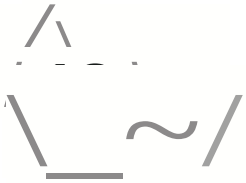
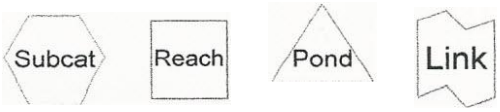
NORTH TO STREAM

EAST TO RR POND



PRE WEST TO **STREET**

(new Subcat)



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

Subcatchment 1S: PRE WEST TO STREET
Runoff Area=0.140 ac Runoff Depth>0.49"
Flow Length=40' Tc=3.6 min CN=63 Runoff=0.07 cfs 0.006 af

Subcatchment 2S: NORTH TO STREAM
Runoff Area=0.580 ac Runoff Oepth>1.16"
Flow Length=150' Tc=10.6 min CN=77 Runoff=0.71 cfs 0.056 af

Subcatchment 3S: (new Subcat)
Runoff Area=0.150 ac Runoff Depth>2.20"
Flow Length=50' Tc=0.7 min CN=91 Runoff=0.45 cfs 0.028 af

Subcatchment 4S: EAST TO RR POND
Runoff Area=0.140 ac Runoff Depth>O.61"
Flow Length=50' Tc=21.5 min CN=66 Runoff=0.06 cfs 0.007 af

Total Runoff Area = 1.010 ac Runoff Volume = 0.097 af Average Runoff Depth = 1.15"

Subcatchment 1 S: PRE WEST TO STREET

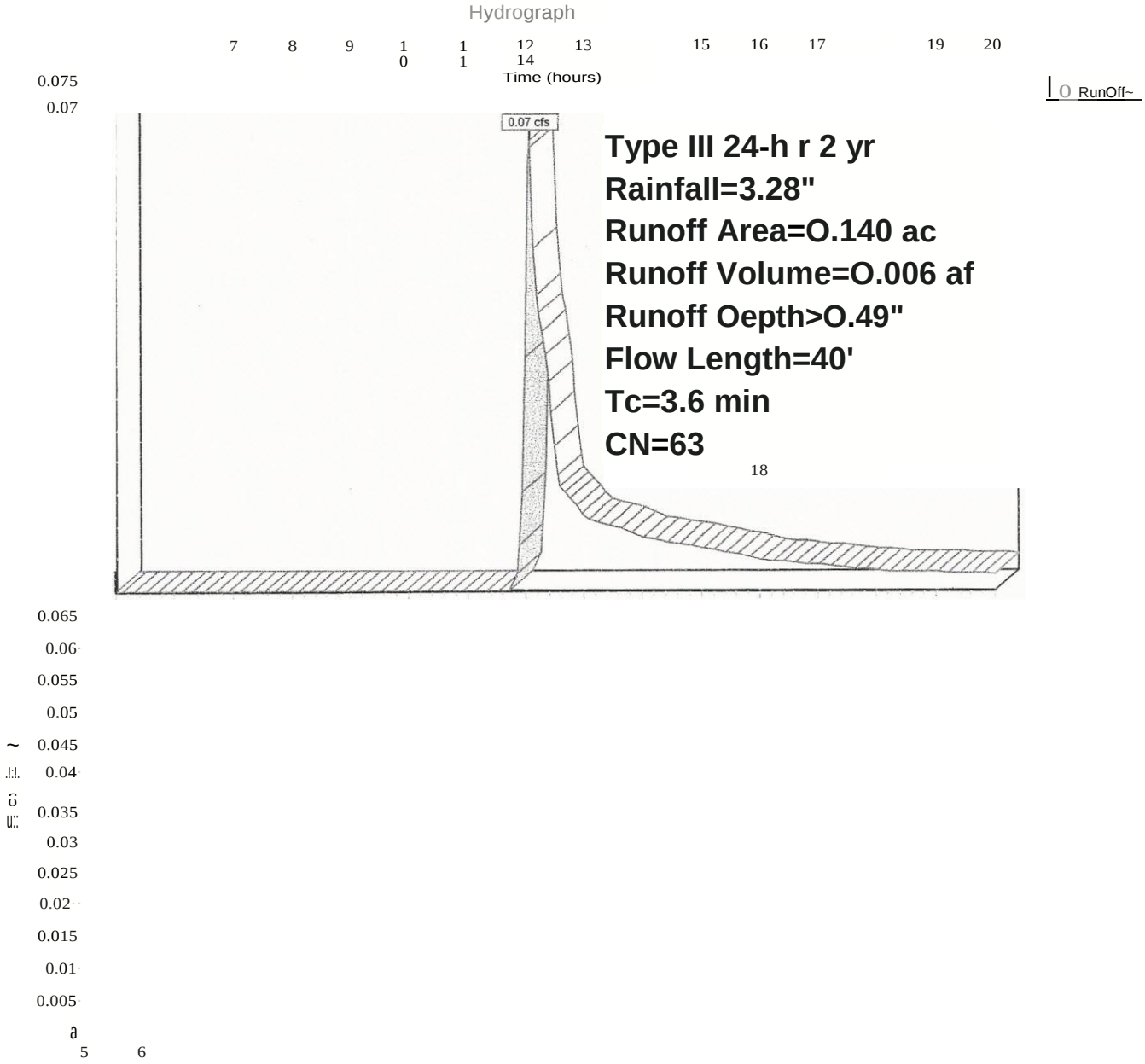
Runoff = 0.07 cfs @ 12.08 hrs, Volume= 0.006 af, Depth> 0.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 yr Rainfall=3.28"

Area (ac)	eN	Description
0.040	98	Paved parking & roofs
0.100	49	50-75 Grass cover Fair, HSG A
0.140	63	Weighted Average

Tc (min)	Length (feet)	Slope (ftIft)	Velocity (ftisec)	Capacity (cfs)	Description
3.6	40	0.0400	0.2		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.20"

Subcatchment 1 S: PRE WEST TO STREET



Subcatchment 25: NORTH TO STREAM

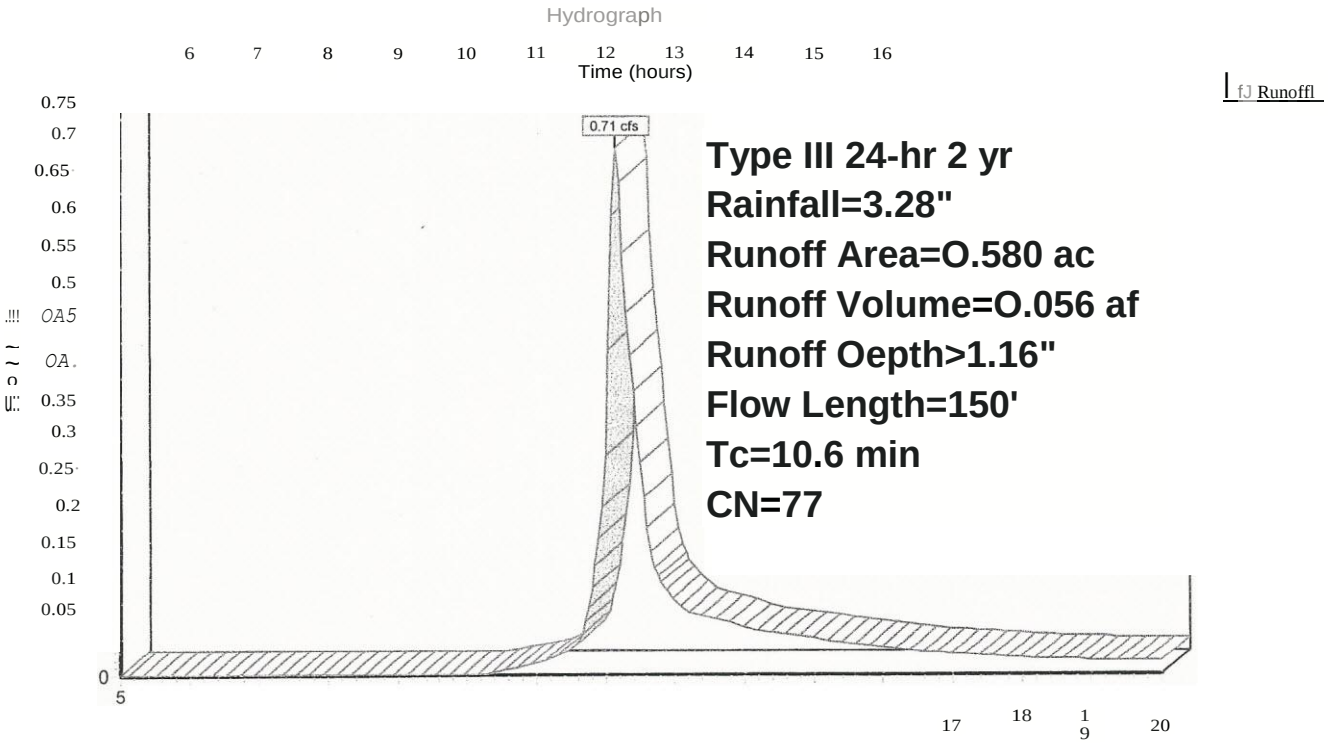
Runoff = 0.71 cfs @ 12.16 hrs, Volume= 0.056 af, Depth> 1.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 yr Rainfall=3.28"

Area (ac)	CN	Description
0.210	98	Paved parking & roofs
0.190	69	50-75 Grass cover, Fair, HSG B
0.180	60	Woods, Fair, HSG B
0.580	77	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ftlsec)	Capacity (cfs)	Description
8.2	50	0.0200	0.1		**Sheet Flow, SHEET** Grass: Dense n= 0.240 P2= 3.20"
2.4	100	0.0200	0.7		**Shallow Concentrated Flow, SHALLOW** Woodland Kv= 5.0 fps
10.6	150	Total			

Subcatchment 2S: NORTH TO STREAM



5subcatchment 35: (new 5ubcat)

Runoff 0.45 cfs @ 12.01 hrs, Volume= 0.028 af, Depth> 2.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 yr Rainfall=3.28"

Area (ac)	CN	Description
0.120	98	Paved parking & roofs
0.030	65	Woodslgrass comb., Fair, HSG B
0.150	91	Weighted Average

Tc (min)	Length (feet)	Slope (ftfft)	Velocity (ftfsec)	Capacity (ds)	Description
0.7	50	0.0200	1.2		**Sheet** Flow, **SHEET** Smooth surfaces n= 0.011 P2= 3.20"

5subcatchment 35: (new 5ubcat)

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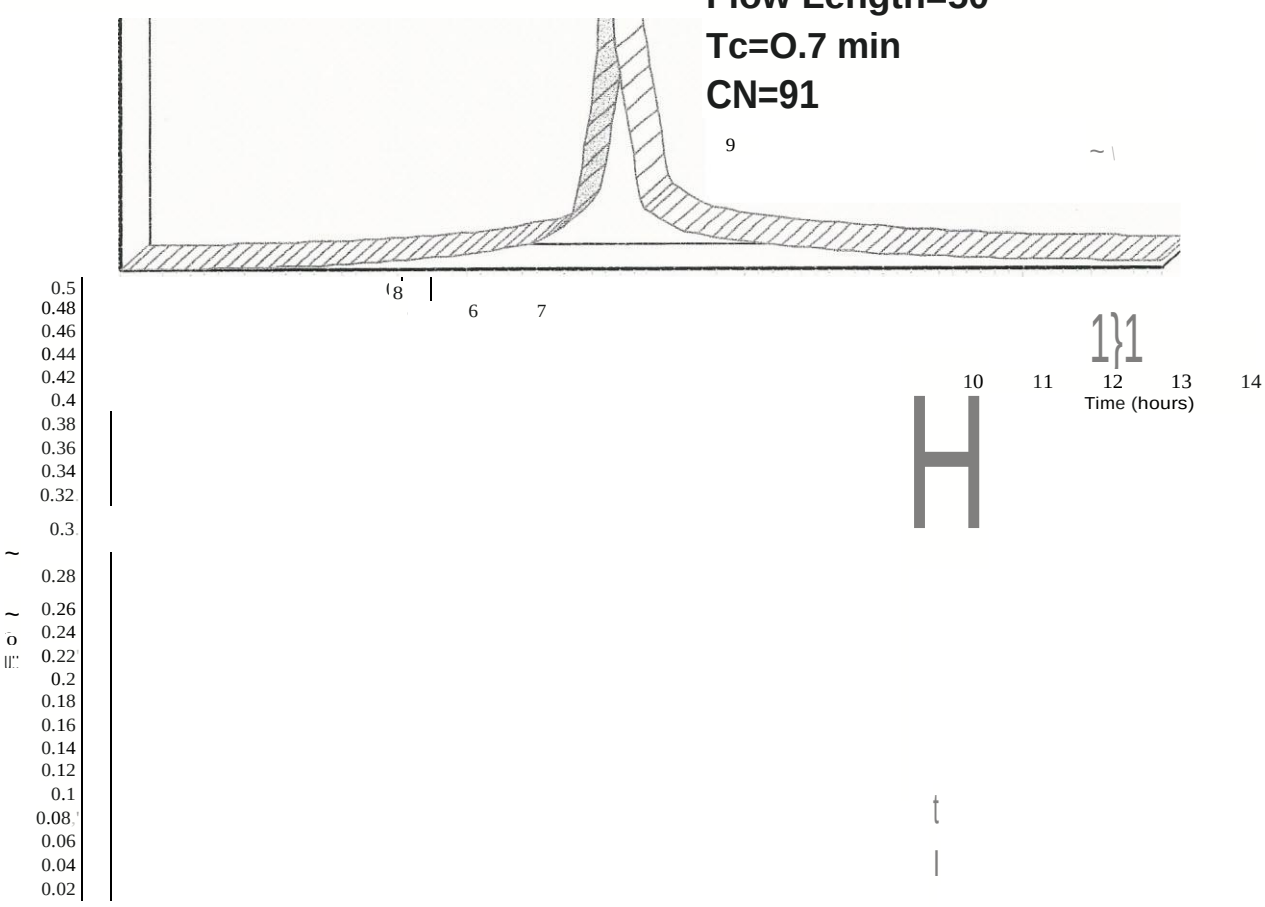
Type III 24-hr 2 yr Rainfall=3.2S"
Runoff Are.a=O.150 ac
Runoff Volume=O.028 af
Runoff Oepth>2.20"
Flow Length=50'
Tc=O.7 min
CN=91



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Subcatchment 4S: EAST TO RR POND

Runoff 0.06 cfs @ 12.36 hrs, Volume= 0.007 af, Depth> 0.61"

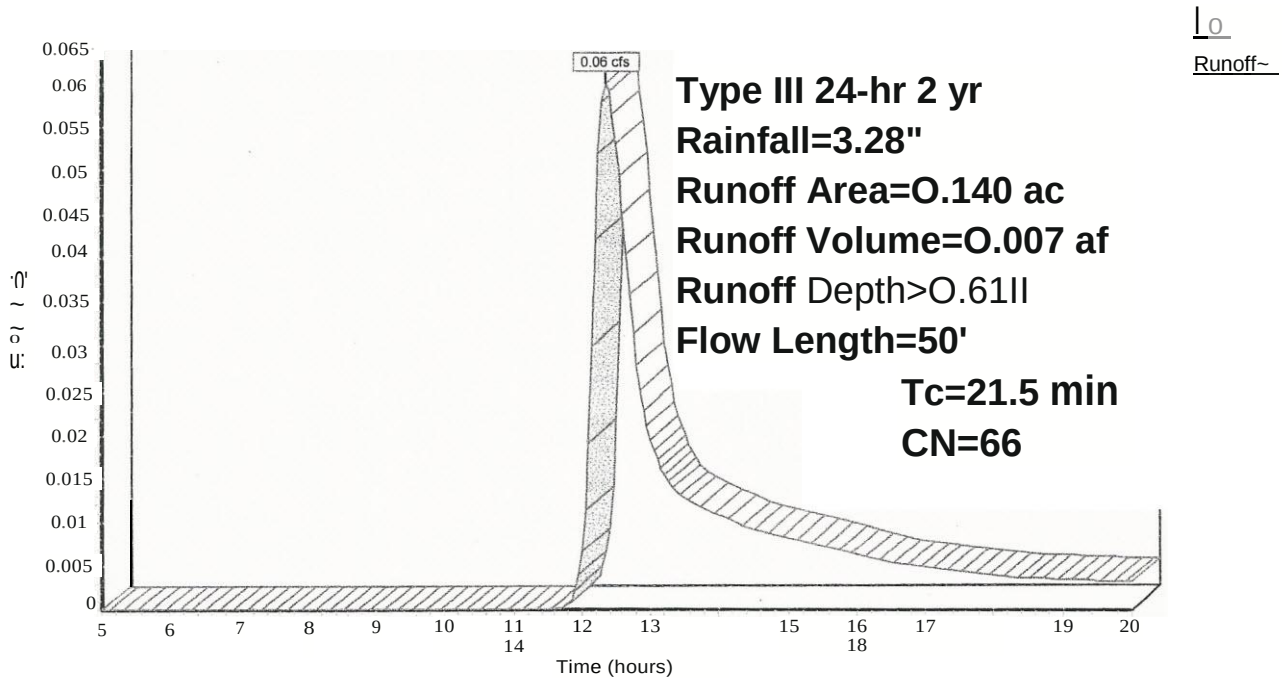
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 yr Rainfall=3.28"

Area (ac)	CN	Description
0.140	66	Woods, Poor, HSG B

Tc (min)	Length (feet)	Slope (ftlft)	Velocity (ftlsec)	Capacity (cfs)	Description
21.5	50	0.0200	0.0		**Sheet Flow, SHEET** Woods: Dense underbrush n= 0.800 P2= 3.20"

Subcatchment 4S: EAST TO RR POND

Hydroqrapn



Runoff~

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

Subcatchment 1S: PRE WEST TO STREET
Runoff Area=0.140 ac Runoff Depth> 1. 31"
Flow Length=40' Tc=3.6 min CN=63 Runoff=0.23 cfs 0.015 af

5ubcatchment 25: NORTH TO STREAM
Runoff Area=0.580 ac Runoff Oepth>2.35"
Flow Length=150' Tc=10.6 min CN=77 Runoff=1.46 cfs 0.114 af

Subcatchment 3S: (new Subcat)
Runoff Area=0.150 ac Runoff Oepth>3.67"
Flow Length=50' Tc=0.7 min CN=91 Runoff=0.74 cfs 0.046 af

Subcatchment 4S: EAST TO RR POND
Runoff Area=0.140 ac Runoff Oepth>1.50"
Flow Length=50' Tc=21.5 min CN=66 Runoff=0.17 cfs 0.018 af

Total Runoff Area = 1.010 ac Runoff Volume = 0.192 af Average Runoff Depth = 2.28"

Subcatchment 1 S: PRE WEST TO STREET

Runoff = 0.23 cfs @ 12.07 hrs, Volume= 0.015 af, Depth> 1.31"

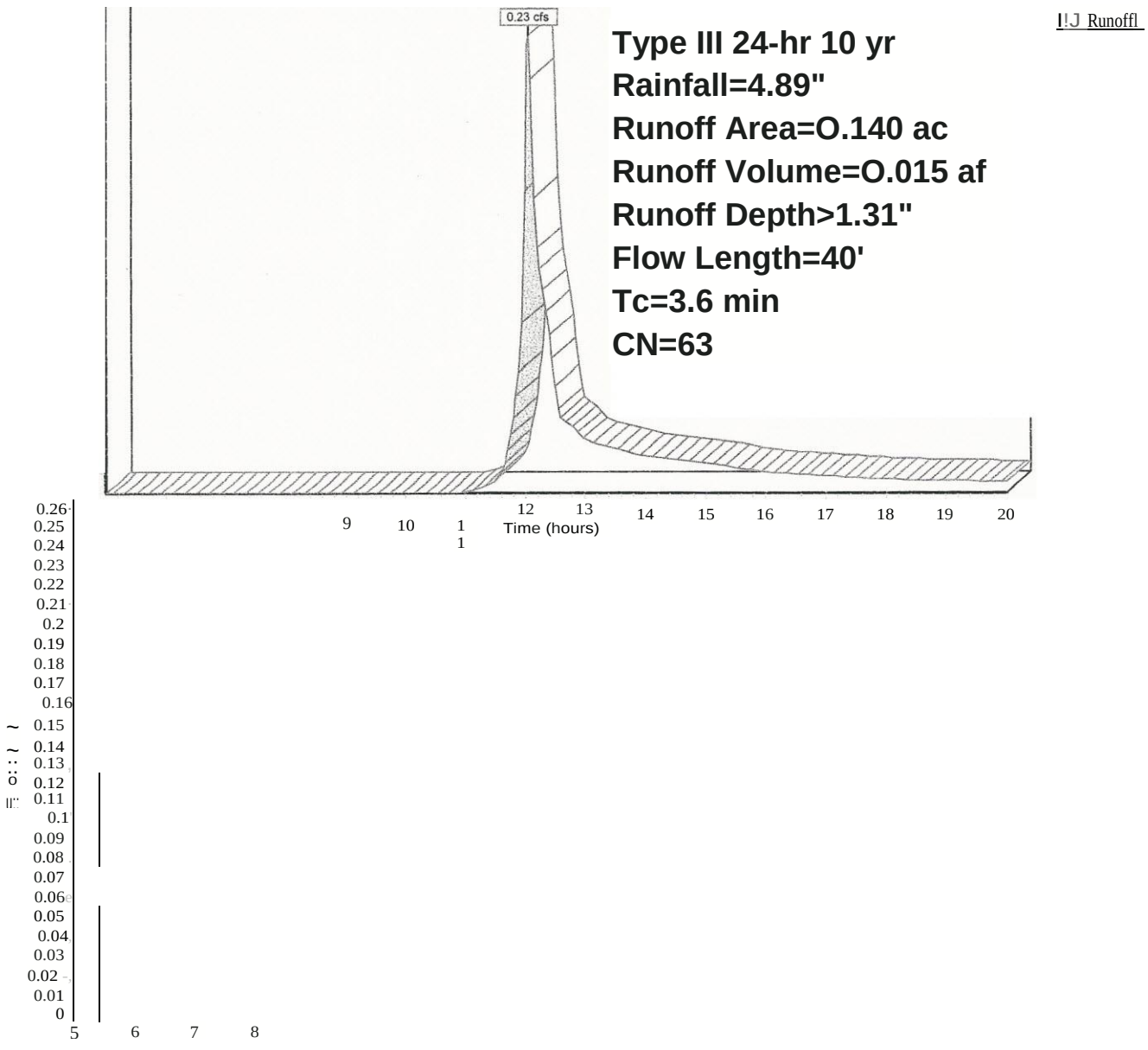
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=4.89"

Area (ac)	CN	Description
0.04	98	Paved parking & roofs
0	49	50-75 Grass cover, Fair, HSG A
0.10	63	Weighted Average
0		
0.14		
0		

Tc (min)	Length (feet)	Slope (ftlft)	Velocity (ftlsec)	Capacity (cfs)	Description
3.6	40	0.0400	0.2		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.20"

Subcatchment 1 S: PRE WEST TO STREET

Hydrograph



Subcatchment 2S: NORTH TO STREAM

Runoff = 1.46 cfs @ 12.15 hrs, Volume= 0.114 at, Depth> 2.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span: 5.00-20.00 hrs, dt= 0.05 hrs
Type **III** 24-hr 10 yr Rainfal\=4.89"

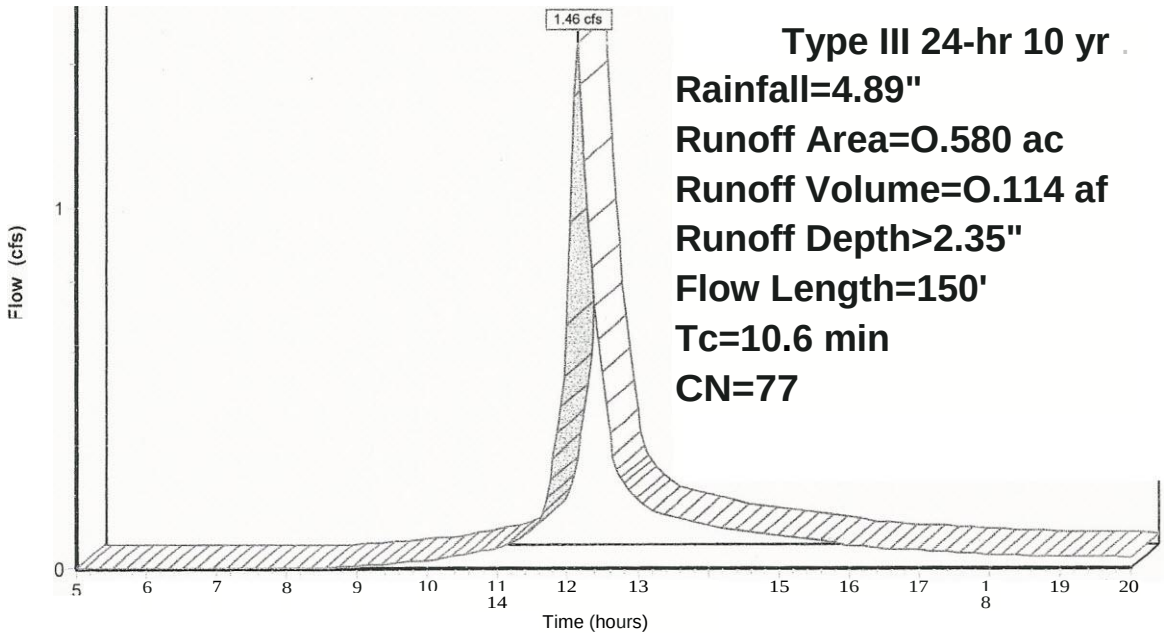
Area (ac)	CN Description
0.210	98 Paved parking & roofs
0.190	69 50-75 Grass cover, Fair, HSG B
0.180	60 Woods, Fair, HSG B
0.580	77 Weighted Average

Tc (min)	Length (feet)	Slope (ftlft)	Velocity (ftlsec)	Capacity (cfs)	Description
8.2	50	0.0200	0.1		**Sheet Flow, SHEET** Grass: Dense n= 0.240 P2= 3.20"
2.4	100	0.0200	0.7		**Shallow Concentrated Flow, SHALLOW** Woodland Kv= 5.0 fps
10.6	150	Total			

Subcatchment 2S: NORTH TO STREAM

Hydrograph

10 Runoffi



Subcatchment 3S: (new Subcat)

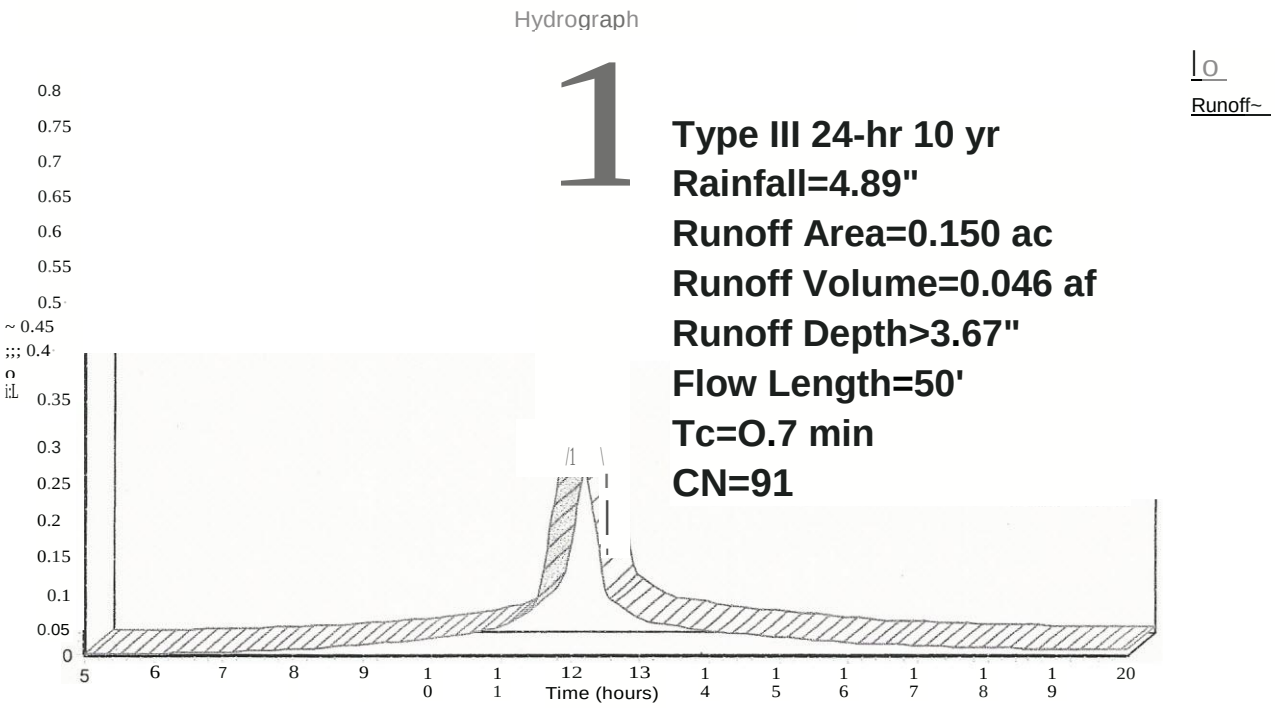
Runoff = 0.74 cfs @ 12.01 hrs, Volume= 0.046 at, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=4.89"

Area (ac)	CN	Description
0.120	98	Paved parking & roofs
0.030	65	Woods/grass comb., Fair, HSG B
0.150	91	Weighted Average

Tc (min)	Length (teet)	Slope (ftlft)	Velocity (ftlsec)	Capacity (cfs)	Description
0.7	50	0.0200	1.2		Sheet Flow, **SHEET** Smooth surfaces n= 0.011 P2= 3.20"

Subcatchment 3S: (new Subcat)



Subcatchment 45: EAST TO RR POND

Runoff 0.17 cfs @ 12.32 nrs. Volume= 0.018 af, Depth> 1.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=4.89"

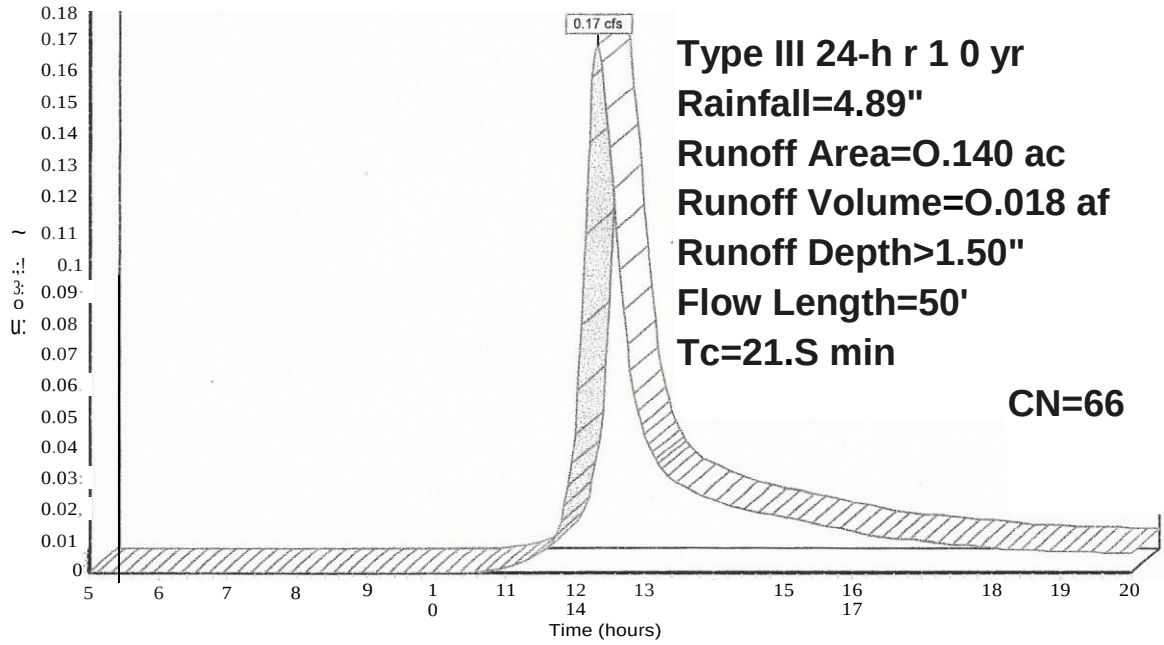
Area (ac)	CN	Description
0.140	66	Woods, Poor, HSG B

Tc (min)	Length (feet)	Slope (fUft)	Velocity (fUsec)	Capacity (cfs)	Description
21.5	50	0.0200	0.0		**Sheet Flow, SHEET** Woods: Dense underbrush n= 0.800 P2= 3.20"

Subcatchment 4S: EAST TO RR POND

Hydrograph

10 Runoffl



Time span=5.00-20.00 hrs, dt=O.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+ Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: PRE WEST TO STREET
Runoff Area=0.140 ac Runoff Oepth>4.15"
Flow Length=40' Tc=3.6 min CN=63 Runoff=0.78 cfs 0.048 af

Subcatchment 2S: NORTH TO STREAM
Runoff Area=0.580 ac Runoff Oepth>5.82"
Flow Length=150' Tc=10.6 min CN=77 Runoff=3.54 cfs 0.282 af

5ubcatchment 35: (new Subcat)
Runoff Area=0.150 ac Runoff Depth>7.46"
Flow Length=50' Tc=0.7 min CN=91 Runoff=1.45 cfs 0.093 af

5ubcatchment 45: EAST TO RR POND
Runoff Area=0.140 ac Runoff Depth>4.48"
Flow Length=50' Tc=21.5 min CN=66 Runoff=0.52 cfs 0.052 af

Total Runoff Area = 1.010 ac Runoff Volume = 0.476 at Average Runoff Depth = 5.65"

Subcatchment is: PRE WEST TO STREET

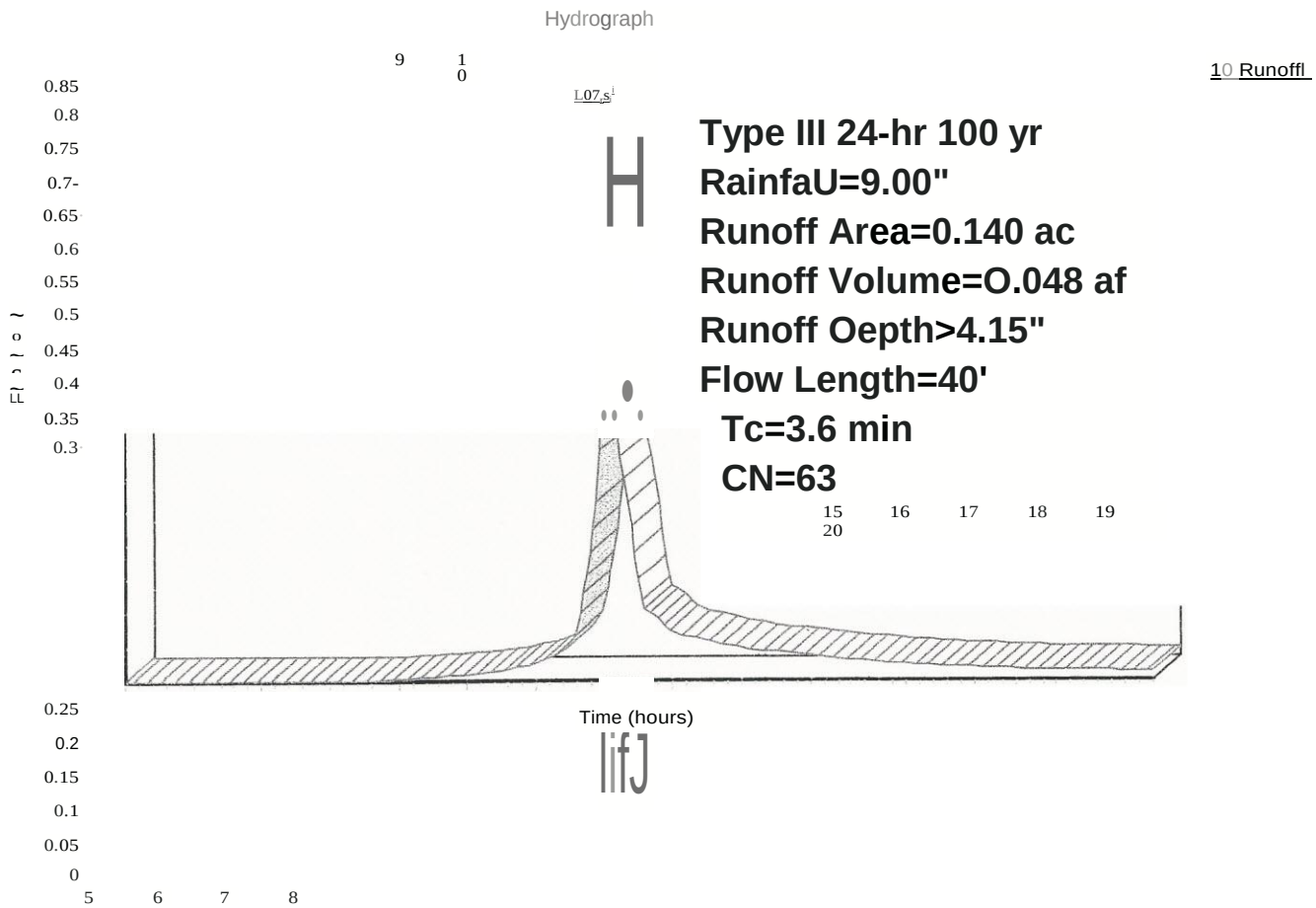
Runoff = 0.78 cfs @ 12.06 hrs, Volume= 0.048 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=9.00"

Area (ac)	CN	Description
0.040	98	Paved parking & roofs
0.100	49	50-75 Grass cover, Fair, HSG A
0.140	63	Weighted Average

Tc (min)	Length (feet)	Slope (ftlft)	Velocity (ftlsec)	Capacity (cfs)	Description
3.6	40	0.0400	0.2		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.20"

Subcatchment is: PRE WEST TO STREET



Subcatchment 2S: NORTH TO STREAM

Runoff = 3.54 cfs @ 12.15 hrs, Volume= 0.282 af, Depth> 5.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=9.00"

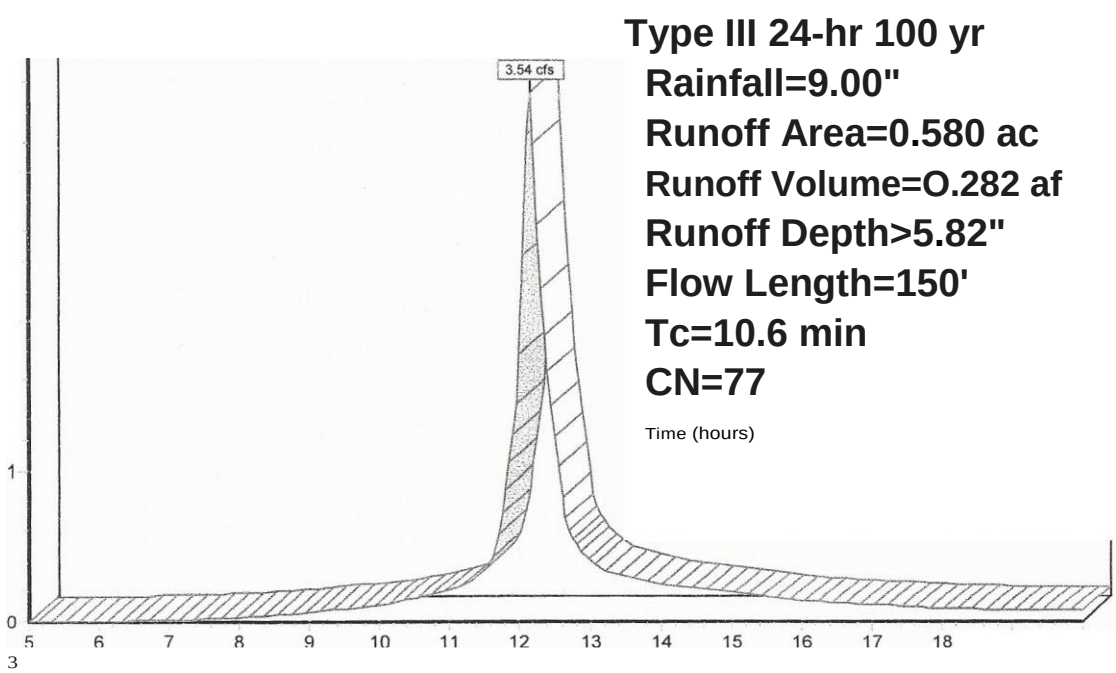
Area (ac)	CN	Description
0.210	98	Paved parking & roofs
0.190	69	50-75 Grass cover, Fair, HSG B
0.180	60	Woods, Fair, HSG B
0.580	77	Weighted Average

Tc (min)	Length (feet)	Slope (fUft)	Velocity (fUsee)	Capacity (cfs)	Description
8.2	50	0.0200	0.1		**Sheet Flow, SHEET** Grass: Dense n= 0.240 P2= 3.20"
2.4	100	0.0200	0.7		**Shallow Concentrated Flow, SHALLOW** Woodland Kv= 5.0 fps
10.6	150	Total			

Subcatchment 2S: NORTH TO STREAM

Hydrograph

10 Runoffl



5ubcatchment 35: (new 5ubcat)

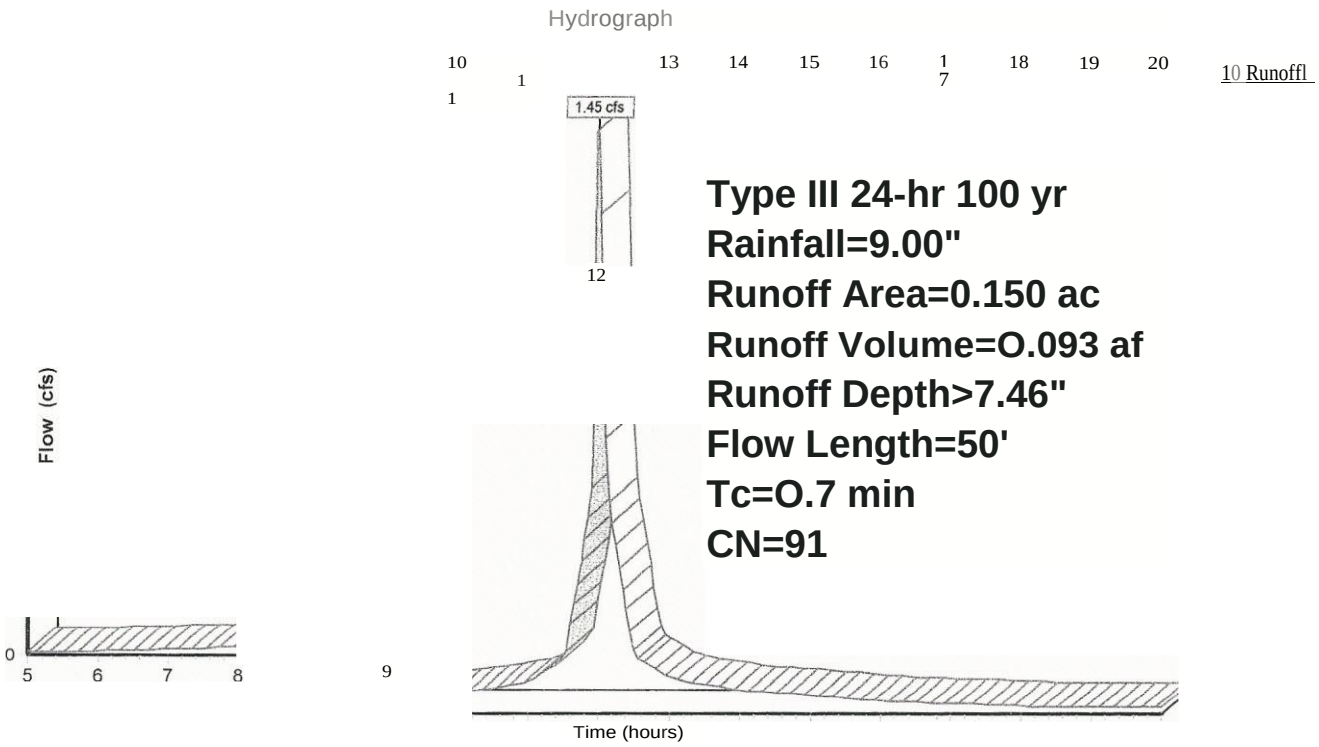
Runoff = 1.45 cfs @ 12.01 hrs, Volume= 0.093 af, Depth> 7.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=9.00"

Area (ac)	CN	Description
0.120	98	Paved parking & roofs
0.030	65	Woods/grass comb., Fair, HSG B
0.150	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0200	1.2		**Sheet Flow, SHEET** Smooth surfaces n= 0.011 P2= 3.20"

5ubcatchment 35: (new 5ubcat)



Subcatchment 4S: EAST TO RR POND

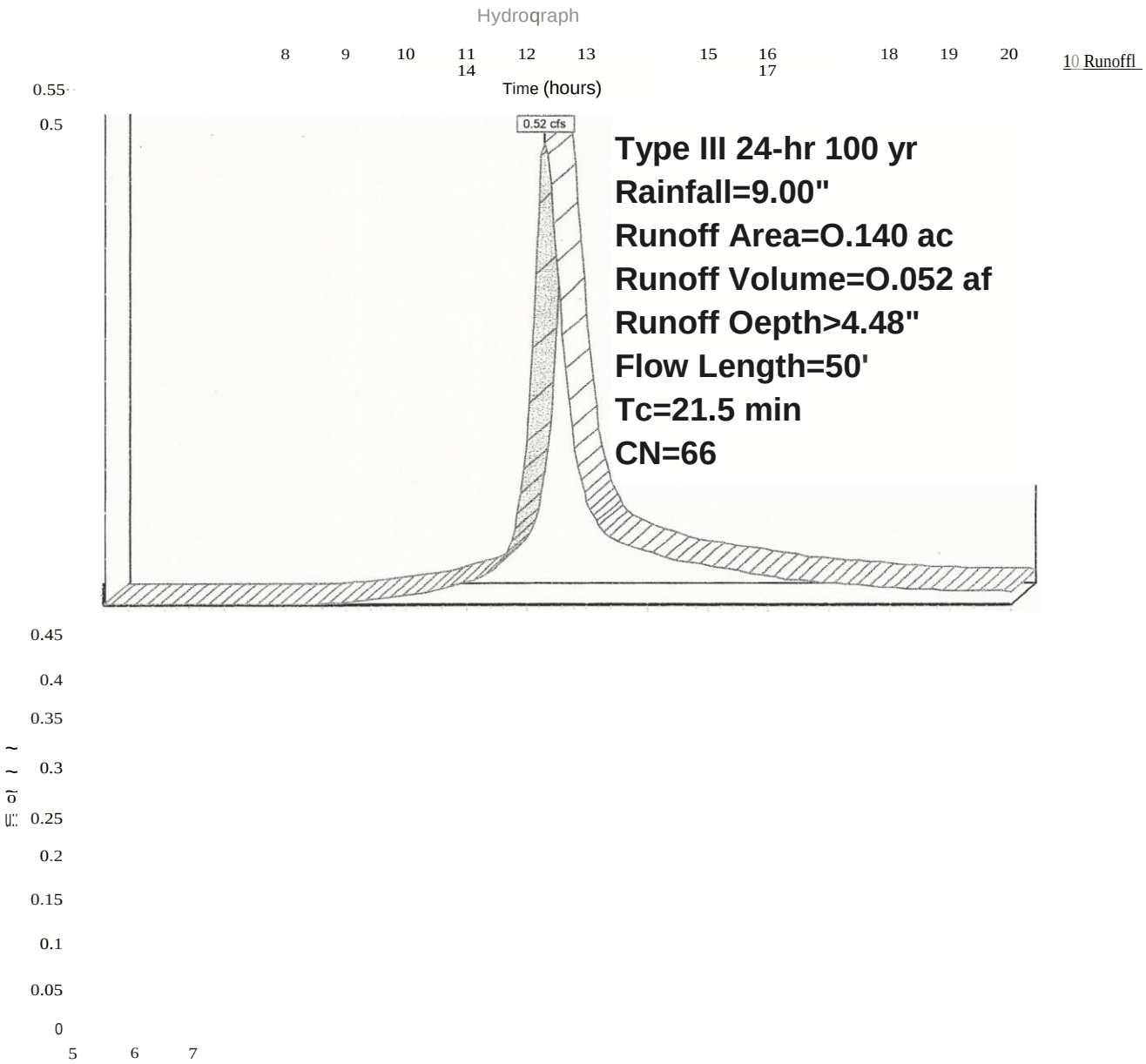
Runoff 0.52 cfs @ 12.30 hrs, Volume= 0.052 af, Depth> 4.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=9.00"

Area (ac)	CN	Description
0.140	66	Woods, Poor, HSG B

Tc (min)	Length (feet)	Slope (ftlft)	Velocity (ftlsec)	Capacity (cfs)	Description
21.5	50	0.0200	0.0		**Sheet Flow, SHEET** Woods: Dense underbrush n= 0.800 P2= 3.20"

Subcatchment 4S: EAST TO RR POND

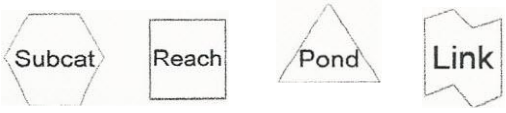


NORTH TO STREAM

EAST TO RR PONDING

WEST TO STREET

SOUTH TO PONDING



Drainage Diagram for 73-77 CROSS RD POST
Prepared by RAM *10/27/2016*
HydroCAD® 7.10 *sin* 001022 © 2005 HydroCAD Software Solutions LLC

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

Subcatchment 1S: WEST TO STREET
Runoff Area=0.1BO ac Runoff Oepth>0.74"
Flow Length=1BO' Tc=9.1 min CN=69 Runoff=0.14 cfs 0.011 af

Subcatchment 2S: NORTH TO STREAM
Runoff Area=0.520 ac Runoff Oepth>0.66"
Tc=O.O min CN=67 Runoff=0.43 cfs 0.028 af

Subcatchment 3S: SOUTH TO PONDING
Runoff Area=0.140 ac Runoff Oepth>0.61"
Flow Length=50' Tc=B.2 min CN=66 Runoff=O.OB cfs 0.007 af

Subcatchment 4S: EAST TO RR PONDING
Runoff Area=0.140 ac Runoff Oepth>0.38"
Flow Length=50' Tc=12.3 min CN=60 Runoff=0.04 cfs 0.004 af

Total Runoff Area = 0.980 ac Runoff Volume = 0.051 at Average Runoff Depth = 0.63"

Subcatchment 1S: WEST TO STREET

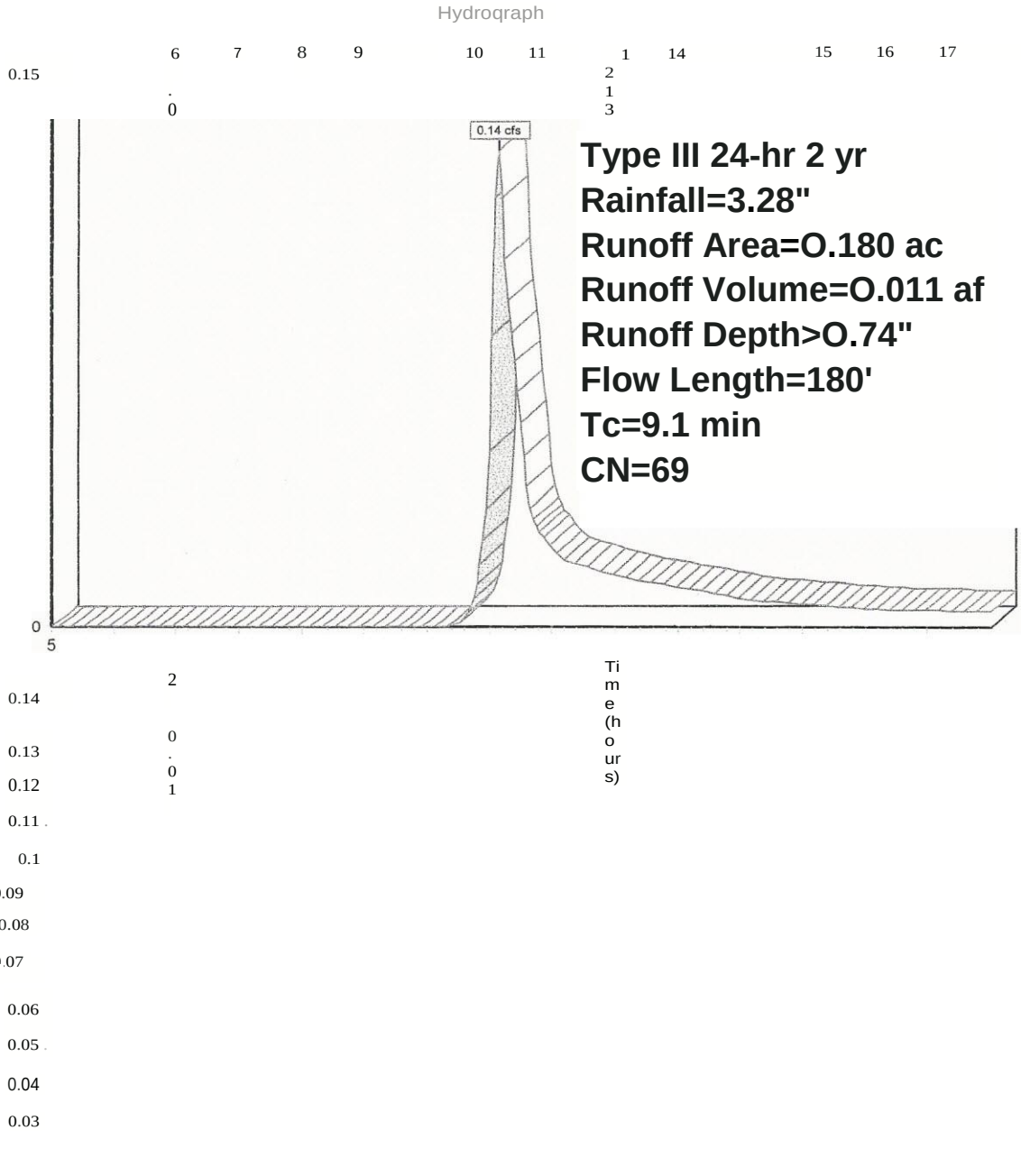
Runoff = 0.14 cfs @ 12.15 hrs, Volume= 0.011 af, Depth> 0.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 yr Rainfall=3.28"

Area (ac)	CN	Description
0.090	98	Paved parking & roofs
0.090	39 > 75	Grass cover, Good, HSG A
0.180	69	Weighted Average

Tc (min)	Length (feet)	Slope (ftlft)	Velocity (ftlsec)	Capacity (cfs)	Description
5.8	40	0.0300	0.1		**Sheet Flow, SHEET** Grass: Dense n= 0.240 P2= 3.20"
3.3	140	0.0200	0.7		**Shallow Concentrated Flow, SHALLOW** Woodland Kv= 5.0 fps
9.1	180	Total			

Subcatchment 1S: WEST TO STREET



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Subcatchment 2S: NORTH TO STREAM

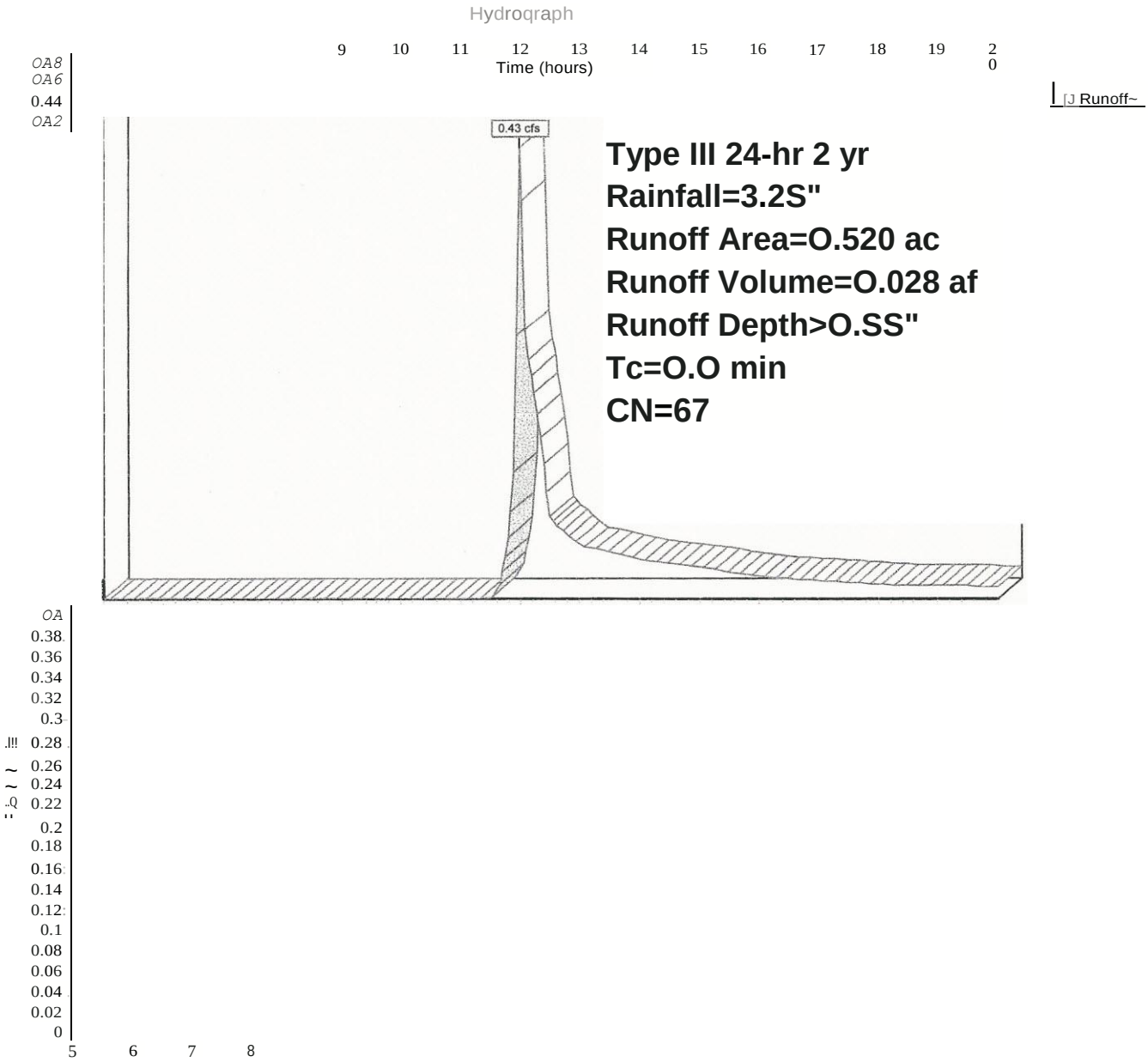
[46] Hint: Tc=O (Instant runoff peak depends on dt)

Runoff = 0.43 cfs @ 12.02 hrs, Volume= 0.028 af, Depth> 0.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 yr Rainfall=3.28"

Area (ac)	eN	Description
0.050	98	Paved parking & roofs
0.200	69	50-75 Grass cover, Fair, HSG B
0.270	60	Woods, Fair, HSG B
0.520	67	Weighted Average

Subcatchment 2S: NORTH TO STREAM



Subcatchment 3S: SOUTH TO PONDING

Runoff 0.08 cfs @ 12.14 hrs, Volume= 0.007 af, Depth> 0.61"

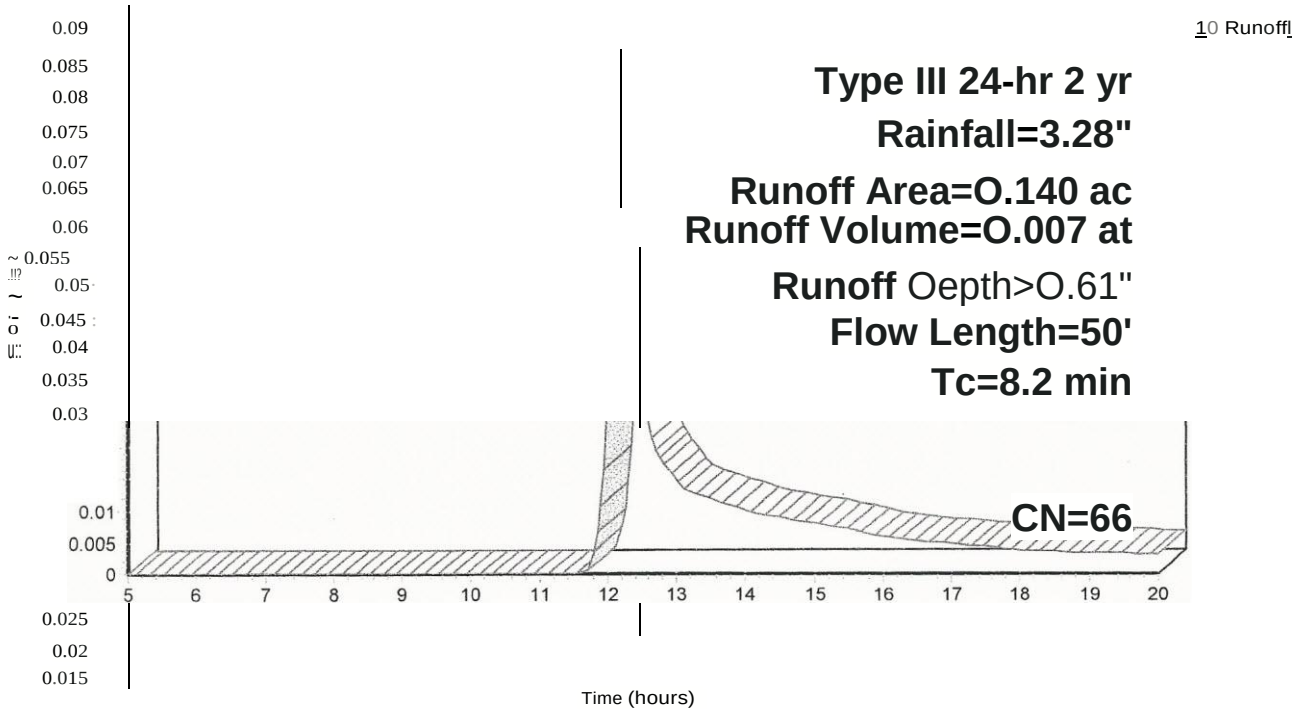
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 yr Rainfall=3.28"

Area (ac)	CN	Description
0.02	98	Paved parking & roofs
0	61	>75 Grass cover, Good, HSG B
0.12	66	Weighted Average
0		
0.14		
0		

Tc (min)	Length (feet)	Slope (ftlft)	Velocity (ftlsee)	Capacity (efs)	Description
8.2	50	0.0200	0.1		**Sheet Flow, SHEET** Grass: Dense n= 0.240 P2= 3.20"

Subcatchment 3S: SOUTH TO PONDING

Hydrograph



Subcatchment 4S: EAST TO RR PONDING

Runoff = 0.04cfs @ 12.26 hrs, Volume= 0.004 af, Depth> 0.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 yr Rainfall=3.28"

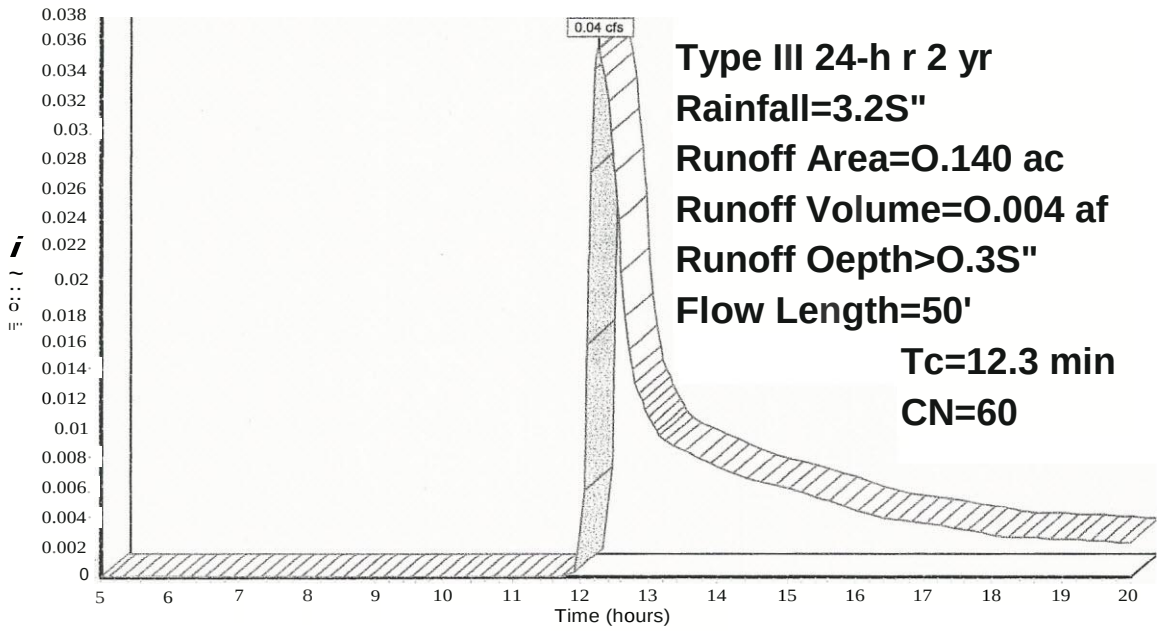
Area (ac)	CN	Description
0.140	60	Woods, Fair, HSG B

Tc (min)	Length (feet)	Slope (ftlft)	Velocity (ftlsec)	Capacity (cfs)	Description
12.3	50	0.0200	0.1		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment 45: EAST TO RR PONDING

Hydroqraph

10 Runoffl



Time span=5.00-20.00 hrs, dt=O.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+ Trans method - Pond routing by Stor-Ind method

Subcatchment 15: WEST TO STREET
Runoff Area=0.180 ac Runoff Depth> 1.72"
Flow Length=180' Tc=9.1 min CN=69 Runoff=0.34 cfs 0.026 af

Subcatchment 25: NORTH TO STREAM
Runoff Area=0.520 ac Runoff Oepth>1.58"
Tc=O.O min CN=67 Runoff=1.17 cfs 0.069 af

Subcatchment 3S: SOUTH TO PONDING
Runoff Area=0.140 ac Runoff Oepth>1.51"
Flow Length=50' Tc=8.2 min CN=66 Runoff=0.23 cfs 0.018 af

Subcatchment 45: EAST TO RR PONDING
Runoff Area=0.140 ac Runoff Oepth>1.11"
Flow Length=50' Tc=12.3 min CN=60 Runoff=0.14 cfs 0.013 af

Total Runoff Area = 0.980 ac Runoff Volume = 0.125 at Average Runoff Depth = 1.53"

Subcatchment 1 S: WEST TO STREET

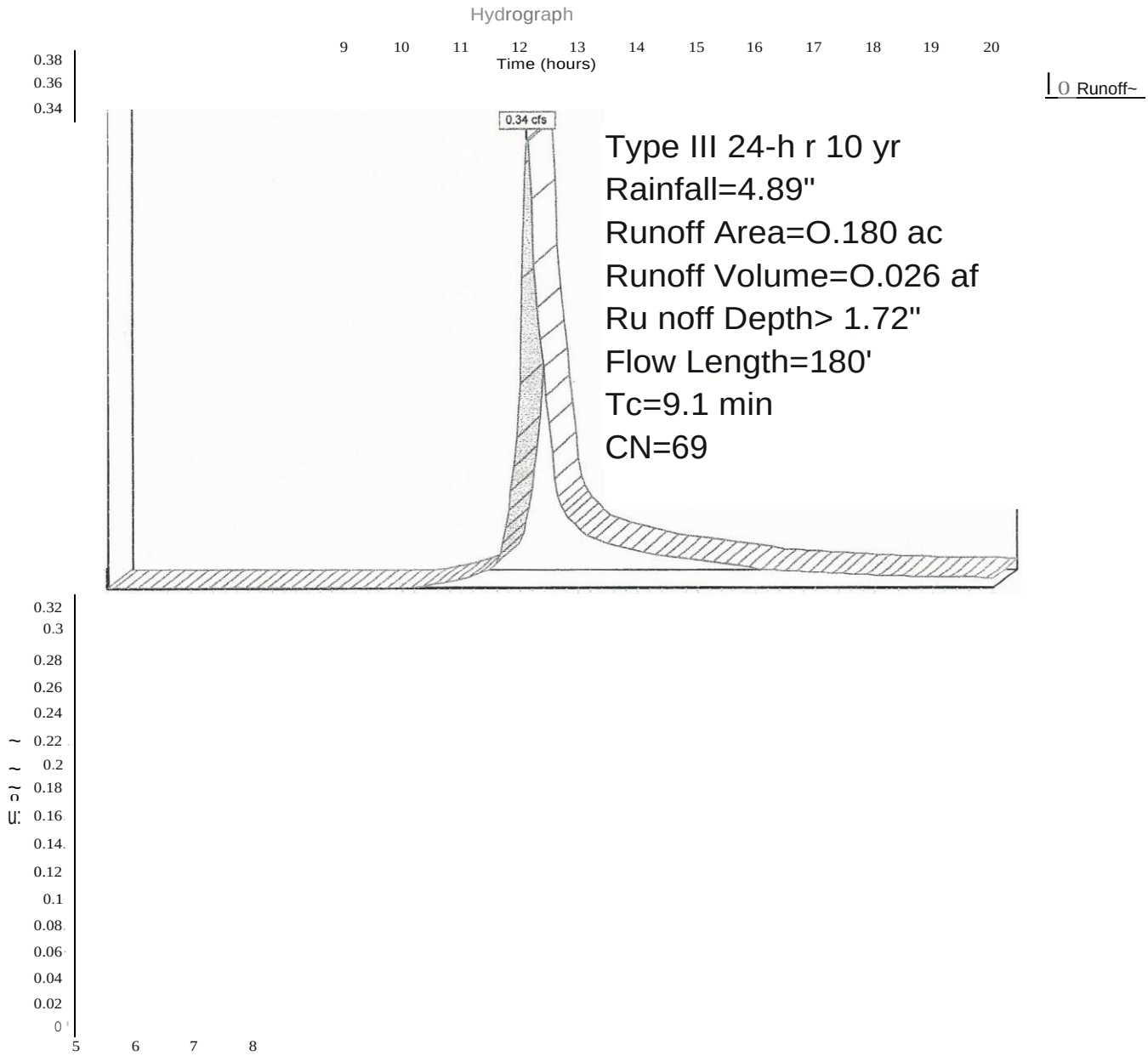
Runoff = 0.34 cfs @ 12.14 hrs, Volume= 0.026 af, Depth> 1.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=4.89"

Area (ac)	CN	Description
0.090	98	Paved parking & roofs
0.090	39	>75 Grass cover, Good, HSG A
0.180	69	Weighted Average

Tc (min)	Length (feet)	Slope (fUft)	Velocity (fUsee)	Capacity (cfs)	Description
5.8	40	0.0300	0.1		Sheet Flow, SHEET Grass: Dense n= 0.240 P2= 3.20"
3.3	140	0.0200	0.7		Shallow Concentrated Flow, SHALLOW Woodland Kv= 5.0 fps
9.1	180	Total			

Subcatchment 1 S: WEST TO STREET



Subcatchment 2S: NORTH TO STREAM

[46] Hint: Tc=O (Instant runoff peak depends on dt)

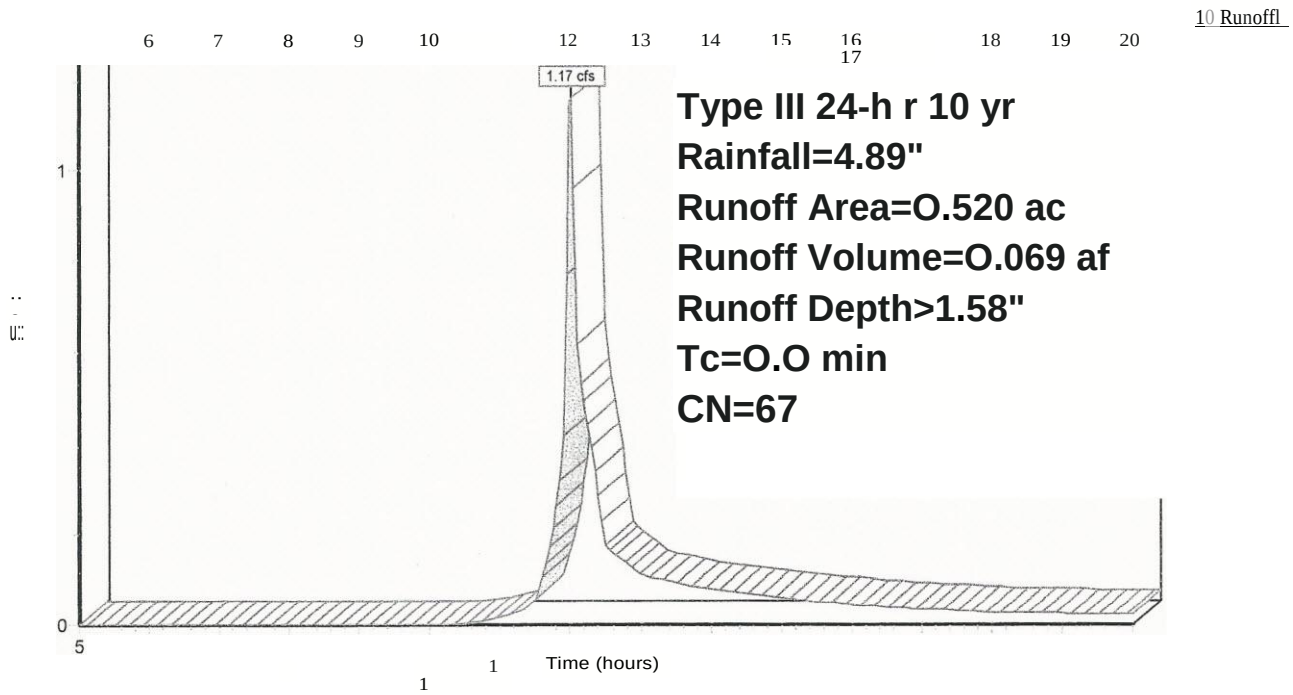
Runoff 1.17 cfs @ 12.01 hrs, Volume= 0.069 af, Depth> 1.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=4.89"

Area (ac)	CN	Description
0.050	98	Paved parking & roofs
0.200	69	50-75 Grass cover, Fair, HSG B
0.270	60	Woods, Fair, HSG B
0.520	67	Weighted Average

Subcatchment 2S: NORTH TO STREAM

Hydrograph



Subcatchment 3S: SOUTH TO PONDING

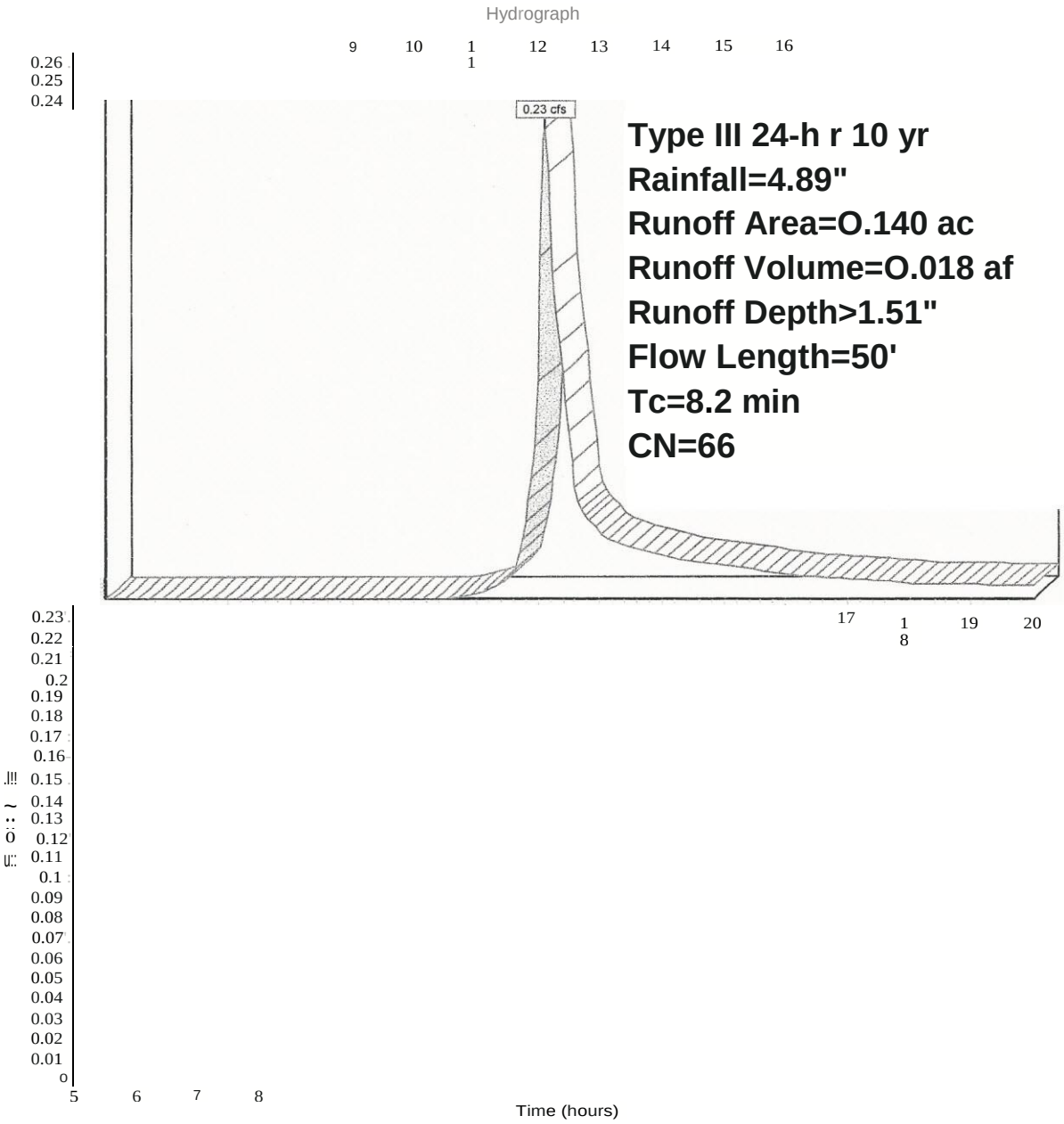
Runoff = 0.23 cfs @ 12.13 hrs, Volume= 0.018af, Depth> 1.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=4.89"

Area (ac)	CN	Description
0.020	98	Paved parking & roofs
0.120	61	>75 Grass cover, Good HSG B
0.140	66	Weighted Average

Tc (rnin)	Length (feet)	Slope *(ftlft)*	Velocity (ftlsec)	Capacity (cfs)	Description
8.2	50	0.0200	0.1		**Sheet Flow, SHEET** Grass: Dense n= 0.240 P2= 3.20"

Subcatchment 3S: SOUTH TO PONDING



10 Runoffi

Subcatchment 4S: EAST TO RR PONDING

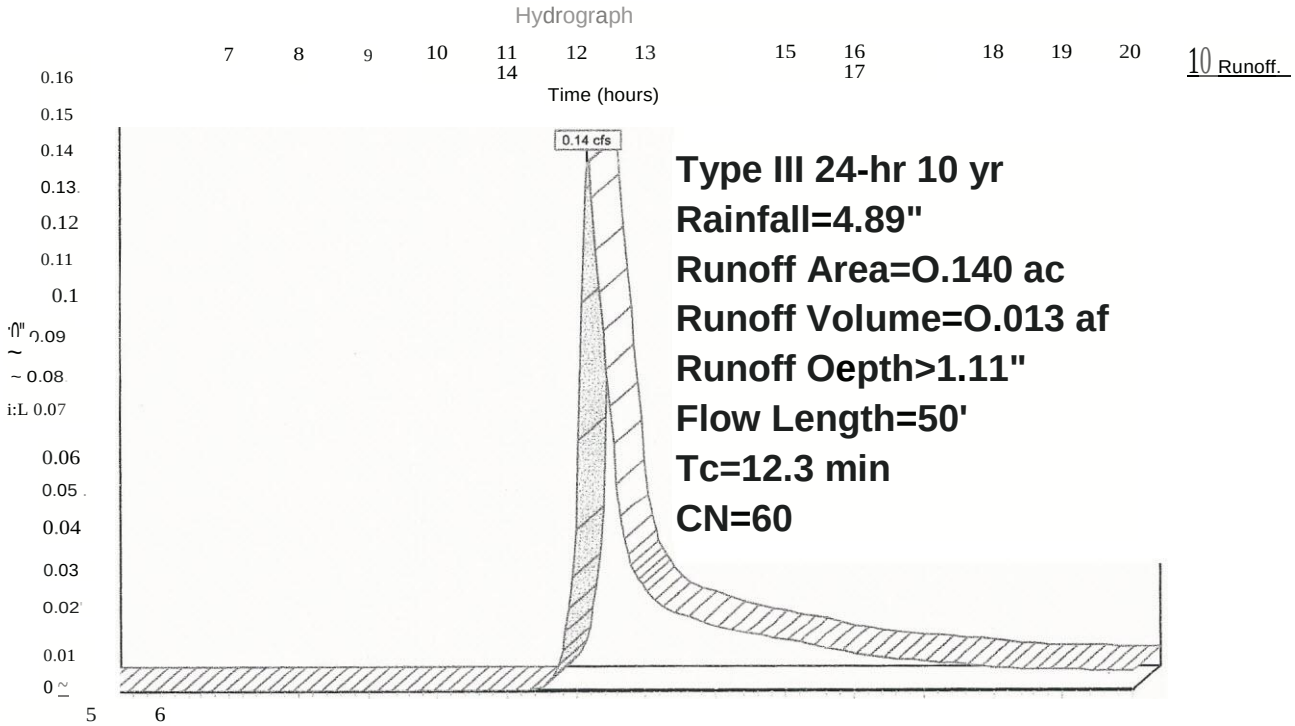
Runoff 0.14 cfs @ 12.20 hrs, Volume= 0.013 af, Depth> 1.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=4.89"

Area (ac)	CN	Description
0.140	60	Woods, Fair, HSG B

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ftlsec)	Capacity (cfs)	Description
12.3	50	0.0200	0.1		**SheetFlow, SHEET** Woods: Light underbrush n= *OAOO* P2= 3.20"

Subcatchment 4S: EAST TO RR PONDING



Time span=5.00-20.00 hrs, dt=O.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+ Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: WEST TO STREET
Runoff Area=0.180 ac Runoff Oepth>4.86"
Flow Length=180' Tc=9.1 min CN=69 Runoff=0.97 cfs 0.073 af

Subcatchment 25: NORTH TO STREAM
Runoff Area=0.520 ac Runoff Oepth>4.64"
Tc=O.O min CN=67 Runoff=3.48 cfs 0.201 af

Subcatchment 3S: SOUTH TO PONDING
Runoff Area=0.140 ac Runoff Oepth>4.51 "
Flow Length=50' Tc=8.2 min CN=66 Runoff=0.73 cfs 0.053 af

Subcatchment 4S: EAST TO RR PONDING
Runoff Area=0.140 ac Runoff Depth>3.78"
Flow Length=50' Tc=12.3 min CN=60 Runoff=0.54 cfs 0.044 af

Total Runoff Area = 0.980 ac Runoff Volume = 0.371 af Average Runoff Depth = 4.54"

Subcatchment 1S: WEST TO STREET

Runoff = 0.97 cfs @ 12.13 hrs, Volume= 0.073 af, Depth> 4.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=9.00"

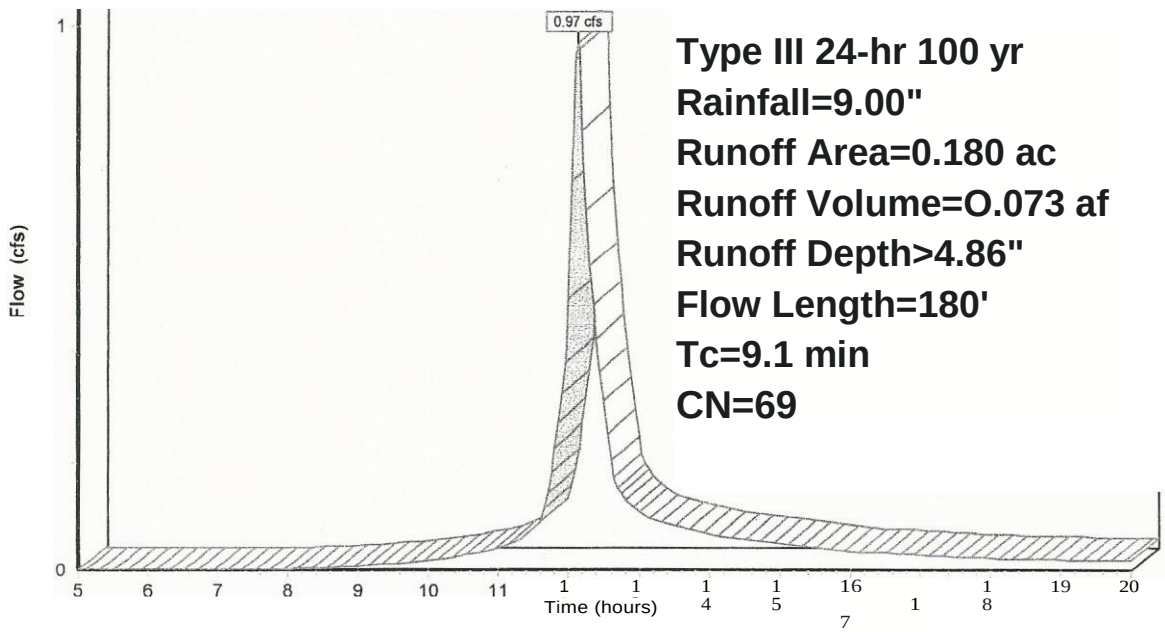
Area (ac)	CN	Description
0.090	98	Paved parking & roofs
0.090	39 > 75	Grass cover, Good, HSG A
0.180	69	Weighted Average

Tc (min)	Length (feet)	Slope (ftlft)	Velocity (ftlsec)	Capacity (cfs)	Description
5.8	40	0.0300	0.1		**Sheet Flow, SHEET** Grass: Dense n= 0.240 P2= 3.20"
3.3	140	0.0200	0.7		**Shallow Concentrated Flow, SHALLOW** Woodland Kv= 5.0 fps
9.1	180	Total			

Subcatchment 1 S: WEST TO STREET

Hydroqraph

10 Runoffl



Subcatchment 2S: NORTH TO STREAM

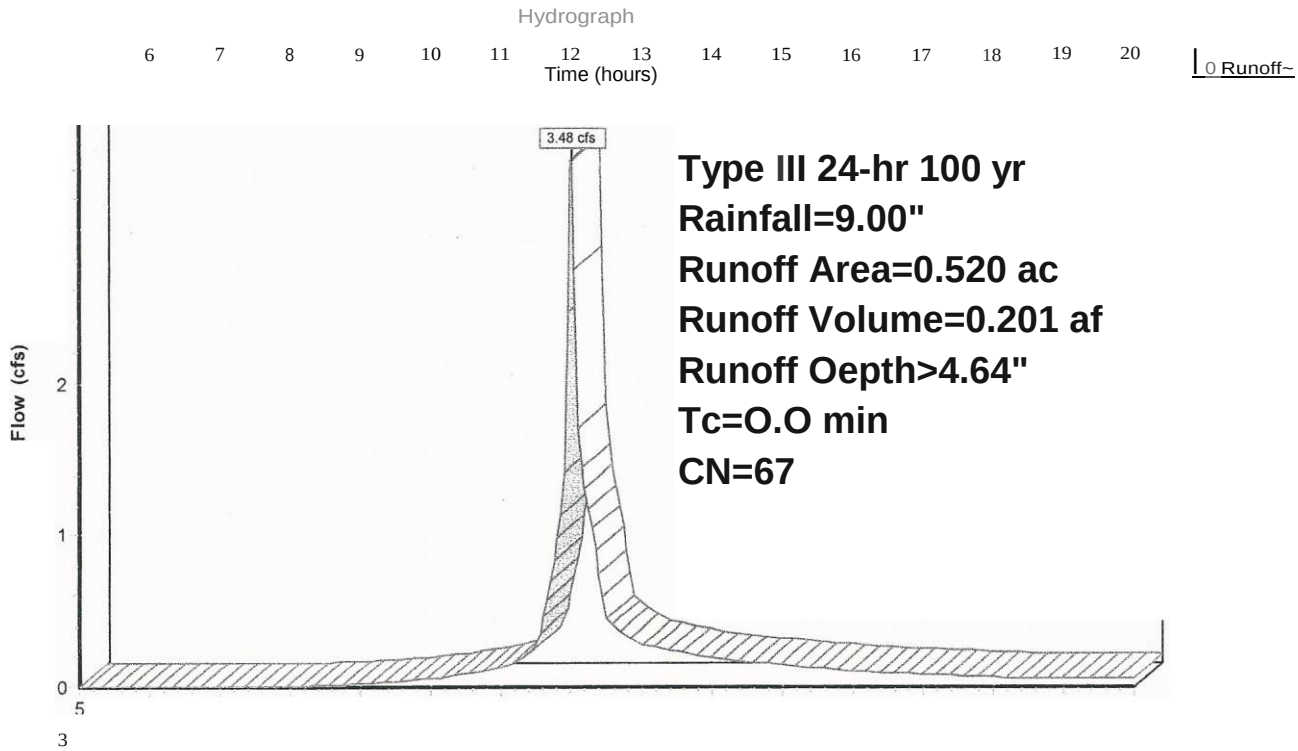
[46] Hint: Tc=O (Instant runoff peak depends on dt)

Runoff = 3.48 cfs @ 12.00 hrs, Volume= 0.201 af, Depth> 4.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=9.00"

Area (ac)	eN	Description
0.050	98	Paved parking & roofs
0.200	69	50-75 Grass cover, Fair, HSG B
0.270	60	Woods, Fair, HSG B
0.520	67	Weighted Average

Subcatchment 2S: NORTH TO STREAM



Subcatchment 3S: SOUTH TO PONDING

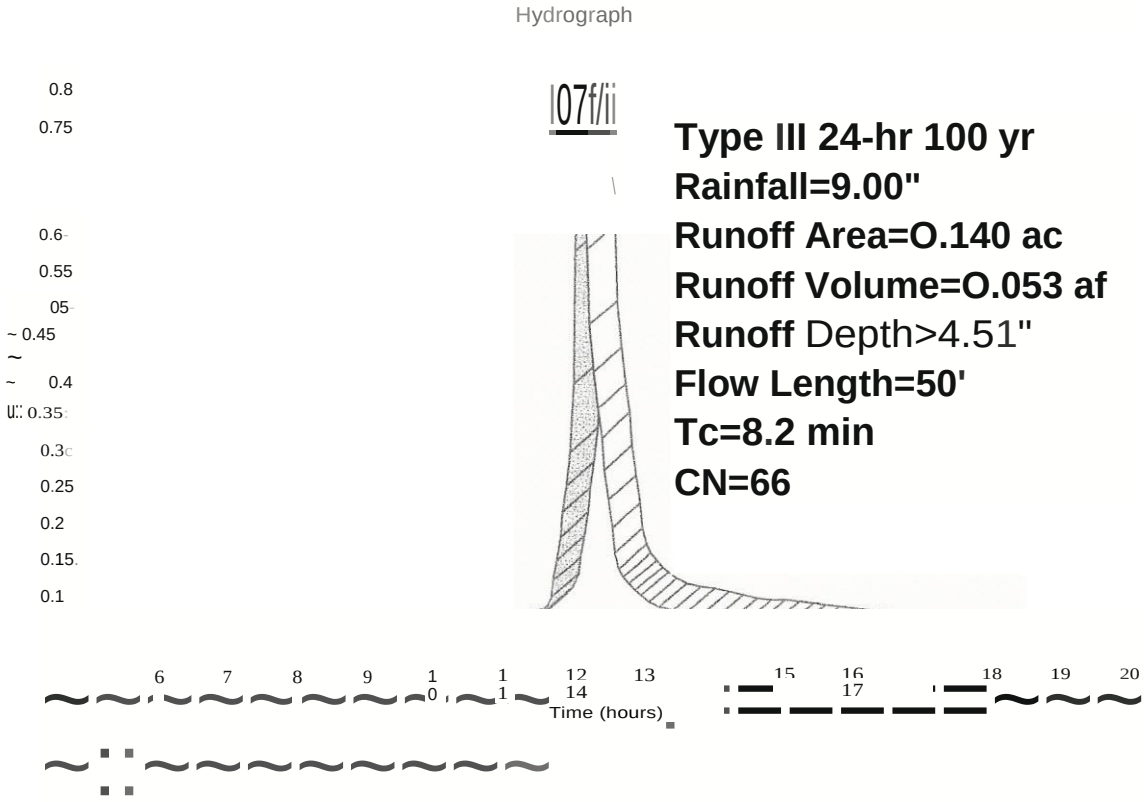
Runoff = 0.73 cfs @ 12.12 hrs, Volume= 0.053 af, Depth> 4.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=9.00"

Area (a c)	CN	Description
0.020	98	Paved parking & roofs
0.120	61	>75 Grass cover, Good, HSG B
0.140	66	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.1		**Sheet Flow, SHEET** Grass: Dense n= 0.240 P2= 3.20"

Subcatchment 3S: SOUTH TO PONDING



Subcatchment 4S: EAST TO RR PONDING

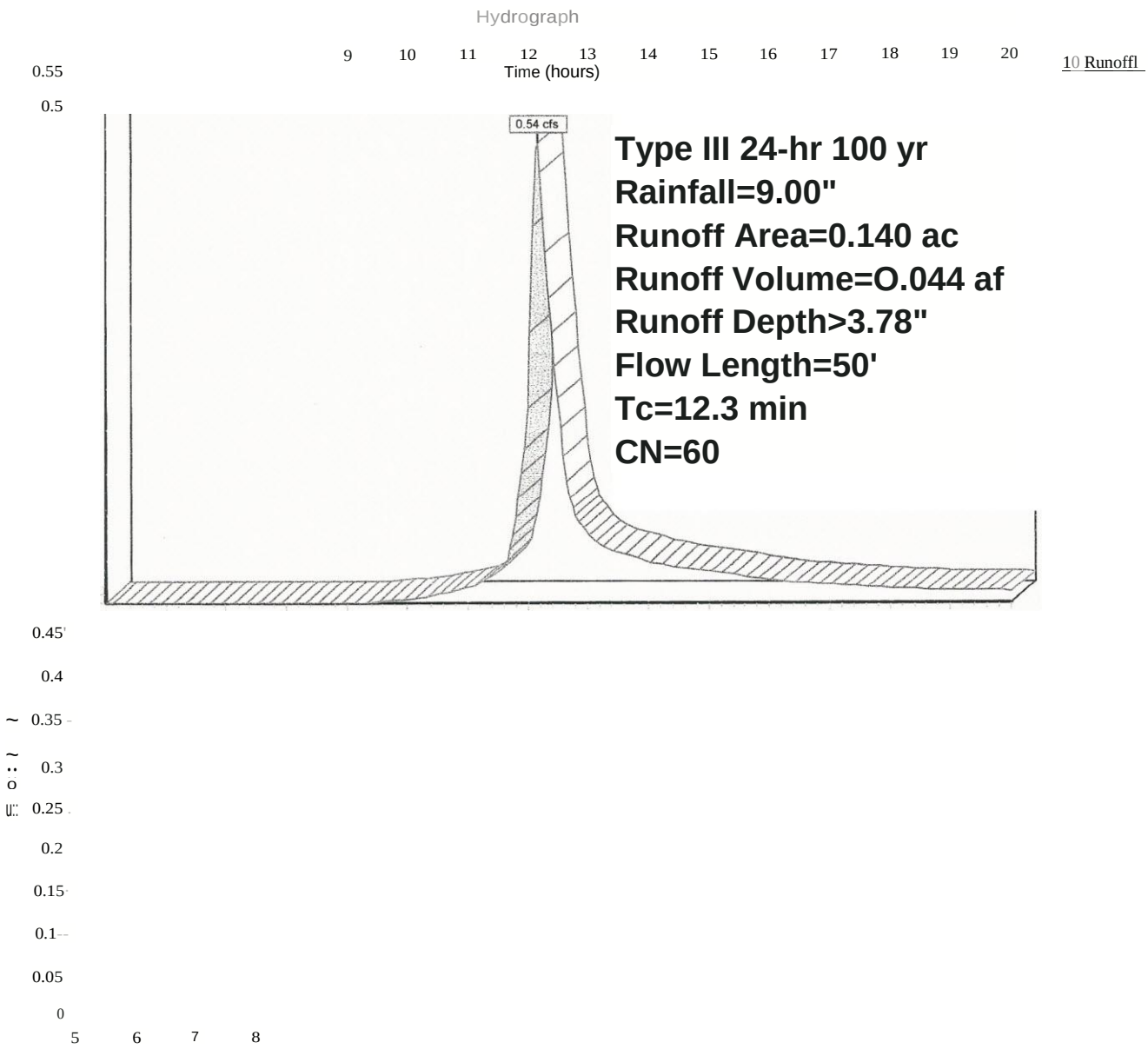
Runoff 0.54 cfs @ 12.18 hrs, Volume= 0.044 af, Depth> 3.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 yr Rainfall=9.00"

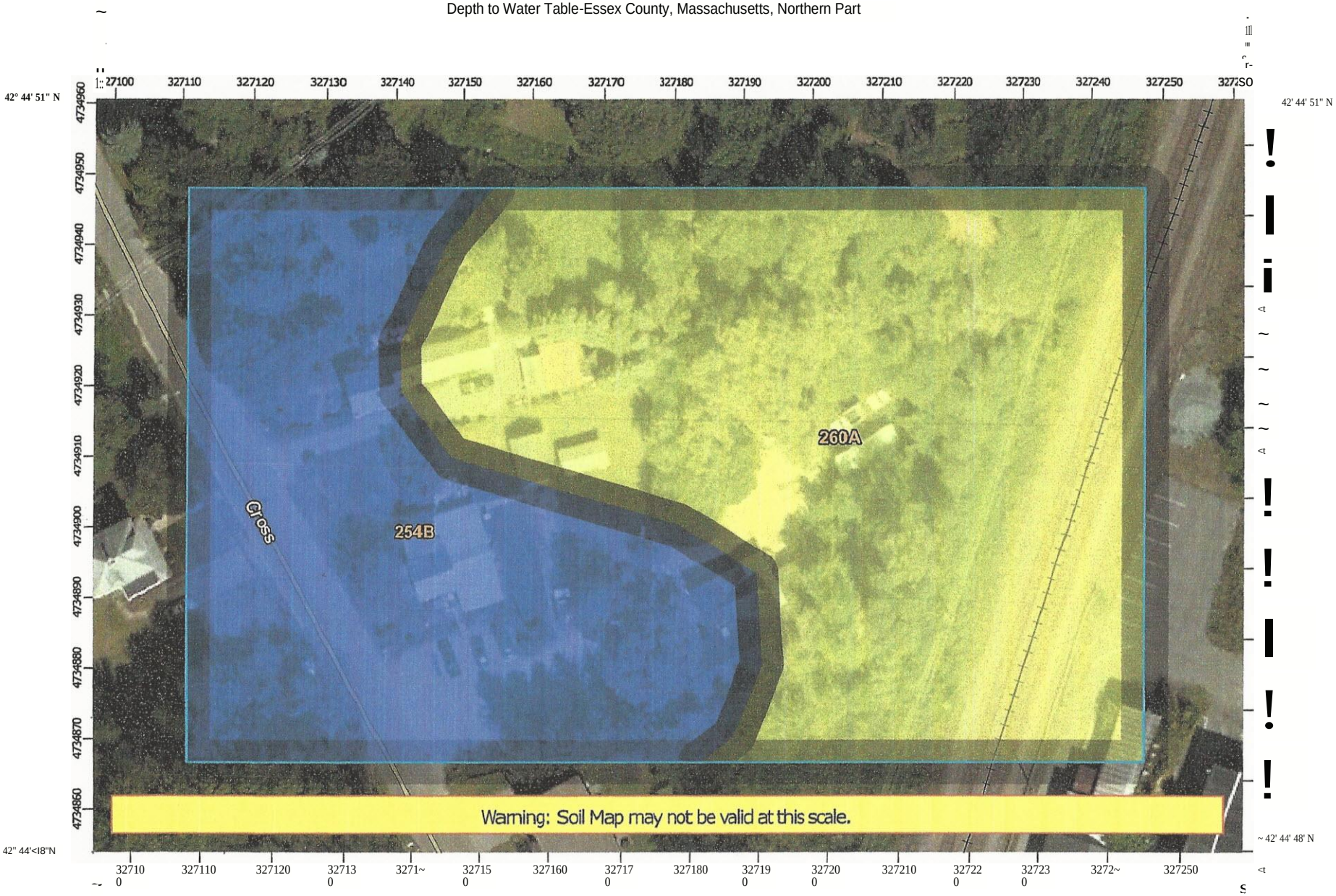
Area (ac)	CN	Description
0.140	60	Woods, Fair, HSG B

Tc (min)	Length (feet)	Slope (fUft)	Velocity (fUse c)	Capacity (cfs)	Description
12.3	50	0.0200	0.1		Sheet Flow, SHEET Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment 4S: EAST TO RR PONDING



Depth to Water Table-Essex County, Massachusetts, Northern Part



Map Scale: 1:752ifprinted on A landscape (11" x 8.5') sheet

0 10 2 4 Meters 60

A 0~-----3~5~====~7~0----------140~==========
=~21~

Map projection: Web MercalDr Comll"c.oordlnates: WGS84 Edge tk:s: IFTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

rJ Area of Interest (AOI)

Solis

Soli Rating Polygons

D 0-25

D 25·50

D 50·100

D 100·150

D 150·200

D >200

D Not rated or not available

Soli Rating Lines

0·25

25·50

50 ·100

100·150

150·200

> 200

Not rated or not available

5011 Rating Points

0·25

25·50

50 ·100

0100.150

150·200

> 200

CJ Not rated or not available

Water Features

Streams and Canals

Transportation

Ralls

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1 :15,800.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Essex County, Massachusetts, Northern Part
Survey Area Data: Version 11, Sep 28, 2015

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

Date(s) aerial images were photographed: Aug 29, 20 14-Sep 19,2014

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.

Depth to Water Table

Depth to Water Table- Summary by Map Unit - Essex County, Massachusetts, Northern Part (MA605)				
Map unit symbol	Map unit name	Rating (centimeters)	Acres inAOI	Percent of AOI
2549	Menimac fine sandy loam, 3 to 8 percent slopes	>200	1_1	40_3
260A	Sudbury fine sandy loam, 0 to 3 percent slopes	60	1_6	59_7
j---- Totals for Area of Interest			2.8	100.0

Description

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as *Zero:* No

Beginning Month: January

Ending Month: December