

Summit Engineering & Survey, Inc.

**HYDRAULIC / HYDROLOGIC CALCULATIONS**

**Padding Site Plan  
1439 Main Street  
Leicester Massachusetts**

Prepared For:  
**Schold Development, LLC**

Prepared By:  
**SUMMIT ENGINEERING & SURVEY, INC.  
710 MAIN STREET  
OXFORD, MASSACHUSETTS**

**July 29, 2021**  
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## **TABLE OF CONTENTS**

Cover Page

Table of Contents

Drainage Summary

Stormwater Management Calculations

Standard #2 Peak Discharge Rates

Standard #3 Loss of Annual Recharge

Standard #4 80% TSS Removal

Standard #9 Operation & Maintenance Plan

Appendices

Pre-Development Diagram

Post- Development Diagram

Pre-Development Watershed Subcatchments

Post-Development Watershed Subcatchments

Soil Maps

Flood Map

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## **DRAINAGE SUMMARY**

Summit Engineering & Survey, Inc. is pleased to provide the following Hydraulic / Hydrologic analysis for the proposed site plan for Schold Development. The proposed project is located at 1439 Main Street in Leicester, Massachusetts. The existing site consists of an area that has been cleared and an area that is un-developed land, much of it wooded with mature woodland. The hydrologic conditions were analyzed using TR-55 and HydroCAD® for the 2, 10 and 100 year storm events utilizing Technical Paper 40, 24 hour Rainfall events.

Project site consists of the grading a padding site for a future site plan for a commercial site. The project as designed conforms to the Massachusetts DEP Stormwater Management Policy.

### **EXISTING CONDITIONS:**

The site is located at 1439 Main Street behind Tractor Supply on the south side of Route 9. The site is has a cleared area and a wooded along the south and east portion of the site. There is an existing water quality basin located in the east portion of the site that has been design to handle full build out of the parcel and also the existing Tractor Supply Site. The existing basin has been recently cleared of all small trees and brush.

The topography of the site is steep, which slopes from northwest (1014) to southeast (921), which is toward east property line. A majority of the site is graded toward the southeast where an existing basin is located.

For the purpose of the analysis of the effect on the padding site grading, the site was analyzed as two independent watersheds. In the Pre-Development Condition, Subcatchment 1 represents the tributary area of the property that flows to the existing basin. Subcatchment 2 represents the tributary portion of the site that flows to the southeasttoward the property line.

According to the online USGS soil survey, the analyzed area consists of soils with "C" hydrologic ratings. Per the soil map the soil on site are Paxton. The cover consists of predominantly woodland and an area that has been cleared and gravel area.

### **PROPOSED CONDITIONS:**

The proposed condition of the site will consists of a gravel area set at specific elevation for building padding areas for future commercial site. The proposed drainage system will consist of diverter berms and swales to collect and direct runoff during the grading of the pad site. There will be two temporary basins constructed to mitigate runoff as well as treatment of runoff prior to discharge into the existing basin located on the site.

The site will be re-graded in the future to support a future commercial project and control stormwater in accordance with the Massachusetts.

In order to analyze the surface water flows, the site was divided into multiple Subcatchments, Ponds and a Reaches

In summary, the peak rates of runoff were compared under pre-development and post-development conditions for analysis of the 2 year, 10 year, 25 year and 100 year storm events. The following is a **Peak Discharge Summary Table**:

### Design Point Analysis:

Watershed		Design Event			
		2 Year	10 Year	25 Year	100 Year
Pre-Development	IP#1E	19.71	32.61	36.94	49.92
	IP#2E	<b>7.74</b>	<b>15.69</b>	<b>18.52</b>	<b>27.33</b>
Post Development	IP#1P	17.59	31.47	35.47	48.18
	IP#2P	<b>3.63</b>	<b>7.33</b>	<b>8.65</b>	<b>12.74</b>

#### DEP Stormwater Management Standards:

Standard #1: The proposed changes will not cause erosion in adjacent water of the Commonwealth, as BMP measures are proposed in accordance with the design requirements of the Stormwater Management handbook. The Erosion & Sedimentation Control Plan provides for the installation of siltation barriers, temporary basins, temporary construction entrances and outlines intermediary measures to control runoff during construction and after construction.

Standard #2: The proposed development peak discharge rates for the total off-site flow are less than or equal to pre-development discharge rates for the 2 year, 10 year, and 100 year storm events for the design points analyzed. Attached calculations show how the site mitigates the increased flow rates due to surface changes from the site development.

Standard #3: The proposed project does not propose any impervious area at this time. The proposed future site will address this Standard as required by Stormwater Management. The existing basin will continue to address this Standard as it was designed to infiltrate runoff from the Tractor Supply Site after pre-treatment. The existing basin will be monitored throughout the construction to ensure that the Infiltration depths are designed to drain in under 72 hours as required by the Policy.

Standard #4: Over 80% TSS shall occur based on the BMP measurements provided. The treatment train varies for each section. TSS worksheets are provided in the report for each treatment train in the site.

Standard #5: The proposed development will not generate higher potential pollutant loads and therefore will not require additional BMP practices.

Standard #6: The proposed project is not near a critical area.

Standard #7: The proposed project is not a redevelopment project.

Standard #8: Erosion and sediment control measures are proposed as part of the proposed project.

Standard #9: An Operation & Maintenance plan is provided within this document

Standard #10: This project does not propose any illicit discharges.

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# **STORMWATER MANAGEMENT CHECKLIST**

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## **STANDARD #3 –LOSS OF ANNUAL RECHARGE**

The site is predominately un-developed. Temporary Basin 1& 2 are constructed for pretreatment prior to the existing basin located in the southeast corner of the parcel. Soils were found to be Class C permeability.

The table below shows the required and provided recharge volumes for the project. As shown, the proposed condition exceeds the minimum requirement for the additional impervious areas.

**Recharge Volume Summary**

Soil Type	Recharge Factor (in. runoff)	Existing Impervious Area (sf)	Additional Impervious Area (sf)	Min. Req. Recharge Volume (cf)
A	0.60	0	0	0
B	0.35	0	0	0
C	0.25	0	0	0
D	0.10	0	0	0
<b>Total Required</b>				<b>0</b>

Standard #3 Only Applies to Additional Impervious

<b>Provided Recharge Volume (cf)</b>		
Roof Recharge (Pond#4)		0
		0
		0
<b>Total Provided</b>		<b>0</b>

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## **STANDARD #4- 80% TSS REMOVAL**

ESTIMATED PROPOSED NEW PAVED COVER= 0 S.F.

### **REQUIRED WATER QUALITY VOLUME:**

<b>Water Quality Volume</b>		
Required Treatment Volume	1.0	Inches Over Impervious Areas
Watershed Series	Paved Area	Water Quality Volume

The design of the drainage system is such that the site is routed through a series of treatment BMP's meeting the Standard. The attached TSS worksheets show the water treatment prior to the existing basin located on. No bypass is designed of the BMP's reducing the WQV.



## **STANDARD #9- OPERATION & MAINTENANCE**

### *OPERATION & MAINTENANCE PLAN:*

#### **CURRENT OWNER & RESPONSIBLE PARTY:**

Matt Schold (Contractor shall be responsible during construction)

#### **FUTURE OWNER & RESPONSIBLE PARTY:**

Matt Schold

#### **DURING CONSTRUCTION:**

##### ***SILT FENCE BARRIER:***

The silt fence barrier shall be installed prior to construction.

During construction the contractor shall inspect the silt fence barrier on a weekly basis and after any significant rainstorm resulting in greater than 0.5" of rainfall. The barrier shall be inspected for any breaches or disturbed silt fence and repaired immediately.

After construction the barrier shall be maintained as stated above until all new areas are vegetated.

After construction these duties shall transfer to the property owner.

##### ***CONSTRUCTION ENTRANCE APRONS:***

Construction aprons shall be installed to protect Tractor Supply Parking Lot and Route 9. The construction entrance apron shall be installed prior to commencement of construction and shall be inspected weekly. The construction entrance apron shall be replaced when debris becomes noticeable on the existing pavement surfaces leading to and from the construction site.

##### ***SLOPE STABILIZATION:***

The slope stabilization controls shall be installed immediately upon obtaining final grades as shown on the project plans. Slopes in the swale area shall be stabilized according to the details provided. All 3:1 slopes established on-site shall be loamed and seeded as soon as weather permits. Any 2:1 slopes established shall be covered with slope stabilization fabric, then loamed and seeded as soon as weather permits. Areas in failure shall be re-graded to final grade and stabilized as necessary.

##### ***TEMPORARY BASINS:***

The temporary basins shall be inspected immediately after storm events and cleaned to remove sediment build-up. Outfalls shall be inspected for erosion or scouring. Additional rip rap shall be added as required to minimize erosion.

#### ***Existing CATCH BASINS:***

Existing Catch basins entrances shall have temporary stone or other filtration device installed around inlet to prevent sediment deposits. Sediment shall be removed when accumulation exceeds 1" depth on paved surfaces.

#### ***CHECK DAMS:***

Check Dams shall be inspected weekly and after rainfall in excess of 0.5". Accumulated sediment shall be removed when depth exceeds 3" on the upstream sided of the dam. Stone or fabric shall be replaced when evidence of clogging is present.

#### ***CONSTRUCTION COMPLETION:***

The entire stormwater management system shall be inspected upon completion of construction. Portions of the system containing sediment shall be cleaned and all sediment properly removed.

#### **AFTER CONSTRUCTION:**

##### ***Existing CATCH BASINS:***

At a minimum, the catch basins shall be inspected and cleaned on a quarterly basis. It is preferred that collection of accumulated sediment shall be accomplished by means of vacuum pumping and not by means of a clamshell bucket. Disposal of accumulated sediment shall be performed in accordance with applicable local, state, and federal guidelines and regulations.

#### ***SEDIMENT BASINS***

Sediment Basins shall be visually inspected monthly for accumulation of debris, slope failure, or stone displacement. Slopes shall be mowed quarterly. Bottom shall be swept, vacuumed of accumulated debris semi-annually.

#### ***EEXISTING INFILTRATION BASIN***

Inspect infiltration basin after major storm events (>3.0 inches) to verify stabilization and infiltration. Mow slopes, berms quarterly. Removed accumulated clippings from infiltration stone. Inspect basin semi-annually for the following:

- Signs of differential settlement

- Cracking
- Erosion
- Leakage in embankments
- Tree growth on embankments
- Condition of rip rap
- Sediment accumulation
- Turf health.

## **LONG TERM POLLUTION PREVENTION PLAN**

The following are the material management practices that shall be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff.

**Good Housekeeping:** The following good housekeeping practices will be followed on site during the construction project and continued upon completion of the construction activities.

1. A concerted effort shall be made to store only enough product required to complete a particular task.
2. All materials stored on site shall be stored in a neat and orderly fashion in their appropriate containers and, if possible, under a roof or other secure enclosure.
3. Products shall be kept in their original containers with the original manufacture's label.
4. Substances shall not be mixed with one another unless recommended by the manufacturer.
5. Whenever possible, all of a product shall be used up before disposing of the container.
6. Manufacture's recommendations for proper use and disposal shall be followed.
7. The site superintendent shall inspect daily to ensure proper use and disposal of materials on site.

**Hazardous Products:** The following practices are intended to reduce the risks associated with hazardous materials.

1. Products shall be kept in original containers unless they are not re-sealable.
2. Where feasible, the original label and material safety data shall be retained, whereas they contain important product information.
3. If surplus product must be disposed of, follow manufacturers or local and State recommended methods for proper disposal.

**Product Specific Practices:** The following product-specific practices shall be followed on site:  
Petroleum Products:

1. All on site vehicles shall be monitored for leaks and receive regular preventative maintenance to reduce the risk of leakage.
2. Petroleum products shall be stored in tightly sealed containers which are clearly labeled.
3. Petroleum Products shall be stored in compliance with Fire Marshall regulations.

Bituminous Concrete:

Any bituminous concrete or asphalt substances used on site shall be applied according to the manufacturer's recommendations.

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**Fertilizers:**

Fertilizers shall be applied in the minimum amounts recommended by the manufacturer. Once applied, fertilizers shall be worked into the soil to limit exposure to stormwater. Storage shall be in a covered shed or trailer. The contents of any partially-used bags of fertilizer shall be transferred to a sealable plastic bag or bin to avoid spills

**Paints:**

1. All containers shall be tightly sealed and stored when not required for use.
2. Excess paint shall not be discharged into any catch basin, drain manhole or any portion of the stormwater management system.
3. Excess paint shall be properly disposed of according to manufacturer's recommendations or State and local regulations.

**Concrete Trucks:**

Concrete trucks shall not be allowed to wash out or discharge surplus concrete or drum wash water on site.

**SPILL CONTROL PRACTICES**

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices shall be followed for spill prevention and cleanup:

1. Manufacturer's recommended methods for cleanup shall be readily available at the onsite trailer, and site personnel shall be made aware of the procedures and the location of the information.
2. Materials and equipment necessary for spill clean up shall be kept in the material storage area on site. Equipment and materials shall include, but not be limited to, brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust and plastic and metal trash containers specifically for this purpose.
3. All spills shall be cleaned up immediately after discovery.
4. The spill area shall be kept well ventilated, and personnel shall wear appropriate protective clothing to prevent injury from contact with hazardous substance.
5. Spills of toxic or hazardous material shall be reported to the appropriate State and/or local authority in accordance with local and/or State regulations.
6. The spill prevention plan shall be adjusted to include measures to prevent a particular type of spill from reoccurring and instructions on how to clean up the spill if there is another occurrence. A description of the spill, what caused it, and the clean up measures shall also be included.
7. The "Manager" shall be the spill prevention and cleanup coordinator. The "Manager" shall designate at least three other site personnel who will be trained in the spill control practices identified above.

**APPENDICES:**

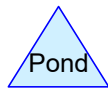
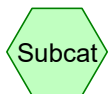
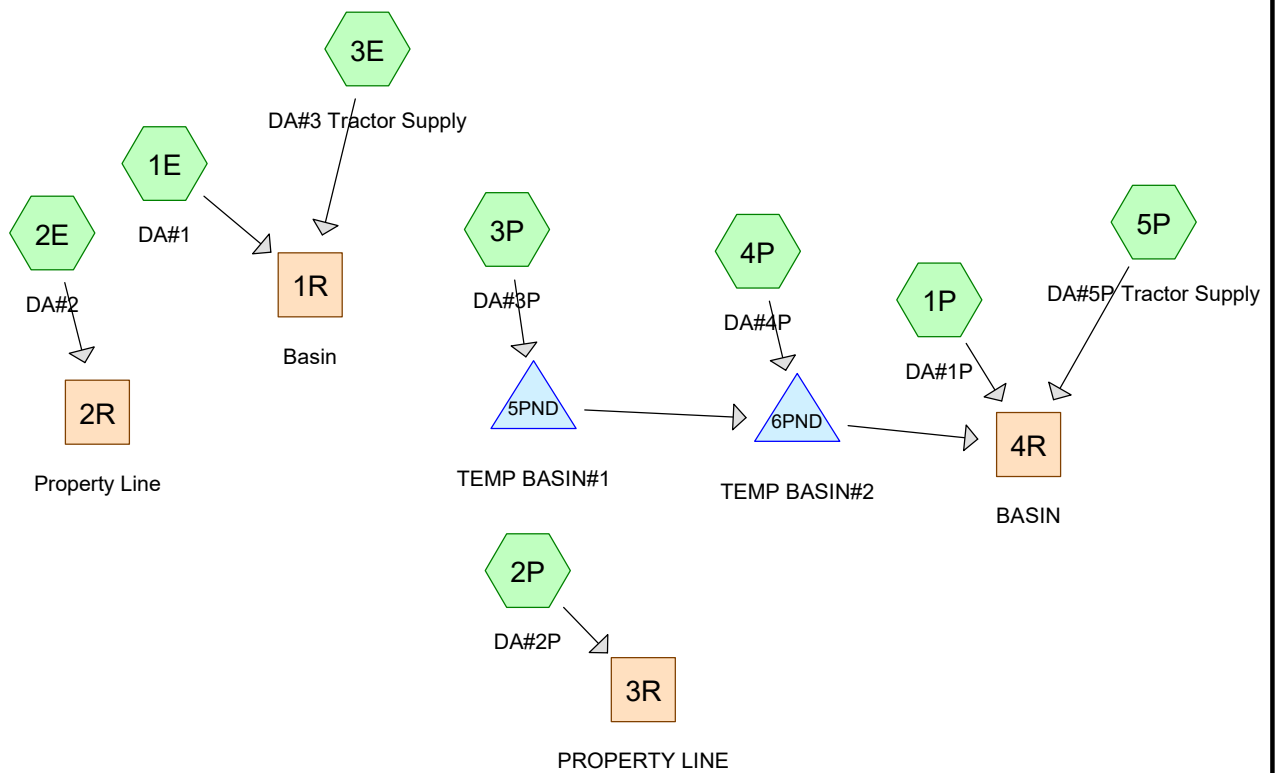
**PRE-DEVELOPMENT DIAGRAM**

**POST-DEVELOPMENT DIAGRAM**

**PRE-DEVELOPMENT WATERSHED MAP**

**POST-DEVELOPMENT WATERSHED MAP**

**SOIL MAPS**



## 1439 Main Street R1

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Page 2

### Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
10.008	74	>75% Grass cover, Good, HSG C (2P, 3E, 5P)
9.781	89	Gravel roads, HSG C (1E, 1P, 2E, 3P, 4P)
5.621	98	Paved parking, HSG C (3E, 5P)
4.859	70	Woods, Good, HSG C (2E)
<b>30.270</b>	<b>83</b>	<b>TOTAL AREA</b>

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### Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
30.270	HSG C	1E, 1P, 2E, 2P, 3E, 3P, 4P, 5P
0.000	HSG D	
0.000	Other	
<b>30.270</b>		<b>TOTAL AREA</b>



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**Ground Covers (all nodes)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	10.008	0.000	0.000	10.008	>75% Grass cover, Good	2P, 3E, 5P
0.000	0.000	9.781	0.000	0.000	9.781	Gravel roads	1E, 1P, 2E, 3P, 4P
0.000	0.000	5.621	0.000	0.000	5.621	Paved parking	3E, 5P
0.000	0.000	4.859	0.000	0.000	4.859	Woods, Good	2E
<b>0.000</b>	<b>0.000</b>	<b>30.270</b>	<b>0.000</b>	<b>0.000</b>	<b>30.270</b>	<b>TOTAL AREA</b>	

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### Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	3E	0.00	0.00	535.0	0.0200	0.011	15.0	0.0	0.0
2	5P	0.00	0.00	535.0	0.0200	0.011	15.0	0.0	0.0

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Type III 24-hr 2YR Rainfall=3.40"

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Page 6

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

<b>Subcatchment 1E: DA#1</b>	Runoff Area=107,129 sf 0.00% Impervious Runoff Depth>2.13" Flow Length=537' Tc=3.8 min CN=89 Runoff=6.85 cfs 0.436 af
<b>Subcatchment 1P: DA#1P</b>	Runoff Area=30,392 sf 0.00% Impervious Runoff Depth>2.13" Tc=6.0 min CN=89 Runoff=1.80 cfs 0.124 af
<b>Subcatchment 2E: DA#2</b>	Runoff Area=272,789 sf 0.00% Impervious Runoff Depth>1.07" Flow Length=762' Slope=0.1000 ' ' Tc=7.4 min CN=74 Runoff=7.74 cfs 0.559 af
<b>Subcatchment 2P: DA#2P</b>	Runoff Area=122,118 sf 0.00% Impervious Runoff Depth>1.07" Tc=6.0 min CN=74 Runoff=3.63 cfs 0.250 af
<b>Subcatchment 3E: DA#3 Tractor Supply</b>	Runoff Area=279,357 sf 43.83% Impervious Runoff Depth>1.80" Flow Length=1,118' Tc=7.2 min CN=85 Runoff=13.75 cfs 0.962 af
<b>Subcatchment 3P: DA#3P</b>	Runoff Area=115,249 sf 0.00% Impervious Runoff Depth>2.13" Tc=6.0 min CN=89 Runoff=6.81 cfs 0.469 af
<b>Subcatchment 4P: DA#4P</b>	Runoff Area=112,159 sf 0.00% Impervious Runoff Depth>2.13" Tc=6.0 min CN=89 Runoff=6.63 cfs 0.457 af
<b>Subcatchment 5P: DA#5P Tractor Supply</b>	Runoff Area=279,357 sf 43.83% Impervious Runoff Depth>1.80" Flow Length=1,118' Tc=7.2 min CN=85 Runoff=13.75 cfs 0.962 af
<b>Reach 1R: Basin</b>	Inflow=19.71 cfs 1.399 af Outflow=19.71 cfs 1.399 af
<b>Reach 2R: Property Line</b>	Inflow=7.74 cfs 0.559 af Outflow=7.74 cfs 0.559 af
<b>Reach 3R: PROPERTY LINE</b>	Inflow=3.63 cfs 0.250 af Outflow=3.63 cfs 0.250 af
<b>Reach 4R: BASIN</b>	Inflow=17.89 cfs 1.670 af Outflow=17.89 cfs 1.670 af
<b>Pond 5PND: TEMP BASIN#1</b>	Peak Elev=972.53' Storage=11,785 cf Inflow=6.81 cfs 0.469 af Outflow=1.23 cfs 0.246 af
<b>Pond 6PND: TEMP BASIN#2</b>	Peak Elev=972.48' Storage=8,011 cf Inflow=6.63 cfs 0.702 af Outflow=3.48 cfs 0.584 af

**Total Runoff Area = 30.270 ac Runoff Volume = 4.219 af Average Runoff Depth = 1.67"**  
**81.43% Pervious = 24.648 ac 18.57% Impervious = 5.621 ac**

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**Summary for Subcatchment 1E: DA#1**

Runoff = 6.85 cfs @ 12.06 hrs, Volume= 0.436 af, Depth&gt; 2.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2YR Rainfall=3.40"

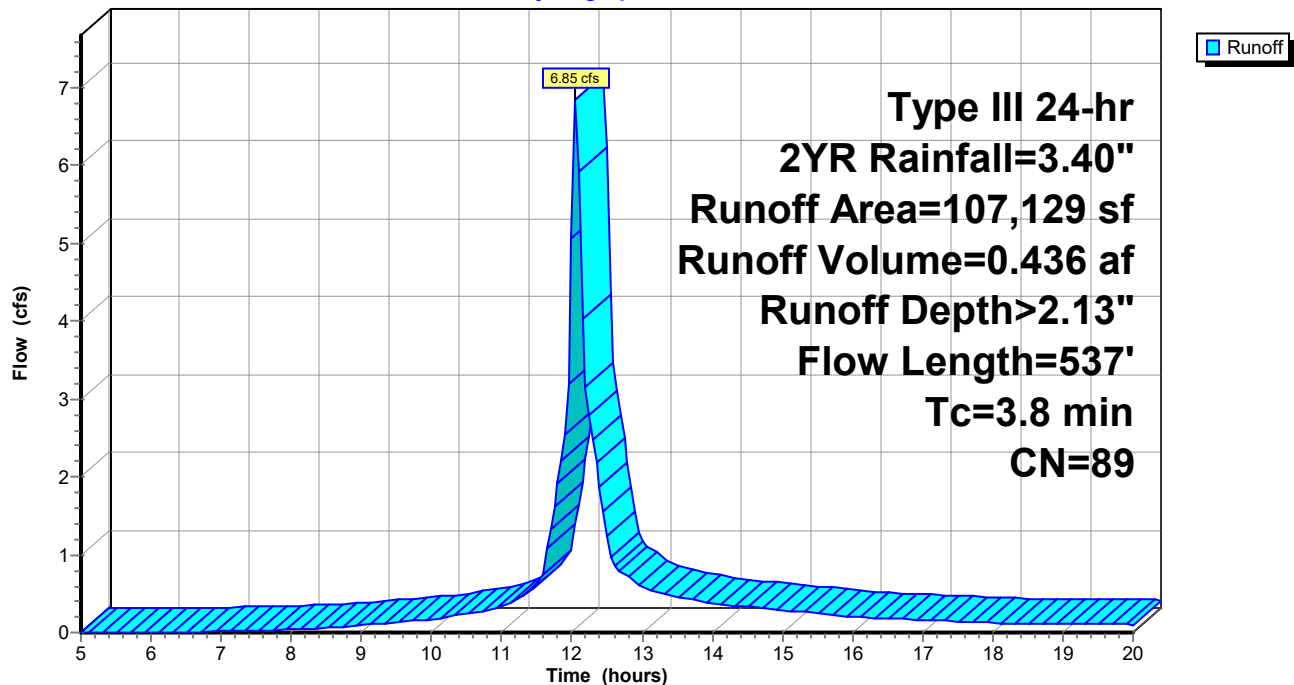
Area (sf)	CN	Description
107,129	89	Gravel roads, HSG C
107,129		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	30	0.0800	0.24		<b>Sheet Flow, TRAVEL PATH A TO B</b> Grass: Short n= 0.150 P2= 3.30"
1.7	507	0.1000	5.09		<b>Shallow Concentrated Flow, TRAVEL PATH B TO C</b> Unpaved Kv= 16.1 fps
3.8	537	Total			

**Subcatchment 1E: DA#1**

Hydrograph



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Type III 24-hr 2YR Rainfall=3.40"

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**Summary for Subcatchment 1P: DA#1P**

Runoff = 1.80 cfs @ 12.09 hrs, Volume= 0.124 af, Depth&gt; 2.13"

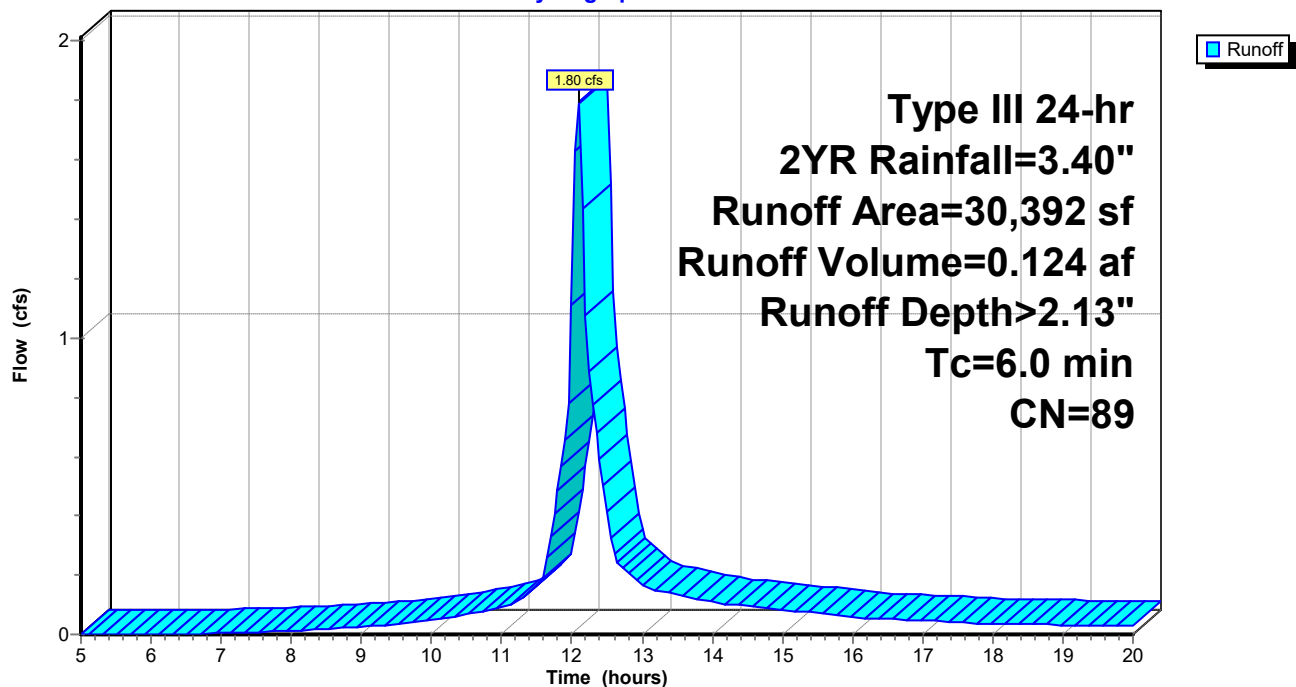
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2YR Rainfall=3.40"

Area (sf)	CN	Description
30,392	89	Gravel roads, HSG C
30,392		100.00% Pervious Area

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

**Subcatchment 1P: DA#1P**

Hydrograph



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Type III 24-hr 2YR Rainfall=3.40"

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Page 9

**Summary for Subcatchment 2E: DA#2**

Runoff = 7.74 cfs @ 12.12 hrs, Volume= 0.559 af, Depth&gt; 1.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2YR Rainfall=3.40"

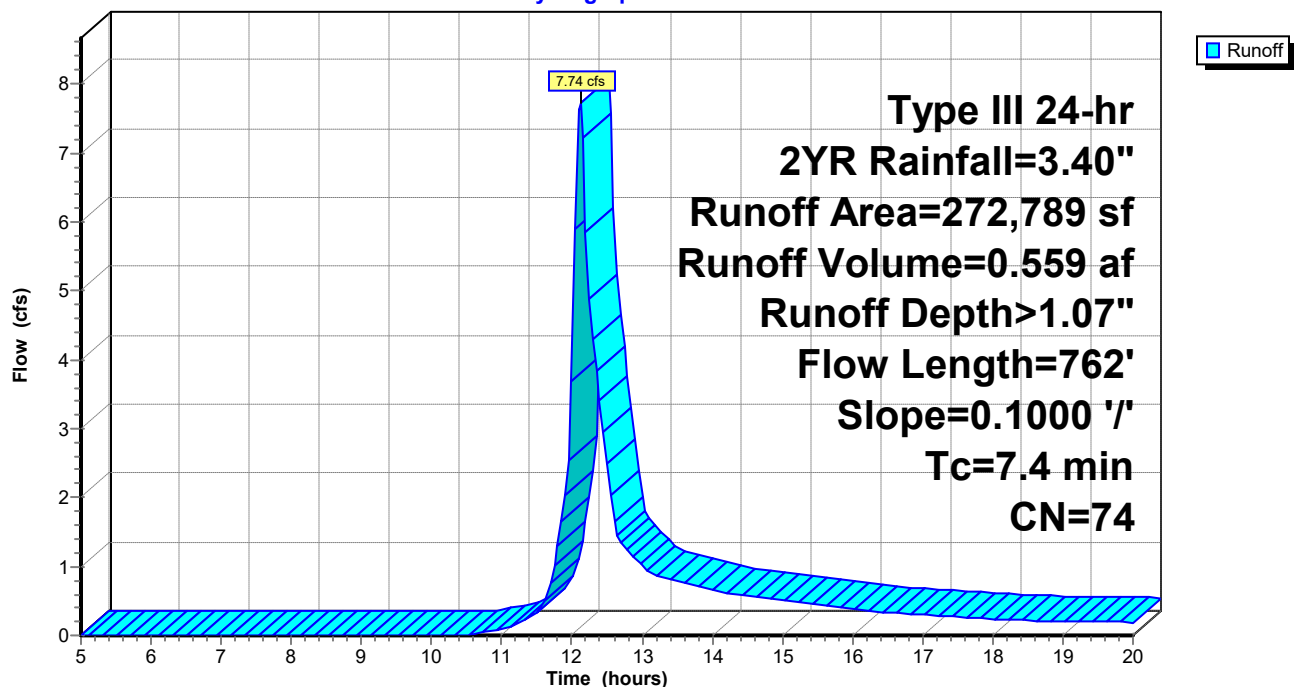
Area (sf)	CN	Description
211,646	70	Woods, Good, HSG C
61,143	89	Gravel roads, HSG C
272,789	74	Weighted Average
272,789		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	30	0.1000	0.26		<b>Sheet Flow, TRAVEL PATH A TO B</b> Grass: Short n= 0.150 P2= 3.30"
2.2	417	0.1000	3.16		<b>Shallow Concentrated Flow, TRAVEL PATH B TO C</b> Nearly Bare & Untilled Kv= 10.0 fps
3.3	315	0.1000	1.58		<b>Shallow Concentrated Flow, travel path c to d</b> Woodland Kv= 5.0 fps
7.4	762	Total			

**Subcatchment 2E: DA#2**

Hydrograph



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Type III 24-hr 2YR Rainfall=3.40"

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Page 10

**Summary for Subcatchment 2P: DA#2P**

Runoff = 3.63 cfs @ 12.10 hrs, Volume= 0.250 af, Depth&gt; 1.07"

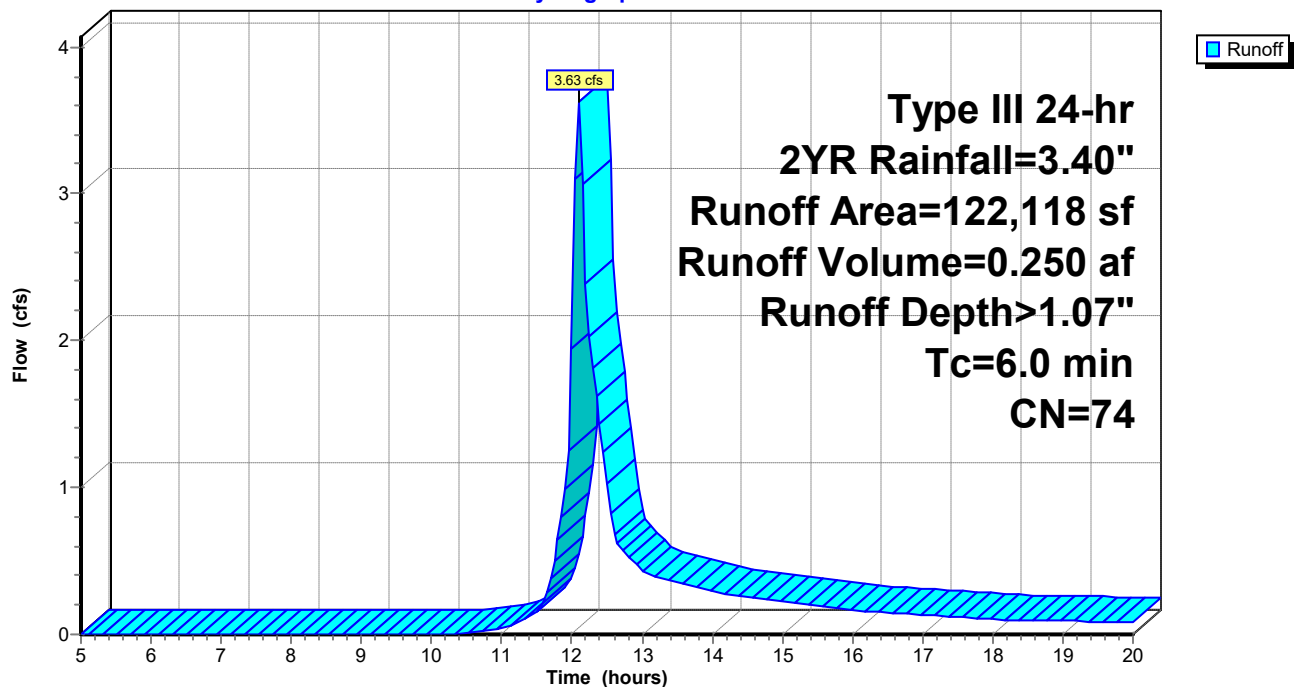
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2YR Rainfall=3.40"

Area (sf)	CN	Description
122,118	74	>75% Grass cover, Good, HSG C
122,118		100.00% Pervious Area

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

**Subcatchment 2P: DA#2P**

Hydrograph



**1439 Main Street R1**

Type III 24-hr 2YR Rainfall=3.40"

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Page 11

**Summary for Subcatchment 3E: DA#3 Tractor Supply**

Runoff = 13.75 cfs @ 12.11 hrs, Volume= 0.962 af, Depth&gt; 1.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2YR Rainfall=3.40"

Area (sf)	CN	Description
122,435	98	Paved parking, HSG C
156,922	74	>75% Grass cover, Good, HSG C
279,357	85	Weighted Average
156,922		56.17% Pervious Area
122,435		43.83% Impervious Area

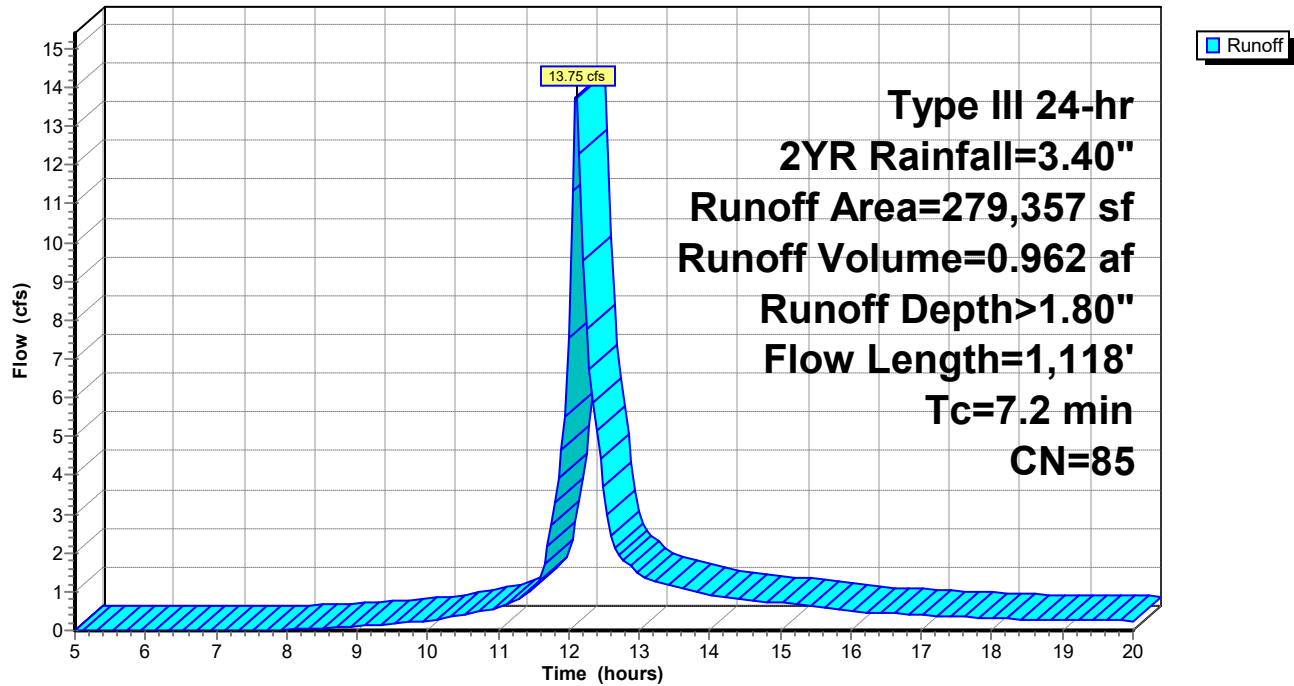
  

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	50	0.0500	0.22		<b>Sheet Flow, TRAVEL PATH A TO B</b> Grass: Short n= 0.150 P2= 3.30"
1.2	286	0.0600	3.94		<b>Shallow Concentrated Flow, TRAVEL PATH B TO C</b> Unpaved Kv= 16.1 fps
0.1	60	0.5000	11.38		<b>Shallow Concentrated Flow, TRAVEL PATH C TO D</b> Unpaved Kv= 16.1 fps
1.1	187	0.0200	2.87		<b>Shallow Concentrated Flow, TRAVEL PATH D TO E</b> Paved Kv= 20.3 fps
1.0	535	0.0200	8.80	10.80	<b>Pipe Channel, TRAVEL PATH E TO F</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
7.2	1,118	Total			



Subcatchment 3E: DA#3 Tractor Supply

Hydrograph



**1439 Main Street R1**

Type III 24-hr 2YR Rainfall=3.40"

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Page 13

**Summary for Subcatchment 3P: DA#3P**

Runoff = 6.81 cfs @ 12.09 hrs, Volume= 0.469 af, Depth&gt; 2.13"

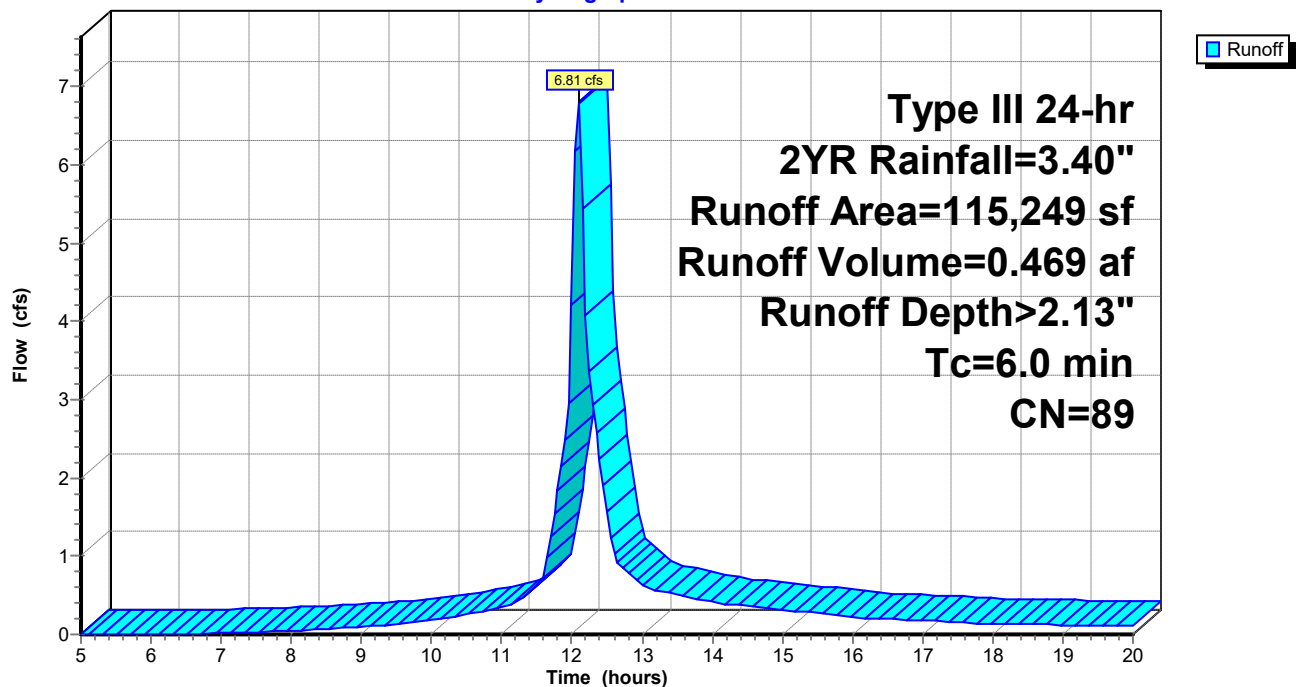
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2YR Rainfall=3.40"

Area (sf)	CN	Description
115,249	89	Gravel roads, HSG C
115,249		100.00% Pervious Area

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

**Subcatchment 3P: DA#3P**

Hydrograph



**1439 Main Street R1**

Type III 24-hr 2YR Rainfall=3.40"

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Page 14

**Summary for Subcatchment 4P: DA#4P**

Runoff = 6.63 cfs @ 12.09 hrs, Volume= 0.457 af, Depth&gt; 2.13"

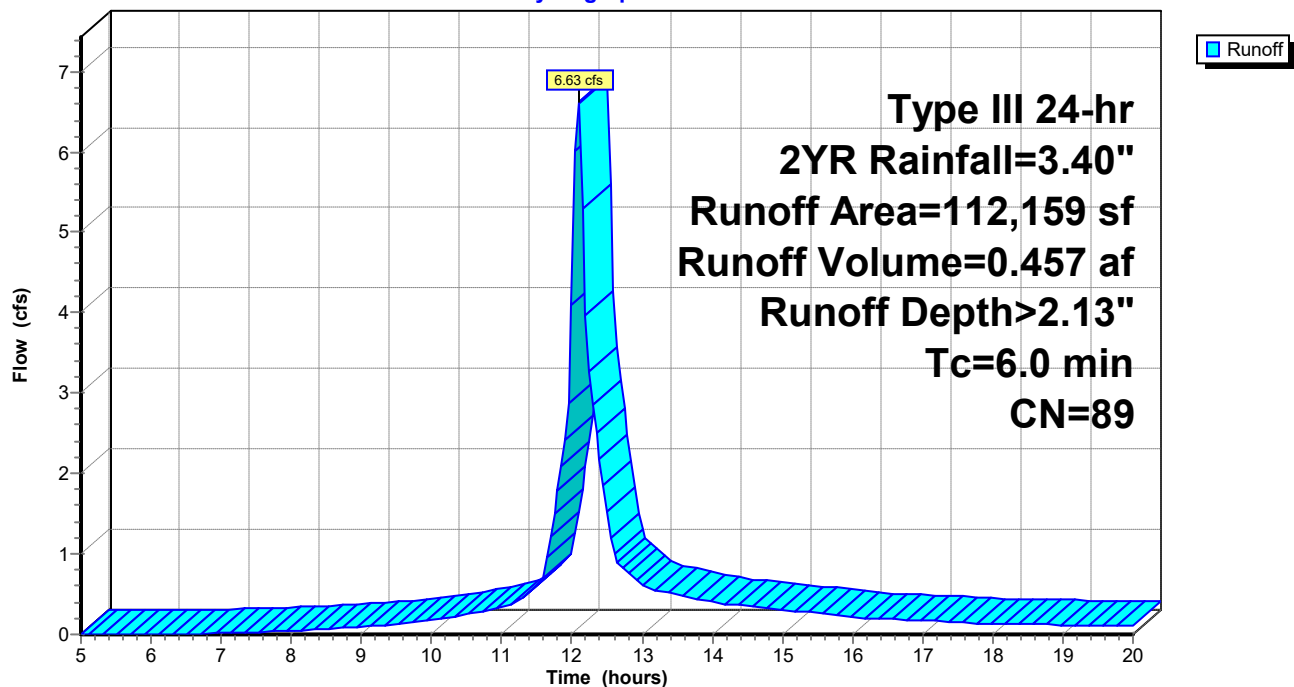
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2YR Rainfall=3.40"

Area (sf)	CN	Description
112,159	89	Gravel roads, HSG C
112,159		100.00% Pervious Area

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

**Subcatchment 4P: DA#4P**

Hydrograph



**1439 Main Street R1**

Type III 24-hr 2YR Rainfall=3.40"

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Page 15

**Summary for Subcatchment 5P: DA#5P Tractor Supply**

Runoff = 13.75 cfs @ 12.11 hrs, Volume= 0.962 af, Depth&gt; 1.80"

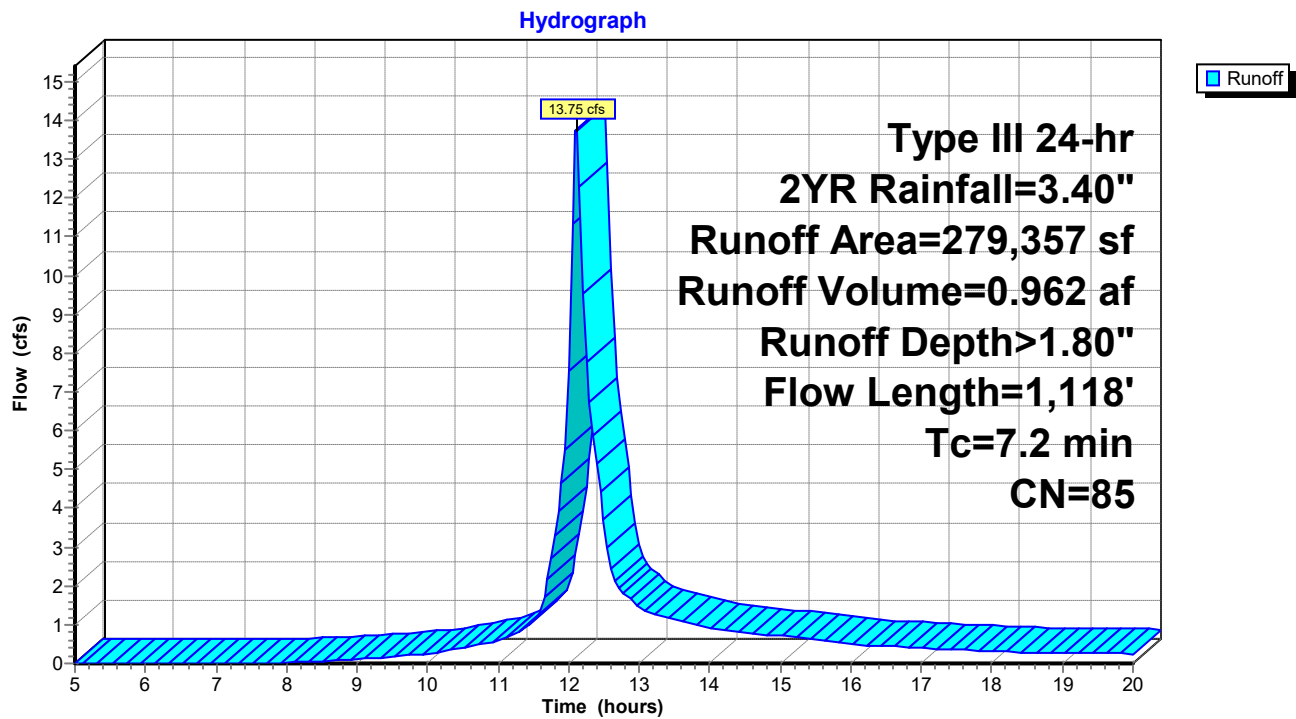
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2YR Rainfall=3.40"

Area (sf)	CN	Description
122,435	98	Paved parking, HSG C
156,922	74	>75% Grass cover, Good, HSG C
279,357	85	Weighted Average
156,922		56.17% Pervious Area
122,435		43.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	50	0.0500	0.22		<b>Sheet Flow, TRAVEL PATH A TO B</b> Grass: Short n= 0.150 P2= 3.30"
1.2	286	0.0600	3.94		<b>Shallow Concentrated Flow, TRAVEL PATH B TO C</b> Unpaved Kv= 16.1 fps
0.1	60	0.5000	11.38		<b>Shallow Concentrated Flow, TRAVEL PATH C TO D</b> Unpaved Kv= 16.1 fps
1.1	187	0.0200	2.87		<b>Shallow Concentrated Flow, TRAVEL PATH D TO E</b> Paved Kv= 20.3 fps
1.0	535	0.0200	8.80	10.80	<b>Pipe Channel, TRAVEL PATH E TO F</b> 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
7.2	1,118	Total			

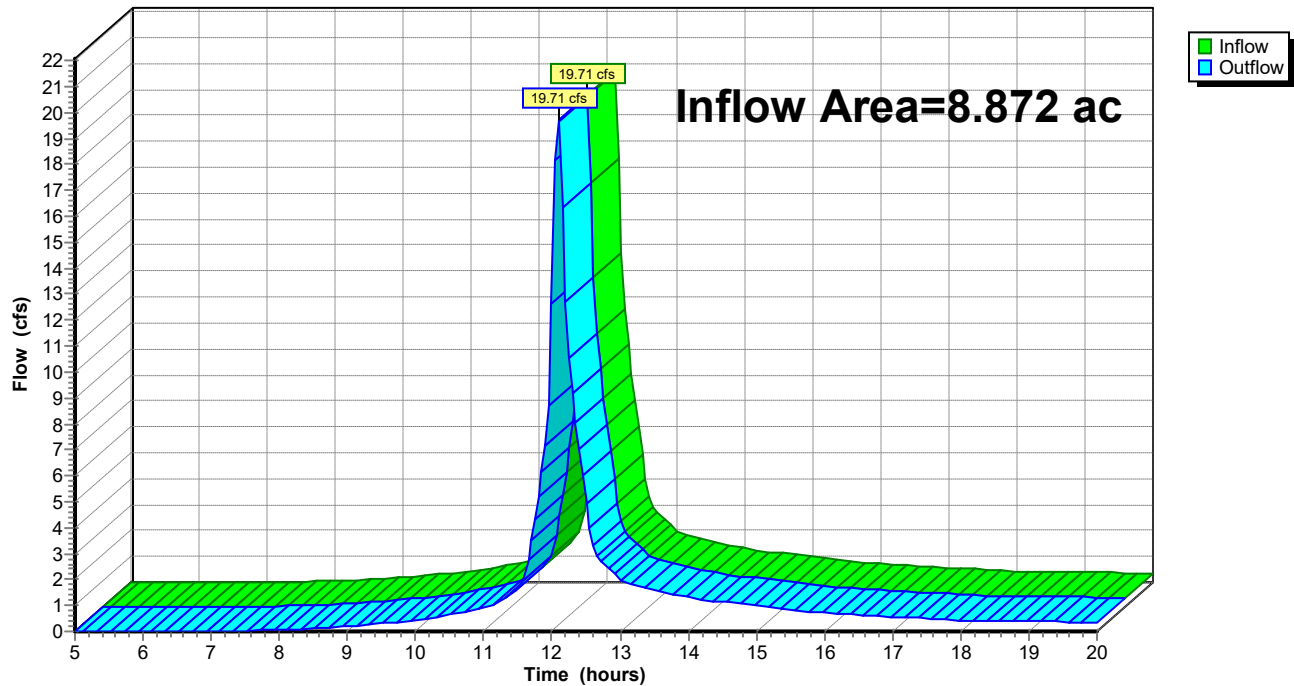
Subcatchment 5P: DA#5P Tractor Supply



**Summary for Reach 1R: Basin**

Inflow Area = 8.872 ac, 31.68% Impervious, Inflow Depth > 1.89" for 2YR event  
Inflow = 19.71 cfs @ 12.09 hrs, Volume= 1.399 af  
Outflow = 19.71 cfs @ 12.09 hrs, Volume= 1.399 af, Atten= 0%, Lag= 0.0 min

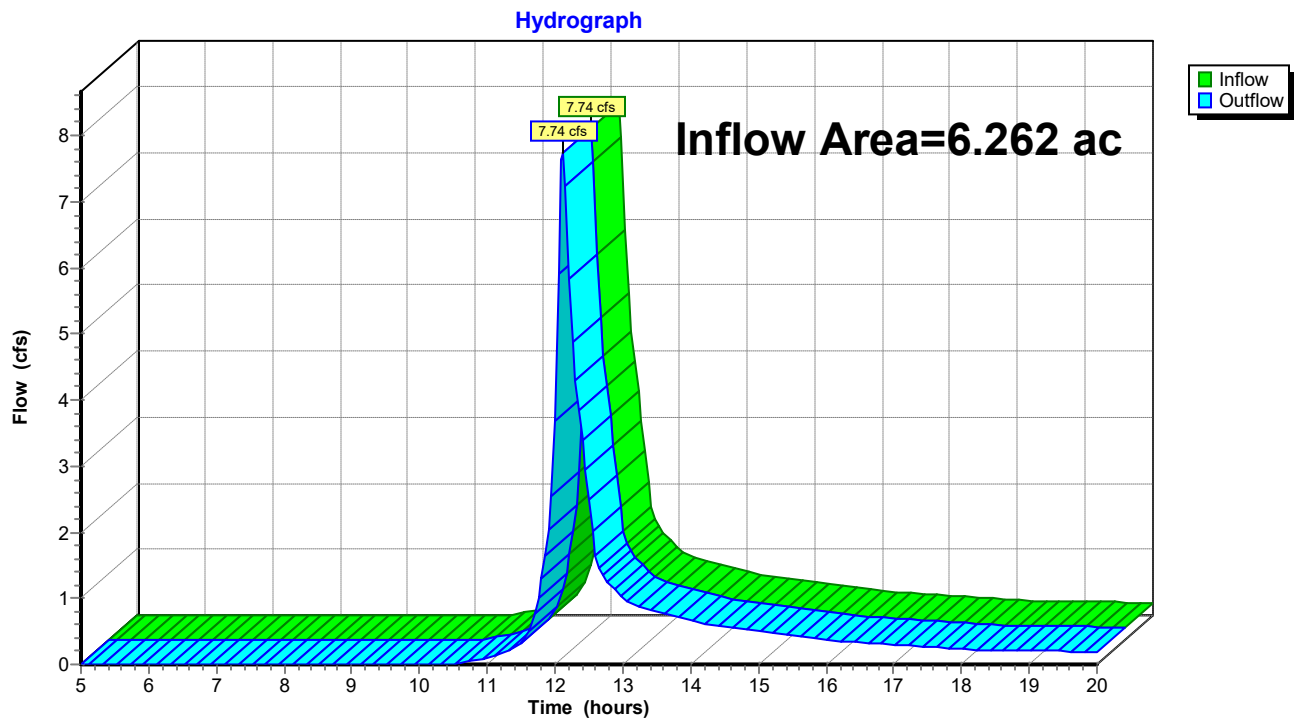
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Reach 1R: Basin****Hydrograph**

**Summary for Reach 2R: Property Line**

Inflow Area = 6.262 ac, 0.00% Impervious, Inflow Depth > 1.07" for 2YR event  
Inflow = 7.74 cfs @ 12.12 hrs, Volume= 0.559 af  
Outflow = 7.74 cfs @ 12.12 hrs, Volume= 0.559 af, Atten= 0%, Lag= 0.0 min

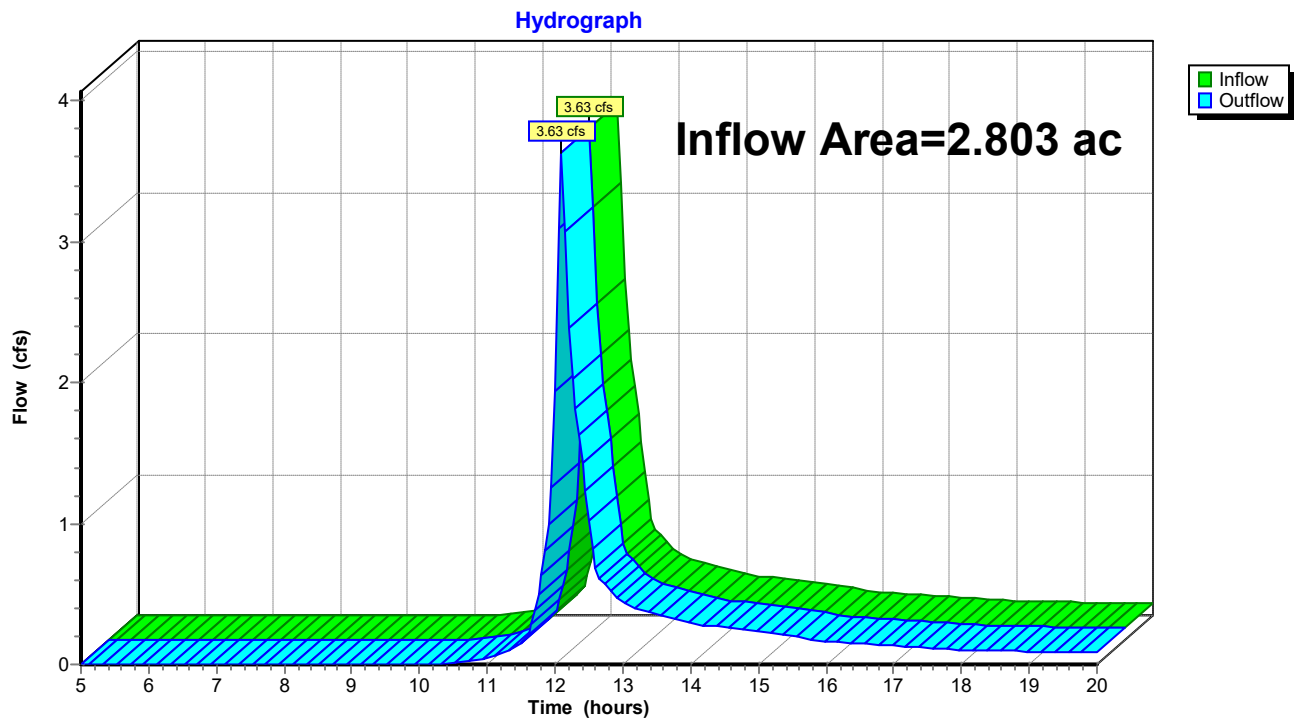
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**Reach 2R: Property Line**

**Summary for Reach 3R: PROPERTY LINE**

Inflow Area = 2.803 ac, 0.00% Impervious, Inflow Depth > 1.07" for 2YR event  
Inflow = 3.63 cfs @ 12.10 hrs, Volume= 0.250 af  
Outflow = 3.63 cfs @ 12.10 hrs, Volume= 0.250 af, Atten= 0%, Lag= 0.0 min

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

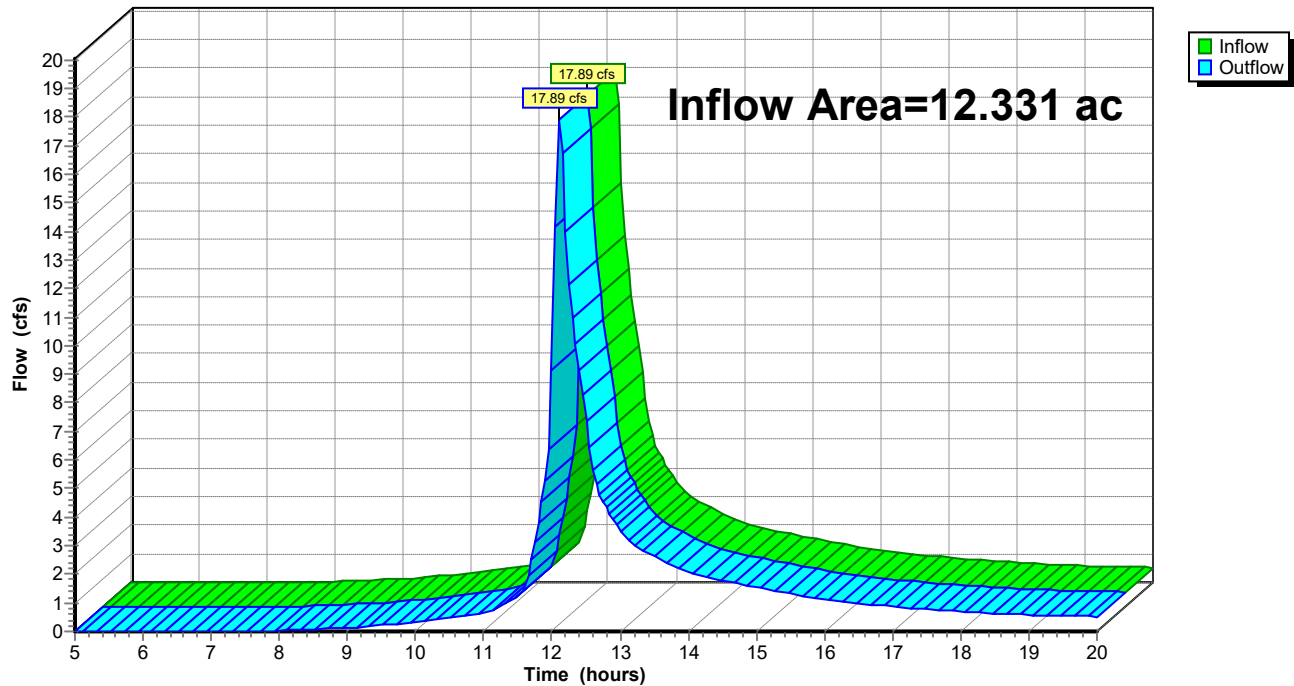
**Reach 3R: PROPERTY LINE**



**Summary for Reach 4R: BASIN**

Inflow Area = 12.331 ac, 22.79% Impervious, Inflow Depth > 1.62" for 2YR event  
Inflow = 17.89 cfs @ 12.11 hrs, Volume= 1.670 af  
Outflow = 17.89 cfs @ 12.11 hrs, Volume= 1.670 af, Atten= 0%, Lag= 0.0 min

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

**Reach 4R: BASIN****Hydrograph**

**1439 Main Street R1**

Type III 24-hr 2YR Rainfall=3.40"

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Page 21

**Summary for Pond 5PND: TEMP BASIN#1**

Inflow Area = 2.646 ac, 0.00% Impervious, Inflow Depth > 2.13" for 2YR event  
 Inflow = 6.81 cfs @ 12.09 hrs, Volume= 0.469 af  
 Outflow = 1.23 cfs @ 12.56 hrs, Volume= 0.246 af, Atten= 82%, Lag= 28.1 min  
 Primary = 1.23 cfs @ 12.56 hrs, Volume= 0.246 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 972.53' @ 12.56 hrs Surf.Area= 5,667 sf Storage= 11,785 cf

Plug-Flow detention time= 183.8 min calculated for 0.246 af (52% of inflow)  
 Center-of-Mass det. time= 103.4 min ( 879.5 - 776.1 )

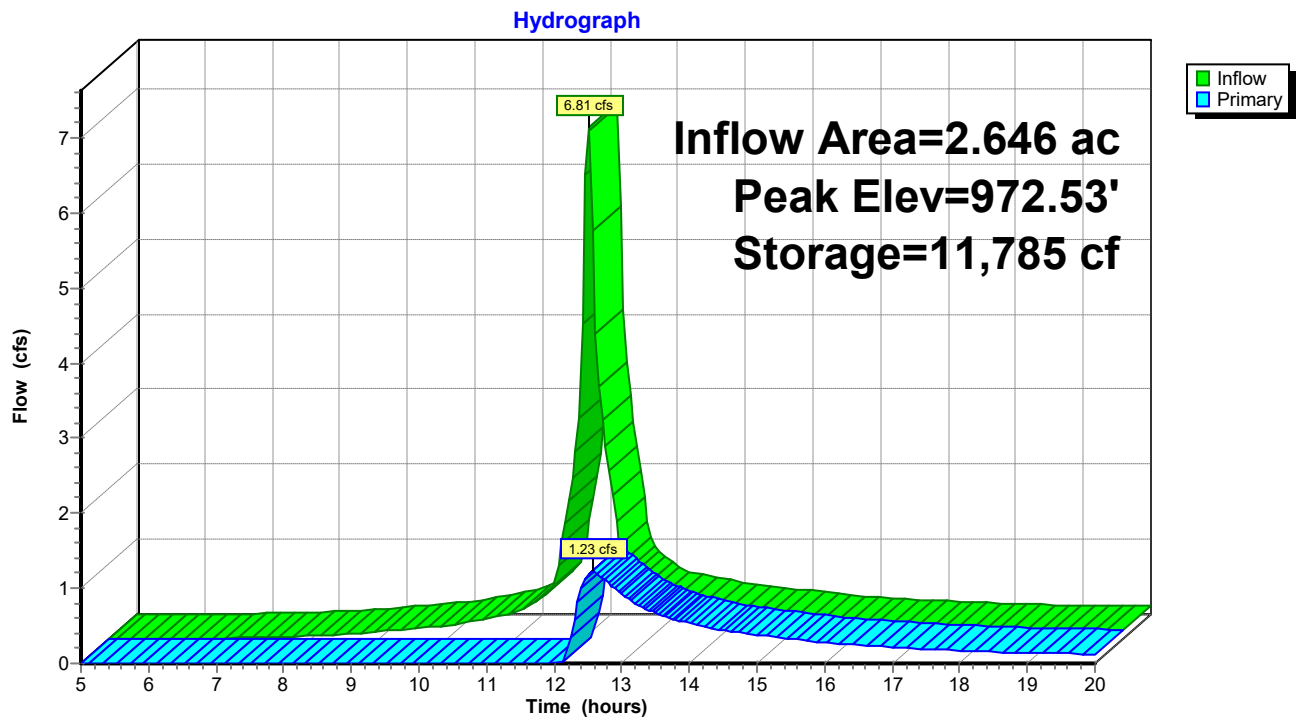
Volume	Invert	Avail.Storage	Storage Description
#1	970.00'	21,058 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
970.00	3,700	0	0
972.00	5,207	8,907	8,907
974.00	6,944	12,151	21,058

Device	Routing	Invert	Outlet Devices
#1	Primary	972.00'	<b>15.0" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=1.22 cfs @ 12.56 hrs HW=972.53' (Free Discharge)  
 ↑1=Orifice/Grate (Orifice Controls 1.22 cfs @ 2.48 fps)

**Pond 5PND: TEMP BASIN#1**



**1439 Main Street R1**

Type III 24-hr 2YR Rainfall=3.40"

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Page 23

**Summary for Pond 6PND: TEMP BASIN#2**

Inflow Area = 5.221 ac, 0.00% Impervious, Inflow Depth > 1.61" for 2YR event  
 Inflow = 6.63 cfs @ 12.09 hrs, Volume= 0.702 af  
 Outflow = 3.48 cfs @ 12.30 hrs, Volume= 0.584 af, Atten= 48%, Lag= 12.3 min  
 Primary = 3.48 cfs @ 12.30 hrs, Volume= 0.584 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 972.48' @ 12.30 hrs Surf.Area= 4,060 sf Storage= 8,011 cf

Plug-Flow detention time= 92.0 min calculated for 0.584 af (83% of inflow)  
 Center-of-Mass det. time= 43.3 min ( 855.6 - 812.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	970.00'	27,194 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
970.00	2,450	0	0
972.00	3,700	6,150	6,150
974.00	5,200	8,900	15,050
976.00	6,944	12,144	27,194

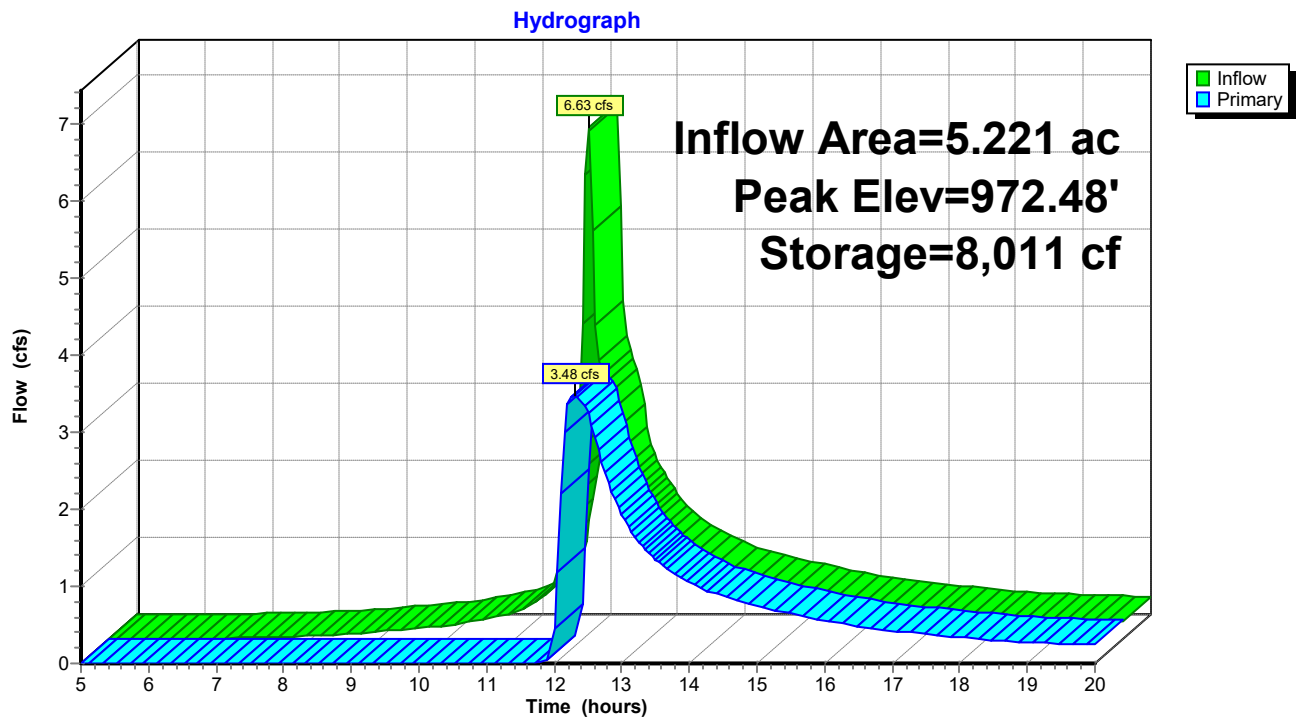
Device	Routing	Invert	Outlet Devices
#1	Primary	974.50'	<b>15.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Primary	971.50'	<b>15.0" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=3.48 cfs @ 12.30 hrs HW=972.48' (Free Discharge)

1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

2=Orifice/Grate (Orifice Controls 3.48 cfs @ 3.37 fps)

Pond 6PND: TEMP BASIN#2



**1439 Main Street R1**

Type III 24-hr 2YR Rainfall=3.40"

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Page 1

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

<b>Subcatchment 1E: DA#1</b>	Runoff Area=107,129 sf 0.00% Impervious Runoff Depth>2.13" Flow Length=537' Tc=3.8 min CN=89 Runoff=6.85 cfs 0.436 af
<b>Subcatchment 1P: DA#1P</b>	Runoff Area=30,392 sf 0.00% Impervious Runoff Depth>2.13" Tc=6.0 min CN=89 Runoff=1.80 cfs 0.124 af
<b>Subcatchment 2E: DA#2</b>	Runoff Area=272,789 sf 0.00% Impervious Runoff Depth>1.07" Flow Length=762' Slope=0.1000 '/' Tc=7.4 min CN=74 Runoff=7.74 cfs 0.559 af
<b>Subcatchment 2P: DA#2P</b>	Runoff Area=122,118 sf 0.00% Impervious Runoff Depth>1.07" Tc=6.0 min CN=74 Runoff=3.63 cfs 0.250 af
<b>Subcatchment 3E: DA#3 Tractor Supply</b>	Runoff Area=279,357 sf 43.83% Impervious Runoff Depth>1.80" Flow Length=1,118' Tc=7.2 min CN=85 Runoff=13.75 cfs 0.962 af
<b>Subcatchment 3P: DA#3P</b>	Runoff Area=115,249 sf 0.00% Impervious Runoff Depth>2.13" Tc=6.0 min CN=89 Runoff=6.81 cfs 0.469 af
<b>Subcatchment 4P: DA#4P</b>	Runoff Area=112,159 sf 0.00% Impervious Runoff Depth>2.13" Tc=6.0 min CN=89 Runoff=6.63 cfs 0.457 af
<b>Subcatchment 5P: DA#5P Tractor Supply</b>	Runoff Area=279,357 sf 43.83% Impervious Runoff Depth>1.80" Flow Length=1,118' Tc=7.2 min CN=85 Runoff=13.75 cfs 0.962 af
<b>Reach 1R: Basin</b>	Inflow=19.71 cfs 1.399 af Outflow=19.71 cfs 1.399 af
<b>Reach 2R: Property Line</b>	Inflow=7.74 cfs 0.559 af Outflow=7.74 cfs 0.559 af
<b>Reach 3R: PROPERTY LINE</b>	Inflow=3.63 cfs 0.250 af Outflow=3.63 cfs 0.250 af
<b>Reach 4R: BASIN</b>	Inflow=17.89 cfs 1.670 af Outflow=17.89 cfs 1.670 af
<b>Pond 5PND: TEMP BASIN#1</b>	Peak Elev=972.53' Storage=11,785 cf Inflow=6.81 cfs 0.469 af Outflow=1.23 cfs 0.246 af
<b>Pond 6PND: TEMP BASIN#2</b>	Peak Elev=972.48' Storage=8,011 cf Inflow=6.63 cfs 0.702 af Outflow=3.48 cfs 0.584 af

**Total Runoff Area = 30.270 ac Runoff Volume = 4.219 af Average Runoff Depth = 1.67"**  
**81.43% Pervious = 24.648 ac 18.57% Impervious = 5.621 ac**

**1439 Main Street R1***Type III 24-hr 10YR Rainfall=4.90"*

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Page 2

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

<b>Subcatchment 1E: DA#1</b>	Runoff Area=107,129 sf 0.00% Impervious Runoff Depth>3.47" Flow Length=537' Tc=3.8 min CN=89 Runoff=10.91 cfs 0.712 af
<b>Subcatchment 1P: DA#1P</b>	Runoff Area=30,392 sf 0.00% Impervious Runoff Depth>3.47" Tc=6.0 min CN=89 Runoff=2.86 cfs 0.202 af
<b>Subcatchment 2E: DA#2</b>	Runoff Area=272,789 sf 0.00% Impervious Runoff Depth>2.11" Flow Length=762' Slope=0.1000 ' ' Tc=7.4 min CN=74 Runoff=15.69 cfs 1.104 af
<b>Subcatchment 2P: DA#2P</b>	Runoff Area=122,118 sf 0.00% Impervious Runoff Depth>2.12" Tc=6.0 min CN=74 Runoff=7.33 cfs 0.494 af
<b>Subcatchment 3E: DA#3 Tractor Supply</b>	Runoff Area=279,357 sf 43.83% Impervious Runoff Depth>3.08" Flow Length=1,118' Tc=7.2 min CN=85 Runoff=23.12 cfs 1.644 af
<b>Subcatchment 3P: DA#3P</b>	Runoff Area=115,249 sf 0.00% Impervious Runoff Depth>3.47" Tc=6.0 min CN=89 Runoff=10.84 cfs 0.765 af
<b>Subcatchment 4P: DA#4P</b>	Runoff Area=112,159 sf 0.00% Impervious Runoff Depth>3.47" Tc=6.0 min CN=89 Runoff=10.55 cfs 0.745 af
<b>Subcatchment 5P: DA#5P Tractor Supply</b>	Runoff Area=279,357 sf 43.83% Impervious Runoff Depth>3.08" Flow Length=1,118' Tc=7.2 min CN=85 Runoff=23.12 cfs 1.644 af
<b>Reach 1R: Basin</b>	Inflow=32.61 cfs 2.356 af Outflow=32.61 cfs 2.356 af
<b>Reach 2R: Property Line</b>	Inflow=15.69 cfs 1.104 af Outflow=15.69 cfs 1.104 af
<b>Reach 3R: PROPERTY LINE</b>	Inflow=7.33 cfs 0.494 af Outflow=7.33 cfs 0.494 af
<b>Reach 4R: BASIN</b>	Inflow=31.47 cfs 3.006 af Outflow=31.47 cfs 3.006 af
<b>Pond 5PND: TEMP BASIN#1</b>	Peak Elev=973.17' Storage=15,592 cf Inflow=10.84 cfs 0.765 af Outflow=4.39 cfs 0.537 af
<b>Pond 6PND: TEMP BASIN#2</b>	Peak Elev=973.67' Storage=13,396 cf Inflow=13.06 cfs 1.282 af Outflow=7.35 cfs 1.160 af

**Total Runoff Area = 30.270 ac Runoff Volume = 7.310 af Average Runoff Depth = 2.90"**  
**81.43% Pervious = 24.648 ac 18.57% Impervious = 5.621 ac**

**1439 Main Street R1**

Type III 24-hr 25yr Rainfall=5.40"

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Page 3

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

**Subcatchment 1E: DA#1** Runoff Area=107,129 sf 0.00% Impervious Runoff Depth>3.93"  
 Flow Length=537' Tc=3.8 min CN=89 Runoff=12.25 cfs 0.805 af

**Subcatchment 1P: DA#1P** Runoff Area=30,392 sf 0.00% Impervious Runoff Depth>3.93"  
 Tc=6.0 min CN=89 Runoff=3.21 cfs 0.228 af

**Subcatchment 2E: DA#2** Runoff Area=272,789 sf 0.00% Impervious Runoff Depth>2.49"  
 Flow Length=762' Slope=0.1000 ' ' Tc=7.4 min CN=74 Runoff=18.52 cfs 1.301 af

**Subcatchment 2P: DA#2P** Runoff Area=122,118 sf 0.00% Impervious Runoff Depth>2.49"  
 Tc=6.0 min CN=74 Runoff=8.65 cfs 0.583 af

**Subcatchment 3E: DA#3 Tractor Supply** Runoff Area=279,357 sf 43.83% Impervious Runoff Depth>3.52"  
 Flow Length=1,118' Tc=7.2 min CN=85 Runoff=26.28 cfs 1.880 af

**Subcatchment 3P: DA#3P** Runoff Area=115,249 sf 0.00% Impervious Runoff Depth>3.93"  
 Tc=6.0 min CN=89 Runoff=12.18 cfs 0.866 af

**Subcatchment 4P: DA#4P** Runoff Area=112,159 sf 0.00% Impervious Runoff Depth>3.93"  
 Tc=6.0 min CN=89 Runoff=11.85 cfs 0.842 af

**Subcatchment 5P: DA#5P Tractor Supply** Runoff Area=279,357 sf 43.83% Impervious Runoff Depth>3.52"  
 Flow Length=1,118' Tc=7.2 min CN=85 Runoff=26.28 cfs 1.880 af

**Reach 1R: Basin** Inflow=36.94 cfs 2.685 af  
 Outflow=36.94 cfs 2.685 af

**Reach 2R: Property Line** Inflow=18.52 cfs 1.301 af  
 Outflow=18.52 cfs 1.301 af

**Reach 3R: PROPERTY LINE** Inflow=8.65 cfs 0.583 af  
 Outflow=8.65 cfs 0.583 af

**Reach 4R: BASIN** Inflow=35.76 cfs 3.464 af  
 Outflow=35.76 cfs 3.464 af

**Pond 5PND: TEMP BASIN#1** Peak Elev=973.39' Storage=16,981 cf Inflow=12.18 cfs 0.866 af  
 Outflow=5.17 cfs 0.637 af

**Pond 6PND: TEMP BASIN#2** Peak Elev=974.07' Storage=15,407 cf Inflow=15.61 cfs 1.479 af  
 Outflow=8.24 cfs 1.355 af

**Total Runoff Area = 30.270 ac Runoff Volume = 8.386 af Average Runoff Depth = 3.32"**  
**81.43% Pervious = 24.648 ac 18.57% Impervious = 5.621 ac**



**1439 Main Street R1**

Type III 24-hr 100YR Rainfall=6.90"

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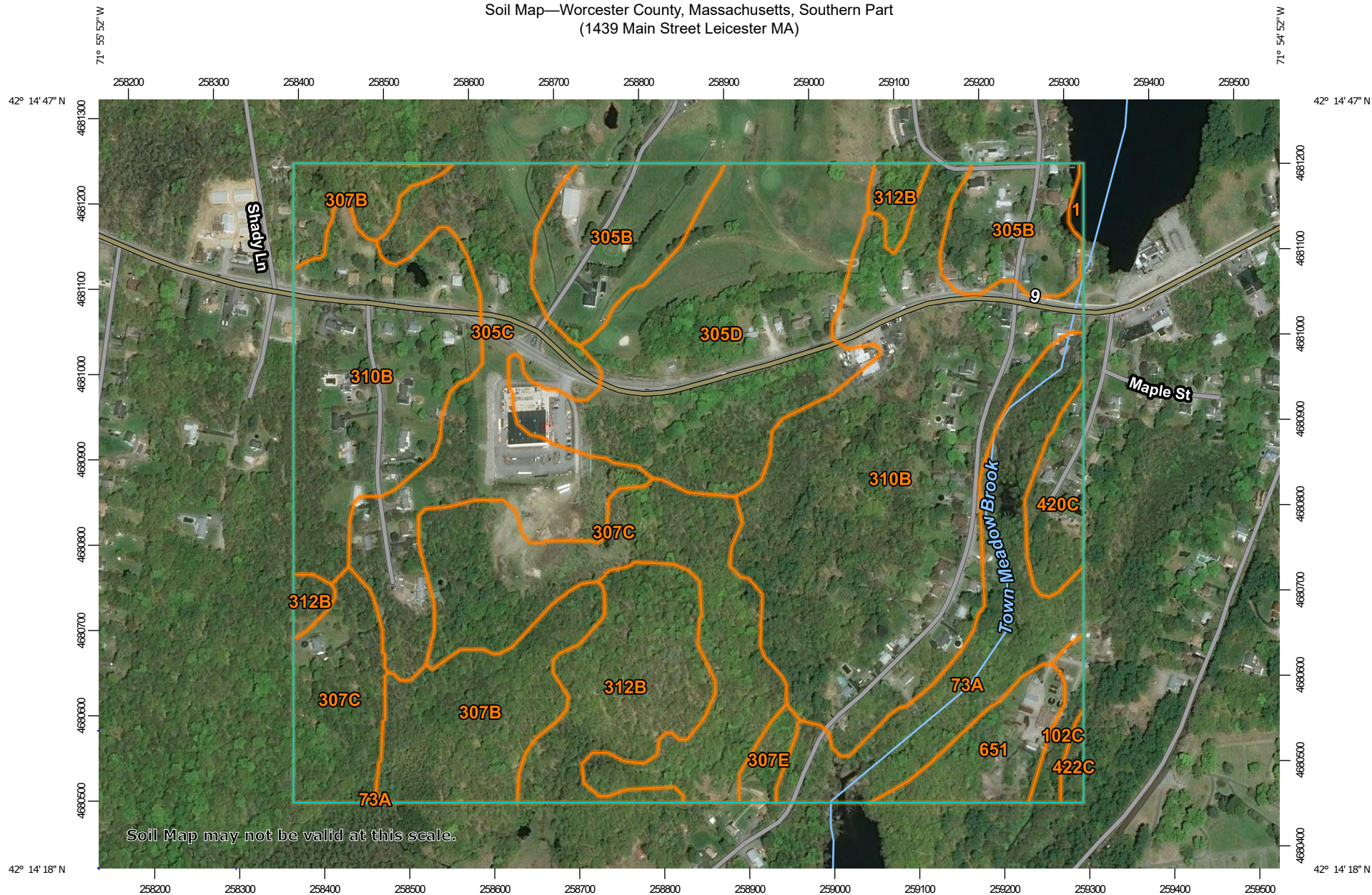
Page 4

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

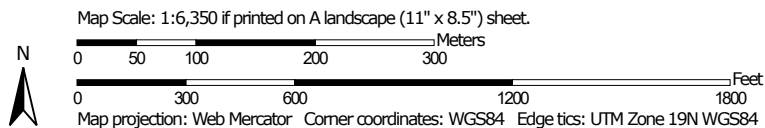
<b>Subcatchment 1E: DA#1</b>	Runoff Area=107,129 sf 0.00% Impervious Runoff Depth>5.30" Flow Length=537' Tc=3.8 min CN=89 Runoff=16.27 cfs 1.087 af
<b>Subcatchment 1P: DA#1P</b>	Runoff Area=30,392 sf 0.00% Impervious Runoff Depth>5.30" Tc=6.0 min CN=89 Runoff=4.27 cfs 0.308 af
<b>Subcatchment 2E: DA#2</b>	Runoff Area=272,789 sf 0.00% Impervious Runoff Depth>3.69" Flow Length=762' Slope=0.1000 '/' Tc=7.4 min CN=74 Runoff=27.33 cfs 1.926 af
<b>Subcatchment 2P: DA#2P</b>	Runoff Area=122,118 sf 0.00% Impervious Runoff Depth>3.69" Tc=6.0 min CN=74 Runoff=12.74 cfs 0.863 af
<b>Subcatchment 3E: DA#3 Tractor Supply</b>	Runoff Area=279,357 sf 43.83% Impervious Runoff Depth>4.87" Flow Length=1,118' Tc=7.2 min CN=85 Runoff=35.75 cfs 2.601 af
<b>Subcatchment 3P: DA#3P</b>	Runoff Area=115,249 sf 0.00% Impervious Runoff Depth>5.30" Tc=6.0 min CN=89 Runoff=16.17 cfs 1.169 af
<b>Subcatchment 4P: DA#4P</b>	Runoff Area=112,159 sf 0.00% Impervious Runoff Depth>5.30" Tc=6.0 min CN=89 Runoff=15.74 cfs 1.138 af
<b>Subcatchment 5P: DA#5P Tractor Supply</b>	Runoff Area=279,357 sf 43.83% Impervious Runoff Depth>4.87" Flow Length=1,118' Tc=7.2 min CN=85 Runoff=35.75 cfs 2.601 af
<b>Reach 1R: Basin</b>	Inflow=49.92 cfs 3.688 af Outflow=49.92 cfs 3.688 af
<b>Reach 2R: Property Line</b>	Inflow=27.33 cfs 1.926 af Outflow=27.33 cfs 1.926 af
<b>Reach 3R: PROPERTY LINE</b>	Inflow=12.74 cfs 0.863 af Outflow=12.74 cfs 0.863 af
<b>Reach 4R: BASIN</b>	Inflow=48.18 cfs 4.857 af Outflow=48.18 cfs 4.857 af
<b>Pond 5PND: TEMP BASIN#1</b>	Peak Elev=973.99' Storage=20,978 cf Inflow=16.17 cfs 1.169 af Outflow=6.90 cfs 0.937 af
<b>Pond 6PND: TEMP BASIN#2</b>	Peak Elev=974.72' Storage=19,047 cf Inflow=21.44 cfs 2.074 af Outflow=13.85 cfs 1.948 af

**Total Runoff Area = 30.270 ac Runoff Volume = 11.693 af Average Runoff Depth = 4.64"**  
**81.43% Pervious = 24.648 ac 18.57% Impervious = 5.621 ac**

Soil Map—Worcester County, Massachusetts, Southern Part  
(1439 Main Street Leicester MA)



Soil Map may not be valid at this scale.



Natural Resources  
Conservation Service


Web Soil Survey  
National Cooperative Soil Survey

7/29/2021  
Page 1 of 3

Soil Map—Worcester County, Massachusetts, Southern Part  
(1439 Main Street Leicester MA)

## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

### Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

### Water Features



Streams and Canals

### Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

### Background



Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Worcester County, Massachusetts, Southern Part

Survey Area Data: Version 13, Jun 11, 2020

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

Date(s) aerial images were photographed: May 18, 2019—Jul 9, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.



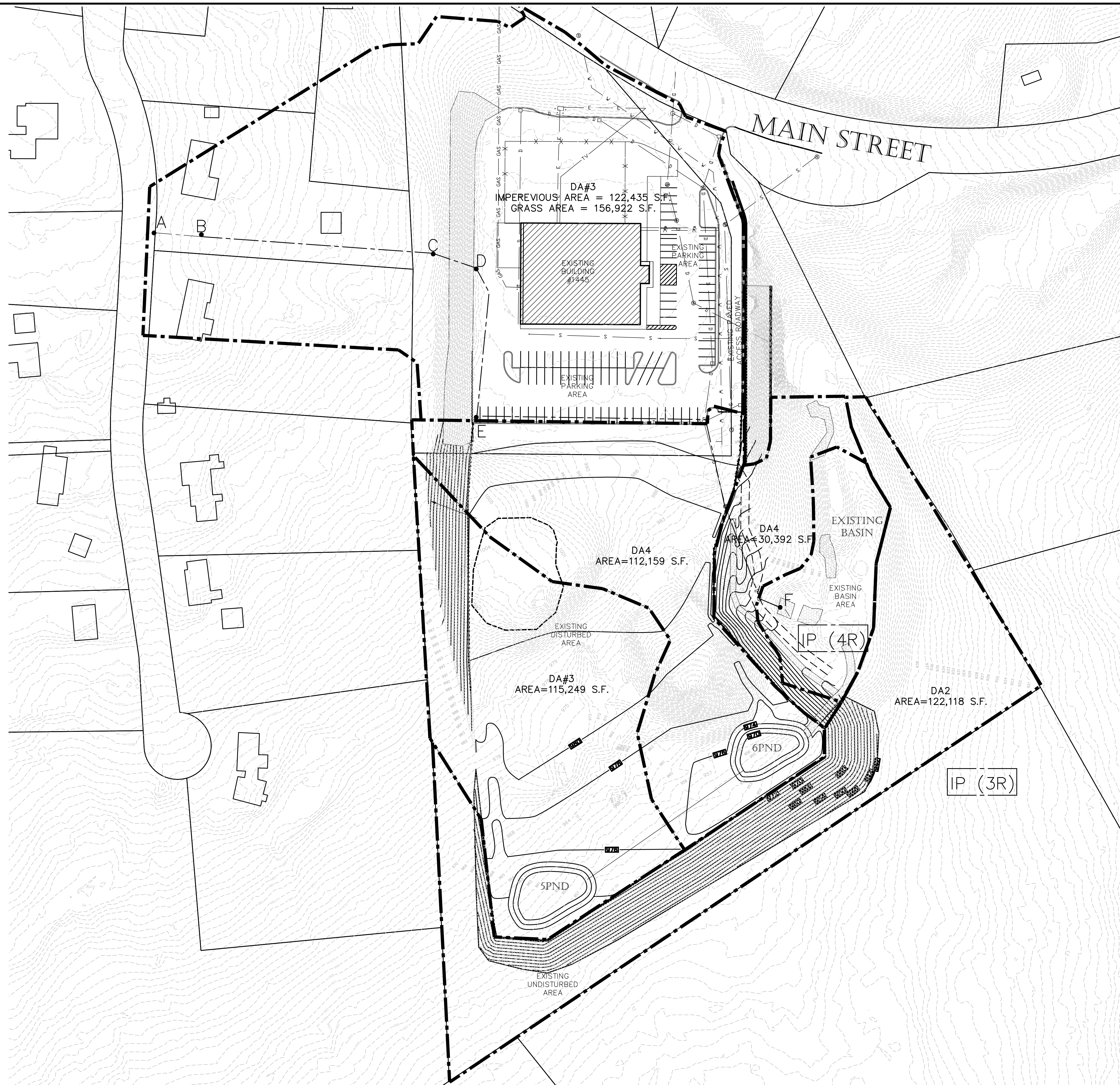
## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Water	0.2	0.1%
73A	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	12.3	7.1%
102C	Chatfield-Hollis-Rock outcrop complex, 0 to 15 percent slopes	1.3	0.7%
305B	Paxton fine sandy loam, 3 to 8 percent slopes	12.7	7.4%
305C	Paxton fine sandy loam, 8 to 15 percent slopes	18.4	10.7%
305D	Paxton fine sandy loam, 15 to 25 percent slopes	23.4	13.6%
307B	Paxton fine sandy loam, 0 to 8 percent slopes, extremely stony	12.0	7.0%
307C	Paxton fine sandy loam, 8 to 15 percent slopes, extremely stony	22.4	12.9%
307E	Paxton fine sandy loam, 15 to 35 percent slopes, extremely stony	1.1	0.6%
310B	Woodbridge fine sandy loam, 3 to 8 percent slopes	49.7	28.8%
312B	Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony	11.4	6.6%
420C	Canton fine sandy loam, 8 to 15 percent slopes	3.0	1.7%
422C	Canton fine sandy loam, 8 to 15 percent slopes, extremely stony	0.5	0.3%
651	Udorthents, smoothed	4.2	2.4%
<b>Totals for Area of Interest</b>		<b>172.8</b>	<b>100.0%</b>









P.E.	P.L.S.

APPROVAL UNDER SITE PLAN REVIEW.  
LEICESTER PLANNING BOARD

BEING A MAJORITY

APPROVAL DATE: \_\_\_\_\_

ENDORSEMENT DATE: \_\_\_\_\_



Chad R. Khan

**PREPARED BY:**

**SUMMIT**  
Engineering & Survey, Inc.

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OXFORD, MA 01537  
P:(508) 987-8713 F:(508) 987-8714

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**SHEET TITLE**

## POST DEVELOPMENT PLAN

DEFINITIVE SITE PLAN  
at

1439 MAIN STREET  
(ROUTE 9)  
LEICESTER, MA

PREPARED FOR  
SCHOLD DEVELOPMENT

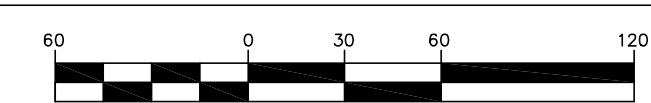
**SHEET NO.**

C-3.0

REVISIONS		
REV.	DATE	DESCRIPTION
1	9/14/21	REVISED PER QUINN COMMENTS.

PROJECT NO.	21-212
DESIGNED BY	PML
CHECKED BY	AB
DATE	6/14/21
CAD FILE	21-212 SPECIAL PERMIT PLAN

### GRAPHIC SCALE



(IN FEET)

1 inch = 60 feet