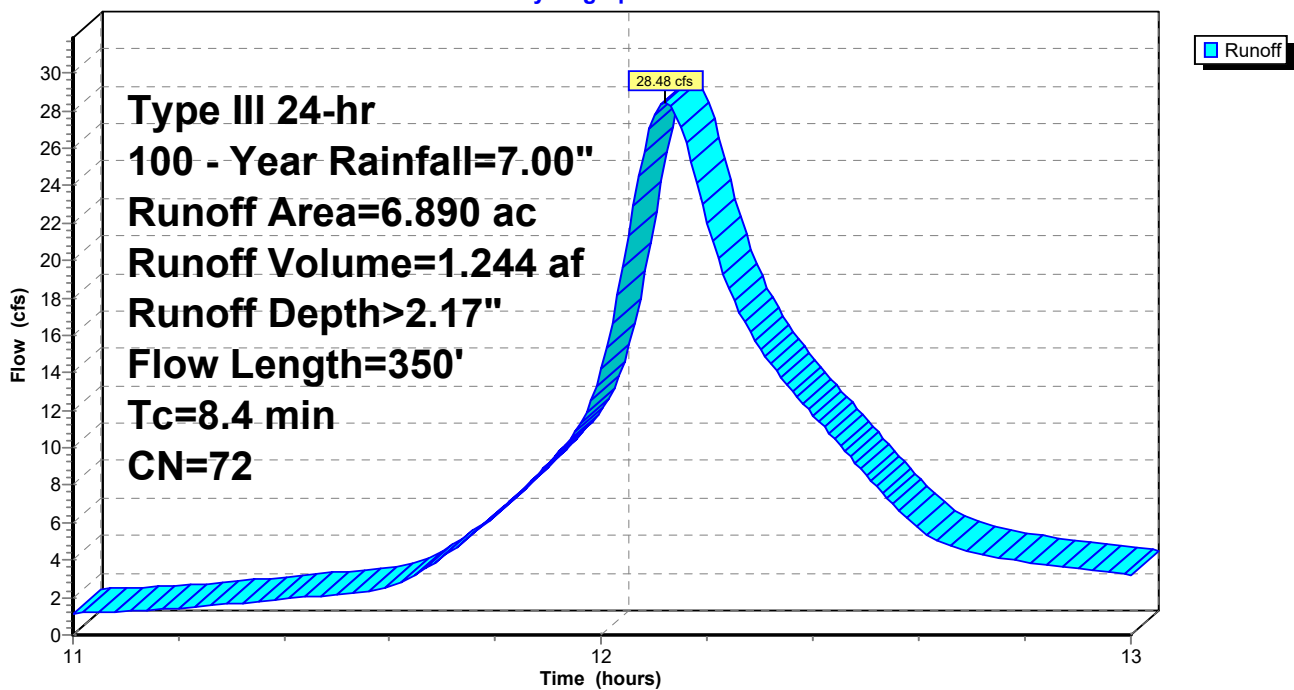
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100 - Year Rainfall=7.00"

Area (ac)	CN	Description
0.500	98	Paved parking & roofs
0.300	74	>75% Grass cover, Good, HSG C
6.090	70	Woods, Good, HSG C
6.890	72	Weighted Average
6.390		92.74% Pervious Area
0.500		7.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	50	0.0800	0.18		<b>Sheet Flow, SHEET FLOW</b> Grass: Dense n= 0.240 P2= 3.20"
3.3	240	0.0600	1.22		<b>Shallow Concentrated Flow, SHALLOW CONCENTRATED FLOW</b> Woodland Kv= 5.0 fps
0.4	60	0.2500	2.50		<b>Shallow Concentrated Flow, SHALLOW CONCENTRATED FLOW</b> Woodland Kv= 5.0 fps
8.4	350	Total			

**Subcatchment 10-S: EXISTING AND PROPOSED RUNOFF,=10S**

Hydrograph



**Summary for Subcatchment 11S: Proposed Cond. Runoff to Tedeschi's**

Runoff = 0.54 cfs @ 12.07 hrs, Volume= 0.021 af, Depth> 2.31"

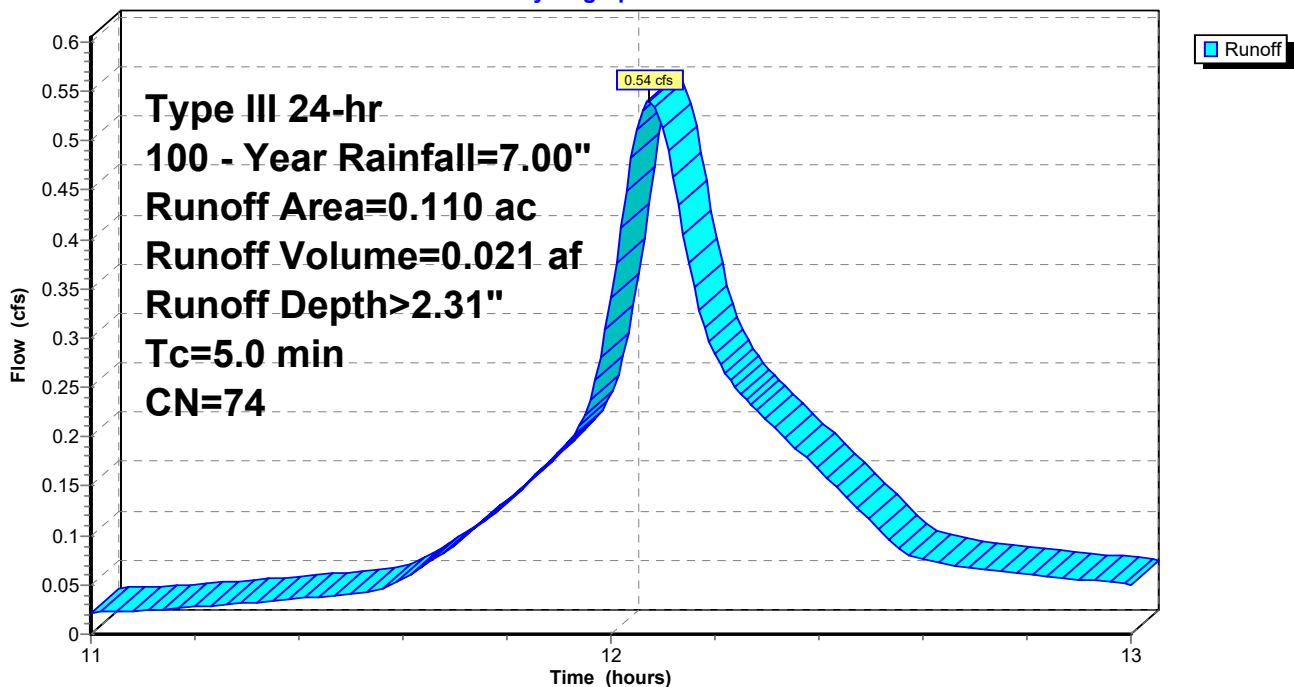
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100 - Year Rainfall=7.00"

Area (ac)	CN	Description
0.110	74	>75% Grass cover, Good, HSG C
0.110		100.00% Pervious Area

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

**Subcatchment 11S: Proposed Cond. Runoff to Tedeschi's**

Hydrograph



**Summary for Reach 2R: 18" PIPE BASIN4& RECH BASIN**

[52] Hint: Inlet/Outlet conditions not evaluated

[62] Hint: Exceeded Reach 3R OUTLET depth by 0.53' @ 12.14 hrs

[79] Warning: Submerged Pond 4P Primary device # 2 INLET by 0.97'

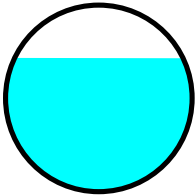
[79] Warning: Submerged Pond 4P Primary device # 3 INLET by 0.47'

Inflow Area =	2.676 ac, 73.36% Impervious, Inflow Depth > 2.37"	for 100 - Year event
Inflow =	10.96 cfs @ 12.15 hrs, Volume=	0.528 af
Outflow =	10.95 cfs @ 12.15 hrs, Volume=	0.527 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 8.08 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 5.83 fps, Avg. Travel Time= 0.4 min

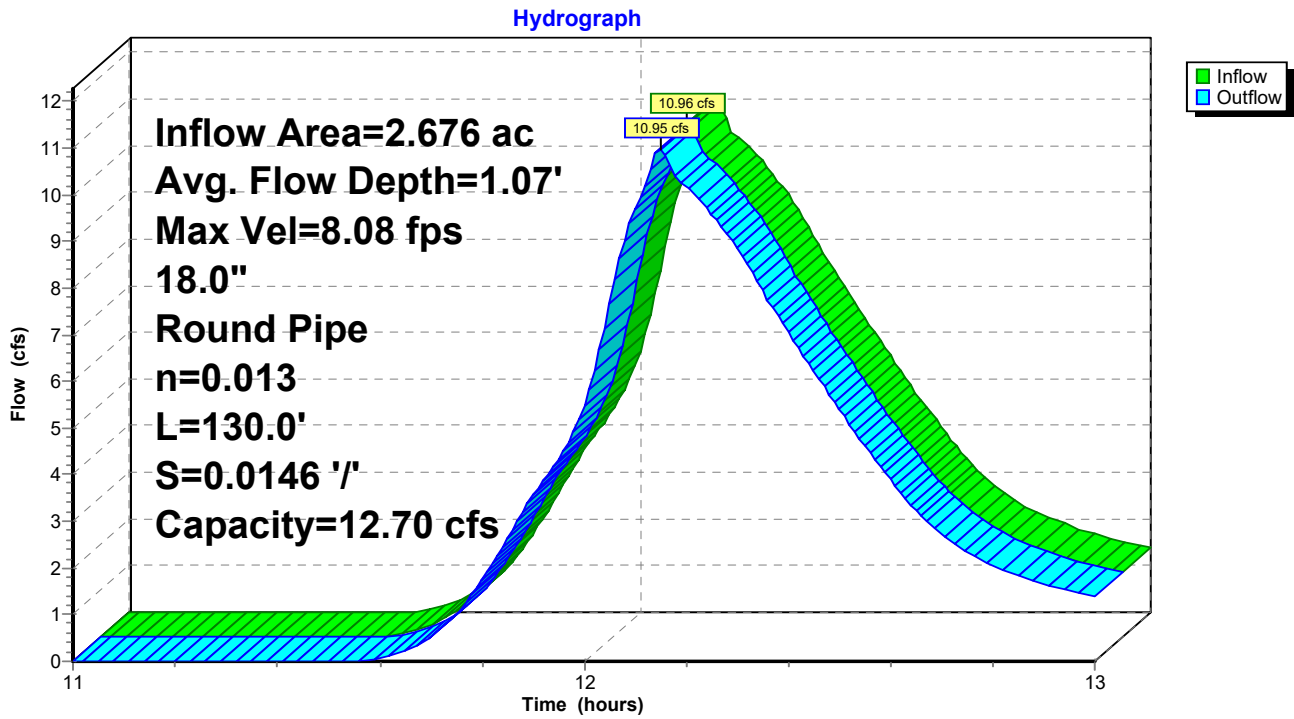
Peak Storage= 176 cf @ 12.15 hrs  
 Average Depth at Peak Storage= 1.07'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.70 cfs

18.0" Round Pipe  
 n= 0.013  
 Length= 130.0' Slope= 0.0146 '  
 Inlet Invert= 271.90', Outlet Invert= 270.00'





### Reach 2R: 18" PIPE BASIN4& RECH BASIN



### Summary for Reach 3R: R3-12" PIPE RECH BASIN

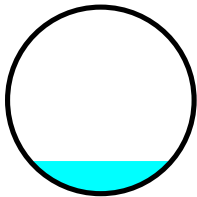
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.215 ac, 100.00% Impervious, Inflow Depth > 0.67" for 100 - Year event  
 Inflow = 0.33 cfs @ 12.34 hrs, Volume= 0.012 af  
 Outflow = 0.33 cfs @ 12.35 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 3.57 fps, Min. Travel Time= 0.5 min  
 Avg. Velocity = 2.70 fps, Avg. Travel Time= 0.7 min

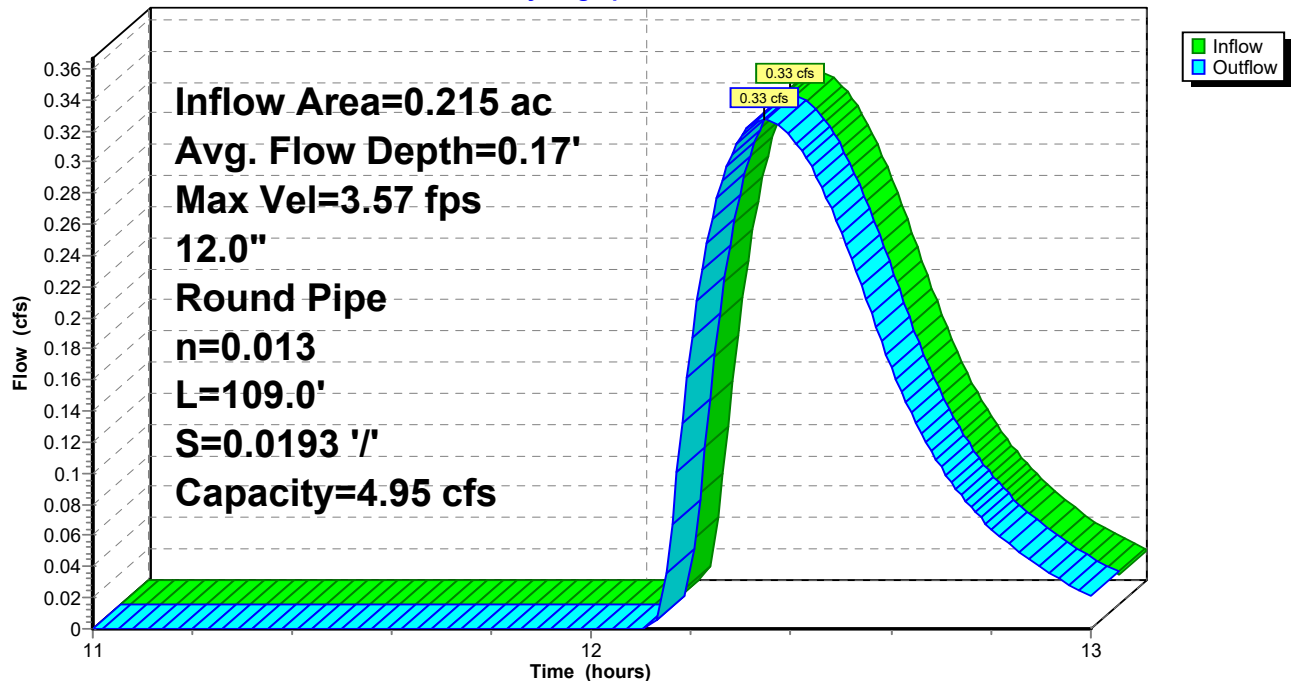
Peak Storage= 10 cf @ 12.35 hrs  
 Average Depth at Peak Storage= 0.17'  
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.95 cfs

12.0" Round Pipe  
 n= 0.013  
 Length= 109.0' Slope= 0.0193 '/'  
 Inlet Invert= 274.50', Outlet Invert= 272.40'



### Reach 3R: R3-12" PIPE RECH BASIN

Hydrograph



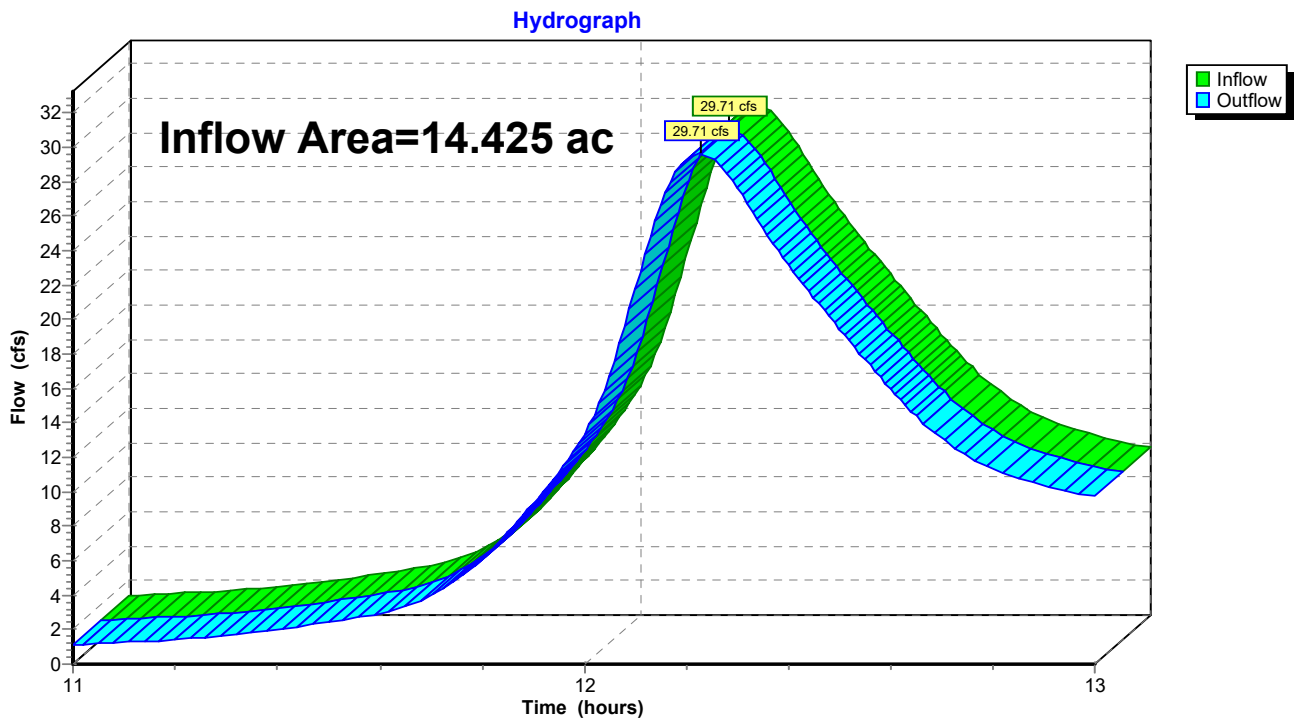
### Summary for Reach IP#1: IP#1 HEADWALL 24" PIPE

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

Inflow Area = 14.425 ac, 7.14% Impervious, Inflow Depth > 1.53" for 100 - Year event  
Inflow = 29.71 cfs @ 12.23 hrs, Volume= 1.841 af  
Outflow = 29.71 cfs @ 12.23 hrs, Volume= 1.841 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs

### Reach IP#1: IP#1 HEADWALL 24" PIPE



### Summary for Reach IP#2: IP#2 EXIT 24"PIPE

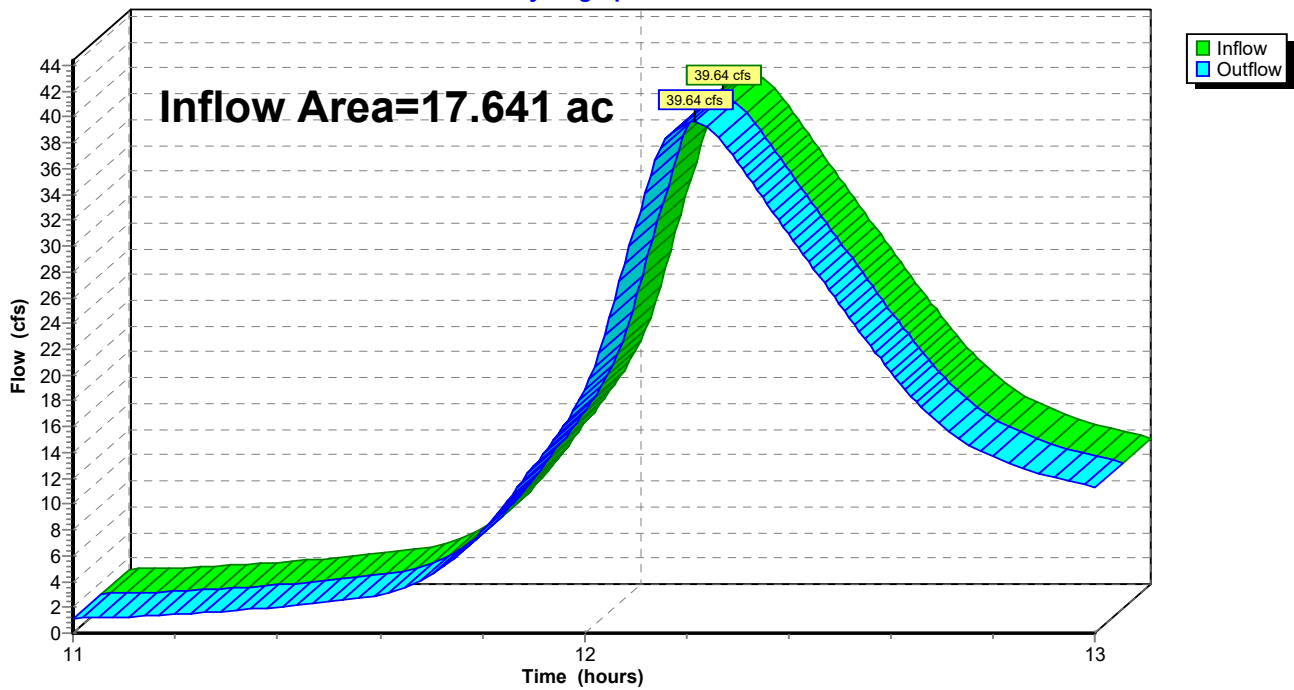
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 17.641 ac, 17.65% Impervious, Inflow Depth > 1.63" for 100 - Year event  
Inflow = 39.64 cfs @ 12.22 hrs, Volume= 2.390 af  
Outflow = 39.64 cfs @ 12.22 hrs, Volume= 2.390 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs

### Reach IP#2: IP#2 EXIT 24"PIPE

Hydrograph



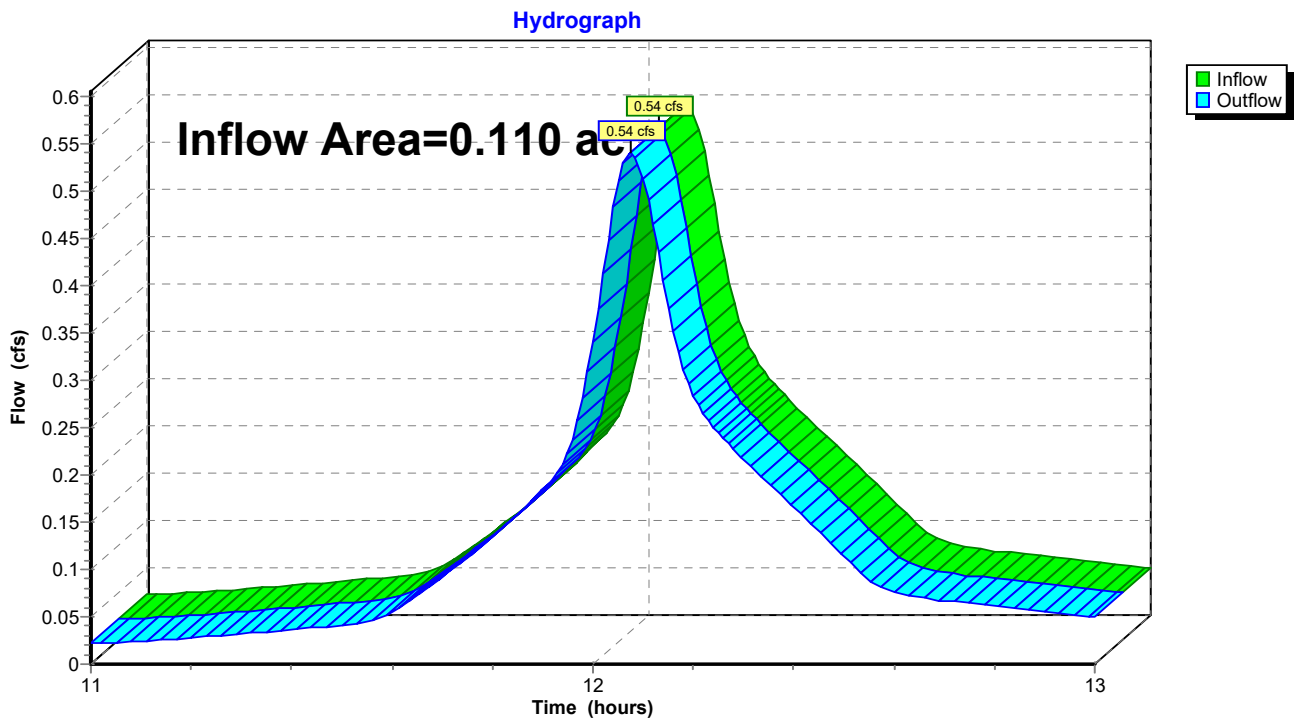
### Summary for Reach IP#3: IP#3 RUNOFF TO TEDESCHI

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

Inflow Area = 0.110 ac, 0.00% Impervious, Inflow Depth > 2.31" for 100 - Year event  
Inflow = 0.54 cfs @ 12.07 hrs, Volume= 0.021 af  
Outflow = 0.54 cfs @ 12.07 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs

### Reach IP#3: IP#3 RUNOFF TO TEDESCHI



**Summary for Pond 1P: Basin 2 to DMH5**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.540 ac, 22.22% Impervious, Inflow Depth > 2.62" for 100 - Year event  
 Inflow = 2.99 cfs @ 12.07 hrs, Volume= 0.118 af  
 Outflow = 0.84 cfs @ 12.42 hrs, Volume= 0.034 af, Atten= 72%, Lag= 20.7 min  
 Discarded = 0.11 cfs @ 12.42 hrs, Volume= 0.012 af  
 Primary = 0.73 cfs @ 12.42 hrs, Volume= 0.022 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Peak Elev= 291.09' @ 12.42 hrs Surf.Area= 1,925 sf Storage= 3,771 cf

Plug-Flow detention time= 46.6 min calculated for 0.034 af (29% of inflow)  
 Center-of-Mass det. time= 21.1 min ( 747.1 - 726.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	288.00'	5,745 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
288.00	665	0	0
290.00	1,330	1,995	1,995
292.00	2,420	3,750	5,745

Device	Routing	Invert	Outlet Devices
#1	Primary	287.50'	<b>12.0" Round Culvert</b> L= 35.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 287.50' / 287.10' S= 0.0114 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	291.00'	<b>24.0" x 24.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Discarded	288.00'	<b>2.410 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.11 cfs @ 12.42 hrs HW=291.09' (Free Discharge)

↑**3=Exfiltration** (Exfiltration Controls 0.11 cfs)

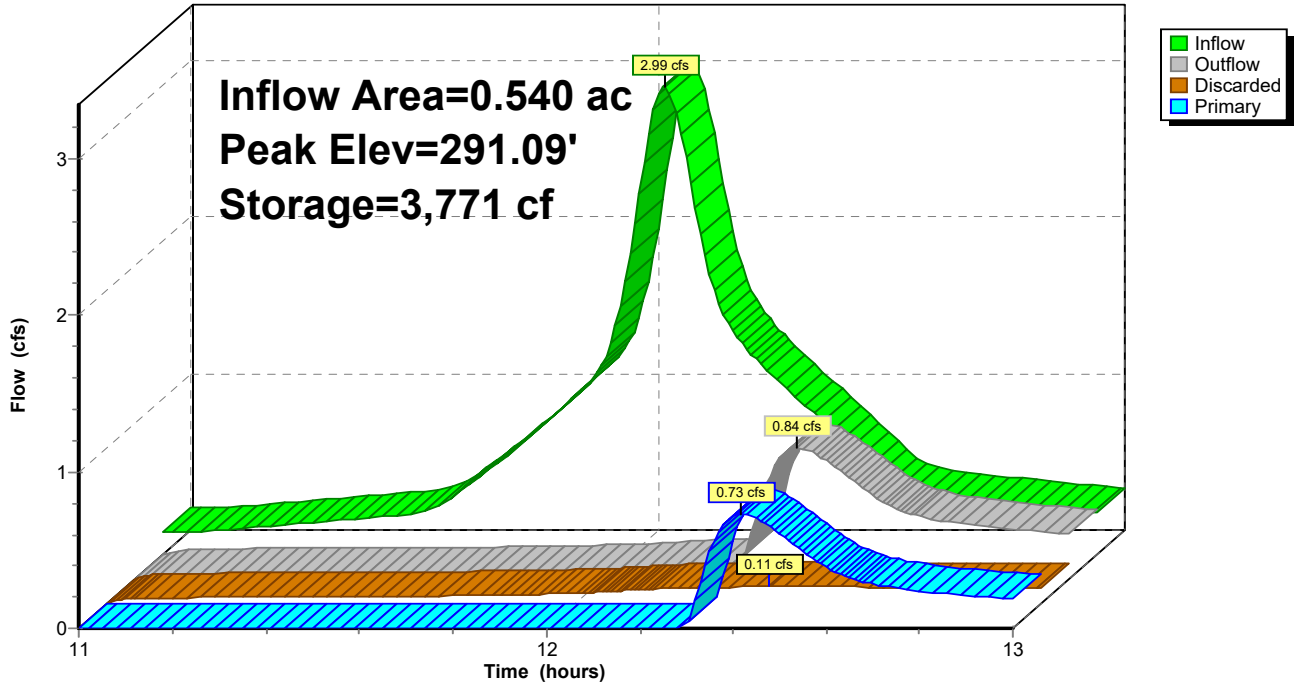
**Primary OutFlow** Max=0.72 cfs @ 12.42 hrs HW=291.09' (Free Discharge)

↑**1=Culvert** (Passes 0.72 cfs of 7.35 cfs potential flow)

↑**2=Orifice/Grate** (Weir Controls 0.72 cfs @ 0.99 fps)

### Pond 1P: Basin 2 to DMH5

Hydrograph



**Summary for Pond 2P: Basin 1**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.210 ac, 90.48% Impervious, Inflow Depth > 3.45" for 100 - Year event  
 Inflow = 1.48 cfs @ 12.07 hrs, Volume= 0.060 af  
 Outflow = 0.73 cfs @ 12.20 hrs, Volume= 0.045 af, Atten= 51%, Lag= 7.8 min  
 Discarded = 0.03 cfs @ 12.20 hrs, Volume= 0.003 af  
 Primary = 0.70 cfs @ 12.20 hrs, Volume= 0.042 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Peak Elev= 292.80' @ 12.20 hrs Surf.Area= 1,150 sf Storage= 1,209 cf

Plug-Flow detention time= 27.6 min calculated for 0.045 af (74% of inflow)  
 Center-of-Mass det. time= 18.2 min ( 741.7 - 723.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	291.00'	2,932 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
291.00	293	0	0
292.00	670	482	482
293.00	1,270	970	1,452
294.00	1,690	1,480	2,932

Device	Routing	Invert	Outlet Devices
#1	Primary	292.00'	<b>6.0" Round Culvert</b> L= 43.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 292.00' / 285.22' S= 0.1577 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Discarded	291.00'	<b>1.020 in/hr Exfiltration over Surface area</b>

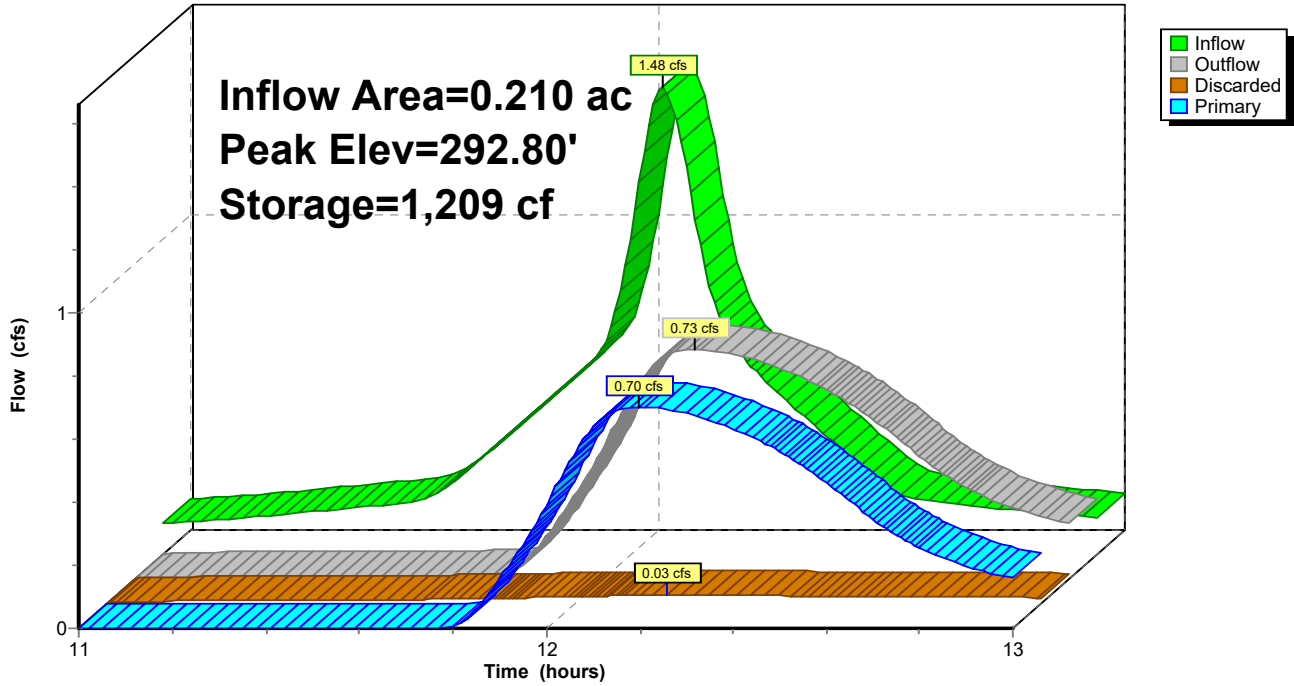
**Discarded OutFlow** Max=0.03 cfs @ 12.20 hrs HW=292.80' (Free Discharge)  
 ↑**2=Exfiltration** (Exfiltration Controls 0.03 cfs)

**Primary OutFlow** Max=0.70 cfs @ 12.20 hrs HW=292.80' (Free Discharge)  
 ↑**1=Culvert** (Inlet Controls 0.70 cfs @ 3.57 fps)



### Pond 2P: Basin 1

Hydrograph



**Summary for Pond 3P: Proposed Cond. CB# 13**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.405 ac, 0.00% Impervious, Inflow Depth > 2.04" for 100 - Year event  
 Inflow = 1.59 cfs @ 12.12 hrs, Volume= 0.069 af  
 Outflow = 1.59 cfs @ 12.12 hrs, Volume= 0.069 af, Atten= 0%, Lag= 0.4 min  
 Primary = 1.59 cfs @ 12.12 hrs, Volume= 0.069 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Peak Elev= 288.22' @ 12.12 hrs Surf.Area= 0 sf Storage= 49 cf

Plug-Flow detention time= 0.8 min calculated for 0.069 af (100% of inflow)  
 Center-of-Mass det. time= 0.5 min ( 730.6 - 730.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	288.00'	427 cf	<b>Custom Stage Data</b> Listed below

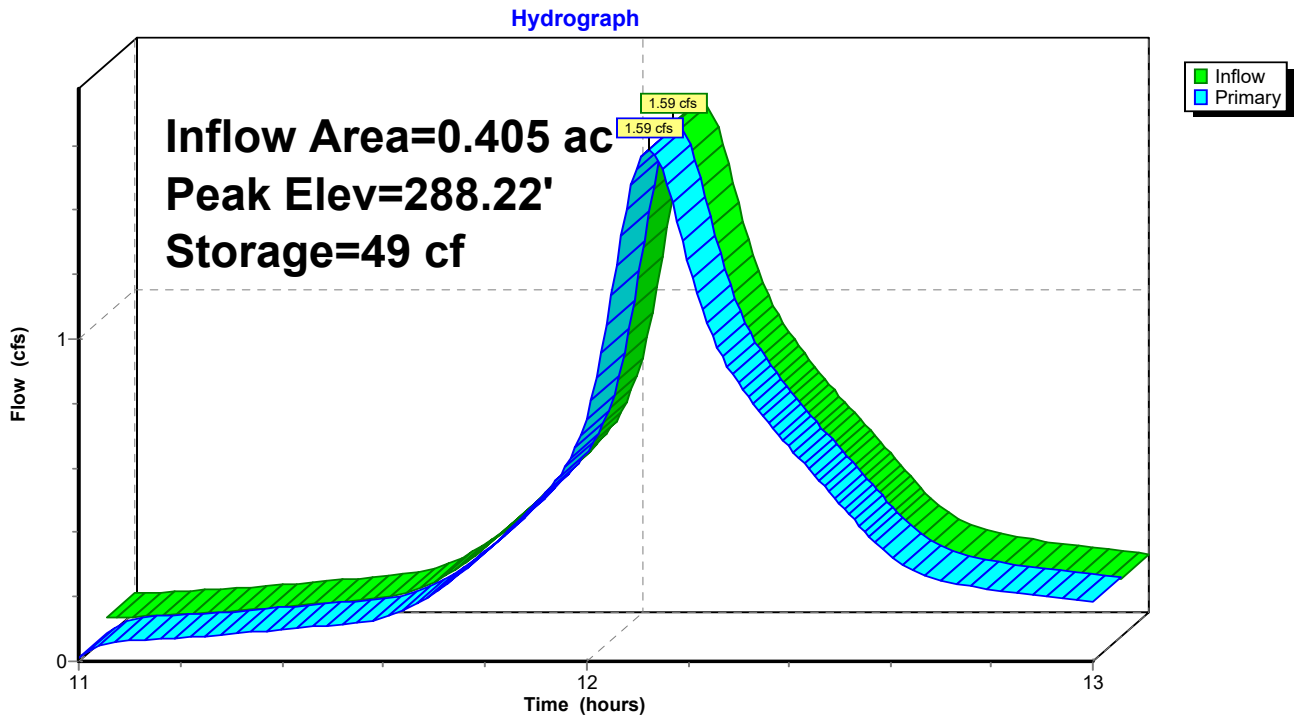
Elevation (feet)	Cum.Store (cubic-feet)
288.00	0
289.00	225
290.00	427

Device	Routing	Invert	Outlet Devices
#1	Primary	288.00'	<b>14.4" x 14.4" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Primary OutFlow** Max=1.58 cfs @ 12.12 hrs HW=288.22' (Free Discharge)

↑ **1=Orifice/Grate** (Weir Controls 1.58 cfs @ 1.52 fps)

### Pond 3P: Proposed Cond. CB# 13



**Summary for Pond 4P: Drainage System # 4@ W. Central St.**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 2.461 ac, 71.03% Impervious, Inflow Depth > 3.20" for 100 - Year event  
 Inflow = 15.77 cfs @ 12.07 hrs, Volume= 0.656 af  
 Outflow = 11.33 cfs @ 12.14 hrs, Volume= 0.579 af, Atten= 28%, Lag= 4.4 min  
 Discarded = 0.39 cfs @ 11.22 hrs, Volume= 0.062 af  
 Primary = 10.94 cfs @ 12.14 hrs, Volume= 0.516 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Peak Elev= 274.17' @ 12.14 hrs Surf.Area= 0 sf Storage= 7,924 cf

Plug-Flow detention time= 15.3 min calculated for 0.575 af (88% of inflow)  
 Center-of-Mass det. time= 10.1 min ( 735.3 - 725.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	271.00'	8,163 cf	<b>Custom Stage Data</b> Listed below

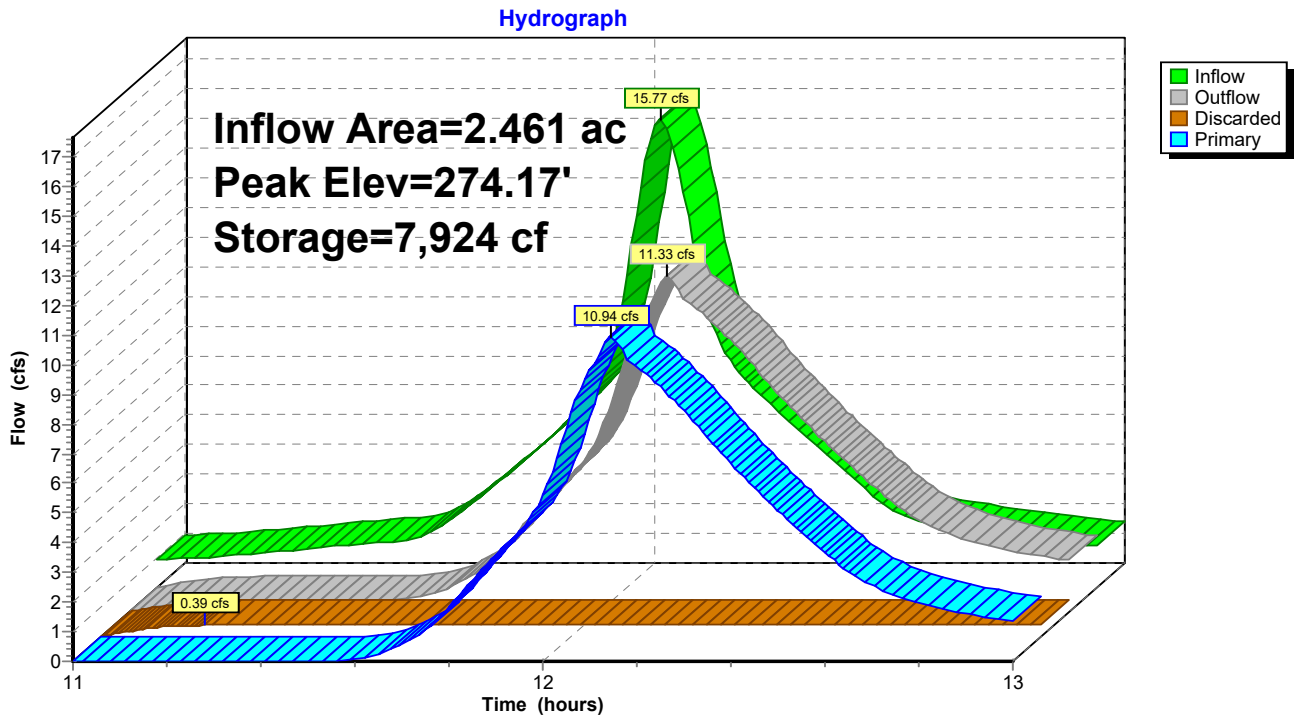
Elevation (feet)	Cum.Store (cubic-feet)
271.00	0
271.50	367
272.00	1,712
272.50	3,109
273.00	4,480
273.50	6,223
274.00	7,796
274.50	8,163

Device	Routing	Invert	Outlet Devices
#1	Discarded	271.00'	<b>Special &amp; User-Defined</b> Elev. (feet) 271.00 271.10 271.60 274.50 Disch. (cfs) 0.000 0.060 0.390 0.390
#2	Primary	272.00'	<b>12.0" Round Culvert</b> L= 20.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 272.00' / 271.30' S= 0.0350 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#3	Primary	272.50'	<b>15.0" Round Culvert</b> L= 20.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 272.50' / 271.80' S= 0.0350 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

**Discarded OutFlow** Max=0.39 cfs @ 11.22 hrs HW=271.60' (Free Discharge)  
 ↑1=**Special & User-Defined** (Custom Controls 0.39 cfs)

**Primary OutFlow** Max=10.92 cfs @ 12.14 hrs HW=274.17' (Free Discharge)  
 ↑2=**Culvert** (Inlet Controls 4.88 cfs @ 6.22 fps)  
 ↑3=**Culvert** (Inlet Controls 6.04 cfs @ 4.92 fps)

### Pond 4P: Drainage System # 4@ W. Central St.



**Summary for Pond 5P: Wendy's & Bldg. # 3 Drainage System # 3**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.215 ac, 100.00% Impervious, Inflow Depth > 3.49" for 100 - Year event  
 Inflow = 1.53 cfs @ 12.07 hrs, Volume= 0.062 af  
 Outflow = 0.50 cfs @ 12.34 hrs, Volume= 0.038 af, Atten= 67%, Lag= 16.2 min  
 Discarded = 0.17 cfs @ 11.57 hrs, Volume= 0.026 af  
 Primary = 0.33 cfs @ 12.34 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Peak Elev= 275.87' @ 12.34 hrs Surf.Area= 0 sf Storage= 1,302 cf

Plug-Flow detention time= 21.6 min calculated for 0.038 af (60% of inflow)  
 Center-of-Mass det. time= 8.3 min ( 731.6 - 723.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	274.00'	2,197 cf	<b>Custom Stage Data</b> Listed below

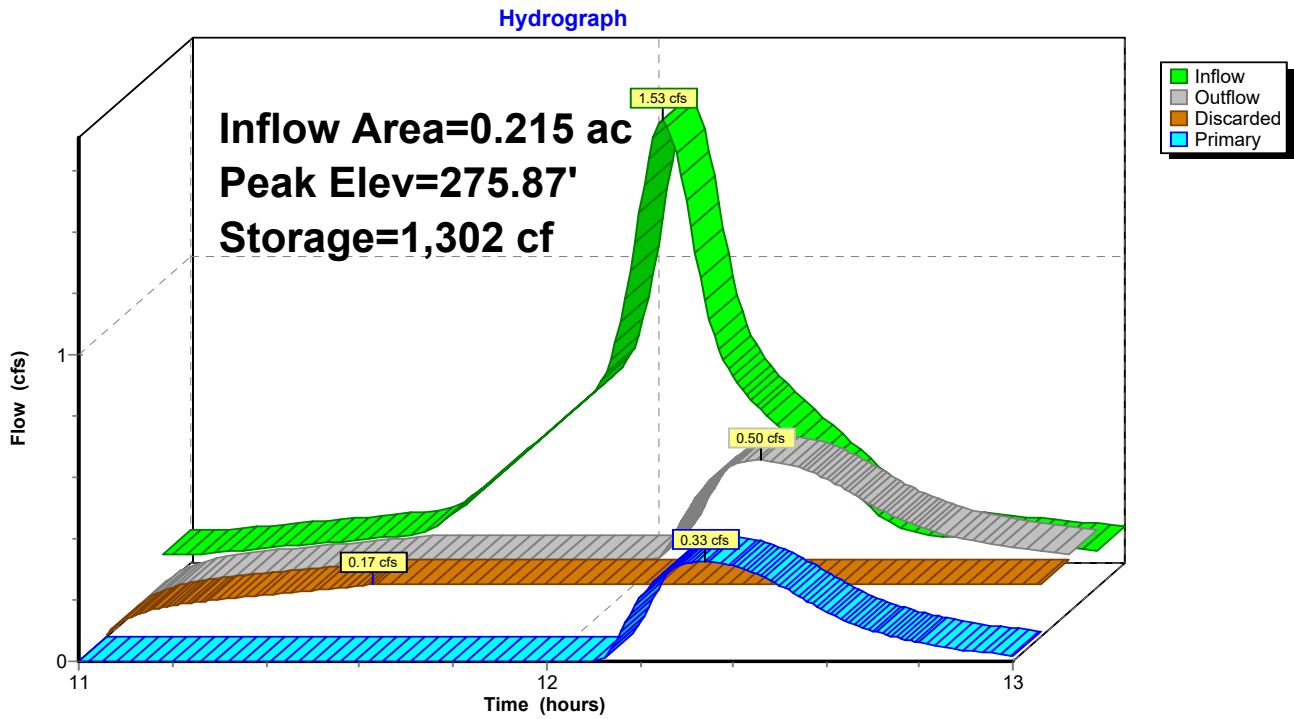
Elevation (feet)	Cum.Store (cubic-feet)
274.00	0
274.50	190
275.00	608
275.50	1,011
276.00	1,401
276.50	1,748
277.00	2,007
277.50	2,197

Device	Routing	Invert	Outlet Devices
#1	Discarded	274.00'	<b>Special &amp; User-Defined</b> Elev. (feet) 274.00 274.10 277.50 Disch. (cfs) 0.000 0.170 0.170
#2	Primary	275.50'	<b>6.0" Vert. Orifice/Grate</b> C= 0.600

**Discarded OutFlow** Max=0.17 cfs @ 11.57 hrs HW=274.10' (Free Discharge)  
 ↑1=**Special & User-Defined** (Custom Controls 0.17 cfs)

**Primary OutFlow** Max=0.33 cfs @ 12.34 hrs HW=275.87' (Free Discharge)  
 ↑2=**Orifice/Grate** (Orifice Controls 0.33 cfs @ 2.08 fps)

### Pond 5P: Wendy's & Bldg. # 3 Drainage System # 3



**Summary for Pond 6-P: EXISTING POND FOR CONDO'S**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 6.890 ac, 7.26% Impervious, Inflow Depth > 2.17" for 100 - Year event  
 Inflow = 28.48 cfs @ 12.12 hrs, Volume= 1.244 af  
 Outflow = 5.86 cfs @ 12.59 hrs, Volume= 0.512 af, Atten= 79%, Lag= 28.3 min  
 Primary = 5.86 cfs @ 12.59 hrs, Volume= 0.512 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs  
 Peak Elev= 329.50' @ 12.59 hrs Surf.Area= 0.000 ac Storage= 0.790 af

Plug-Flow detention time= 35.6 min calculated for 0.512 af (41% of inflow)  
 Center-of-Mass det. time= 16.6 min ( 746.3 - 729.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	326.00'	2.340 af	<b>Custom Stage Data</b> Listed below

Elevation (feet)	Cum.Store (acre-feet)
326.00	0.000
328.00	0.400
330.00	0.920
332.00	1.570
334.00	2.340

Device	Routing	Invert	Outlet Devices
#1	Primary	326.00'	<b>12.0" Round Culvert</b> L= 70.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 326.00' / 325.30' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

**Primary OutFlow** Max=5.86 cfs @ 12.59 hrs HW=329.50' (Free Discharge)

↑**1=Culvert** (Barrel Controls 5.86 cfs @ 7.47 fps)



### Pond 6-P: EXISTING POND FOR CONDO'S

