

ENGINEERING REPORT – SELECTED PLAN

**East Branch Blind Brook Flood Study
Avon Circle, Port Chester Middle School and Bowman Avenue**

Town of Rye and Village of Rye Brook

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Prepared By:



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East Branch Blind Brook Flood Study Avon Circle, Port Chester Middle School and Bowman Avenue

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1. EXECUTIVE SUMMARY

The purpose of this report is to provide a detailed engineering analysis of the selected flood mitigation plan. This report further explores the engineering design requirements for the selected plan, Case 3b, as was identified in the previous studies. This report supplements the previous report entitled: Hydrologic and Hydraulic Analysis, dated February 7, 2019, in which various options for flood remediation were explored. A copy of that report can be found in Appendix F. Also referenced herein is the Preliminary Engineering Report, Phase 2A, dated June 17, 2019 and contained in Appendix G of this report in which the recommended plan concept was selected from four (4) options presented.

This analysis further expands upon the selected plan in that it accounts for current extreme rainfall data taken from the newer Northeast Regional Climate Center (NRCC) which is listed as 9.02 inches in 24 hours for the 100 year storm event. This data is listed in Appendix D for reference. The original FEMA flood studies as detailed in the February 7, 2019 report were based on the then accepted 7.2 inch rainfall value. This enhanced design now fully attenuates the 100 year storm event and even reduces flows seen downstream. This is a significant improvement over the recommended option (Case 3b per the Preliminary Engineering Report, Phase 2A, dated June 17, 2019) which provided for significant flood reductions but not complete attenuation of the extreme precipitation, 9.02 inch, 100 year storm event.

This flood mitigation is achieved by providing additional piping capacity to bypass Avon Circle and effectively move the flood storage from the Avon community to a proposed subsurface detention system located within the ballfields at the Port Chester Middle School. The proposed detention system at the Middle School has also been enlarged in this study to fully attenuate the 9.02 inch, 100 year storm event.

A proposed layout for this design has been included in this report in Appendix B along with a revised cost estimate accounting for the currently proposed infrastructure required to achieve the flood reduction objectives. This estimate can be found in Appendix C.

As part of this design the Middle School ballfields would be raised to an elevation of 44.0', thus requiring a FEMA CLOMR-F application. This report would serve as the basis for that application. In addition, various easements for the proposed infrastructure would be required, defining ownership and maintenance responsibilities to be shared among the stakeholders involved:

1. Village of Rye Brook
2. Town of Rye
3. Port Chester School District
4. Avon Circle homeowners.

The division of responsibilities is not detailed in this report; this is subject to discussion and negotiation by the stakeholders involved.

Should the stakeholders decide to move forward with construction, the following permits and additional information will be required for final engineering design and construction documents to be produced:

1. Expanded, more detailed survey information for all areas of proposed construction.
2. Geotechnical survey and testing of subsurface soil and rock conditions.
3. Request for a FEMA Conditional Letter of Map Revision based on Fill (CLOMR-F) due to raising of the ballfield to elevation 44.0.
4. NYS Protection of Waters Permit Required for the excavation or placing of fill in navigable waters of the state, below the mean high water level, this is due to the existing stream classification and standard of C.
5. Westchester County Channel permit.
6. NYSDEC General Permit for Stormwater Discharges from Construction Activity.
7. Temporary construction and permanent easement agreements.

2. HYDROLOGIC AND HYDRAULIC ANALYSIS

INTRODUCTION:

The East Branch of the Blind Brook travels from the Hutchinson River Parkway down to the area of Bowman Avenue in the Village of Rye Brook which is about 715 acres. The Brook creates flood areas along its route that are described well in the related FEMA reports.

Of particular concern is the flooding that occurs at the Avon Circle Condominiums at the intersection of Westchester Avenue and North Ridge Street. Additionally, the ball fields of the Port Chester Middle School are also affected by the flood waters that travel past Avon Circle under a culvert at Westchester Avenue.

FEMA:

The Federal Emergency Management Agency provides flood maps and detailed reports on their methodology in the areas of concern. Unfortunately, due to the complexity of the culvert systems at Avon Circle the FEMA analysis incorrectly shows overtopping of Westchester Avenue even for small storms. Due to this inaccurate modeling, we needed to re-model the area prior to analyzing alternate methods of flood abatement. Our review of the FEMA study indicates that they only accounted for one culvert at Avon Circle when there are two. However, when we adjusted the FEMA model for two culverts the model still indicated overtopping of Westchester Avenue during even small storms which has never actually happened.

HYDROLOGY:

For this study, the entire East Branch of the Blind Brook was re-modeled to develop flows and hydrographs that are closely conforming to actual conditions in the watershed. To that end the watershed was broken down into numerous land use, zoning, and soil subareas. Each subareas was assigned an appropriate runoff curve number for that use.

The travel times in the watershed were evaluated by detailed runoff profiles that assigned velocities to each segment of the total reach. Where flood storage was found in the upper watershed the new hydrologic model represents those areas similar to the FEMA studies.

The flows and hydrographs were developed based on the detailed watershed characteristics.

HYDROLOGIC MODEL CALIBRATION:

Avon Circle was flooded by a major storm on April 15, 2007. A photograph from that flood was analyzed and the historic flood level was determined. This rainstorm was approximately 7.7 inches of rain over a 72 hour period.

Accordingly, the results of the hydrologic model were compared to the 2007 flood event and a close correlation was found. This insures that the hydrologic model can accurately represent other storm events as well.

The following photographs of flooding during the April 2007 storm as compared to a recent photograph at the same vantage point provide some anecdotal information that assists in calibrating the hydrologic model.



In the photos we can determine there is about 1 foot of water during the April 2007 storm in an area where the ground level is about elevation 52 feet. Thus the flood elevation was about elevation 53 feet. The hydrologic model prepared for this project conforms to

that flood level. This indicates good precision in the model since the model also predicts an elevation of 53 feet for the flood in that location.

RAINFALL AMOUNTS:

The FEMA flood studies were based on 7.2 inches of rainfall in 24 hours which represents the 100 year storm as was known when the FEMA studies were performed. Since the original FEMA study, Northeast Regional Climate Center (NRCC) has now estimated larger values of the 100 year storm as well as new values for other storm frequencies.

The maximum rainfall event in this report is taken from the newer NRCC data at a location midway in the watershed. As noted, the newer 100 year storm event is listed as 9.02 inches in 24 hours which is used in this report which is an accepted standard for design in flood studies.

Table: Rainfall Amounts for Differing 24 hour Storms NRCC Extreme Estimates / Mid Values

Storm	5min	3hr	6hr	12hr	24hr
1yr	0.34	1.5	1.86	2.31	2.85
2yr	0.4	1.84	2.28	2.8	3.45
5yr	0.47	2.31	2.86	3.52	4.31
10yr	0.53	2.75	3.41	4.19	5.11
25yr	0.62	3.46	4.3	5.28	6.4
50yr	0.71	4.12	5.13	6.27	7.6
100yr	0.8	4.91	6.11	7.47	9.02

Reference: <http://precip.eas.cornell.edu/data.php?1549210900008>

This report analyzes the 100 year storm as well as the 50 year, 10 year and 2 years storms with 24 hour duration. To more fully describe the operation the report also analyzes selected 6 hour storms to represent short, intense storms.

Table: Storm Frequencies Evaluated in this Report

Storm Frequency (year)	Duration of Storm (hours)	Rainfall (inches)
100	24	9.02
100	6	6.11
50	24	7.6
50	6	5.13
10	24	5.11
2	24	3.45

With these range of rainfalls this Report provides a good representation of the manner in which the proposed system will operate in low storm events as well as extreme events.

DESIGN CRITERIA:

To ensure that the proposed mitigation and improvements in the East Branch of the Blind Brook in the vicinity of Avon Circle does not impact the hydrology downstream this report ensures that the peak flows and flood elevations do not exceed current conditions.

The base, current conditions for various rainfall are indicated as:

NRCC Updated 100 Year Storm Event in 24 hours

Flood Level at Bowman Avenue: 40.0 feet elevation – Fixed by Downstream 100 year flow
Flow at Bowman Avenue: 918.66 cubic per second

STORAGE CHAMBERS:

To store the peak runoff in the most efficient manner, several underground detention systems were considered to be used underlying the ball fields. All systems considered exhibit a high degree of void ratio, 94%+/- . The base elevation of the chambers would be 39 feet elevation and the top of the system would be 3 feet higher to elevation 42 feet.

The chambers high void ratio further enhanced by the potential for infiltration to the soil below would provide sufficient storage to attenuate the 9.02 inch, 100 year storm event. The system would be covered with filter material then two feet of replacement soil.

Please see Appendix E for information on the selected detention system.

DESCRIPTION OF THE MODIFICATIONS:

It was reported by residents of Avon Circle that the April 2007 storm overtopped the existing dual culverts upstream of Avon Circle. Accordingly, this report provides that the berm and headwall near these culvert inlets be raised from about the current 61 feet to roughly elevation 70 feet. This elevation height would prevent flows from running down to the Avon parking area and pool while allowing the existing dual culverts to handle additional flow.

RECOMMENDATIONS:

The following are the recommendations that arise from the detailed study in the area:

1. The berm / headwall at the Avon culverts should be raised from elevation 61 feet to about elevation 70 to prevent overflows onto Avon Circle.
2. An additional 60 inch diameter reinforced concrete pipe or equivalent precast concrete box culvert (4'x5') must be installed under Westchester Avenue to act as an overflow for the waters that potentially can be trapped behind the berm of Westchester Avenue at Avon Circle. The flow in this pipe will enter the stream and not the detention system on the ball fields.

3. A new culvert system must be constructed to bypass Avon Circle and convey flows directly to the Port Chester Middle School area. This system could consist of dual 60 inch diameter pipes, or a hydraulically equivalent precast concrete box culvert.
4. The proposed subsurface detention system at the ball fields would consist of a preliminary settling zone to collect debris that can be readily removed. The system would contain a bank of subsurface chambers containing a high void fraction such as is found in the "Stormtank" product. The storage of flows would be within the cells of the "Stormtank" matrix. This system would have two feet of washed stone cover and would restore the use of the ball fields. Such a system would also keep the upper field normally in a dry condition.
5. The ball field would be raised to an elevation of about 44 feet. Use of an artificial turf system is recommended as this will provide for better drainage characteristics (high permeability) than traditional sod, a better playing surface and negate the risk of dirt and silt entering the underground detention system, minimizing maintenance.

TABLE: EFFECTIVENESS OF THE PROPOSED STORMWATER DETENTION SYSTEM

The proposed detention system would reduce peak flows for all storms studied within a wide range of storm frequencies, as can be seen from the Table below:

Storm	Existing Flow	Proposed Outflow	Reductions in Peak Flow at Bowman Avenue
(year)	(cfs)	(cfs)	(cfs)
100 yr 24 hour duration	918.66	889.95	28.71
100 yr 6 hour duration	836.21	811.33	24.88
50 yr 24 hour duration	823.85	767.24	56.61
50 yr 6 hour duration	703.94	691.37	12.57
10 yr 24 hour duration	581.41	546.67	34.74
2 yr 24 hour duration	311.53	311.06	0.47

The results indicate that the proposal would actually reduce peak flows to the downstream areas, especially for the large storms that cause flooding.

UPSTREAM EFFECTS at HIDDEN FALLS DAM / LONGLEDGE DRIVE:

The installation of a bypass culvert system to mitigate flooding at the Avon Condominiums will have a negligible effect on the upstream water course as shown in

the following figure. The 100 year frequency rainfall of 9.02 inches will now be handled by the proposed bypass piping to be constructed along the rear of the western most buildings.

The new control structure proposed for Avon Condominiums may raise the 100 year flood elevation slightly from 79.52 feet to 80.74 feet as predicted by the hydrologic model. This change would not affect any of the structures in the area and would only occur in the event of an extreme precipitation event of 9.02 inches in 24 hours.

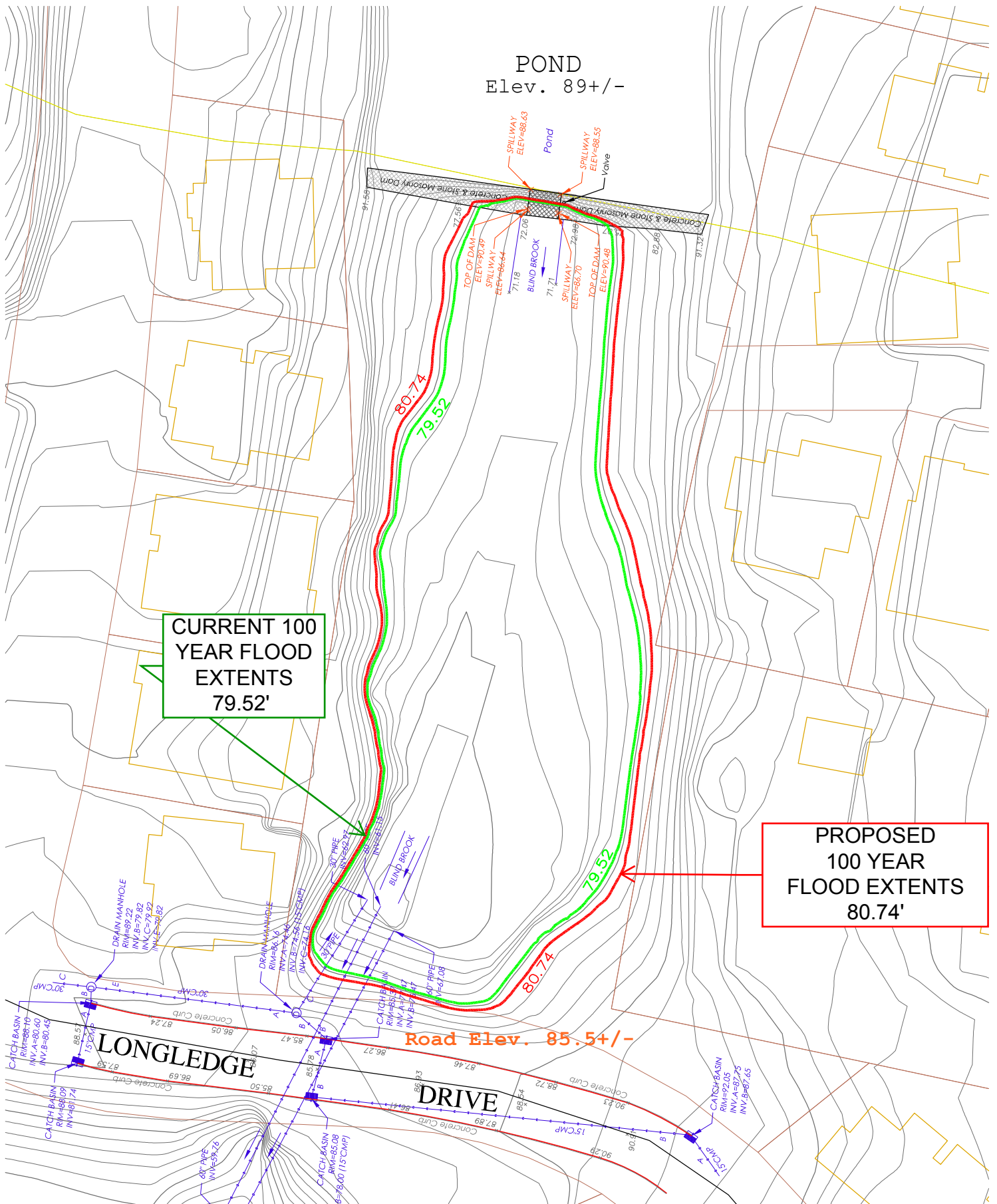
The Hidden Falls Dam collects runoff and discharges that flow through the Avon Development. The existing small impounding area to the north of Longledge Drive at Hidden Falls Development, currently floods to an elevation of about 79.5 feet during the 100 year storm event in the existing condition.

This impoundment is well defined and contains capacity up to an elevation of 85.5 feet before it would overtop the roadway. The nearest home is at elevation 86 feet and is above any flood elevation. However as noted, the 100 year storm event will reach only to the 80.74 foot elevation, well below existing capacity.

For the more frequent storms there is no change in the flood elevation at this impoundment up to the 10 year storm.

Please see attached figure illustrating the extent of upstream flooding in the extreme precipitation event.

POND
Elev. 89+/-



CURRENT 100
YEAR FLOOD
EXTENTS
79.52'

PROPOSED
100 YEAR
FLOOD EXTENTS
80.74'

Comparison of Current and Proposed Flood Elevations
Upstream of Avon Condominiums - Rye Brook, NY

COST ESTIMATE AND CONSTRUCTABILITY:

Much time was spent in evaluating construction costs in conjunction with constructability of the project. A revised cost estimate can be found in Appendix C. The following concerns were considered critical in this process:

1. Bypass culvert pipe size at Avon condominiums. The physical restrictions due to the slopes and presence of rock along the proposed culvert alignment primarily drove the selection of the bypass culvert piping materials. The need to minimize the depth and volume of excavation, while maintaining a reasonable trench width and ease of installation resulted in the selection of a precast concrete culvert section. The improved hydraulic characteristics available and long life expectancy of a precast concrete culvert, made this the best choice.
2. Westchester Avenue Crossing: Originally contemplated as requiring pipe drilling under Westchester Avenue in the June 2019 report (Appendix G); the current design proved to be achievable by typical open cut trenching methods, with a maximum trench depth of just over 20'. This allowed significant costs to be better directed toward additional capacity in the proposed subsurface detention system to fully attenuate the 9.02 inch 100 year storm event. We recommend again use of precast concrete materials to cross Westchester Avenue primarily due to long-life expectancy and superior water-tight design.
3. Underground Detention system: As noted previously the detention system size has been substantially increased from what was originally contemplated. To achieve full 100 year storm attenuation it was necessary to maximize the volume of this system. This was achieved by considering various products that exhibit high void ratios, at least 92% to 94%. The systems considered included "Stormtank", "Rainstore" and "Ecobloc" among others. Cost estimates for each were received and compared, as well as structural characteristics. The "Stormtank" system proved to be the best balance of cost and performance for this application.

Details for the proposed underground detention system and culvert piping can be found in Appendices E of this report.

3. CONCLUSIONS

DISCUSSION:

It is clear that during a rainfall of 9.02 inches in 24 hours (100 year storm), the Avon Circle condominiums would experience dangerous flood levels in current conditions. The top of Westchester Avenue is about 55 feet in elevation and the flood level for 9.02 inches of rainfall is also about 55 feet. Such a flood would be disastrous for most of the residences near the pool area.

Clearly, it is important to find a solution to prevent the extreme flood levels at Avon. It is also apparent that any attempt to reduce the flood levels at Avon Circle would rely upon some form of stormwater detention at Port Chester Middle School. Given the history of flooding along the Blind Brook it is also critical that any plan must not further exacerbate the amount of flooding upstream along this corridor.

In general, the project involves moving the peak flood storage volume that occurs north of Westchester Avenue, some 13 acre feet (566,000 cubic feet) to the south side of Westchester Avenue. To that end, the subsurface system proposed provides about 14.2 acre-feet of storage (620,300 cubic feet) on the ball fields and also reduces the peak rate of flow.

To manage these flows, additional pipe crossings would be installed under Westchester Avenue. The proposed bypass, culvert would discharge directly into the subsurface detention system under the ball fields. An additional culvert near the Avon pool area would be used as an emergency overflow to convey any excess flow that could possibly occur from areas directly tributary to the low points at the Avon development.

The subsurface detention system would consist of a main header to disperse the high flows into the voids of the "Stormtank" storage system. The upper end of the subsurface system would be utilized to capture debris and silt utilizing the stormtank system in a configuration to allow for pre-treatment of the system. Access points would be installed to inspect and clean the system as needed.

It is important to note that there is a County Trunk Sewer and County Channel line that run along the East Branch of the Blind Brook and any improvements must be coordinated with the County.

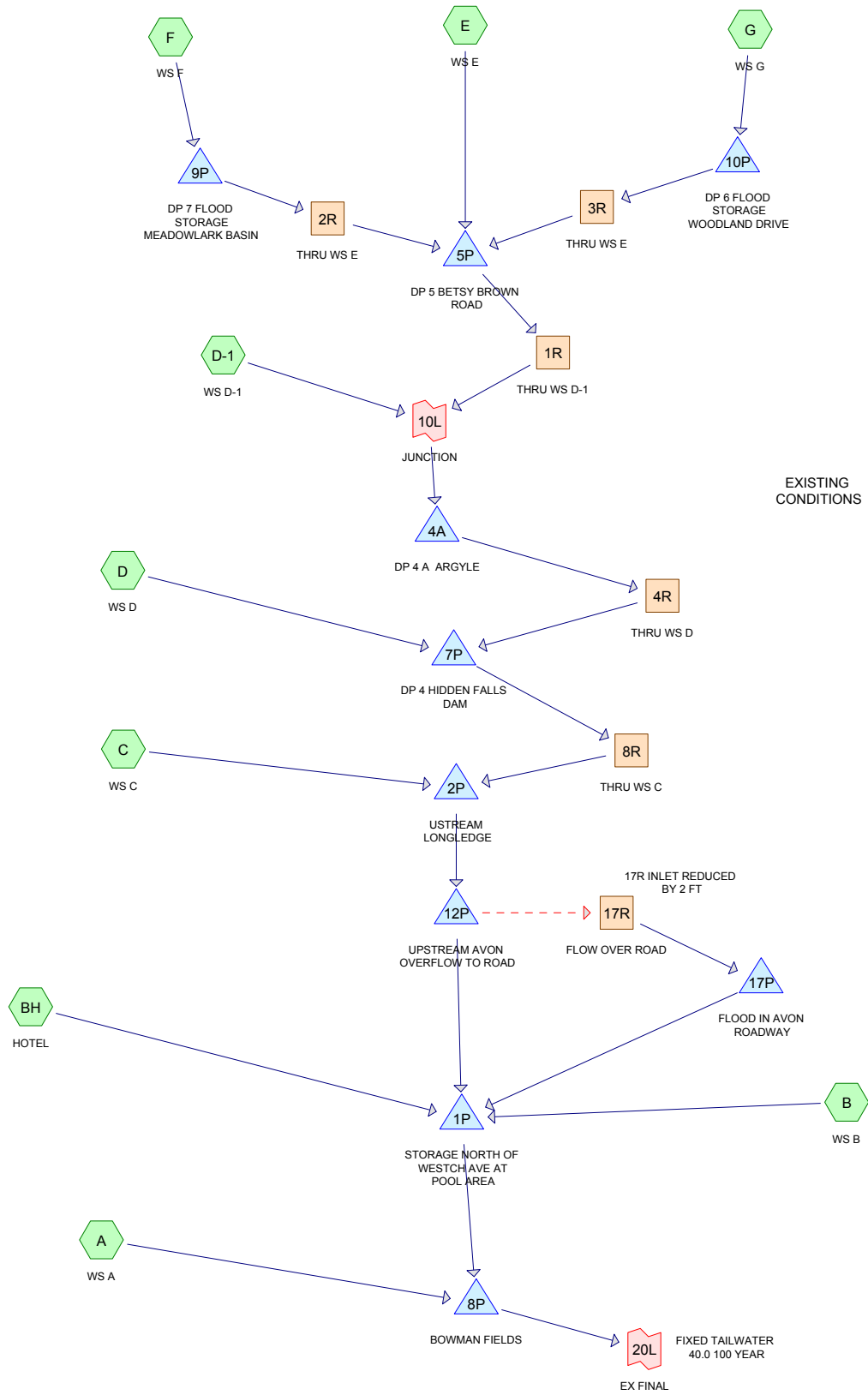
MODEL OUTPUT:

This report contains the hydrologic output for both the analysis of the current flow conditions as well as the flows and flood elevations for the proposed modifications. Hydrocad software was used in this analysis with rainfall data taken from the Northeast Regional Climate Center. Topography was based on the GIS and field surveys were used in the area of the ball fields.

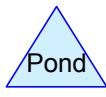
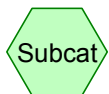
Other data used in this report was provided in earlier reports found in Appendices F and G.

APPENDIX A

STORMWATER CALCULATIONS



EXISTING
CONDITIONS



Routing Diagram for Avon_Exist.ing_Final

Prepared by , Printed 5/29/2020

HydroCAD® 10.00-16 s/n M16359 © 2015 HydroCAD Software Solutions LLC

Summary for Subcatchment A: WS A

Runoff = 285.42 cfs @ 12.42 hrs, Volume= 40.508 af, Depth= 8.18"

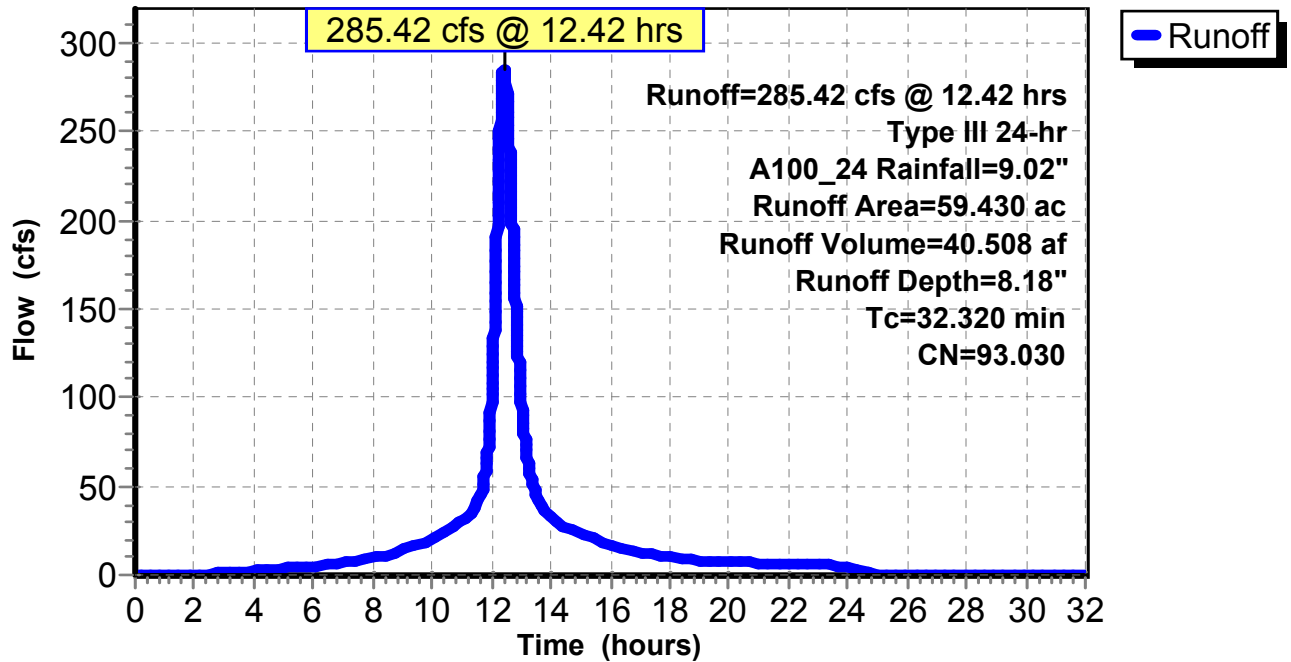
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



Summary for Subcatchment B: WS B

Runoff = 278.22 cfs @ 12.37 hrs, Volume= 35.772 af, Depth= 7.46"

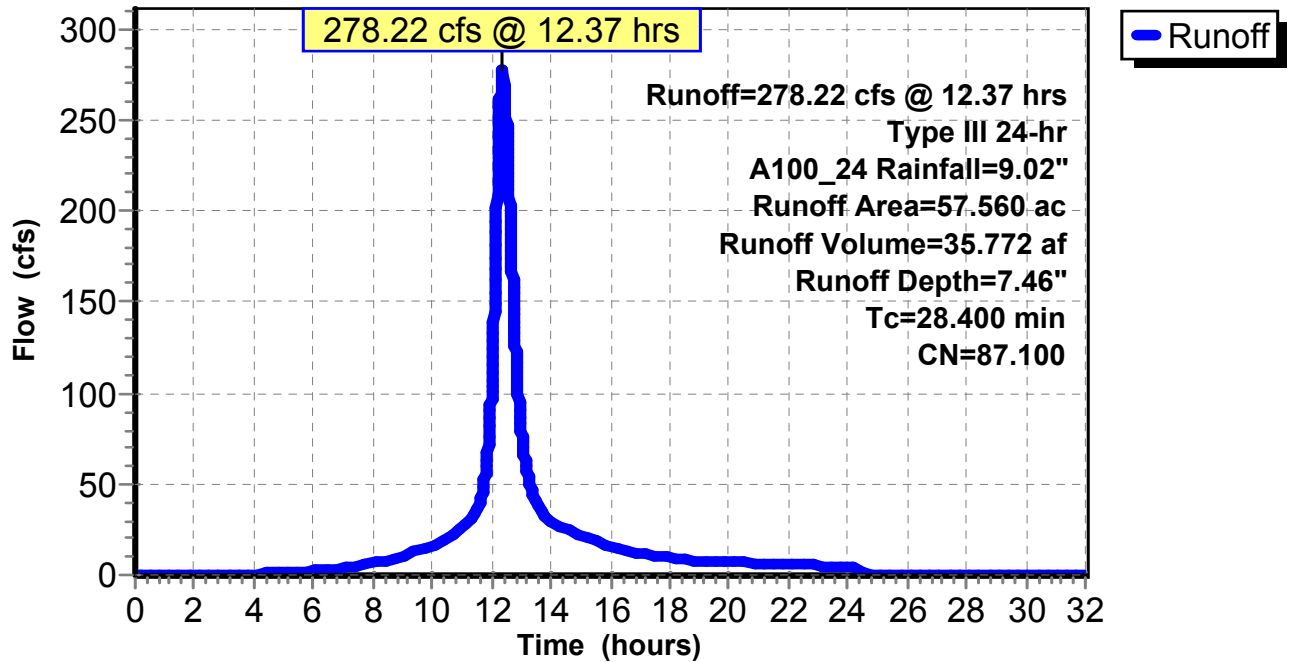
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



Avon_Exist.ing_Final

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Avon
Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Subcatchment BH: HOTEL

Runoff = 70.94 cfs @ 12.42 hrs, Volume= 9.362 af, Depth= 7.34"

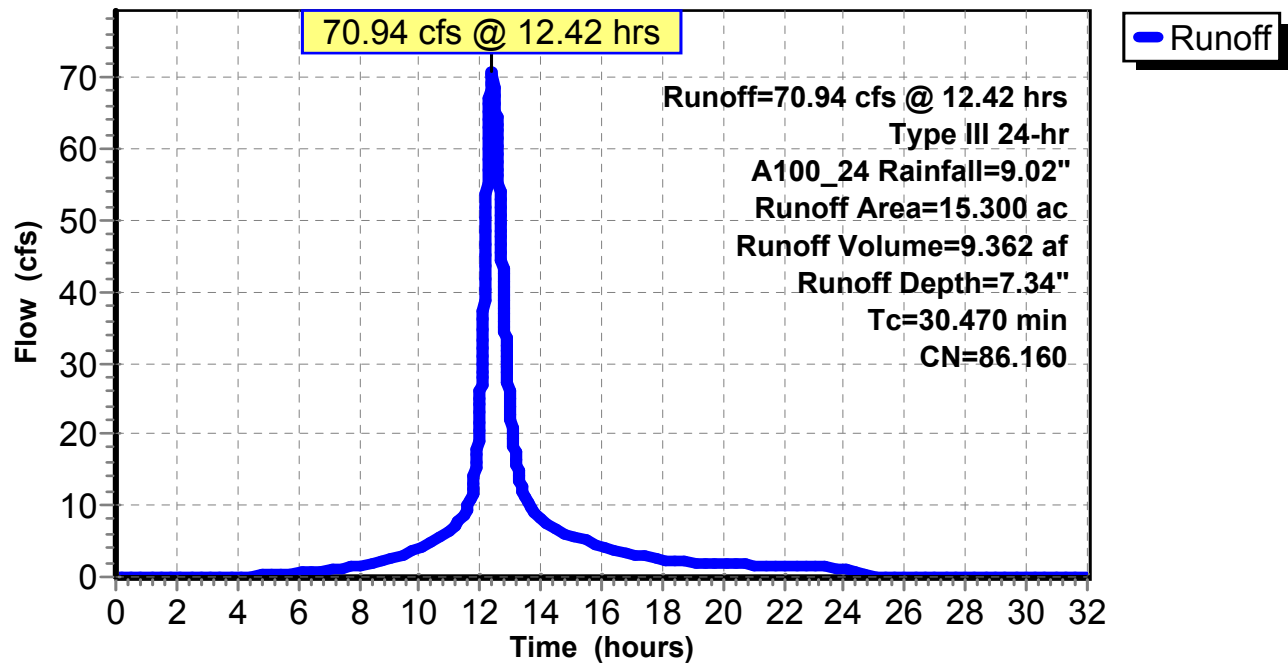
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



Avon_Exist.ing_Final

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Avon
Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Subcatchment C: WS C

Runoff = 117.59 cfs @ 12.25 hrs, Volume= 12.344 af, Depth= 6.90"

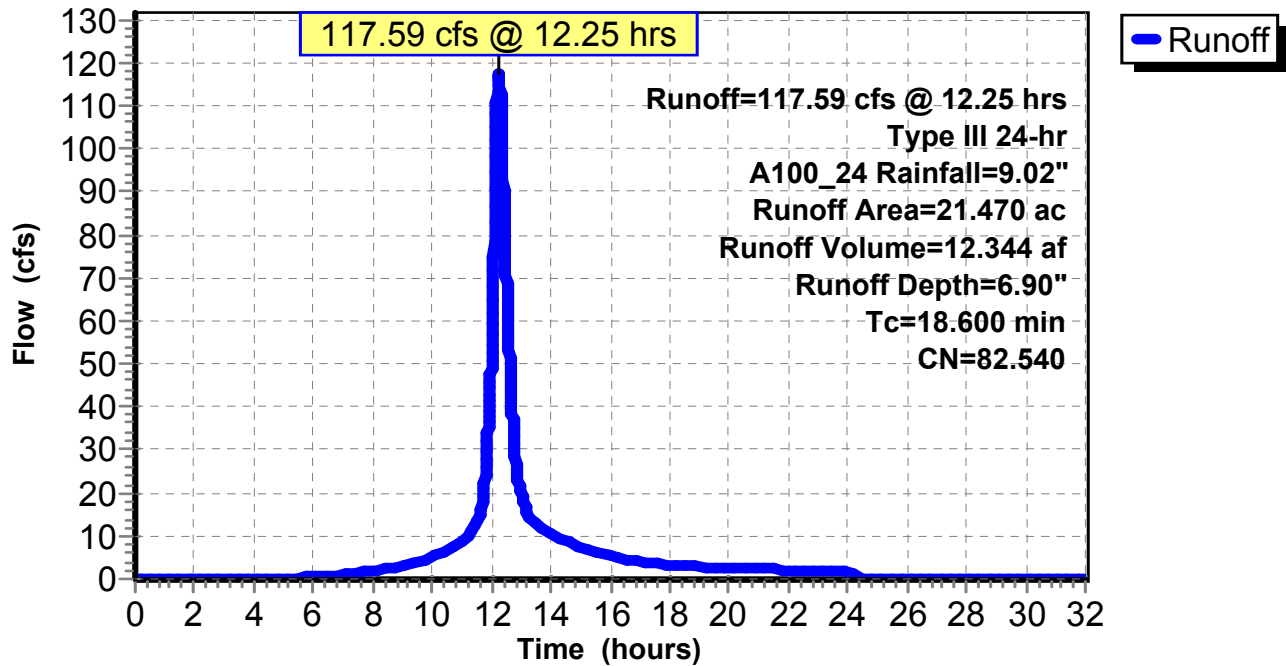
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



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Avon
Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Subcatchment D: WS D

Runoff = 421.79 cfs @ 12.61 hrs, Volume= 66.238 af, Depth= 6.86"

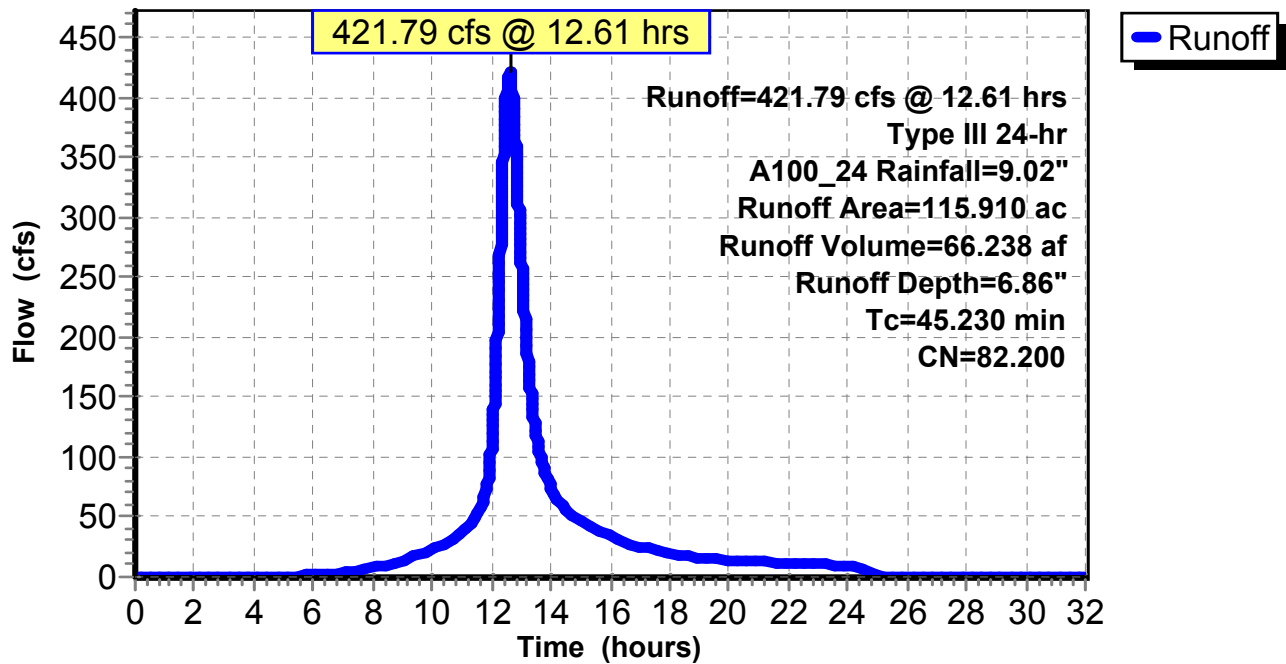
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



Avon_Exist.ing_Final

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Avon
Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Subcatchment D-1: WS D-1

Runoff = 155.42 cfs @ 12.44 hrs, Volume= 20.173 af, Depth= 6.12"

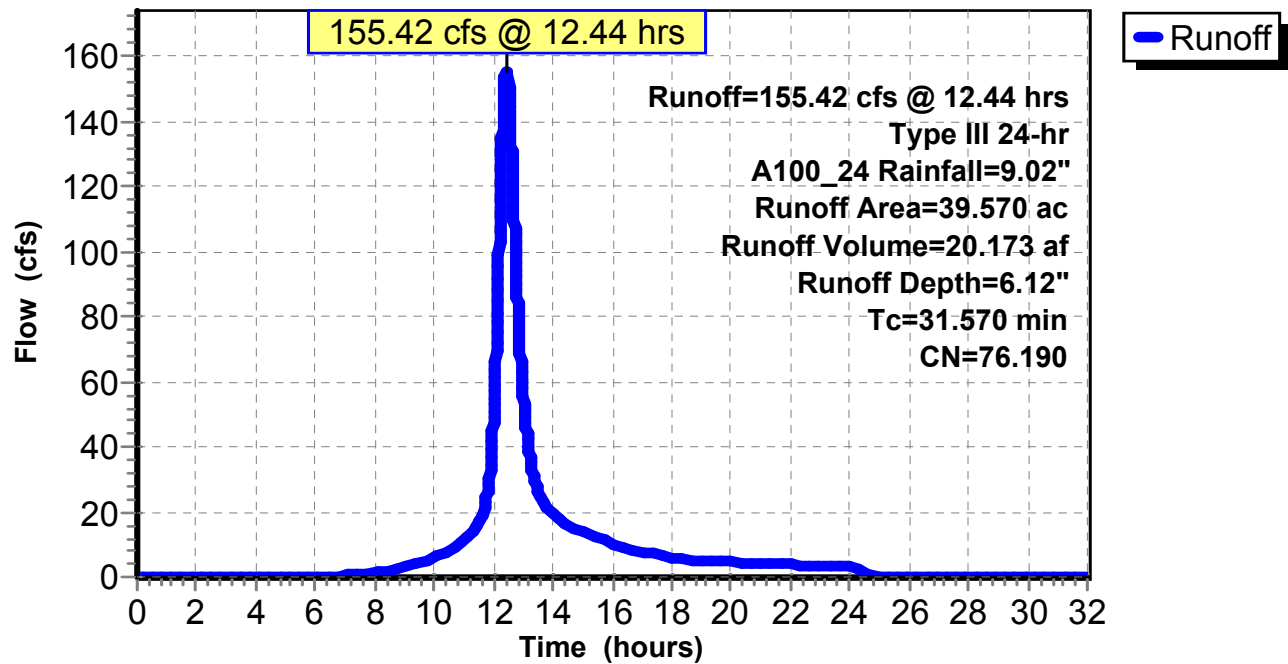
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



Avon_Exist.ing_Final

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Avon
Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Subcatchment E: WS E

Runoff = 343.89 cfs @ 12.85 hrs, Volume= 64.802 af, Depth= 6.63"

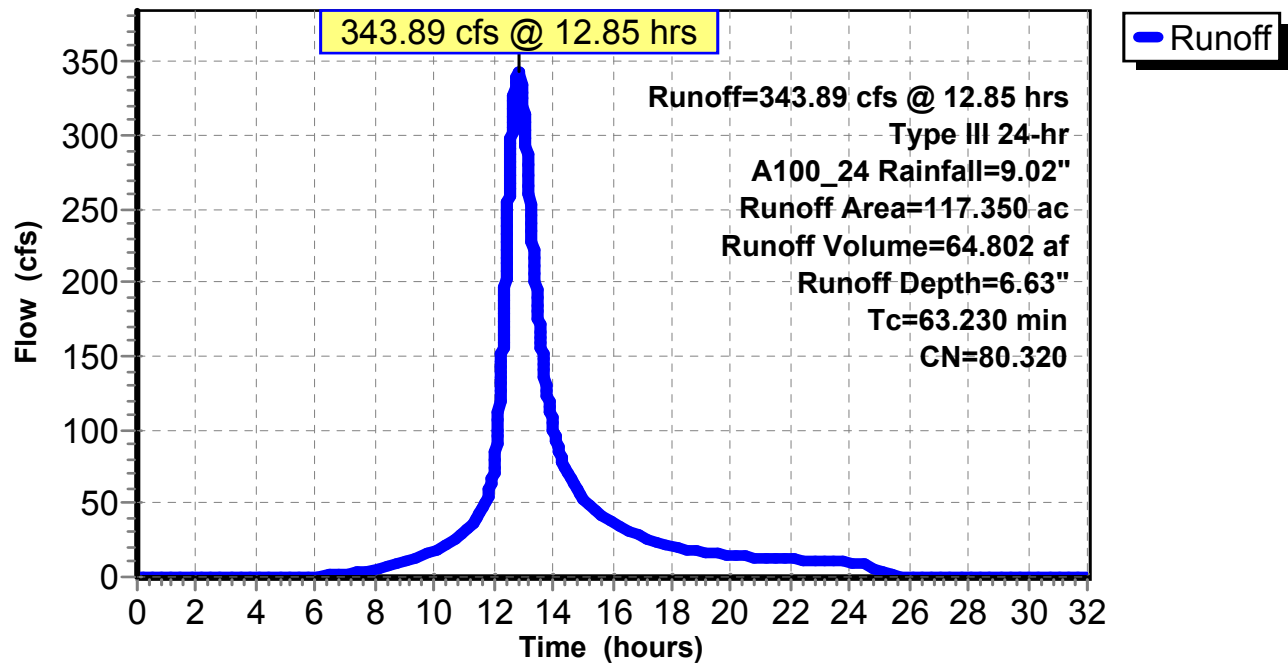
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



Summary for Subcatchment F: WS F

Runoff = 388.56 cfs @ 12.59 hrs, Volume= 59.365 af, Depth= 5.88"

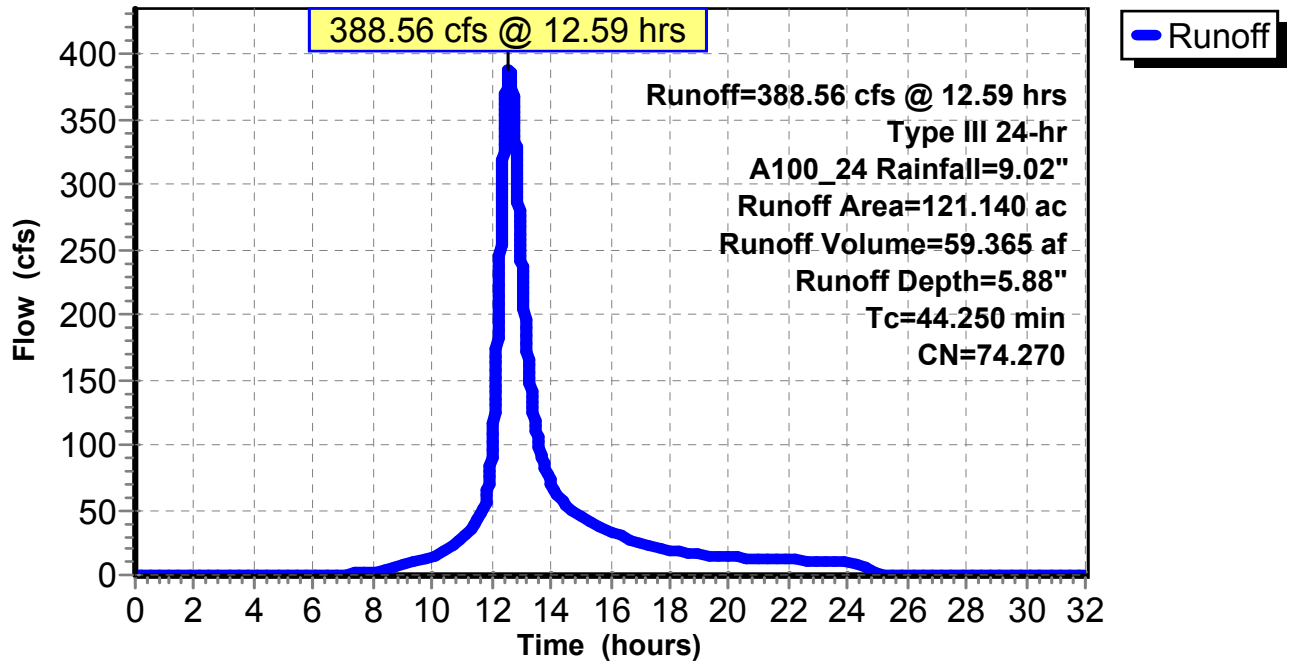
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



Avon_Exist.ing_Final

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Avon
Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Subcatchment G: WS G

Runoff = 670.66 cfs @ 12.50 hrs, Volume= 94.119 af, Depth= 6.77"

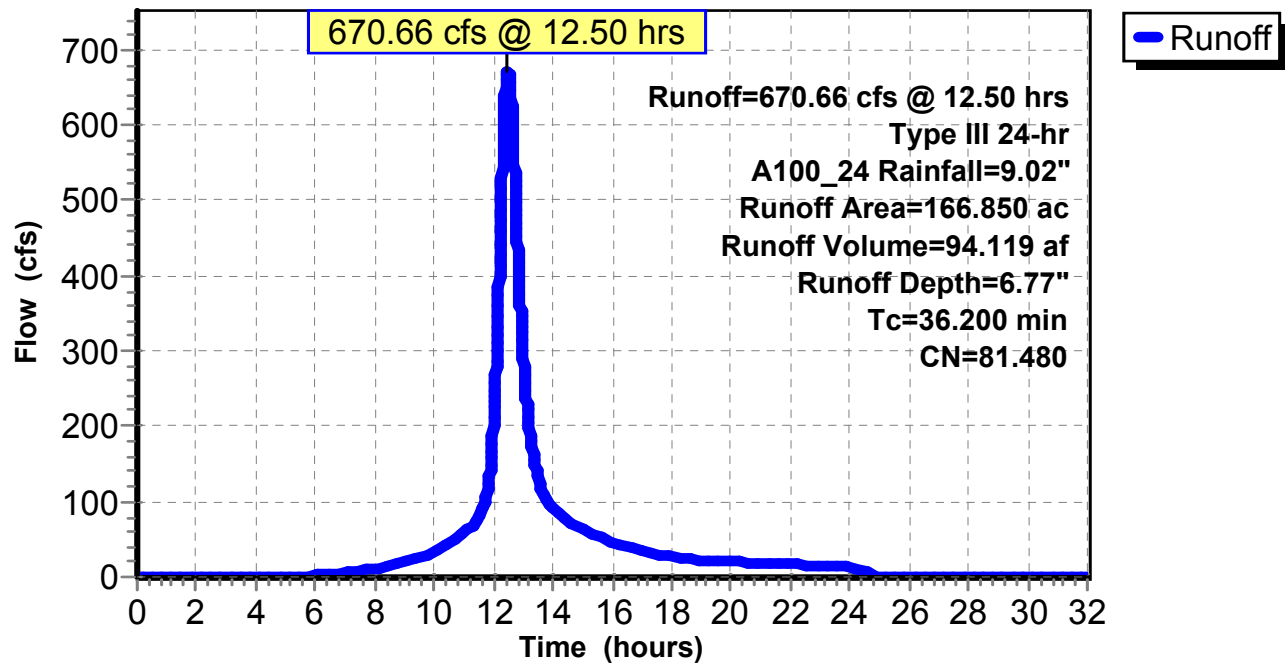
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 5.82" for A100_24 event
 Inflow = 451.66 cfs @ 13.40 hrs, Volume= 196.643 af
 Outflow = 451.47 cfs @ 13.42 hrs, Volume= 196.521 af, Atten= 0%, Lag= 1.219 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 4.86 fps, Min. Travel Time= 1.727 min
 Avg. Velocity = 2.40 fps, Avg. Travel Time= 3.500 min

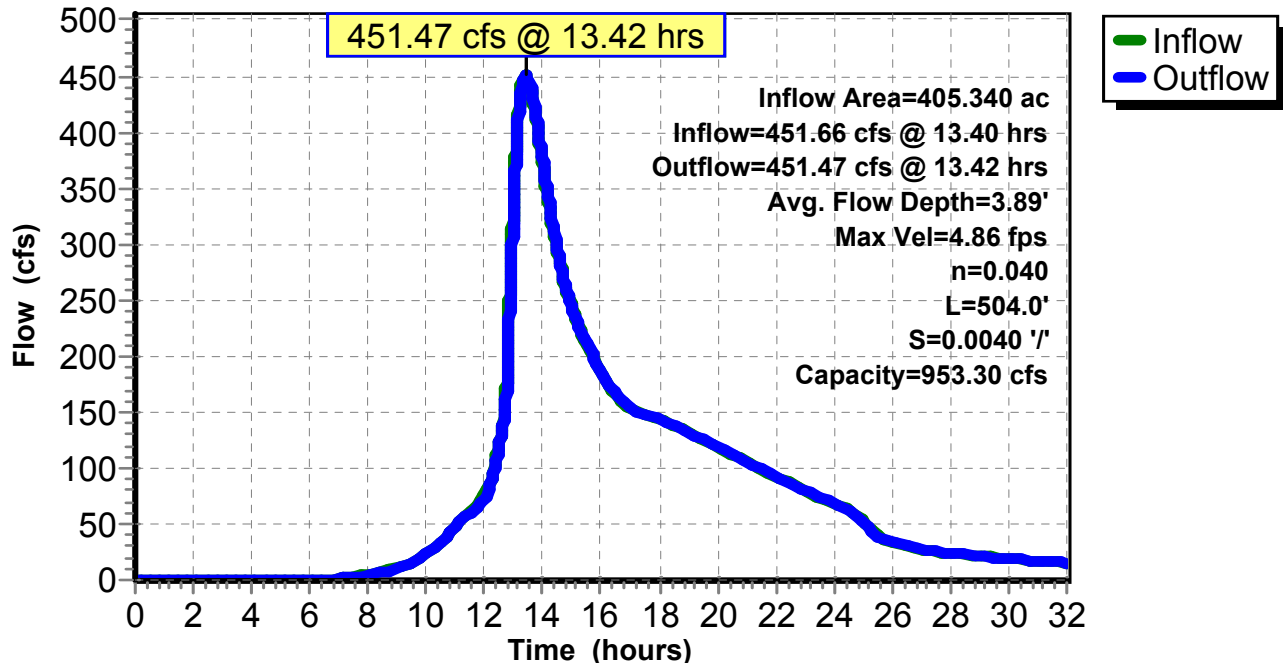
Peak Storage= 46,790 cf @ 13.42 hrs
 Average Depth at Peak Storage= 3.89'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' ' Top Width= 32.00'
 Length= 504.0' Slope= 0.0040 ' '
 Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 5.88" for A100_24 event
 Inflow = 388.04 cfs @ 12.60 hrs, Volume= 59.364 af
 Outflow = 353.10 cfs @ 12.77 hrs, Volume= 59.329 af, Atten= 9%, Lag= 9.956 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.52 fps, Min. Travel Time= 14.398 min
 Avg. Velocity = 0.73 fps, Avg. Travel Time= 50.068 min

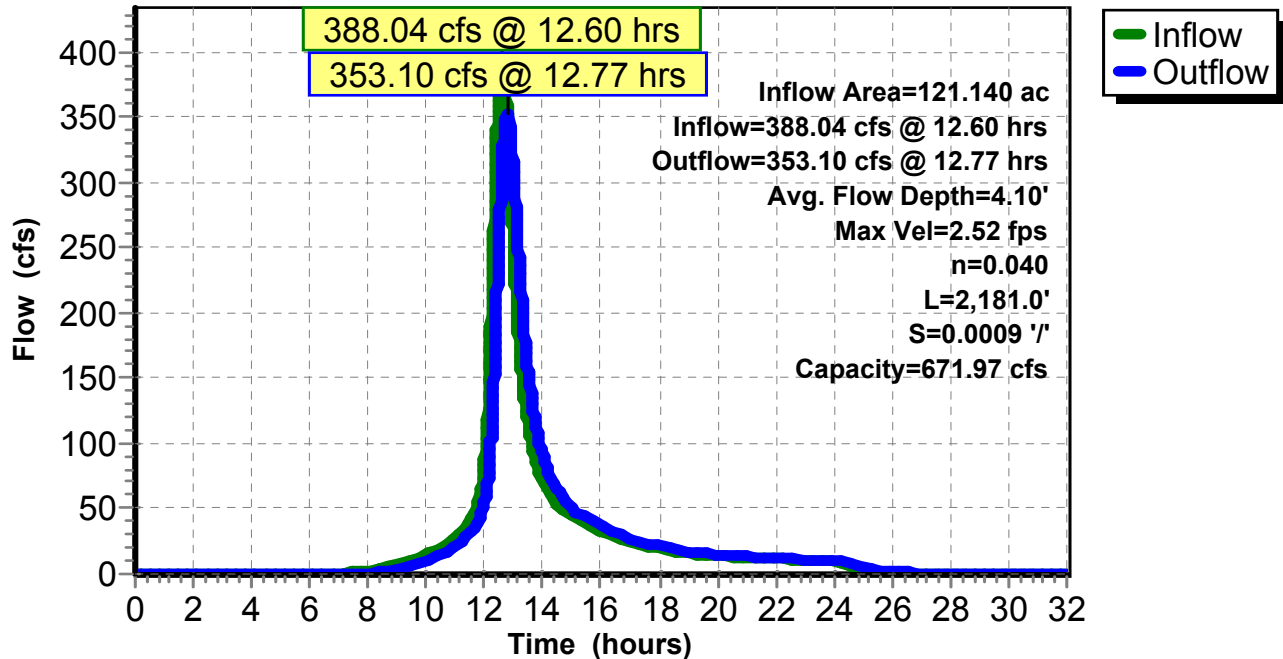
Peak Storage= 305,028 cf @ 12.77 hrs
 Average Depth at Peak Storage= 4.10'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 2,181.0' Slope= 0.0009 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 6.63" for A100_24 event
 Inflow = 666.08 cfs @ 12.52 hrs, Volume= 92.226 af
 Outflow = 78.53 cfs @ 14.39 hrs, Volume= 72.863 af, Atten= 88%, Lag= 111.923 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.71 fps, Min. Travel Time= 521.931 min
 Avg. Velocity = 0.50 fps, Avg. Travel Time= 738.756 min

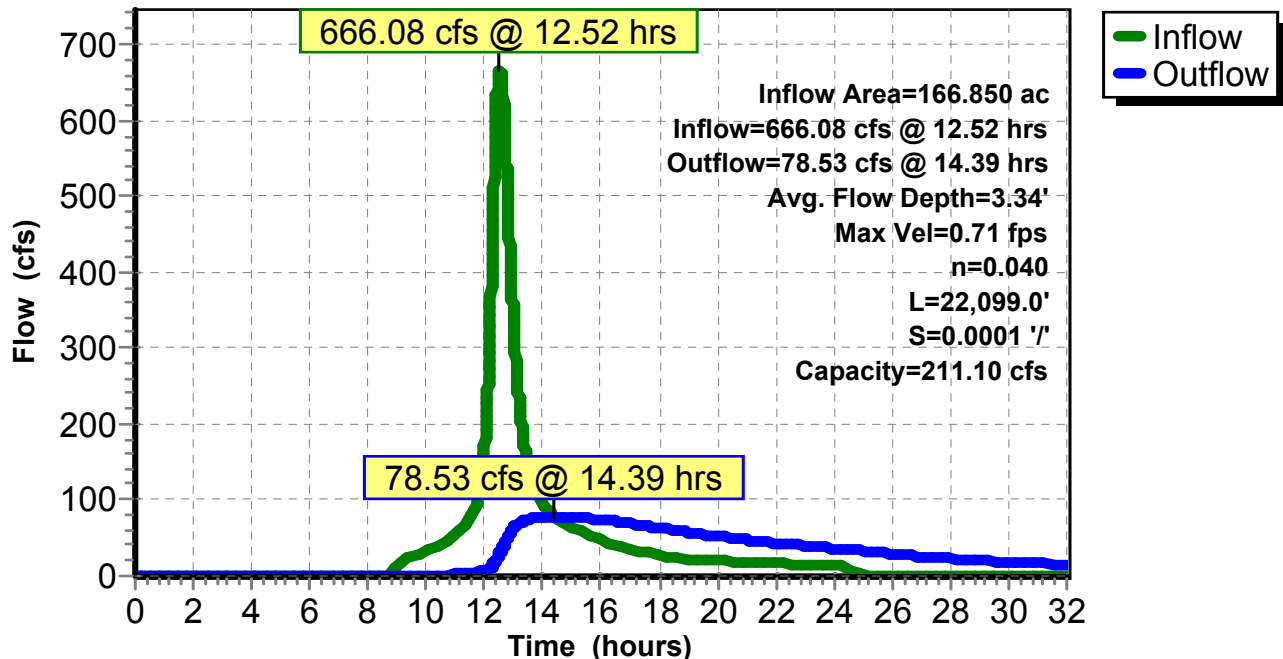
Peak Storage= 2,459,120 cf @ 14.39 hrs
 Average Depth at Peak Storage= 3.34'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 22,099.0' Slope= 0.0001 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 5.84" for A100_24 event
 Inflow = 480.50 cfs @ 13.41 hrs, Volume= 216.445 af
 Outflow = 477.17 cfs @ 13.50 hrs, Volume= 216.033 af, Atten= 1%, Lag= 5.311 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 7.68 fps, Min. Travel Time= 6.470 min
 Avg. Velocity = 4.21 fps, Avg. Travel Time= 11.805 min

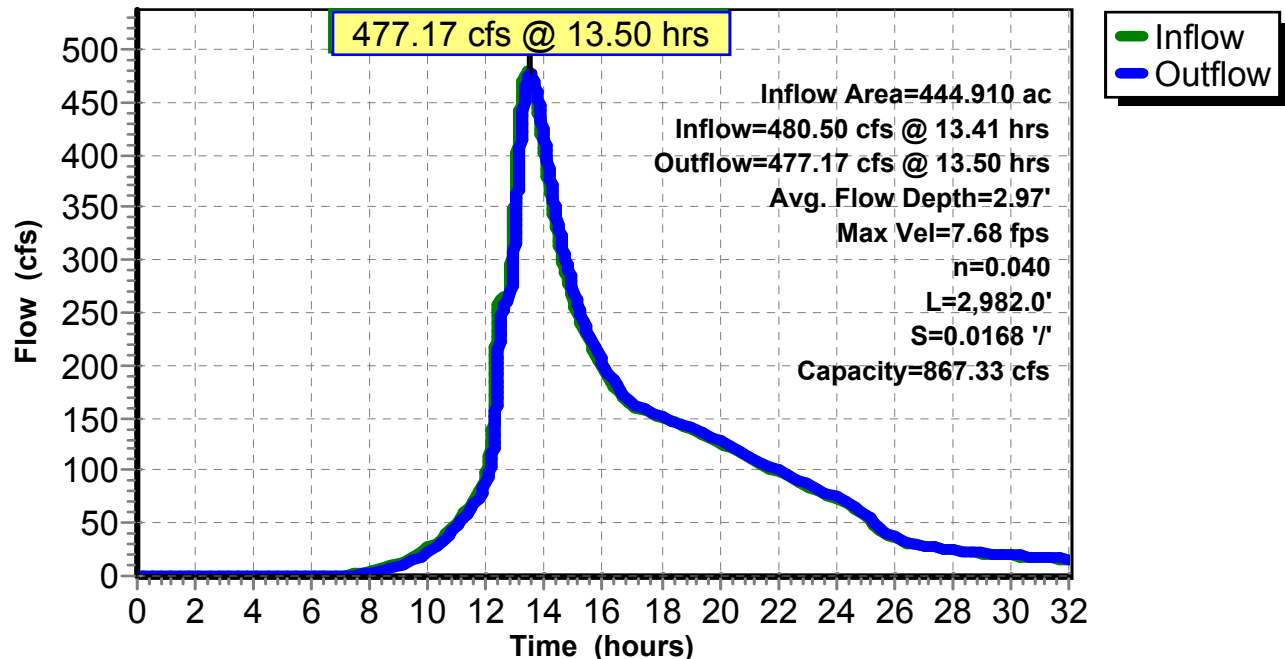
Peak Storage= 185,243 cf @ 13.50 hrs
 Average Depth at Peak Storage= 2.97'
 Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040
 Side Slope Z-value= 3.0 ' / ' Top Width= 36.00'
 Length= 2,982.0' Slope= 0.0168 ' / '
 Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 6.04" for A100_24 event
Inflow = 679.39 cfs @ 12.64 hrs, Volume= 282.271 af
Outflow = 679.26 cfs @ 12.65 hrs, Volume= 282.217 af, Atten= 0%, Lag= 0.440 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 11.76 fps, Min. Travel Time= 0.617 min
Avg. Velocity = 5.35 fps, Avg. Travel Time= 1.356 min

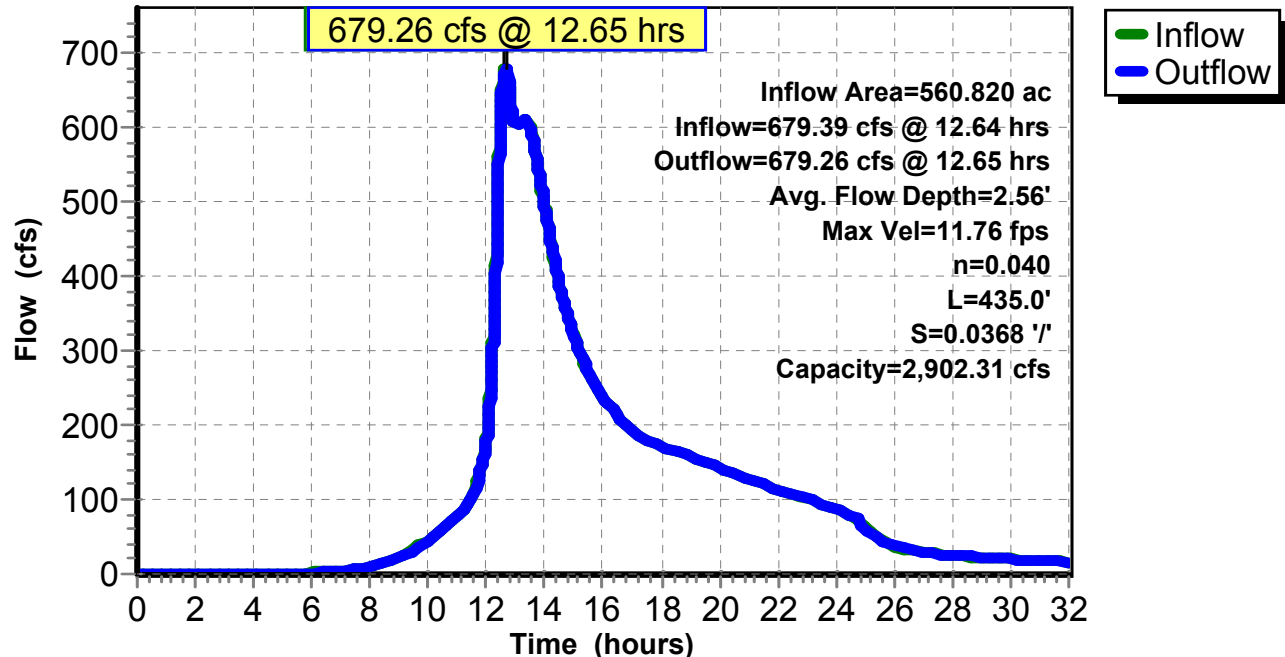
Peak Storage= 25,126 cf @ 12.65 hrs
Average Depth at Peak Storage= 2.56'
Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 ' ' Top Width= 32.00'
Length= 435.0' Slope= 0.0368 ' '
Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 301.49 cfs @ 12.79 hrs, Volume= 47.376 af
 Outflow = 301.32 cfs @ 12.81 hrs, Volume= 47.376 af, Atten= 0%, Lag= 0.946 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 9.85 fps, Min. Travel Time= 1.502 min
 Avg. Velocity = 3.84 fps, Avg. Travel Time= 3.859 min

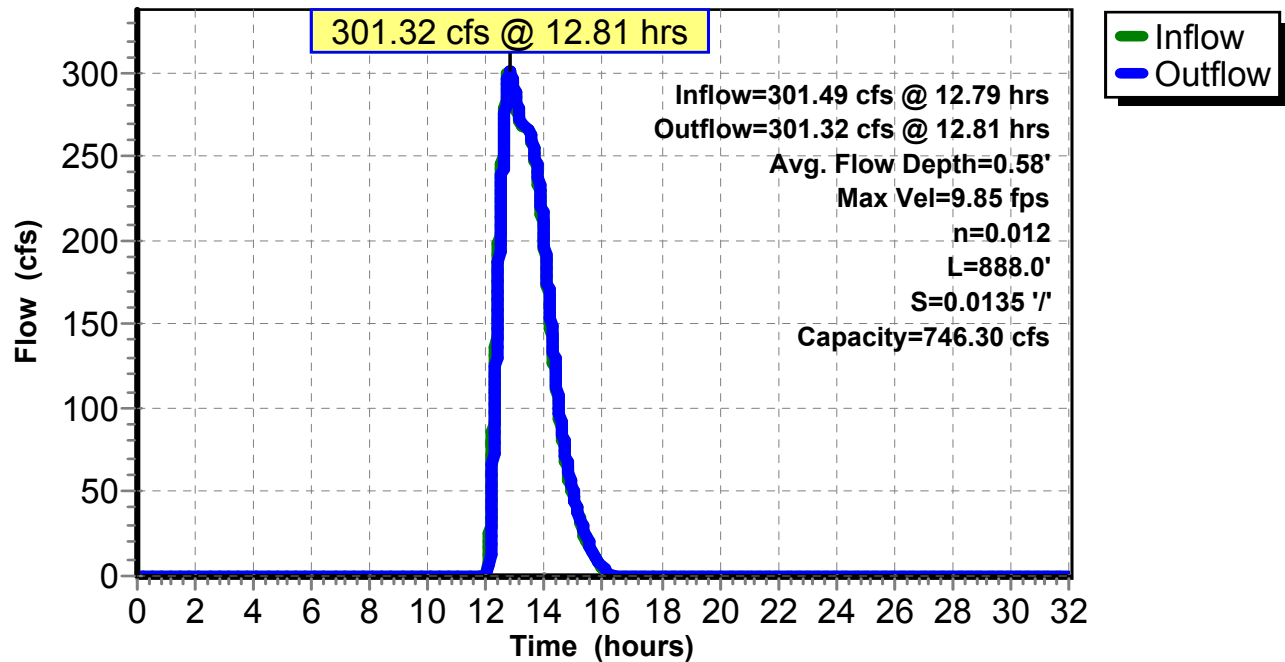
Peak Storage= 27,161 cf @ 12.81 hrs
 Average Depth at Peak Storage= 0.58'
 Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
 Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
 Length= 888.0' Slope= 0.0135 ' '
 Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



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Summary for Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 6.22" for A100_24 event
 Inflow = 851.53 cfs @ 12.43 hrs, Volume= 339.682 af
 Outflow = 706.74 cfs @ 13.21 hrs, Volume= 339.687 af, Atten= 17%, Lag= 46.888 min
 Primary = 706.74 cfs @ 13.21 hrs, Volume= 339.687 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 54.98' @ 13.20 hrs Surf.Area= 2.705 ac Storage= 11.224 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 3.657 min (963.437 - 959.781)

Volume	Invert	Avail.Storage	Storage Description
#1	46.00'	82.605 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
46.00	0.695	0.000	0.000
48.00	0.695	1.390	1.390
50.00	0.800	1.495	2.885
52.00	1.420	2.220	5.105
54.00	2.270	3.690	8.795
56.00	3.160	5.430	14.225
58.00	4.070	7.230	21.455
60.00	4.980	9.050	30.505
62.00	5.710	10.690	41.195
64.00	6.620	12.330	53.525
66.00	7.170	13.790	67.315
68.00	8.120	15.290	82.605

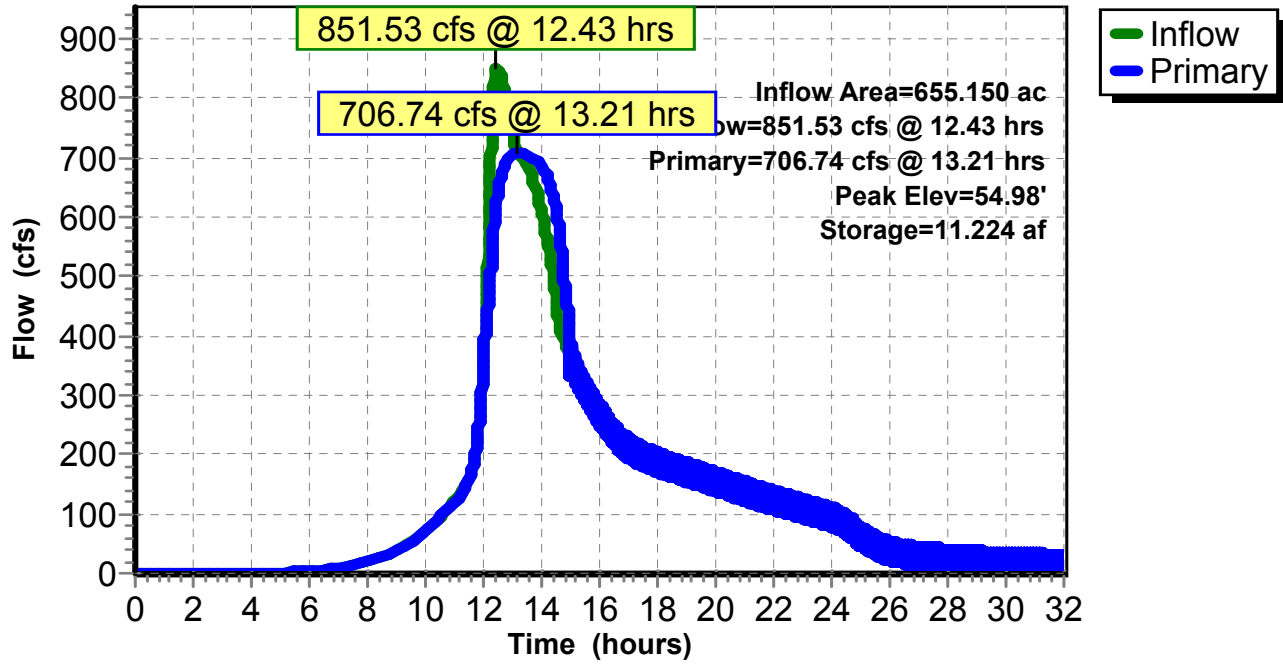
Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48

Primary OutFlow Max=706.75 cfs @ 13.21 hrs HW=54.98' TW=40.19' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 706.75 cfs @ 18.12 fps)
- 2=WEIR WESTCH AVE (Controls 0.00 cfs)

Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



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Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 6.07" for A100_24 event
 Inflow = 727.12 cfs @ 12.62 hrs, Volume= 294.561 af
 Outflow = 674.71 cfs @ 12.79 hrs, Volume= 294.558 af, Atten= 7%, Lag= 10.081 min
 Primary = 674.71 cfs @ 12.79 hrs, Volume= 294.558 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 79.52' @ 12.79 hrs Surf.Area= 0.588 ac Storage= 3.312 af

Plug-Flow detention time= 0.904 min calculated for 294.466 af (100% of inflow)
 Center-of-Mass det. time= 0.896 min (982.627 - 981.731)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

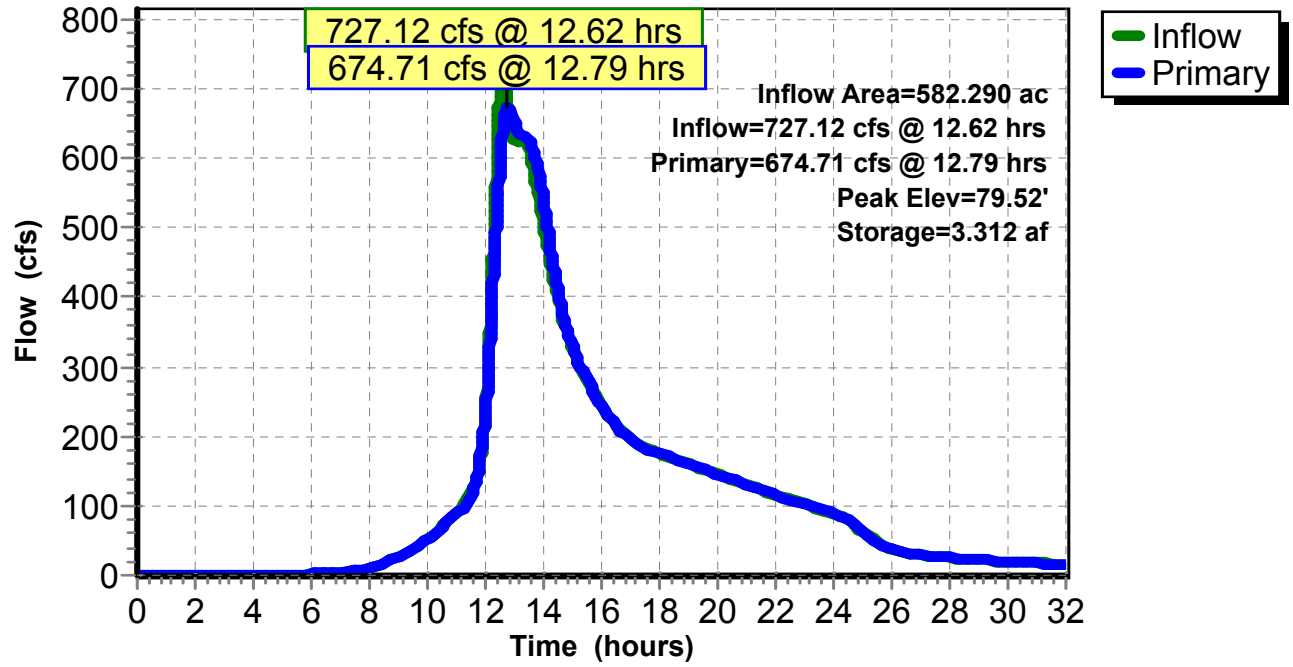
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=674.70 cfs @ 12.79 hrs HW=79.52' TW=62.40' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 376.63 cfs @ 19.18 fps)
- 2=Culvert 2 (Inlet Controls 298.07 cfs @ 15.18 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



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Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 5.84" for A100_24 event
 Inflow = 481.18 cfs @ 13.38 hrs, Volume= 216.694 af
 Outflow = 480.50 cfs @ 13.41 hrs, Volume= 216.445 af, Atten= 0%, Lag= 1.730 min
 Primary = 480.50 cfs @ 13.41 hrs, Volume= 216.445 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 130.84' @ 13.42 hrs Surf.Area= 1.106 ac Storage= 2.936 af

Plug-Flow detention time= 8.005 min calculated for 216.377 af (100% of inflow)
 Center-of-Mass det. time= 6.979 min (1,026.245 - 1,019.266)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

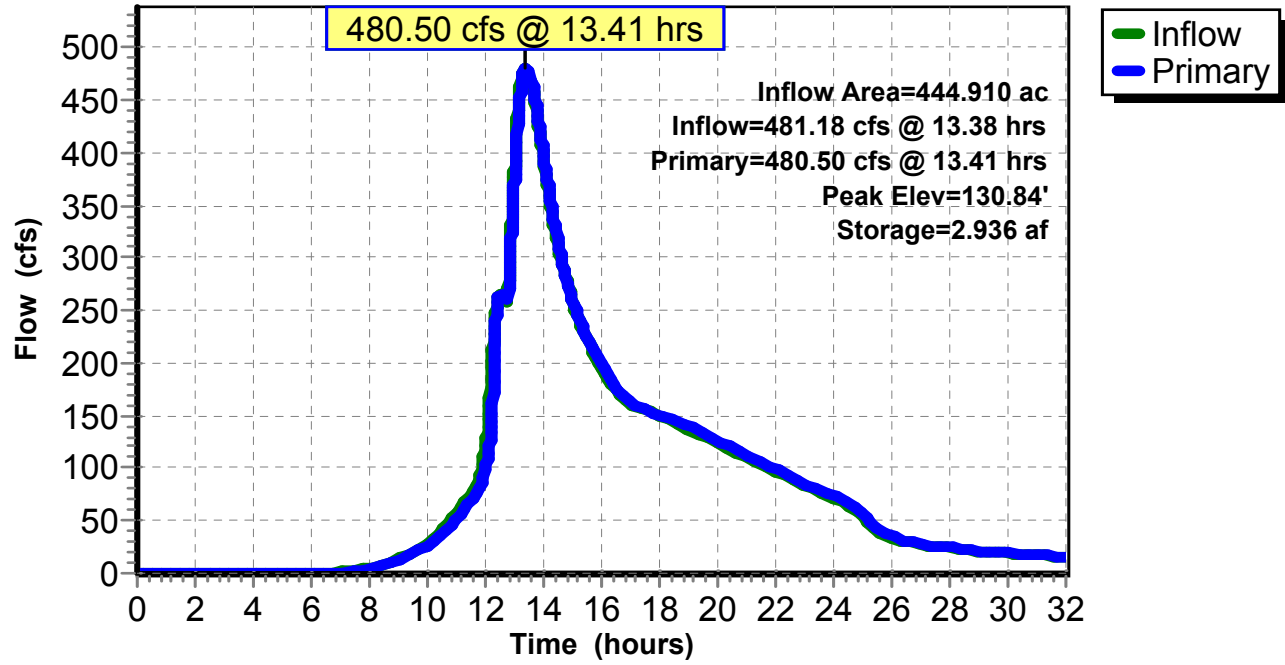
Primary OutFlow Max=480.36 cfs @ 13.41 hrs HW=130.84' TW=128.96' (Dynamic Tailwater)

1=Culvert (Inlet Controls 166.02 cfs @ 6.61 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 314.34 cfs @ 3.00 fps)

Pond 4A: DP 4 A ARGYLE

Hydrograph



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Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 5.83" for A100_24 event
Inflow = 745.59 cfs @ 12.81 hrs, Volume= 196.994 af
Outflow = 451.66 cfs @ 13.40 hrs, Volume= 196.643 af, Atten= 39%, Lag= 35.252 min
Primary = 451.66 cfs @ 13.40 hrs, Volume= 196.643 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 132.84' @ 13.41 hrs Surf.Area= 23.470 ac Storage= 36.117 af

Plug-Flow detention time= 59.524 min calculated for 196.581 af (100% of inflow)
Center-of-Mass det. time= 57.851 min (1,036.551 - 978.700)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

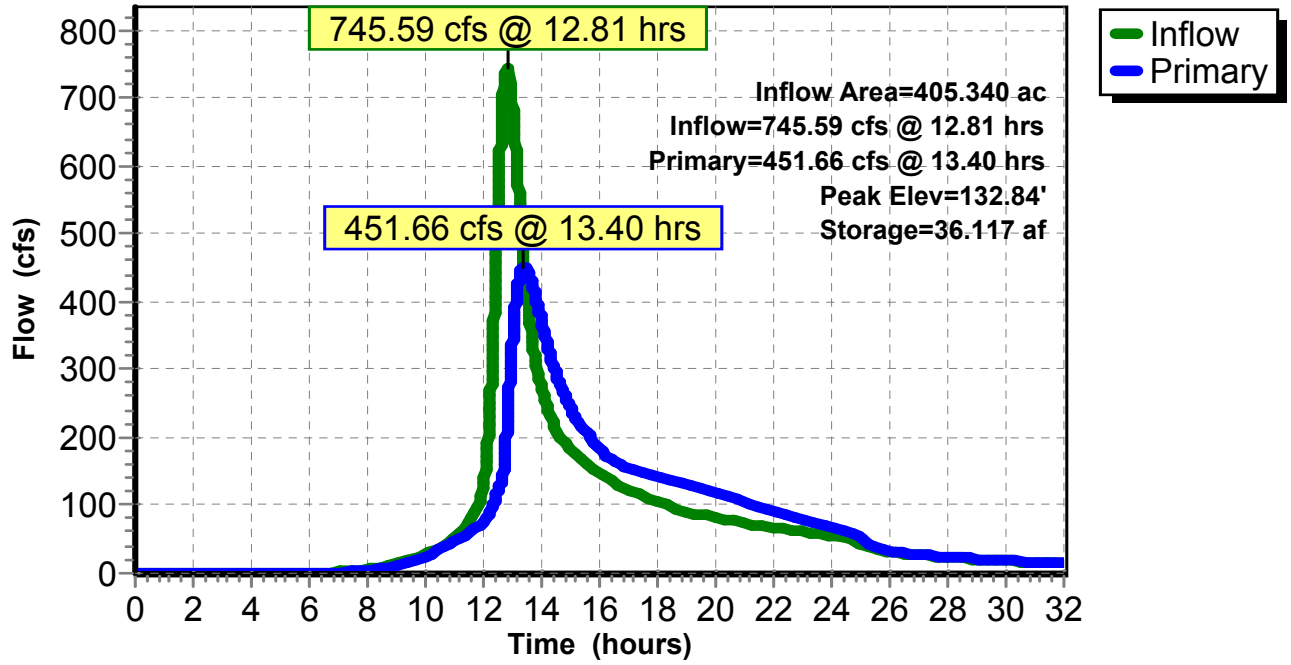
Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

Primary OutFlow Max=451.58 cfs @ 13.40 hrs HW=132.84' TW=131.89' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 118.10 cfs @ 4.70 fps)
- 2=Asymmetrical Weir (Weir Controls 333.48 cfs @ 2.38 fps)

Pond 5P: DP 5 BETSY BROWN ROAD

Hydrograph



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Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 6.04" for A100_24 event
Inflow = 681.20 cfs @ 12.62 hrs, Volume= 282.272 af
Outflow = 679.39 cfs @ 12.64 hrs, Volume= 282.271 af, Atten= 0%, Lag= 1.333 min
Primary = 679.39 cfs @ 12.64 hrs, Volume= 282.271 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 91.55' @ 12.64 hrs Surf.Area= 1.370 ac Storage= 2.122 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.881 min (988.703 - 985.822)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

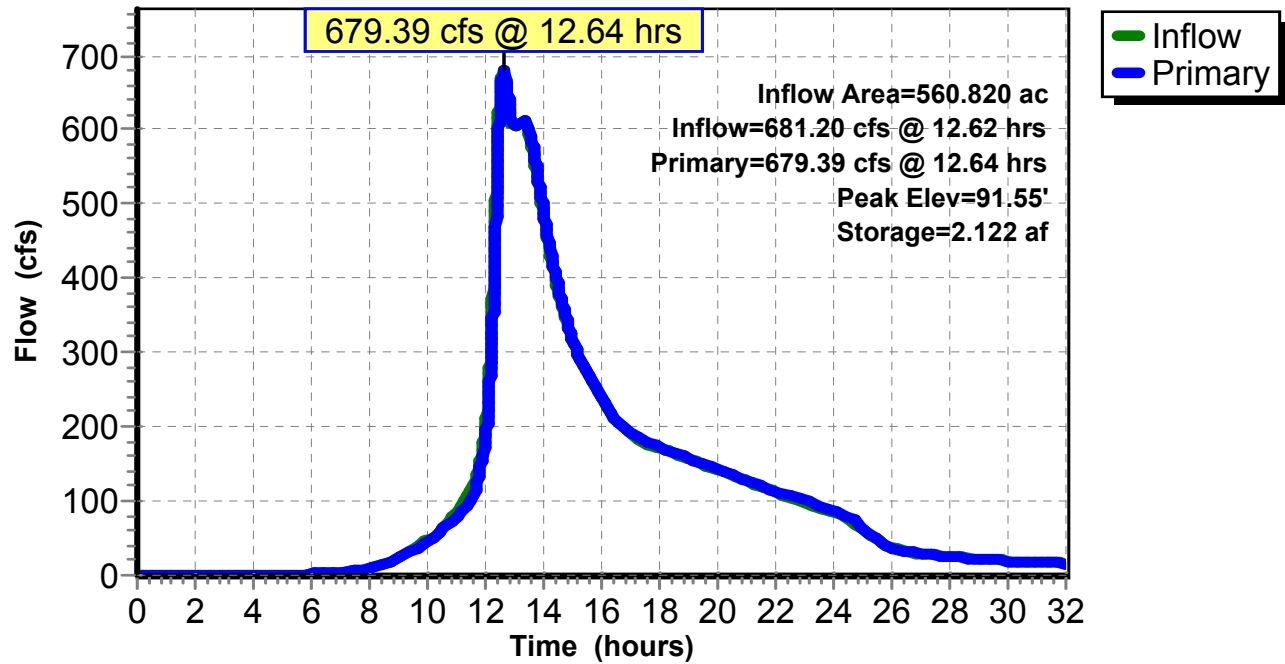
Primary OutFlow Max=679.35 cfs @ 12.64 hrs HW=91.55' TW=78.56' (Dynamic Tailwater)

1=Sharp-Crested Rectangular Weir (Weir Controls 210.55 cfs @ 5.66 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 468.80 cfs @ 3.38 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



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Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 6.38" for A100_24 event
 Inflow = 918.69 cfs @ 12.52 hrs, Volume= 380.195 af
 Outflow = 918.66 cfs @ 12.52 hrs, Volume= 378.498 af, Atten= 0%, Lag= 0.418 min
 Primary = 918.66 cfs @ 12.52 hrs, Volume= 378.498 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 40.25' @ 12.52 hrs Surf.Area= 1.211 ac Storage= 1.940 af

Plug-Flow detention time= 7.012 min calculated for 378.380 af (100% of inflow)
 Center-of-Mass det. time= 2.860 min (947.469 - 944.609)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

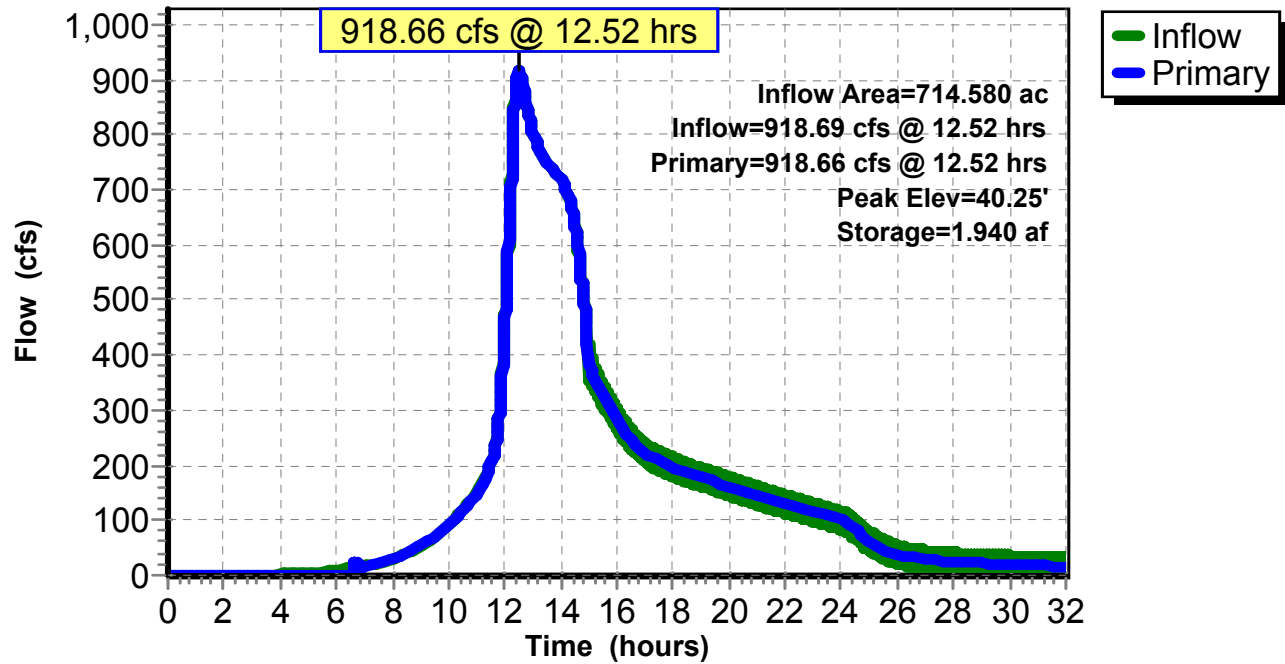
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=918.65 cfs @ 12.52 hrs HW=40.25' TW=40.00' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 331.60 cfs @ 2.41 fps)
- 2=WEIR BOWMAN (Weir Controls 587.05 cfs @ 1.80 fps)

Pond 8P: BOWMAN FIELDS

Hydrograph



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Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 5.88" for A100_24 event
Inflow = 388.56 cfs @ 12.59 hrs, Volume= 59.365 af
Outflow = 388.04 cfs @ 12.60 hrs, Volume= 59.364 af, Atten= 0%, Lag= 0.474 min
Primary = 388.04 cfs @ 12.60 hrs, Volume= 59.364 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 135.16' @ 12.64 hrs Surf.Area= 0.225 ac Storage= 0.277 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.389 min (846.715 - 846.326)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

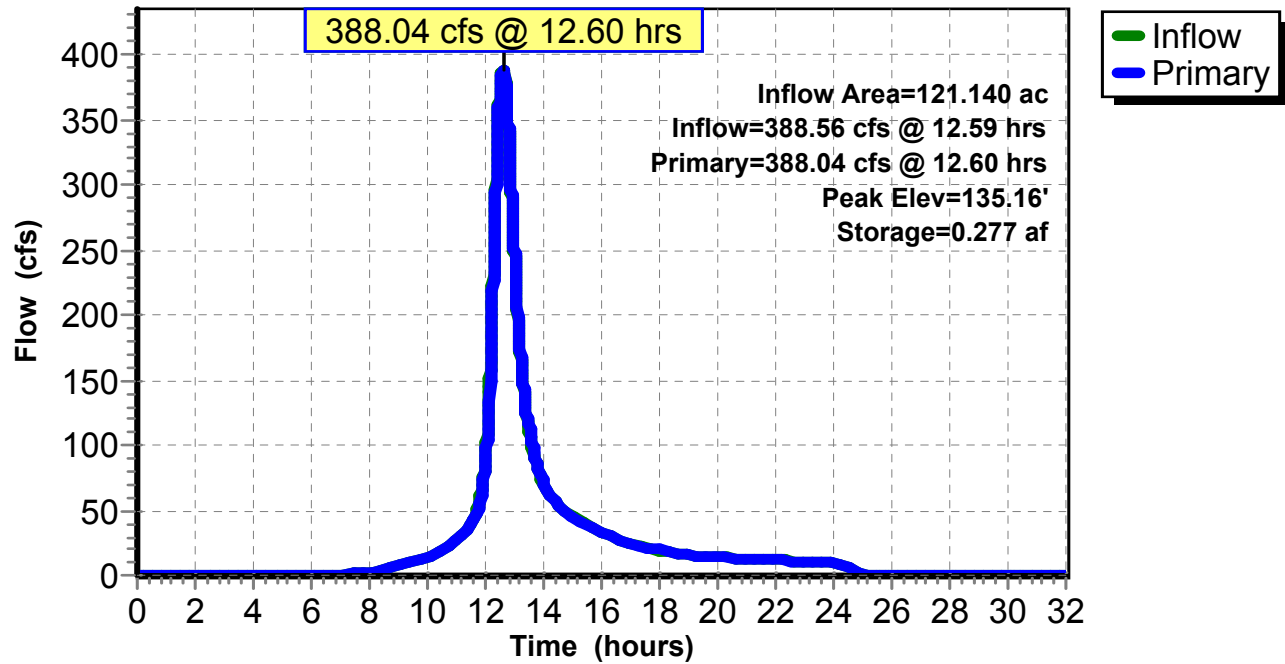
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=386.91 cfs @ 12.60 hrs HW=135.15' TW=133.85' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 38.93 cfs @ 5.51 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 76.84 cfs @ 4.93 fps)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 271.13 cfs @ 2.64 fps)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Hydrograph



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Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 6.77" for A100_24 event
 Inflow = 670.66 cfs @ 12.50 hrs, Volume= 94.119 af
 Outflow = 666.08 cfs @ 12.52 hrs, Volume= 92.226 af, Atten= 1%, Lag= 1.511 min
 Primary = 666.08 cfs @ 12.52 hrs, Volume= 92.226 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.78' @ 12.52 hrs Surf.Area= 4.292 ac Storage= 7.764 af (4.796 af above start)

Plug-Flow detention time= 50.147 min calculated for 89.231 af (95% of inflow)
 Center-of-Mass det. time= 12.886 min (835.965 - 823.078)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

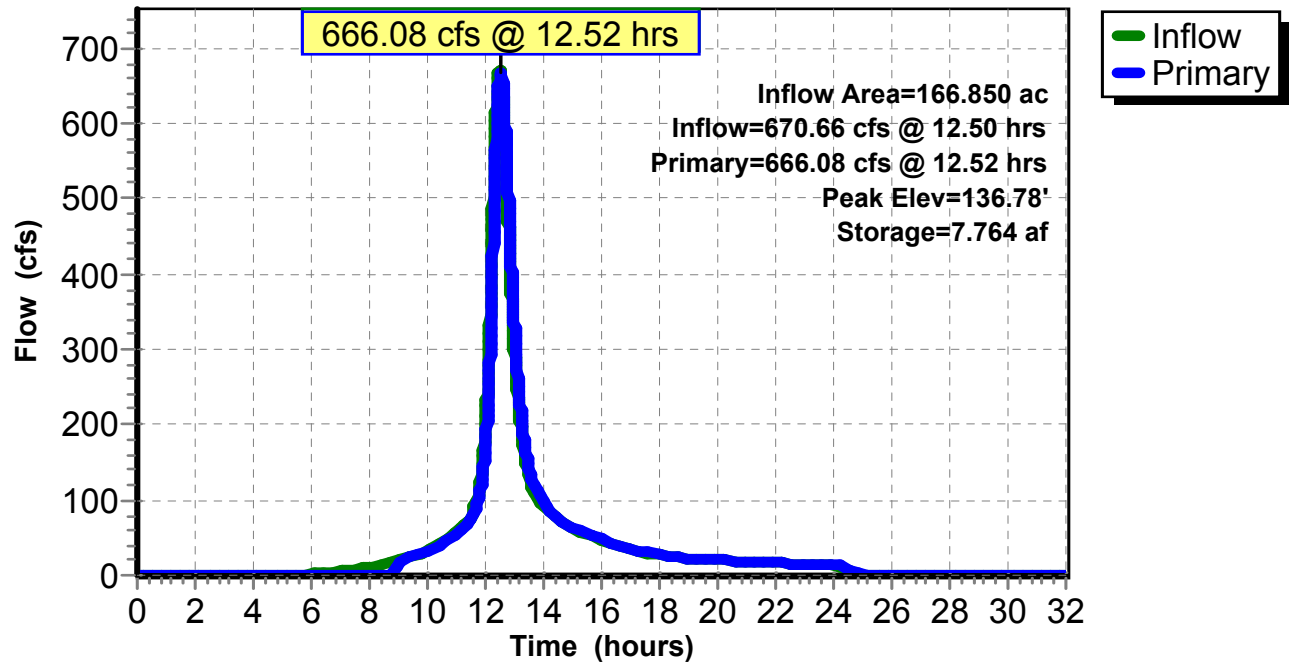
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=665.97 cfs @ 12.52 hrs HW=136.78' TW=131.87' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 4.43 cfs @ 3.01 fps)
- 2=Asymmetrical Weir (Weir Controls 661.54 cfs @ 2.44 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Hydrograph



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Summary for Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 6.07" for A100_24 event
 Inflow = 674.71 cfs @ 12.79 hrs, Volume= 294.558 af
 Outflow = 674.71 cfs @ 12.79 hrs, Volume= 294.547 af, Atten= 0%, Lag= 0.113 min
 Primary = 373.22 cfs @ 12.79 hrs, Volume= 247.172 af
 Secondary = 301.49 cfs @ 12.79 hrs, Volume= 47.376 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 62.40' @ 12.79 hrs Surf.Area= 1,732 sf Storage= 5,800 cf

Plug-Flow detention time= 0.204 min calculated for 294.455 af (100% of inflow)
 Center-of-Mass det. time= 0.170 min (982.797 - 982.627)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	22,686 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686

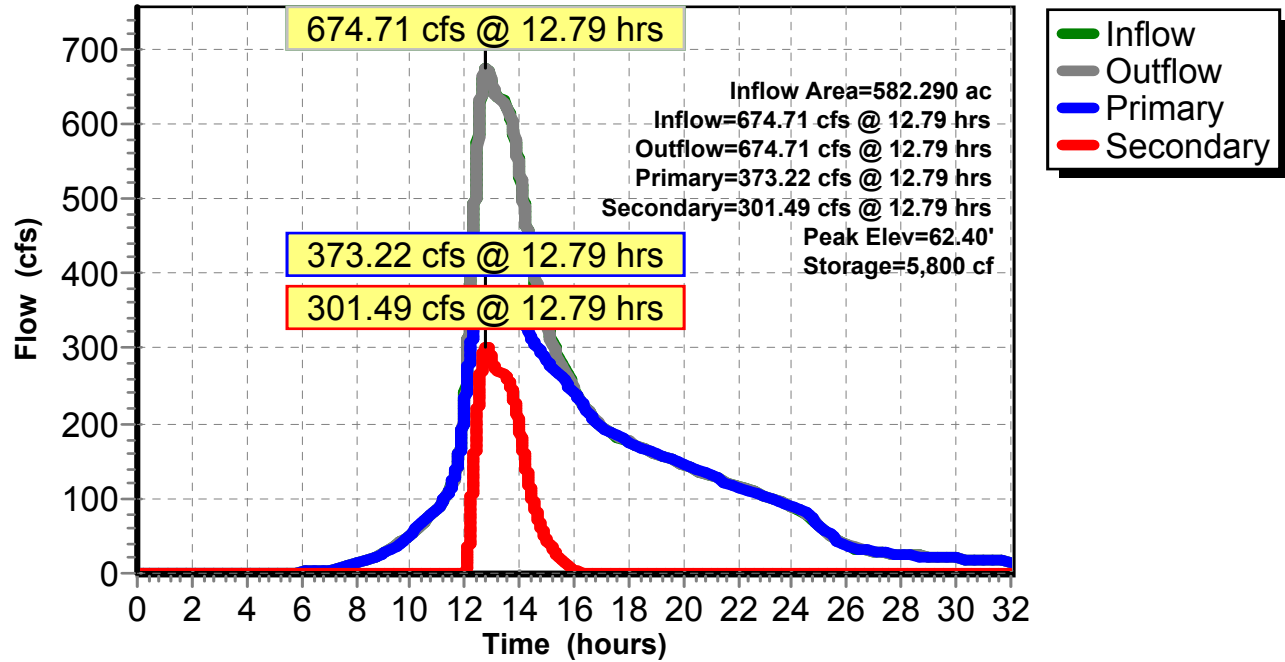
Device	Routing	Invert	Outlet Devices
#1	Primary	56.00'	60.0" Round Culvert X 2.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 56.00' / 37.90' S= 0.0217 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	60.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 66.00 64.00 62.00 60.00 60.00 62.00 64.00 66.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=373.22 cfs @ 12.79 hrs HW=62.40' TW=54.39' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 373.22 cfs @ 9.50 fps)

Secondary OutFlow Max=301.49 cfs @ 12.79 hrs HW=62.40' TW=58.58' (Dynamic Tailwater)
 ↑2=Asymmetrical Weir (Weir Controls 301.49 cfs @ 4.28 fps)

Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Hydrograph



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Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 301.32 cfs @ 12.81 hrs, Volume= 47.376 af
 Outflow = 271.40 cfs @ 13.42 hrs, Volume= 47.376 af, Atten= 10%, Lag= 36.617 min
 Primary = 271.40 cfs @ 13.42 hrs, Volume= 47.376 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 55.02' @ 13.21 hrs Surf.Area= 49,240 sf Storage= 108,750 cf

Plug-Flow detention time= 4.767 min calculated for 47.361 af (100% of inflow)
 Center-of-Mass det. time= 4.768 min (812.565 - 807.797)

Volume	Invert	Avail.Storage	Storage Description
#1	51.00'	162,178 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
51.00	6,000	0	0
52.00	15,452	10,726	10,726
54.00	38,000	53,452	64,178
56.00	60,000	98,000	162,178

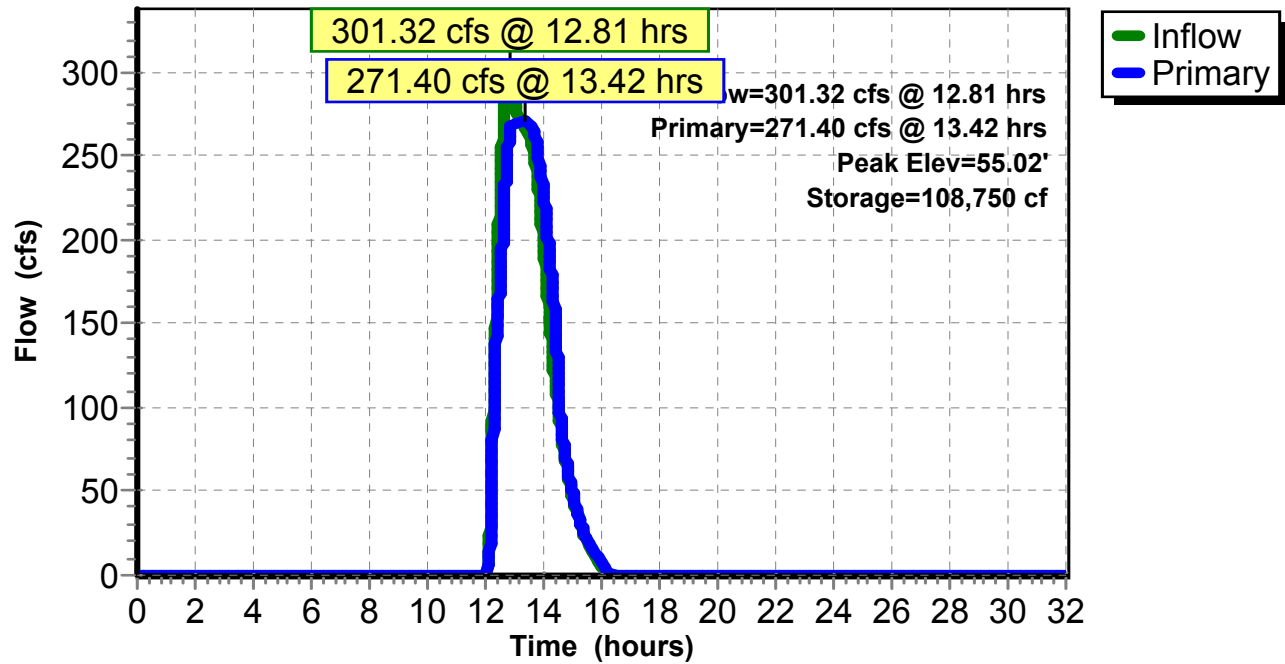
Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=280.79 cfs @ 13.42 hrs HW=54.97' TW=54.92' (Dynamic Tailwater)

↑1=Sharp-Crested Rectangular Weir(Weir Controls 280.79 cfs @ 1.44 fps)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



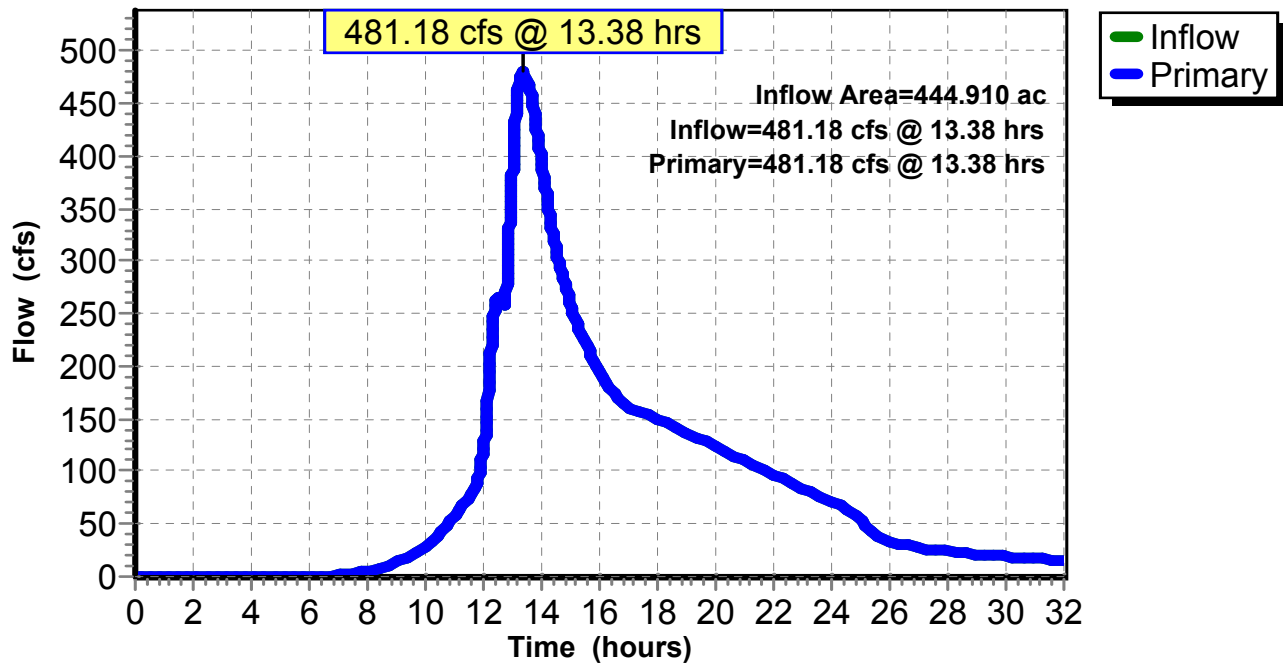
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 5.84" for A100_24 event
Inflow = 481.18 cfs @ 13.38 hrs, Volume= 216.694 af
Primary = 481.18 cfs @ 13.38 hrs, Volume= 216.694 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



Summary for Link 20L: EX FINAL

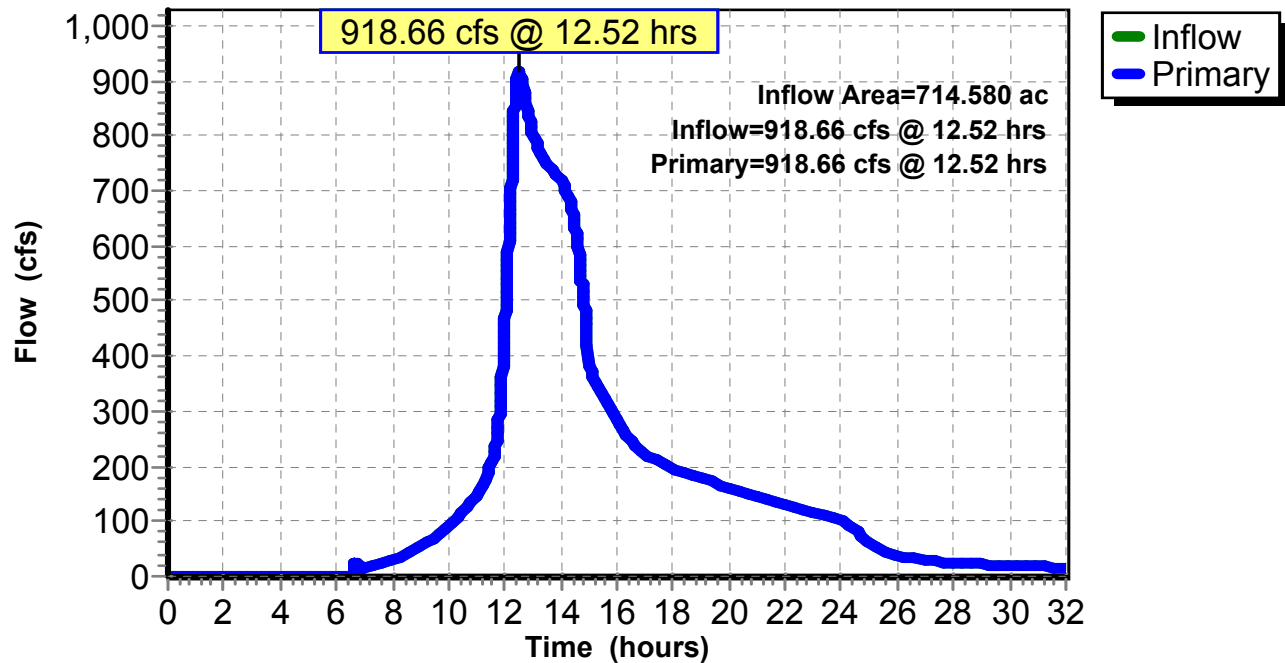
Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 6.36" for A100_24 event
Inflow = 918.66 cfs @ 12.52 hrs, Volume= 378.498 af
Primary = 918.66 cfs @ 12.52 hrs, Volume= 378.498 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 40.00'

Link 20L: EX FINAL

Hydrograph



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Type III 6-hr A100_6 Rainfall=6.11"

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Summary for Subcatchment A: WS A

Runoff = 265.65 cfs @ 3.42 hrs, Volume= 26.222 af, Depth= 5.29"

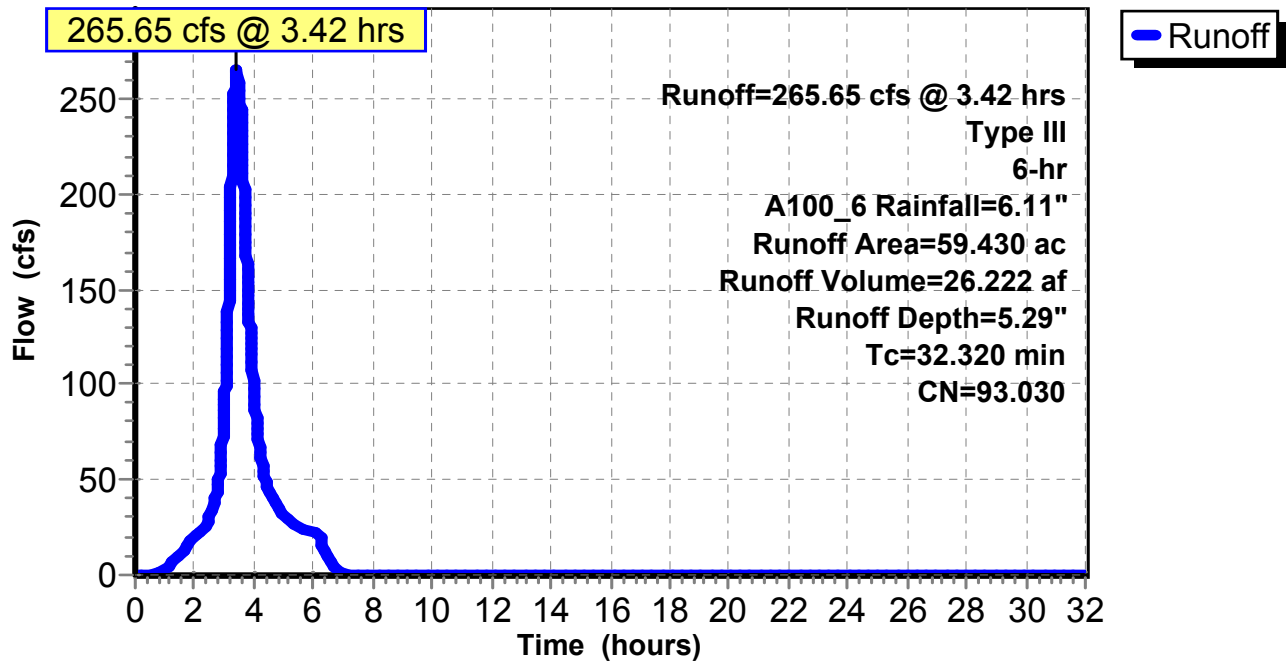
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr A100_6 Rainfall=6.11"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



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Summary for Subcatchment B: WS B

Runoff = 247.98 cfs @ 3.38 hrs, Volume= 22.225 af, Depth= 4.63"

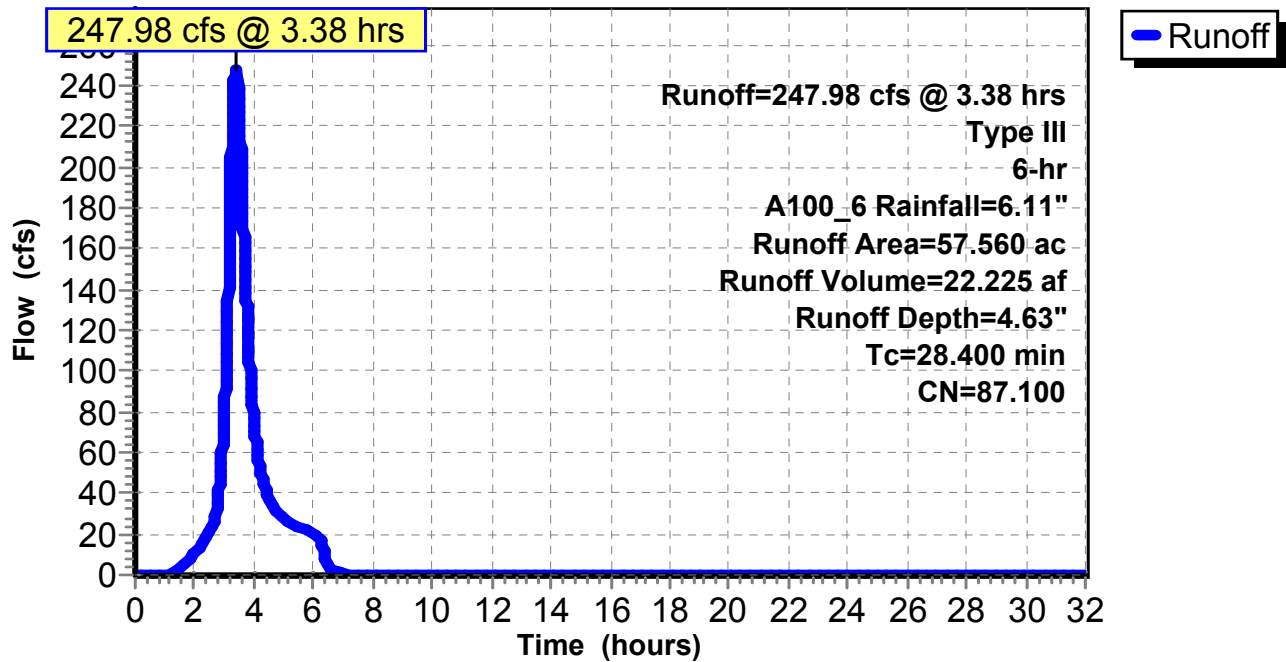
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr A100_6 Rainfall=6.11"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



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Type III 6-hr A100_6 Rainfall=6.11"

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Summary for Subcatchment BH: HOTEL

Runoff = 62.64 cfs @ 3.42 hrs, Volume= 5.777 af, Depth= 4.53"

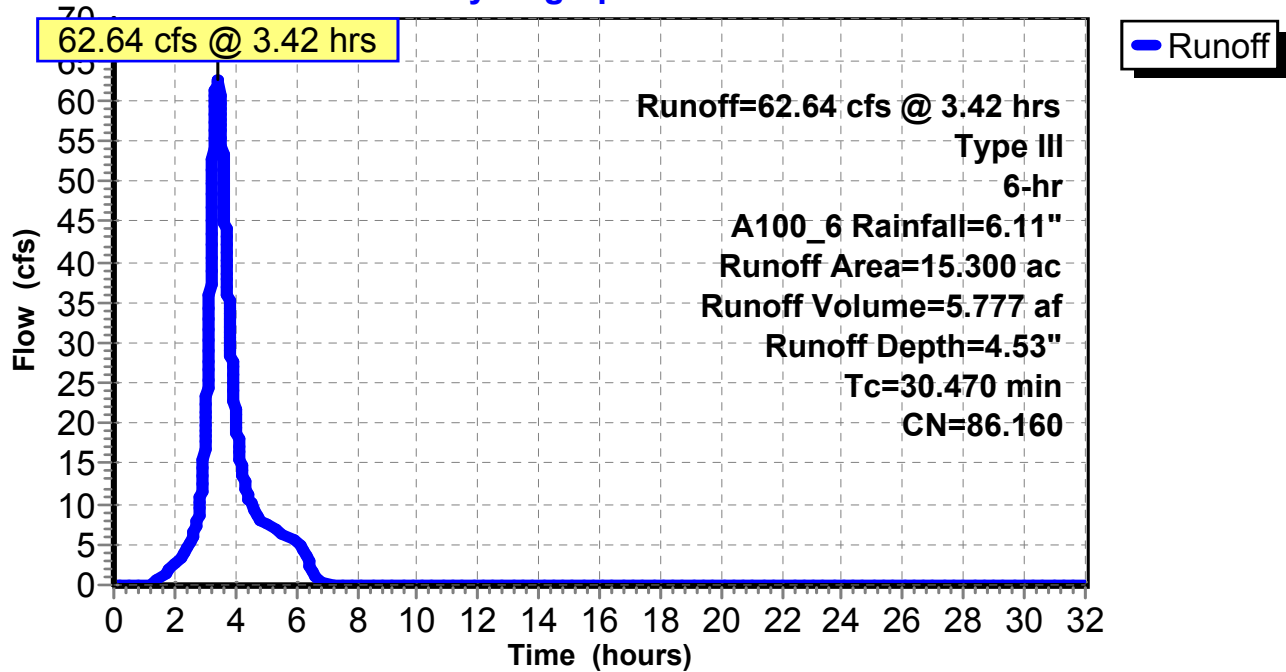
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr A100_6 Rainfall=6.11"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



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Type III 6-hr A100_6 Rainfall=6.11"

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Summary for Subcatchment C: WS C

Runoff = 100.73 cfs @ 3.25 hrs, Volume= 7.416 af, Depth= 4.15"

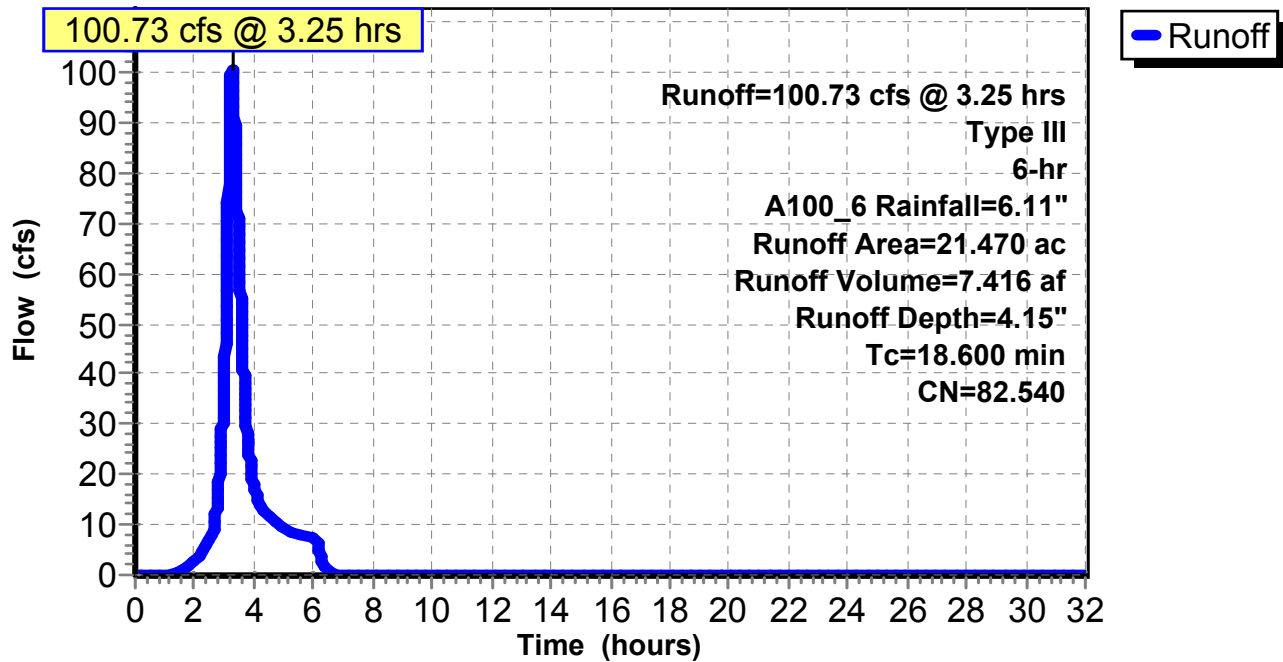
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr A100_6 Rainfall=6.11"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



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Type III 6-hr A100_6 Rainfall=6.11"

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Summary for Subcatchment D: WS D

Runoff = 355.20 cfs @ 3.62 hrs, Volume= 39.693 af, Depth= 4.11"

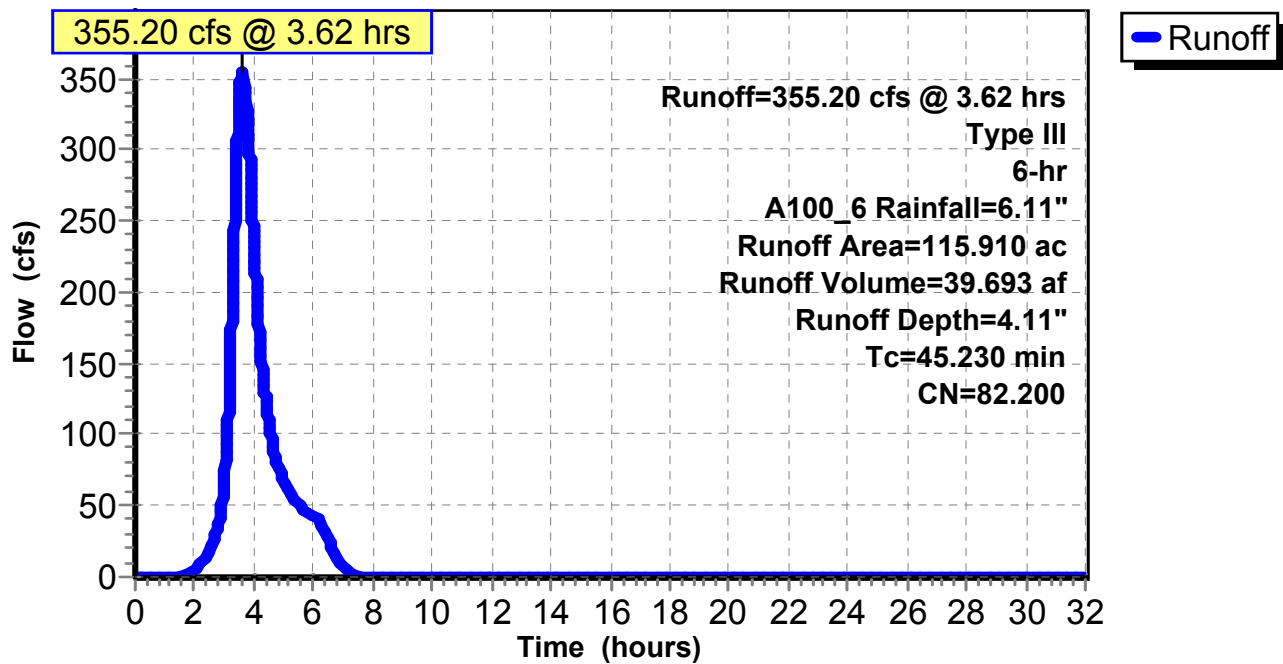
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr A100_6 Rainfall=6.11"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



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Type III 6-hr A100_6 Rainfall=6.11"

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Summary for Subcatchment D-1: WS D-1

Runoff = 124.39 cfs @ 3.47 hrs, Volume= 11.522 af, Depth= 3.49"

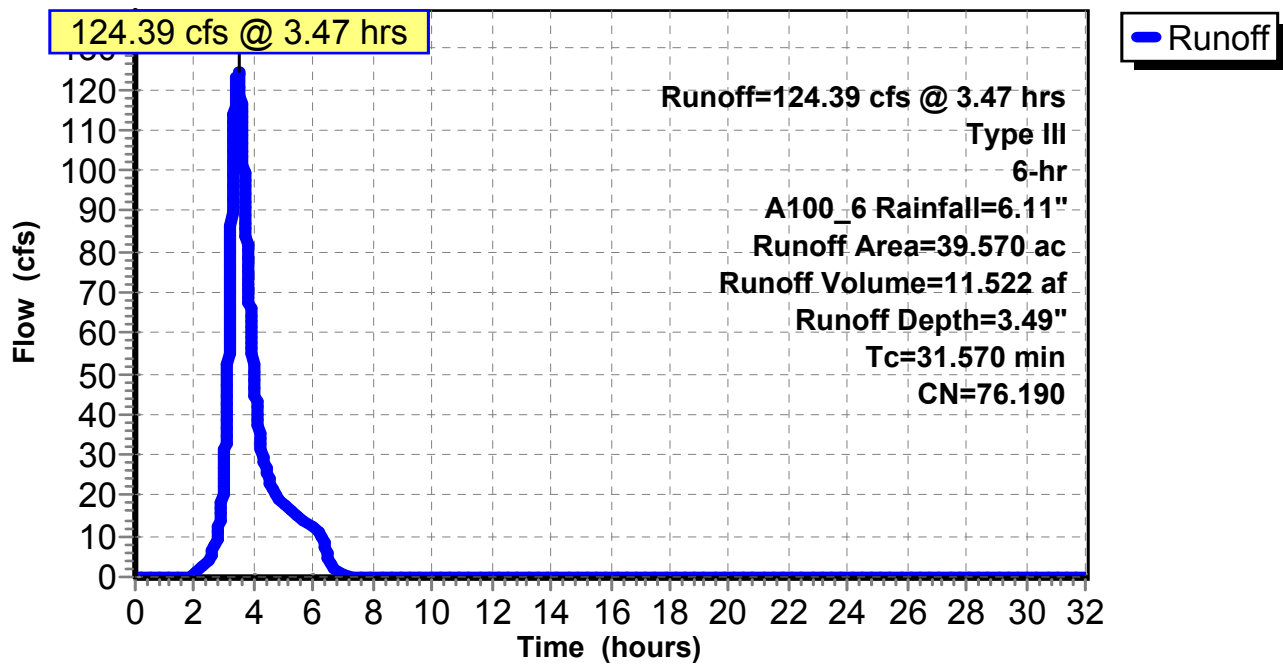
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr A100_6 Rainfall=6.11"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



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Type III 6-hr A100_6 Rainfall=6.11"

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Summary for Subcatchment E: WS E

Runoff = 283.03 cfs @ 3.86 hrs, Volume= 38.272 af, Depth= 3.91"

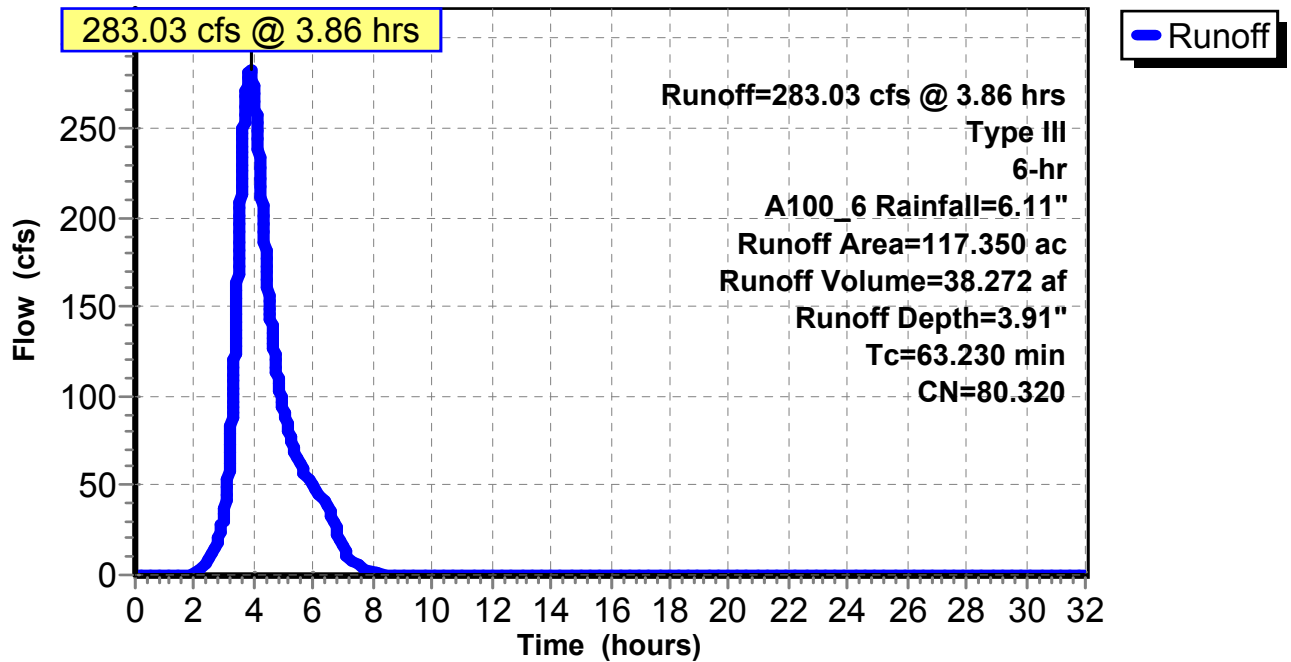
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr A100_6 Rainfall=6.11"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



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Type III 6-hr A100_6 Rainfall=6.11"

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Summary for Subcatchment F: WS F

Runoff = 302.88 cfs @ 3.64 hrs, Volume= 33.355 af, Depth= 3.30"

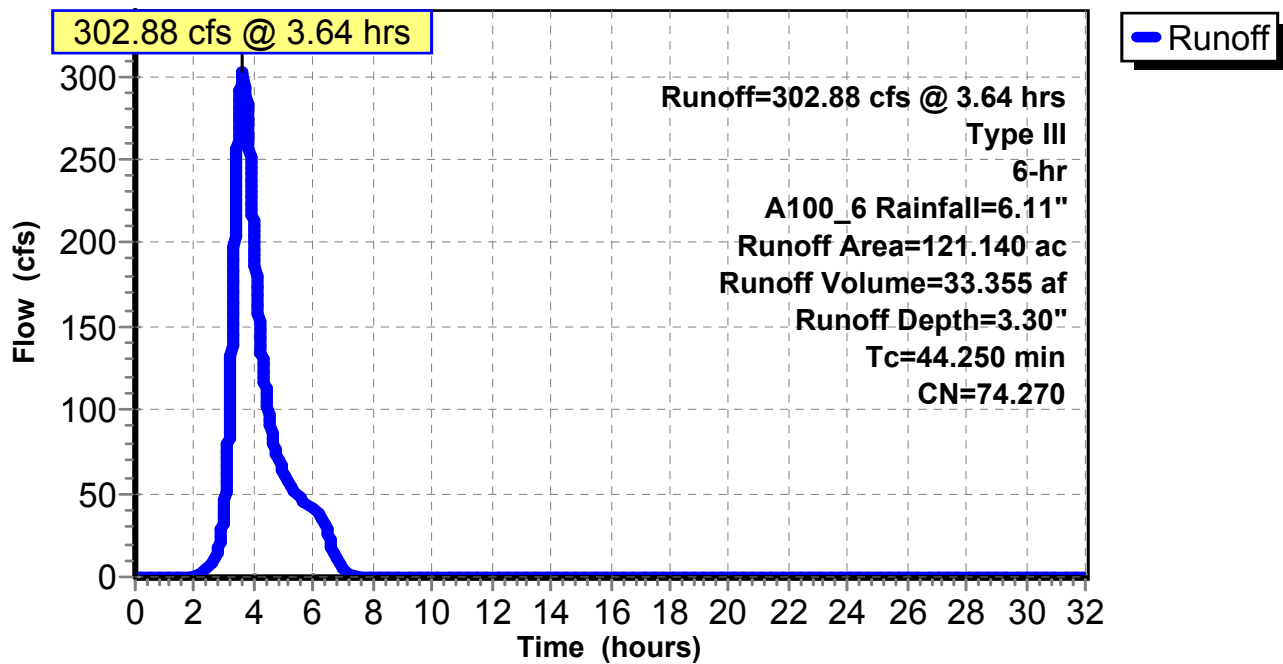
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr A100_6 Rainfall=6.11"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



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Type III 6-hr A100_6 Rainfall=6.11"

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Summary for Subcatchment G: WS G

Runoff = 566.42 cfs @ 3.50 hrs, Volume= 56.091 af, Depth= 4.03"

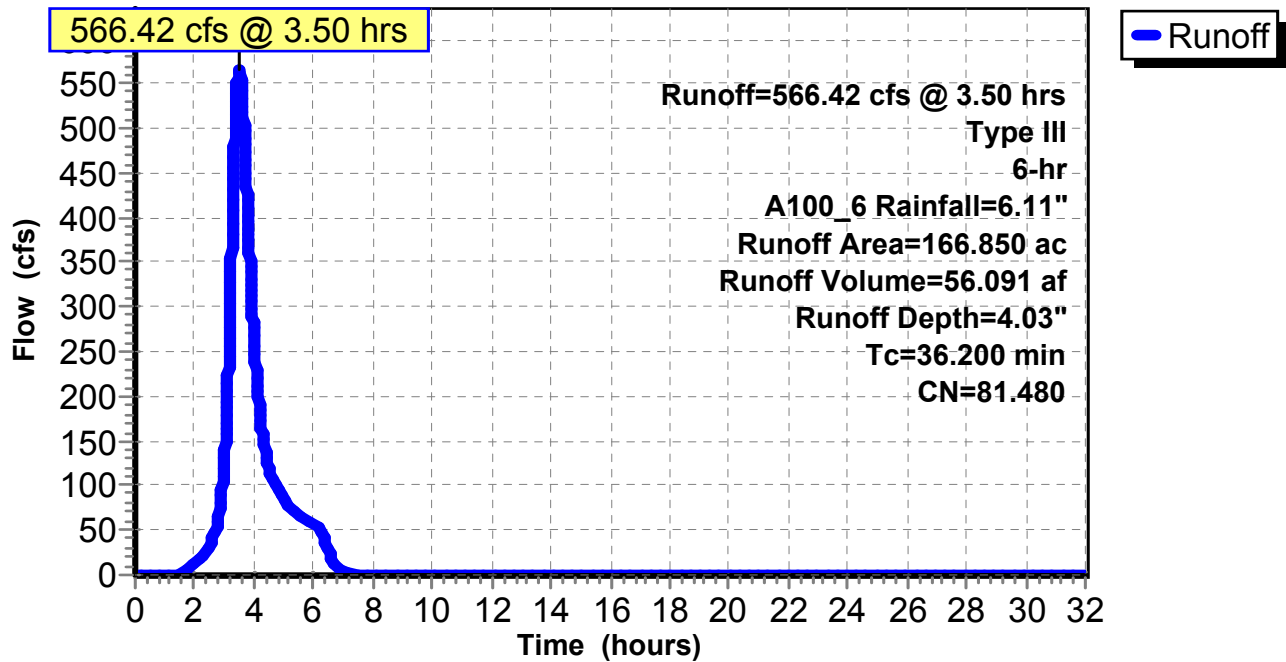
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr A100_6 Rainfall=6.11"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 3.45" for A100_6 event
Inflow = 296.93 cfs @ 4.61 hrs, Volume= 116.569 af
Outflow = 296.81 cfs @ 4.63 hrs, Volume= 116.512 af, Atten= 0%, Lag= 1.363 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.25 fps, Min. Travel Time= 1.978 min
Avg. Velocity = 1.76 fps, Avg. Travel Time= 4.761 min

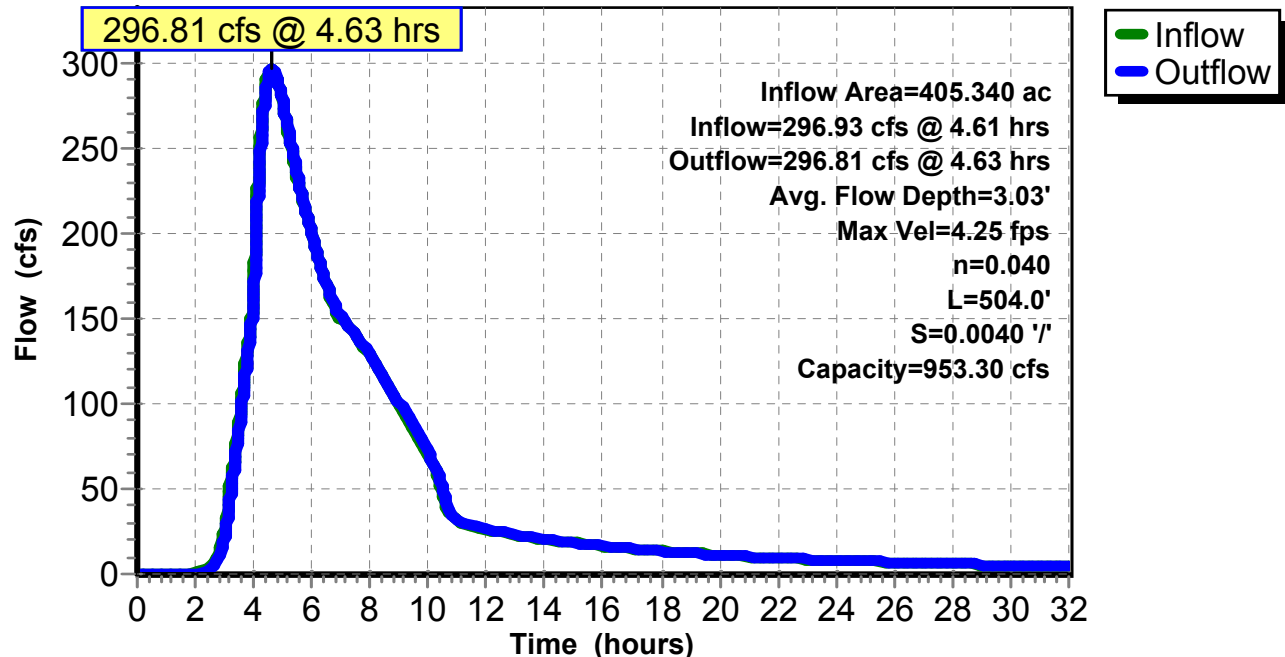
Peak Storage= 35,220 cf @ 4.63 hrs
Average Depth at Peak Storage= 3.03'
Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
Length= 504.0' Slope= 0.0040 ' / '
Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 3.30" for A100_6 event
 Inflow = 302.44 cfs @ 3.64 hrs, Volume= 33.354 af
 Outflow = 267.40 cfs @ 3.82 hrs, Volume= 33.354 af, Atten= 12%, Lag= 11.000 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.30 fps, Min. Travel Time= 15.814 min
 Avg. Velocity = 0.38 fps, Avg. Travel Time= 96.090 min

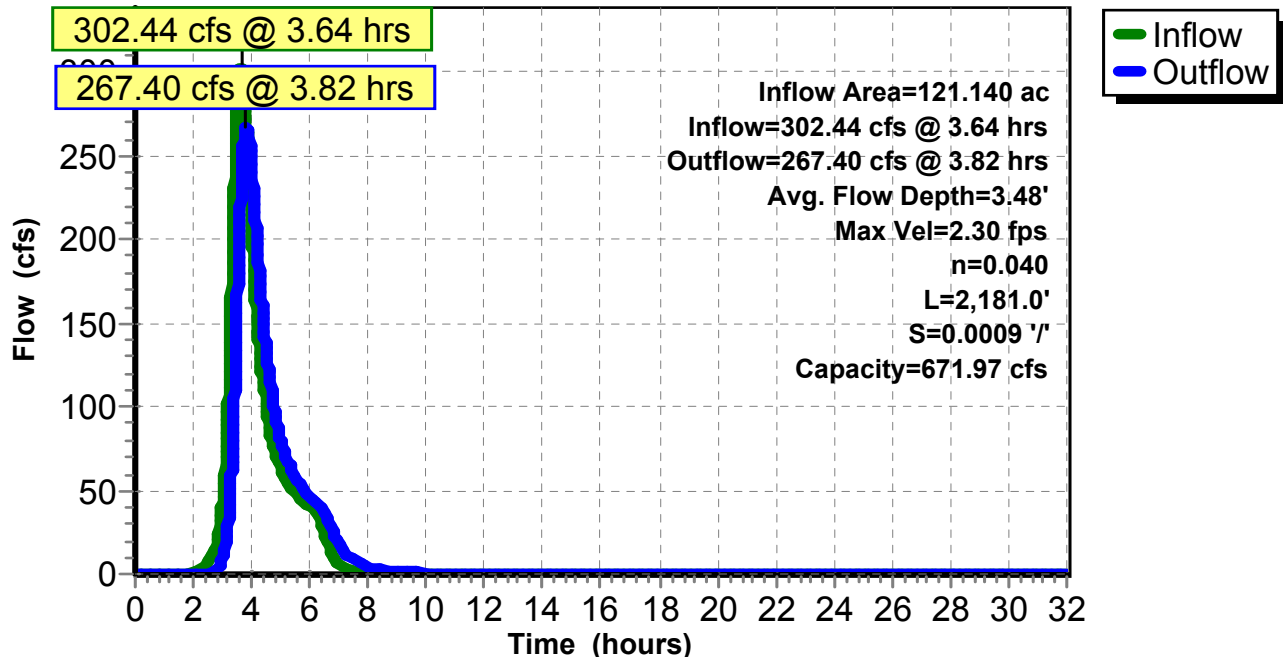
Peak Storage= 253,710 cf @ 3.82 hrs
 Average Depth at Peak Storage= 3.48'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 2,181.0' Slope= 0.0009 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 3.90" for A100_6 event
 Inflow = 560.25 cfs @ 3.54 hrs, Volume= 54.198 af
 Outflow = 51.11 cfs @ 6.31 hrs, Volume= 45.084 af, Atten= 91%, Lag= 165.887 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.61 fps, Min. Travel Time= 606.089 min
 Avg. Velocity = 0.39 fps, Avg. Travel Time= 945.876 min

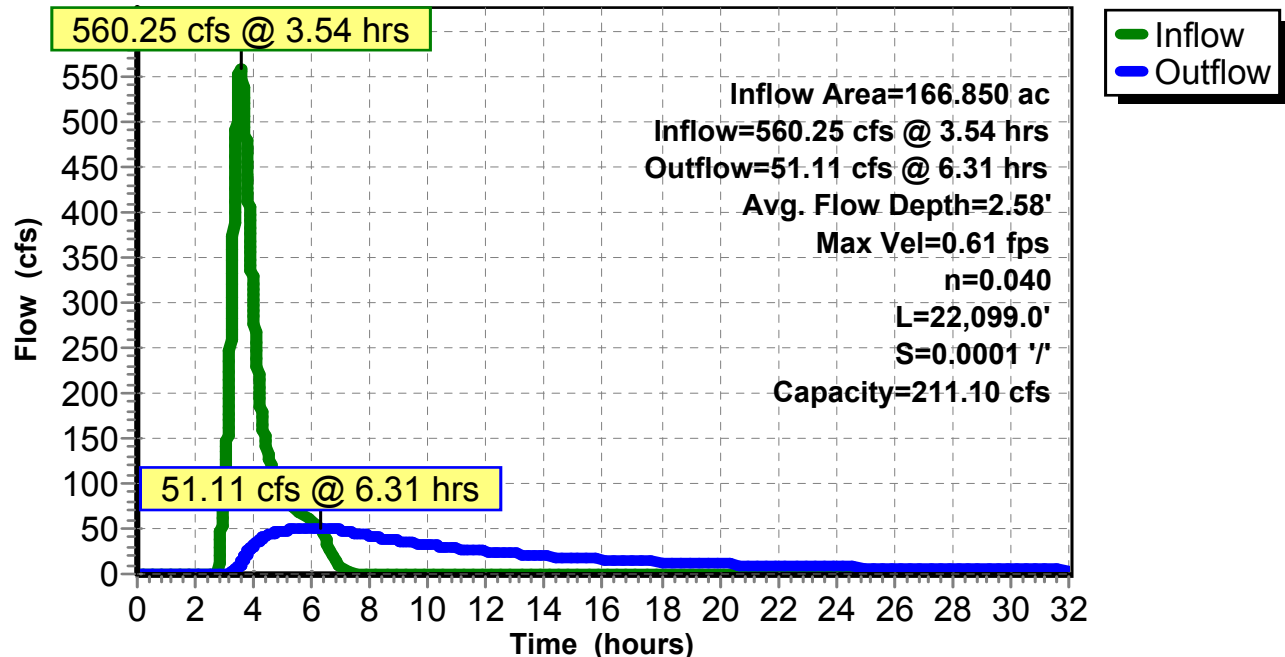
Peak Storage= 1,858,605 cf @ 6.31 hrs
 Average Depth at Peak Storage= 2.58'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 22,099.0' Slope= 0.0001 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 3.45" for A100_6 event
 Inflow = 318.63 cfs @ 4.63 hrs, Volume= 127.924 af
 Outflow = 316.71 cfs @ 4.72 hrs, Volume= 127.737 af, Atten= 1%, Lag= 5.905 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 6.85 fps, Min. Travel Time= 7.256 min
 Avg. Velocity = 3.11 fps, Avg. Travel Time= 15.971 min

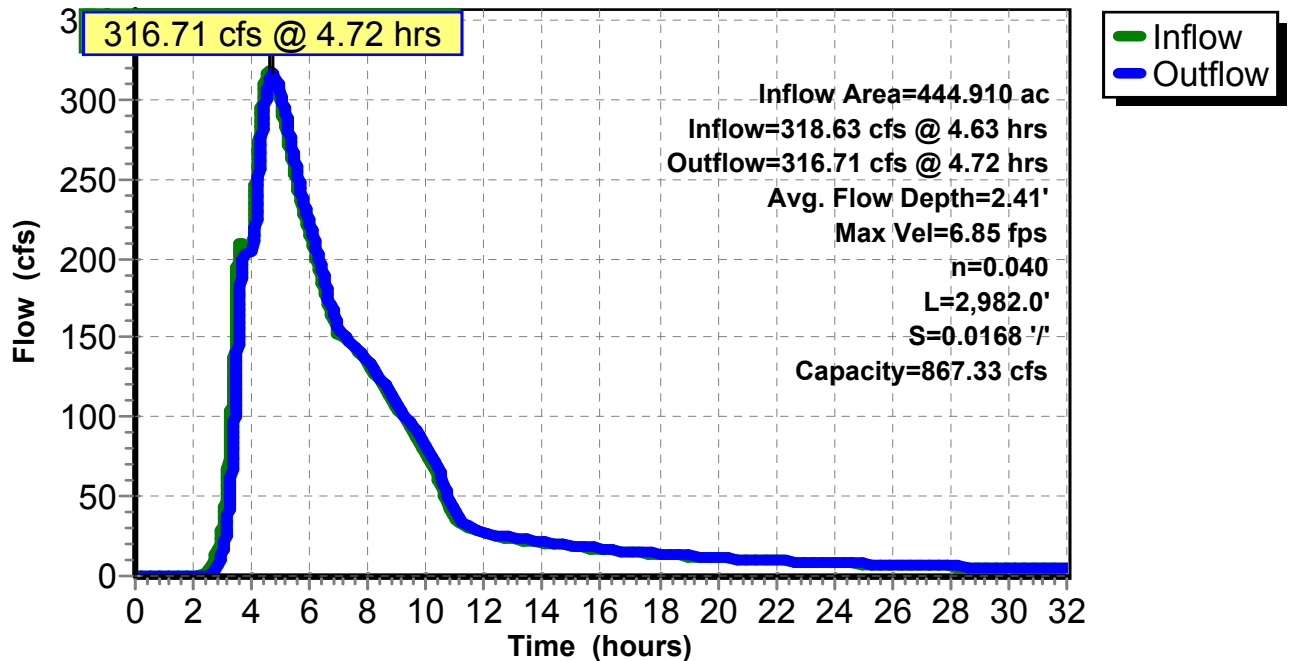
Peak Storage= 137,886 cf @ 4.72 hrs
 Average Depth at Peak Storage= 2.41'
 Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040
 Side Slope Z-value= 3.0 ' / ' Top Width= 36.00'
 Length= 2,982.0' Slope= 0.0168 ' / '
 Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 3.58" for A100_6 event
 Inflow = 545.74 cfs @ 3.70 hrs, Volume= 167.430 af
 Outflow = 545.63 cfs @ 3.71 hrs, Volume= 167.404 af, Atten= 0%, Lag= 0.474 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 10.92 fps, Min. Travel Time= 0.664 min
 Avg. Velocity = 3.84 fps, Avg. Travel Time= 1.887 min

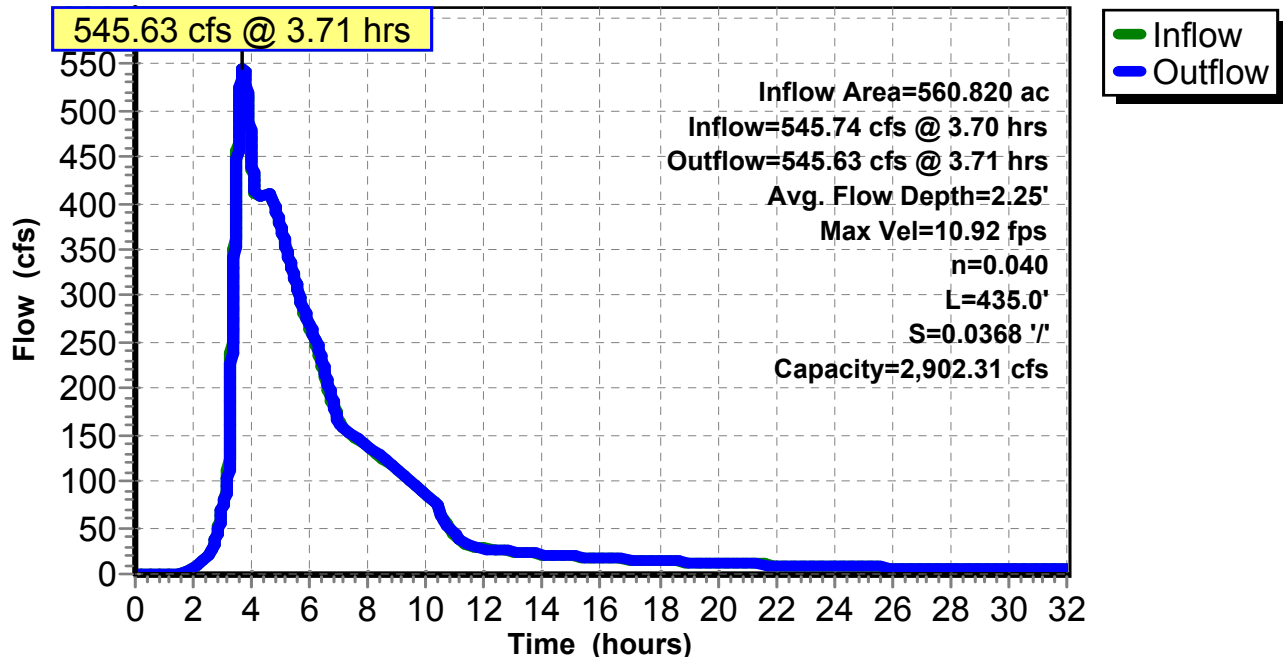
Peak Storage= 21,741 cf @ 3.71 hrs
 Average Depth at Peak Storage= 2.25'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
 Length= 435.0' Slope= 0.0368 ' / '
 Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 210.65 cfs @ 3.79 hrs, Volume= 22.616 af
Outflow = 210.37 cfs @ 3.81 hrs, Volume= 22.616 af, Atten= 0%, Lag= 1.051 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 8.56 fps, Min. Travel Time= 1.728 min
Avg. Velocity = 3.02 fps, Avg. Travel Time= 4.903 min

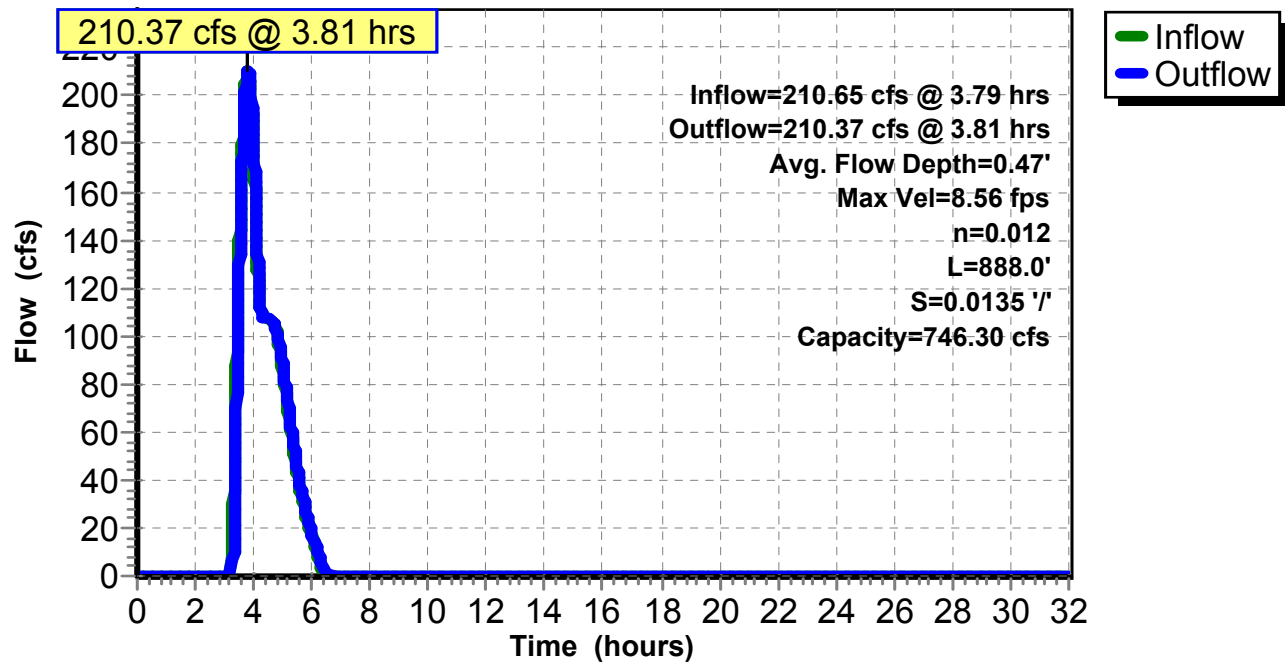
Peak Storage= 21,812 cf @ 3.81 hrs
Average Depth at Peak Storage= 0.47'
Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
Length= 888.0' Slope= 0.0135 ' '
Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



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Summary for Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 3.71" for A100_6 event
 Inflow = 740.75 cfs @ 3.58 hrs, Volume= 202.816 af
 Outflow = 645.55 cfs @ 3.95 hrs, Volume= 202.814 af, Atten= 13%, Lag= 22.185 min
 Primary = 645.55 cfs @ 3.95 hrs, Volume= 202.814 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 52.63' @ 3.95 hrs Surf.Area= 1.687 ac Storage= 6.083 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 1.727 min (407.027 - 405.301)

Volume	Invert	Avail.Storage	Storage Description
#1	46.00'	82.605 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
46.00	0.695	0.000	0.000
48.00	0.695	1.390	1.390
50.00	0.800	1.495	2.885
52.00	1.420	2.220	5.105
54.00	2.270	3.690	8.795
56.00	3.160	5.430	14.225
58.00	4.070	7.230	21.455
60.00	4.980	9.050	30.505
62.00	5.710	10.690	41.195
64.00	6.620	12.330	53.525
66.00	7.170	13.790	67.315
68.00	8.120	15.290	82.605

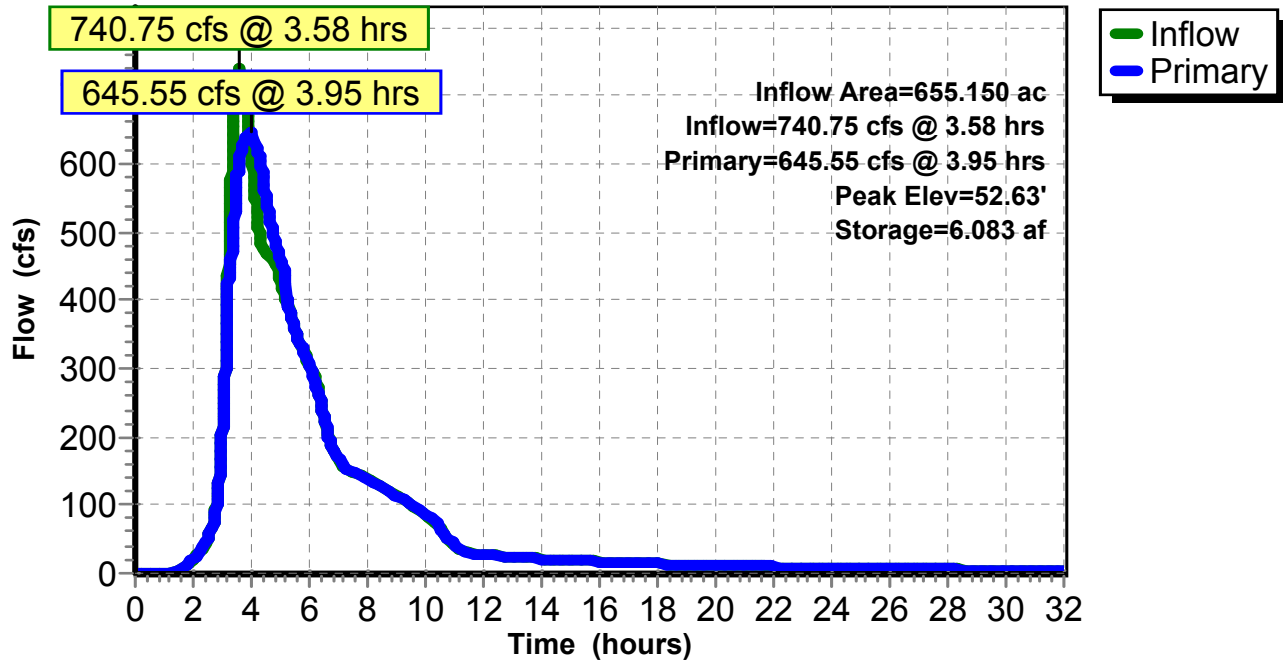
Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48

Primary OutFlow Max=645.56 cfs @ 3.95 hrs HW=52.63' TW=40.18' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 645.56 cfs @ 16.55 fps)
- 2=WEIR WESTCH AVE (Controls 0.00 cfs)

Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



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Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 3.60" for A100_6 event
 Inflow = 580.87 cfs @ 3.69 hrs, Volume= 174.821 af
 Outflow = 560.69 cfs @ 3.79 hrs, Volume= 174.819 af, Atten= 3%, Lag= 6.406 min
 Primary = 560.69 cfs @ 3.79 hrs, Volume= 174.819 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 75.66' @ 3.79 hrs Surf.Area= 0.396 ac Storage= 1.389 af

Plug-Flow detention time= 0.422 min calculated for 174.765 af (100% of inflow)
 Center-of-Mass det. time= 0.409 min (433.192 - 432.783)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

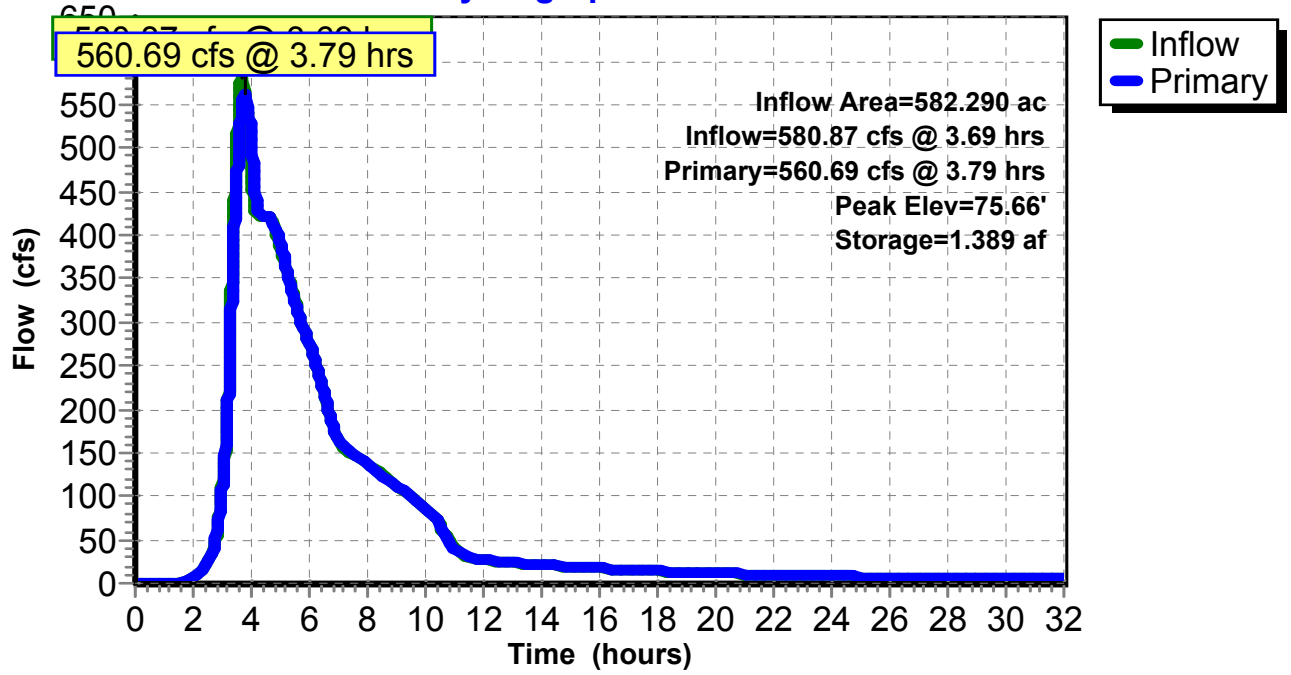
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=560.67 cfs @ 3.79 hrs HW=75.66' TW=61.93' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 327.60 cfs @ 16.68 fps)
- 2=Culvert 2 (Inlet Controls 233.06 cfs @ 11.87 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



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Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 3.45" for A100_6 event
 Inflow = 318.80 cfs @ 4.60 hrs, Volume= 128.034 af
 Outflow = 318.63 cfs @ 4.63 hrs, Volume= 127.924 af, Atten= 0%, Lag= 1.591 min
 Primary = 318.63 cfs @ 4.63 hrs, Volume= 127.924 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 130.51' @ 4.63 hrs Surf.Area= 1.036 ac Storage= 2.578 af

Plug-Flow detention time= 8.882 min calculated for 127.924 af (100% of inflow)
 Center-of-Mass det. time= 7.658 min (489.801 - 482.143)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

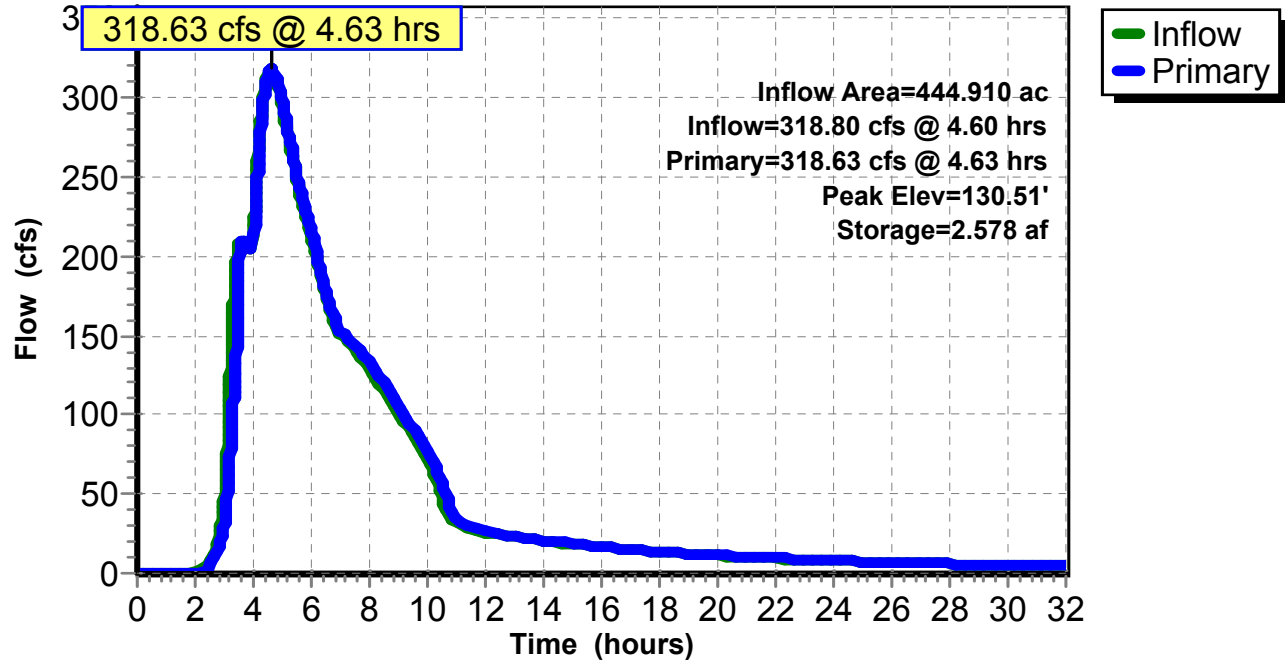
Primary OutFlow Max=318.62 cfs @ 4.63 hrs HW=130.51' TW=128.40' (Dynamic Tailwater)

1=Culvert (Barrel Controls 171.58 cfs @ 7.58 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 147.04 cfs @ 2.33 fps)

Pond 4A: DP 4 A ARGYLE

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Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 3.46" for A100_6 event
Inflow = 575.98 cfs @ 3.86 hrs, Volume= 116.710 af
Outflow = 296.93 cfs @ 4.61 hrs, Volume= 116.569 af, Atten= 48%, Lag= 45.062 min
Primary = 296.93 cfs @ 4.61 hrs, Volume= 116.569 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 132.51' @ 4.62 hrs Surf.Area= 21.063 ac Storage= 28.908 af

Plug-Flow detention time= 59.844 min calculated for 116.569 af (100% of inflow)
Center-of-Mass det. time= 58.076 min (503.806 - 445.730)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

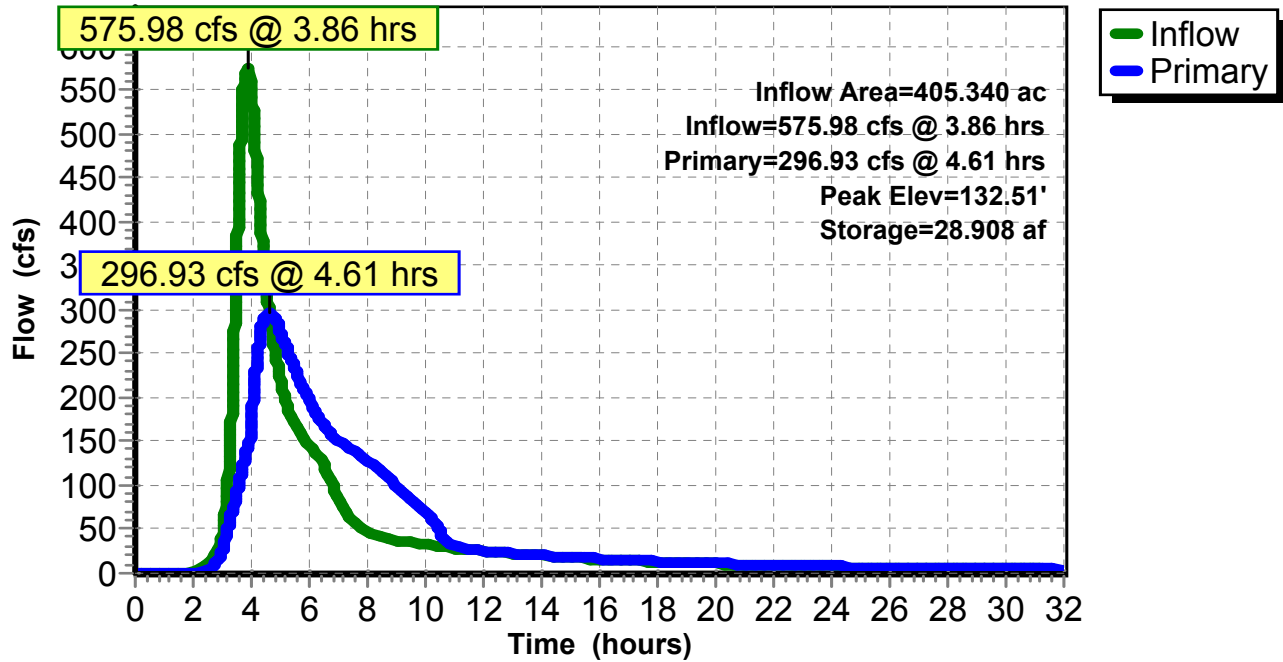
Primary OutFlow Max=296.88 cfs @ 4.61 hrs HW=132.51' TW=131.03' (Dynamic Tailwater)

1=Culvert (Inlet Controls 147.28 cfs @ 5.86 fps)

2=Asymmetrical Weir (Weir Controls 149.61 cfs @ 2.00 fps)

Pond 5P: DP 5 BETSY BROWN ROAD

Hydrograph



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Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 3.58" for A100_6 event
Inflow = 547.55 cfs @ 3.67 hrs, Volume= 167.430 af
Outflow = 545.74 cfs @ 3.70 hrs, Volume= 167.430 af, Atten= 0%, Lag= 1.741 min
Primary = 545.74 cfs @ 3.70 hrs, Volume= 167.430 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 91.37' @ 3.70 hrs Surf.Area= 1.370 ac Storage= 1.870 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.699 min (441.252 - 438.554)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

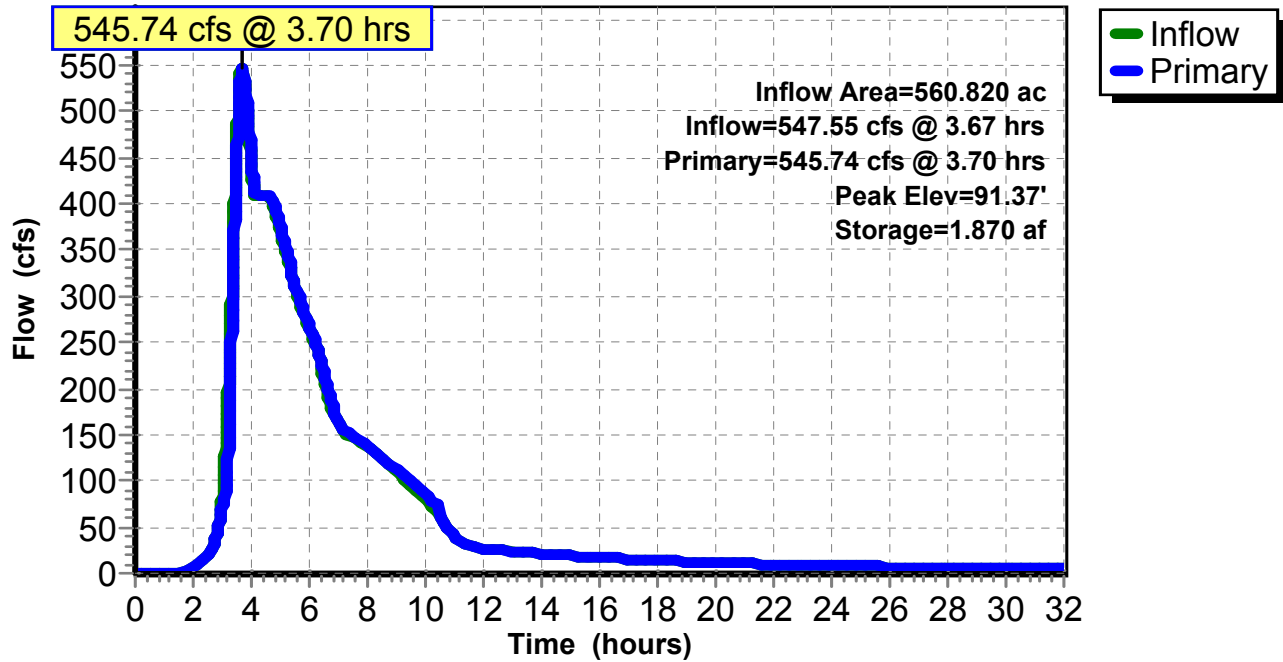
Primary OutFlow Max=545.71 cfs @ 3.70 hrs HW=91.37' TW=78.25' (Dynamic Tailwater)

1=Sharp-Crested Rectangular Weir (Weir Controls 192.11 cfs @ 5.49 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 353.61 cfs @ 3.08 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



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Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 3.85" for A100_6 event
 Inflow = 836.32 cfs @ 3.56 hrs, Volume= 229.035 af
 Outflow = 836.21 cfs @ 3.56 hrs, Volume= 227.345 af, Atten= 0%, Lag= 0.340 min
 Primary = 836.21 cfs @ 3.56 hrs, Volume= 227.345 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 40.22' @ 3.56 hrs Surf.Area= 1.153 ac Storage= 1.899 af

Plug-Flow detention time= 12.622 min calculated for 227.274 af (99% of inflow)
 Center-of-Mass det. time= 2.199 min (388.196 - 385.997)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

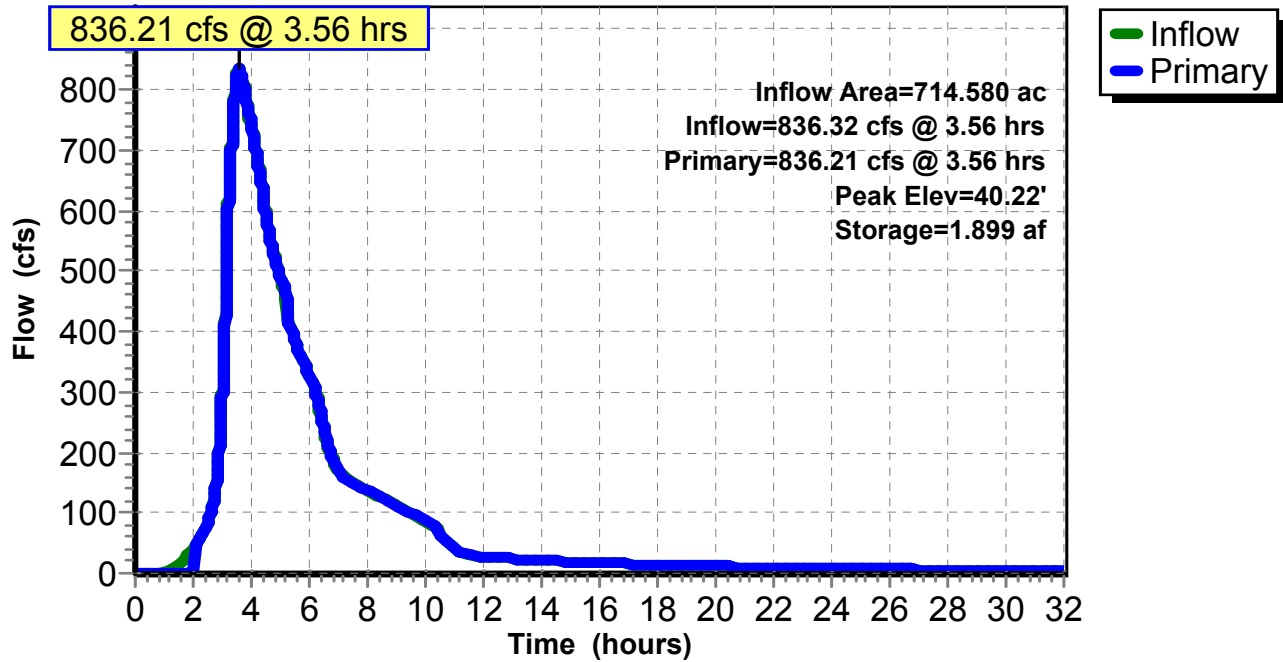
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=836.15 cfs @ 3.56 hrs HW=40.22' TW=40.00' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 307.66 cfs @ 2.23 fps)
- 2=WEIR BOWMAN (Weir Controls 528.49 cfs @ 1.68 fps)

Pond 8P: BOWMAN FIELDS

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Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 3.30" for A100_6 event
 Inflow = 302.88 cfs @ 3.64 hrs, Volume= 33.355 af
 Outflow = 302.44 cfs @ 3.64 hrs, Volume= 33.354 af, Atten= 0%, Lag= 0.162 min
 Primary = 302.44 cfs @ 3.64 hrs, Volume= 33.354 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 134.99' @ 3.68 hrs Surf.Area= 0.204 ac Storage= 0.240 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.534 min (252.238 - 251.704)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

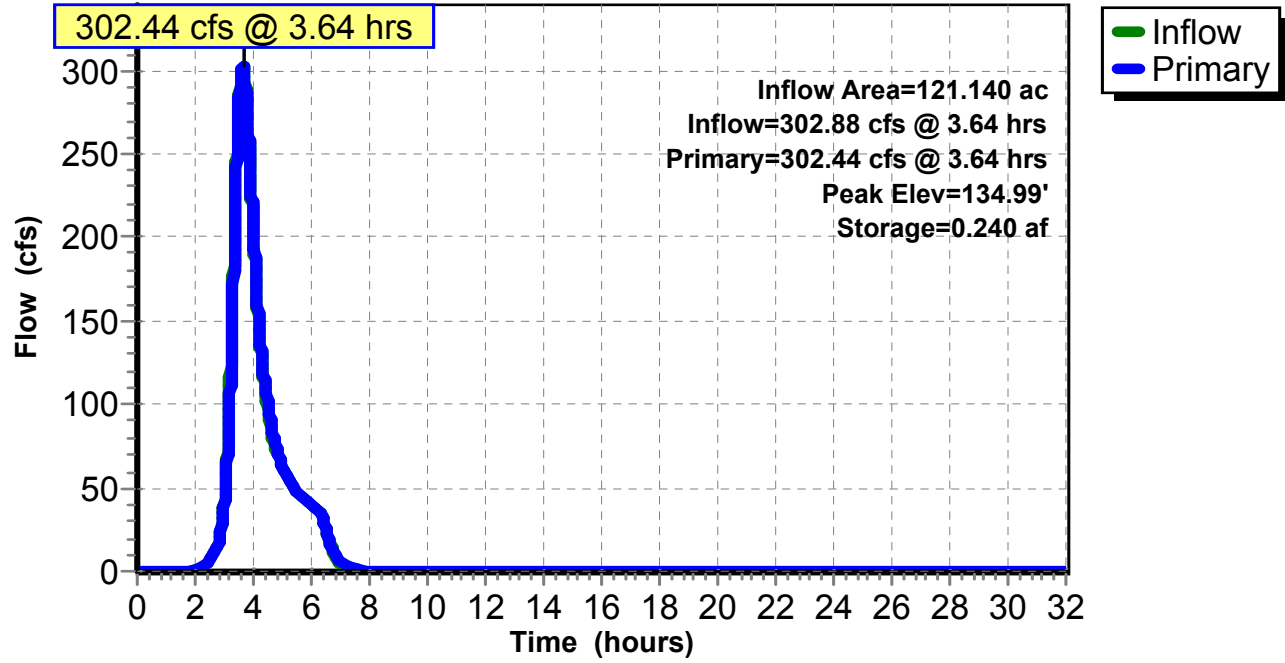
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=301.53 cfs @ 3.64 hrs HW=134.99' TW=133.19' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 45.67 cfs @ 6.46 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 81.27 cfs @ 5.42 fps)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 174.59 cfs @ 2.28 fps)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Hydrograph



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Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 4.03" for A100_6 event
 Inflow = 566.42 cfs @ 3.50 hrs, Volume= 56.091 af
 Outflow = 560.25 cfs @ 3.54 hrs, Volume= 54.198 af, Atten= 1%, Lag= 2.580 min
 Primary = 560.25 cfs @ 3.54 hrs, Volume= 54.198 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.70' @ 3.54 hrs Surf.Area= 4.173 ac Storage= 7.428 af (4.461 af above start)

Plug-Flow detention time= 23.600 min calculated for 51.231 af (91% of inflow)
 Center-of-Mass det. time= 7.839 min (246.449 - 238.610)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

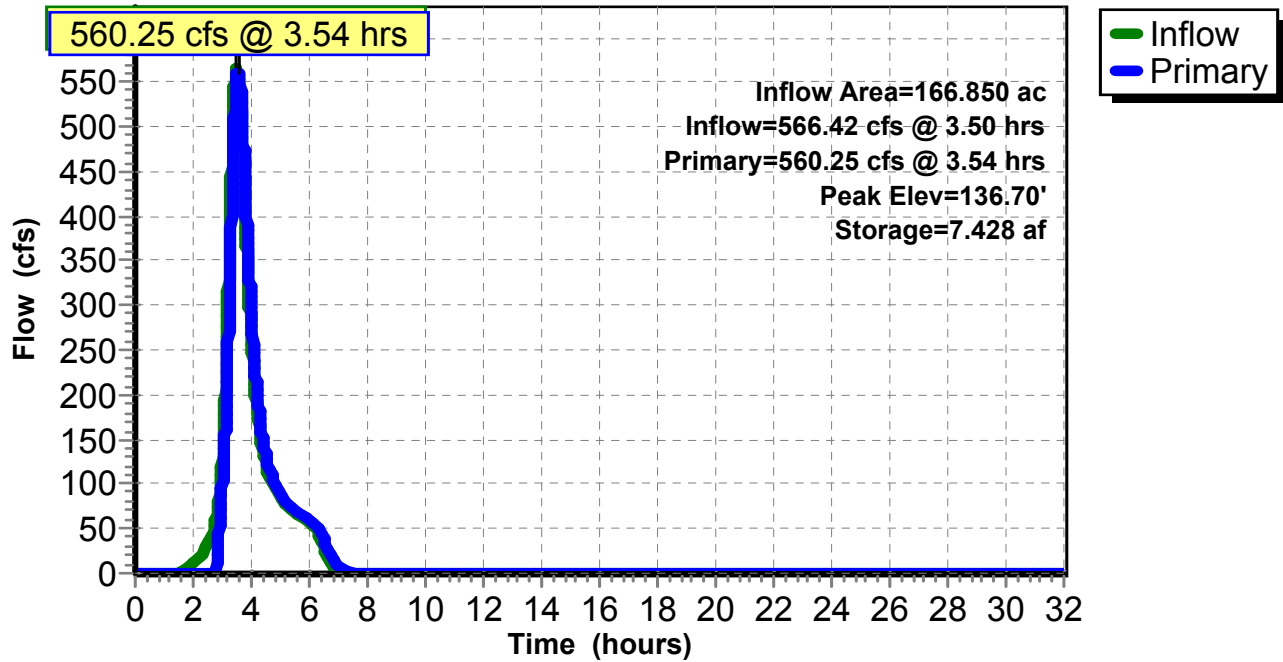
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=560.18 cfs @ 3.54 hrs HW=136.70' TW=131.02' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 3.61 cfs @ 2.86 fps)
- 2=Asymmetrical Weir (Weir Controls 556.57 cfs @ 2.34 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Hydrograph



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Summary for Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 3.60" for A100_6 event
 Inflow = 560.69 cfs @ 3.79 hrs, Volume= 174.819 af
 Outflow = 560.68 cfs @ 3.79 hrs, Volume= 174.814 af, Atten= 0%, Lag= 0.103 min
 Primary = 350.03 cfs @ 3.79 hrs, Volume= 152.198 af
 Secondary = 210.65 cfs @ 3.79 hrs, Volume= 22.616 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 61.93' @ 3.79 hrs Surf.Area= 1,405 sf Storage= 5,073 cf

Plug-Flow detention time= 0.235 min calculated for 174.814 af (100% of inflow)
 Center-of-Mass det. time= 0.189 min (433.381 - 433.192)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	22,686 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686

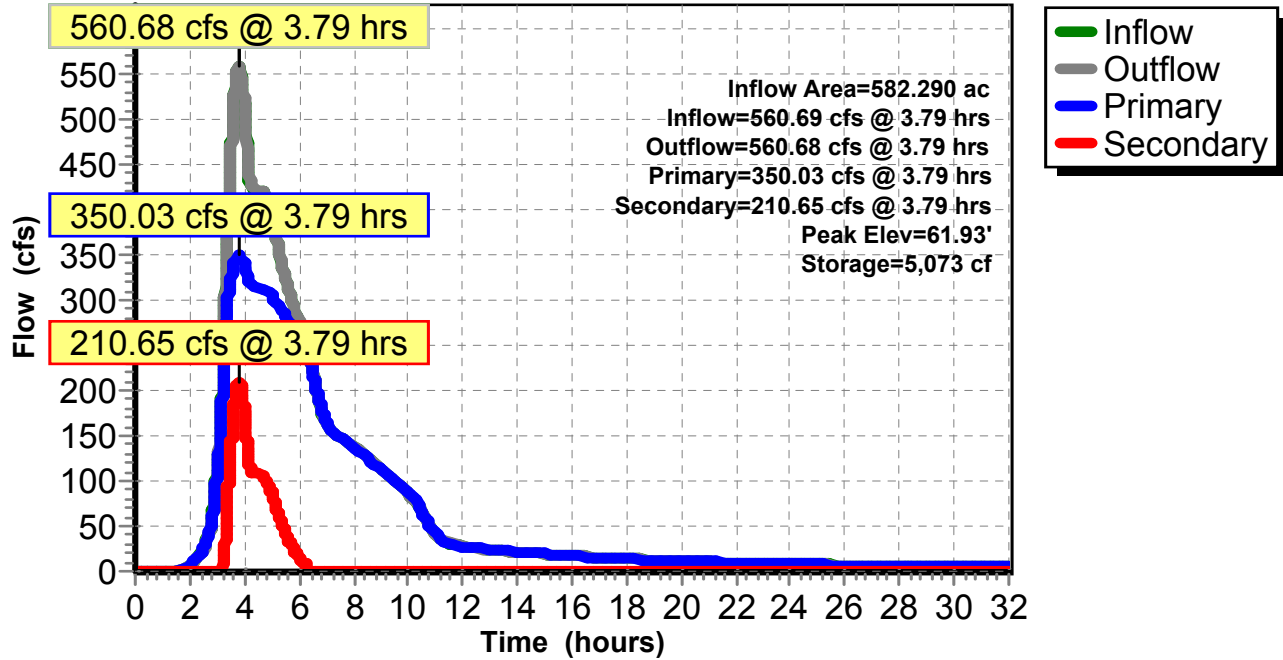
Device	Routing	Invert	Outlet Devices
#1	Primary	56.00'	60.0" Round Culvert X 2.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 56.00' / 37.90' S= 0.0217 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	60.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 66.00 64.00 62.00 60.00 60.00 62.00 64.00 66.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=350.03 cfs @ 3.79 hrs HW=61.93' TW=52.39' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 350.03 cfs @ 8.91 fps)

Secondary OutFlow Max=210.63 cfs @ 3.79 hrs HW=61.93' TW=58.47' (Dynamic Tailwater)
 ↑2=Asymmetrical Weir (Weir Controls 210.63 cfs @ 3.81 fps)

Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Hydrograph



Avon_Exist.ing_Final

Prepared by

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Avon
Type III 6-hr A100_6 Rainfall=6.11"

Printed 5/29/2020

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Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 210.37 cfs @ 3.81 hrs, Volume= 22.616 af
 Outflow = 198.71 cfs @ 3.87 hrs, Volume= 22.616 af, Atten= 6%, Lag= 3.636 min
 Primary = 198.71 cfs @ 3.87 hrs, Volume= 22.616 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 52.82' @ 3.94 hrs Surf.Area= 24,721 sf Storage= 27,240 cf

Plug-Flow detention time= 1.514 min calculated for 22.609 af (100% of inflow)
 Center-of-Mass det. time= 1.517 min (263.094 - 261.577)

Volume	Invert	Avail.Storage	Storage Description
#1	51.00'	162,178 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
51.00	6,000	0	0
52.00	15,452	10,726	10,726
54.00	38,000	53,452	64,178
56.00	60,000	98,000	162,178

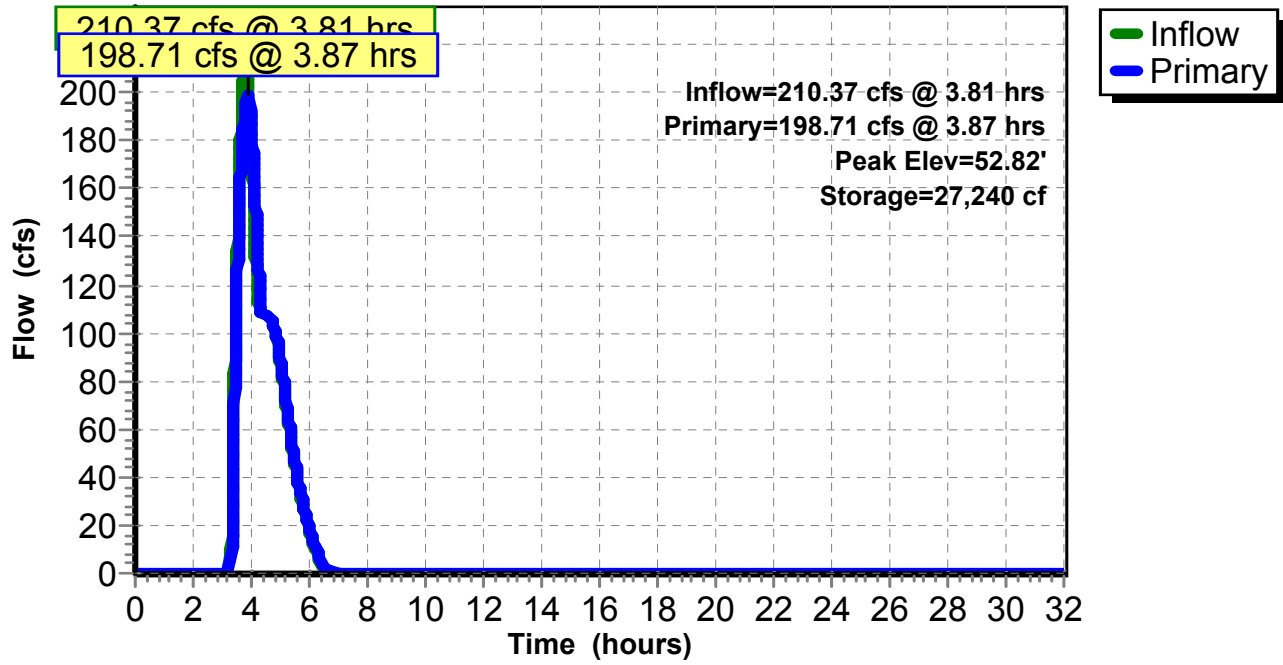
Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=193.15 cfs @ 3.87 hrs HW=52.78' TW=52.57' (Dynamic Tailwater)

↑1=Sharp-Crested Rectangular Weir (Weir Controls 193.15 cfs @ 2.19 fps)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



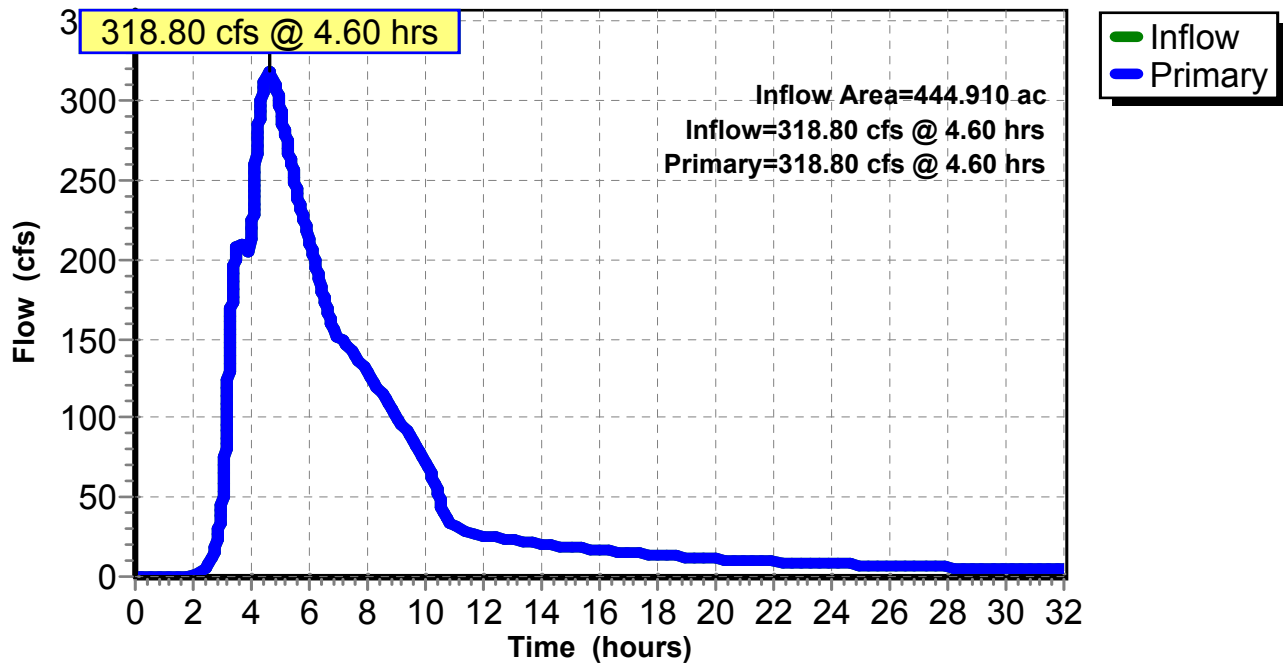
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 3.45" for A100_6 event
Inflow = 318.80 cfs @ 4.60 hrs, Volume= 128.034 af
Primary = 318.80 cfs @ 4.60 hrs, Volume= 128.034 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



Summary for Link 20L: EX FINAL

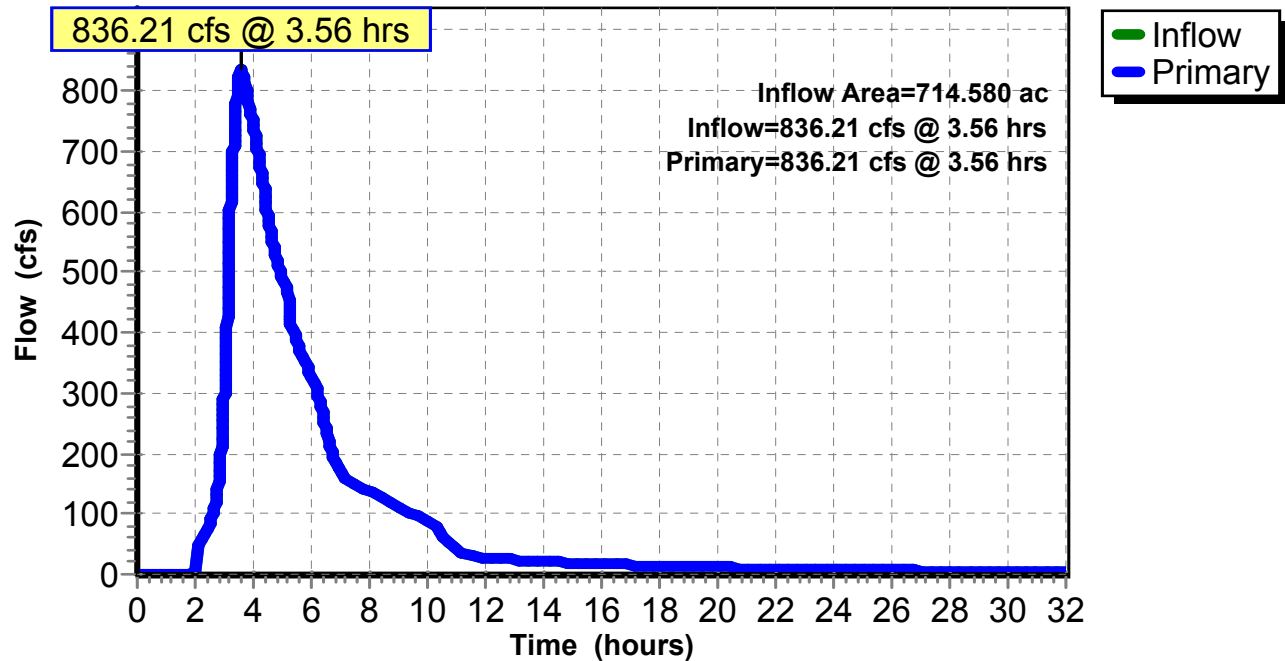
Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 3.82" for A100_6 event
Inflow = 836.21 cfs @ 3.56 hrs, Volume= 227.345 af
Primary = 836.21 cfs @ 3.56 hrs, Volume= 227.345 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 40.00'

Link 20L: EX FINAL

Hydrograph



Summary for Subcatchment A: WS A

Runoff = 257.02 cfs @ 11.17 hrs, Volume= 34.017 af, Depth= 6.87"

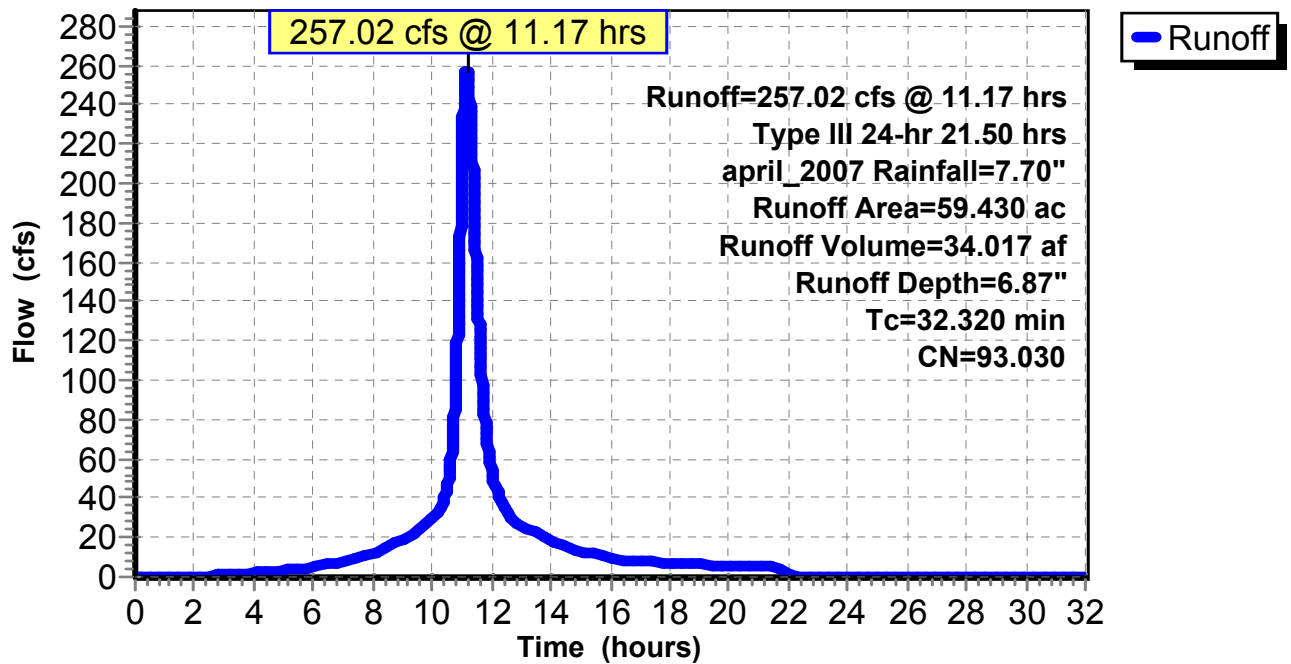
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



Summary for Subcatchment B: WS B

Runoff = 247.26 cfs @ 11.14 hrs, Volume= 29.594 af, Depth= 6.17"

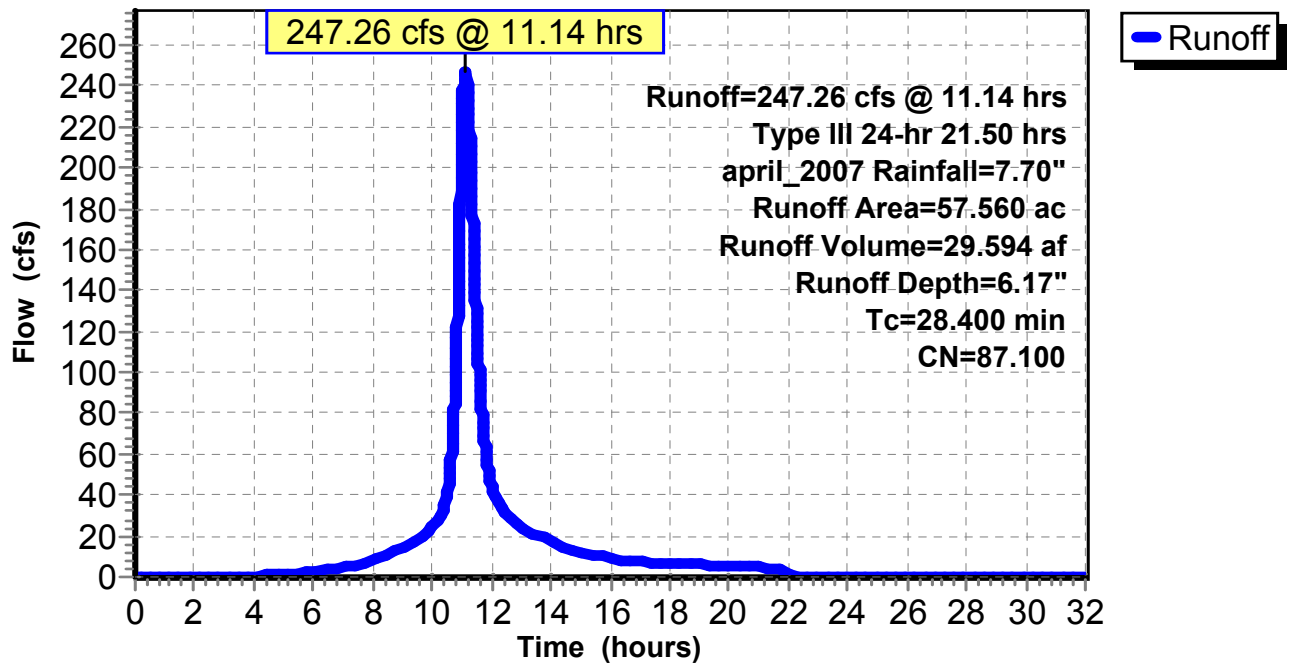
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



Summary for Subcatchment BH: HOTEL

Runoff = 62.73 cfs @ 11.14 hrs, Volume= 7.726 af, Depth= 6.06"

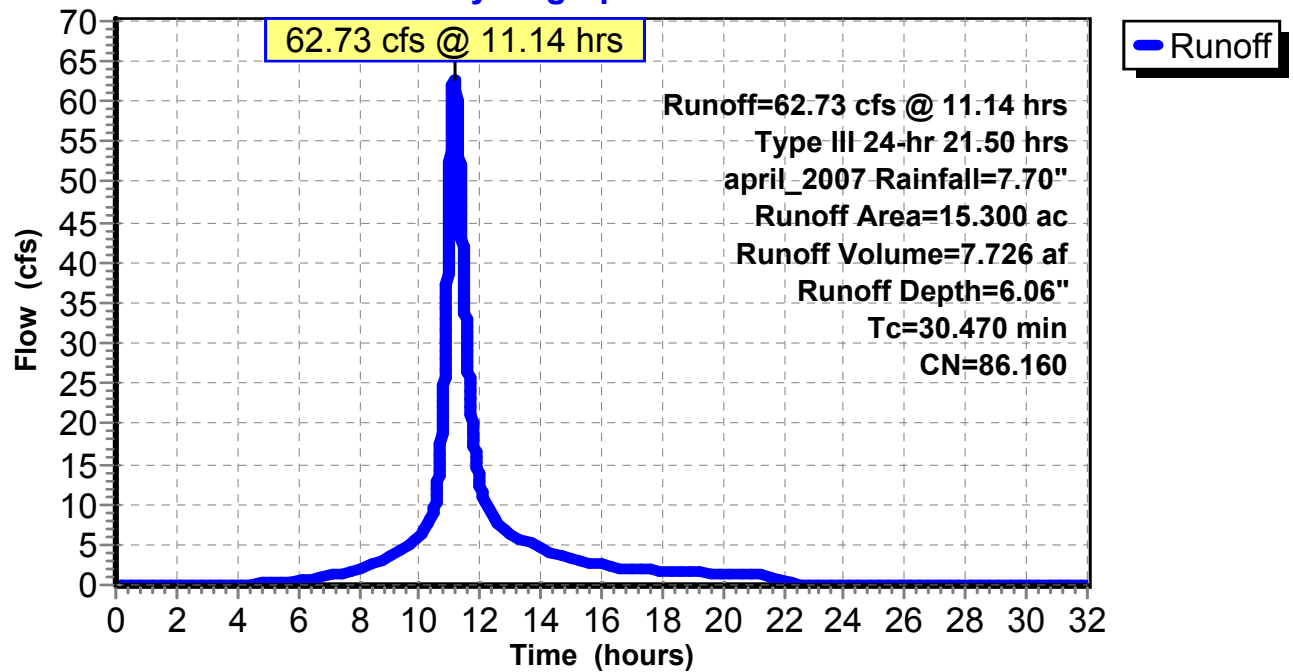
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



Summary for Subcatchment C: WS C

Runoff = 103.29 cfs @ 11.00 hrs, Volume= 10.087 af, Depth= 5.64"

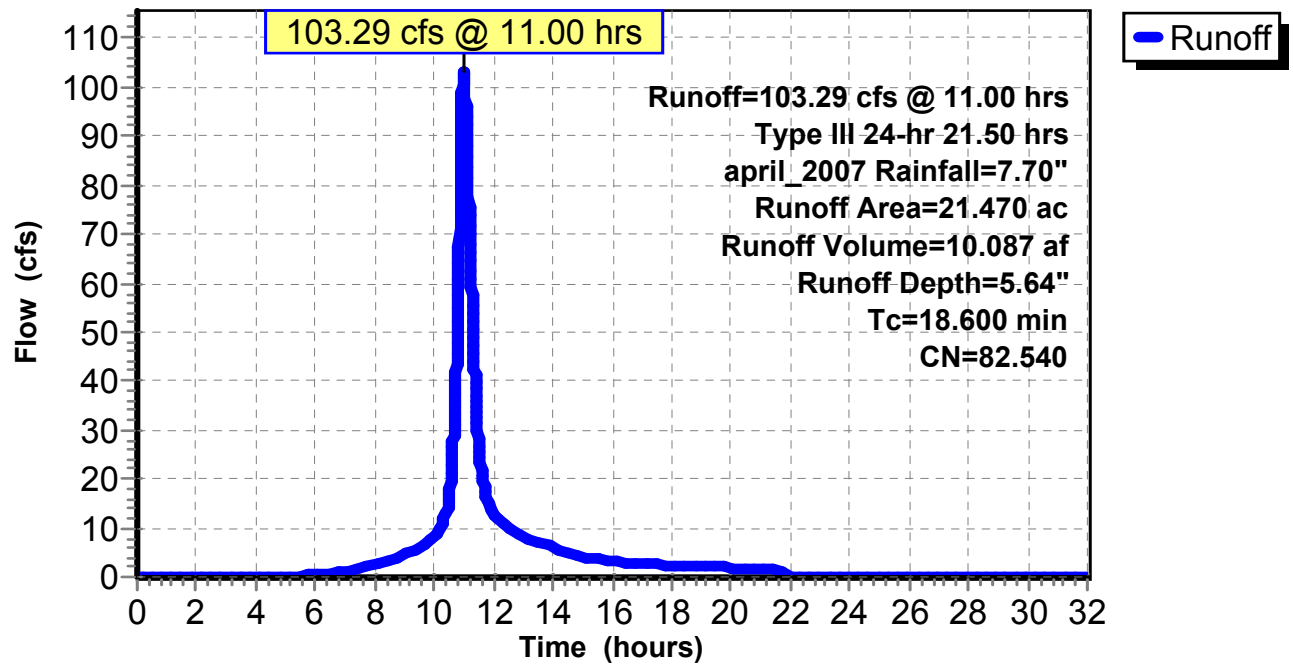
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



Summary for Subcatchment D: WS D

Runoff = 363.73 cfs @ 11.36 hrs, Volume= 54.078 af, Depth= 5.60"

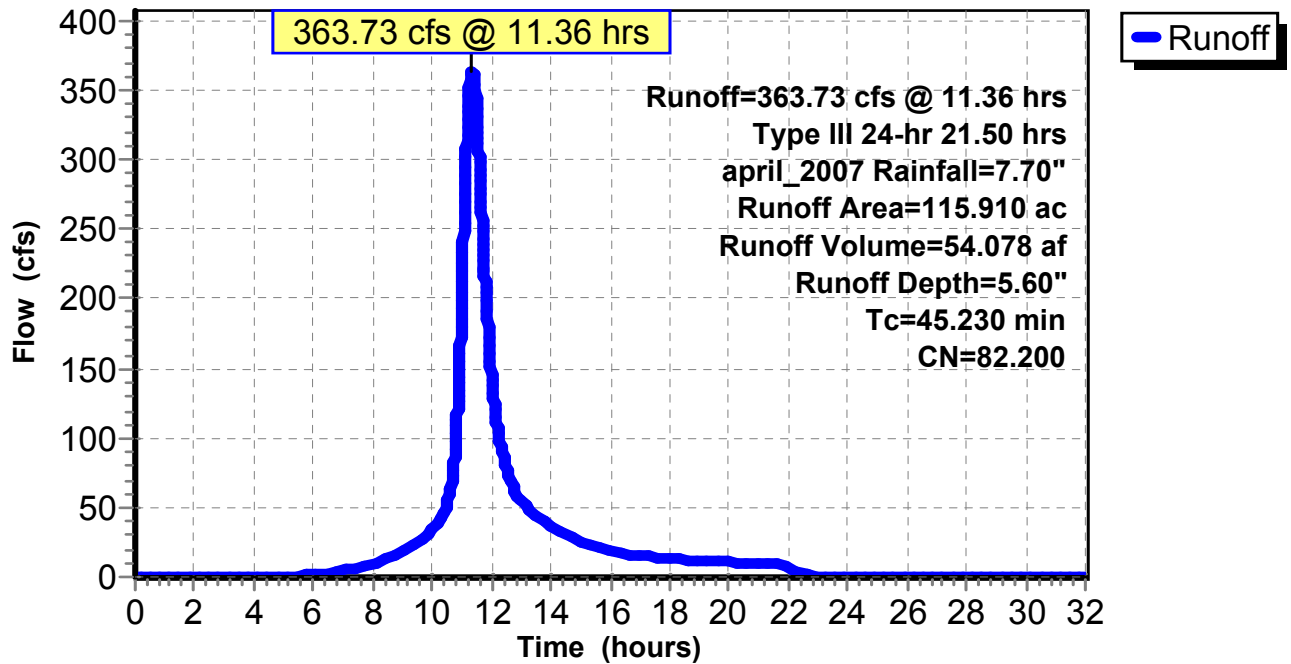
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



Summary for Subcatchment D-1: WS D-1

Runoff = 133.15 cfs @ 11.19 hrs, Volume= 16.182 af, Depth= 4.91"

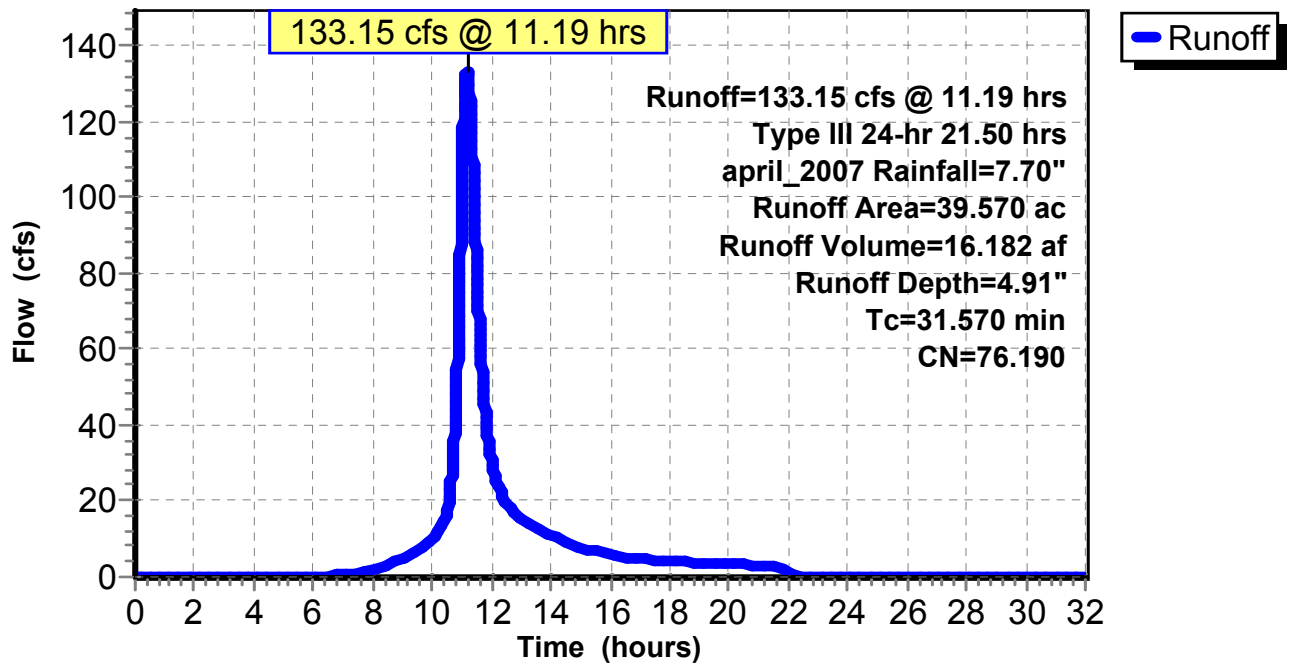
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



Summary for Subcatchment E: WS E

Runoff = 293.65 cfs @ 11.59 hrs, Volume= 52.624 af, Depth= 5.38"

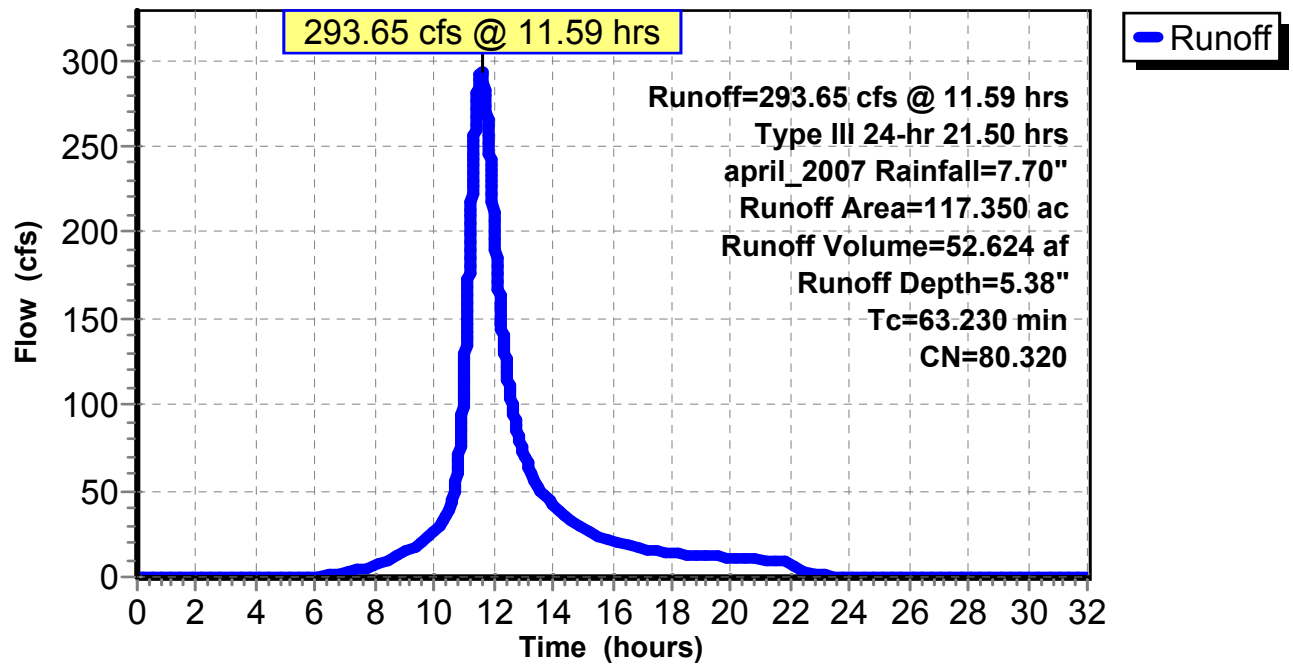
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



Summary for Subcatchment F: WS F

Runoff = 328.06 cfs @ 11.36 hrs, Volume= 47.334 af, Depth= 4.69"

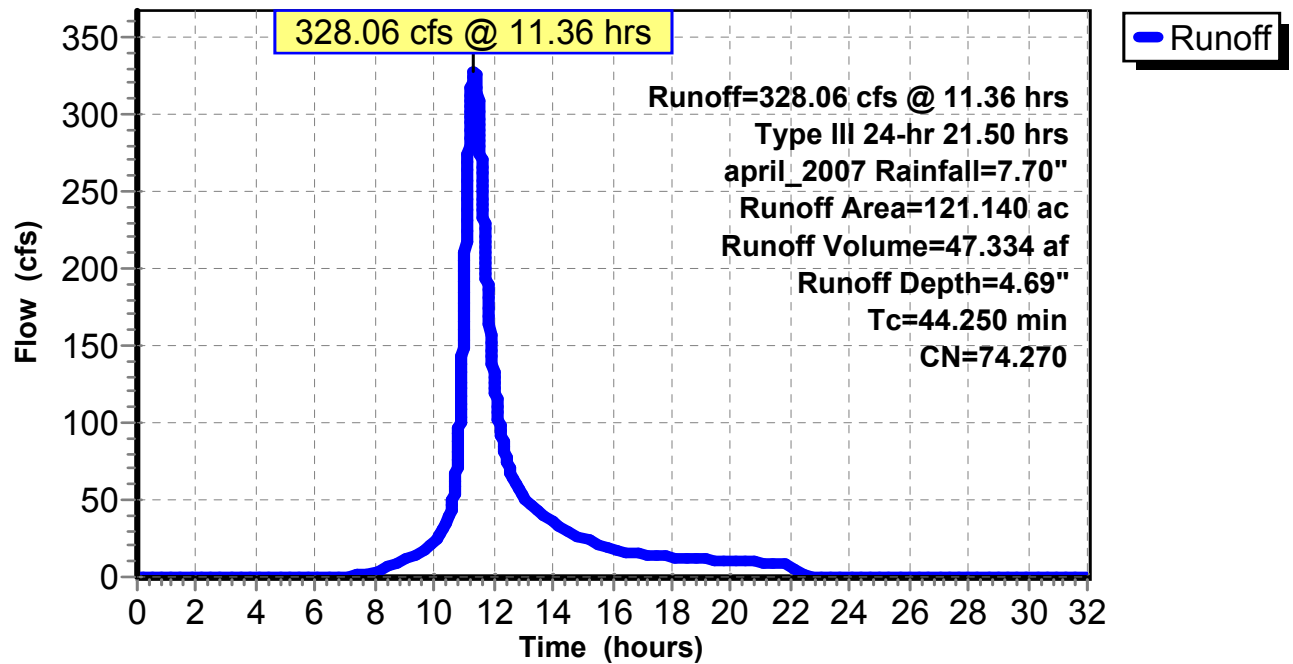
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



Summary for Subcatchment G: WS G

Runoff = 583.01 cfs @ 11.22 hrs, Volume= 76.685 af, Depth= 5.52"

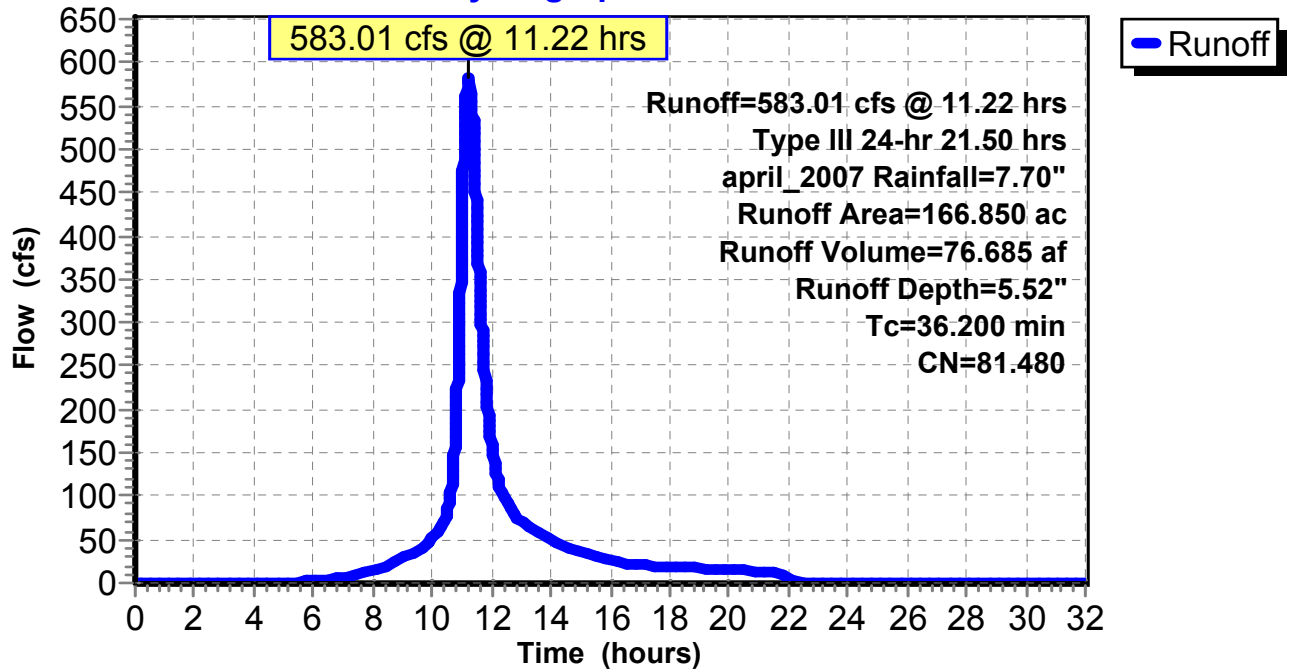
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 4.69" for april_2007 event
 Inflow = 338.72 cfs @ 12.25 hrs, Volume= 158.325 af
 Outflow = 338.58 cfs @ 12.27 hrs, Volume= 158.223 af, Atten= 0%, Lag= 1.325 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 4.43 fps, Min. Travel Time= 1.894 min
 Avg. Velocity = 2.22 fps, Avg. Travel Time= 3.781 min

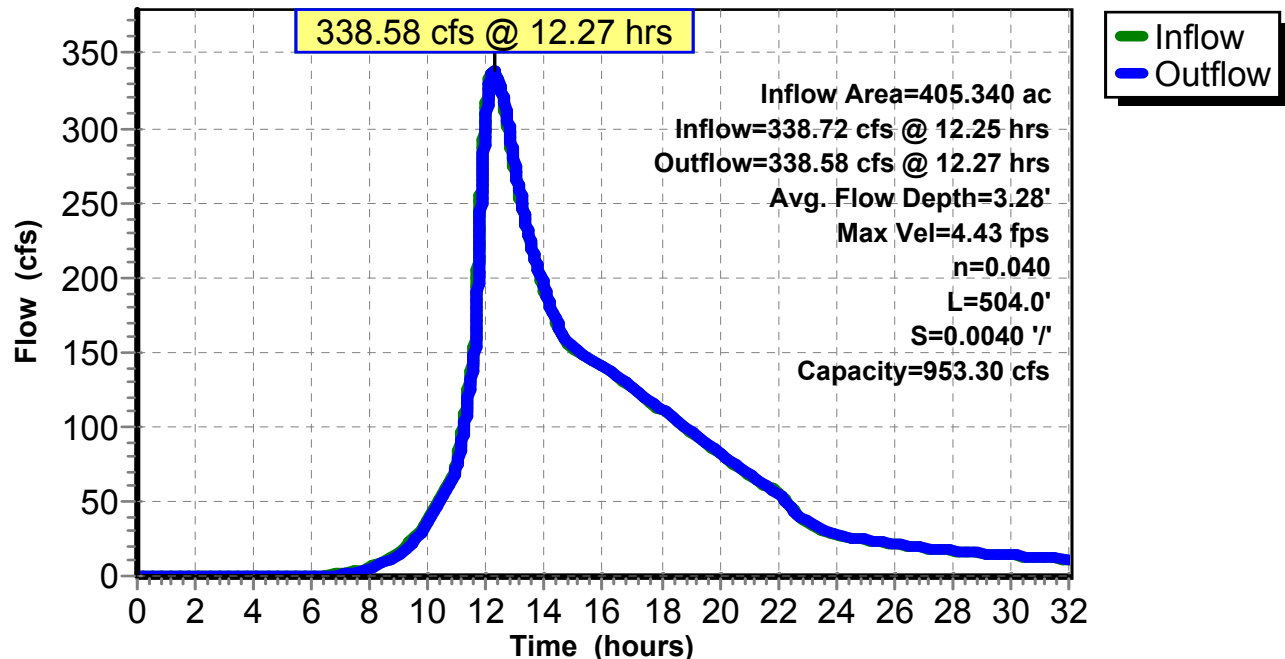
Peak Storage= 38,484 cf @ 12.27 hrs
 Average Depth at Peak Storage= 3.28'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' ' Top Width= 32.00'
 Length= 504.0' Slope= 0.0040 ' '
 Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 4.69" for april_2007 event
 Inflow = 327.54 cfs @ 11.36 hrs, Volume= 47.334 af
 Outflow = 292.10 cfs @ 11.53 hrs, Volume= 47.317 af, Atten= 11%, Lag= 10.139 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.37 fps, Min. Travel Time= 15.346 min
 Avg. Velocity = 0.64 fps, Avg. Travel Time= 56.913 min

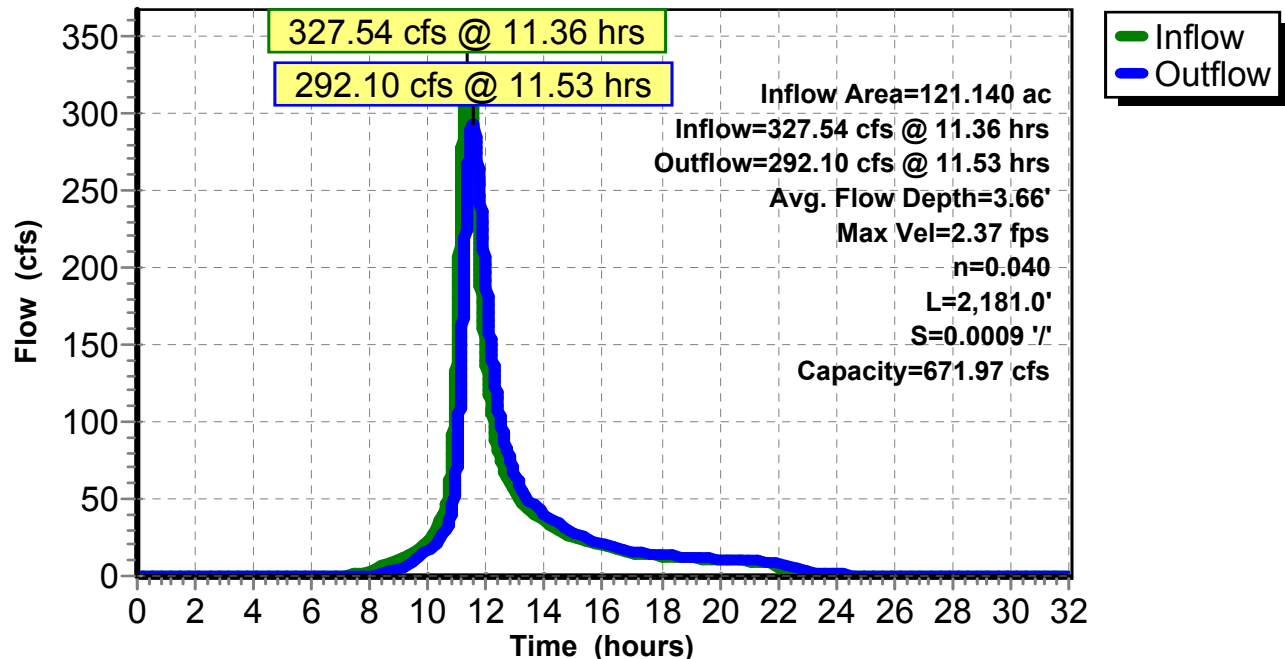
Peak Storage= 268,947 cf @ 11.53 hrs
 Average Depth at Peak Storage= 3.66'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 2,181.0' Slope= 0.0009 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 5.38" for april_2007 event
 Inflow = 576.75 cfs @ 11.28 hrs, Volume= 74.792 af
 Outflow = 59.92 cfs @ 13.52 hrs, Volume= 58.661 af, Atten= 90%, Lag= 134.880 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.64 fps, Min. Travel Time= 573.152 min
 Avg. Velocity = 0.47 fps, Avg. Travel Time= 791.270 min

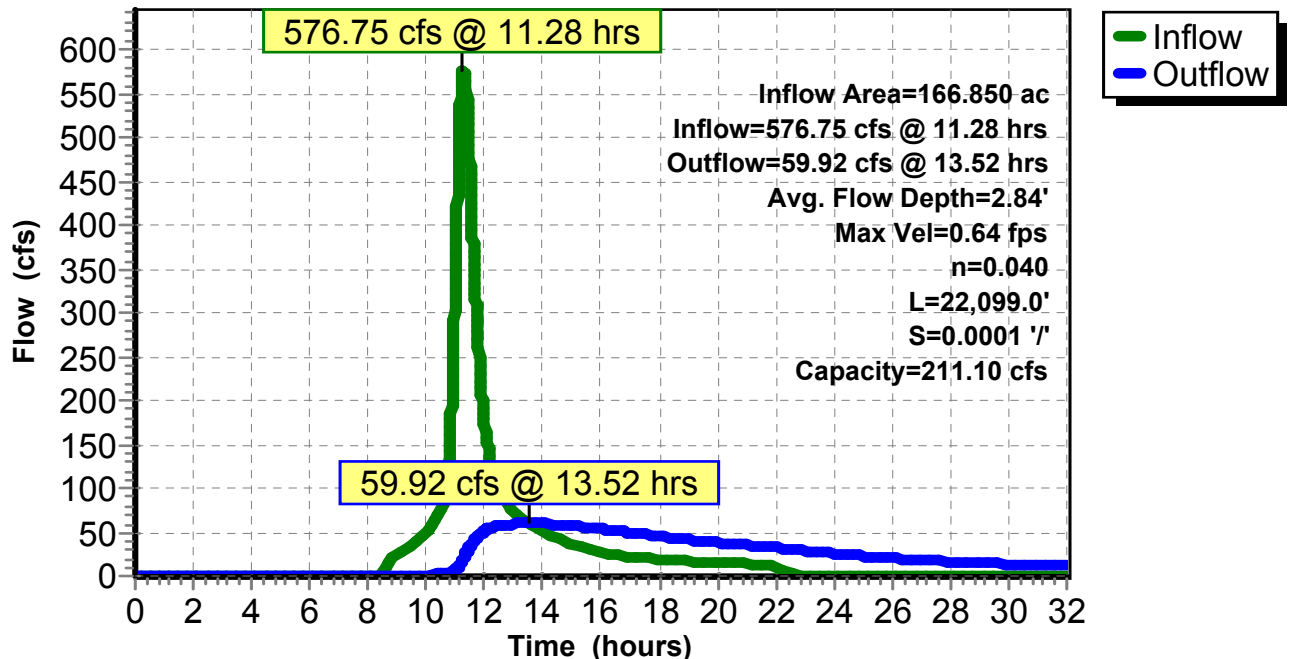
Peak Storage= 2,060,515 cf @ 13.52 hrs
 Average Depth at Peak Storage= 2.84'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 22,099.0' Slope= 0.0001 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 4.70" for april_2007 event
 Inflow = 361.14 cfs @ 12.27 hrs, Volume= 174.204 af
 Outflow = 358.87 cfs @ 12.36 hrs, Volume= 173.864 af, Atten= 1%, Lag= 5.614 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 7.10 fps, Min. Travel Time= 7.005 min
 Avg. Velocity = 3.92 fps, Avg. Travel Time= 12.677 min

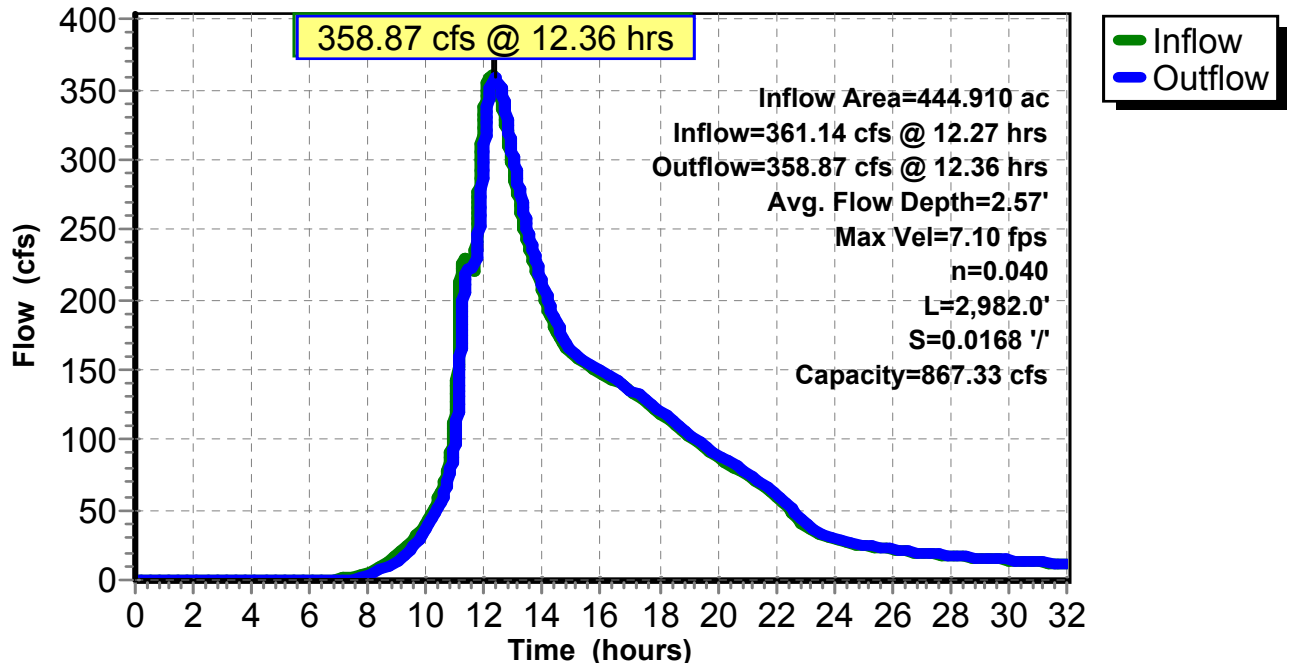
Peak Storage= 150,826 cf @ 12.36 hrs
 Average Depth at Peak Storage= 2.57'
 Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040
 Side Slope Z-value= 3.0 '/' Top Width= 36.00'
 Length= 2,982.0' Slope= 0.0168 '/'
 Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 4.88" for april_2007 event
 Inflow = 582.97 cfs @ 11.41 hrs, Volume= 227.941 af
 Outflow = 582.86 cfs @ 11.42 hrs, Volume= 227.896 af, Atten= 0%, Lag= 0.398 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 11.17 fps, Min. Travel Time= 0.649 min
 Avg. Velocity = 4.91 fps, Avg. Travel Time= 1.476 min

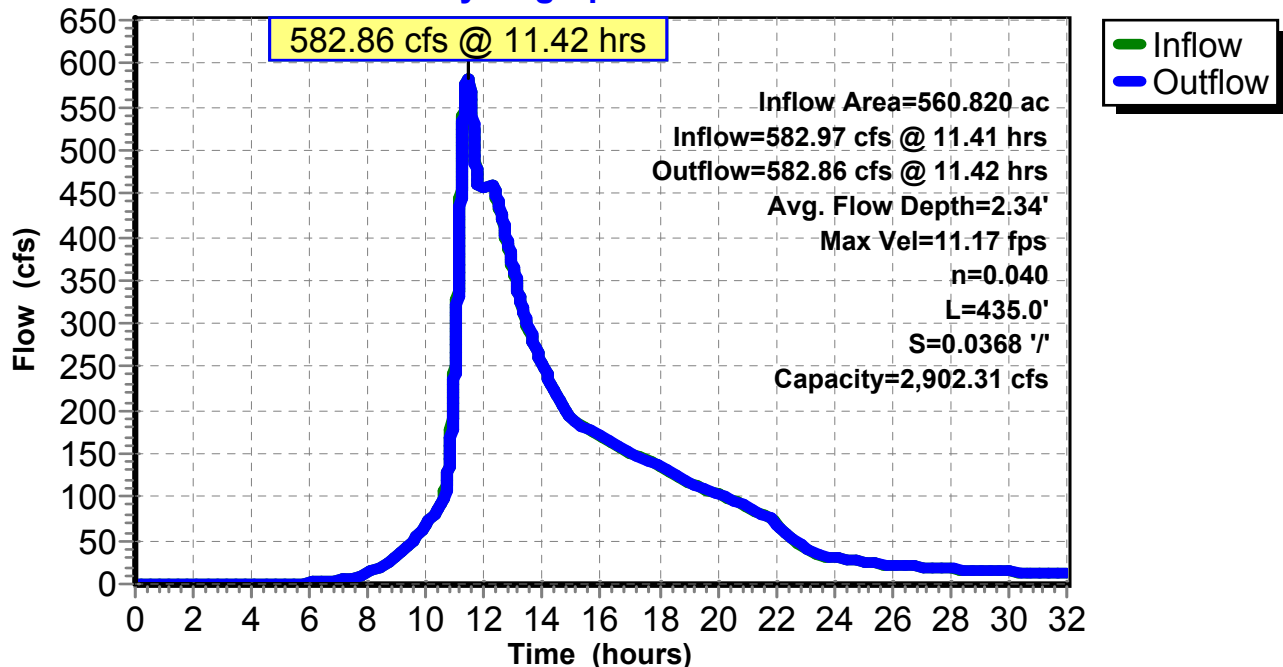
Peak Storage= 22,708 cf @ 11.42 hrs
 Average Depth at Peak Storage= 2.34'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
 Length= 435.0' Slope= 0.0368 ' / '
 Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



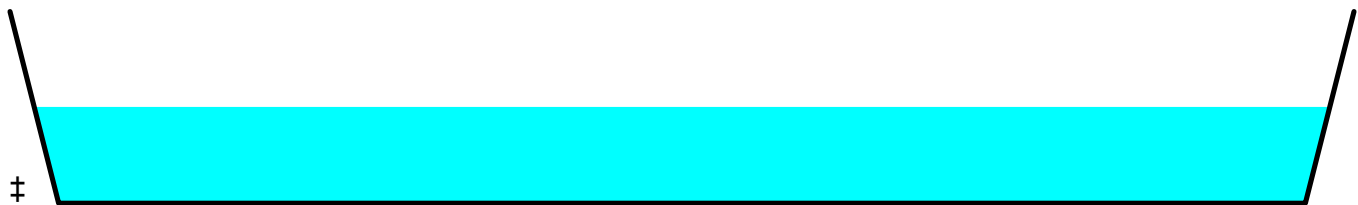
Summary for Reach 17R: FLOW OVER ROAD

Inflow = 235.65 cfs @ 11.51 hrs, Volume= 28.162 af
Outflow = 235.41 cfs @ 11.53 hrs, Volume= 28.162 af, Atten= 0%, Lag= 1.015 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 8.95 fps, Min. Travel Time= 1.654 min
Avg. Velocity = 3.23 fps, Avg. Travel Time= 4.578 min

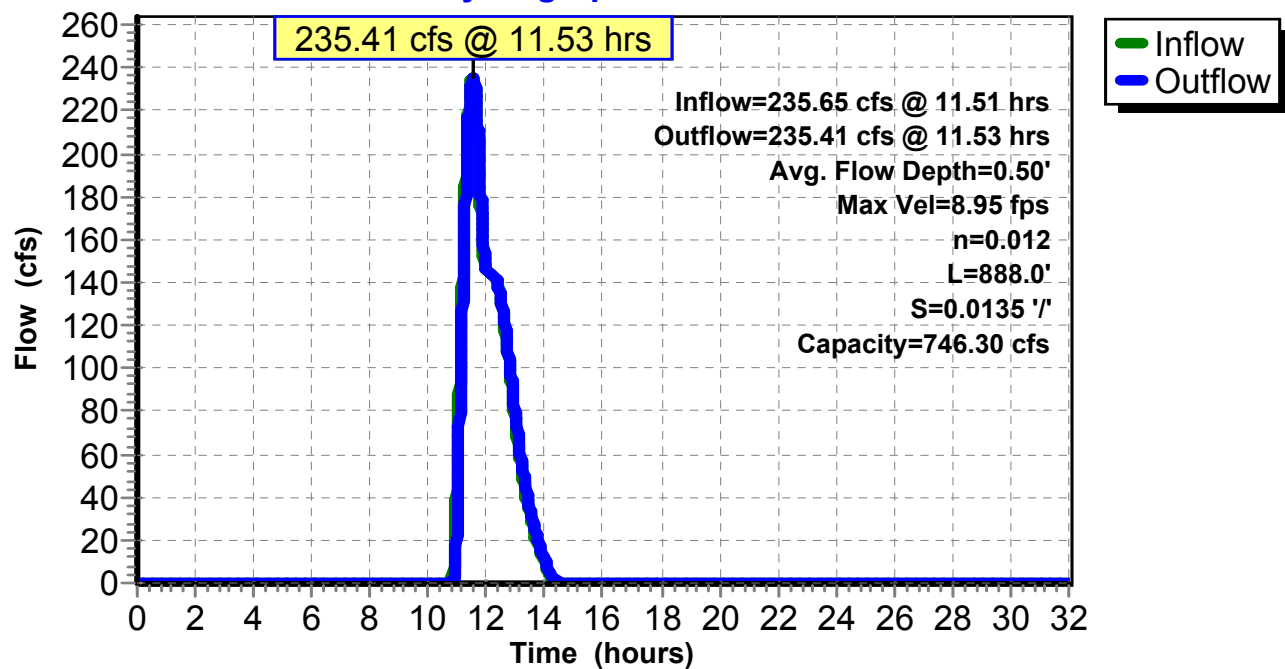
Peak Storage= 23,360 cf @ 11.53 hrs
Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
Length= 888.0' Slope= 0.0135 ' '
Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



Avon_Exist.ing_Final

Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Prepared by

Printed 5/29/2020

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Summary for Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 5.04" for april_2007 event
 Inflow = 777.23 cfs @ 11.25 hrs, Volume= 275.292 af
 Outflow = 662.30 cfs @ 11.69 hrs, Volume= 275.290 af, Atten= 15%, Lag= 26.774 min
 Primary = 662.30 cfs @ 11.69 hrs, Volume= 275.290 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 53.25' @ 11.69 hrs Surf.Area= 1.952 ac Storage= 7.215 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 1.786 min (889.090 - 887.304)

Volume	Invert	Avail.Storage	Storage Description
#1	46.00'	82.605 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
46.00	0.695	0.000	0.000
48.00	0.695	1.390	1.390
50.00	0.800	1.495	2.885
52.00	1.420	2.220	5.105
54.00	2.270	3.690	8.795
56.00	3.160	5.430	14.225
58.00	4.070	7.230	21.455
60.00	4.980	9.050	30.505
62.00	5.710	10.690	41.195
64.00	6.620	12.330	53.525
66.00	7.170	13.790	67.315
68.00	8.120	15.290	82.605

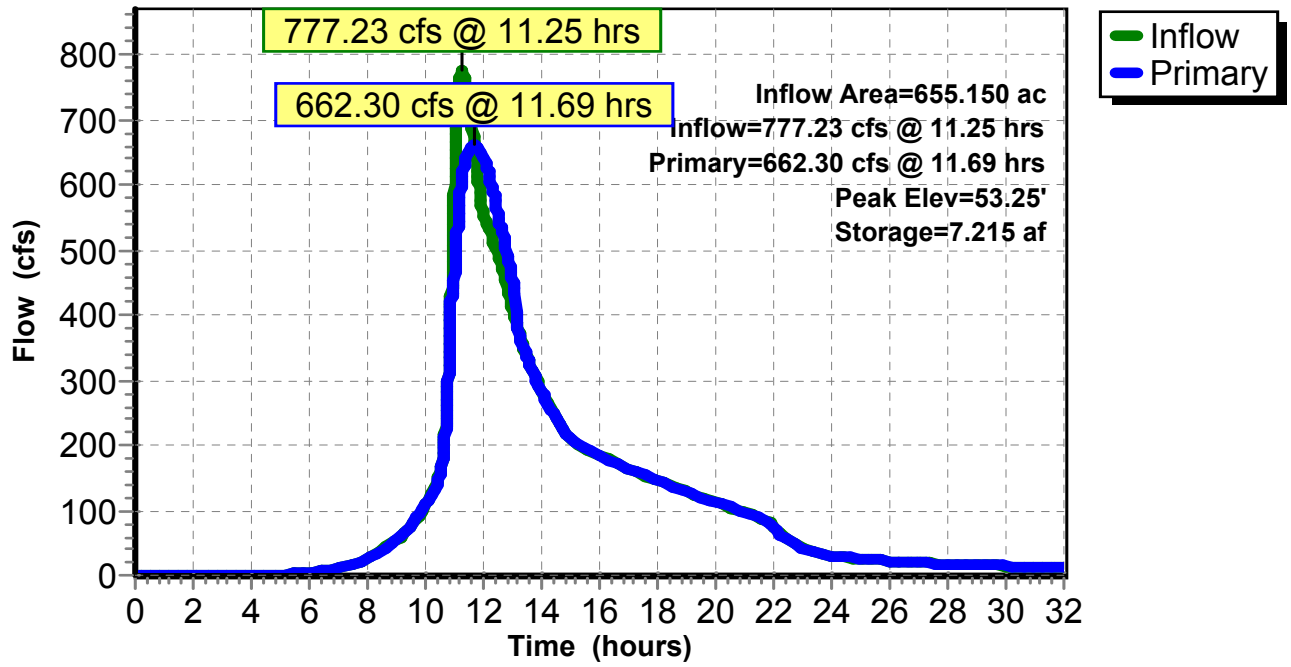
Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48

Primary OutFlow Max=662.31 cfs @ 11.69 hrs HW=53.25' TW=40.18' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 662.31 cfs @ 16.98 fps)
- 2=WEIR WESTCH AVE (Controls 0.00 cfs)

Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



Avon_Exist.ing_Final

Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Prepared by

Printed 5/29/2020

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Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 4.90" for april_2007 event
 Inflow = 620.12 cfs @ 11.38 hrs, Volume= 237.983 af
 Outflow = 592.61 cfs @ 11.51 hrs, Volume= 237.981 af, Atten= 4%, Lag= 7.713 min
 Primary = 592.61 cfs @ 11.51 hrs, Volume= 237.981 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 76.66' @ 11.51 hrs Surf.Area= 0.453 ac Storage= 1.818 af

Plug-Flow detention time= 0.435 min calculated for 237.907 af (100% of inflow)
 Center-of-Mass det. time= 0.426 min (911.893 - 911.467)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

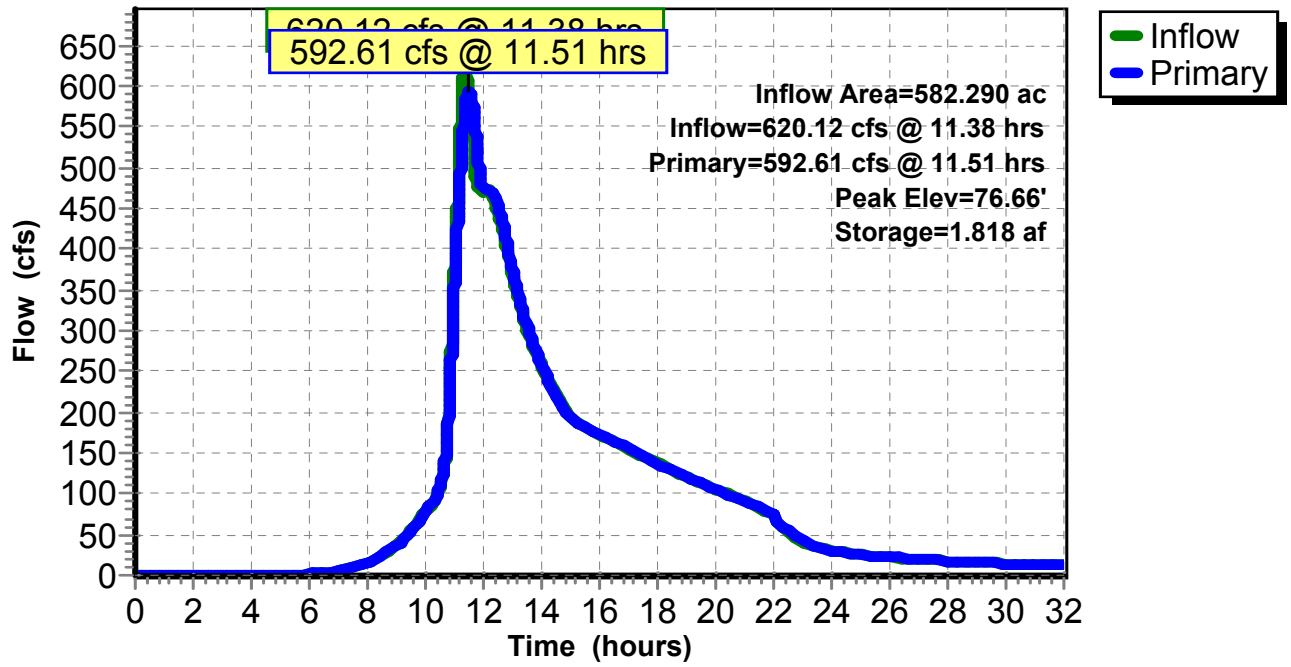
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=592.60 cfs @ 11.51 hrs HW=76.66' TW=62.06' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 341.02 cfs @ 17.37 fps)
- 2=Culvert 2 (Inlet Controls 251.58 cfs @ 12.81 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



Avon_Exist.ing_Final

Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Prepared by

Printed 5/29/2020

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Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 4.70" for april_2007 event
 Inflow = 361.67 cfs @ 12.24 hrs, Volume= 174.405 af
 Outflow = 361.14 cfs @ 12.27 hrs, Volume= 174.204 af, Atten= 0%, Lag= 1.768 min
 Primary = 361.14 cfs @ 12.27 hrs, Volume= 174.204 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 130.60' @ 12.28 hrs Surf.Area= 1.055 ac Storage= 2.672 af

Plug-Flow detention time= 8.594 min calculated for 174.204 af (100% of inflow)
 Center-of-Mass det. time= 7.482 min (958.792 - 951.310)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

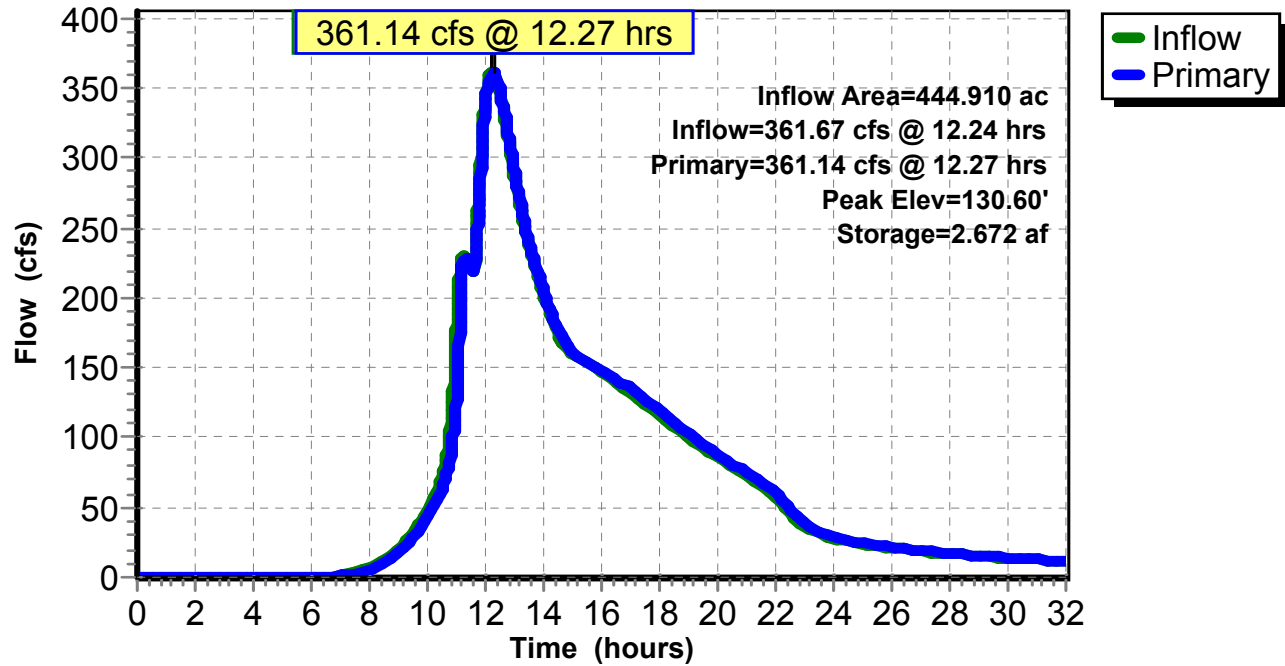
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=361.04 cfs @ 12.27 hrs HW=130.60' TW=128.56' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 172.81 cfs @ 6.88 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 188.23 cfs @ 2.53 fps)

Pond 4A: DP 4 A ARGYLE

Hydrograph



Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 4.70" for april_2007 event
 Inflow = 620.86 cfs @ 11.58 hrs, Volume= 158.602 af
 Outflow = 338.72 cfs @ 12.25 hrs, Volume= 158.325 af, Atten= 45%, Lag= 40.039 min
 Primary = 338.72 cfs @ 12.25 hrs, Volume= 158.325 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 132.61' @ 12.25 hrs Surf.Area= 21.797 ac Storage= 31.022 af

Plug-Flow detention time= 58.794 min calculated for 158.275 af (100% of inflow)
 Center-of-Mass det. time= 57.034 min (969.395 - 912.361)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

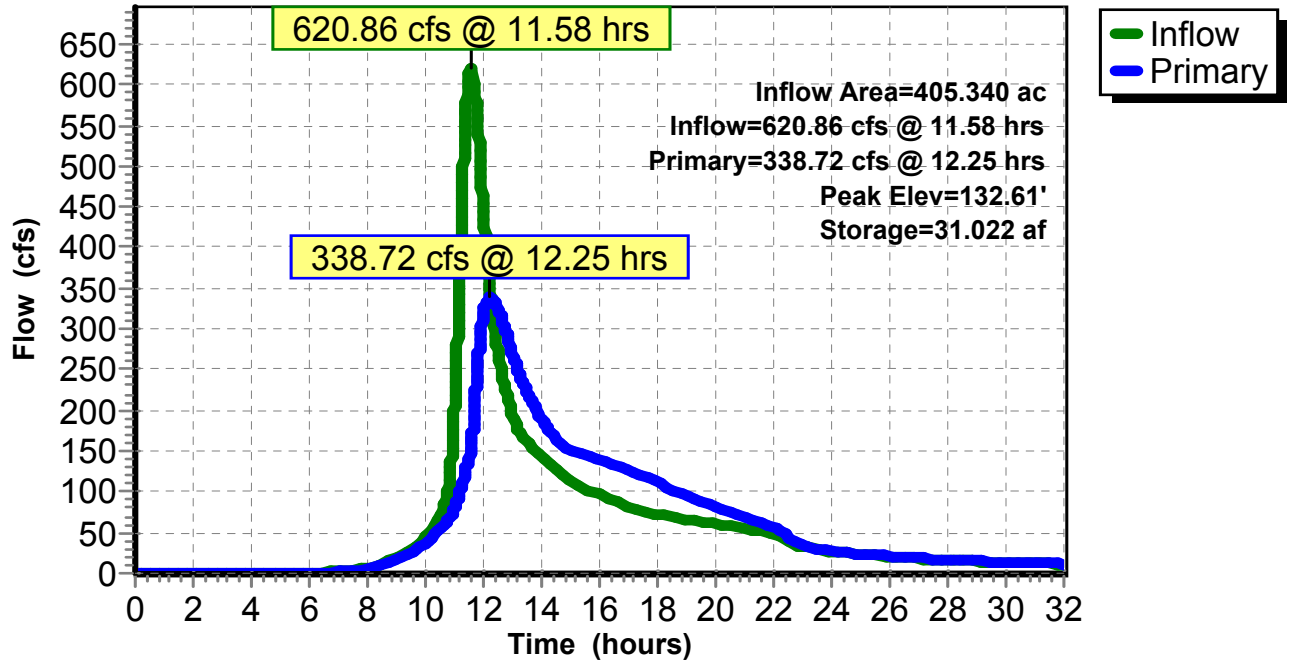
Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

Primary OutFlow Max=338.66 cfs @ 12.25 hrs HW=132.61' TW=131.28' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 139.76 cfs @ 5.56 fps)
- 2=Asymmetrical Weir (Weir Controls 198.91 cfs @ 2.14 fps)

Pond 5P: DP 5 BETSY BROWN ROAD

Hydrograph



Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 4.88" for april_2007 event
 Inflow = 583.76 cfs @ 11.39 hrs, Volume= 227.942 af
 Outflow = 582.97 cfs @ 11.41 hrs, Volume= 227.941 af, Atten= 0%, Lag= 1.087 min
 Primary = 582.97 cfs @ 11.41 hrs, Volume= 227.941 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 91.42' @ 11.41 hrs Surf.Area= 1.370 ac Storage= 1.943 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 2.884 min (918.778 - 915.893)

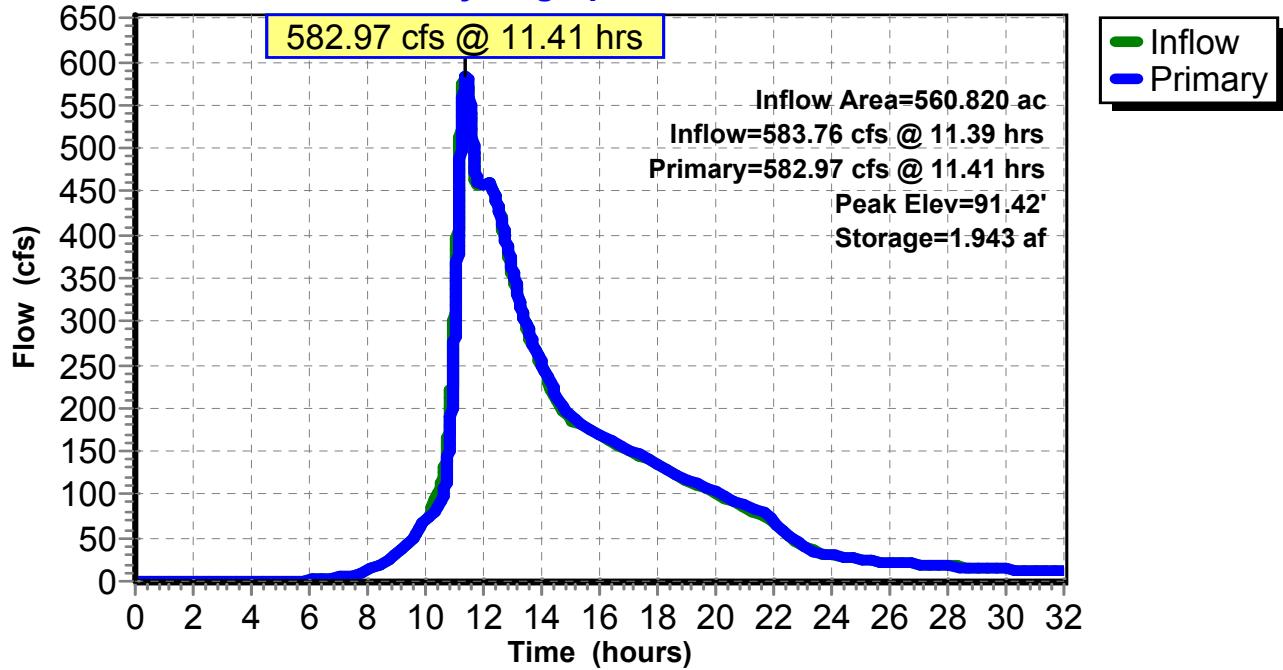
Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=582.97 cfs @ 11.41 hrs HW=91.42' TW=78.34' (Dynamic Tailwater)
 1=Sharp-Crested Rectangular Weir (Weir Controls 197.36 cfs @ 5.54 fps)
 2=Sharp-Crested Rectangular Weir (Weir Controls 385.61 cfs @ 3.17 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 5.19" for april_2007 event
 Inflow = 854.91 cfs @ 11.28 hrs, Volume= 309.307 af
 Outflow = 854.81 cfs @ 11.29 hrs, Volume= 307.616 af, Atten= 0%, Lag= 0.362 min
 Primary = 854.81 cfs @ 11.29 hrs, Volume= 307.616 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 40.22' @ 11.29 hrs Surf.Area= 1.166 ac Storage= 1.908 af

Plug-Flow detention time= 8.516 min calculated for 307.520 af (99% of inflow)
 Center-of-Mass det. time= 3.076 min (872.621 - 869.545)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

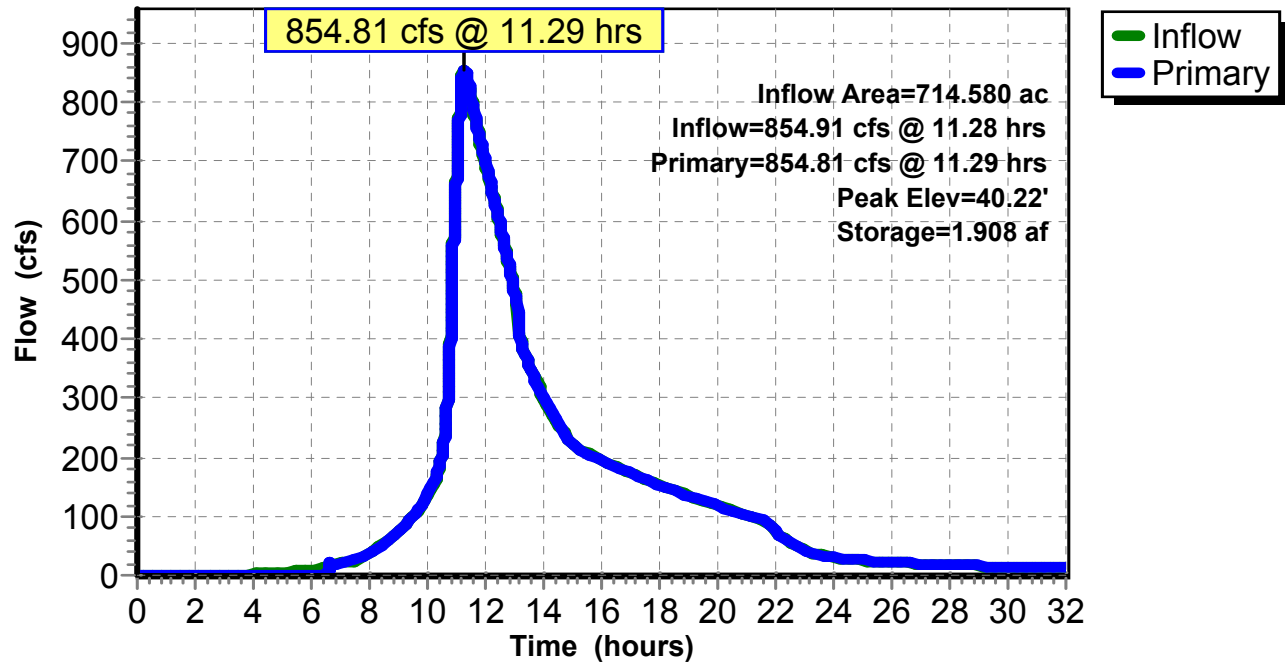
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=854.77 cfs @ 11.29 hrs HW=40.22' TW=40.00' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 313.16 cfs @ 2.27 fps)
- 2=WEIR BOWMAN (Weir Controls 541.61 cfs @ 1.71 fps)

Pond 8P: BOWMAN FIELDS

Hydrograph



Avon_Exist.ing_Final

Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

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Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 4.69" for april_2007 event
 Inflow = 328.06 cfs @ 11.36 hrs, Volume= 47.334 af
 Outflow = 327.54 cfs @ 11.36 hrs, Volume= 47.334 af, Atten= 0%, Lag= 0.196 min
 Primary = 327.54 cfs @ 11.36 hrs, Volume= 47.334 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 135.04' @ 11.37 hrs Surf.Area= 0.210 ac Storage= 0.251 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.397 min (768.620 - 768.223)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

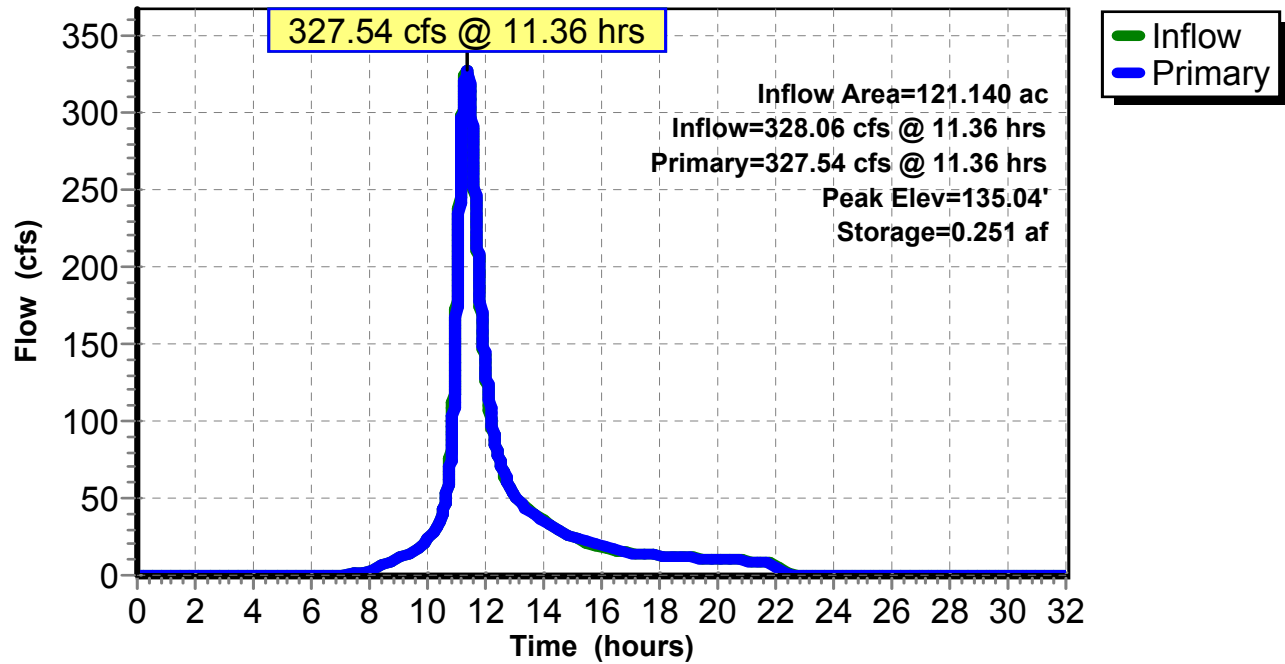
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=326.62 cfs @ 11.36 hrs HW=135.04' TW=133.42' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 43.37 cfs @ 6.14 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 79.90 cfs @ 5.26 fps)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 203.35 cfs @ 2.40 fps)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Hydrograph



Avon_Exist.ing_Final

Avon
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

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Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 5.52" for april_2007 event
 Inflow = 583.01 cfs @ 11.22 hrs, Volume= 76.685 af
 Outflow = 576.75 cfs @ 11.28 hrs, Volume= 74.792 af, Atten= 1%, Lag= 3.010 min
 Primary = 576.75 cfs @ 11.28 hrs, Volume= 74.792 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.72' @ 11.28 hrs Surf.Area= 4.192 ac Storage= 7.482 af (4.514 af above start)

Plug-Flow detention time= 51.858 min calculated for 71.802 af (94% of inflow)
 Center-of-Mass det. time= 13.013 min (758.954 - 745.941)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

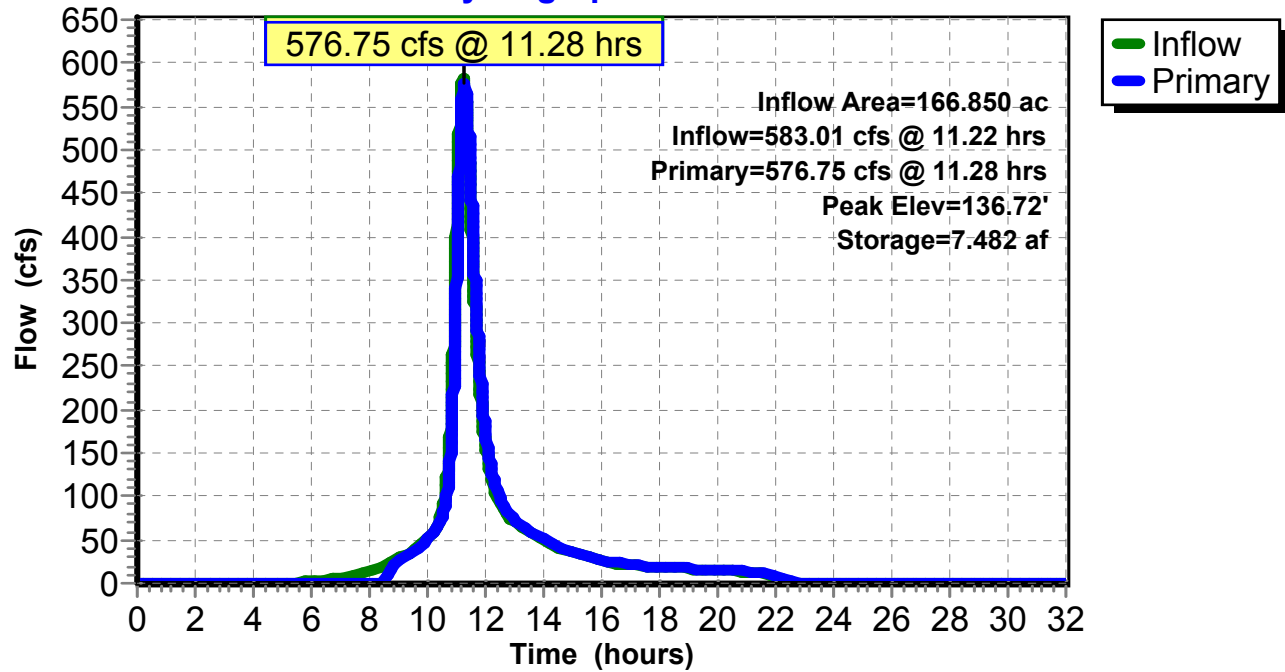
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=576.68 cfs @ 11.28 hrs HW=136.72' TW=131.46' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 3.74 cfs @ 2.88 fps)
- 2=Asymmetrical Weir (Weir Controls 572.94 cfs @ 2.36 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Hydrograph



Avon_Exist.ing_Final

Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

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Summary for Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 4.90" for april_2007 event
 Inflow = 592.61 cfs @ 11.51 hrs, Volume= 237.981 af
 Outflow = 592.61 cfs @ 11.51 hrs, Volume= 237.972 af, Atten= 0%, Lag= 0.104 min
 Primary = 356.96 cfs @ 11.51 hrs, Volume= 209.810 af
 Secondary = 235.65 cfs @ 11.51 hrs, Volume= 28.162 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 62.06' @ 11.51 hrs Surf.Area= 1,472 sf Storage= 5,269 cf

Plug-Flow detention time= 0.217 min calculated for 237.898 af (100% of inflow)
 Center-of-Mass det. time= 0.179 min (912.072 - 911.893)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	22,686 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686

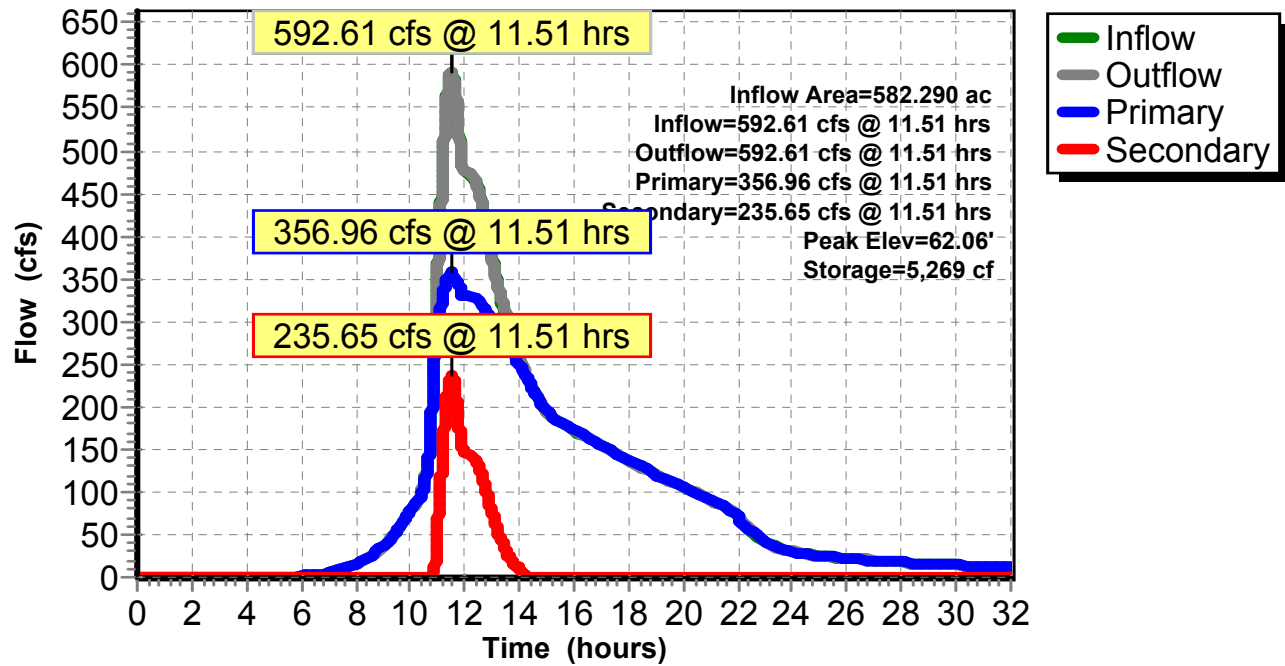
Device	Routing	Invert	Outlet Devices
#1	Primary	56.00'	60.0" Round Culvert X 2.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 56.00' / 37.90' S= 0.0217 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	60.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 66.00 64.00 62.00 60.00 60.00 62.00 64.00 66.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=356.96 cfs @ 11.51 hrs HW=62.06' TW=52.96' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 356.96 cfs @ 9.09 fps)

Secondary OutFlow Max=235.64 cfs @ 11.51 hrs HW=62.06' TW=58.50' (Dynamic Tailwater)
 ↑2=Asymmetrical Weir (Weir Controls 235.64 cfs @ 3.94 fps)

Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Hydrograph



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Avon
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

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Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 235.41 cfs @ 11.53 hrs, Volume= 28.162 af
Outflow = 218.24 cfs @ 11.60 hrs, Volume= 28.162 af, Atten= 7%, Lag= 4.557 min
Primary = 218.24 cfs @ 11.60 hrs, Volume= 28.162 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 53.36' @ 11.69 hrs Surf.Area= 30,834 sf Storage= 42,301 cf

Plug-Flow detention time= 1.893 min calculated for 28.153 af (100% of inflow)
Center-of-Mass det. time= 1.895 min (726.923 - 725.028)

Volume	Invert	Avail.Storage	Storage Description
#1	51.00'	162,178 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
51.00	6,000	0	0
52.00	15,452	10,726	10,726
54.00	38,000	53,452	64,178
56.00	60,000	98,000	162,178

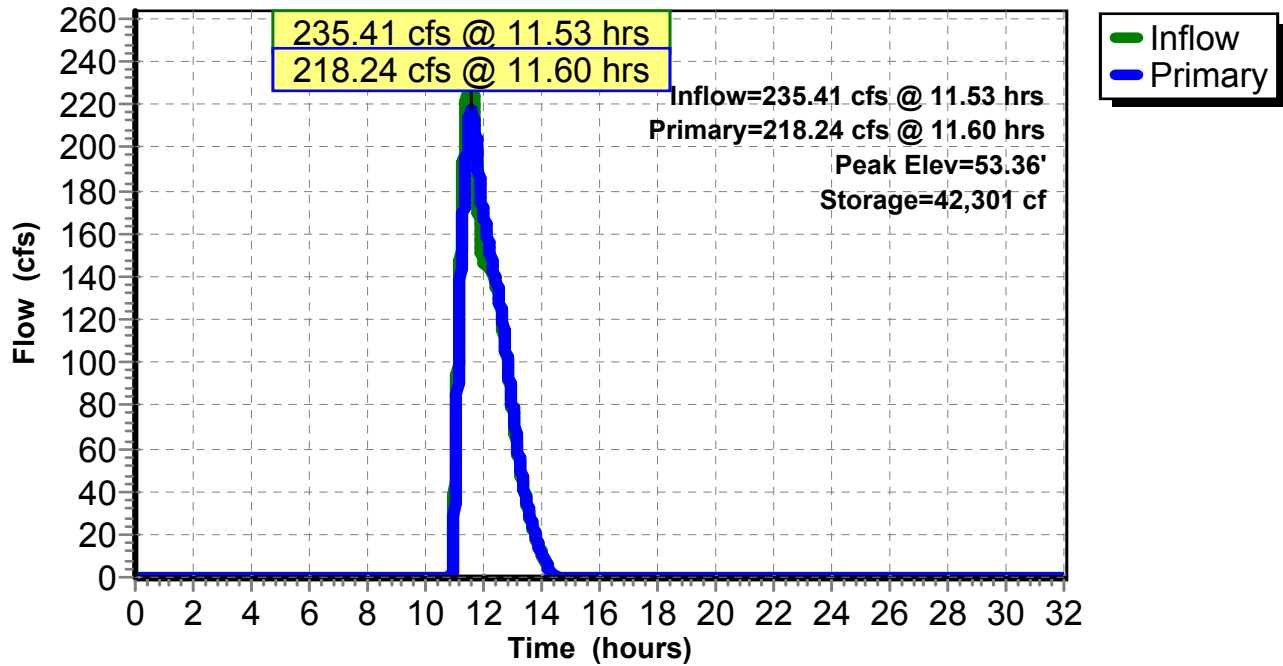
Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=207.60 cfs @ 11.60 hrs HW=53.30' TW=53.18' (Dynamic Tailwater)

↑1=Sharp-Crested Rectangular Weir (Weir Controls 207.60 cfs @ 1.82 fps)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



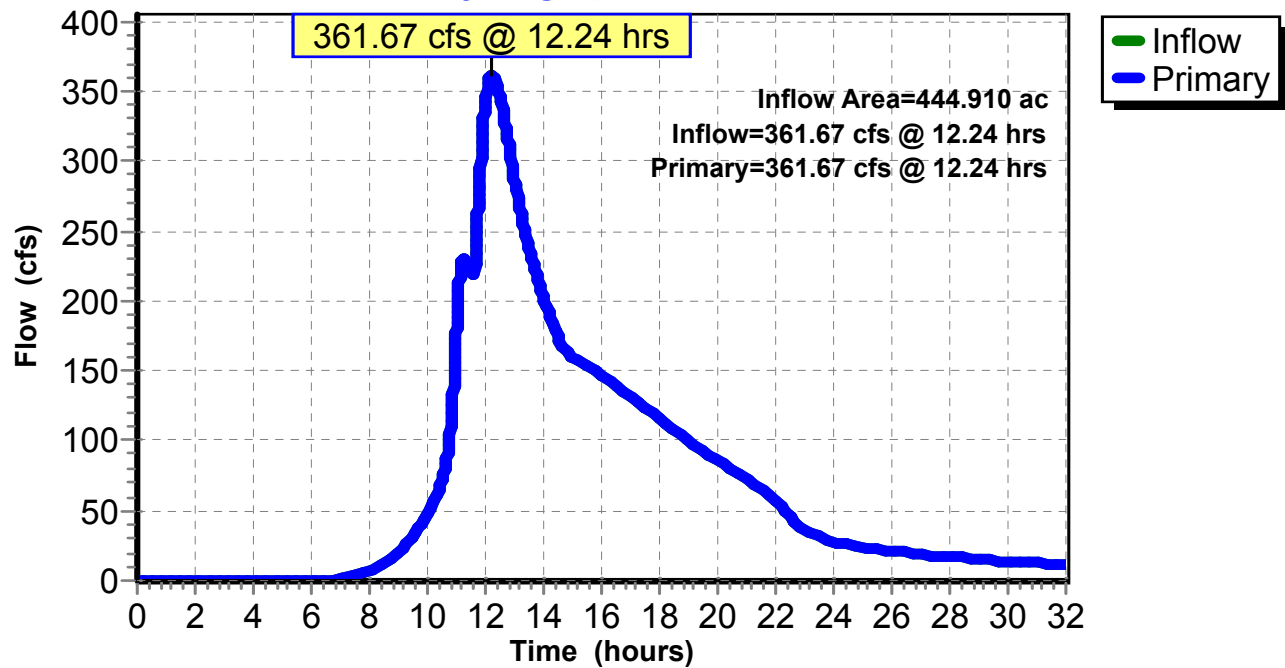
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 4.70" for april_2007 event
Inflow = 361.67 cfs @ 12.24 hrs, Volume= 174.405 af
Primary = 361.67 cfs @ 12.24 hrs, Volume= 174.405 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



Summary for Link 20L: EX FINAL

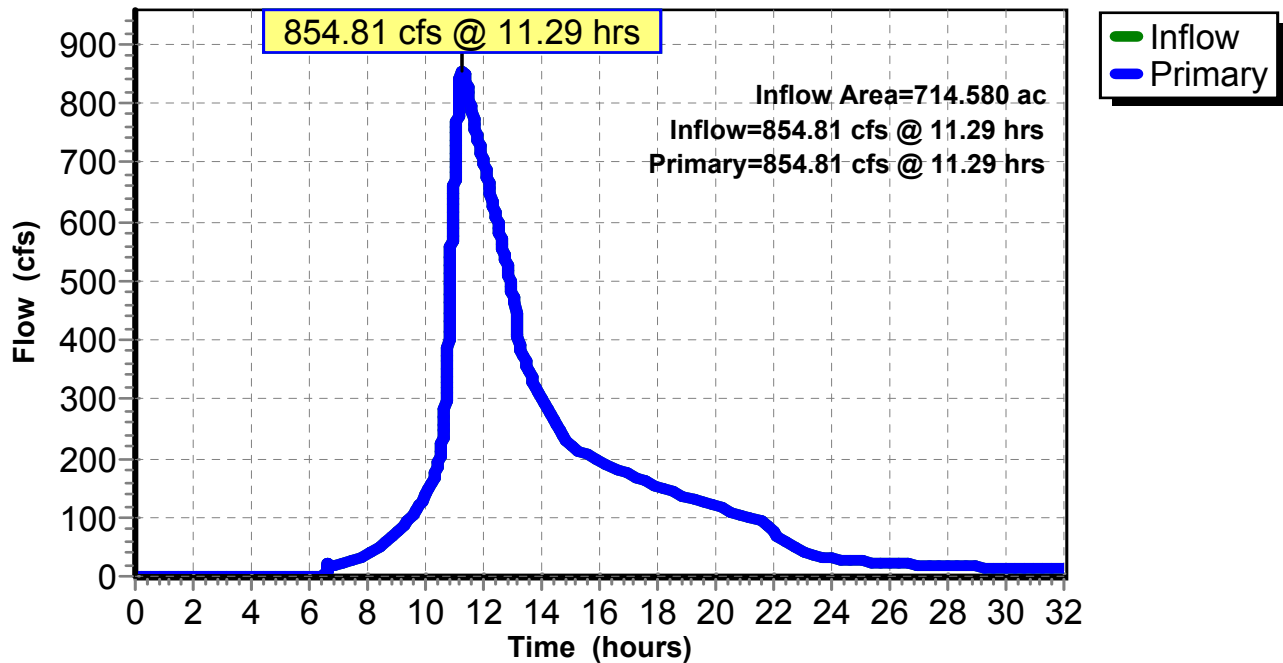
Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 5.17" for april_2007 event
Inflow = 854.81 cfs @ 11.29 hrs, Volume= 307.616 af
Primary = 854.81 cfs @ 11.29 hrs, Volume= 307.616 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 40.00'

Link 20L: EX FINAL

Hydrograph



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Avon
Type III 24-hr B50_24 Rainfall=7.60"

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Summary for Subcatchment A: WS A

Runoff = 238.46 cfs @ 12.42 hrs, Volume= 33.525 af, Depth= 6.77"

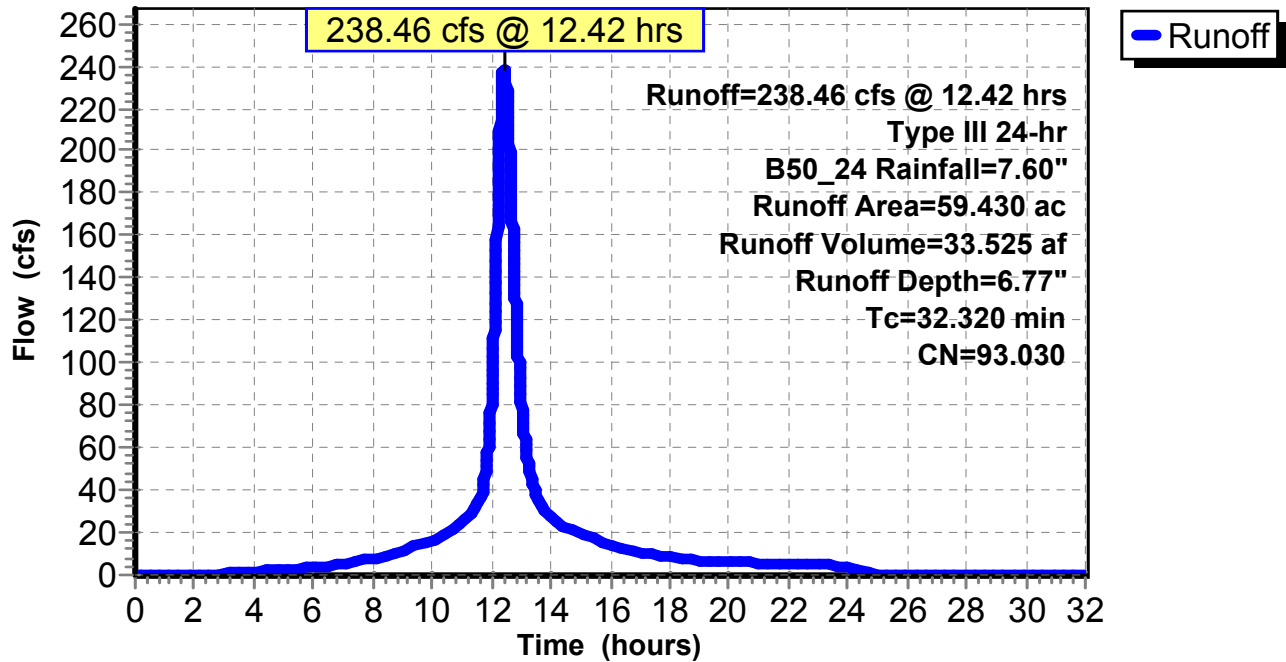
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr B50_24 Rainfall=7.60"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



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Type III 24-hr B50_24 Rainfall=7.60"

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Summary for Subcatchment B: WS B

Runoff = 228.89 cfs @ 12.37 hrs, Volume= 29.127 af, Depth= 6.07"

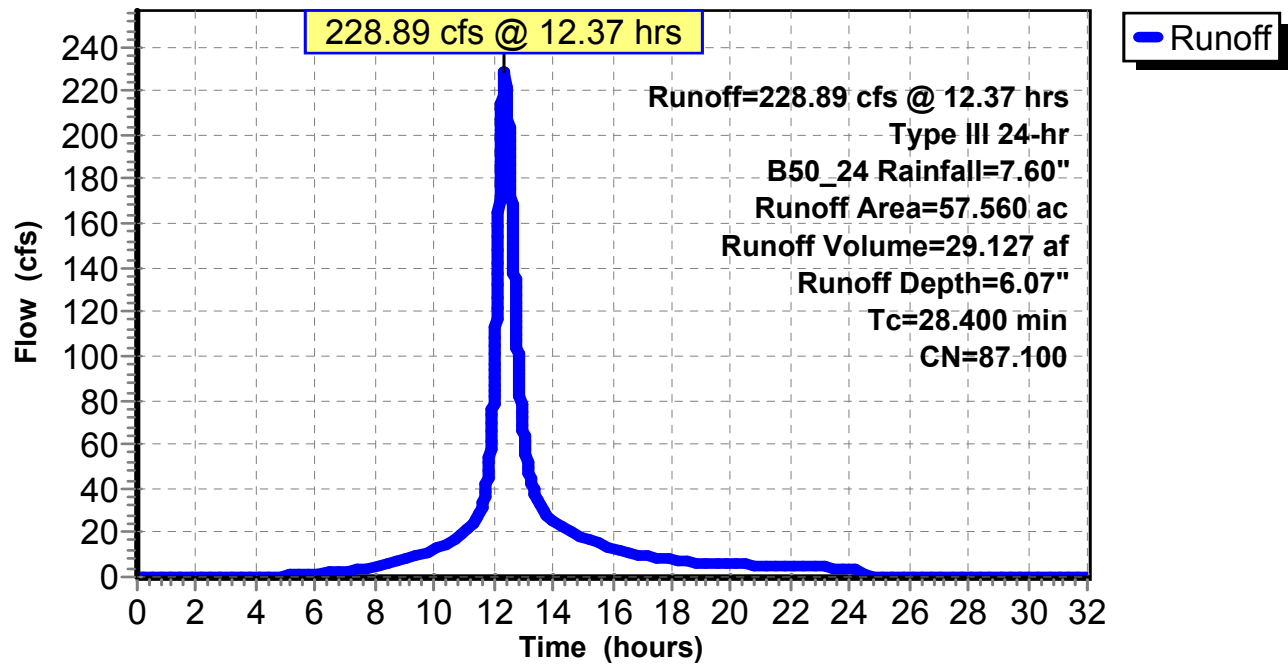
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr B50_24 Rainfall=7.60"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



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Summary for Subcatchment BH: HOTEL

Runoff = 58.21 cfs @ 12.42 hrs, Volume= 7.603 af, Depth= 5.96"

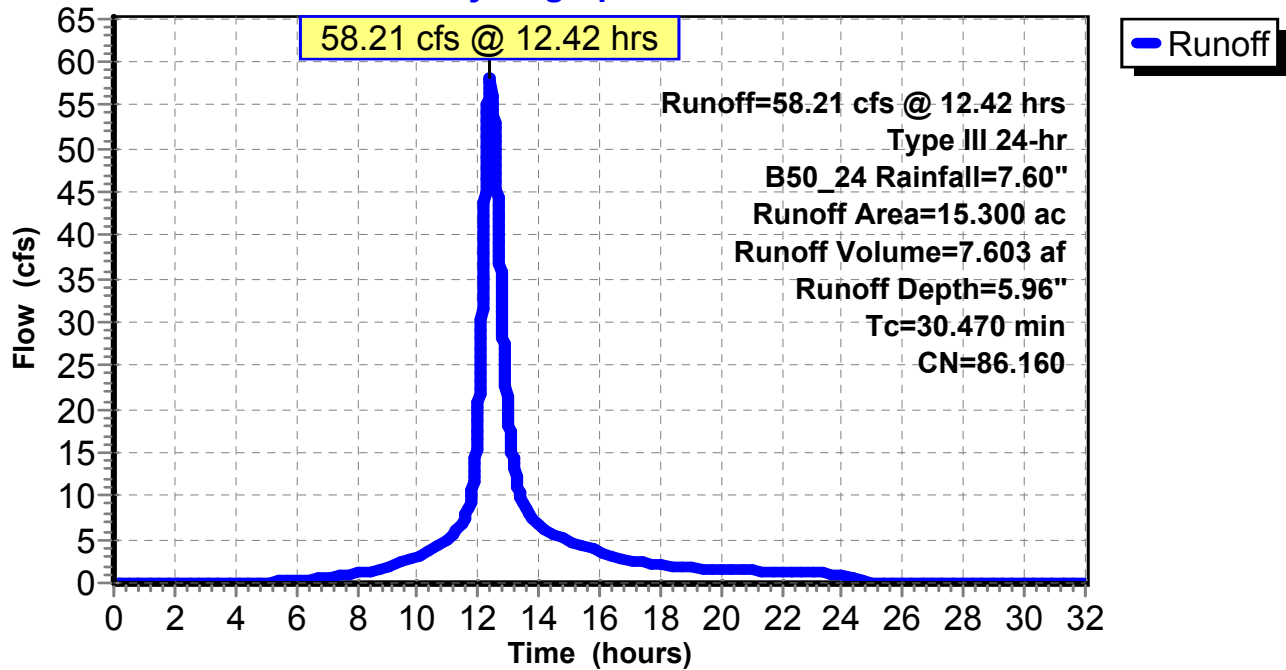
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr B50_24 Rainfall=7.60"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



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Summary for Subcatchment C: WS C

Runoff = 95.36 cfs @ 12.25 hrs, Volume= 9.918 af, Depth= 5.54"

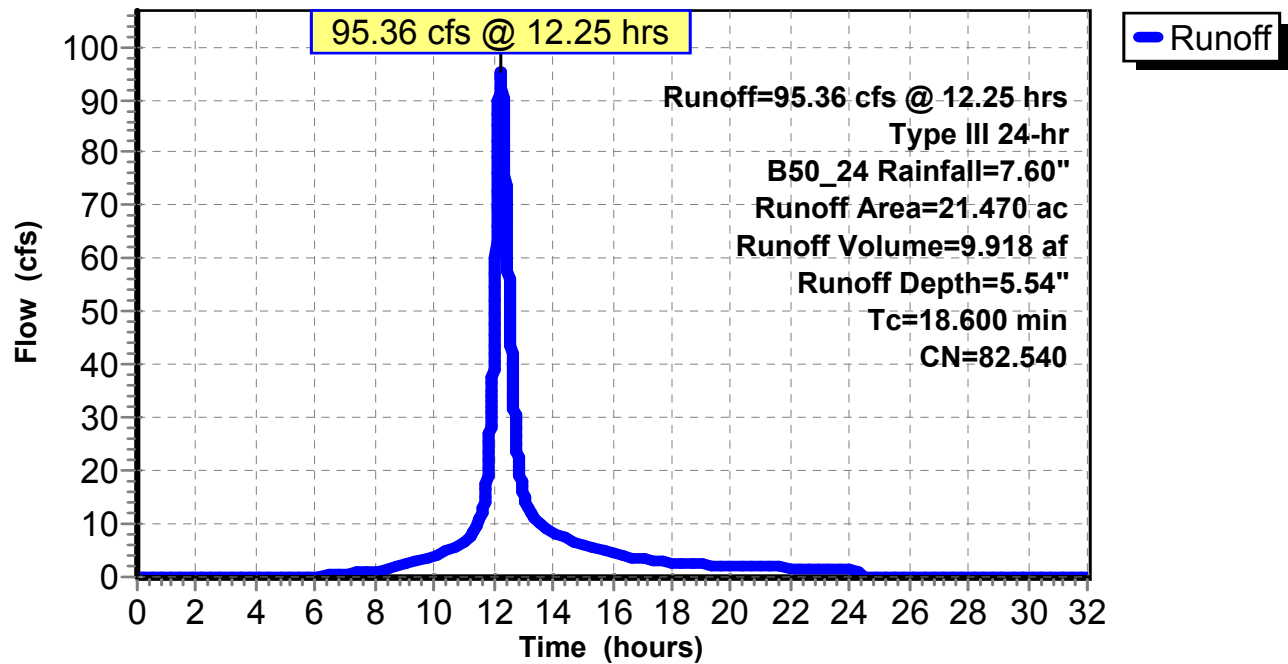
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr B50_24 Rainfall=7.60"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



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Summary for Subcatchment D: WS D

Runoff = 341.42 cfs @ 12.61 hrs, Volume= 53.163 af, Depth= 5.50"

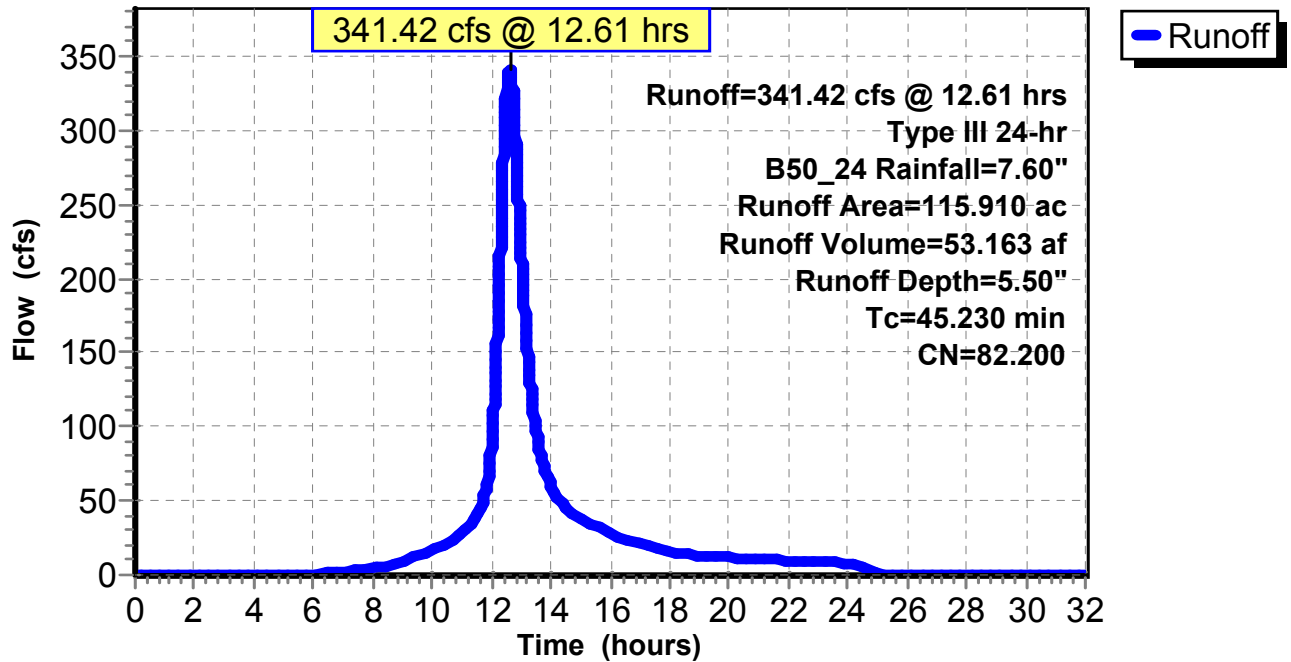
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr B50_24 Rainfall=7.60"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



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Type III 24-hr B50_24 Rainfall=7.60"

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Summary for Subcatchment D-1: WS D-1

Runoff = 123.12 cfs @ 12.45 hrs, Volume= 15.884 af, Depth= 4.82"

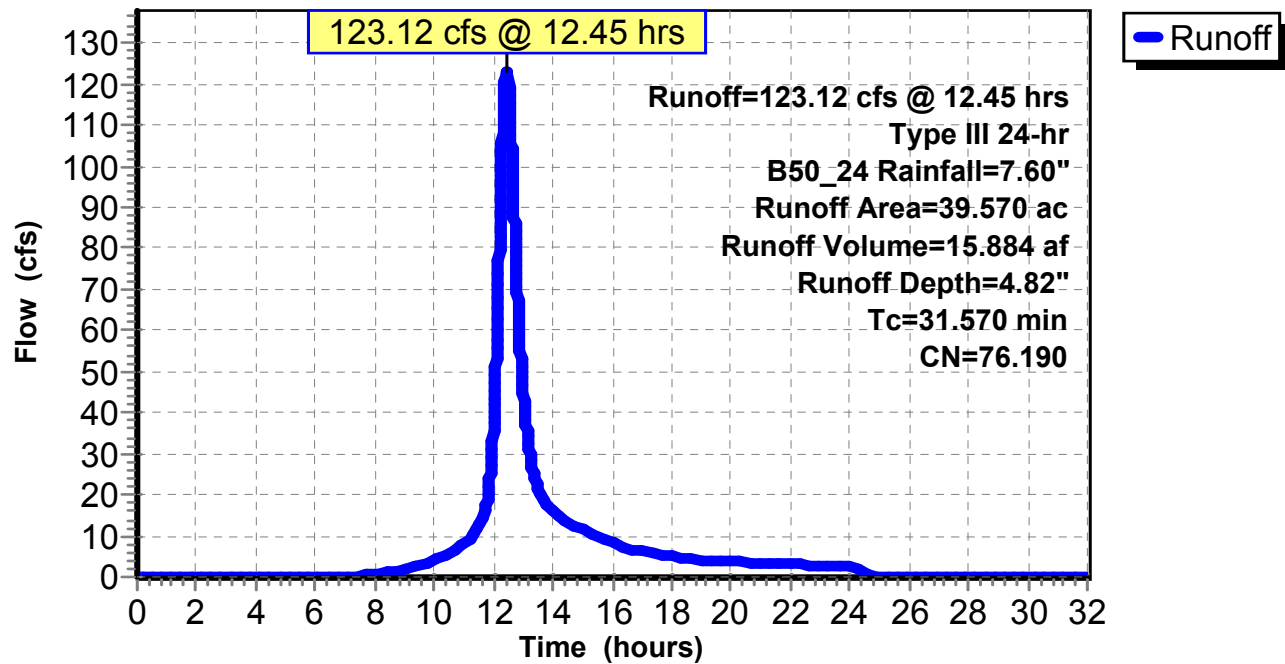
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr B50_24 Rainfall=7.60"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



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Type III 24-hr B50_24 Rainfall=7.60"

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Summary for Subcatchment E: WS E

Runoff = 276.33 cfs @ 12.85 hrs, Volume= 51.710 af, Depth= 5.29"

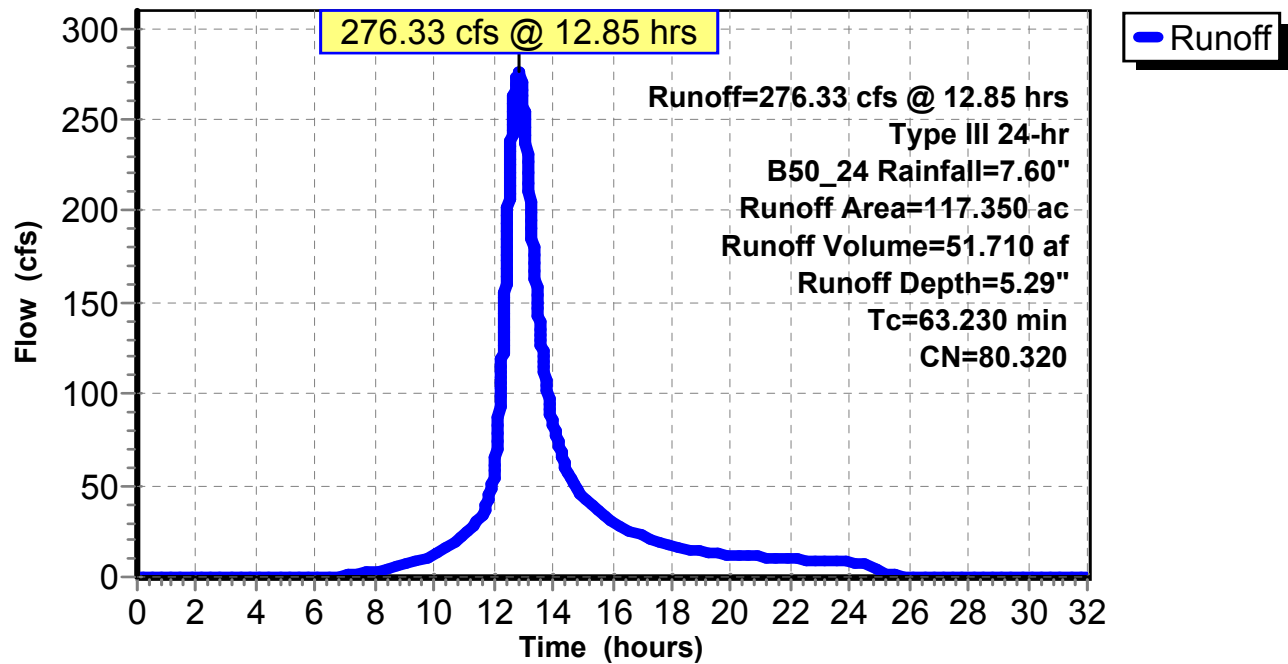
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr B50_24 Rainfall=7.60"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



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Type III 24-hr B50_24 Rainfall=7.60"

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Summary for Subcatchment F: WS F

Runoff = 305.00 cfs @ 12.63 hrs, Volume= 46.436 af, Depth= 4.60"

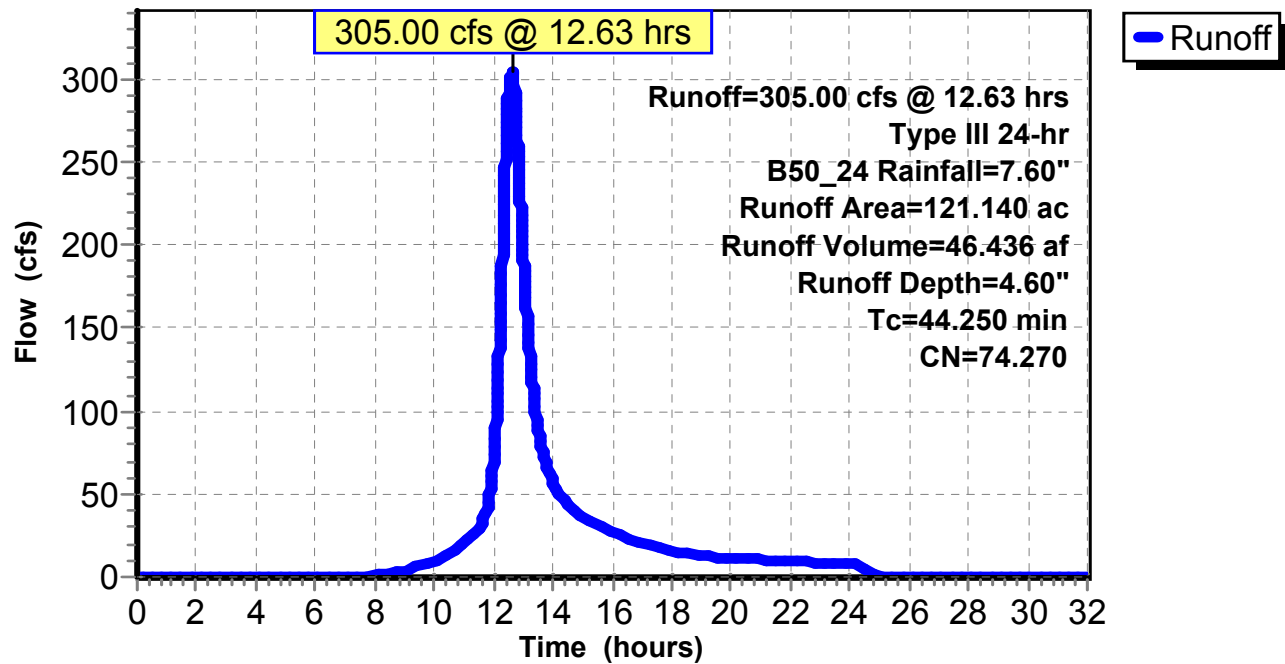
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr B50_24 Rainfall=7.60"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



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Summary for Subcatchment G: WS G

Runoff = 541.76 cfs @ 12.50 hrs, Volume= 75.374 af, Depth= 5.42"

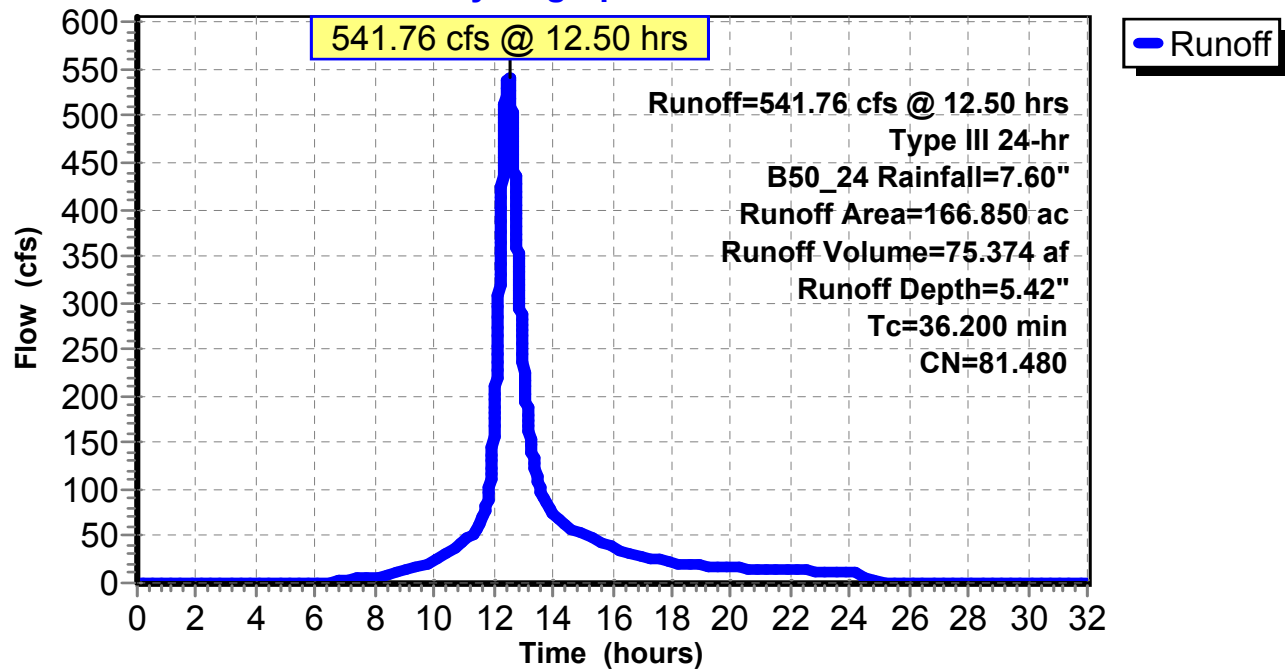
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr B50_24 Rainfall=7.60"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 4.55" for B50_24 event
Inflow = 314.53 cfs @ 13.53 hrs, Volume= 153.701 af
Outflow = 314.40 cfs @ 13.55 hrs, Volume= 153.591 af, Atten= 0%, Lag= 1.341 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.33 fps, Min. Travel Time= 1.941 min
Avg. Velocity = 2.24 fps, Avg. Travel Time= 3.754 min

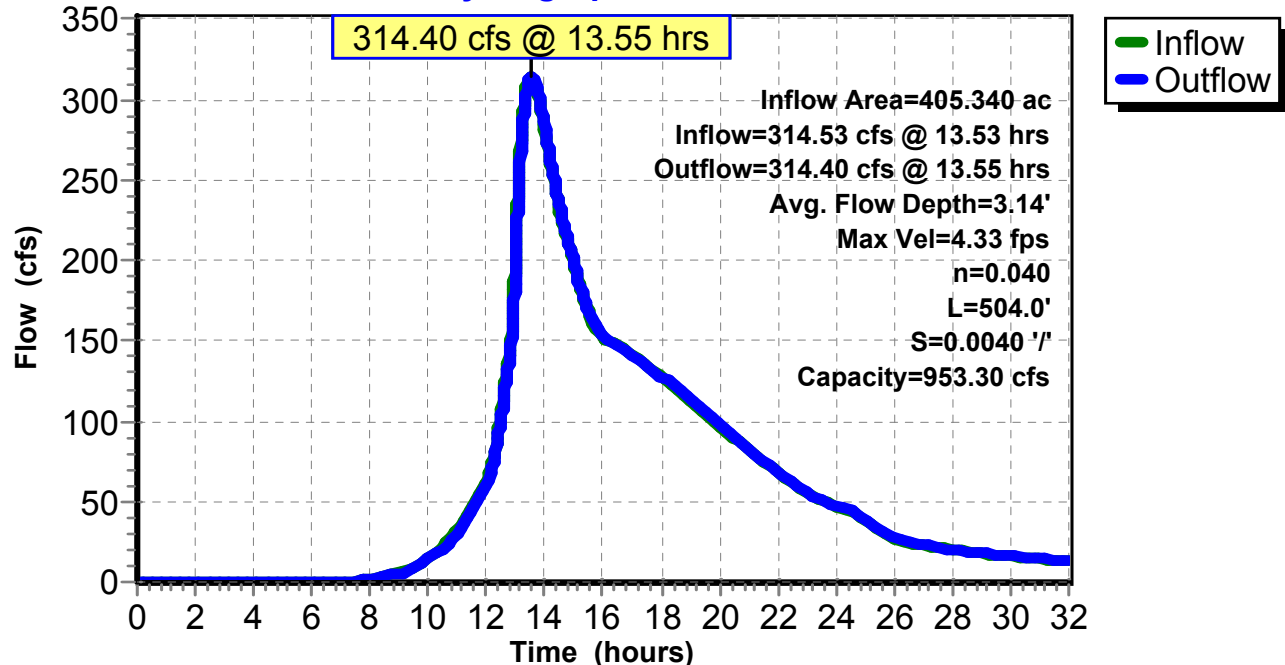
Peak Storage= 36,609 cf @ 13.55 hrs
Average Depth at Peak Storage= 3.14'
Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 '/' Top Width= 32.00'
Length= 504.0' Slope= 0.0040 '/'
Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 4.60" for B50_24 event
 Inflow = 304.62 cfs @ 12.63 hrs, Volume= 46.436 af
 Outflow = 273.03 cfs @ 12.79 hrs, Volume= 46.402 af, Atten= 10%, Lag= 9.533 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.32 fps, Min. Travel Time= 15.702 min
 Avg. Velocity = 0.67 fps, Avg. Travel Time= 53.894 min

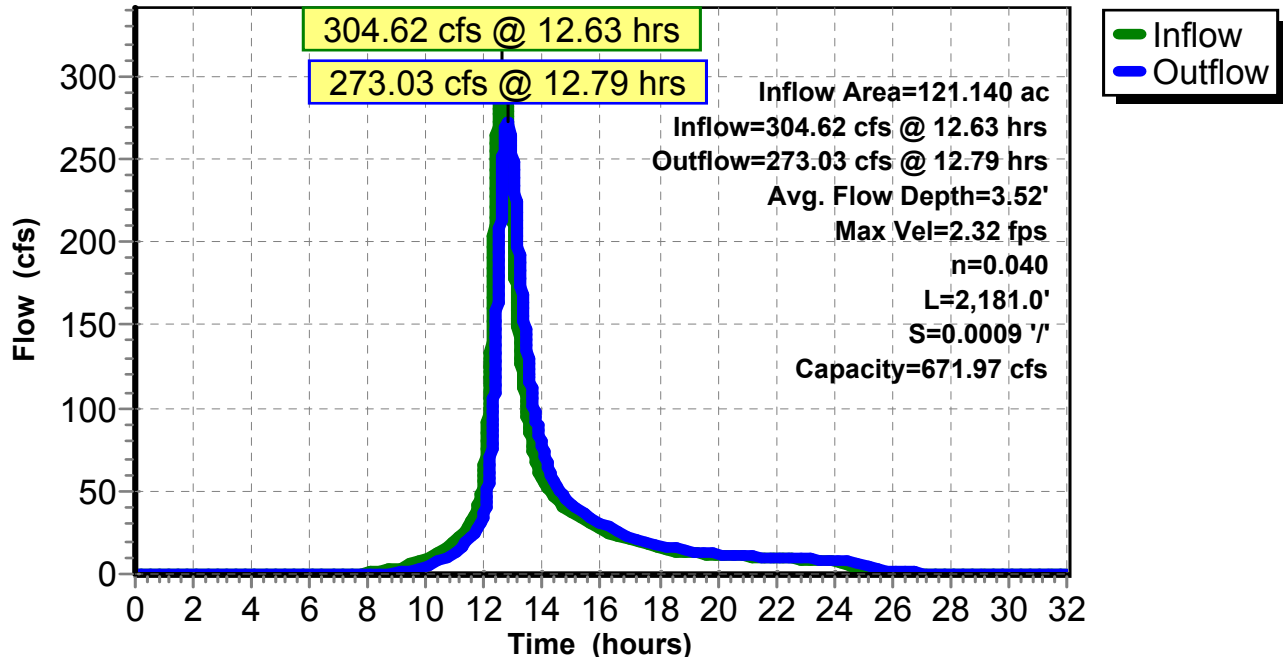
Peak Storage= 257,216 cf @ 12.79 hrs
 Average Depth at Peak Storage= 3.52'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 2,181.0' Slope= 0.0009 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 5.28" for B50_24 event
 Inflow = 537.26 cfs @ 12.53 hrs, Volume= 73.482 af
 Outflow = 56.67 cfs @ 14.77 hrs, Volume= 55.900 af, Atten= 89%, Lag= 134.663 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.63 fps, Min. Travel Time= 584.433 min
 Avg. Velocity = 0.46 fps, Avg. Travel Time= 792.886 min

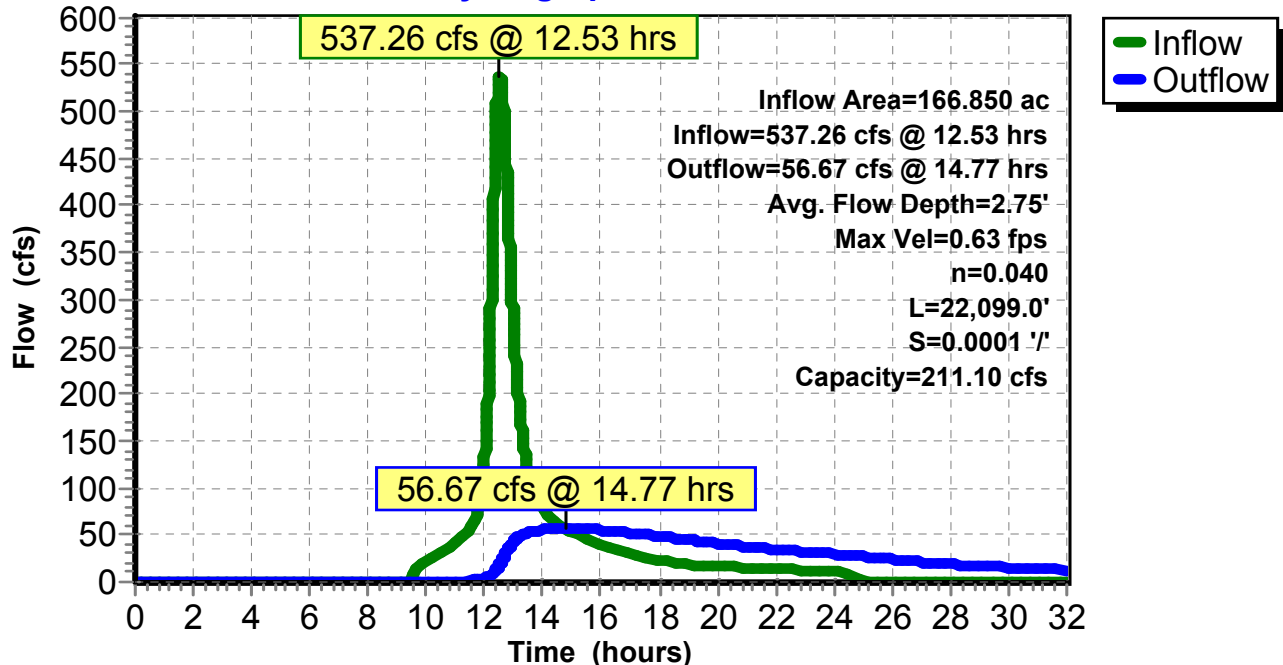
Peak Storage= 1,987,301 cf @ 14.77 hrs
 Average Depth at Peak Storage= 2.75'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 '/' Top Width= 42.00'
 Length= 22,099.0' Slope= 0.0001 '/'
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 4.56" for B50_24 event
 Inflow = 335.41 cfs @ 13.54 hrs, Volume= 169.251 af
 Outflow = 333.26 cfs @ 13.64 hrs, Volume= 168.878 af, Atten= 1%, Lag= 5.813 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 6.95 fps, Min. Travel Time= 7.152 min
 Avg. Velocity = 3.96 fps, Avg. Travel Time= 12.548 min

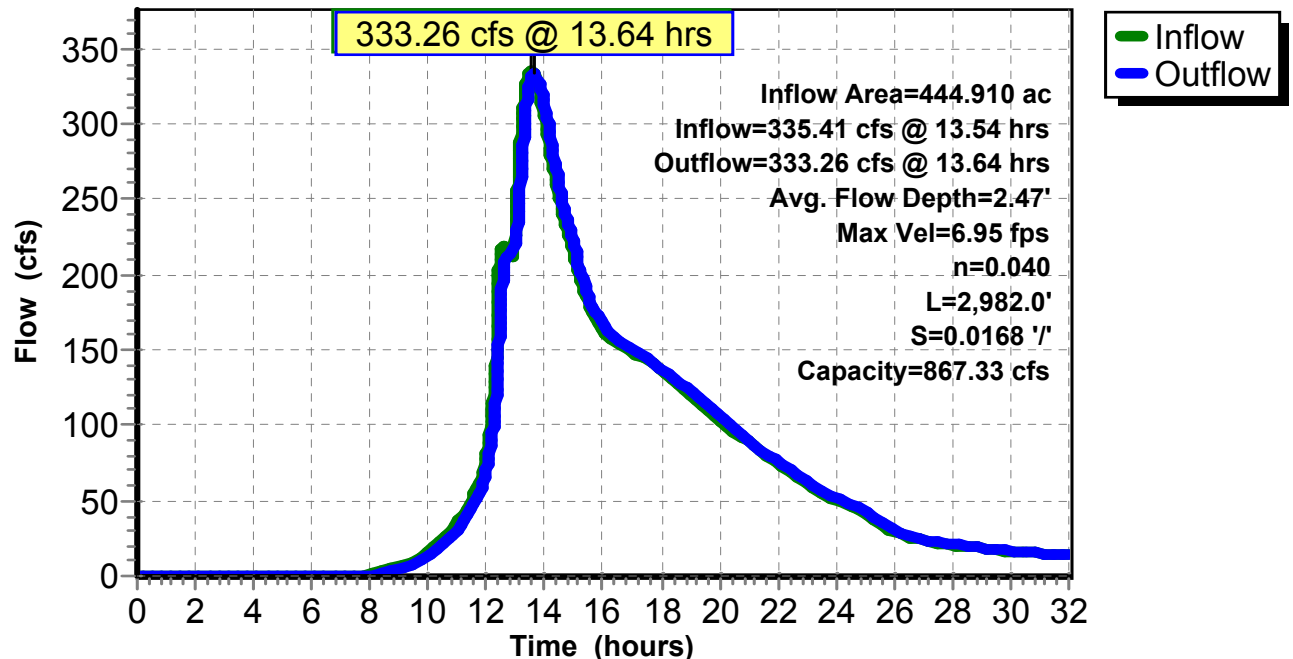
Peak Storage= 143,017 cf @ 13.64 hrs
 Average Depth at Peak Storage= 2.47'
 Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040
 Side Slope Z-value= 3.0 ' / ' Top Width= 36.00'
 Length= 2,982.0' Slope= 0.0168 ' / '
 Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 4.75" for B50_24 event
 Inflow = 549.37 cfs @ 12.66 hrs, Volume= 222.040 af
 Outflow = 549.29 cfs @ 12.67 hrs, Volume= 221.991 af, Atten= 0%, Lag= 0.424 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 10.94 fps, Min. Travel Time= 0.663 min
 Avg. Velocity = 4.96 fps, Avg. Travel Time= 1.461 min

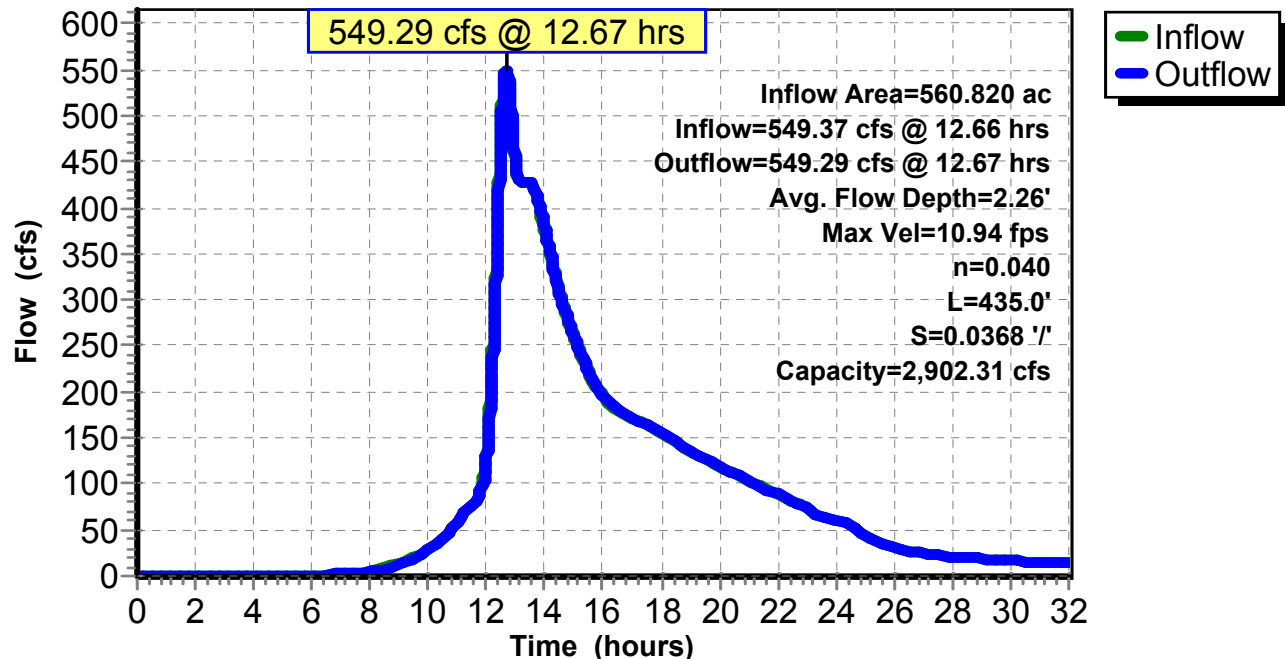
Peak Storage= 21,837 cf @ 12.67 hrs
 Average Depth at Peak Storage= 2.26'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
 Length= 435.0' Slope= 0.0368 ' / '
 Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 214.36 cfs @ 12.75 hrs, Volume= 23.952 af
 Outflow = 214.10 cfs @ 12.77 hrs, Volume= 23.952 af, Atten= 0%, Lag= 1.048 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 8.62 fps, Min. Travel Time= 1.716 min
 Avg. Velocity = 3.06 fps, Avg. Travel Time= 4.844 min

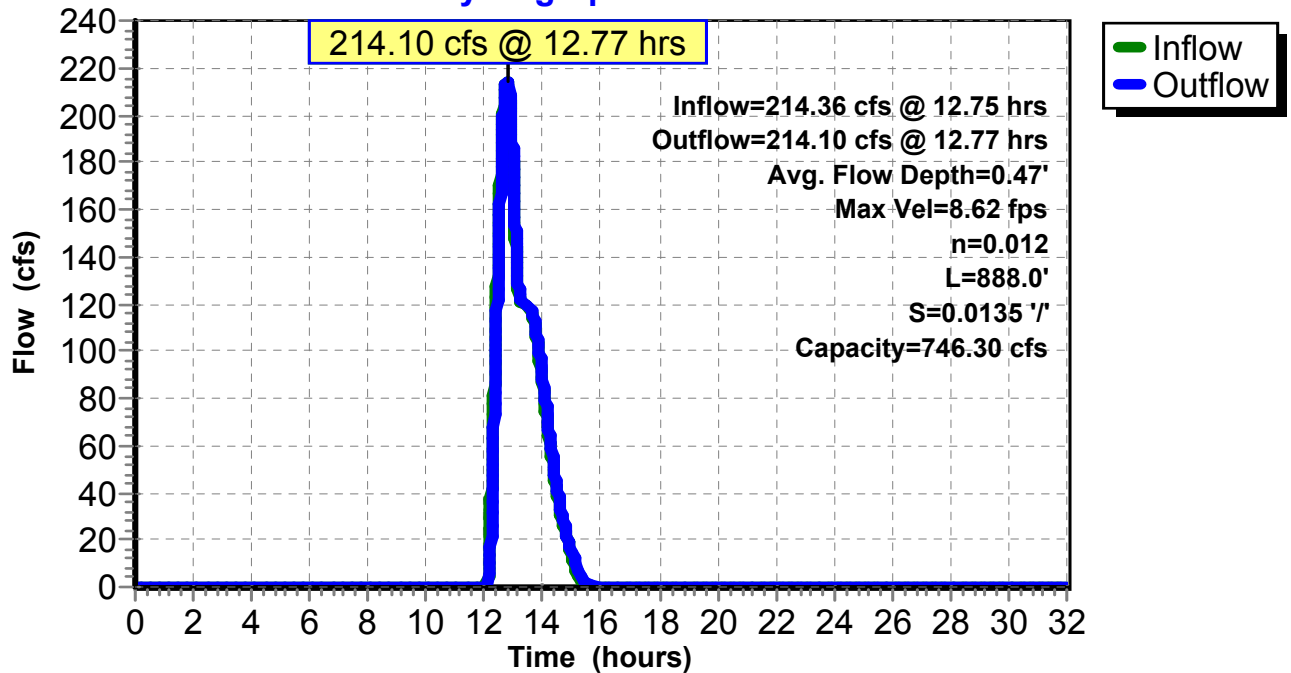
Peak Storage= 22,047 cf @ 12.77 hrs
 Average Depth at Peak Storage= 0.47'
 Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
 Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
 Length= 888.0' Slope= 0.0135 ' '
 Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



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Summary for Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 4.92" for B50_24 event
 Inflow = 744.19 cfs @ 12.54 hrs, Volume= 268.627 af
 Outflow = 647.23 cfs @ 12.92 hrs, Volume= 268.625 af, Atten= 13%, Lag= 22.493 min
 Primary = 647.23 cfs @ 12.92 hrs, Volume= 268.625 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 52.69' @ 12.91 hrs Surf.Area= 1.713 ac Storage= 6.187 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 1.374 min (966.236 - 964.862)

Volume	Invert	Avail.Storage	Storage Description
#1	46.00'	82.605 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
46.00	0.695	0.000	0.000
48.00	0.695	1.390	1.390
50.00	0.800	1.495	2.885
52.00	1.420	2.220	5.105
54.00	2.270	3.690	8.795
56.00	3.160	5.430	14.225
58.00	4.070	7.230	21.455
60.00	4.980	9.050	30.505
62.00	5.710	10.690	41.195
64.00	6.620	12.330	53.525
66.00	7.170	13.790	67.315
68.00	8.120	15.290	82.605

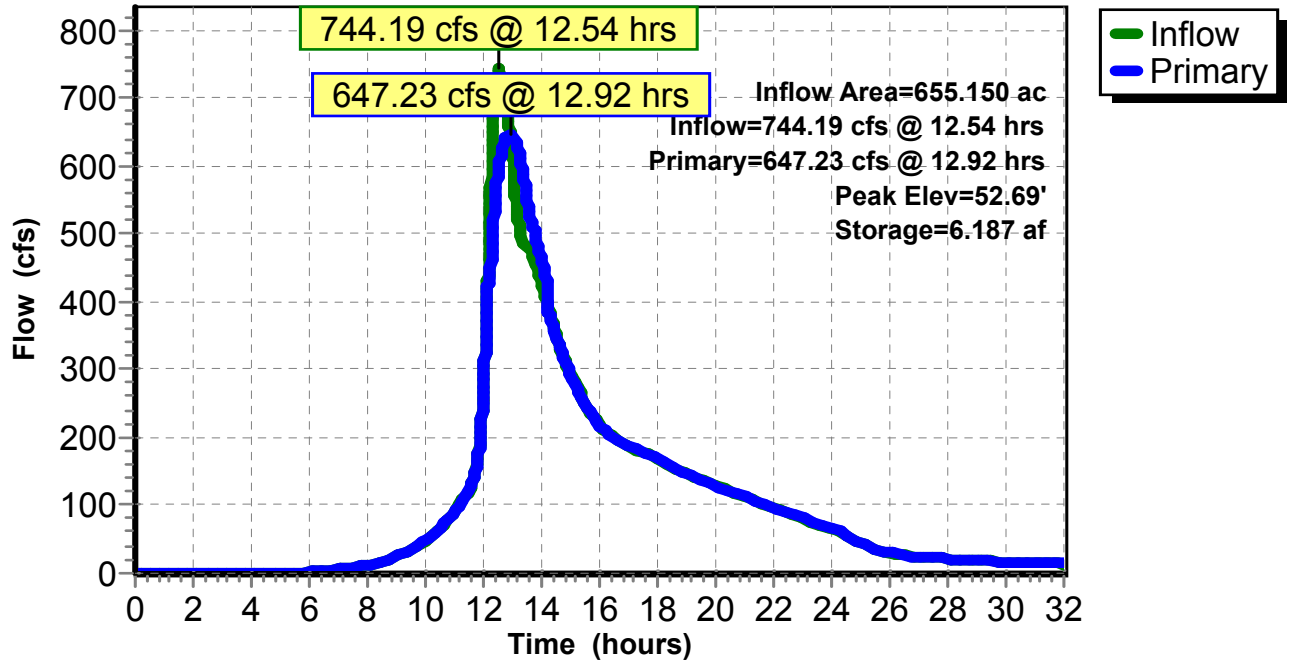
Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48

Primary OutFlow Max=647.24 cfs @ 12.92 hrs HW=52.69' TW=40.18' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 647.24 cfs @ 16.59 fps)
- 2=WEIR WESTCH AVE (Controls 0.00 cfs)

Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



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Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 4.78" for B50_24 event
 Inflow = 586.07 cfs @ 12.64 hrs, Volume= 231.908 af
 Outflow = 565.45 cfs @ 12.75 hrs, Volume= 231.906 af, Atten= 4%, Lag= 6.921 min
 Primary = 565.45 cfs @ 12.75 hrs, Volume= 231.906 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 75.80' @ 12.75 hrs Surf.Area= 0.406 ac Storage= 1.448 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.336 min (989.123 - 988.786)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

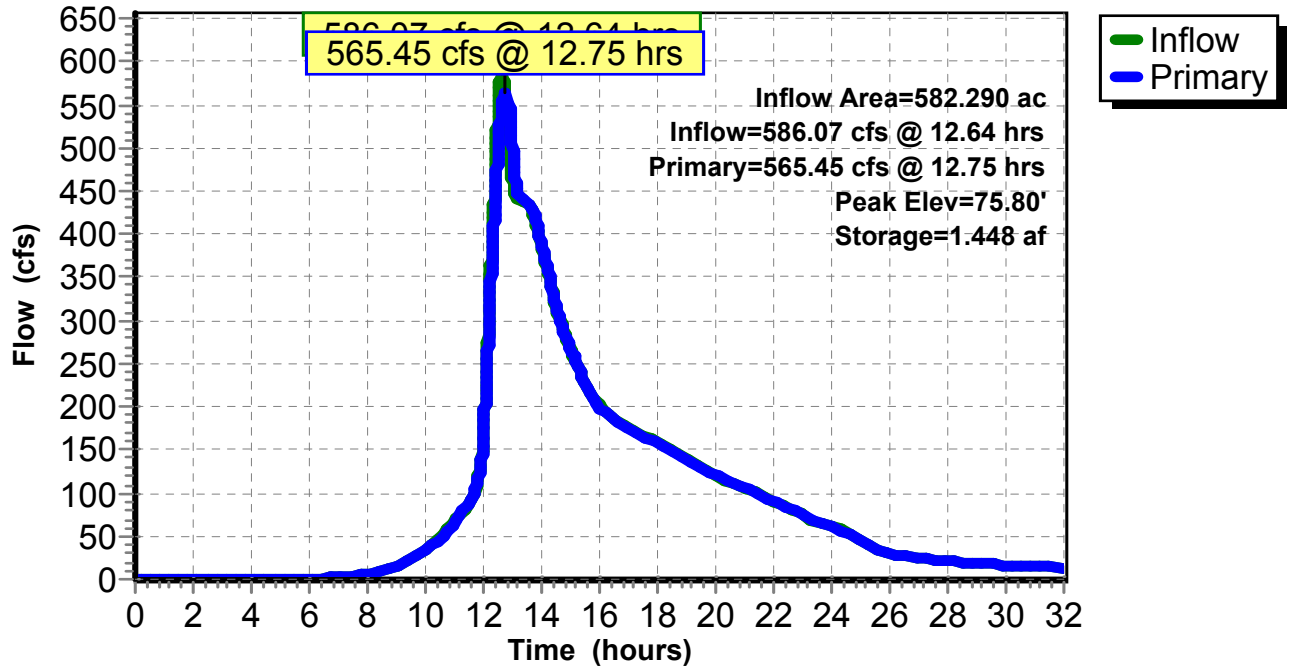
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=565.43 cfs @ 12.75 hrs HW=75.80' TW=61.95' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 329.59 cfs @ 16.79 fps)
- 2=Culvert 2 (Inlet Controls 235.85 cfs @ 12.01 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



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Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 4.57" for B50_24 event
Inflow = 335.59 cfs @ 13.51 hrs, Volume= 169.474 af
Outflow = 335.41 cfs @ 13.54 hrs, Volume= 169.251 af, Atten= 0%, Lag= 1.602 min
Primary = 335.41 cfs @ 13.54 hrs, Volume= 169.251 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 130.54' @ 13.54 hrs Surf.Area= 1.043 ac Storage= 2.613 af

Plug-Flow detention time= 8.737 min calculated for 169.198 af (100% of inflow)
Center-of-Mass det. time= 7.572 min (1,034.689 - 1,027.117)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

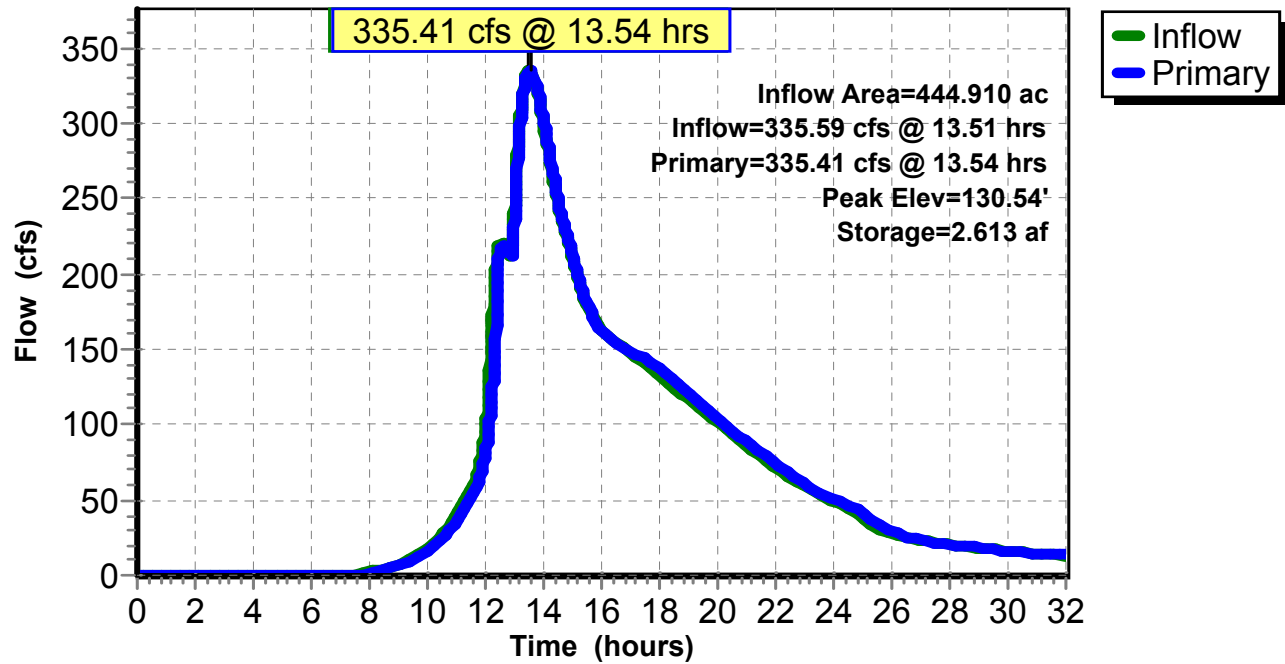
Primary OutFlow Max=335.41 cfs @ 13.54 hrs HW=130.54' TW=128.46' (Dynamic Tailwater)

1=Culvert (Barrel Controls 173.14 cfs @ 7.59 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 162.27 cfs @ 2.40 fps)

Pond 4A: DP 4 A ARGYLE

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Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 4.56" for B50_24 event
 Inflow = 582.92 cfs @ 12.83 hrs, Volume= 154.012 af
 Outflow = 314.53 cfs @ 13.53 hrs, Volume= 153.701 af, Atten= 46%, Lag= 41.634 min
 Primary = 314.53 cfs @ 13.53 hrs, Volume= 153.701 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 132.56' @ 13.53 hrs Surf.Area= 21.383 ac Storage= 29.820 af

Plug-Flow detention time= 58.063 min calculated for 153.653 af (100% of inflow)
 Center-of-Mass det. time= 56.191 min (1,044.511 - 988.320)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

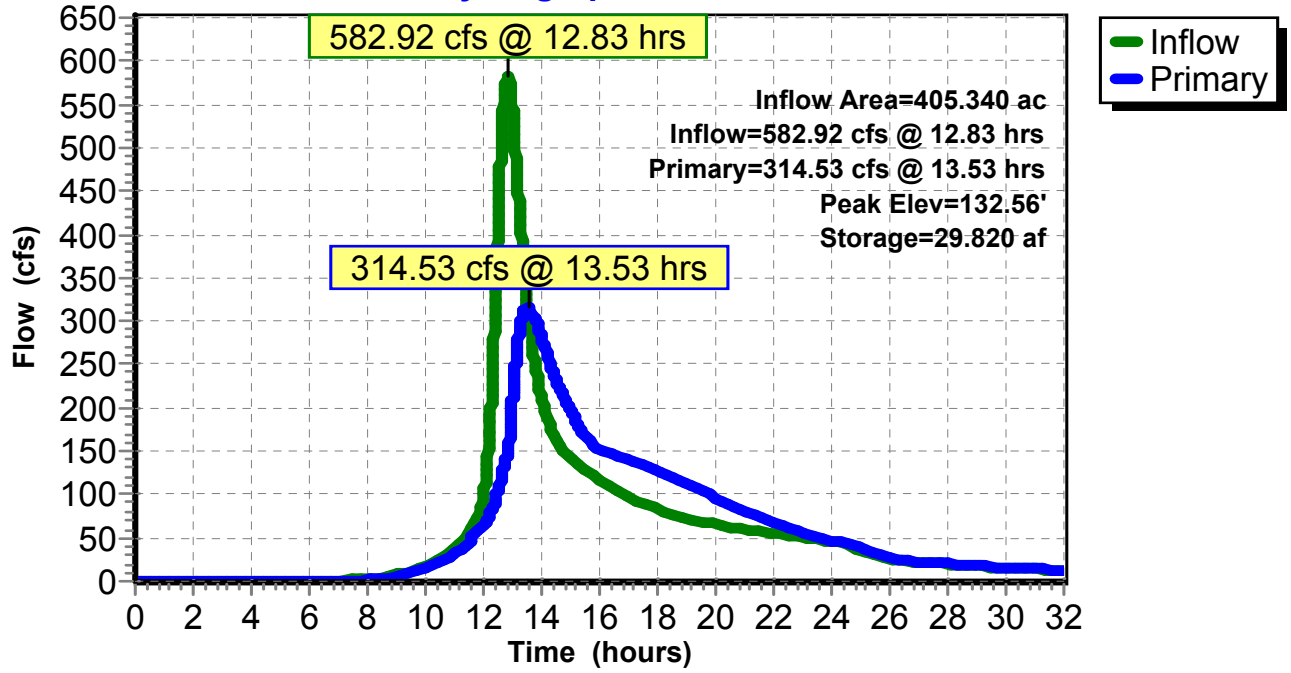
Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

Primary OutFlow Max=314.48 cfs @ 13.53 hrs HW=132.56' TW=131.14' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 144.14 cfs @ 5.74 fps)
- 2=Asymmetrical Weir (Weir Controls 170.34 cfs @ 2.06 fps)

Pond 5P: DP 5 BETSY BROWN ROAD

Hydrograph



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Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 4.75" for B50_24 event
Inflow = 550.66 cfs @ 12.62 hrs, Volume= 222.042 af
Outflow = 549.37 cfs @ 12.66 hrs, Volume= 222.040 af, Atten= 0%, Lag= 2.273 min
Primary = 549.37 cfs @ 12.66 hrs, Volume= 222.040 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 91.37' @ 12.66 hrs Surf.Area= 1.370 ac Storage= 1.878 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.852 min (995.912 - 993.061)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

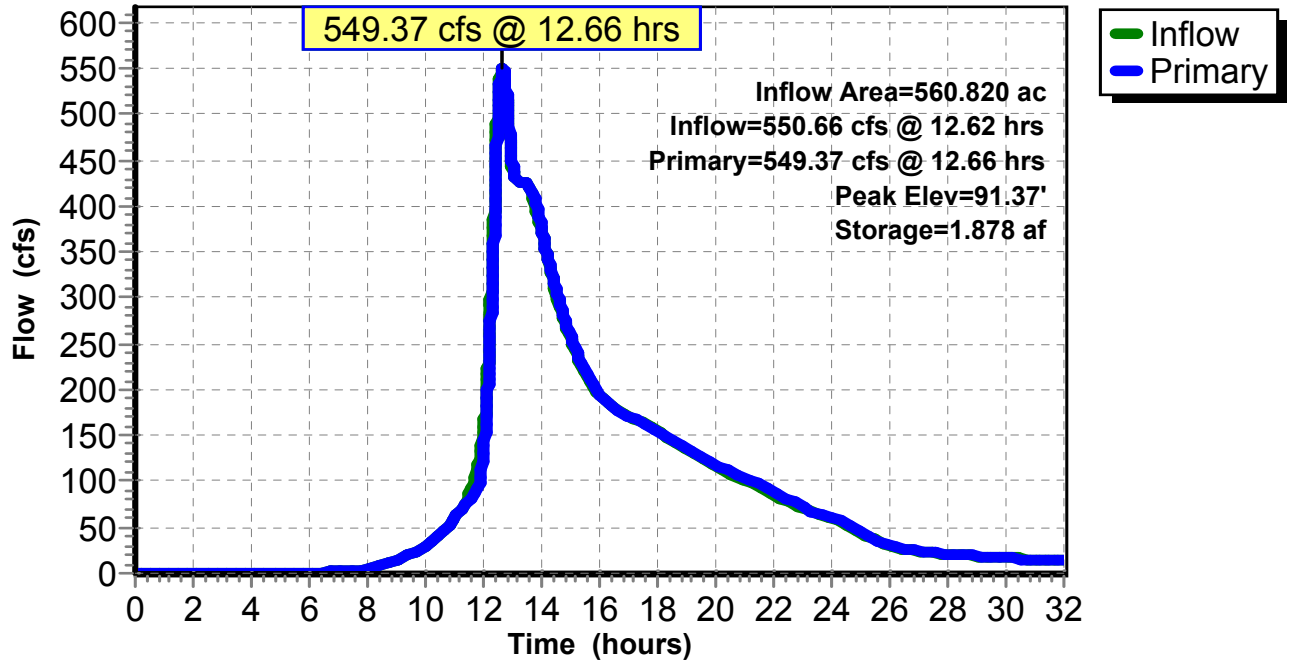
Primary OutFlow Max=549.34 cfs @ 12.66 hrs HW=91.37' TW=78.26' (Dynamic Tailwater)

1=Sharp-Crested Rectangular Weir (Weir Controls 192.62 cfs @ 5.49 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 356.72 cfs @ 3.09 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



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Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 5.07" for B50_24 event
 Inflow = 823.94 cfs @ 12.54 hrs, Volume= 302.150 af
 Outflow = 823.85 cfs @ 12.55 hrs, Volume= 300.460 af, Atten= 0%, Lag= 0.421 min
 Primary = 823.85 cfs @ 12.55 hrs, Volume= 300.460 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 40.21' @ 12.55 hrs Surf.Area= 1.144 ac Storage= 1.893 af

Plug-Flow detention time= 8.560 min calculated for 300.460 af (99% of inflow)
 Center-of-Mass det. time= 3.365 min (950.152 - 946.787)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

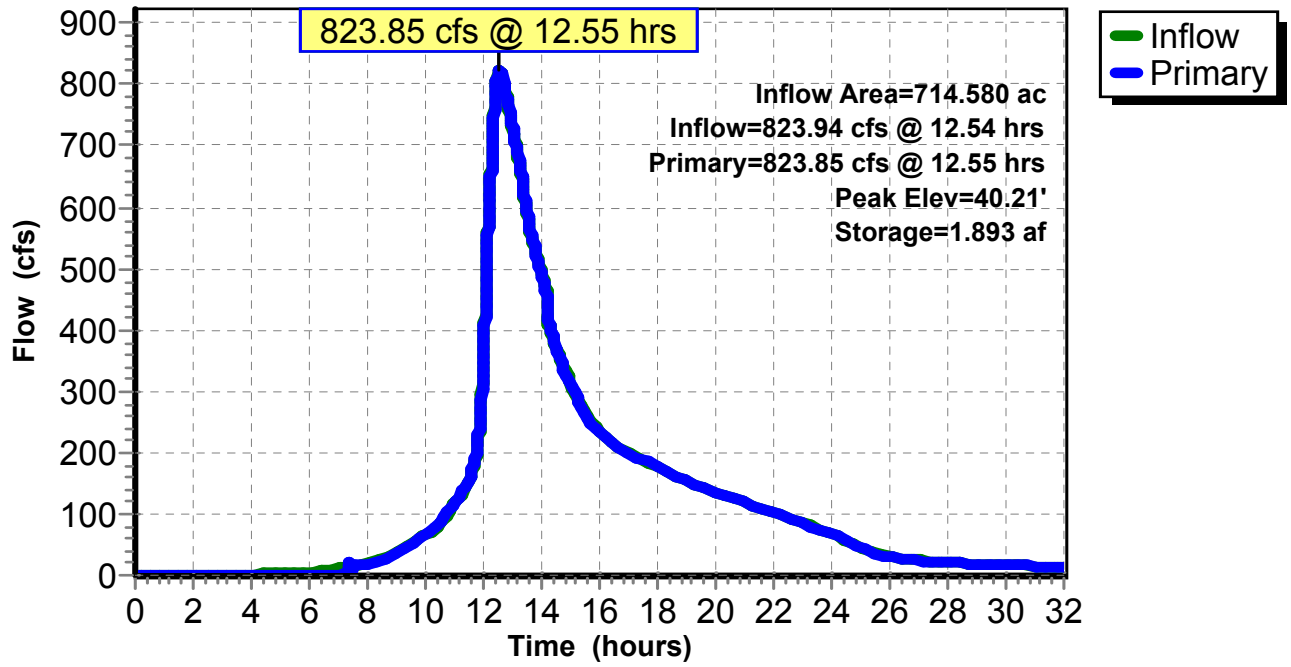
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=823.84 cfs @ 12.55 hrs HW=40.21' TW=40.00' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 303.98 cfs @ 2.21 fps)
- 2=WEIR BOWMAN (Weir Controls 519.85 cfs @ 1.66 fps)

Pond 8P: BOWMAN FIELDS

Hydrograph



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Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 4.60" for B50_24 event
Inflow = 305.00 cfs @ 12.63 hrs, Volume= 46.436 af
Outflow = 304.62 cfs @ 12.63 hrs, Volume= 46.436 af, Atten= 0%, Lag= 0.071 min
Primary = 304.62 cfs @ 12.63 hrs, Volume= 46.436 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 135.00' @ 12.64 hrs Surf.Area= 0.205 ac Storage= 0.242 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.385 min (853.709 - 853.323)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

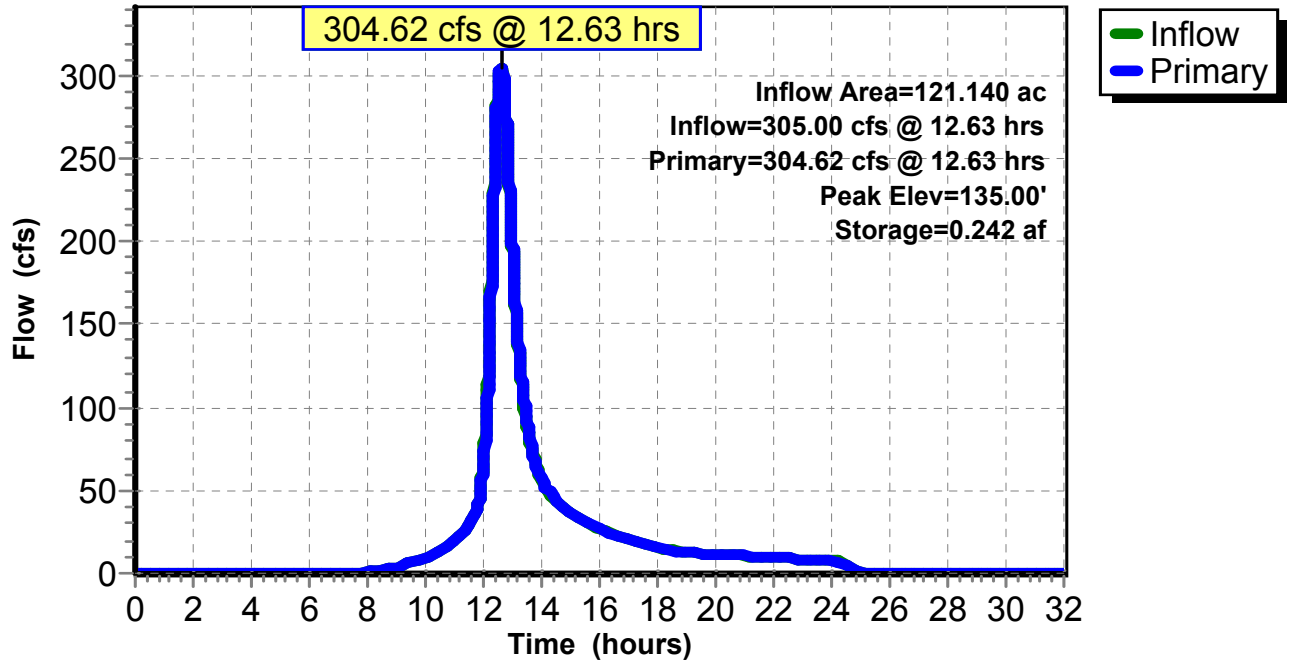
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=303.84 cfs @ 12.63 hrs HW=135.00' TW=133.32' (Dynamic Tailwater)

1=Culvert (Inlet Controls 44.10 cfs @ 6.24 fps)
2=Sharp-Crested Rectangular Weir (Weir Controls 79.75 cfs @ 5.30 fps)
3=Sharp-Crested Rectangular Weir (Weir Controls 180.00 cfs @ 2.31 fps)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

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Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 5.42" for B50_24 event
 Inflow = 541.76 cfs @ 12.50 hrs, Volume= 75.374 af
 Outflow = 537.26 cfs @ 12.53 hrs, Volume= 73.482 af, Atten= 1%, Lag= 1.589 min
 Primary = 537.26 cfs @ 12.53 hrs, Volume= 73.482 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.69' @ 12.53 hrs Surf.Area= 4.146 ac Storage= 7.353 af (4.386 af above start)

Plug-Flow detention time= 58.191 min calculated for 70.514 af (94% of inflow)
 Center-of-Mass det. time= 14.145 min (843.409 - 829.264)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

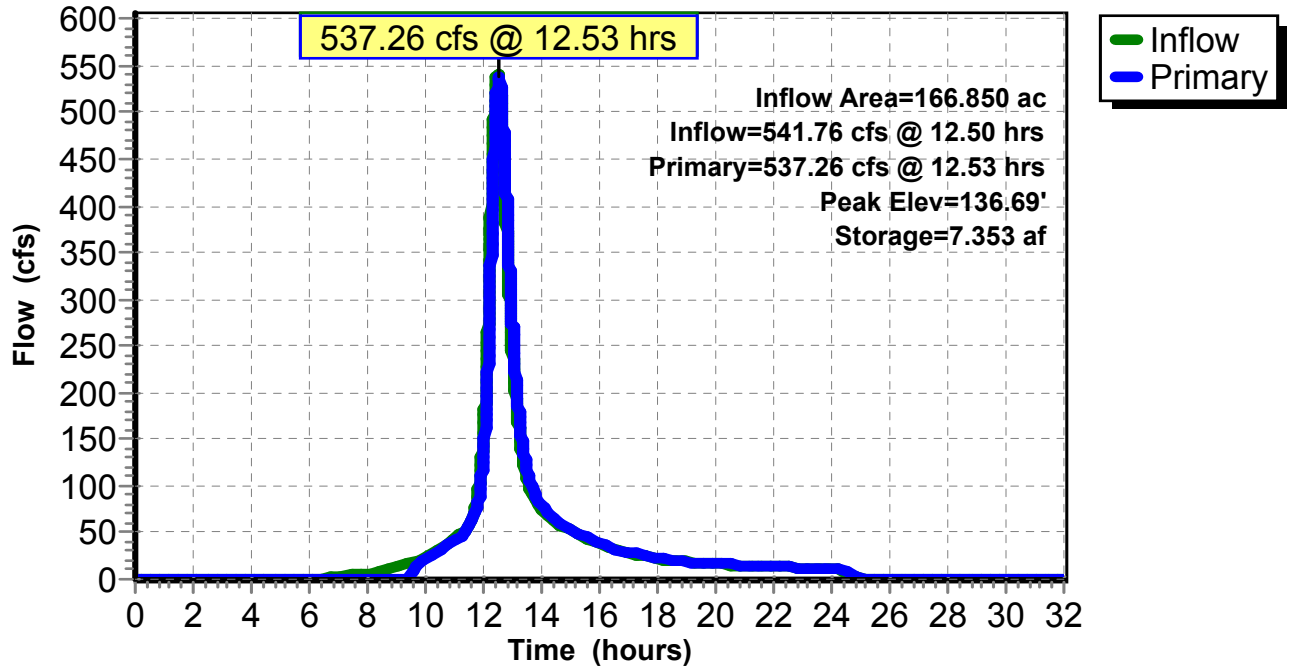
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=537.23 cfs @ 12.53 hrs HW=136.69' TW=131.44' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 3.44 cfs @ 2.82 fps)
- 2=Asymmetrical Weir (Weir Controls 533.79 cfs @ 2.32 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Hydrograph



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Summary for Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 4.78" for B50_24 event
 Inflow = 565.45 cfs @ 12.75 hrs, Volume= 231.906 af
 Outflow = 565.45 cfs @ 12.75 hrs, Volume= 231.897 af, Atten= 0%, Lag= 0.102 min
 Primary = 351.09 cfs @ 12.75 hrs, Volume= 207.945 af
 Secondary = 214.36 cfs @ 12.75 hrs, Volume= 23.952 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 61.95' @ 12.75 hrs Surf.Area= 1,410 sf Storage= 5,102 cf

Plug-Flow detention time= 0.219 min calculated for 231.897 af (100% of inflow)
 Center-of-Mass det. time= 0.180 min (989.303 - 989.123)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	22,686 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686

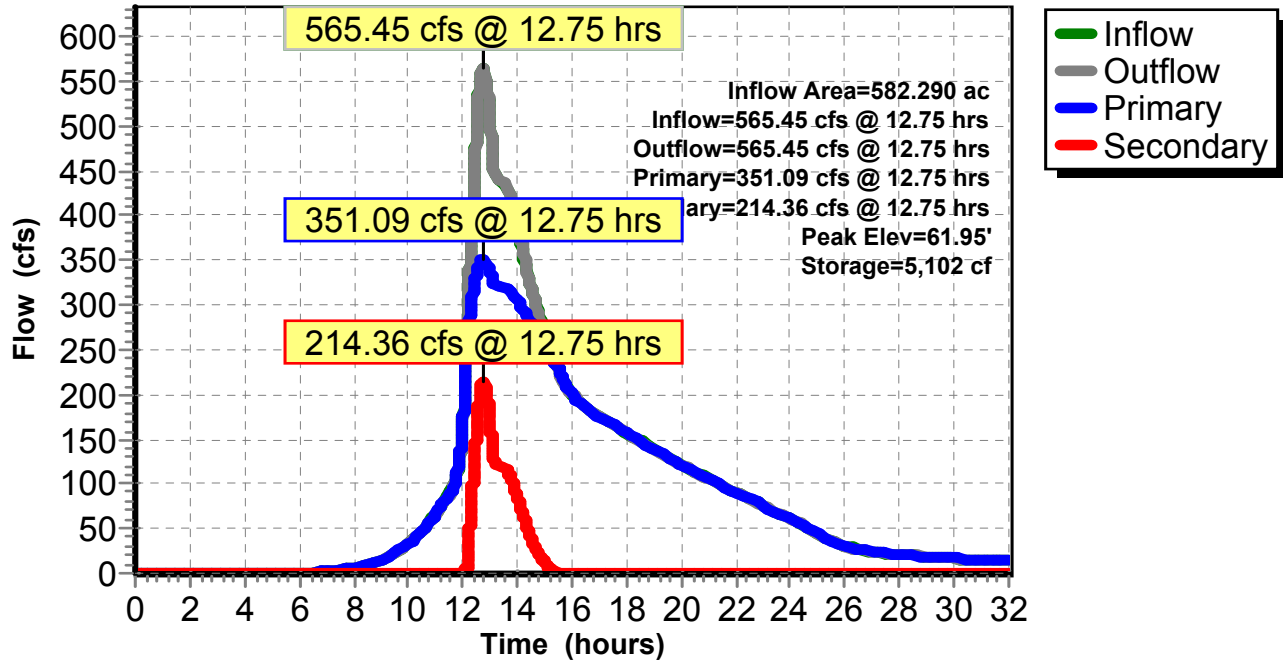
Device	Routing	Invert	Outlet Devices
#1	Primary	56.00'	60.0" Round Culvert X 2.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 56.00' / 37.90' S= 0.0217 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	60.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 66.00 64.00 62.00 60.00 60.00 62.00 64.00 66.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=351.08 cfs @ 12.75 hrs HW=61.95' TW=52.44' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 351.08 cfs @ 8.94 fps)

Secondary OutFlow Max=214.34 cfs @ 12.75 hrs HW=61.95' TW=58.47' (Dynamic Tailwater)
 ↑2=Asymmetrical Weir (Weir Controls 214.34 cfs @ 3.82 fps)

Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Hydrograph



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Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 214.10 cfs @ 12.77 hrs, Volume= 23.952 af
Outflow = 201.88 cfs @ 12.84 hrs, Volume= 23.952 af, Atten= 6%, Lag= 4.010 min
Primary = 201.88 cfs @ 12.84 hrs, Volume= 23.952 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 52.88' @ 12.91 hrs Surf.Area= 25,325 sf Storage= 28,581 cf

Plug-Flow detention time= 1.528 min calculated for 23.944 af (100% of inflow)
Center-of-Mass det. time= 1.531 min (799.277 - 797.746)

Volume	Invert	Avail.Storage	Storage Description
#1	51.00'	162,178 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
51.00	6,000	0	0
52.00	15,452	10,726	10,726
54.00	38,000	53,452	64,178
56.00	60,000	98,000	162,178

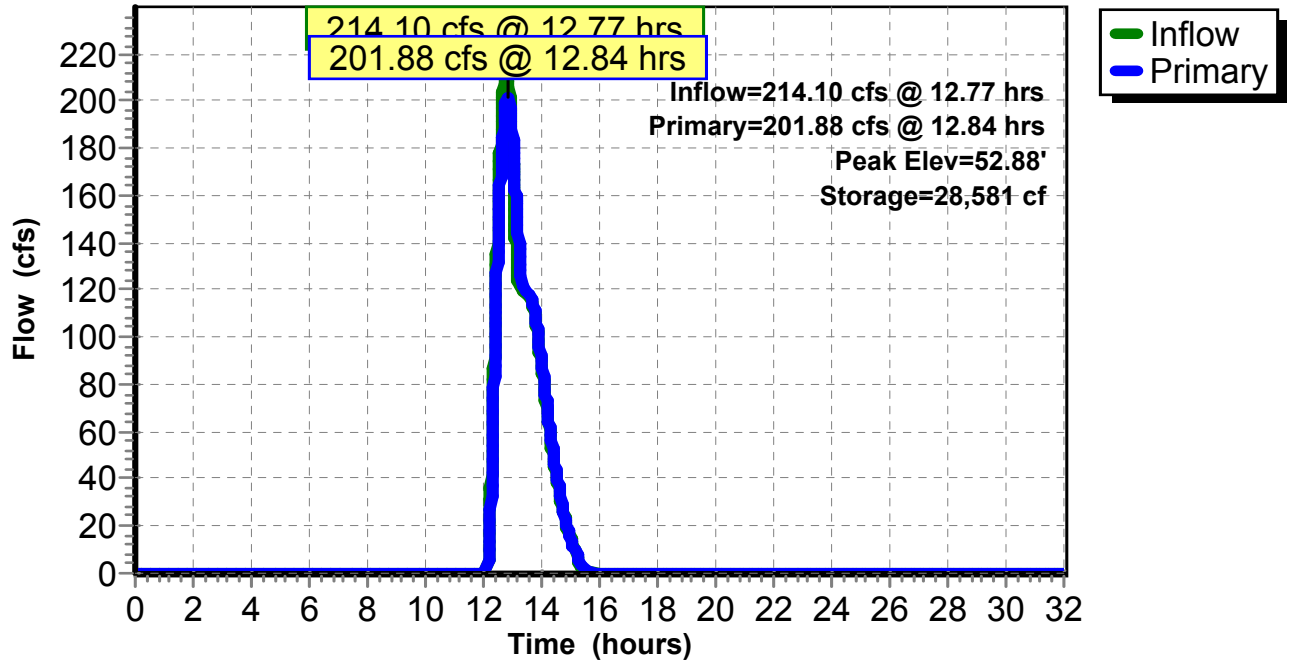
Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=196.10 cfs @ 12.84 hrs HW=52.83' TW=52.64' (Dynamic Tailwater)

↑1=Sharp-Crested Rectangular Weir(Weir Controls 196.10 cfs @ 2.16 fps)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



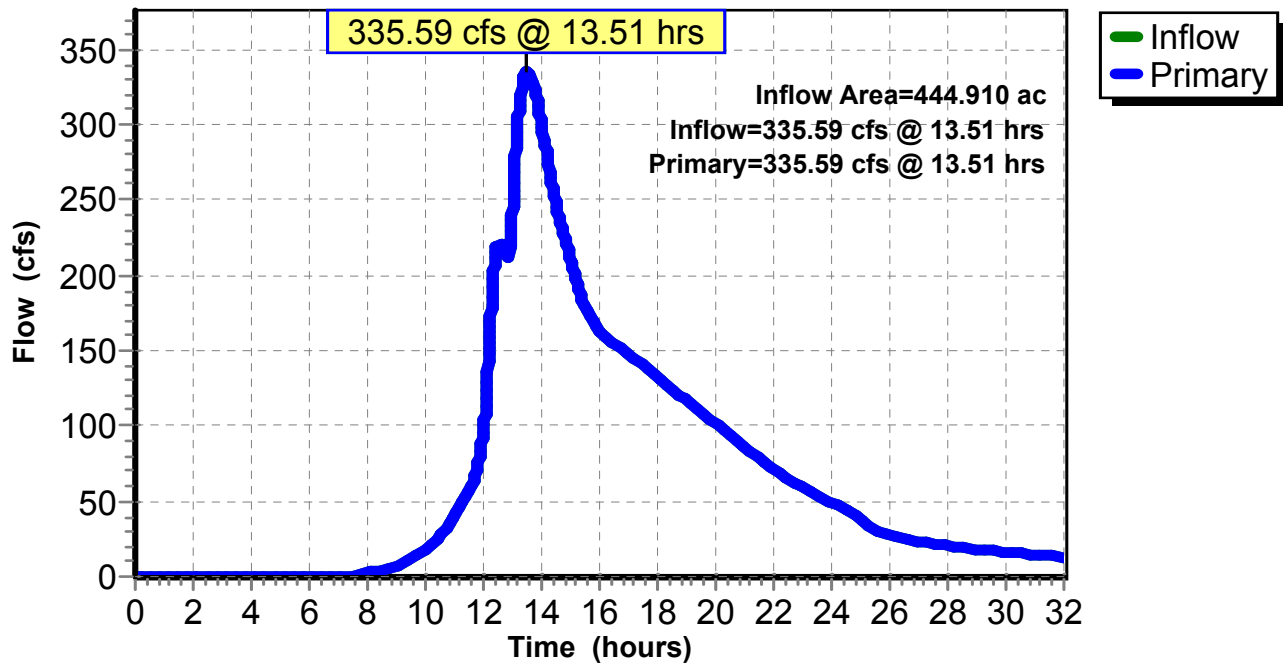
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 4.57" for B50_24 event
Inflow = 335.59 cfs @ 13.51 hrs, Volume= 169.474 af
Primary = 335.59 cfs @ 13.51 hrs, Volume= 169.474 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



Summary for Link 20L: EX FINAL

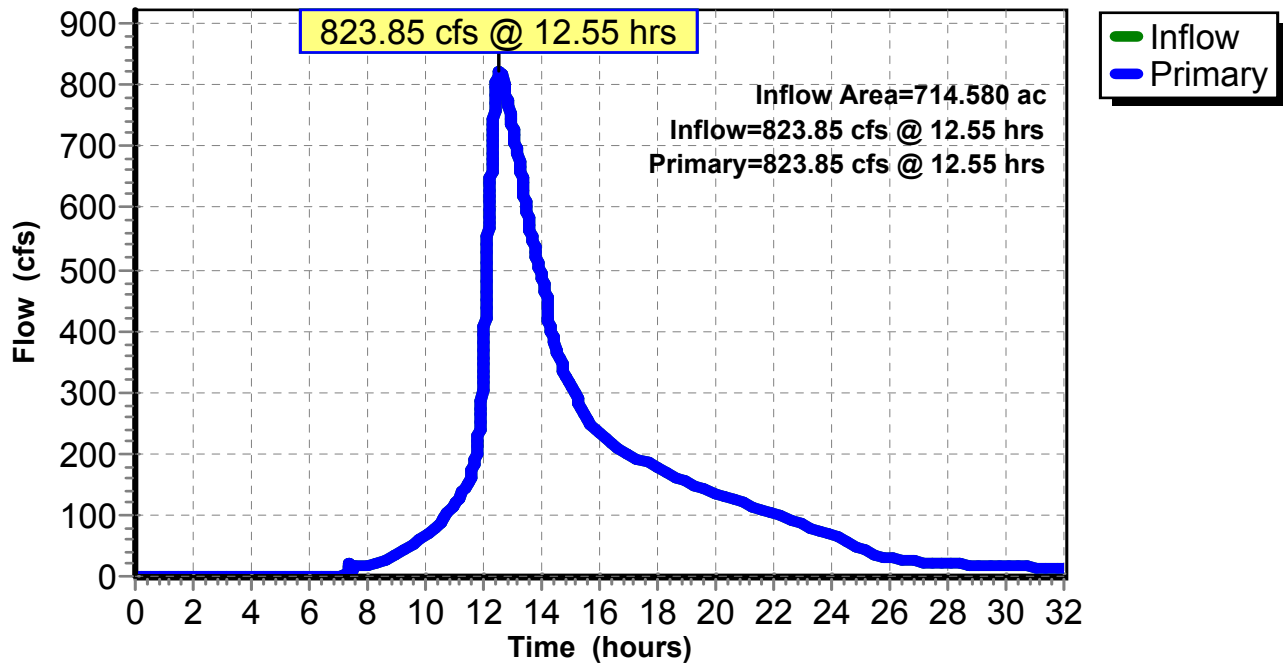
Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 5.05" for B50_24 event
Inflow = 823.85 cfs @ 12.55 hrs, Volume= 300.460 af
Primary = 823.85 cfs @ 12.55 hrs, Volume= 300.460 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 40.00'

Link 20L: EX FINAL

Hydrograph



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Type III 6-hr B50_6 Rainfall=5.13"

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Summary for Subcatchment A: WS A

Runoff = 219.18 cfs @ 3.42 hrs, Volume= 21.439 af, Depth= 4.33"

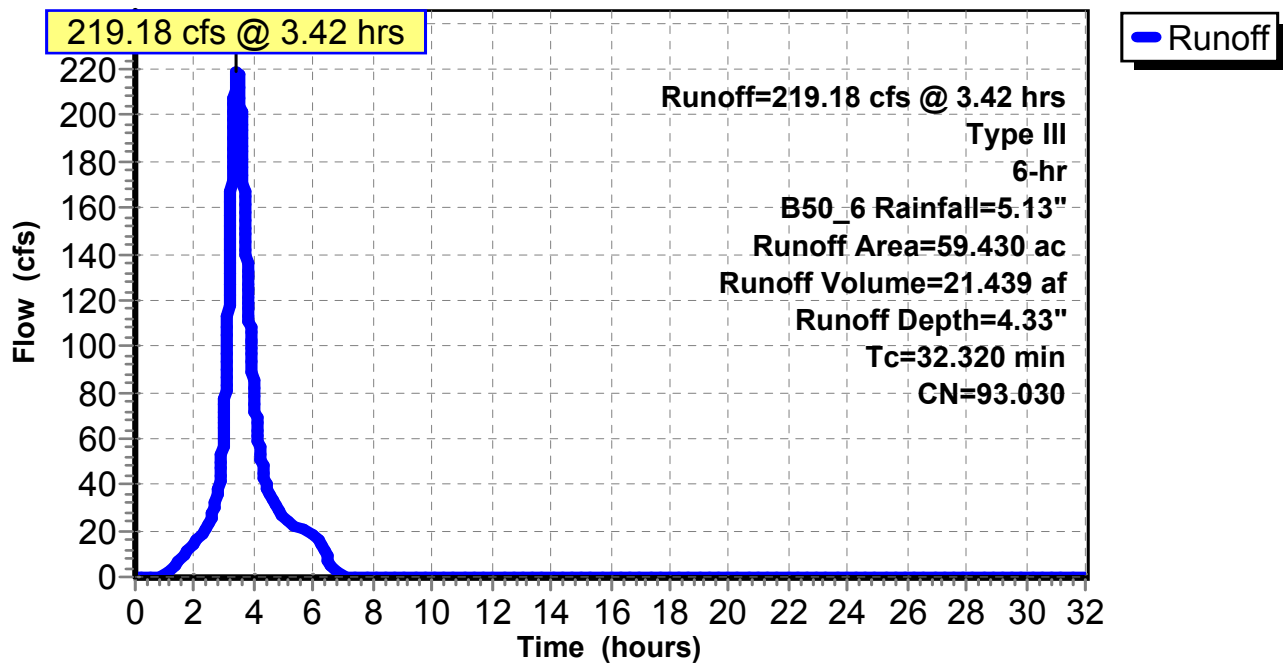
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr B50_6 Rainfall=5.13"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



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Type III 6-hr B50_6 Rainfall=5.13"

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Summary for Subcatchment B: WS B

Runoff = 199.45 cfs @ 3.38 hrs, Volume= 17.748 af, Depth= 3.70"

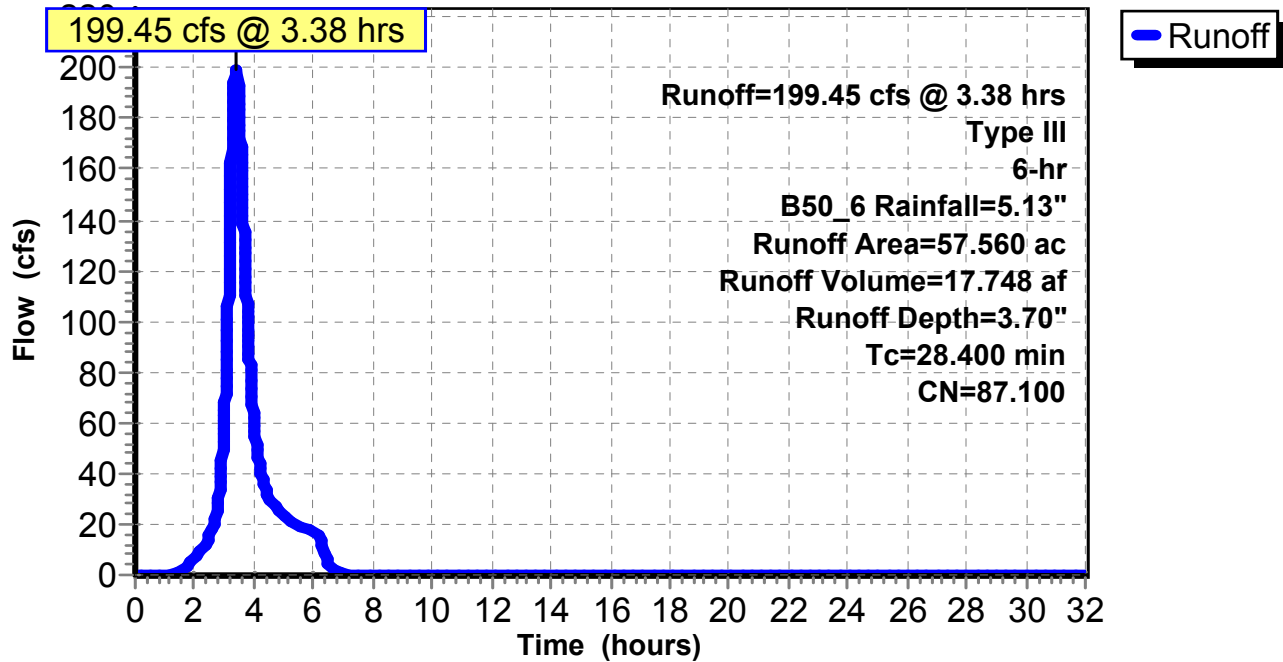
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr B50_6 Rainfall=5.13"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



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Type III 6-hr B50_6 Rainfall=5.13"

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Summary for Subcatchment BH: HOTEL

Runoff = 50.18 cfs @ 3.42 hrs, Volume= 4.596 af, Depth= 3.60"

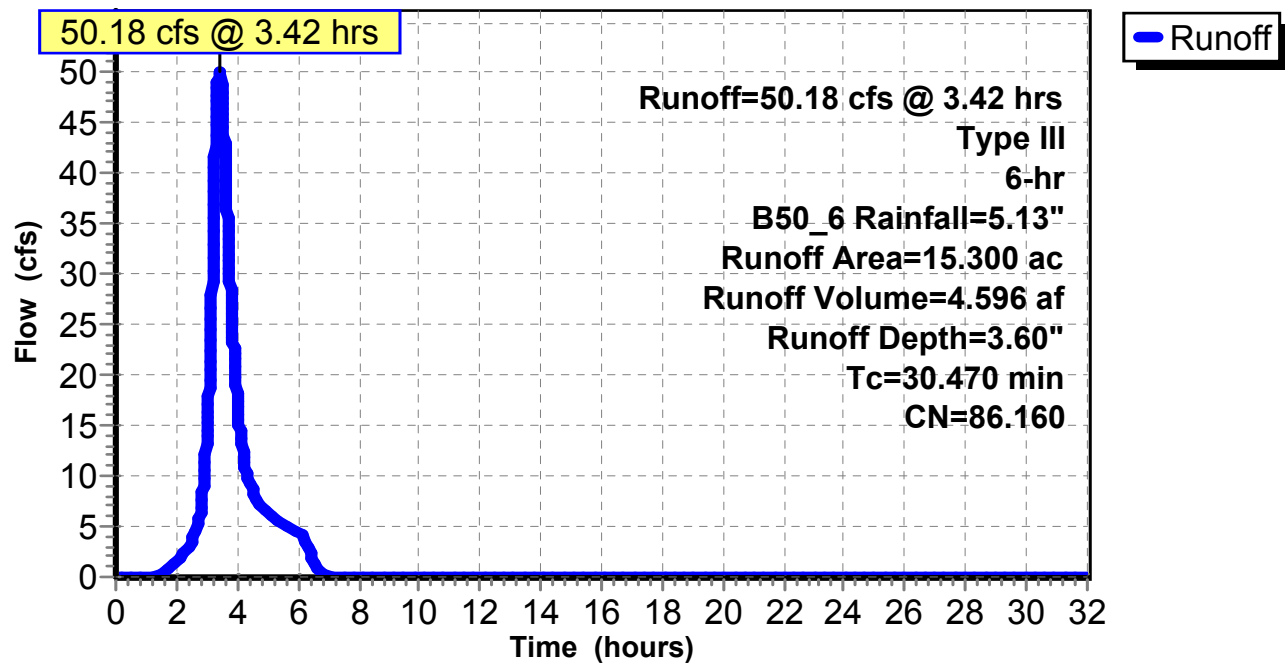
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr B50_6 Rainfall=5.13"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



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Type III 6-hr B50_6 Rainfall=5.13"

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Summary for Subcatchment C: WS C

Runoff = 79.24 cfs @ 3.25 hrs, Volume= 5.810 af, Depth= 3.25"

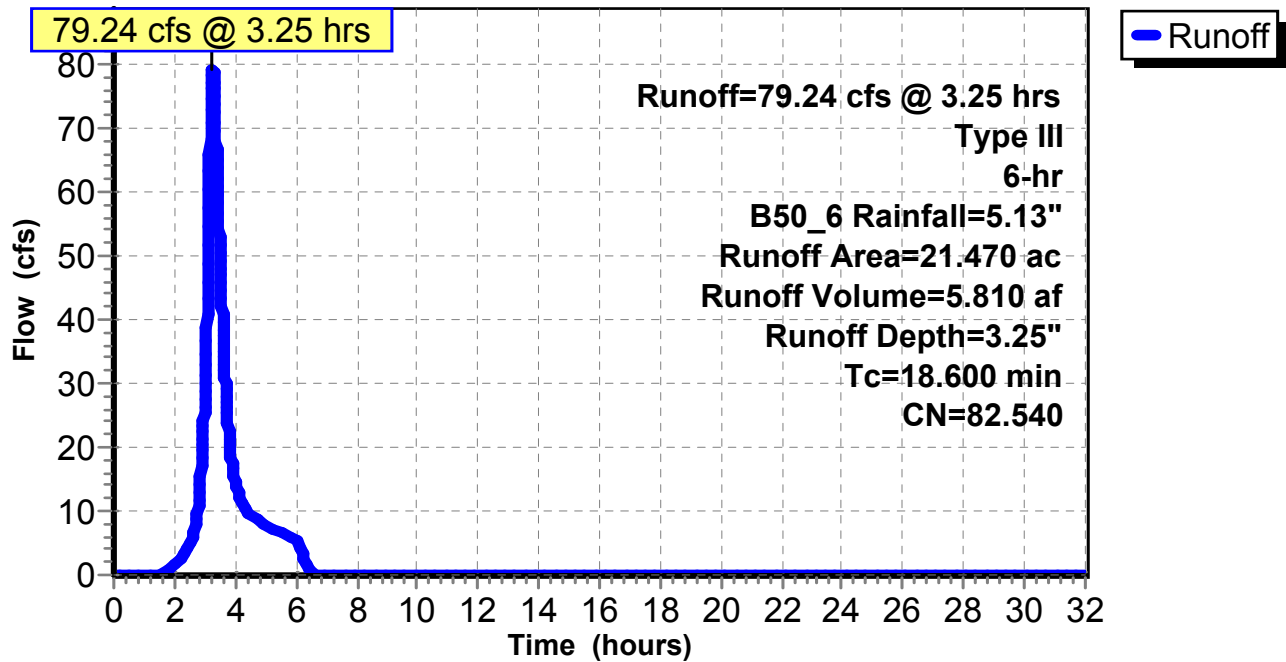
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr B50_6 Rainfall=5.13"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



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Type III 6-hr B50_6 Rainfall=5.13"

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Summary for Subcatchment D: WS D

Runoff = 278.61 cfs @ 3.62 hrs, Volume= 31.052 af, Depth= 3.21"

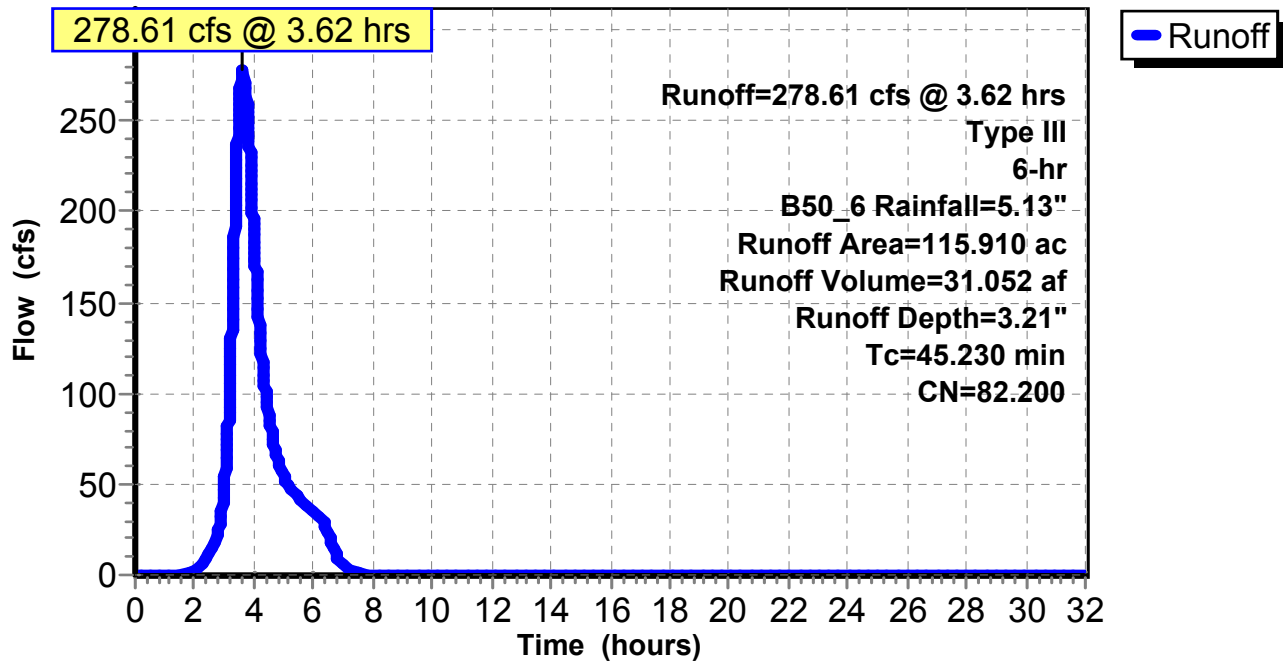
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr B50_6 Rainfall=5.13"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



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Summary for Subcatchment D-1: WS D-1

Runoff = 94.65 cfs @ 3.47 hrs, Volume= 8.771 af, Depth= 2.66"

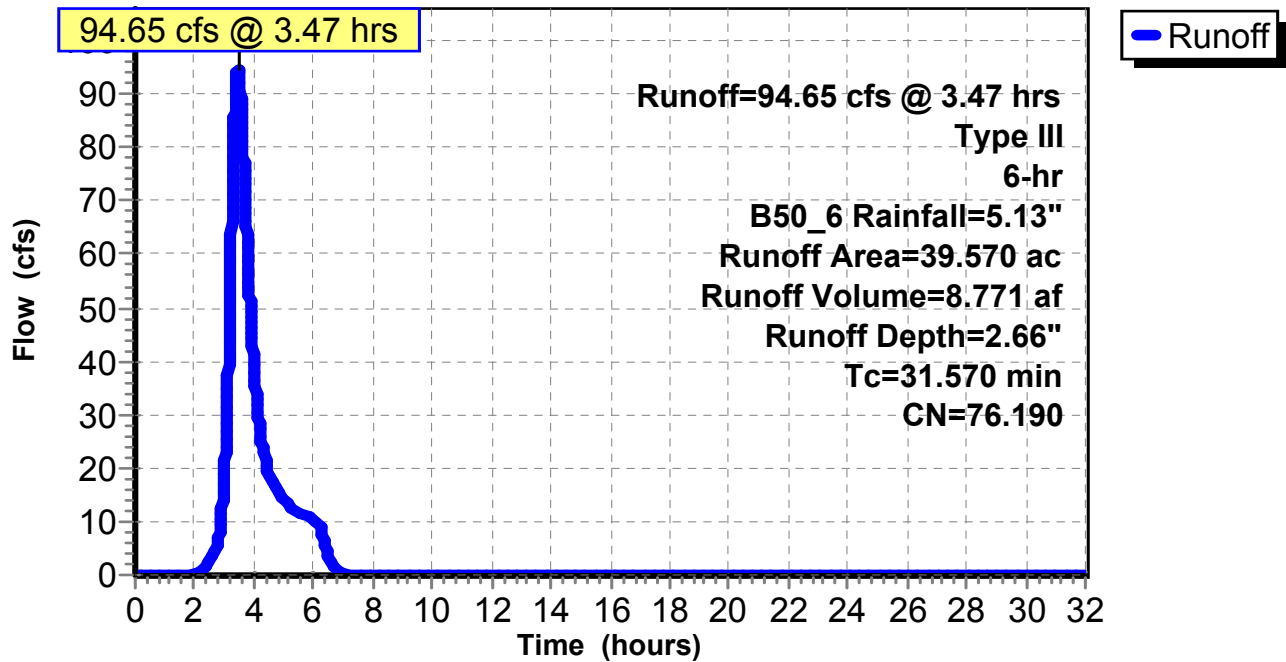
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr B50_6 Rainfall=5.13"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



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Summary for Subcatchment E: WS E

Runoff = 219.52 cfs @ 3.87 hrs, Volume= 29.694 af, Depth= 3.04"

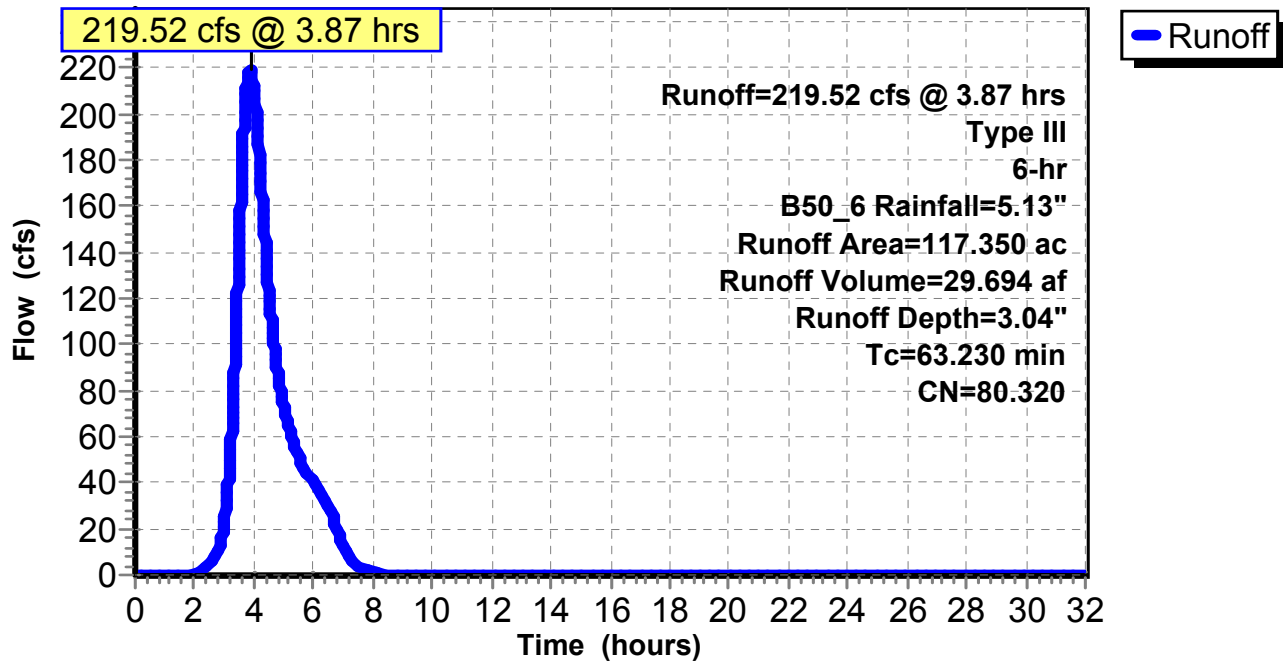
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr B50_6 Rainfall=5.13"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



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Summary for Subcatchment F: WS F

Runoff = 227.34 cfs @ 3.64 hrs, Volume= 25.154 af, Depth= 2.49"

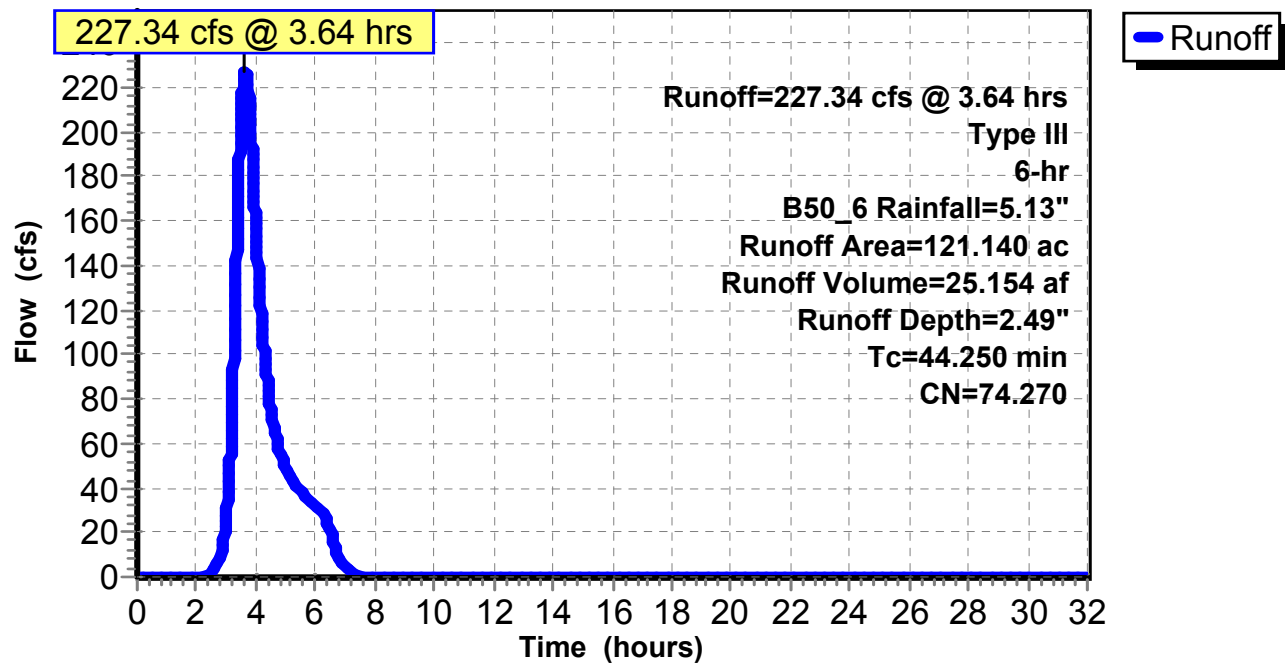
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr B50_6 Rainfall=5.13"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



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Type III 6-hr B50_6 Rainfall=5.13"

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Summary for Subcatchment G: WS G

Runoff = 442.87 cfs @ 3.50 hrs, Volume= 43.742 af, Depth= 3.15"

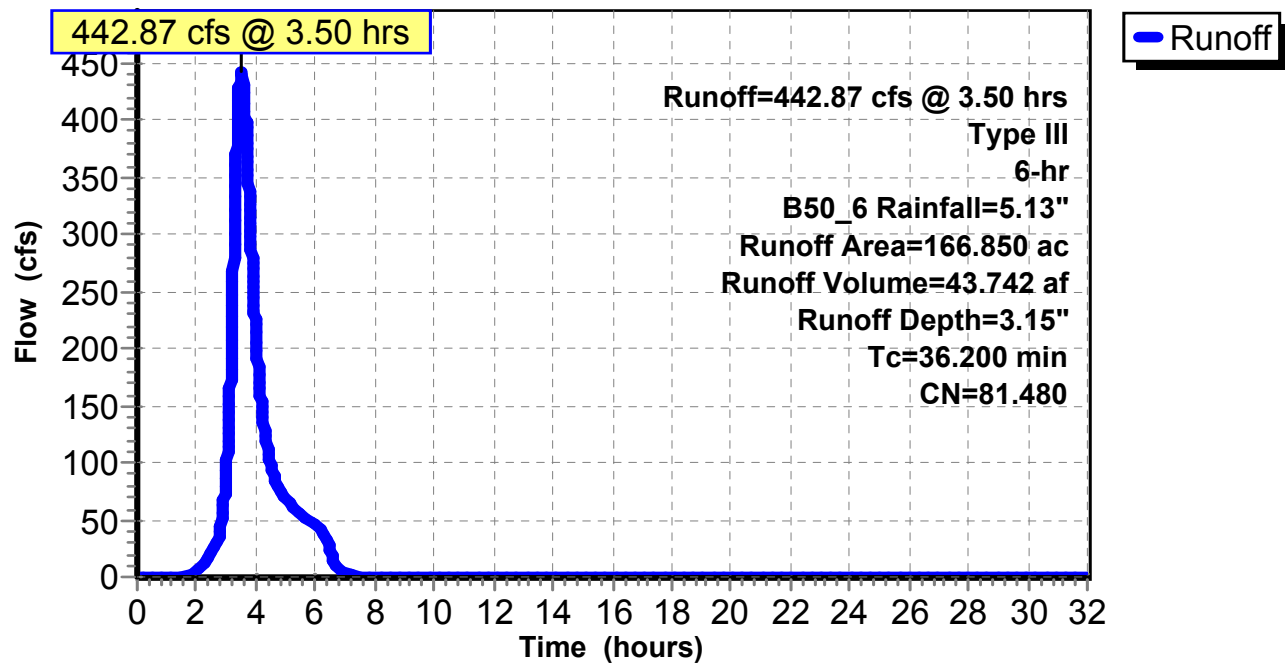
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr B50_6 Rainfall=5.13"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 2.61" for B50_6 event
Inflow = 194.60 cfs @ 4.81 hrs, Volume= 88.261 af
Outflow = 194.54 cfs @ 4.84 hrs, Volume= 88.209 af, Atten= 0%, Lag= 1.555 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.69 fps, Min. Travel Time= 2.278 min
Avg. Velocity = 1.61 fps, Avg. Travel Time= 5.224 min

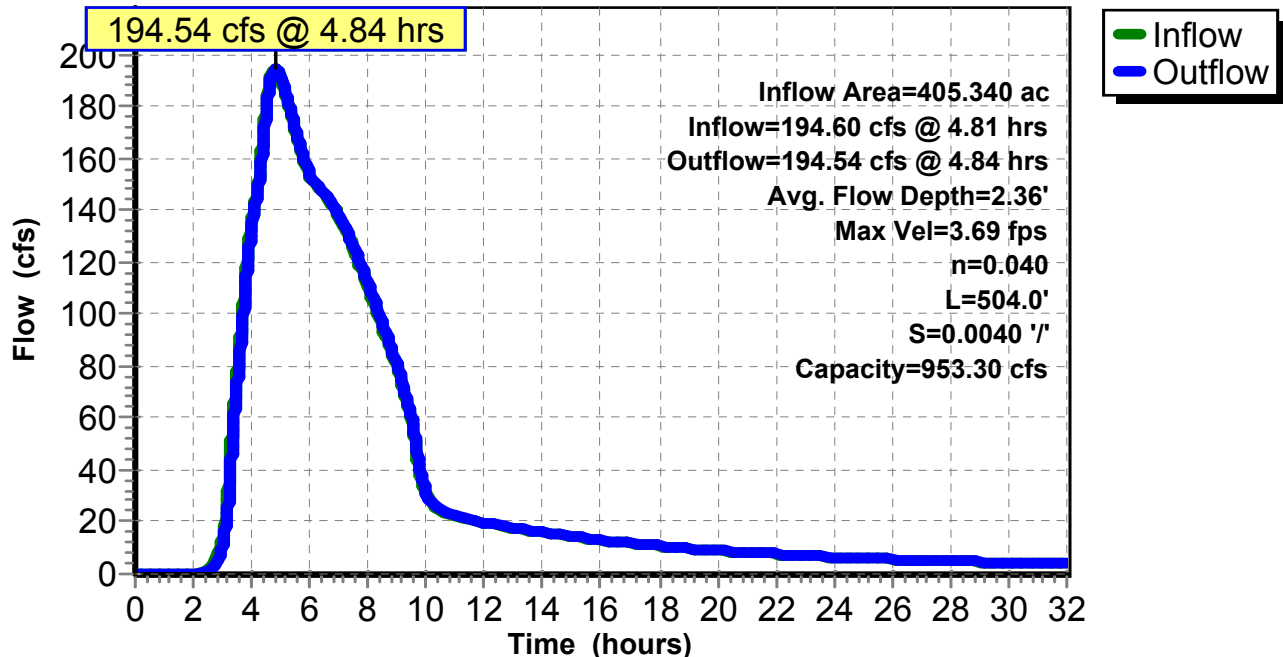
Peak Storage= 26,588 cf @ 4.84 hrs
Average Depth at Peak Storage= 2.36'
Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
Length= 504.0' Slope= 0.0040 ' / '
Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 2.49" for B50_6 event
 Inflow = 226.95 cfs @ 3.65 hrs, Volume= 25.153 af
 Outflow = 195.19 cfs @ 3.85 hrs, Volume= 25.153 af, Atten= 14%, Lag= 12.513 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.06 fps, Min. Travel Time= 17.628 min
 Avg. Velocity = 0.36 fps, Avg. Travel Time= 102.208 min

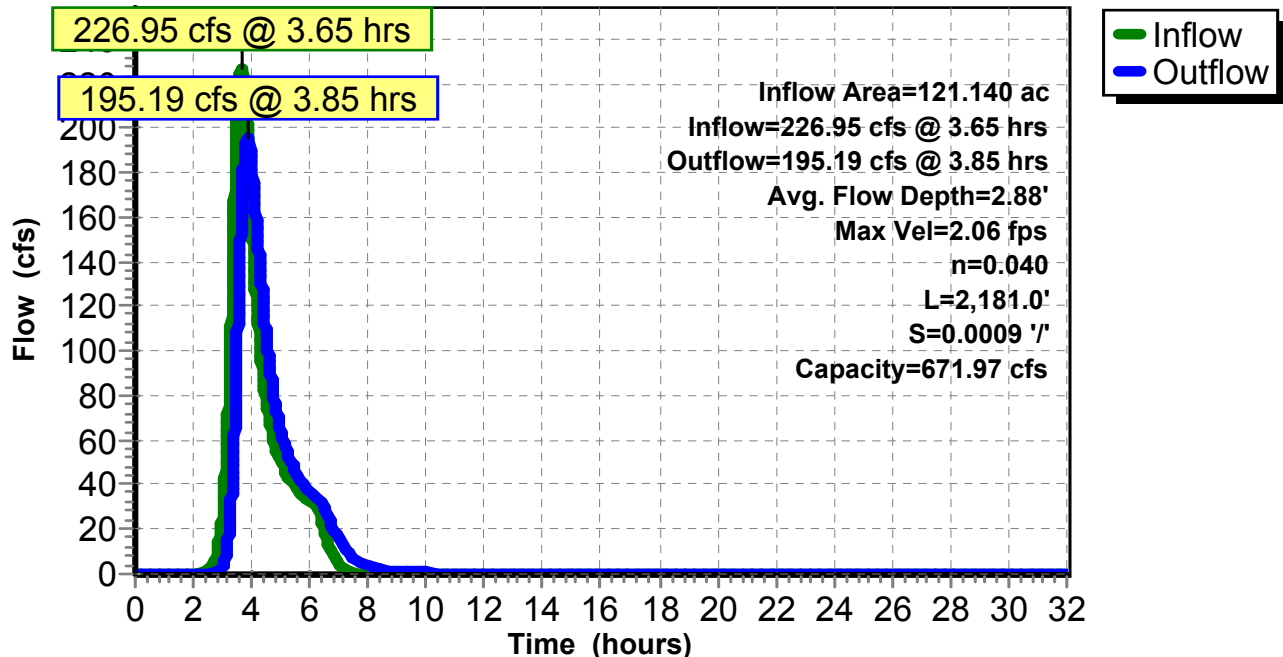
Peak Storage= 206,450 cf @ 3.85 hrs
 Average Depth at Peak Storage= 2.88'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 2,181.0' Slope= 0.0009 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 3.01" for B50_6 event
 Inflow = 437.61 cfs @ 3.55 hrs, Volume= 41.850 af
 Outflow = 35.75 cfs @ 6.41 hrs, Volume= 33.541 af, Atten= 92%, Lag= 171.682 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.53 fps, Min. Travel Time= 688.510 min
 Avg. Velocity = 0.35 fps, Avg. Travel Time= 1,039.013 min

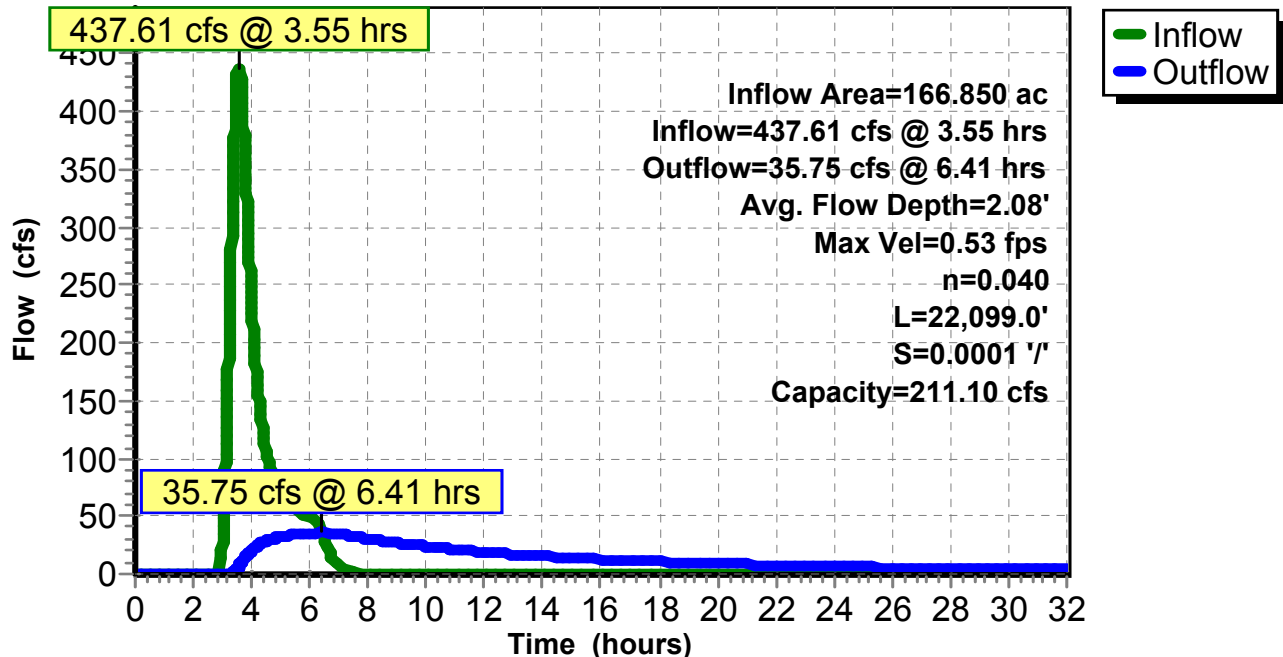
Peak Storage= 1,476,909 cf @ 6.41 hrs
 Average Depth at Peak Storage= 2.08'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 22,099.0' Slope= 0.0001 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 2.61" for B50_6 event
Inflow = 209.95 cfs @ 4.83 hrs, Volume= 96.879 af
Outflow = 208.80 cfs @ 4.94 hrs, Volume= 96.708 af, Atten= 1%, Lag= 6.540 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.08 fps, Min. Travel Time= 8.180 min
Avg. Velocity = 2.87 fps, Avg. Travel Time= 17.347 min

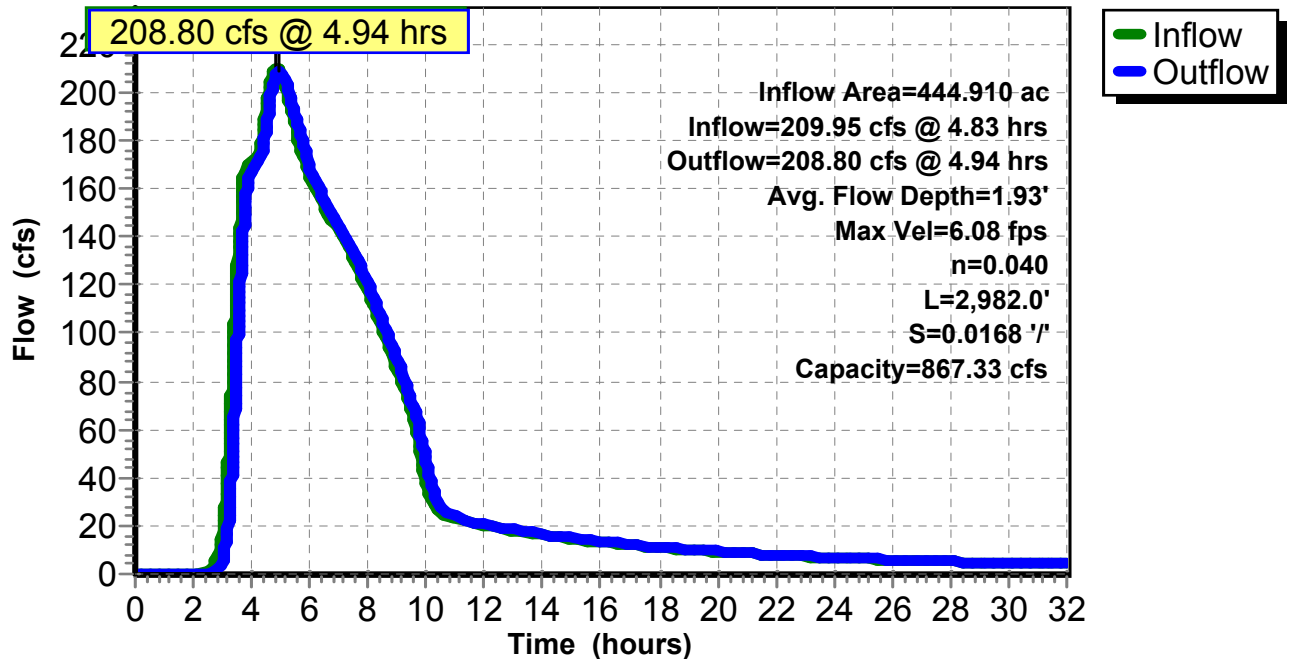
Peak Storage= 102,484 cf @ 4.94 hrs
Average Depth at Peak Storage= 1.93'
Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040
Side Slope Z-value= 3.0 '/' Top Width= 36.00'
Length= 2,982.0' Slope= 0.0168 '/'
Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 2.73" for B50_6 event
 Inflow = 414.05 cfs @ 3.76 hrs, Volume= 127.759 af
 Outflow = 413.99 cfs @ 3.77 hrs, Volume= 127.737 af, Atten= 0%, Lag= 0.456 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 9.92 fps, Min. Travel Time= 0.731 min
 Avg. Velocity = 3.50 fps, Avg. Travel Time= 2.072 min

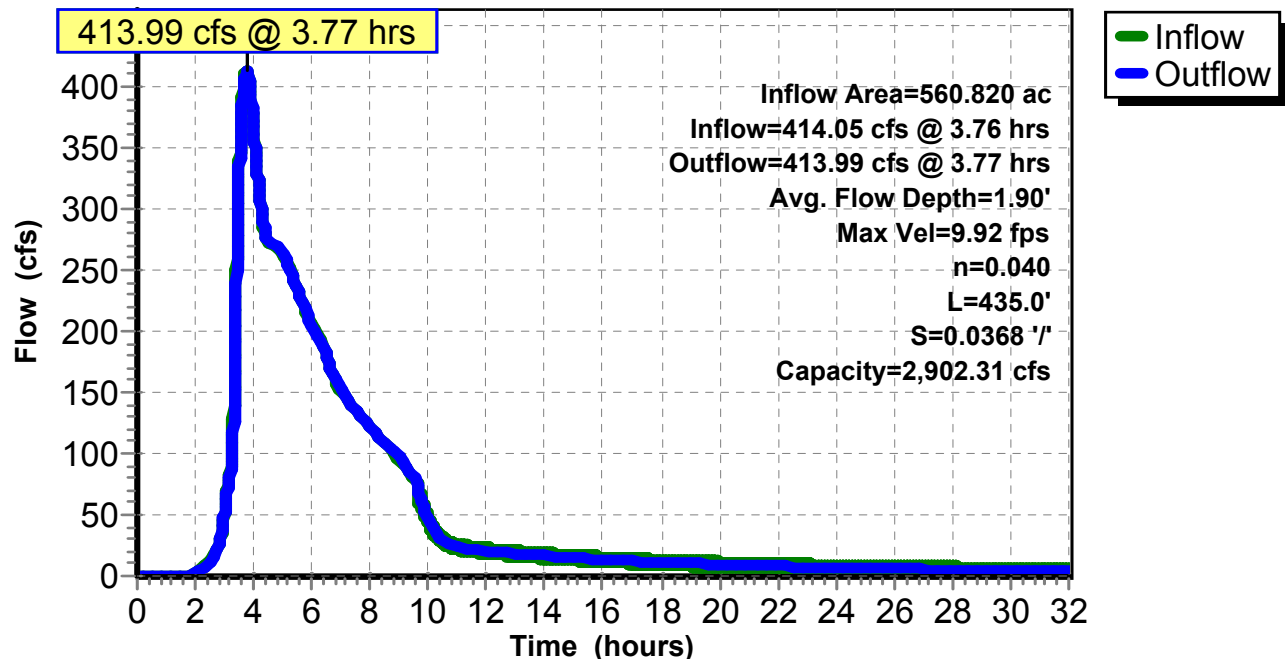
Peak Storage= 18,149 cf @ 3.77 hrs
 Average Depth at Peak Storage= 1.90'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
 Length= 435.0' Slope= 0.0368 ' / '
 Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



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Summary for Reach 17R: FLOW OVER ROAD

Inflow = 117.26 cfs @ 3.78 hrs, Volume= 7.647 af
Outflow = 116.96 cfs @ 3.80 hrs, Volume= 7.647 af, Atten= 0%, Lag= 1.266 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.80 fps, Min. Travel Time= 2.175 min
Avg. Velocity = 2.00 fps, Avg. Travel Time= 7.385 min

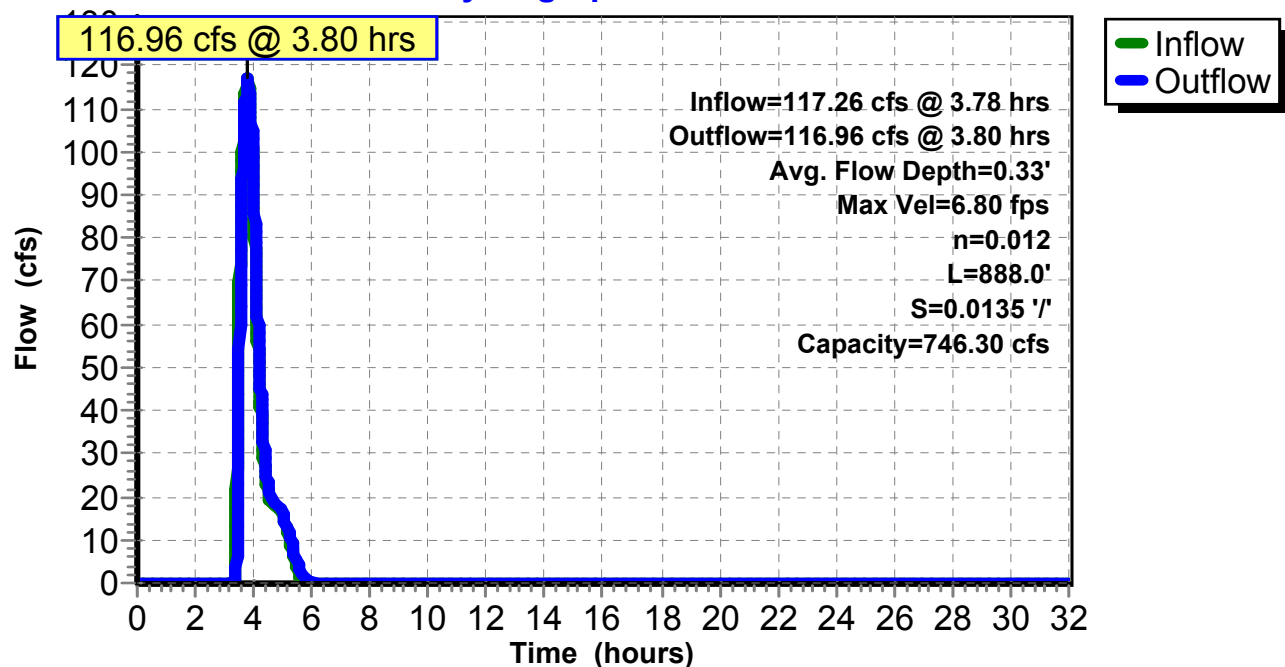
Peak Storage= 15,265 cf @ 3.80 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
Length= 888.0' Slope= 0.0135 ' '
Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



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Summary for Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 2.86" for B50_6 event
 Inflow = 591.02 cfs @ 3.62 hrs, Volume= 155.885 af
 Outflow = 549.35 cfs @ 3.83 hrs, Volume= 155.891 af, Atten= 7%, Lag= 12.823 min
 Primary = 549.35 cfs @ 3.83 hrs, Volume= 155.891 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 49.36' @ 3.83 hrs Surf.Area= 0.766 ac Storage= 2.384 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.571 min (410.822 - 410.252)

Volume	Invert	Avail.Storage	Storage Description
#1	46.00'	82.605 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
46.00	0.695	0.000	0.000
48.00	0.695	1.390	1.390
50.00	0.800	1.495	2.885
52.00	1.420	2.220	5.105
54.00	2.270	3.690	8.795
56.00	3.160	5.430	14.225
58.00	4.070	7.230	21.455
60.00	4.980	9.050	30.505
62.00	5.710	10.690	41.195
64.00	6.620	12.330	53.525
66.00	7.170	13.790	67.315
68.00	8.120	15.290	82.605

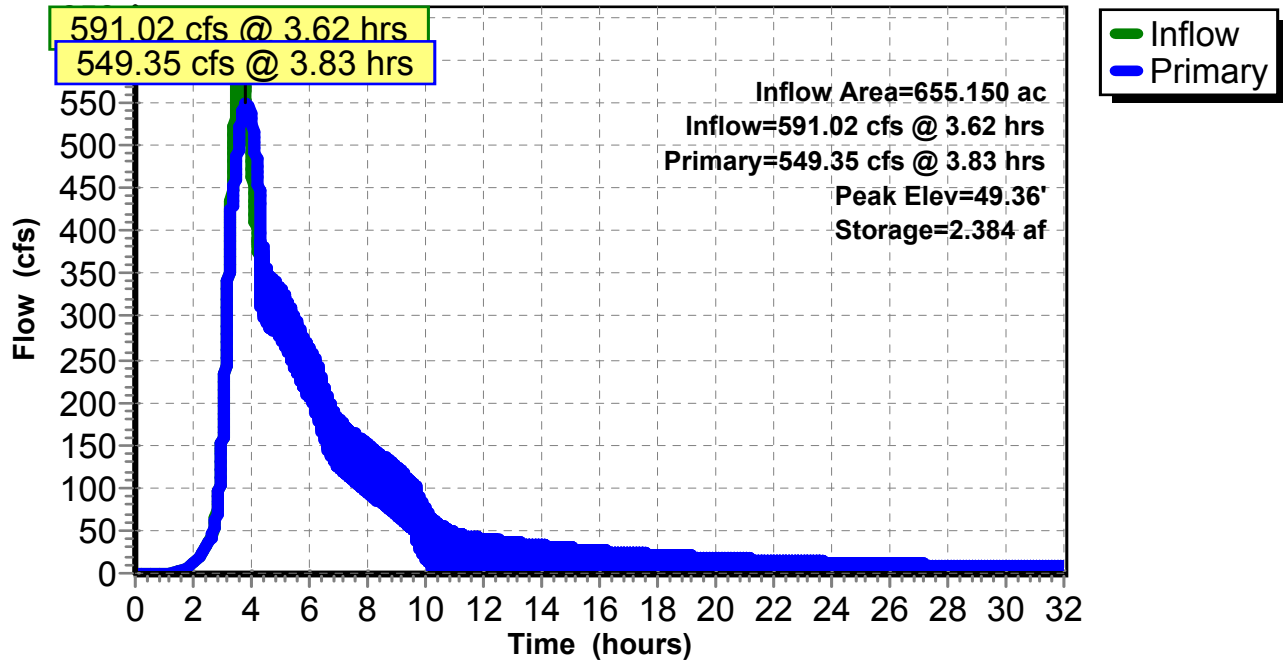
Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48

Primary OutFlow Max=549.35 cfs @ 3.83 hrs HW=49.36' TW=40.15' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 549.35 cfs @ 14.08 fps)
- 2=WEIR WESTCH AVE (Controls 0.00 cfs)

Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



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Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 2.75" for B50_6 event
 Inflow = 438.17 cfs @ 3.73 hrs, Volume= 133.547 af
 Outflow = 435.86 cfs @ 3.78 hrs, Volume= 133.546 af, Atten= 1%, Lag= 2.933 min
 Primary = 435.86 cfs @ 3.78 hrs, Volume= 133.546 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 72.34' @ 3.78 hrs Surf.Area= 0.197 ac Storage= 0.434 af

Plug-Flow detention time= 0.159 min calculated for 133.504 af (100% of inflow)
 Center-of-Mass det. time= 0.144 min (440.146 - 440.002)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

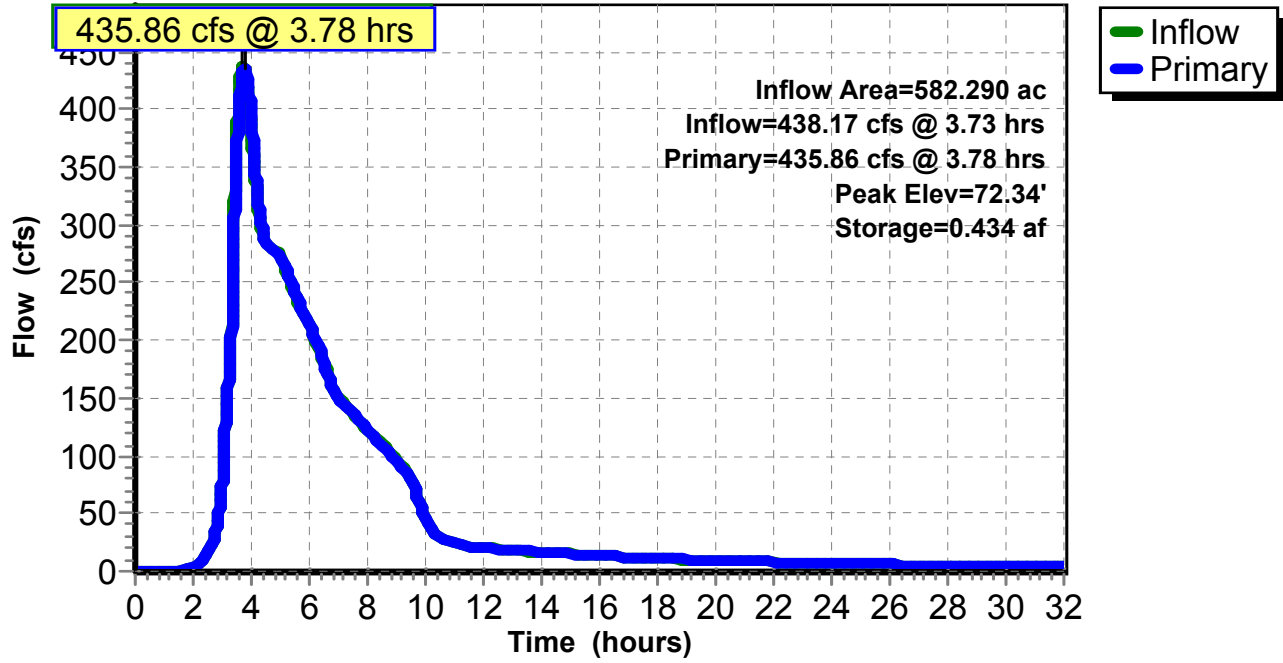
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=435.86 cfs @ 3.78 hrs HW=72.34' TW=61.34' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 278.73 cfs @ 14.20 fps)
- 2=Culvert 2 (Inlet Controls 157.12 cfs @ 8.00 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



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Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 2.62" for B50_6 event
Inflow = 210.09 cfs @ 4.80 hrs, Volume= 96.980 af
Outflow = 209.95 cfs @ 4.83 hrs, Volume= 96.879 af, Atten= 0%, Lag= 1.948 min
Primary = 209.95 cfs @ 4.83 hrs, Volume= 96.879 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 130.25' @ 4.83 hrs Surf.Area= 0.982 ac Storage= 2.317 af

Plug-Flow detention time= 10.040 min calculated for 96.849 af (100% of inflow)
Center-of-Mass det. time= 8.577 min (500.345 - 491.768)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

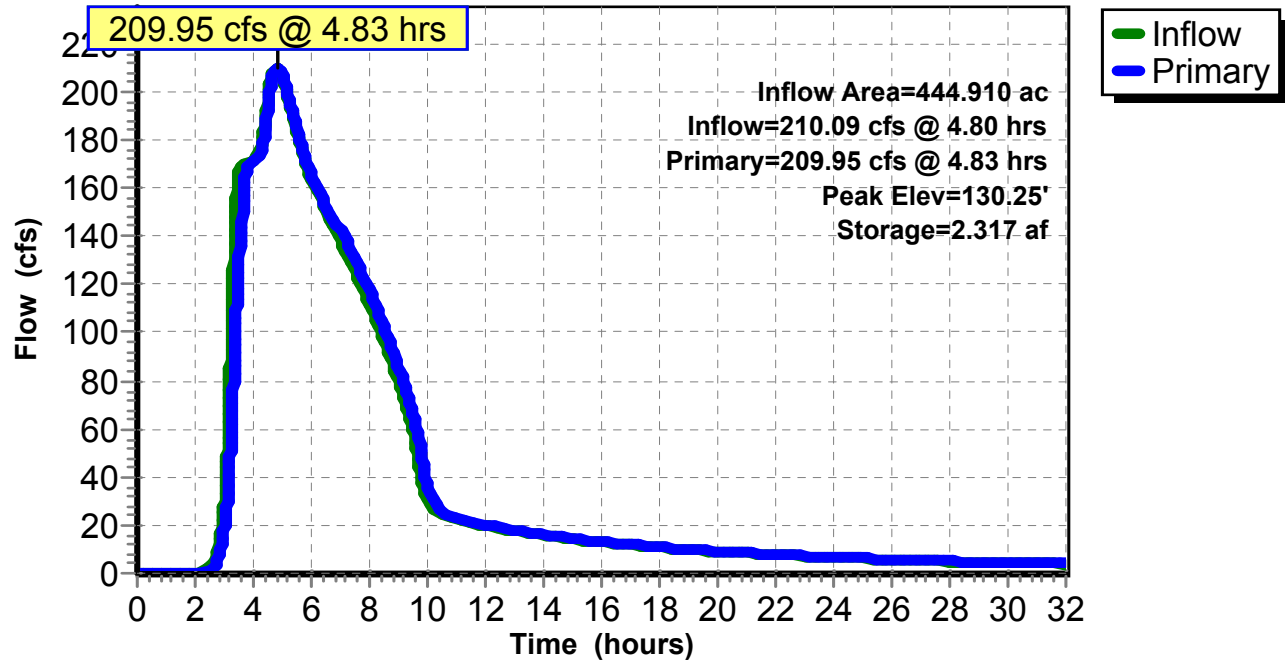
Primary OutFlow Max=209.95 cfs @ 4.83 hrs HW=130.25' TW=127.92' (Dynamic Tailwater)

1=Culvert (Barrel Controls 159.39 cfs @ 7.43 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 50.56 cfs @ 1.63 fps)

Pond 4A: DP 4 A ARGYLE

Hydrograph



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Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 2.62" for B50_6 event
 Inflow = 431.61 cfs @ 3.87 hrs, Volume= 88.388 af
 Outflow = 194.60 cfs @ 4.81 hrs, Volume= 88.261 af, Atten= 55%, Lag= 56.460 min
 Primary = 194.60 cfs @ 4.81 hrs, Volume= 88.261 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 132.20' @ 4.81 hrs Surf.Area= 18.714 ac Storage= 22.623 af

Plug-Flow detention time= 59.679 min calculated for 88.233 af (100% of inflow)
 Center-of-Mass det. time= 57.577 min (514.065 - 456.488)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

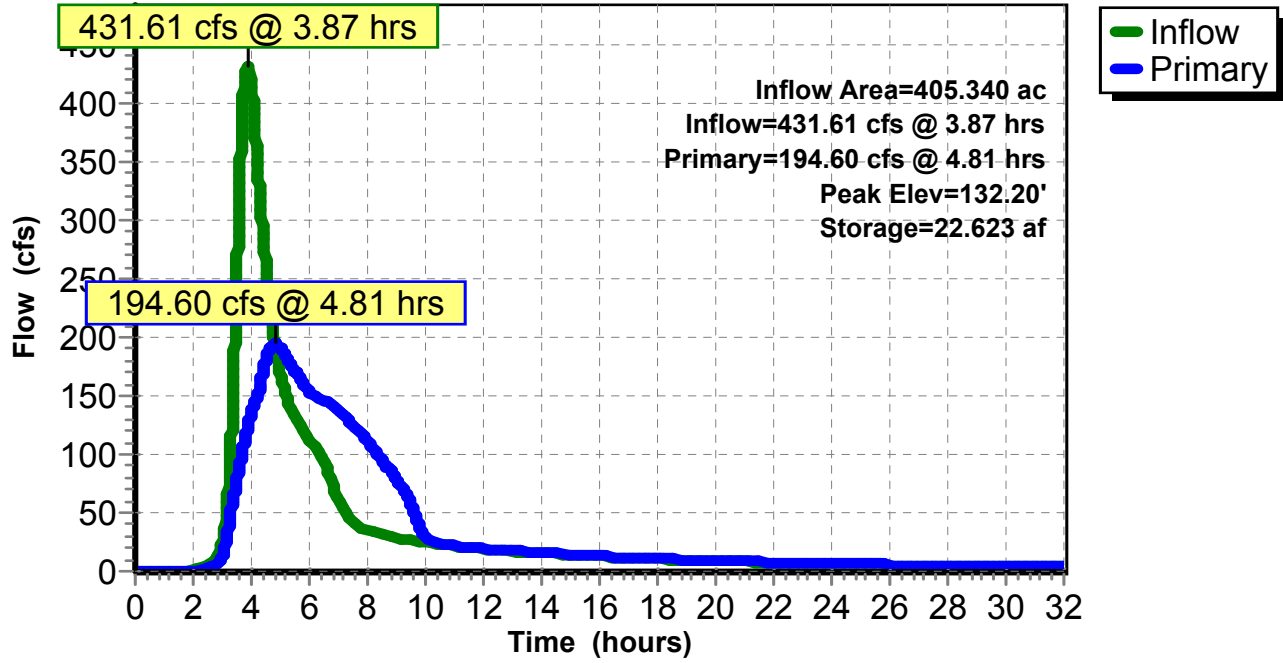
Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

Primary OutFlow Max=194.60 cfs @ 4.81 hrs HW=132.20' TW=130.36' (Dynamic Tailwater)

- 1=Culvert (Barrel Controls 161.30 cfs @ 7.60 fps)
- 2=Asymmetrical Weir (Weir Controls 33.31 cfs @ 1.36 fps)

Pond 5P: DP 5 BETSY BROWN ROAD

Hydrograph



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Type III 6-hr B50_6 Rainfall=5.13"

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Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 2.73" for B50_6 event
Inflow = 414.92 cfs @ 3.72 hrs, Volume= 127.760 af
Outflow = 414.05 cfs @ 3.76 hrs, Volume= 127.759 af, Atten= 0%, Lag= 2.083 min
Primary = 414.05 cfs @ 3.76 hrs, Volume= 127.759 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 91.17' @ 3.76 hrs Surf.Area= 1.370 ac Storage= 1.598 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.837 min (448.859 - 446.023)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

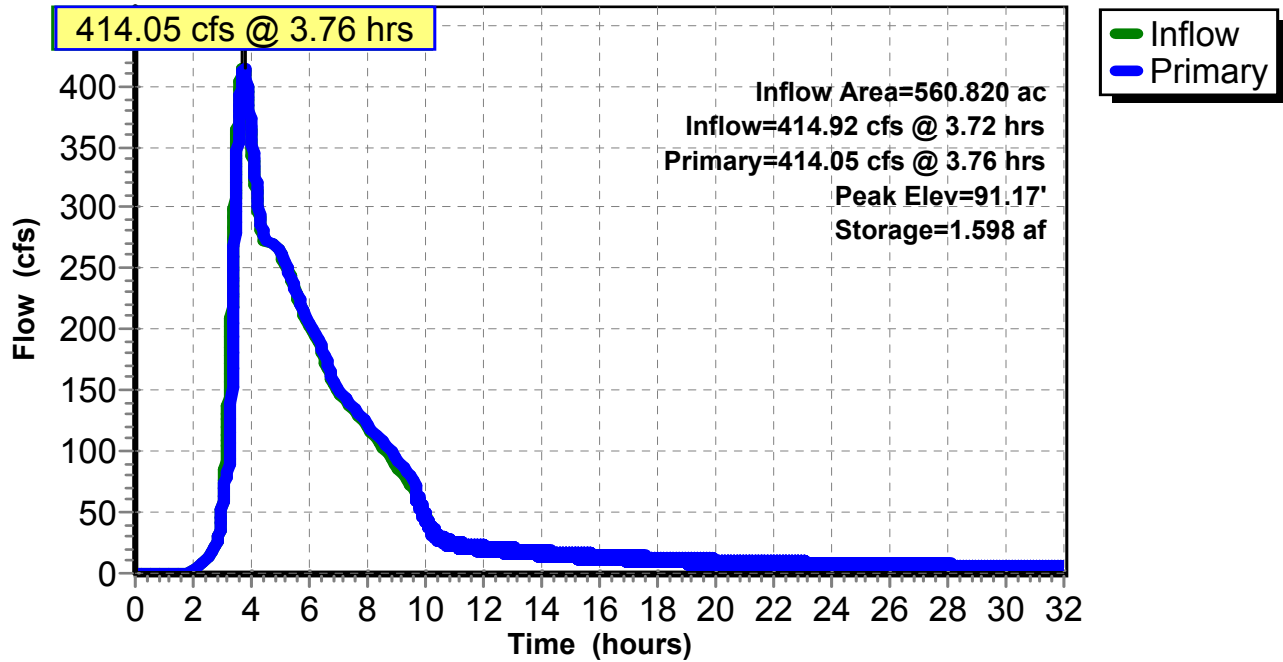
Primary OutFlow Max=414.04 cfs @ 3.76 hrs HW=91.17' TW=77.90' (Dynamic Tailwater)

1=Sharp-Crested Rectangular Weir(Weir Controls 172.65 cfs @ 5.29 fps)

2=Sharp-Crested Rectangular Weir(Weir Controls 241.39 cfs @ 2.71 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



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Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 2.98" for B50_6 event
 Inflow = 703.97 cfs @ 3.59 hrs, Volume= 177.330 af
 Outflow = 703.94 cfs @ 3.59 hrs, Volume= 175.642 af, Atten= 0%, Lag= 0.277 min
 Primary = 703.94 cfs @ 3.59 hrs, Volume= 175.642 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 40.16' @ 3.59 hrs Surf.Area= 1.063 ac Storage= 1.840 af

Plug-Flow detention time= 16.011 min calculated for 175.587 af (99% of inflow)
 Center-of-Mass det. time= 2.726 min (391.067 - 388.342)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

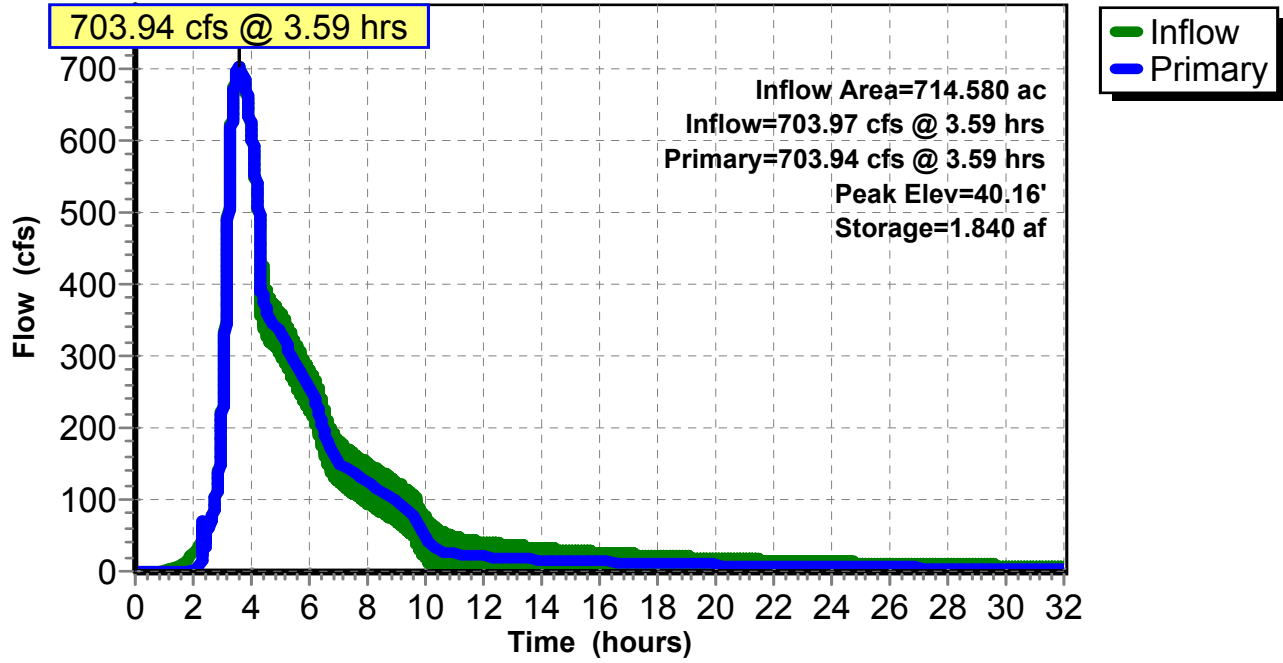
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=703.93 cfs @ 3.59 hrs HW=40.16' TW=40.00' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 266.82 cfs @ 1.94 fps)
- 2=WEIR BOWMAN (Weir Controls 437.11 cfs @ 1.47 fps)

Pond 8P: BOWMAN FIELDS

Hydrograph



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Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 2.49" for B50_6 event
Inflow = 227.34 cfs @ 3.64 hrs, Volume= 25.154 af
Outflow = 226.95 cfs @ 3.65 hrs, Volume= 25.153 af, Atten= 0%, Lag= 0.311 min
Primary = 226.95 cfs @ 3.65 hrs, Volume= 25.153 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 134.82' @ 3.69 hrs Surf.Area= 0.183 ac Storage= 0.208 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.520 min (254.798 - 254.278)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

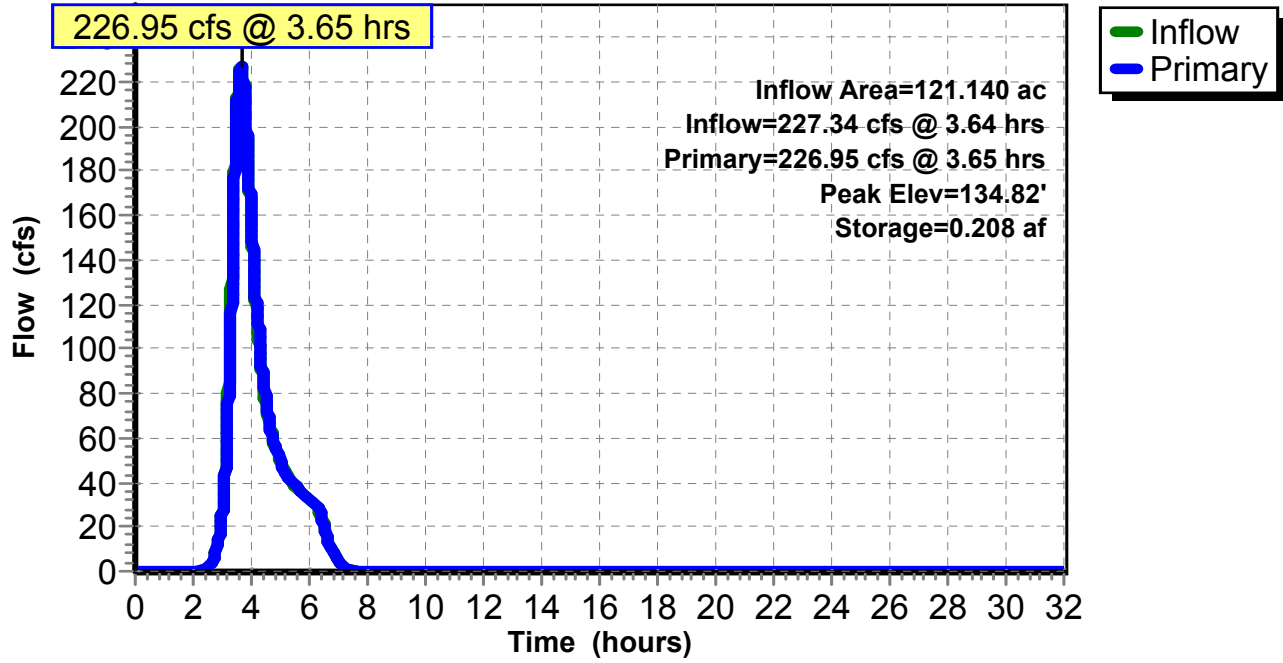
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=226.26 cfs @ 3.65 hrs HW=134.82' TW=132.57' (Dynamic Tailwater)

1=Culvert (Inlet Controls 51.07 cfs @ 7.23 fps)
2=Sharp-Crested Rectangular Weir (Weir Controls 82.30 cfs @ 5.72 fps)
3=Sharp-Crested Rectangular Weir (Weir Controls 92.88 cfs @ 1.85 fps)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Hydrograph



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Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 3.15" for B50_6 event
 Inflow = 442.87 cfs @ 3.50 hrs, Volume= 43.742 af
 Outflow = 437.61 cfs @ 3.55 hrs, Volume= 41.850 af, Atten= 1%, Lag= 3.056 min
 Primary = 437.61 cfs @ 3.55 hrs, Volume= 41.850 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.60' @ 3.55 hrs Surf.Area= 4.023 ac Storage= 7.018 af (4.050 af above start)

Plug-Flow detention time= 27.913 min calculated for 38.882 af (89% of inflow)
 Center-of-Mass det. time= 8.641 min (249.501 - 240.860)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

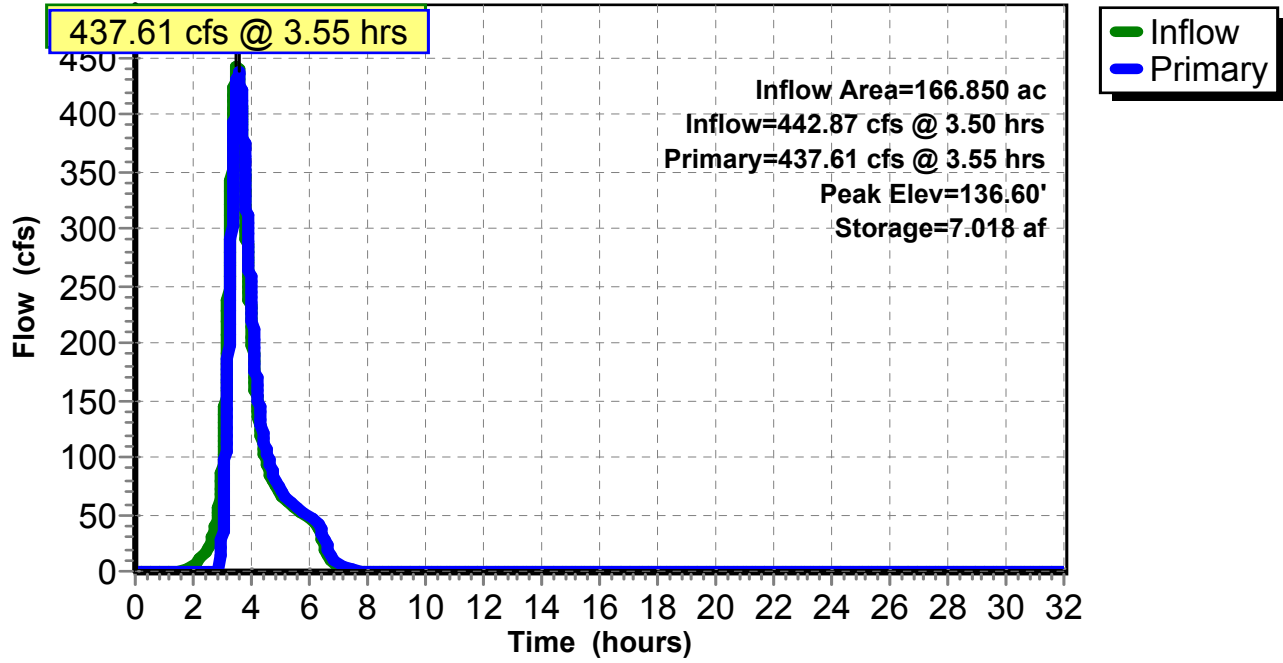
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=437.55 cfs @ 3.55 hrs HW=136.60' TW=130.74' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 2.69 cfs @ 2.65 fps)
- 2=Asymmetrical Weir (Weir Controls 434.86 cfs @ 2.21 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Hydrograph



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Summary for Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 2.75" for B50_6 event
Inflow = 435.86 cfs @ 3.78 hrs, Volume= 133.546 af
Outflow = 435.86 cfs @ 3.78 hrs, Volume= 133.541 af, Atten= 0%, Lag= 0.109 min
Primary = 318.60 cfs @ 3.78 hrs, Volume= 125.894 af
Secondary = 117.26 cfs @ 3.78 hrs, Volume= 7.647 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 61.34' @ 3.78 hrs Surf.Area= 1,266 sf Storage= 4,288 cf

Plug-Flow detention time= 0.259 min calculated for 133.541 af (100% of inflow)
Center-of-Mass det. time= 0.203 min (440.349 - 440.146)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	22,686 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686

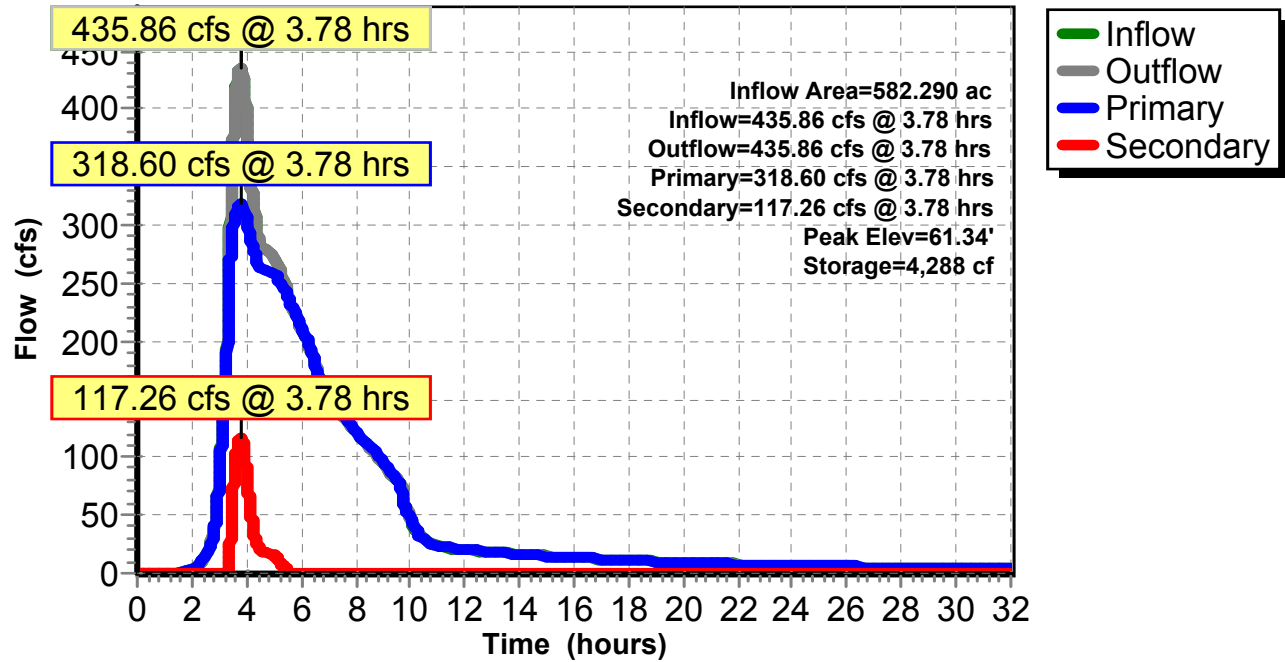
Device	Routing	Invert	Outlet Devices
#1	Primary	56.00'	60.0" Round Culvert X 2.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 56.00' / 37.90' S= 0.0217 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	60.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 66.00 64.00 62.00 60.00 60.00 62.00 64.00 66.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=318.59 cfs @ 3.78 hrs HW=61.34' TW=49.32' (Dynamic Tailwater)
↑1=Culvert (Inlet Controls 318.59 cfs @ 8.11 fps)

Secondary OutFlow Max=117.25 cfs @ 3.78 hrs HW=61.34' TW=58.33' (Dynamic Tailwater)
↑2=Asymmetrical Weir (Weir Controls 117.25 cfs @ 3.32 fps)

Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Hydrograph



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Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 116.96 cfs @ 3.80 hrs, Volume= 7.647 af
 Outflow = 116.77 cfs @ 3.82 hrs, Volume= 7.647 af, Atten= 0%, Lag= 0.999 min
 Primary = 116.77 cfs @ 3.82 hrs, Volume= 7.647 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 51.80' @ 3.82 hrs Surf.Area= 13,568 sf Storage= 7,834 cf

Plug-Flow detention time= 1.460 min calculated for 7.647 af (100% of inflow)
 Center-of-Mass det. time= 1.258 min (245.138 - 243.880)

Volume	Invert	Avail.Storage	Storage Description
#1	51.00'	162,178 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
51.00	6,000	0	0
52.00	15,452	10,726	10,726
54.00	38,000	53,452	64,178
56.00	60,000	98,000	162,178

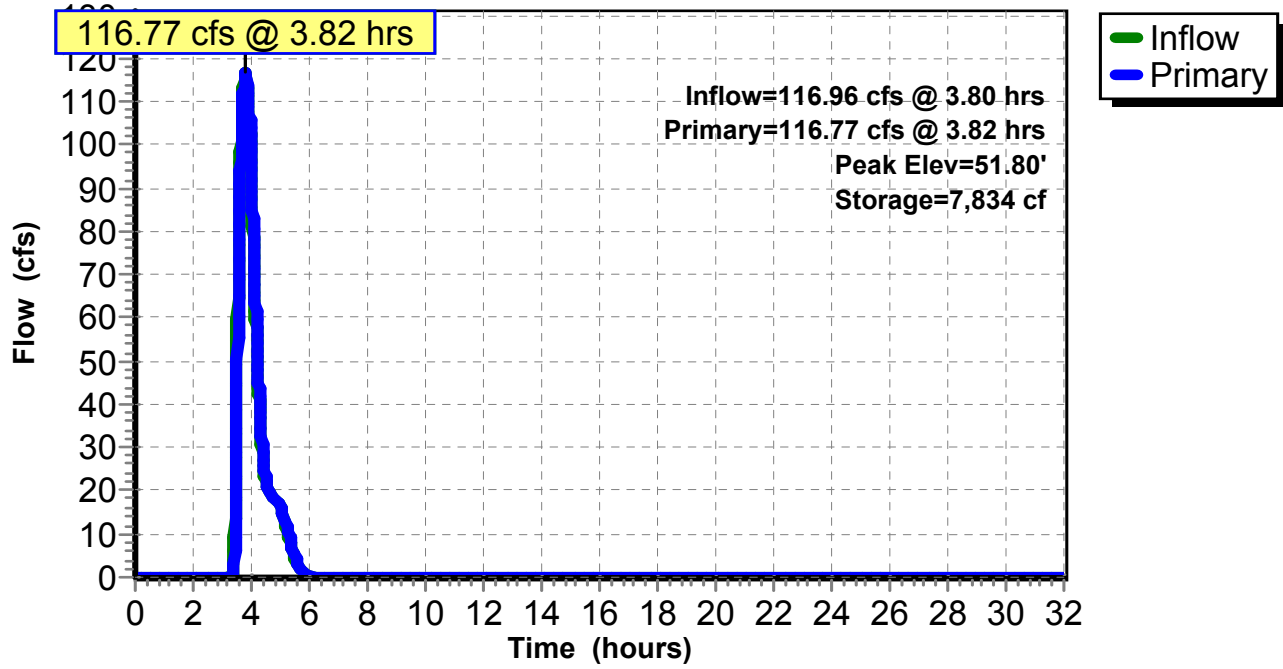
Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=116.76 cfs @ 3.82 hrs HW=51.80' TW=49.36' (Dynamic Tailwater)

↑1=Sharp-Crested Rectangular Weir (Weir Controls 116.76 cfs @ 2.93 fps)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



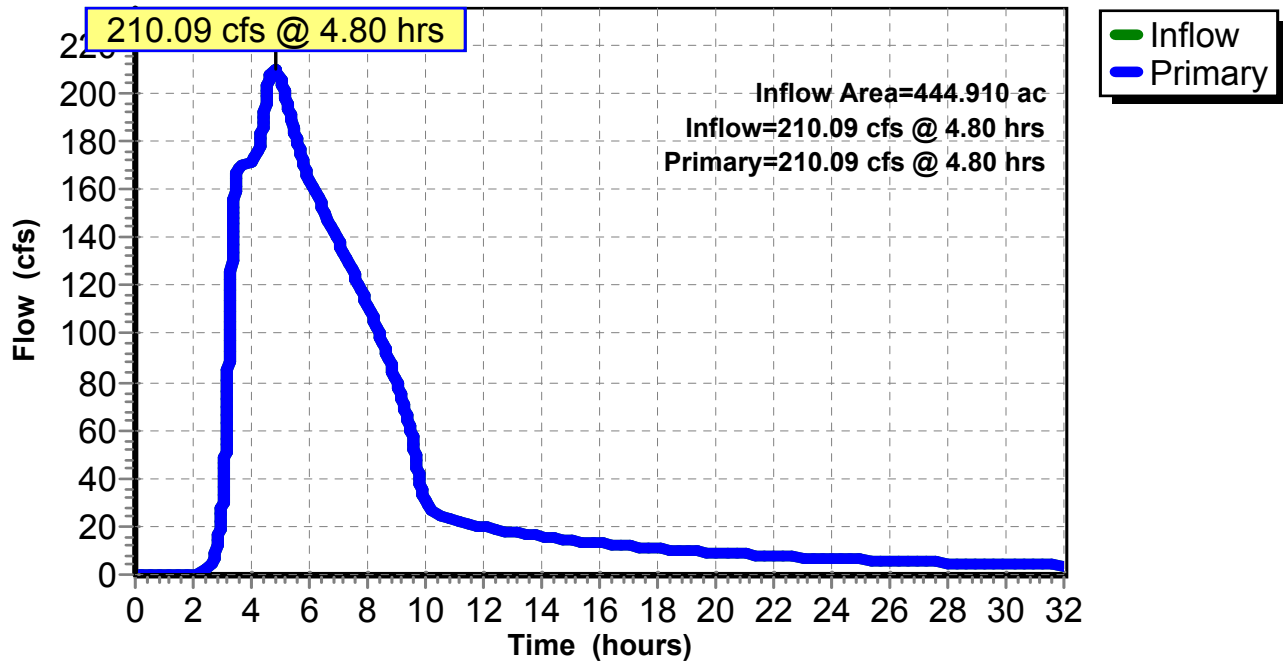
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 2.62" for B50_6 event
Inflow = 210.09 cfs @ 4.80 hrs, Volume= 96.980 af
Primary = 210.09 cfs @ 4.80 hrs, Volume= 96.980 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



Summary for Link 20L: EX FINAL

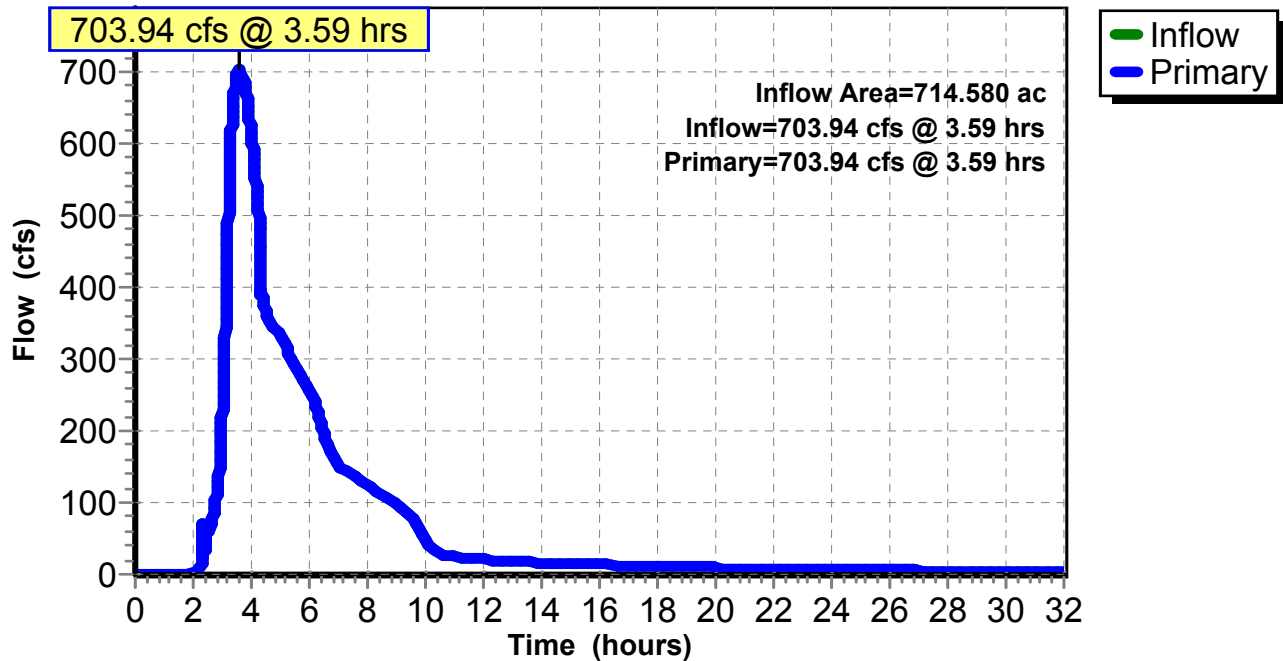
Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 2.95" for B50_6 event
Inflow = 703.94 cfs @ 3.59 hrs, Volume= 175.642 af
Primary = 703.94 cfs @ 3.59 hrs, Volume= 175.642 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 40.00'

Link 20L: EX FINAL

Hydrograph



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Summary for Subcatchment A: WS A

Runoff = 155.42 cfs @ 12.43 hrs, Volume= 21.342 af, Depth= 4.31"

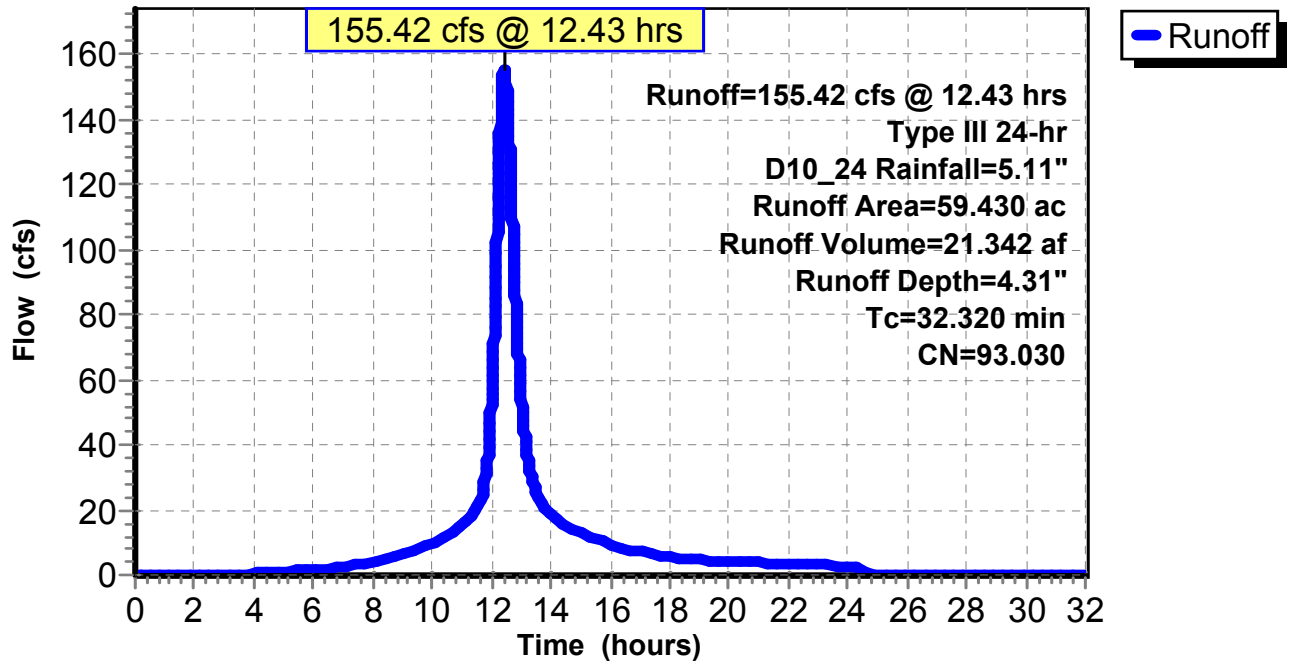
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



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Summary for Subcatchment B: WS B

Runoff = 141.78 cfs @ 12.40 hrs, Volume= 17.657 af, Depth= 3.68"

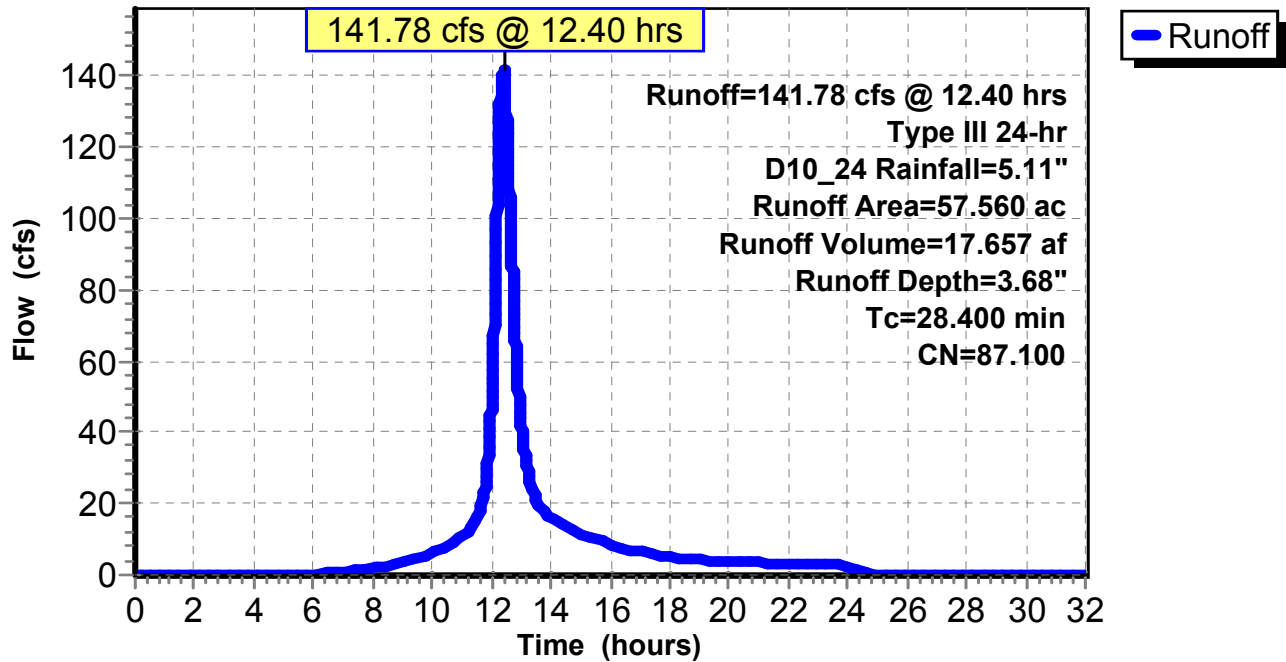
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



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Summary for Subcatchment BH: HOTEL

Runoff = 35.75 cfs @ 12.42 hrs, Volume= 4.572 af, Depth= 3.59"

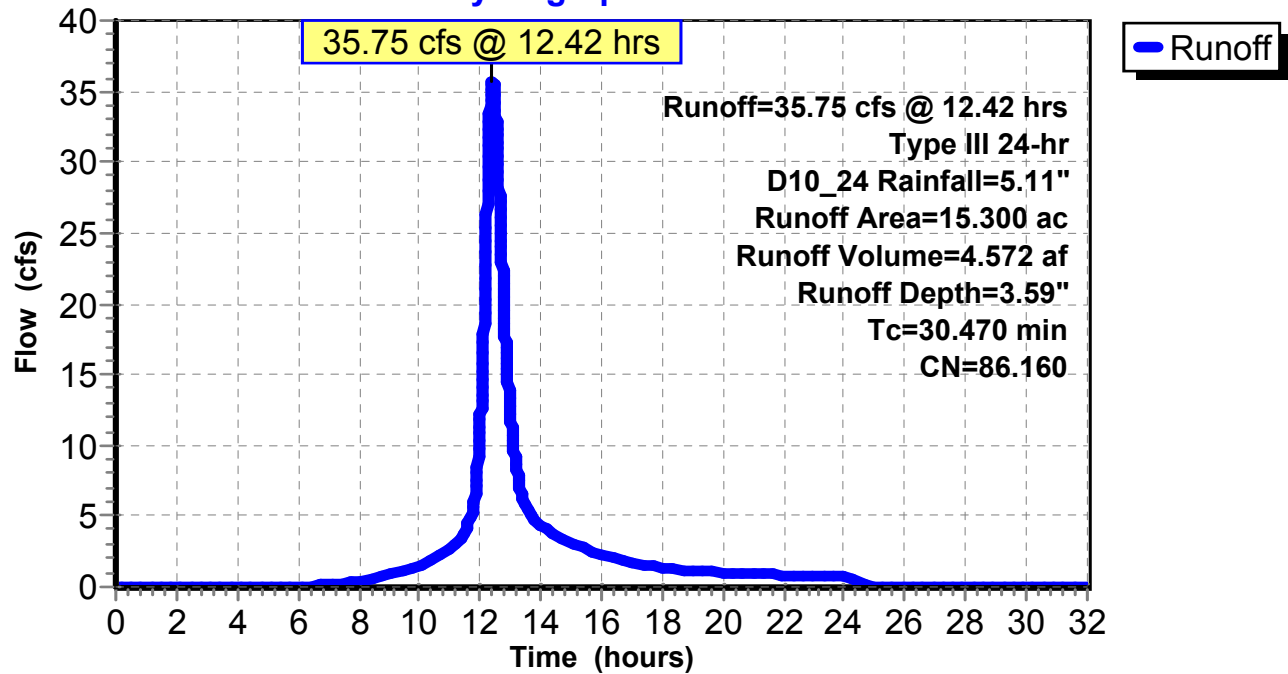
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



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Summary for Subcatchment C: WS C

Runoff = 56.40 cfs @ 12.25 hrs, Volume= 5.778 af, Depth= 3.23"

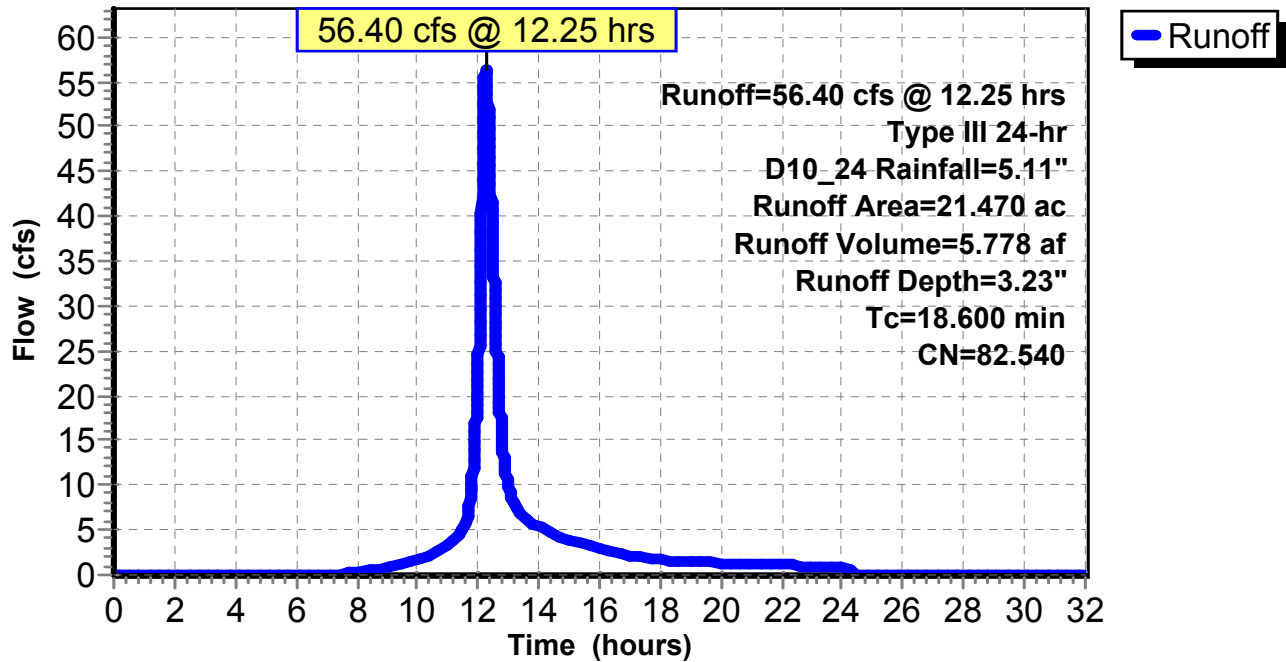
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



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Summary for Subcatchment D: WS D

Runoff = 200.91 cfs @ 12.61 hrs, Volume= 30.878 af, Depth= 3.20"

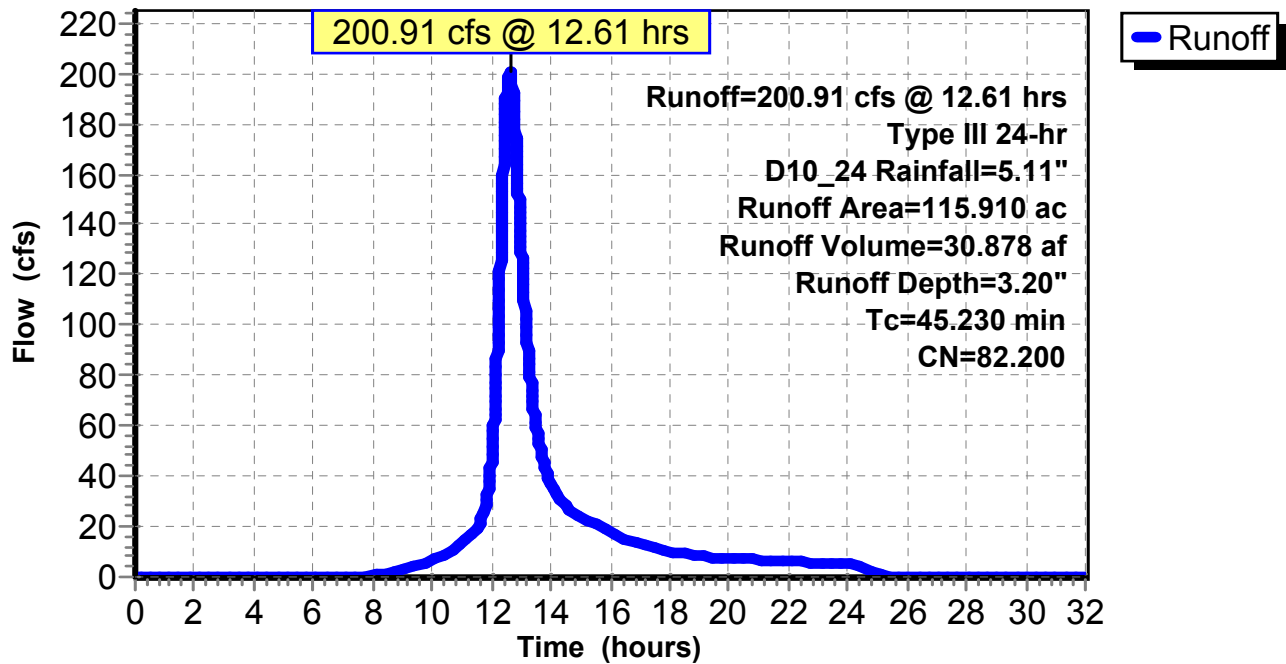
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



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Summary for Subcatchment D-1: WS D-1

Runoff = 67.70 cfs @ 12.45 hrs, Volume= 8.716 af, Depth= 2.64"

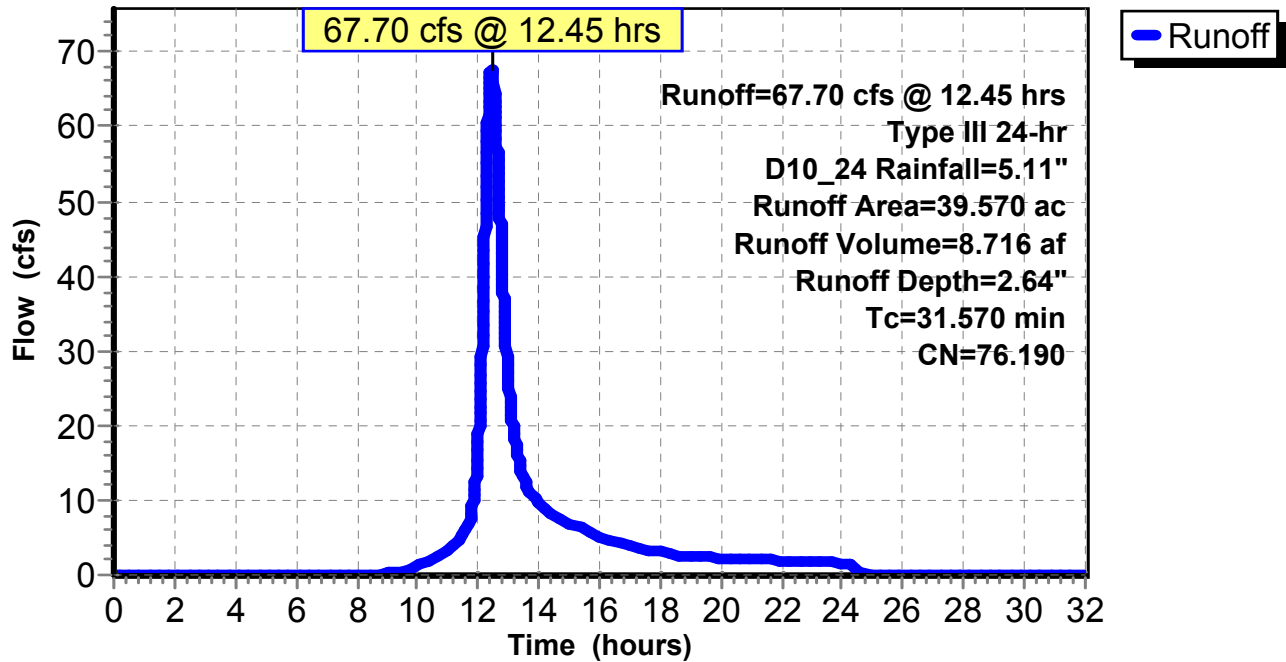
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

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Summary for Subcatchment E: WS E

Runoff = 159.06 cfs @ 12.86 hrs, Volume= 29.522 af, Depth= 3.02"

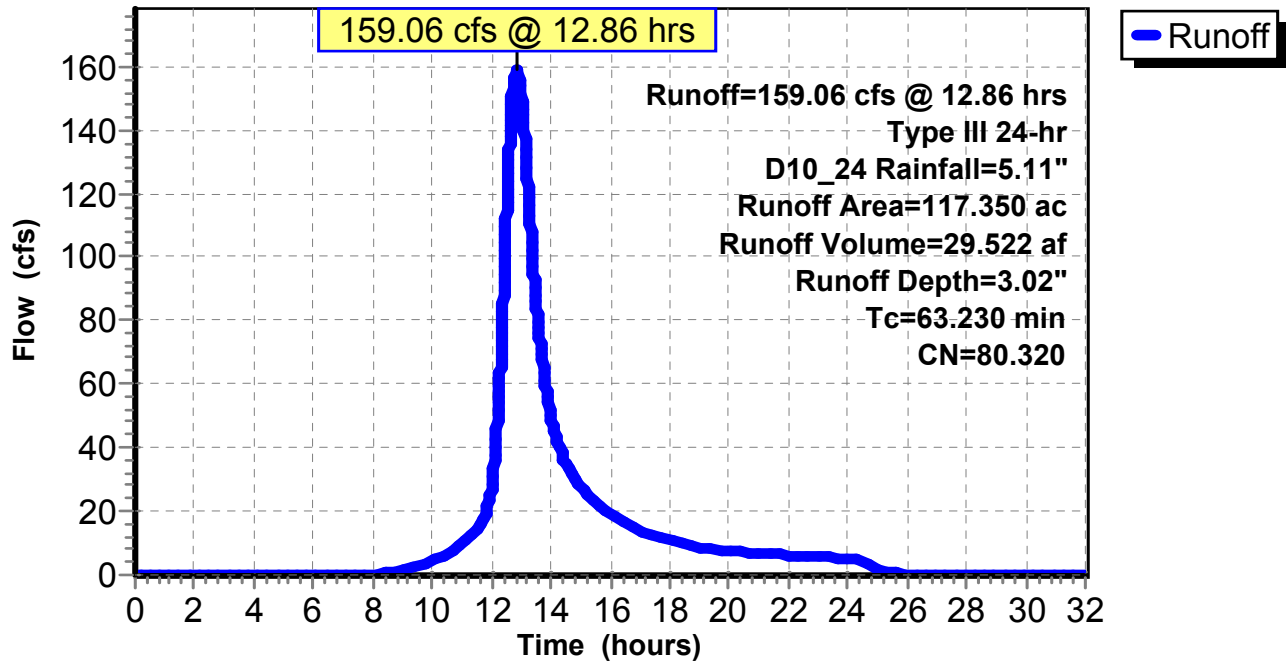
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



Summary for Subcatchment F: WS F

Runoff = 163.60 cfs @ 12.63 hrs, Volume= 24.991 af, Depth= 2.48"

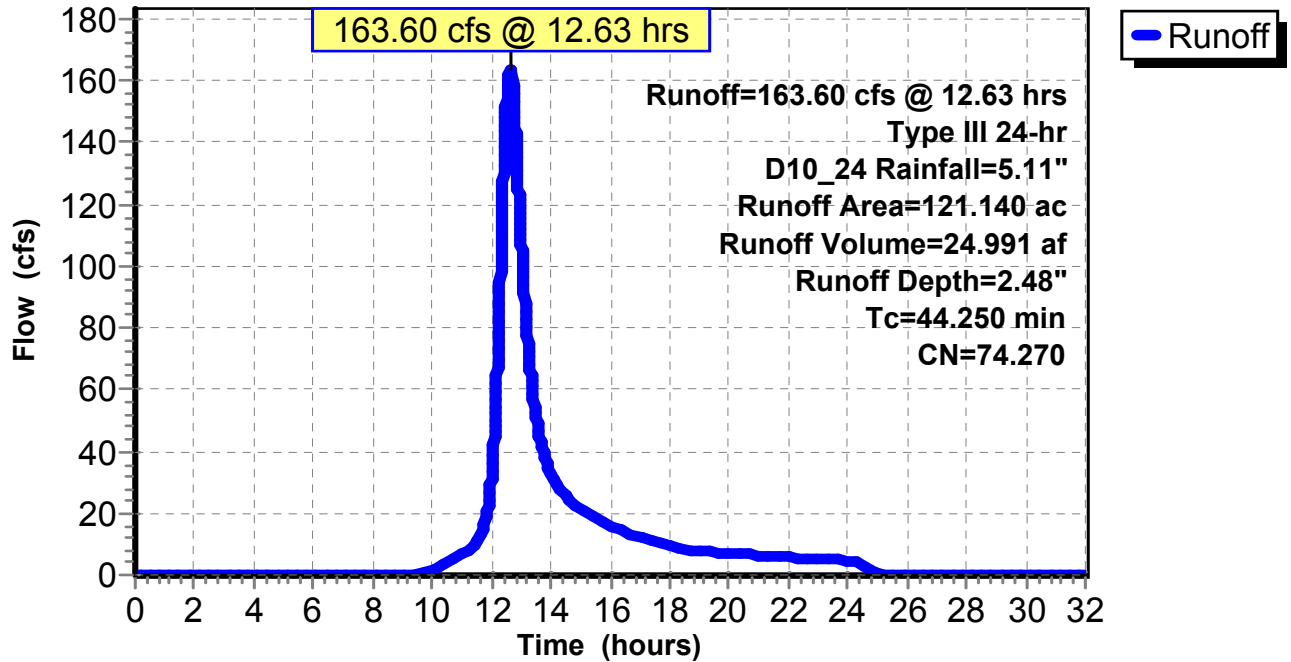
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



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Summary for Subcatchment G: WS G

Runoff = 316.99 cfs @ 12.51 hrs, Volume= 43.494 af, Depth= 3.13"

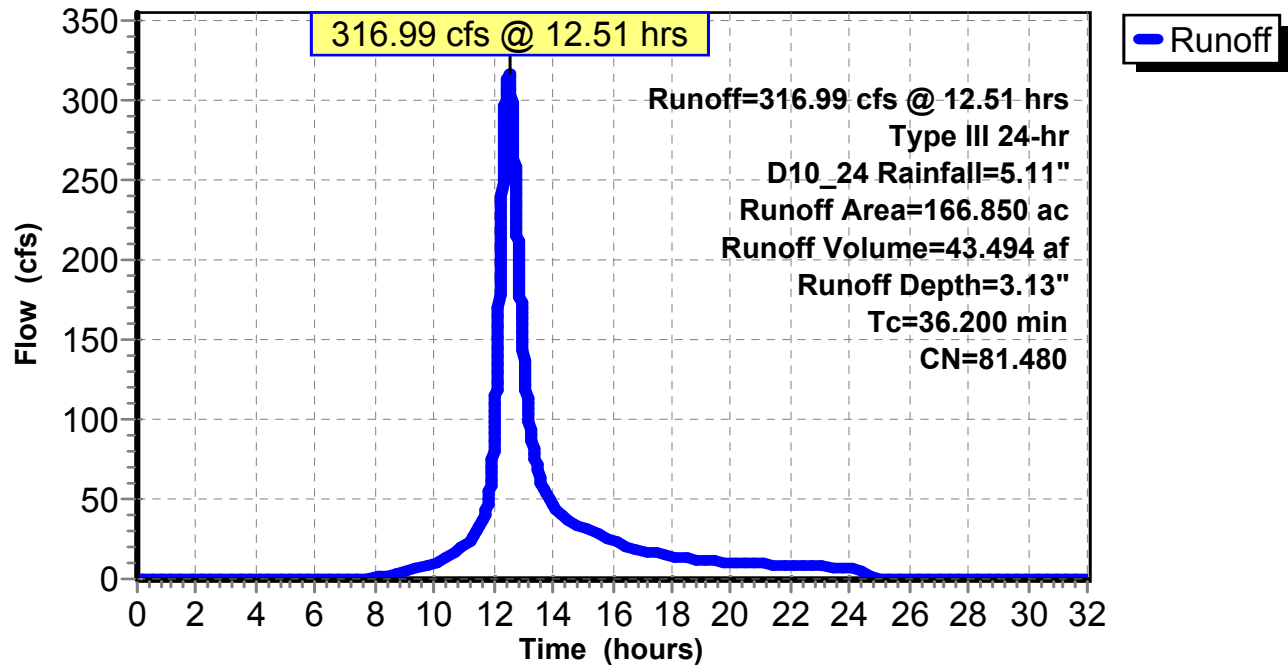
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



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Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 2.44" for D10_24 event
Inflow = 138.62 cfs @ 13.79 hrs, Volume= 82.358 af
Outflow = 138.61 cfs @ 13.82 hrs, Volume= 82.273 af, Atten= 0%, Lag= 1.715 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.28 fps, Min. Travel Time= 2.560 min
Avg. Velocity = 1.85 fps, Avg. Travel Time= 4.534 min

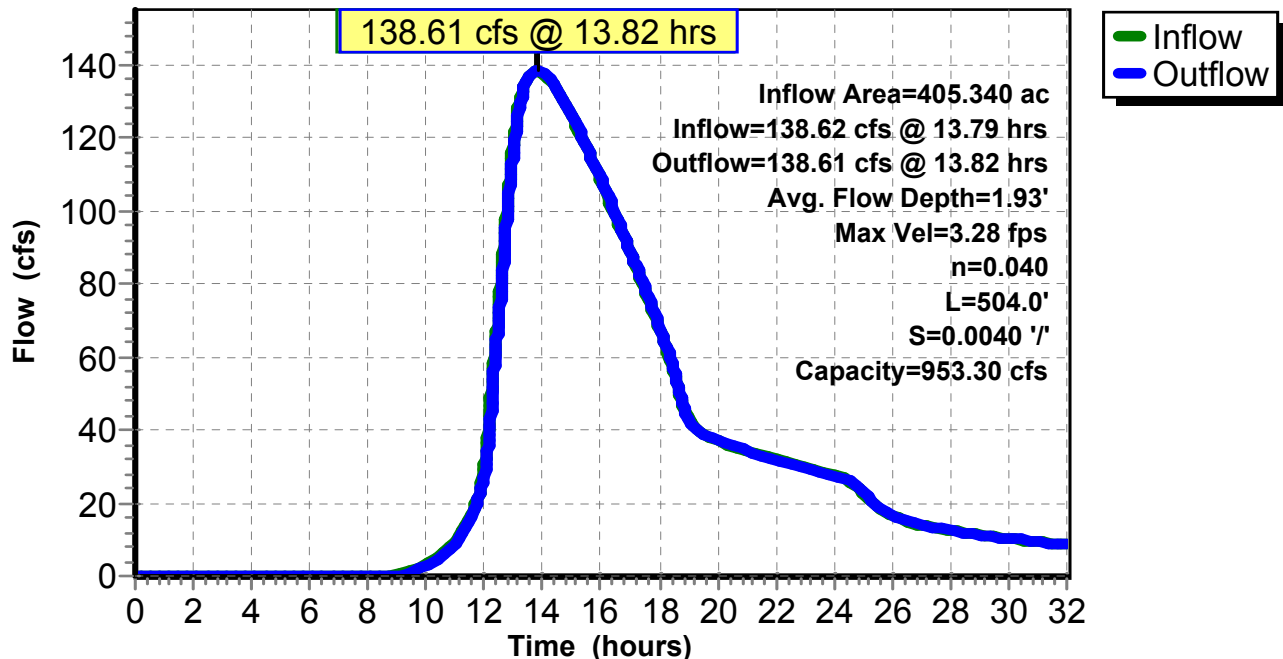
Peak Storage= 21,292 cf @ 13.82 hrs
Average Depth at Peak Storage= 1.93'
Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 ' ' Top Width= 32.00'
Length= 504.0' Slope= 0.0040 ' '
Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 2.48" for D10_24 event
 Inflow = 163.32 cfs @ 12.64 hrs, Volume= 24.990 af
 Outflow = 138.47 cfs @ 12.85 hrs, Volume= 24.960 af, Atten= 15%, Lag= 12.635 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 1.83 fps, Min. Travel Time= 19.897 min
 Avg. Velocity = 0.56 fps, Avg. Travel Time= 64.665 min

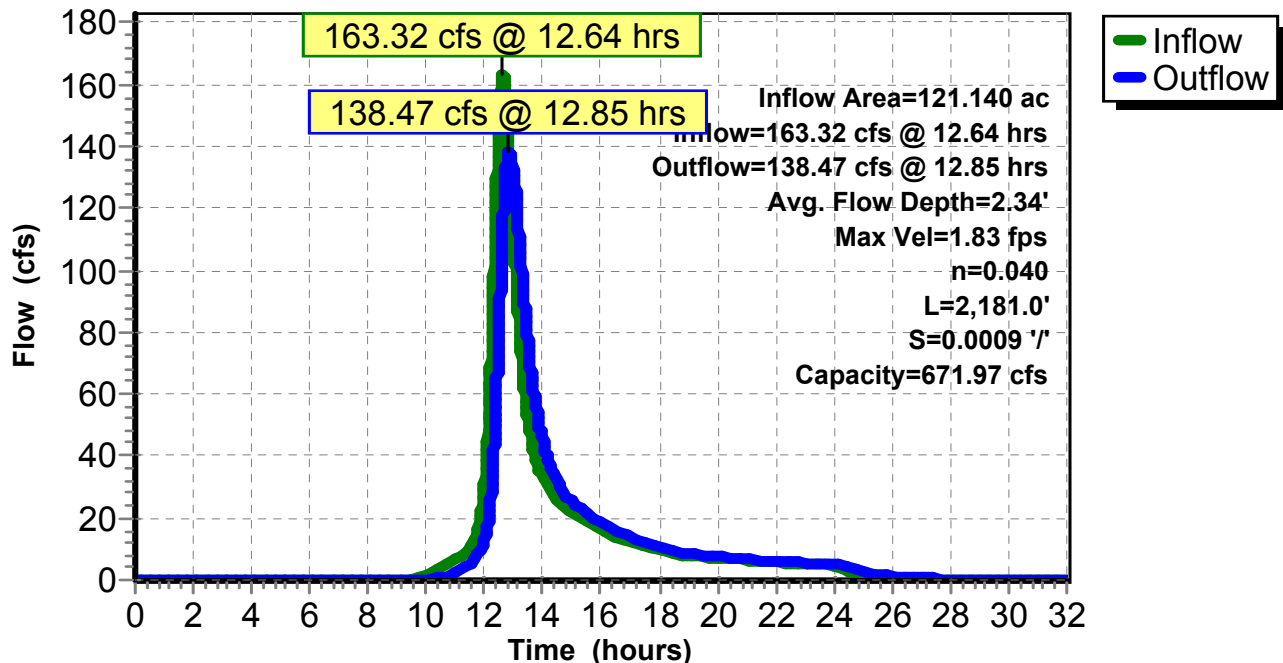
Peak Storage= 165,313 cf @ 12.85 hrs
 Average Depth at Peak Storage= 2.34'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 2,181.0' Slope= 0.0009 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 2.99" for D10_24 event
 Inflow = 312.80 cfs @ 12.55 hrs, Volume= 41.601 af
 Outflow = 24.92 cfs @ 16.01 hrs, Volume= 28.101 af, Atten= 92%, Lag= 207.966 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.47 fps, Min. Travel Time= 785.161 min
 Avg. Velocity = 0.38 fps, Avg. Travel Time= 962.848 min

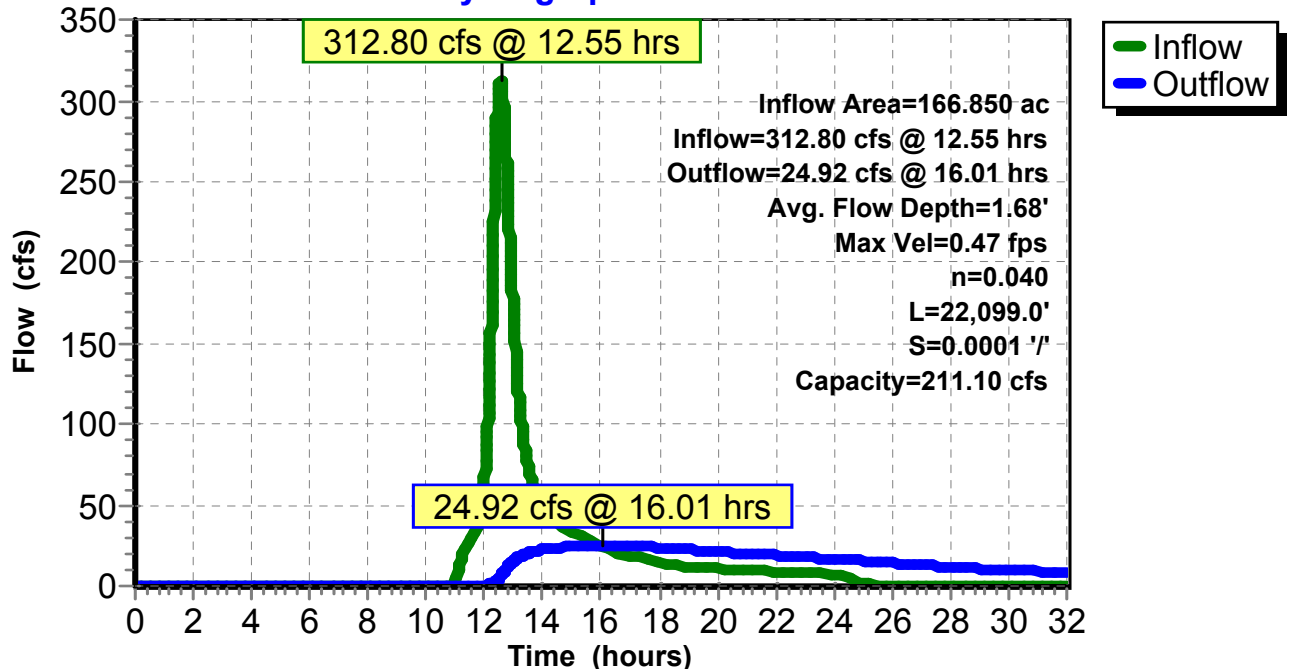
Peak Storage= 1,174,070 cf @ 16.01 hrs
 Average Depth at Peak Storage= 1.68'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 22,099.0' Slope= 0.0001 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 2.45" for D10_24 event
 Inflow = 149.37 cfs @ 13.75 hrs, Volume= 90.822 af
 Outflow = 149.09 cfs @ 13.87 hrs, Volume= 90.538 af, Atten= 0%, Lag= 7.506 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 5.50 fps, Min. Travel Time= 9.038 min
 Avg. Velocity = 3.35 fps, Avg. Travel Time= 14.834 min

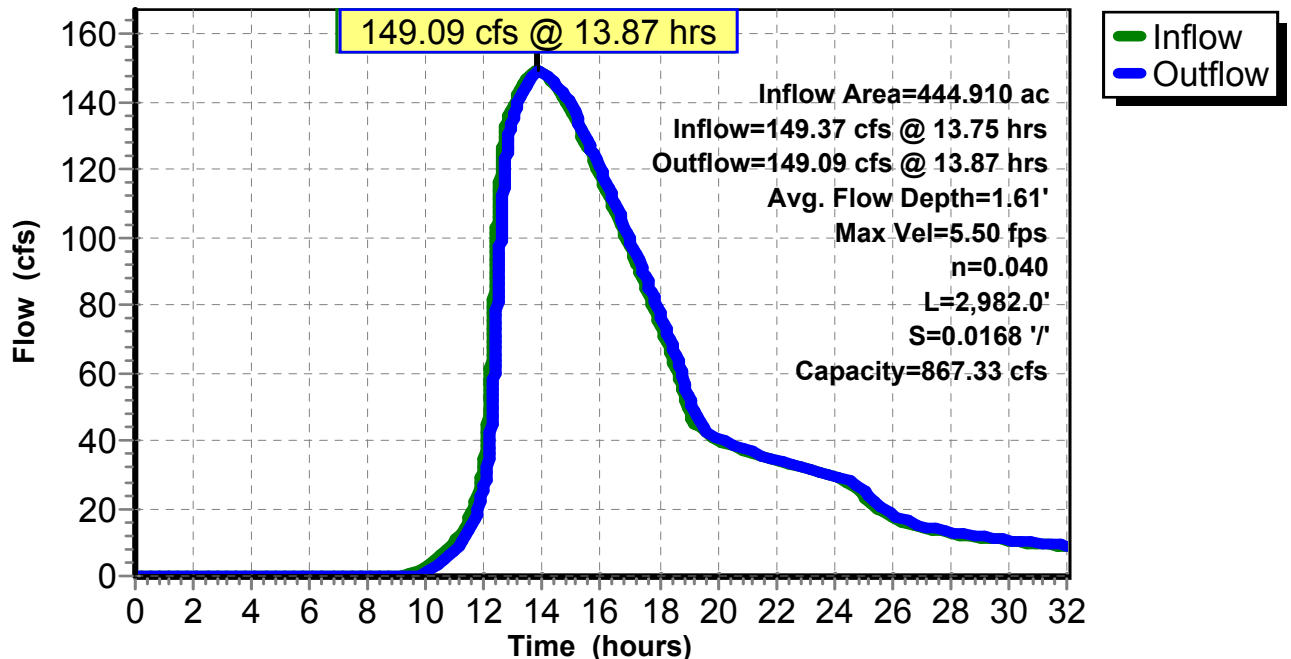
Peak Storage= 80,852 cf @ 13.87 hrs
 Average Depth at Peak Storage= 1.61'
 Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040
 Side Slope Z-value= 3.0 ' / ' Top Width= 36.00'
 Length= 2,982.0' Slope= 0.0168 ' / '
 Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 2.60" for D10_24 event
 Inflow = 314.45 cfs @ 12.72 hrs, Volume= 121.416 af
 Outflow = 314.37 cfs @ 12.73 hrs, Volume= 121.378 af, Atten= 0%, Lag= 0.500 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 9.01 fps, Min. Travel Time= 0.805 min
 Avg. Velocity = 4.10 fps, Avg. Travel Time= 1.769 min

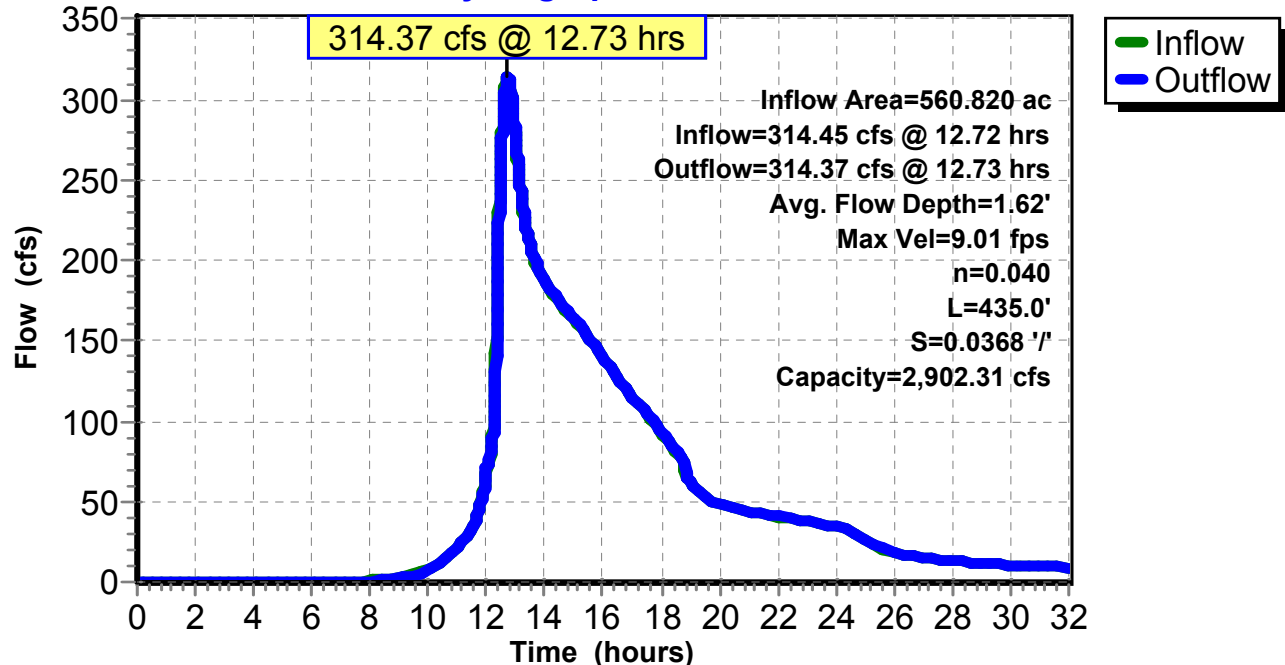
Peak Storage= 15,185 cf @ 12.73 hrs
 Average Depth at Peak Storage= 1.62'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
 Length= 435.0' Slope= 0.0368 ' / '
 Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



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Summary for Reach 17R: FLOW OVER ROAD

Inflow = 46.83 cfs @ 12.72 hrs, Volume= 1.933 af
Outflow = 46.32 cfs @ 12.75 hrs, Volume= 1.933 af, Atten= 1%, Lag= 2.063 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.72 fps, Min. Travel Time= 3.136 min
Avg. Velocity = 1.27 fps, Avg. Travel Time= 11.618 min

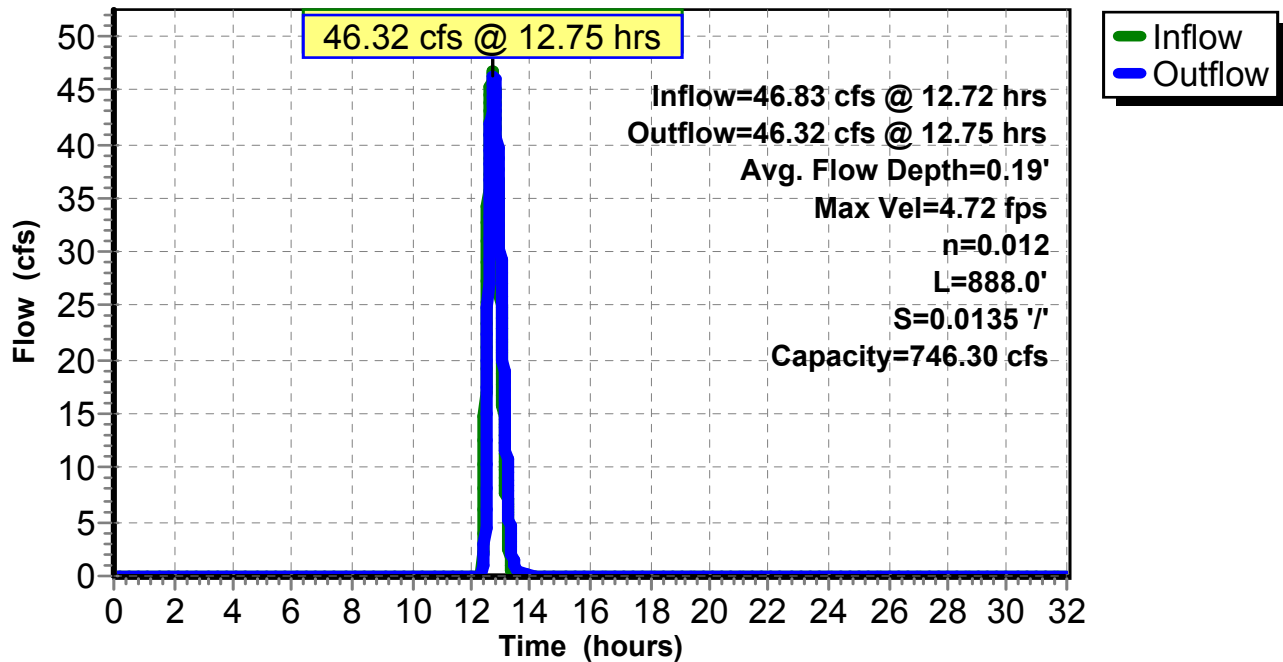
Peak Storage= 8,714 cf @ 12.75 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
Length= 888.0' Slope= 0.0135 ' '
Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



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Summary for Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 2.74" for D10_24 event
 Inflow = 447.80 cfs @ 12.61 hrs, Volume= 149.376 af
 Outflow = 439.17 cfs @ 12.71 hrs, Volume= 149.374 af, Atten= 2%, Lag= 5.793 min
 Primary = 439.17 cfs @ 12.71 hrs, Volume= 149.374 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 46.27' @ 12.70 hrs Surf.Area= 0.695 ac Storage= 0.185 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.024 min (970.163 - 970.140)

Volume	Invert	Avail.Storage	Storage Description
#1	46.00'	82.605 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
46.00	0.695	0.000	0.000
48.00	0.695	1.390	1.390
50.00	0.800	1.495	2.885
52.00	1.420	2.220	5.105
54.00	2.270	3.690	8.795
56.00	3.160	5.430	14.225
58.00	4.070	7.230	21.455
60.00	4.980	9.050	30.505
62.00	5.710	10.690	41.195
64.00	6.620	12.330	53.525
66.00	7.170	13.790	67.315
68.00	8.120	15.290	82.605

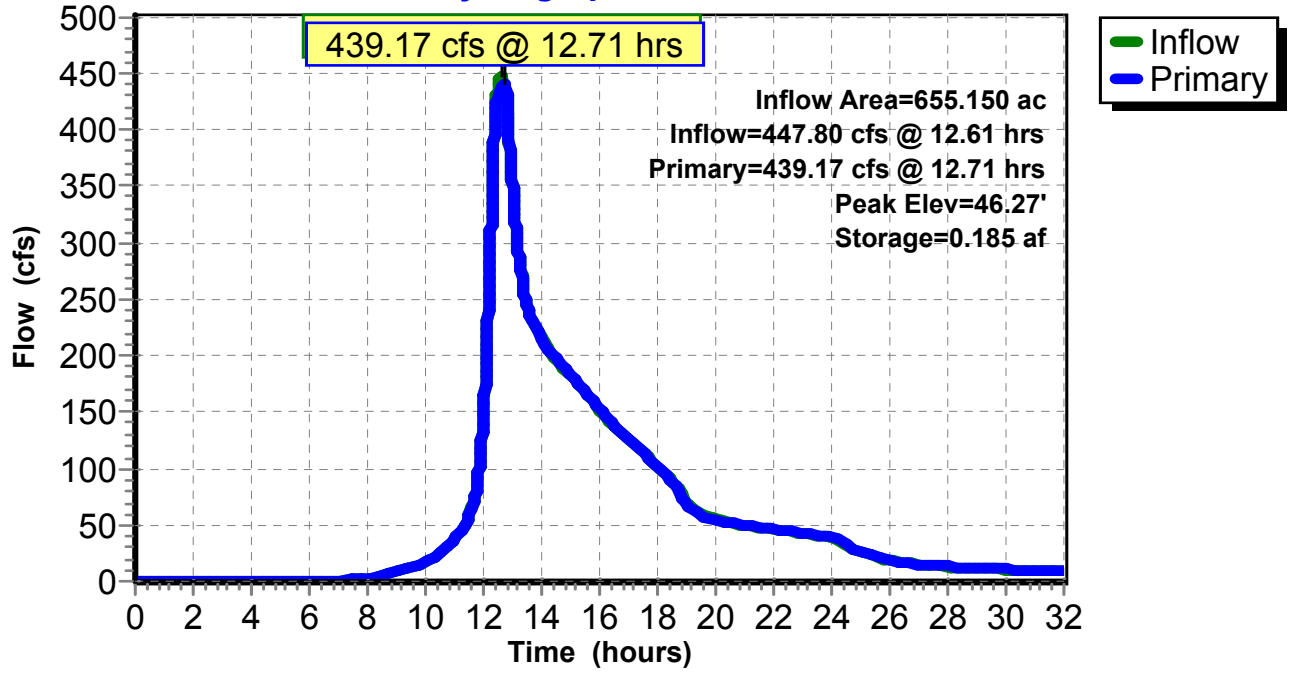
Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48

Primary OutFlow Max=439.18 cfs @ 12.71 hrs HW=46.27' TW=40.10' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 439.18 cfs @ 11.26 fps)
- 2=WEIR WESTCH AVE (Controls 0.00 cfs)

Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



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Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 2.62" for D10_24 event
 Inflow = 332.91 cfs @ 12.69 hrs, Volume= 127.156 af
 Outflow = 332.57 cfs @ 12.72 hrs, Volume= 127.155 af, Atten= 0%, Lag= 1.424 min
 Primary = 332.57 cfs @ 12.72 hrs, Volume= 127.155 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 70.42' @ 12.72 hrs Surf.Area= 0.109 ac Storage= 0.141 af

Plug-Flow detention time= 0.050 min calculated for 127.155 af (100% of inflow)
 Center-of-Mass det. time= 0.040 min (995.770 - 995.731)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

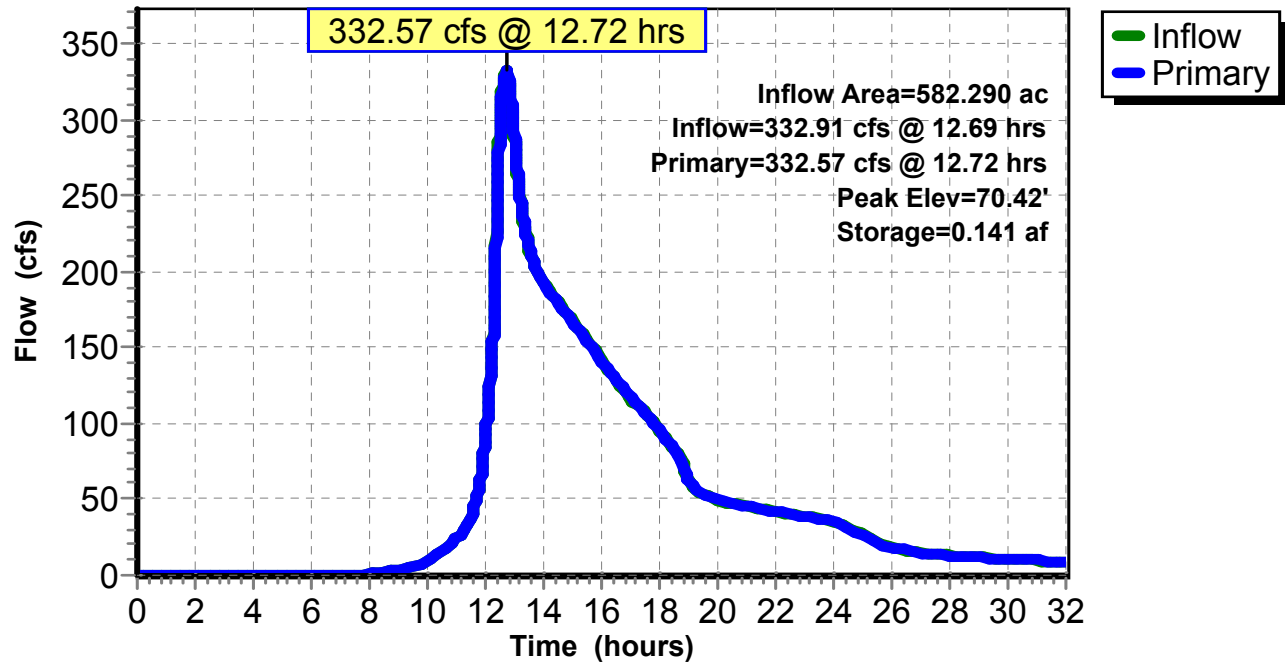
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=332.55 cfs @ 12.72 hrs HW=70.42' TW=60.75' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 245.94 cfs @ 12.53 fps)
- 2=Culvert 2 (Inlet Controls 86.61 cfs @ 6.22 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



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Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 2.45" for D10_24 event
Inflow = 149.62 cfs @ 13.64 hrs, Volume= 90.989 af
Outflow = 149.37 cfs @ 13.75 hrs, Volume= 90.822 af, Atten= 0%, Lag= 6.569 min
Primary = 149.37 cfs @ 13.75 hrs, Volume= 90.822 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 130.02' @ 13.75 hrs Surf.Area= 0.935 ac Storage= 2.100 af

Plug-Flow detention time= 10.109 min calculated for 90.822 af (100% of inflow)
Center-of-Mass det. time= 8.497 min (1,041.996 - 1,033.499)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

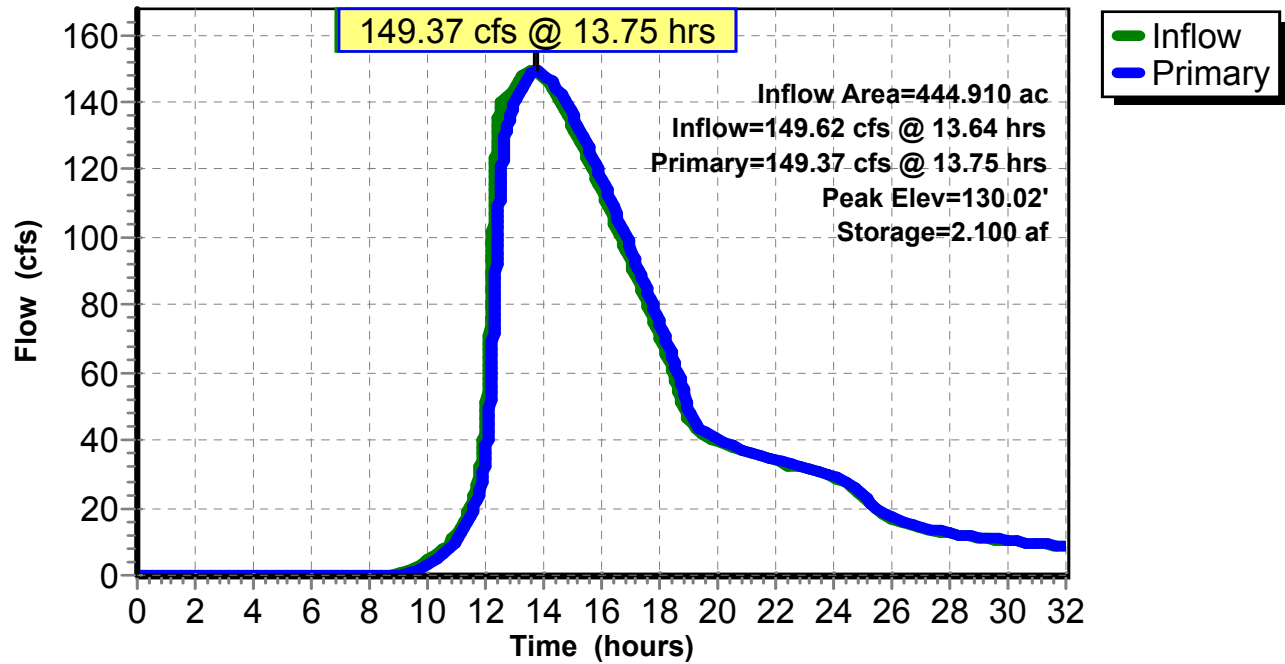
Primary OutFlow Max=149.37 cfs @ 13.75 hrs HW=130.02' TW=127.61' (Dynamic Tailwater)

1=Culvert (Barrel Controls 148.08 cfs @ 7.28 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 1.30 cfs @ 0.48 fps)

Pond 4A: DP 4 A ARGYLE

Hydrograph



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Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 2.44" for D10_24 event
 Inflow = 310.43 cfs @ 12.86 hrs, Volume= 82.583 af
 Outflow = 138.62 cfs @ 13.79 hrs, Volume= 82.358 af, Atten= 55%, Lag= 55.811 min
 Primary = 138.62 cfs @ 13.79 hrs, Volume= 82.358 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 131.76' @ 13.79 hrs Surf.Area= 15.297 ac Storage= 15.203 af

Plug-Flow detention time= 42.191 min calculated for 82.358 af (100% of inflow)
 Center-of-Mass det. time= 39.740 min (1,049.835 - 1,010.095)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

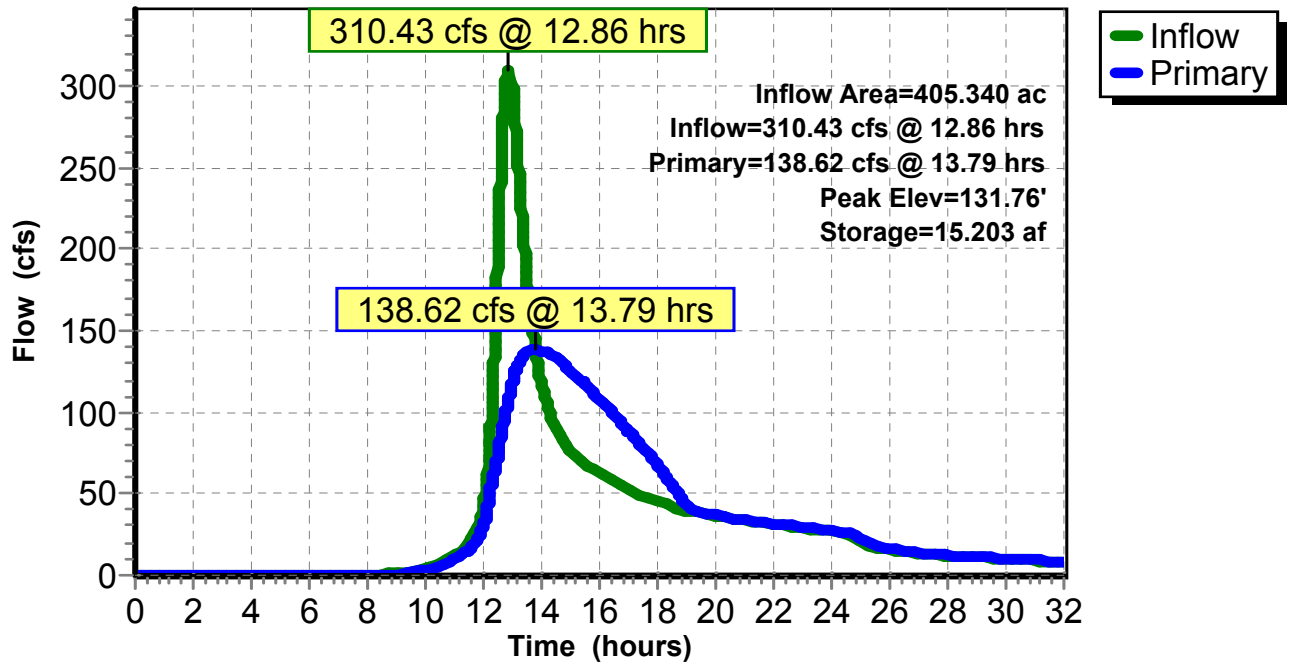
Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

Primary OutFlow Max=138.62 cfs @ 13.79 hrs HW=131.76' TW=129.93' (Dynamic Tailwater)

- 1=Culvert (Barrel Controls 138.62 cfs @ 7.31 fps)
- 2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 5P: DP 5 BETSY BROWN ROAD

Hydrograph



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Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 2.60" for D10_24 event
Inflow = 315.08 cfs @ 12.71 hrs, Volume= 121.417 af
Outflow = 314.45 cfs @ 12.72 hrs, Volume= 121.416 af, Atten= 0%, Lag= 0.774 min
Primary = 314.45 cfs @ 12.72 hrs, Volume= 121.416 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 91.00' @ 12.72 hrs Surf.Area= 1.370 ac Storage= 1.366 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.643 min (1,002.826 - 1,000.183)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

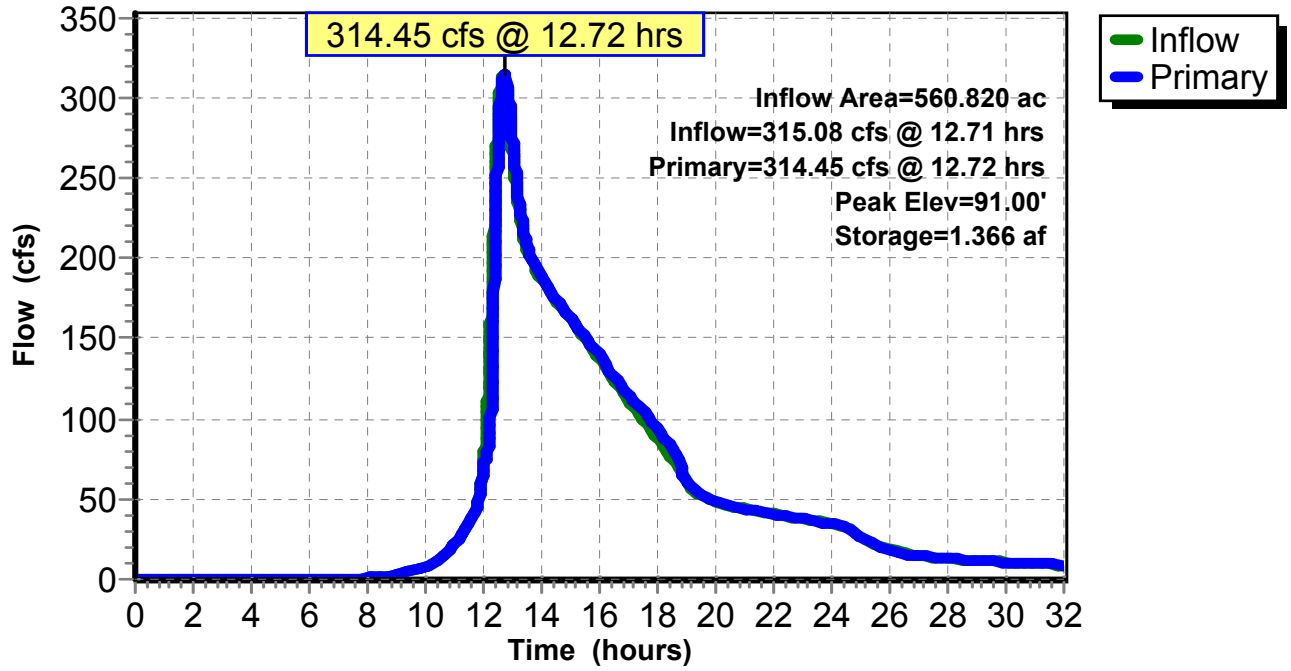
Primary OutFlow Max=314.42 cfs @ 12.72 hrs HW=91.00' TW=77.61' (Dynamic Tailwater)

1=Sharp-Crested Rectangular Weir (Weir Controls 156.58 cfs @ 5.12 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 157.84 cfs @ 2.35 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



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Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 2.87" for D10_24 event
 Inflow = 581.40 cfs @ 12.47 hrs, Volume= 170.716 af
 Outflow = 581.41 cfs @ 12.47 hrs, Volume= 169.025 af, Atten= 0%, Lag= 0.246 min
 Primary = 581.41 cfs @ 12.47 hrs, Volume= 169.025 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 40.12' @ 12.47 hrs Surf.Area= 0.986 ac Storage= 1.793 af

Plug-Flow detention time= 13.933 min calculated for 169.025 af (99% of inflow)
 Center-of-Mass det. time= 4.915 min (954.044 - 949.129)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

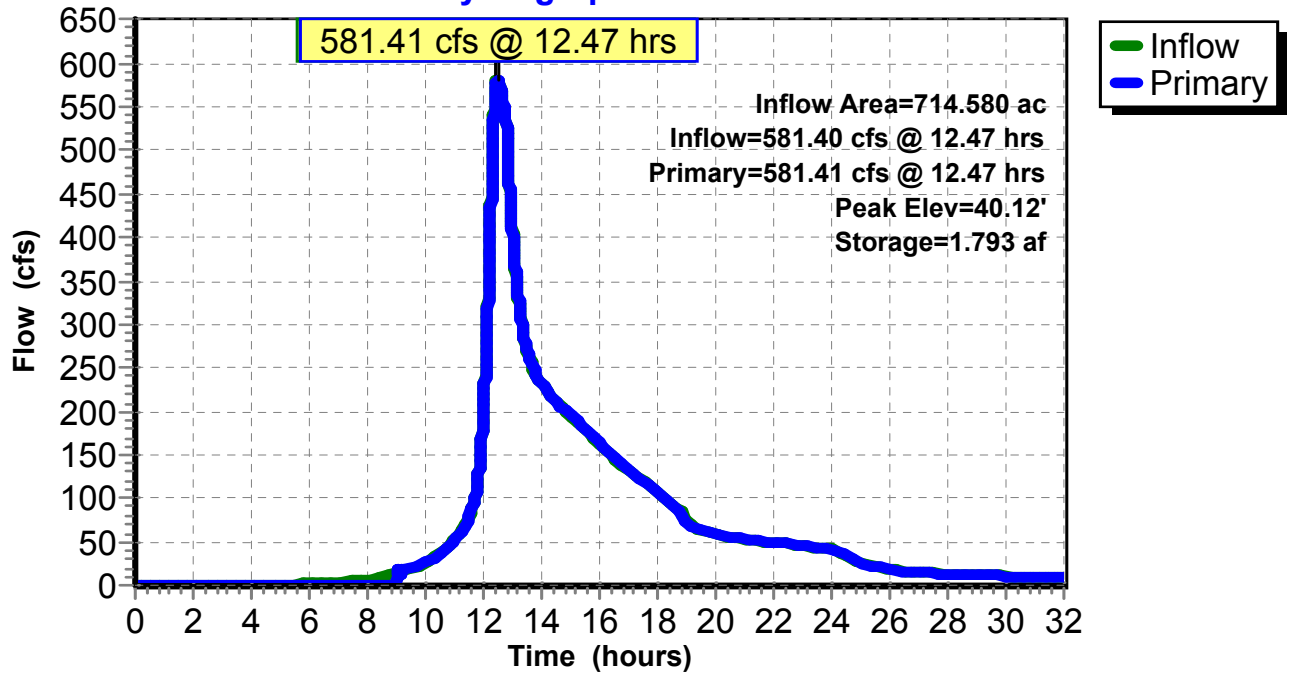
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=581.34 cfs @ 12.47 hrs HW=40.12' TW=40.00' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 226.10 cfs @ 1.64 fps)
- 2=WEIR BOWMAN (Weir Controls 355.23 cfs @ 1.25 fps)

Pond 8P: BOWMAN FIELDS

Hydrograph



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Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 2.48" for D10_24 event
 Inflow = 163.60 cfs @ 12.63 hrs, Volume= 24.991 af
 Outflow = 163.32 cfs @ 12.64 hrs, Volume= 24.990 af, Atten= 0%, Lag= 0.312 min
 Primary = 163.32 cfs @ 12.64 hrs, Volume= 24.990 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 134.65' @ 12.65 hrs Surf.Area= 0.161 ac Storage= 0.178 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.345 min (871.502 - 871.157)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

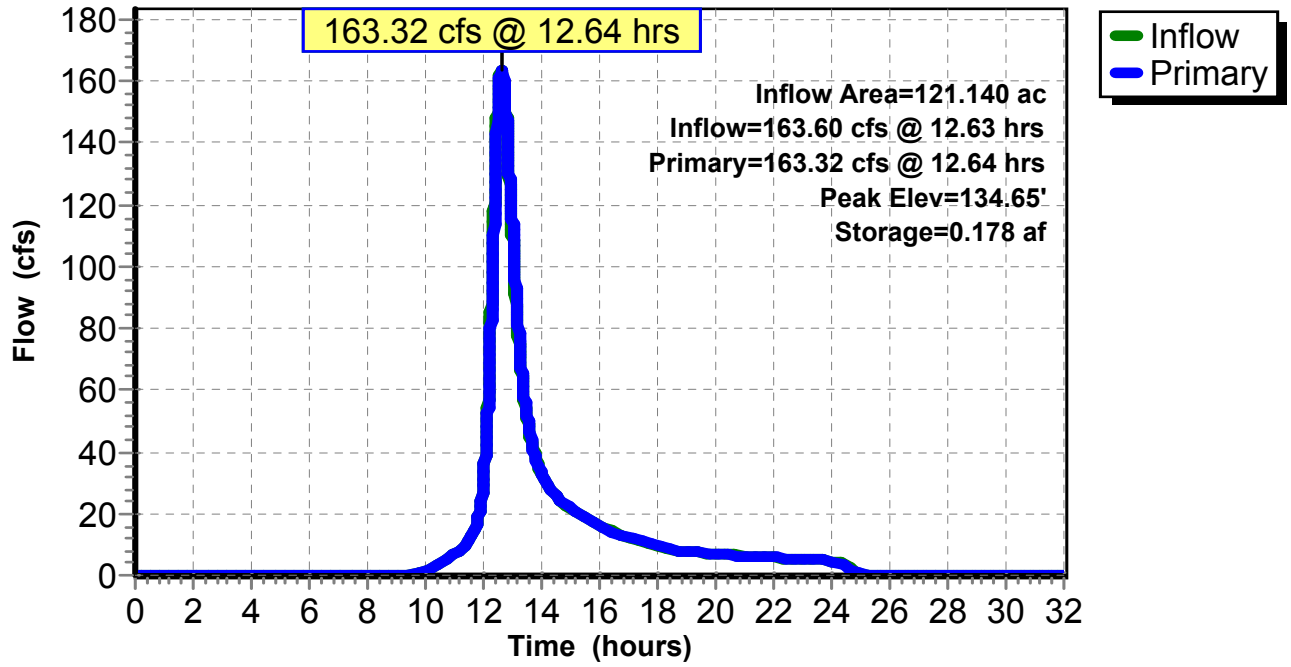
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=162.88 cfs @ 12.64 hrs HW=134.65' TW=132.12' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 54.15 cfs @ 7.66 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 79.76 cfs @ 5.80 fps)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 28.97 cfs @ 1.25 fps)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Hydrograph



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Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 3.13" for D10_24 event
 Inflow = 316.99 cfs @ 12.51 hrs, Volume= 43.494 af
 Outflow = 312.80 cfs @ 12.55 hrs, Volume= 41.601 af, Atten= 1%, Lag= 2.338 min
 Primary = 312.80 cfs @ 12.55 hrs, Volume= 41.601 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.49' @ 12.55 hrs Surf.Area= 3.851 ac Storage= 6.566 af (3.598 af above start)

Plug-Flow detention time= 82.878 min calculated for 38.622 af (89% of inflow)
 Center-of-Mass det. time= 17.842 min (862.681 - 844.839)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

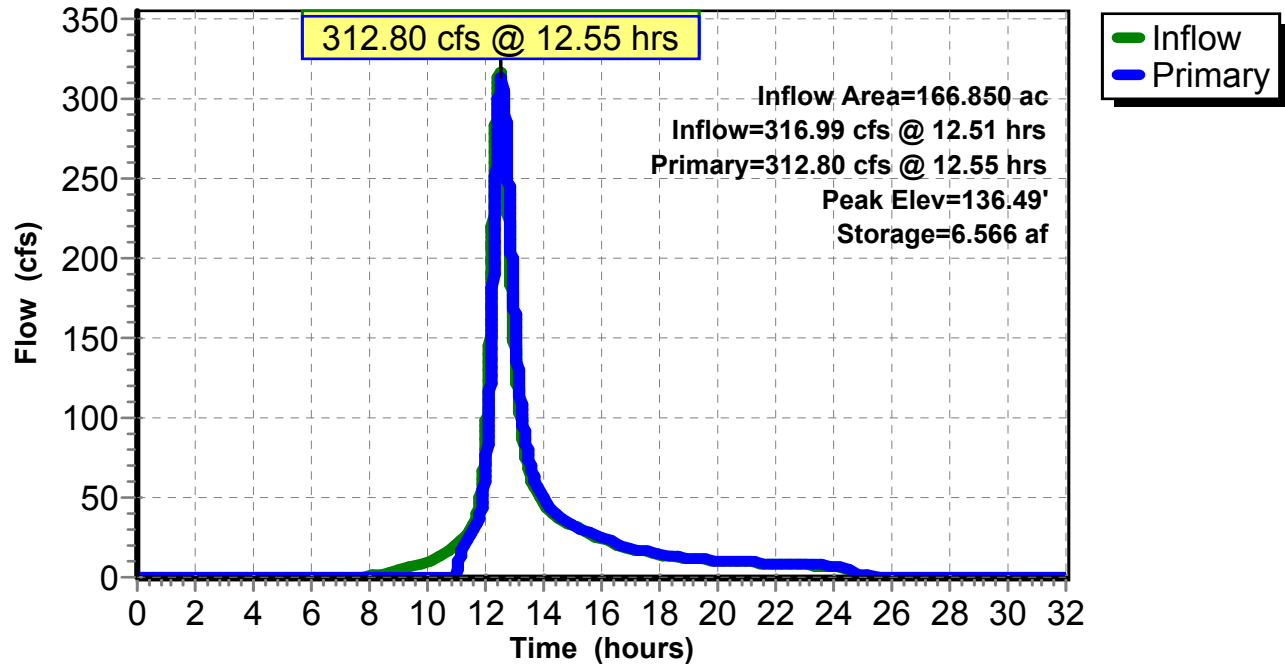
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=312.76 cfs @ 12.55 hrs HW=136.49' TW=130.71' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 1.79 cfs @ 2.38 fps)
- 2=Asymmetrical Weir (Weir Controls 310.98 cfs @ 2.04 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Hydrograph



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Summary for Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 2.62" for D10_24 event
 Inflow = 332.57 cfs @ 12.72 hrs, Volume= 127.155 af
 Outflow = 332.57 cfs @ 12.72 hrs, Volume= 127.147 af, Atten= 0%, Lag= 0.116 min
 Primary = 285.74 cfs @ 12.72 hrs, Volume= 125.214 af
 Secondary = 46.83 cfs @ 12.72 hrs, Volume= 1.933 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 60.75' @ 12.72 hrs Surf.Area= 1,126 sf Storage= 3,580 cf

Plug-Flow detention time= 0.262 min calculated for 127.107 af (100% of inflow)
 Center-of-Mass det. time= 0.206 min (995.976 - 995.770)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	22,686 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686

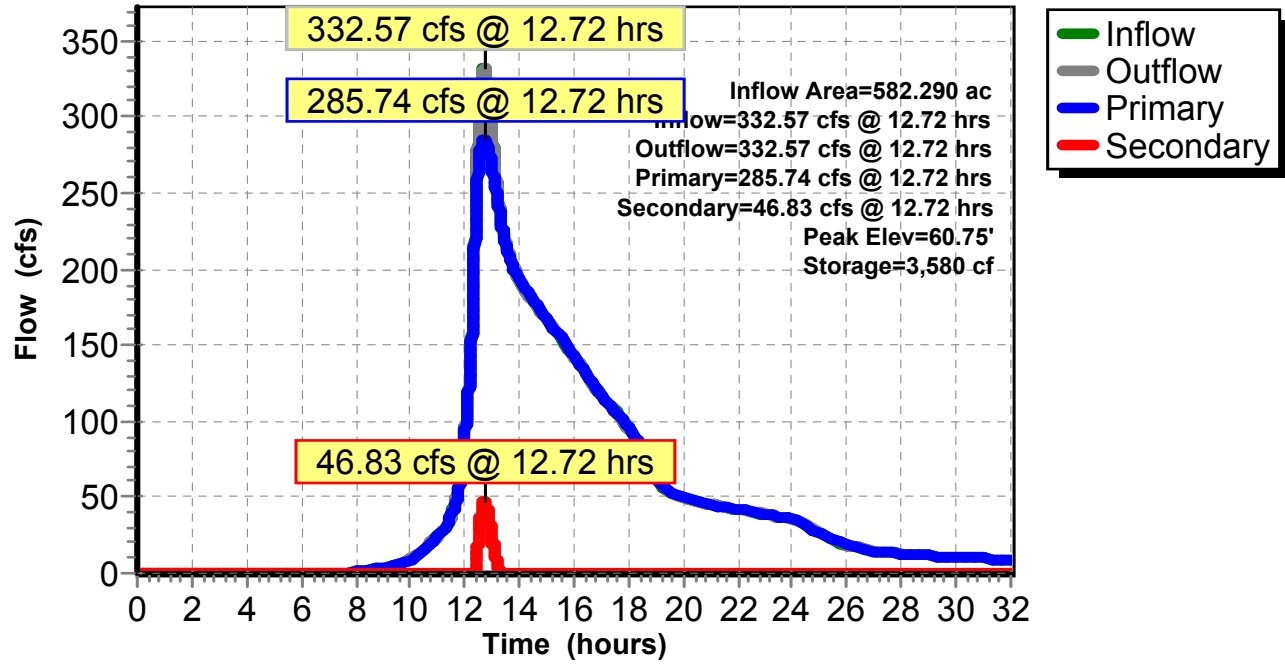
Device	Routing	Invert	Outlet Devices
#1	Primary	56.00'	60.0" Round Culvert X 2.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 56.00' / 37.90' S= 0.0217 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	60.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 66.00 64.00 62.00 60.00 60.00 62.00 64.00 66.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=285.74 cfs @ 12.72 hrs HW=60.75' TW=46.26' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 285.74 cfs @ 7.42 fps)

Secondary OutFlow Max=46.82 cfs @ 12.72 hrs HW=60.75' TW=58.19' (Dynamic Tailwater)
 ↑2=Asymmetrical Weir (Weir Controls 46.82 cfs @ 2.61 fps)

Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Hydrograph



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Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 46.32 cfs @ 12.75 hrs, Volume= 1.933 af
Outflow = 46.17 cfs @ 12.77 hrs, Volume= 1.933 af, Atten= 0%, Lag= 1.071 min
Primary = 46.17 cfs @ 12.77 hrs, Volume= 1.933 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 51.43' @ 12.77 hrs Surf.Area= 10,073 sf Storage= 3,463 cf

Plug-Flow detention time= 1.425 min calculated for 1.932 af (100% of inflow)
Center-of-Mass det. time= 1.433 min (771.924 - 770.491)

Volume	Invert	Avail.Storage	Storage Description
#1	51.00'	162,178 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
51.00	6,000	0	0
52.00	15,452	10,726	10,726
54.00	38,000	53,452	64,178
56.00	60,000	98,000	162,178

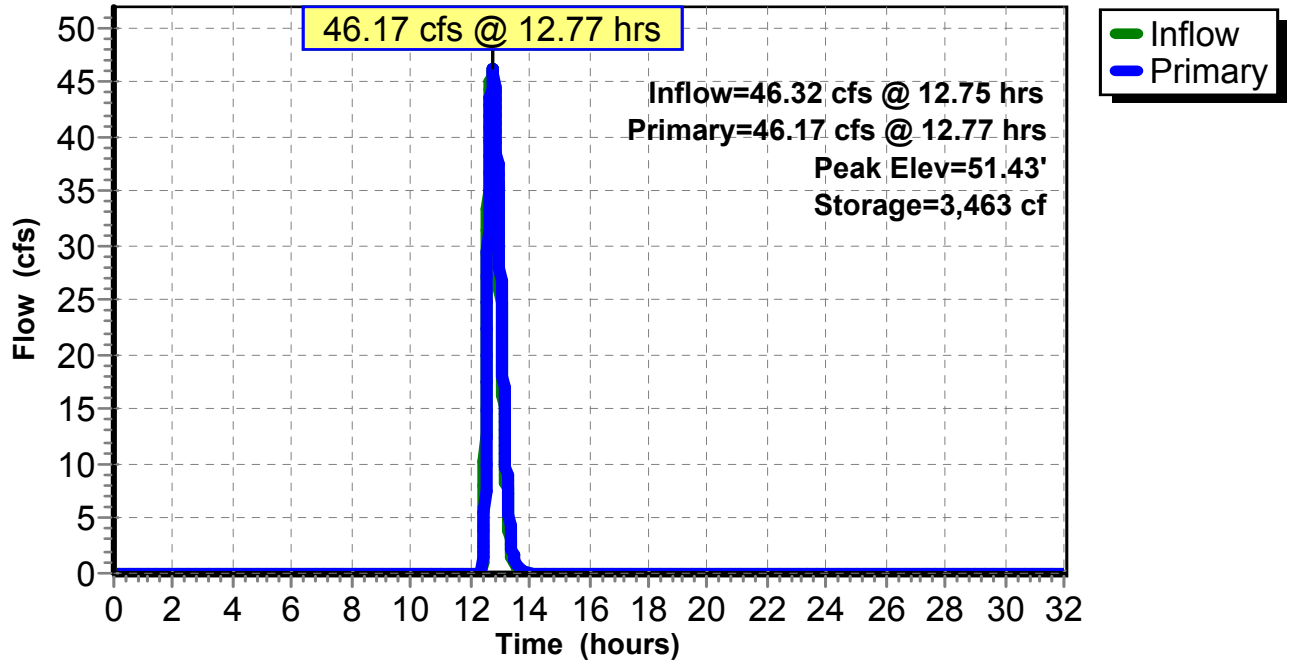
Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=46.17 cfs @ 12.77 hrs HW=51.43' TW=46.22' (Dynamic Tailwater)

↑1=Sharp-Crested Rectangular Weir(Weir Controls 46.17 cfs @ 2.15 fps)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



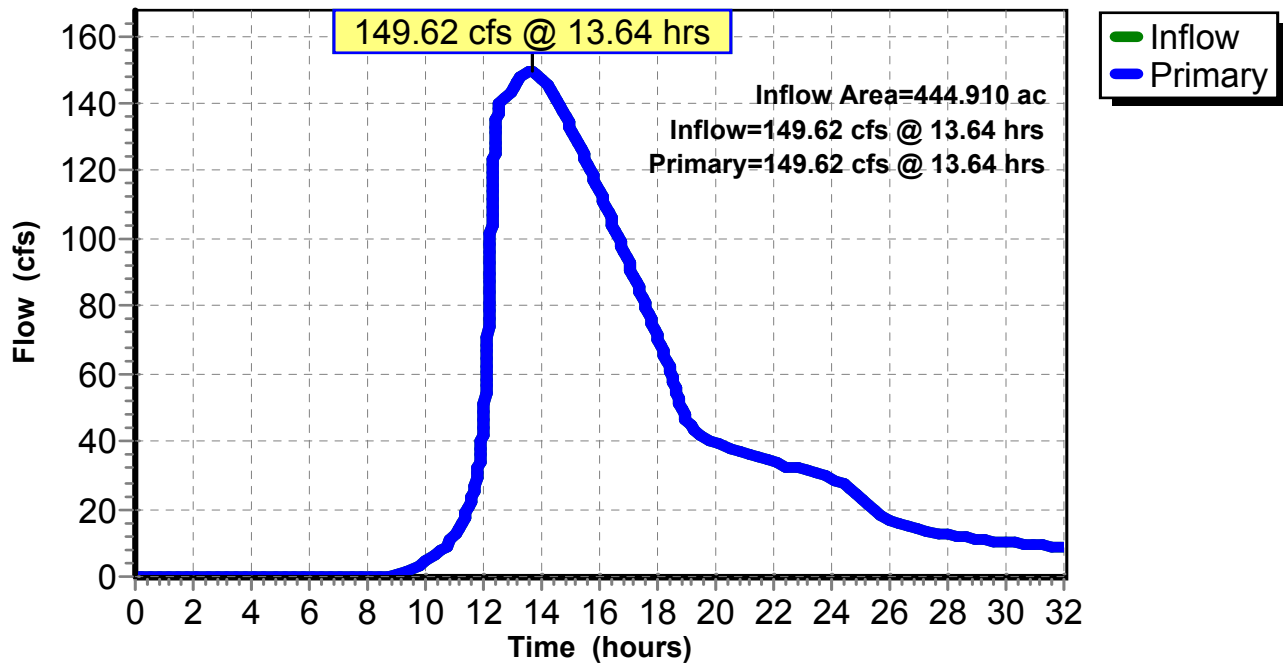
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 2.45" for D10_24 event
Inflow = 149.62 cfs @ 13.64 hrs, Volume= 90.989 af
Primary = 149.62 cfs @ 13.64 hrs, Volume= 90.989 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



Summary for Link 20L: EX FINAL

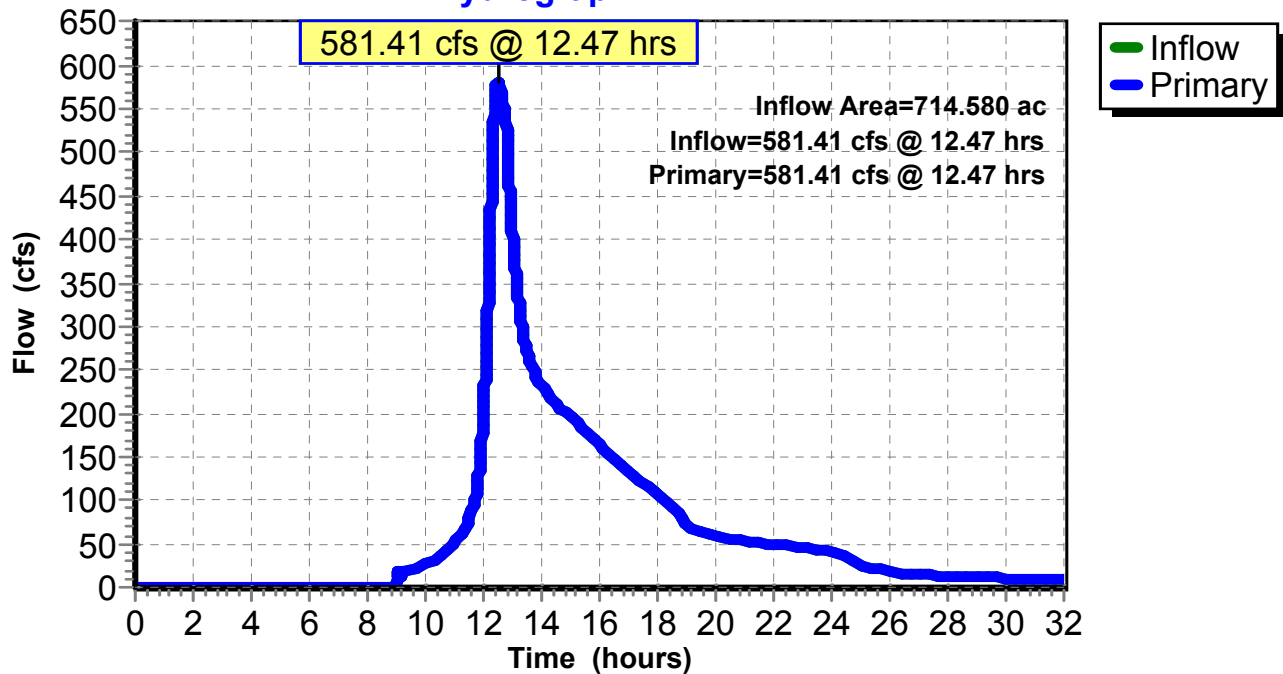
Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 2.84" for D10_24 event
Inflow = 581.41 cfs @ 12.47 hrs, Volume= 169.025 af
Primary = 581.41 cfs @ 12.47 hrs, Volume= 169.025 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 40.00'

Link 20L: EX FINAL

Hydrograph



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Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Subcatchment A: WS A

Runoff = 99.30 cfs @ 12.43 hrs, Volume= 13.320 af, Depth= 2.69"

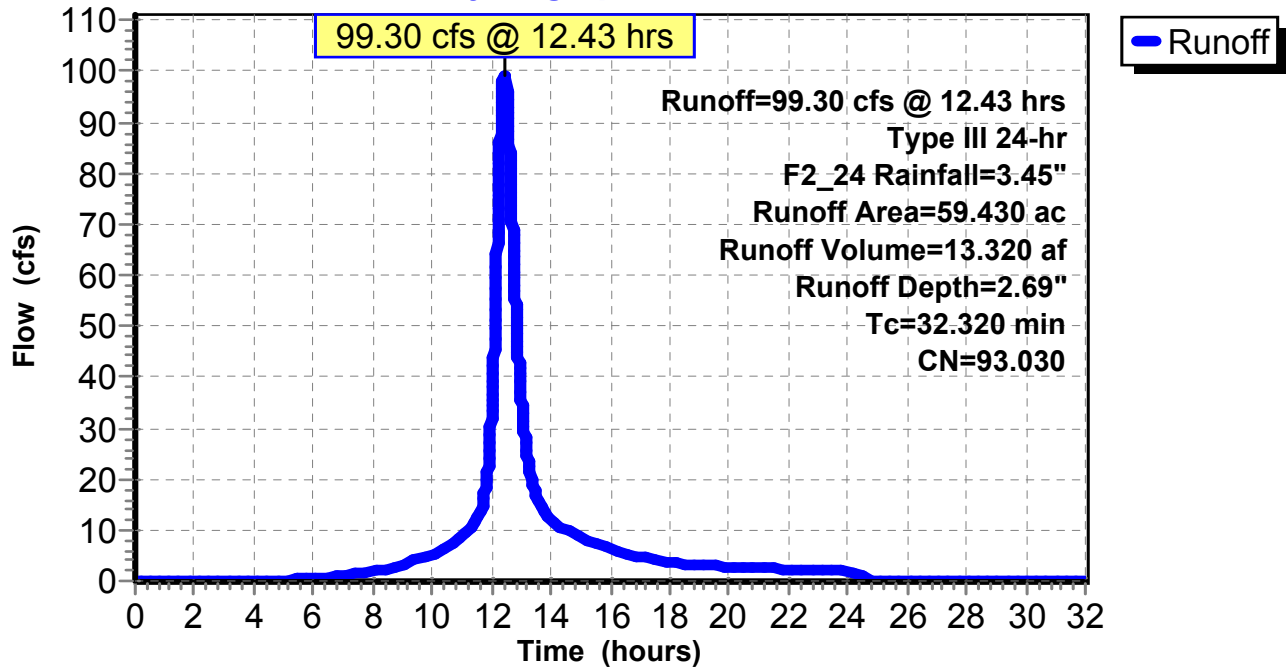
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



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Summary for Subcatchment B: WS B

Runoff = 83.90 cfs @ 12.40 hrs, Volume= 10.294 af, Depth= 2.15"

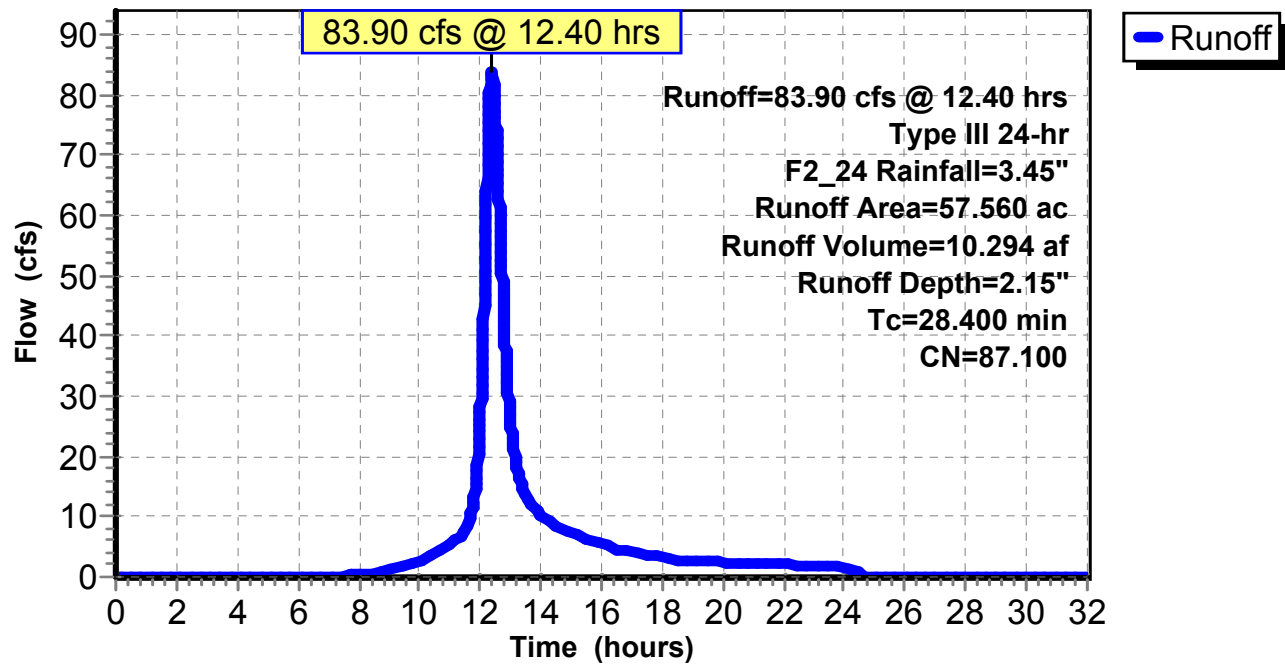
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



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Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Subcatchment BH: HOTEL

Runoff = 20.85 cfs @ 12.42 hrs, Volume= 2.636 af, Depth= 2.07"

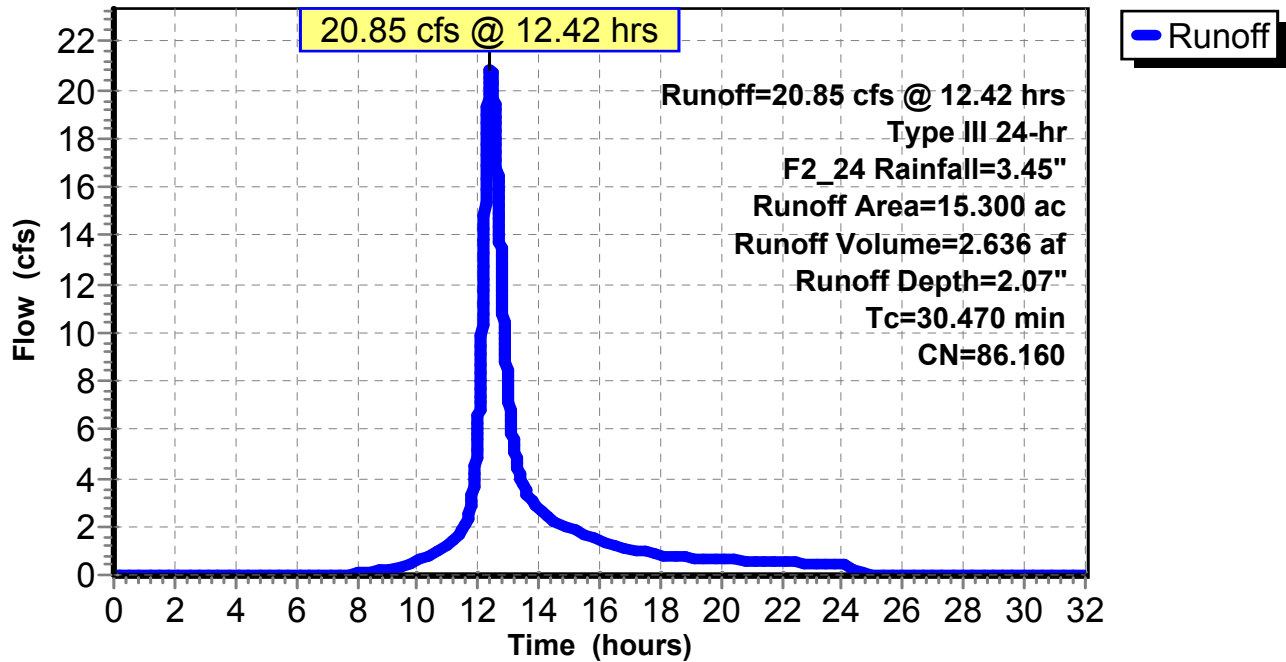
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



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Avon
Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Subcatchment C: WS C

Runoff = 31.12 cfs @ 12.26 hrs, Volume= 3.188 af, Depth= 1.78"

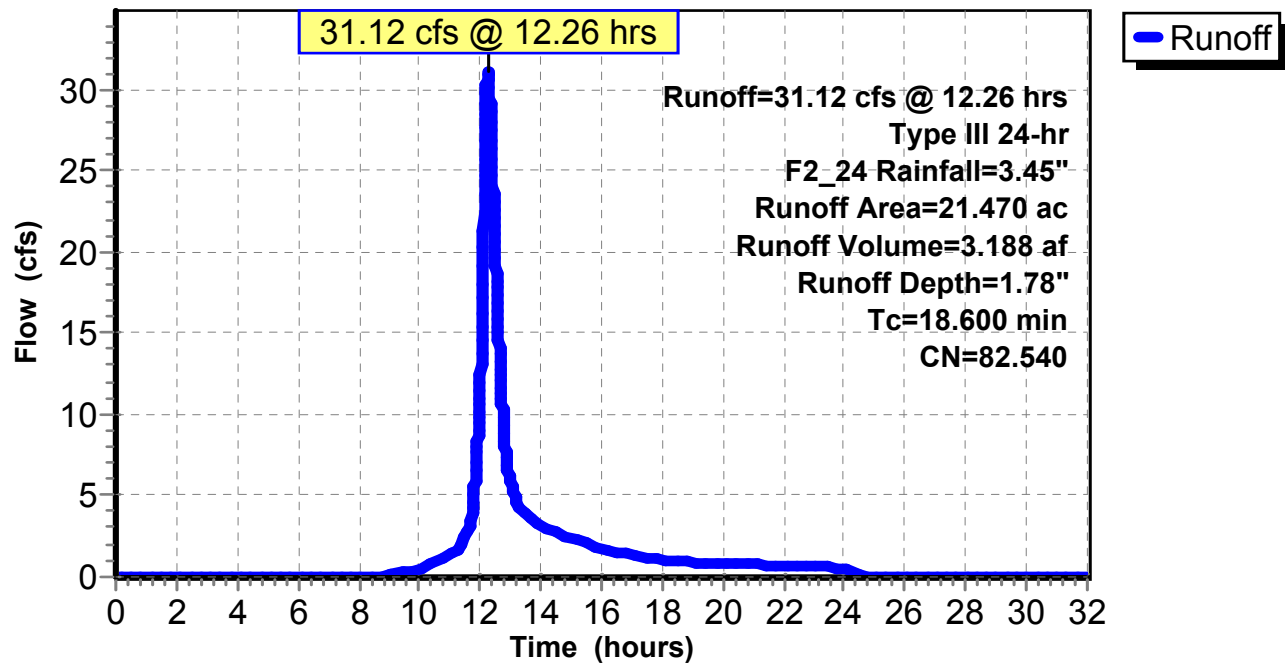
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



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Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Subcatchment D: WS D

Runoff = 110.10 cfs @ 12.62 hrs, Volume= 16.964 af, Depth= 1.76"

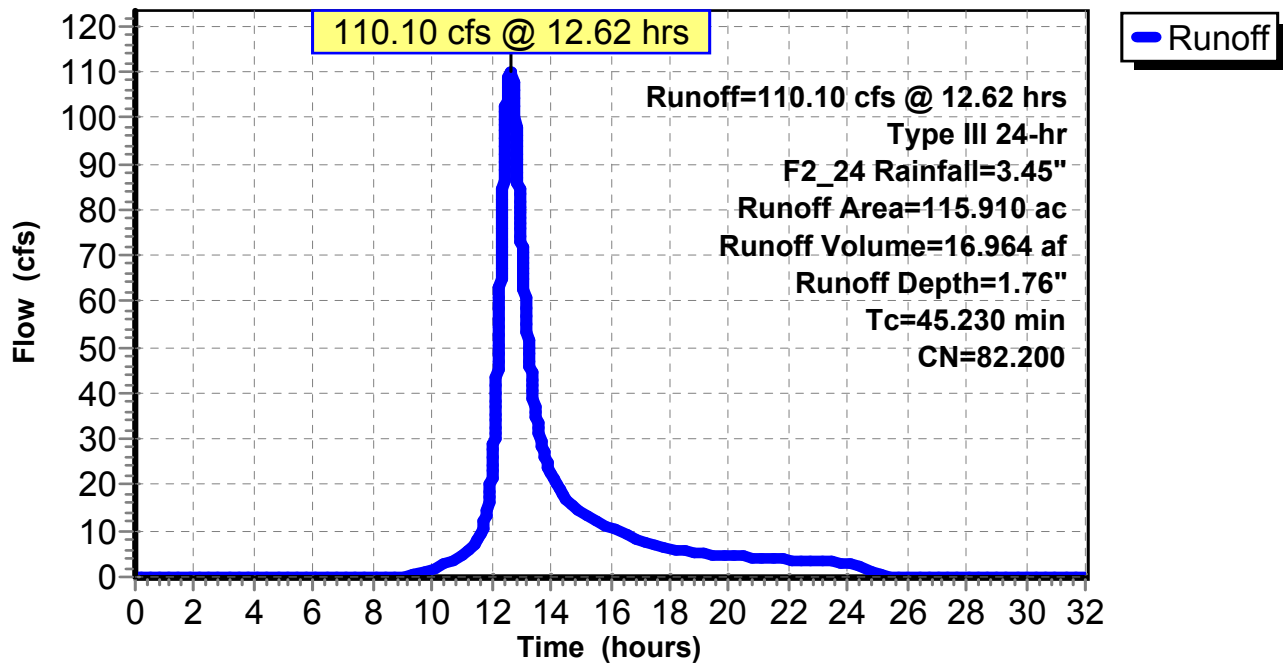
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



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Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Subcatchment D-1: WS D-1

Runoff = 33.48 cfs @ 12.46 hrs, Volume= 4.423 af, Depth= 1.34"

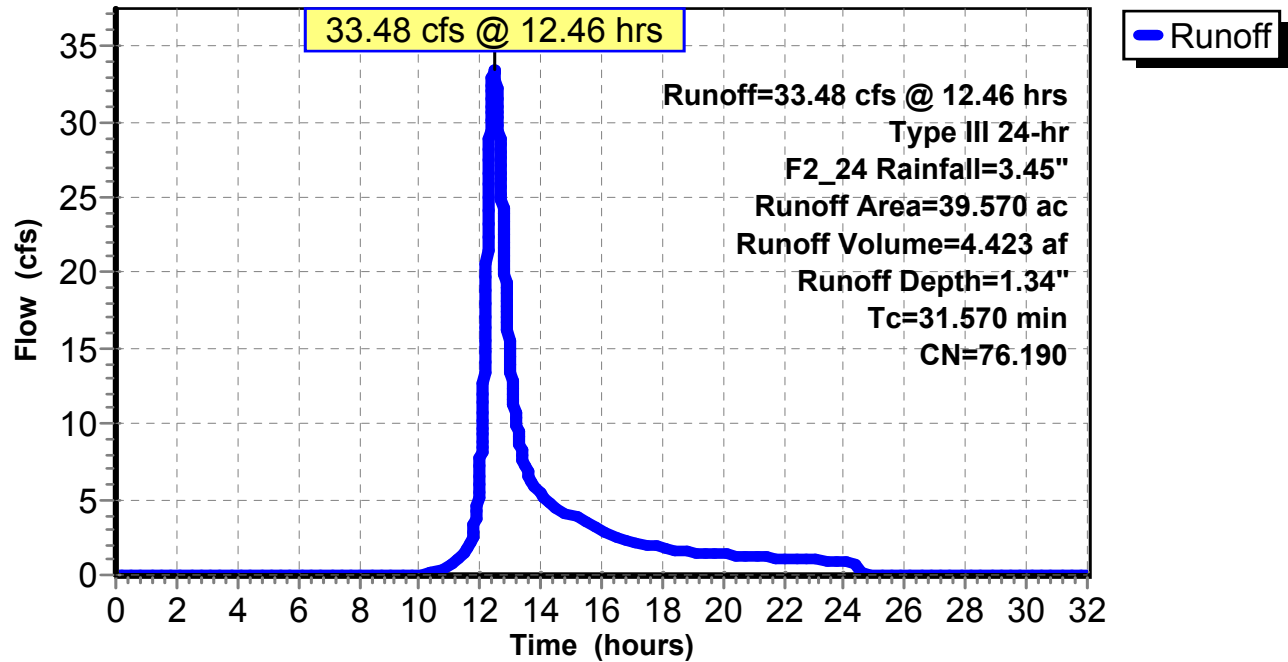
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



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Avon
Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Subcatchment E: WS E

Runoff = 84.40 cfs @ 12.86 hrs, Volume= 15.837 af, Depth= 1.62"

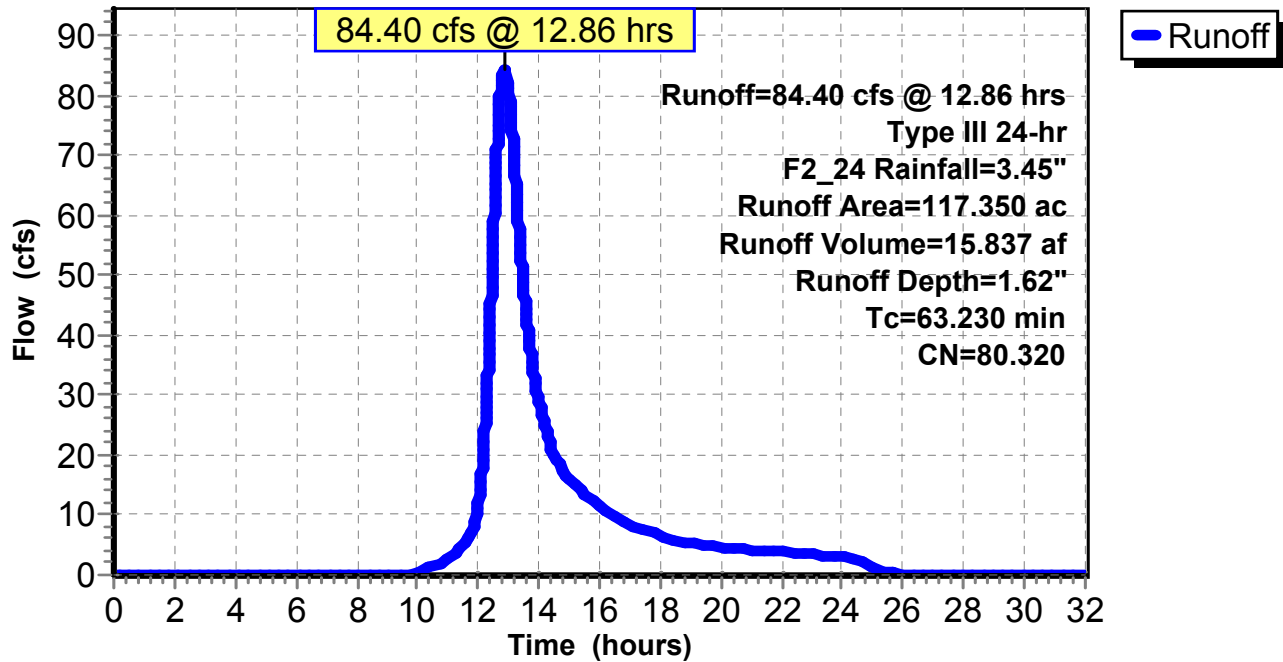
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



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Avon
Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Subcatchment F: WS F

Runoff = 77.91 cfs @ 12.64 hrs, Volume= 12.335 af, Depth= 1.22"

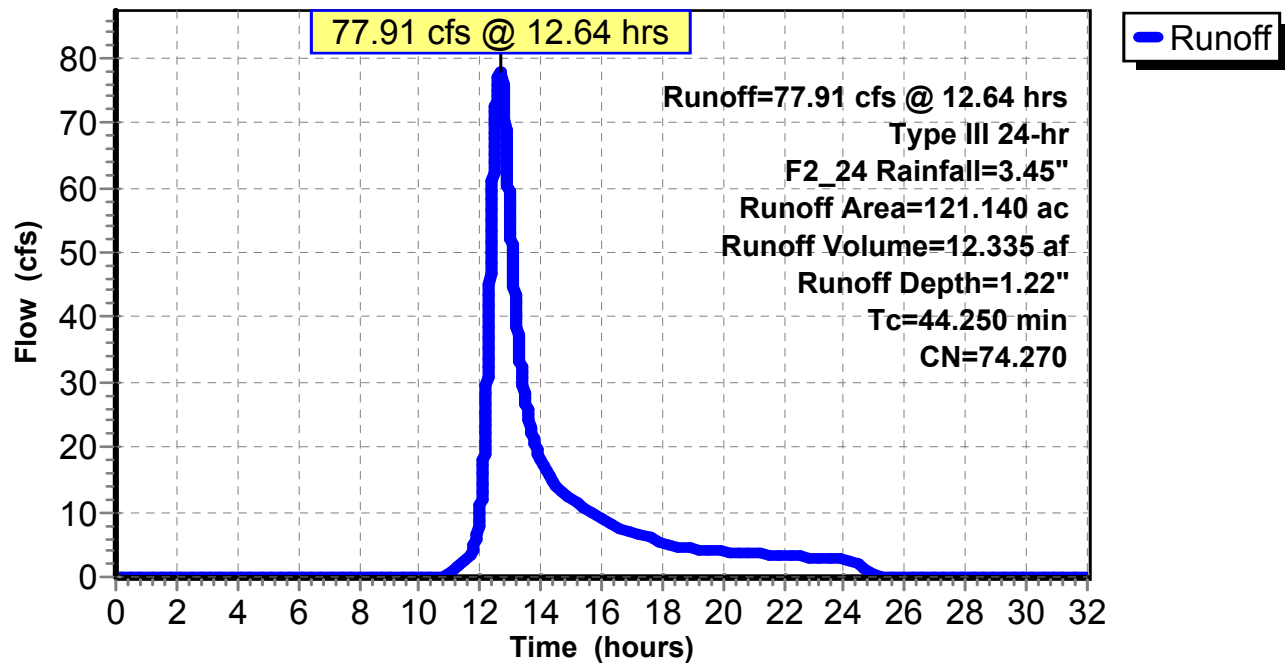
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



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Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Subcatchment G: WS G

Runoff = 172.12 cfs @ 12.51 hrs, Volume= 23.680 af, Depth= 1.70"

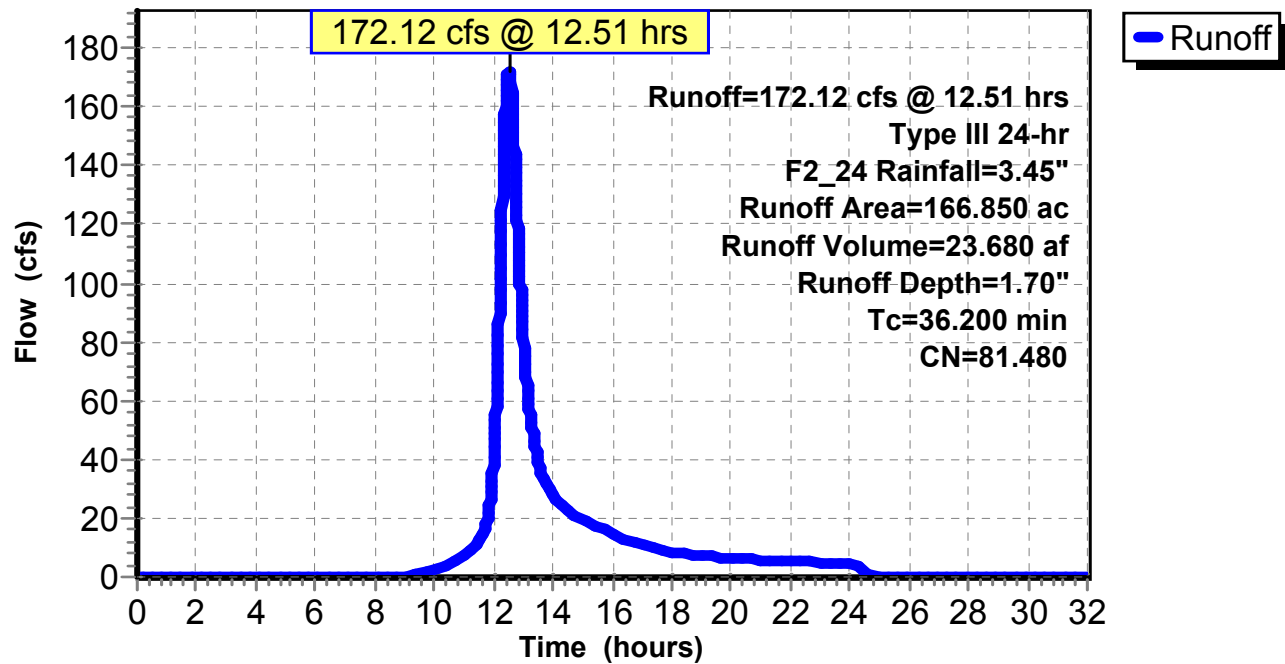
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



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Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 1.19" for F2_24 event
Inflow = 91.32 cfs @ 13.53 hrs, Volume= 40.235 af
Outflow = 91.29 cfs @ 13.56 hrs, Volume= 40.174 af, Atten= 0%, Lag= 1.979 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.83 fps, Min. Travel Time= 2.967 min
Avg. Velocity = 1.47 fps, Avg. Travel Time= 5.723 min

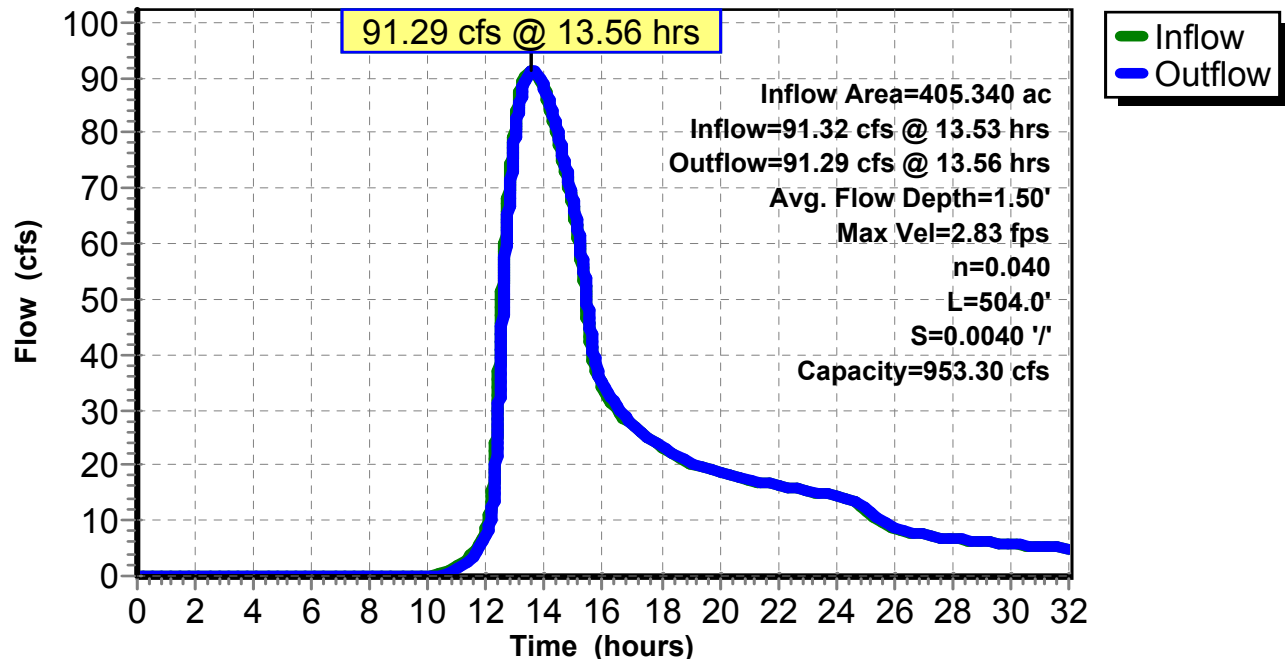
Peak Storage= 16,254 cf @ 13.56 hrs
Average Depth at Peak Storage= 1.50'
Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 ' ' Top Width= 32.00'
Length= 504.0' Slope= 0.0040 ' '
Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 1.22" for F2_24 event
 Inflow = 77.39 cfs @ 12.66 hrs, Volume= 12.334 af
 Outflow = 60.06 cfs @ 12.95 hrs, Volume= 12.308 af, Atten= 22%, Lag= 17.263 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 1.35 fps, Min. Travel Time= 26.977 min
 Avg. Velocity = 0.46 fps, Avg. Travel Time= 78.913 min

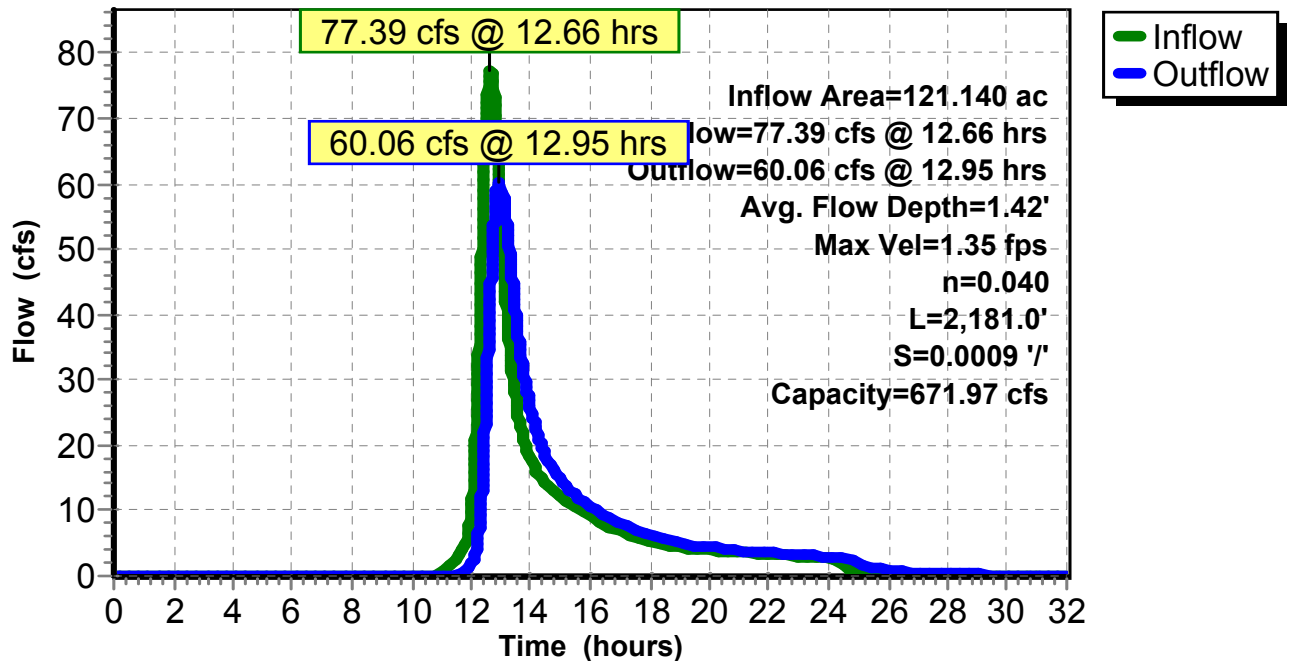
Peak Storage= 97,215 cf @ 12.95 hrs
 Average Depth at Peak Storage= 1.42'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 2,181.0' Slope= 0.0009 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 1.57" for F2_24 event
Inflow = 168.82 cfs @ 12.57 hrs, Volume= 21.787 af
Outflow = 9.66 cfs @ 17.68 hrs, Volume= 12.241 af, Atten= 94%, Lag= 306.502 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.33 fps, Min. Travel Time= 1,119.307 min
Avg. Velocity = 0.29 fps, Avg. Travel Time= 1,258.649 min

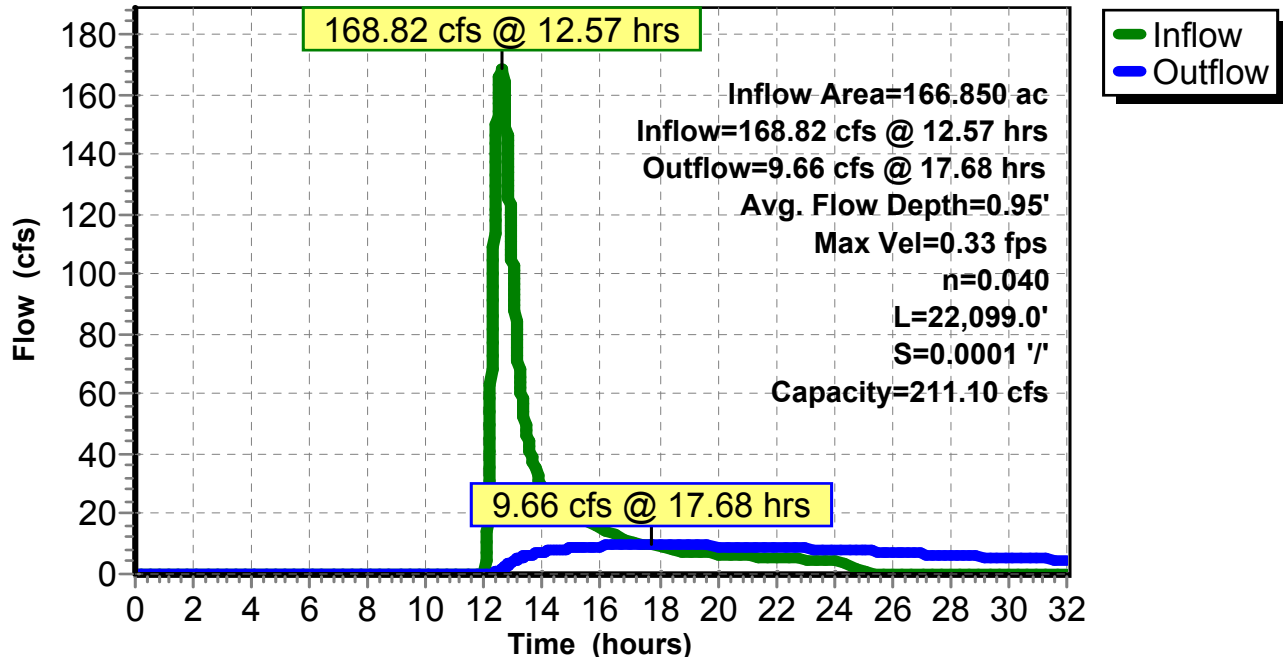
Peak Storage= 648,566 cf @ 17.68 hrs
Average Depth at Peak Storage= 0.95'
Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 ' ' Top Width= 42.00'
Length= 22,099.0' Slope= 0.0001 ' '
Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 1.20" for F2_24 event
 Inflow = 97.78 cfs @ 13.61 hrs, Volume= 44.480 af
 Outflow = 97.49 cfs @ 13.74 hrs, Volume= 44.281 af, Atten= 0%, Lag= 7.529 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 4.83 fps, Min. Travel Time= 10.290 min
 Avg. Velocity = 2.71 fps, Avg. Travel Time= 18.311 min

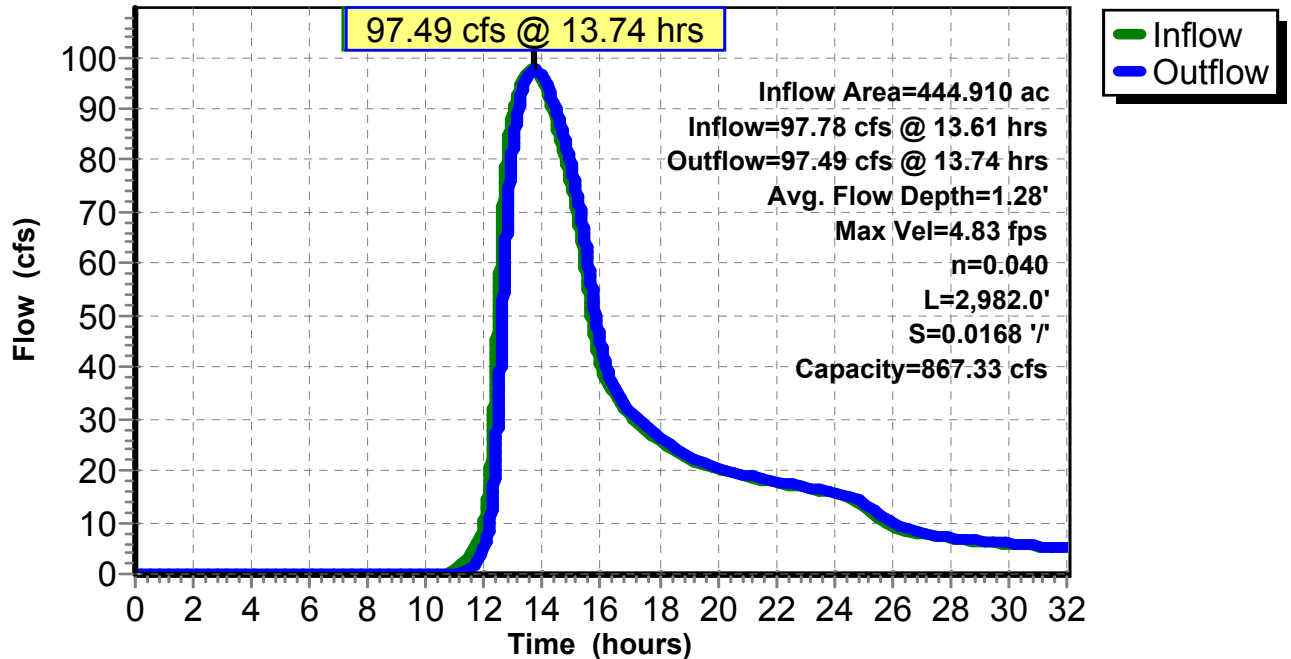
Peak Storage= 60,194 cf @ 13.74 hrs
 Average Depth at Peak Storage= 1.28'
 Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040
 Side Slope Z-value= 3.0 '/' Top Width= 36.00'
 Length= 2,982.0' Slope= 0.0168 '/'
 Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 1.31" for F2_24 event
 Inflow = 169.73 cfs @ 12.83 hrs, Volume= 61.244 af
 Outflow = 169.67 cfs @ 12.84 hrs, Volume= 61.218 af, Atten= 0%, Lag= 0.635 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 7.21 fps, Min. Travel Time= 1.006 min
 Avg. Velocity = 3.27 fps, Avg. Travel Time= 2.216 min

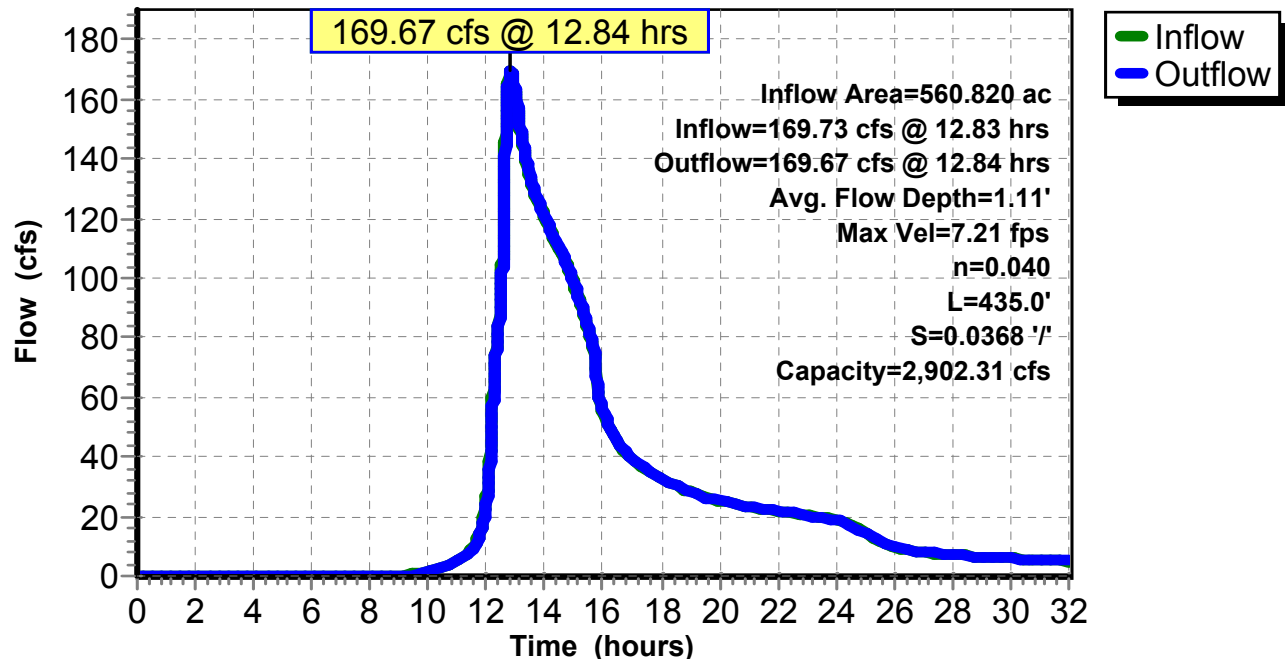
Peak Storage= 10,241 cf @ 12.84 hrs
 Average Depth at Peak Storage= 1.11'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' ' Top Width= 32.00'
 Length= 435.0' Slope= 0.0368 ' '
 Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.000 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.000 min

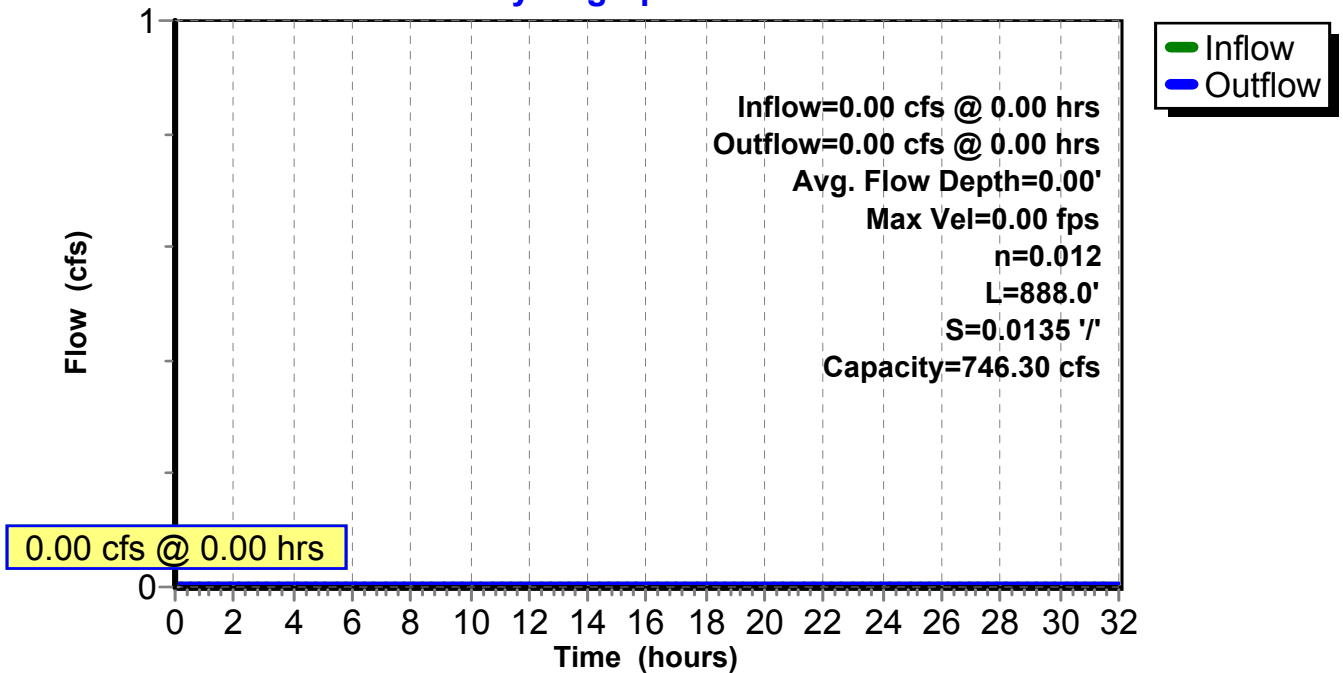
Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
Length= 888.0' Slope= 0.0135 ' '
Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



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Summary for Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 1.42" for F2_24 event
 Inflow = 235.95 cfs @ 12.71 hrs, Volume= 77.328 af
 Outflow = 235.95 cfs @ 12.71 hrs, Volume= 77.328 af, Atten= 0%, Lag= 0.000 min
 Primary = 235.95 cfs @ 12.71 hrs, Volume= 77.328 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 46.00' @ 12.71 hrs Surf.Area= 0.695 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.000 min (970.306 - 970.306)

Volume	Invert	Avail.Storage	Storage Description
#1	46.00'	82.605 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
46.00	0.695	0.000	0.000
48.00	0.695	1.390	1.390
50.00	0.800	1.495	2.885
52.00	1.420	2.220	5.105
54.00	2.270	3.690	8.795
56.00	3.160	5.430	14.225
58.00	4.070	7.230	21.455
60.00	4.980	9.050	30.505
62.00	5.710	10.690	41.195
64.00	6.620	12.330	53.525
66.00	7.170	13.790	67.315
68.00	8.120	15.290	82.605

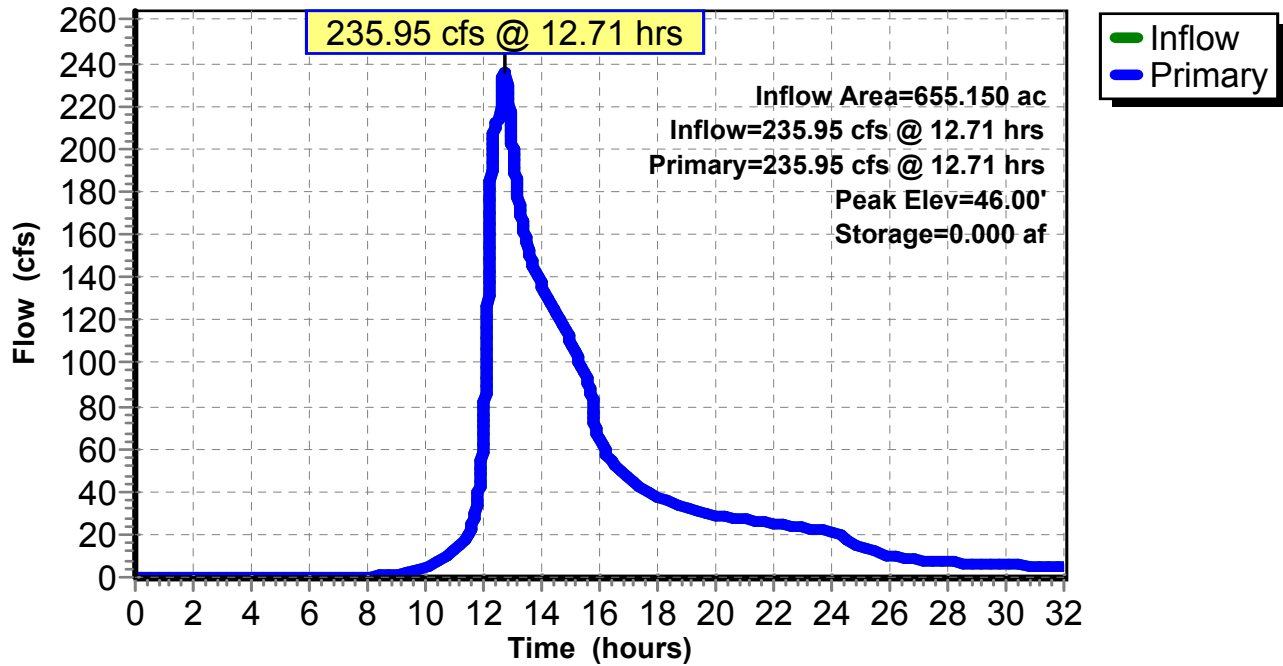
Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/ Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48

Primary OutFlow Max=429.50 cfs @ 12.71 hrs HW=46.00' TW=40.04' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 429.50 cfs @ 11.01 fps)
- 2=WEIR WESTCH AVE (Controls 0.00 cfs)

Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



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Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 1.33" for F2_24 event
 Inflow = 177.65 cfs @ 12.82 hrs, Volume= 64.406 af
 Outflow = 177.65 cfs @ 12.82 hrs, Volume= 64.405 af, Atten= 0%, Lag= 0.064 min
 Primary = 177.65 cfs @ 12.82 hrs, Volume= 64.405 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 67.18' @ 12.82 hrs Surf.Area= 0.003 ac Storage= 0.002 af

Plug-Flow detention time= 0.017 min calculated for 64.385 af (100% of inflow)
 Center-of-Mass det. time= 0.004 min (996.785 - 996.782)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

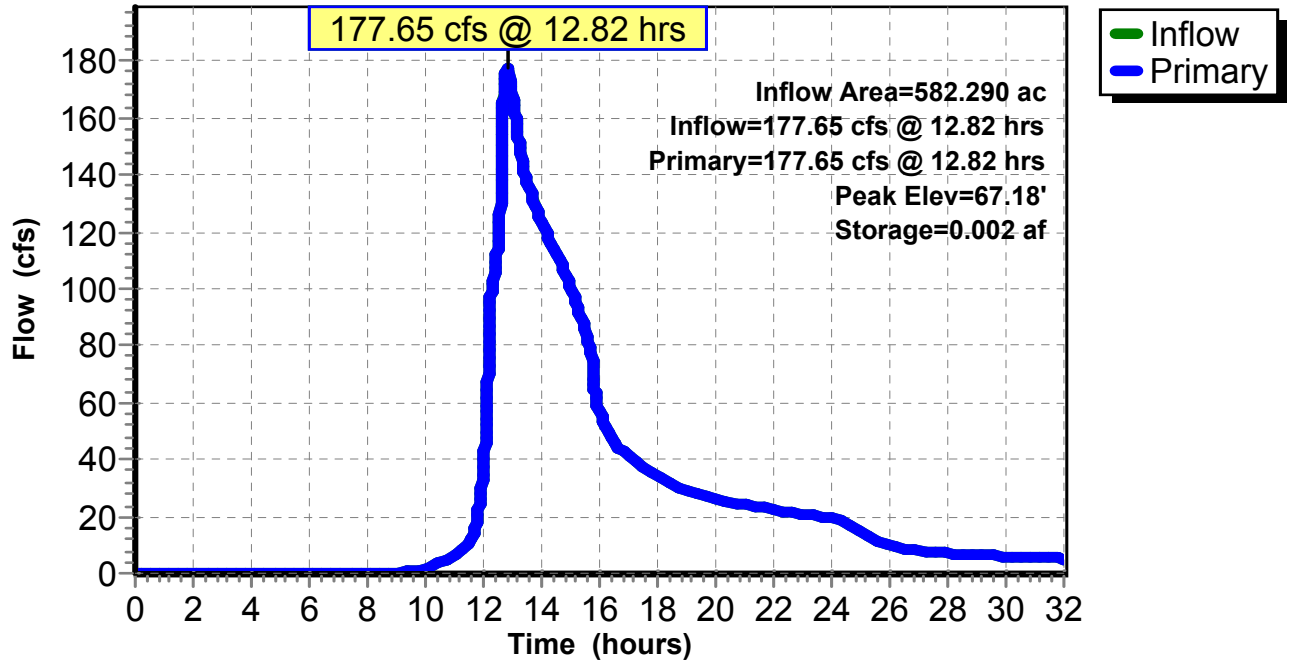
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=177.65 cfs @ 12.82 hrs HW=67.18' TW=59.39' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 177.55 cfs @ 9.04 fps)
- 2=Culvert 2 (Inlet Controls 0.09 cfs @ 1.06 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



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Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 1.20" for F2_24 event
Inflow = 98.41 cfs @ 13.43 hrs, Volume= 44.597 af
Outflow = 97.78 cfs @ 13.61 hrs, Volume= 44.480 af, Atten= 1%, Lag= 10.959 min
Primary = 97.78 cfs @ 13.61 hrs, Volume= 44.480 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 129.05' @ 13.61 hrs Surf.Area= 0.735 ac Storage= 1.290 af

Plug-Flow detention time= 10.481 min calculated for 44.466 af (100% of inflow)
Center-of-Mass det. time= 8.185 min (1,041.937 - 1,033.752)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

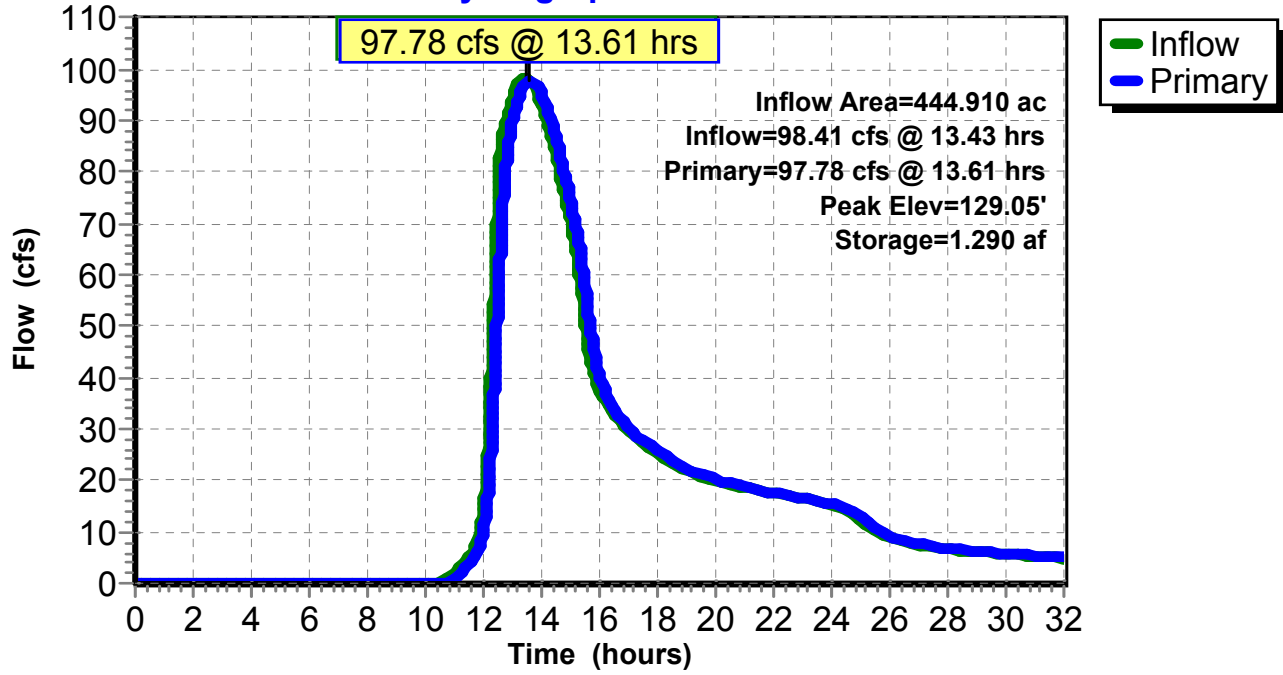
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=97.78 cfs @ 13.61 hrs HW=129.05' TW=127.27' (Dynamic Tailwater)

1=Culvert (Barrel Controls 97.78 cfs @ 6.58 fps)
2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 4A: DP 4 A ARGYLE

Hydrograph



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Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 1.20" for F2_24 event
Inflow = 147.35 cfs @ 12.92 hrs, Volume= 40.385 af
Outflow = 91.32 cfs @ 13.53 hrs, Volume= 40.235 af, Atten= 38%, Lag= 36.621 min
Primary = 91.32 cfs @ 13.53 hrs, Volume= 40.235 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 130.87' @ 13.53 hrs Surf.Area= 7.943 ac Storage= 4.775 af

Plug-Flow detention time= 22.387 min calculated for 40.235 af (100% of inflow)
Center-of-Mass det. time= 19.097 min (1,048.111 - 1,029.015)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

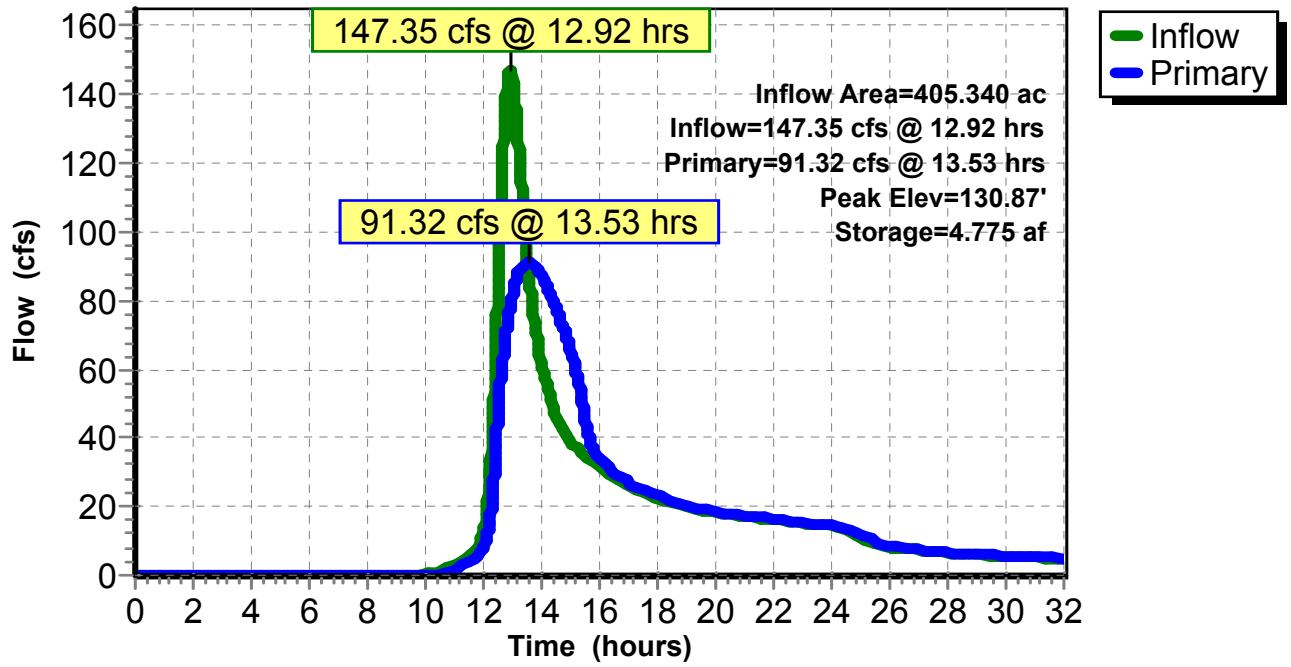
Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

Primary OutFlow Max=91.32 cfs @ 13.53 hrs HW=130.87' TW=129.50' (Dynamic Tailwater)

- 1=Culvert (Barrel Controls 91.32 cfs @ 6.64 fps)
- 2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 5P: DP 5 BETSY BROWN ROAD

Hydrograph



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Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 1.31" for F2_24 event
Inflow = 170.72 cfs @ 12.77 hrs, Volume= 61.245 af
Outflow = 169.73 cfs @ 12.83 hrs, Volume= 61.244 af, Atten= 1%, Lag= 3.324 min
Primary = 169.73 cfs @ 12.83 hrs, Volume= 61.244 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 90.69' @ 12.83 hrs Surf.Area= 1.370 ac Storage= 0.946 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.038 min (1,003.576 - 1,001.537)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

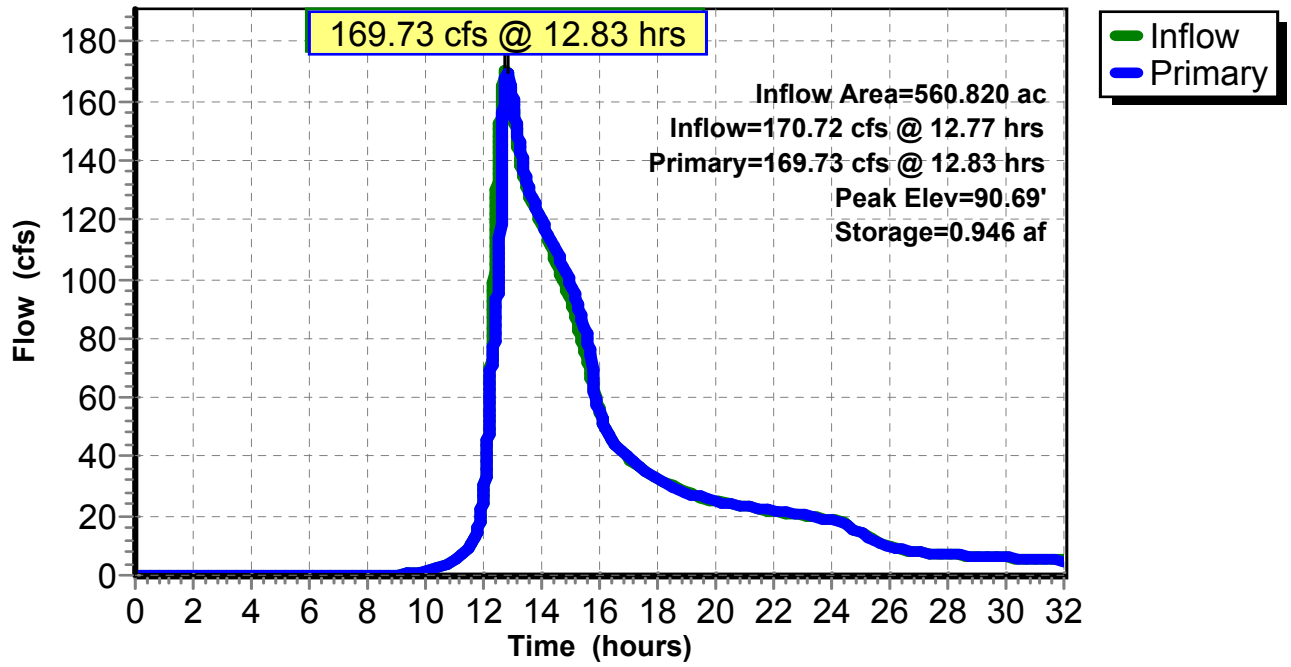
Primary OutFlow Max=169.71 cfs @ 12.83 hrs HW=90.69' TW=77.11' (Dynamic Tailwater)

1=Sharp-Crested Rectangular Weir(Weir Controls 128.73 cfs @ 4.78 fps)

2=Sharp-Crested Rectangular Weir(Weir Controls 40.99 cfs @ 1.50 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



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Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 1.52" for F2_24 event
 Inflow = 311.58 cfs @ 12.46 hrs, Volume= 90.648 af
 Outflow = 311.53 cfs @ 12.46 hrs, Volume= 88.958 af, Atten= 0%, Lag= 0.163 min
 Primary = 311.53 cfs @ 12.46 hrs, Volume= 88.958 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 40.04' @ 12.46 hrs Surf.Area= 0.852 ac Storage= 1.720 af

Plug-Flow detention time= 23.696 min calculated for 88.931 af (98% of inflow)
 Center-of-Mass det. time= 7.411 min (954.801 - 947.390)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

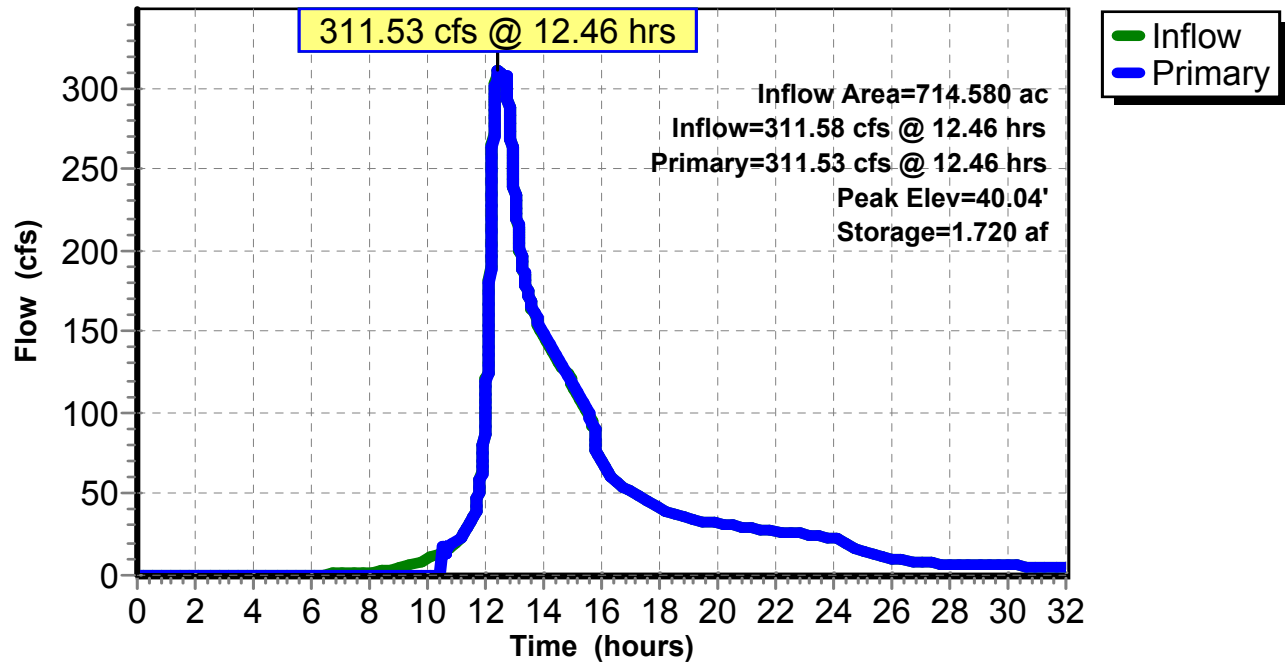
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=311.48 cfs @ 12.46 hrs HW=40.04' TW=40.00' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 126.82 cfs @ 0.92 fps)
- 2=WEIR BOWMAN (Weir Controls 184.66 cfs @ 0.72 fps)

Pond 8P: BOWMAN FIELDS

Hydrograph



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Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 1.22" for F2_24 event
 Inflow = 77.91 cfs @ 12.64 hrs, Volume= 12.335 af
 Outflow = 77.39 cfs @ 12.66 hrs, Volume= 12.334 af, Atten= 1%, Lag= 1.070 min
 Primary = 77.39 cfs @ 12.66 hrs, Volume= 12.334 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 133.07' @ 12.70 hrs Surf.Area= 0.052 ac Storage= 0.039 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.097 min (892.176 - 892.079)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

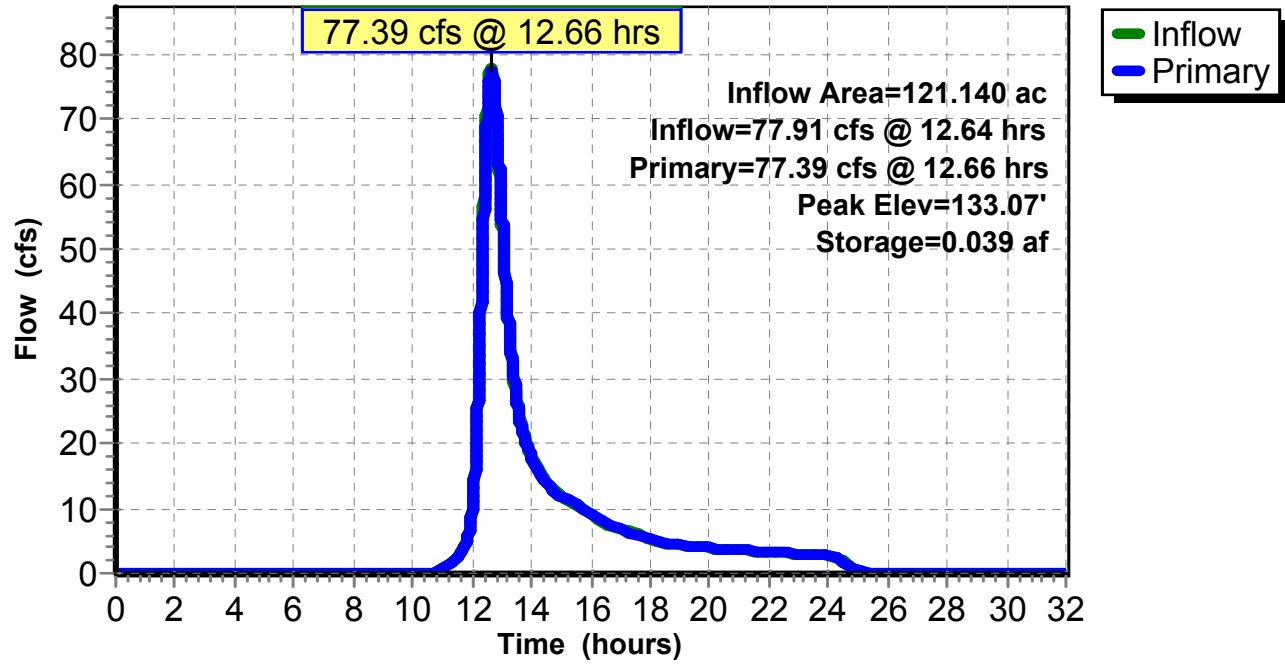
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=77.17 cfs @ 12.66 hrs HW=133.06' TW=131.18' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 46.68 cfs @ 6.60 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 30.50 cfs @ 4.16 fps)
- 3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Hydrograph



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Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 1.70" for F2_24 event
 Inflow = 172.12 cfs @ 12.51 hrs, Volume= 23.680 af
 Outflow = 168.82 cfs @ 12.57 hrs, Volume= 21.787 af, Atten= 2%, Lag= 3.638 min
 Primary = 168.82 cfs @ 12.57 hrs, Volume= 21.787 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.33' @ 12.57 hrs Surf.Area= 3.614 ac Storage= 5.973 af (3.005 af above start)

Plug-Flow detention time= 126.747 min calculated for 18.820 af (79% of inflow)
 Center-of-Mass det. time= 23.680 min (886.000 - 862.320)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

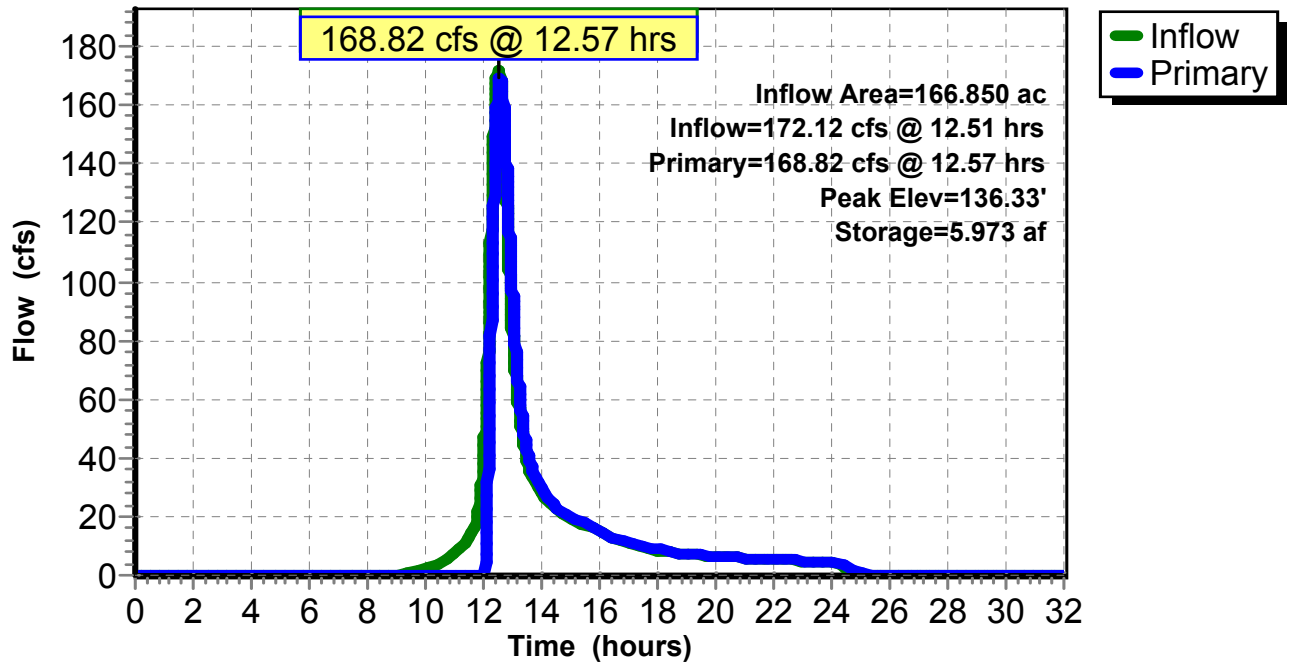
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=168.81 cfs @ 12.57 hrs HW=136.33' TW=130.27' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 0.83 cfs @ 1.96 fps)
- 2=Asymmetrical Weir (Weir Controls 167.98 cfs @ 1.73 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Hydrograph



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Summary for Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 1.33" for F2_24 event
 Inflow = 177.65 cfs @ 12.82 hrs, Volume= 64.405 af
 Outflow = 177.65 cfs @ 12.82 hrs, Volume= 64.399 af, Atten= 0%, Lag= 0.170 min
 Primary = 177.65 cfs @ 12.82 hrs, Volume= 64.399 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 59.39' @ 12.82 hrs Surf.Area= 871 sf Storage= 2,249 cf

Plug-Flow detention time= 0.323 min calculated for 64.399 af (100% of inflow)
 Center-of-Mass det. time= 0.241 min (997.026 - 996.785)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	22,686 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686

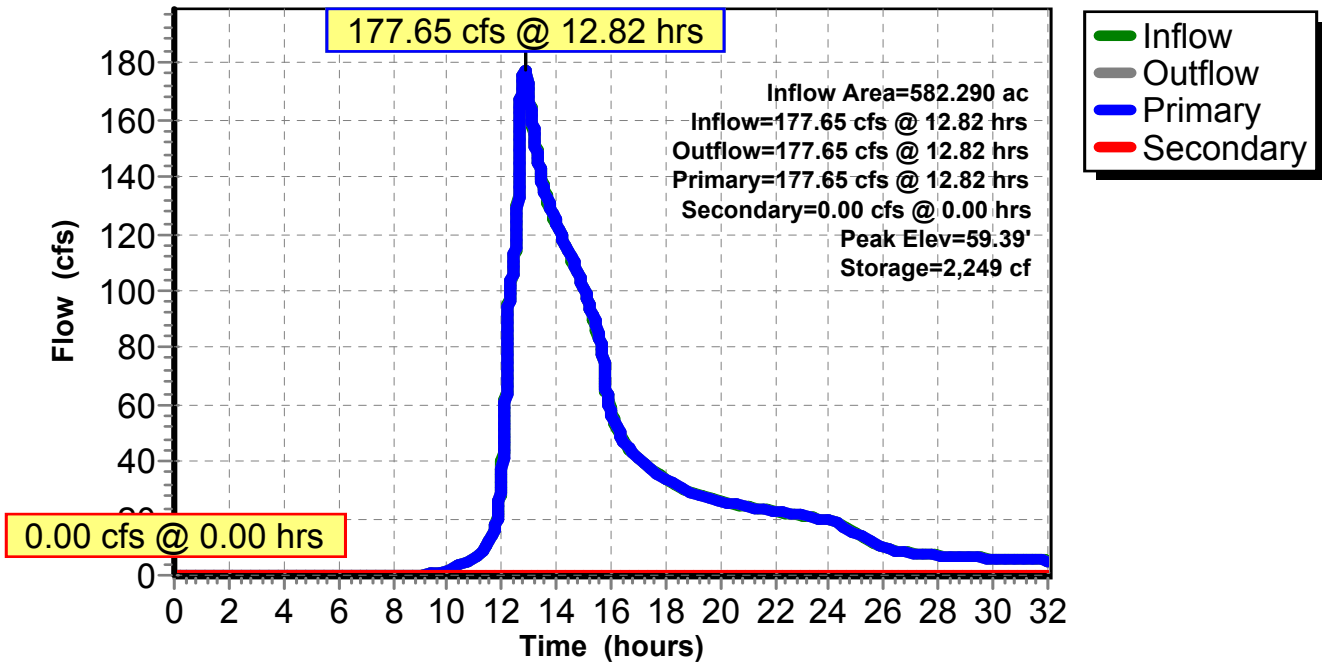
Device	Routing	Invert	Outlet Devices
#1	Primary	56.00'	60.0" Round Culvert X 2.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 56.00' / 37.90' S= 0.0217 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	60.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 66.00 64.00 62.00 60.00 60.00 62.00 64.00 66.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=177.64 cfs @ 12.82 hrs HW=59.39' TW=46.00' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 177.64 cfs @ 6.27 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=56.00' TW=58.00' (Dynamic Tailwater)
 ↑2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Hydrograph



Avon_Exist.ing_Final

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Avon
Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 51.00' @ 0.00 hrs Surf.Area= 6,000 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	51.00'	162,178 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
51.00	6,000	0	0
52.00	15,452	10,726	10,726
54.00	38,000	53,452	64,178
56.00	60,000	98,000	162,178

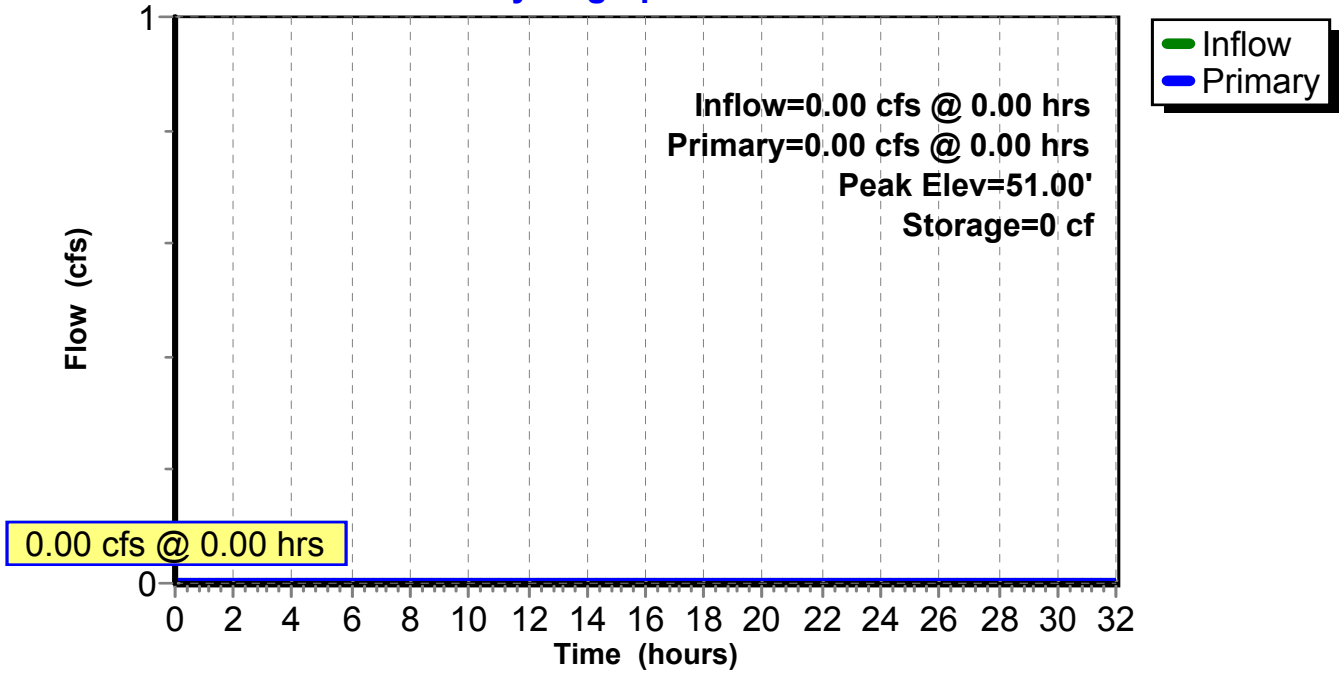
Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=51.00' TW=46.00' (Dynamic Tailwater)

↑1=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



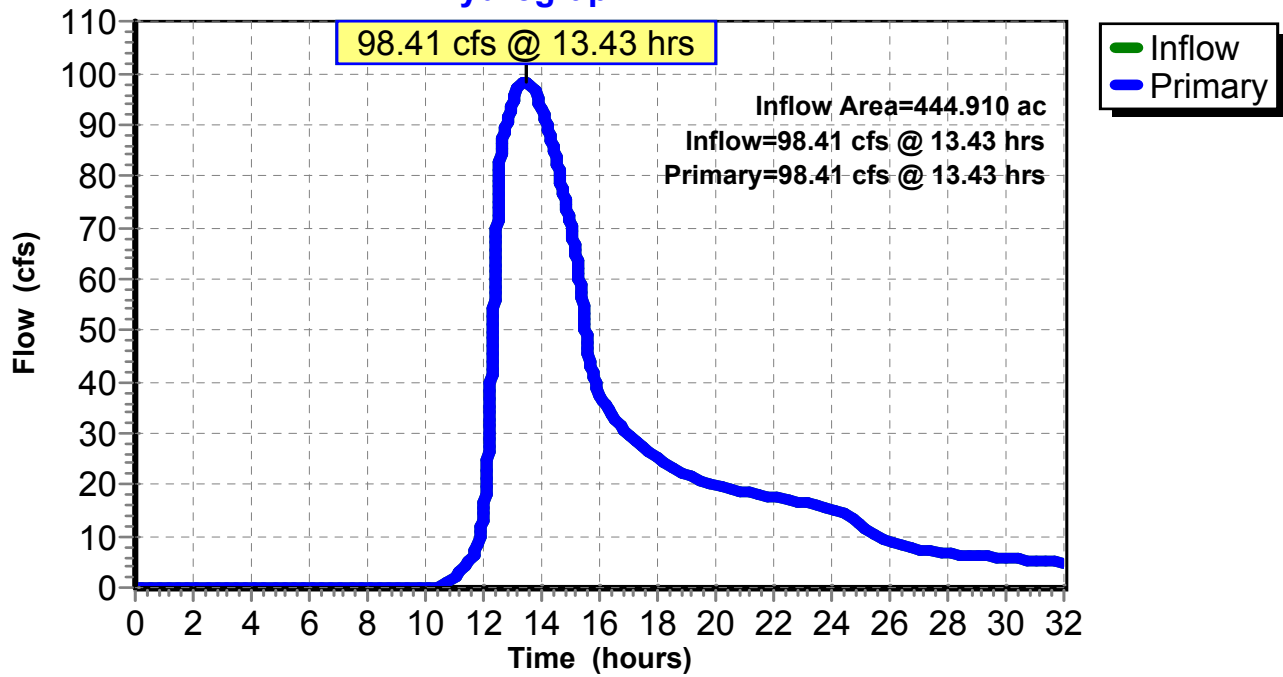
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 1.20" for F2_24 event
Inflow = 98.41 cfs @ 13.43 hrs, Volume= 44.597 af
Primary = 98.41 cfs @ 13.43 hrs, Volume= 44.597 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



Summary for Link 20L: EX FINAL

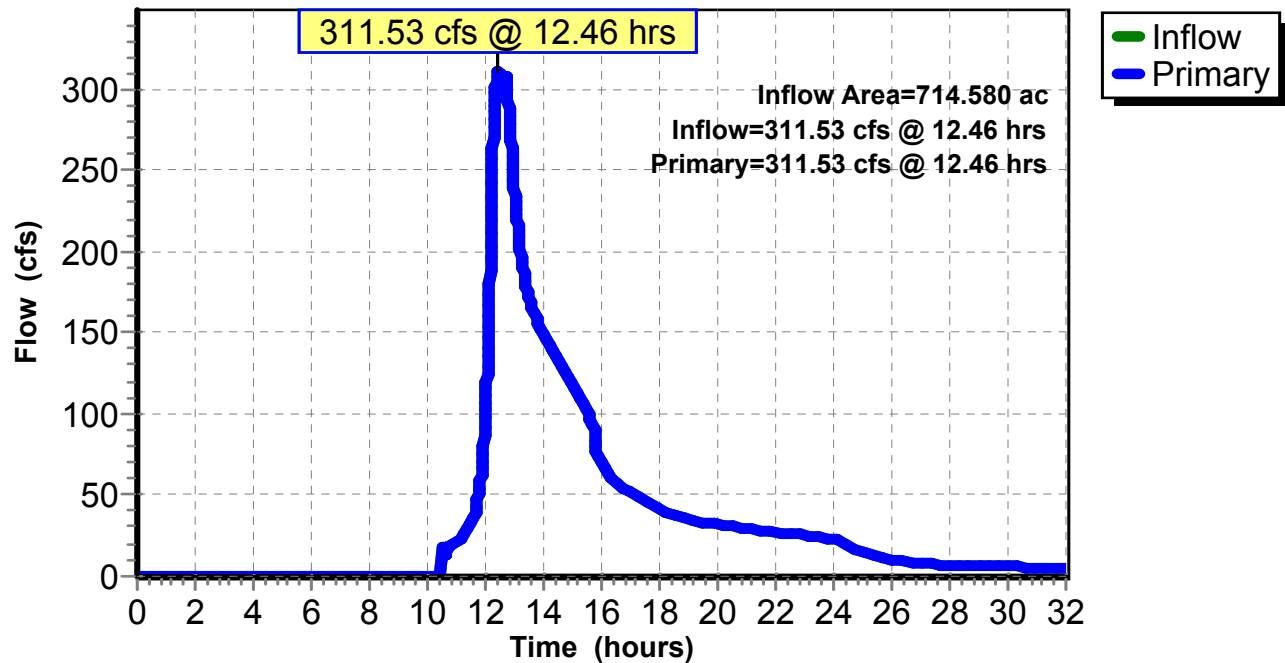
Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 1.49" for F2_24 event
Inflow = 311.53 cfs @ 12.46 hrs, Volume= 88.958 af
Primary = 311.53 cfs @ 12.46 hrs, Volume= 88.958 af, Atten= 0%, Lag= 0.000 min

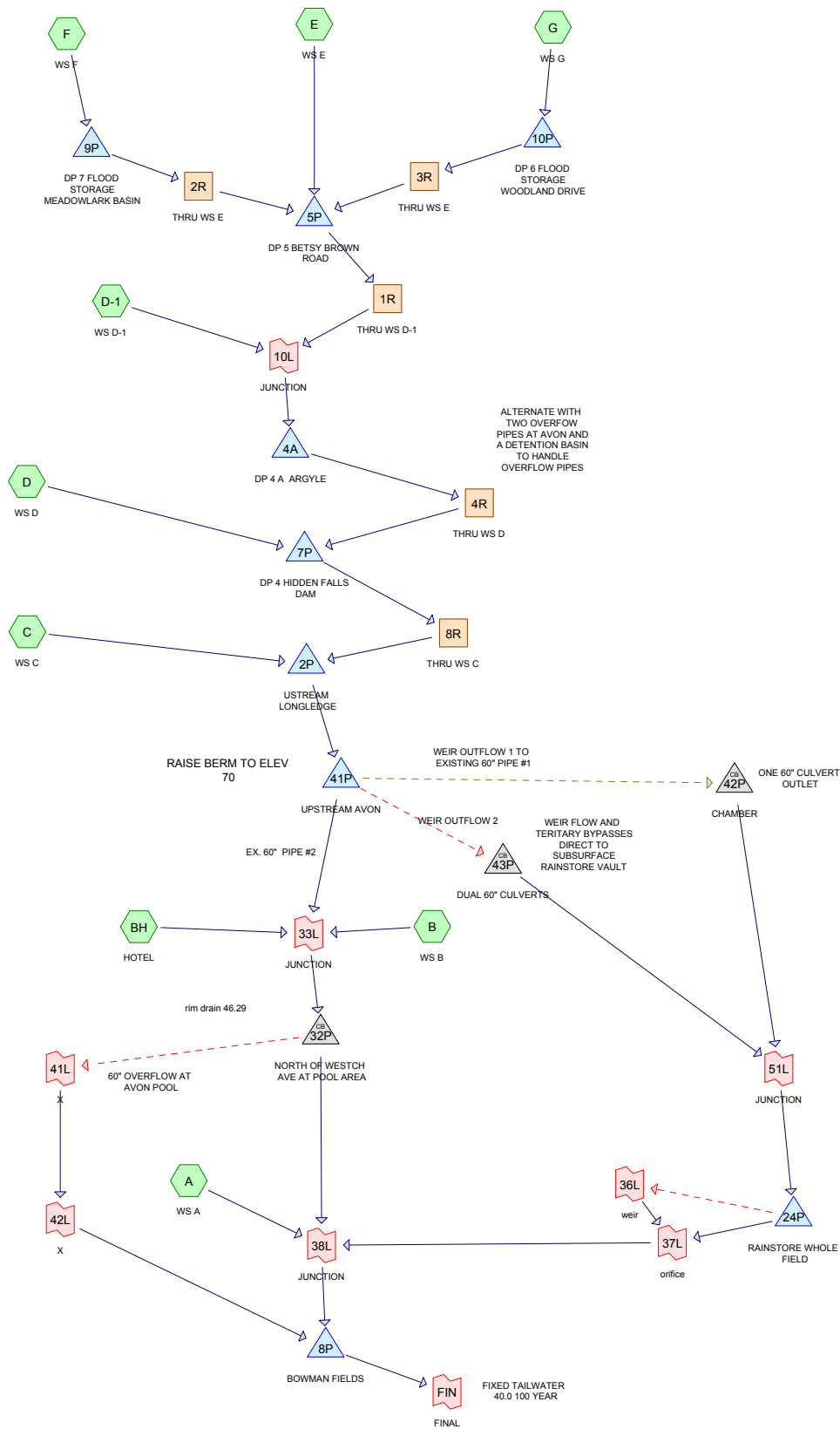
Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 40.00'

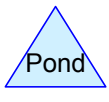
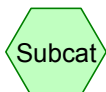
Link 20L: EX FINAL

Hydrograph





ALTERNATE WITH TWO OVERFLOW PIPES AT AVON AND A DETENTION BASIN TO HANDLE OVERFLOW PIPES



Routing Diagram for Avon Working Model 10
 Prepared by , Printed 5/29/2020
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Avon PR

Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Subcatchment A: WS A

Runoff = 285.42 cfs @ 12.42 hrs, Volume= 40.508 af, Depth= 8.18"

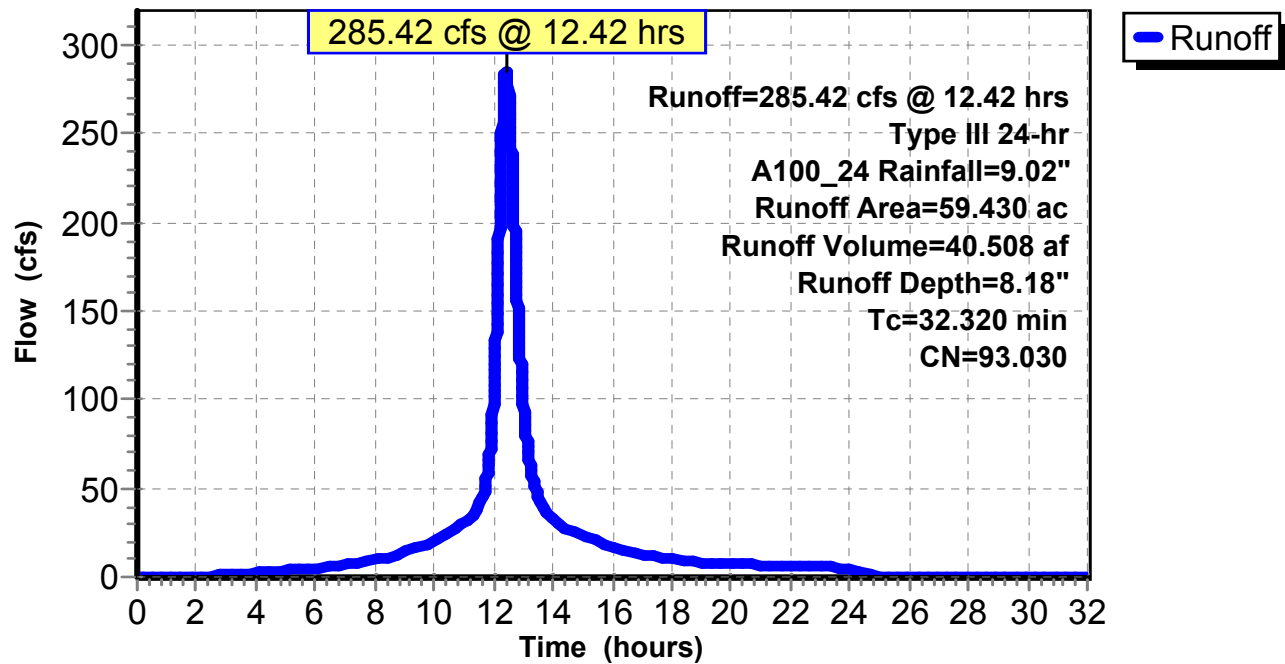
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



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Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Subcatchment B: WS B

Runoff = 278.22 cfs @ 12.37 hrs, Volume= 35.772 af, Depth= 7.46"

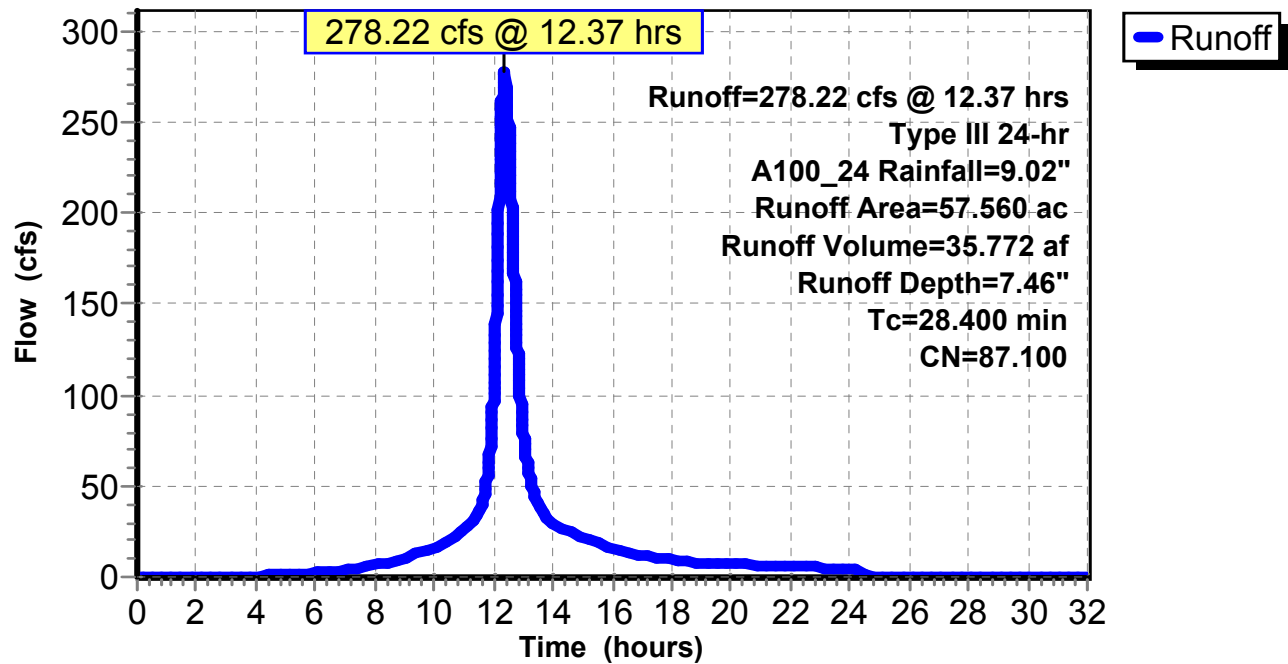
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



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Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Subcatchment BH: HOTEL

Runoff = 70.94 cfs @ 12.42 hrs, Volume= 9.362 af, Depth= 7.34"

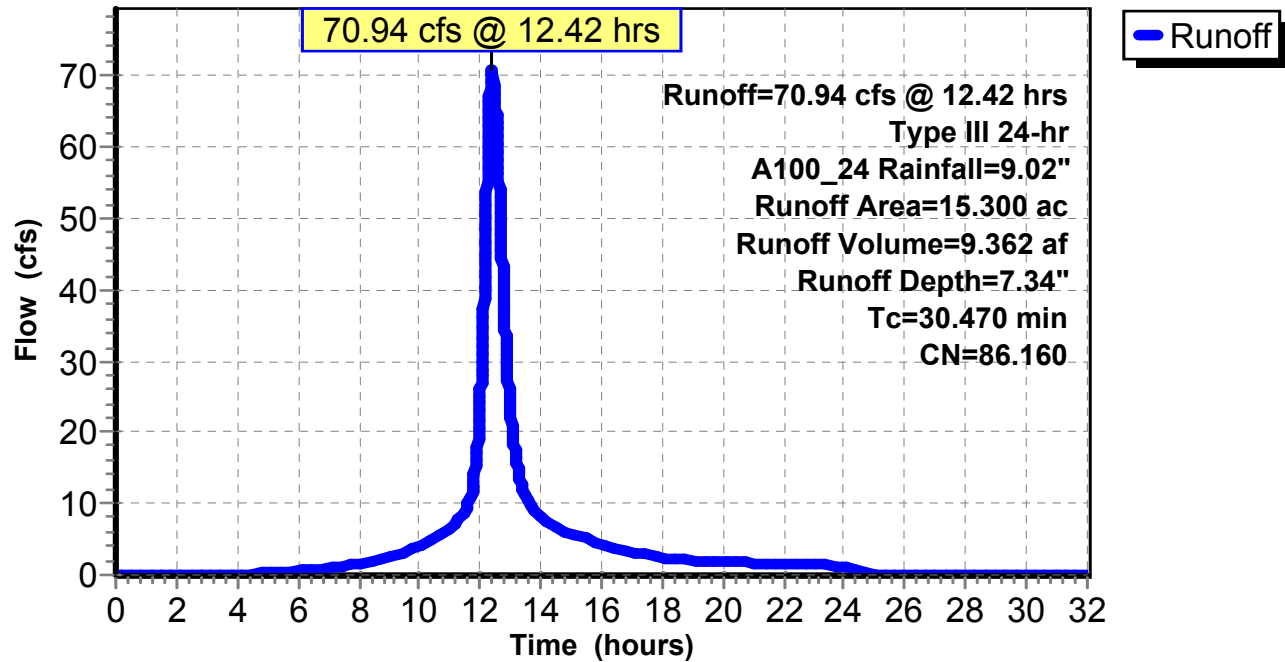
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



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Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Subcatchment C: WS C

Runoff = 117.59 cfs @ 12.25 hrs, Volume= 12.344 af, Depth= 6.90"

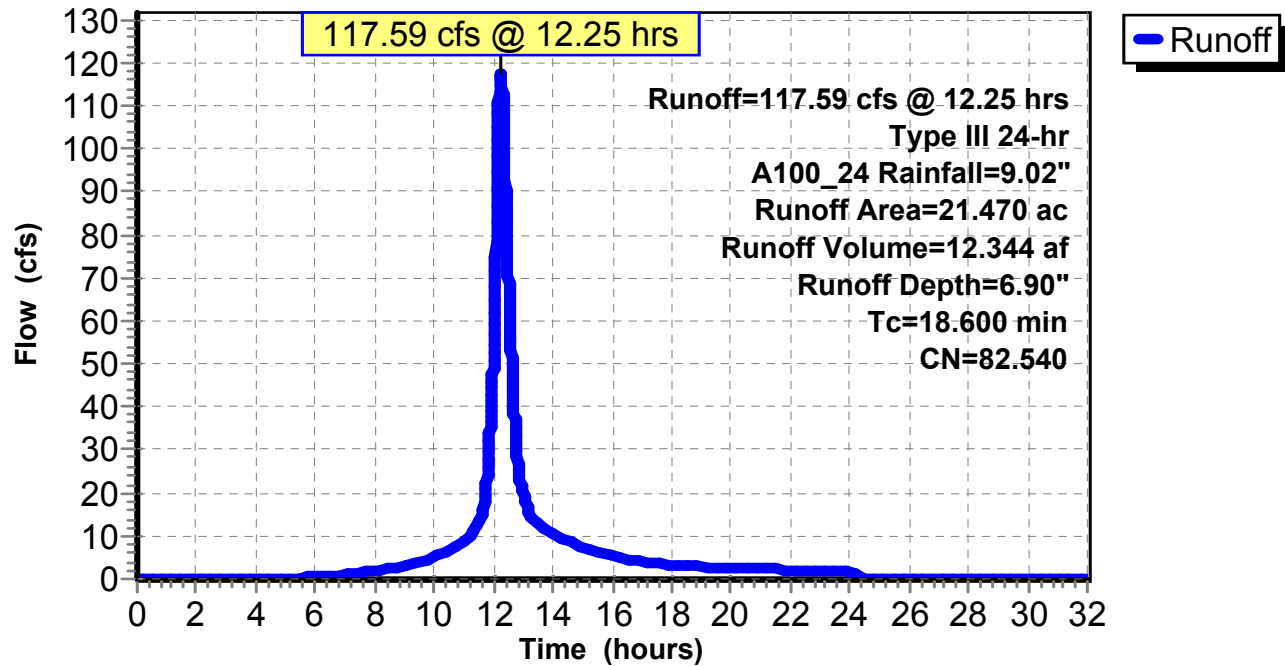
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



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Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Subcatchment D: WS D

Runoff = 421.79 cfs @ 12.61 hrs, Volume= 66.238 af, Depth= 6.86"

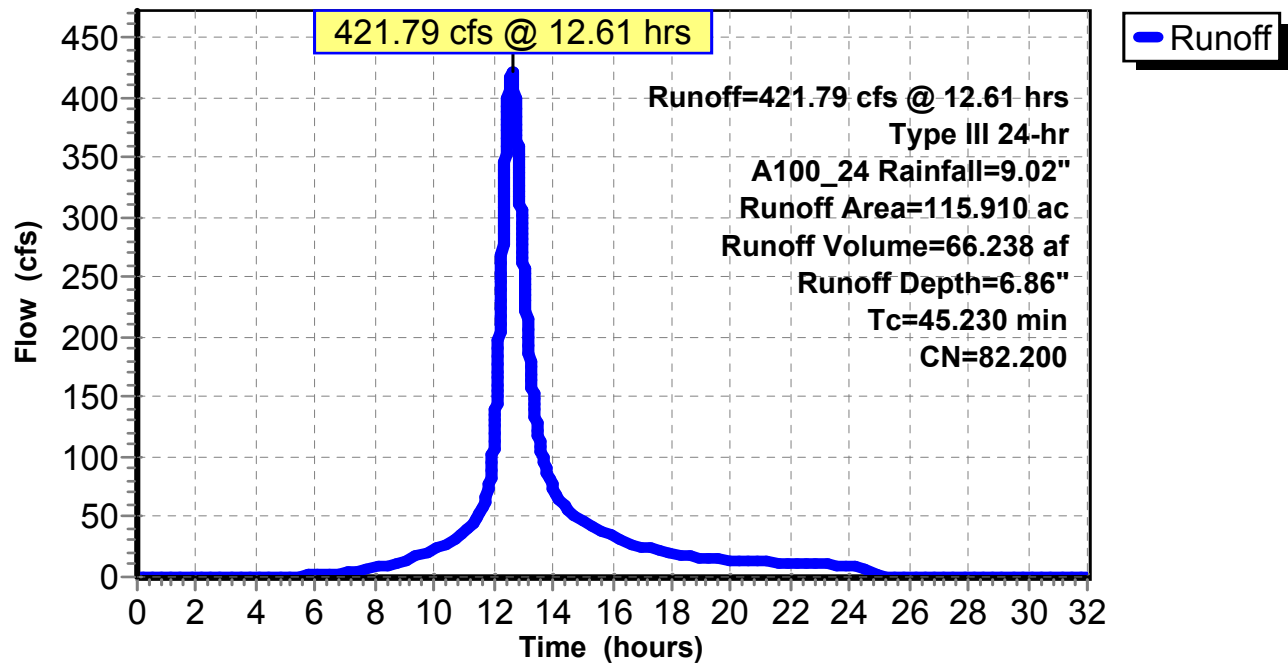
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



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Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Subcatchment D-1: WS D-1

Runoff = 155.42 cfs @ 12.44 hrs, Volume= 20.173 af, Depth= 6.12"

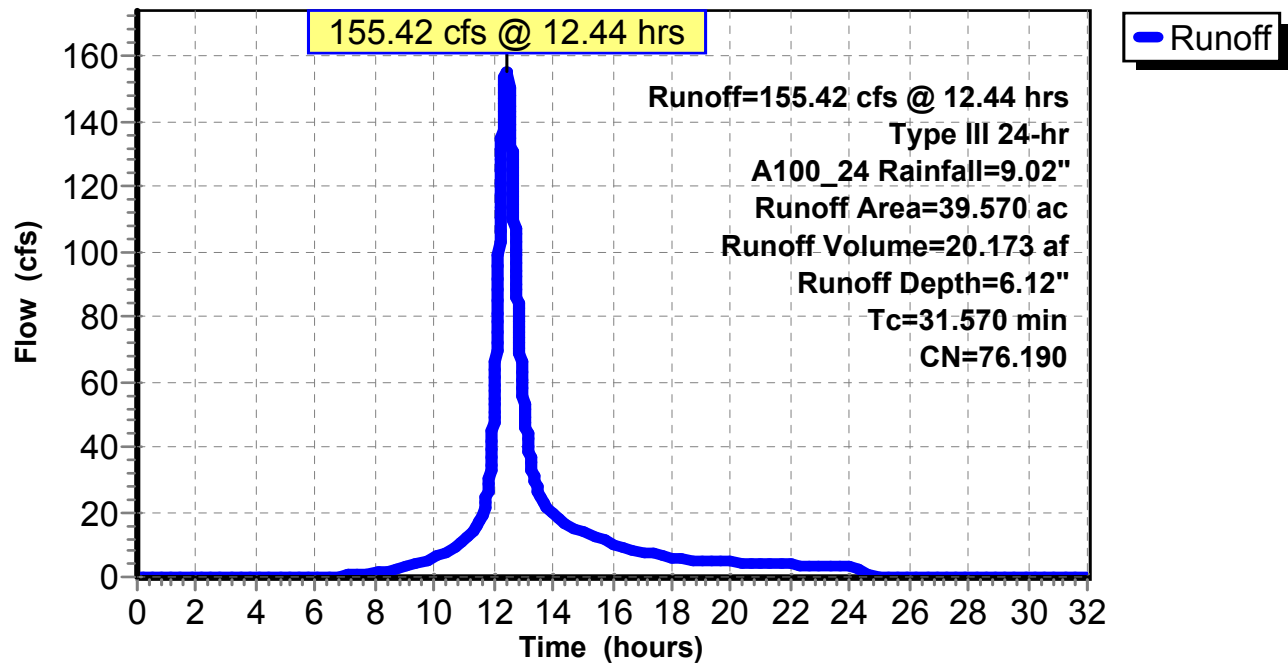
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



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Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Subcatchment E: WS E

Runoff = 343.89 cfs @ 12.85 hrs, Volume= 64.802 af, Depth= 6.63"

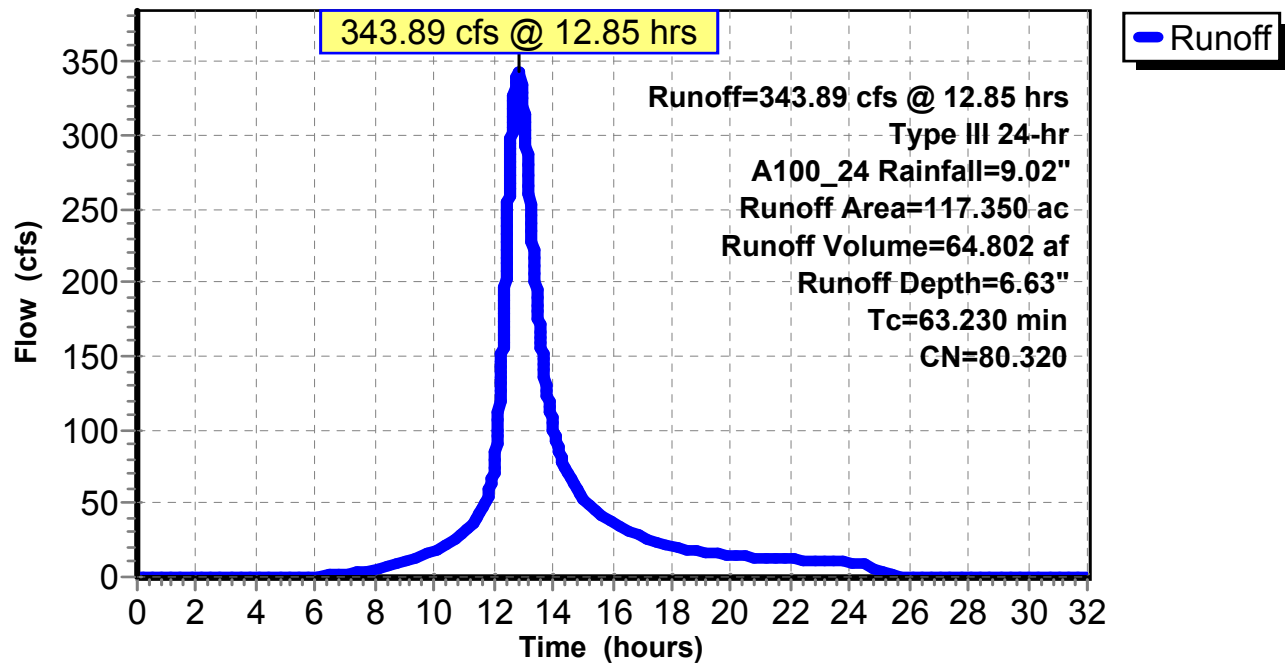
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



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Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Subcatchment F: WS F

Runoff = 388.56 cfs @ 12.59 hrs, Volume= 59.365 af, Depth= 5.88"

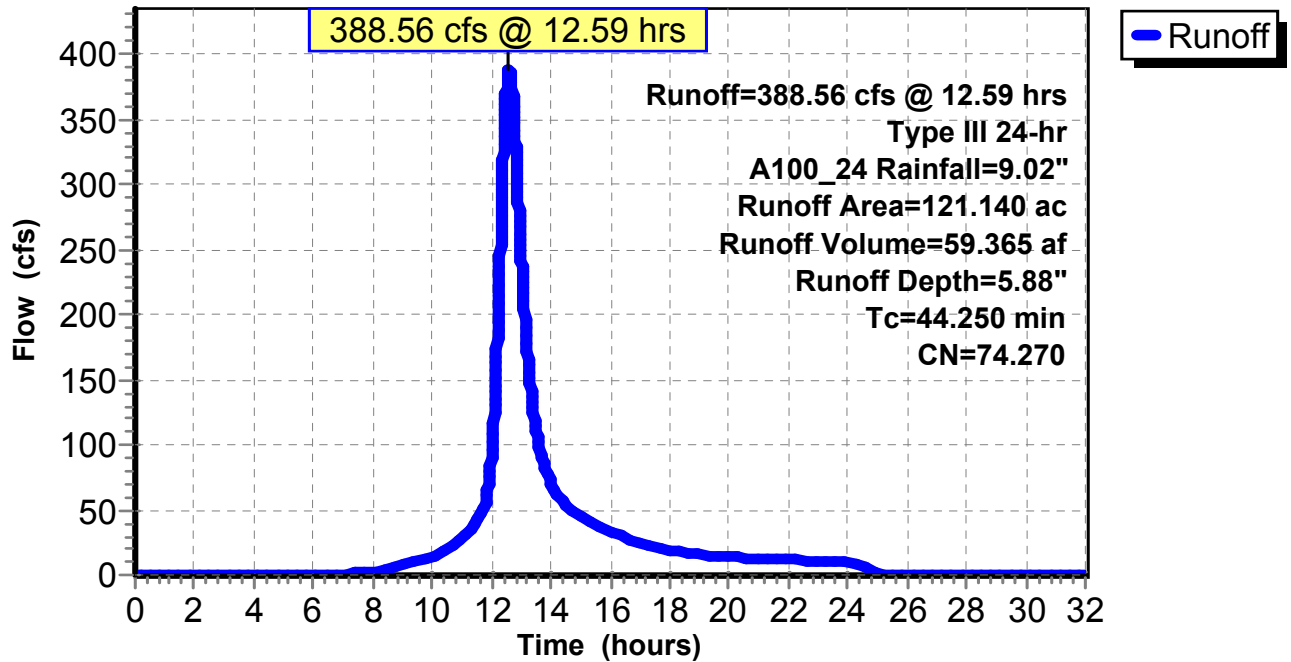
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



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Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Subcatchment G: WS G

Runoff = 670.66 cfs @ 12.50 hrs, Volume= 94.119 af, Depth= 6.77"

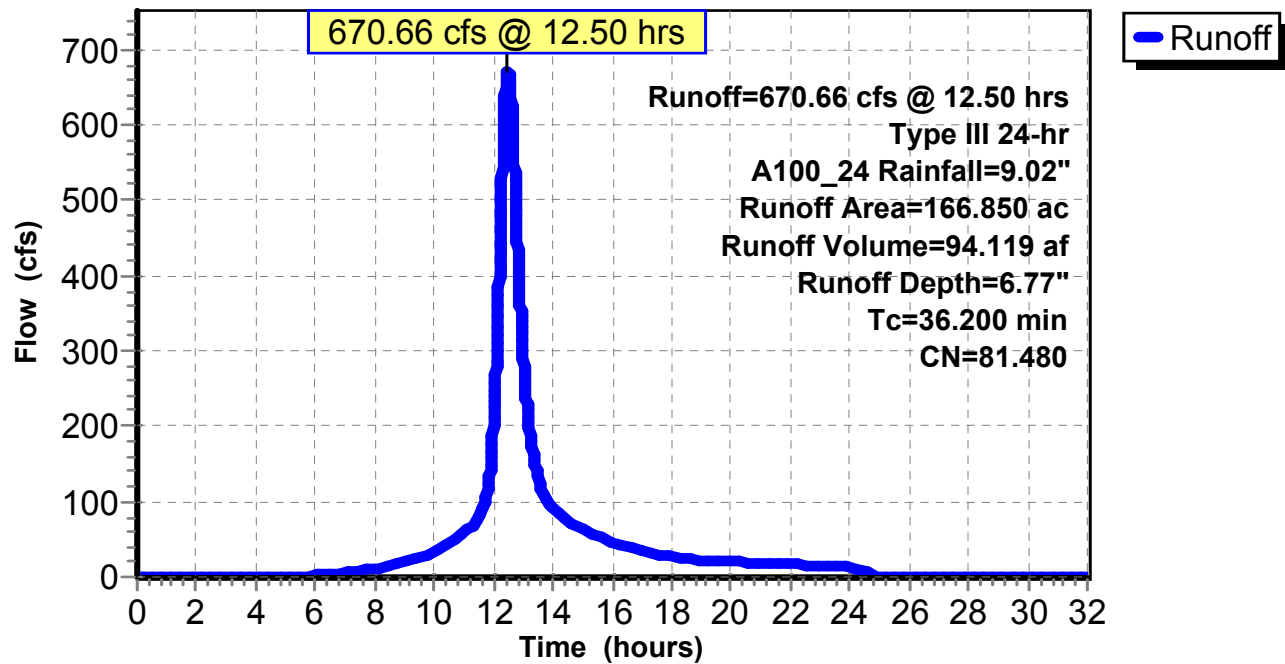
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



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Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 5.82" for A100_24 event
Inflow = 452.22 cfs @ 13.40 hrs, Volume= 196.643 af
Outflow = 452.03 cfs @ 13.42 hrs, Volume= 196.521 af, Atten= 0%, Lag= 1.220 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2

Max. Velocity= 4.86 fps, Min. Travel Time= 1.727 min

Avg. Velocity = 2.40 fps, Avg. Travel Time= 3.500 min

Peak Storage= 46,830 cf @ 13.42 hrs

Average Depth at Peak Storage= 3.89'

Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040

Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'

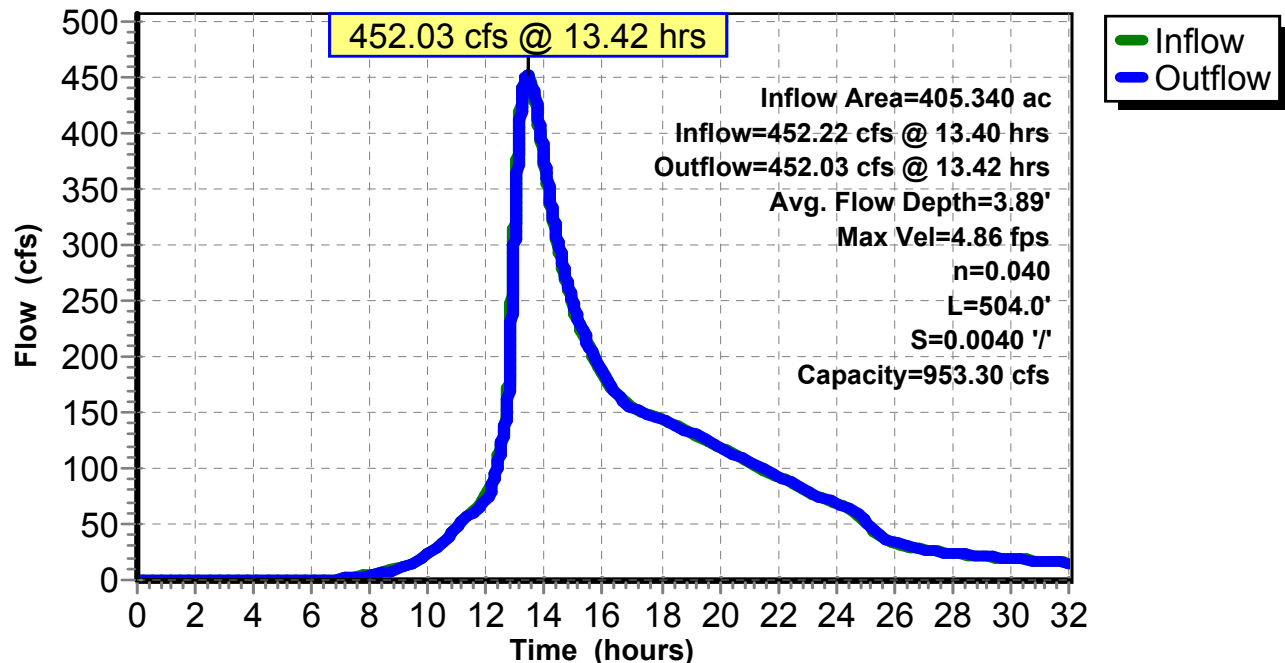
Length= 504.0' Slope= 0.0040 ' / '

Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



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Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 5.88" for A100_24 event
Inflow = 388.06 cfs @ 12.60 hrs, Volume= 59.364 af
Outflow = 353.12 cfs @ 12.77 hrs, Volume= 59.329 af, Atten= 9%, Lag= 9.954 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.52 fps, Min. Travel Time= 14.397 min
Avg. Velocity = 0.73 fps, Avg. Travel Time= 50.068 min

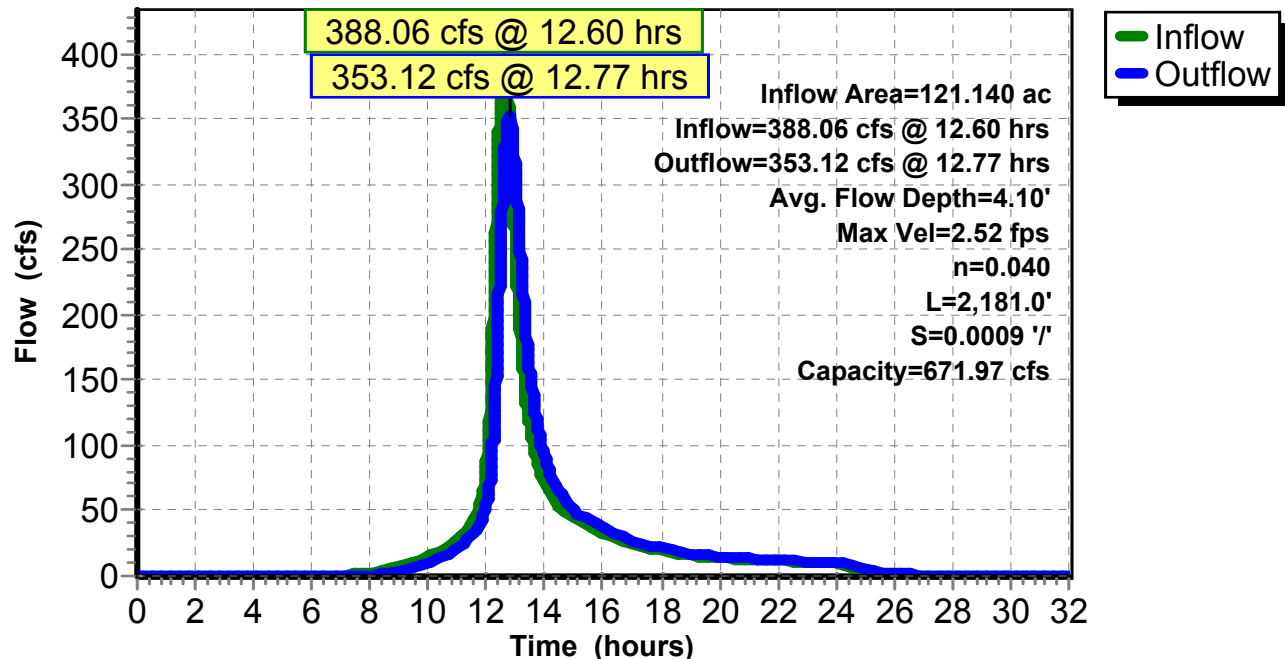
Peak Storage= 305,038 cf @ 12.77 hrs
Average Depth at Peak Storage= 4.10'
Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
Length= 2,181.0' Slope= 0.0009 ' / '
Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



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Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 6.63" for A100_24 event
Inflow = 666.08 cfs @ 12.52 hrs, Volume= 92.226 af
Outflow = 78.53 cfs @ 14.39 hrs, Volume= 72.863 af, Atten= 88%, Lag= 111.923 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2

Max. Velocity= 0.71 fps, Min. Travel Time= 521.931 min

Avg. Velocity = 0.50 fps, Avg. Travel Time= 738.756 min

Peak Storage= 2,459,120 cf @ 14.39 hrs

Average Depth at Peak Storage= 3.34'

Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040

Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'

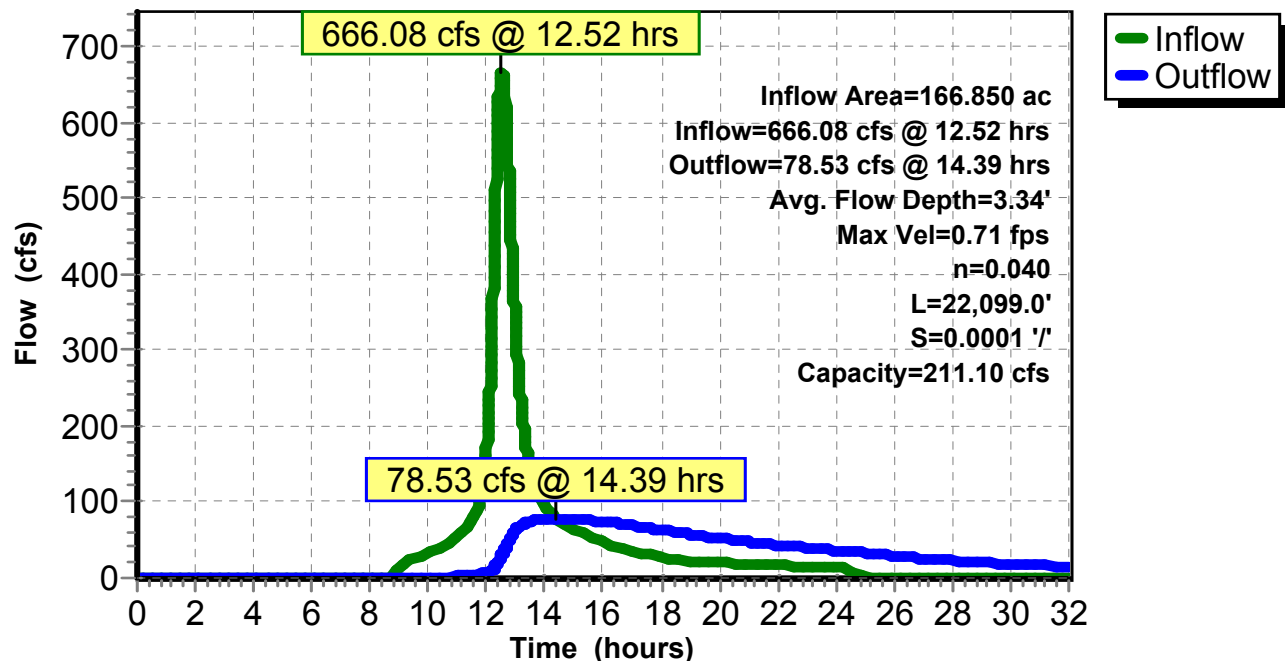
Length= 22,099.0' Slope= 0.0001 ' / '

Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



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Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 5.84" for A100_24 event
Inflow = 481.03 cfs @ 13.41 hrs, Volume= 216.445 af
Outflow = 477.68 cfs @ 13.50 hrs, Volume= 216.033 af, Atten= 1%, Lag= 5.297 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2

Max. Velocity= 7.68 fps, Min. Travel Time= 6.468 min

Avg. Velocity= 4.21 fps, Avg. Travel Time= 11.805 min

Peak Storage= 185,386 cf @ 13.50 hrs

Average Depth at Peak Storage= 2.97'

Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040

Side Slope Z-value= 3.0 ' / ' Top Width= 36.00'

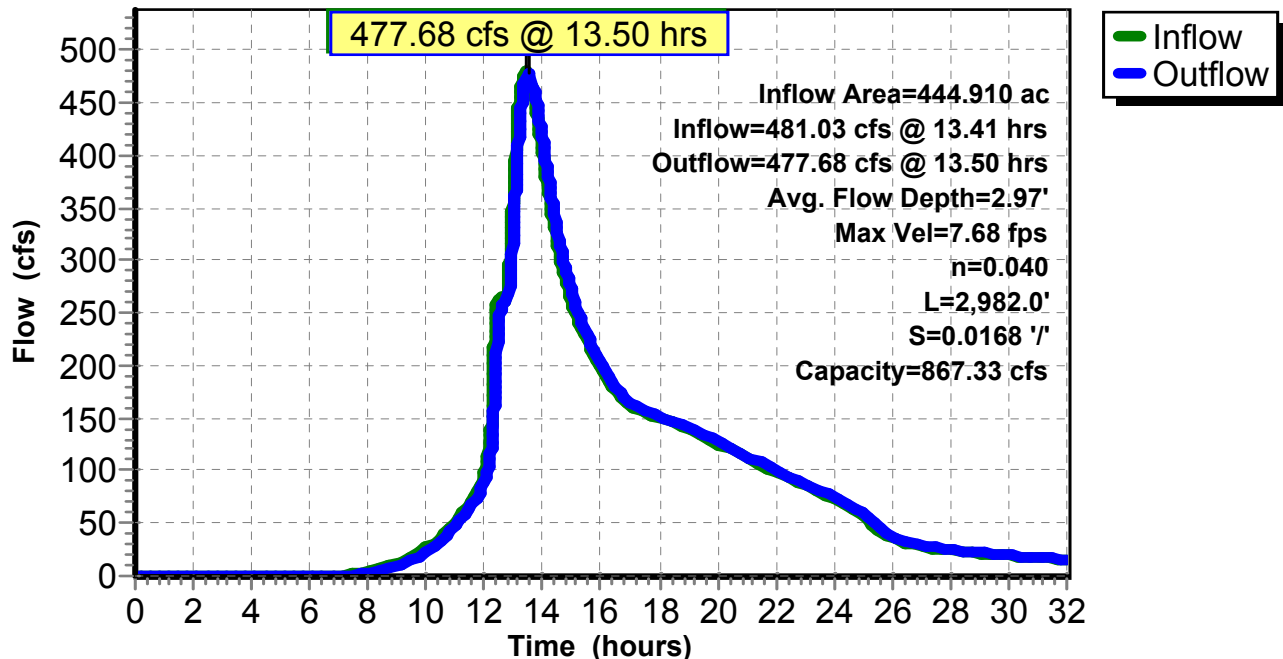
Length= 2,982.0' Slope= 0.0168 ' / '

Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



Avon_Working_Model_10

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Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 6.04" for A100_24 event
Inflow = 679.39 cfs @ 12.64 hrs, Volume= 282.271 af
Outflow = 679.26 cfs @ 12.65 hrs, Volume= 282.217 af, Atten= 0%, Lag= 0.440 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.76 fps, Min. Travel Time= 0.617 min
Avg. Velocity= 5.35 fps, Avg. Travel Time= 1.356 min

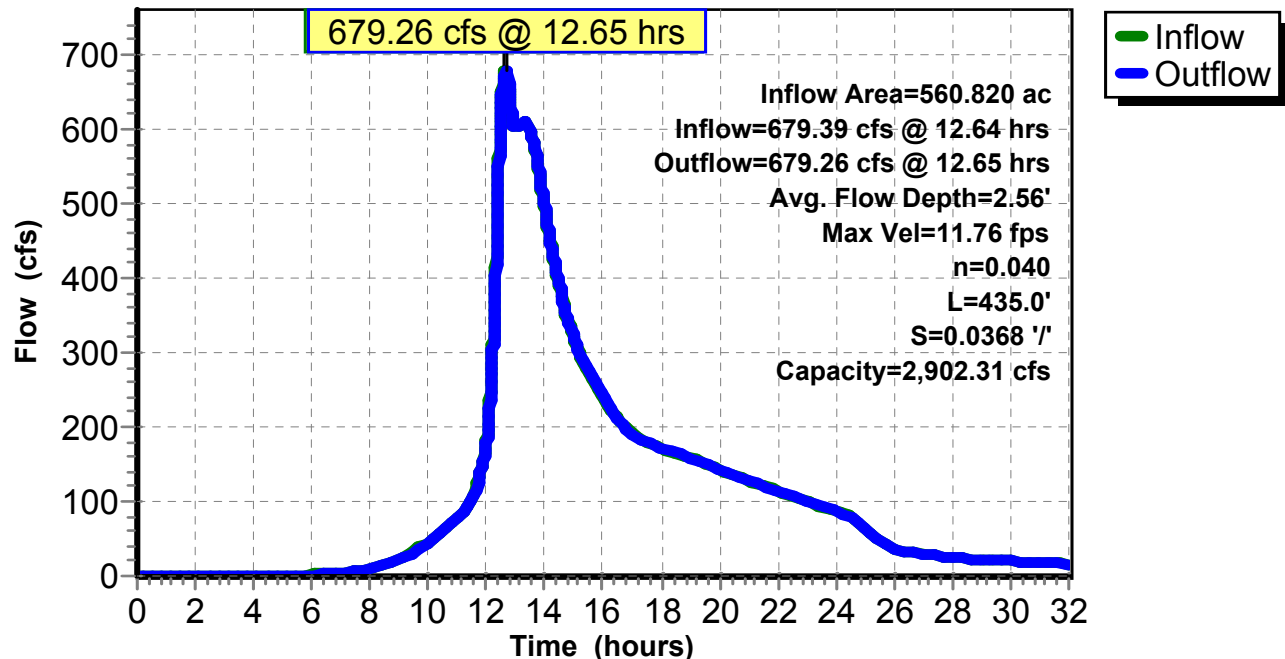
Peak Storage= 25,126 cf @ 12.65 hrs
Average Depth at Peak Storage= 2.56'
Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
Length= 435.0' Slope= 0.0368 ' / '
Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



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Avon PR
Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 6.07" for A100_24 event
 Inflow = 727.12 cfs @ 12.62 hrs, Volume= 294.561 af
 Outflow = 663.73 cfs @ 12.81 hrs, Volume= 294.558 af, Atten= 9%, Lag= 11.497 min
 Primary = 663.73 cfs @ 12.81 hrs, Volume= 294.558 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 80.74' @ 12.81 hrs Surf.Area= 0.647 ac Storage= 4.063 af

Plug-Flow detention time= 1.214 min calculated for 294.558 af (100% of inflow)
 Center-of-Mass det. time= 1.206 min (982.934 - 981.728)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

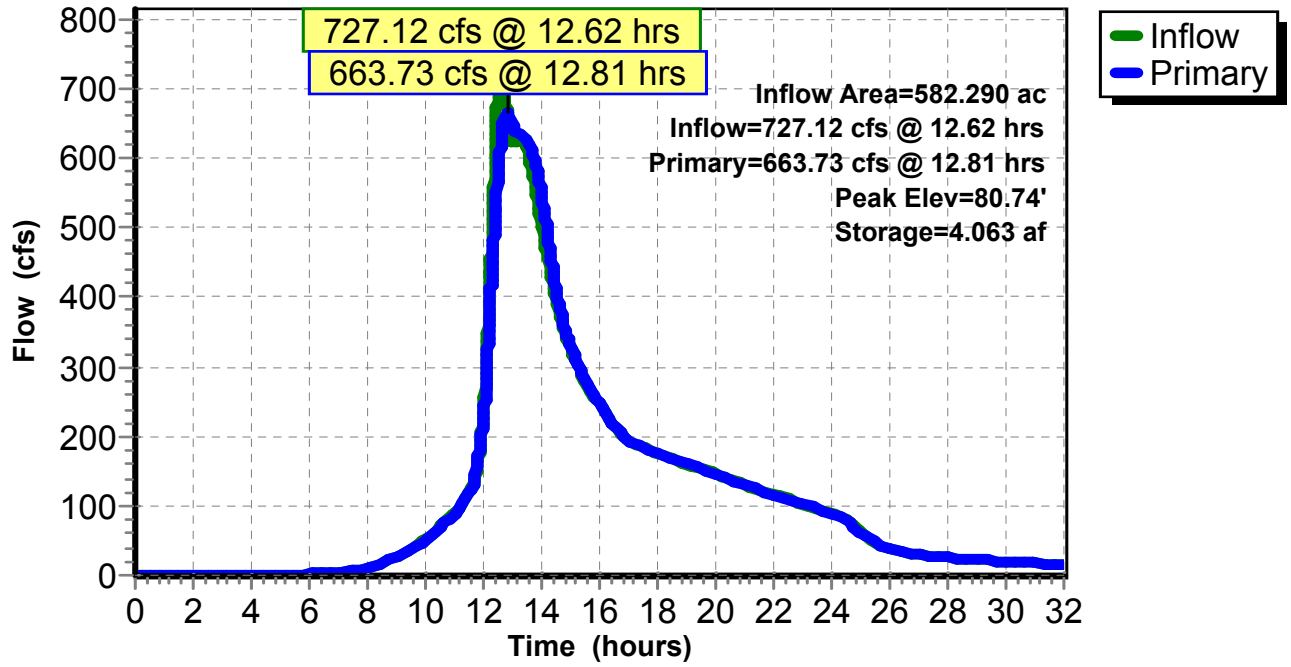
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=663.72 cfs @ 12.81 hrs HW=80.74' TW=67.19' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 347.93 cfs @ 17.72 fps)
- 2=Culvert 2 (Inlet Controls 315.79 cfs @ 16.08 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



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Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 5.84" for A100_24 event
Inflow = 481.68 cfs @ 13.38 hrs, Volume= 216.694 af
Outflow = 481.03 cfs @ 13.41 hrs, Volume= 216.445 af, Atten= 0%, Lag= 1.752 min
Primary = 481.03 cfs @ 13.41 hrs, Volume= 216.445 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 130.84' @ 13.42 hrs Surf.Area= 1.107 ac Storage= 2.937 af

Plug-Flow detention time= 8.005 min calculated for 216.377 af (100% of inflow)
Center-of-Mass det. time= 6.979 min (1,026.241 - 1,019.263)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

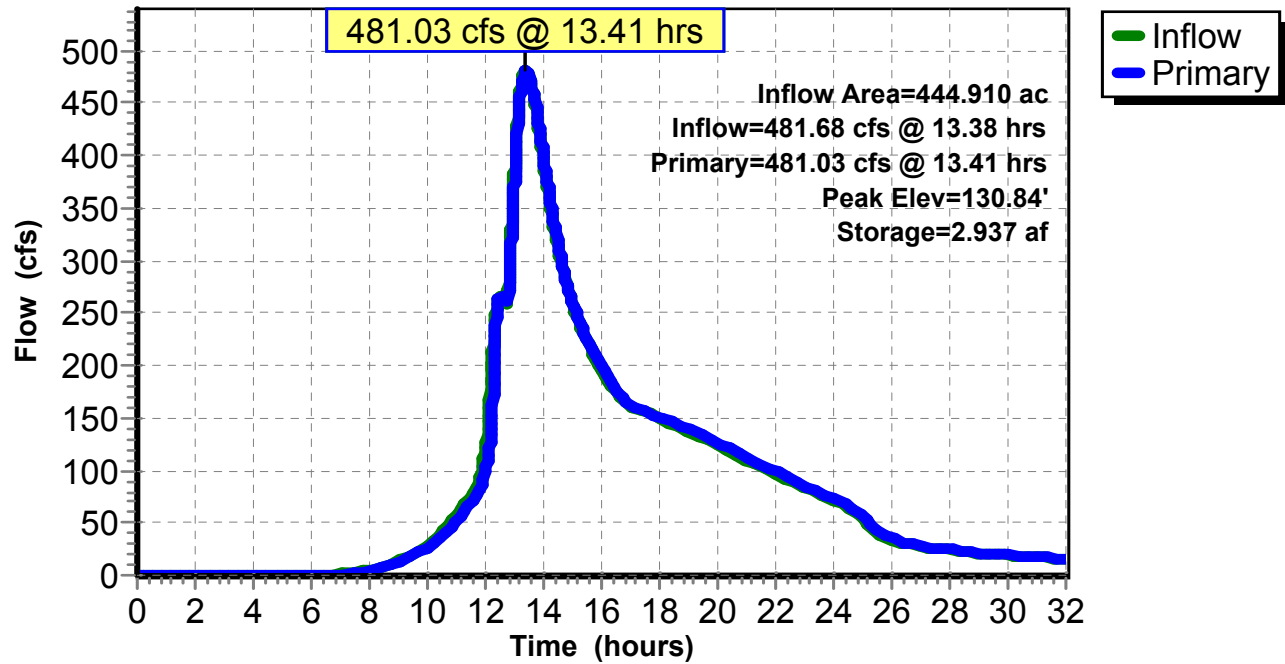
Primary OutFlow Max=481.02 cfs @ 13.41 hrs HW=130.84' TW=128.96' (Dynamic Tailwater)

1=Culvert (Inlet Controls 166.00 cfs @ 6.60 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 315.02 cfs @ 3.00 fps)

Pond 4A: DP 4 A ARGYLE

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Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 5.83" for A100_24 event
 Inflow = 745.61 cfs @ 12.81 hrs, Volume= 196.994 af
 Outflow = 452.22 cfs @ 13.40 hrs, Volume= 196.643 af, Atten= 39%, Lag= 35.344 min
 Primary = 452.22 cfs @ 13.40 hrs, Volume= 196.643 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 132.84' @ 13.40 hrs Surf.Area= 23.478 ac Storage= 36.143 af

Plug-Flow detention time= 59.521 min calculated for 196.581 af (100% of inflow)
 Center-of-Mass det. time= 57.847 min (1,036.547 - 978.700)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

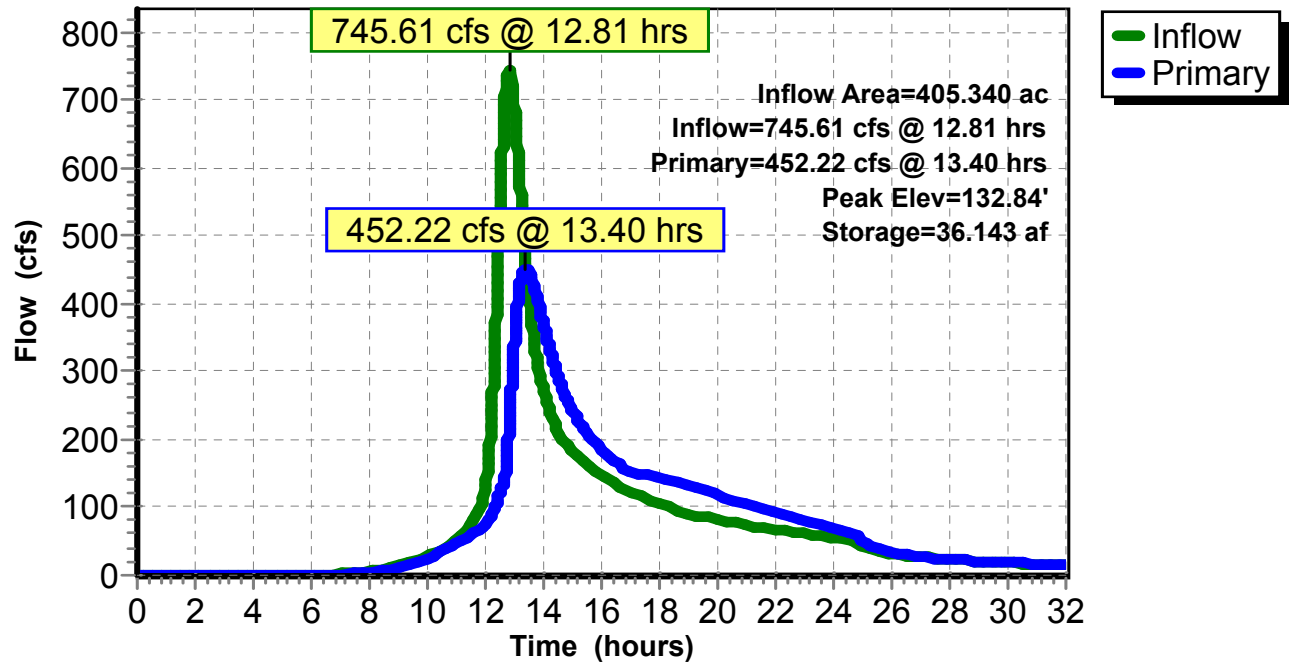
Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

Primary OutFlow Max=452.22 cfs @ 13.40 hrs HW=132.84' TW=131.89' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 117.99 cfs @ 4.69 fps)
- 2=Asymmetrical Weir (Weir Controls 334.23 cfs @ 2.38 fps)

Pond 5P: DP 5 BETSY BROWN ROAD

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Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 6.04" for A100_24 event
Inflow = 681.21 cfs @ 12.62 hrs, Volume= 282.272 af
Outflow = 679.39 cfs @ 12.64 hrs, Volume= 282.271 af, Atten= 0%, Lag= 1.333 min
Primary = 679.39 cfs @ 12.64 hrs, Volume= 282.271 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 91.55' @ 12.64 hrs Surf.Area= 1.370 ac Storage= 2.122 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.881 min (988.700 - 985.819)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

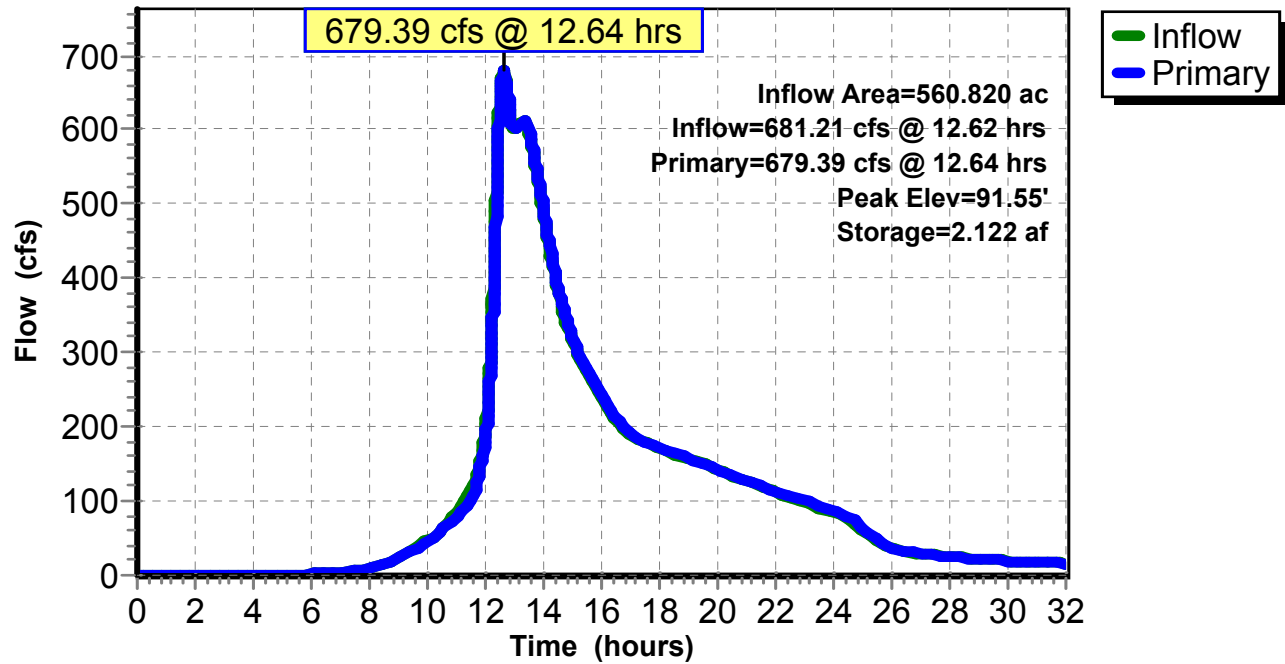
Primary OutFlow Max=679.35 cfs @ 12.64 hrs HW=91.55' TW=78.56' (Dynamic Tailwater)

1=Sharp-Crested Rectangular Weir (Weir Controls 210.55 cfs @ 5.66 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 468.80 cfs @ 3.38 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

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Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 6.26" for A100_24 event
 Inflow = 890.05 cfs @ 12.42 hrs, Volume= 373.068 af
 Outflow = 889.95 cfs @ 12.42 hrs, Volume= 371.378 af, Atten= 0%, Lag= 0.340 min
 Primary = 889.95 cfs @ 12.42 hrs, Volume= 371.378 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 40.24' @ 12.42 hrs Surf.Area= 1.191 ac Storage= 1.925 af

Plug-Flow detention time= 7.162 min calculated for 371.378 af (100% of inflow)
 Center-of-Mass det. time= 2.944 min (951.473 - 948.530)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

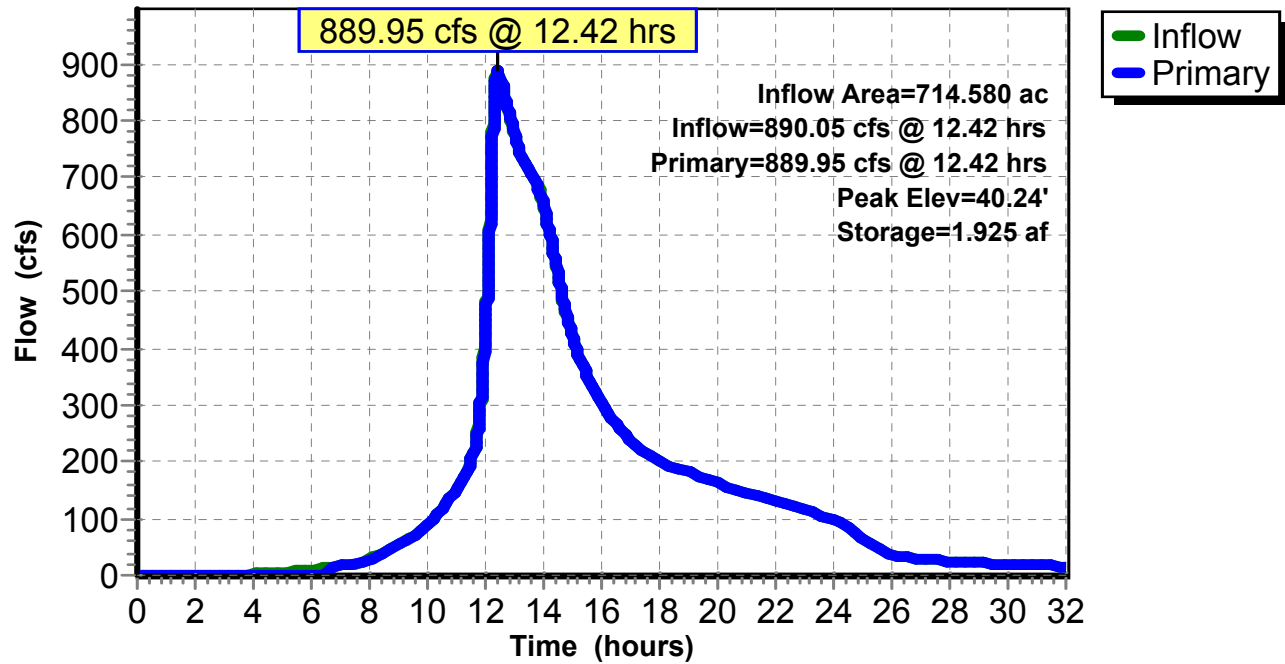
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=889.91 cfs @ 12.42 hrs HW=40.24' TW=40.00' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 323.39 cfs @ 2.35 fps)
- 2=WEIR BOWMAN (Weir Controls 566.52 cfs @ 1.76 fps)

Pond 8P: BOWMAN FIELDS

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Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 5.88" for A100_24 event
 Inflow = 388.56 cfs @ 12.59 hrs, Volume= 59.365 af
 Outflow = 388.06 cfs @ 12.60 hrs, Volume= 59.364 af, Atten= 0%, Lag= 0.479 min
 Primary = 388.06 cfs @ 12.60 hrs, Volume= 59.364 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 135.16' @ 12.64 hrs Surf.Area= 0.225 ac Storage= 0.277 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.388 min (846.714 - 846.326)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

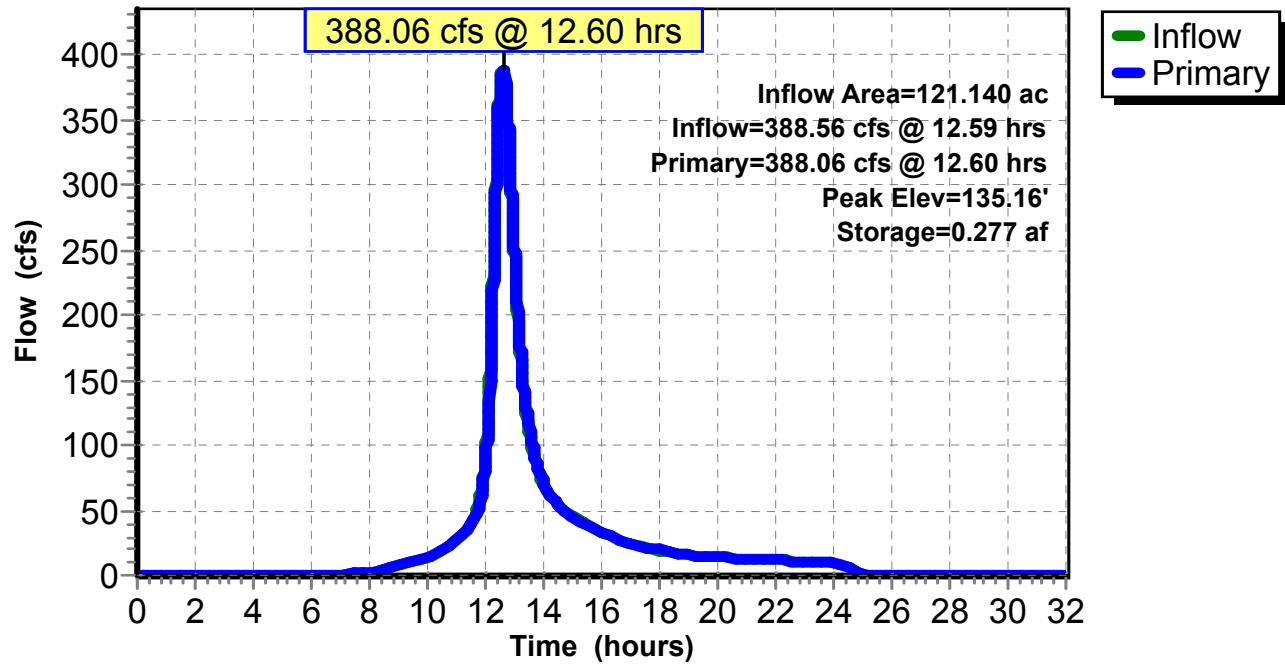
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=388.04 cfs @ 12.60 hrs HW=135.16' TW=133.85' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 38.95 cfs @ 5.51 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 76.90 cfs @ 4.93 fps)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 272.18 cfs @ 2.65 fps)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Hydrograph



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Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 6.77" for A100_24 event
 Inflow = 670.66 cfs @ 12.50 hrs, Volume= 94.119 af
 Outflow = 666.08 cfs @ 12.52 hrs, Volume= 92.226 af, Atten= 1%, Lag= 1.511 min
 Primary = 666.08 cfs @ 12.52 hrs, Volume= 92.226 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.78' @ 12.52 hrs Surf.Area= 4.292 ac Storage= 7.764 af (4.796 af above start)

Plug-Flow detention time= 50.147 min calculated for 89.231 af (95% of inflow)
 Center-of-Mass det. time= 12.886 min (835.965 - 823.078)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

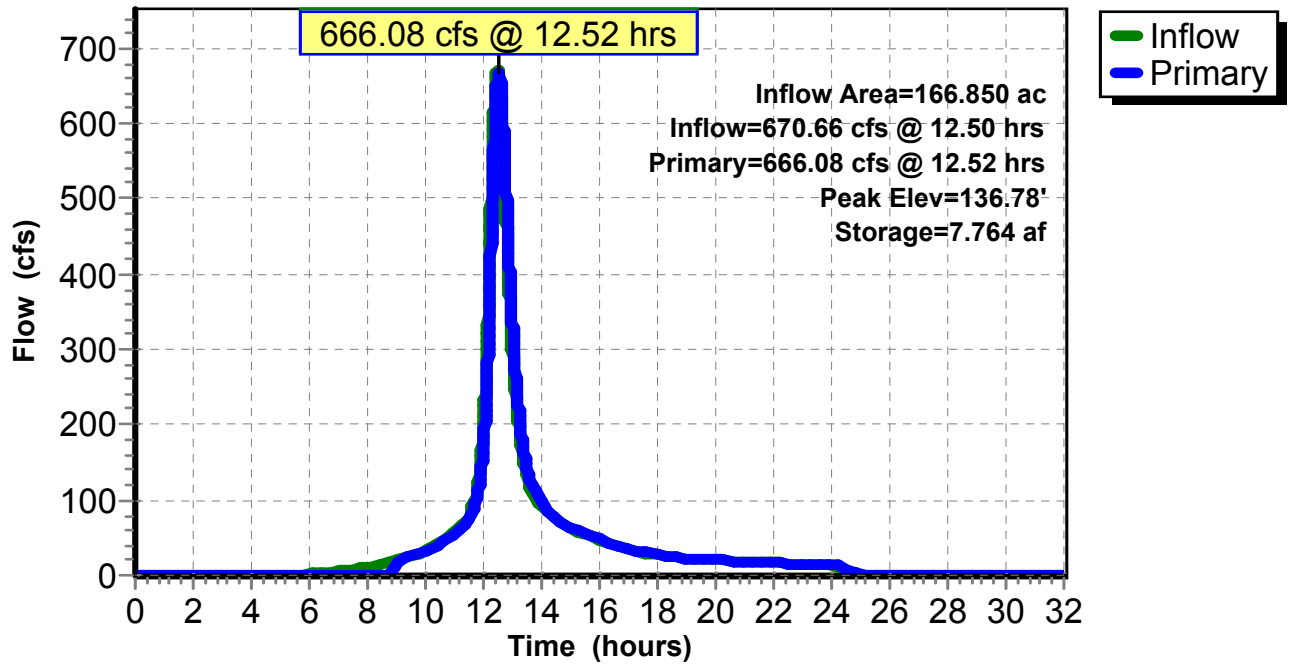
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=665.97 cfs @ 12.52 hrs HW=136.78' TW=131.87' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 4.43 cfs @ 3.01 fps)
- 2=Asymmetrical Weir (Weir Controls 661.54 cfs @ 2.44 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

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Summary for Pond 24P: RAINSTORE WHOLE FIELD

Inflow = 405.62 cfs @ 12.83 hrs, Volume= 73.676 af
 Outflow = 370.34 cfs @ 13.54 hrs, Volume= 73.677 af, Atten= 9%, Lag= 42.745 min
 Discarded = 9.68 cfs @ 12.19 hrs, Volume= 7.127 af
 Primary = 107.67 cfs @ 13.54 hrs, Volume= 24.216 af
 Secondary = 252.99 cfs @ 13.54 hrs, Volume= 42.333 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 42.09' @ 13.54 hrs Surf.Area= 209,016 sf Storage= 620,291 cf

Plug-Flow detention time= 41.862 min calculated for 73.654 af (100% of inflow)
 Center-of-Mass det. time= 41.929 min (857.268 - 815.339)

Volume	Invert	Avail.Storage	Storage Description
#1	39.00'	2,608,520 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 2,717,208 cf Overall x 96.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
39.00	209,016	0	0
52.00	209,016	2,717,208	2,717,208

Device	Routing	Invert	Outlet Devices
#1	Secondary	40.00'	26.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Discarded	39.00'	2.000 in/hr Exfiltration over Surface area
#3	Primary	39.00'	42.0" Vert. Orifice/Grate X 2.00 C= 0.600

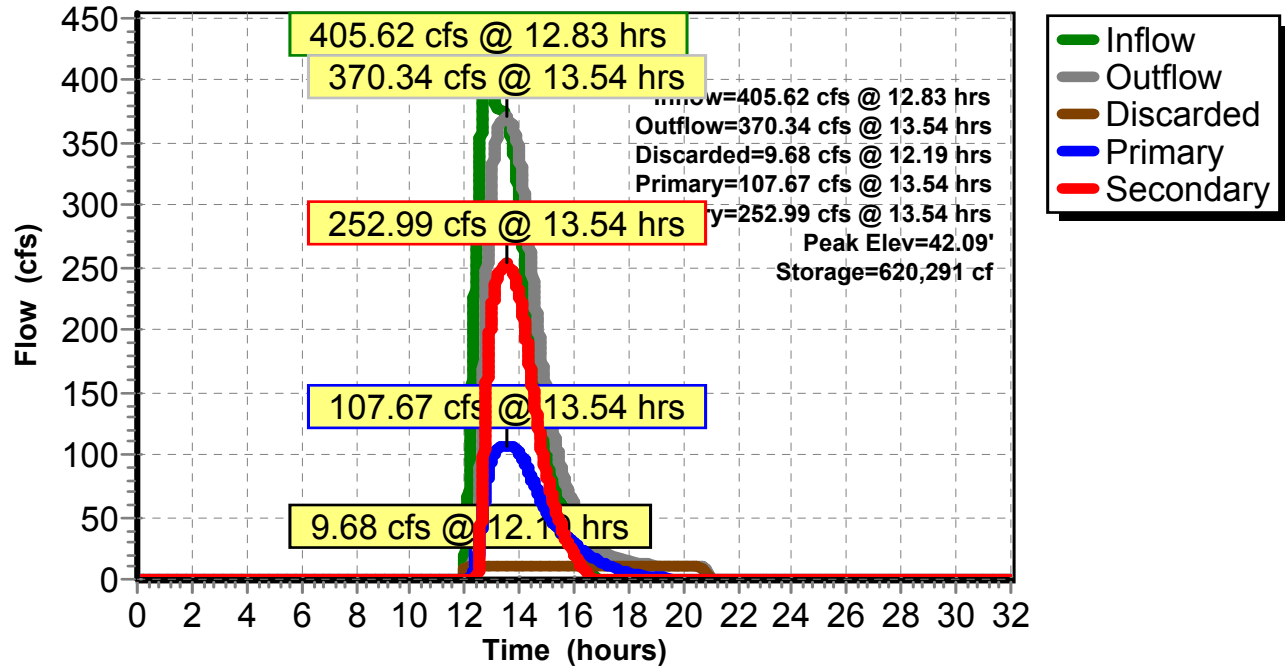
Discarded OutFlow Max=9.68 cfs @ 12.19 hrs HW=39.14' (Free Discharge)
 ↑**2=Exfiltration** (Exfiltration Controls 9.68 cfs)

Primary OutFlow Max=107.66 cfs @ 13.54 hrs HW=42.09' TW=0.00' (Dynamic Tailwater)
 ↑**3=Orifice/Grate** (Orifice Controls 107.66 cfs @ 5.99 fps)

Secondary OutFlow Max=252.99 cfs @ 13.54 hrs HW=42.09' TW=0.00' (Dynamic Tailwater)
 ↑**1=Sharp-Crested Rectangular Weir**(Weir Controls 252.99 cfs @ 4.73 fps)

Pond 24P: RAINSTORE WHOLE FIELD

Hydrograph



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Summary for Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 4.87" for A100_24 event
Inflow = 595.03 cfs @ 12.40 hrs, Volume= 266.010 af
Outflow = 595.03 cfs @ 12.40 hrs, Volume= 266.010 af, Atten= 0%, Lag= 0.000 min
Primary = 444.30 cfs @ 12.40 hrs, Volume= 233.619 af
Secondary = 150.73 cfs @ 12.40 hrs, Volume= 32.391 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 46.07' @ 12.40 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 110.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0009 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48
#3	Secondary	40.25'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 40.25' / 39.75' S= 0.0037 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf

Primary OutFlow Max=444.23 cfs @ 12.40 hrs HW=46.06' TW=0.00' (Dynamic Tailwater)

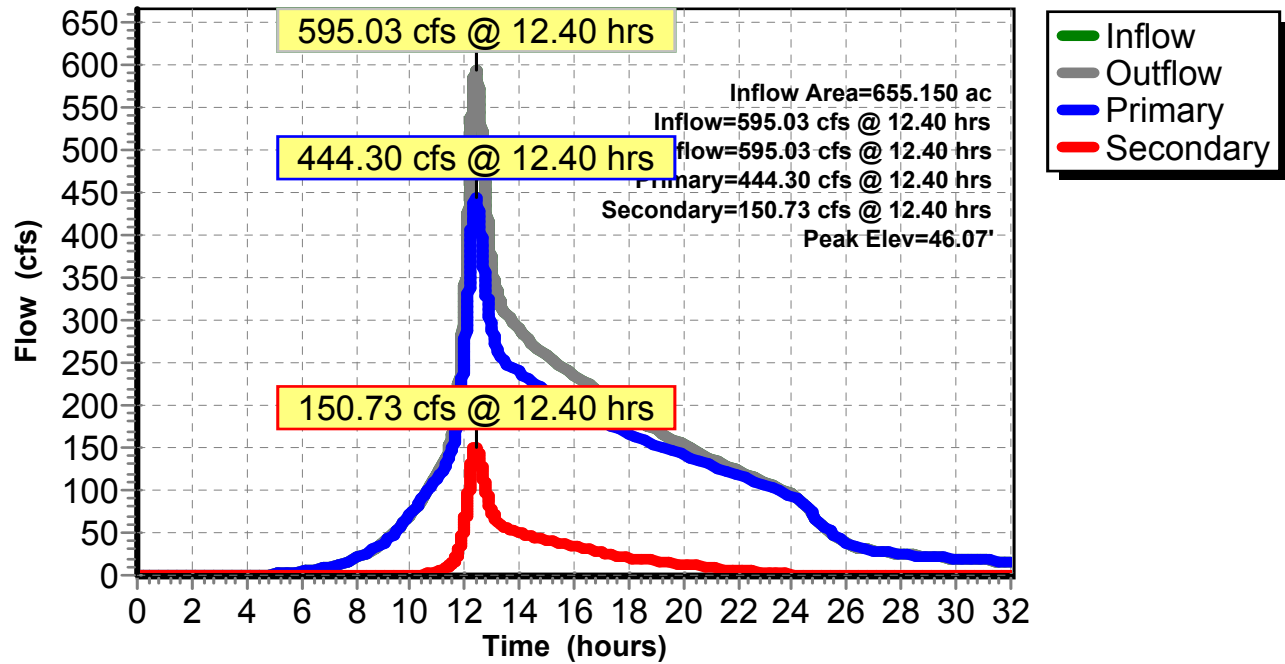
↑1=Culvert (Barrel Controls 444.23 cfs @ 11.39 fps)
↑2=WEIR WESTCH AVE (Controls 0.00 cfs)

Secondary OutFlow Max=150.69 cfs @ 12.40 hrs HW=46.06' TW=0.00' (Dynamic Tailwater)

↑3=Culvert (Barrel Controls 150.69 cfs @ 8.29 fps)

Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

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Summary for Pond 41P: UPSTREAM AVON

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 6.07" for A100_24 event
Inflow = 663.73 cfs @ 12.81 hrs, Volume= 294.558 af
Outflow = 663.60 cfs @ 12.83 hrs, Volume= 294.552 af, Atten= 0%, Lag= 0.834 min
Primary = 257.98 cfs @ 12.83 hrs, Volume= 220.876 af
Secondary = 261.48 cfs @ 12.83 hrs, Volume= 52.834 af
Tertiary = 144.14 cfs @ 12.83 hrs, Volume= 20.842 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 67.19' @ 12.83 hrs Surf.Area= 10,112 sf Storage= 34,763 cf

Plug-Flow detention time= 0.652 min calculated for 294.460 af (100% of inflow)
Center-of-Mass det. time= 0.633 min (983.567 - 982.934)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	83,358 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686
70.00	10,112	40,448	63,134
72.00	10,112	20,224	83,358

Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert L= 947.0' Ke= 0.700 Inlet / Outlet Invert= 55.13' / 37.90' S= 0.0182 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Tertiary	65.00'	14.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Secondary	63.50'	12.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

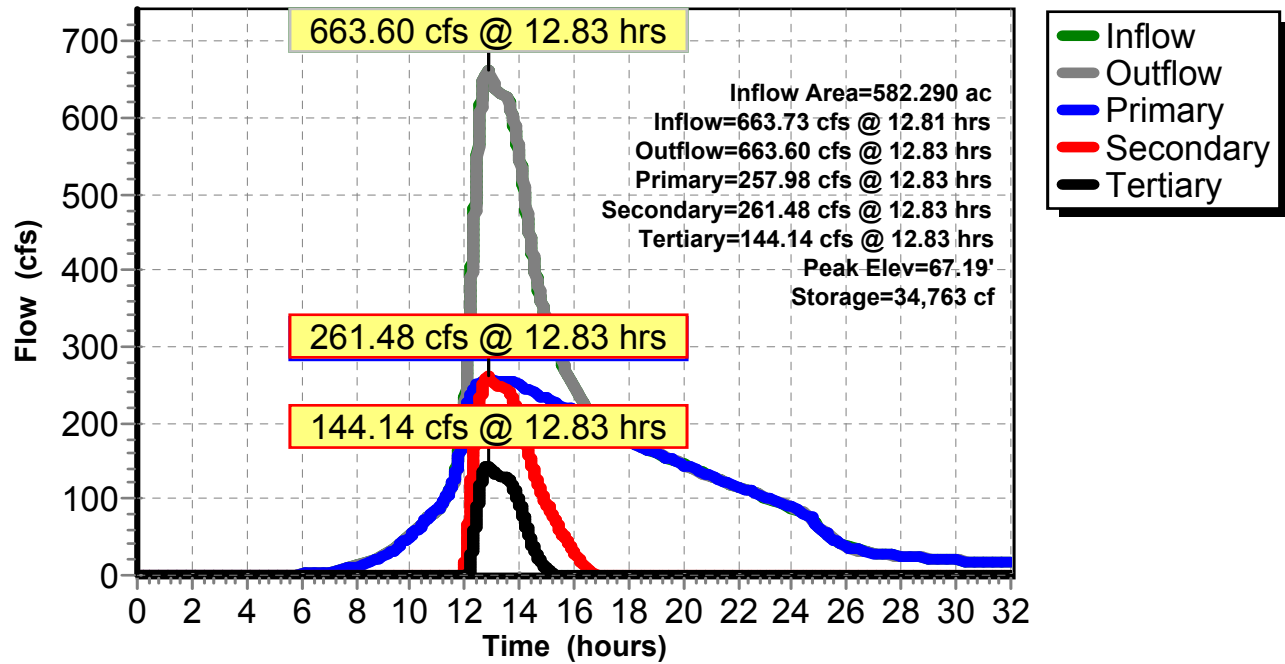
Primary OutFlow Max=257.98 cfs @ 12.83 hrs HW=67.19' TW=0.00' (Dynamic Tailwater)
↑1=Culvert (Inlet Controls 257.98 cfs @ 13.14 fps)

Secondary OutFlow Max=261.47 cfs @ 12.83 hrs HW=67.19' TW=59.53' (Dynamic Tailwater)
↑3=Sharp-Crested Rectangular Weir (Weir Controls 261.47 cfs @ 6.29 fps)

Tertiary OutFlow Max=144.14 cfs @ 12.83 hrs HW=67.19' TW=59.26' (Dynamic Tailwater)
↑2=Sharp-Crested Rectangular Weir (Weir Controls 144.14 cfs @ 4.84 fps)

Pond 41P: UPSTREAM AVON

Hydrograph



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Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Pond 42P: CHAMBER

Inflow = 144.14 cfs @ 12.83 hrs, Volume= 20.842 af
Outflow = 144.14 cfs @ 12.83 hrs, Volume= 20.842 af, Atten= 0%, Lag= 0.000 min
Primary = 144.14 cfs @ 12.83 hrs, Volume= 20.842 af

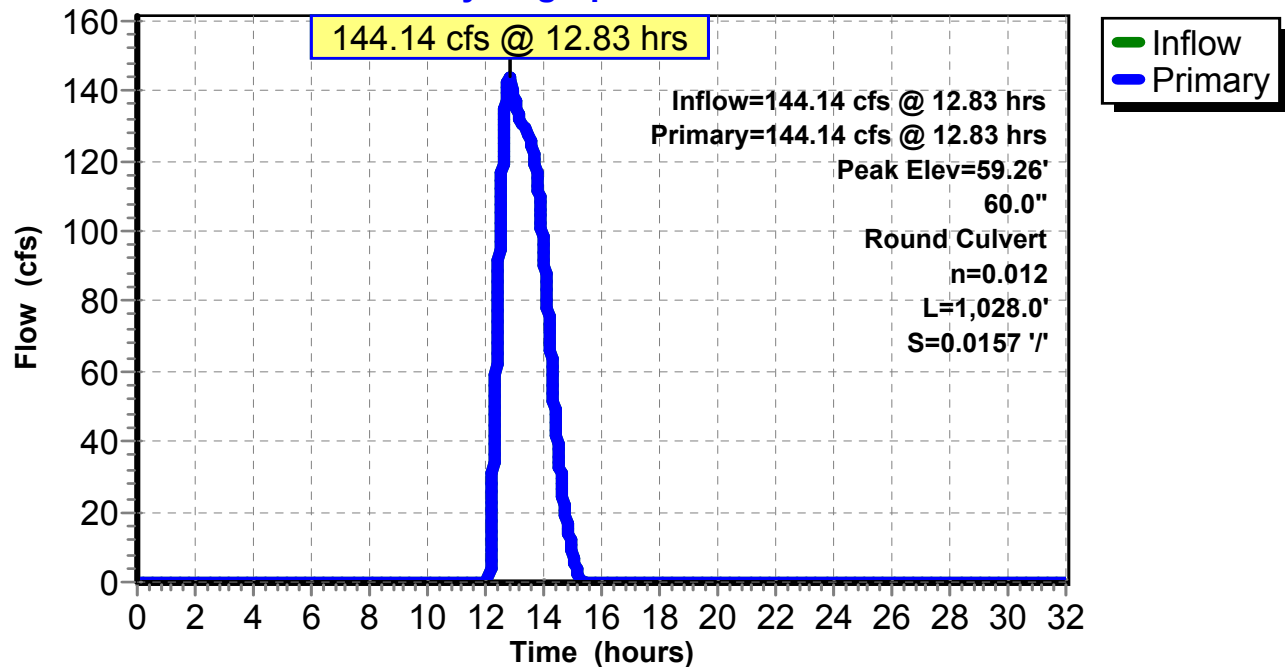
Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 59.26' @ 12.83 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert L= 1,028.0' Ke= 0.250 Inlet / Outlet Invert= 55.13' / 39.00' S= 0.0157 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf

Primary OutFlow Max=144.14 cfs @ 12.83 hrs HW=59.26' TW=0.00' (Dynamic Tailwater)
↑1=Culvert (Inlet Controls 144.14 cfs @ 8.31 fps)

Pond 42P: CHAMBER

Hydrograph



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Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Pond 43P: DUAL 60" CULVERTS

Inflow = 261.48 cfs @ 12.83 hrs, Volume= 52.834 af
Outflow = 261.48 cfs @ 12.83 hrs, Volume= 52.834 af, Atten= 0%, Lag= 0.000 min
Primary = 261.48 cfs @ 12.83 hrs, Volume= 52.834 af

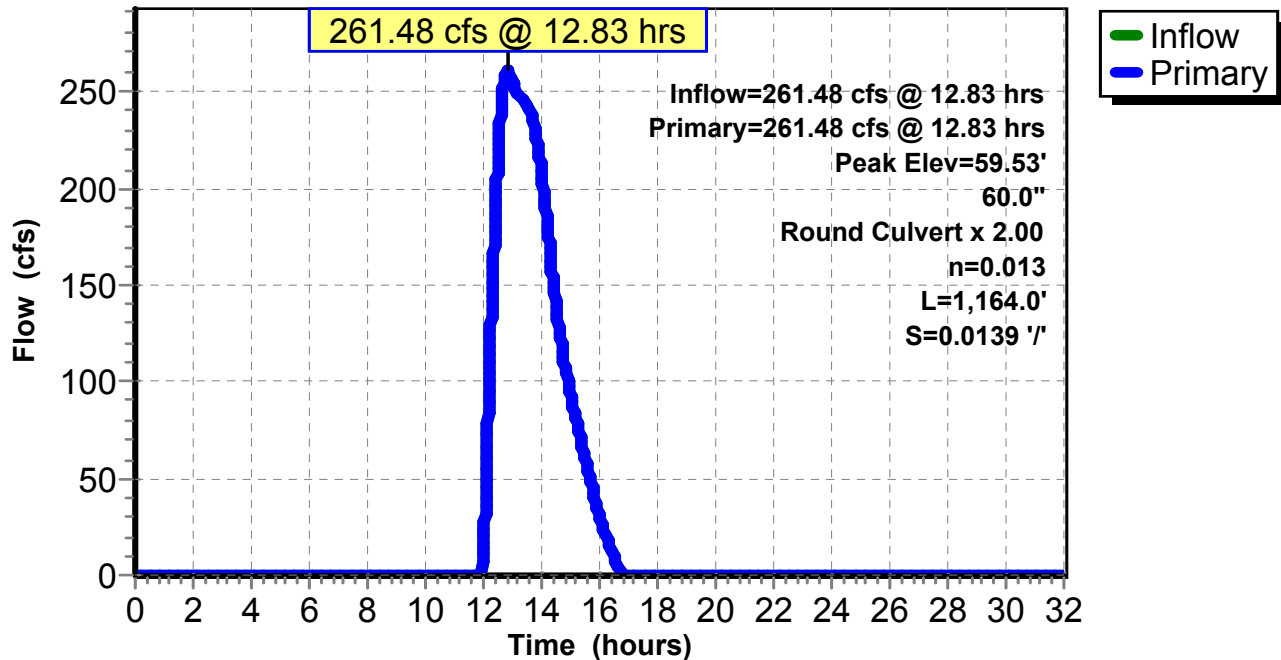
Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 59.53' @ 12.83 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert X 2.00 L= 1,164.0' Ke= 0.500 Inlet / Outlet Invert= 55.13' / 39.00' S= 0.0139 '/ Cc= 0.900 n= 0.013, Flow Area= 19.63 sf

Primary OutFlow Max=261.47 cfs @ 12.83 hrs HW=59.53' TW=0.00' (Dynamic Tailwater)
↑1=Culvert (Inlet Controls 261.47 cfs @ 7.14 fps)

Pond 43P: DUAL 60" CULVERTS

Hydrograph



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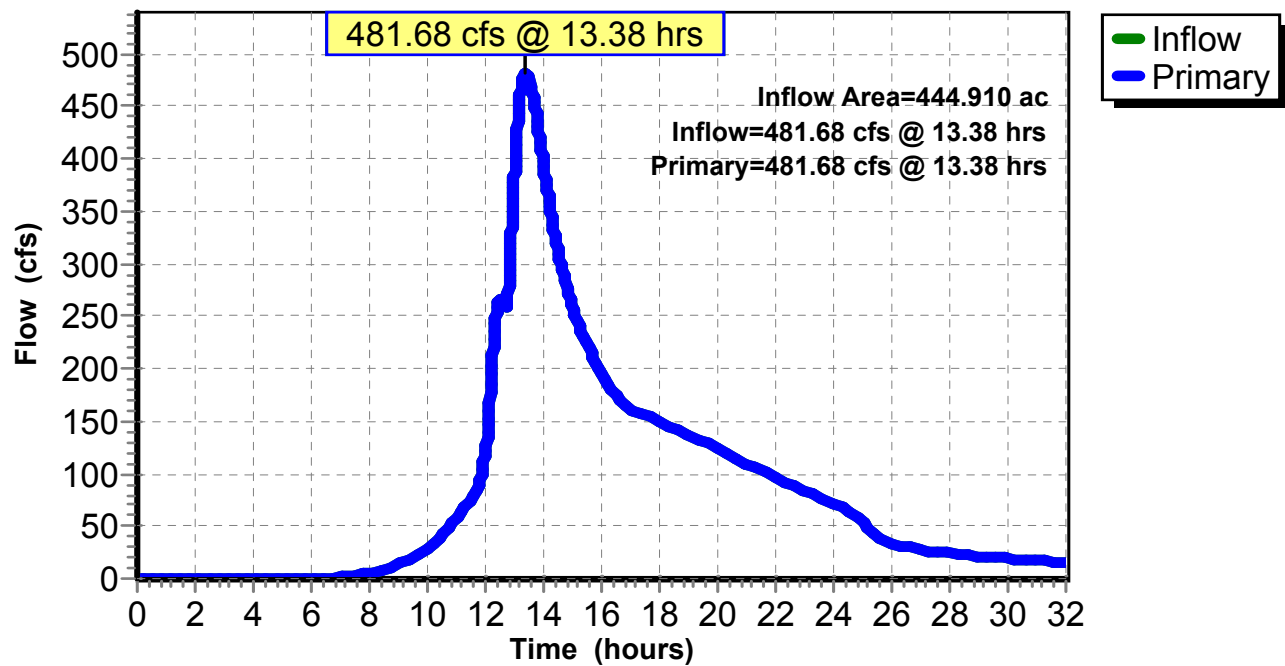
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 5.84" for A100_24 event
Inflow = 481.68 cfs @ 13.38 hrs, Volume= 216.694 af
Primary = 481.68 cfs @ 13.38 hrs, Volume= 216.694 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



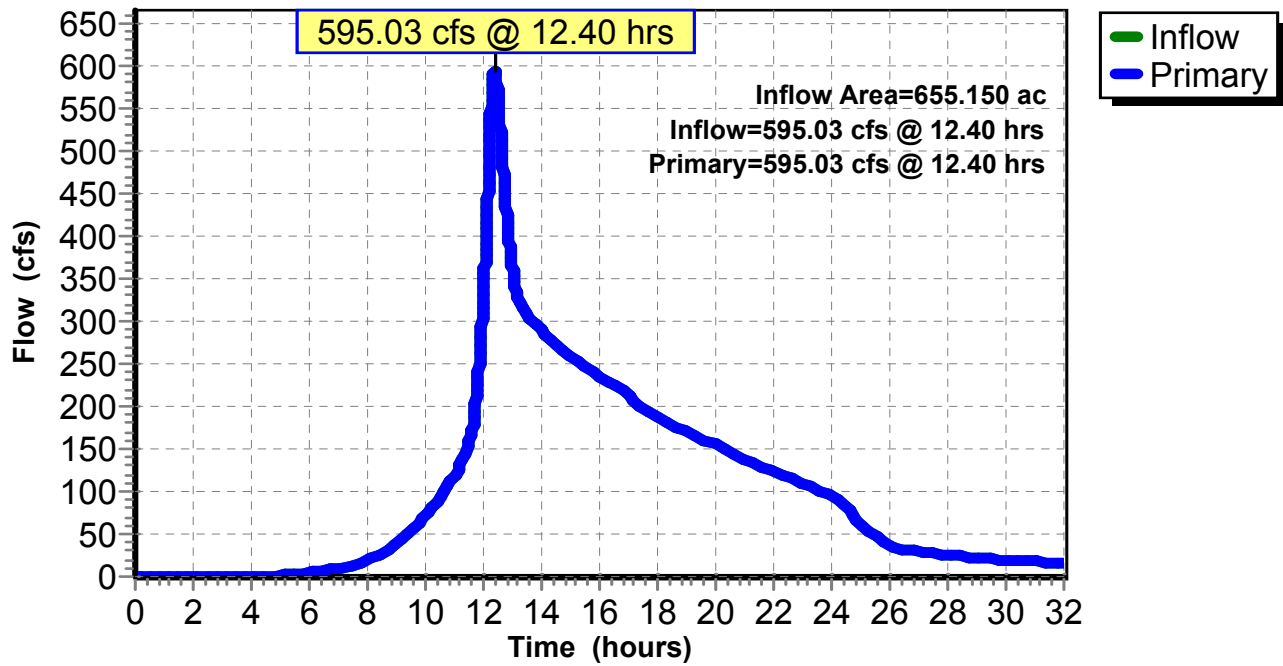
Summary for Link 33L: JUNCTION

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 4.87" for A100_24 event
Inflow = 595.03 cfs @ 12.40 hrs, Volume= 266.010 af
Primary = 595.03 cfs @ 12.40 hrs, Volume= 266.010 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 33L: JUNCTION

Hydrograph



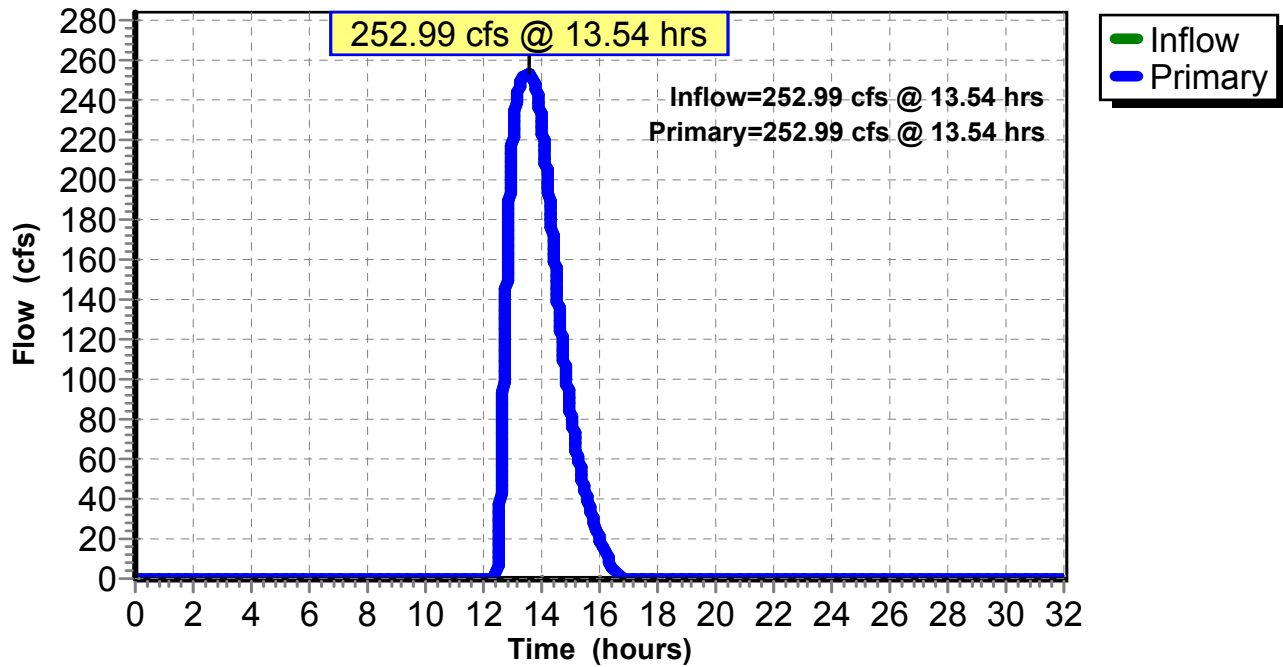
Summary for Link 36L: weir

Inflow = 252.99 cfs @ 13.54 hrs, Volume= 42.333 af
Primary = 252.99 cfs @ 13.54 hrs, Volume= 42.333 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 36L: weir

Hydrograph



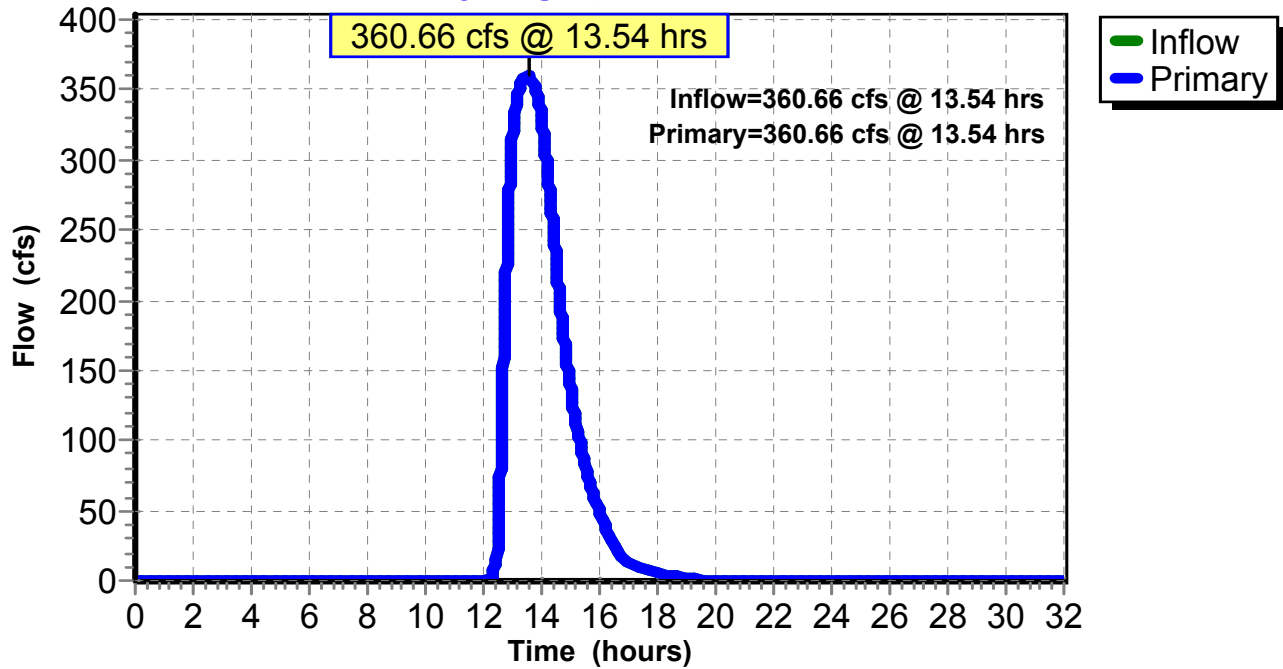
Summary for Link 37L: orifice

Inflow = 360.66 cfs @ 13.54 hrs, Volume= 66.549 af
Primary = 360.66 cfs @ 13.54 hrs, Volume= 66.549 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 37L: orifice

Hydrograph



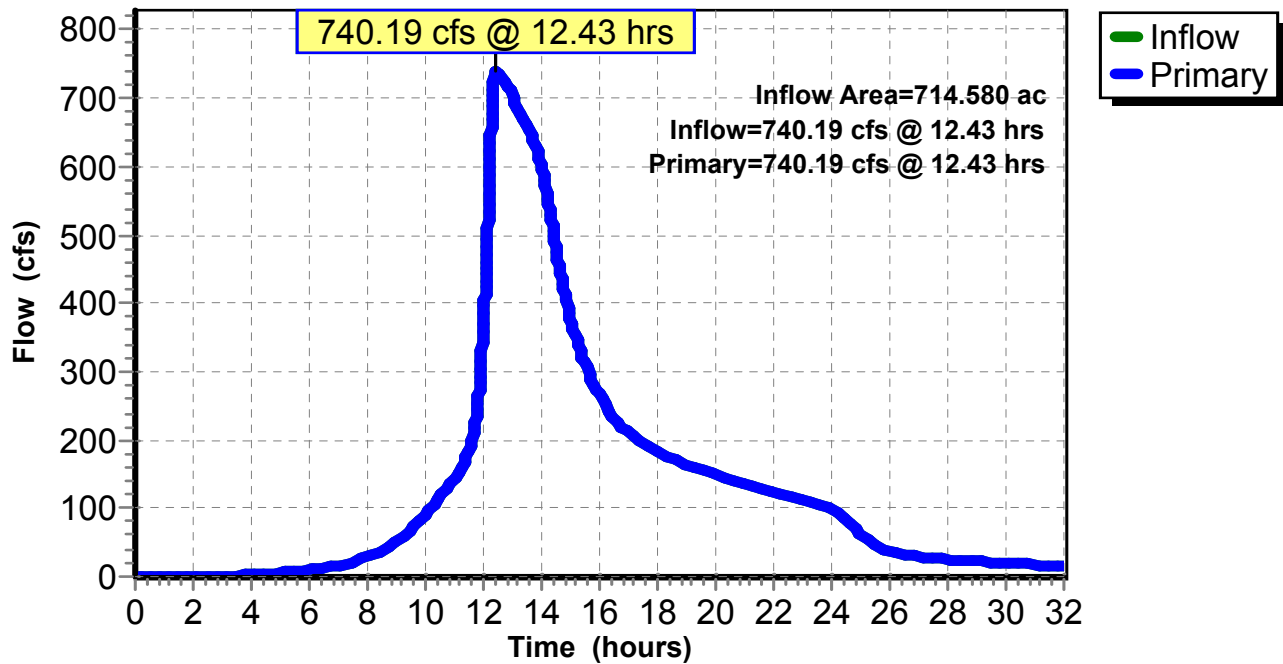
Summary for Link 38L: JUNCTION

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 5.72" for A100_24 event
Inflow = 740.19 cfs @ 12.43 hrs, Volume= 340.677 af
Primary = 740.19 cfs @ 12.43 hrs, Volume= 340.677 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 38L: JUNCTION

Hydrograph



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Type III 24-hr A100_24 Rainfall=9.02"

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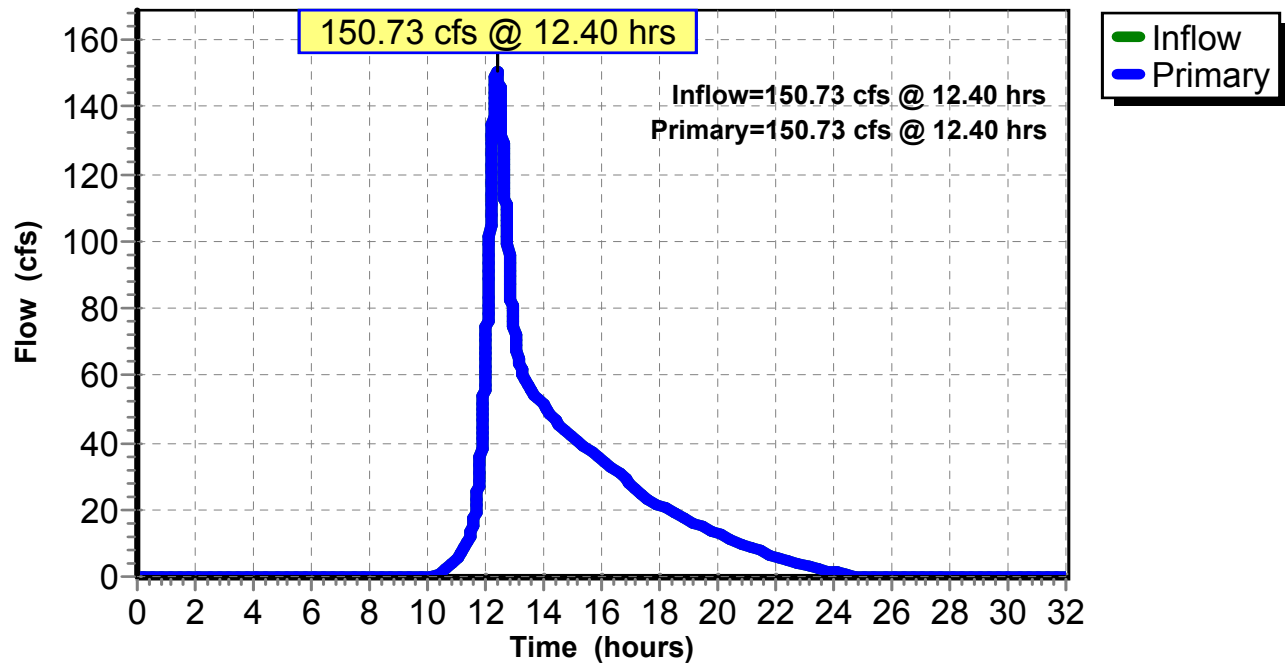
Summary for Link 41L: X

Inflow = 150.73 cfs @ 12.40 hrs, Volume= 32.391 af
Primary = 150.73 cfs @ 12.40 hrs, Volume= 32.391 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 41L: X

Hydrograph



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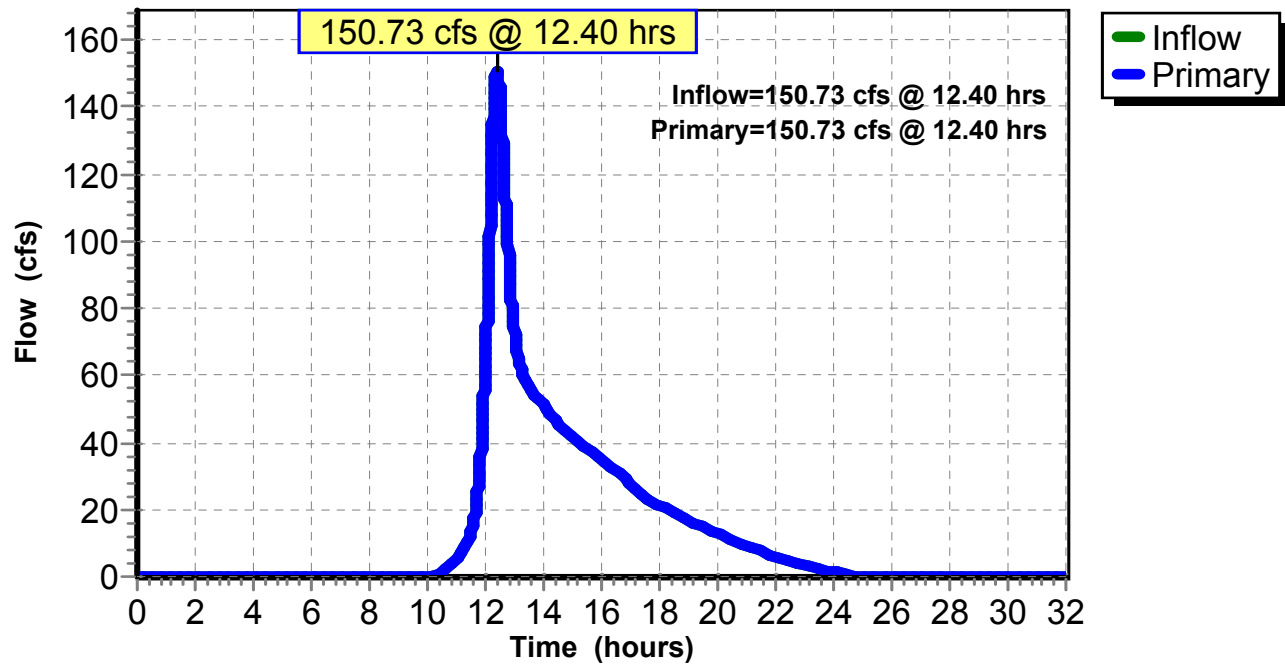
Summary for Link 42L: X

Inflow = 150.73 cfs @ 12.40 hrs, Volume= 32.391 af
Primary = 150.73 cfs @ 12.40 hrs, Volume= 32.391 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 42L: X

Hydrograph



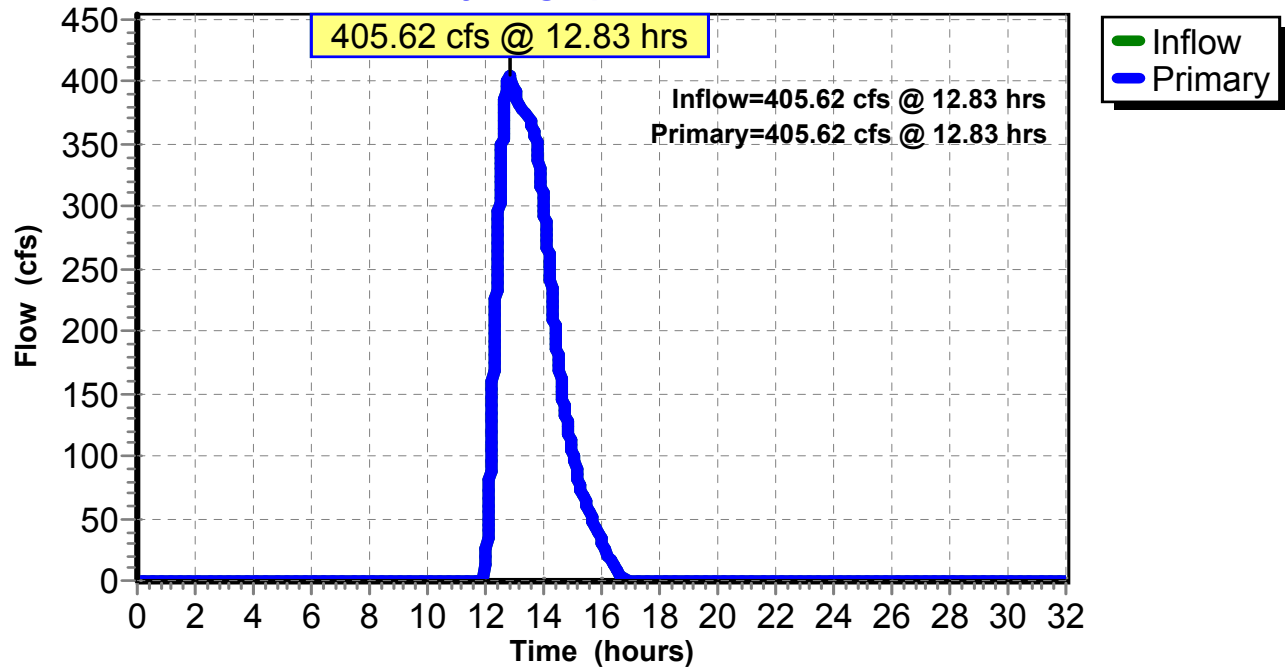
Summary for Link 51L: JUNCTION

Inflow = 405.62 cfs @ 12.83 hrs, Volume= 73.676 af
Primary = 405.62 cfs @ 12.83 hrs, Volume= 73.676 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 51L: JUNCTION

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Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Link FIN: FINAL

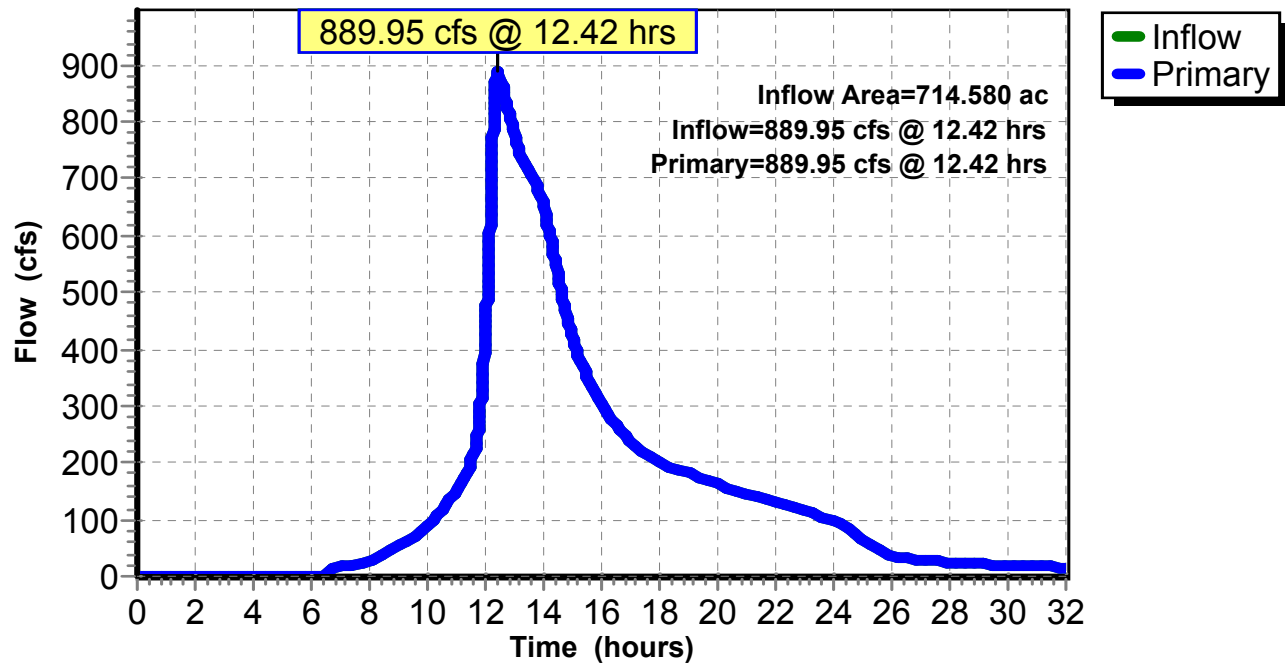
Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 6.24" for A100_24 event
Inflow = 889.95 cfs @ 12.42 hrs, Volume= 371.378 af
Primary = 889.95 cfs @ 12.42 hrs, Volume= 371.378 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 40.00'

Link FIN: FINAL

Hydrograph



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Type III 6-hr A100_6 Rainfall=6.11"

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Summary for Subcatchment A: WS A

Runoff = 265.65 cfs @ 3.42 hrs, Volume= 26.222 af, Depth= 5.29"

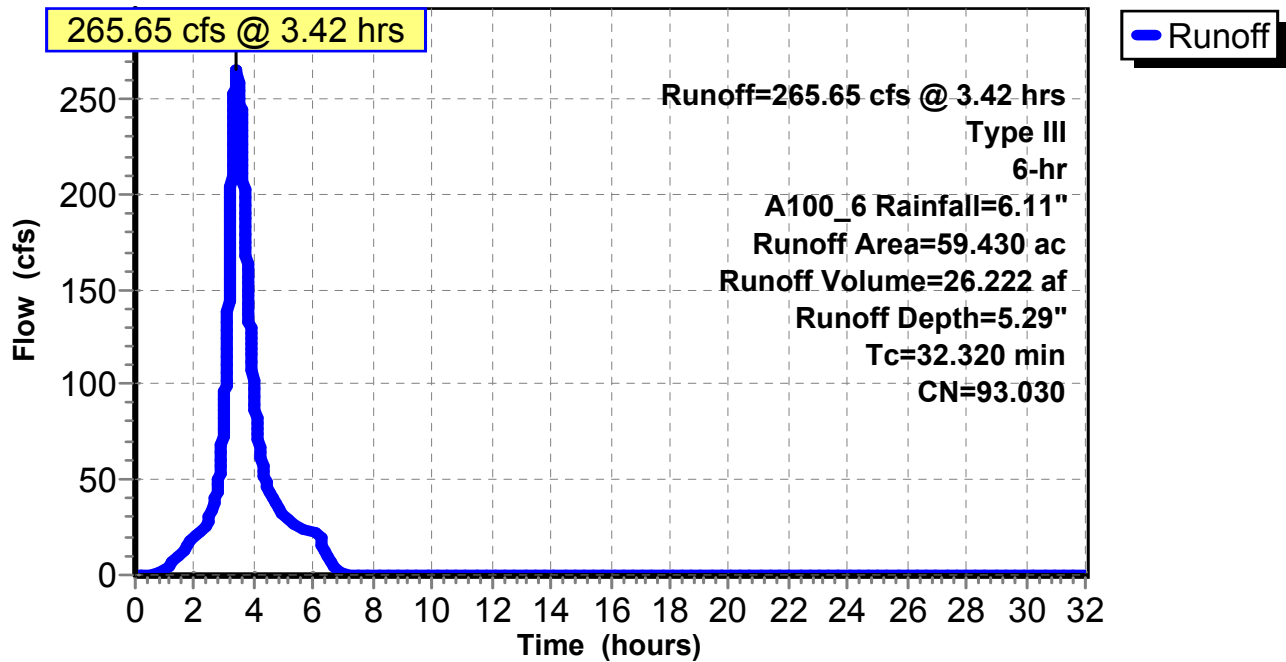
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr A100_6 Rainfall=6.11"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



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Summary for Subcatchment B: WS B

Runoff = 247.98 cfs @ 3.38 hrs, Volume= 22.225 af, Depth= 4.63"

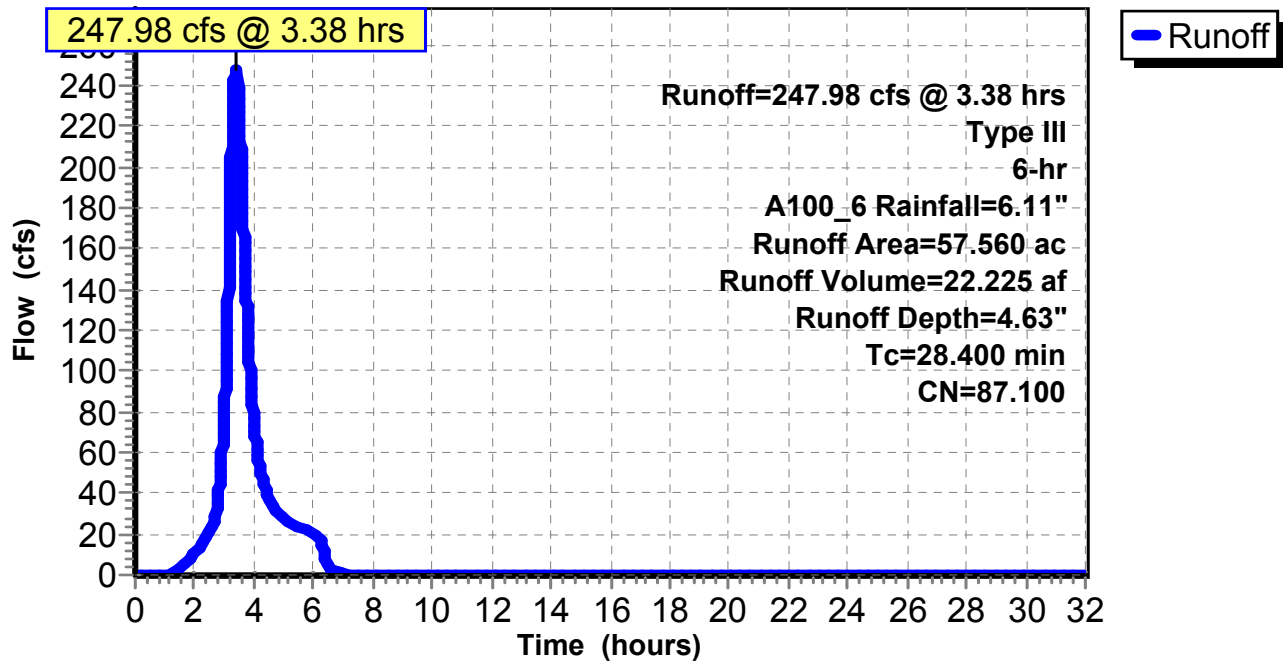
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr A100_6 Rainfall=6.11"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



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Type III 6-hr A100_6 Rainfall=6.11"

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Summary for Subcatchment BH: HOTEL

Runoff = 62.64 cfs @ 3.42 hrs, Volume= 5.777 af, Depth= 4.53"

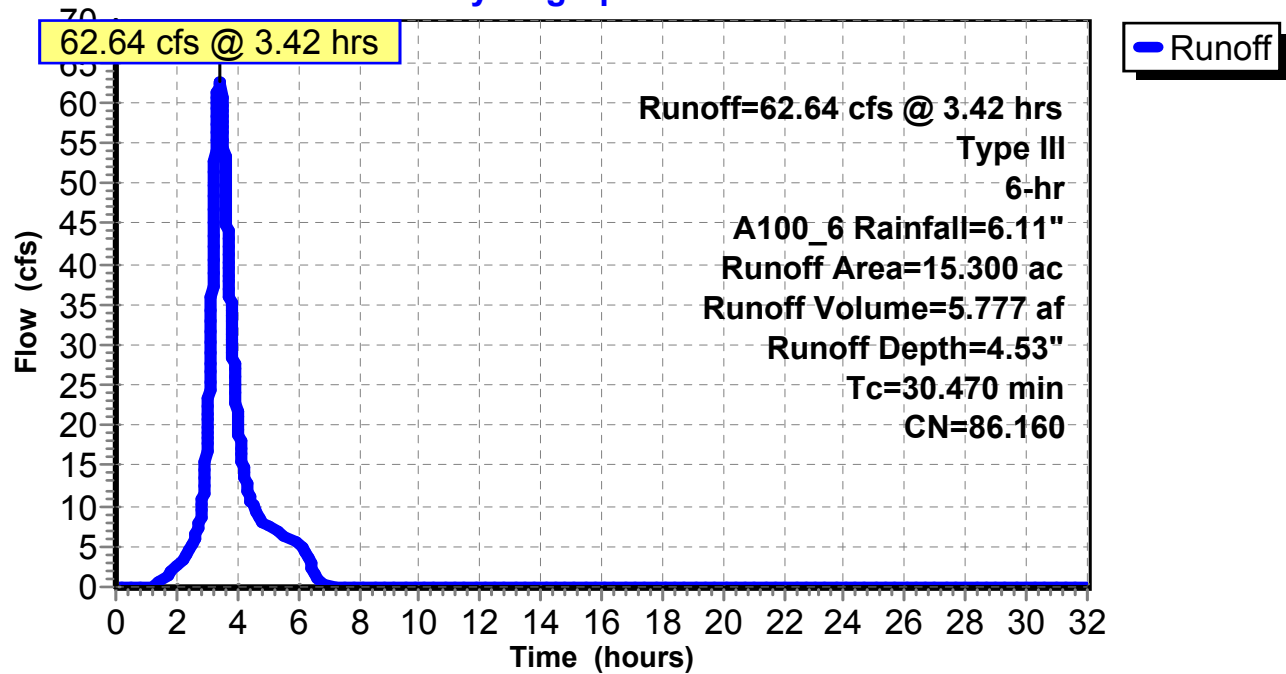
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr A100_6 Rainfall=6.11"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



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Type III 6-hr A100_6 Rainfall=6.11"

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Summary for Subcatchment C: WS C

Runoff = 100.73 cfs @ 3.25 hrs, Volume= 7.416 af, Depth= 4.15"

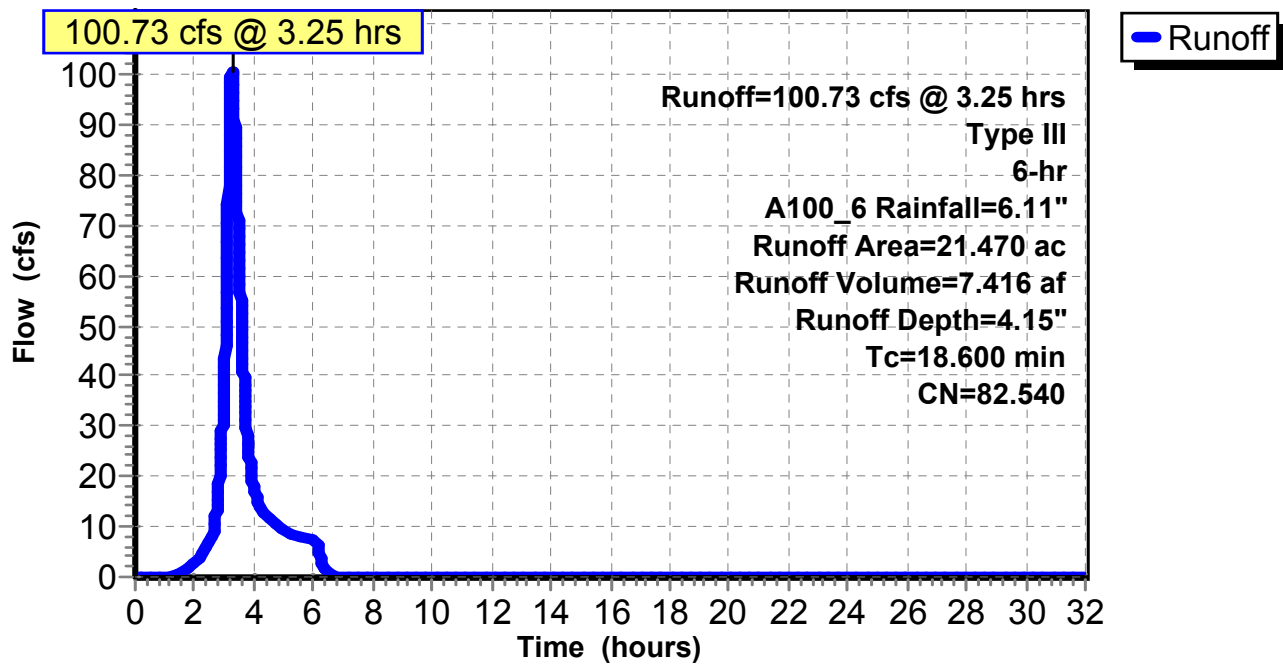
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr A100_6 Rainfall=6.11"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



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Type III 6-hr A100_6 Rainfall=6.11"

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Summary for Subcatchment D: WS D

Runoff = 355.20 cfs @ 3.62 hrs, Volume= 39.693 af, Depth= 4.11"

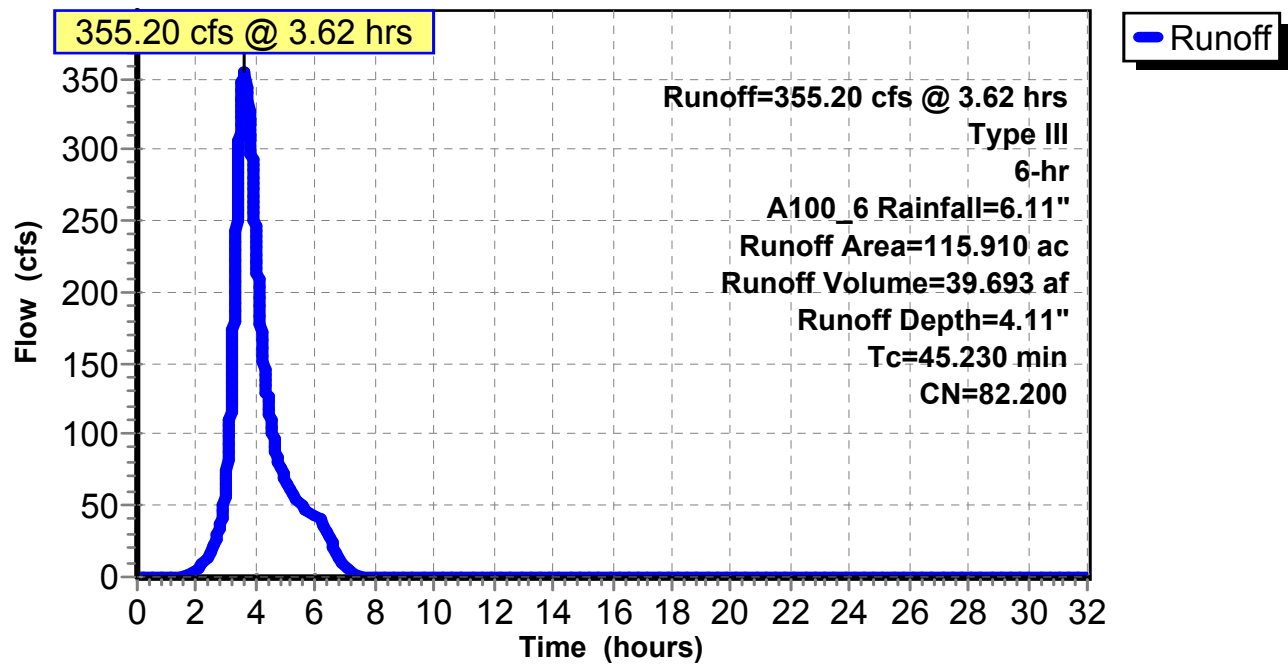
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr A100_6 Rainfall=6.11"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



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Summary for Subcatchment D-1: WS D-1

Runoff = 124.39 cfs @ 3.47 hrs, Volume= 11.522 af, Depth= 3.49"

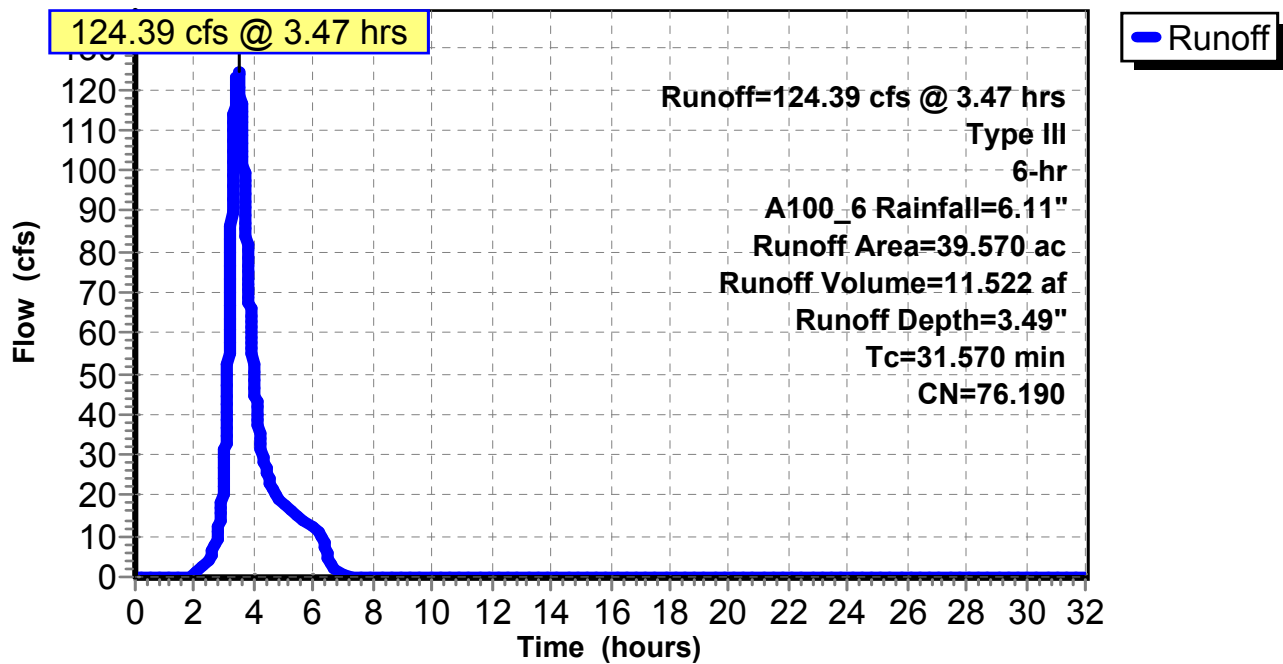
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr A100_6 Rainfall=6.11"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



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Type III 6-hr A100_6 Rainfall=6.11"

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Summary for Subcatchment E: WS E

Runoff = 283.03 cfs @ 3.86 hrs, Volume= 38.272 af, Depth= 3.91"

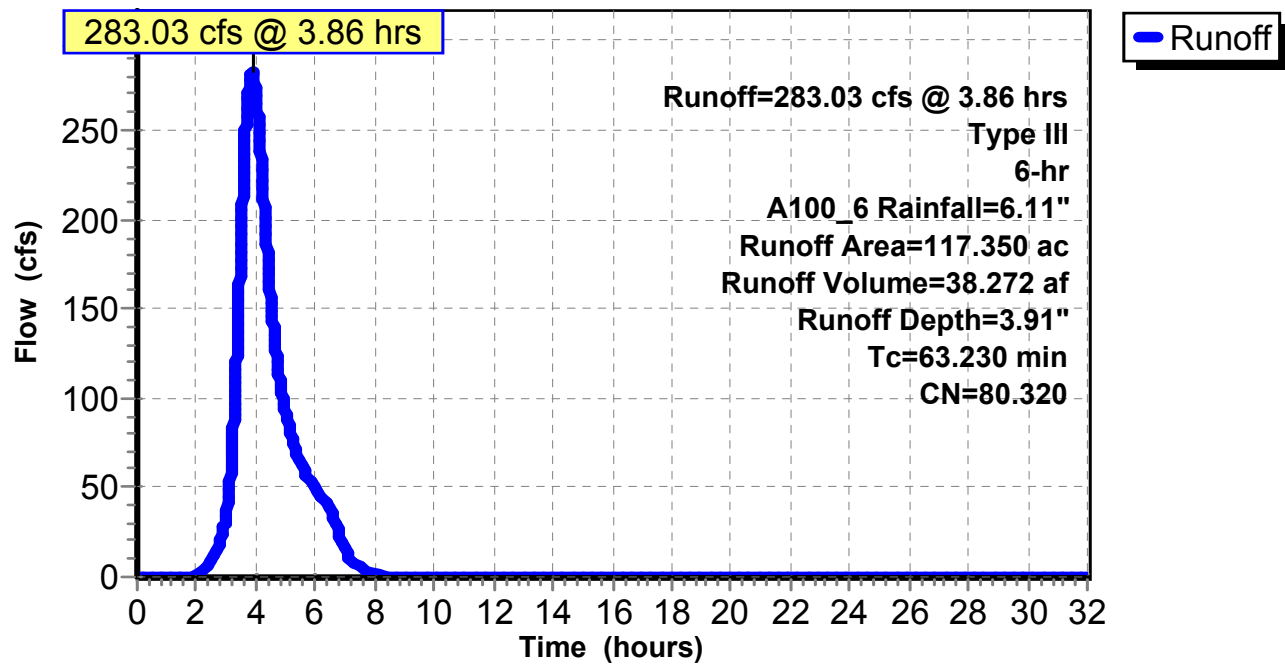
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr A100_6 Rainfall=6.11"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



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Type III 6-hr A100_6 Rainfall=6.11"

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Summary for Subcatchment F: WS F

Runoff = 302.88 cfs @ 3.64 hrs, Volume= 33.355 af, Depth= 3.30"

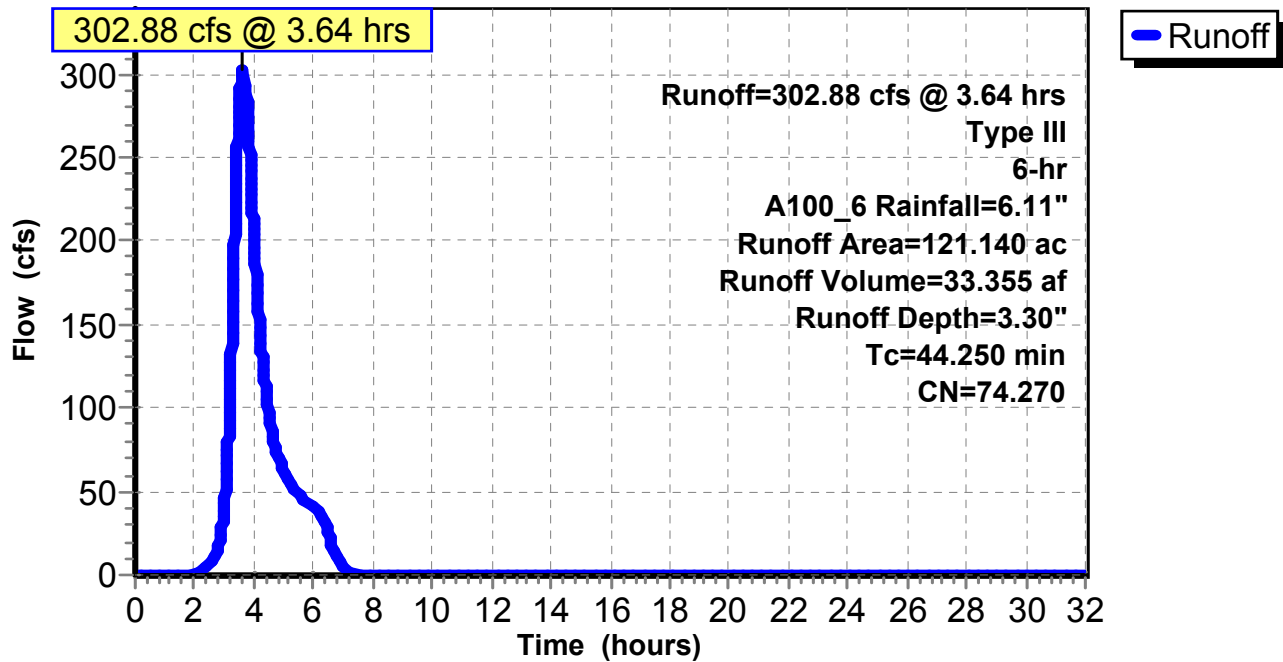
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr A100_6 Rainfall=6.11"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



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Type III 6-hr A100_6 Rainfall=6.11"

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Summary for Subcatchment G: WS G

Runoff = 566.42 cfs @ 3.50 hrs, Volume= 56.091 af, Depth= 4.03"

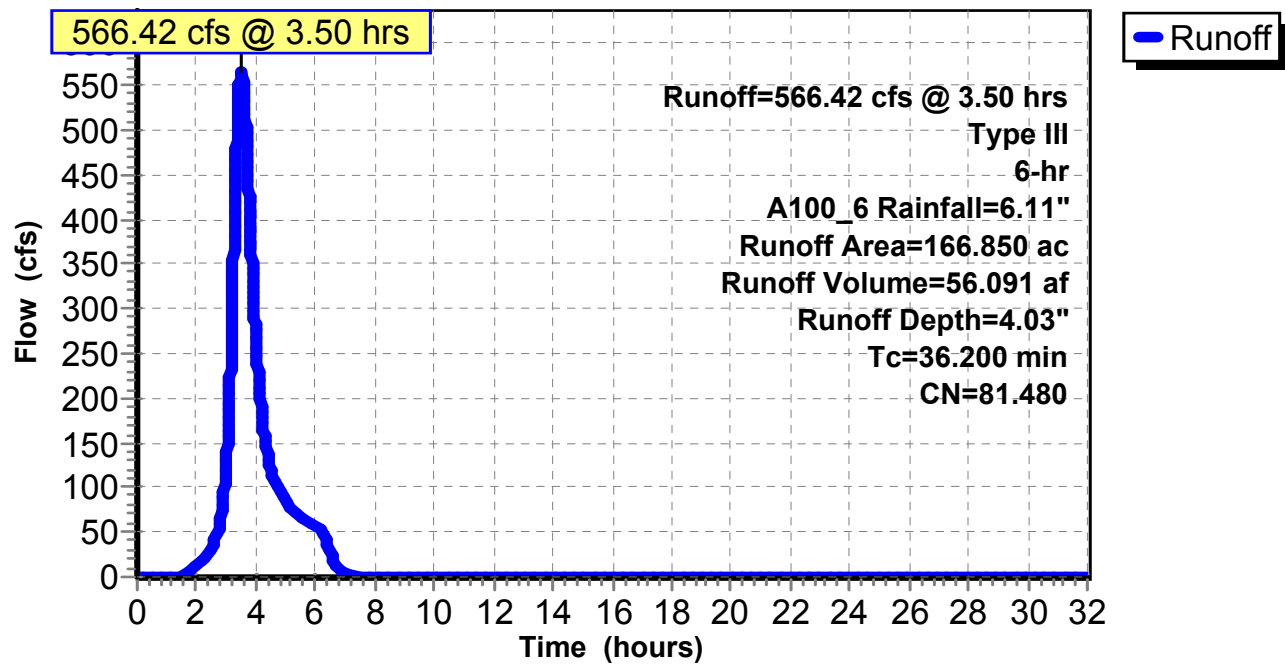
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr A100_6 Rainfall=6.11"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



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Type III 6-hr A100_6 Rainfall=6.11"

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Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 3.45" for A100_6 event
Inflow = 297.14 cfs @ 4.61 hrs, Volume= 116.569 af
Outflow = 297.02 cfs @ 4.64 hrs, Volume= 116.512 af, Atten= 0%, Lag= 1.365 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.25 fps, Min. Travel Time= 1.977 min
Avg. Velocity = 1.76 fps, Avg. Travel Time= 4.762 min

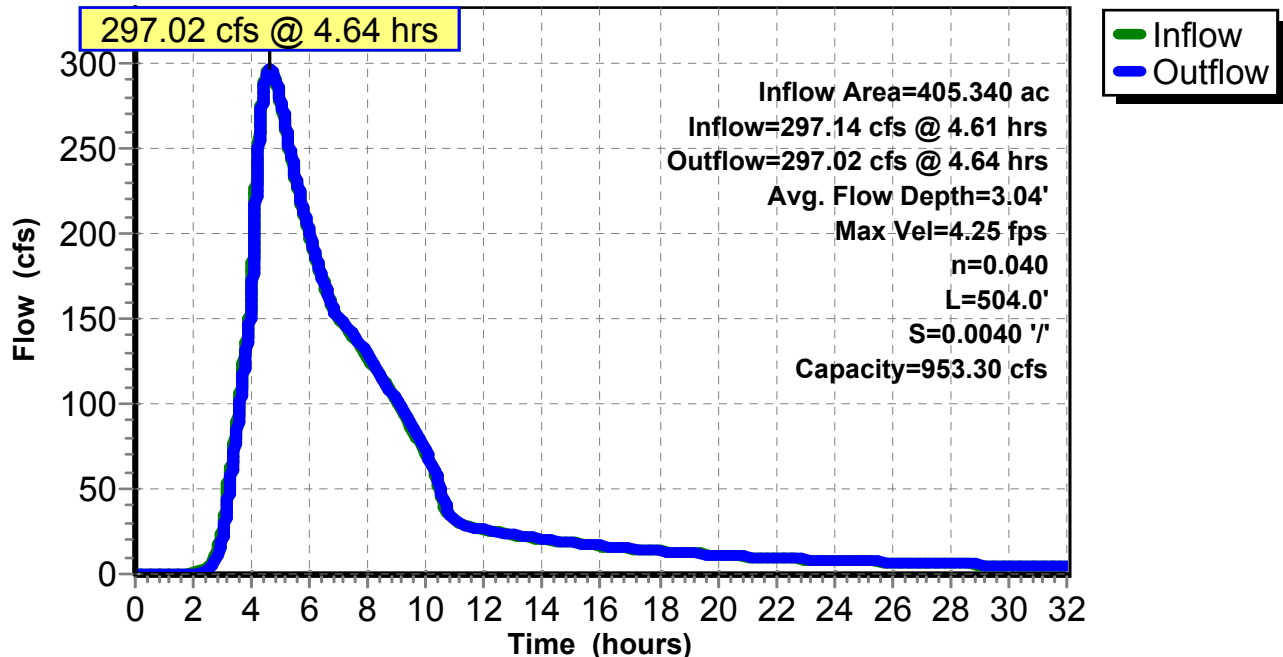
Peak Storage= 35,237 cf @ 4.64 hrs
Average Depth at Peak Storage= 3.04'
Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
Length= 504.0' Slope= 0.0040 ' / '
Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



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Type III 6-hr A100_6 Rainfall=6.11"

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Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 3.30" for A100_6 event
Inflow = 302.45 cfs @ 3.64 hrs, Volume= 33.354 af
Outflow = 267.41 cfs @ 3.82 hrs, Volume= 33.354 af, Atten= 12%, Lag= 11.002 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2

Max. Velocity= 2.30 fps, Min. Travel Time= 15.813 min

Avg. Velocity = 0.38 fps, Avg. Travel Time= 96.091 min

Peak Storage= 253,719 cf @ 3.82 hrs

Average Depth at Peak Storage= 3.48'

Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040

Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'

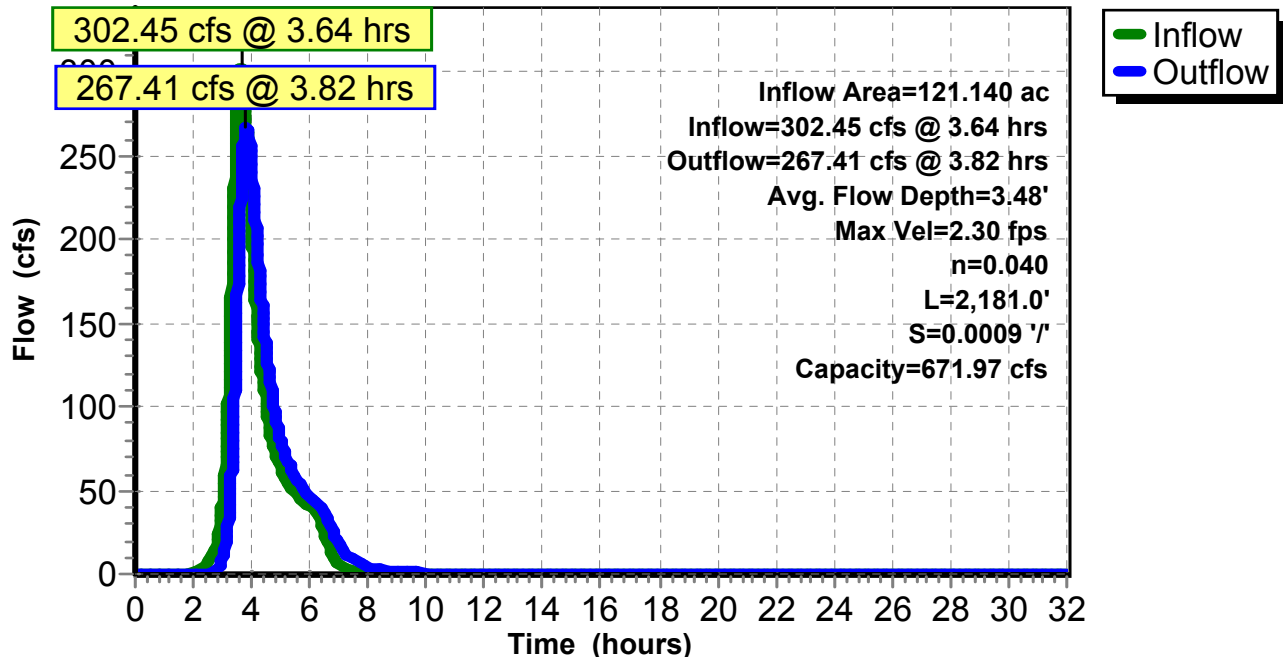
Length= 2,181.0' Slope= 0.0009 ' / '

Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



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Type III 6-hr A100_6 Rainfall=6.11"

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Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 3.90" for A100_6 event
Inflow = 560.25 cfs @ 3.54 hrs, Volume= 54.198 af
Outflow = 51.11 cfs @ 6.31 hrs, Volume= 45.084 af, Atten= 91%, Lag= 165.887 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2

Max. Velocity= 0.61 fps, Min. Travel Time= 606.089 min

Avg. Velocity = 0.39 fps, Avg. Travel Time= 945.876 min

Peak Storage= 1,858,605 cf @ 6.31 hrs

Average Depth at Peak Storage= 2.58'

Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040

Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'

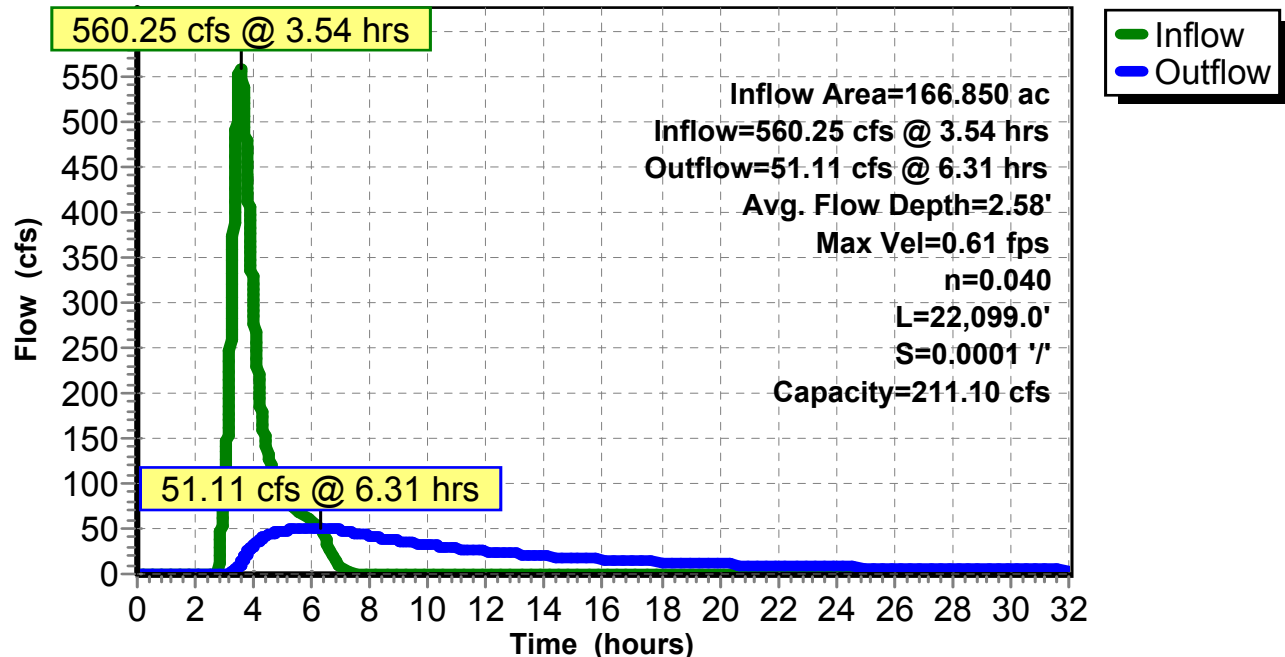
Length= 22,099.0' Slope= 0.0001 ' / '

Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



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Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 3.45" for A100_6 event
Inflow = 318.80 cfs @ 4.63 hrs, Volume= 127.924 af
Outflow = 316.88 cfs @ 4.73 hrs, Volume= 127.737 af, Atten= 1%, Lag= 5.899 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.85 fps, Min. Travel Time= 7.255 min
Avg. Velocity = 3.11 fps, Avg. Travel Time= 15.971 min

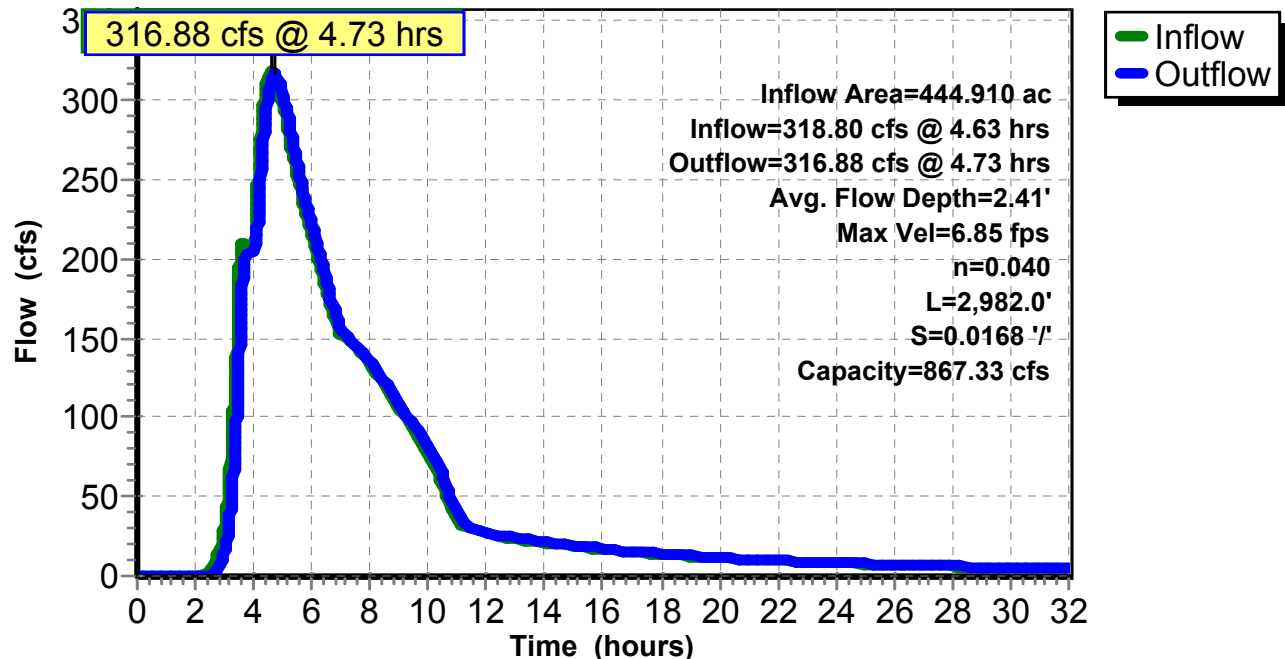
Peak Storage= 137,939 cf @ 4.73 hrs
Average Depth at Peak Storage= 2.41'
Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040
Side Slope Z-value= 3.0 ' / ' Top Width= 36.00'
Length= 2,982.0' Slope= 0.0168 ' / '
Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



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Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 3.58" for A100_6 event
Inflow = 545.75 cfs @ 3.70 hrs, Volume= 167.430 af
Outflow = 545.64 cfs @ 3.71 hrs, Volume= 167.404 af, Atten= 0%, Lag= 0.474 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.92 fps, Min. Travel Time= 0.664 min
Avg. Velocity = 3.84 fps, Avg. Travel Time= 1.887 min

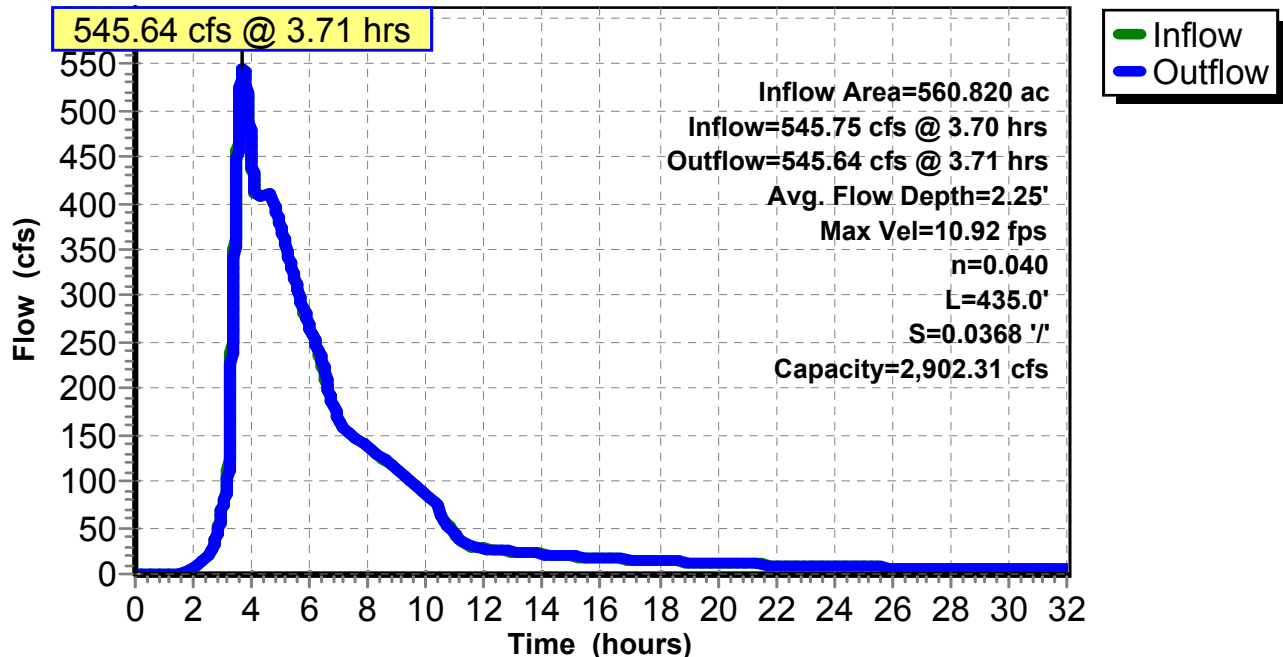
Peak Storage= 21,742 cf @ 3.71 hrs
Average Depth at Peak Storage= 2.25'
Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
Length= 435.0' Slope= 0.0368 ' / '
Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



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Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 3.60" for A100_6 event
 Inflow = 580.88 cfs @ 3.69 hrs, Volume= 174.821 af
 Outflow = 552.64 cfs @ 3.81 hrs, Volume= 174.819 af, Atten= 5%, Lag= 7.671 min
 Primary = 552.64 cfs @ 3.81 hrs, Volume= 174.819 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 76.72' @ 3.81 hrs Surf.Area= 0.456 ac Storage= 1.843 af

Plug-Flow detention time= 0.597 min calculated for 174.765 af (100% of inflow)
 Center-of-Mass det. time= 0.583 min (433.364 - 432.781)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

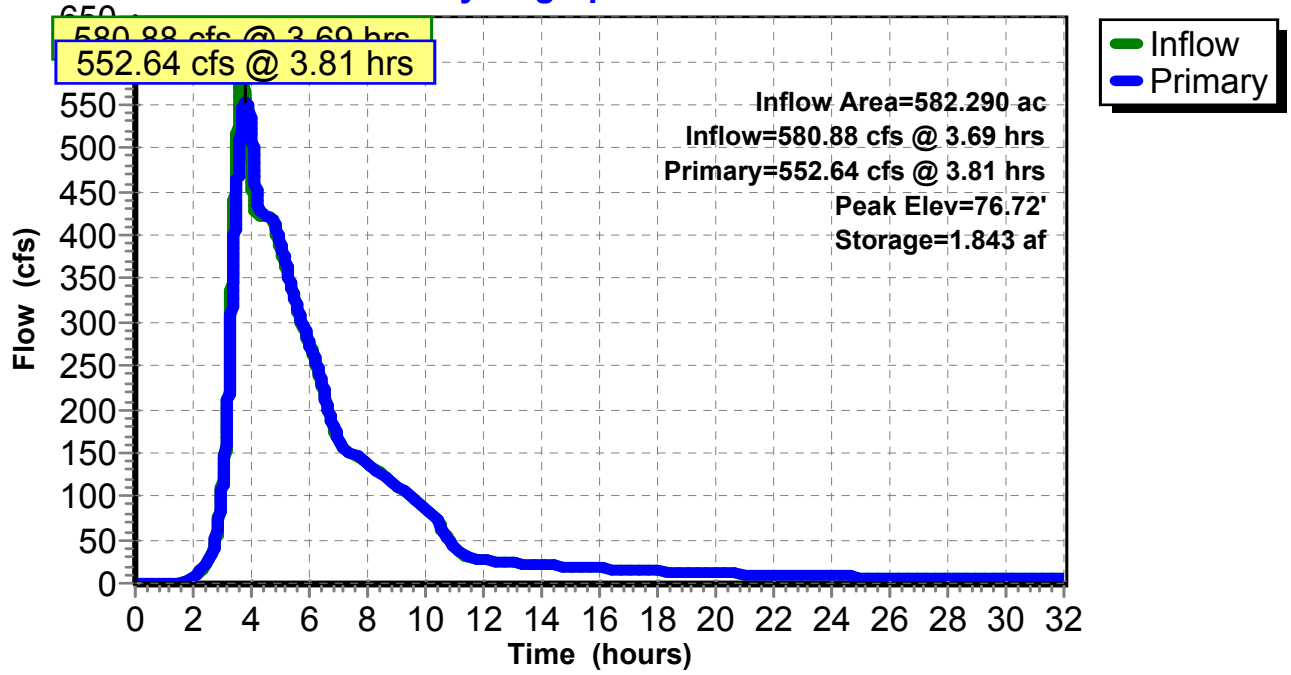
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=552.62 cfs @ 3.81 hrs HW=76.72' TW=66.65' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 300.04 cfs @ 15.28 fps)
- 2=Culvert 2 (Inlet Controls 252.57 cfs @ 12.86 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



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Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 3.45" for A100_6 event
 Inflow = 318.98 cfs @ 4.60 hrs, Volume= 128.034 af
 Outflow = 318.80 cfs @ 4.63 hrs, Volume= 127.924 af, Atten= 0%, Lag= 1.617 min
 Primary = 318.80 cfs @ 4.63 hrs, Volume= 127.924 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 130.51' @ 4.63 hrs Surf.Area= 1.036 ac Storage= 2.578 af

Plug-Flow detention time= 8.881 min calculated for 127.924 af (100% of inflow)
 Center-of-Mass det. time= 7.658 min (489.798 - 482.140)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

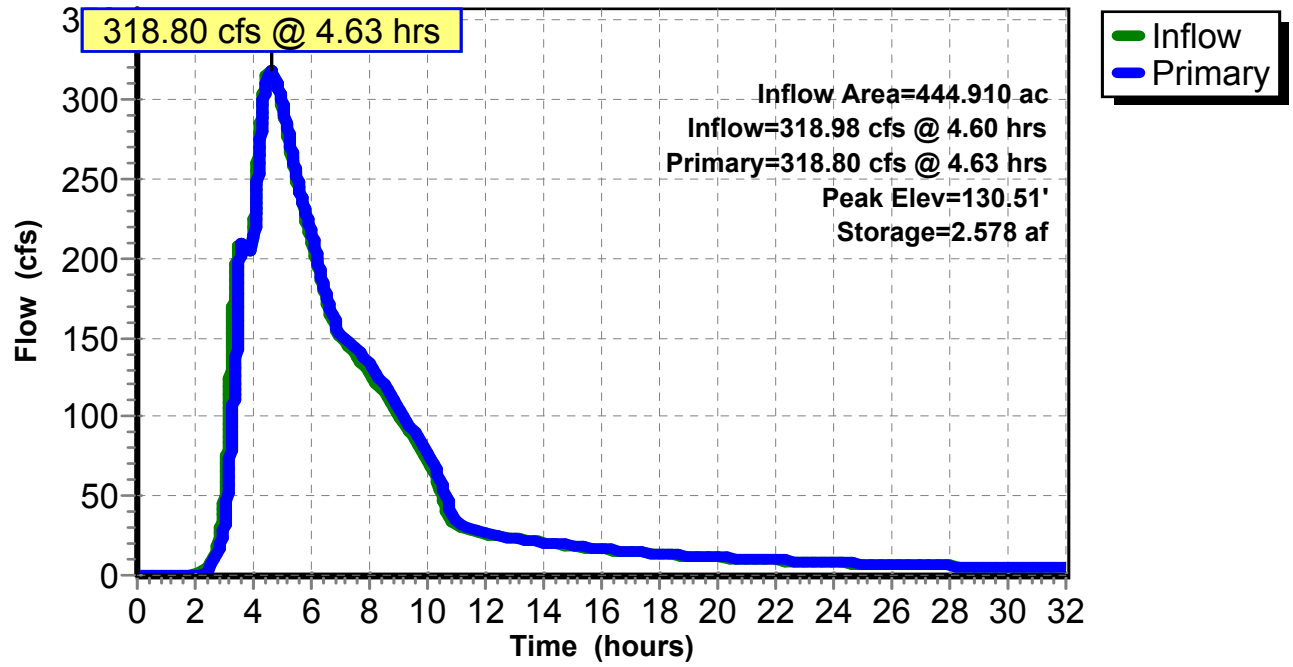
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=318.80 cfs @ 4.63 hrs HW=130.51' TW=128.40' (Dynamic Tailwater)

- 1=Culvert (Barrel Controls 171.60 cfs @ 7.58 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 147.20 cfs @ 2.33 fps)

Pond 4A: DP 4 A ARGYLE

Hydrograph



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Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 3.46" for A100_6 event
 Inflow = 575.99 cfs @ 3.86 hrs, Volume= 116.710 af
 Outflow = 297.14 cfs @ 4.61 hrs, Volume= 116.569 af, Atten= 48%, Lag= 45.169 min
 Primary = 297.14 cfs @ 4.61 hrs, Volume= 116.569 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 132.51' @ 4.62 hrs Surf.Area= 21.068 ac Storage= 28.921 af

Plug-Flow detention time= 59.852 min calculated for 116.533 af (100% of inflow)
 Center-of-Mass det. time= 58.073 min (503.803 - 445.730)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

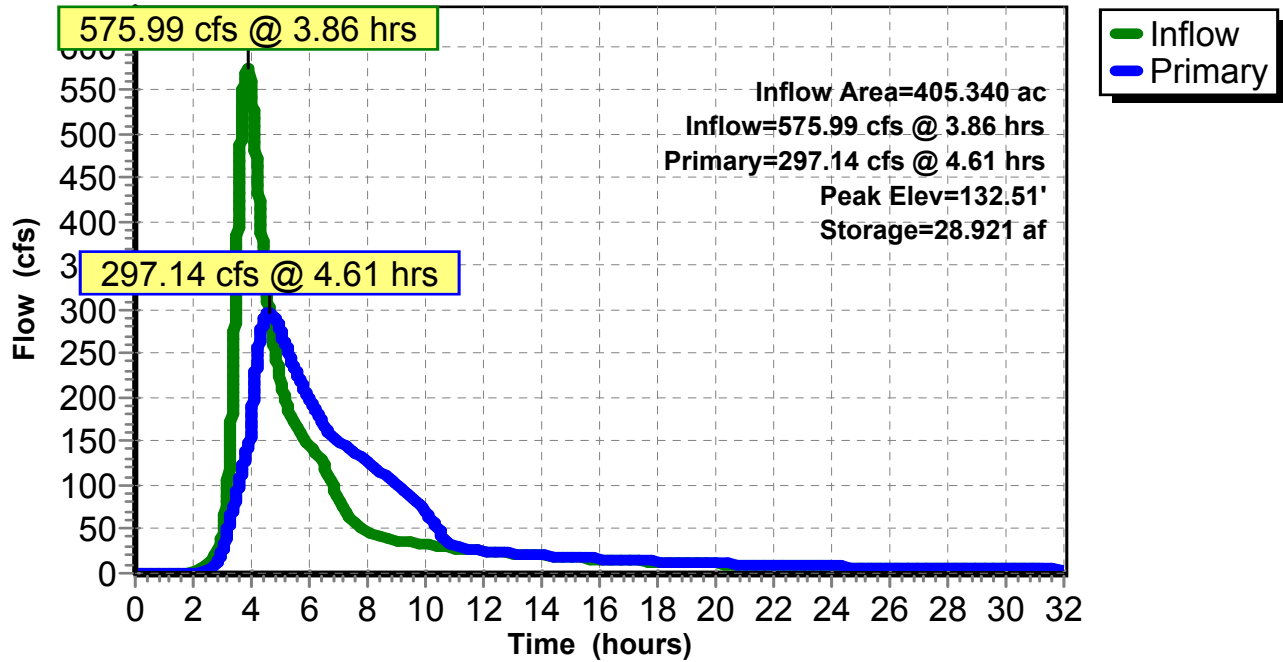
Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

Primary OutFlow Max=297.14 cfs @ 4.61 hrs HW=132.51' TW=131.03' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 147.24 cfs @ 5.86 fps)
- 2=Asymmetrical Weir (Weir Controls 149.89 cfs @ 2.00 fps)

Pond 5P: DP 5 BETSY BROWN ROAD

Hydrograph



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Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 3.58" for A100_6 event
 Inflow = 547.56 cfs @ 3.67 hrs, Volume= 167.430 af
 Outflow = 545.75 cfs @ 3.70 hrs, Volume= 167.430 af, Atten= 0%, Lag= 1.740 min
 Primary = 545.75 cfs @ 3.70 hrs, Volume= 167.430 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 91.37' @ 3.70 hrs Surf.Area= 1.370 ac Storage= 1.870 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 2.698 min (441.249 - 438.551)

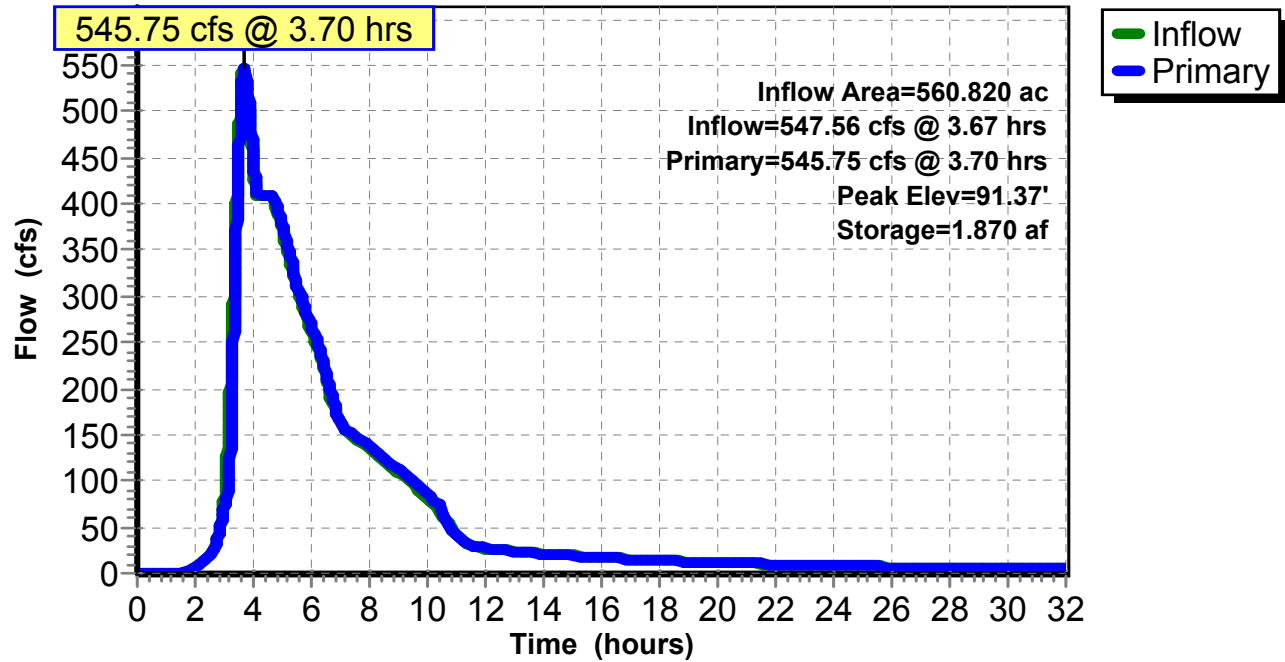
Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=545.72 cfs @ 3.70 hrs HW=91.37' TW=78.25' (Dynamic Tailwater)
 1=Sharp-Crested Rectangular Weir(Weir Controls 192.11 cfs @ 5.49 fps)
 2=Sharp-Crested Rectangular Weir(Weir Controls 353.61 cfs @ 3.08 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



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Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 3.74" for A100_6 event
 Inflow = 811.60 cfs @ 3.41 hrs, Volume= 222.758 af
 Outflow = 811.33 cfs @ 3.42 hrs, Volume= 221.068 af, Atten= 0%, Lag= 0.445 min
 Primary = 811.33 cfs @ 3.42 hrs, Volume= 221.068 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 40.20' @ 3.42 hrs Surf.Area= 1.135 ac Storage= 1.887 af

Plug-Flow detention time= 12.972 min calculated for 220.999 af (99% of inflow)
 Center-of-Mass det. time= 2.305 min (395.431 - 393.126)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

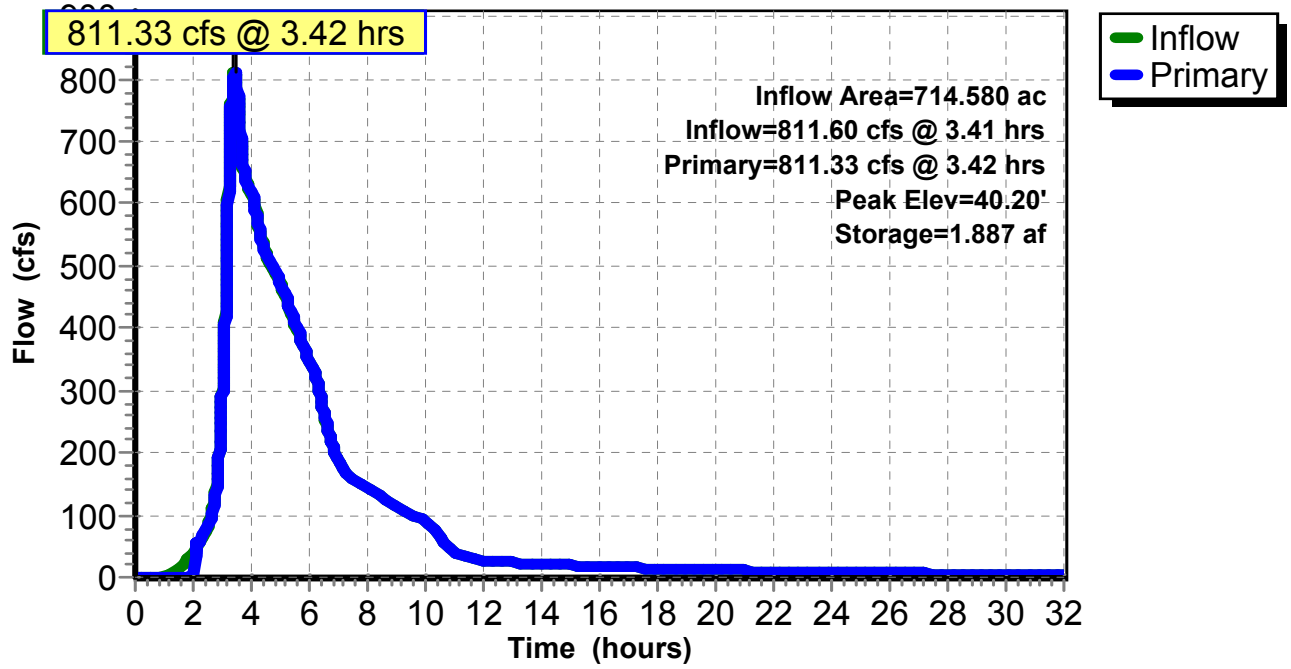
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=811.26 cfs @ 3.42 hrs HW=40.20' TW=40.00' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 300.20 cfs @ 2.18 fps)
- 2=WEIR BOWMAN (Weir Controls 511.05 cfs @ 1.64 fps)

Pond 8P: BOWMAN FIELDS

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Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 3.30" for A100_6 event
 Inflow = 302.88 cfs @ 3.64 hrs, Volume= 33.355 af
 Outflow = 302.45 cfs @ 3.64 hrs, Volume= 33.354 af, Atten= 0%, Lag= 0.161 min
 Primary = 302.45 cfs @ 3.64 hrs, Volume= 33.354 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 134.99' @ 3.68 hrs Surf.Area= 0.204 ac Storage= 0.241 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.533 min (252.237 - 251.704)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

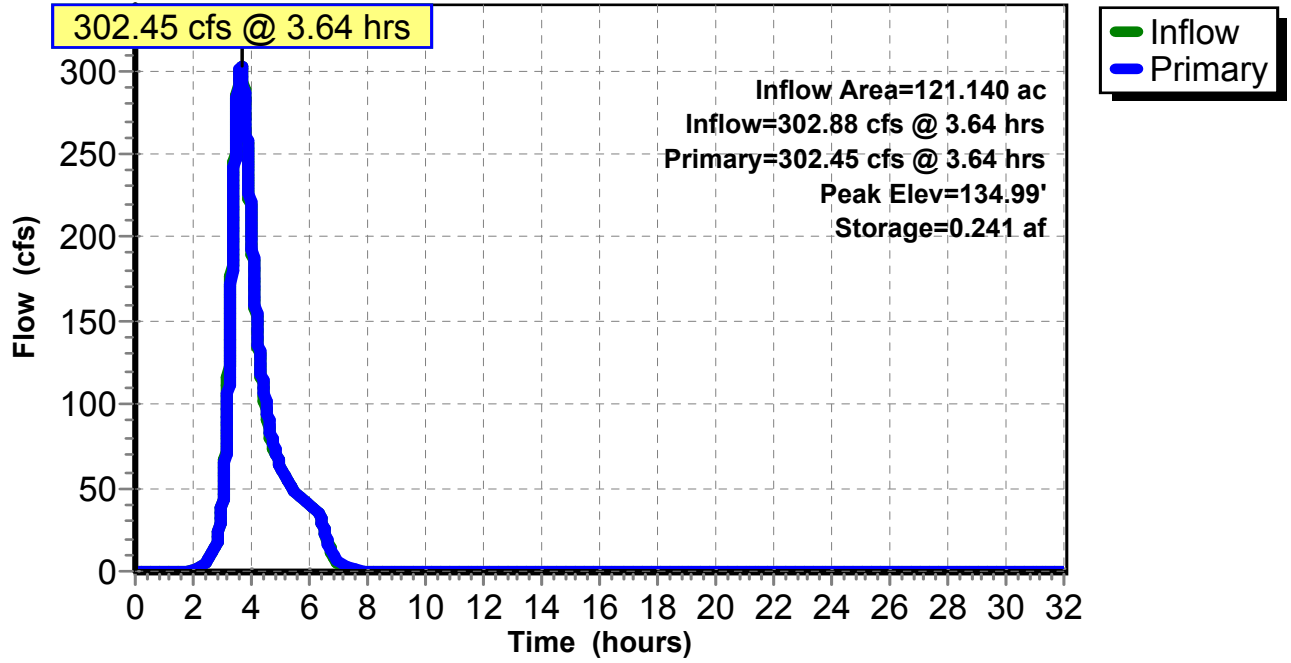
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=302.43 cfs @ 3.64 hrs HW=134.99' TW=133.19' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 45.68 cfs @ 6.46 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 81.33 cfs @ 5.42 fps)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 175.41 cfs @ 2.29 fps)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

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Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 4.03" for A100_6 event
 Inflow = 566.42 cfs @ 3.50 hrs, Volume= 56.091 af
 Outflow = 560.25 cfs @ 3.54 hrs, Volume= 54.198 af, Atten= 1%, Lag= 2.580 min
 Primary = 560.25 cfs @ 3.54 hrs, Volume= 54.198 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.70' @ 3.54 hrs Surf.Area= 4.173 ac Storage= 7.428 af (4.461 af above start)

Plug-Flow detention time= 23.600 min calculated for 51.231 af (91% of inflow)
 Center-of-Mass det. time= 7.839 min (246.449 - 238.610)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

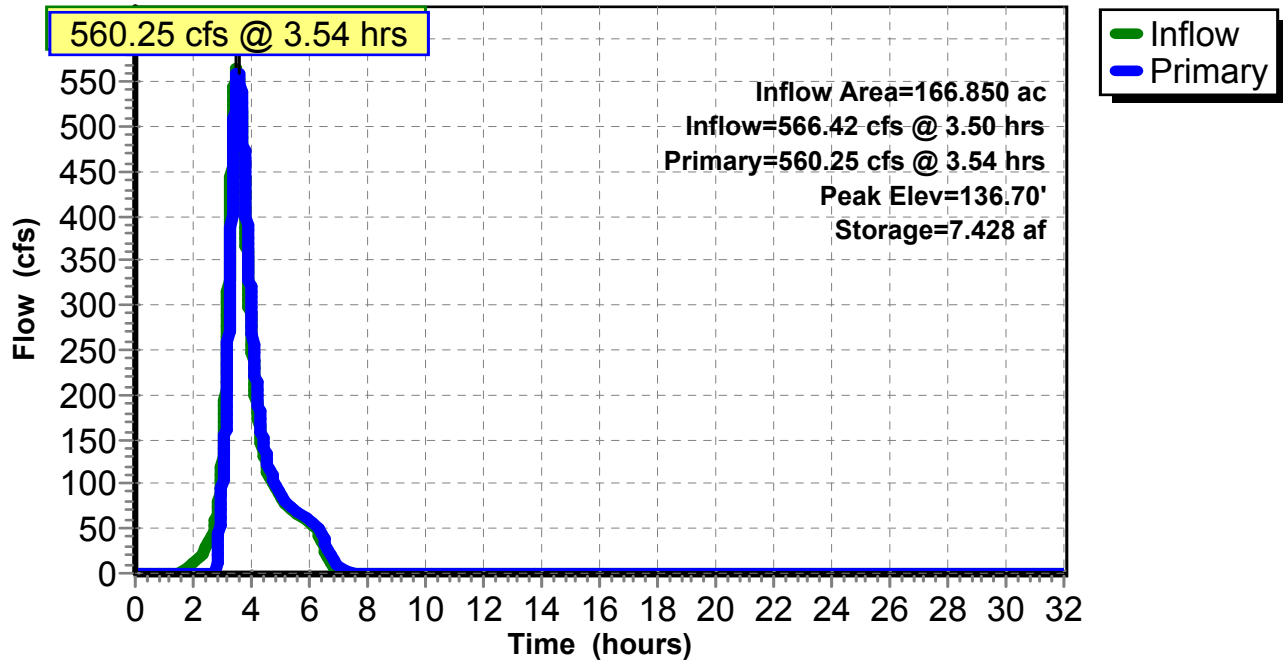
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=560.18 cfs @ 3.54 hrs HW=136.70' TW=131.02' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 3.61 cfs @ 2.86 fps)
- 2=Asymmetrical Weir (Weir Controls 556.57 cfs @ 2.34 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

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Summary for Pond 24P: RAINSTORE WHOLE FIELD

Inflow = 301.93 cfs @ 3.83 hrs, Volume= 39.528 af
 Outflow = 211.87 cfs @ 4.18 hrs, Volume= 39.528 af, Atten= 30%, Lag= 21.319 min
 Discarded = 9.68 cfs @ 3.38 hrs, Volume= 6.285 af
 Primary = 71.32 cfs @ 4.18 hrs, Volume= 14.534 af
 Secondary = 130.87 cfs @ 4.18 hrs, Volume= 18.709 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 41.34' @ 4.18 hrs Surf.Area= 209,016 sf Storage= 470,021 cf

Plug-Flow detention time= 55.387 min calculated for 39.516 af (100% of inflow)
 Center-of-Mass det. time= 55.454 min (323.479 - 268.025)

Volume	Invert	Avail.Storage	Storage Description
#1	39.00'	2,608,520 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 2,717,208 cf Overall x 96.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
39.00	209,016	0	0
52.00	209,016	2,717,208	2,717,208

Device	Routing	Invert	Outlet Devices
#1	Secondary	40.00'	26.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Discarded	39.00'	2.000 in/hr Exfiltration over Surface area
#3	Primary	39.00'	42.0" Vert. Orifice/Grate X 2.00 C= 0.600

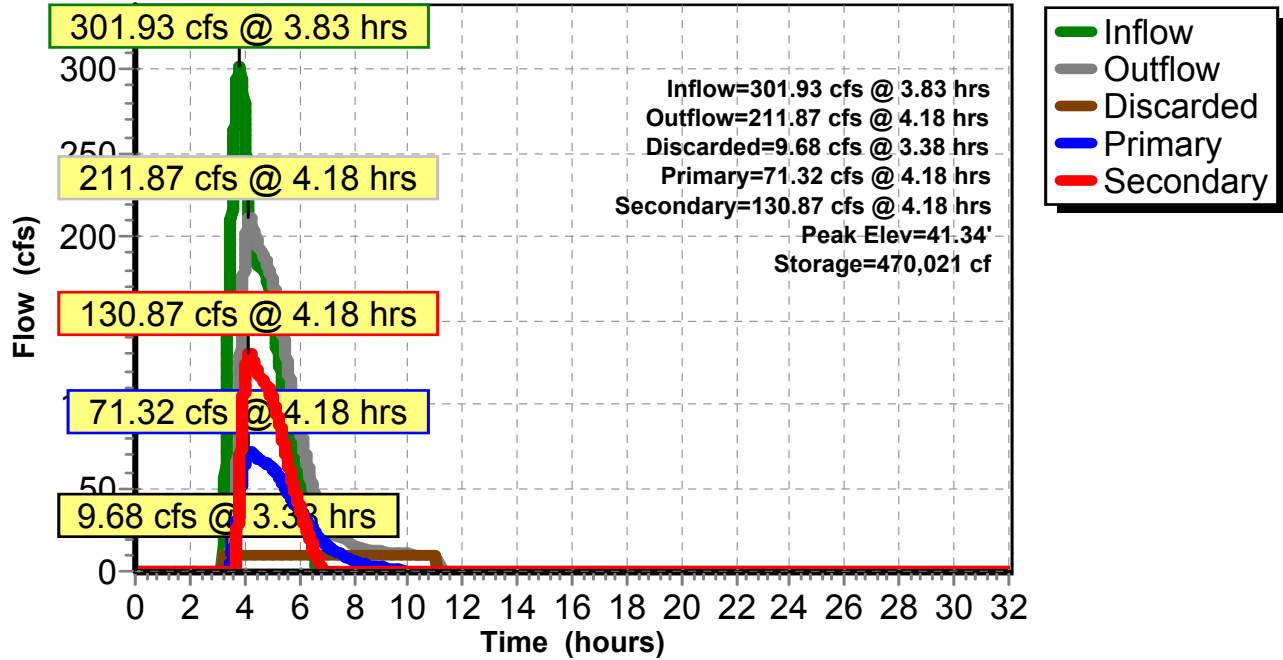
Discarded OutFlow Max=9.68 cfs @ 3.38 hrs HW=39.14' (Free Discharge)
 ↑**2=Exfiltration** (Exfiltration Controls 9.68 cfs)

Primary OutFlow Max=71.32 cfs @ 4.18 hrs HW=41.34' TW=0.00' (Dynamic Tailwater)
 ↑**3=Orifice/Grate** (Orifice Controls 71.32 cfs @ 5.21 fps)

Secondary OutFlow Max=130.86 cfs @ 4.18 hrs HW=41.34' TW=0.00' (Dynamic Tailwater)
 ↑**1=Sharp-Crested Rectangular Weir**(Weir Controls 130.86 cfs @ 3.79 fps)

Pond 24P: RAINSTORE WHOLE FIELD

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Summary for Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 2.99" for A100_6 event
Inflow = 545.17 cfs @ 3.41 hrs, Volume= 163.293 af
Outflow = 545.17 cfs @ 3.41 hrs, Volume= 163.293 af, Atten= 0%, Lag= 0.000 min
Primary = 410.89 cfs @ 3.41 hrs, Volume= 143.271 af
Secondary = 134.28 cfs @ 3.41 hrs, Volume= 20.022 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 45.55' @ 3.41 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 110.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0009 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48
#3	Secondary	40.25'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 40.25' / 39.75' S= 0.0037 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf

Primary OutFlow Max=410.86 cfs @ 3.41 hrs HW=45.55' TW=0.00' (Dynamic Tailwater)

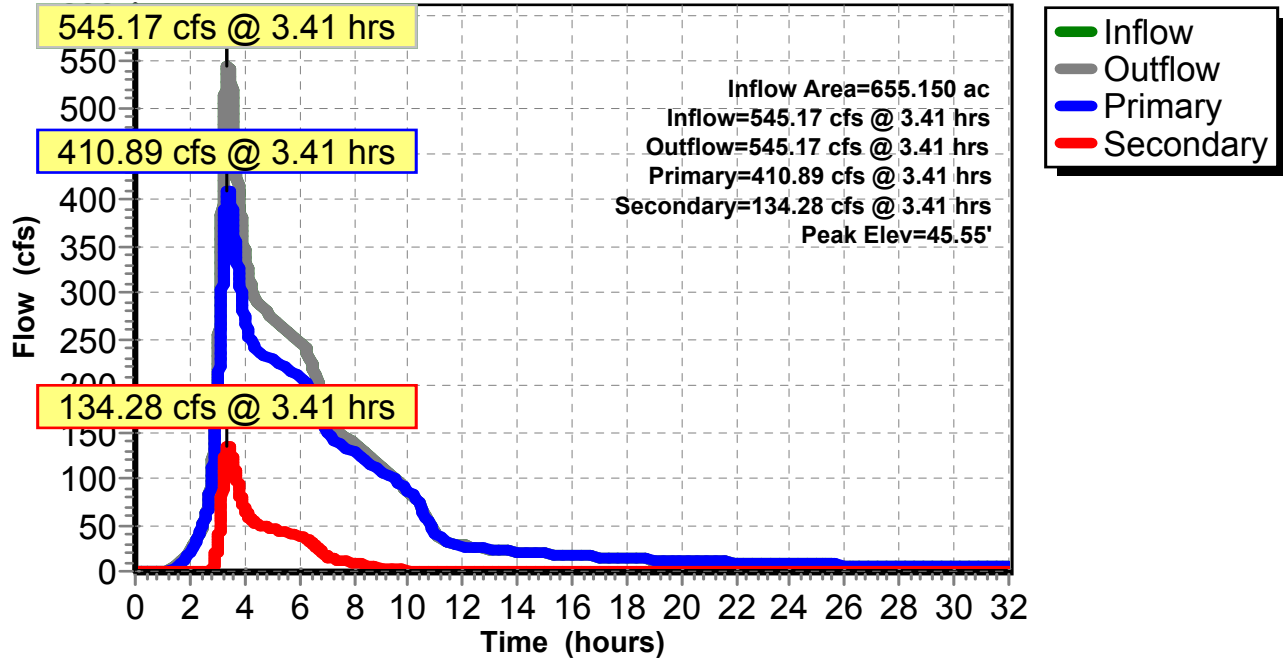
↑1=Culvert (Barrel Controls 410.86 cfs @ 10.53 fps)
↑2=WEIR WESTCH AVE (Controls 0.00 cfs)

Secondary OutFlow Max=134.27 cfs @ 3.41 hrs HW=45.55' TW=0.00' (Dynamic Tailwater)

↑3=Culvert (Barrel Controls 134.27 cfs @ 8.02 fps)

Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



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Type III 6-hr A100_6 Rainfall=6.11"

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Summary for Pond 41P: UPSTREAM AVON

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 3.60" for A100_6 event
 Inflow = 552.64 cfs @ 3.81 hrs, Volume= 174.819 af
 Outflow = 552.42 cfs @ 3.83 hrs, Volume= 174.819 af, Atten= 0%, Lag= 0.875 min
 Primary = 250.48 cfs @ 3.83 hrs, Volume= 135.291 af
 Secondary = 207.51 cfs @ 3.83 hrs, Volume= 31.283 af
 Tertiary = 94.43 cfs @ 3.83 hrs, Volume= 8.245 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 66.65' @ 3.83 hrs Surf.Area= 10,112 sf Storage= 29,221 cf

Plug-Flow detention time= 0.642 min calculated for 174.764 af (100% of inflow)
 Center-of-Mass det. time= 0.638 min (434.002 - 433.364)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	83,358 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686
70.00	10,112	40,448	63,134
72.00	10,112	20,224	83,358

Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert L= 947.0' Ke= 0.700 Inlet / Outlet Invert= 55.13' / 37.90' S= 0.0182 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Tertiary	65.00'	14.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Secondary	63.50'	12.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

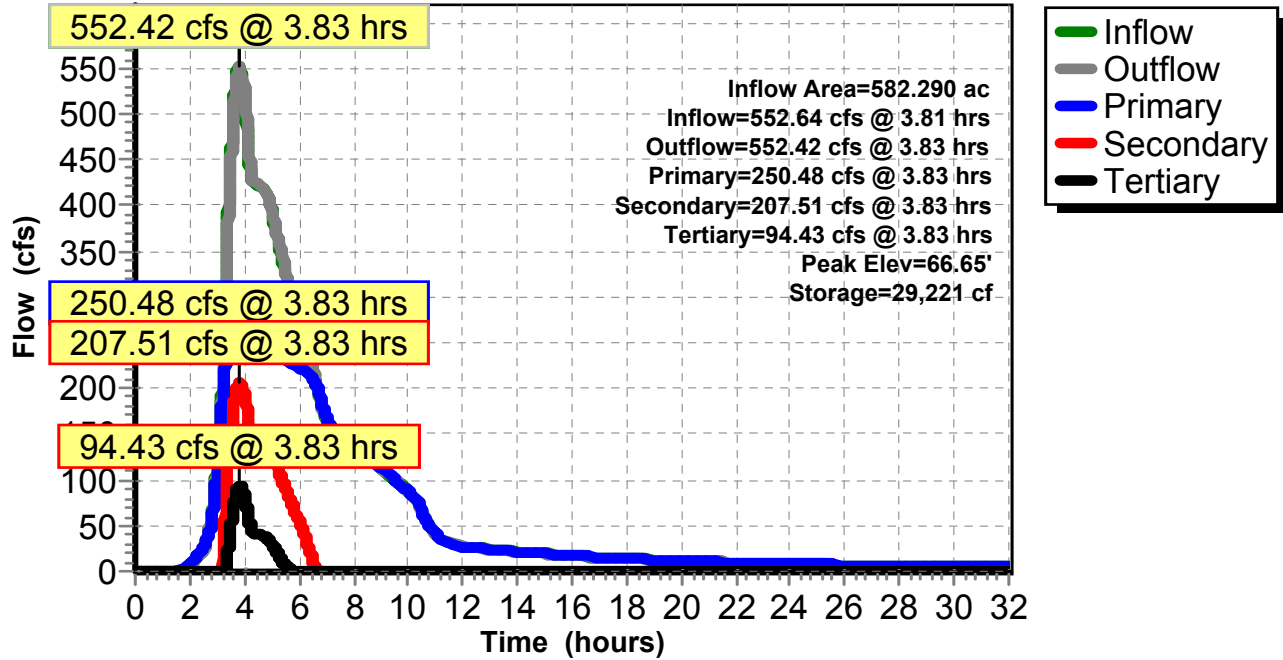
Primary OutFlow Max=250.48 cfs @ 3.83 hrs HW=66.65' TW=0.00' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 250.48 cfs @ 12.76 fps)

Secondary OutFlow Max=207.50 cfs @ 3.83 hrs HW=66.65' TW=58.87' (Dynamic Tailwater)
 ↑3=Sharp-Crested Rectangular Weir (Weir Controls 207.50 cfs @ 5.80 fps)

Tertiary OutFlow Max=94.42 cfs @ 3.83 hrs HW=66.65' TW=58.28' (Dynamic Tailwater)
 ↑2=Sharp-Crested Rectangular Weir (Weir Controls 94.42 cfs @ 4.20 fps)

Pond 41P: UPSTREAM AVON

Hydrograph



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Summary for Pond 42P: CHAMBER

Inflow = 94.43 cfs @ 3.83 hrs, Volume= 8.245 af
Outflow = 94.43 cfs @ 3.83 hrs, Volume= 8.245 af, Atten= 0%, Lag= 0.000 min
Primary = 94.43 cfs @ 3.83 hrs, Volume= 8.245 af

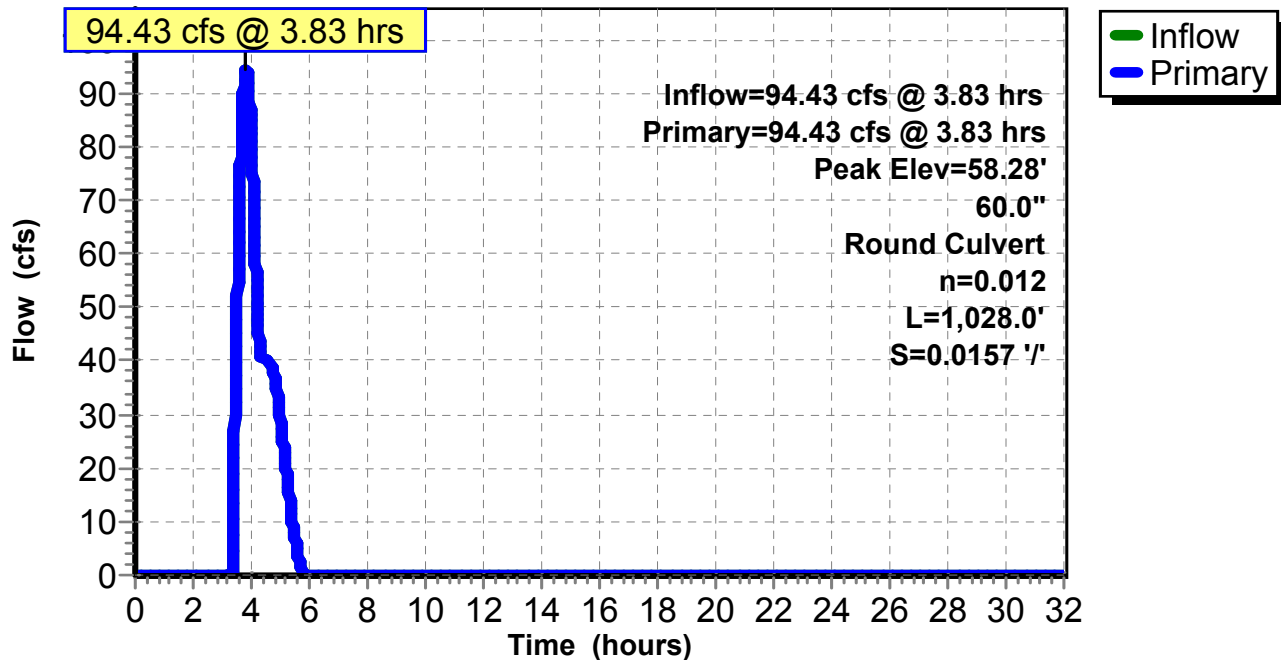
Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 58.28' @ 3.83 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert L= 1,028.0' Ke= 0.250 Inlet / Outlet Invert= 55.13' / 39.00' S= 0.0157 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf

Primary OutFlow Max=94.42 cfs @ 3.83 hrs HW=58.28' TW=0.00' (Dynamic Tailwater)
↑1=Culvert (Inlet Controls 94.42 cfs @ 7.25 fps)

Pond 42P: CHAMBER

Hydrograph



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Summary for Pond 43P: DUAL 60" CULVERTS

Inflow = 207.51 cfs @ 3.83 hrs, Volume= 31.283 af
 Outflow = 207.51 cfs @ 3.83 hrs, Volume= 31.283 af, Atten= 0%, Lag= 0.000 min
 Primary = 207.51 cfs @ 3.83 hrs, Volume= 31.283 af

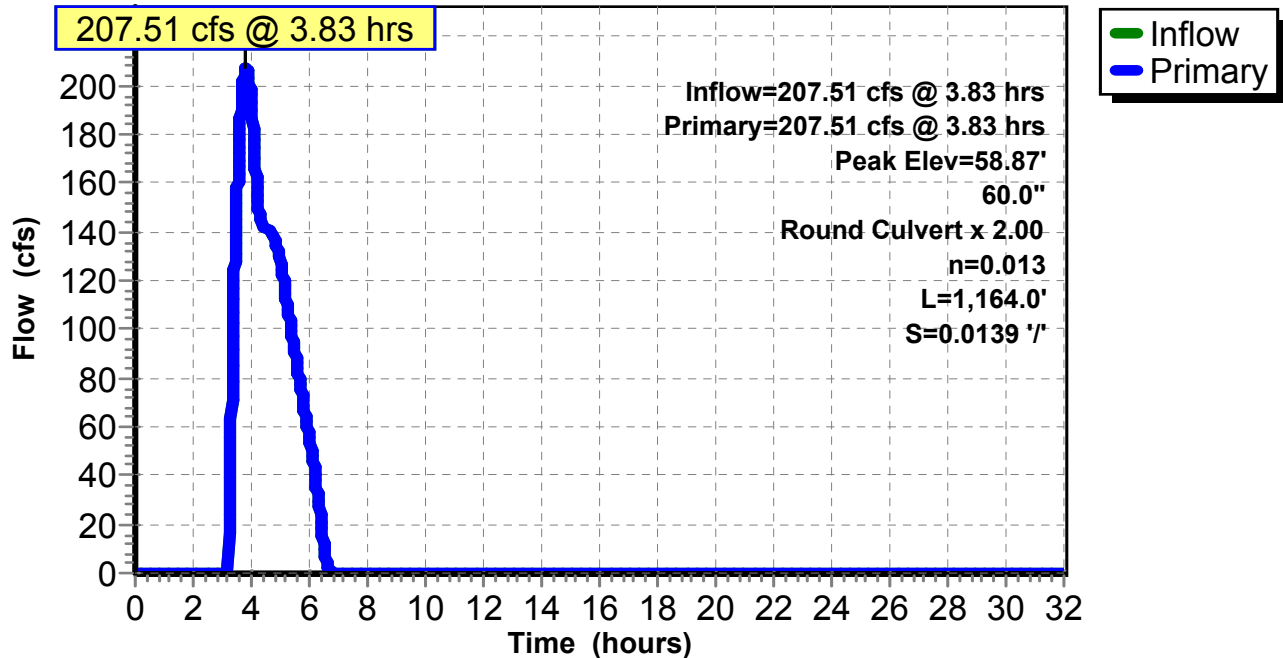
Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 58.87' @ 3.83 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert X 2.00 L= 1,164.0' Ke= 0.500 Inlet / Outlet Invert= 55.13' / 39.00' S= 0.0139 '/ Cc= 0.900 n= 0.013, Flow Area= 19.63 sf

Primary OutFlow Max=207.50 cfs @ 3.83 hrs HW=58.87' TW=0.00' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 207.50 cfs @ 6.58 fps)

Pond 43P: DUAL 60" CULVERTS

Hydrograph



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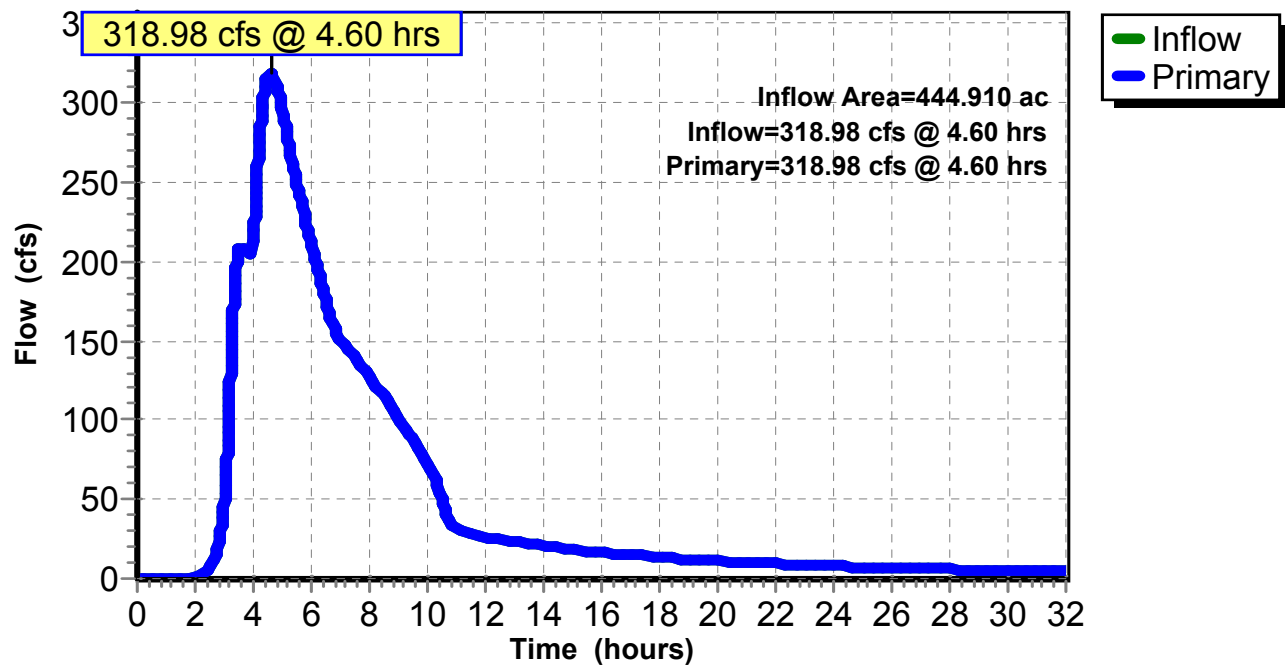
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 3.45" for A100_6 event
Inflow = 318.98 cfs @ 4.60 hrs, Volume= 128.034 af
Primary = 318.98 cfs @ 4.60 hrs, Volume= 128.034 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



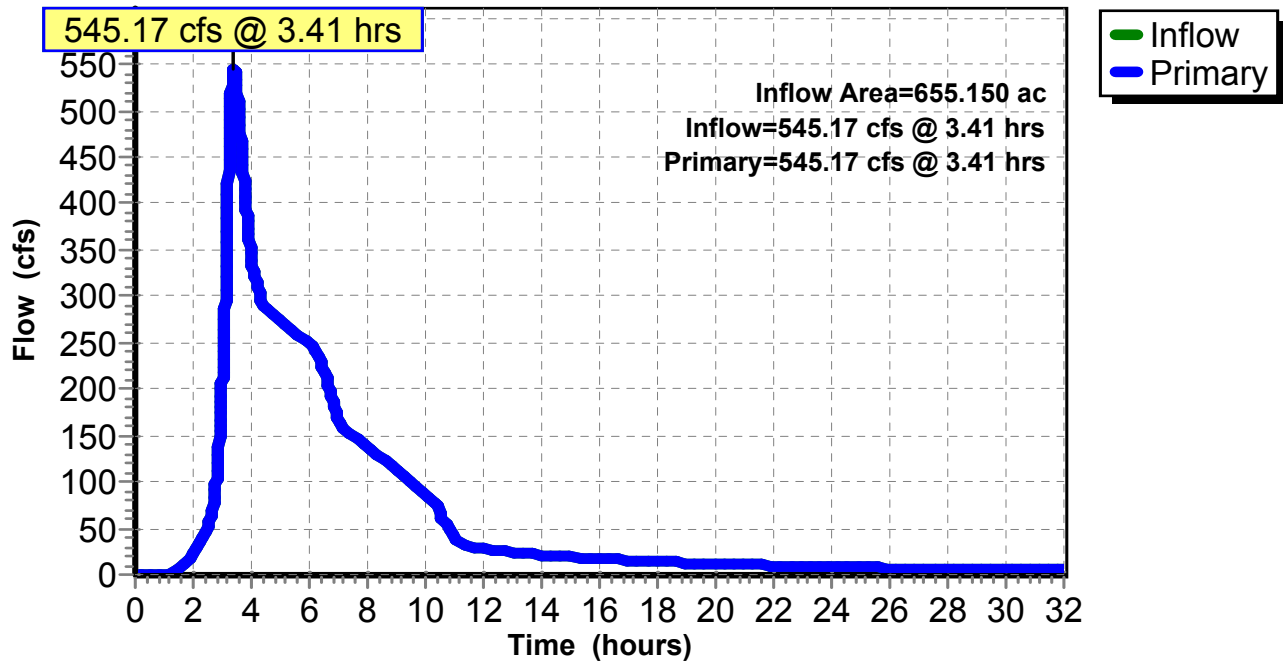
Summary for Link 33L: JUNCTION

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 2.99" for A100_6 event
Inflow = 545.17 cfs @ 3.41 hrs, Volume= 163.293 af
Primary = 545.17 cfs @ 3.41 hrs, Volume= 163.293 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 33L: JUNCTION

Hydrograph



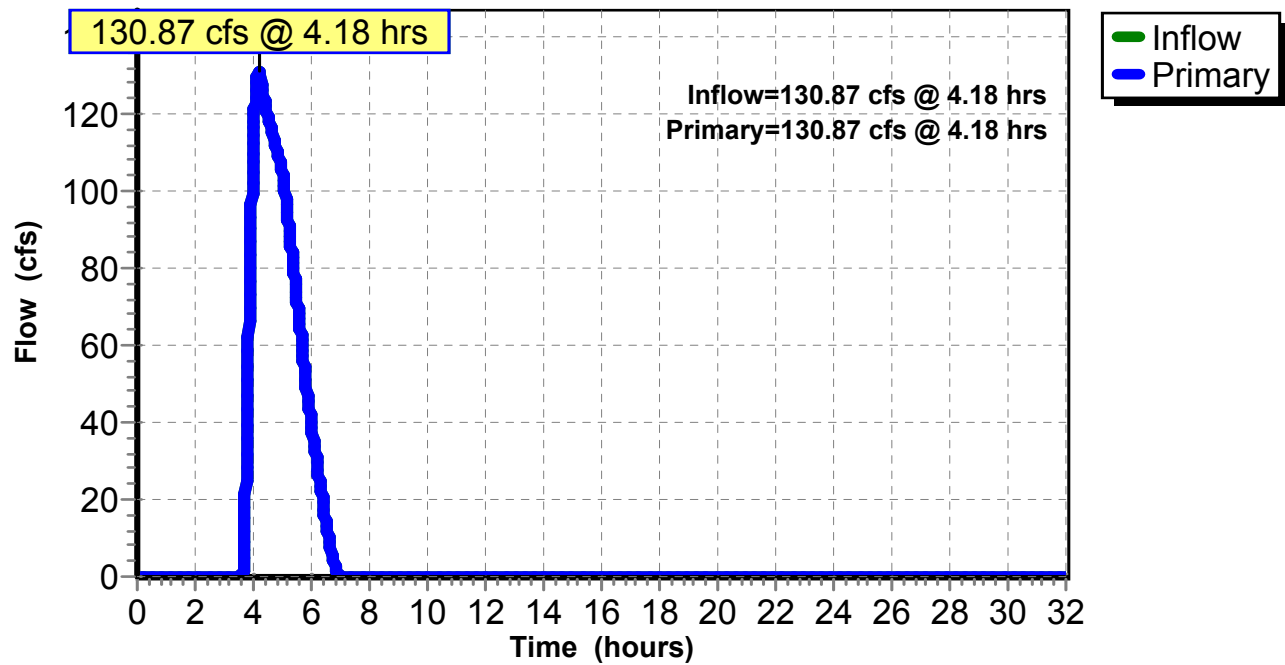
Summary for Link 36L: weir

Inflow = 130.87 cfs @ 4.18 hrs, Volume= 18.709 af
Primary = 130.87 cfs @ 4.18 hrs, Volume= 18.709 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 36L: weir

Hydrograph



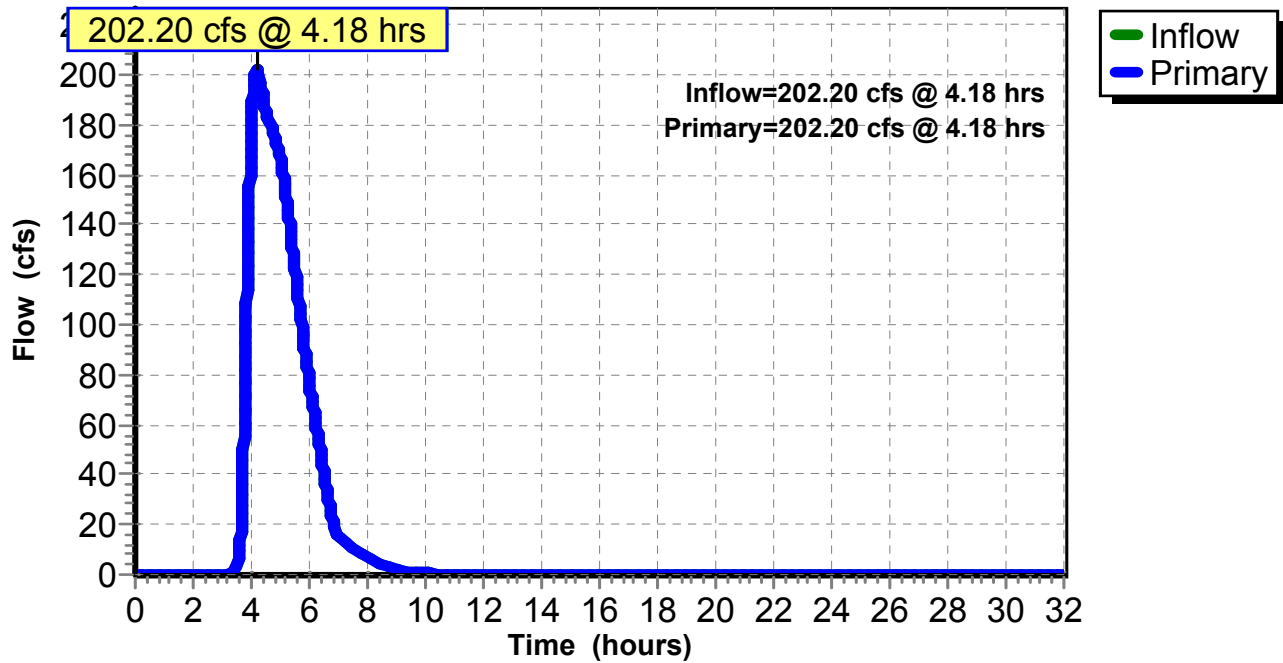
Summary for Link 37L: orifice

Inflow = 202.20 cfs @ 4.18 hrs, Volume= 33.243 af
Primary = 202.20 cfs @ 4.18 hrs, Volume= 33.243 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 37L: orifice

Hydrograph



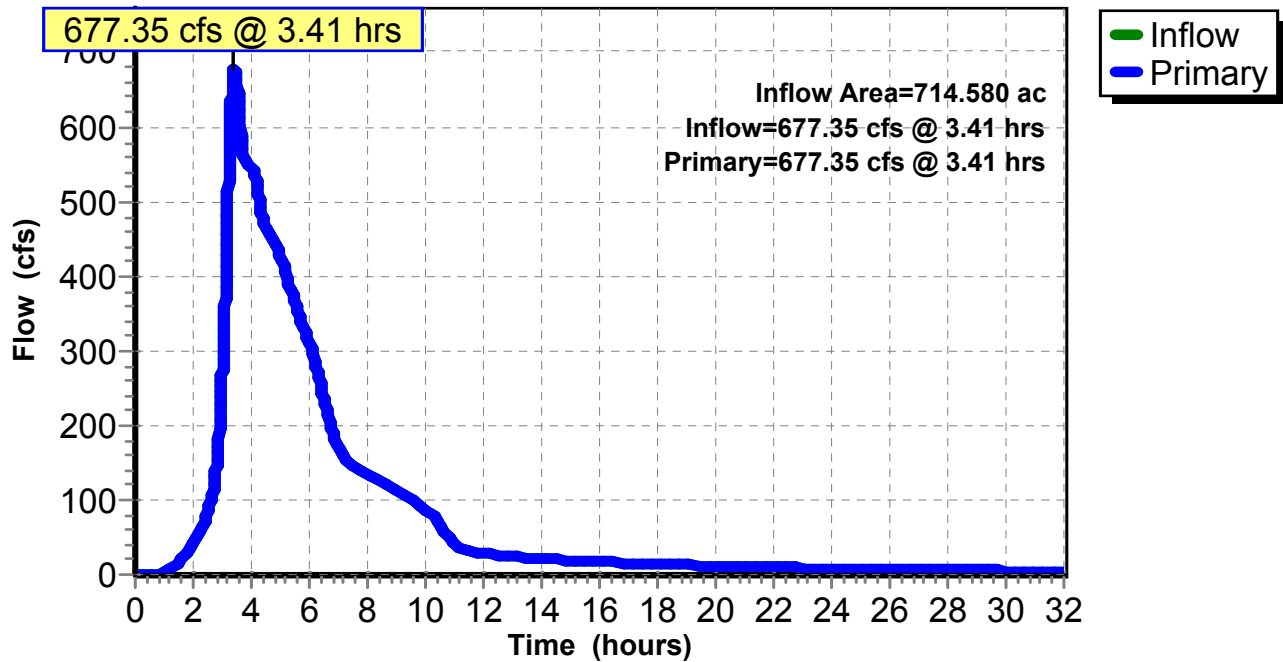
Summary for Link 38L: JUNCTION

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 3.40" for A100_6 event
Inflow = 677.35 cfs @ 3.41 hrs, Volume= 202.736 af
Primary = 677.35 cfs @ 3.41 hrs, Volume= 202.736 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 38L: JUNCTION

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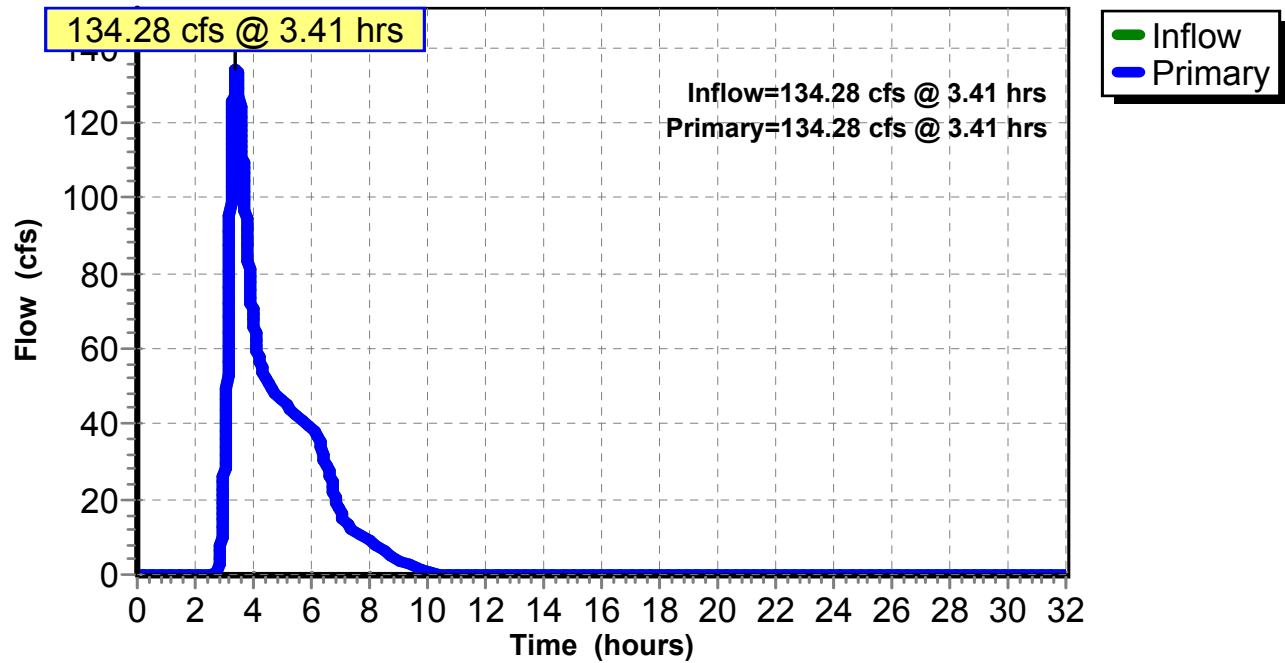
Summary for Link 41L: X

Inflow = 134.28 cfs @ 3.41 hrs, Volume= 20.022 af
Primary = 134.28 cfs @ 3.41 hrs, Volume= 20.022 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 41L: X

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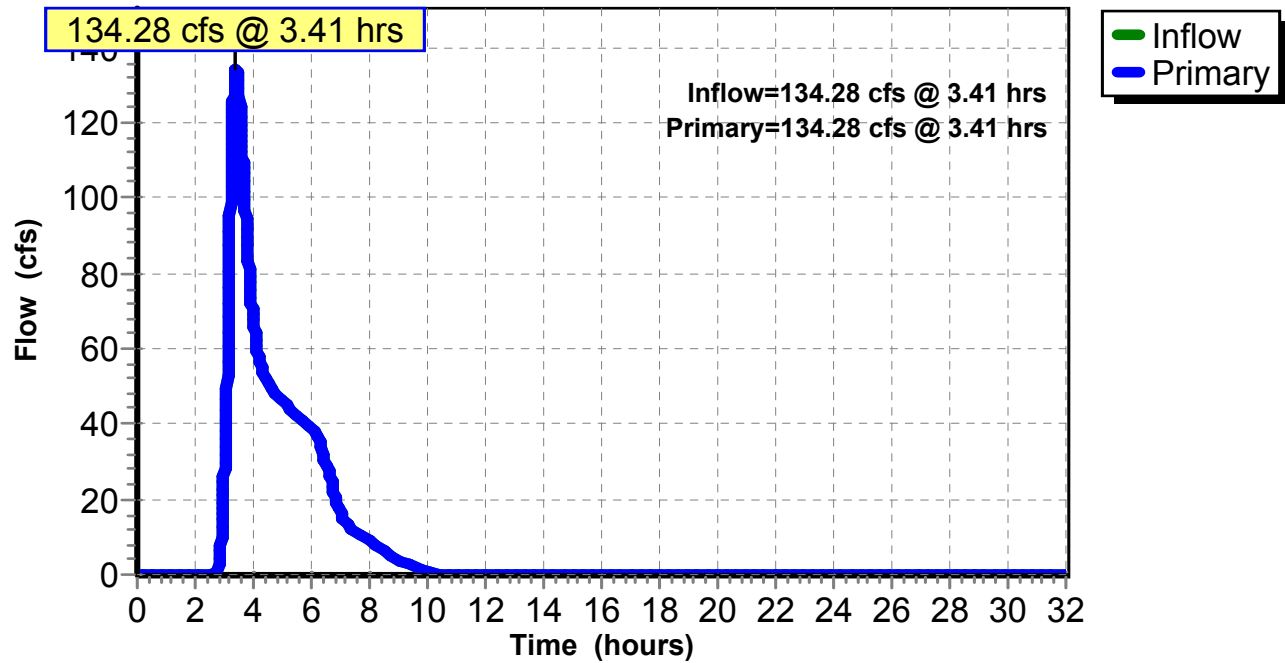
Summary for Link 42L: X

Inflow = 134.28 cfs @ 3.41 hrs, Volume= 20.022 af
Primary = 134.28 cfs @ 3.41 hrs, Volume= 20.022 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 42L: X

Hydrograph



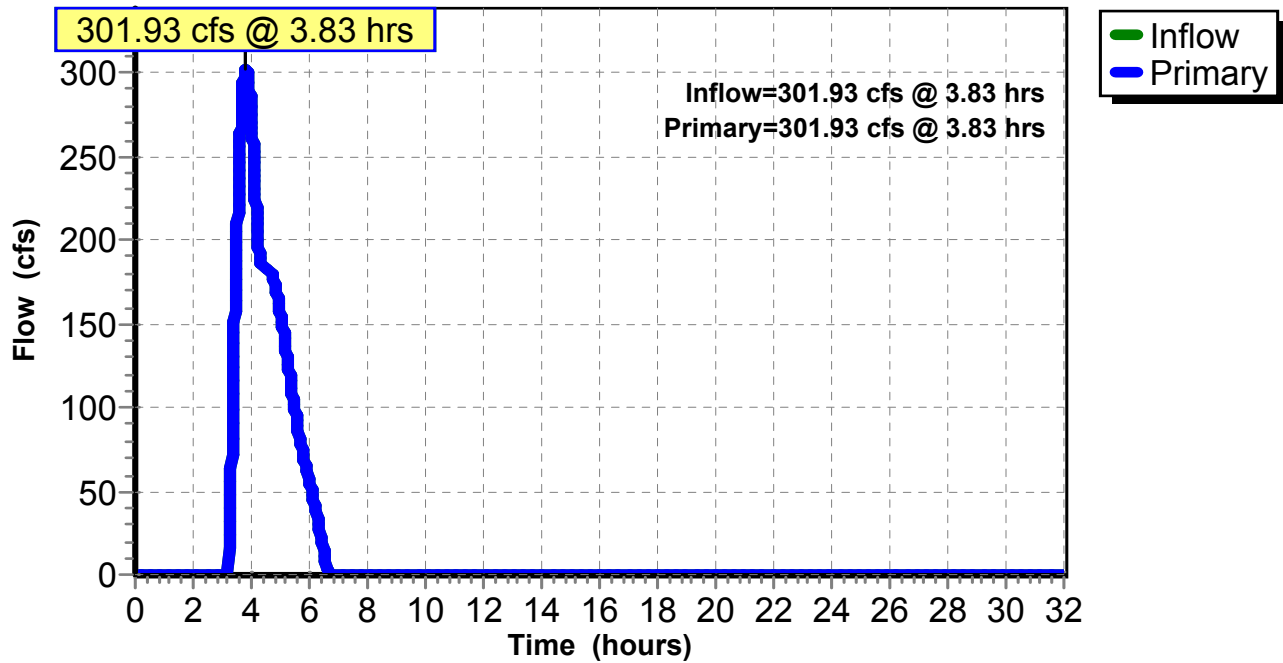
Summary for Link 51L: JUNCTION

Inflow = 301.93 cfs @ 3.83 hrs, Volume= 39.528 af
Primary = 301.93 cfs @ 3.83 hrs, Volume= 39.528 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 51L: JUNCTION

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Summary for Link FIN: FINAL

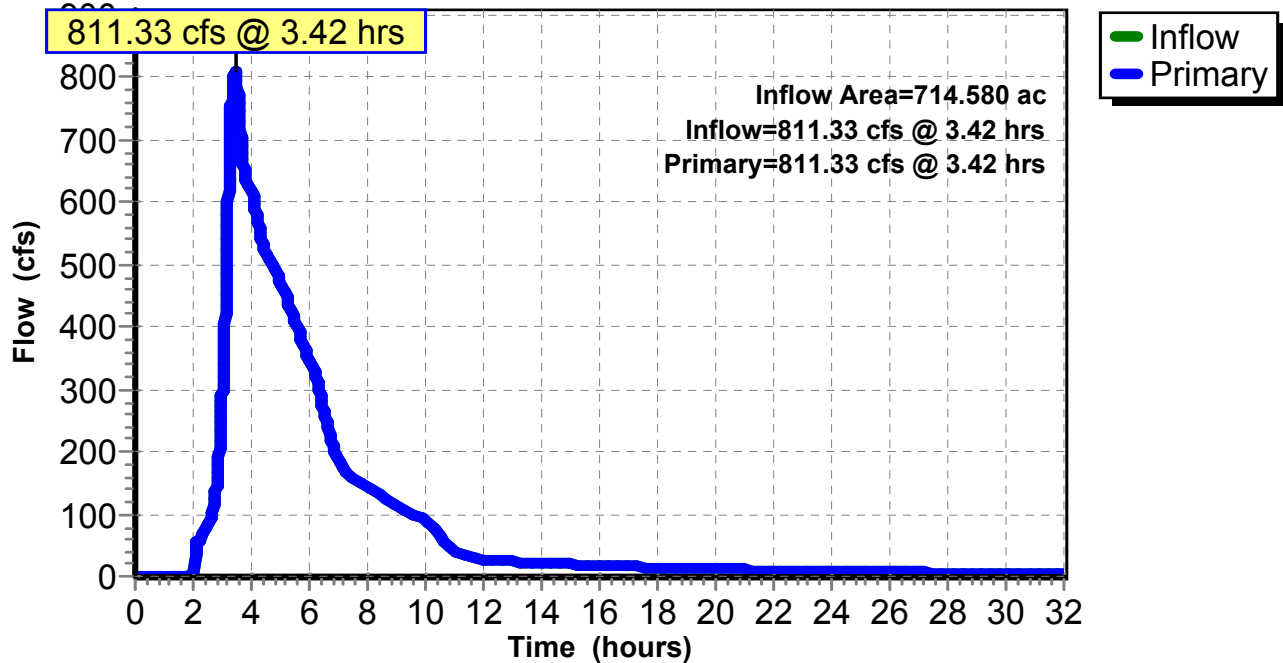
Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 3.71" for A100_6 event
Inflow = 811.33 cfs @ 3.42 hrs, Volume= 221.068 af
Primary = 811.33 cfs @ 3.42 hrs, Volume= 221.068 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 40.00'

Link FIN: FINAL

Hydrograph



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Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

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Summary for Subcatchment A: WS A

Runoff = 257.02 cfs @ 11.17 hrs, Volume= 34.017 af, Depth= 6.87"

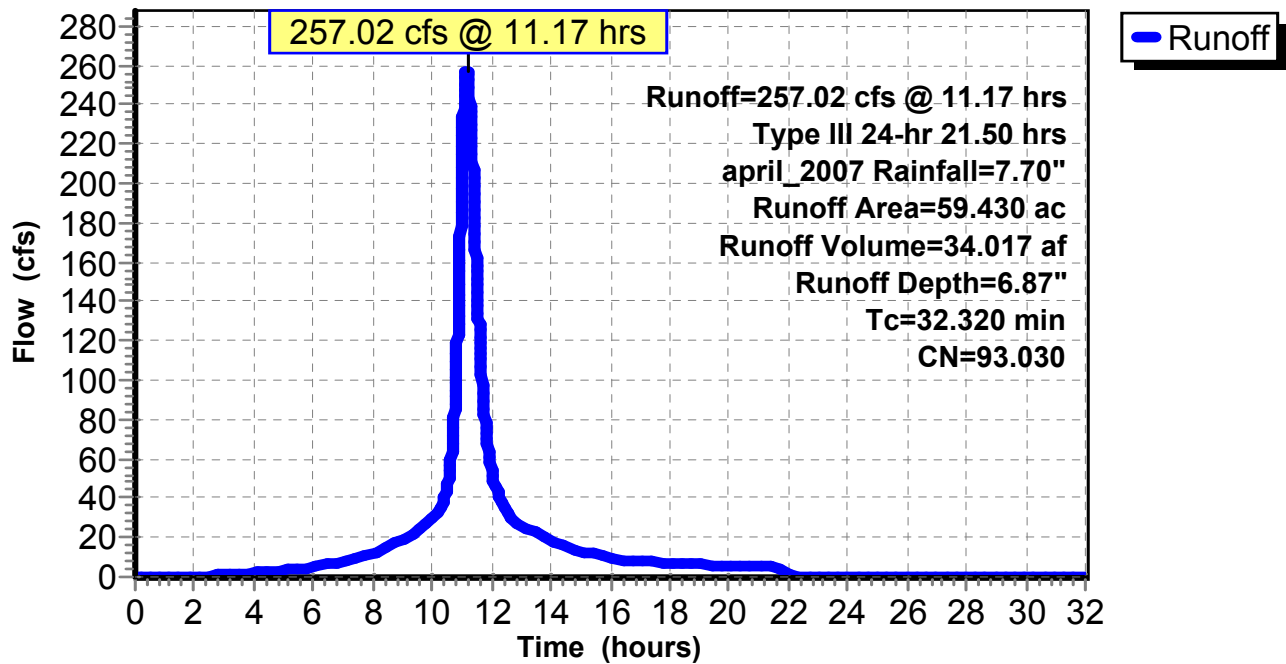
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



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Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

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Summary for Subcatchment B: WS B

Runoff = 247.26 cfs @ 11.14 hrs, Volume= 29.594 af, Depth= 6.17"

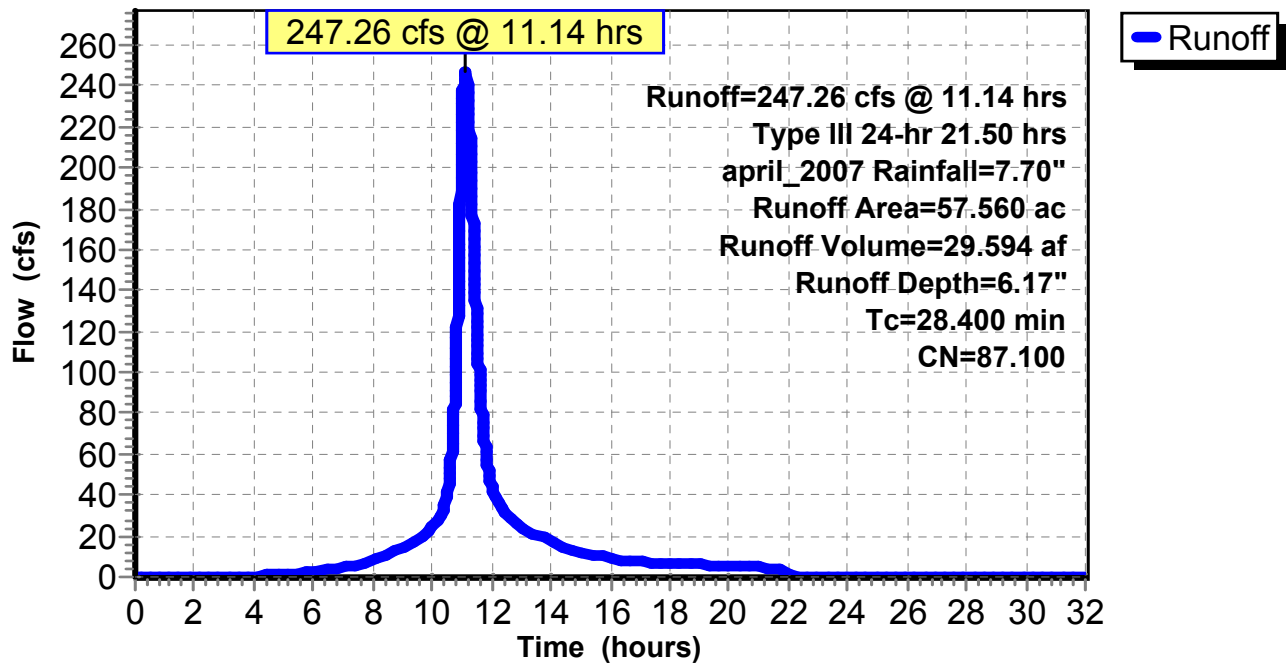
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



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Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

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Summary for Subcatchment BH: HOTEL

Runoff = 62.73 cfs @ 11.14 hrs, Volume= 7.726 af, Depth= 6.06"

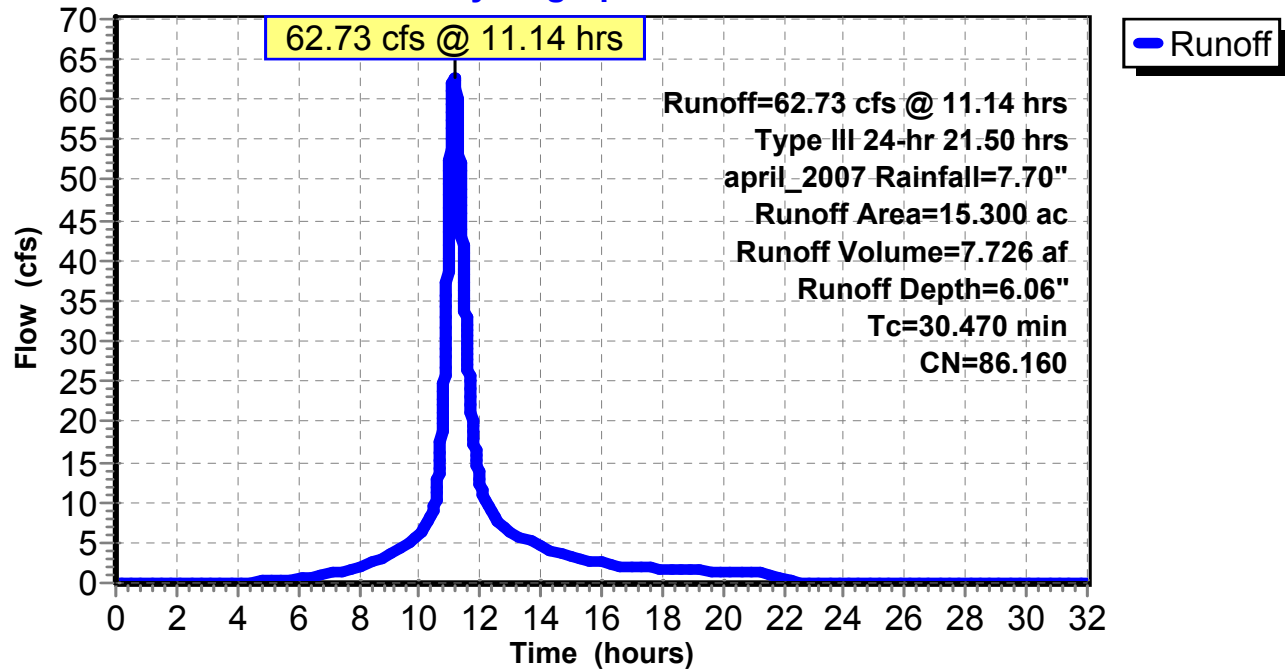
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



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Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

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Summary for Subcatchment C: WS C

Runoff = 103.29 cfs @ 11.00 hrs, Volume= 10.087 af, Depth= 5.64"

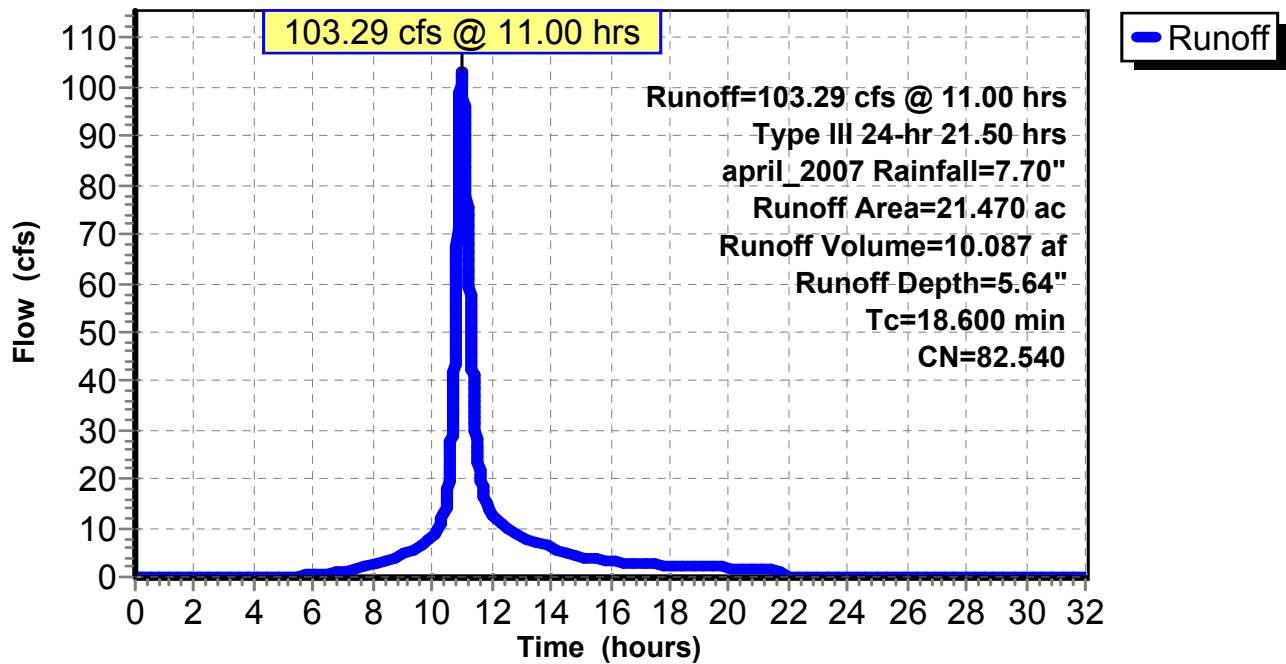
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



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Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

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Summary for Subcatchment D: WS D

Runoff = 363.73 cfs @ 11.36 hrs, Volume= 54.078 af, Depth= 5.60"

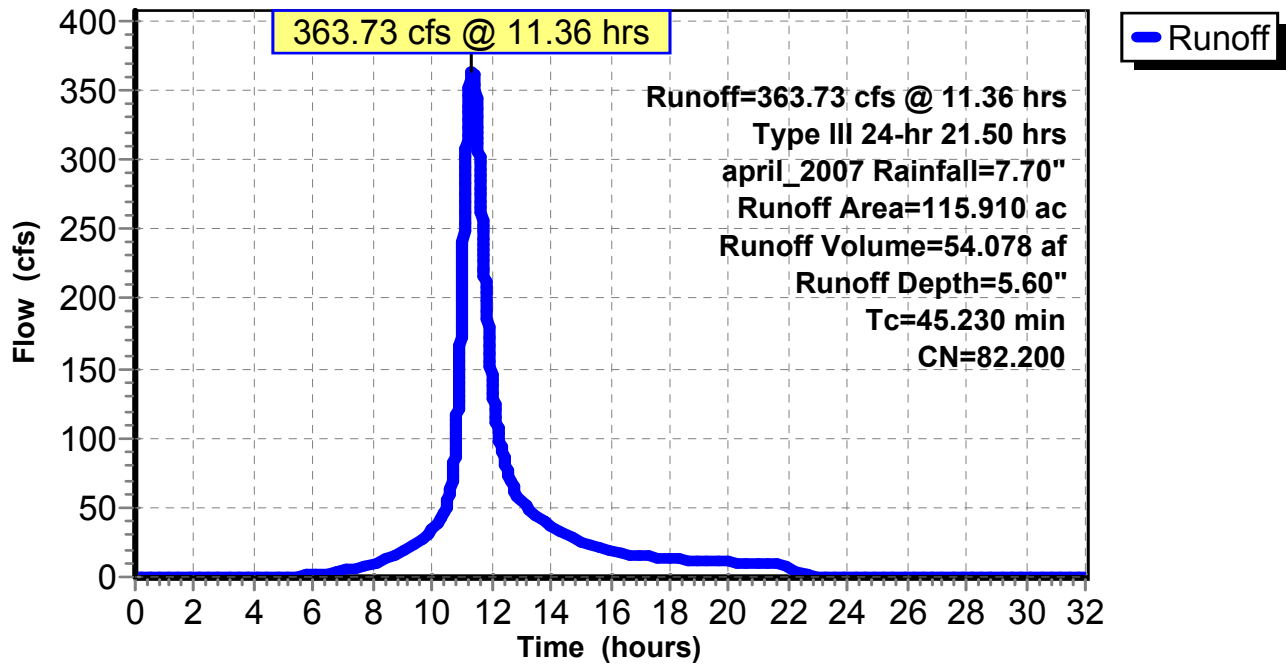
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



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Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

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Summary for Subcatchment D-1: WS D-1

Runoff = 133.15 cfs @ 11.19 hrs, Volume= 16.182 af, Depth= 4.91"

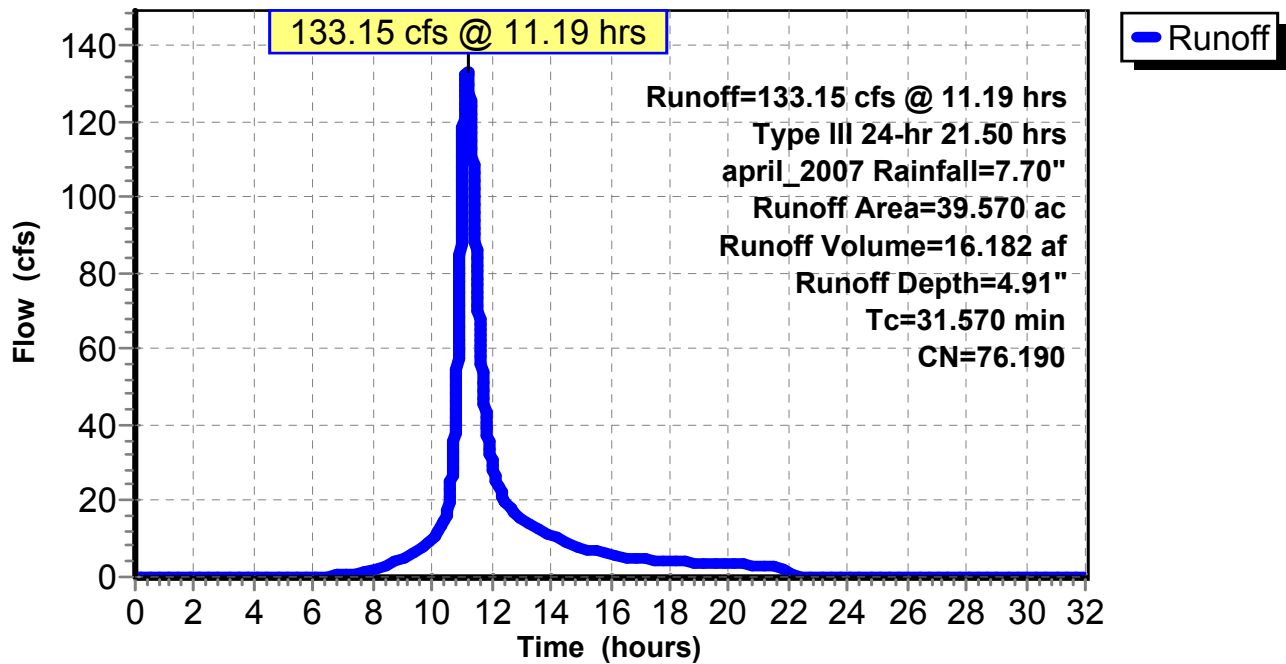
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



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Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

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Summary for Subcatchment E: WS E

Runoff = 293.65 cfs @ 11.59 hrs, Volume= 52.624 af, Depth= 5.38"

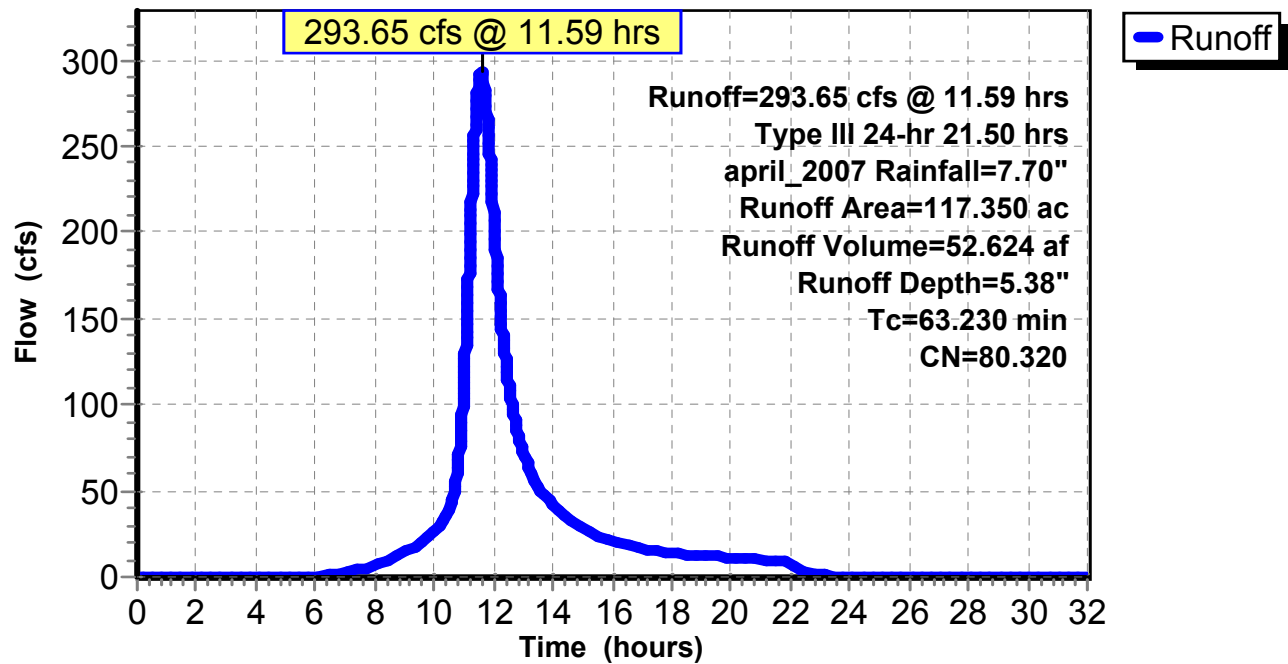
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



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Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

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Summary for Subcatchment F: WS F

Runoff = 328.06 cfs @ 11.36 hrs, Volume= 47.334 af, Depth= 4.69"

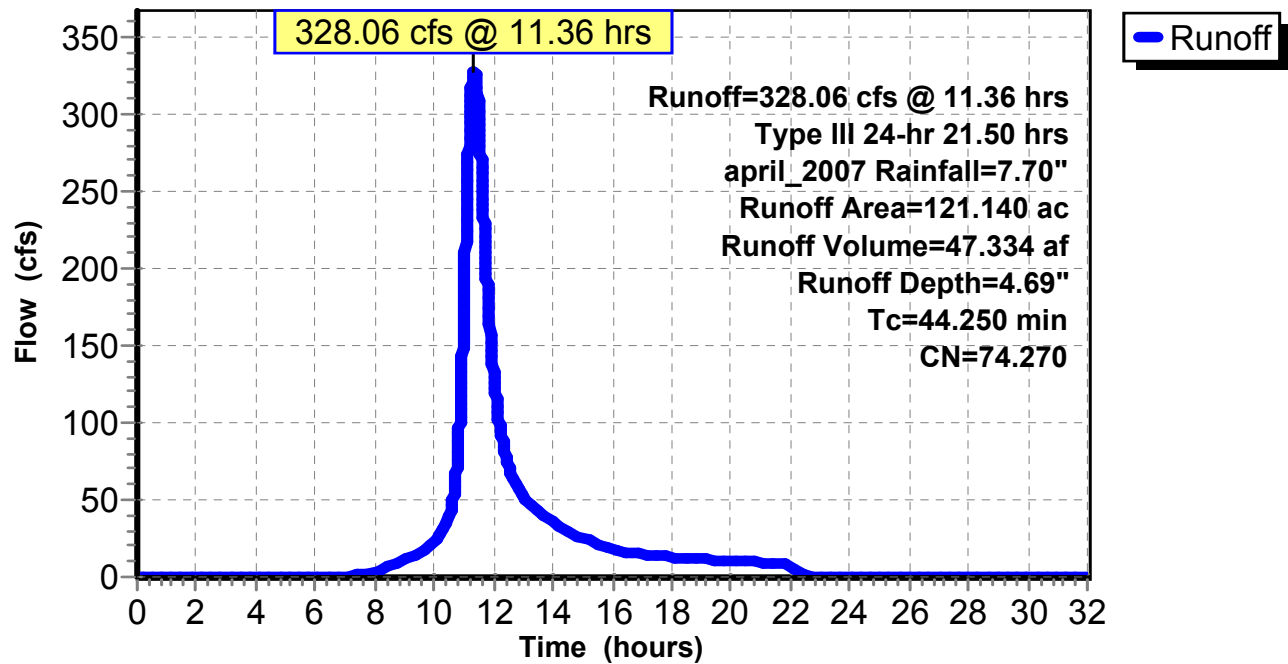
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



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Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

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Summary for Subcatchment G: WS G

Runoff = 583.01 cfs @ 11.22 hrs, Volume= 76.685 af, Depth= 5.52"

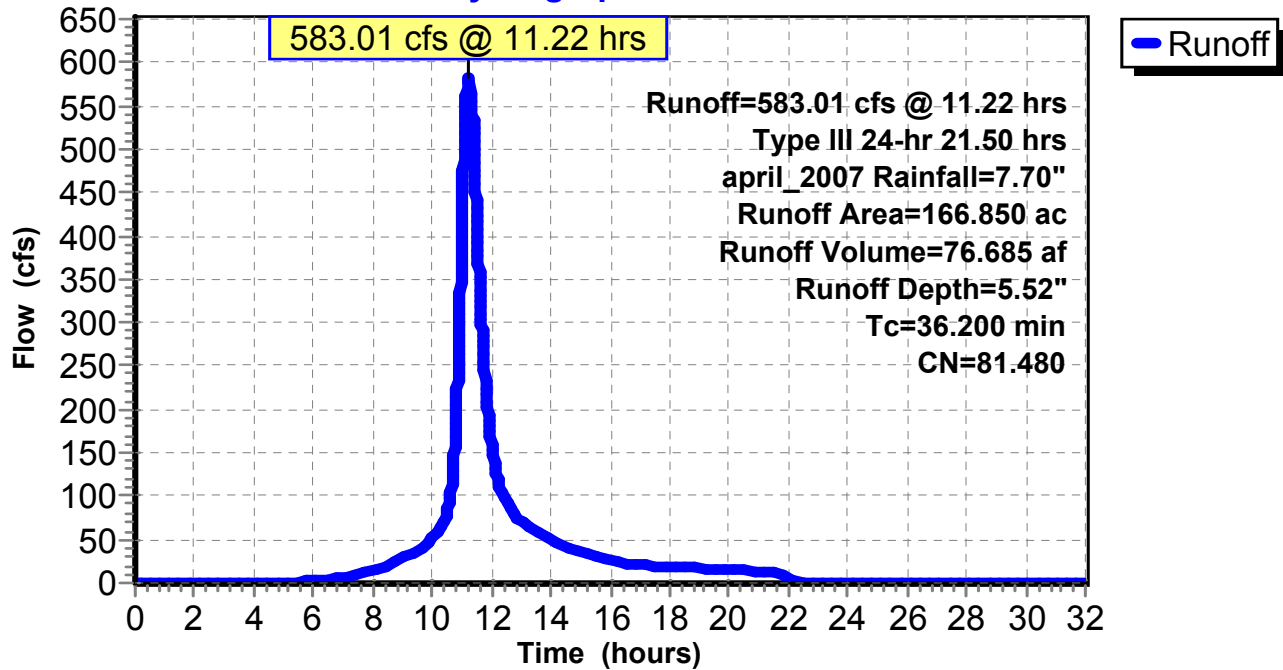
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



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Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

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Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 4.69" for april_2007 event
Inflow = 339.02 cfs @ 12.25 hrs, Volume= 158.325 af
Outflow = 338.89 cfs @ 12.27 hrs, Volume= 158.223 af, Atten= 0%, Lag= 1.324 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.44 fps, Min. Travel Time= 1.894 min
Avg. Velocity = 2.22 fps, Avg. Travel Time= 3.781 min

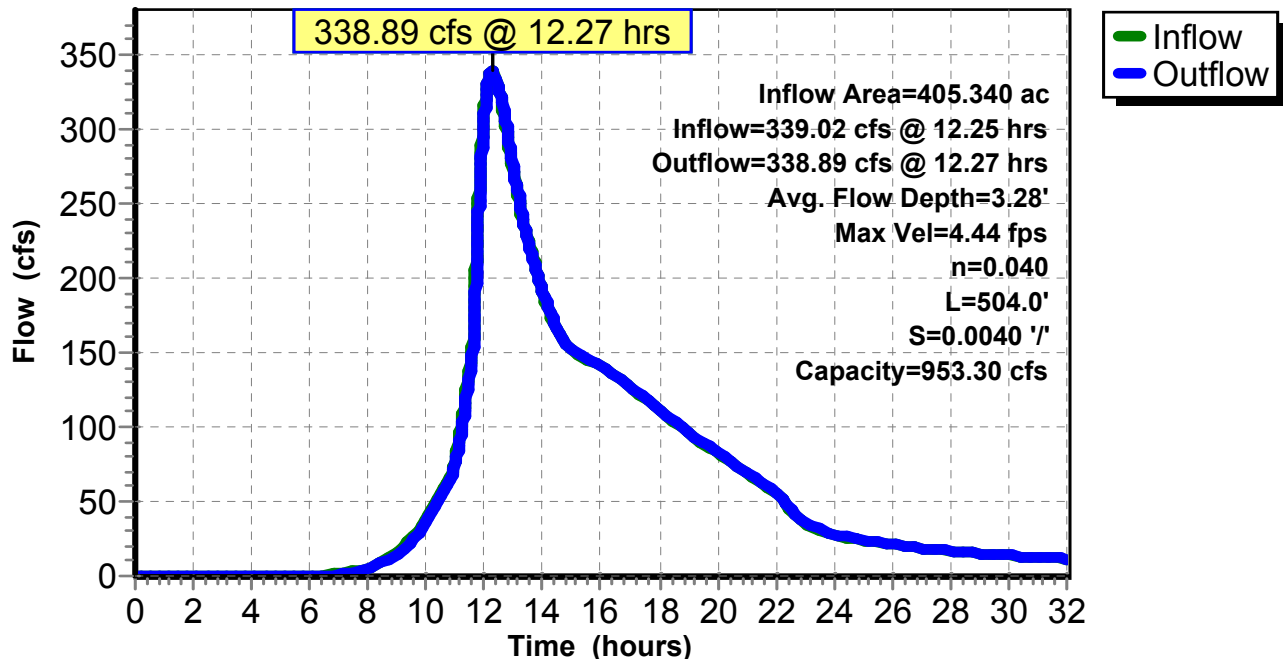
Peak Storage= 38,507 cf @ 12.27 hrs
Average Depth at Peak Storage= 3.28'
Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 ' ' Top Width= 32.00'
Length= 504.0' Slope= 0.0040 ' '
Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



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Avon PR
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

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Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 4.69" for april_2007 event
Inflow = 327.55 cfs @ 11.36 hrs, Volume= 47.334 af
Outflow = 292.11 cfs @ 11.53 hrs, Volume= 47.317 af, Atten= 11%, Lag= 10.139 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.37 fps, Min. Travel Time= 15.346 min
Avg. Velocity = 0.64 fps, Avg. Travel Time= 56.913 min

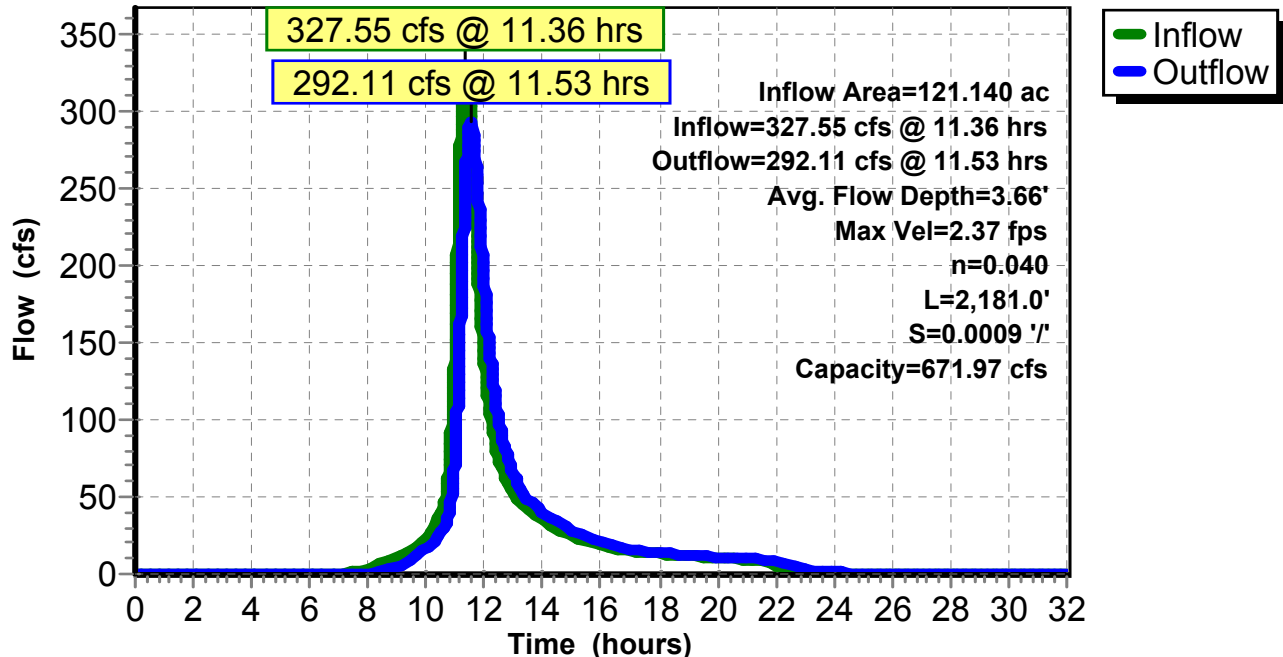
Peak Storage= 268,956 cf @ 11.53 hrs
Average Depth at Peak Storage= 3.66'
Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 '/ Top Width= 42.00'
Length= 2,181.0' Slope= 0.0009 '/
Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



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Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 5.38" for april_2007 event
Inflow = 576.75 cfs @ 11.28 hrs, Volume= 74.792 af
Outflow = 59.92 cfs @ 13.52 hrs, Volume= 58.661 af, Atten= 90%, Lag= 134.880 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2

Max. Velocity= 0.64 fps, Min. Travel Time= 573.152 min

Avg. Velocity = 0.47 fps, Avg. Travel Time= 791.270 min

Peak Storage= 2,060,515 cf @ 13.52 hrs

Average Depth at Peak Storage= 2.84'

Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040

Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'

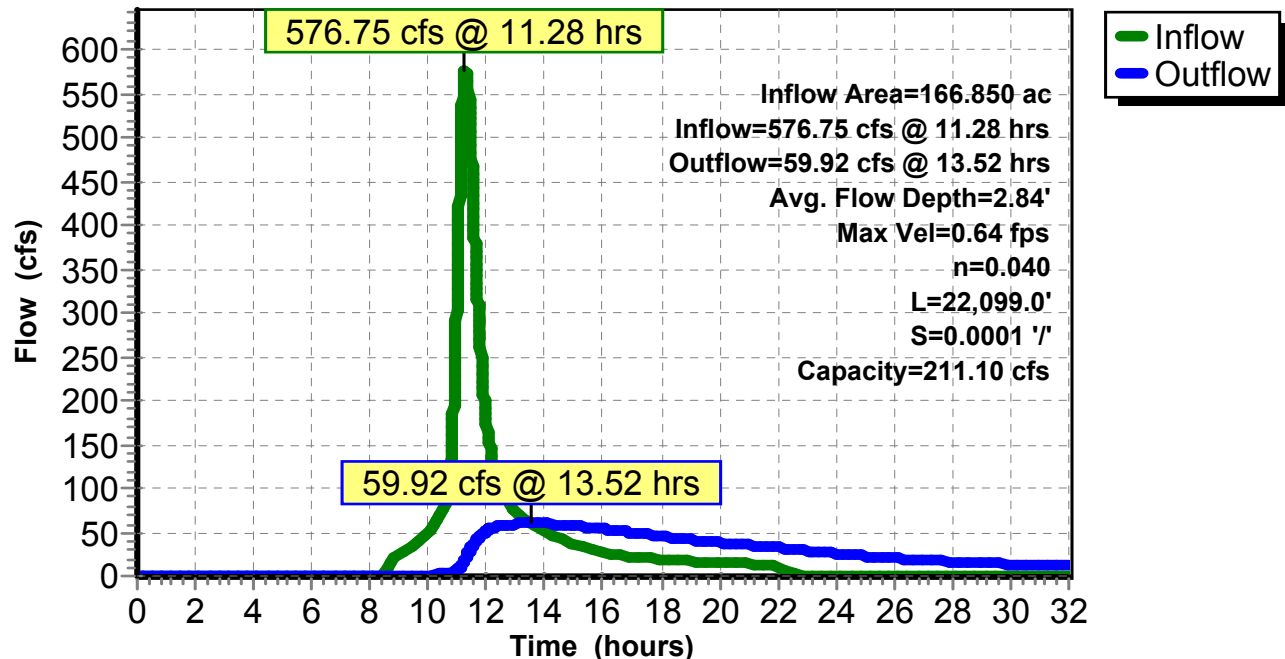
Length= 22,099.0' Slope= 0.0001 ' / '

Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



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Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 4.70" for april_2007 event
Inflow = 361.43 cfs @ 12.27 hrs, Volume= 174.204 af
Outflow = 359.14 cfs @ 12.36 hrs, Volume= 173.864 af, Atten= 1%, Lag= 5.622 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2

Max. Velocity= 7.10 fps, Min. Travel Time= 7.003 min

Avg. Velocity= 3.92 fps, Avg. Travel Time= 12.677 min

Peak Storage= 150,907 cf @ 12.36 hrs

Average Depth at Peak Storage= 2.57'

Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040

Side Slope Z-value= 3.0 ' / ' Top Width= 36.00'

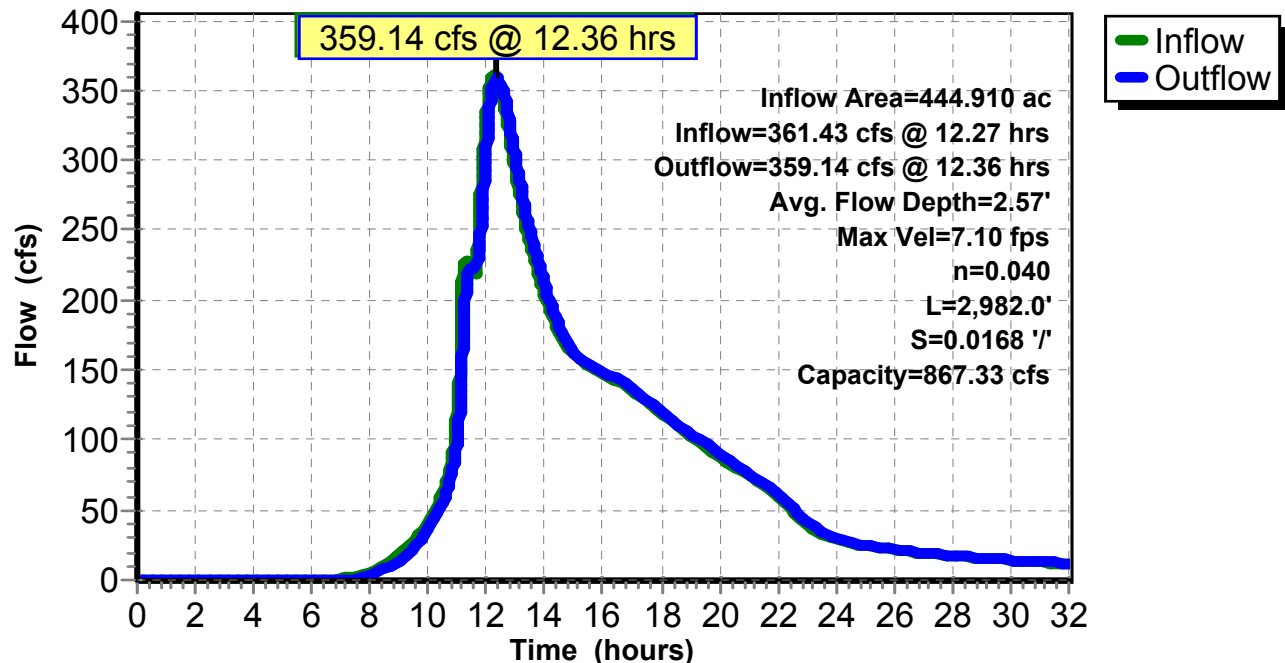
Length= 2,982.0' Slope= 0.0168 ' / '

Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



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Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

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Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 4.88" for april_2007 event
Inflow = 582.98 cfs @ 11.41 hrs, Volume= 227.941 af
Outflow = 582.86 cfs @ 11.42 hrs, Volume= 227.896 af, Atten= 0%, Lag= 0.398 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 11.17 fps, Min. Travel Time= 0.649 min
Avg. Velocity = 4.91 fps, Avg. Travel Time= 1.476 min

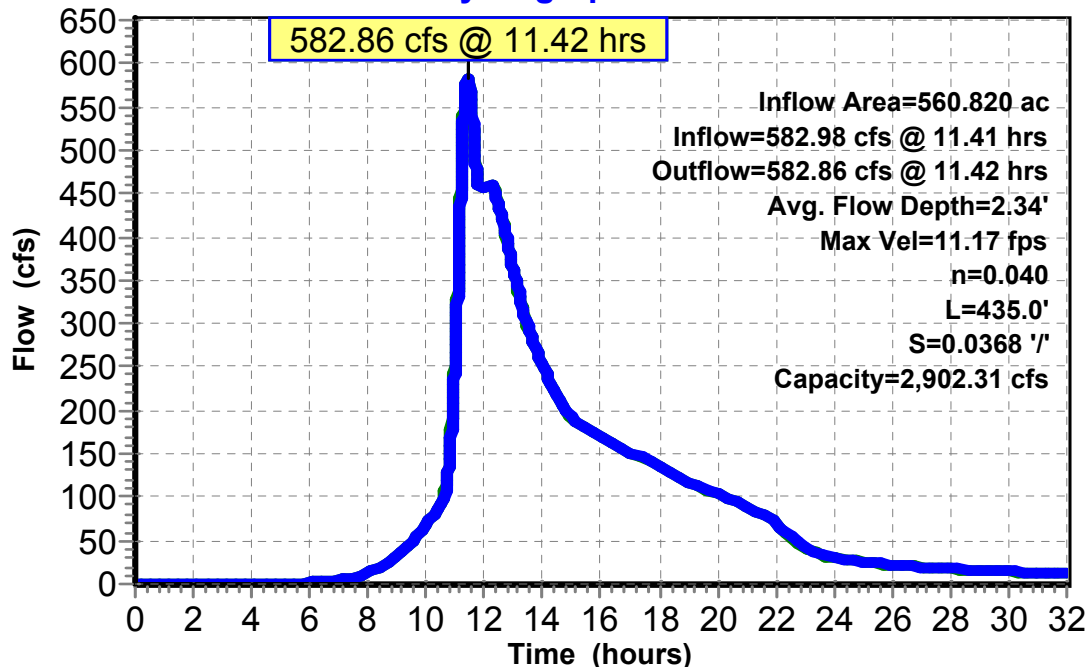
Peak Storage= 22,708 cf @ 11.42 hrs
Average Depth at Peak Storage= 2.34'
Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
Length= 435.0' Slope= 0.0368 ' / '
Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



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Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 4.90" for april_2007 event
 Inflow = 620.13 cfs @ 11.38 hrs, Volume= 237.983 af
 Outflow = 583.77 cfs @ 11.53 hrs, Volume= 237.981 af, Atten= 6%, Lag= 8.973 min
 Primary = 583.77 cfs @ 11.53 hrs, Volume= 237.981 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 77.77' @ 11.53 hrs Surf.Area= 0.509 ac Storage= 2.353 af

Plug-Flow detention time= 0.611 min calculated for 237.907 af (100% of inflow)
 Center-of-Mass det. time= 0.602 min (912.066 - 911.464)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

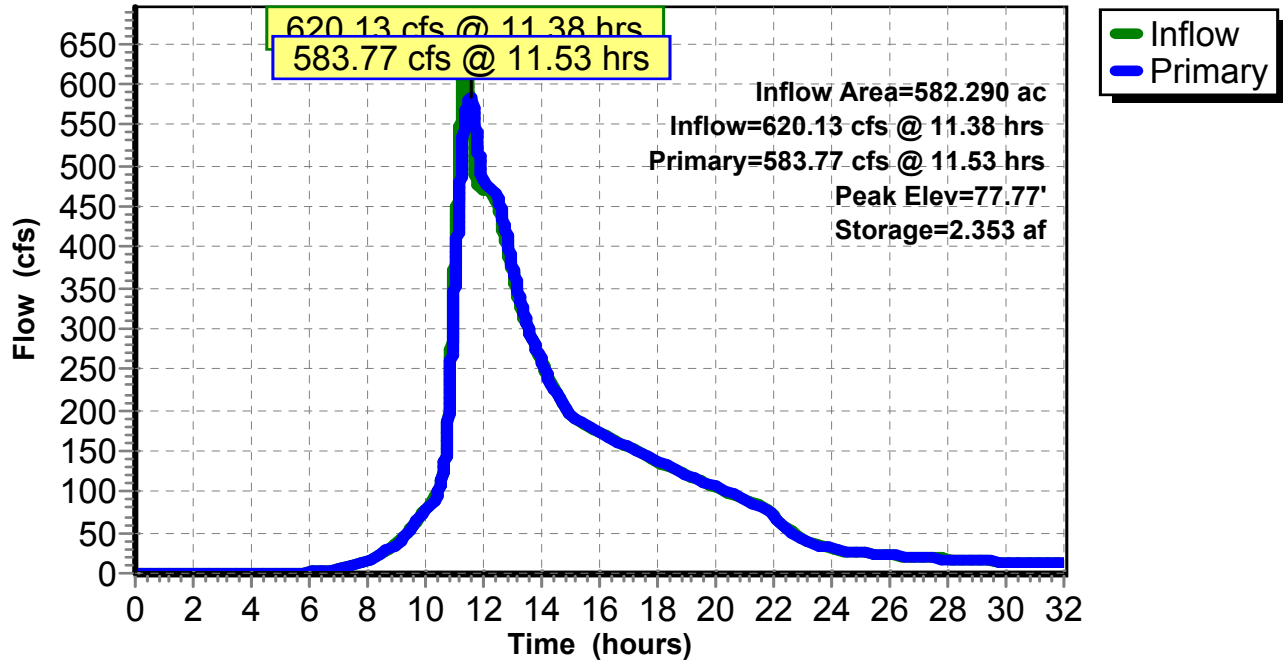
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=583.77 cfs @ 11.53 hrs HW=77.77' TW=66.80' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 313.14 cfs @ 15.95 fps)
- 2=Culvert 2 (Inlet Controls 270.63 cfs @ 13.78 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



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Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 4.70" for april_2007 event
 Inflow = 361.93 cfs @ 12.24 hrs, Volume= 174.405 af
 Outflow = 361.43 cfs @ 12.27 hrs, Volume= 174.204 af, Atten= 0%, Lag= 1.776 min
 Primary = 361.43 cfs @ 12.27 hrs, Volume= 174.204 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 130.60' @ 12.28 hrs Surf.Area= 1.056 ac Storage= 2.673 af

Plug-Flow detention time= 8.593 min calculated for 174.204 af (100% of inflow)
 Center-of-Mass det. time= 7.482 min (958.789 - 951.307)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

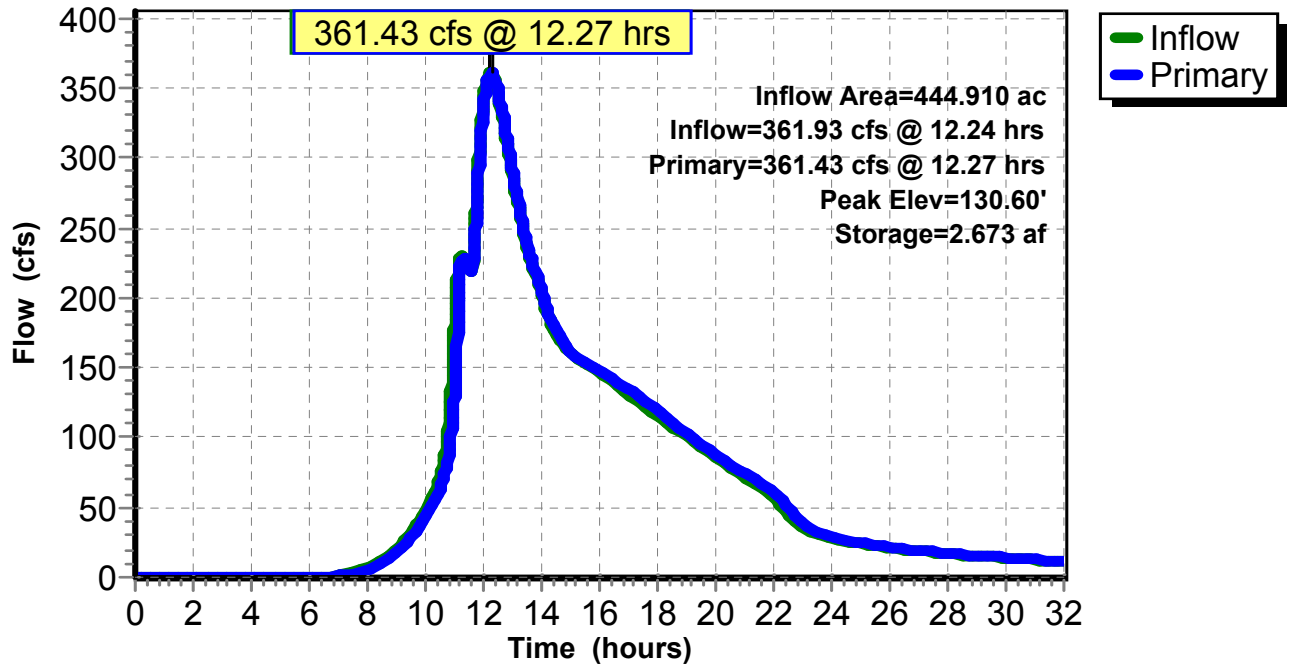
Primary OutFlow Max=361.43 cfs @ 12.27 hrs HW=130.60' TW=128.56' (Dynamic Tailwater)

1=Culvert (Inlet Controls 172.81 cfs @ 6.88 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 188.62 cfs @ 2.53 fps)

Pond 4A: DP 4 A ARGYLE

Hydrograph



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Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 4.70" for april_2007 event
 Inflow = 620.87 cfs @ 11.58 hrs, Volume= 158.602 af
 Outflow = 339.02 cfs @ 12.25 hrs, Volume= 158.325 af, Atten= 45%, Lag= 40.142 min
 Primary = 339.02 cfs @ 12.25 hrs, Volume= 158.325 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 132.61' @ 12.25 hrs Surf.Area= 21.802 ac Storage= 31.039 af

Plug-Flow detention time= 58.778 min calculated for 158.325 af (100% of inflow)
 Center-of-Mass det. time= 57.031 min (969.392 - 912.361)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

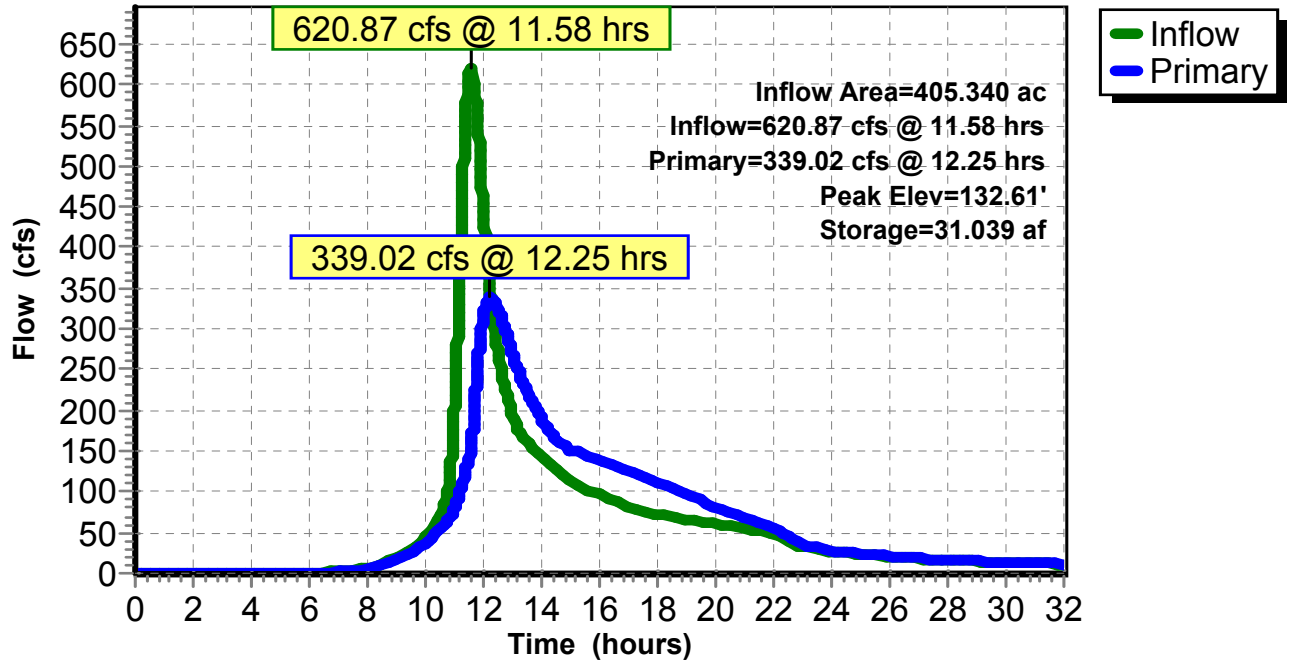
Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

Primary OutFlow Max=339.02 cfs @ 12.25 hrs HW=132.61' TW=131.28' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 139.71 cfs @ 5.56 fps)
- 2=Asymmetrical Weir (Weir Controls 199.32 cfs @ 2.14 fps)

Pond 5P: DP 5 BETSY BROWN ROAD

Hydrograph



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Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 4.88" for april_2007 event
 Inflow = 583.77 cfs @ 11.39 hrs, Volume= 227.942 af
 Outflow = 582.98 cfs @ 11.41 hrs, Volume= 227.941 af, Atten= 0%, Lag= 1.088 min
 Primary = 582.98 cfs @ 11.41 hrs, Volume= 227.941 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 91.42' @ 11.41 hrs Surf.Area= 1.370 ac Storage= 1.943 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 2.884 min (918.775 - 915.891)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

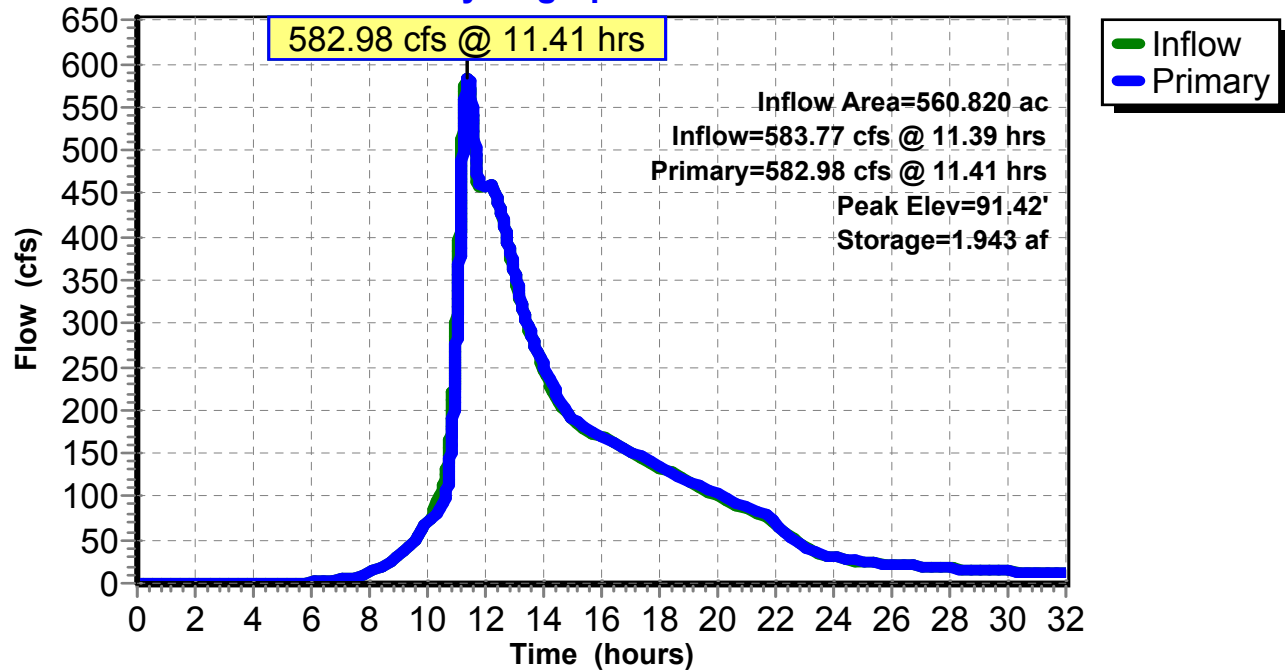
Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=582.98 cfs @ 11.41 hrs HW=91.42' TW=78.34' (Dynamic Tailwater)

- 1=Sharp-Crested Rectangular Weir (Weir Controls 197.36 cfs @ 5.54 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 385.62 cfs @ 3.17 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



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Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 5.08" for april_2007 event
 Inflow = 810.10 cfs @ 11.17 hrs, Volume= 302.770 af
 Outflow = 809.81 cfs @ 11.17 hrs, Volume= 301.080 af, Atten= 0%, Lag= 0.210 min
 Primary = 809.81 cfs @ 11.17 hrs, Volume= 301.080 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 40.20' @ 11.17 hrs Surf.Area= 1.134 ac Storage= 1.886 af

Plug-Flow detention time= 8.721 min calculated for 301.080 af (99% of inflow)
 Center-of-Mass det. time= 3.169 min (878.624 - 875.455)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

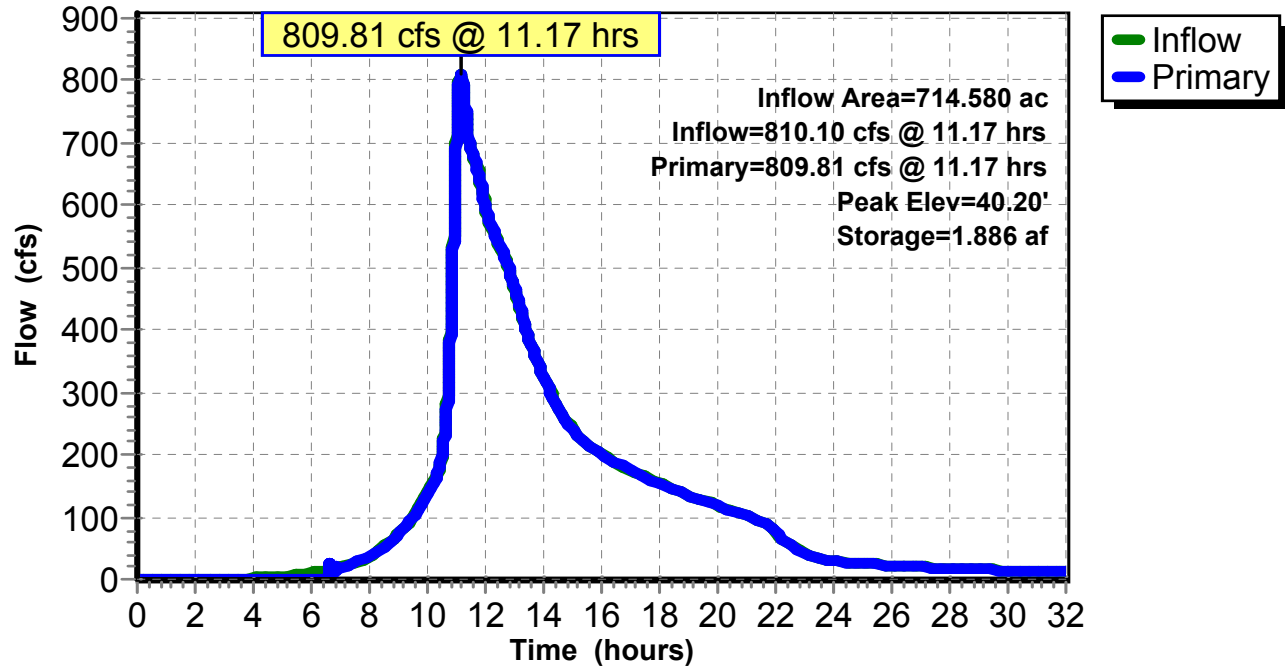
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=809.79 cfs @ 11.17 hrs HW=40.20' TW=40.00' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 299.76 cfs @ 2.18 fps)
- 2=WEIR BOWMAN (Weir Controls 510.03 cfs @ 1.64 fps)

Pond 8P: BOWMAN FIELDS

Hydrograph



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Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 4.69" for april_2007 event
 Inflow = 328.06 cfs @ 11.36 hrs, Volume= 47.334 af
 Outflow = 327.55 cfs @ 11.36 hrs, Volume= 47.334 af, Atten= 0%, Lag= 0.197 min
 Primary = 327.55 cfs @ 11.36 hrs, Volume= 47.334 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 135.04' @ 11.37 hrs Surf.Area= 0.210 ac Storage= 0.251 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.397 min (768.620 - 768.223)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

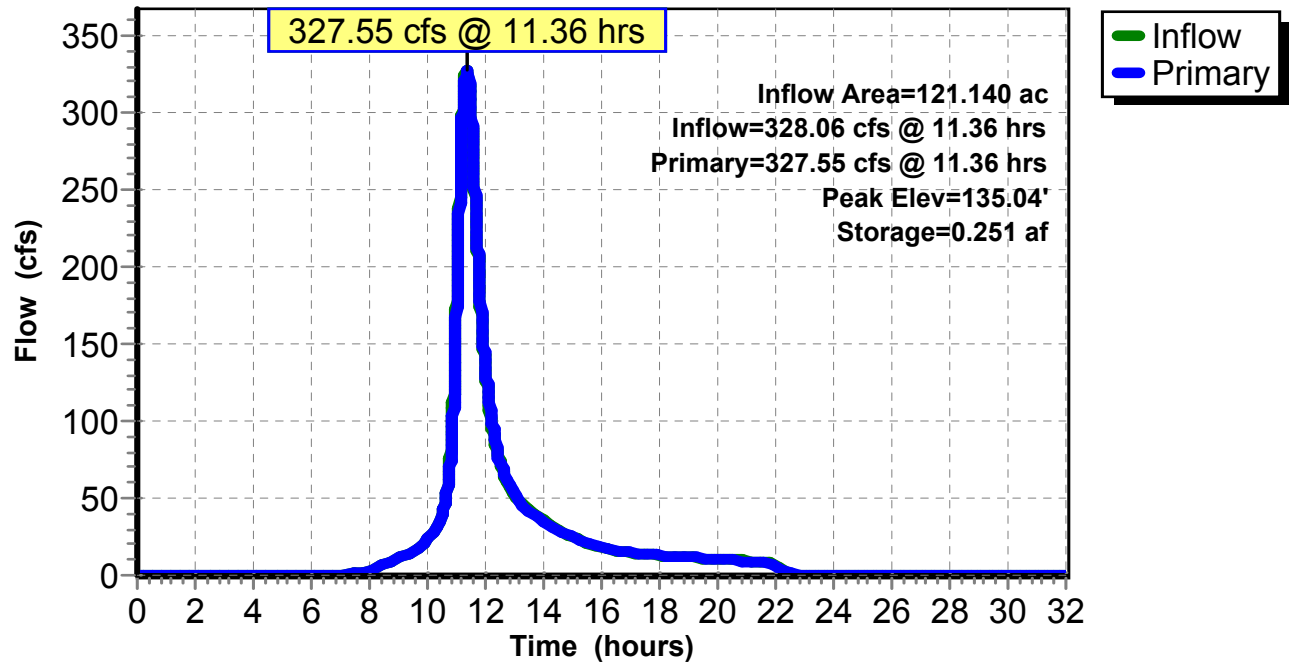
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=327.54 cfs @ 11.36 hrs HW=135.04' TW=133.42' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 43.39 cfs @ 6.14 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 79.96 cfs @ 5.26 fps)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 204.19 cfs @ 2.41 fps)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Hydrograph



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Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

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Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 5.52" for april_2007 event
 Inflow = 583.01 cfs @ 11.22 hrs, Volume= 76.685 af
 Outflow = 576.75 cfs @ 11.28 hrs, Volume= 74.792 af, Atten= 1%, Lag= 3.010 min
 Primary = 576.75 cfs @ 11.28 hrs, Volume= 74.792 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.72' @ 11.28 hrs Surf.Area= 4.192 ac Storage= 7.482 af (4.514 af above start)

Plug-Flow detention time= 51.858 min calculated for 71.802 af (94% of inflow)
 Center-of-Mass det. time= 13.013 min (758.954 - 745.941)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

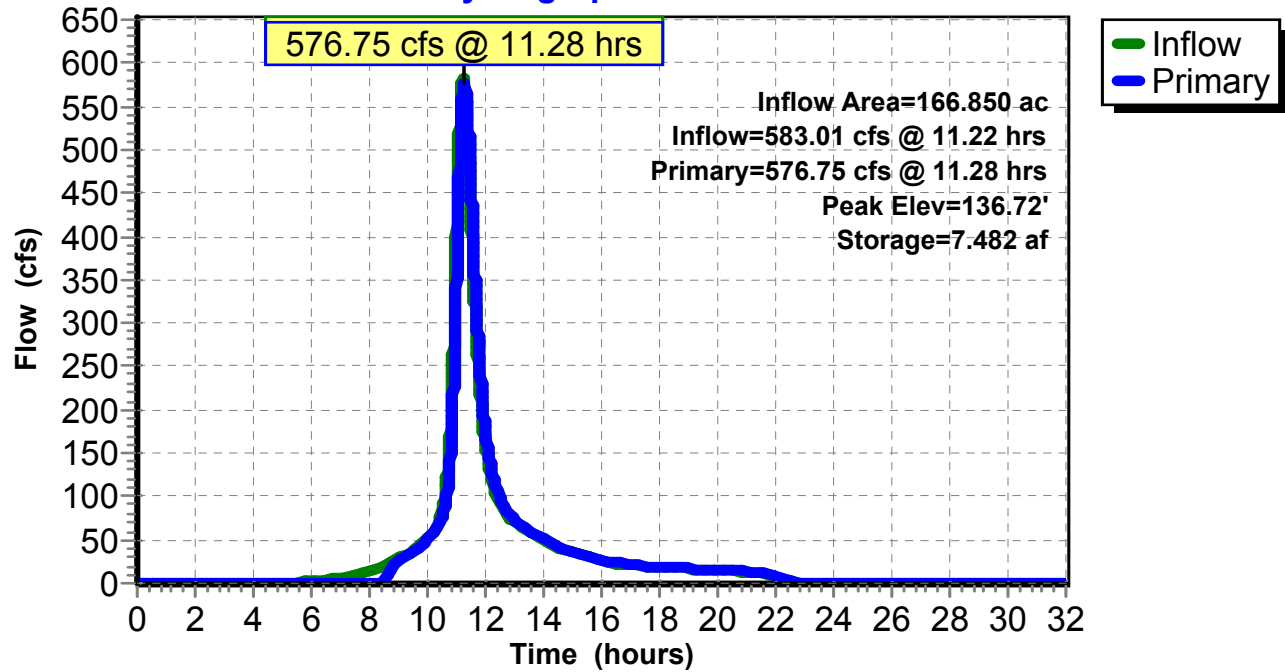
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=576.68 cfs @ 11.28 hrs HW=136.72' TW=131.46' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 3.74 cfs @ 2.88 fps)
- 2=Asymmetrical Weir (Weir Controls 572.94 cfs @ 2.36 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Hydrograph



Avon_Working_Model_10

Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

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Summary for Pond 24P: RAINSTORE WHOLE FIELD

Inflow = 330.90 cfs @ 11.54 hrs, Volume= 47.614 af
 Outflow = 251.84 cfs @ 11.91 hrs, Volume= 47.614 af, Atten= 24%, Lag= 21.846 min
 Discarded = 9.68 cfs @ 11.01 hrs, Volume= 6.544 af
 Primary = 81.27 cfs @ 11.91 hrs, Volume= 16.958 af
 Secondary = 160.89 cfs @ 11.91 hrs, Volume= 24.112 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 41.54' @ 11.91 hrs Surf.Area= 209,016 sf Storage= 510,099 cf

Plug-Flow detention time= 50.862 min calculated for 47.599 af (100% of inflow)
 Center-of-Mass det. time= 50.927 min (782.871 - 731.944)

Volume	Invert	Avail.Storage	Storage Description
#1	39.00'	2,608,520 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 2,717,208 cf Overall x 96.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
39.00	209,016	0	0
52.00	209,016	2,717,208	2,717,208

Device	Routing	Invert	Outlet Devices
#1	Secondary	40.00'	26.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Discarded	39.00'	2.000 in/hr Exfiltration over Surface area
#3	Primary	39.00'	42.0" Vert. Orifice/Grate X 2.00 C= 0.600

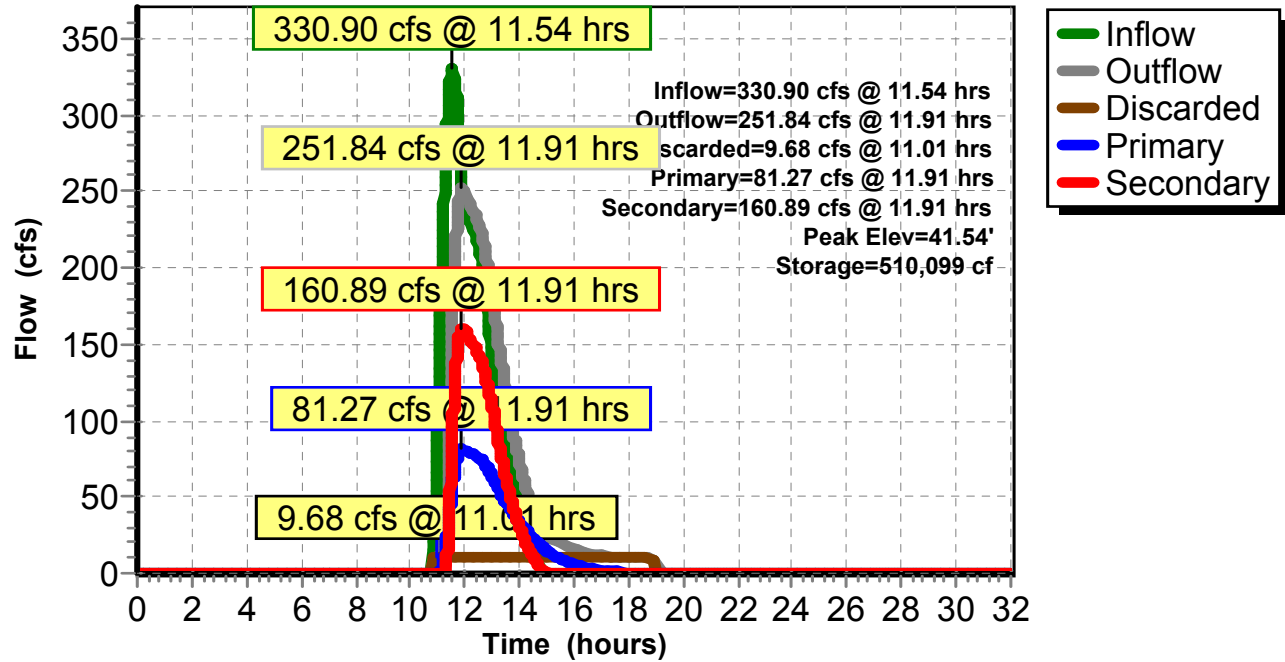
Discarded OutFlow Max=9.68 cfs @ 11.01 hrs HW=39.13' (Free Discharge)
 ↑**2=Exfiltration** (Exfiltration Controls 9.68 cfs)

Primary OutFlow Max=81.27 cfs @ 11.91 hrs HW=41.54' TW=0.00' (Dynamic Tailwater)
 ↑**3=Orifice/Grate** (Orifice Controls 81.27 cfs @ 5.43 fps)

Secondary OutFlow Max=160.89 cfs @ 11.91 hrs HW=41.54' TW=0.00' (Dynamic Tailwater)
 ↑**1=Sharp-Crested Rectangular Weir**(Weir Controls 160.89 cfs @ 4.06 fps)

Pond 24P: RAINSTORE WHOLE FIELD

Hydrograph



Avon_Working_Model_10

Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

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Summary for Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 4.17" for april_2007 event
 Inflow = 550.37 cfs @ 11.14 hrs, Volume= 227.683 af
 Outflow = 550.37 cfs @ 11.14 hrs, Volume= 227.683 af, Atten= 0%, Lag= 0.000 min
 Primary = 414.35 cfs @ 11.14 hrs, Volume= 201.363 af
 Secondary = 136.01 cfs @ 11.14 hrs, Volume= 26.320 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 45.60' @ 11.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 110.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0009 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48
#3	Secondary	40.25'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 40.25' / 39.75' S= 0.0037 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf

Primary OutFlow Max=414.31 cfs @ 11.14 hrs HW=45.60' TW=0.00' (Dynamic Tailwater)

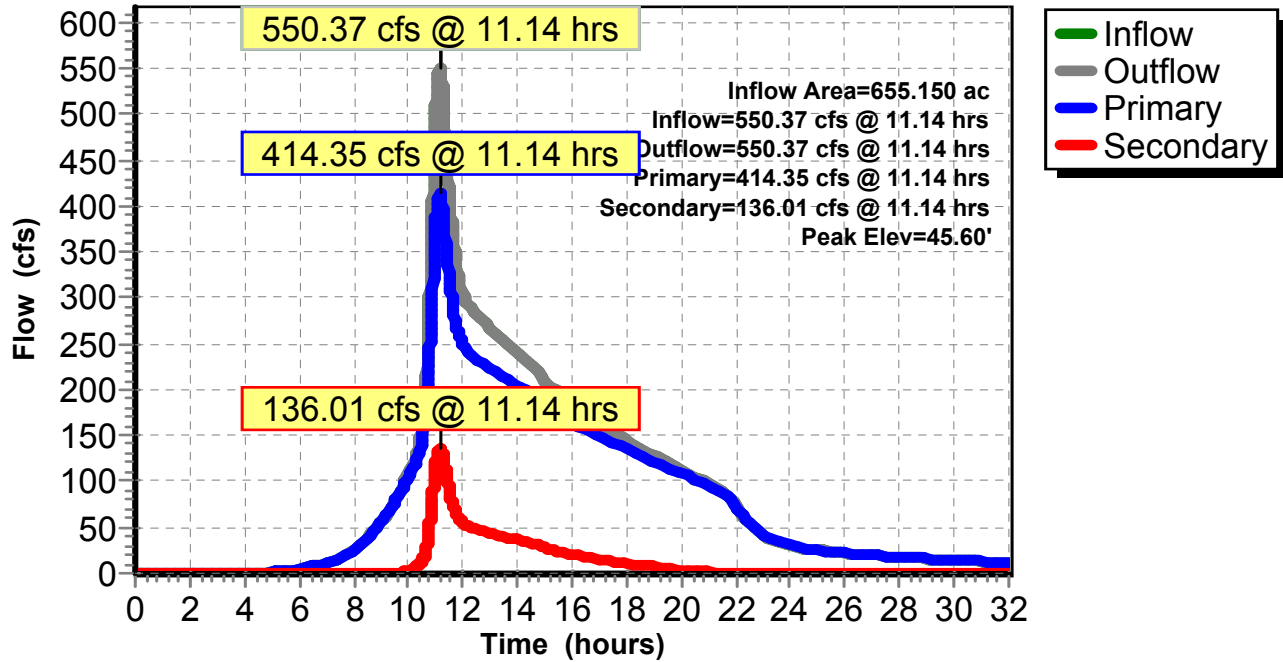
↑1=Culvert (Barrel Controls 414.31 cfs @ 10.62 fps)
 ↓2=WEIR WESTCH AVE (Controls 0.00 cfs)

Secondary OutFlow Max=135.99 cfs @ 11.14 hrs HW=45.60' TW=0.00' (Dynamic Tailwater)

↑3=Culvert (Barrel Controls 135.99 cfs @ 8.05 fps)

Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



Avon_Working_Model_10

Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

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Summary for Pond 41P: UPSTREAM AVON

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 4.90" for april_2007 event
 Inflow = 583.77 cfs @ 11.53 hrs, Volume= 237.981 af
 Outflow = 583.57 cfs @ 11.54 hrs, Volume= 237.978 af, Atten= 0%, Lag= 0.844 min
 Primary = 252.68 cfs @ 11.54 hrs, Volume= 190.364 af
 Secondary = 222.76 cfs @ 11.54 hrs, Volume= 36.576 af
 Tertiary = 108.14 cfs @ 11.54 hrs, Volume= 11.038 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 66.80' @ 11.54 hrs Surf.Area= 10,112 sf Storage= 30,824 cf

Plug-Flow detention time= 0.624 min calculated for 237.978 af (100% of inflow)
 Center-of-Mass det. time= 0.609 min (912.675 - 912.066)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	83,358 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686
70.00	10,112	40,448	63,134
72.00	10,112	20,224	83,358

Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert L= 947.0' Ke= 0.700 Inlet / Outlet Invert= 55.13' / 37.90' S= 0.0182 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Tertiary	65.00'	14.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Secondary	63.50'	12.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

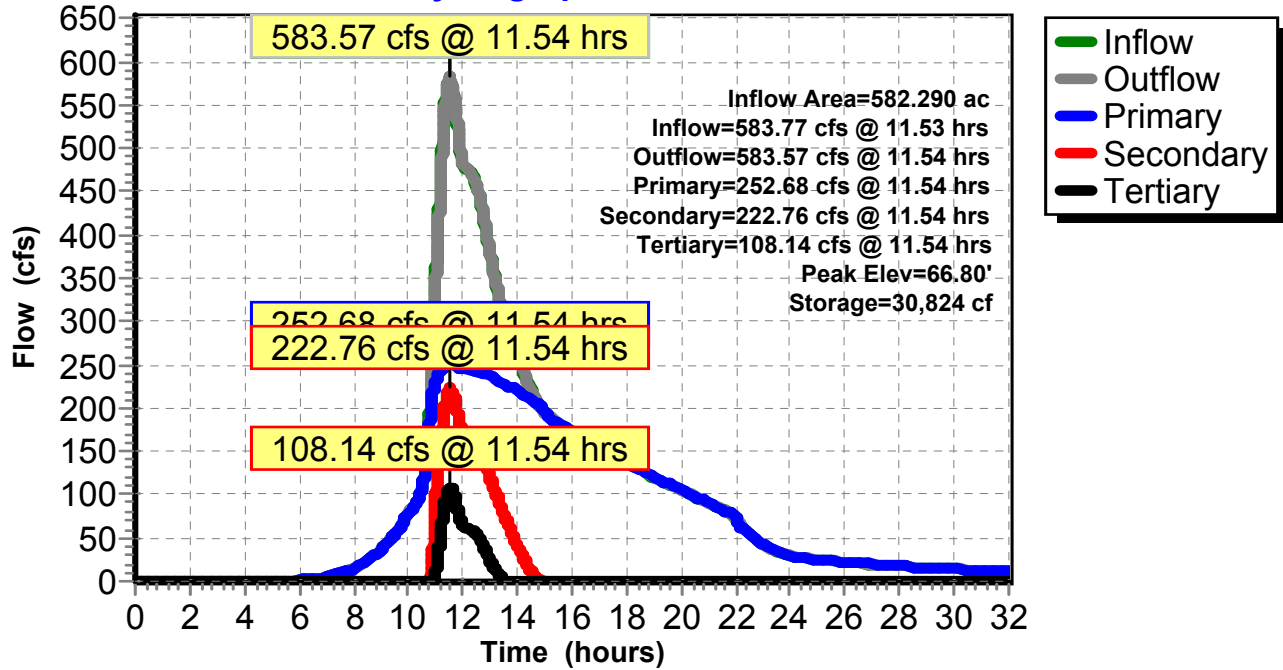
Primary OutFlow Max=252.67 cfs @ 11.54 hrs HW=66.80' TW=0.00' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 252.67 cfs @ 12.87 fps)

Secondary OutFlow Max=222.75 cfs @ 11.54 hrs HW=66.80' TW=59.05' (Dynamic Tailwater)
 ↑3=Sharp-Crested Rectangular Weir (Weir Controls 222.75 cfs @ 5.94 fps)

Tertiary OutFlow Max=108.12 cfs @ 11.54 hrs HW=66.80' TW=58.55' (Dynamic Tailwater)
 ↑2=Sharp-Crested Rectangular Weir (Weir Controls 108.12 cfs @ 4.39 fps)

Pond 41P: UPSTREAM AVON

Hydrograph



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Avon PR
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

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Summary for Pond 42P: CHAMBER

Inflow = 108.14 cfs @ 11.54 hrs, Volume= 11.038 af
Outflow = 108.14 cfs @ 11.54 hrs, Volume= 11.038 af, Atten= 0%, Lag= 0.000 min
Primary = 108.14 cfs @ 11.54 hrs, Volume= 11.038 af

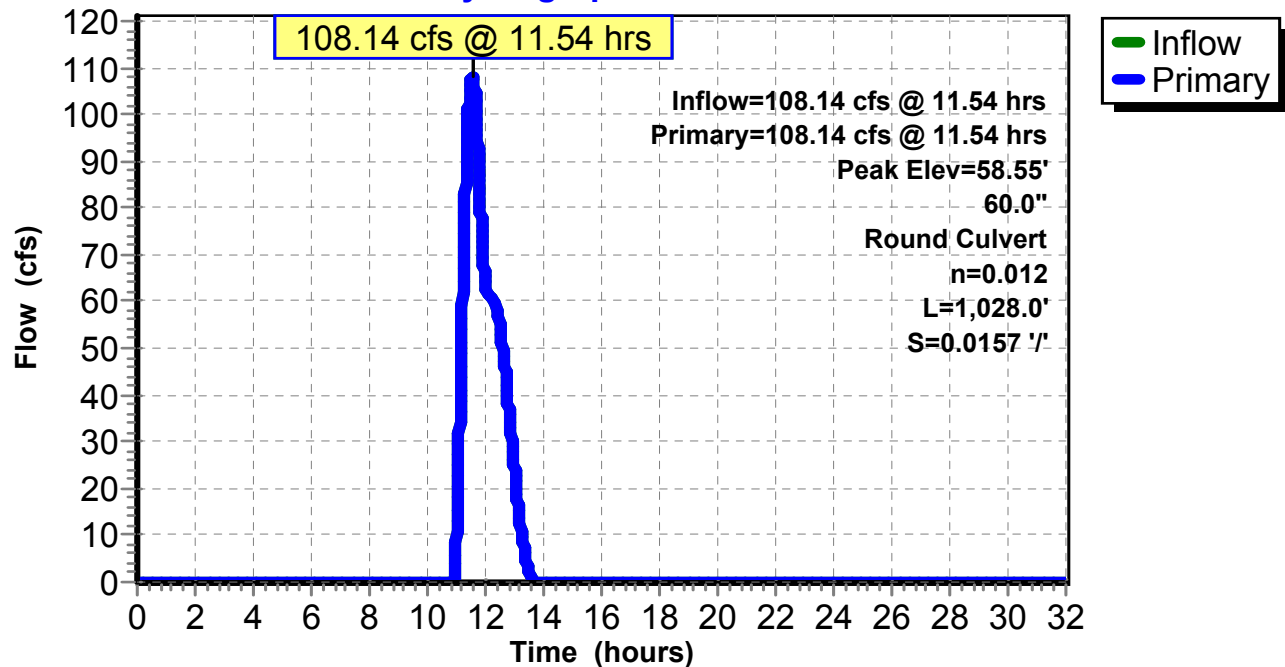
Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 58.55' @ 11.54 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert L= 1,028.0' Ke= 0.250 Inlet / Outlet Invert= 55.13' / 39.00' S= 0.0157 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf

Primary OutFlow Max=108.12 cfs @ 11.54 hrs HW=58.55' TW=0.00' (Dynamic Tailwater)
↑1=Culvert (Inlet Controls 108.12 cfs @ 7.56 fps)

Pond 42P: CHAMBER

Hydrograph



Summary for Pond 43P: DUAL 60" CULVERTS

Inflow = 222.76 cfs @ 11.54 hrs, Volume= 36.576 af
 Outflow = 222.76 cfs @ 11.54 hrs, Volume= 36.576 af, Atten= 0%, Lag= 0.000 min
 Primary = 222.76 cfs @ 11.54 hrs, Volume= 36.576 af

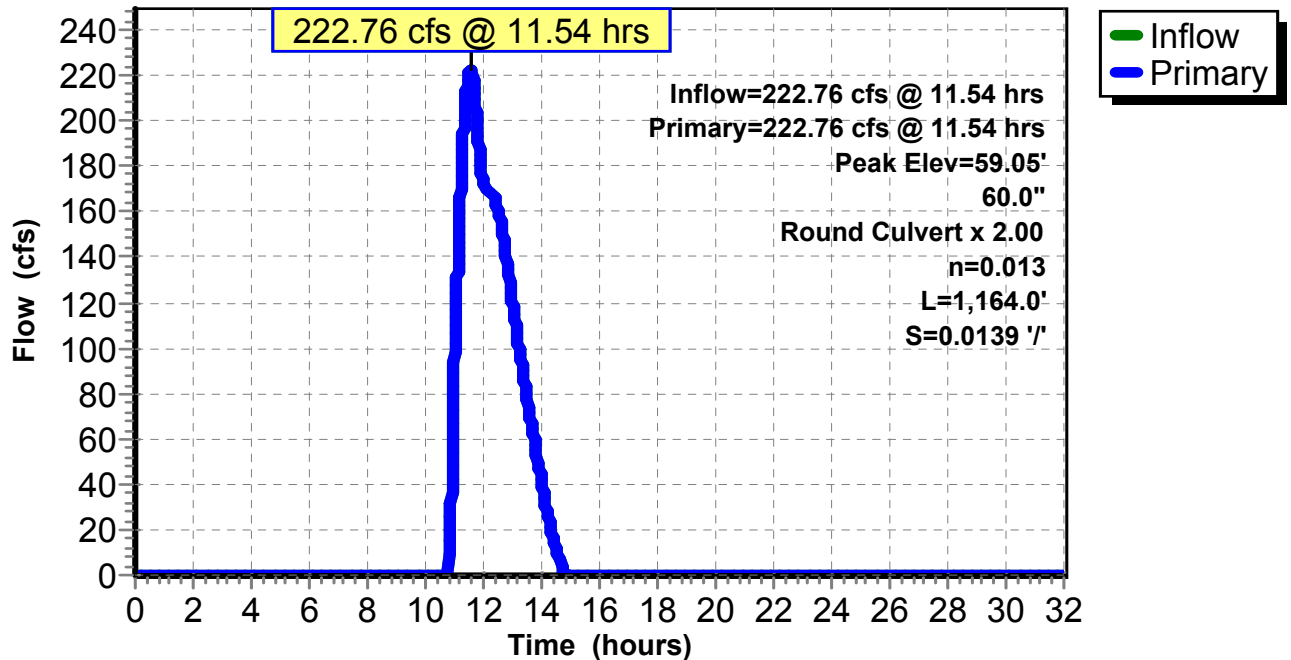
Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 59.05' @ 11.54 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert X 2.00 L= 1,164.0' Ke= 0.500 Inlet / Outlet Invert= 55.13' / 39.00' S= 0.0139 '/ Cc= 0.900 n= 0.013, Flow Area= 19.63 sf

Primary OutFlow Max=222.75 cfs @ 11.54 hrs HW=59.05' TW=0.00' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 222.75 cfs @ 6.74 fps)

Pond 43P: DUAL 60" CULVERTS

Hydrograph



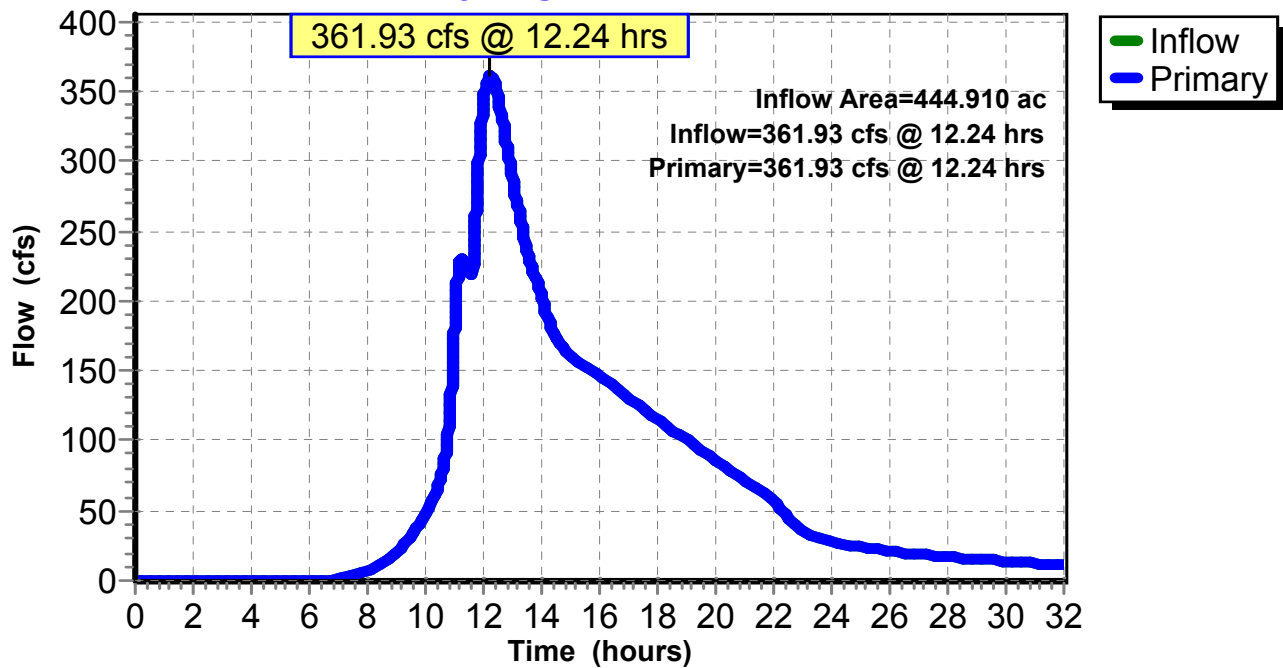
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 4.70" for april_2007 event
Inflow = 361.93 cfs @ 12.24 hrs, Volume= 174.405 af
Primary = 361.93 cfs @ 12.24 hrs, Volume= 174.405 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



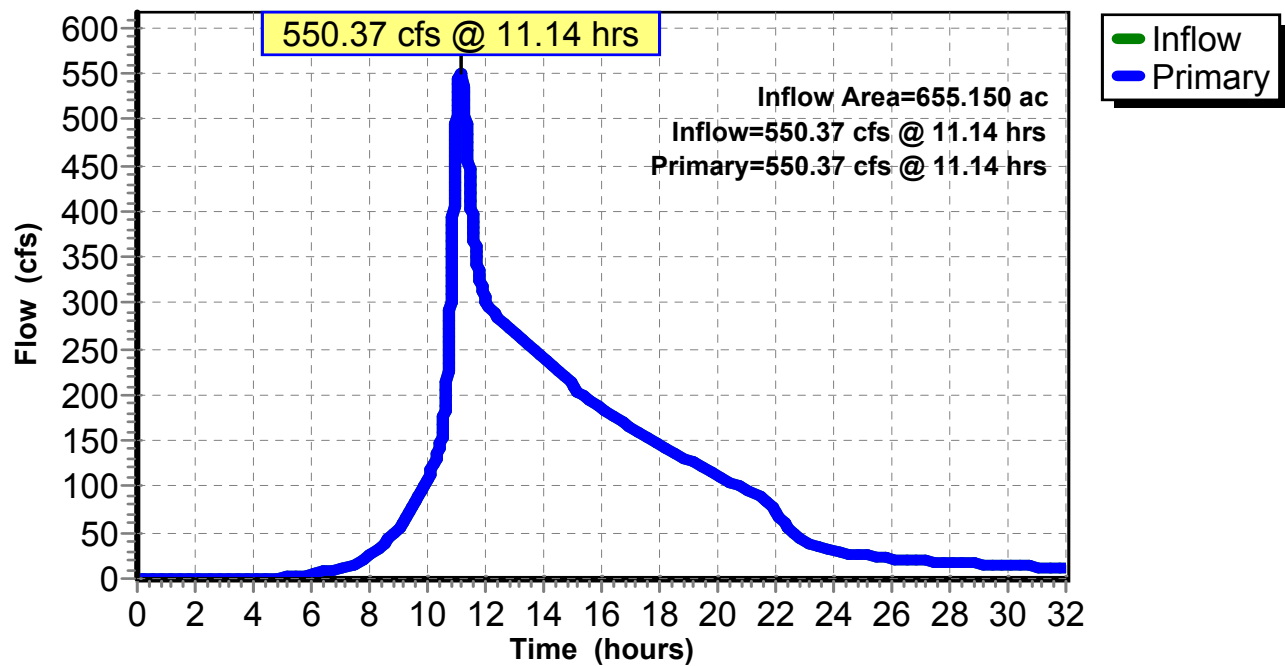
Summary for Link 33L: JUNCTION

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 4.17" for april_2007 event
Inflow = 550.37 cfs @ 11.14 hrs, Volume= 227.683 af
Primary = 550.37 cfs @ 11.14 hrs, Volume= 227.683 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 33L: JUNCTION

Hydrograph



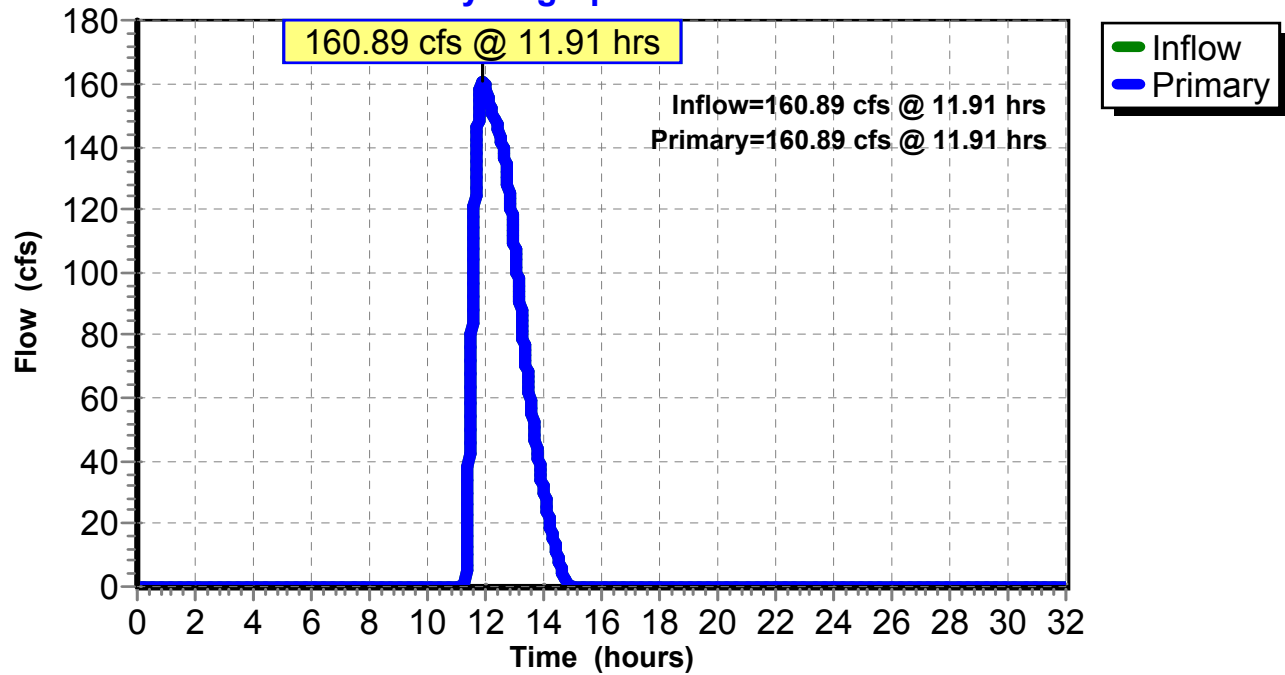
Summary for Link 36L: weir

Inflow = 160.89 cfs @ 11.91 hrs, Volume= 24.112 af
Primary = 160.89 cfs @ 11.91 hrs, Volume= 24.112 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 36L: weir

Hydrograph



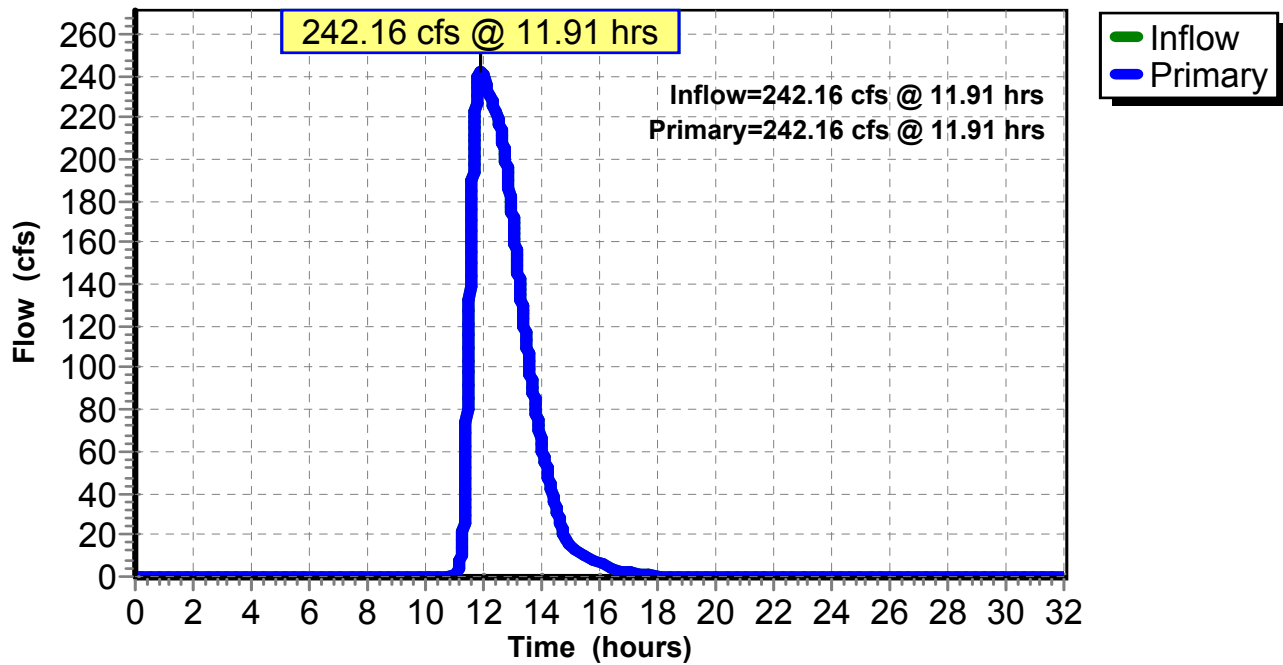
Summary for Link 37L: orifice

Inflow = 242.16 cfs @ 11.91 hrs, Volume= 41.070 af
Primary = 242.16 cfs @ 11.91 hrs, Volume= 41.070 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 37L: orifice

Hydrograph



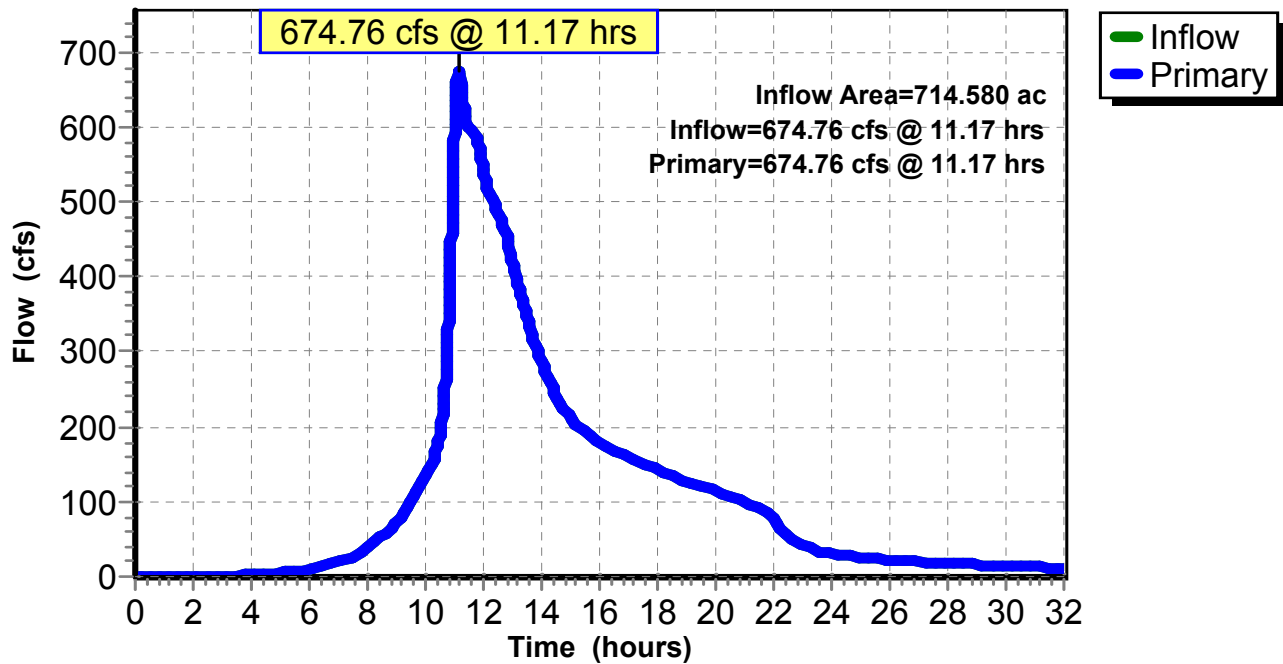
Summary for Link 38L: JUNCTION

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 4.64" for april_2007 event
Inflow = 674.76 cfs @ 11.17 hrs, Volume= 276.449 af
Primary = 674.76 cfs @ 11.17 hrs, Volume= 276.449 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 38L: JUNCTION

Hydrograph



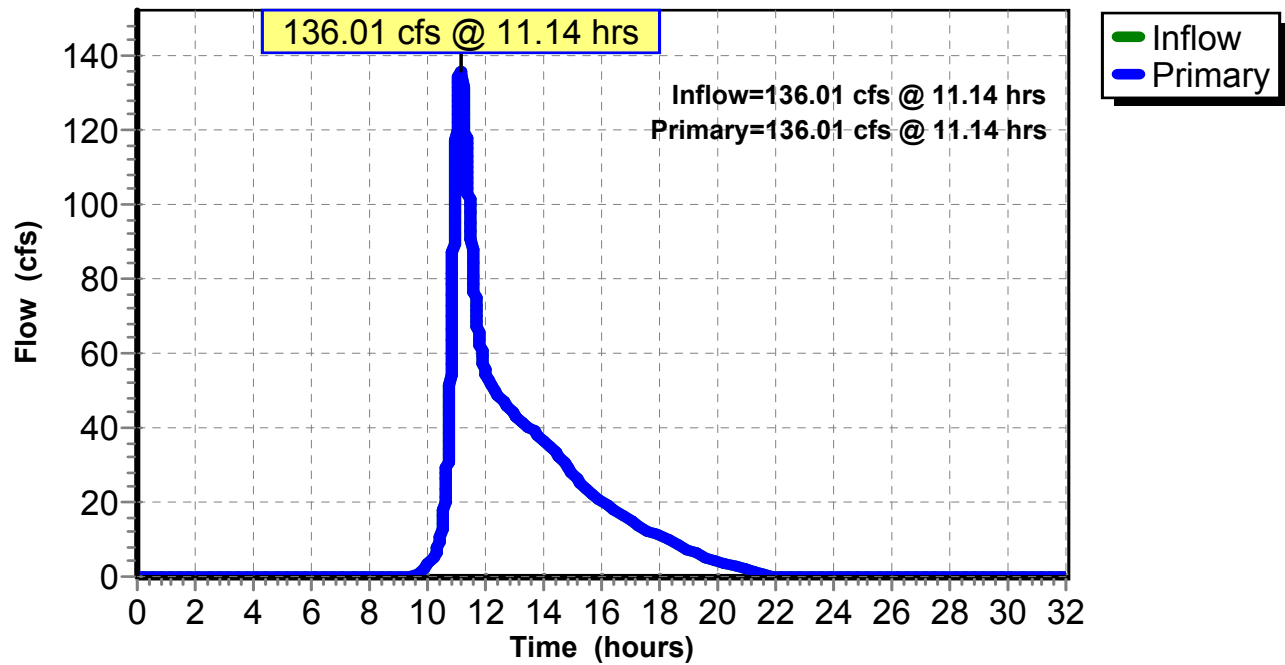
Summary for Link 41L: X

Inflow = 136.01 cfs @ 11.14 hrs, Volume= 26.320 af
Primary = 136.01 cfs @ 11.14 hrs, Volume= 26.320 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 41L: X

Hydrograph



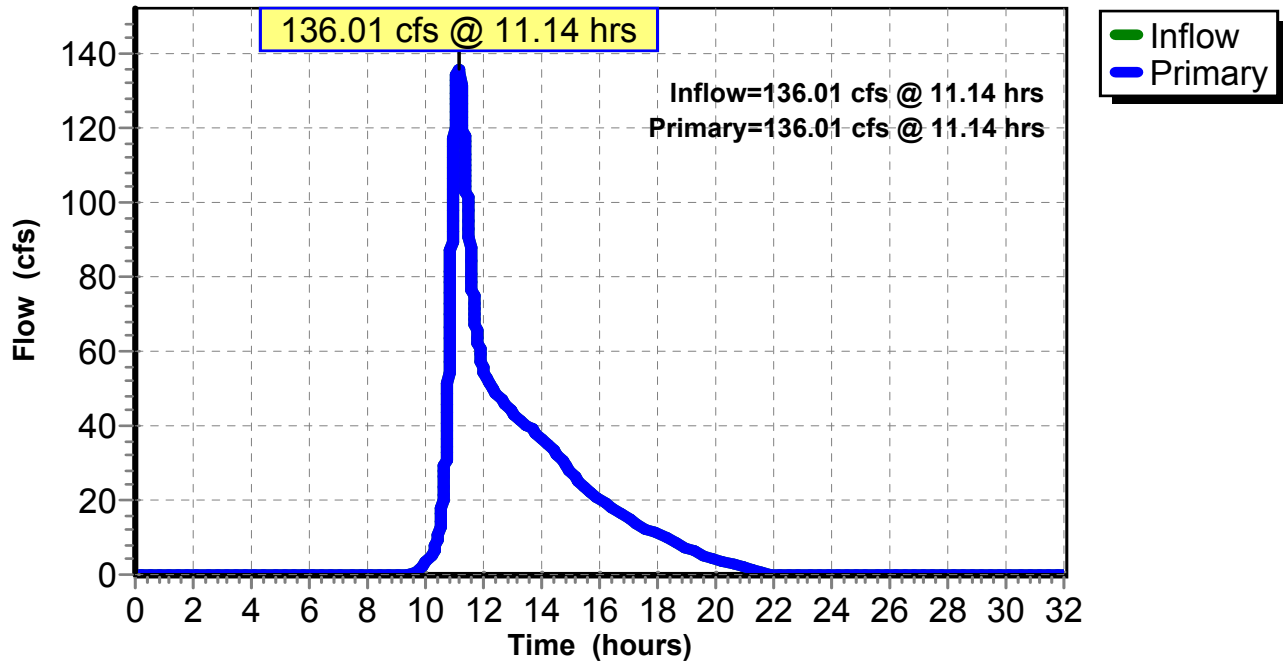
Summary for Link 42L: X

Inflow = 136.01 cfs @ 11.14 hrs, Volume= 26.320 af
Primary = 136.01 cfs @ 11.14 hrs, Volume= 26.320 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 42L: X

Hydrograph



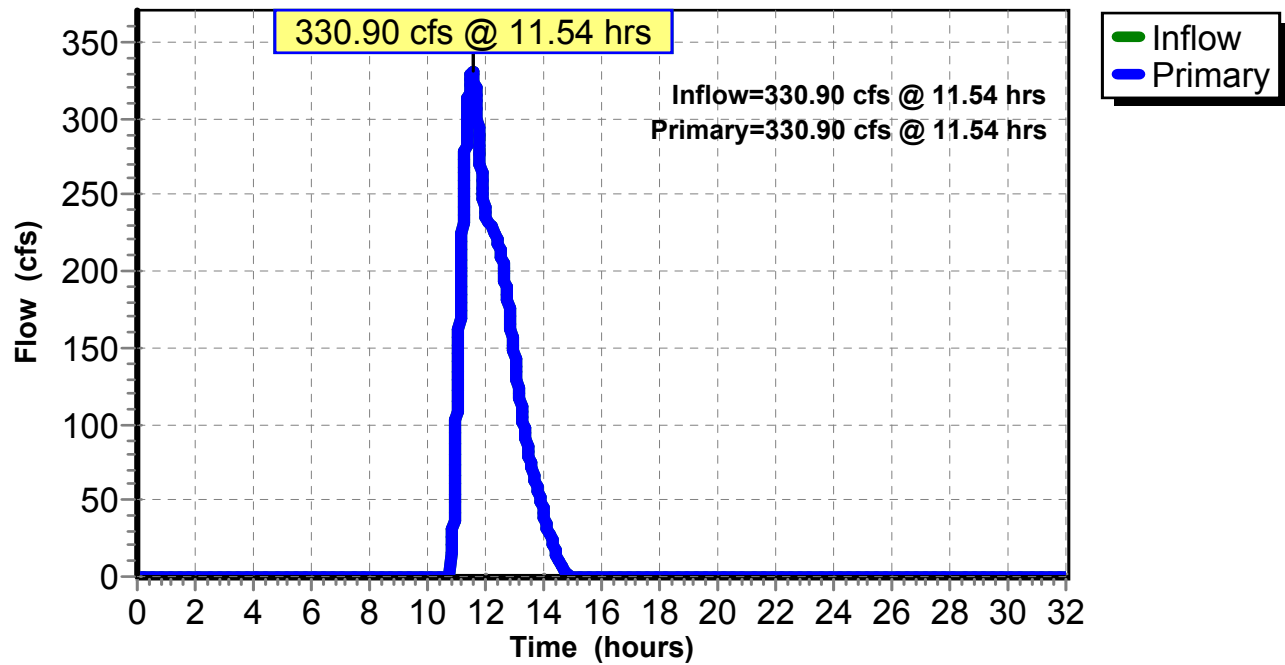
Summary for Link 51L: JUNCTION

Inflow = 330.90 cfs @ 11.54 hrs, Volume= 47.614 af
Primary = 330.90 cfs @ 11.54 hrs, Volume= 47.614 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 51L: JUNCTION

Hydrograph



Summary for Link FIN: FINAL

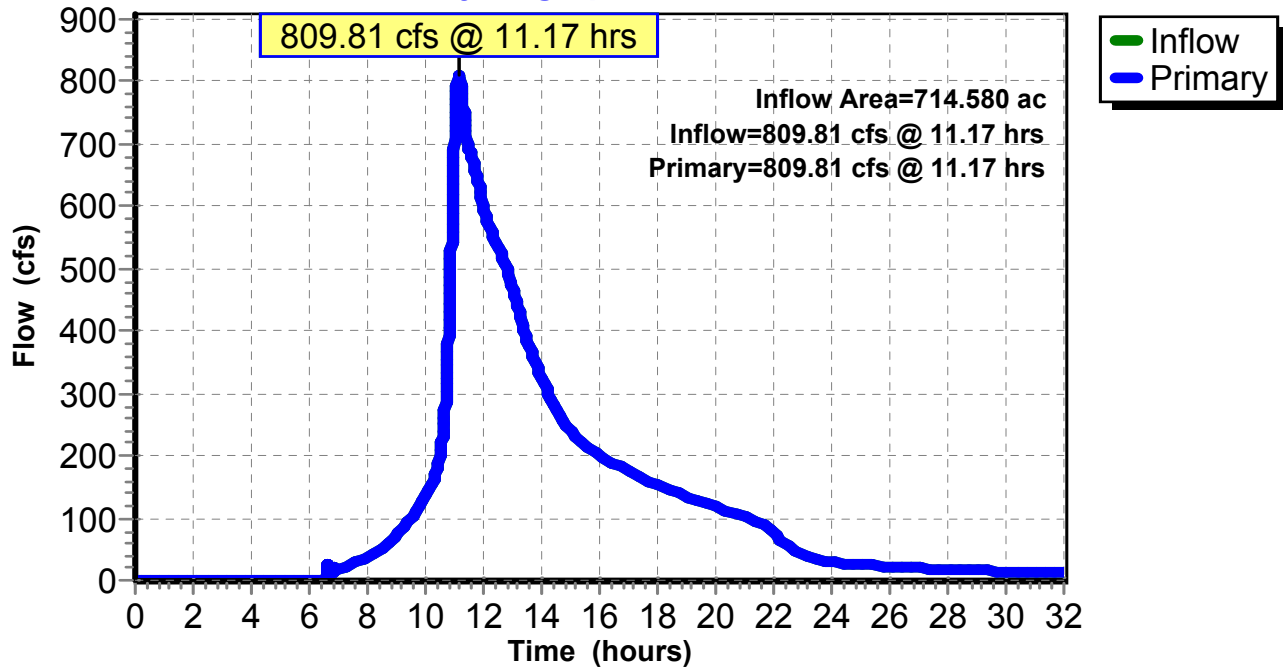
Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 5.06" for april_2007 event
Inflow = 809.81 cfs @ 11.17 hrs, Volume= 301.080 af
Primary = 809.81 cfs @ 11.17 hrs, Volume= 301.080 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 40.00'

Link FIN: FINAL

Hydrograph



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Type III 24-hr B50_24 Rainfall=7.60"

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Summary for Subcatchment A: WS A

Runoff = 238.46 cfs @ 12.42 hrs, Volume= 33.525 af, Depth= 6.77"

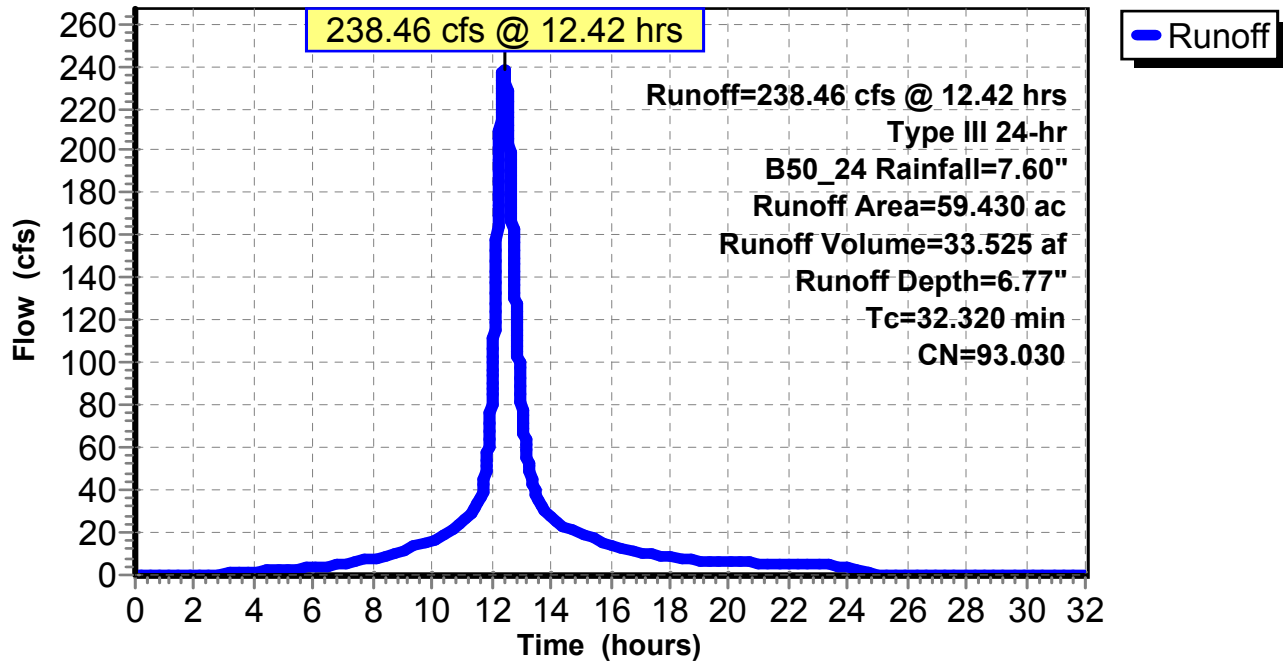
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr B50_24 Rainfall=7.60"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



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Summary for Subcatchment B: WS B

Runoff = 228.89 cfs @ 12.37 hrs, Volume= 29.127 af, Depth= 6.07"

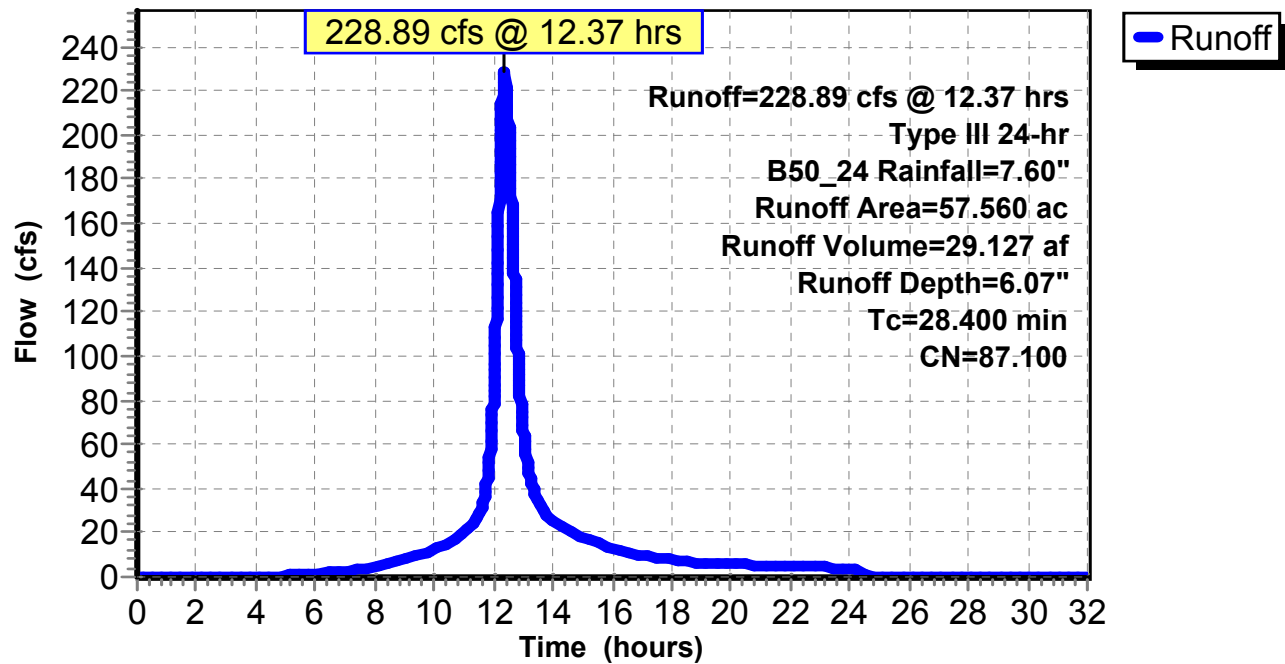
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr B50_24 Rainfall=7.60"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



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Type III 24-hr B50_24 Rainfall=7.60"

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Summary for Subcatchment BH: HOTEL

Runoff = 58.21 cfs @ 12.42 hrs, Volume= 7.603 af, Depth= 5.96"

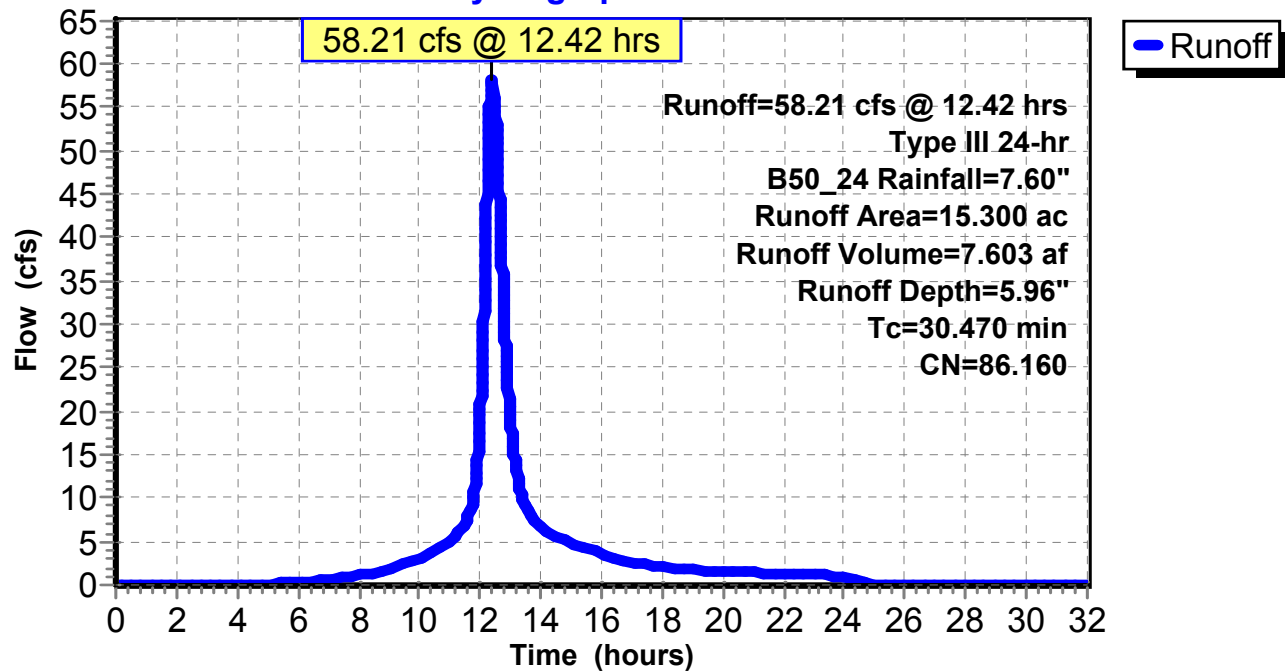
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr B50_24 Rainfall=7.60"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



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Type III 24-hr B50_24 Rainfall=7.60"

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Summary for Subcatchment C: WS C

Runoff = 95.36 cfs @ 12.25 hrs, Volume= 9.918 af, Depth= 5.54"

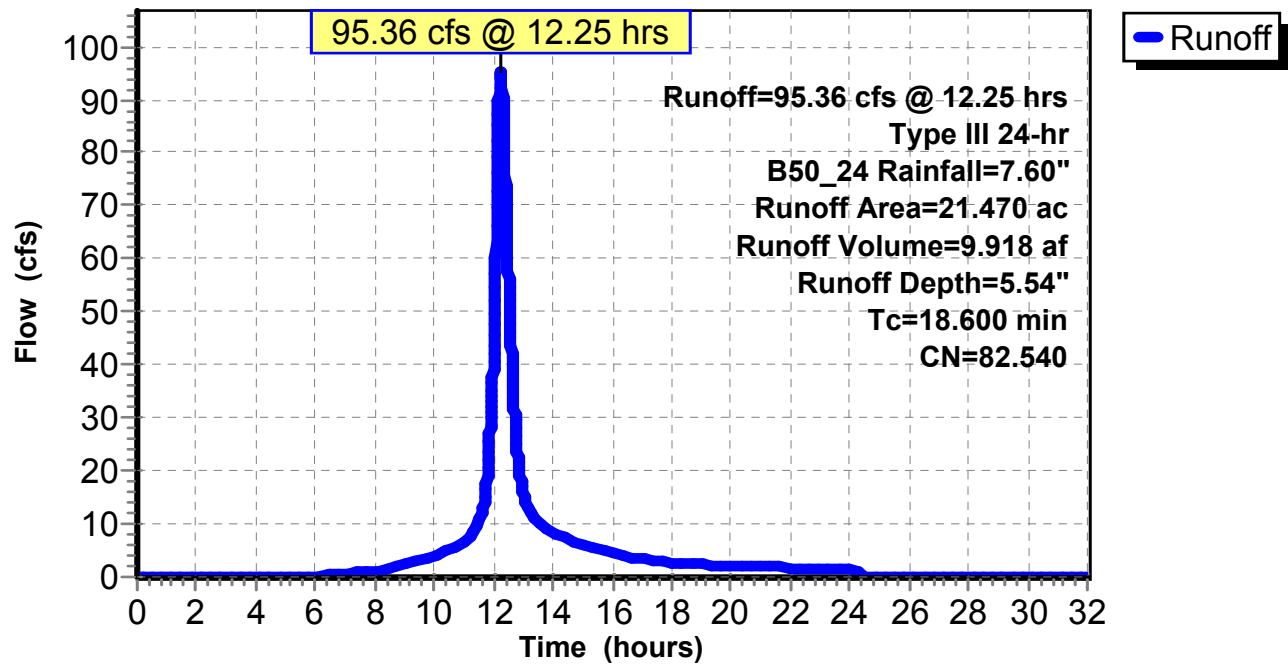
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr B50_24 Rainfall=7.60"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



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Type III 24-hr B50_24 Rainfall=7.60"

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Summary for Subcatchment D: WS D

Runoff = 341.42 cfs @ 12.61 hrs, Volume= 53.163 af, Depth= 5.50"

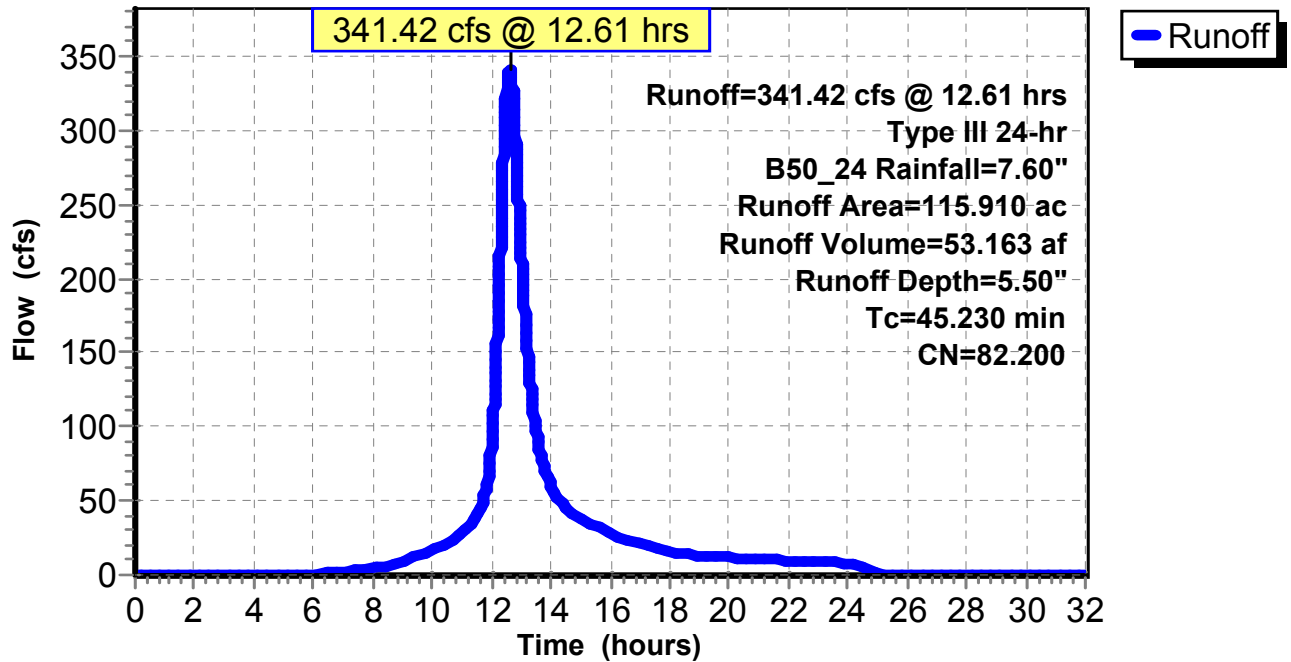
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr B50_24 Rainfall=7.60"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



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Type III 24-hr B50_24 Rainfall=7.60"

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Summary for Subcatchment D-1: WS D-1

Runoff = 123.12 cfs @ 12.45 hrs, Volume= 15.884 af, Depth= 4.82"

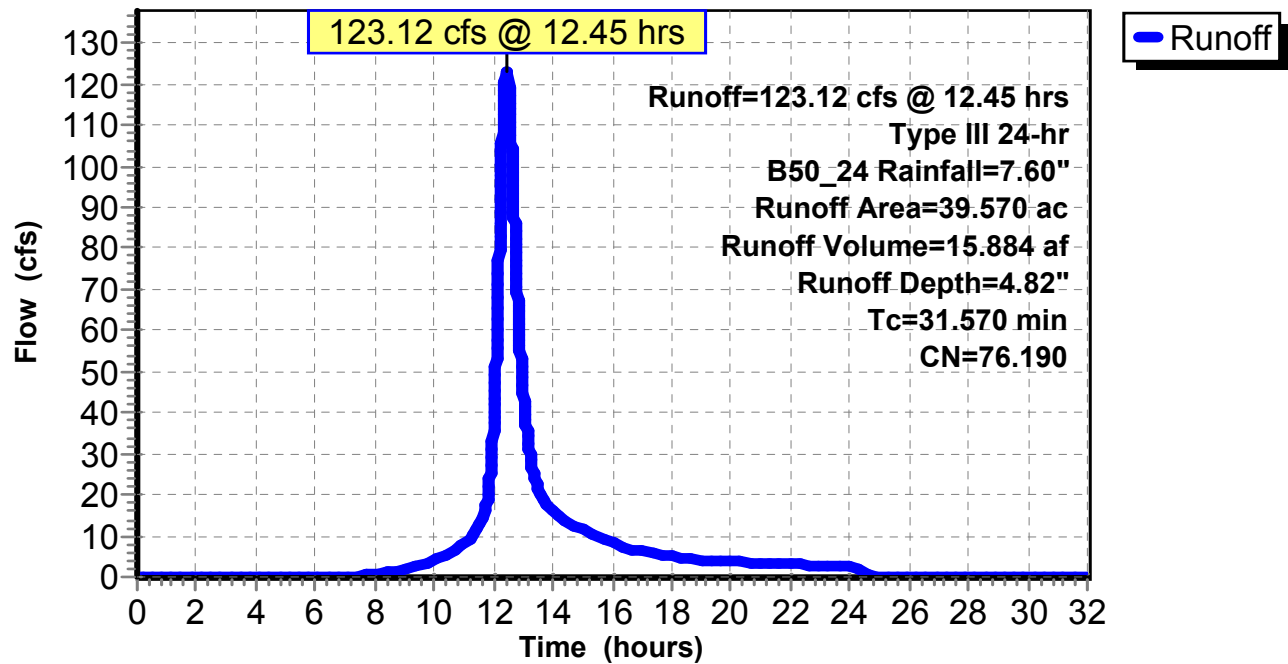
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr B50_24 Rainfall=7.60"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



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Type III 24-hr B50_24 Rainfall=7.60"

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Summary for Subcatchment E: WS E

Runoff = 276.33 cfs @ 12.85 hrs, Volume= 51.710 af, Depth= 5.29"

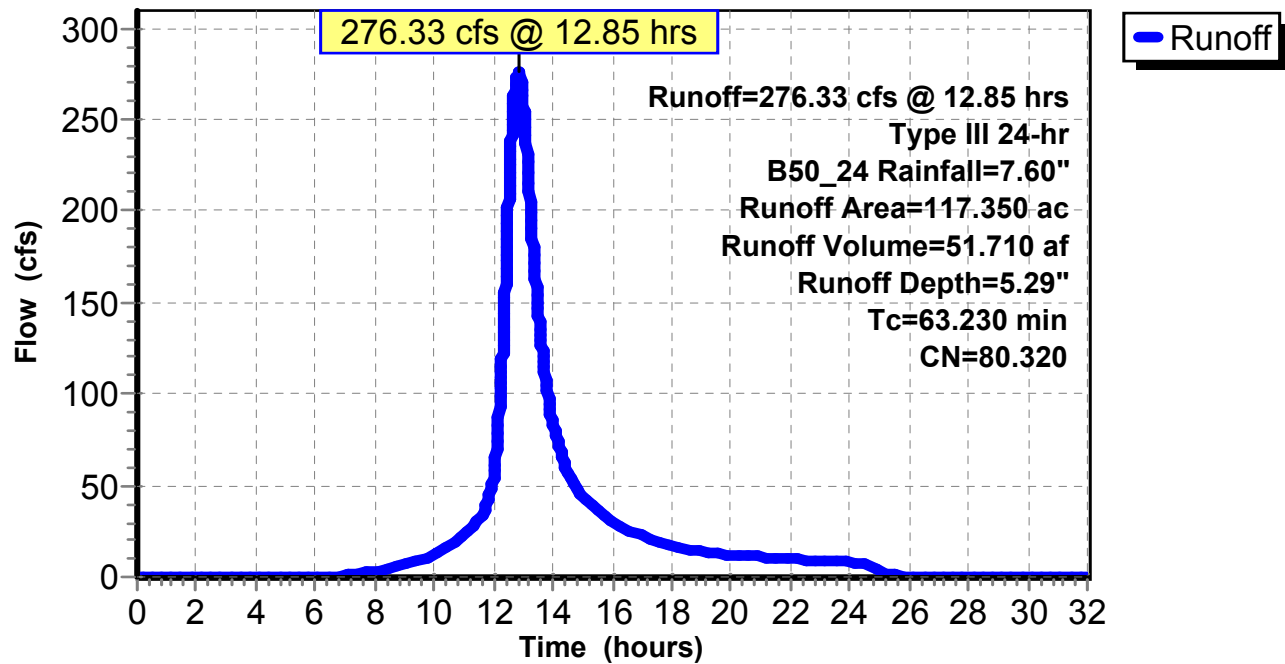
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr B50_24 Rainfall=7.60"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



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Avon PR

Type III 24-hr B50_24 Rainfall=7.60"

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Summary for Subcatchment F: WS F

Runoff = 305.00 cfs @ 12.63 hrs, Volume= 46.436 af, Depth= 4.60"

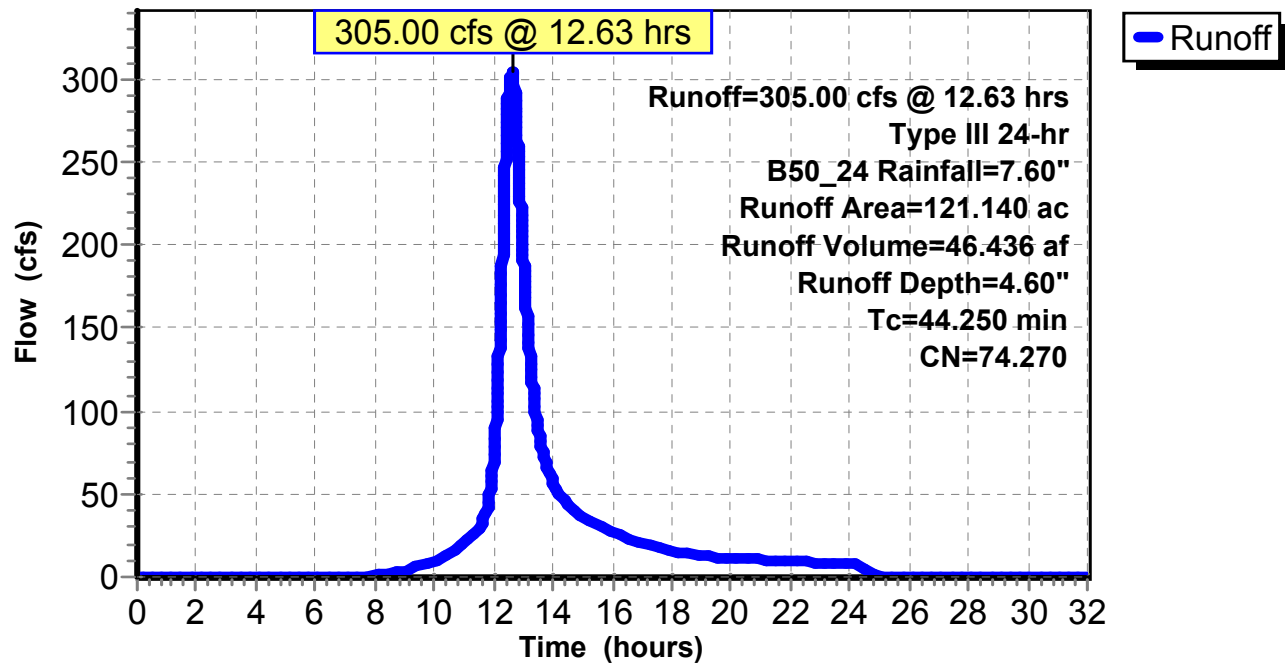
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr B50_24 Rainfall=7.60"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



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Type III 24-hr B50_24 Rainfall=7.60"

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Summary for Subcatchment G: WS G

Runoff = 541.76 cfs @ 12.50 hrs, Volume= 75.374 af, Depth= 5.42"

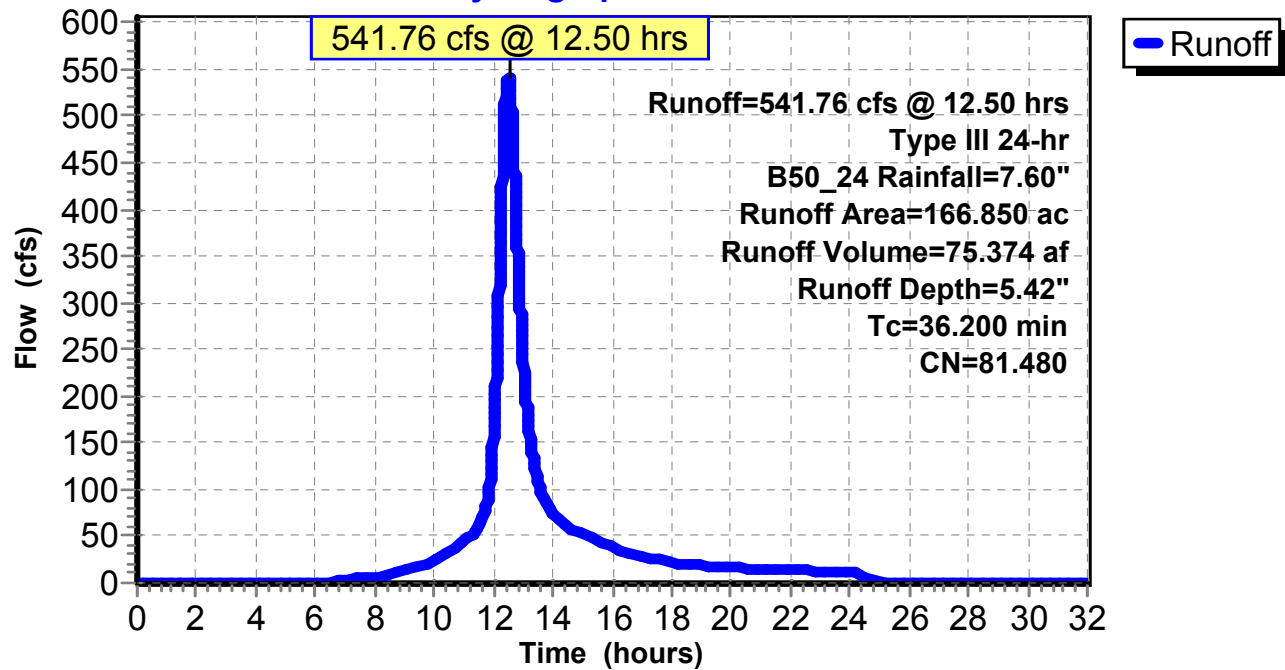
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr B50_24 Rainfall=7.60"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



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Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 4.55" for B50_24 event
Inflow = 314.78 cfs @ 13.53 hrs, Volume= 153.701 af
Outflow = 314.65 cfs @ 13.55 hrs, Volume= 153.591 af, Atten= 0%, Lag= 1.342 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.33 fps, Min. Travel Time= 1.940 min
Avg. Velocity = 2.24 fps, Avg. Travel Time= 3.754 min

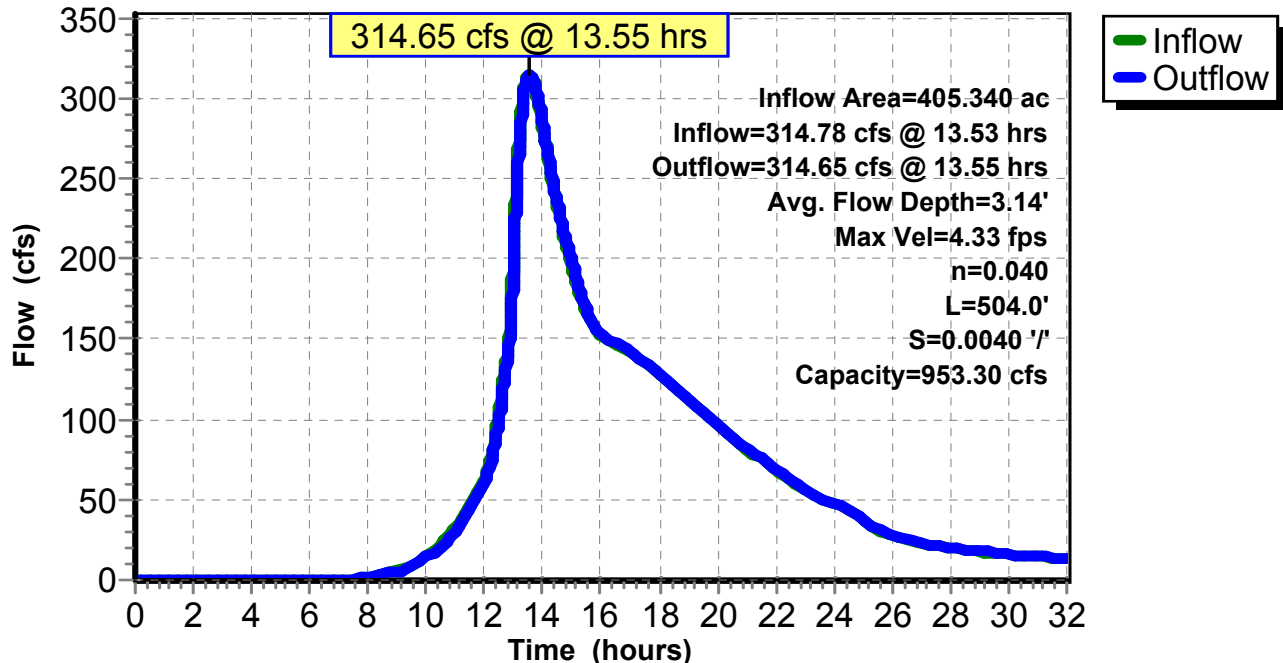
Peak Storage= 36,629 cf @ 13.55 hrs
Average Depth at Peak Storage= 3.14'
Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
Length= 504.0' Slope= 0.0040 ' / '
Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



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Type III 24-hr B50_24 Rainfall=7.60"

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Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 4.60" for B50_24 event
Inflow = 304.64 cfs @ 12.63 hrs, Volume= 46.436 af
Outflow = 273.04 cfs @ 12.79 hrs, Volume= 46.402 af, Atten= 10%, Lag= 9.533 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.32 fps, Min. Travel Time= 15.702 min
Avg. Velocity = 0.67 fps, Avg. Travel Time= 53.894 min

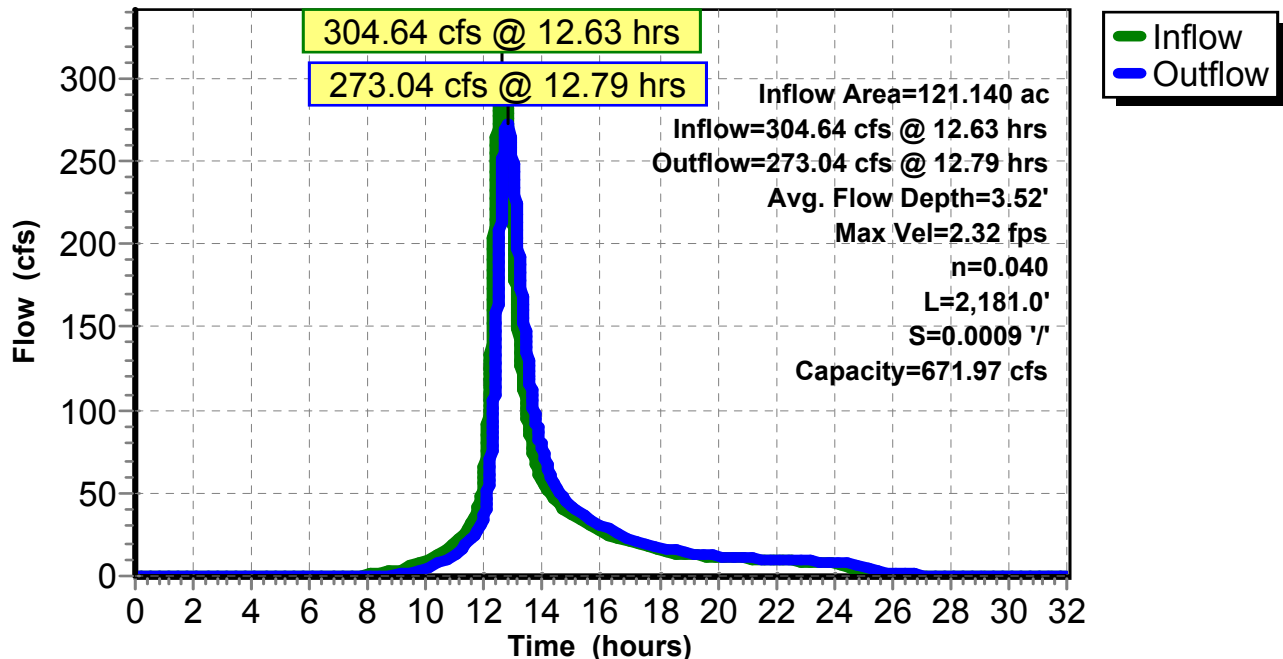
Peak Storage= 257,225 cf @ 12.79 hrs
Average Depth at Peak Storage= 3.52'
Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
Length= 2,181.0' Slope= 0.0009 ' / '
Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



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Type III 24-hr B50_24 Rainfall=7.60"

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Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 5.28" for B50_24 event
Inflow = 537.26 cfs @ 12.53 hrs, Volume= 73.482 af
Outflow = 56.67 cfs @ 14.77 hrs, Volume= 55.900 af, Atten= 89%, Lag= 134.663 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2

Max. Velocity= 0.63 fps, Min. Travel Time= 584.433 min

Avg. Velocity = 0.46 fps, Avg. Travel Time= 792.886 min

Peak Storage= 1,987,301 cf @ 14.77 hrs

Average Depth at Peak Storage= 2.75'

Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040

Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'

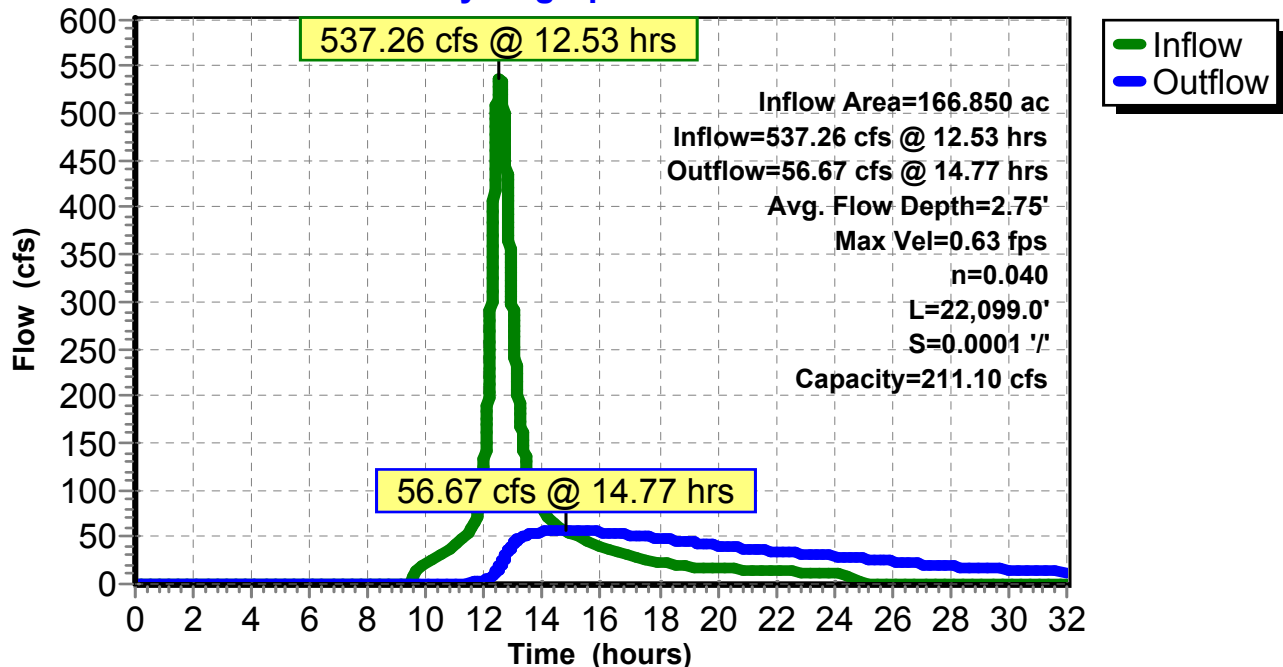
Length= 22,099.0' Slope= 0.0001 ' / '

Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

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Type III 24-hr B50_24 Rainfall=7.60"

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Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 4.56" for B50_24 event
Inflow = 335.62 cfs @ 13.54 hrs, Volume= 169.251 af
Outflow = 333.47 cfs @ 13.64 hrs, Volume= 168.879 af, Atten= 1%, Lag= 5.809 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.95 fps, Min. Travel Time= 7.151 min
Avg. Velocity = 3.96 fps, Avg. Travel Time= 12.548 min

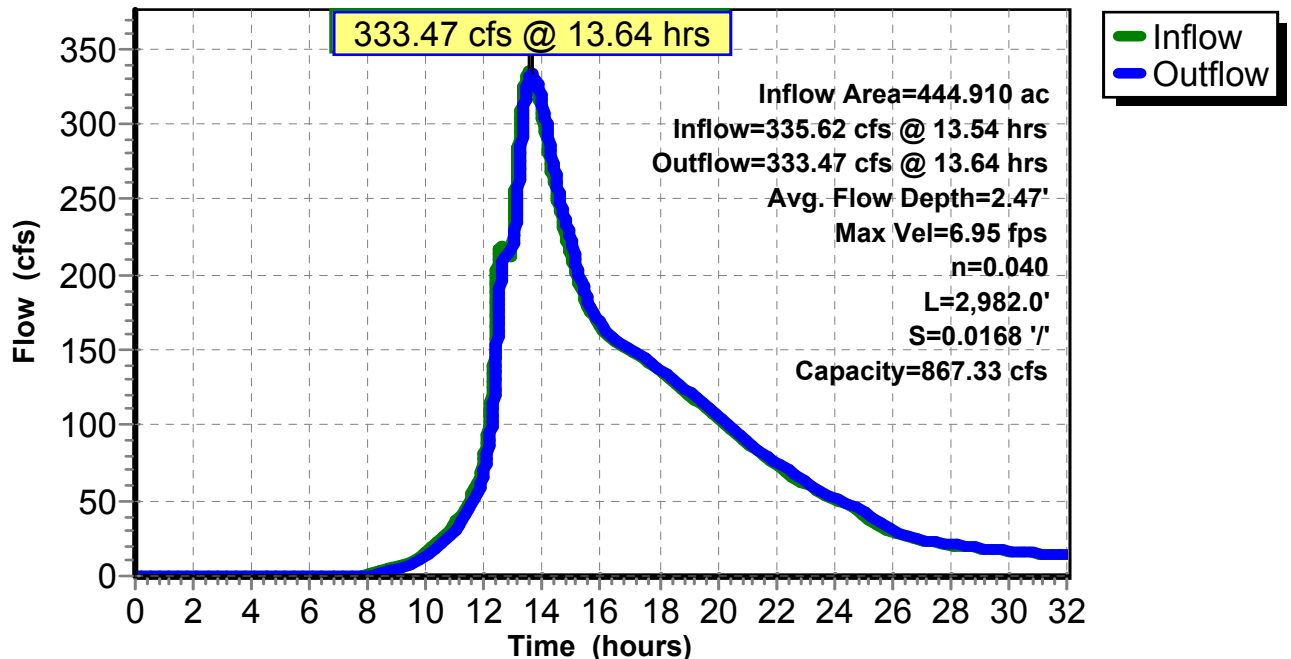
Peak Storage= 143,079 cf @ 13.64 hrs
Average Depth at Peak Storage= 2.47'
Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040
Side Slope Z-value= 3.0 ' / ' Top Width= 36.00'
Length= 2,982.0' Slope= 0.0168 ' / '
Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



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Type III 24-hr B50_24 Rainfall=7.60"

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Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 4.75" for B50_24 event
Inflow = 549.38 cfs @ 12.66 hrs, Volume= 222.040 af
Outflow = 549.29 cfs @ 12.67 hrs, Volume= 221.991 af, Atten= 0%, Lag= 0.424 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 10.94 fps, Min. Travel Time= 0.663 min
Avg. Velocity = 4.96 fps, Avg. Travel Time= 1.461 min

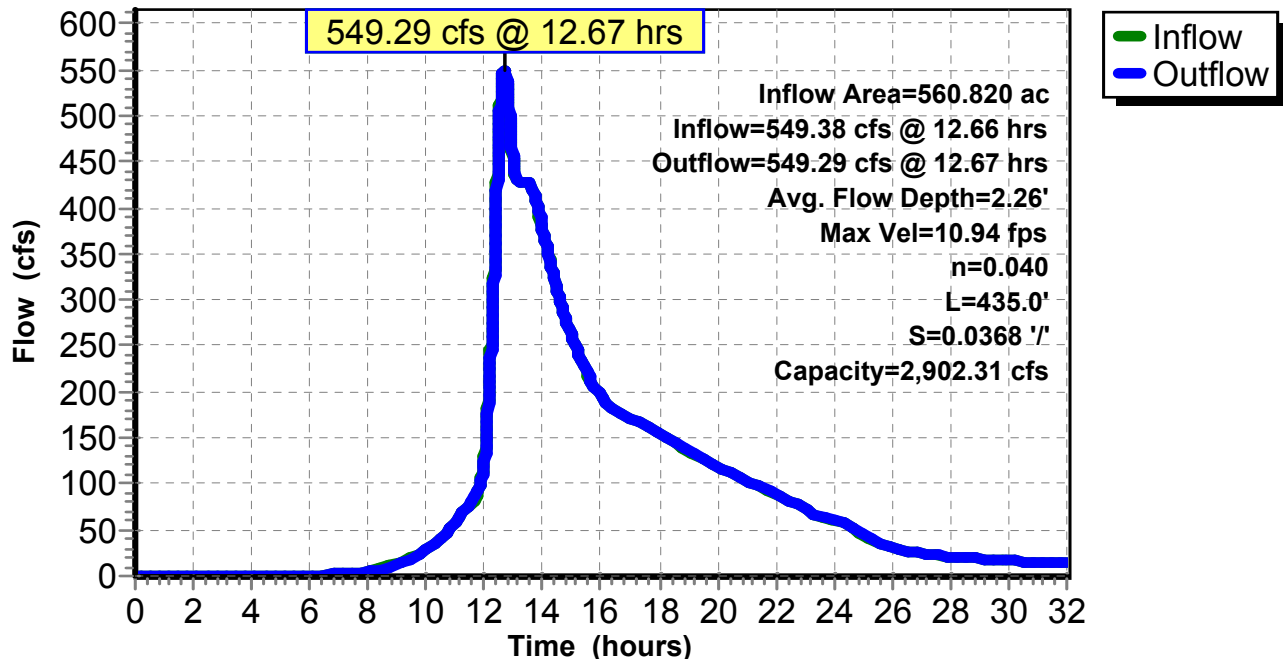
Peak Storage= 21,837 cf @ 12.67 hrs
Average Depth at Peak Storage= 2.26'
Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
Length= 435.0' Slope= 0.0368 ' / '
Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

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Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 4.78" for B50_24 event
 Inflow = 586.08 cfs @ 12.64 hrs, Volume= 231.909 af
 Outflow = 557.51 cfs @ 12.78 hrs, Volume= 231.907 af, Atten= 5%, Lag= 8.243 min
 Primary = 557.51 cfs @ 12.78 hrs, Volume= 231.907 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 76.88' @ 12.78 hrs Surf.Area= 0.464 ac Storage= 1.918 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.479 min (989.264 - 988.784)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

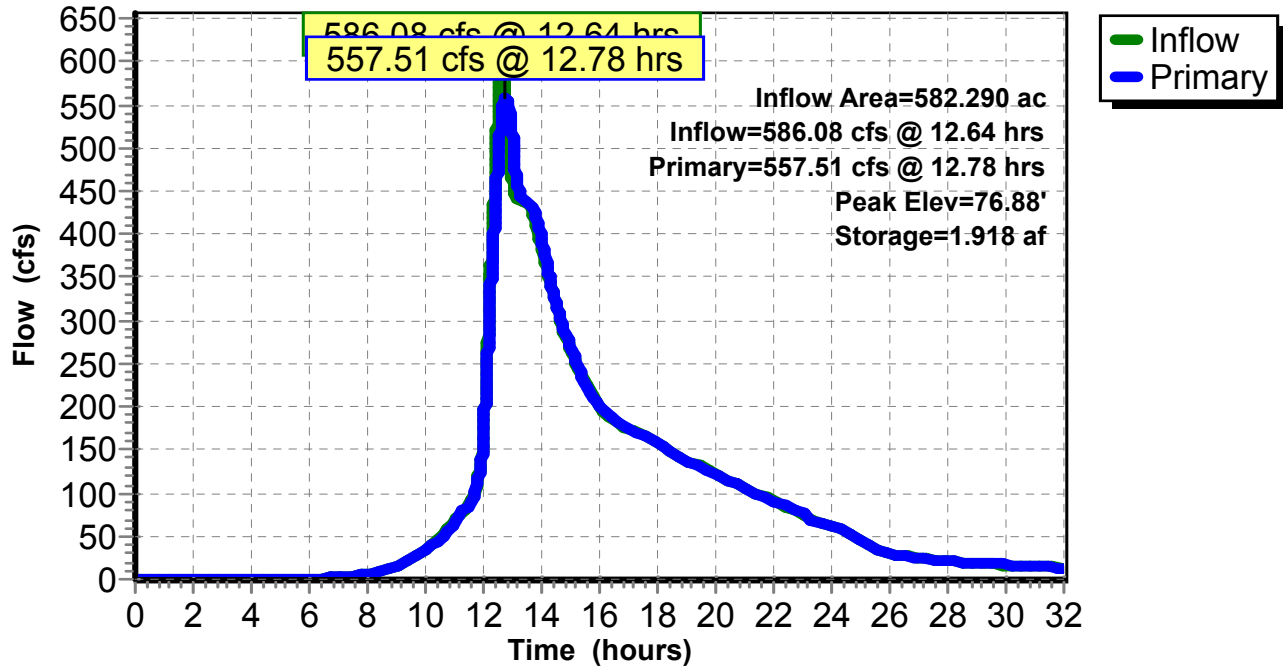
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=557.48 cfs @ 12.78 hrs HW=76.88' TW=66.67' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 302.07 cfs @ 15.38 fps)
- 2=Culvert 2 (Inlet Controls 255.41 cfs @ 13.01 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



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Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 4.57" for B50_24 event
Inflow = 335.81 cfs @ 13.52 hrs, Volume= 169.474 af
Outflow = 335.62 cfs @ 13.54 hrs, Volume= 169.251 af, Atten= 0%, Lag= 1.618 min
Primary = 335.62 cfs @ 13.54 hrs, Volume= 169.251 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 130.54' @ 13.54 hrs Surf.Area= 1.044 ac Storage= 2.614 af

Plug-Flow detention time= 8.738 min calculated for 169.251 af (100% of inflow)
Center-of-Mass det. time= 7.572 min (1,034.686 - 1,027.115)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

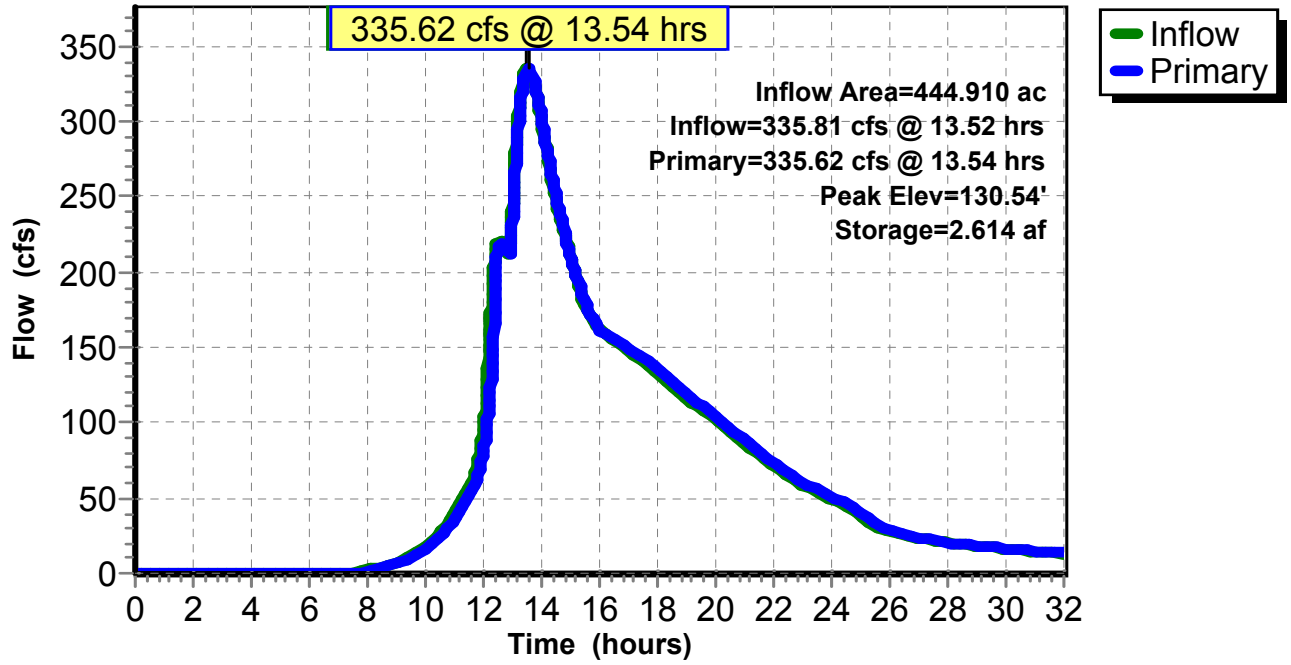
Primary OutFlow Max=335.62 cfs @ 13.54 hrs HW=130.54' TW=128.46' (Dynamic Tailwater)

1=Culvert (Barrel Controls 173.16 cfs @ 7.59 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 162.46 cfs @ 2.40 fps)

Pond 4A: DP 4 A ARGYLE

Hydrograph



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Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 4.56" for B50_24 event
 Inflow = 582.94 cfs @ 12.83 hrs, Volume= 154.012 af
 Outflow = 314.78 cfs @ 13.53 hrs, Volume= 153.701 af, Atten= 46%, Lag= 41.739 min
 Primary = 314.78 cfs @ 13.53 hrs, Volume= 153.701 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 132.56' @ 13.53 hrs Surf.Area= 21.387 ac Storage= 29.834 af

Plug-Flow detention time= 58.047 min calculated for 153.701 af (100% of inflow)
 Center-of-Mass det. time= 56.188 min (1,044.508 - 988.320)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

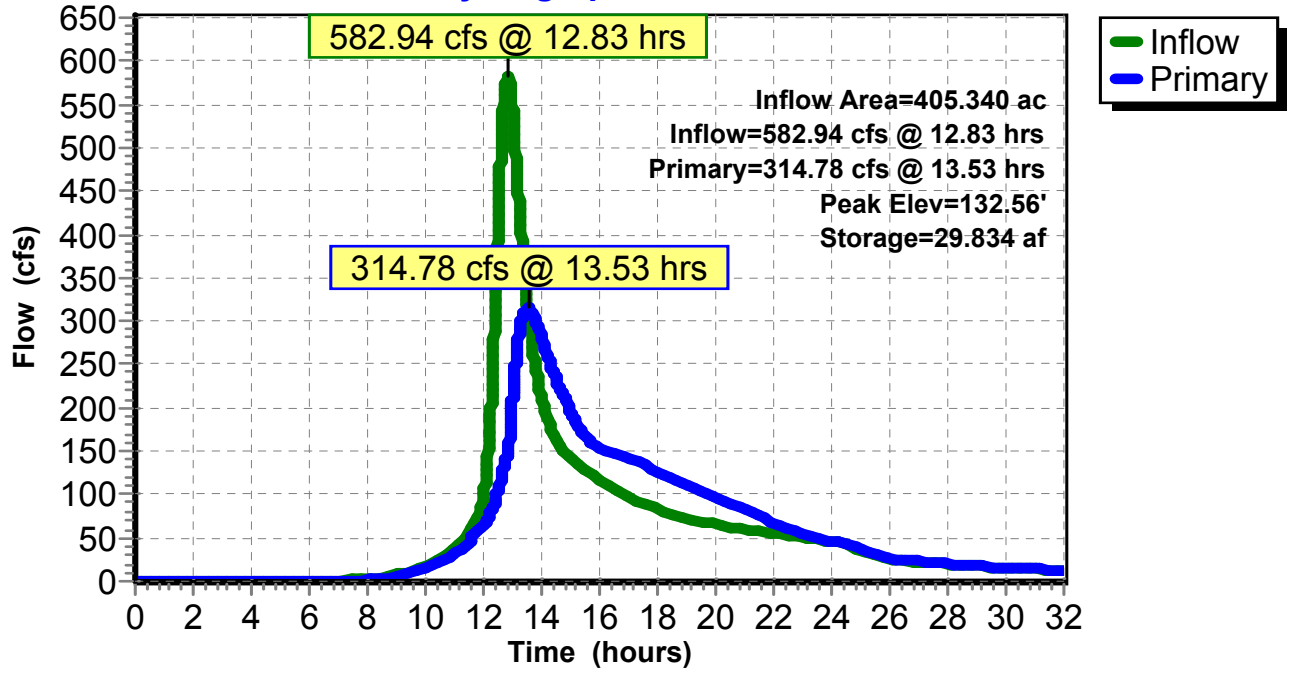
Primary OutFlow Max=314.78 cfs @ 13.53 hrs HW=132.56' TW=131.14' (Dynamic Tailwater)

1=Culvert (Inlet Controls 144.10 cfs @ 5.73 fps)

2=Asymmetrical Weir (Weir Controls 170.68 cfs @ 2.06 fps)

Pond 5P: DP 5 BETSY BROWN ROAD

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Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 4.75" for B50_24 event
Inflow = 550.67 cfs @ 12.62 hrs, Volume= 222.042 af
Outflow = 549.38 cfs @ 12.66 hrs, Volume= 222.040 af, Atten= 0%, Lag= 2.272 min
Primary = 549.38 cfs @ 12.66 hrs, Volume= 222.040 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 91.37' @ 12.66 hrs Surf.Area= 1.370 ac Storage= 1.878 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.852 min (995.910 - 993.059)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

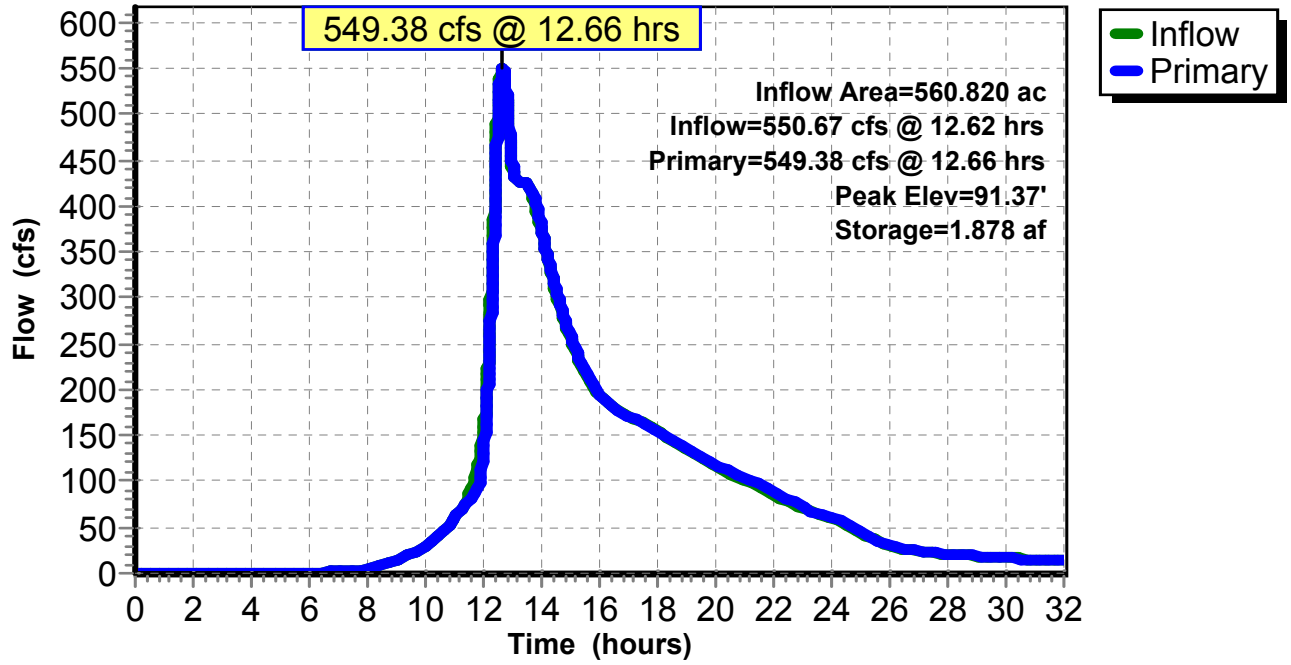
Primary OutFlow Max=549.35 cfs @ 12.66 hrs HW=91.37' TW=78.26' (Dynamic Tailwater)

1=Sharp-Crested Rectangular Weir (Weir Controls 192.62 cfs @ 5.49 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 356.73 cfs @ 3.09 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



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Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 4.97" for B50_24 event
 Inflow = 767.23 cfs @ 12.41 hrs, Volume= 295.729 af
 Outflow = 767.24 cfs @ 12.41 hrs, Volume= 294.039 af, Atten= 0%, Lag= 0.414 min
 Primary = 767.24 cfs @ 12.41 hrs, Volume= 294.039 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 40.19' @ 12.41 hrs Surf.Area= 1.105 ac Storage= 1.867 af

Plug-Flow detention time= 8.716 min calculated for 293.947 af (99% of inflow)
 Center-of-Mass det. time= 3.467 min (956.365 - 952.898)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

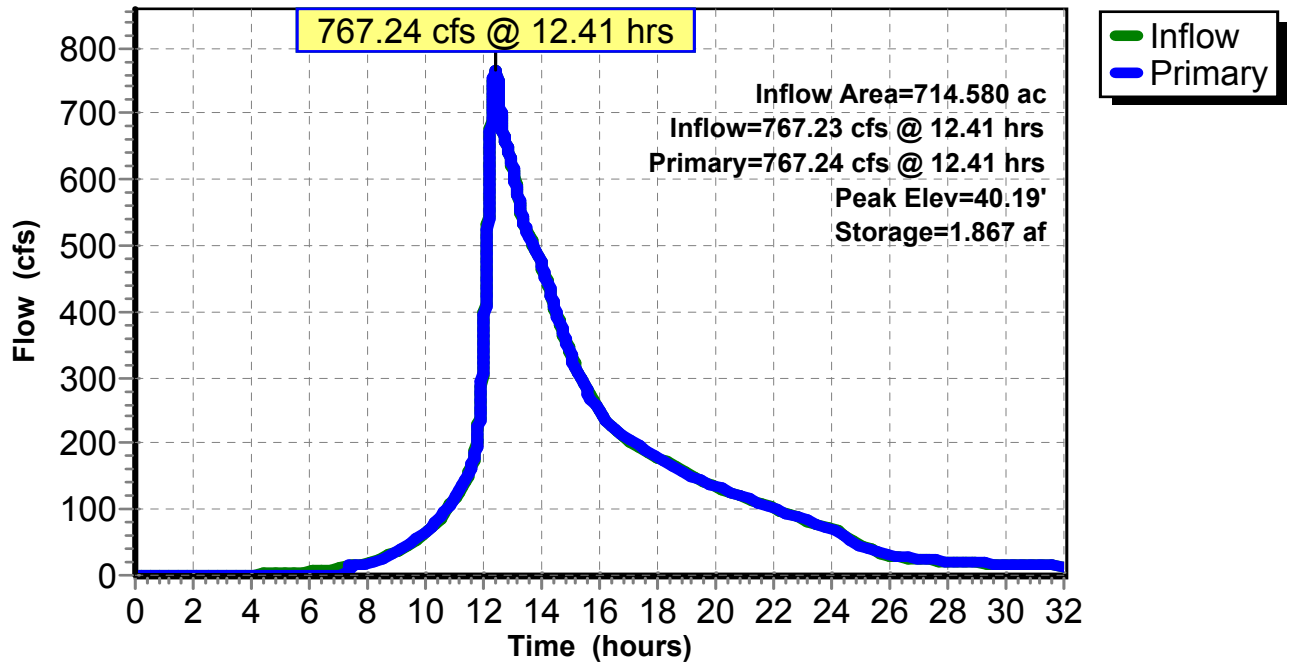
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=767.16 cfs @ 12.41 hrs HW=40.19' TW=40.00' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 286.73 cfs @ 2.08 fps)
- 2=WEIR BOWMAN (Weir Controls 480.42 cfs @ 1.57 fps)

Pond 8P: BOWMAN FIELDS

Hydrograph



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Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 4.60" for B50_24 event
 Inflow = 305.00 cfs @ 12.63 hrs, Volume= 46.436 af
 Outflow = 304.64 cfs @ 12.63 hrs, Volume= 46.436 af, Atten= 0%, Lag= 0.072 min
 Primary = 304.64 cfs @ 12.63 hrs, Volume= 46.436 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 135.00' @ 12.64 hrs Surf.Area= 0.205 ac Storage= 0.242 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.385 min (853.708 - 853.323)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

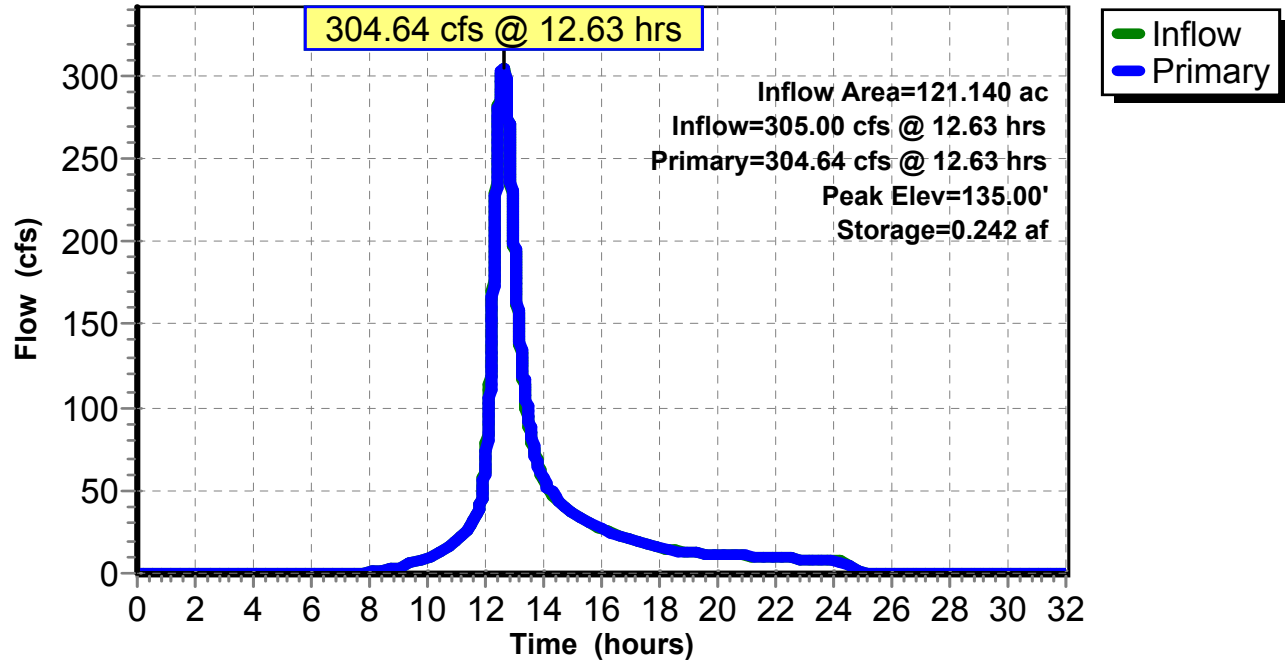
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=304.61 cfs @ 12.63 hrs HW=135.00' TW=133.32' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 44.12 cfs @ 6.24 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 79.79 cfs @ 5.30 fps)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 180.69 cfs @ 2.31 fps)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Hydrograph



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Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 5.42" for B50_24 event
 Inflow = 541.76 cfs @ 12.50 hrs, Volume= 75.374 af
 Outflow = 537.26 cfs @ 12.53 hrs, Volume= 73.482 af, Atten= 1%, Lag= 1.589 min
 Primary = 537.26 cfs @ 12.53 hrs, Volume= 73.482 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.69' @ 12.53 hrs Surf.Area= 4.146 ac Storage= 7.353 af (4.386 af above start)

Plug-Flow detention time= 58.191 min calculated for 70.514 af (94% of inflow)
 Center-of-Mass det. time= 14.145 min (843.409 - 829.264)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

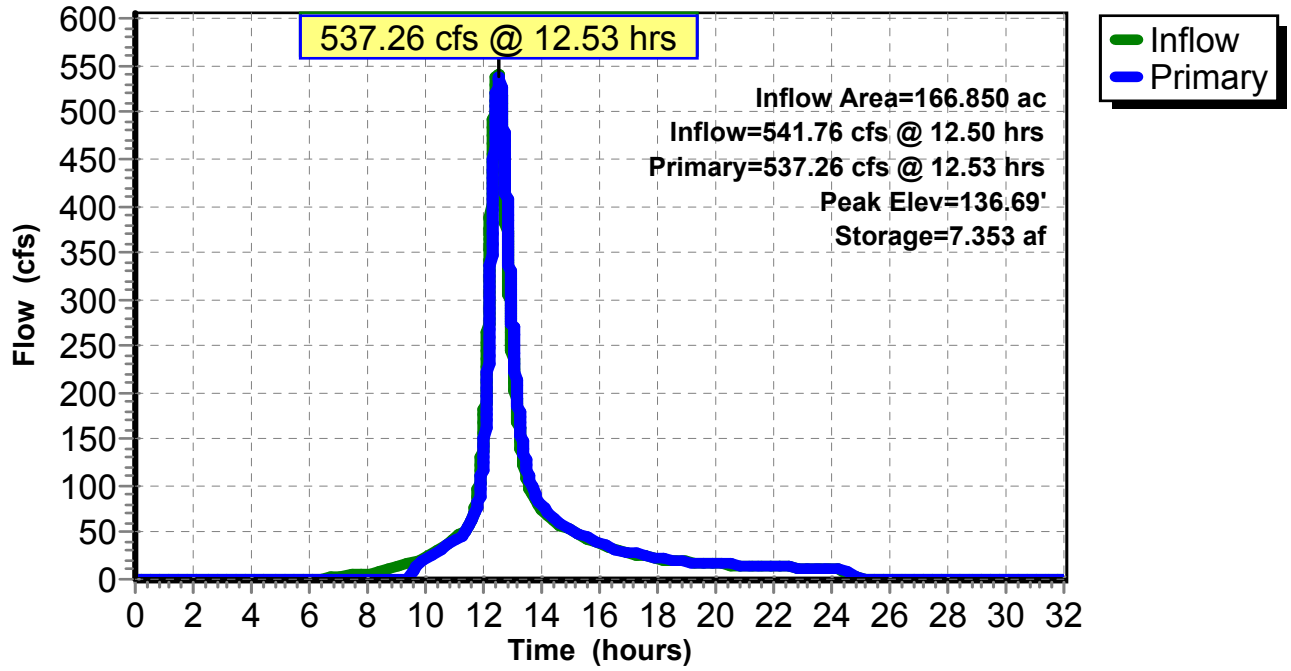
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=537.23 cfs @ 12.53 hrs HW=136.69' TW=131.44' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 3.44 cfs @ 2.82 fps)
- 2=Asymmetrical Weir (Weir Controls 533.79 cfs @ 2.32 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Hydrograph



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Summary for Pond 24P: RAINSTORE WHOLE FIELD

Inflow = 306.47 cfs @ 12.79 hrs, Volume= 41.791 af
 Outflow = 224.44 cfs @ 13.14 hrs, Volume= 41.794 af, Atten= 27%, Lag= 21.159 min
 Discarded = 9.68 cfs @ 12.27 hrs, Volume= 6.431 af
 Primary = 74.50 cfs @ 13.14 hrs, Volume= 15.243 af
 Secondary = 140.26 cfs @ 13.14 hrs, Volume= 20.120 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 41.41' @ 13.14 hrs Surf.Area= 209,016 sf Storage= 482,847 cf

Plug-Flow detention time= 54.261 min calculated for 41.781 af (100% of inflow)
 Center-of-Mass det. time= 54.334 min (859.050 - 804.716)

Volume	Invert	Avail.Storage	Storage Description
#1	39.00'	2,608,520 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 2,717,208 cf Overall x 96.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
39.00	209,016	0	0
52.00	209,016	2,717,208	2,717,208

Device	Routing	Invert	Outlet Devices
#1	Secondary	40.00'	26.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Discarded	39.00'	2.000 in/hr Exfiltration over Surface area
#3	Primary	39.00'	42.0" Vert. Orifice/Grate X 2.00 C= 0.600

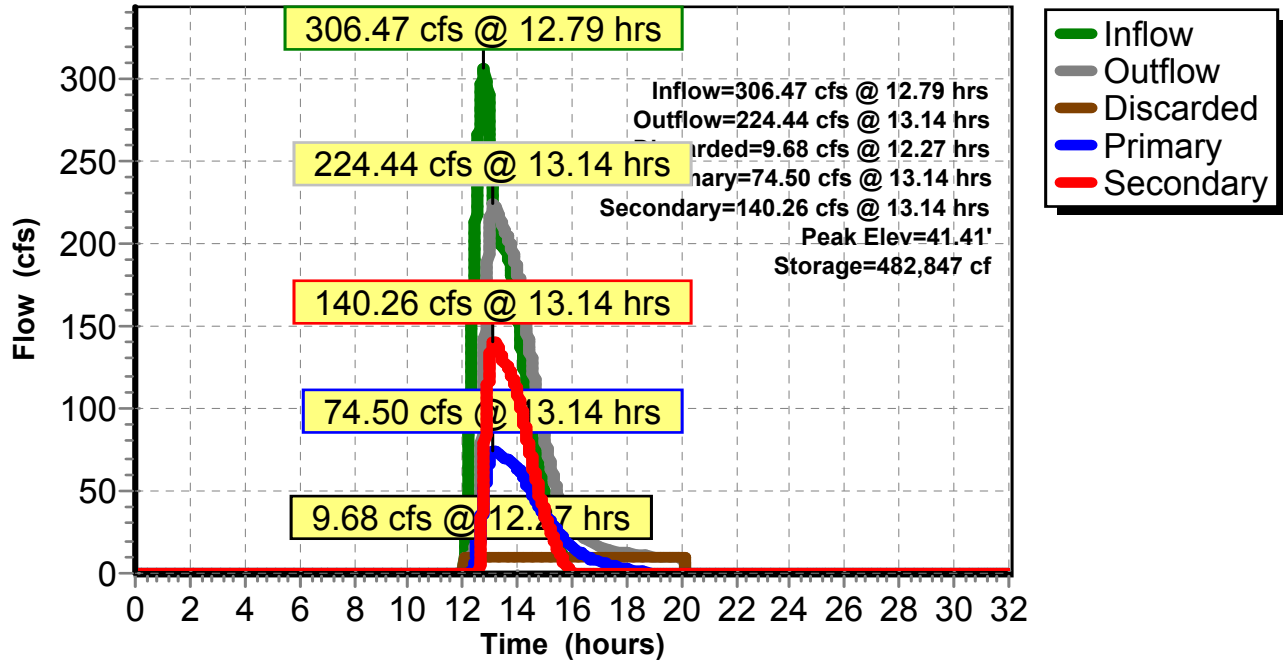
Discarded OutFlow Max=9.68 cfs @ 12.27 hrs HW=39.13' (Free Discharge)
 ↑**2=Exfiltration** (Exfiltration Controls 9.68 cfs)

Primary OutFlow Max=74.50 cfs @ 13.14 hrs HW=41.41' TW=0.00' (Dynamic Tailwater)
 ↑**3=Orifice/Grate** (Orifice Controls 74.50 cfs @ 5.28 fps)

Secondary OutFlow Max=140.25 cfs @ 13.14 hrs HW=41.41' TW=0.00' (Dynamic Tailwater)
 ↑**1=Sharp-Crested Rectangular Weir**(Weir Controls 140.25 cfs @ 3.88 fps)

Pond 24P: RAINSTORE WHOLE FIELD

Hydrograph



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Summary for Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 4.15" for B50_24 event
Inflow = 526.22 cfs @ 12.40 hrs, Volume= 226.840 af
Outflow = 526.22 cfs @ 12.40 hrs, Volume= 226.840 af, Atten= 0%, Lag= 0.000 min
Primary = 398.25 cfs @ 12.40 hrs, Volume= 201.525 af
Secondary = 127.97 cfs @ 12.40 hrs, Volume= 25.315 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 45.36' @ 12.40 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 110.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0009 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48
#3	Secondary	40.25'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 40.25' / 39.75' S= 0.0037 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf

Primary OutFlow Max=398.21 cfs @ 12.40 hrs HW=45.36' TW=0.00' (Dynamic Tailwater)

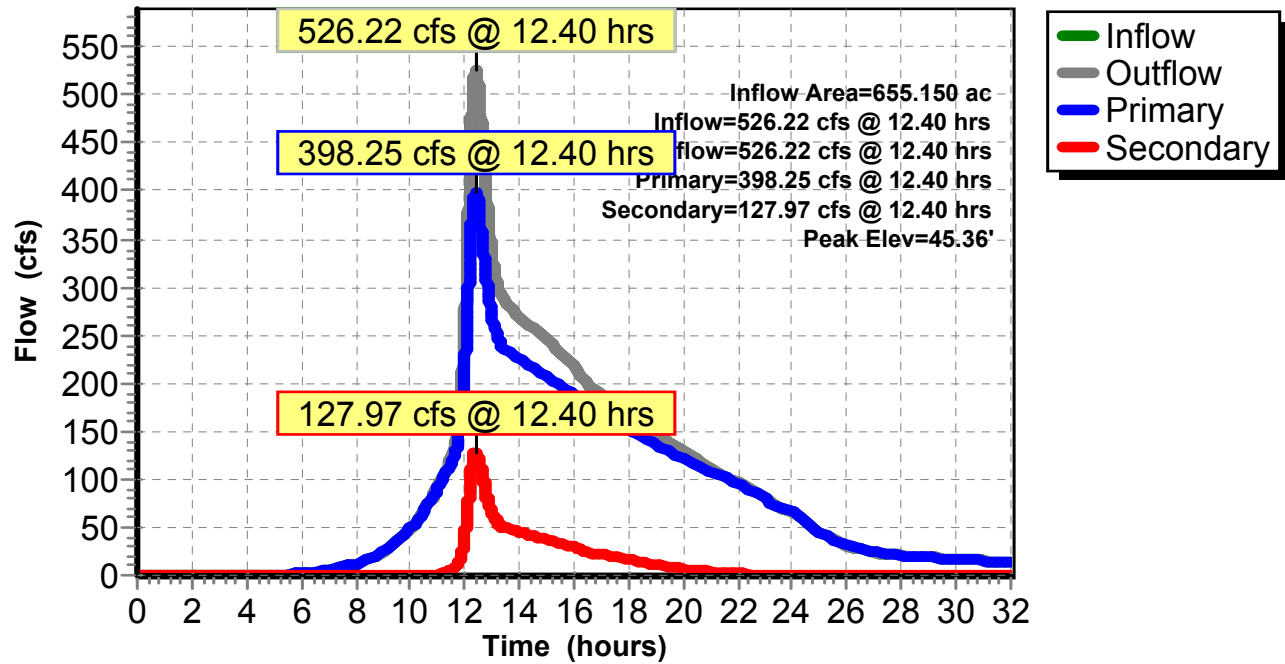
↑1=Culvert (Barrel Controls 398.21 cfs @ 10.21 fps)
↑2=WEIR WESTCH AVE (Controls 0.00 cfs)

Secondary OutFlow Max=127.96 cfs @ 12.40 hrs HW=45.36' TW=0.00' (Dynamic Tailwater)

↑3=Culvert (Barrel Controls 127.96 cfs @ 7.92 fps)

Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



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Summary for Pond 41P: UPSTREAM AVON

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 4.78" for B50_24 event
Inflow = 557.51 cfs @ 12.78 hrs, Volume= 231.907 af
Outflow = 557.30 cfs @ 12.79 hrs, Volume= 231.902 af, Atten= 0%, Lag= 0.875 min
Primary = 250.83 cfs @ 12.79 hrs, Volume= 190.110 af
Secondary = 209.91 cfs @ 12.79 hrs, Volume= 32.861 af
Tertiary = 96.56 cfs @ 12.79 hrs, Volume= 8.930 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 66.67' @ 12.79 hrs Surf.Area= 10,112 sf Storage= 29,475 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.592 min (989.856 - 989.264)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	83,358 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686
70.00	10,112	40,448	63,134
72.00	10,112	20,224	83,358

Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert L= 947.0' Ke= 0.700 Inlet / Outlet Invert= 55.13' / 37.90' S= 0.0182 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Tertiary	65.00'	14.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Secondary	63.50'	12.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

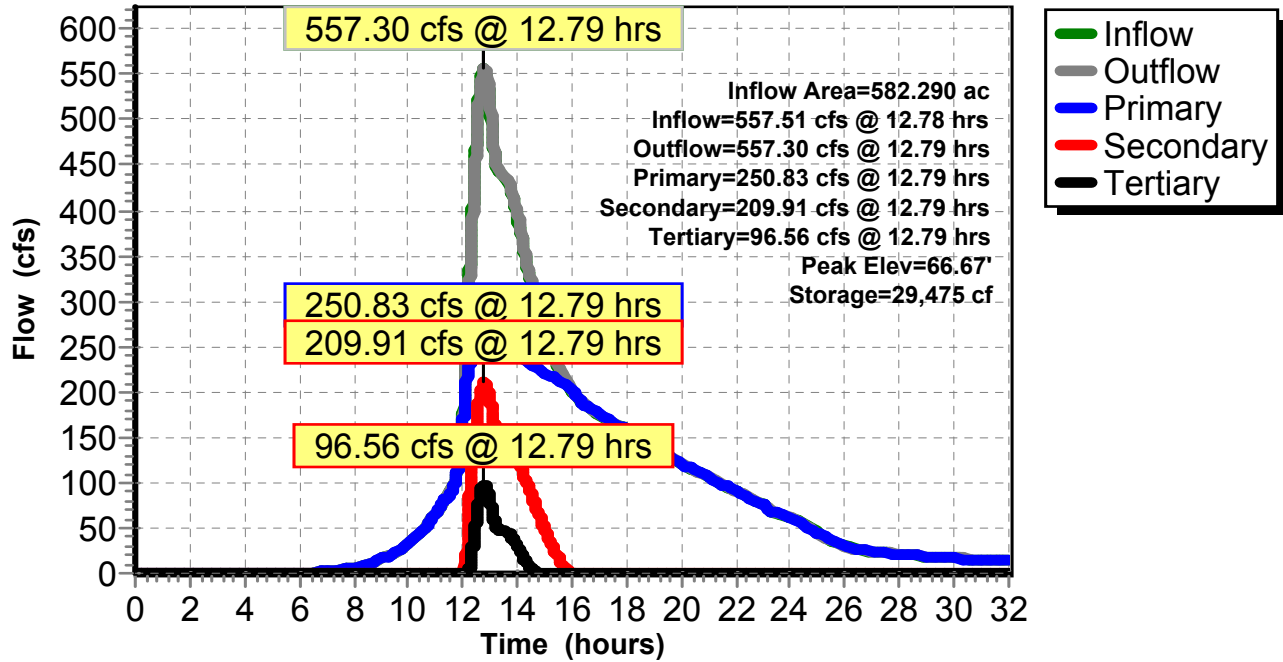
Primary OutFlow Max=250.83 cfs @ 12.79 hrs HW=66.67' TW=0.00' (Dynamic Tailwater)
↑1=Culvert (Inlet Controls 250.83 cfs @ 12.77 fps)

Secondary OutFlow Max=209.91 cfs @ 12.79 hrs HW=66.67' TW=58.90' (Dynamic Tailwater)
↑3=Sharp-Crested Rectangular Weir (Weir Controls 209.91 cfs @ 5.82 fps)

Tertiary OutFlow Max=96.56 cfs @ 12.79 hrs HW=66.67' TW=58.32' (Dynamic Tailwater)
↑2=Sharp-Crested Rectangular Weir (Weir Controls 96.56 cfs @ 4.23 fps)

Pond 41P: UPSTREAM AVON

Hydrograph



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Summary for Pond 42P: CHAMBER

Inflow = 96.56 cfs @ 12.79 hrs, Volume= 8.930 af
Outflow = 96.56 cfs @ 12.79 hrs, Volume= 8.930 af, Atten= 0%, Lag= 0.000 min
Primary = 96.56 cfs @ 12.79 hrs, Volume= 8.930 af

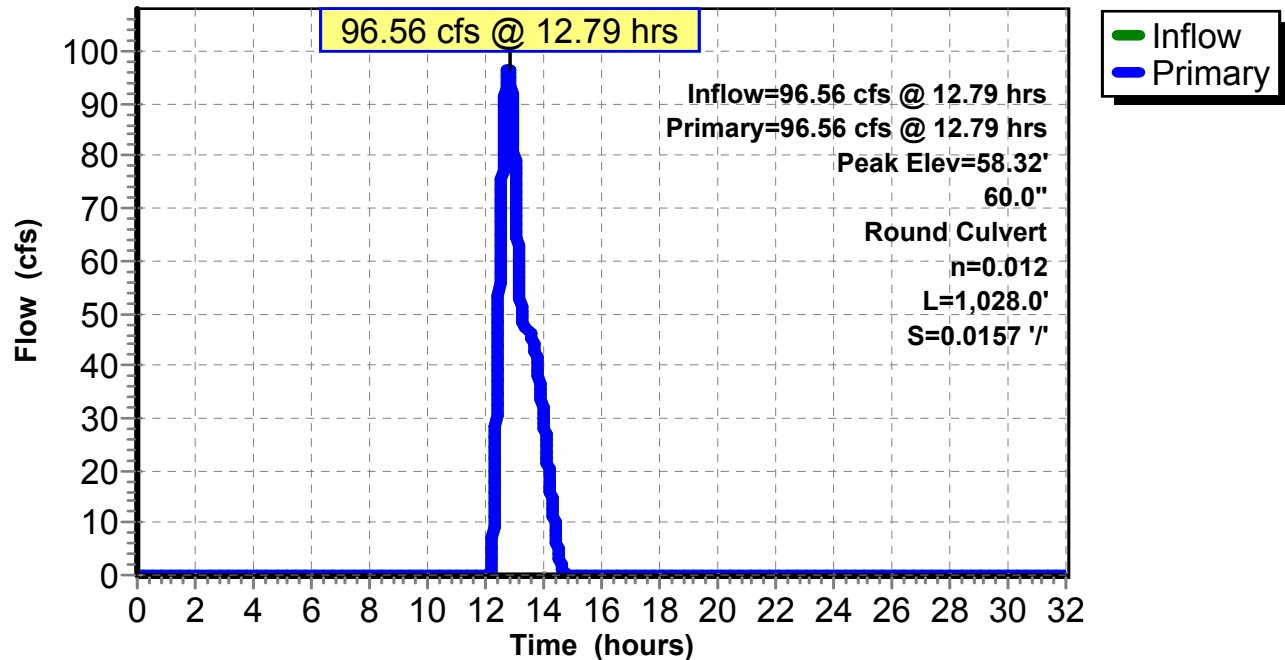
Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 58.32' @ 12.79 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert L= 1,028.0' Ke= 0.250 Inlet / Outlet Invert= 55.13' / 39.00' S= 0.0157 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf

Primary OutFlow Max=96.56 cfs @ 12.79 hrs HW=58.32' TW=0.00' (Dynamic Tailwater)
↑1=Culvert (Inlet Controls 96.56 cfs @ 7.30 fps)

Pond 42P: CHAMBER

Hydrograph



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Summary for Pond 43P: DUAL 60" CULVERTS

Inflow = 209.91 cfs @ 12.79 hrs, Volume= 32.861 af
Outflow = 209.91 cfs @ 12.79 hrs, Volume= 32.861 af, Atten= 0%, Lag= 0.000 min
Primary = 209.91 cfs @ 12.79 hrs, Volume= 32.861 af

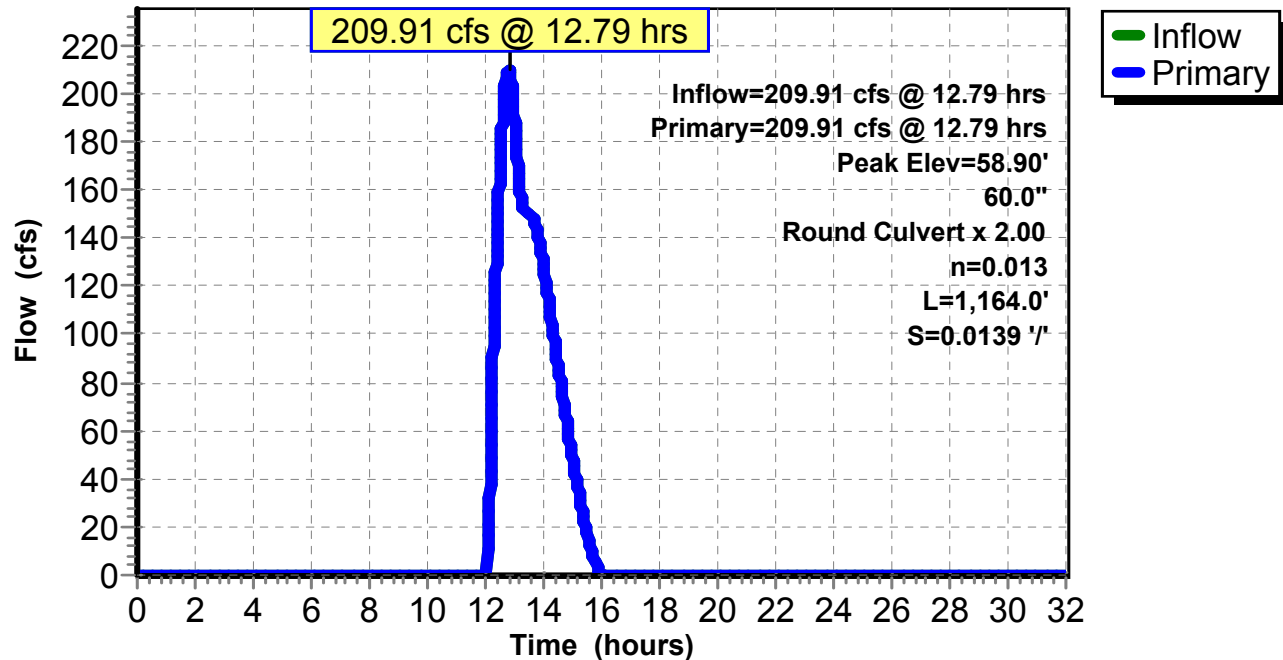
Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 58.90' @ 12.79 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert X 2.00 L= 1,164.0' Ke= 0.500 Inlet / Outlet Invert= 55.13' / 39.00' S= 0.0139 '/ Cc= 0.900 n= 0.013, Flow Area= 19.63 sf

Primary OutFlow Max=209.91 cfs @ 12.79 hrs HW=58.90' TW=0.00' (Dynamic Tailwater)
↑1=Culvert (Inlet Controls 209.91 cfs @ 6.61 fps)

Pond 43P: DUAL 60" CULVERTS

Hydrograph



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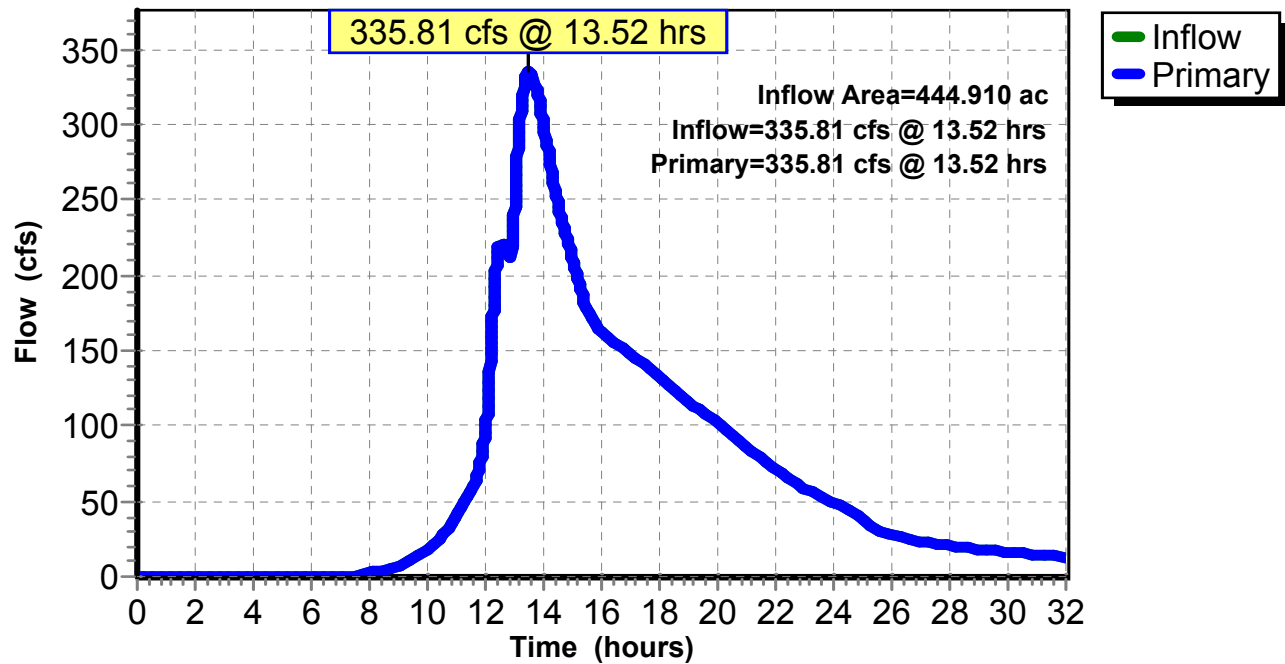
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 4.57" for B50_24 event
Inflow = 335.81 cfs @ 13.52 hrs, Volume= 169.474 af
Primary = 335.81 cfs @ 13.52 hrs, Volume= 169.474 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



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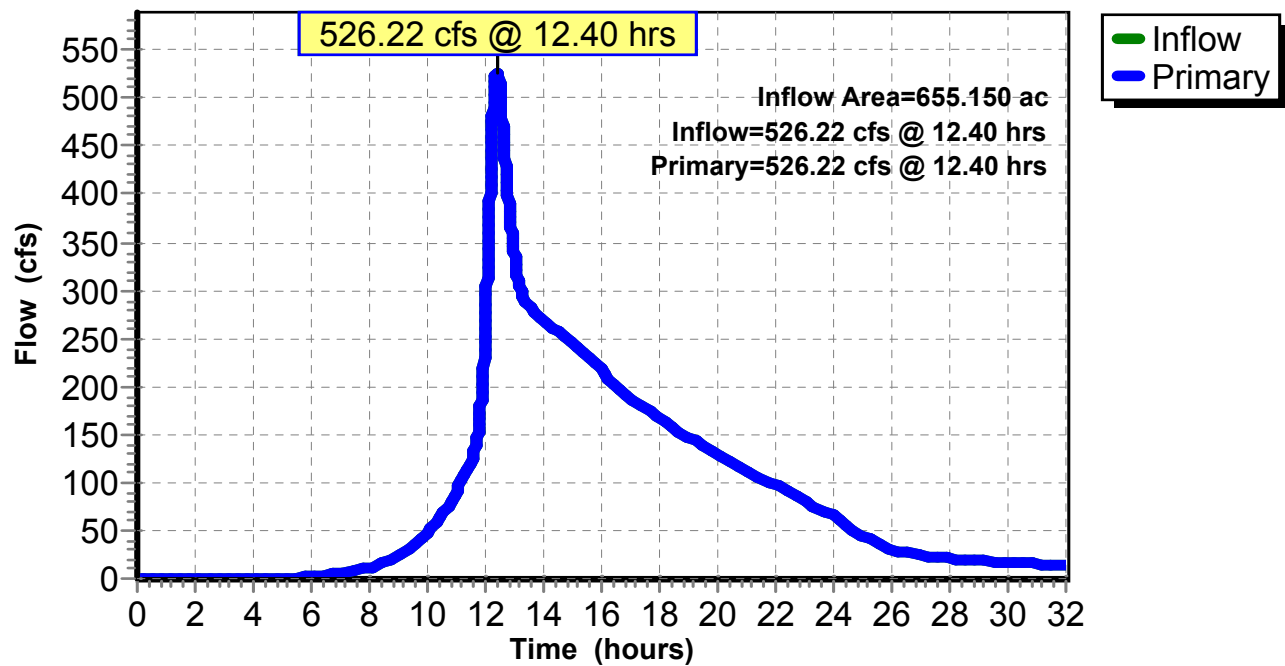
Summary for Link 33L: JUNCTION

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 4.15" for B50_24 event
Inflow = 526.22 cfs @ 12.40 hrs, Volume= 226.840 af
Primary = 526.22 cfs @ 12.40 hrs, Volume= 226.840 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 33L: JUNCTION

Hydrograph



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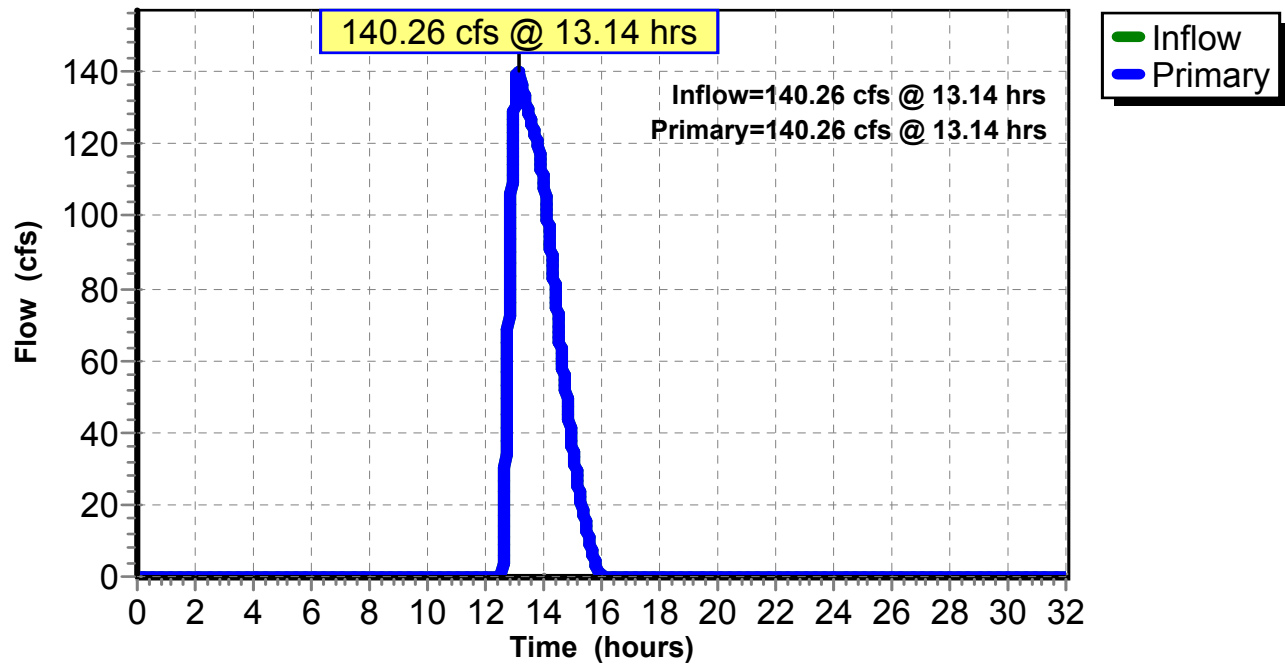
Summary for Link 36L: weir

Inflow = 140.26 cfs @ 13.14 hrs, Volume= 20.120 af
Primary = 140.26 cfs @ 13.14 hrs, Volume= 20.120 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 36L: weir

Hydrograph



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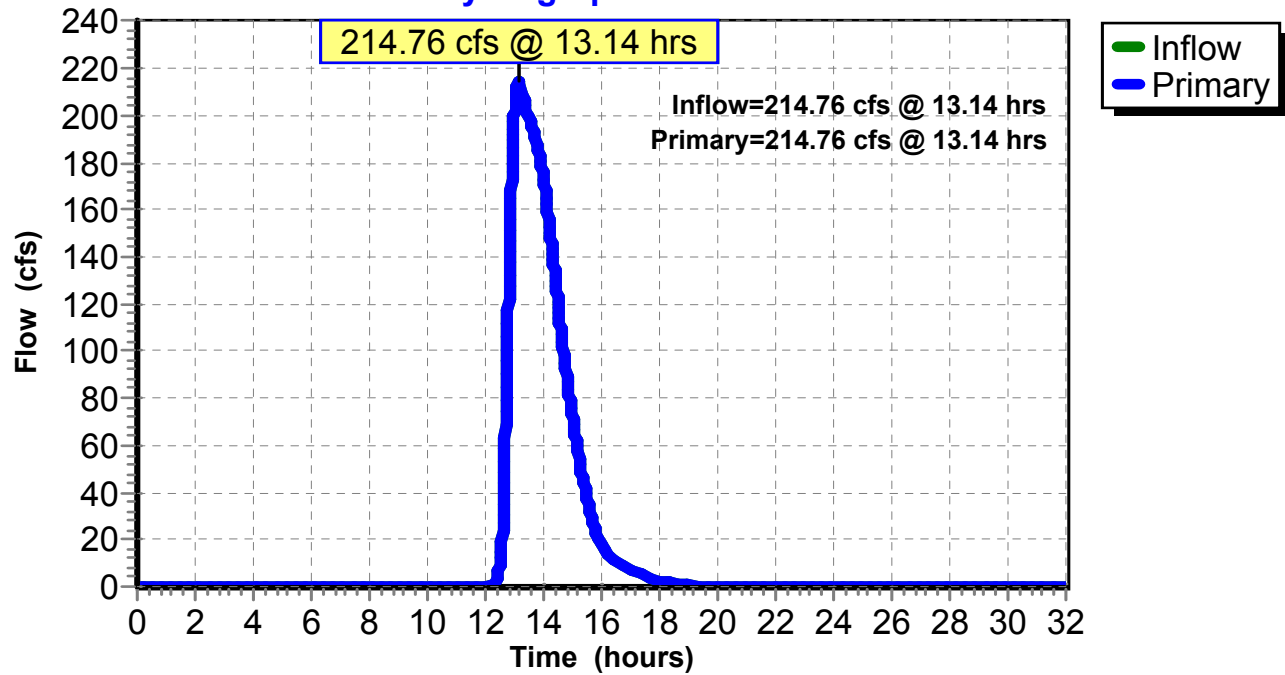
Summary for Link 37L: orifice

Inflow = 214.76 cfs @ 13.14 hrs, Volume= 35.363 af
Primary = 214.76 cfs @ 13.14 hrs, Volume= 35.363 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 37L: orifice

Hydrograph



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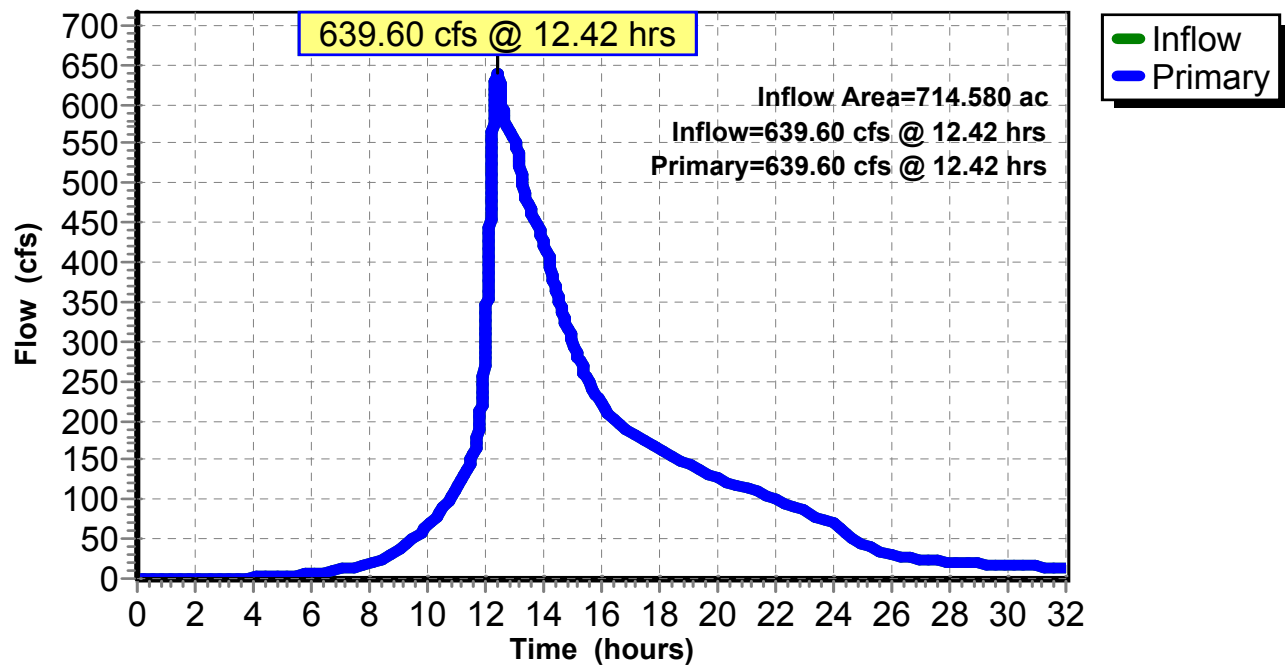
Summary for Link 38L: JUNCTION

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 4.54" for B50_24 event
Inflow = 639.60 cfs @ 12.42 hrs, Volume= 270.414 af
Primary = 639.60 cfs @ 12.42 hrs, Volume= 270.414 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 38L: JUNCTION

Hydrograph



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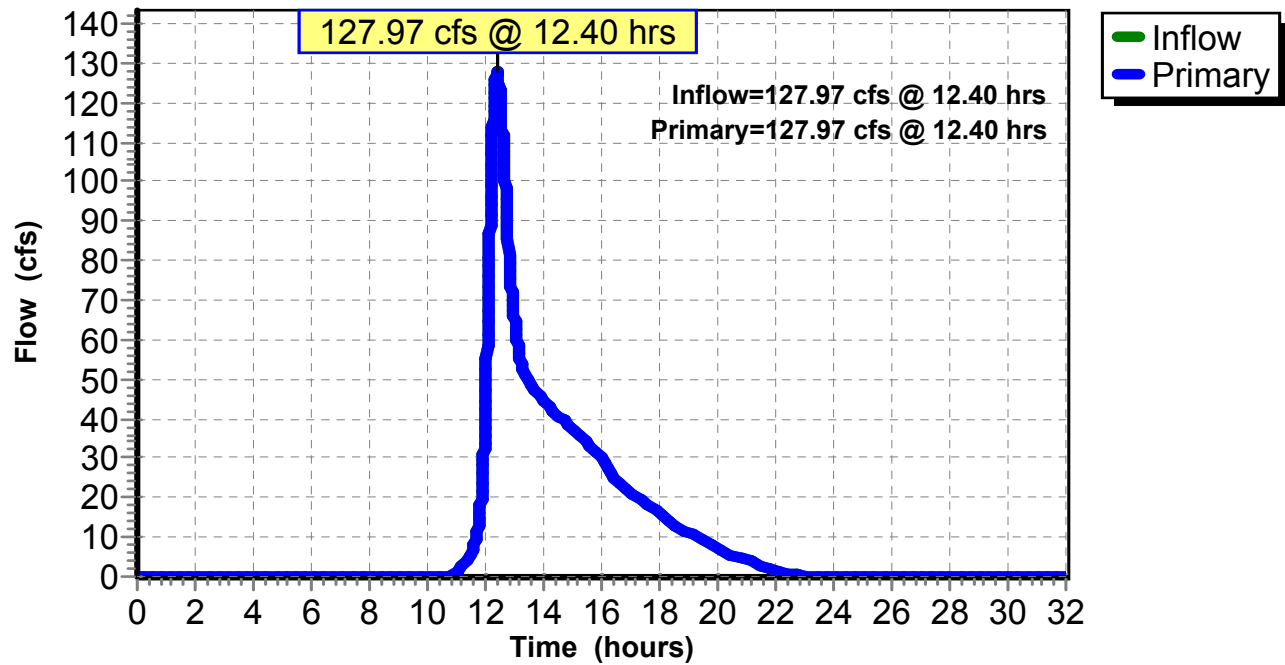
Summary for Link 41L: X

Inflow = 127.97 cfs @ 12.40 hrs, Volume= 25.315 af
Primary = 127.97 cfs @ 12.40 hrs, Volume= 25.315 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 41L: X

Hydrograph



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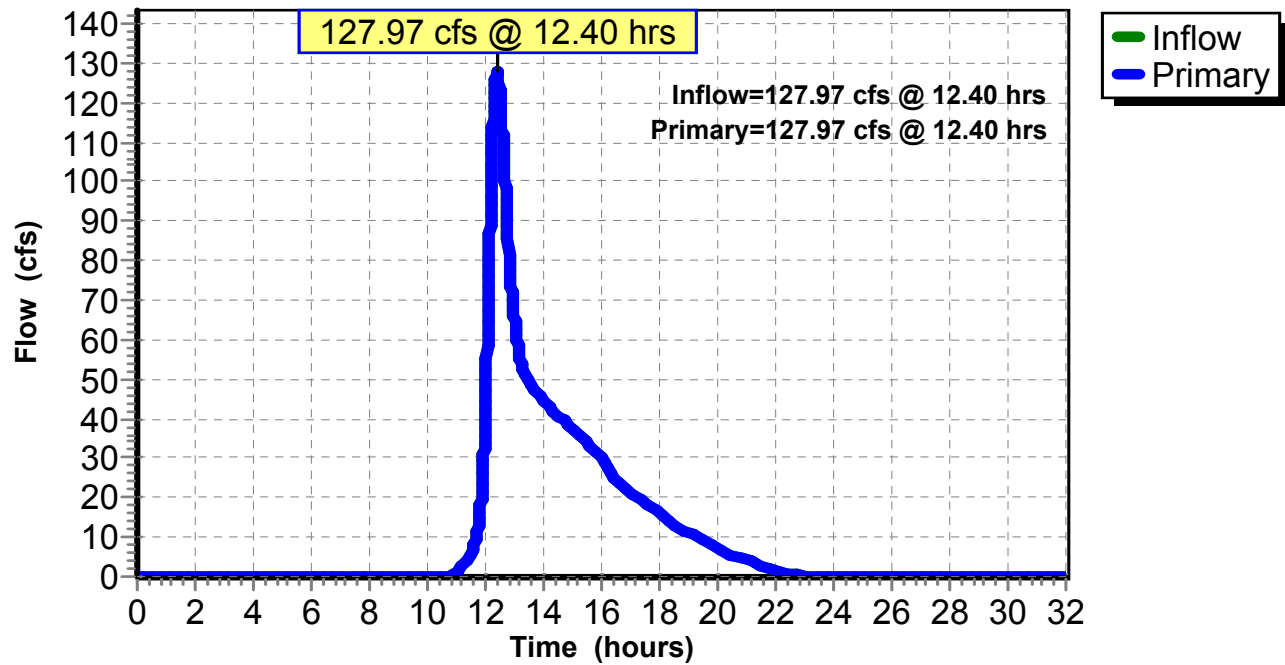
Summary for Link 42L: X

Inflow = 127.97 cfs @ 12.40 hrs, Volume= 25.315 af
Primary = 127.97 cfs @ 12.40 hrs, Volume= 25.315 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 42L: X

Hydrograph



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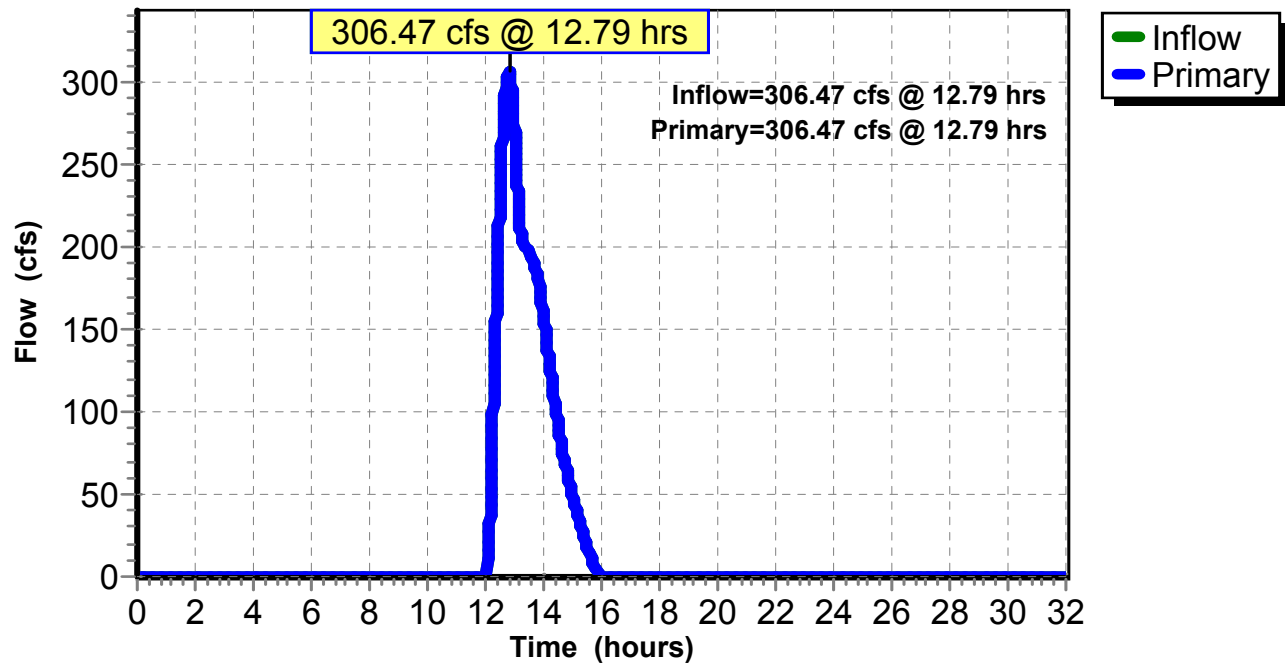
Summary for Link 51L: JUNCTION

Inflow = 306.47 cfs @ 12.79 hrs, Volume= 41.791 af
Primary = 306.47 cfs @ 12.79 hrs, Volume= 41.791 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 51L: JUNCTION

Hydrograph



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Summary for Link FIN: FINAL

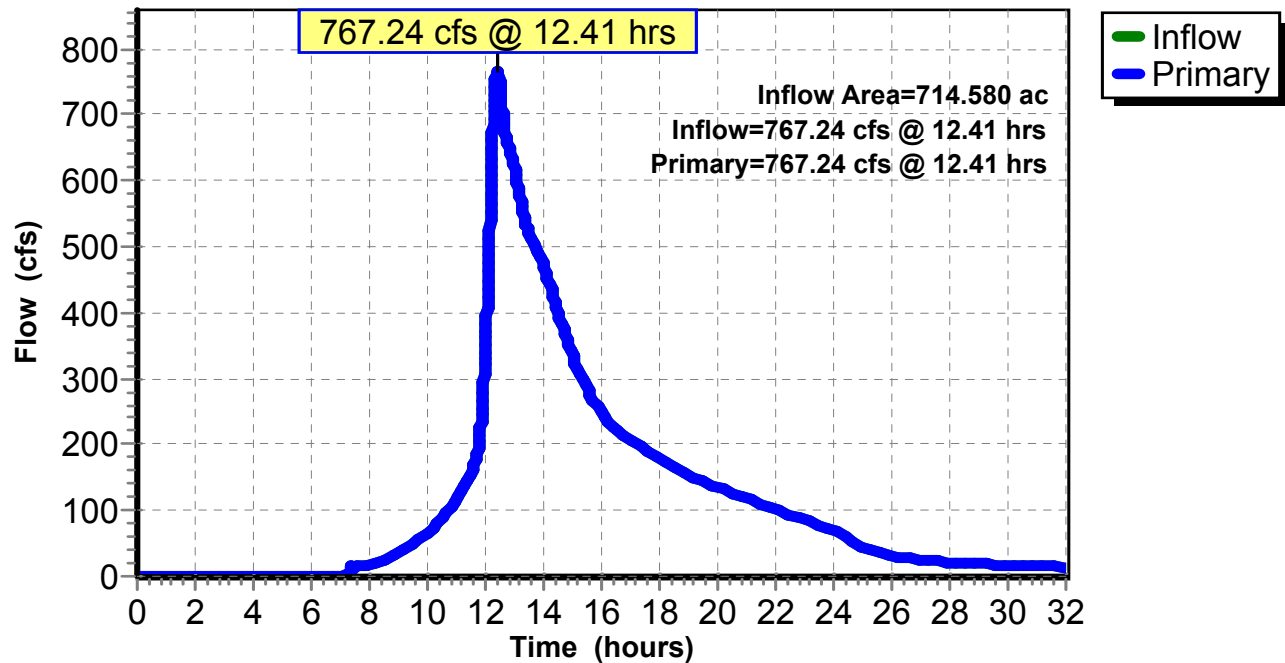
Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 4.94" for B50_24 event
Inflow = 767.24 cfs @ 12.41 hrs, Volume= 294.039 af
Primary = 767.24 cfs @ 12.41 hrs, Volume= 294.039 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 40.00'

Link FIN: FINAL

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Type III 6-hr B50_6 Rainfall=5.13"

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Summary for Subcatchment A: WS A

Runoff = 219.18 cfs @ 3.42 hrs, Volume= 21.439 af, Depth= 4.33"

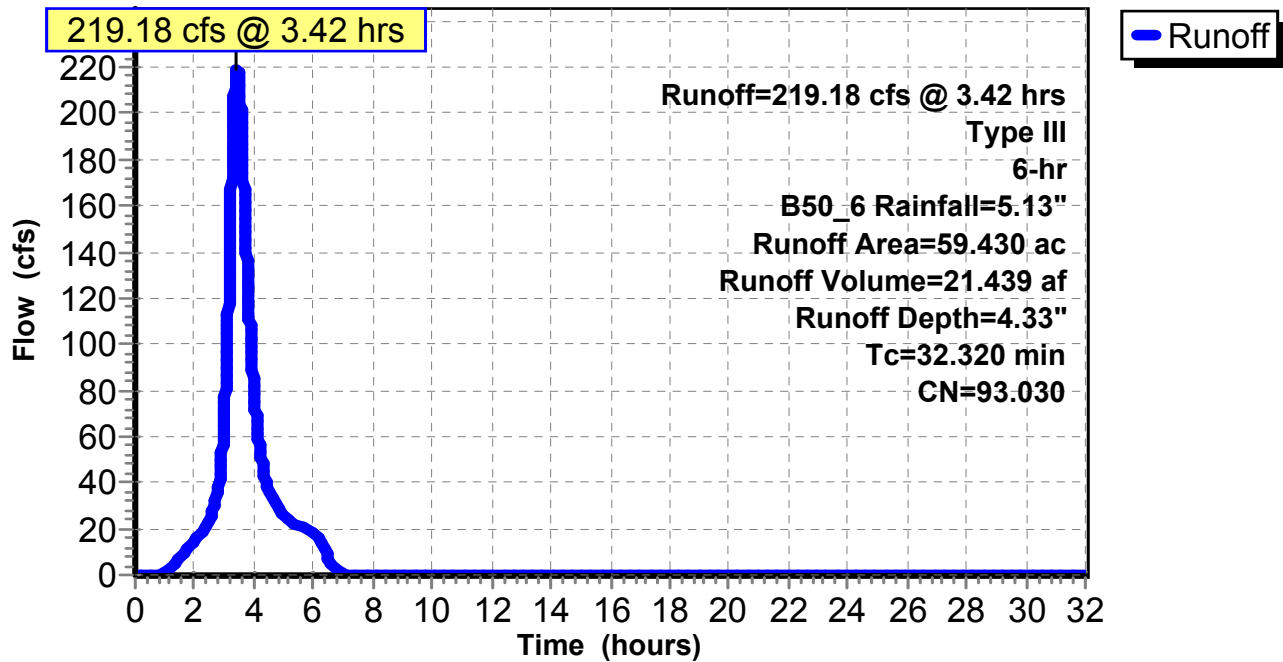
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr B50_6 Rainfall=5.13"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

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Summary for Subcatchment B: WS B

Runoff = 199.45 cfs @ 3.38 hrs, Volume= 17.748 af, Depth= 3.70"

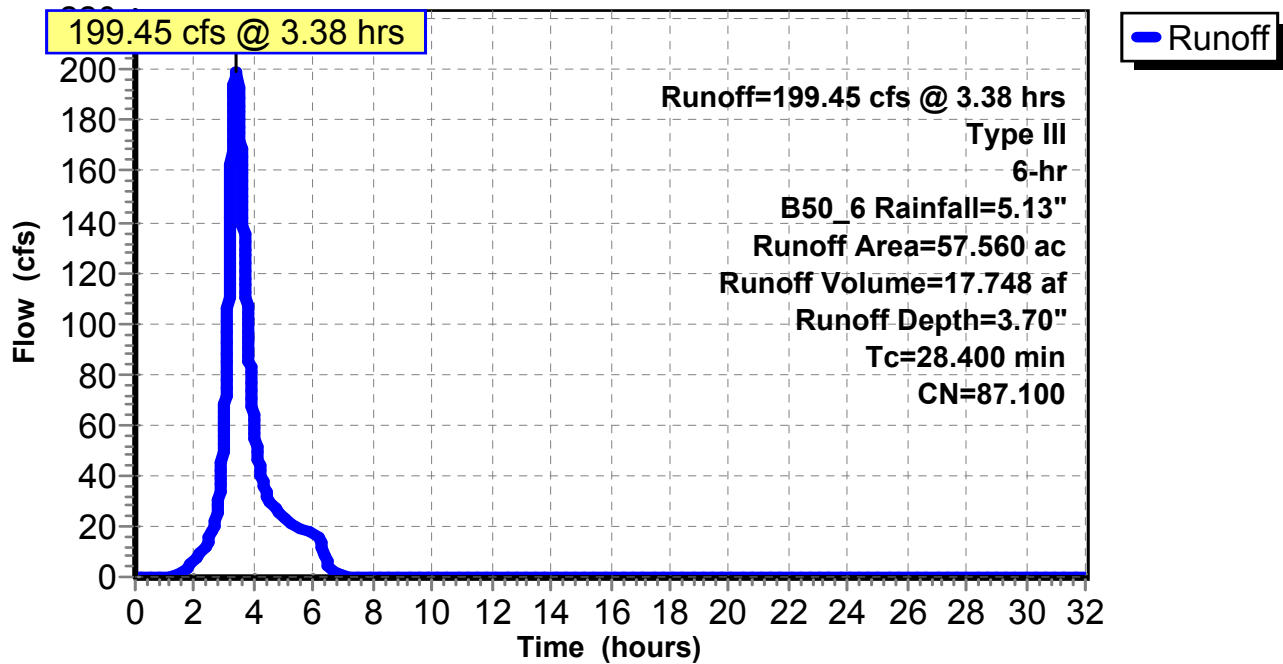
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr B50_6 Rainfall=5.13"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



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Type III 6-hr B50_6 Rainfall=5.13"

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Summary for Subcatchment BH: HOTEL

Runoff = 50.18 cfs @ 3.42 hrs, Volume= 4.596 af, Depth= 3.60"

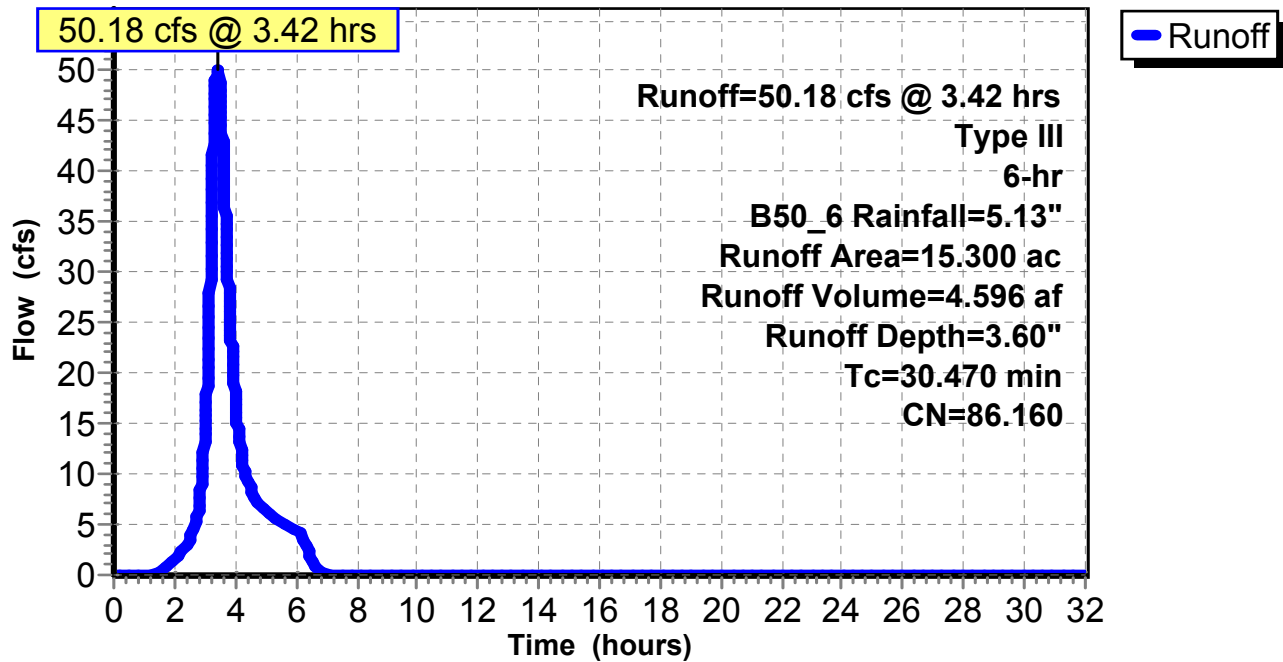
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr B50_6 Rainfall=5.13"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



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Type III 6-hr B50_6 Rainfall=5.13"

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Summary for Subcatchment C: WS C

Runoff = 79.24 cfs @ 3.25 hrs, Volume= 5.810 af, Depth= 3.25"

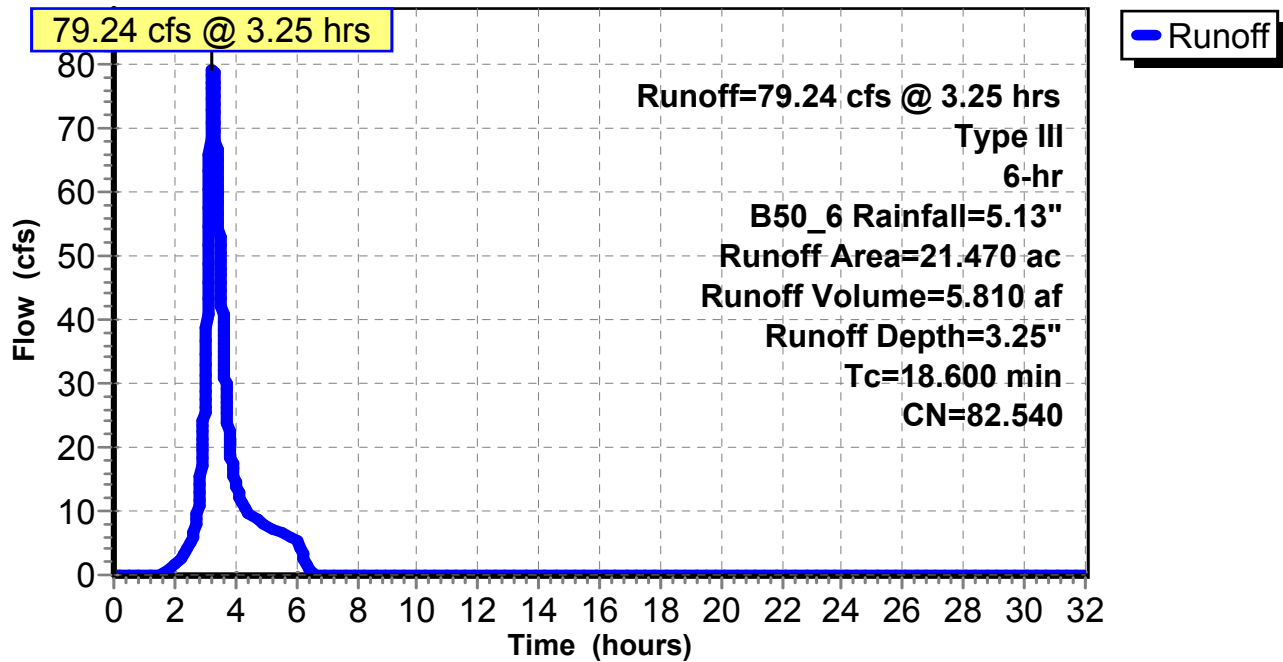
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr B50_6 Rainfall=5.13"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



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Summary for Subcatchment D: WS D

Runoff = 278.61 cfs @ 3.62 hrs, Volume= 31.052 af, Depth= 3.21"

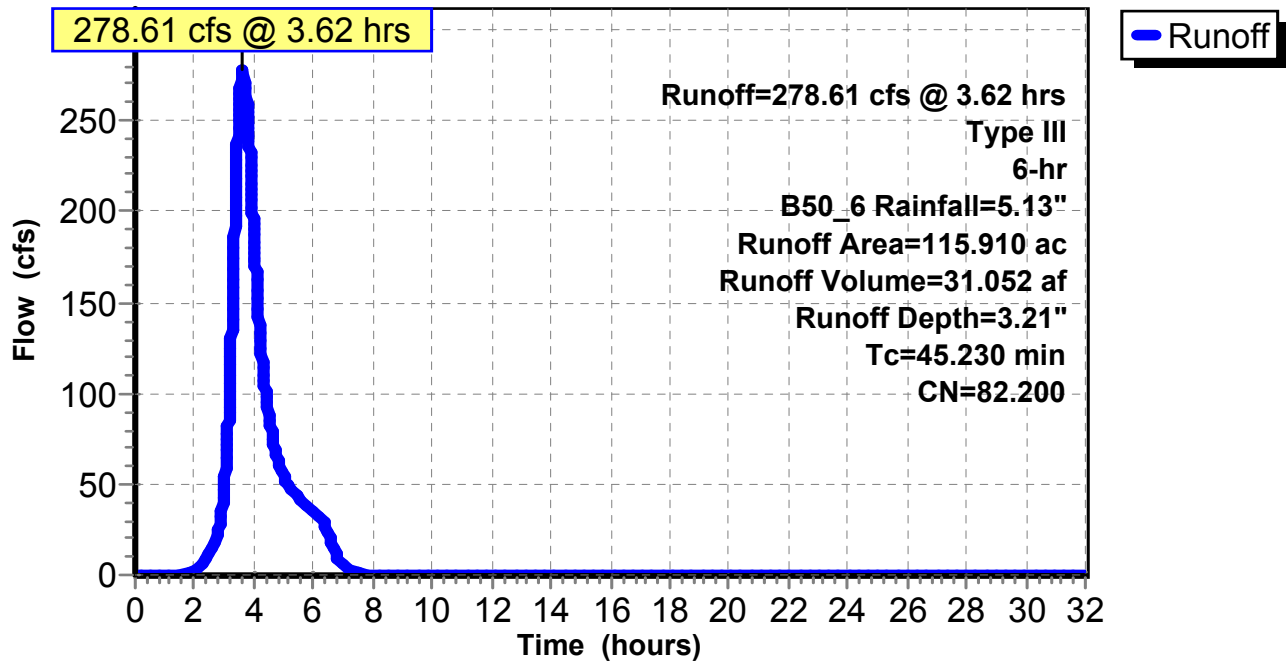
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr B50_6 Rainfall=5.13"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



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Summary for Subcatchment D-1: WS D-1

Runoff = 94.65 cfs @ 3.47 hrs, Volume= 8.771 af, Depth= 2.66"

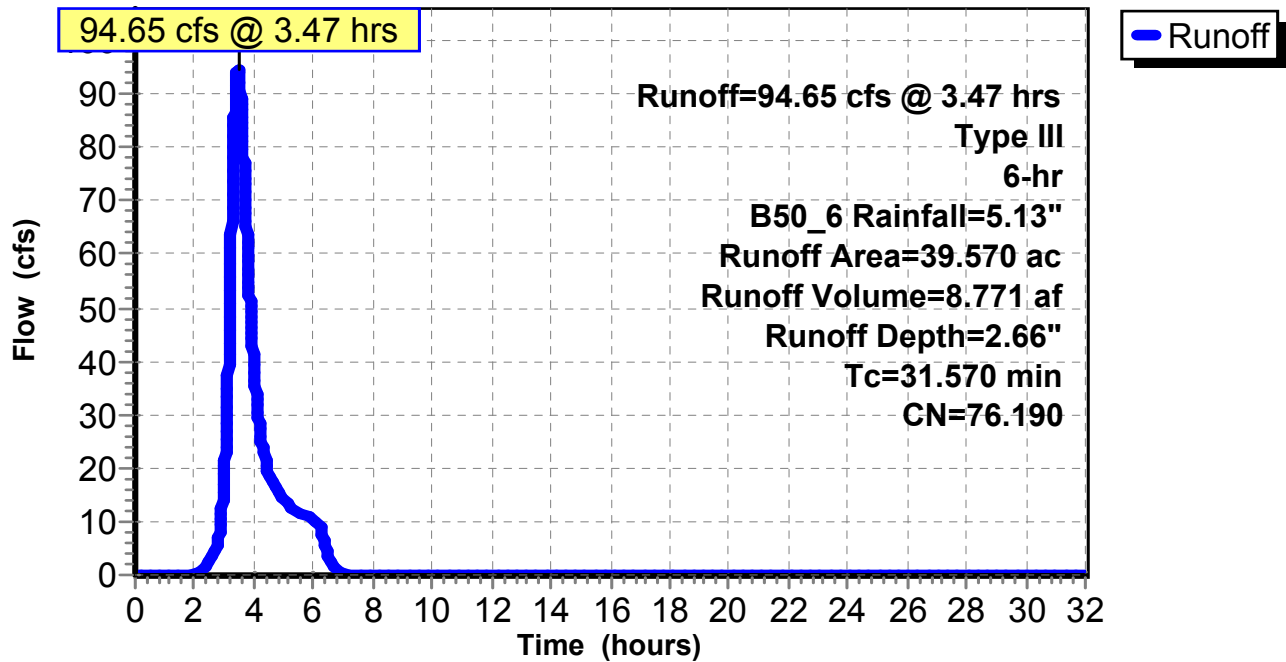
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr B50_6 Rainfall=5.13"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



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Type III 6-hr B50_6 Rainfall=5.13"

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Summary for Subcatchment E: WS E

Runoff = 219.52 cfs @ 3.87 hrs, Volume= 29.694 af, Depth= 3.04"

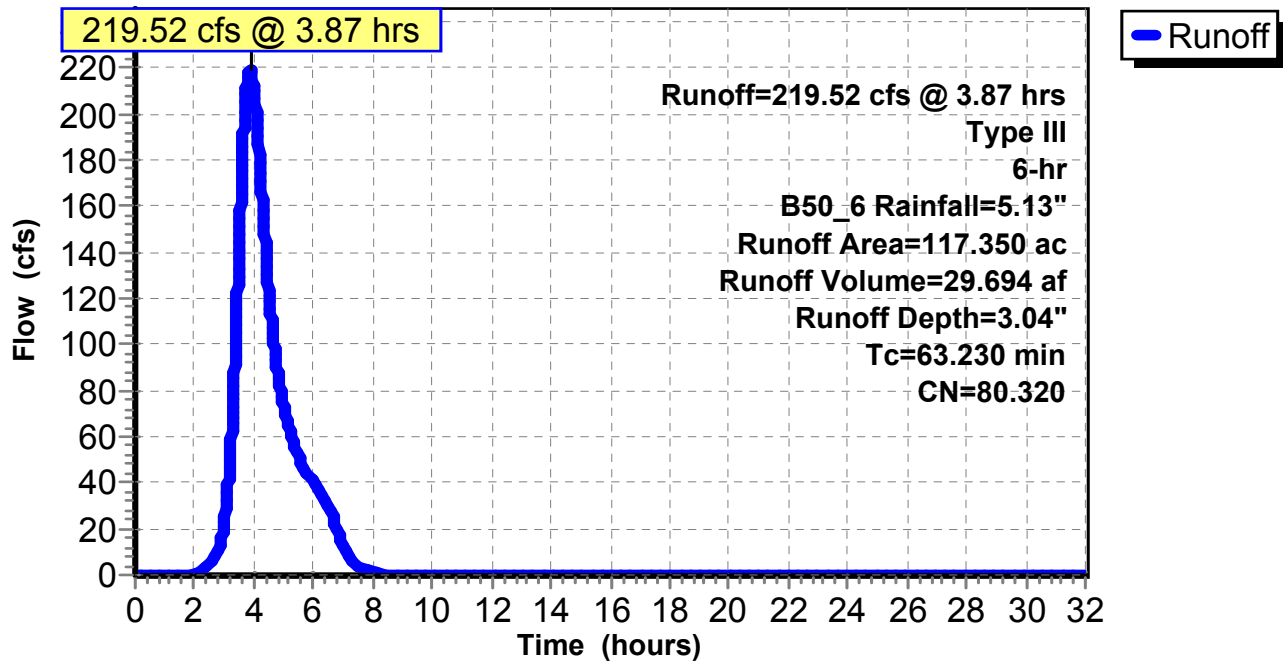
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr B50_6 Rainfall=5.13"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



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Summary for Subcatchment F: WS F

Runoff = 227.34 cfs @ 3.64 hrs, Volume= 25.154 af, Depth= 2.49"

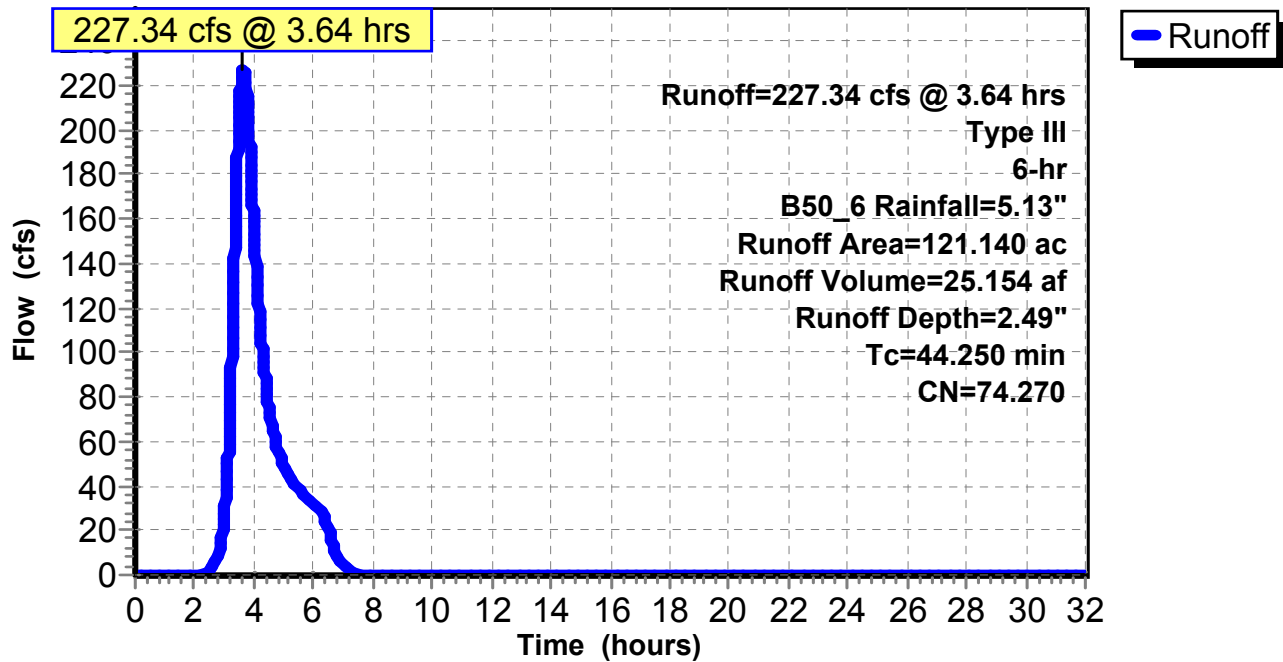
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr B50_6 Rainfall=5.13"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



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Summary for Subcatchment G: WS G

Runoff = 442.87 cfs @ 3.50 hrs, Volume= 43.742 af, Depth= 3.15"

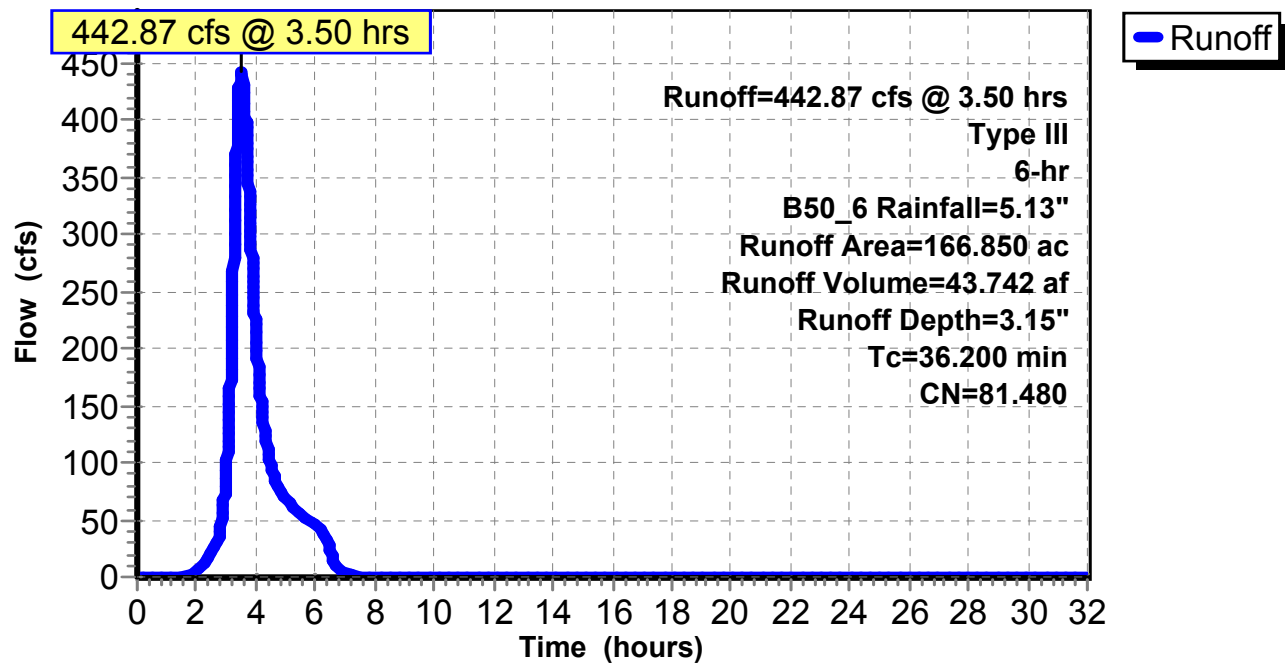
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 6-hr B50_6 Rainfall=5.13"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



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Type III 6-hr B50_6 Rainfall=5.13"

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Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 2.61" for B50_6 event
Inflow = 194.62 cfs @ 4.81 hrs, Volume= 88.261 af
Outflow = 194.55 cfs @ 4.84 hrs, Volume= 88.209 af, Atten= 0%, Lag= 1.555 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.69 fps, Min. Travel Time= 2.278 min
Avg. Velocity = 1.61 fps, Avg. Travel Time= 5.224 min

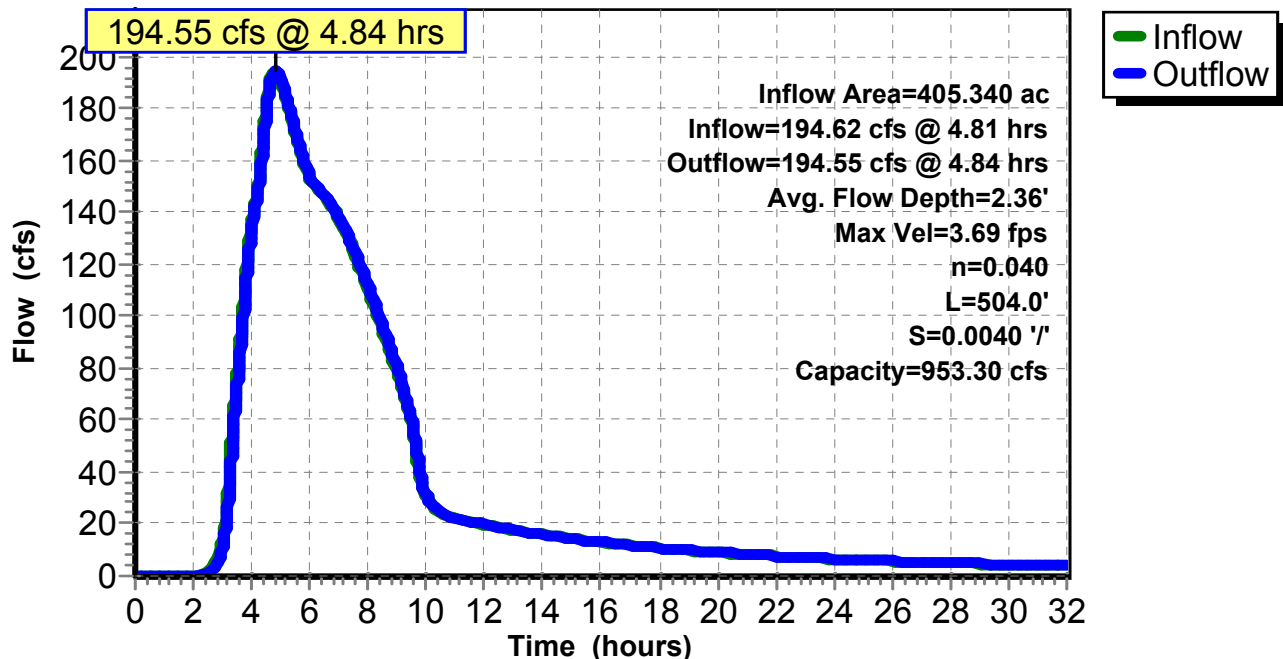
Peak Storage= 26,590 cf @ 4.84 hrs
Average Depth at Peak Storage= 2.36'
Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
Length= 504.0' Slope= 0.0040 ' / '
Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



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Type III 6-hr B50_6 Rainfall=5.13"

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Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 2.49" for B50_6 event
Inflow = 226.96 cfs @ 3.65 hrs, Volume= 25.153 af
Outflow = 195.21 cfs @ 3.85 hrs, Volume= 25.153 af, Atten= 14%, Lag= 12.515 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2

Max. Velocity= 2.06 fps, Min. Travel Time= 17.628 min

Avg. Velocity = 0.36 fps, Avg. Travel Time= 102.209 min

Peak Storage= 206,457 cf @ 3.85 hrs

Average Depth at Peak Storage= 2.88'

Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040

Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'

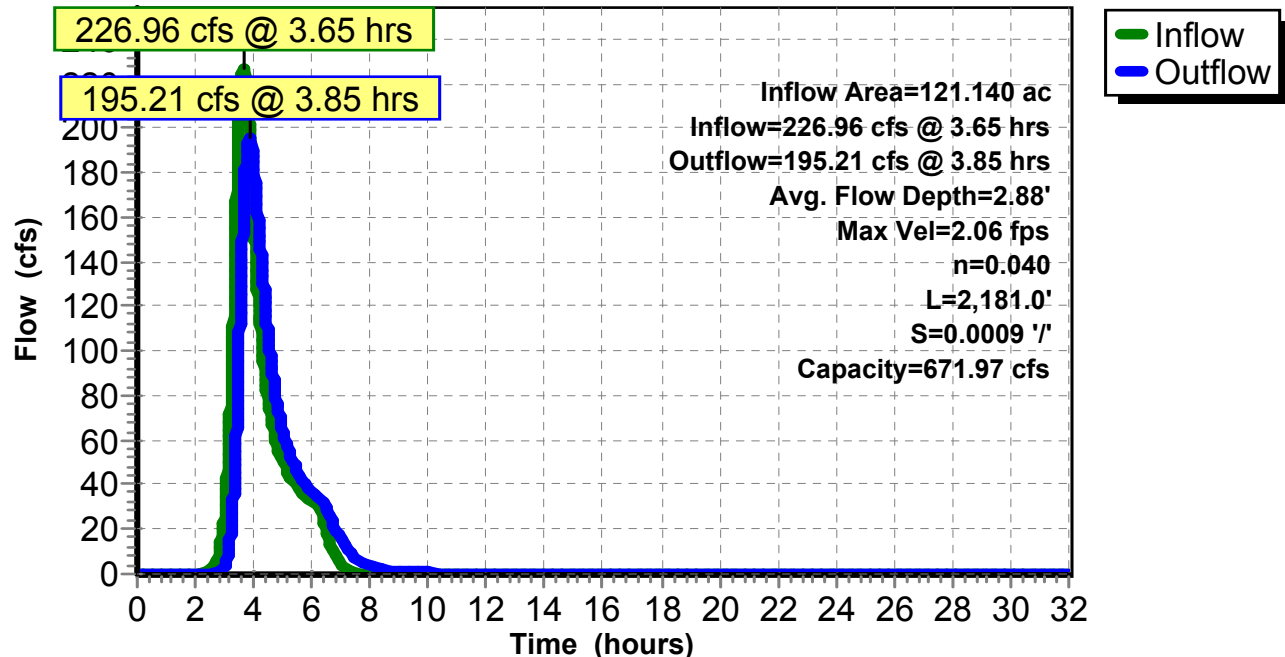
Length= 2,181.0' Slope= 0.0009 ' / '

Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



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Type III 6-hr B50_6 Rainfall=5.13"

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Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 3.01" for B50_6 event
Inflow = 437.61 cfs @ 3.55 hrs, Volume= 41.850 af
Outflow = 35.75 cfs @ 6.41 hrs, Volume= 33.541 af, Atten= 92%, Lag= 171.682 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2

Max. Velocity= 0.53 fps, Min. Travel Time= 688.510 min

Avg. Velocity = 0.35 fps, Avg. Travel Time= 1,039.013 min

Peak Storage= 1,476,909 cf @ 6.41 hrs

Average Depth at Peak Storage= 2.08'

Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040

Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'

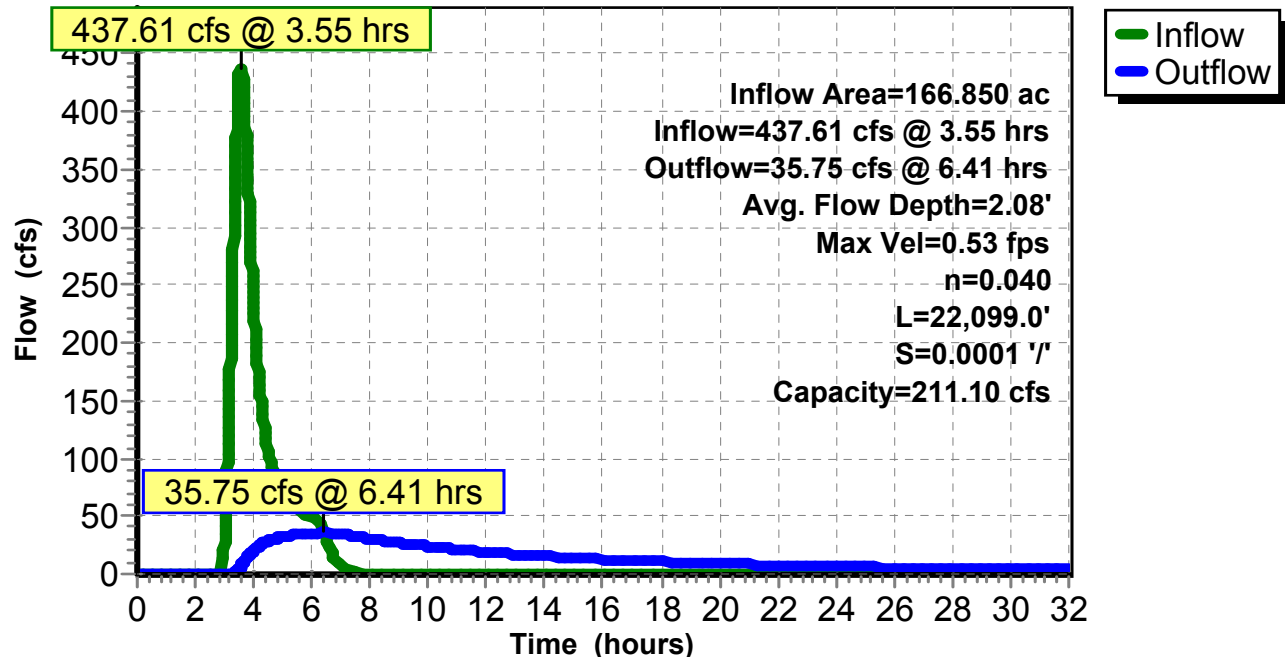
Length= 22,099.0' Slope= 0.0001 ' / '

Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



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Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 2.61" for B50_6 event
Inflow = 209.96 cfs @ 4.83 hrs, Volume= 96.879 af
Outflow = 208.81 cfs @ 4.94 hrs, Volume= 96.708 af, Atten= 1%, Lag= 6.540 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 6.08 fps, Min. Travel Time= 8.180 min
Avg. Velocity = 2.87 fps, Avg. Travel Time= 17.347 min

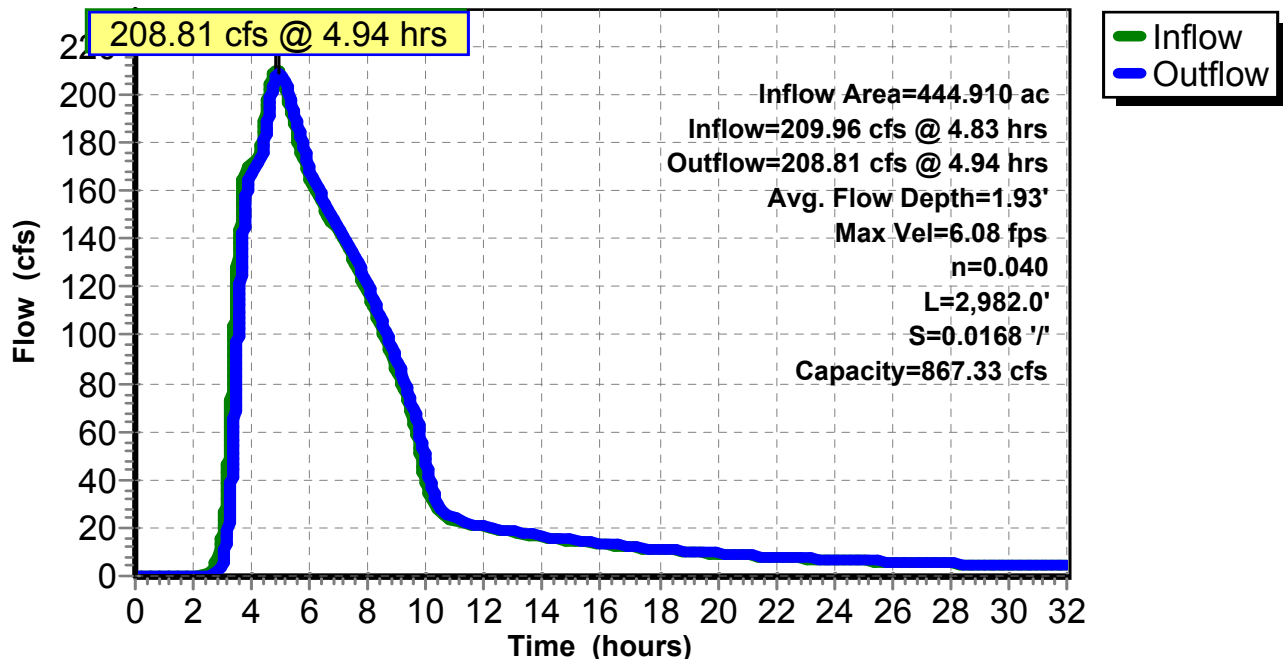
Peak Storage= 102,489 cf @ 4.94 hrs
Average Depth at Peak Storage= 1.93'
Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040
Side Slope Z-value= 3.0 '/' Top Width= 36.00'
Length= 2,982.0' Slope= 0.0168 '/'
Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



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Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 2.73" for B50_6 event
Inflow = 414.06 cfs @ 3.76 hrs, Volume= 127.759 af
Outflow = 414.00 cfs @ 3.77 hrs, Volume= 127.737 af, Atten= 0%, Lag= 0.455 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 9.92 fps, Min. Travel Time= 0.731 min
Avg. Velocity = 3.50 fps, Avg. Travel Time= 2.072 min

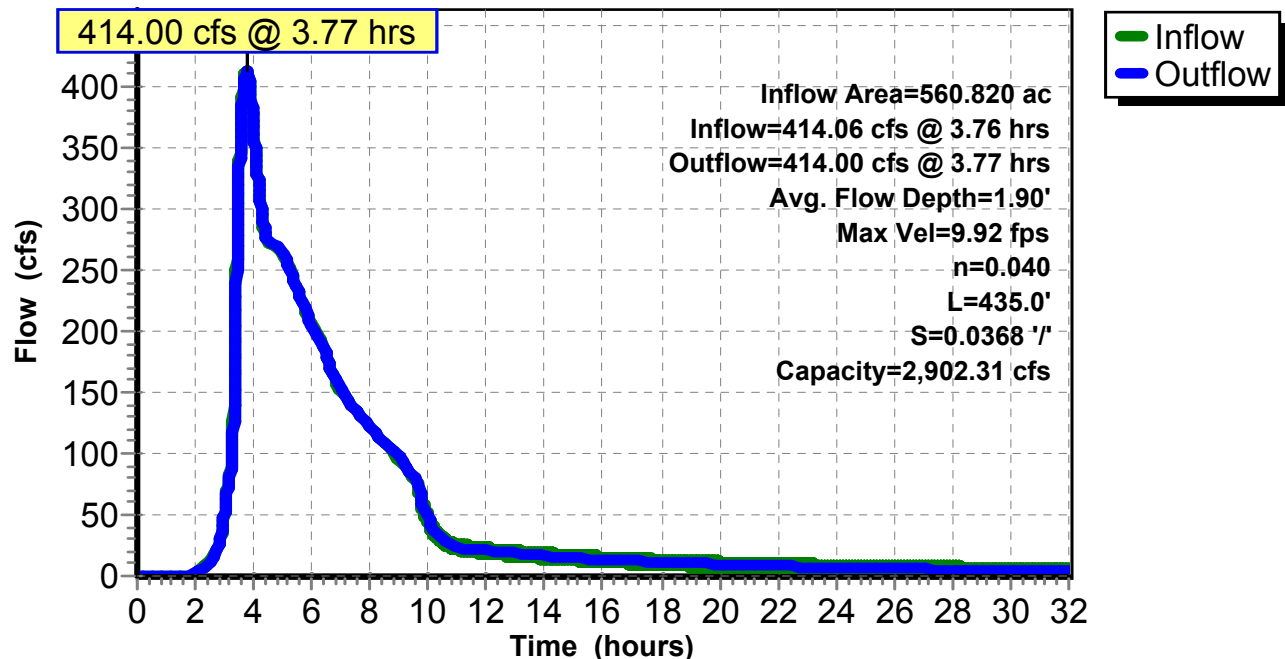
Peak Storage= 18,149 cf @ 3.77 hrs
Average Depth at Peak Storage= 1.90'
Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
Length= 435.0' Slope= 0.0368 ' / '
Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



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Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 2.75" for B50_6 event
 Inflow = 438.18 cfs @ 3.73 hrs, Volume= 133.547 af
 Outflow = 433.80 cfs @ 3.80 hrs, Volume= 133.546 af, Atten= 1%, Lag= 3.877 min
 Primary = 433.80 cfs @ 3.80 hrs, Volume= 133.546 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 73.20' @ 3.80 hrs Surf.Area= 0.240 ac Storage= 0.621 af

Plug-Flow detention time= 0.225 min calculated for 133.546 af (100% of inflow)
 Center-of-Mass det. time= 0.210 min (440.212 - 440.002)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

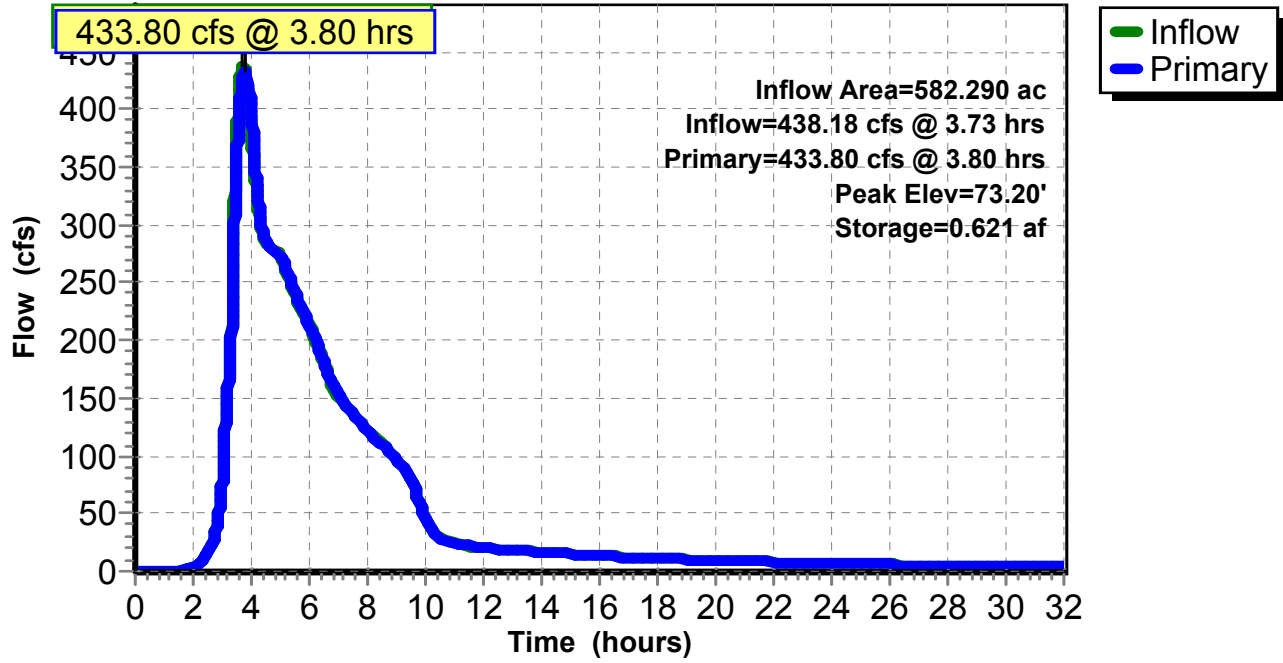
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=433.78 cfs @ 3.80 hrs HW=73.20' TW=65.99' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 253.89 cfs @ 12.93 fps)
- 2=Culvert 2 (Inlet Controls 179.90 cfs @ 9.16 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



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Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 2.62" for B50_6 event
Inflow = 210.11 cfs @ 4.80 hrs, Volume= 96.980 af
Outflow = 209.96 cfs @ 4.83 hrs, Volume= 96.879 af, Atten= 0%, Lag= 1.947 min
Primary = 209.96 cfs @ 4.83 hrs, Volume= 96.879 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 130.25' @ 4.83 hrs Surf.Area= 0.982 ac Storage= 2.317 af

Plug-Flow detention time= 10.039 min calculated for 96.849 af (100% of inflow)
Center-of-Mass det. time= 8.577 min (500.345 - 491.768)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

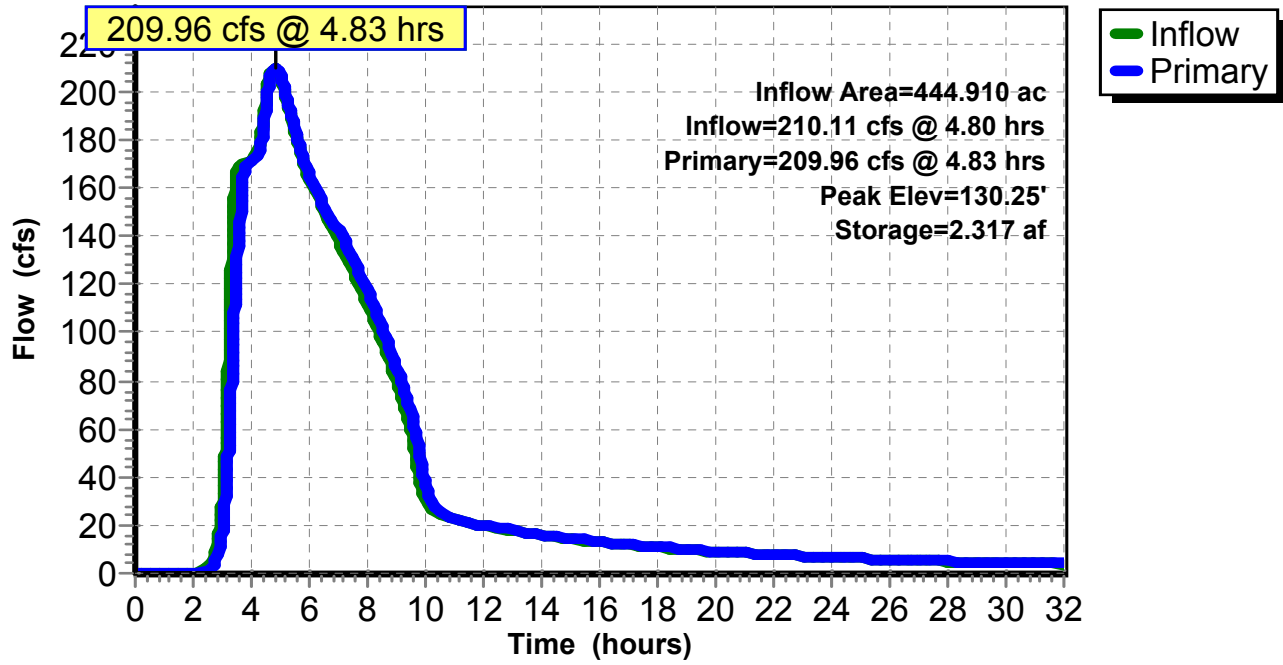
Primary OutFlow Max=209.96 cfs @ 4.83 hrs HW=130.25' TW=127.92' (Dynamic Tailwater)

1=Culvert (Barrel Controls 159.39 cfs @ 7.43 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 50.57 cfs @ 1.63 fps)

Pond 4A: DP 4 A ARGYLE

Hydrograph



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Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 2.62" for B50_6 event
 Inflow = 431.62 cfs @ 3.87 hrs, Volume= 88.388 af
 Outflow = 194.62 cfs @ 4.81 hrs, Volume= 88.261 af, Atten= 55%, Lag= 56.452 min
 Primary = 194.62 cfs @ 4.81 hrs, Volume= 88.261 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 132.20' @ 4.81 hrs Surf.Area= 18.714 ac Storage= 22.624 af

Plug-Flow detention time= 59.680 min calculated for 88.233 af (100% of inflow)
 Center-of-Mass det. time= 57.577 min (514.065 - 456.488)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

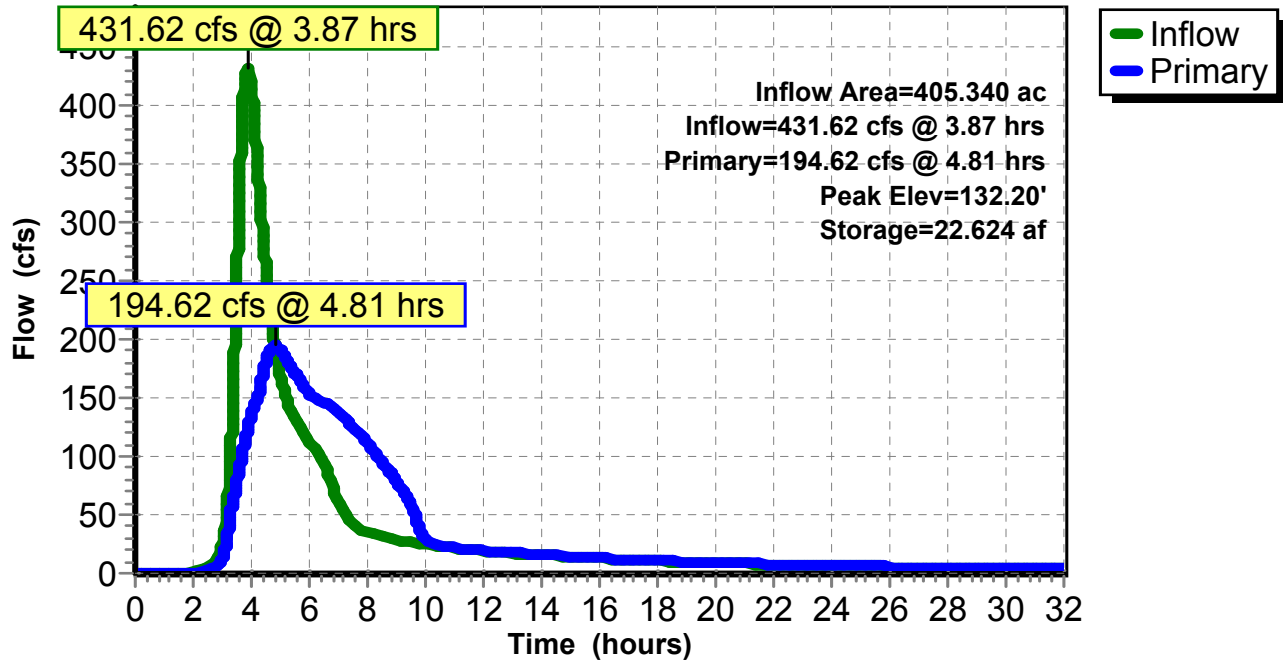
Primary OutFlow Max=194.62 cfs @ 4.81 hrs HW=132.20' TW=130.36' (Dynamic Tailwater)

1=Culvert (Barrel Controls 161.30 cfs @ 7.60 fps)

2=Asymmetrical Weir (Weir Controls 33.32 cfs @ 1.36 fps)

Pond 5P: DP 5 BETSY BROWN ROAD

Hydrograph



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Type III 6-hr B50_6 Rainfall=5.13"

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Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 2.73" for B50_6 event
Inflow = 414.93 cfs @ 3.72 hrs, Volume= 127.760 af
Outflow = 414.06 cfs @ 3.76 hrs, Volume= 127.759 af, Atten= 0%, Lag= 2.083 min
Primary = 414.06 cfs @ 3.76 hrs, Volume= 127.759 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 91.17' @ 3.76 hrs Surf.Area= 1.370 ac Storage= 1.598 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.837 min (448.859 - 446.022)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

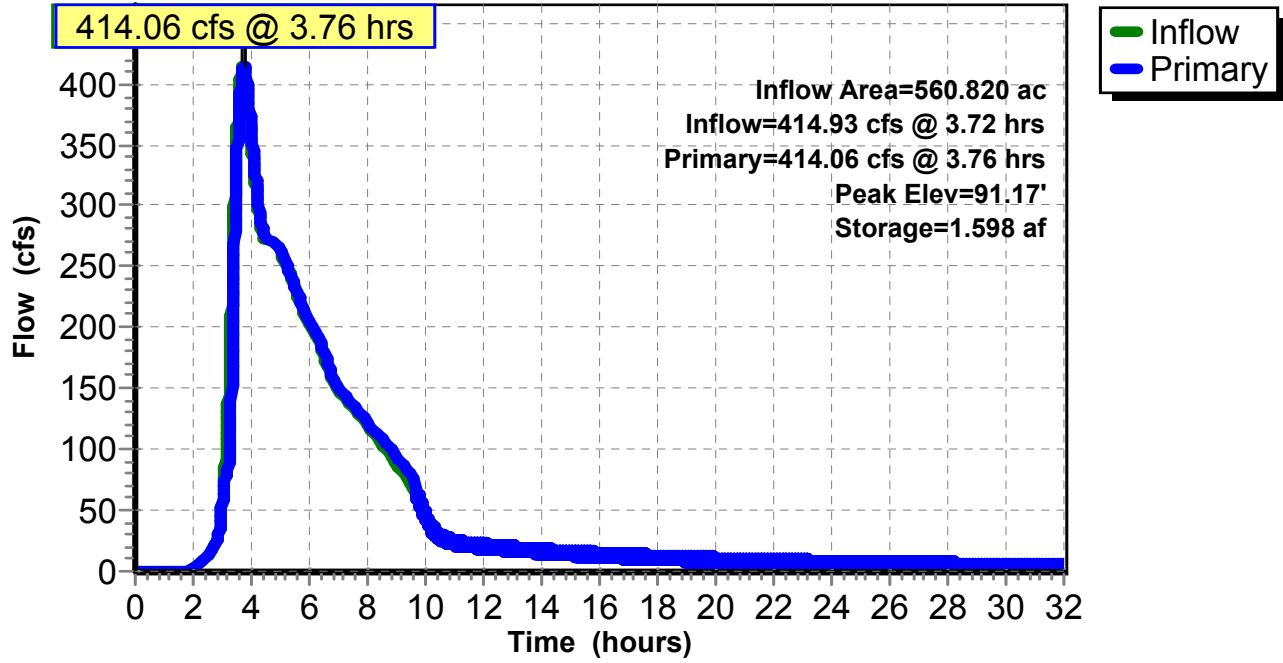
Primary OutFlow Max=414.05 cfs @ 3.76 hrs HW=91.17' TW=77.90' (Dynamic Tailwater)

1=Sharp-Crested Rectangular Weir(Weir Controls 172.65 cfs @ 5.29 fps)

2=Sharp-Crested Rectangular Weir(Weir Controls 241.40 cfs @ 2.71 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



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Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 2.88" for B50_6 event
 Inflow = 691.47 cfs @ 3.44 hrs, Volume= 171.781 af
 Outflow = 691.37 cfs @ 3.44 hrs, Volume= 170.091 af, Atten= 0%, Lag= 0.129 min
 Primary = 691.37 cfs @ 3.44 hrs, Volume= 170.091 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 40.16' @ 3.44 hrs Surf.Area= 1.054 ac Storage= 1.835 af

Plug-Flow detention time= 16.527 min calculated for 170.037 af (99% of inflow)
 Center-of-Mass det. time= 2.862 min (398.495 - 395.633)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

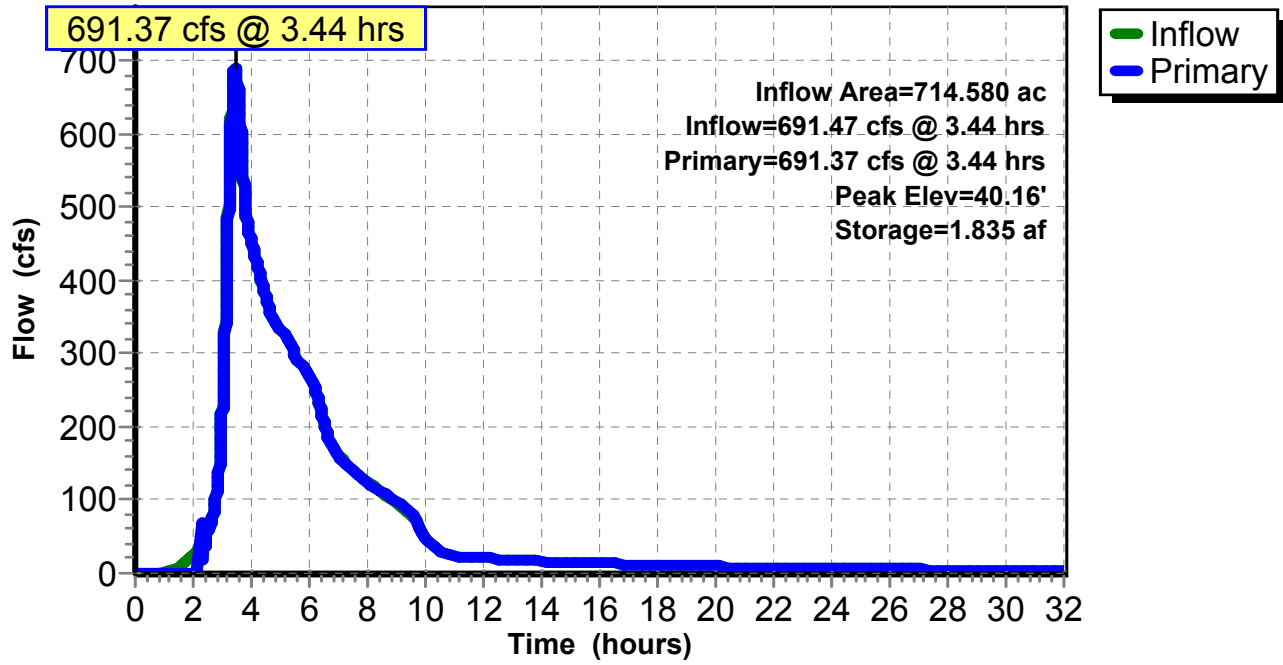
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=691.30 cfs @ 3.44 hrs HW=40.16' TW=40.00' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 262.75 cfs @ 1.91 fps)
- 2=WEIR BOWMAN (Weir Controls 428.55 cfs @ 1.45 fps)

Pond 8P: BOWMAN FIELDS

Hydrograph



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Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 2.49" for B50_6 event
Inflow = 227.34 cfs @ 3.64 hrs, Volume= 25.154 af
Outflow = 226.96 cfs @ 3.65 hrs, Volume= 25.153 af, Atten= 0%, Lag= 0.310 min
Primary = 226.96 cfs @ 3.65 hrs, Volume= 25.153 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 134.82' @ 3.69 hrs Surf.Area= 0.183 ac Storage= 0.208 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.519 min (254.798 - 254.278)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

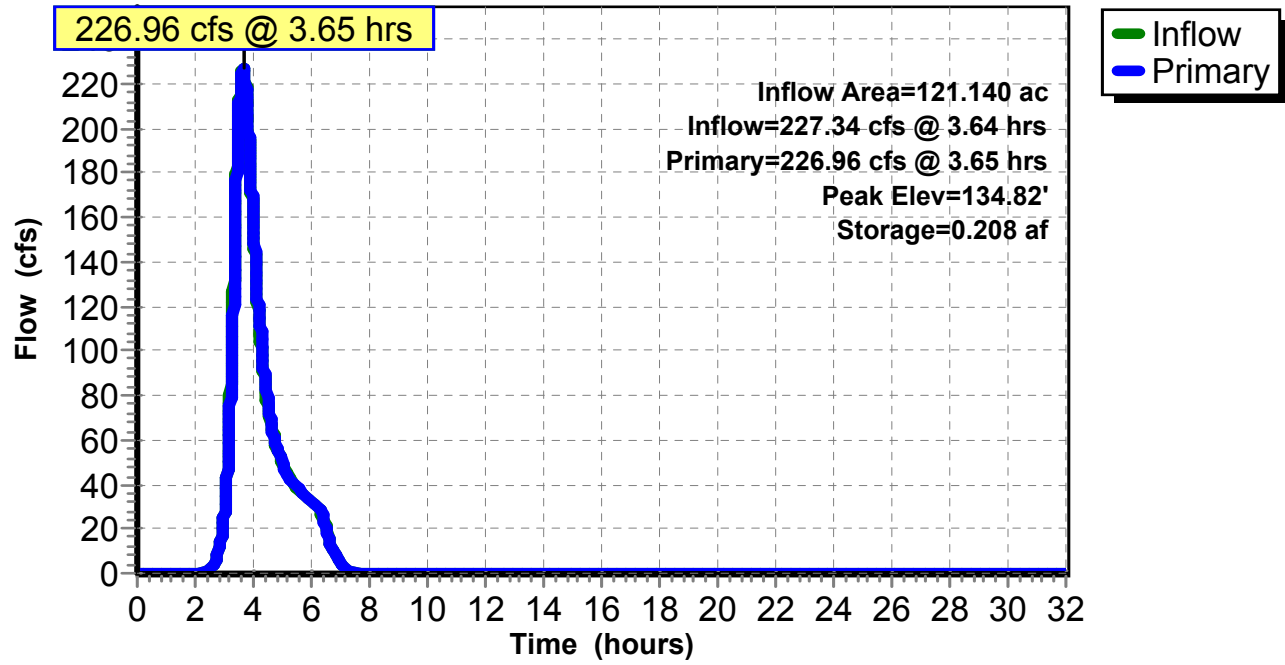
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=226.94 cfs @ 3.65 hrs HW=134.82' TW=132.57' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 51.09 cfs @ 7.23 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 82.35 cfs @ 5.72 fps)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 93.49 cfs @ 1.85 fps)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Hydrograph



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Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 3.15" for B50_6 event
 Inflow = 442.87 cfs @ 3.50 hrs, Volume= 43.742 af
 Outflow = 437.61 cfs @ 3.55 hrs, Volume= 41.850 af, Atten= 1%, Lag= 3.056 min
 Primary = 437.61 cfs @ 3.55 hrs, Volume= 41.850 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.60' @ 3.55 hrs Surf.Area= 4.023 ac Storage= 7.018 af (4.050 af above start)

Plug-Flow detention time= 27.906 min calculated for 38.882 af (89% of inflow)
 Center-of-Mass det. time= 8.641 min (249.501 - 240.860)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

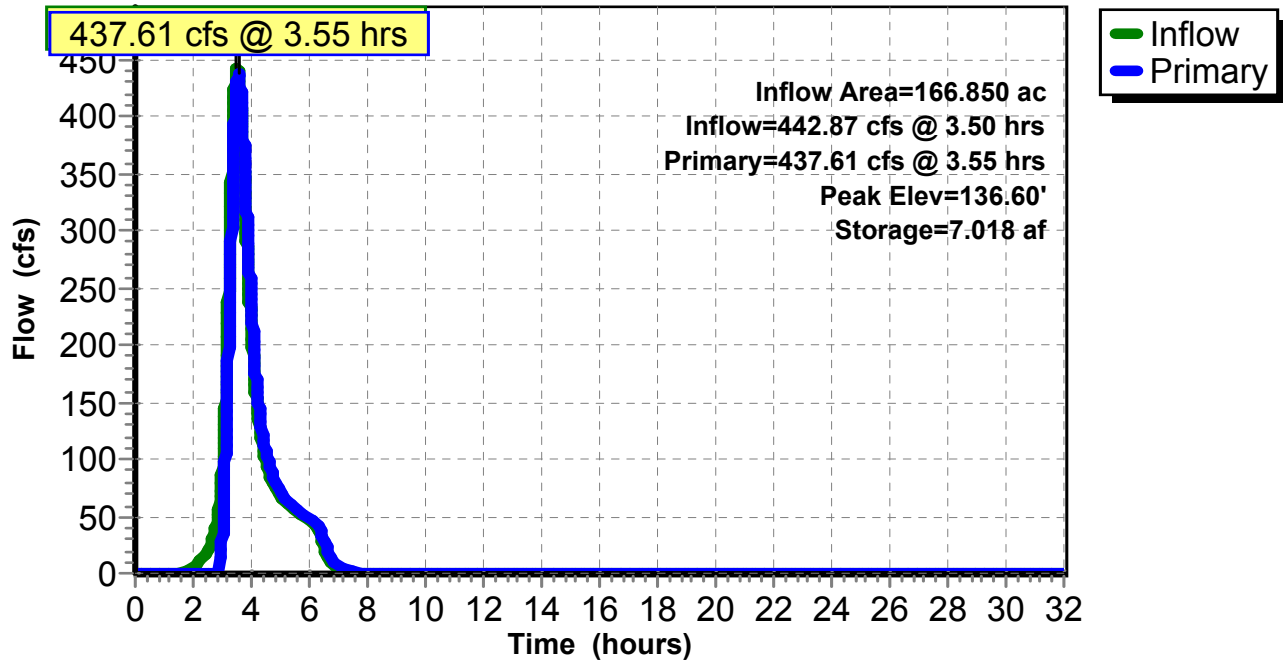
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=437.55 cfs @ 3.55 hrs HW=136.60' TW=130.74' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 2.69 cfs @ 2.65 fps)
- 2=Asymmetrical Weir (Weir Controls 434.86 cfs @ 2.21 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Hydrograph



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Summary for Pond 24P: RAINSTORE WHOLE FIELD

Inflow = 192.35 cfs @ 3.81 hrs, Volume= 16.888 af
Outflow = 93.39 cfs @ 4.26 hrs, Volume= 16.891 af, Atten= 51%, Lag= 26.707 min
Discarded = 9.68 cfs @ 3.50 hrs, Volume= 5.551 af
Primary = 39.13 cfs @ 4.26 hrs, Volume= 7.103 af
Secondary = 44.59 cfs @ 4.26 hrs, Volume= 4.237 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 40.65' @ 4.26 hrs Surf.Area= 209,016 sf Storage= 331,592 cf

Plug-Flow detention time= 84.603 min calculated for 16.886 af (100% of inflow)
Center-of-Mass det. time= 84.678 min (338.089 - 253.411)

Volume	Invert	Avail.Storage	Storage Description
#1	39.00'	2,608,520 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 2,717,208 cf Overall x 96.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
39.00	209,016	0	0
52.00	209,016	2,717,208	2,717,208

Device	Routing	Invert	Outlet Devices
#1	Secondary	40.00'	26.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Discarded	39.00'	2.000 in/hr Exfiltration over Surface area
#3	Primary	39.00'	42.0" Vert. Orifice/Grate X 2.00 C= 0.600

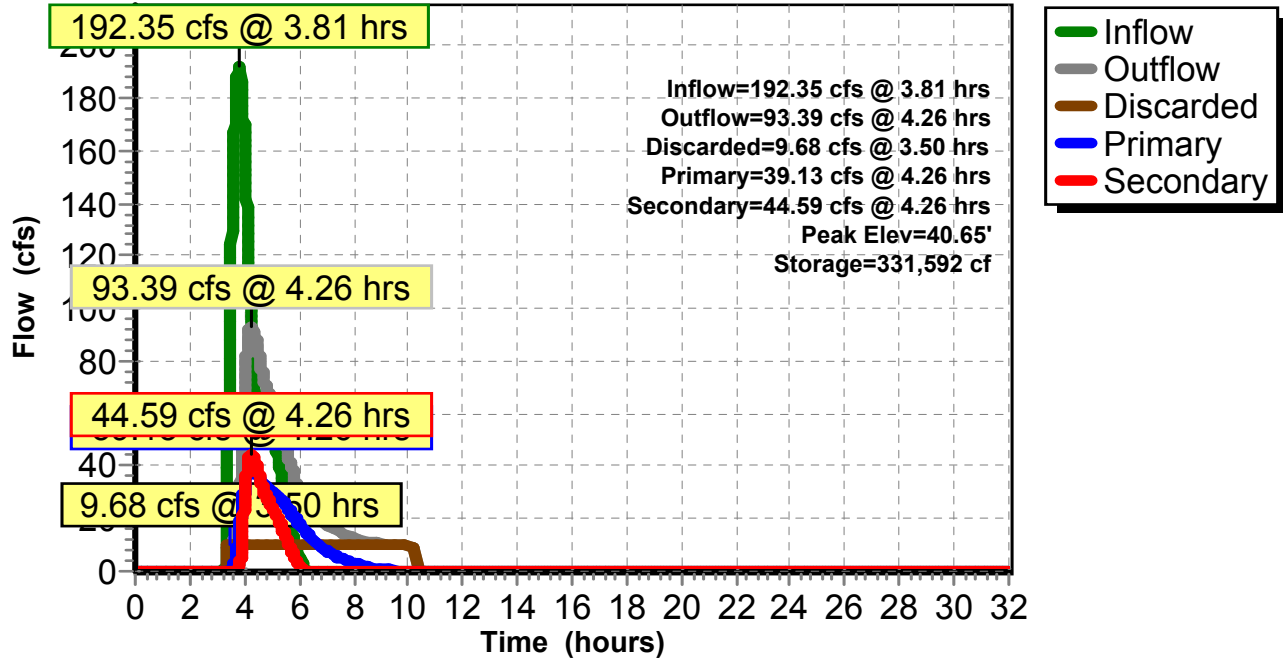
Discarded OutFlow Max=9.68 cfs @ 3.50 hrs HW=39.14' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 9.68 cfs)

Primary OutFlow Max=39.12 cfs @ 4.26 hrs HW=40.65' TW=0.00' (Dynamic Tailwater)
↑**3=Orifice/Grate** (Orifice Controls 39.12 cfs @ 4.38 fps)

Secondary OutFlow Max=44.59 cfs @ 4.26 hrs HW=40.65' TW=0.00' (Dynamic Tailwater)
↑**1=Sharp-Crested Rectangular Weir**(Weir Controls 44.59 cfs @ 2.64 fps)

Pond 24P: RAINSTORE WHOLE FIELD

Hydrograph



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Summary for Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 2.55" for B50_6 event
Inflow = 472.60 cfs @ 3.44 hrs, Volume= 139.001 af
Outflow = 472.60 cfs @ 3.44 hrs, Volume= 139.001 af, Atten= 0%, Lag= 0.000 min
Primary = 362.11 cfs @ 3.44 hrs, Volume= 122.935 af
Secondary = 110.49 cfs @ 3.44 hrs, Volume= 16.067 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 44.87' @ 3.44 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 110.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0009 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48
#3	Secondary	40.25'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 40.25' / 39.75' S= 0.0037 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf

Primary OutFlow Max=362.06 cfs @ 3.44 hrs HW=44.87' TW=0.00' (Dynamic Tailwater)

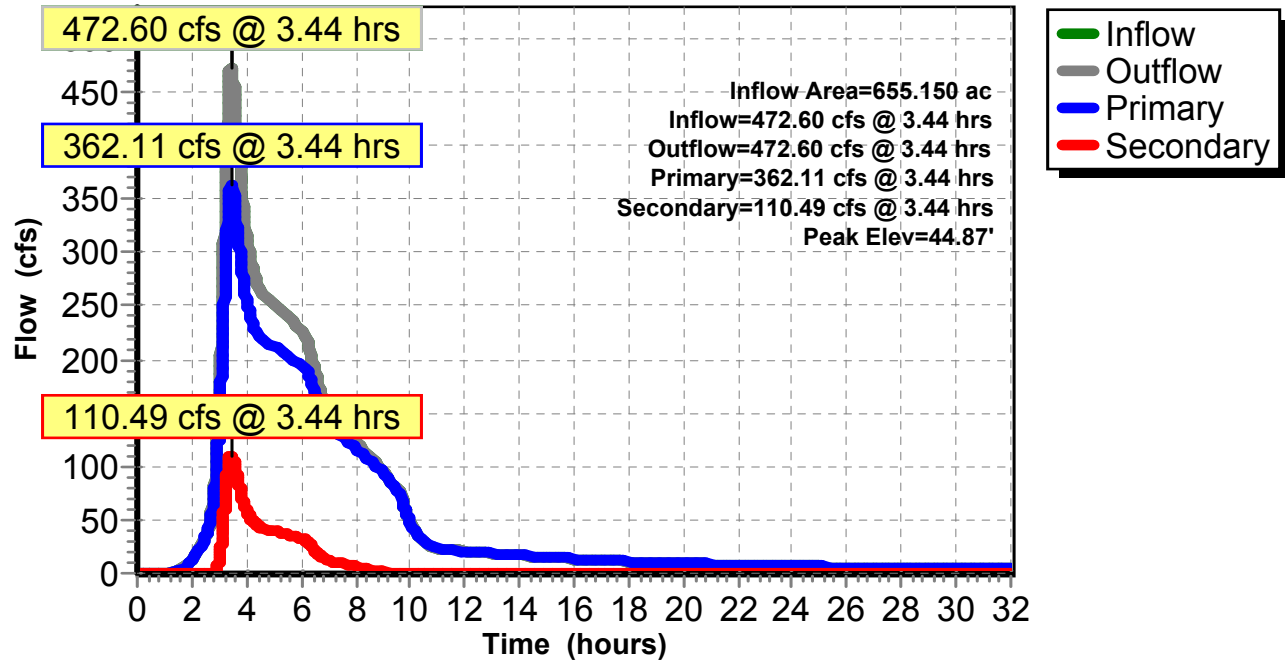
↑1=Culvert (Barrel Controls 362.06 cfs @ 9.28 fps)
↑2=WEIR WESTCH AVE (Controls 0.00 cfs)

Secondary OutFlow Max=110.46 cfs @ 3.44 hrs HW=44.87' TW=0.00' (Dynamic Tailwater)

↑3=Culvert (Barrel Controls 110.46 cfs @ 7.61 fps)

Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



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Summary for Pond 41P: UPSTREAM AVON

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 2.75" for B50_6 event
Inflow = 433.80 cfs @ 3.80 hrs, Volume= 133.546 af
Outflow = 433.55 cfs @ 3.81 hrs, Volume= 133.545 af, Atten= 0%, Lag= 0.962 min
Primary = 241.21 cfs @ 3.81 hrs, Volume= 116.657 af
Secondary = 147.84 cfs @ 3.81 hrs, Volume= 14.953 af
Tertiary = 44.51 cfs @ 3.81 hrs, Volume= 1.935 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 65.99' @ 3.81 hrs Surf.Area= 10,079 sf Storage= 22,592 cf

Plug-Flow detention time= 0.579 min calculated for 133.545 af (100% of inflow)
Center-of-Mass det. time= 0.574 min (440.786 - 440.212)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	83,358 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686
70.00	10,112	40,448	63,134
72.00	10,112	20,224	83,358

Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert L= 947.0' Ke= 0.700 Inlet / Outlet Invert= 55.13' / 37.90' S= 0.0182 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Tertiary	65.00'	14.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Secondary	63.50'	12.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

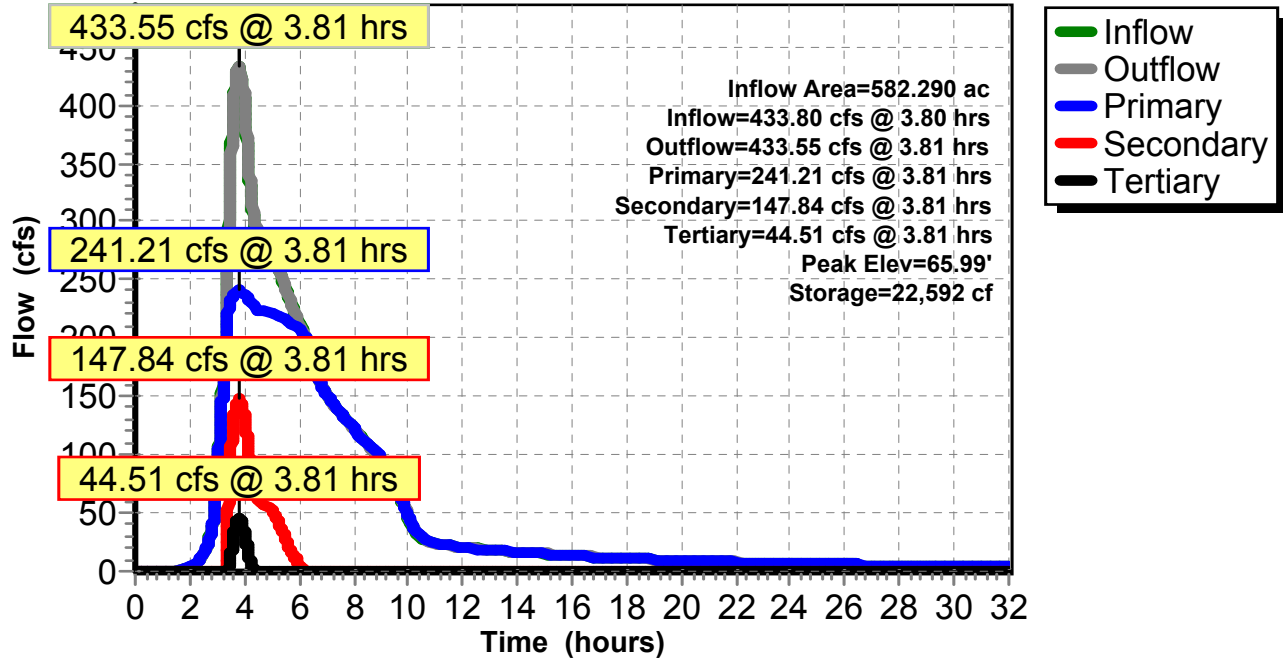
Primary OutFlow Max=241.20 cfs @ 3.81 hrs HW=65.99' TW=0.00' (Dynamic Tailwater)
↑1=Culvert (Inlet Controls 241.20 cfs @ 12.28 fps)

Secondary OutFlow Max=147.83 cfs @ 3.81 hrs HW=65.99' TW=58.16' (Dynamic Tailwater)
↑3=Sharp-Crested Rectangular Weir (Weir Controls 147.83 cfs @ 5.16 fps)

Tertiary OutFlow Max=44.50 cfs @ 3.81 hrs HW=65.99' TW=57.18' (Dynamic Tailwater)
↑2=Sharp-Crested Rectangular Weir (Weir Controls 44.50 cfs @ 3.25 fps)

Pond 41P: UPSTREAM AVON

Hydrograph



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Summary for Pond 42P: CHAMBER

Inflow = 44.51 cfs @ 3.81 hrs, Volume= 1.935 af
Outflow = 44.51 cfs @ 3.81 hrs, Volume= 1.935 af, Atten= 0%, Lag= 0.000 min
Primary = 44.51 cfs @ 3.81 hrs, Volume= 1.935 af

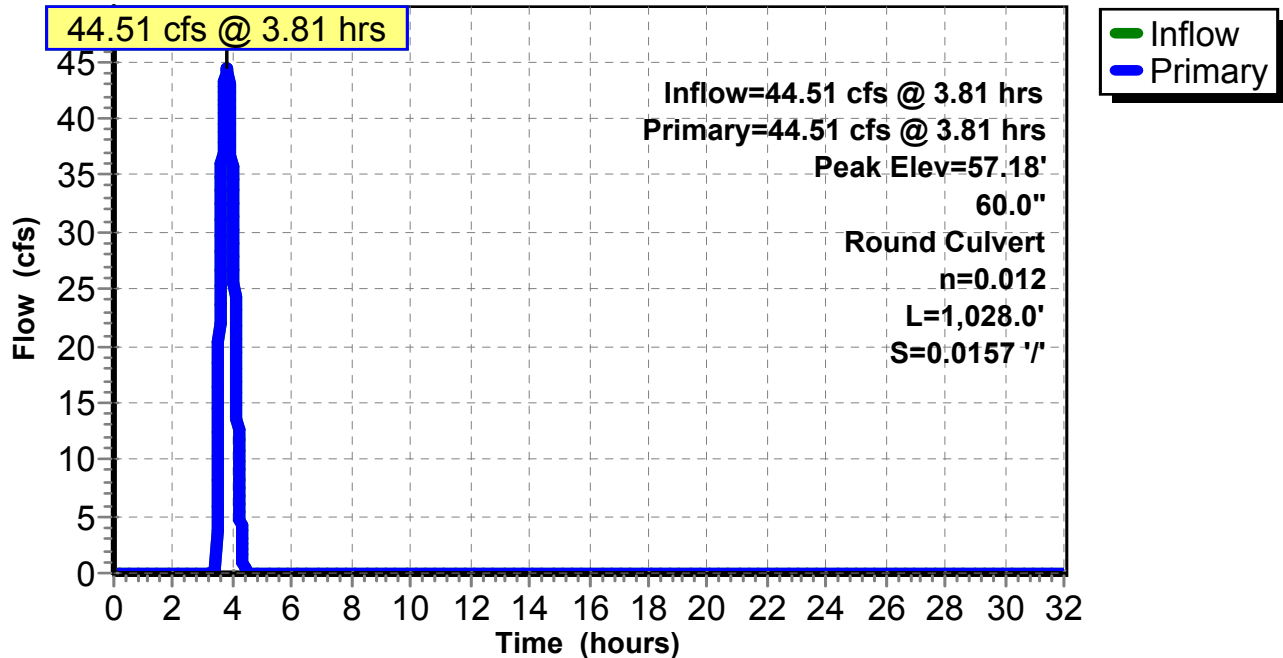
Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 57.18' @ 3.81 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert L= 1,028.0' Ke= 0.250 Inlet / Outlet Invert= 55.13' / 39.00' S= 0.0157 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf

Primary OutFlow Max=44.50 cfs @ 3.81 hrs HW=57.18' TW=0.00' (Dynamic Tailwater)
↑1=Culvert (Inlet Controls 44.50 cfs @ 5.86 fps)

Pond 42P: CHAMBER

Hydrograph



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Summary for Pond 43P: DUAL 60" CULVERTS

Inflow = 147.84 cfs @ 3.81 hrs, Volume= 14.953 af
Outflow = 147.84 cfs @ 3.81 hrs, Volume= 14.953 af, Atten= 0%, Lag= 0.000 min
Primary = 147.84 cfs @ 3.81 hrs, Volume= 14.953 af

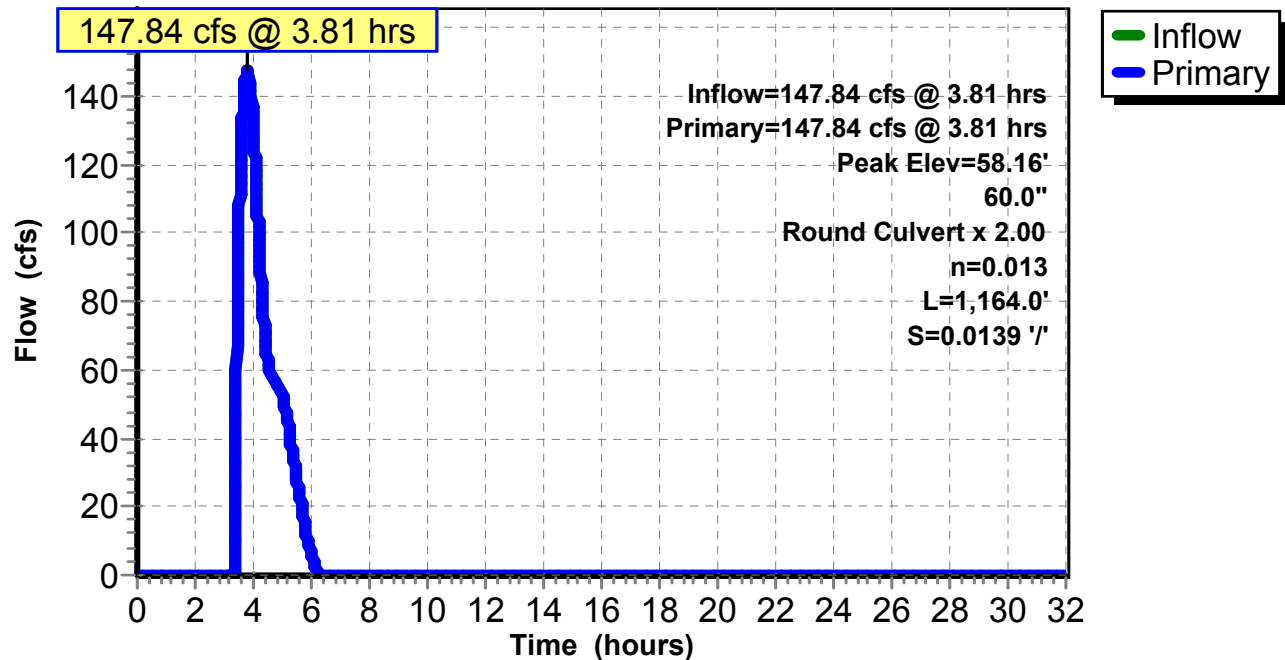
Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 58.16' @ 3.81 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert X 2.00 L= 1,164.0' Ke= 0.500 Inlet / Outlet Invert= 55.13' / 39.00' S= 0.0139 '/ Cc= 0.900 n= 0.013, Flow Area= 19.63 sf

Primary OutFlow Max=147.83 cfs @ 3.81 hrs HW=58.16' TW=0.00' (Dynamic Tailwater)
↑1=Culvert (Inlet Controls 147.83 cfs @ 5.93 fps)

Pond 43P: DUAL 60" CULVERTS

Hydrograph



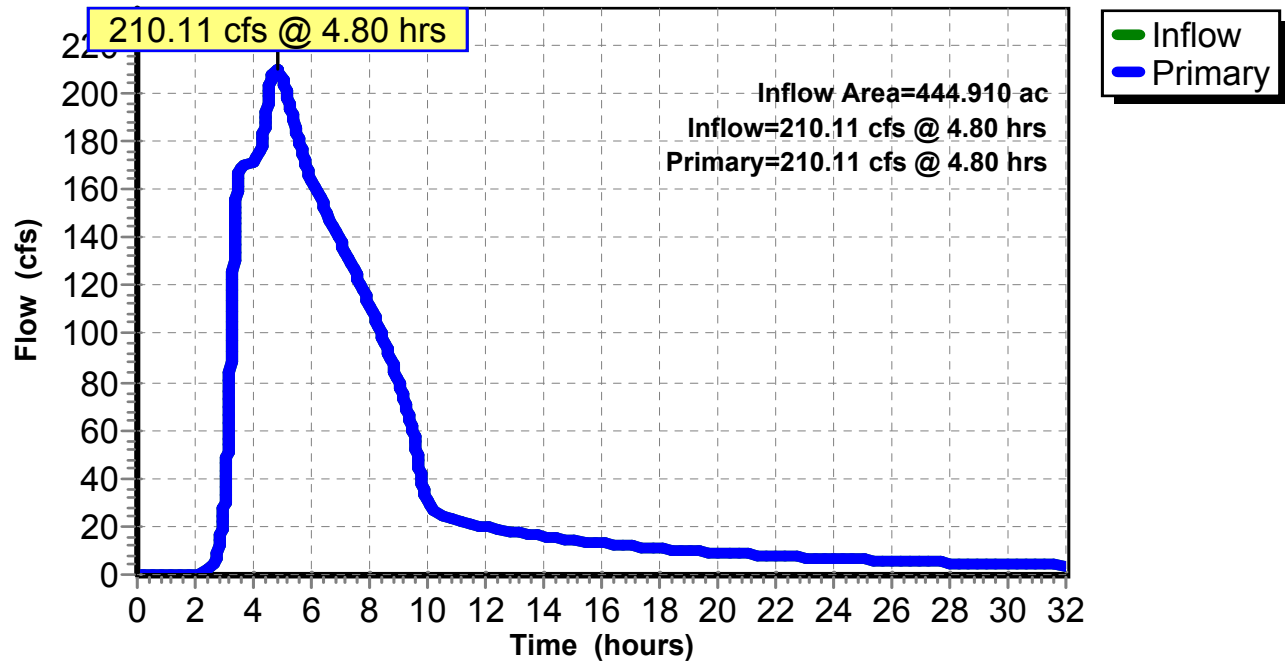
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 2.62" for B50_6 event
Inflow = 210.11 cfs @ 4.80 hrs, Volume= 96.980 af
Primary = 210.11 cfs @ 4.80 hrs, Volume= 96.980 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



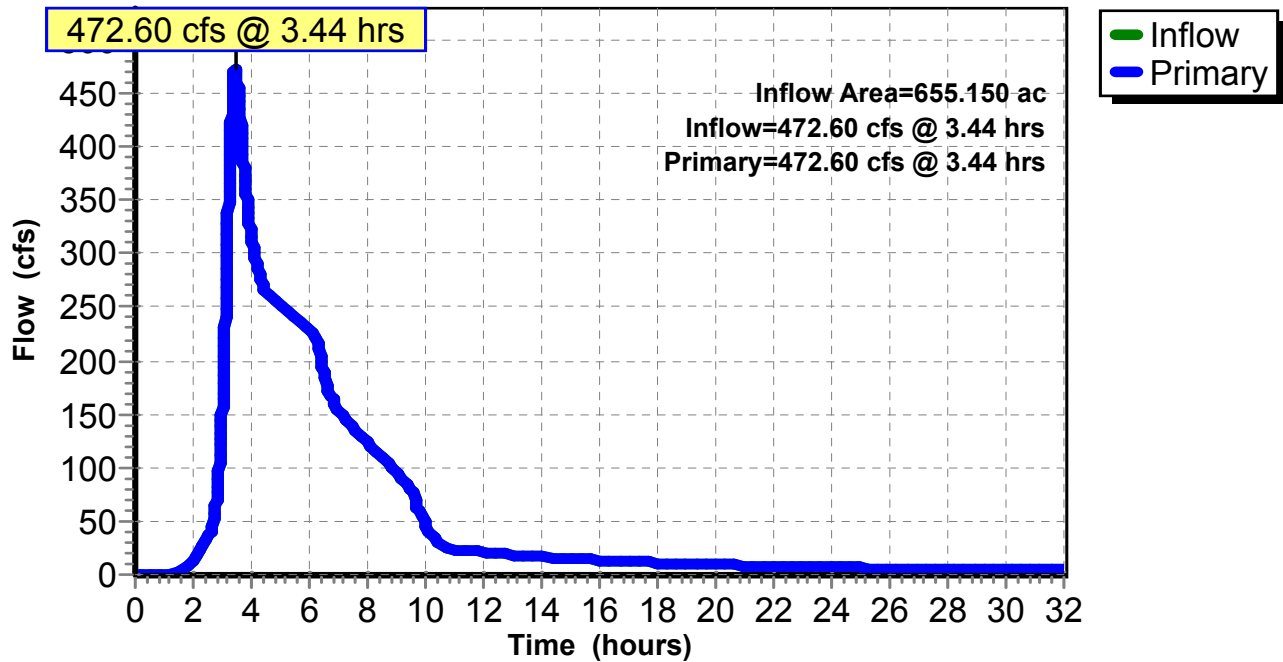
Summary for Link 33L: JUNCTION

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 2.55" for B50_6 event
Inflow = 472.60 cfs @ 3.44 hrs, Volume= 139.001 af
Primary = 472.60 cfs @ 3.44 hrs, Volume= 139.001 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 33L: JUNCTION

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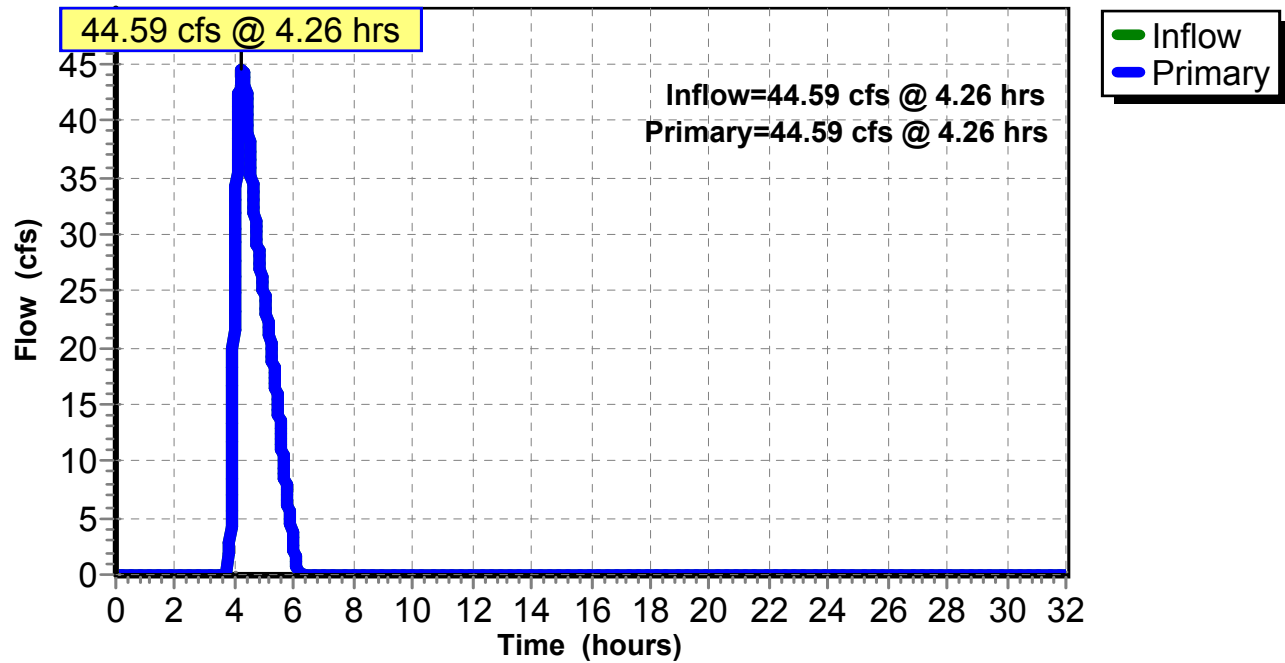
Summary for Link 36L: weir

Inflow = 44.59 cfs @ 4.26 hrs, Volume= 4.237 af
Primary = 44.59 cfs @ 4.26 hrs, Volume= 4.237 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 36L: weir

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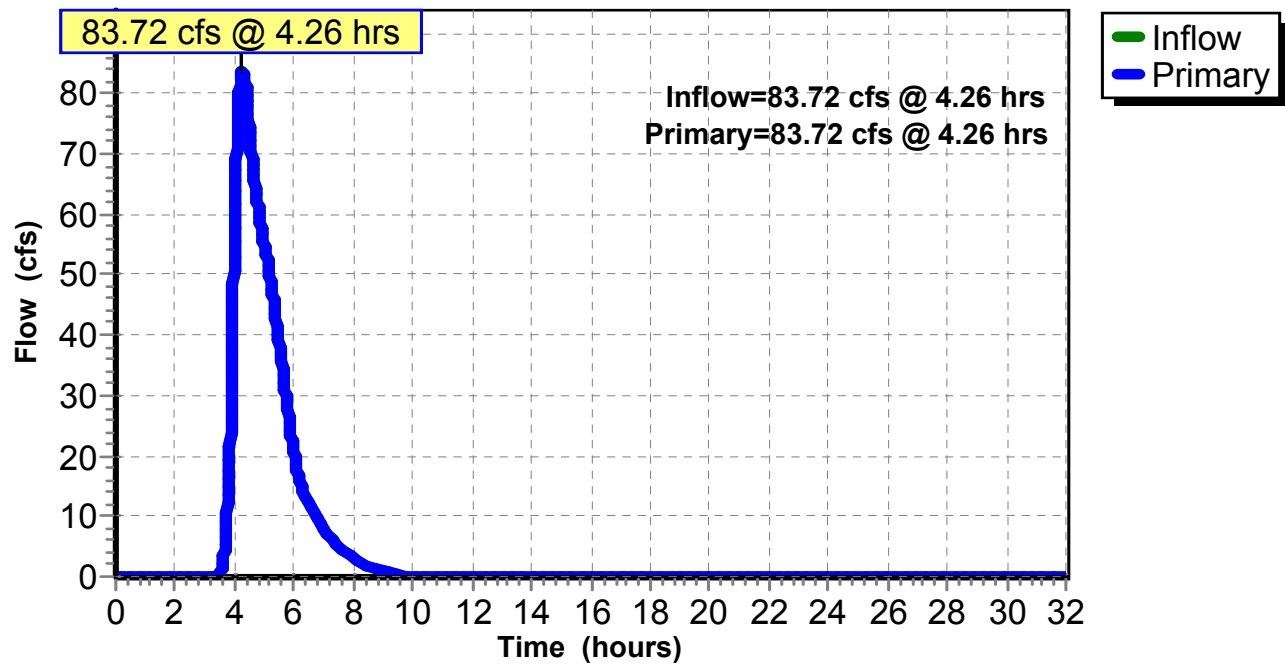
Summary for Link 37L: orifice

Inflow = 83.72 cfs @ 4.26 hrs, Volume= 11.340 af
Primary = 83.72 cfs @ 4.26 hrs, Volume= 11.340 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 37L: orifice

Hydrograph



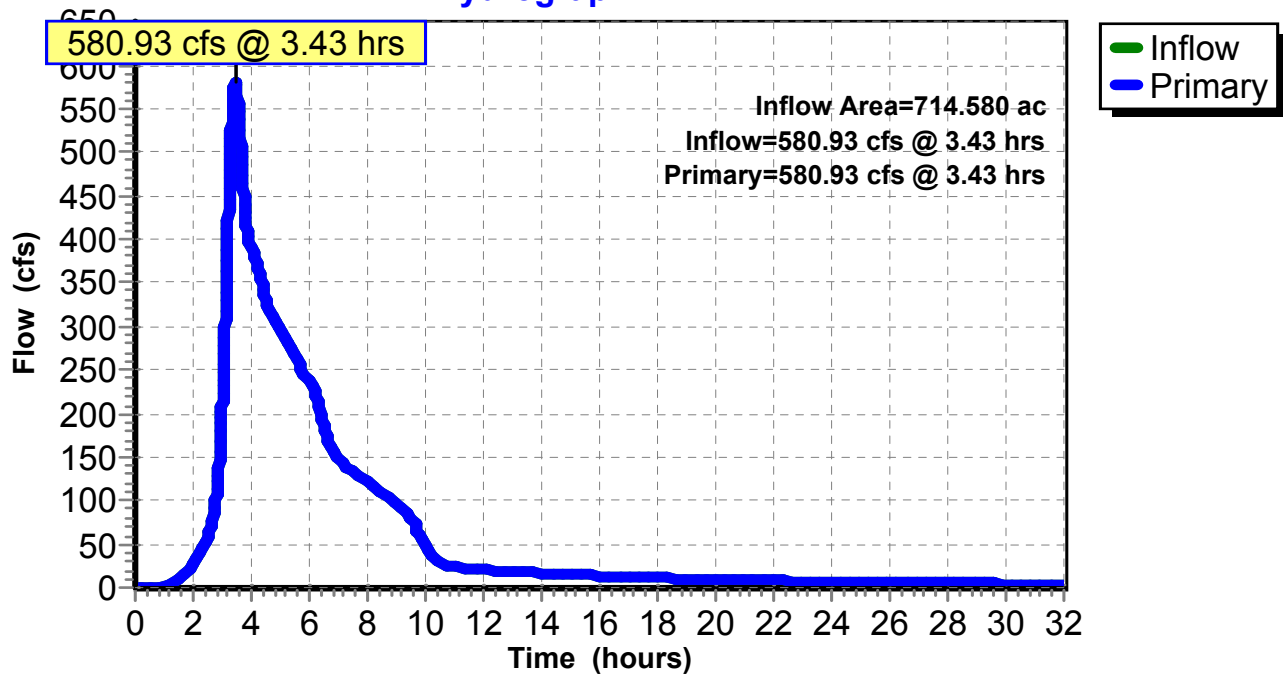
Summary for Link 38L: JUNCTION

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 2.61" for B50_6 event
Inflow = 580.93 cfs @ 3.43 hrs, Volume= 155.714 af
Primary = 580.93 cfs @ 3.43 hrs, Volume= 155.714 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 38L: JUNCTION

Hydrograph



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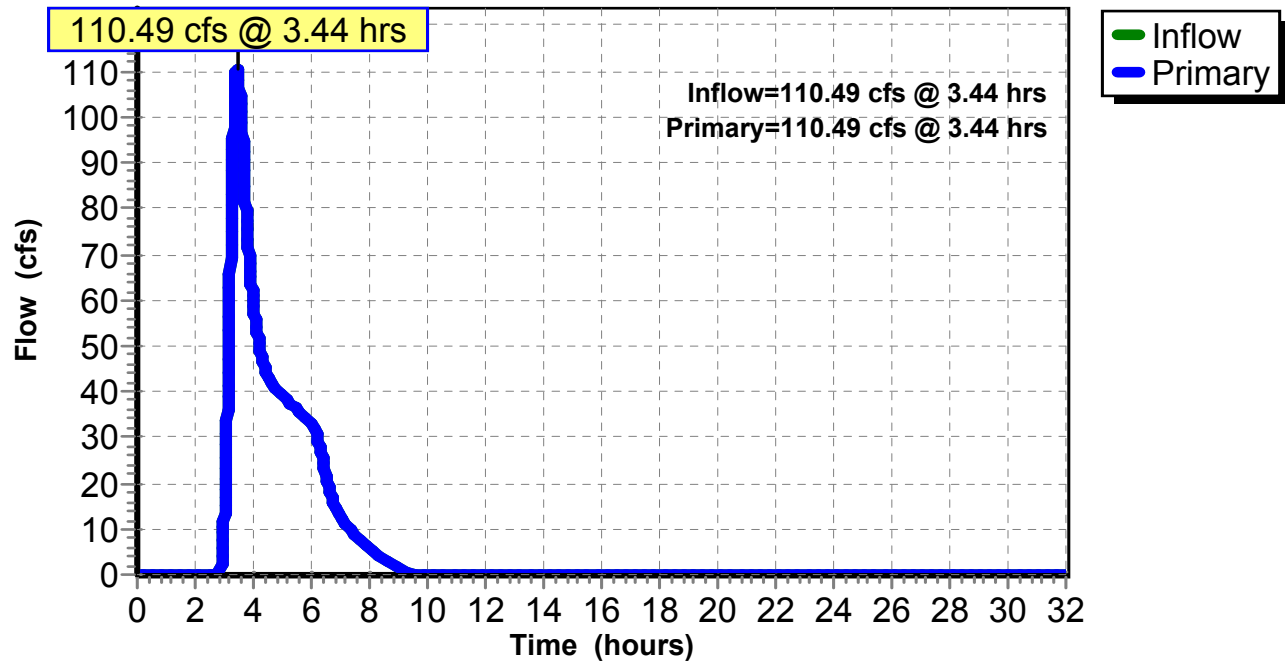
Summary for Link 41L: X

Inflow = 110.49 cfs @ 3.44 hrs, Volume= 16.067 af
Primary = 110.49 cfs @ 3.44 hrs, Volume= 16.067 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 41L: X

Hydrograph



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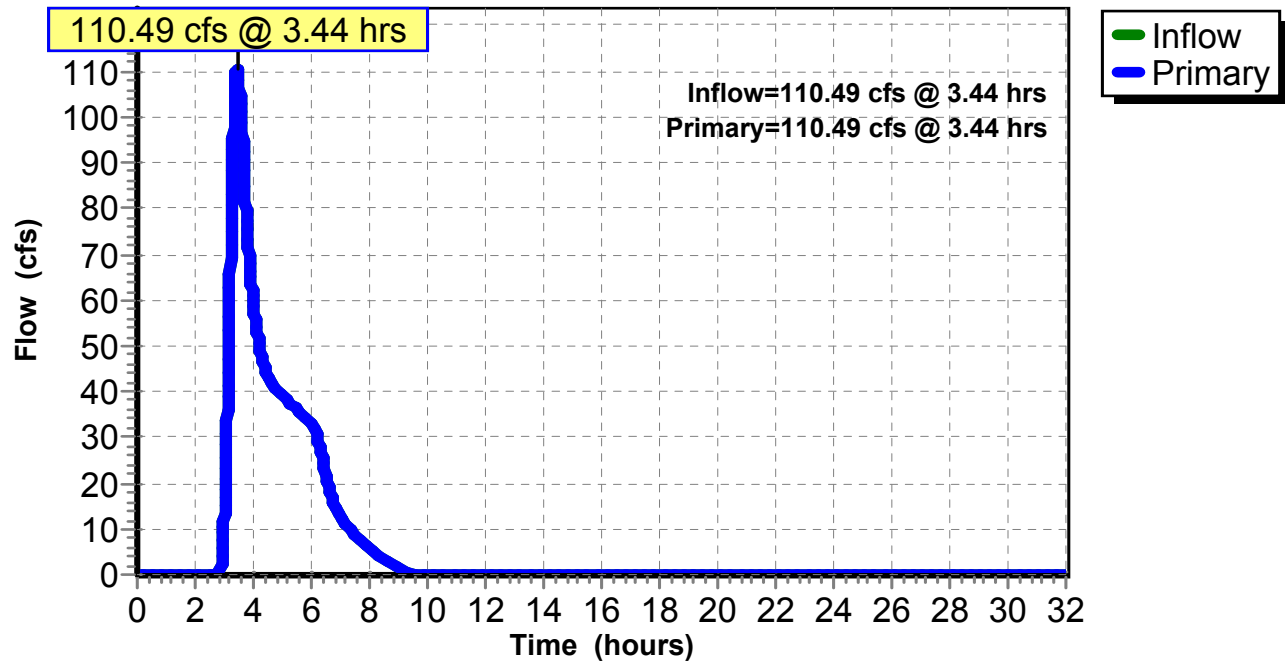
Summary for Link 42L: X

Inflow = 110.49 cfs @ 3.44 hrs, Volume= 16.067 af
Primary = 110.49 cfs @ 3.44 hrs, Volume= 16.067 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 42L: X

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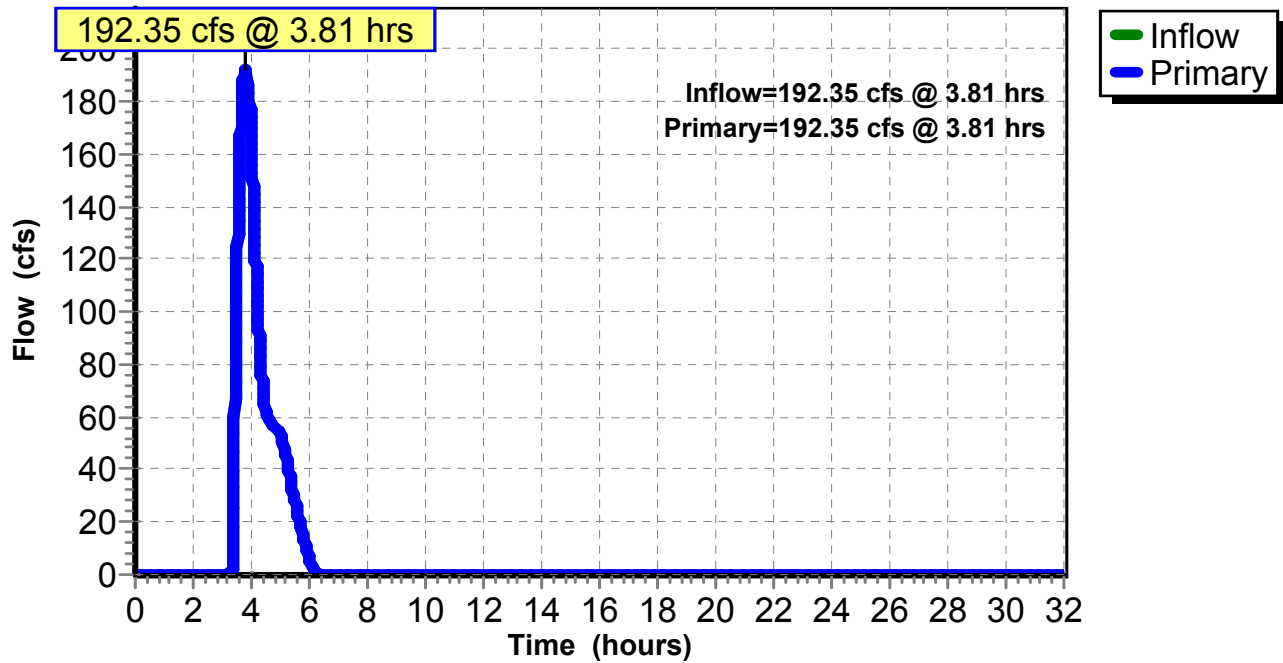
Summary for Link 51L: JUNCTION

Inflow = 192.35 cfs @ 3.81 hrs, Volume= 16.888 af
Primary = 192.35 cfs @ 3.81 hrs, Volume= 16.888 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 51L: JUNCTION

Hydrograph



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Summary for Link FIN: FINAL

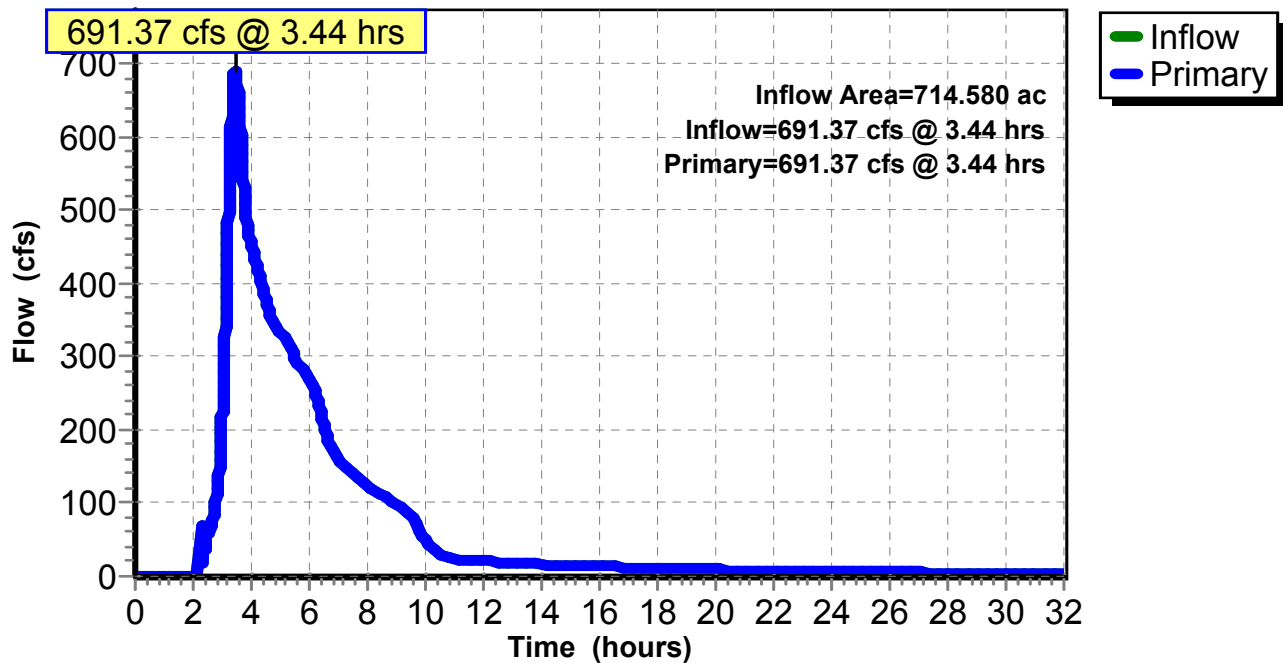
Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 2.86" for B50_6 event
Inflow = 691.37 cfs @ 3.44 hrs, Volume= 170.091 af
Primary = 691.37 cfs @ 3.44 hrs, Volume= 170.091 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 40.00'

Link FIN: FINAL

Hydrograph



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Type III 24-hr D10_24 Rainfall=5.11"

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Summary for Subcatchment A: WS A

Runoff = 155.42 cfs @ 12.43 hrs, Volume= 21.342 af, Depth= 4.31"

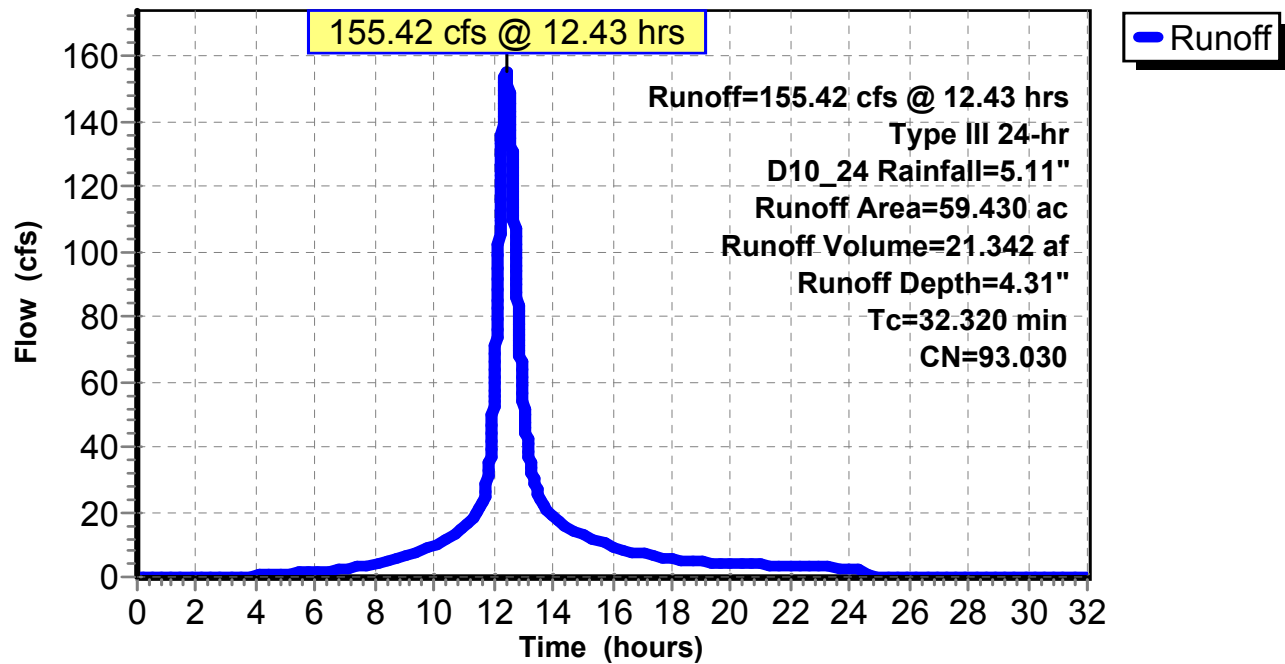
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



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Type III 24-hr D10_24 Rainfall=5.11"

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Summary for Subcatchment B: WS B

Runoff = 141.78 cfs @ 12.40 hrs, Volume= 17.657 af, Depth= 3.68"

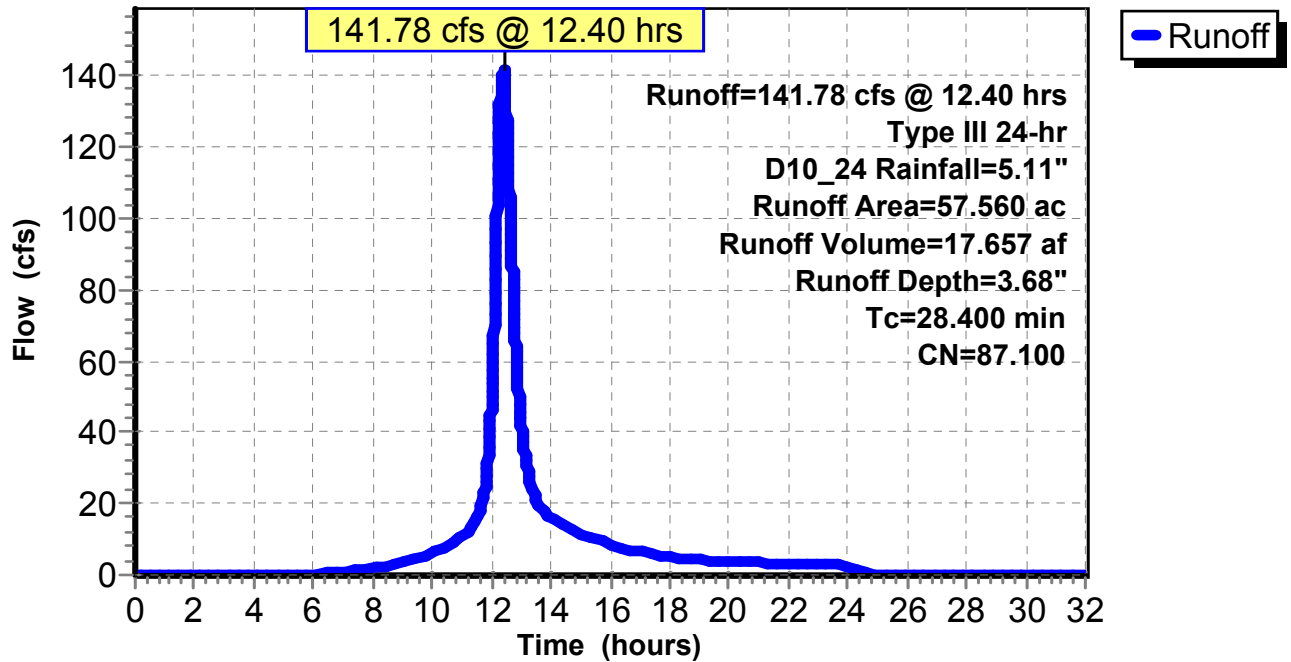
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



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Type III 24-hr D10_24 Rainfall=5.11"

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Summary for Subcatchment BH: HOTEL

Runoff = 35.75 cfs @ 12.42 hrs, Volume= 4.572 af, Depth= 3.59"

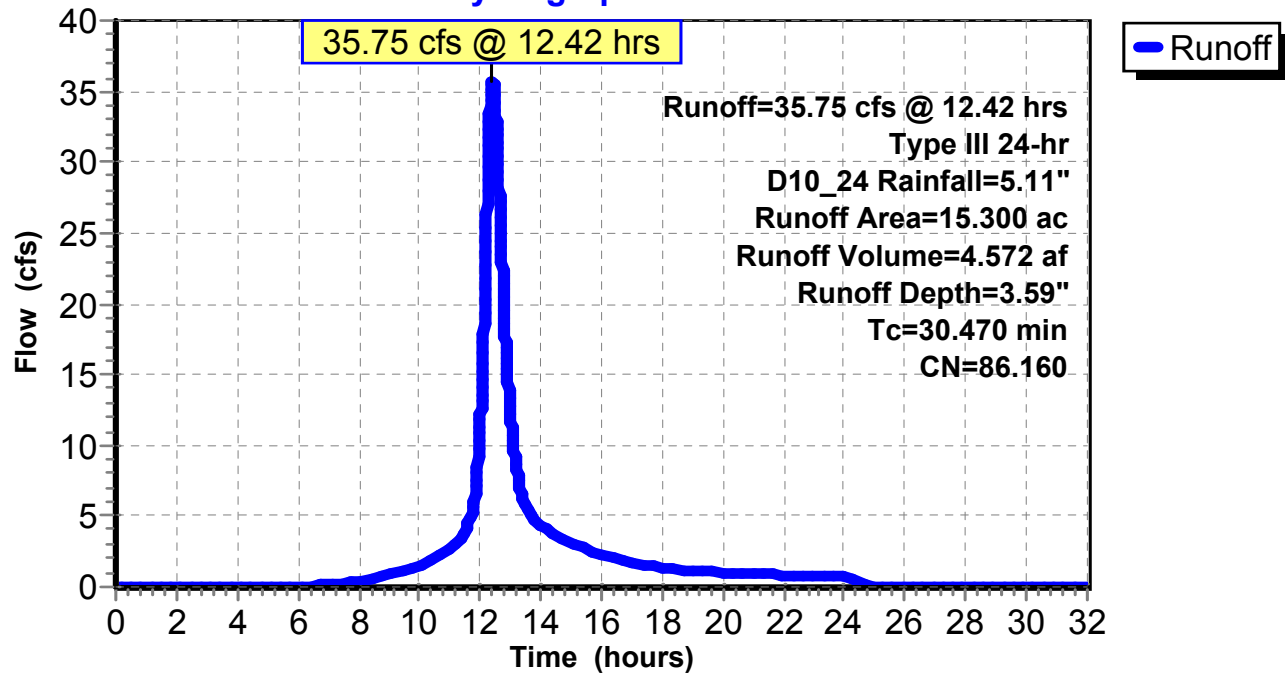
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



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Type III 24-hr D10_24 Rainfall=5.11"

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Summary for Subcatchment C: WS C

Runoff = 56.40 cfs @ 12.25 hrs, Volume= 5.778 af, Depth= 3.23"

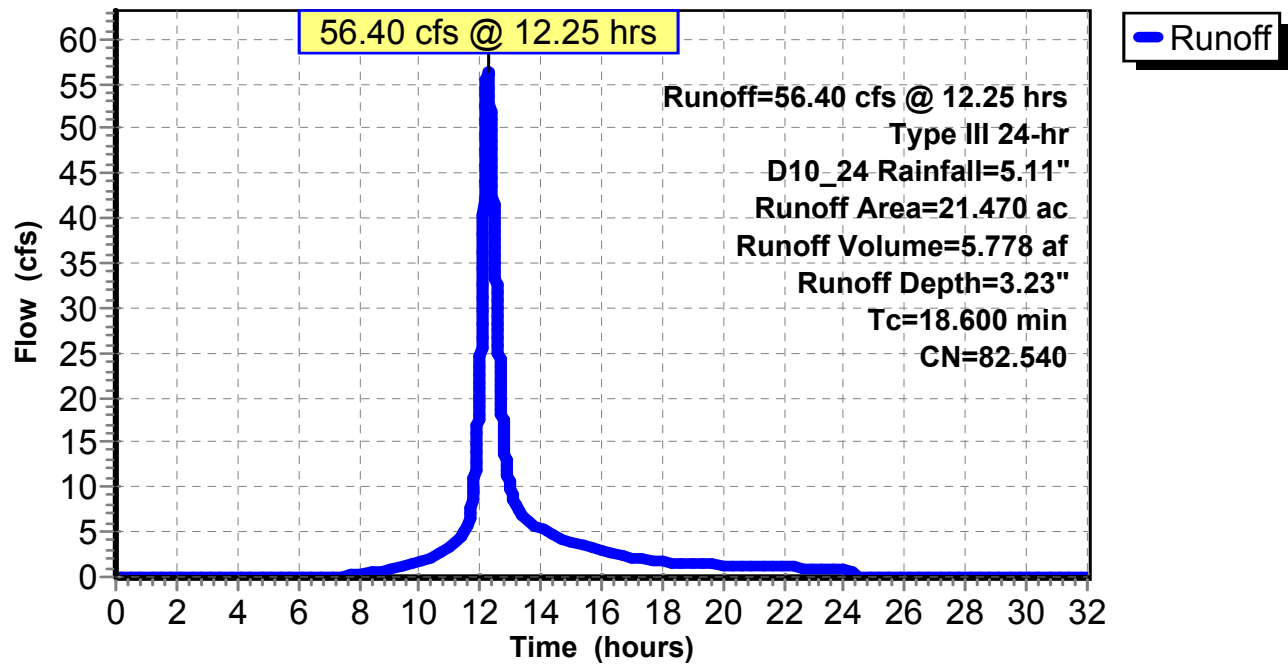
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



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Type III 24-hr D10_24 Rainfall=5.11"

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Summary for Subcatchment D: WS D

Runoff = 200.91 cfs @ 12.61 hrs, Volume= 30.878 af, Depth= 3.20"

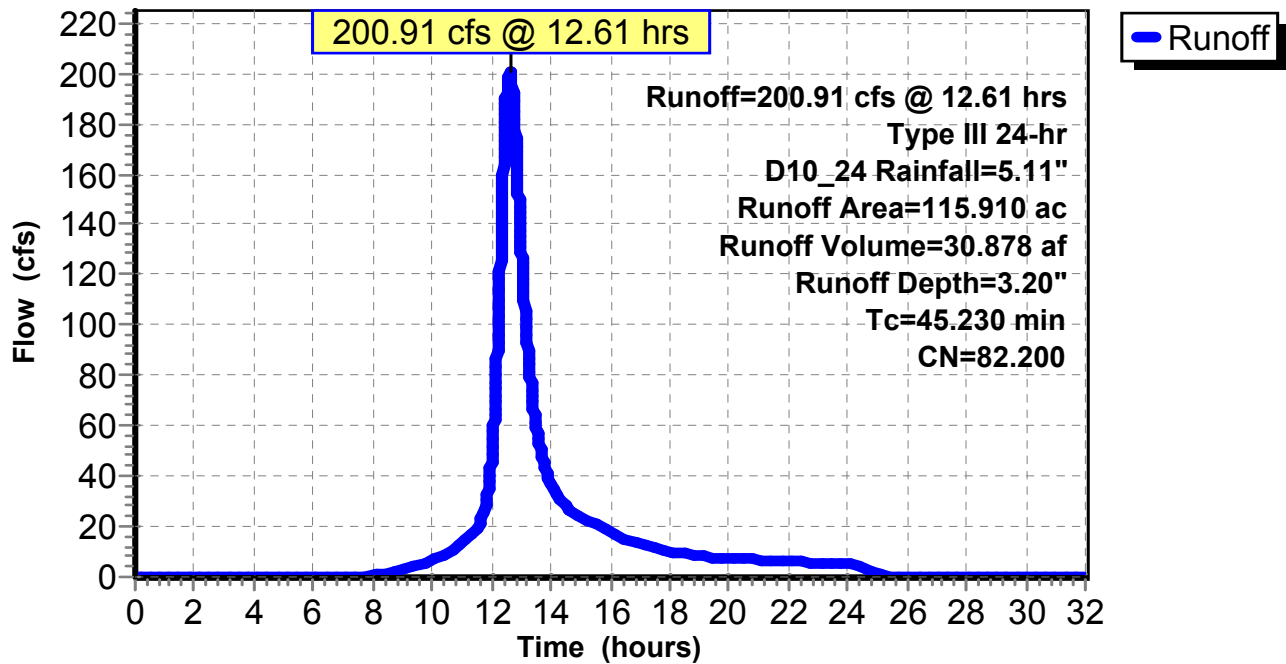
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



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Summary for Subcatchment D-1: WS D-1

Runoff = 67.70 cfs @ 12.45 hrs, Volume= 8.716 af, Depth= 2.64"

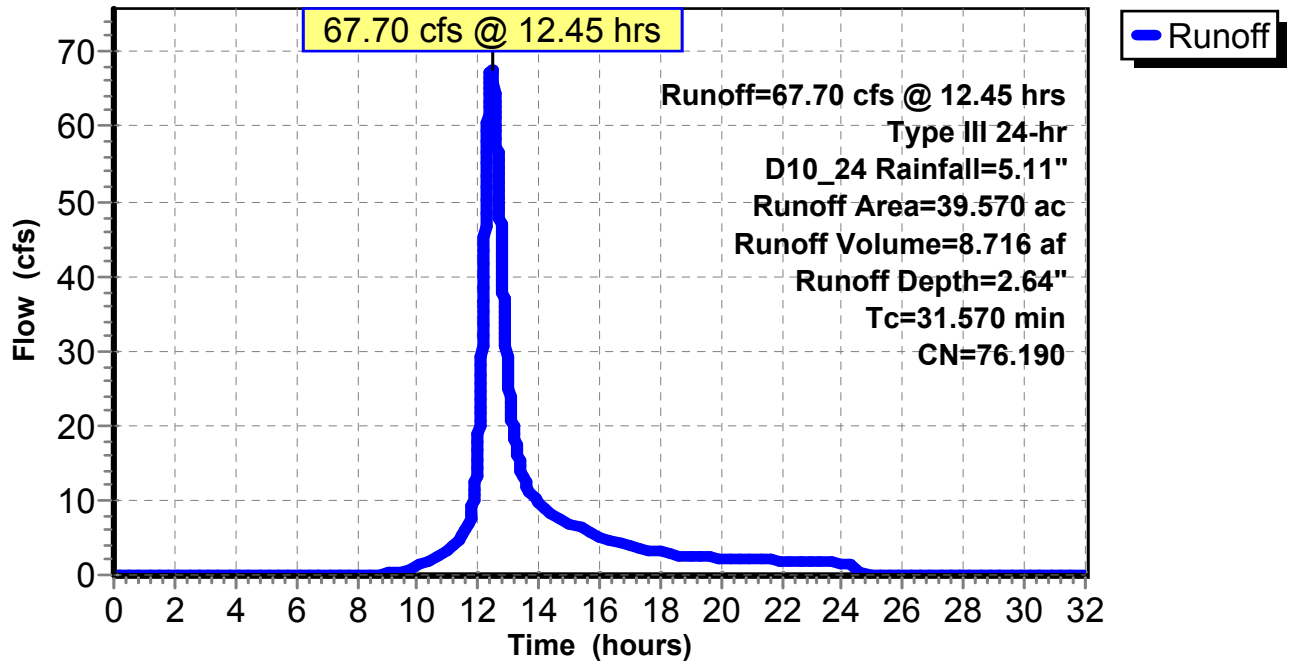
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



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Type III 24-hr D10_24 Rainfall=5.11"

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Summary for Subcatchment E: WS E

Runoff = 159.06 cfs @ 12.86 hrs, Volume= 29.522 af, Depth= 3.02"

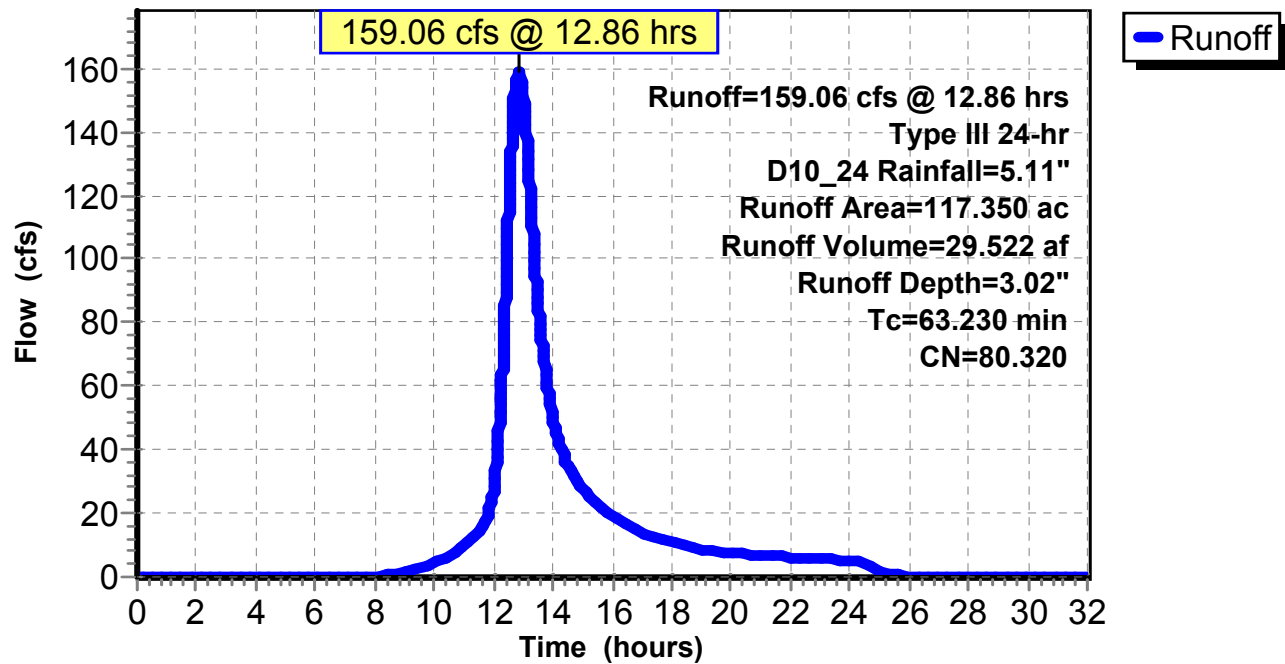
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



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Type III 24-hr D10_24 Rainfall=5.11"

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Summary for Subcatchment F: WS F

Runoff = 163.60 cfs @ 12.63 hrs, Volume= 24.991 af, Depth= 2.48"

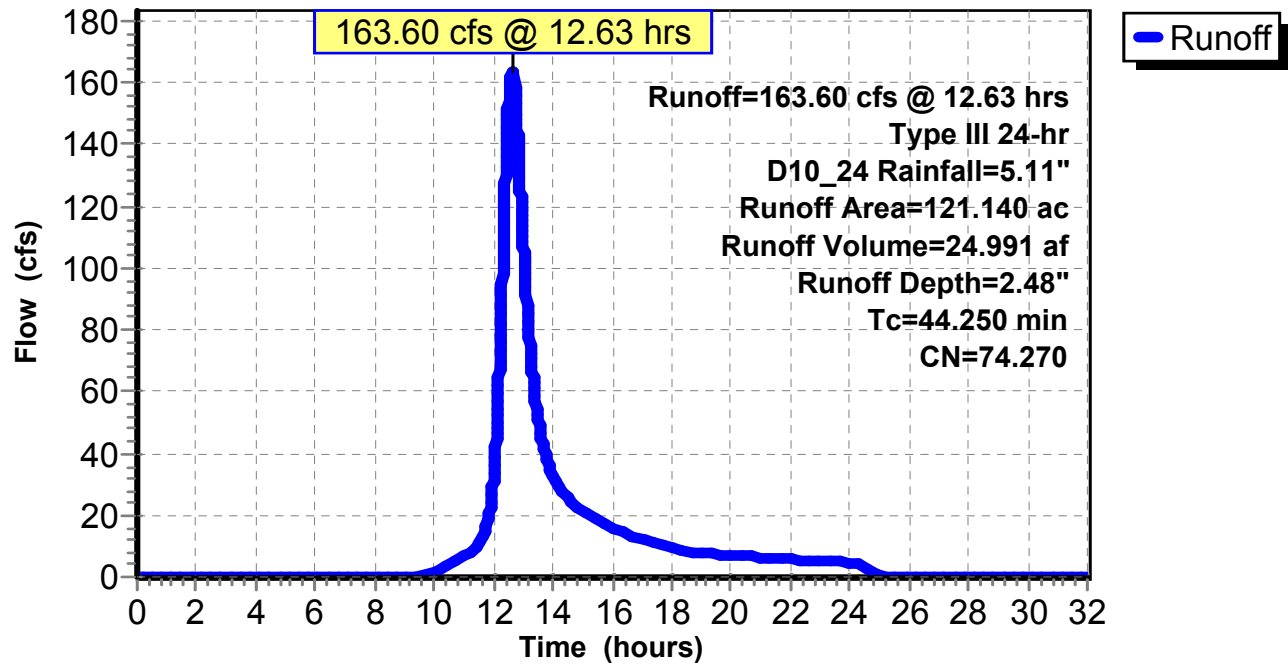
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



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Type III 24-hr D10_24 Rainfall=5.11"

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Summary for Subcatchment G: WS G

Runoff = 316.99 cfs @ 12.51 hrs, Volume= 43.494 af, Depth= 3.13"

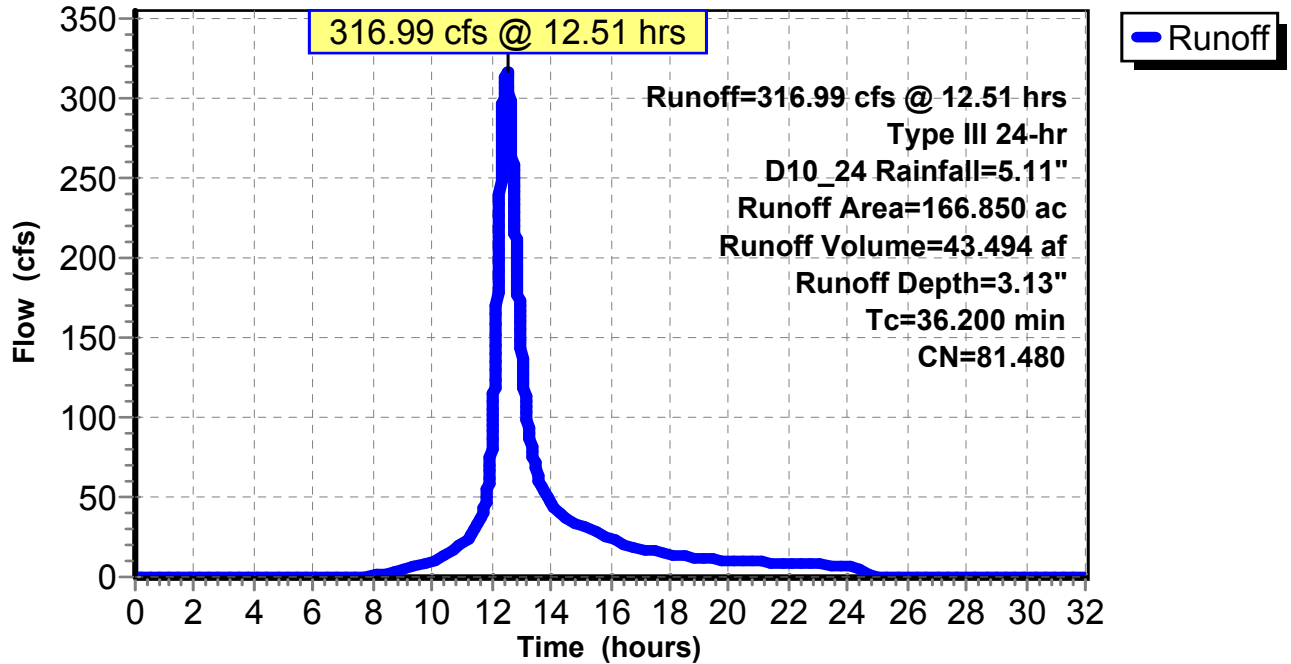
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



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Type III 24-hr D10_24 Rainfall=5.11"

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Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 2.44" for D10_24 event
Inflow = 138.63 cfs @ 13.79 hrs, Volume= 82.359 af
Outflow = 138.61 cfs @ 13.82 hrs, Volume= 82.273 af, Atten= 0%, Lag= 1.715 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.28 fps, Min. Travel Time= 2.560 min
Avg. Velocity = 1.85 fps, Avg. Travel Time= 4.534 min

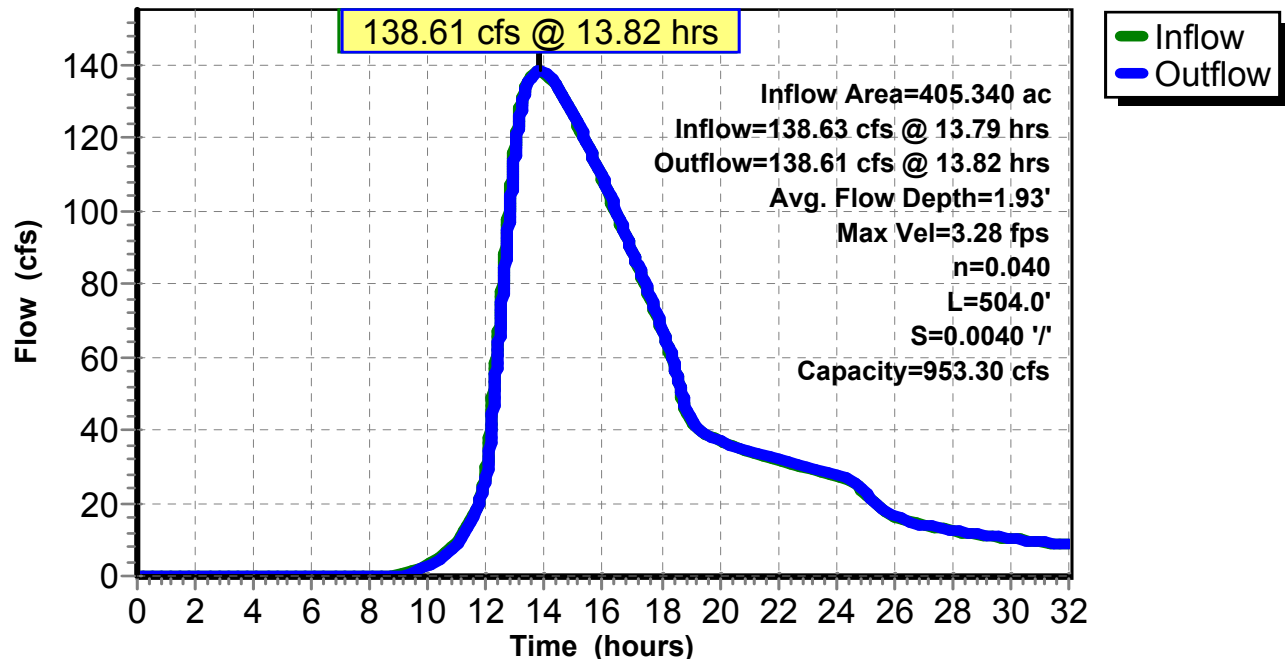
Peak Storage= 21,292 cf @ 13.82 hrs
Average Depth at Peak Storage= 1.93'
Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
Length= 504.0' Slope= 0.0040 ' / '
Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



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Type III 24-hr D10_24 Rainfall=5.11"

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Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 2.48" for D10_24 event
Inflow = 163.33 cfs @ 12.64 hrs, Volume= 24.990 af
Outflow = 138.48 cfs @ 12.85 hrs, Volume= 24.960 af, Atten= 15%, Lag= 12.635 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2

Max. Velocity= 1.83 fps, Min. Travel Time= 19.897 min

Avg. Velocity = 0.56 fps, Avg. Travel Time= 64.665 min

Peak Storage= 165,320 cf @ 12.85 hrs

Average Depth at Peak Storage= 2.34'

Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040

Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'

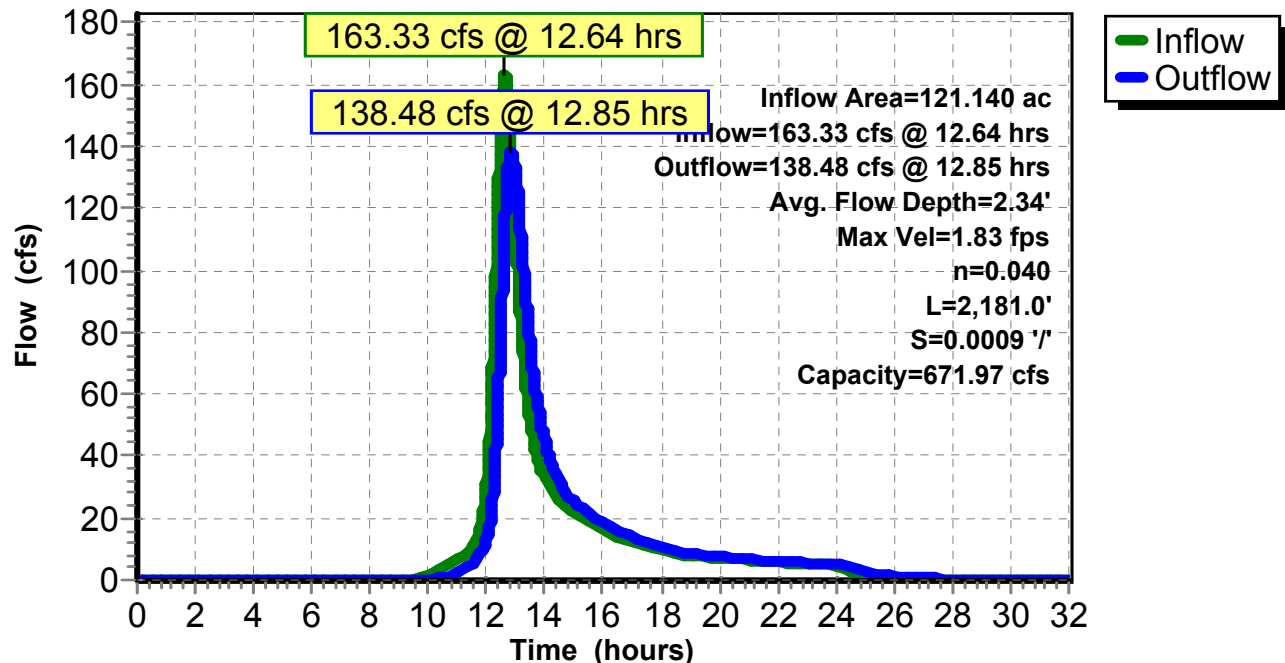
Length= 2,181.0' Slope= 0.0009 ' / '

Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



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Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 2.99" for D10_24 event
Inflow = 312.80 cfs @ 12.55 hrs, Volume= 41.601 af
Outflow = 24.92 cfs @ 16.01 hrs, Volume= 28.101 af, Atten= 92%, Lag= 207.966 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2

Max. Velocity= 0.47 fps, Min. Travel Time= 785.161 min

Avg. Velocity = 0.38 fps, Avg. Travel Time= 962.848 min

Peak Storage= 1,174,070 cf @ 16.01 hrs

Average Depth at Peak Storage= 1.68'

Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040

Side Slope Z-value= 1.0 '/' Top Width= 42.00'

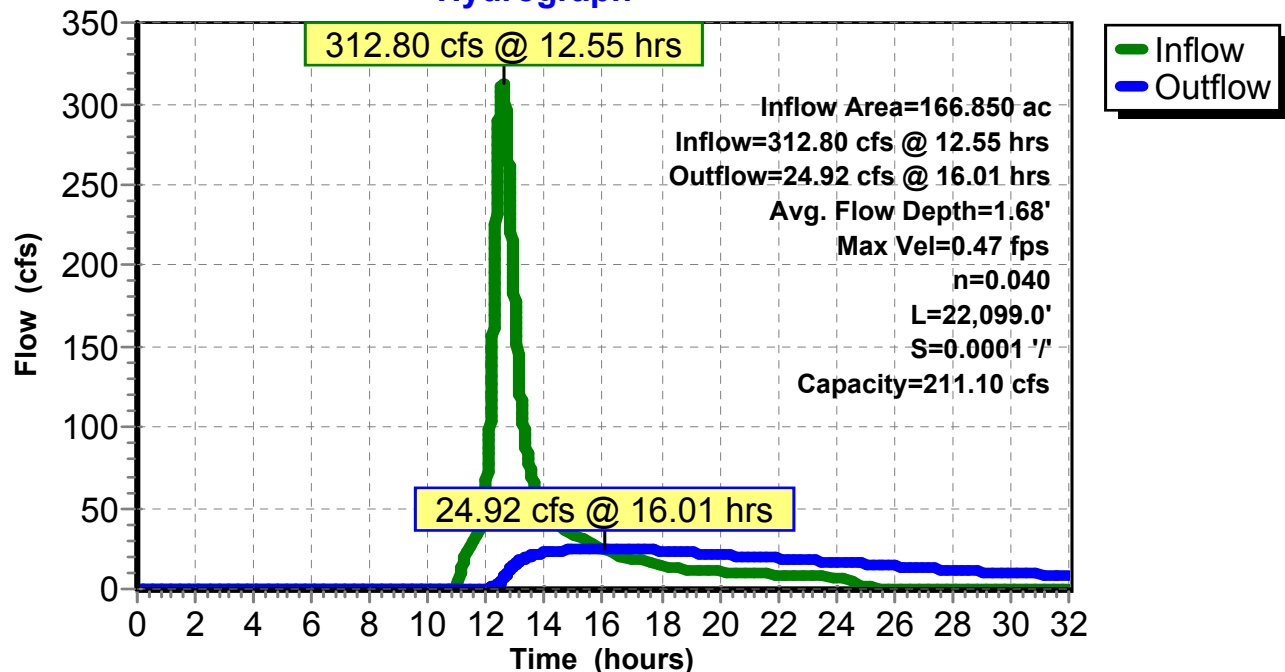
Length= 22,099.0' Slope= 0.0001 '/'

Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



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Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 2.45" for D10_24 event
Inflow = 149.38 cfs @ 13.75 hrs, Volume= 90.823 af
Outflow = 149.10 cfs @ 13.87 hrs, Volume= 90.538 af, Atten= 0%, Lag= 7.508 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2

Max. Velocity= 5.50 fps, Min. Travel Time= 9.038 min

Avg. Velocity= 3.35 fps, Avg. Travel Time= 14.834 min

Peak Storage= 80,854 cf @ 13.87 hrs

Average Depth at Peak Storage= 1.61'

Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040

Side Slope Z-value= 3.0 ' / ' Top Width= 36.00'

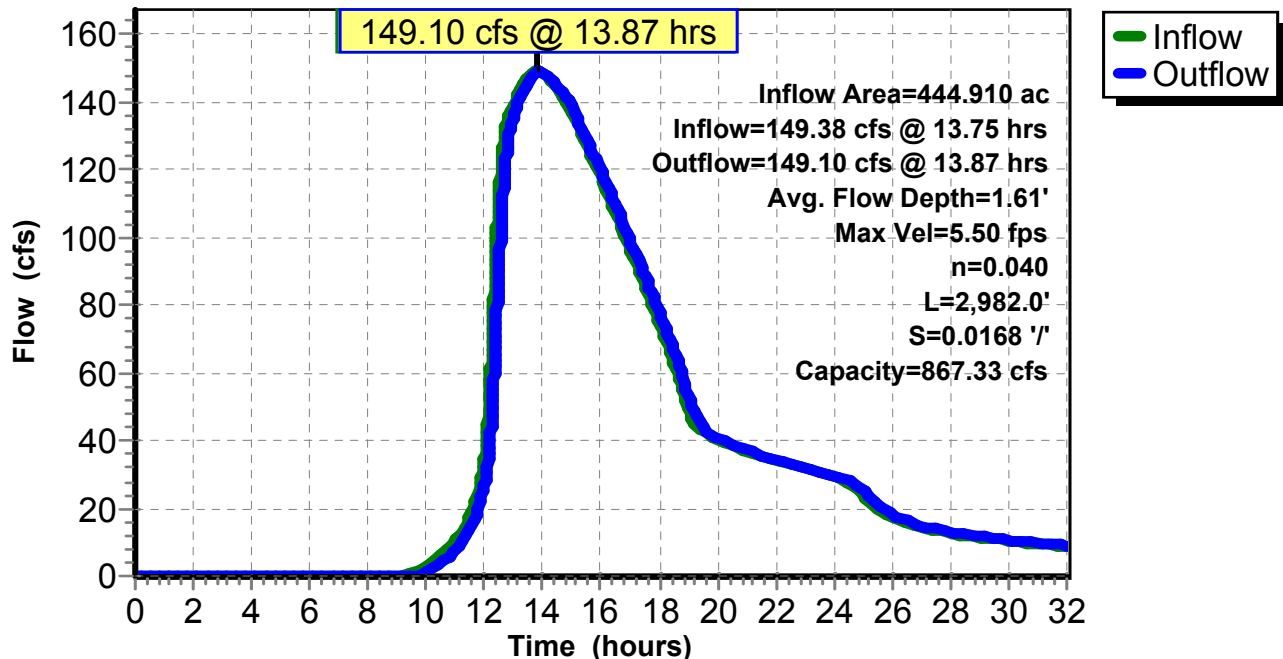
Length= 2,982.0' Slope= 0.0168 ' / '

Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



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Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 2.60" for D10_24 event
Inflow = 314.45 cfs @ 12.72 hrs, Volume= 121.416 af
Outflow = 314.38 cfs @ 12.73 hrs, Volume= 121.378 af, Atten= 0%, Lag= 0.500 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 9.01 fps, Min. Travel Time= 0.805 min
Avg. Velocity = 4.10 fps, Avg. Travel Time= 1.769 min

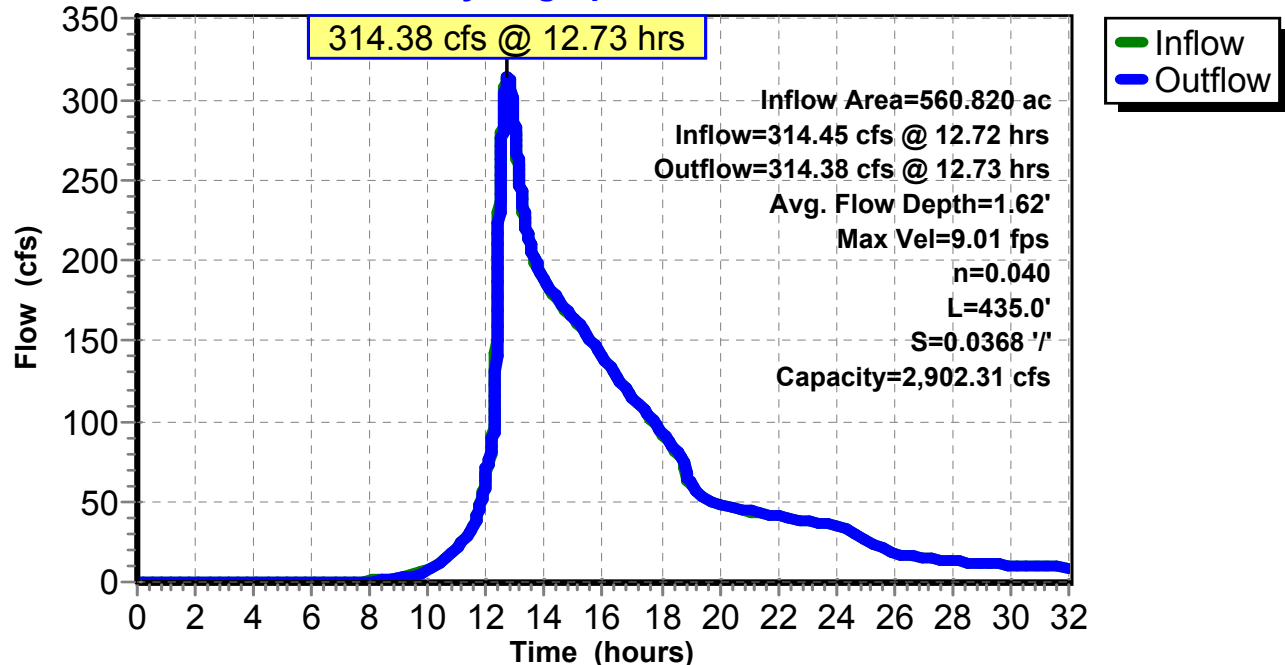
Peak Storage= 15,186 cf @ 12.73 hrs
Average Depth at Peak Storage= 1.62'
Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
Length= 435.0' Slope= 0.0368 ' / '
Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



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Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 2.62" for D10_24 event
 Inflow = 332.92 cfs @ 12.69 hrs, Volume= 127.156 af
 Outflow = 332.16 cfs @ 12.72 hrs, Volume= 127.155 af, Atten= 0%, Lag= 1.951 min
 Primary = 332.16 cfs @ 12.72 hrs, Volume= 127.155 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 70.92' @ 12.73 hrs Surf.Area= 0.132 ac Storage= 0.201 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.057 min (995.789 - 995.732)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

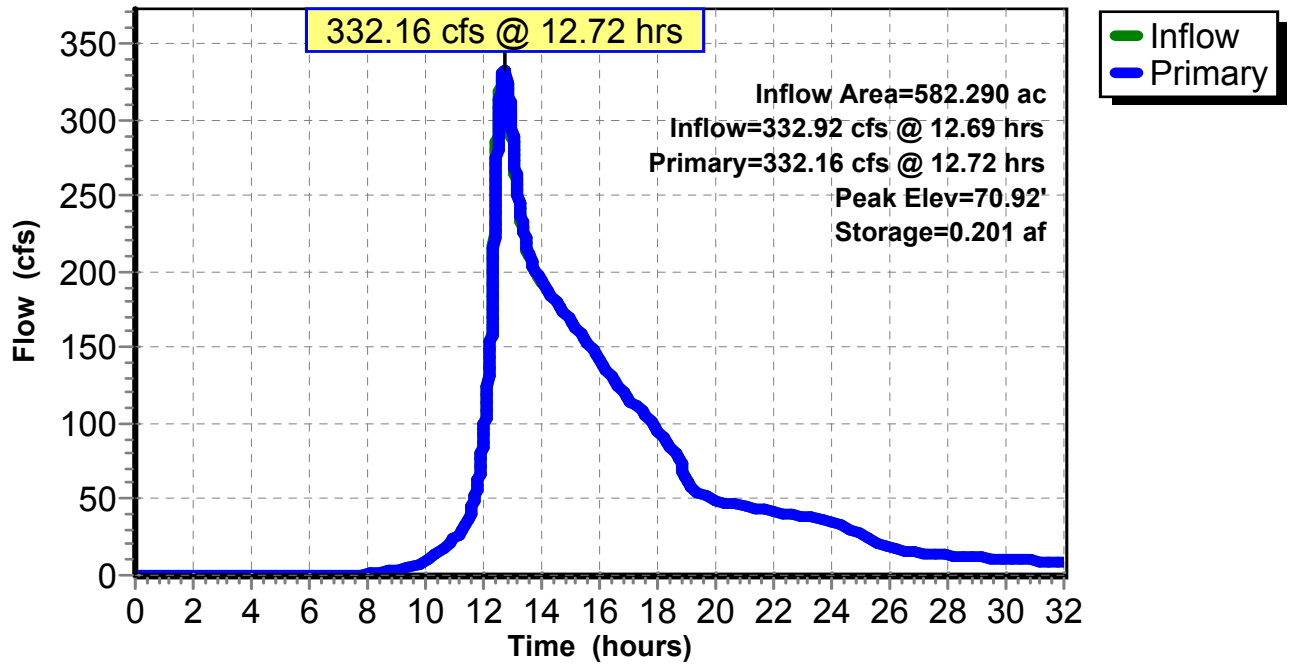
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=332.15 cfs @ 12.72 hrs HW=70.92' TW=65.31' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 224.01 cfs @ 11.41 fps)
- 2=Culvert 2 (Inlet Controls 108.14 cfs @ 6.68 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



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Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 2.45" for D10_24 event
Inflow = 149.62 cfs @ 13.64 hrs, Volume= 90.989 af
Outflow = 149.38 cfs @ 13.75 hrs, Volume= 90.823 af, Atten= 0%, Lag= 6.557 min
Primary = 149.38 cfs @ 13.75 hrs, Volume= 90.823 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 130.02' @ 13.75 hrs Surf.Area= 0.935 ac Storage= 2.100 af

Plug-Flow detention time= 10.107 min calculated for 90.794 af (100% of inflow)
Center-of-Mass det. time= 8.497 min (1,041.999 - 1,033.501)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

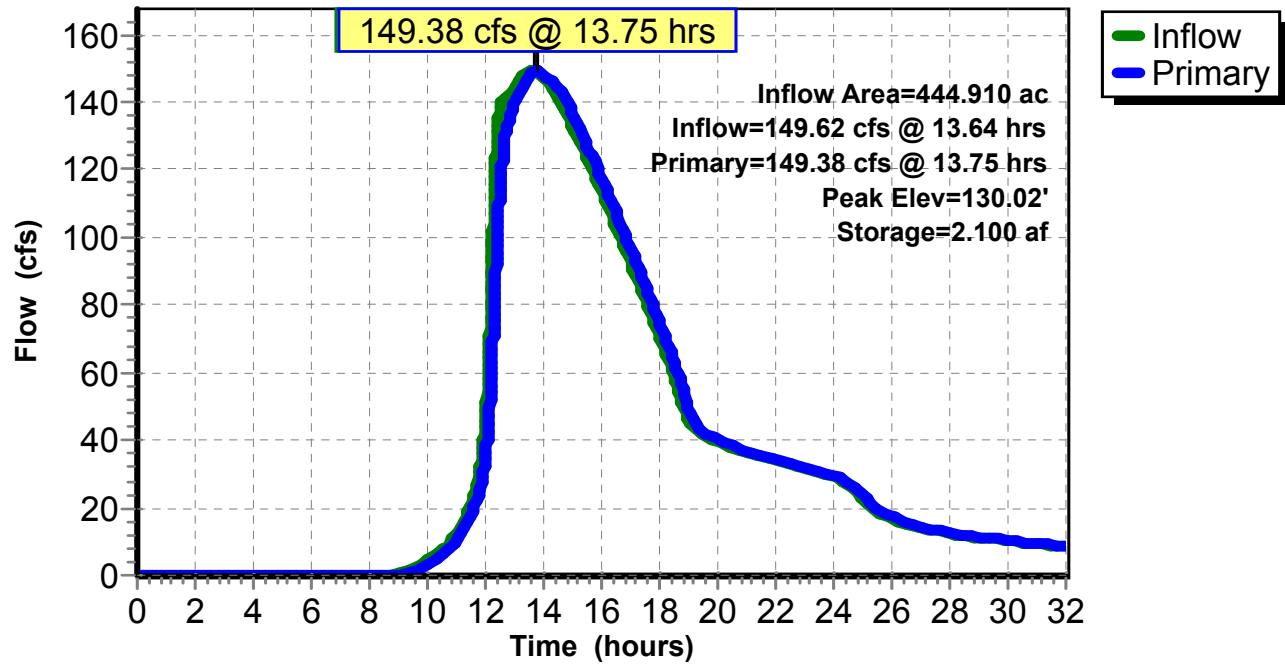
Primary OutFlow Max=149.38 cfs @ 13.75 hrs HW=130.02' TW=127.61' (Dynamic Tailwater)

1=Culvert (Barrel Controls 148.08 cfs @ 7.28 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 1.30 cfs @ 0.48 fps)

Pond 4A: DP 4 A ARGYLE

Hydrograph



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Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 2.44" for D10_24 event
 Inflow = 310.44 cfs @ 12.86 hrs, Volume= 82.583 af
 Outflow = 138.63 cfs @ 13.79 hrs, Volume= 82.359 af, Atten= 55%, Lag= 55.807 min
 Primary = 138.63 cfs @ 13.79 hrs, Volume= 82.359 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 131.76' @ 13.79 hrs Surf.Area= 15.298 ac Storage= 15.204 af

Plug-Flow detention time= 42.193 min calculated for 82.359 af (100% of inflow)
 Center-of-Mass det. time= 39.742 min (1,049.837 - 1,010.095)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

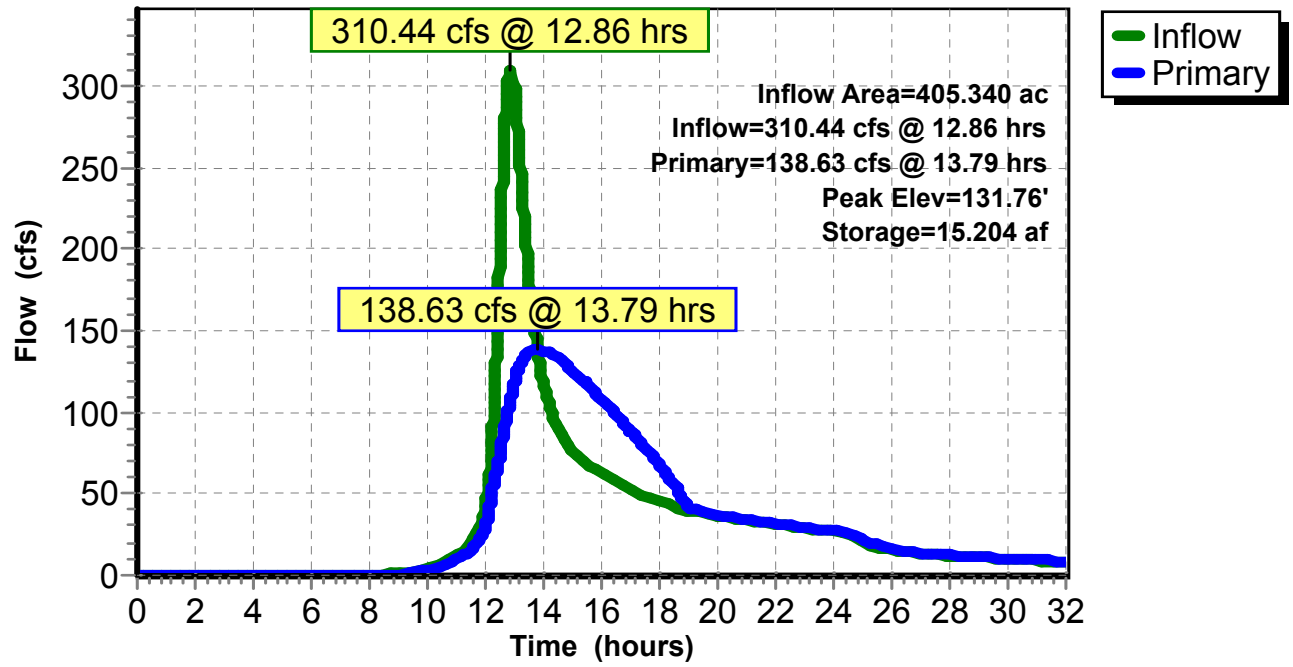
Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

Primary OutFlow Max=138.63 cfs @ 13.79 hrs HW=131.76' TW=129.93' (Dynamic Tailwater)

- 1=Culvert (Barrel Controls 138.63 cfs @ 7.31 fps)
- 2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 5P: DP 5 BETSY BROWN ROAD

Hydrograph



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Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 2.60" for D10_24 event
Inflow = 315.08 cfs @ 12.71 hrs, Volume= 121.417 af
Outflow = 314.45 cfs @ 12.72 hrs, Volume= 121.416 af, Atten= 0%, Lag= 0.775 min
Primary = 314.45 cfs @ 12.72 hrs, Volume= 121.416 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 91.00' @ 12.72 hrs Surf.Area= 1.370 ac Storage= 1.366 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.643 min (1,002.827 - 1,000.185)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

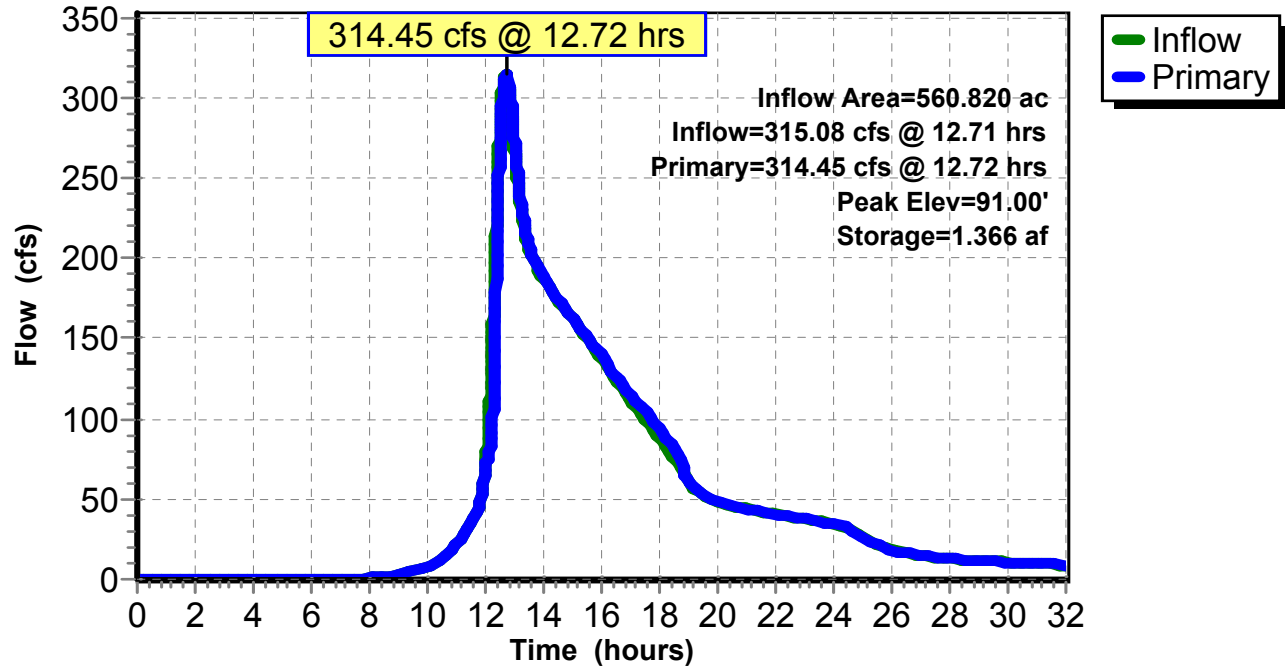
Primary OutFlow Max=314.43 cfs @ 12.72 hrs HW=91.00' TW=77.61' (Dynamic Tailwater)

1=Sharp-Crested Rectangular Weir (Weir Controls 156.58 cfs @ 5.12 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 157.85 cfs @ 2.35 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



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Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 2.80" for D10_24 event
 Inflow = 546.74 cfs @ 12.43 hrs, Volume= 166.856 af
 Outflow = 546.67 cfs @ 12.44 hrs, Volume= 165.166 af, Atten= 0%, Lag= 0.327 min
 Primary = 546.67 cfs @ 12.44 hrs, Volume= 165.166 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 40.10' @ 12.44 hrs Surf.Area= 0.966 ac Storage= 1.781 af

Plug-Flow detention time= 14.221 min calculated for 165.114 af (99% of inflow)
 Center-of-Mass det. time= 5.078 min (959.033 - 953.955)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

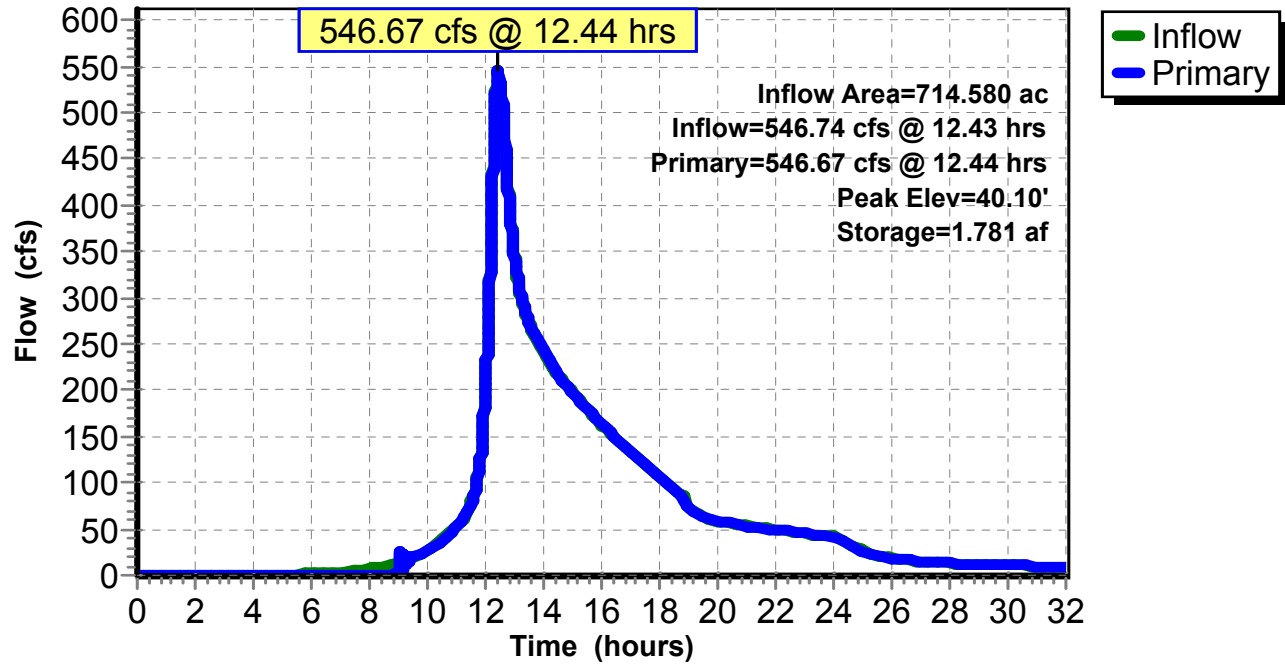
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=546.64 cfs @ 12.44 hrs HW=40.10' TW=40.00' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 214.07 cfs @ 1.55 fps)
- 2=WEIR BOWMAN (Weir Controls 332.57 cfs @ 1.19 fps)

Pond 8P: BOWMAN FIELDS

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Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 2.48" for D10_24 event
 Inflow = 163.60 cfs @ 12.63 hrs, Volume= 24.991 af
 Outflow = 163.33 cfs @ 12.64 hrs, Volume= 24.990 af, Atten= 0%, Lag= 0.312 min
 Primary = 163.33 cfs @ 12.64 hrs, Volume= 24.990 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 134.65' @ 12.65 hrs Surf.Area= 0.161 ac Storage= 0.178 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.345 min (871.502 - 871.157)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

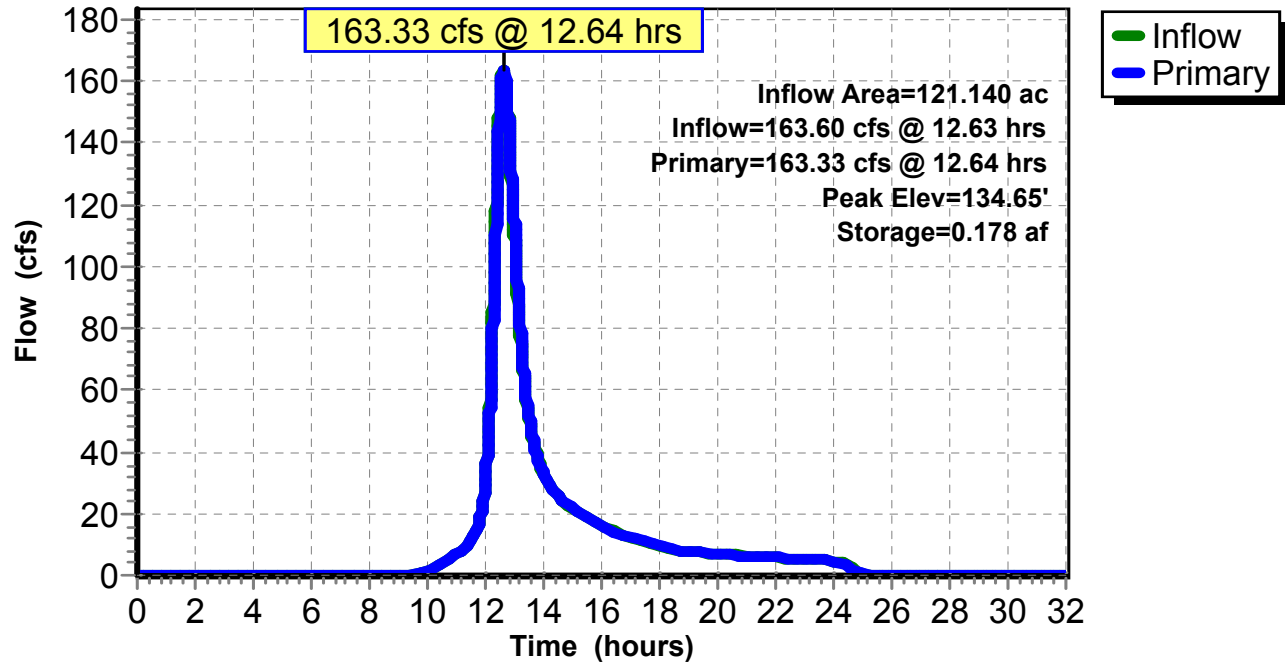
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=163.29 cfs @ 12.64 hrs HW=134.65' TW=132.12' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 54.16 cfs @ 7.66 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 79.80 cfs @ 5.80 fps)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 29.33 cfs @ 1.26 fps)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

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Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 3.13" for D10_24 event
 Inflow = 316.99 cfs @ 12.51 hrs, Volume= 43.494 af
 Outflow = 312.80 cfs @ 12.55 hrs, Volume= 41.601 af, Atten= 1%, Lag= 2.338 min
 Primary = 312.80 cfs @ 12.55 hrs, Volume= 41.601 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.49' @ 12.55 hrs Surf.Area= 3.851 ac Storage= 6.566 af (3.598 af above start)

Plug-Flow detention time= 82.878 min calculated for 38.622 af (89% of inflow)
 Center-of-Mass det. time= 17.842 min (862.681 - 844.839)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

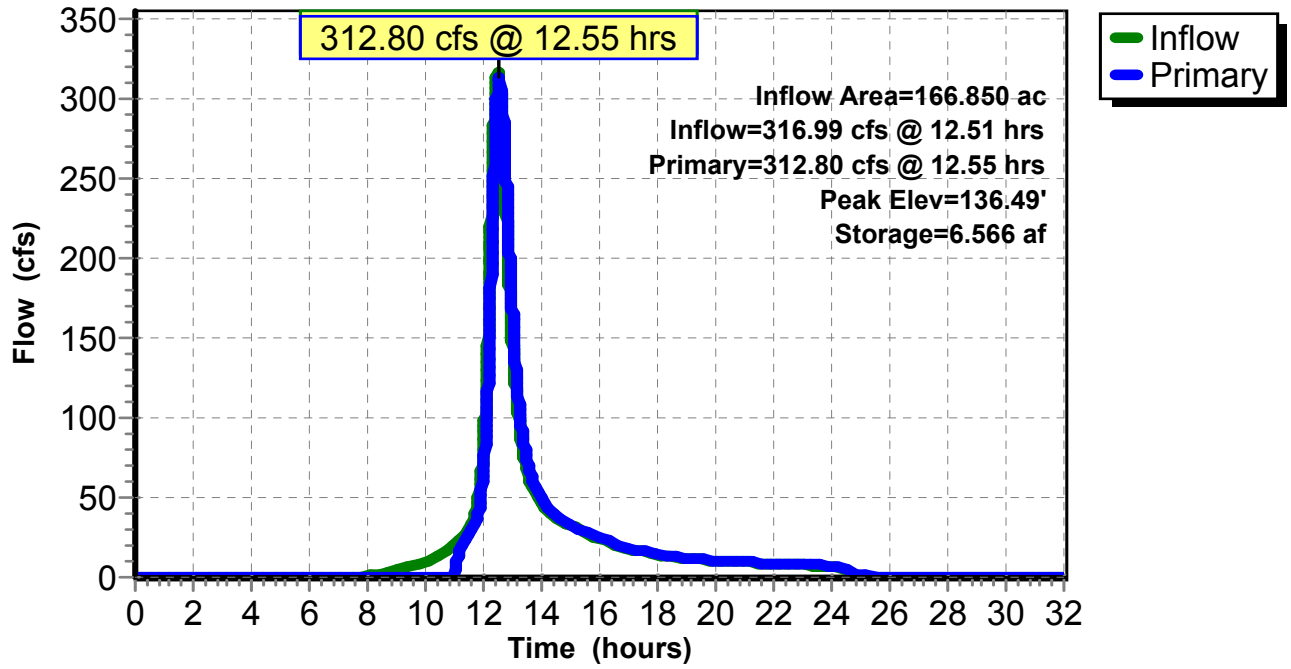
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=312.76 cfs @ 12.55 hrs HW=136.49' TW=130.71' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 1.79 cfs @ 2.38 fps)
- 2=Asymmetrical Weir (Weir Controls 310.98 cfs @ 2.04 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

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Summary for Pond 24P: RAINSTORE WHOLE FIELD

Inflow = 100.75 cfs @ 12.74 hrs, Volume= 5.391 af
 Outflow = 21.10 cfs @ 13.33 hrs, Volume= 5.394 af, Atten= 79%, Lag= 35.587 min
 Discarded = 9.68 cfs @ 12.58 hrs, Volume= 3.871 af
 Primary = 11.42 cfs @ 13.33 hrs, Volume= 1.522 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 39.85' @ 13.33 hrs Surf.Area= 209,016 sf Storage= 171,252 cf

Plug-Flow detention time= 101.540 min calculated for 5.390 af (100% of inflow)
 Center-of-Mass det. time= 101.637 min (872.921 - 771.284)

Volume	Invert	Avail.Storage	Storage Description
#1	39.00'	2,608,520 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 2,717,208 cf Overall x 96.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
39.00	209,016	0	0
52.00	209,016	2,717,208	2,717,208

Device	Routing	Invert	Outlet Devices
#1	Secondary	40.00'	26.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Discarded	39.00'	2.000 in/hr Exfiltration over Surface area
#3	Primary	39.00'	42.0" Vert. Orifice/Grate X 2.00 C= 0.600

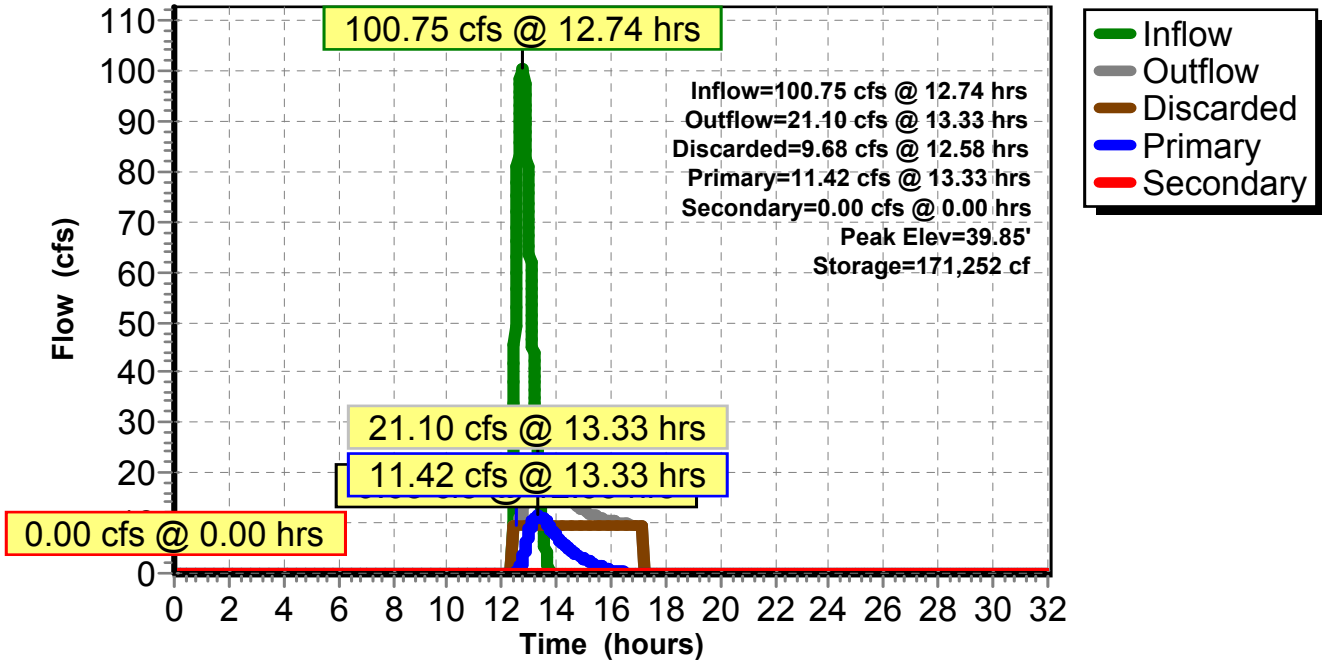
Discarded OutFlow Max=9.68 cfs @ 12.58 hrs HW=39.14' (Free Discharge)
 ↑**2=Exfiltration** (Exfiltration Controls 9.68 cfs)

Primary OutFlow Max=11.42 cfs @ 13.33 hrs HW=39.85' TW=0.00' (Dynamic Tailwater)
 ↑**3=Orifice/Grate** (Orifice Controls 11.42 cfs @ 3.15 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=39.00' TW=0.00' (Dynamic Tailwater)
 ↑**1=Sharp-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 24P: RAINSTORE WHOLE FIELD

Hydrograph



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Summary for Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 2.64" for D10_24 event
Inflow = 391.36 cfs @ 12.44 hrs, Volume= 143.992 af
Outflow = 391.36 cfs @ 12.44 hrs, Volume= 143.992 af, Atten= 0%, Lag= 0.000 min
Primary = 308.28 cfs @ 12.44 hrs, Volume= 131.598 af
Secondary = 83.09 cfs @ 12.44 hrs, Volume= 12.394 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 44.10' @ 12.44 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 110.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0009 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48
#3	Secondary	40.25'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 40.25' / 39.75' S= 0.0037 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf

Primary OutFlow Max=308.26 cfs @ 12.44 hrs HW=44.10' TW=0.00' (Dynamic Tailwater)

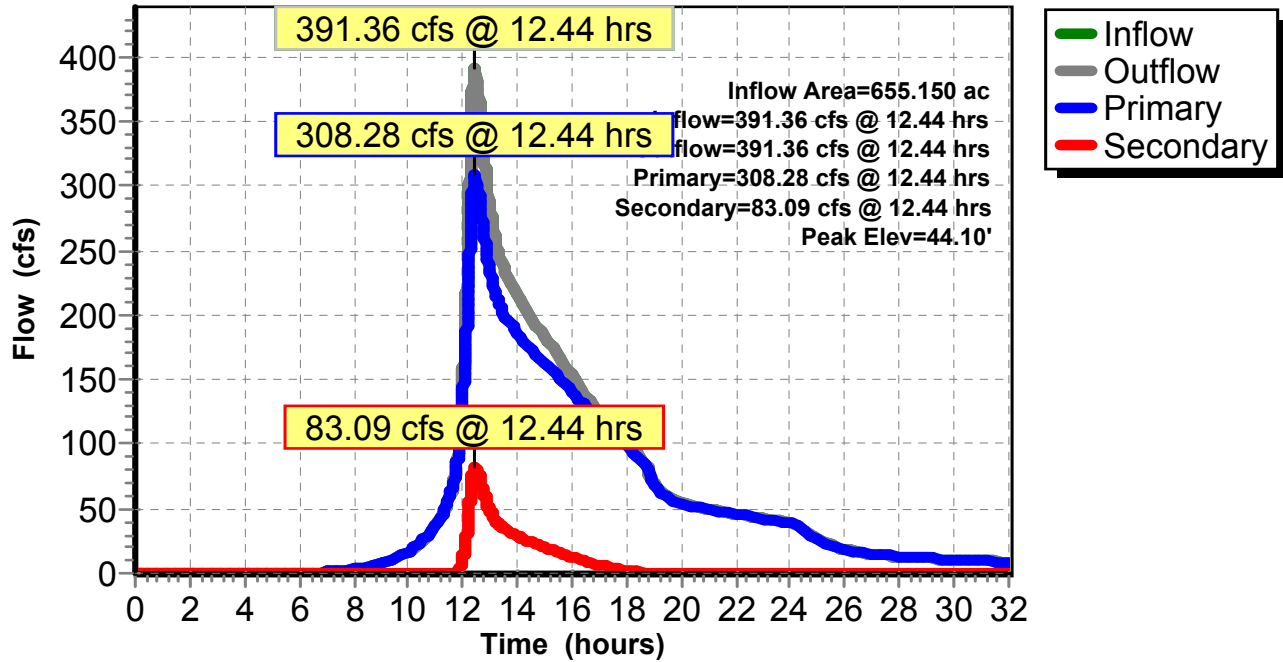
↑1=Culvert (Barrel Controls 308.26 cfs @ 7.99 fps)
↑2=WEIR WESTCH AVE (Controls 0.00 cfs)

Secondary OutFlow Max=83.08 cfs @ 12.44 hrs HW=44.10' TW=0.00' (Dynamic Tailwater)

↑3=Culvert (Barrel Controls 83.08 cfs @ 7.08 fps)

Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



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Summary for Pond 41P: UPSTREAM AVON

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 2.62" for D10_24 event
 Inflow = 332.16 cfs @ 12.72 hrs, Volume= 127.155 af
 Outflow = 331.96 cfs @ 12.74 hrs, Volume= 127.153 af, Atten= 0%, Lag= 1.004 min
 Primary = 231.21 cfs @ 12.74 hrs, Volume= 121.762 af
 Secondary = 92.81 cfs @ 12.74 hrs, Volume= 5.216 af
 Tertiary = 7.94 cfs @ 12.74 hrs, Volume= 0.175 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 65.31' @ 12.74 hrs Surf.Area= 7,661 sf Storage= 16,571 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.464 min (996.253 - 995.789)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	83,358 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686
70.00	10,112	40,448	63,134
72.00	10,112	20,224	83,358

Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert L= 947.0' Ke= 0.700 Inlet / Outlet Invert= 55.13' / 37.90' S= 0.0182 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Tertiary	65.00'	14.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Secondary	63.50'	12.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

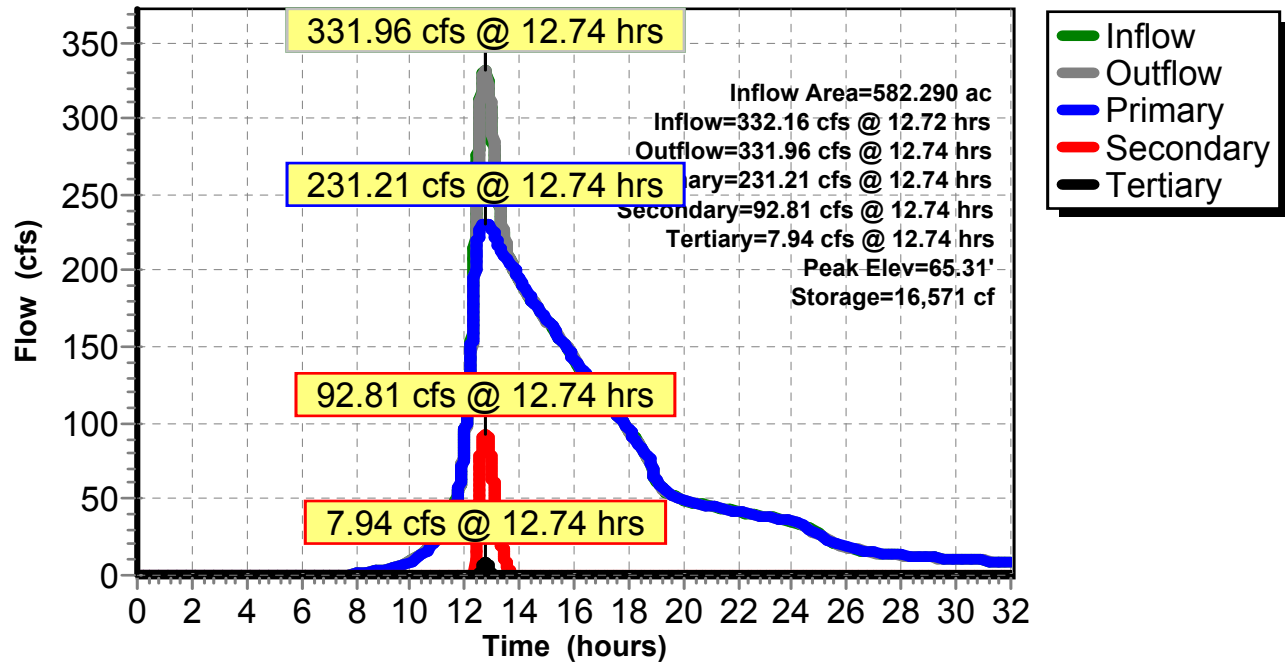
Primary OutFlow Max=231.21 cfs @ 12.74 hrs HW=65.31' TW=0.00' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 231.21 cfs @ 11.78 fps)

Secondary OutFlow Max=92.81 cfs @ 12.74 hrs HW=65.31' TW=57.45' (Dynamic Tailwater)
 ↑3=Sharp-Crested Rectangular Weir (Weir Controls 92.81 cfs @ 4.40 fps)

Tertiary OutFlow Max=7.94 cfs @ 12.74 hrs HW=65.31' TW=55.96' (Dynamic Tailwater)
 ↑2=Sharp-Crested Rectangular Weir (Weir Controls 7.94 cfs @ 1.83 fps)

Pond 41P: UPSTREAM AVON

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Summary for Pond 42P: CHAMBER

Inflow = 7.94 cfs @ 12.74 hrs, Volume= 0.175 af
Outflow = 7.94 cfs @ 12.74 hrs, Volume= 0.175 af, Atten= 0%, Lag= 0.000 min
Primary = 7.94 cfs @ 12.74 hrs, Volume= 0.175 af

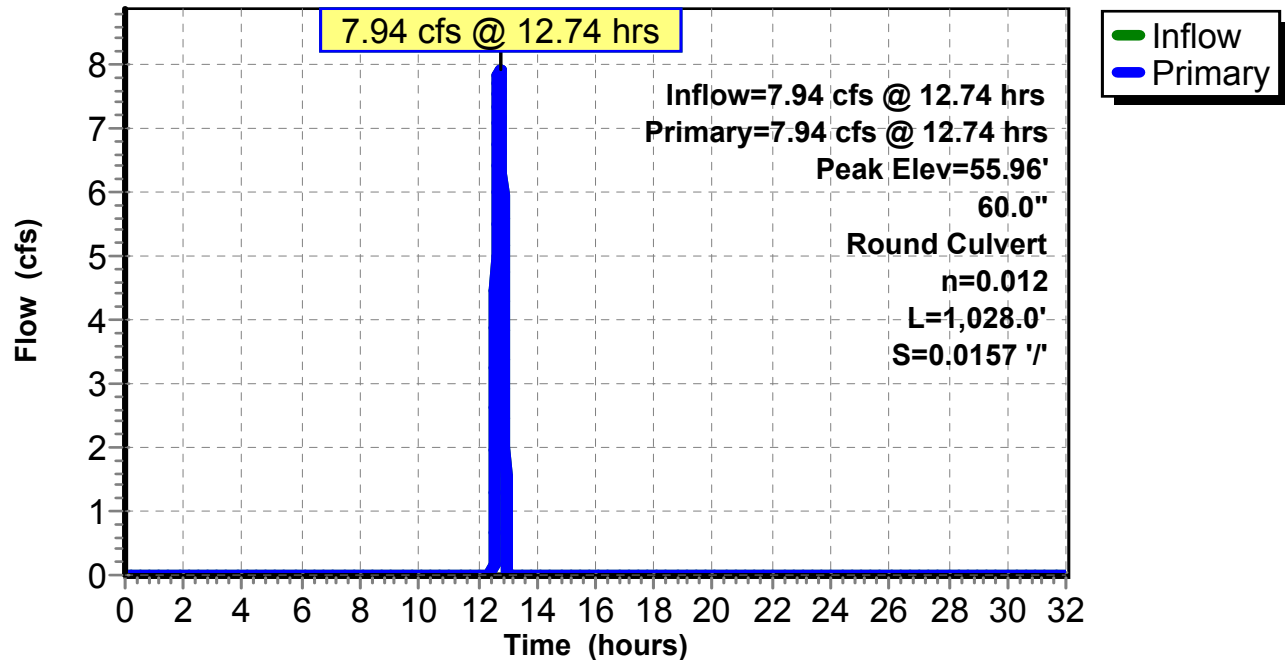
Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 55.96' @ 12.74 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert L= 1,028.0' Ke= 0.250 Inlet / Outlet Invert= 55.13' / 39.00' S= 0.0157 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf

Primary OutFlow Max=7.94 cfs @ 12.74 hrs HW=55.96' TW=0.00' (Dynamic Tailwater)
↑1=Culvert (Inlet Controls 7.94 cfs @ 3.72 fps)

Pond 42P: CHAMBER

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Summary for Pond 43P: DUAL 60" CULVERTS

Inflow = 92.81 cfs @ 12.74 hrs, Volume= 5.216 af
Outflow = 92.81 cfs @ 12.74 hrs, Volume= 5.216 af, Atten= 0%, Lag= 0.000 min
Primary = 92.81 cfs @ 12.74 hrs, Volume= 5.216 af

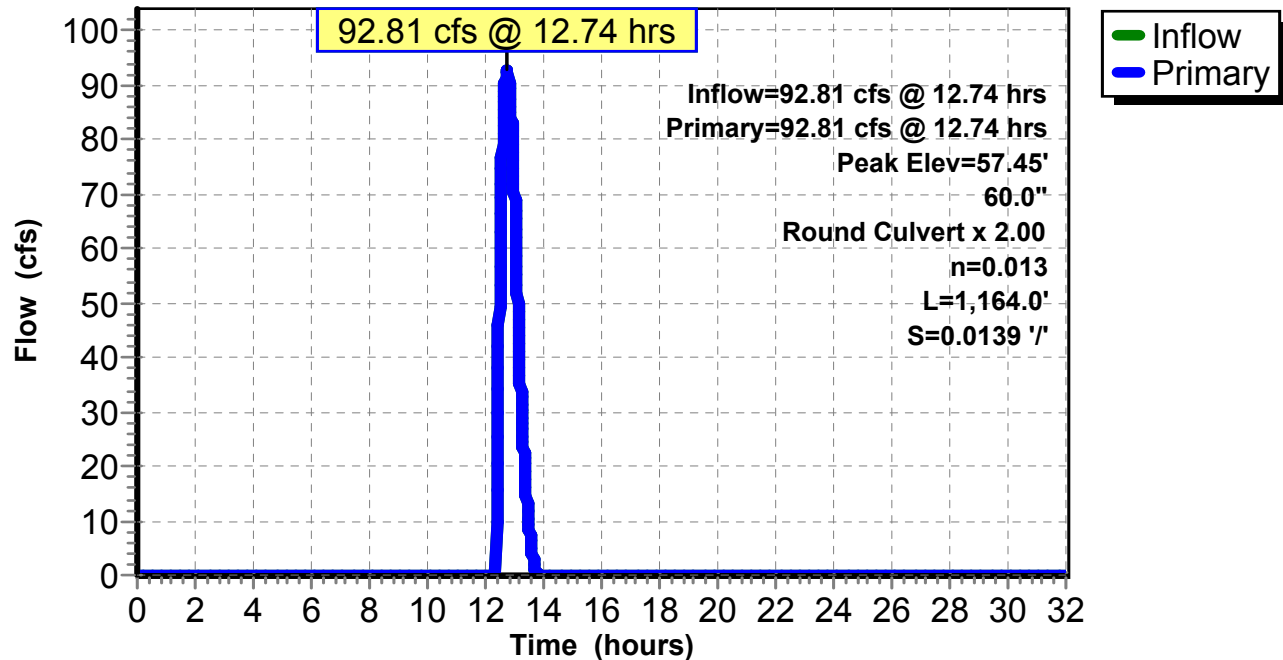
Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 57.45' @ 12.74 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert X 2.00 L= 1,164.0' Ke= 0.500 Inlet / Outlet Invert= 55.13' / 39.00' S= 0.0139 '/ Cc= 0.900 n= 0.013, Flow Area= 19.63 sf

Primary OutFlow Max=92.81 cfs @ 12.74 hrs HW=57.45' TW=0.00' (Dynamic Tailwater)
↑1=Culvert (Inlet Controls 92.81 cfs @ 5.19 fps)

Pond 43P: DUAL 60" CULVERTS

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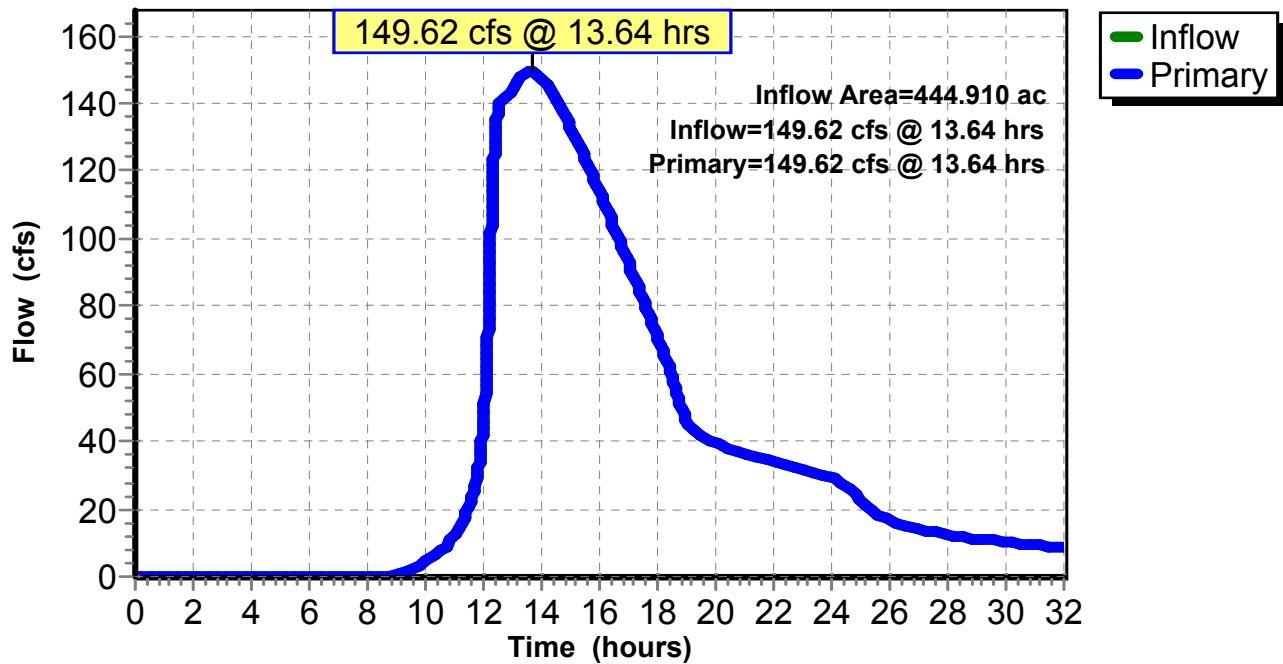
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 2.45" for D10_24 event
Inflow = 149.62 cfs @ 13.64 hrs, Volume= 90.989 af
Primary = 149.62 cfs @ 13.64 hrs, Volume= 90.989 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



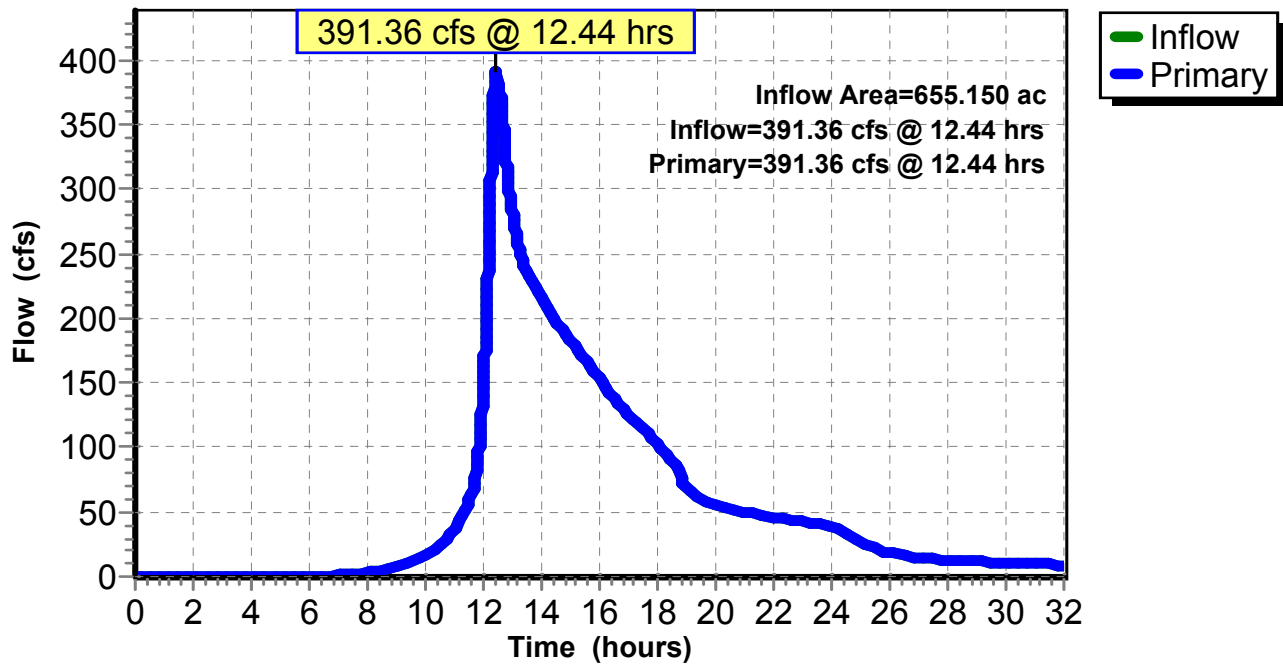
Summary for Link 33L: JUNCTION

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 2.64" for D10_24 event
Inflow = 391.36 cfs @ 12.44 hrs, Volume= 143.992 af
Primary = 391.36 cfs @ 12.44 hrs, Volume= 143.992 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 33L: JUNCTION

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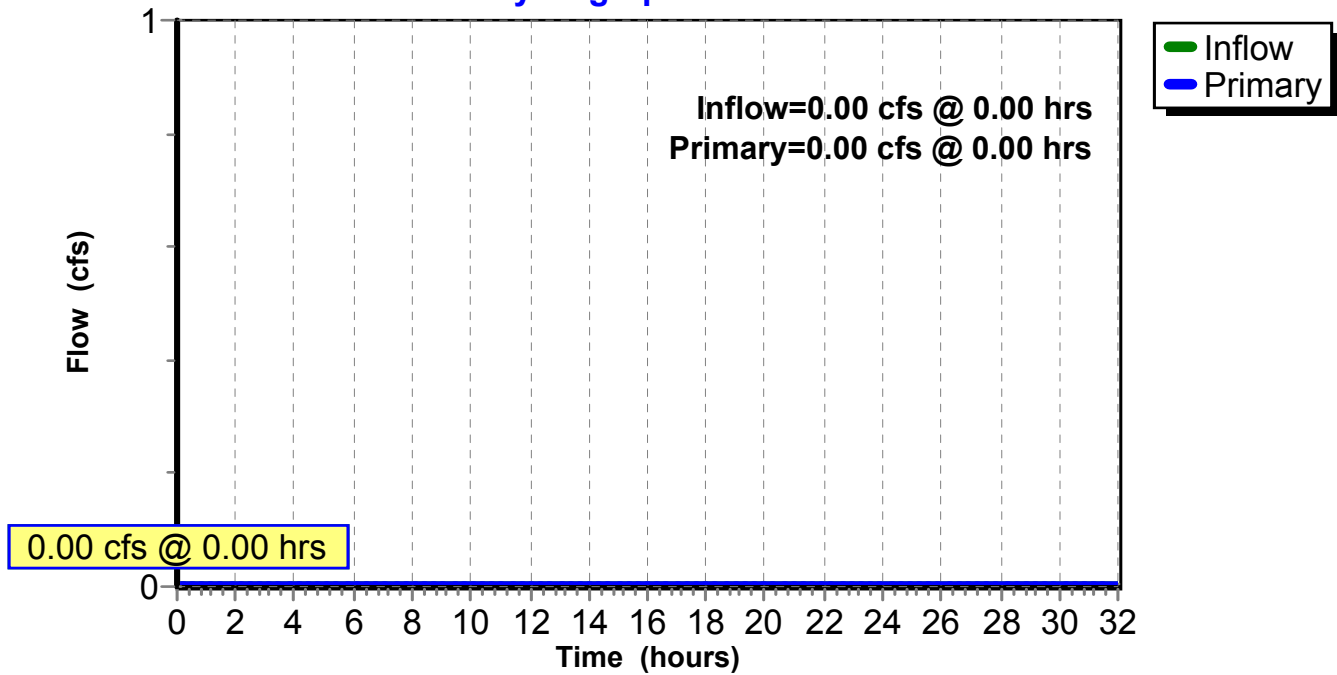
Summary for Link 36L: weir

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 36L: weir

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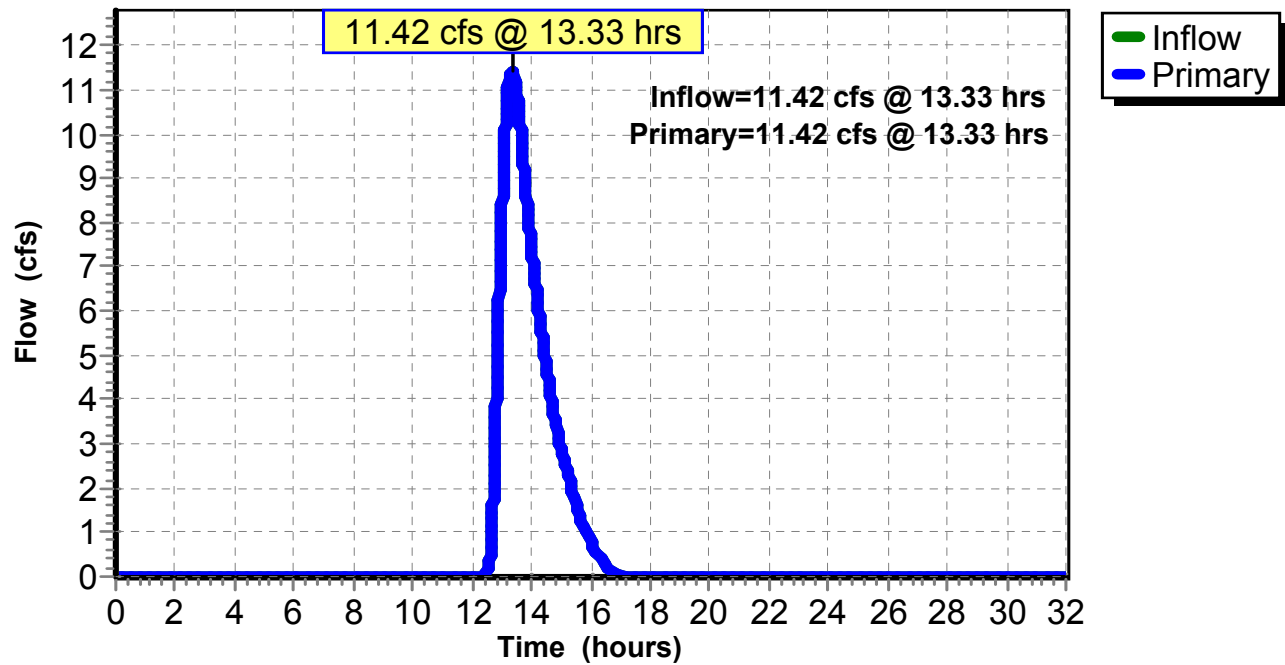
Summary for Link 37L: orifice

Inflow = 11.42 cfs @ 13.33 hrs, Volume= 1.522 af
Primary = 11.42 cfs @ 13.33 hrs, Volume= 1.522 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 37L: orifice

Hydrograph



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Type III 24-hr D10_24 Rainfall=5.11"

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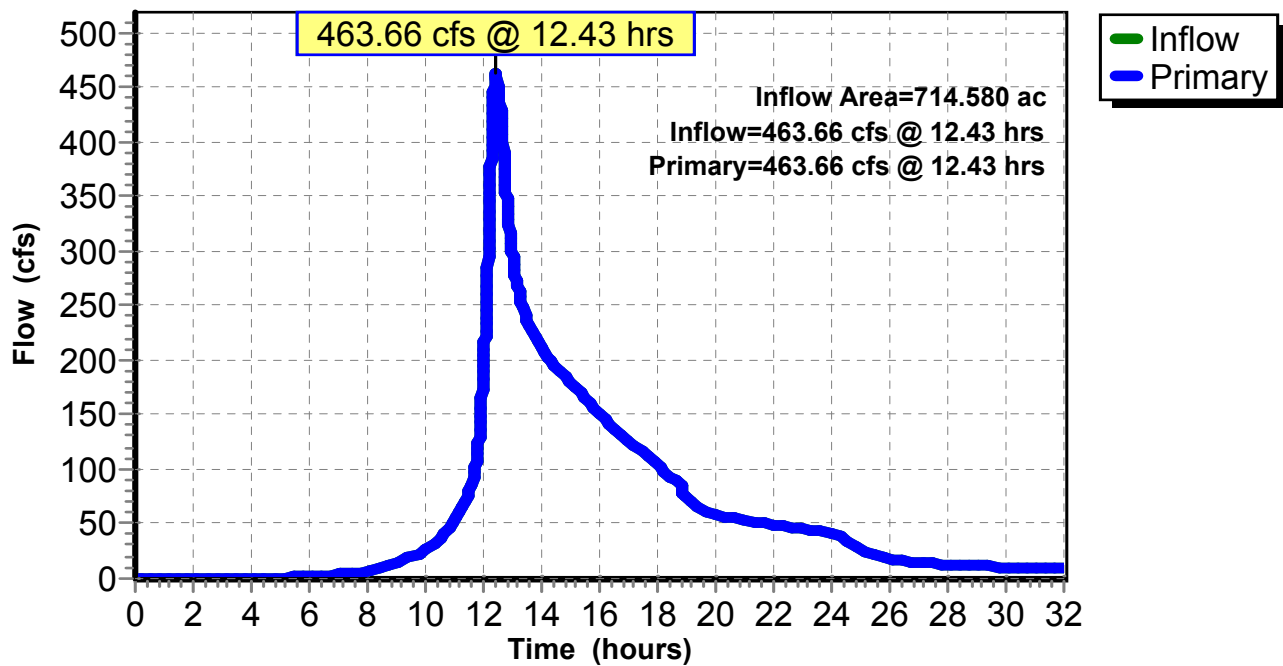
Summary for Link 38L: JUNCTION

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 2.59" for D10_24 event
Inflow = 463.66 cfs @ 12.43 hrs, Volume= 154.462 af
Primary = 463.66 cfs @ 12.43 hrs, Volume= 154.462 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 38L: JUNCTION

Hydrograph



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Type III 24-hr D10_24 Rainfall=5.11"

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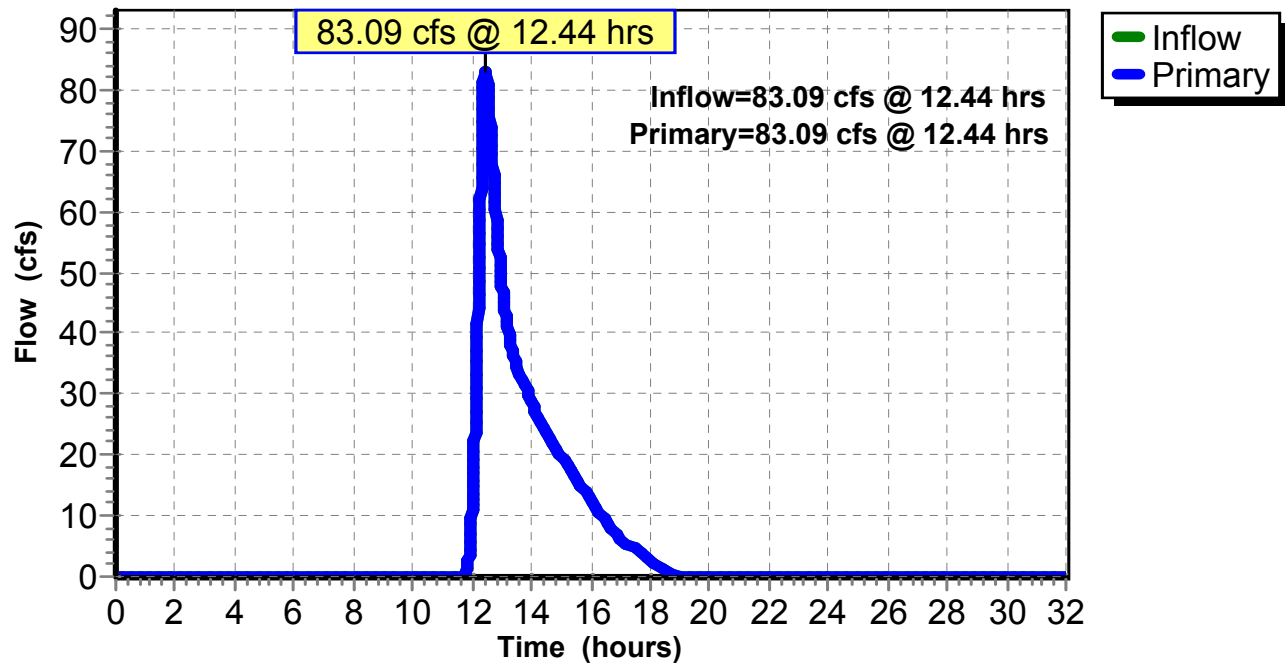
Summary for Link 41L: X

Inflow = 83.09 cfs @ 12.44 hrs, Volume= 12.394 af
Primary = 83.09 cfs @ 12.44 hrs, Volume= 12.394 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 41L: X

Hydrograph



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Type III 24-hr D10_24 Rainfall=5.11"

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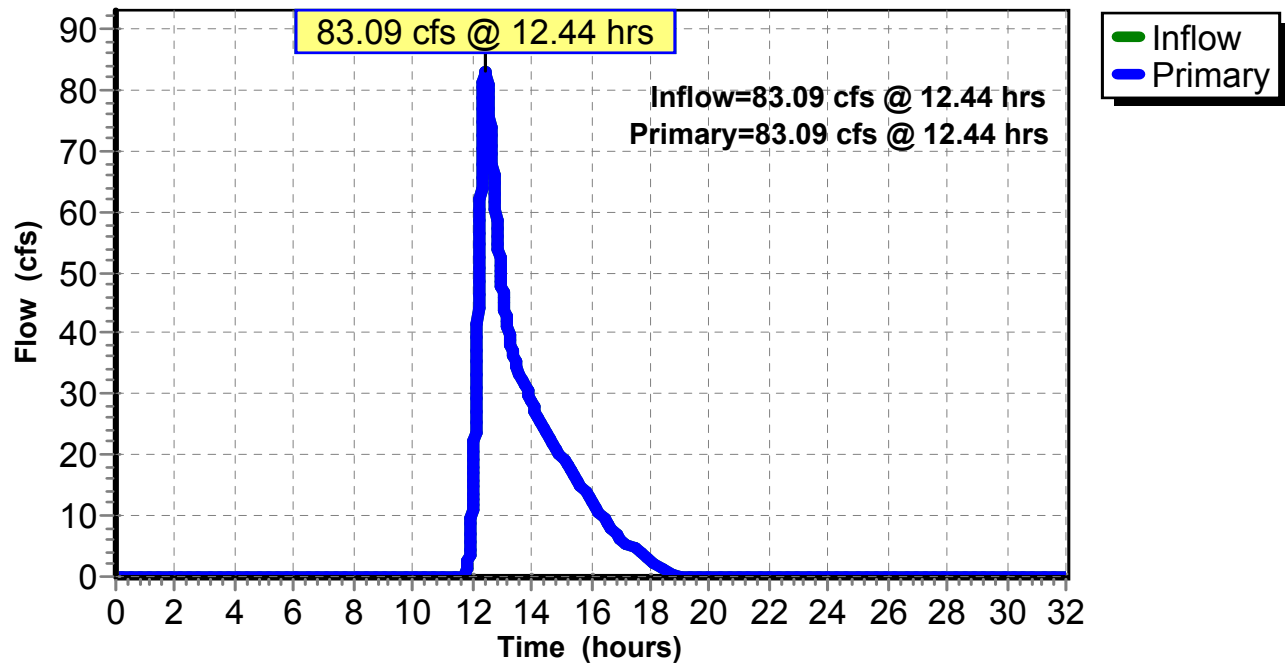
Summary for Link 42L: X

Inflow = 83.09 cfs @ 12.44 hrs, Volume= 12.394 af
Primary = 83.09 cfs @ 12.44 hrs, Volume= 12.394 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 42L: X

Hydrograph



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Type III 24-hr D10_24 Rainfall=5.11"

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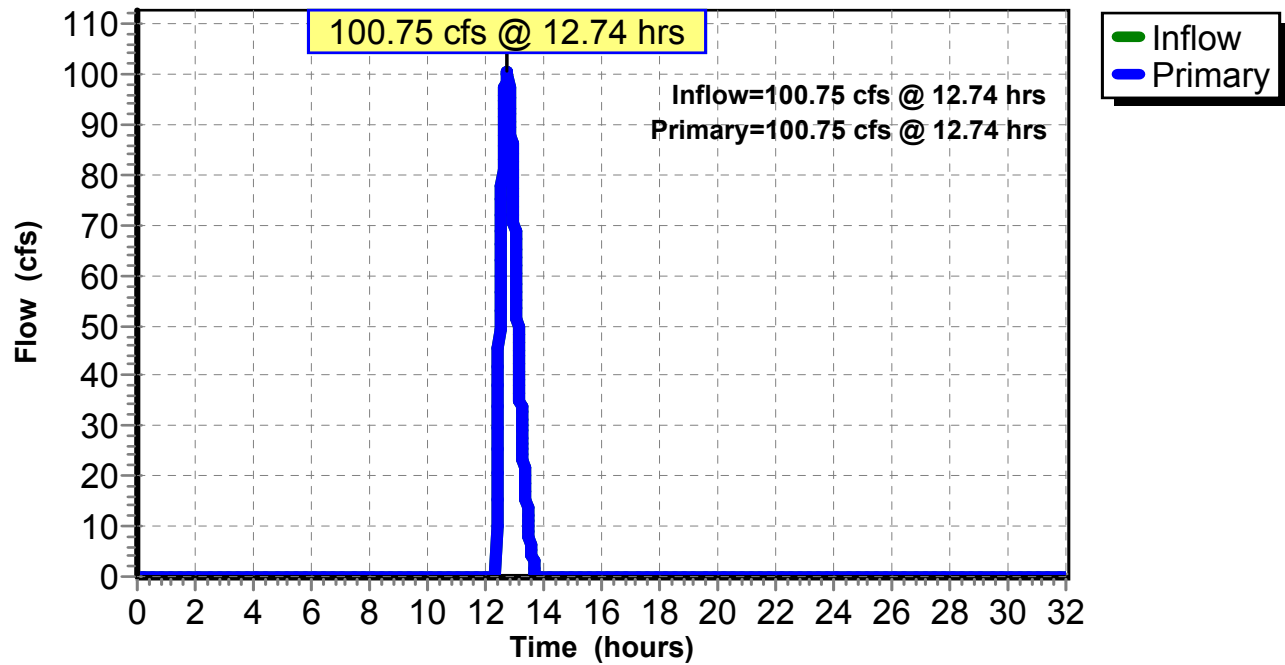
Summary for Link 51L: JUNCTION

Inflow = 100.75 cfs @ 12.74 hrs, Volume= 5.391 af
Primary = 100.75 cfs @ 12.74 hrs, Volume= 5.391 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 51L: JUNCTION

Hydrograph



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Type III 24-hr D10_24 Rainfall=5.11"

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Summary for Link FIN: FINAL

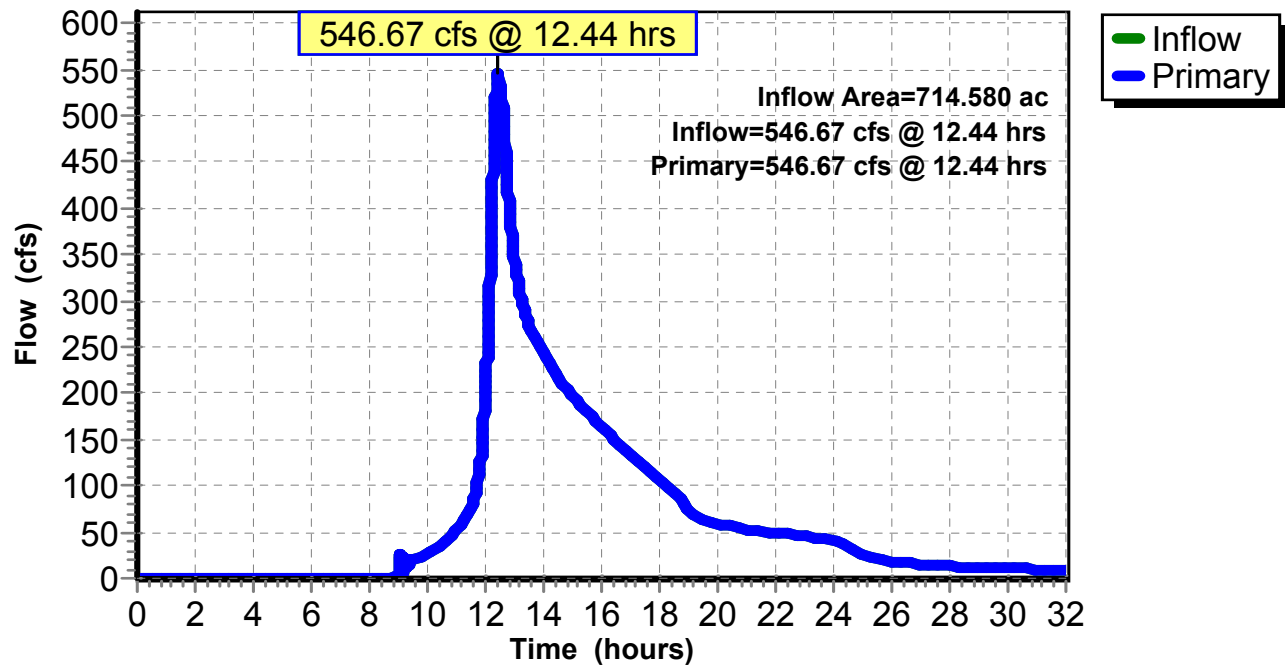
Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 2.77" for D10_24 event
Inflow = 546.67 cfs @ 12.44 hrs, Volume= 165.166 af
Primary = 546.67 cfs @ 12.44 hrs, Volume= 165.166 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 40.00'

Link FIN: FINAL

Hydrograph



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Avon PR
Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Subcatchment A: WS A

Runoff = 99.30 cfs @ 12.43 hrs, Volume= 13.320 af, Depth= 2.69"

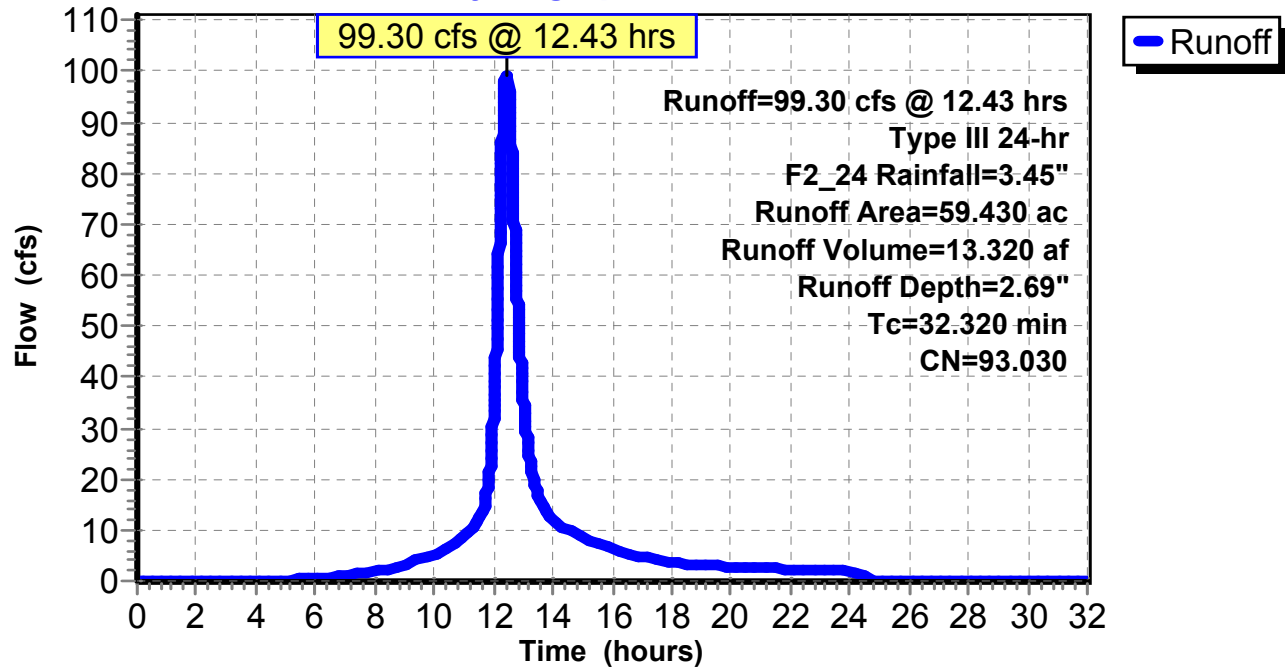
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



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Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Subcatchment B: WS B

Runoff = 83.90 cfs @ 12.40 hrs, Volume= 10.294 af, Depth= 2.15"

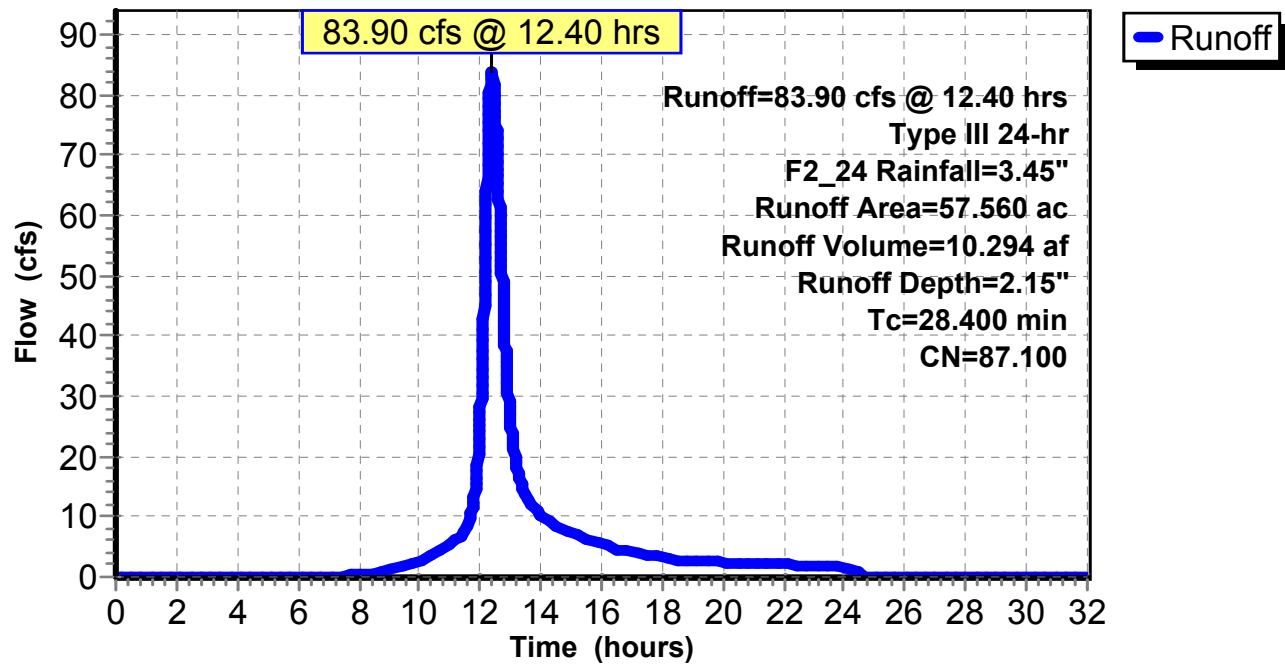
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



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Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Subcatchment BH: HOTEL

Runoff = 20.85 cfs @ 12.42 hrs, Volume= 2.636 af, Depth= 2.07"

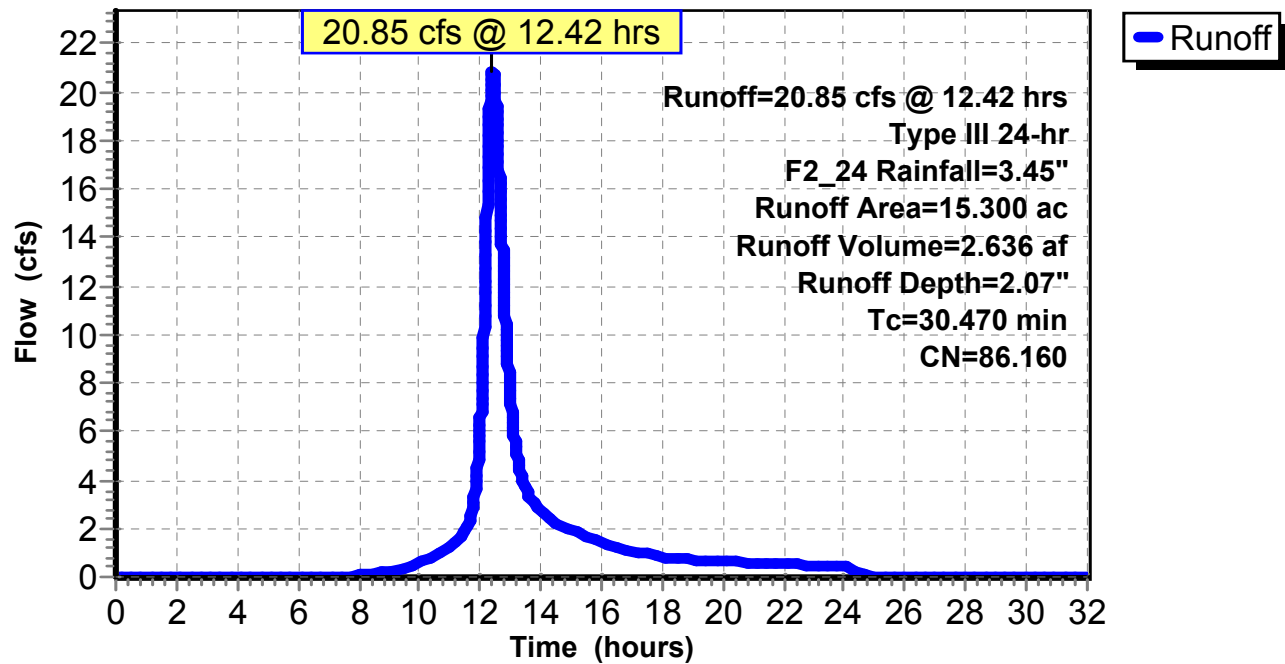
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



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Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Subcatchment C: WS C

Runoff = 31.12 cfs @ 12.26 hrs, Volume= 3.188 af, Depth= 1.78"

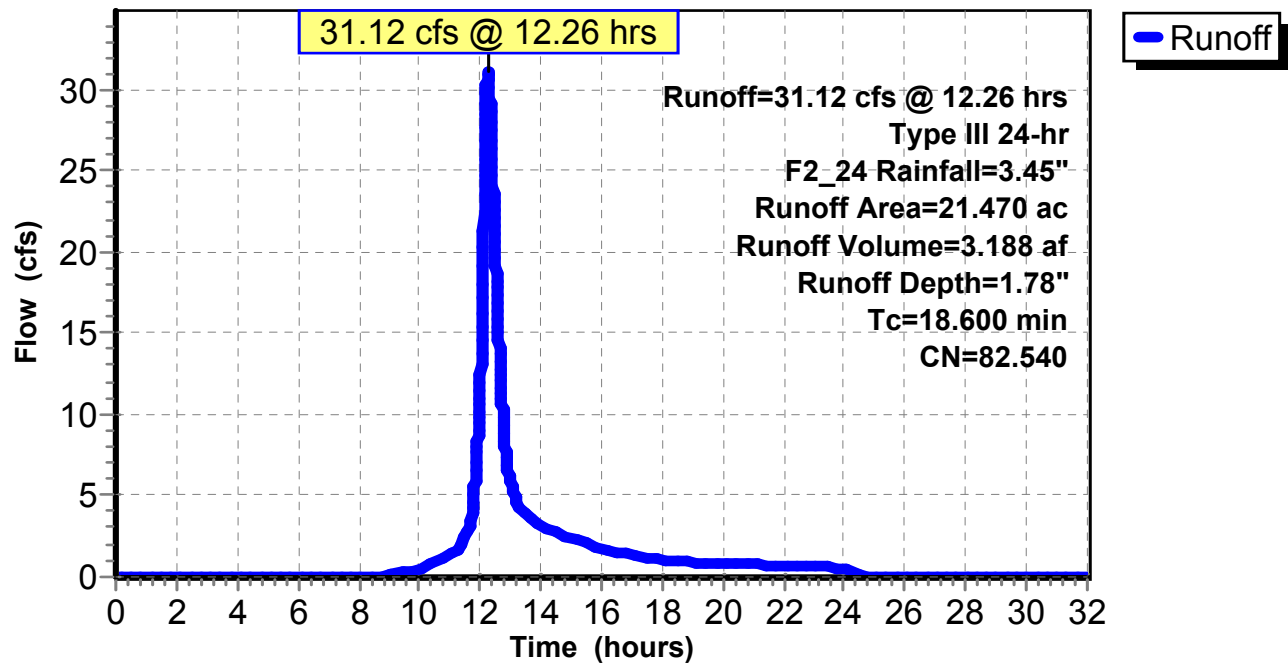
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



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Avon PR
Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Subcatchment D: WS D

Runoff = 110.10 cfs @ 12.62 hrs, Volume= 16.964 af, Depth= 1.76"

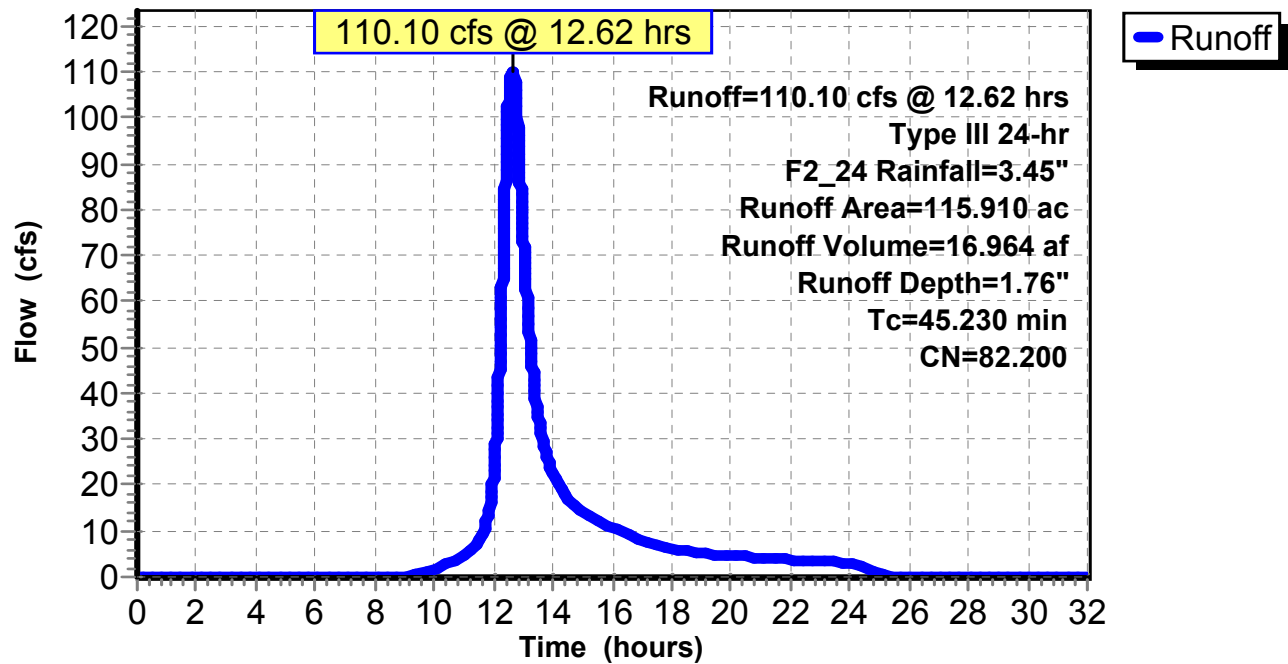
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



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Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Subcatchment D-1: WS D-1

Runoff = 33.48 cfs @ 12.46 hrs, Volume= 4.423 af, Depth= 1.34"

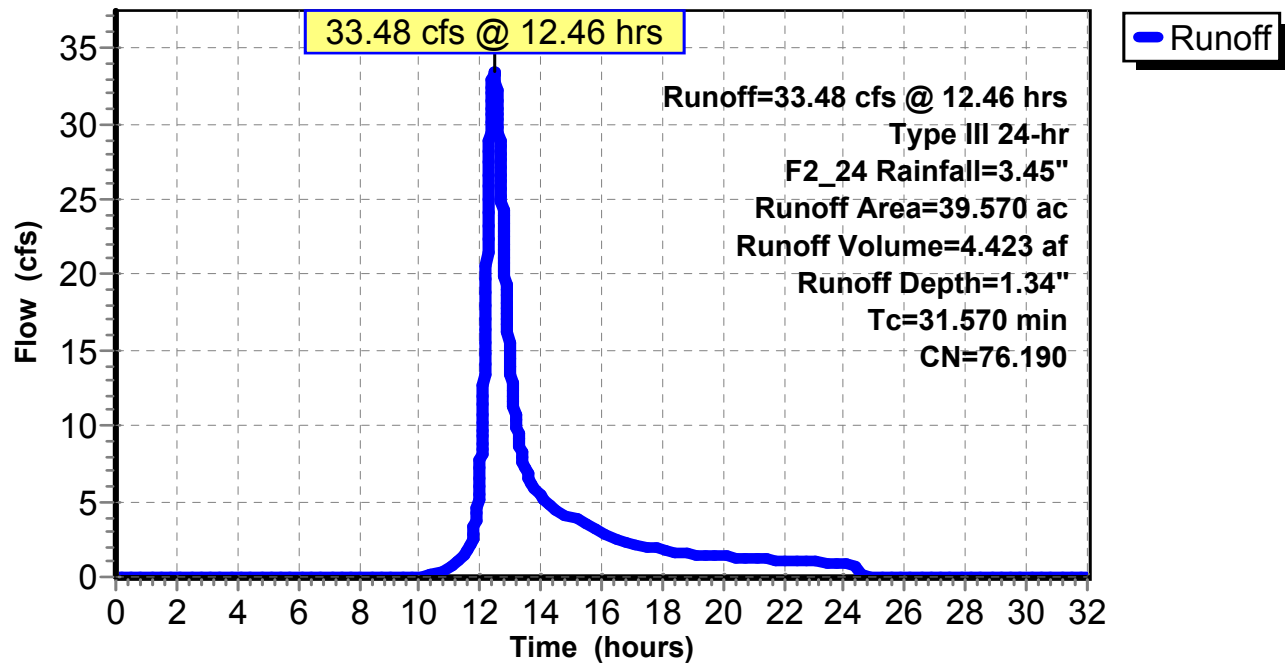
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



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Avon PR
Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Subcatchment E: WS E

Runoff = 84.40 cfs @ 12.86 hrs, Volume= 15.837 af, Depth= 1.62"

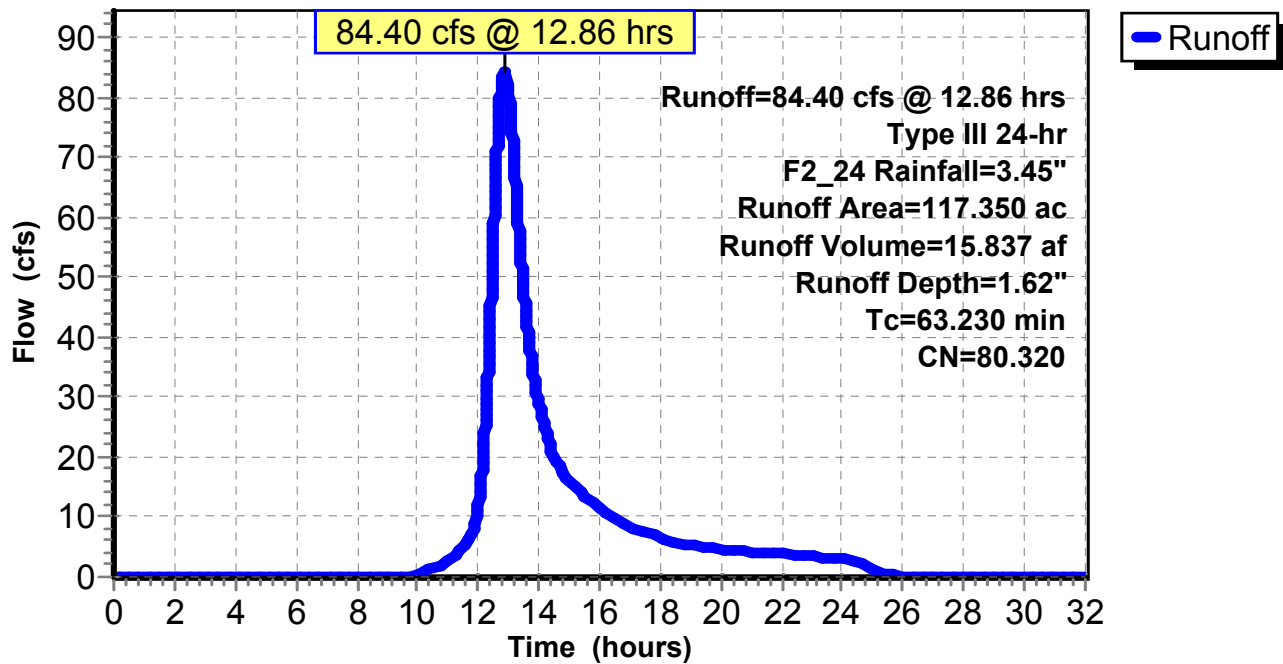
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



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Avon PR
Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Subcatchment F: WS F

Runoff = 77.91 cfs @ 12.64 hrs, Volume= 12.335 af, Depth= 1.22"

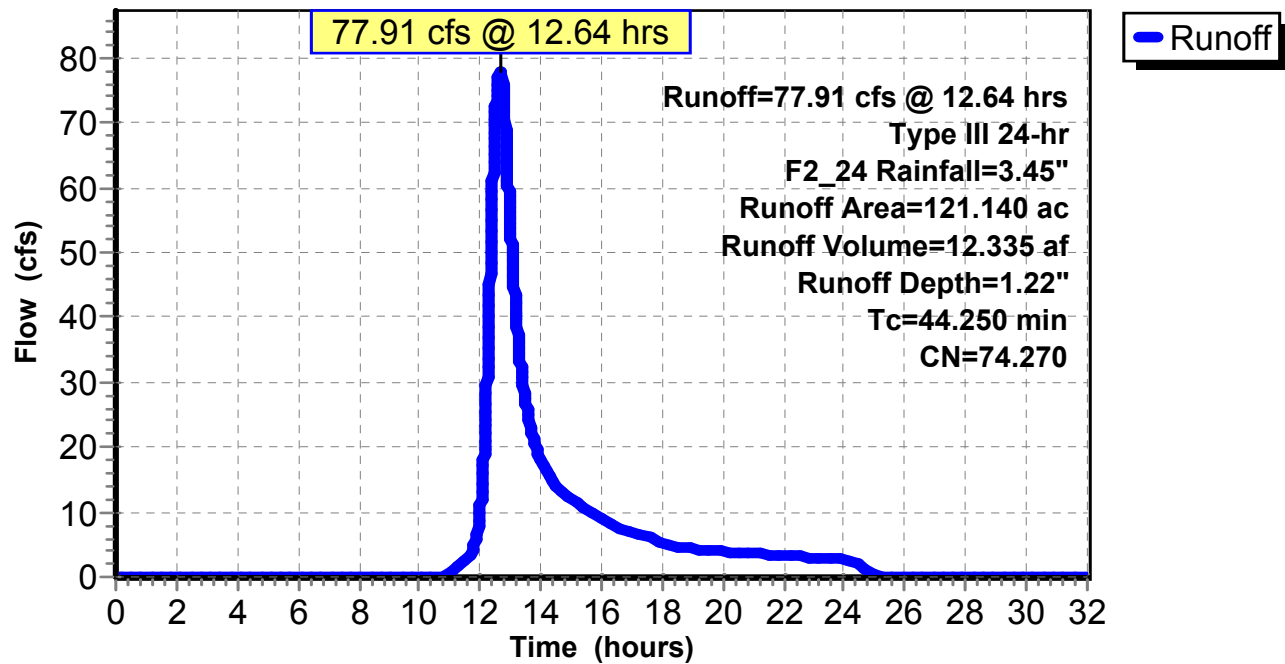
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



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Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Subcatchment G: WS G

Runoff = 172.12 cfs @ 12.51 hrs, Volume= 23.680 af, Depth= 1.70"

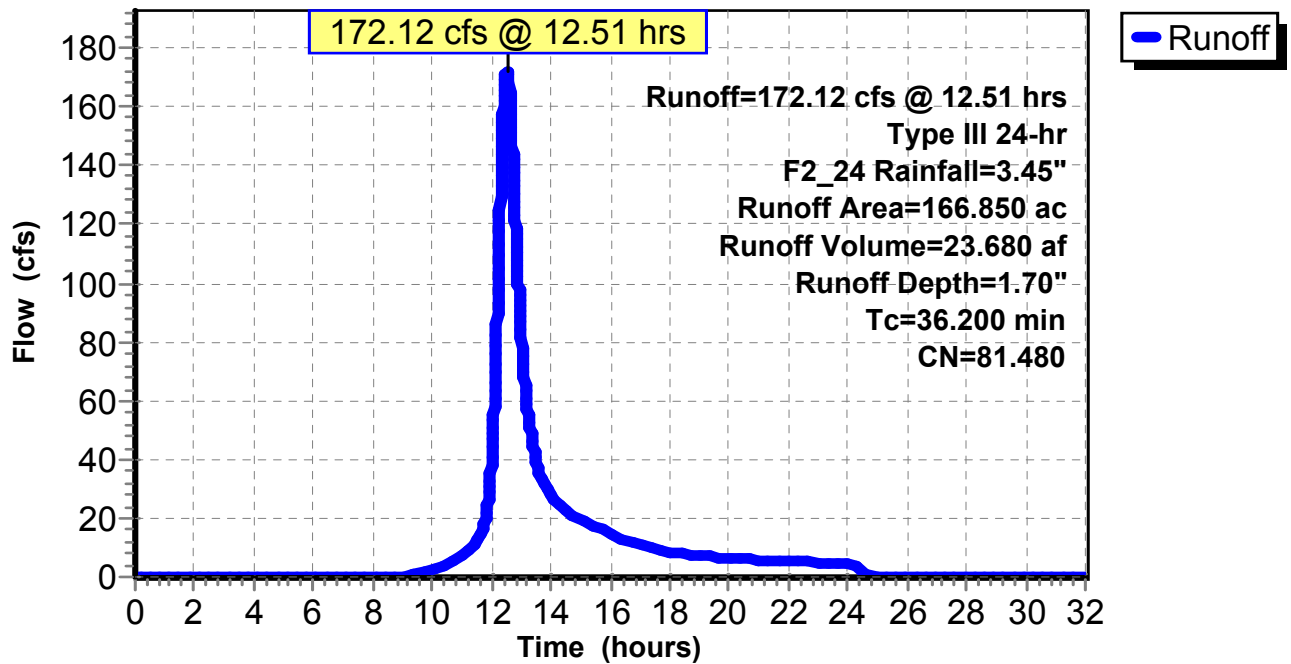
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



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Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 1.19" for F2_24 event
Inflow = 91.33 cfs @ 13.53 hrs, Volume= 40.235 af
Outflow = 91.30 cfs @ 13.56 hrs, Volume= 40.174 af, Atten= 0%, Lag= 1.976 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.83 fps, Min. Travel Time= 2.967 min
Avg. Velocity = 1.47 fps, Avg. Travel Time= 5.723 min

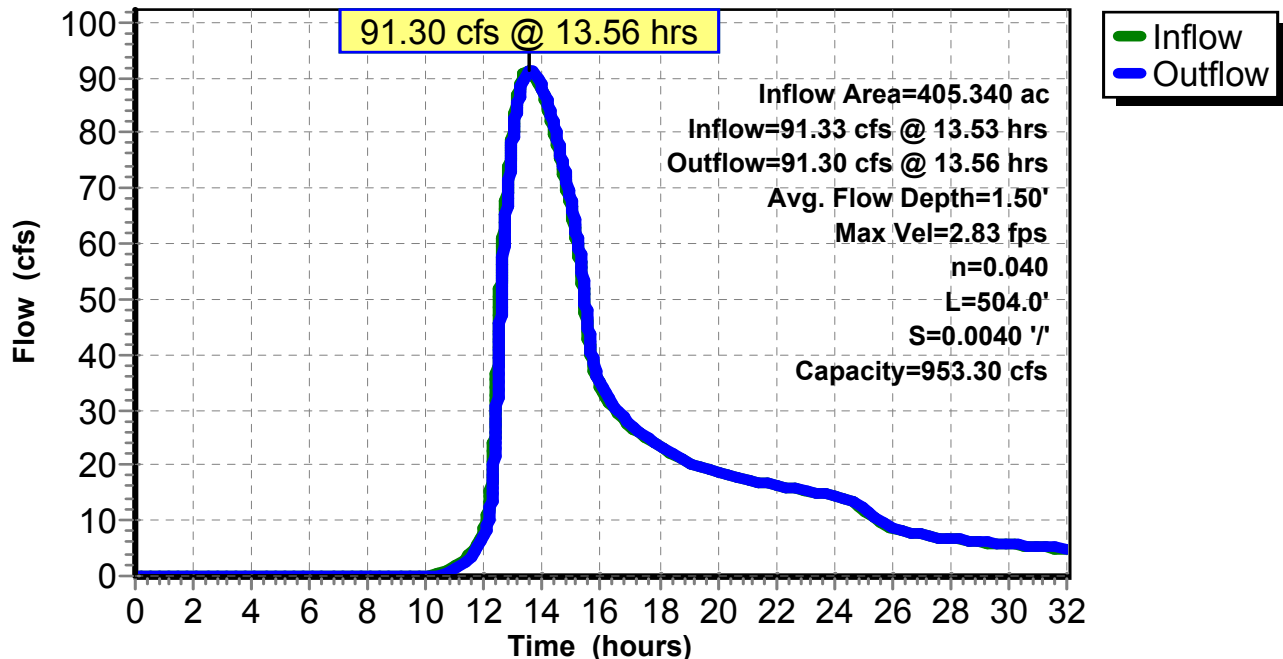
Peak Storage= 16,255 cf @ 13.56 hrs
Average Depth at Peak Storage= 1.50'
Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 ' ' Top Width= 32.00'
Length= 504.0' Slope= 0.0040 ' '
Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



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Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 1.22" for F2_24 event
Inflow = 77.40 cfs @ 12.66 hrs, Volume= 12.334 af
Outflow = 60.07 cfs @ 12.95 hrs, Volume= 12.308 af, Atten= 22%, Lag= 17.257 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.35 fps, Min. Travel Time= 26.976 min
Avg. Velocity = 0.46 fps, Avg. Travel Time= 78.913 min

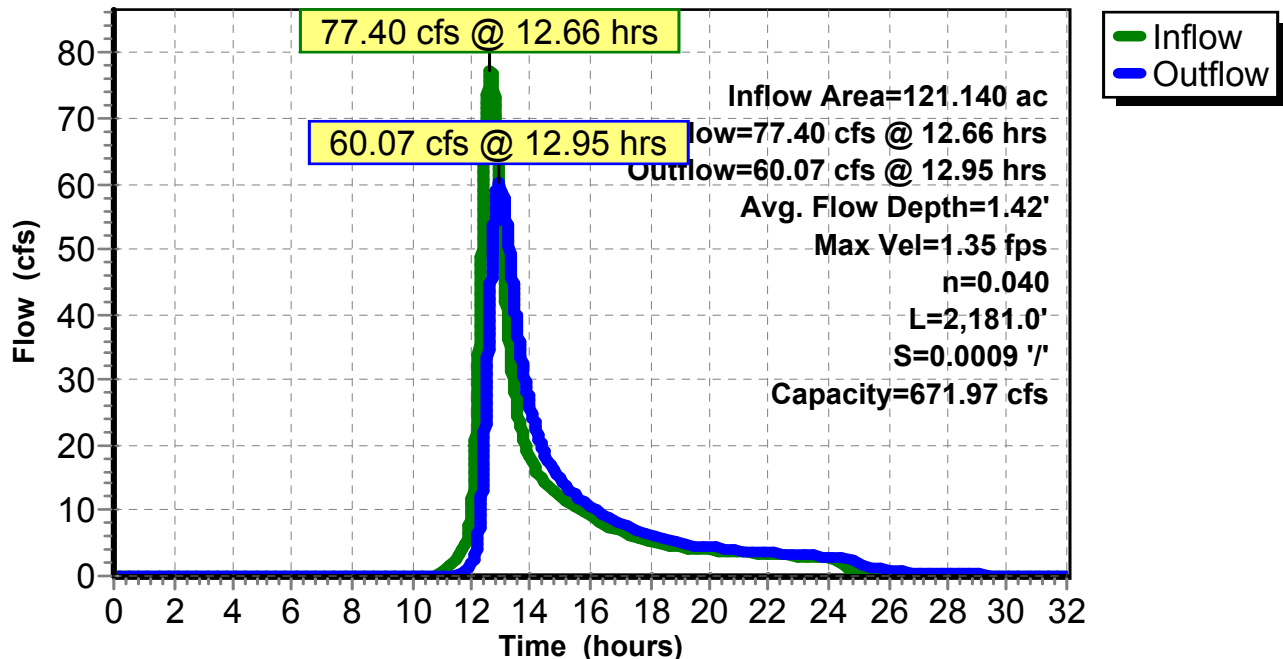
Peak Storage= 97,220 cf @ 12.95 hrs
Average Depth at Peak Storage= 1.42'
Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040
Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
Length= 2,181.0' Slope= 0.0009 ' / '
Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



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Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 1.57" for F2_24 event
Inflow = 168.82 cfs @ 12.57 hrs, Volume= 21.787 af
Outflow = 9.66 cfs @ 17.68 hrs, Volume= 12.241 af, Atten= 94%, Lag= 306.502 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2

Max. Velocity= 0.33 fps, Min. Travel Time= 1,119.307 min

Avg. Velocity = 0.29 fps, Avg. Travel Time= 1,258.649 min

Peak Storage= 648,566 cf @ 17.68 hrs

Average Depth at Peak Storage= 0.95'

Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040

Side Slope Z-value= 1.0 ' ' Top Width= 42.00'

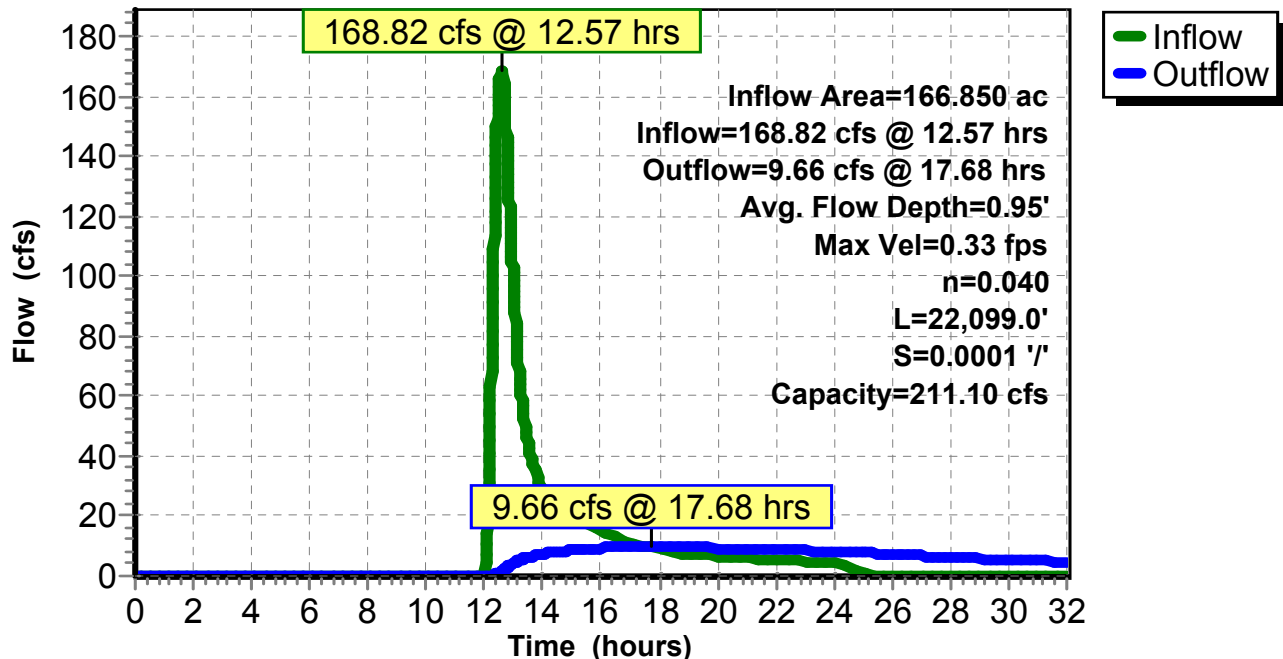
Length= 22,099.0' Slope= 0.0001 ' '

Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



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Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 1.20" for F2_24 event
Inflow = 97.79 cfs @ 13.61 hrs, Volume= 44.480 af
Outflow = 97.50 cfs @ 13.74 hrs, Volume= 44.281 af, Atten= 0%, Lag= 7.529 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.83 fps, Min. Travel Time= 10.290 min
Avg. Velocity = 2.71 fps, Avg. Travel Time= 18.312 min

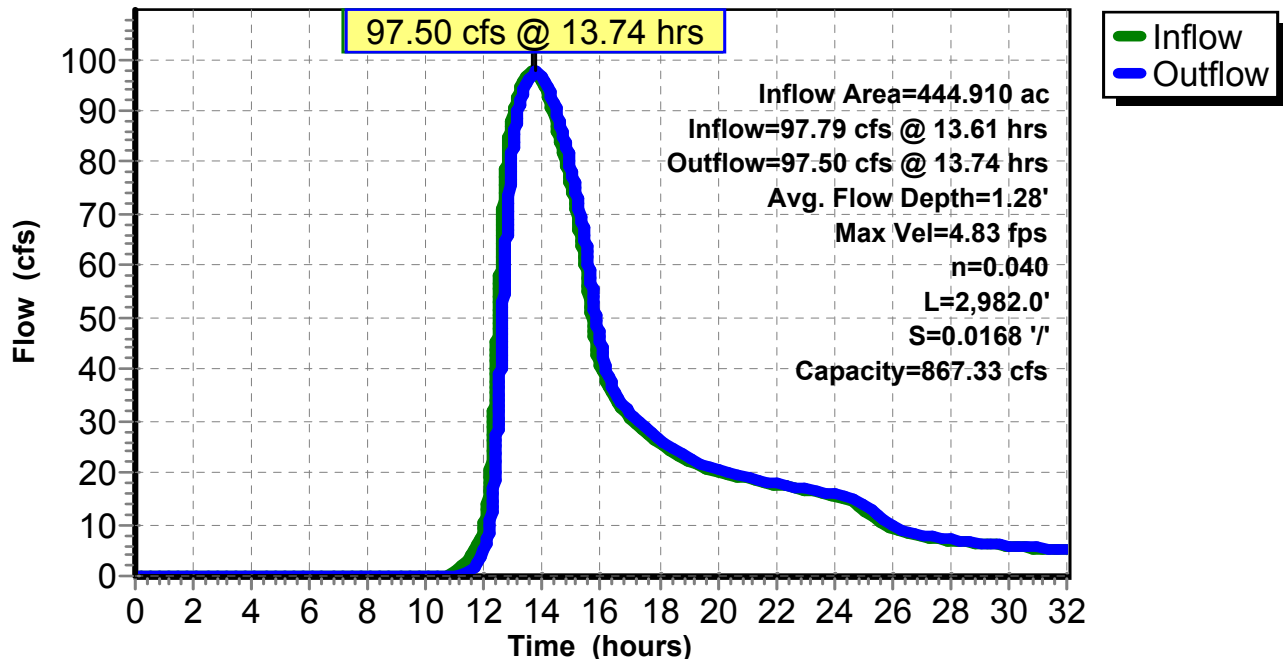
Peak Storage= 60,198 cf @ 13.74 hrs
Average Depth at Peak Storage= 1.28'
Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040
Side Slope Z-value= 3.0 '/ Top Width= 36.00'
Length= 2,982.0' Slope= 0.0168 '/
Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



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Avon PR
Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 1.31" for F2_24 event
Inflow = 169.72 cfs @ 12.83 hrs, Volume= 61.245 af
Outflow = 169.66 cfs @ 12.84 hrs, Volume= 61.218 af, Atten= 0%, Lag= 0.636 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2

Max. Velocity= 7.21 fps, Min. Travel Time= 1.006 min

Avg. Velocity = 3.27 fps, Avg. Travel Time= 2.216 min

Peak Storage= 10,241 cf @ 12.84 hrs

Average Depth at Peak Storage= 1.11'

Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040

Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'

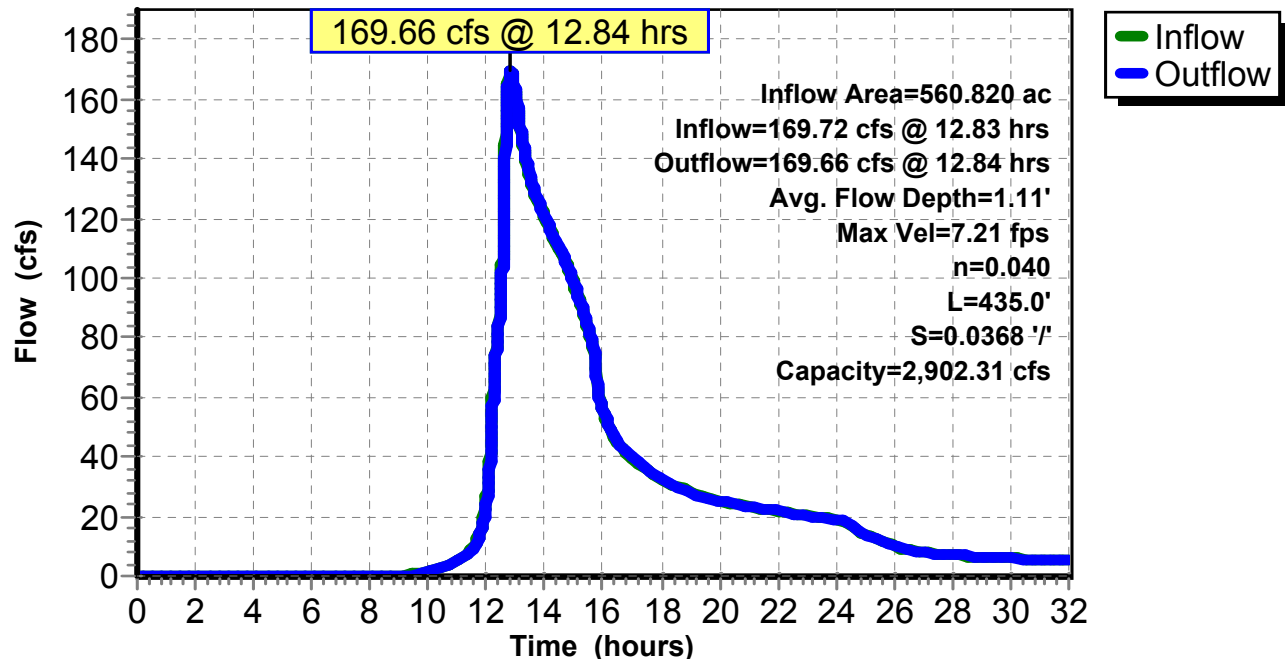
Length= 435.0' Slope= 0.0368 ' / '

Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



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Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 1.33" for F2_24 event
 Inflow = 177.64 cfs @ 12.82 hrs, Volume= 64.406 af
 Outflow = 177.64 cfs @ 12.82 hrs, Volume= 64.405 af, Atten= 0%, Lag= 0.065 min
 Primary = 177.64 cfs @ 12.82 hrs, Volume= 64.405 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 67.18' @ 12.82 hrs Surf.Area= 0.003 ac Storage= 0.002 af

Plug-Flow detention time= 0.017 min calculated for 64.405 af (100% of inflow)
 Center-of-Mass det. time= 0.004 min (996.786 - 996.783)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

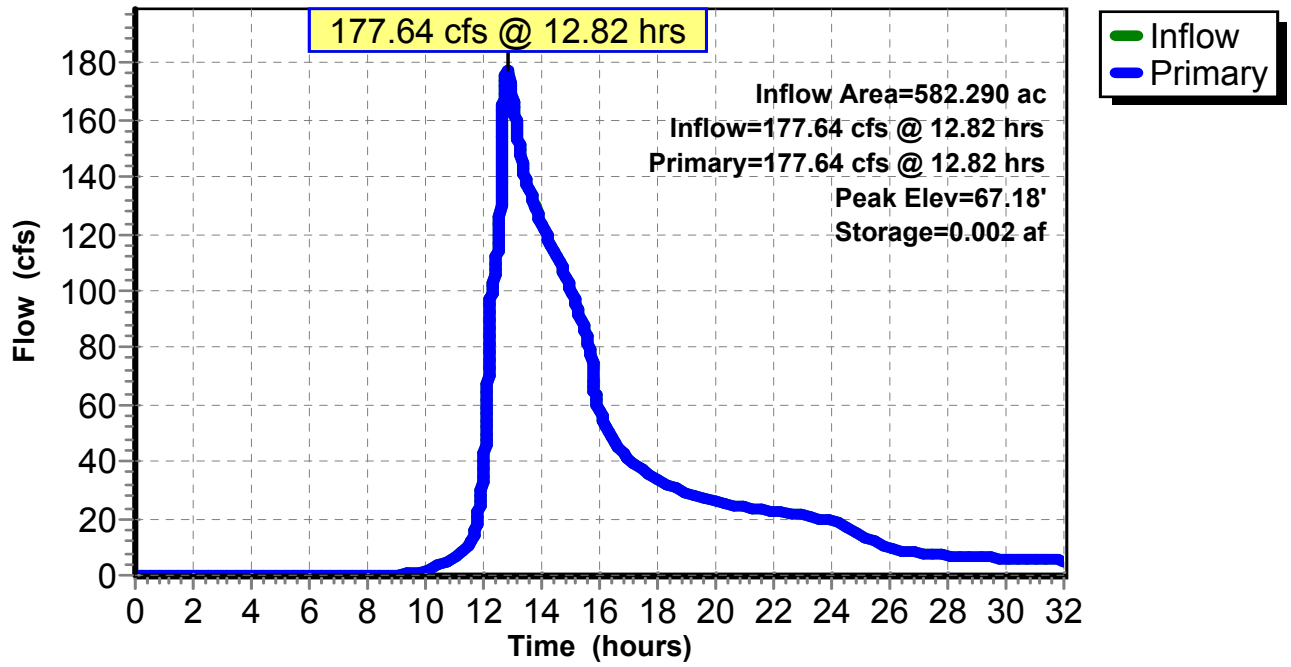
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=177.64 cfs @ 12.82 hrs HW=67.18' TW=62.14' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 177.54 cfs @ 9.04 fps)
- 2=Culvert 2 (Inlet Controls 0.09 cfs @ 1.06 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



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Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 1.20" for F2_24 event
Inflow = 98.42 cfs @ 13.43 hrs, Volume= 44.597 af
Outflow = 97.79 cfs @ 13.61 hrs, Volume= 44.480 af, Atten= 1%, Lag= 10.956 min
Primary = 97.79 cfs @ 13.61 hrs, Volume= 44.480 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 129.05' @ 13.61 hrs Surf.Area= 0.735 ac Storage= 1.290 af

Plug-Flow detention time= 10.480 min calculated for 44.467 af (100% of inflow)
Center-of-Mass det. time= 8.185 min (1,041.938 - 1,033.754)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

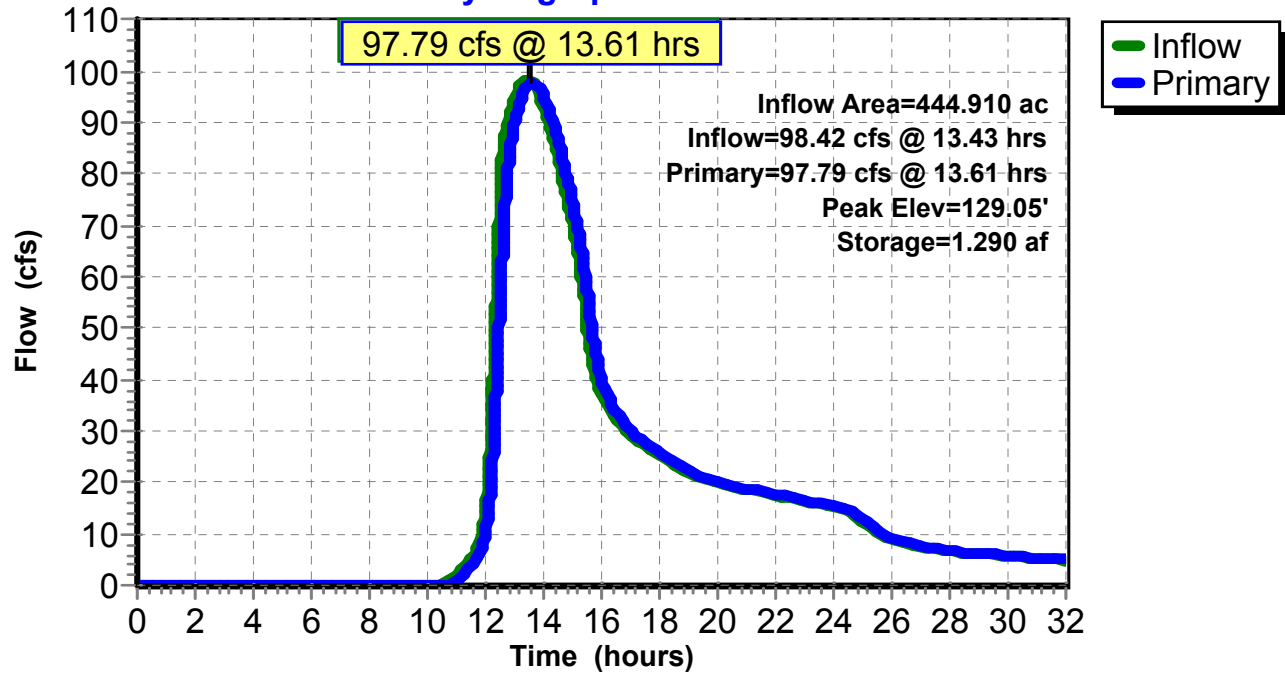
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=97.79 cfs @ 13.61 hrs HW=129.05' TW=127.27' (Dynamic Tailwater)

1=Culvert (Barrel Controls 97.79 cfs @ 6.58 fps)
2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 4A: DP 4 A ARGYLE

Hydrograph



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Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 1.20" for F2_24 event
 Inflow = 147.36 cfs @ 12.92 hrs, Volume= 40.385 af
 Outflow = 91.33 cfs @ 13.53 hrs, Volume= 40.235 af, Atten= 38%, Lag= 36.615 min
 Primary = 91.33 cfs @ 13.53 hrs, Volume= 40.235 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 130.87' @ 13.53 hrs Surf.Area= 7.944 ac Storage= 4.776 af

Plug-Flow detention time= 22.389 min calculated for 40.235 af (100% of inflow)
 Center-of-Mass det. time= 19.098 min (1,048.113 - 1,029.015)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

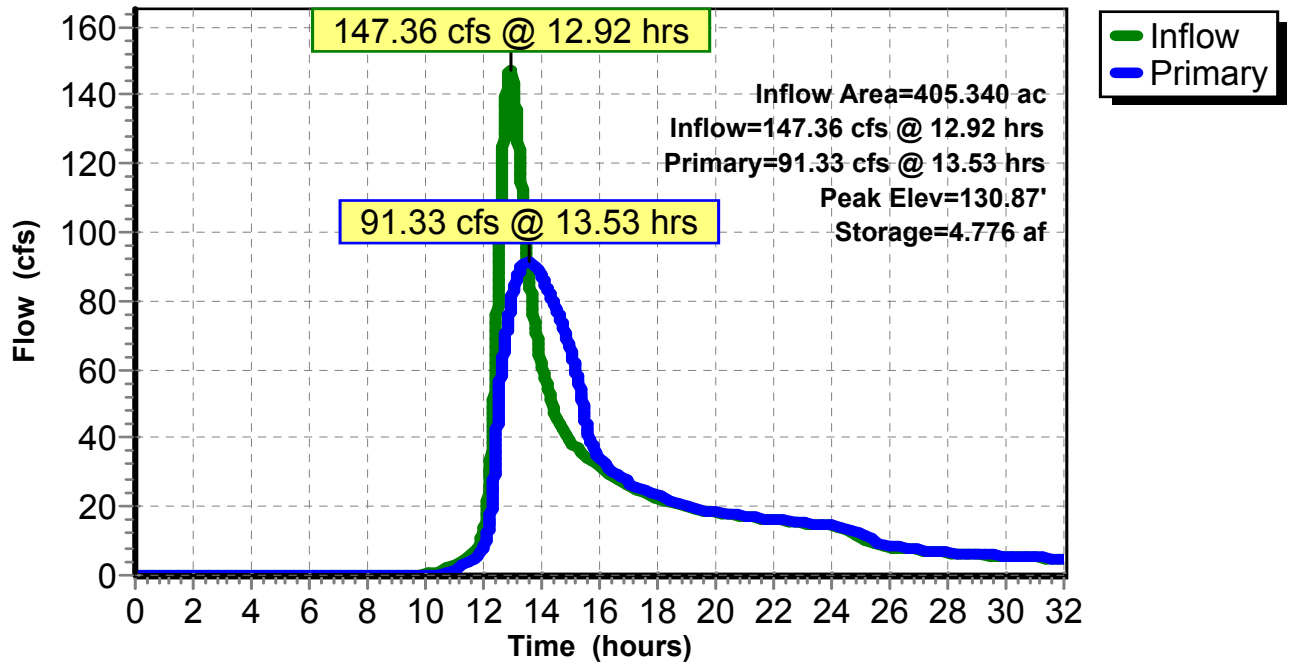
Primary OutFlow Max=91.33 cfs @ 13.53 hrs HW=130.87' TW=129.50' (Dynamic Tailwater)

1=Culvert (Barrel Controls 91.33 cfs @ 6.64 fps)

2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 5P: DP 5 BETSY BROWN ROAD

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Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 1.31" for F2_24 event
Inflow = 170.71 cfs @ 12.77 hrs, Volume= 61.245 af
Outflow = 169.72 cfs @ 12.83 hrs, Volume= 61.245 af, Atten= 1%, Lag= 3.326 min
Primary = 169.72 cfs @ 12.83 hrs, Volume= 61.245 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 90.69' @ 12.83 hrs Surf.Area= 1.370 ac Storage= 0.946 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.043 min (1,003.581 - 1,001.538)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

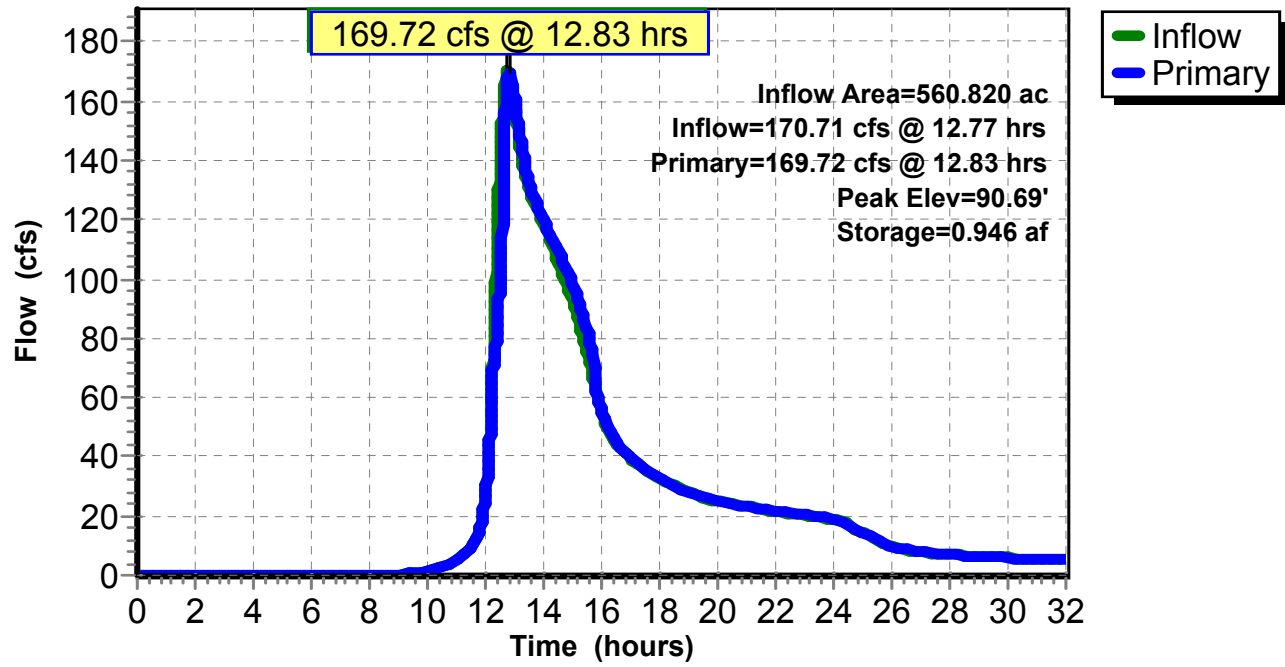
Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=169.71 cfs @ 12.83 hrs HW=90.69' TW=77.11' (Dynamic Tailwater)

1=Sharp-Crested Rectangular Weir(Weir Controls 128.72 cfs @ 4.78 fps)
2=Sharp-Crested Rectangular Weir(Weir Controls 40.98 cfs @ 1.50 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



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Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 1.52" for F2_24 event
 Inflow = 311.12 cfs @ 12.46 hrs, Volume= 90.654 af
 Outflow = 311.06 cfs @ 12.46 hrs, Volume= 88.964 af, Atten= 0%, Lag= 0.146 min
 Primary = 311.06 cfs @ 12.46 hrs, Volume= 88.964 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 40.04' @ 12.46 hrs Surf.Area= 0.851 ac Storage= 1.720 af

Plug-Flow detention time= 23.755 min calculated for 88.964 af (98% of inflow)
 Center-of-Mass det. time= 7.415 min (954.870 - 947.455)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

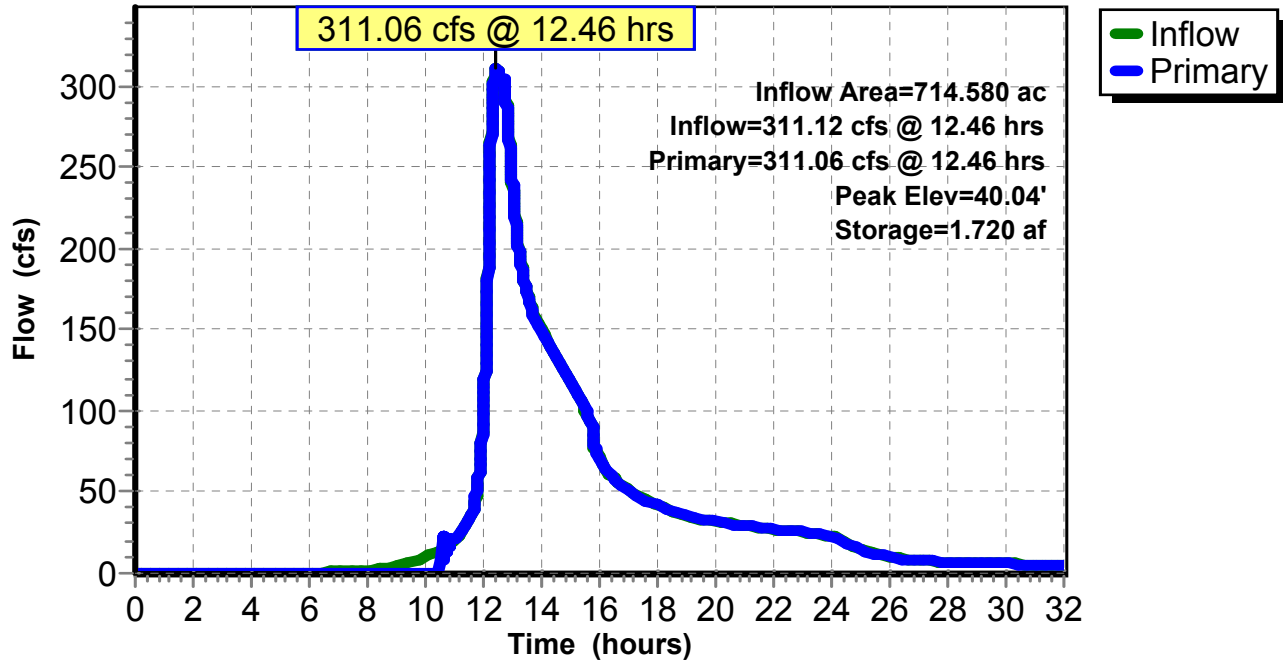
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=311.02 cfs @ 12.46 hrs HW=40.04' TW=40.00' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 126.64 cfs @ 0.92 fps)
- 2=WEIR BOWMAN (Weir Controls 184.38 cfs @ 0.72 fps)

Pond 8P: BOWMAN FIELDS

Hydrograph



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Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 1.22" for F2_24 event
Inflow = 77.91 cfs @ 12.64 hrs, Volume= 12.335 af
Outflow = 77.40 cfs @ 12.66 hrs, Volume= 12.334 af, Atten= 1%, Lag= 1.078 min
Primary = 77.40 cfs @ 12.66 hrs, Volume= 12.334 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 133.08' @ 12.70 hrs Surf.Area= 0.052 ac Storage= 0.039 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.098 min (892.177 - 892.079)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

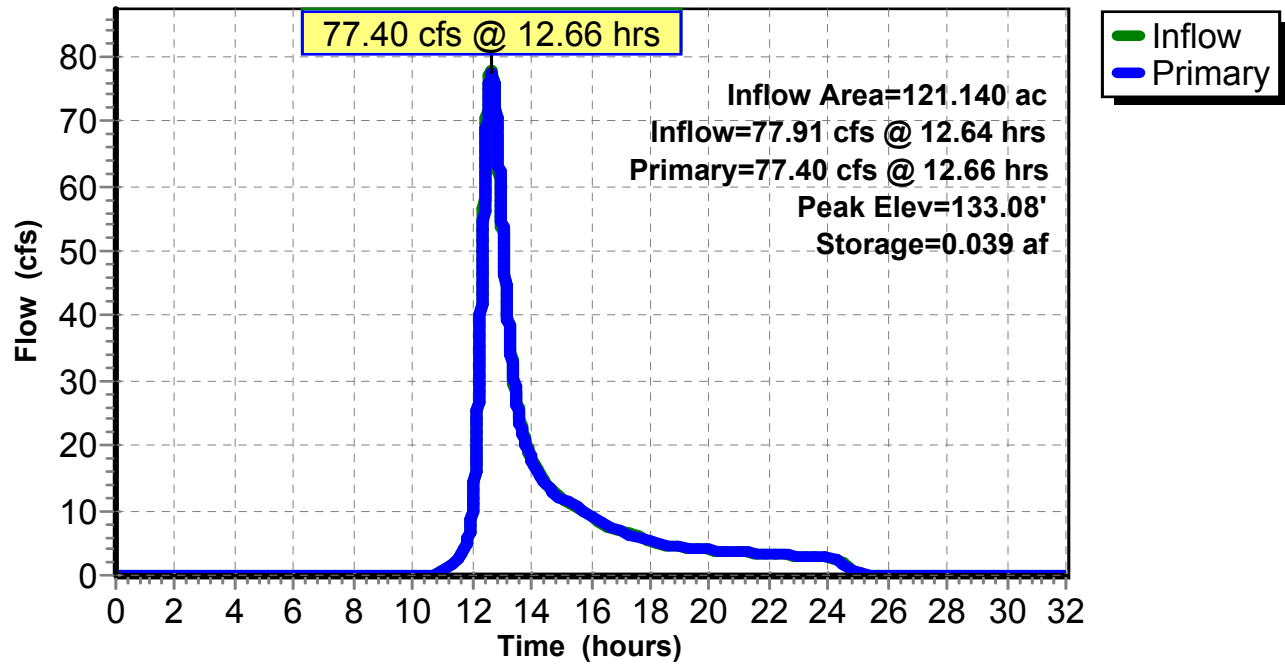
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=77.39 cfs @ 12.66 hrs HW=133.07' TW=131.18' (Dynamic Tailwater)

1=Culvert (Inlet Controls 46.74 cfs @ 6.61 fps)
2=Sharp-Crested Rectangular Weir (Weir Controls 30.65 cfs @ 4.17 fps)
3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Hydrograph



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Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 1.70" for F2_24 event
 Inflow = 172.12 cfs @ 12.51 hrs, Volume= 23.680 af
 Outflow = 168.82 cfs @ 12.57 hrs, Volume= 21.787 af, Atten= 2%, Lag= 3.638 min
 Primary = 168.82 cfs @ 12.57 hrs, Volume= 21.787 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.33' @ 12.57 hrs Surf.Area= 3.614 ac Storage= 5.973 af (3.005 af above start)

Plug-Flow detention time= 126.747 min calculated for 18.820 af (79% of inflow)
 Center-of-Mass det. time= 23.680 min (886.000 - 862.320)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

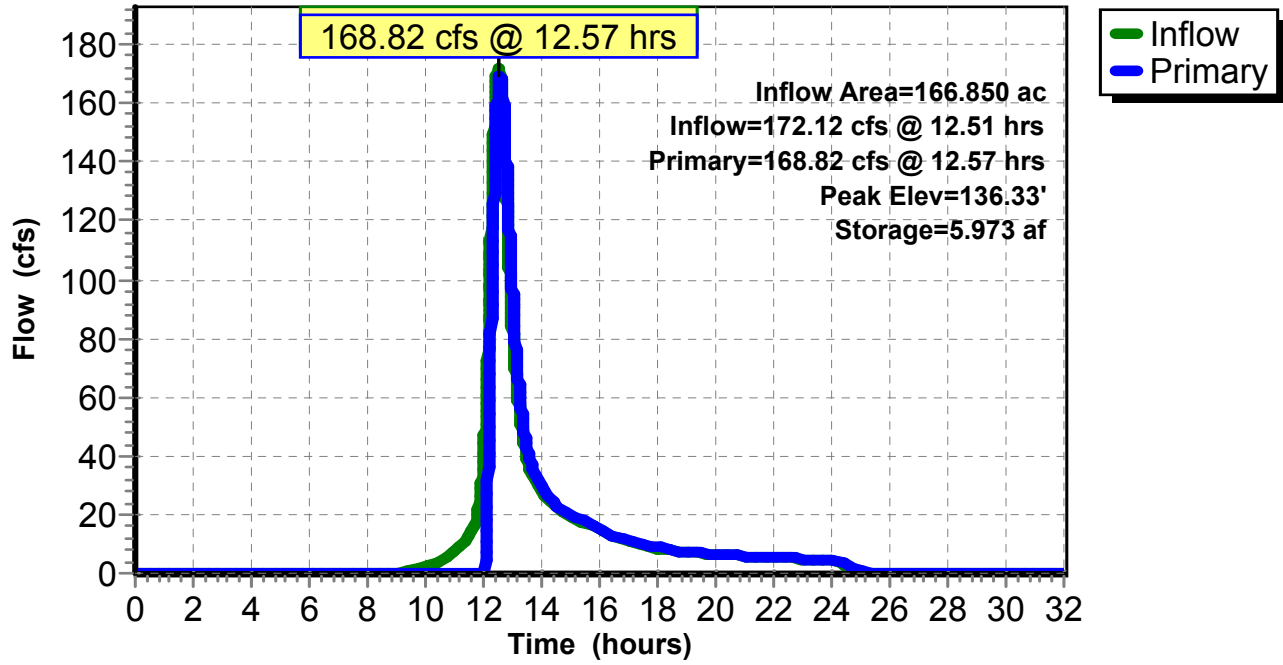
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=168.81 cfs @ 12.57 hrs HW=136.33' TW=130.27' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 0.83 cfs @ 1.96 fps)
- 2=Asymmetrical Weir (Weir Controls 167.98 cfs @ 1.73 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Hydrograph



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Summary for Pond 24P: RAINSTORE WHOLE FIELD

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 39.00' @ 0.00 hrs Surf.Area= 209,016 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	39.00'	2,608,520 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 2,717,208 cf Overall x 96.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
39.00	209,016	0	0
52.00	209,016	2,717,208	2,717,208

Device	Routing	Invert	Outlet Devices
#1	Secondary	40.00'	26.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Discarded	39.00'	2.000 in/hr Exfiltration over Surface area
#3	Primary	39.00'	42.0" Vert. Orifice/Grate X 2.00 C= 0.600

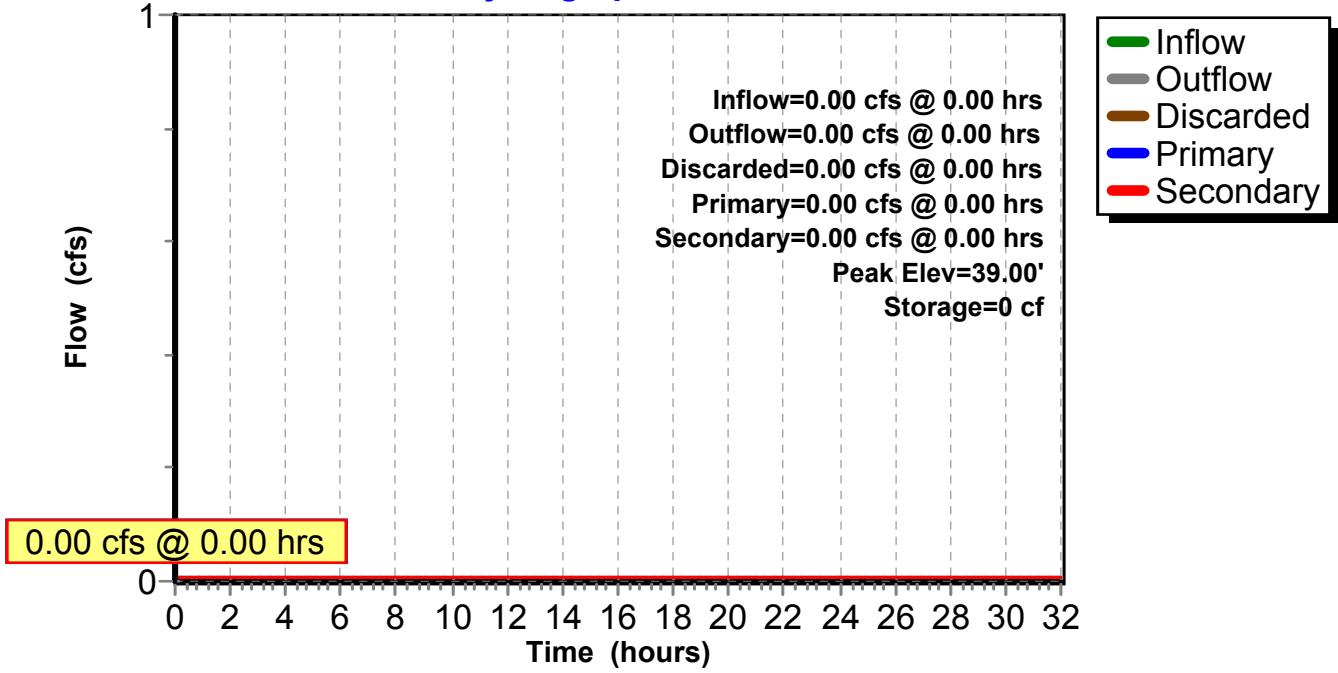
Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=39.00' (Free Discharge)
↑2=Exfiltration (Passes 0.00 cfs of 9.68 cfs potential flow)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=39.00' TW=0.00' (Dynamic Tailwater)
↑3=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=39.00' TW=0.00' (Dynamic Tailwater)
↑1=Sharp-Crested Rectangular Weir(Controls 0.00 cfs)

Pond 24P: RAINSTORE WHOLE FIELD

Hydrograph



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Summary for Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 1.42" for F2_24 event
Inflow = 233.34 cfs @ 12.72 hrs, Volume= 77.334 af
Outflow = 233.34 cfs @ 12.72 hrs, Volume= 77.334 af, Atten= 0%, Lag= 0.000 min
Primary = 199.31 cfs @ 12.72 hrs, Volume= 73.593 af
Secondary = 34.04 cfs @ 12.72 hrs, Volume= 3.741 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 42.53' @ 12.72 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 110.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0009 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48
#3	Secondary	40.25'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 40.25' / 39.75' S= 0.0037 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf

Primary OutFlow Max=199.29 cfs @ 12.72 hrs HW=42.53' TW=0.00' (Dynamic Tailwater)

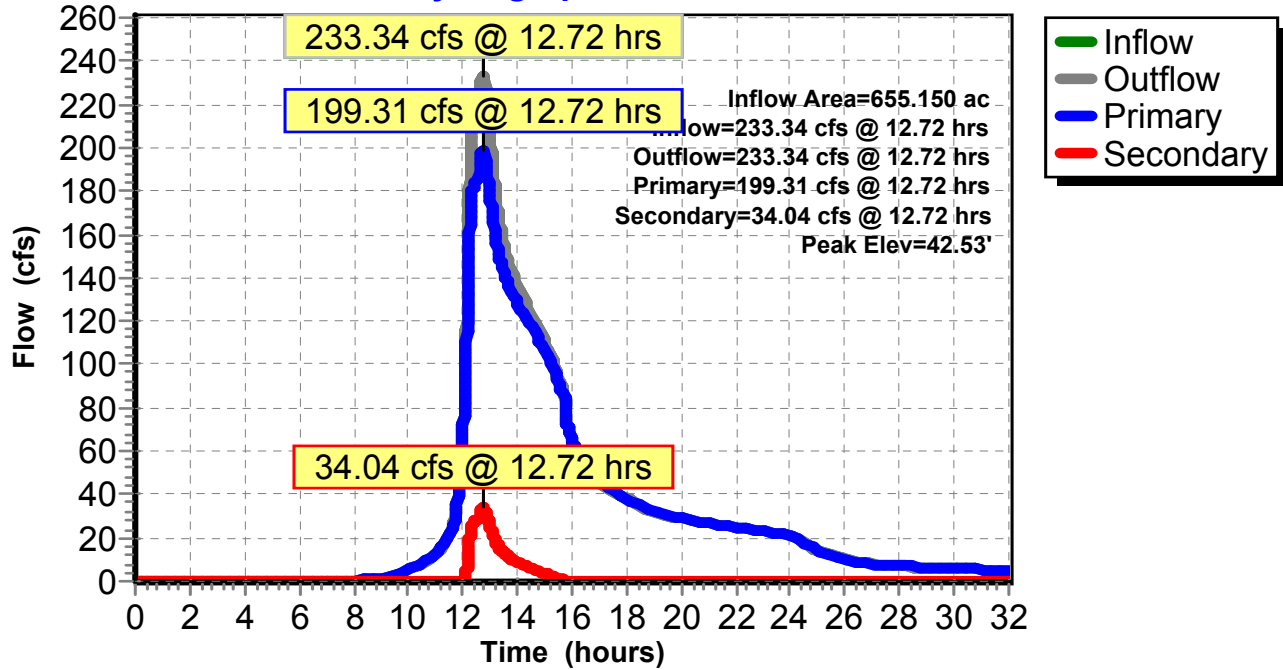
↑1=Culvert (Barrel Controls 199.29 cfs @ 6.91 fps)
↑2=WEIR WESTCH AVE (Controls 0.00 cfs)

Secondary OutFlow Max=34.03 cfs @ 12.72 hrs HW=42.53' TW=0.00' (Dynamic Tailwater)

↑3=Culvert (Barrel Controls 34.03 cfs @ 5.72 fps)

Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

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Summary for Pond 41P: UPSTREAM AVON

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 1.33" for F2_24 event
 Inflow = 177.64 cfs @ 12.82 hrs, Volume= 64.405 af
 Outflow = 177.44 cfs @ 12.84 hrs, Volume= 64.404 af, Atten= 0%, Lag= 1.283 min
 Primary = 177.44 cfs @ 12.84 hrs, Volume= 64.404 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 62.15' @ 12.84 hrs Surf.Area= 1,543 sf Storage= 5,405 cf

Plug-Flow detention time= 0.334 min calculated for 64.404 af (100% of inflow)
 Center-of-Mass det. time= 0.327 min (997.114 - 996.786)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	83,358 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686
70.00	10,112	40,448	63,134
72.00	10,112	20,224	83,358

Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert L= 947.0' Ke= 0.700 Inlet / Outlet Invert= 55.13' / 37.90' S= 0.0182 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Tertiary	65.00'	14.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Secondary	63.50'	12.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

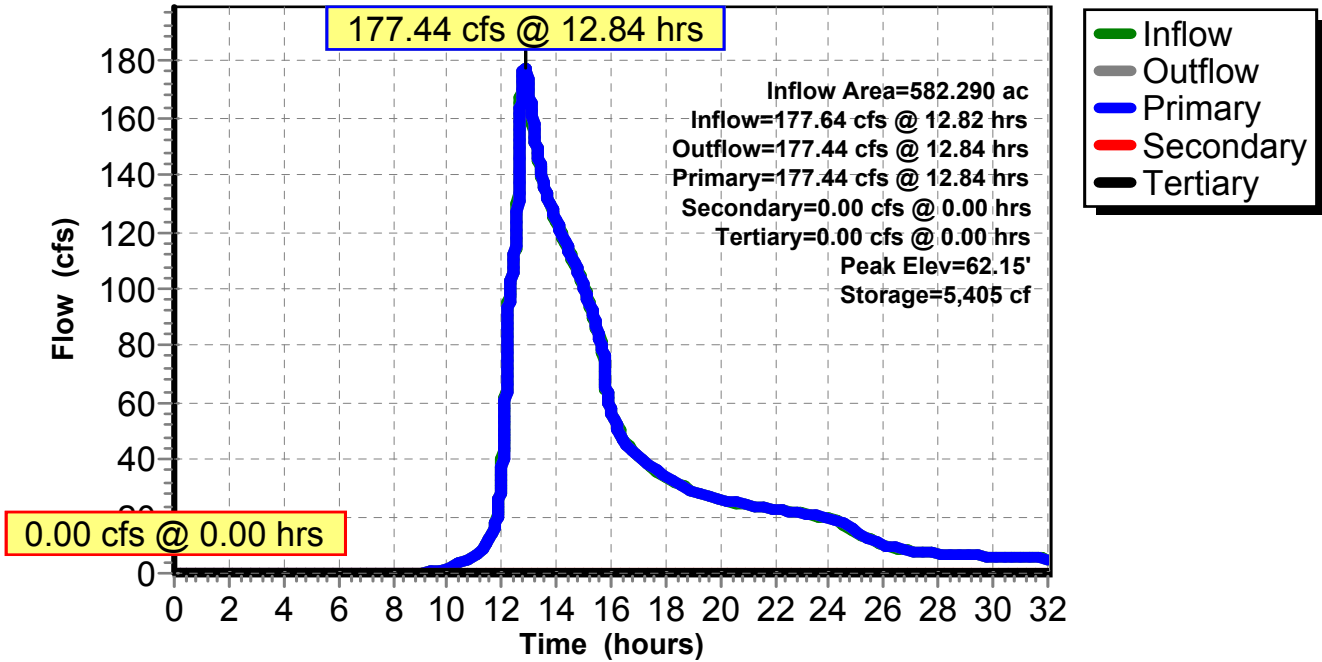
Primary OutFlow Max=177.43 cfs @ 12.84 hrs HW=62.15' TW=0.00' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 177.43 cfs @ 9.04 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=56.00' TW=55.13' (Dynamic Tailwater)
 ↑3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=56.00' TW=55.13' (Dynamic Tailwater)
 ↑2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 41P: UPSTREAM AVON

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Summary for Pond 42P: CHAMBER

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

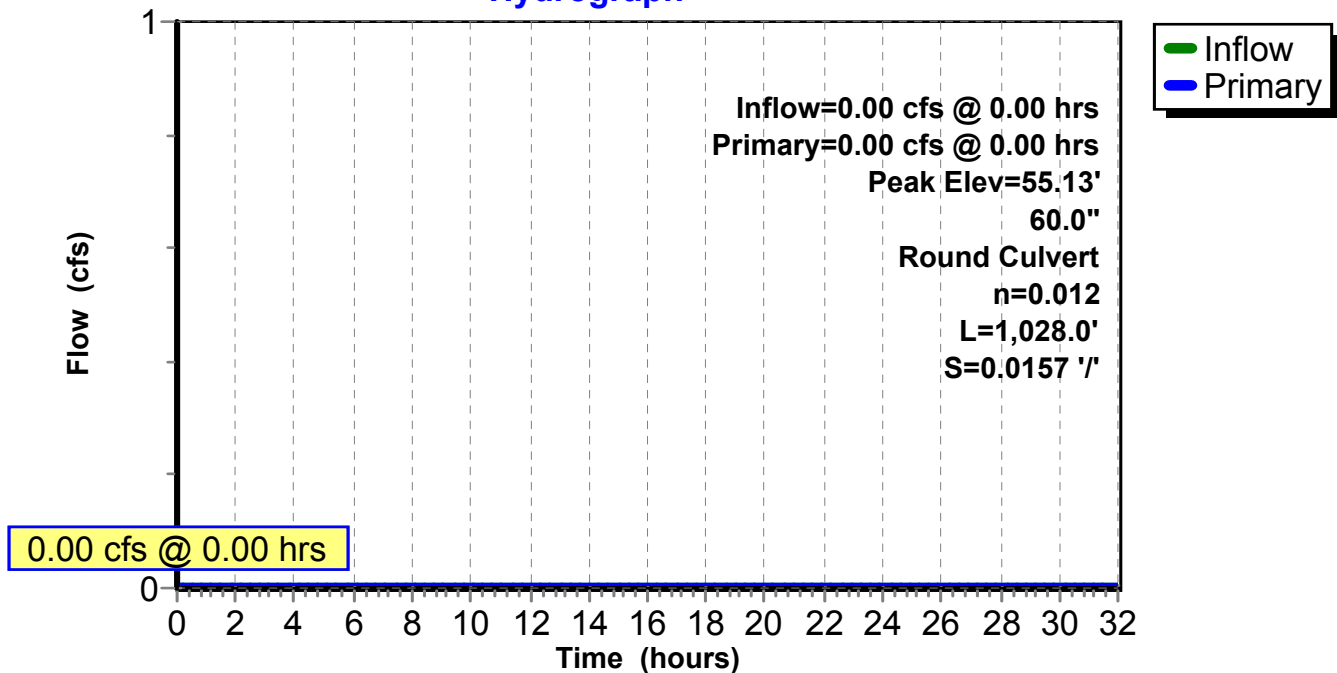
Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 55.13' @ 0.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert L= 1,028.0' Ke= 0.250 Inlet / Outlet Invert= 55.13' / 39.00' S= 0.0157 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=55.13' TW=0.00' (Dynamic Tailwater)
↑1=Culvert (Controls 0.00 cfs)

Pond 42P: CHAMBER

Hydrograph



Avon_Working_Model_10

Prepared by

HydroCAD® 10.00-16 s/n M16359 © 2015 HydroCAD Software Solutions LLC

Avon PR
Type III 24-hr F2_24 Rainfall=3.45"

Printed 5/29/2020

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Summary for Pond 43P: DUAL 60" CULVERTS

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

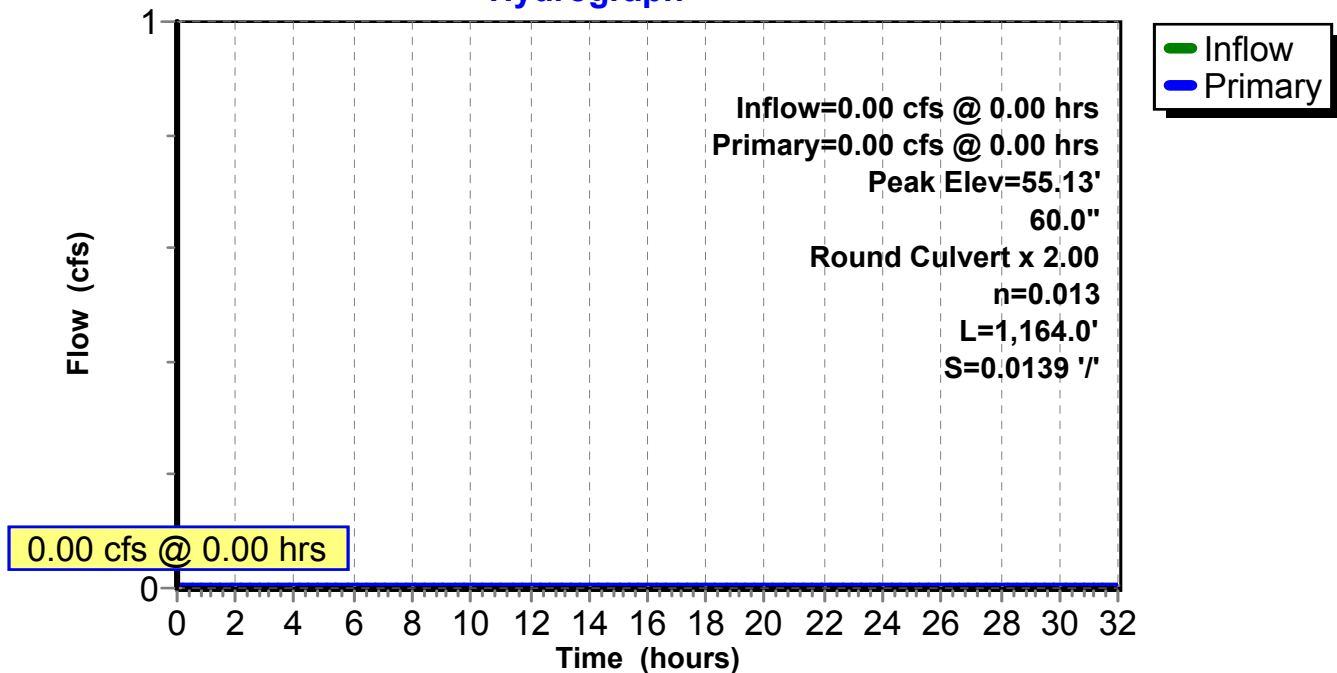
Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 55.13' @ 0.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert X 2.00 L= 1,164.0' Ke= 0.500 Inlet / Outlet Invert= 55.13' / 39.00' S= 0.0139 '/ Cc= 0.900 n= 0.013, Flow Area= 19.63 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=55.13' TW=0.00' (Dynamic Tailwater)
↑1=Culvert (Controls 0.00 cfs)

Pond 43P: DUAL 60" CULVERTS

Hydrograph



Avon_Working_Model_10

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Avon PR
Type III 24-hr F2_24 Rainfall=3.45"

Printed 5/29/2020

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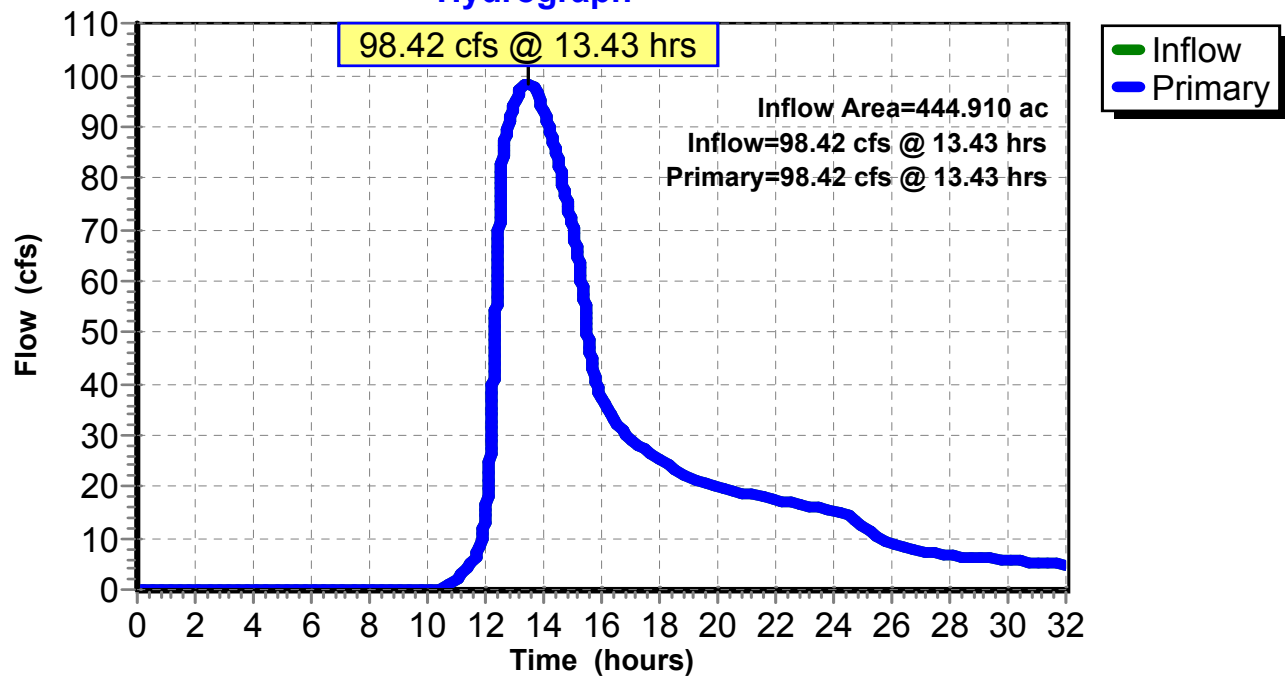
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 1.20" for F2_24 event
Inflow = 98.42 cfs @ 13.43 hrs, Volume= 44.597 af
Primary = 98.42 cfs @ 13.43 hrs, Volume= 44.597 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



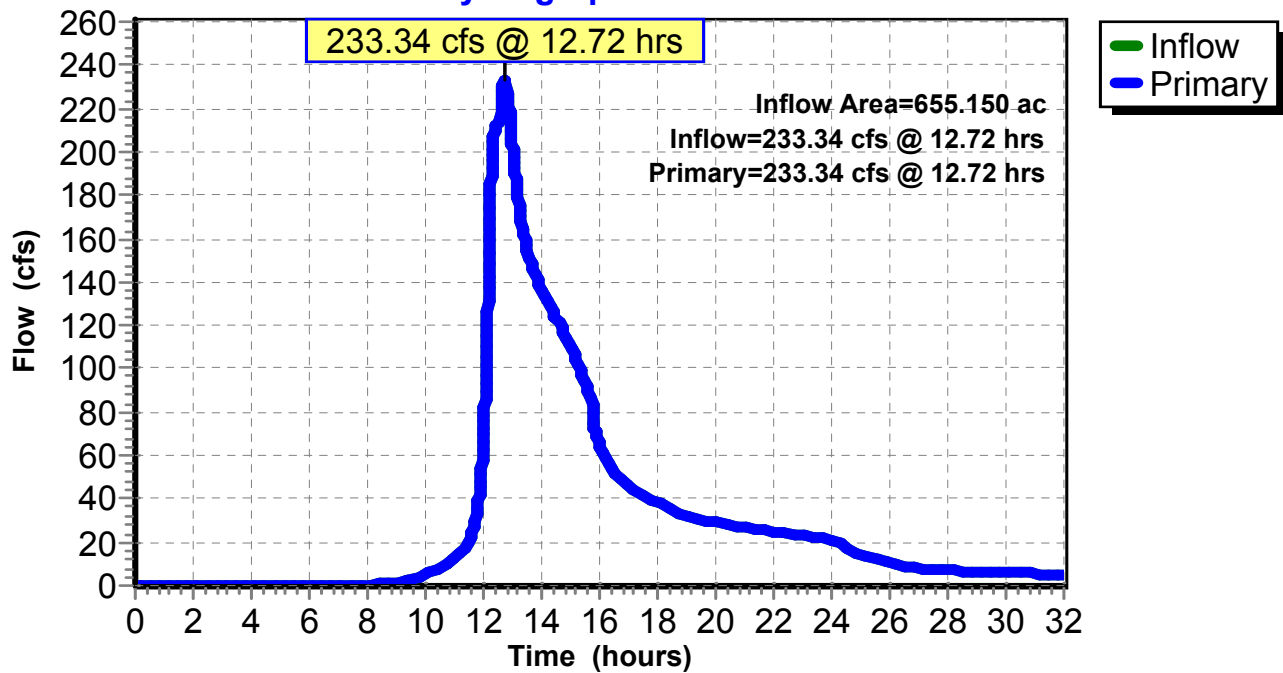
Summary for Link 33L: JUNCTION

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 1.42" for F2_24 event
Inflow = 233.34 cfs @ 12.72 hrs, Volume= 77.334 af
Primary = 233.34 cfs @ 12.72 hrs, Volume= 77.334 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 33L: JUNCTION

Hydrograph



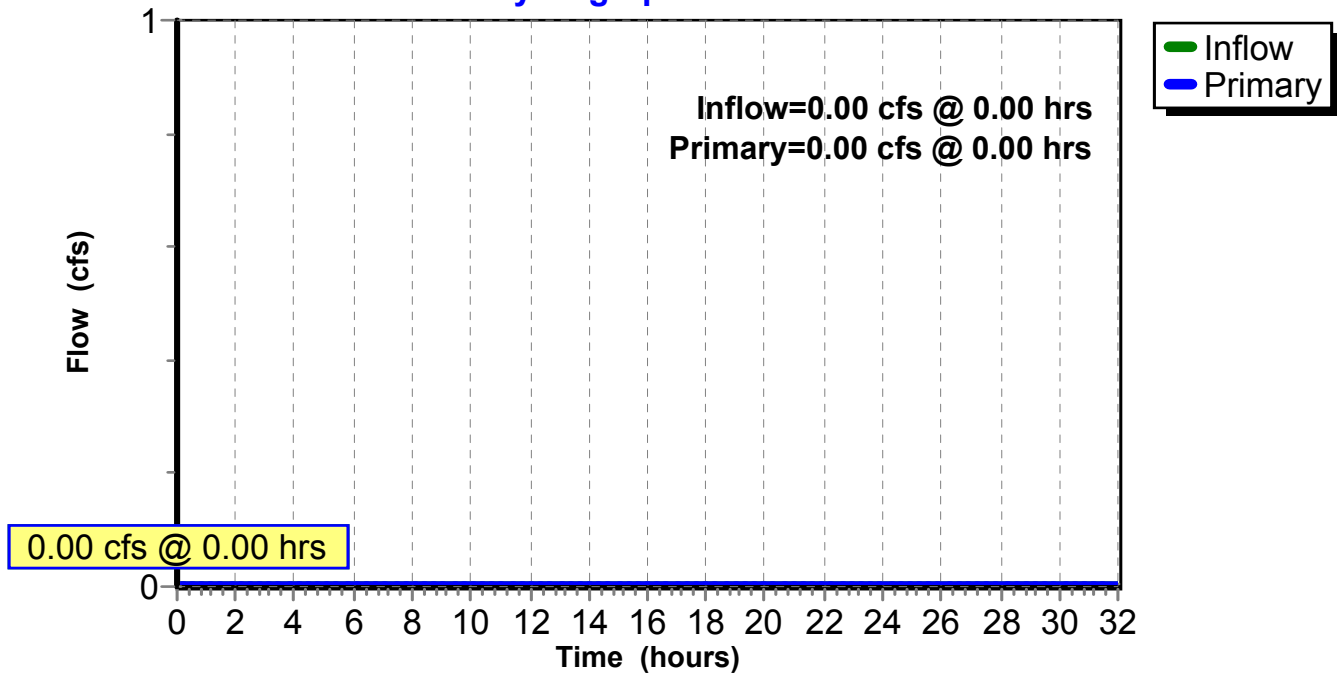
Summary for Link 36L: weir

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 36L: weir

Hydrograph



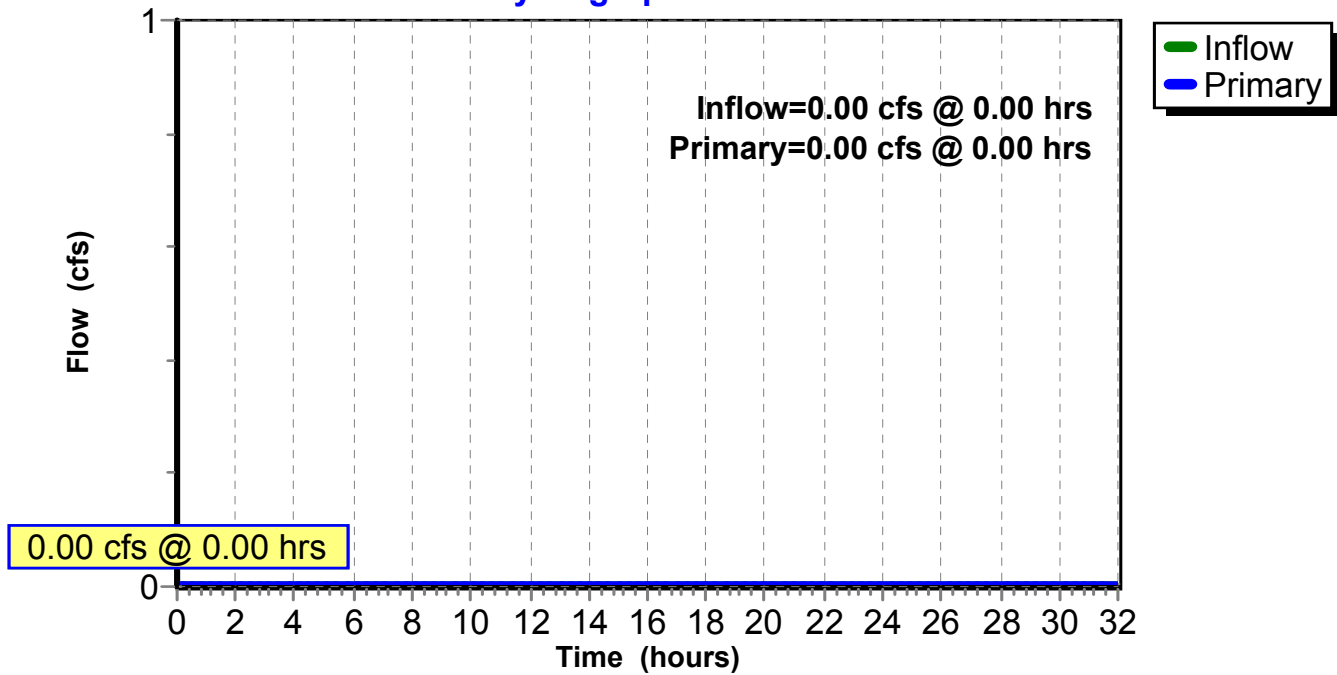
Summary for Link 37L: orifice

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 37L: orifice

Hydrograph



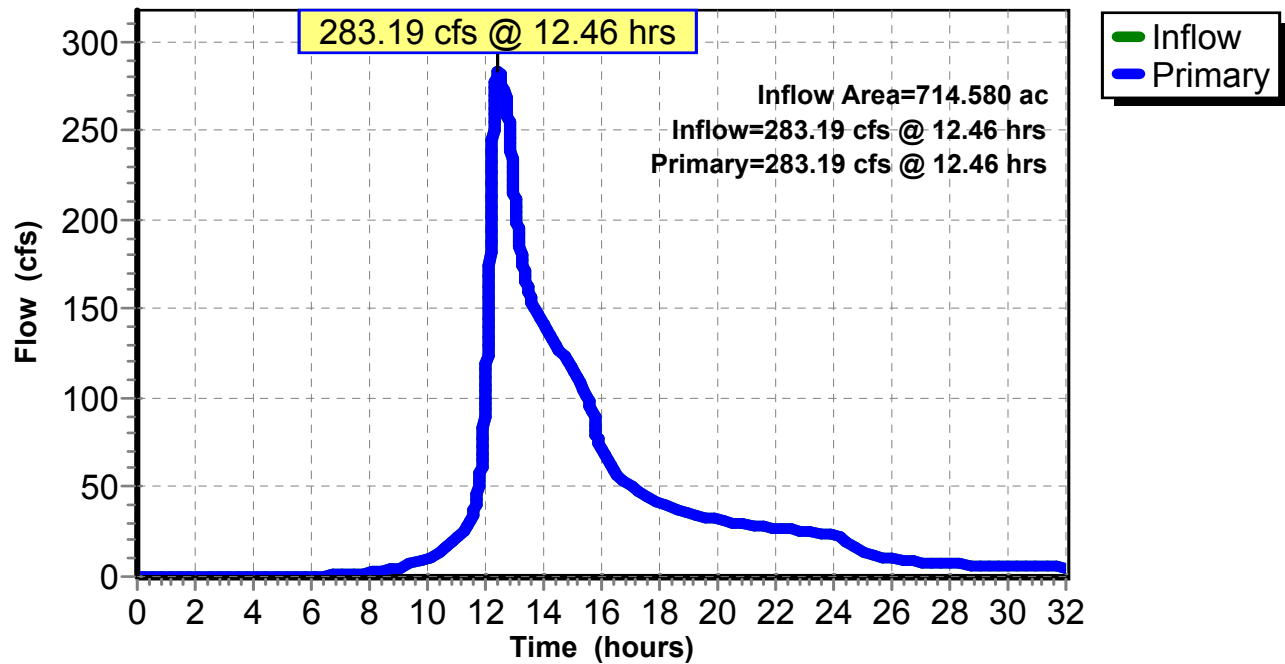
Summary for Link 38L: JUNCTION

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 1.46" for F2_24 event
Inflow = 283.19 cfs @ 12.46 hrs, Volume= 86.913 af
Primary = 283.19 cfs @ 12.46 hrs, Volume= 86.913 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 38L: JUNCTION

Hydrograph



Avon_Working_Model_10

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Avon PR
Type III 24-hr F2_24 Rainfall=3.45"

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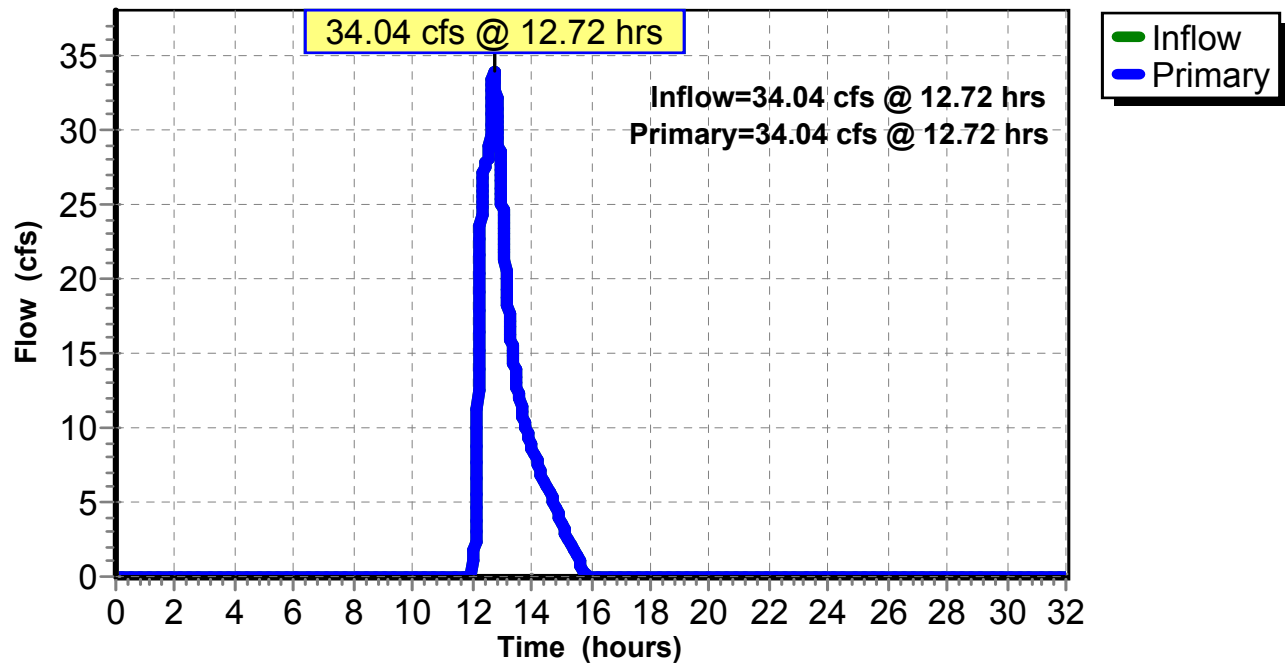
Summary for Link 41L: X

Inflow = 34.04 cfs @ 12.72 hrs, Volume= 3.741 af
Primary = 34.04 cfs @ 12.72 hrs, Volume= 3.741 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 41L: X

Hydrograph



Avon_Working_Model_10

Prepared by

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Avon PR
Type III 24-hr F2_24 Rainfall=3.45"

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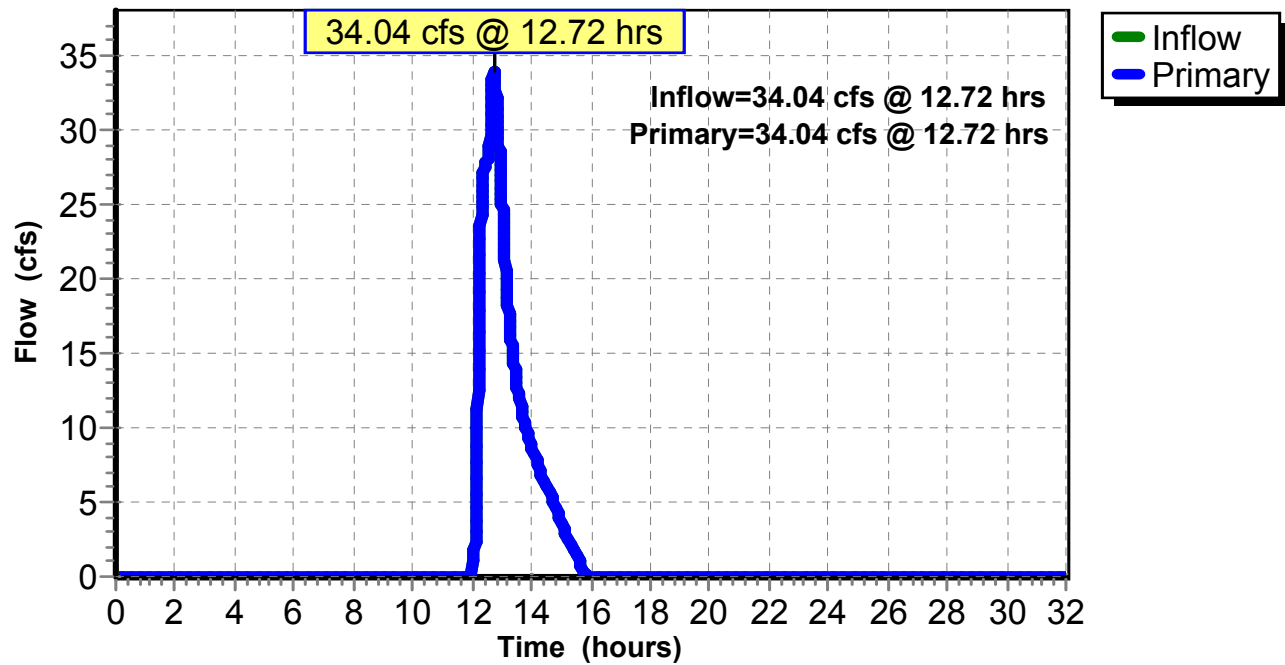
Summary for Link 42L: X

Inflow = 34.04 cfs @ 12.72 hrs, Volume= 3.741 af
Primary = 34.04 cfs @ 12.72 hrs, Volume= 3.741 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 42L: X

Hydrograph



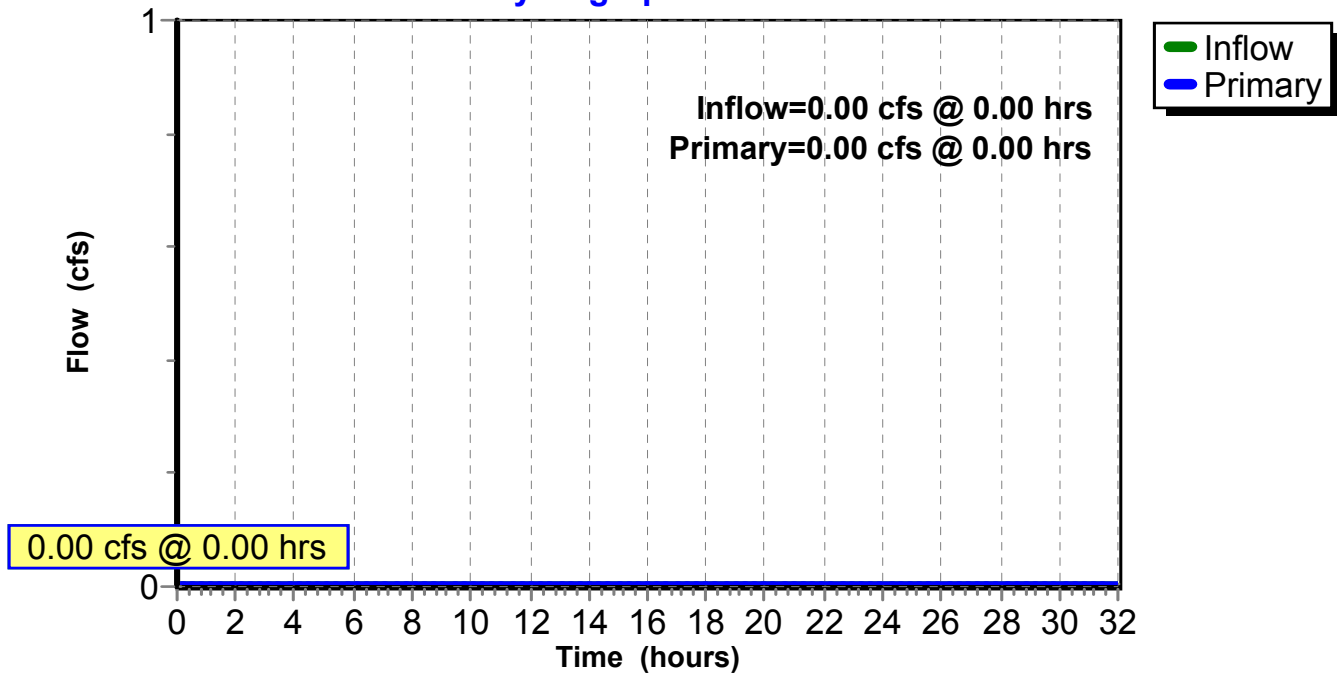
Summary for Link 51L: JUNCTION

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 51L: JUNCTION

Hydrograph



Summary for Link FIN: FINAL

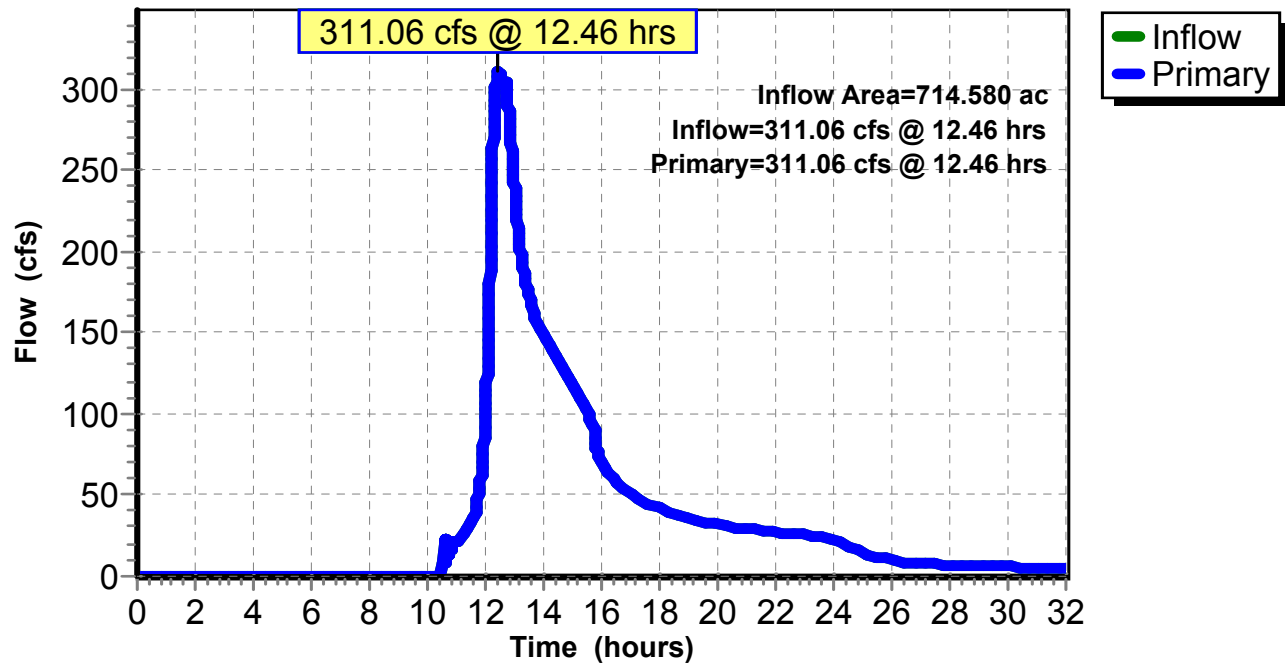
Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 1.49" for F2_24 event
Inflow = 311.06 cfs @ 12.46 hrs, Volume= 88.964 af
Primary = 311.06 cfs @ 12.46 hrs, Volume= 88.964 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 40.00'

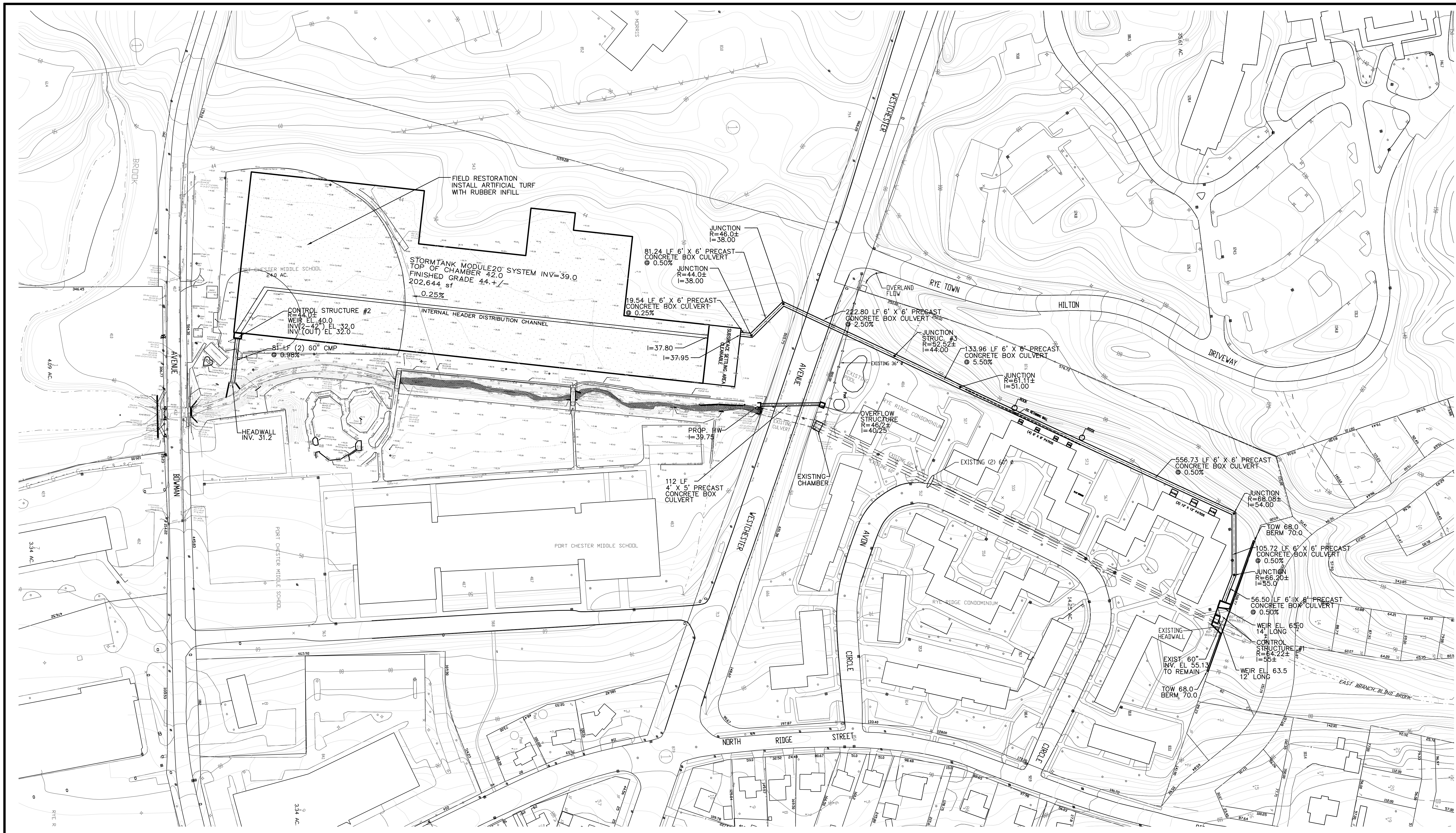
Link FIN: FINAL

Hydrograph

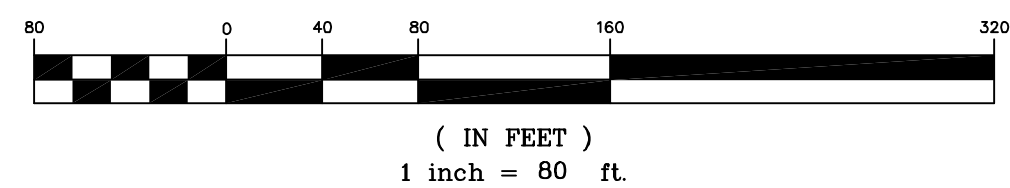


APPENDIX B

PROPOSED PLAN



SITE PLAN
GRAPHIC SCALE



NOTE: MAINTENANCE AND ACCESS EASEMENTS TO BE ESTABLISHED.

ANY ALTERATIONS OR REVISIONS OF THESE PLANS, UNLESS DONE BY OR UNDER THE DIRECTION OF THE NYS LICENSED AND REGISTERED ENGINEER THAT PREPARED THEM, IS A VIOLATION OF THE NYS EDUCATION LAW.

THIS PLAN NOT VALID FOR CONSTRUCTION WITHOUT ENGINEERS SEAL & SIGNATURE

7/29/20
6/15/20
4/9/20
Rev. _____
Orig. 2/4/19
design by: DR
drawn by: PF
chkd by: DR
Copyright © 2019

PROPOSED LAYOUT EAST BRANCH BLIND BROOK FLOOD STUDY TOWN OF RYE & VILLAGE OF RYE BROOK, N.Y.	
SITE PLAN	
dolph rotfeld engineering DIVISION OF AI ENGINEERS, INC. P.C. 570 TAXTER ROAD, ELMSFORD, NY 10523 (914) 631-8600	
sheet 1 of 1	

Y:\Projects\Municipalities\Rye Brook (V)\2019 DRAINAGE\PROPOSED DRAINAGE 7-31-20.dwg, DRAINAGE, 7/31/2020 10:25:16 AM, 1:40

APPENDIX C

COST ESTIMATE



Dolph Rotfeld Engineering Division
570 Taxter Road, Elmsford, N.Y., (914) 631-8600

**PRELIMINARY COST ESTIMATE
WORK SHEET**

PROJECT:		East Branch Blind Brook Flood Mitigation Study			
LOCATION:		Avon Circle, Port Chester Middle School			
OWNER:		Village of Rye Brook, NY			
Estimated by:	OS	Date:	July 31, 2020		
Checked by:	AO	Approved by:			
ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1	Control Structure 1 (cast in place concrete)	410	C.Y.	\$400	\$164,000
2	Control Structure 2 (pre cast concrete)	1	EA.	\$14,000	\$14,000
3	Precast Concrete Head Wall	3	EA.	\$4,000	\$12,000
4	Pre-cast Concrete Culvert (6'x6')- Avon Bypass	1080	L.F.	\$600	\$648,000
5	Pre-cast Concrete Culvert (6'x6')- Westch. Ave.	120	L.F.	\$2,000	\$240,000
6	Pre-cast Concrete Culvert (4'x5')- Westch. Ave.	112	L.F.	\$1,300	\$145,600
7	Junction / Manholes	6	EA.	\$10,000	\$60,000
8	Underground Detention (Stormtank)	607,000	CF	\$3	\$1,887,770
9	Crushed / Washed stone	18,750	C.Y.	\$35.00	\$656,250
10	Overflow Structure (pre cast concrete)	1	EA.	\$11,000.00	\$11,000
11	Earthwork - Excavate and remove	15,000	C.Y.	\$25	\$375,000
12	Artificial Turf Field and Infill	202644	S.F.	\$5.00	\$1,013,220
13	Baseball Diamond Equipment	1	L.S.	\$50,000	\$50,000
14	Distribution Channel (10'x5') Precast Concrete	1800	L.F.	\$280	\$504,000
15	Distribution Channel Installation	1800	L.F.	\$150	\$270,000
				Sub-total	\$6,050,840
				10% Contingency	\$605,084
				Total	\$6,655,924

APPENDIX D

RAINFALL DATA

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New York
Location	
Longitude	73.686 degrees West
Latitude	41.007 degrees North
Elevation	0 feet
Date/Time	Tue, 09 Jun 2020 14:54:35 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.34	0.51	0.64	0.84	1.05	1.31	1yr	0.90	1.23	1.50	1.86	2.31	2.86	3.20	1yr	2.53	3.08	3.57	4.29	4.93	1yr
2yr	0.41	0.63	0.78	1.02	1.28	1.59	2yr	1.11	1.50	1.83	2.26	2.80	3.45	3.87	2yr	3.05	3.72	4.27	5.07	5.75	2yr
5yr	0.47	0.74	0.93	1.24	1.59	2.00	5yr	1.37	1.84	2.31	2.86	3.52	4.31	4.89	5yr	3.82	4.70	5.45	6.39	7.13	5yr
10yr	0.53	0.84	1.06	1.44	1.87	2.38	10yr	1.61	2.16	2.75	3.41	4.19	5.11	5.84	10yr	4.53	5.61	6.56	7.60	8.39	10yr
25yr	0.62	0.99	1.26	1.74	2.32	2.98	25yr	2.00	2.67	3.46	4.30	5.28	6.41	7.38	25yr	5.67	7.10	8.38	9.56	10.41	25yr
50yr	0.71	1.14	1.46	2.04	2.74	3.54	50yr	2.36	3.14	4.13	5.13	6.27	7.60	8.82	50yr	6.72	8.48	10.09	11.39	12.26	50yr
100yr	0.80	1.30	1.68	2.37	3.23	4.21	100yr	2.79	3.69	4.91	6.11	7.47	9.02	10.54	100yr	7.98	10.13	12.15	13.56	14.44	100yr
200yr	0.91	1.49	1.93	2.77	3.82	5.01	200yr	3.30	4.34	5.86	7.29	8.89	10.71	12.60	200yr	9.48	12.12	14.64	16.15	17.01	200yr
500yr	1.10	1.80	2.35	3.41	4.77	6.29	500yr	4.12	5.38	7.37	9.18	11.20	13.45	15.96	500yr	11.90	15.35	18.75	20.35	21.14	500yr

Lower Confidence Limits

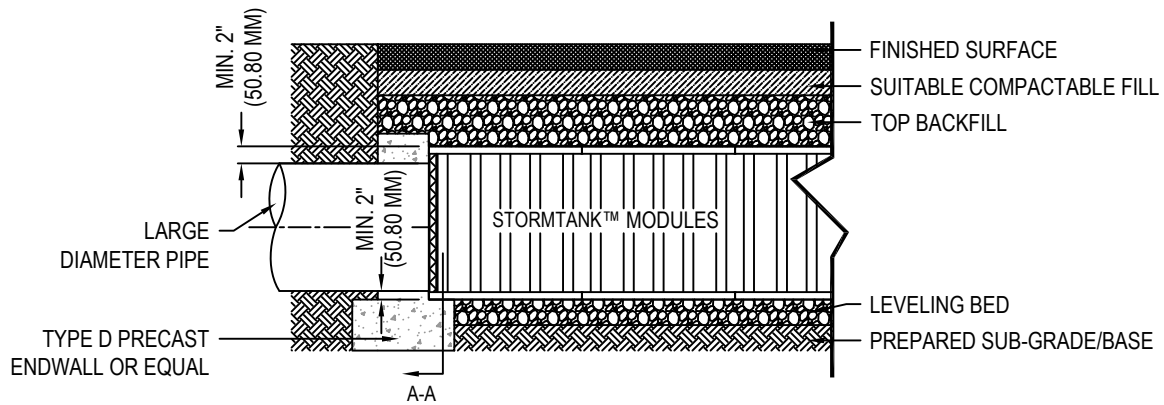
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.27	0.41	0.50	0.68	0.83	0.91	1yr	0.72	0.89	1.33	1.60	1.95	2.56	2.66	1yr	2.27	2.55	3.13	3.67	4.38	1yr
2yr	0.39	0.61	0.75	1.01	1.25	1.50	2yr	1.08	1.46	1.70	2.20	2.76	3.35	3.75	2yr	2.96	3.61	4.12	4.91	5.59	2yr
5yr	0.43	0.67	0.83	1.14	1.45	1.75	5yr	1.25	1.71	1.99	2.60	3.27	4.00	4.53	5yr	3.54	4.36	5.01	5.88	6.64	5yr
10yr	0.47	0.73	0.90	1.26	1.62	1.97	10yr	1.40	1.93	2.23	2.97	3.73	4.59	5.24	10yr	4.06	5.04	5.81	6.60	7.55	10yr
25yr	0.51	0.78	0.97	1.39	1.83	2.30	25yr	1.58	2.25	2.59	3.49	4.46	5.49	6.35	25yr	4.86	6.10	7.09	7.62	8.98	25yr
50yr	0.54	0.82	1.02	1.47	1.97	2.58	50yr	1.70	2.52	2.93	3.96	5.07	6.30	7.35	50yr	5.58	7.07	8.25	8.39	10.23	50yr
100yr	0.57	0.87	1.09	1.57	2.15	2.88	100yr	1.86	2.82	3.30	4.50	5.82	7.24	8.52	100yr	6.41	8.20	9.59	9.26	11.65	100yr
200yr	0.61	0.92	1.17	1.69	2.35	3.24	200yr	2.03	3.17	3.71	5.13	6.69	8.33	9.88	200yr	7.37	9.50	11.18	10.14	13.31	200yr
500yr	0.66	0.98	1.26	1.83	2.60	3.78	500yr	2.25	3.69	4.35	6.15	8.08	10.04	12.04	500yr	8.89	11.58	13.71	11.35	15.87	500yr

Upper Confidence Limits

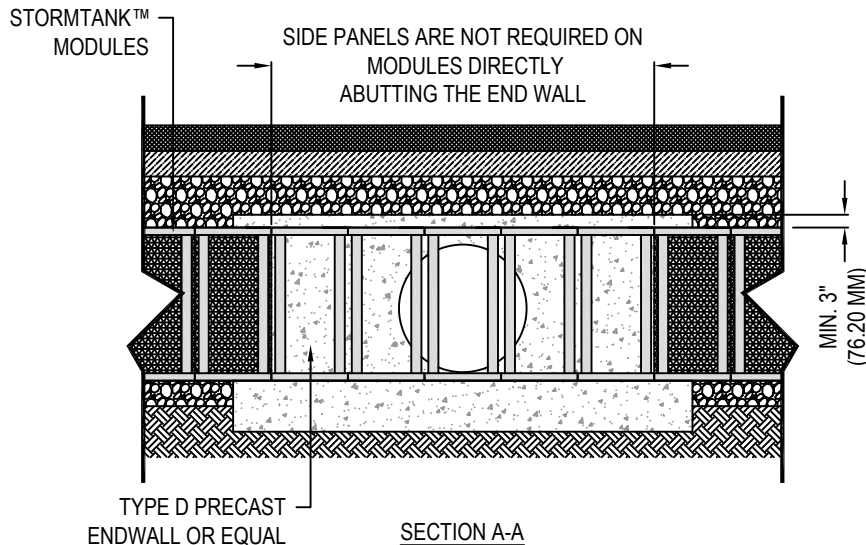
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.37	0.57	0.70	0.94	1.15	1.39	1yr	0.99	1.36	1.60	2.10	2.63	3.13	3.54	1yr	2.77	3.41	3.83	4.65	5.29	1yr
2yr	0.43	0.66	0.82	1.10	1.36	1.59	2yr	1.18	1.56	1.81	2.33	2.91	3.57	4.02	2yr	3.16	3.86	4.42	5.40	5.97	2yr
5yr	0.52	0.80	0.99	1.36	1.74	2.03	5yr	1.50	1.99	2.35	2.98	3.73	4.64	5.32	5yr	4.11	5.11	5.88	6.88	7.70	5yr
10yr	0.62	0.95	1.18	1.65	2.13	2.44	10yr	1.84	2.39	2.88	3.60	4.52	5.66	6.56	10yr	5.01	6.30	7.29	8.48	9.35	10yr
25yr	0.79	1.20	1.50	2.14	2.81	3.15	25yr	2.43	3.08	3.77	4.63	5.81	7.38	8.65	25yr	6.53	8.32	9.72	11.20	12.09	25yr
50yr	0.95	1.44	1.79	2.58	3.47	3.82	50yr	2.99	3.74	4.63	5.61	7.11	9.00	10.68	50yr	7.97	10.27	12.07	13.85	14.66	50yr
100yr	1.15	1.73	2.17	3.13	4.30	4.66	100yr	3.71	4.55	5.68	6.81	8.62	10.98	13.18	100yr	9.72	12.67	15.00	17.08	17.78	100yr
200yr	1.38	2.08	2.64	3.82	5.32	5.66	200yr	4.59	5.53	6.98	8.25	10.45	13.40	16.25	200yr	11.86	15.62	18.61	21.12	21.57	200yr
500yr	1.80	2.67	3.44	5.00	7.11	7.33	500yr	6.13	7.16	9.17	10.64	13.48	17.45	21.44	500yr	15.44	20.61	24.77	28.05	27.83	500yr

APPENDIX E

SUBSURFACE DETENTION SYSTEM



CROSS SECTION



SECTION A-A

DIMENSION TABLE		
MODULE 20 SERIES	MODULE 20 SERIES	MAX. OPENING HEIGHT (MM)
--	2512	8" (203.2)
2018	2518	14" (355.6)
2024	2524	20" (508.0)
--	2530	26" (660.4)
--	2533	29" (736.6)
2036	2536	32" (812.8)

MANUFACTURER NOTES:

1. REFERENCE CURRENT INSTALLATION INSTRUCTIONS FOR PROPER INSTALLATION PRACTICES.
2. SEE LOCAL PRECAST CONCRETE MANUFACTURERS FOR DETAILED INFORMATION ON CATCH BASIN DIMENSIONS AND MANUFACTURING.
3. INFLUENT AND EFFLUENT ORIFICE CONFIGURATIONS MAY VARY. ROUND, SQUARE, RECTANGULAR AND MULTI-STAGE ARE ACCEPTABLE, AS LONG AS MEETING DIMENSION AND LOCATION REQUIREMENTS.
4. TOP OF OPENING MUST BE A MINIMUM 2" BELOW THE TOP OF THE TOP PLATEN, WHILE THE BOTTOM OF THE OPENING MUST BE MINIMUM 2" ABOVE THE BOTTOM OF THE BOTTOM PLATEN.
5. CATCH BASIN OPENING ARE NOT INTENDED TO SPAN THE CENTER PLATENS OF A DOUBLE STACK SYSTEM.
6. WHEN INSTALLING WITH 20 SERIES MODULES, HORIZONTAL CONNECTOR TABS WILL NEED REMOVED FROM MODULE TO ALLOW FOR ABUTMENT.

NOTES:

1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. DO NOT SCALE DRAWING.
3. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY. THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION.
4. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.
5. CONTRACTOR'S NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT www.CADdetails.com/info AND ENTER REFERENCE NUMBER 4907-004



STEP 1:

REMOVE THE SIDE PANEL FROM MODULE AND PLACE ON FLAT SURFACE. LAYOUT AND CUT OPENING INTO SIDE PANEL FOR INLET/OUTLET PORT CONNECTION.

REFER TO DIMENSIONS BELOW FOR OPENING PLACEMENT AND SEE TABLE BELOW FOR OPENING SIZE.

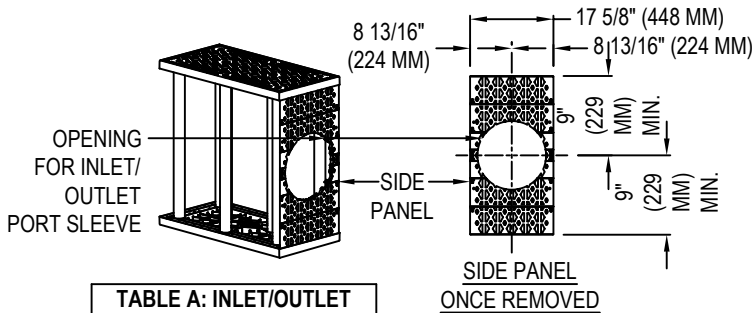
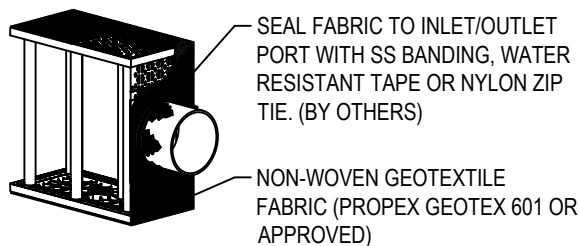


TABLE A: INLET/OUTLET PORT DIMENSION	
PORT SIZE	OPEN SIZE
12" (305 MM)	13.75" (349 MM)
14" (356 MM)	15" (381 MM)

OPENING IS SHOWN VERTICALLY CENTERED FOR VISUAL CLARITY. PART **MUST** BE INSTALLED HORIZONTALLY CENTERED

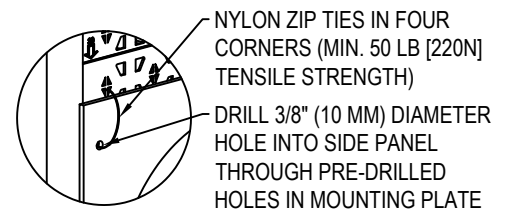
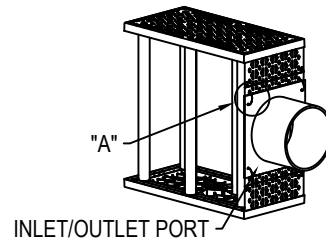
STEP 3:

WRAP SPECIFIED GEOTEXTILE FABRIC AROUND THE ENTIRE INSTALLATION OF STORMTANK MODULES (REFERENCE BRENTWOOD DOCUMENT "SITE PREPARATION AND INSTALLATION INSTRUCTIONS"). CUT "X" INTO GEOTEXTILE FABRIC AT PIPE LOCATION AND PEEL EDGES OUT. CONNECT GEOTEXTILE FABRIC TO THE PORT WITH SS BANDING, WATER RESISTANT TAP OR NYLON ZIP TIE.



STEP 2:

INSERT THE SHORT SIDE OF THE BRENTWOOD INLET/OUTLET PORT THROUGH THE OPENING IN THE SIDE PANEL, PLACING THE MOUNTING PLATE AGAINST THE SIDE PANEL. DRILL HOLES THROUGH THE SIDE PANEL USING THE PRE-DRILLED HOLES IN THE INLET/OUTLET PORT MOUNTING PLATE. ATTACH THE PLATE TO THE PANEL WITH NYLON ZIP TIES (MIN. 50 LB. (222N) TENSILE STRENGTH). PULL TIE UNTIL TIGHT.



DETAIL "A"

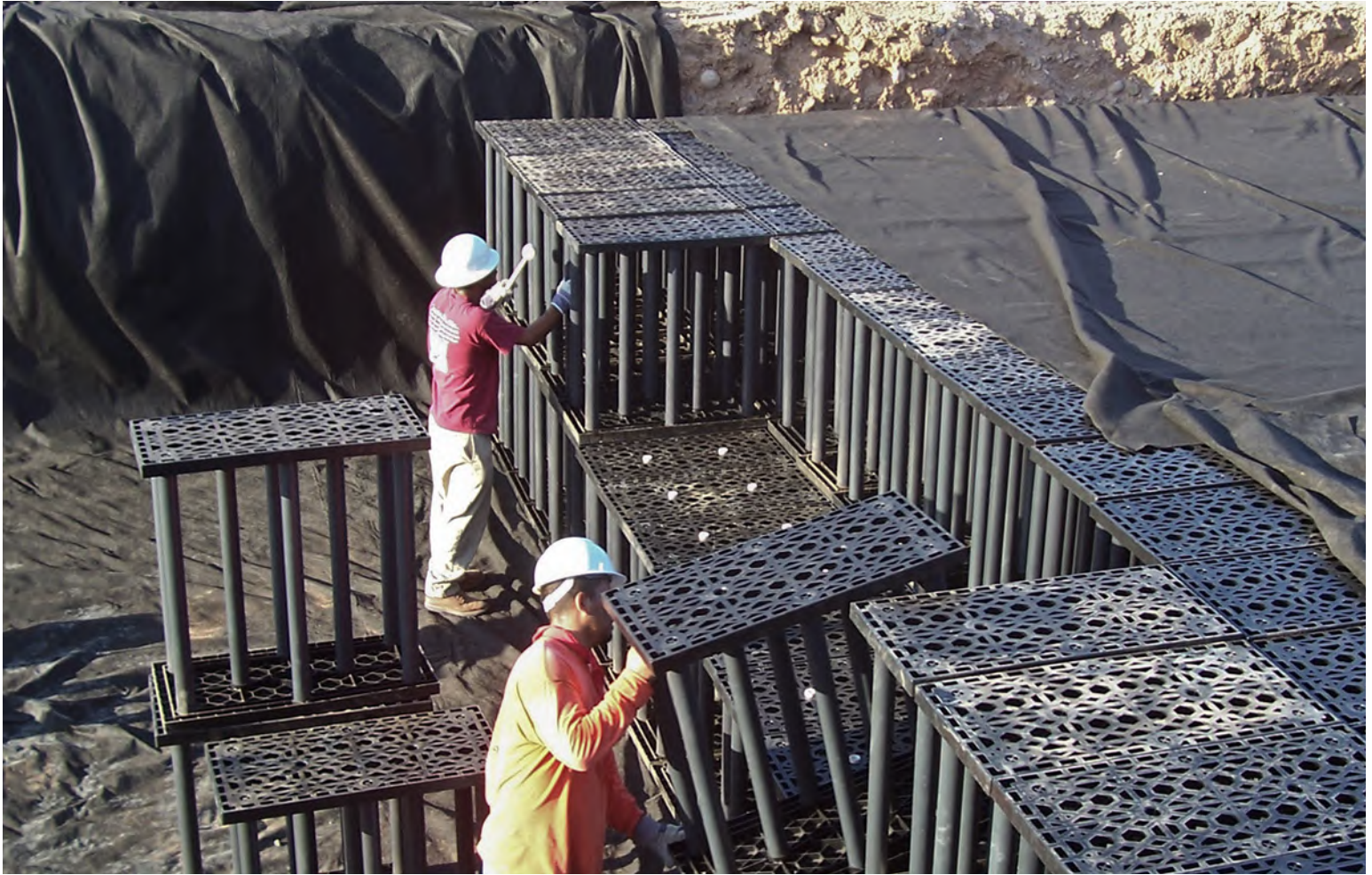
NOTES:

1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. DO NOT SCALE DRAWING.
3. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY. THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION.
4. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.
5. CONTRACTOR'S NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT www.CADdetails.com/info AND ENTER REFERENCE NUMBER 4907-005.





INSTALLATION GUIDE



STORM TANK[®] *Module*

SITE PREPARATION & INSTALLATION INSTRUCTIONS

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General Conditions

- Review installation procedures and coordinate the installation with other construction activities, such as grading, excavation, utilities, construction access, erosion control, etc.
- Engineered Drawings supersede all provided documentation, as the information furnished in this document is based on a typical installation.
- When installed based on Brentwood’s Site Preparation and Installation Instructions or similar, a StormTank® system can support an HS-25 load.
- Coordinate the installation with manufacturer’s representative/distributor to be on-site to review start up procedures and installation instructions.
- Components shall be unloaded, handled and stored in an area protected from traffic and in a manner to prevent damage.
- Assembled modules may be walked on, but vehicular traffic is prohibited until backfilled per Manufacturer’s requirements. Protect the installation against damage with highly visible construction tape, fencing, or other means until construction is complete.
- Ensure all construction occurs in accordance with Federal, State and Local Laws, Ordinances, Regulations and Safety Requirements.
- Extra care and caution should be taken when temperatures are at or below 40° F (4.4° C).

1.0 StormTank® Assembly

StormTank® Modules:

StormTank® modules are delivered to the site as palletized components requiring simple assembly. No special equipment, tools or bonding agents are required; only a rubber mallet. A single worker can typically assemble a module in two minutes.

General Notes:

- Remove packaging material and check for any damage. Report any damaged components to a StormTank® Distributor or Brentwood personnel.
- StormTank® components are backed by a one year warranty, when installed per manufacturer's recommendations.

Step 1



Place a platen on a firm level surface and insert the eight (8) columns into the platen receiver cups. Firmly tap each column with a rubber mallet to ensure the column is seated.

Step 2



Place a second platen on a firm level surface. Flip the previously assembled components upside down onto the second platen, aligning the columns into the platen receiver cups.

Step 3



Once aligned, seat the top assembly by alternating taps, with a rubber mallet at each structural column until all columns are firmly seated.

Step 4



If side panels are required, firmly tap the top platen upward to raise the top platen. Insert the side panel into the bottom platen.

Step 5



Align the top of the side panel with the top platen and firmly seat the top platen utilizing a rubber mallet.

Completed Module



A complete module can support up to HS-25 Loading when installed per manufacturer's recommendations.

2.0 Basin Excavation

1. Stake out and excavate to elevations per approved plans.

Excavation Requirements:

- a. Sub-grade excavation must be a minimum of 6" (152 mm) below designed StormTank® Module invert.
- b. The excavation should extend a minimum of 12" (305 mm) beyond the StormTank® dimensions in each length and width (an additional 24" [610 mm] in total length and total width) to allow for adequate placement of side backfill material.
- c. Remove objectionable material encountered within the excavation, including protruding material from the walls.
- d. Furnish, install, monitor and maintain excavation support (e.g., shoring, bracing, trench boxes, etc.) as required by Federal, State and Local Laws, Ordinances, Regulations and Safety Requirements.



3.0 Sub-Grade Requirements

1. Sub-grade shall be unfrozen, level (plus or minus 1%), and free of lumps or debris with no standing water, mud or muck. Do not use materials nor mix with materials that are frozen and/or coated with ice or frost.
2. Unstable, unsuitable and/or compromised areas should be brought to the Engineer's attention and mitigating efforts determined prior to compacting the sub-grade.
3. Sub-grade must be compacted to 95% Standard Proctor Density or as approved by the Engineer of Record. If code requirements restrict subgrade compaction, it is the requirement of the geotechnical Engineer to verify that the bearing capacity and settlement criteria for support of the system are met. *



** The Engineer of Record shall reference Brentwood document Appendix A for minimum soil bearing capacity required based on Load Rating and top cover depth. Minimum soil bearing capacity is required so that settlements are less than 1" through the entire sub-grade and do not exceed long-term 1/2" differential settlement between any two adjacent units within the system. Sub-grade must be designed to ensure soil bearing capacity is maintained throughout all soil saturation levels.*

4.0 Leveling Bed Installation

1. Install geotextile fabric and/or liner material, as specified.
 - a. Geotextile fabric shall be placed per manufacturer's recommendations.
 - b. Additional material to be utilized for wrapping above the system must be protected from damage until use.
2. After the geotextile is secured, place a minimum 6" (152 mm) Leveling Bed.
 - a. Material should be a 3/4" (19 mm) angular stone meeting Appendix B – Acceptable Fill Material.
 - b. Material should be raked free of voids, lumps, debris, sharp objects and plate vibrated to a level with a maximum 1% slope.
3. Correct any unsatisfactory conditions.

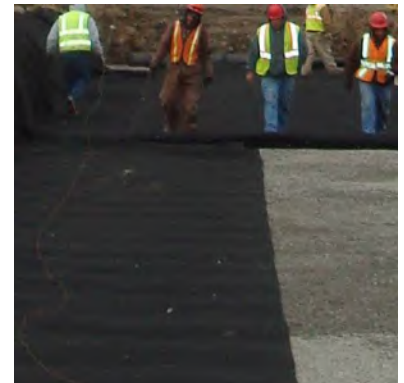


*Leveling Bed preparation is critical to proper installation and operation of the StormTank® system. **DO NOT PROCEED UNTIL THE LEVELING BED IS PROPERLY PREPARED.***



5.0 StormTank® Module Placement

1. Install geotextile fabric and/or liner material, as specified.
 - a. Geotextile fabric shall be placed per manufacturer's recommendations.
 - b. Additional material to be utilized for wrapping above the system must be protected from damage until use.
2. Mark the footprint of the modules for placement.
 - a. Ensure module perimeter outline is square or similar prior to Module placement.
 - b. Care should be taken to note any connections, ports or other irregular units to be placed.

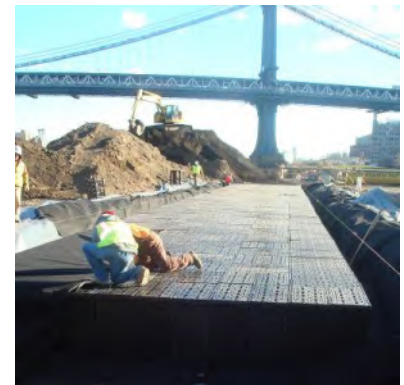


5.0 StormTank® Module Placement (Continued)

3. Install the individual modules by hand, as detailed below.
 - a. The modules should be installed as shown in the StormTank® submittal drawings with the short side of perimeter modules facing outward, except as otherwise required.
 - b. Make sure the top/bottom platens are in alignment in all directions to within a maximum 1/4" (6.4 mm).
 - c. For double stack configurations:
 - i. Install the bottom module first. **DO NOT INTERMIX VARIOUS MODULE HEIGHTS ACROSS LAYERS.** Backfilling prior to proceeding to second layer is optional.
 - ii. Insert stacking pins (2 per module) into the top platen of the bottom module.
 - iii. Place the upper module directly on top of the bottom module in the same direction, making sure to engage the pins.
4. Install the modules to completion, taking care to avoid damage to the geotextile and/or liner material.
5. Locate any ports or other penetration of the StormTank®.
 - a. Install ports/penetrations in accordance with the approved submittals, contract documents and manufacturer's recommendations.
6. Upon completion of module installation, wrap the modules in geotextile fabric and/or liner.
 - a. Geotextile fabric shall be wrapped and secured per manufacturer's recommendations.
 - b. Seal any ports/penetrations per Manufacturer's requirements

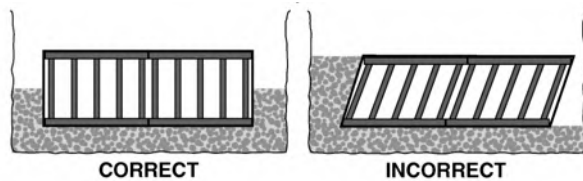
Notes:

- *If damage occurs to the geotextile fabric or impermeable liner, repair the material in accordance with the geotextile/liner Manufacturer's recommendations.*



6.0 Side Backfill

1. Inspect all geotextile, ensuring that no voids or damage exists; which will allow sediment into the StormTank® system.
2. Adjust the stone/soil interface geotextile along the side of the native soil to ensure the geotextile is taught to the native soil.
3. Once the geotextile is secured, begin to place the Side Backfill.
 - a. Material should be a 3/4" (19 mm) angular stone meeting Appendix B – Acceptable Fill Material.
 - b. Backfill sides "evenly" around the perimeter without exceeding single 12" (305 mm) lifts.



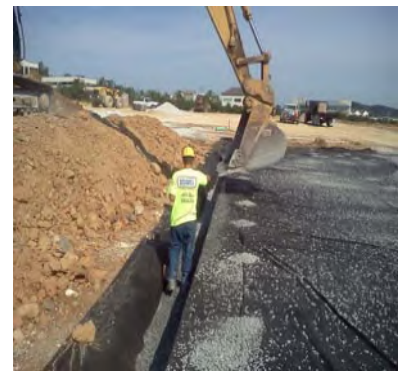
- c. Place material utilizing an excavator, dozer or conveyor boom.
- d. Utilize a plate vibrator to settle the stone and provide a uniform distribution.



Complete the Side Backfill evenly to the top of the StormTank® Modules prior to proceeding to the next step (Top Backfill).

Notes:

- Do not apply vehicular load to the modules during placement of side backfill. All material placement should occur with equipment located on the native soil surrounding the system.
- If damage occurs to the geotextile fabric or impermeable liner, repair the material in accordance with the geotextile/liner Manufacturer's recommendations.



7.0 Top Backfill (Stone)

1. Begin to place the Top Backfill.
 - a. Material should be a 3/4" (19 mm) angular stone meeting Appendix B – Acceptable Fill Material.
 - b. Place material utilizing an excavator, dozer or conveyor boom (Appendix C – Material Placement) and use a walk-behind plate vibrator to settle the stone and provide an even distribution.

DO NOT DRIVE ON THE MODULES WITHOUT A MINIMUM 12" (305 mm) COVER.

2. Upon completion of Top Backfilling, wrap the system in geotextile fabric and/or liner per manufacturer's recommendations.
3. Install metallic tape around the perimeter of the system to mark the area for future utility detection.



Driving on the Modules and stone backfill with equipment heavier than a low ground pressure, track type equipment (Max. gross operating load of 6,000 lbs. [2,721 kg] or less) is prohibited until a full 24" (610 mm) of material has been placed.

Notes:

- *If damage occurs to the geotextile fabric or impermeable liner, repair the material in accordance with the geotextile/liner Manufacturer's recommendations.*



8.0 Suitable Compactable Fill

Following Top Backfill placement and geotextile fabric wrapping; complete the installation as noted below.

Vegetated Area

1. Place fill onto the geotextile.
 - a. Maximum 12" (305 mm) lifts, compacted with a vibratory plate or walk behind roller to a minimum of 90% Standard Proctor Density.
 - b. The minimum top cover to finished grade should not be less than 24" (610 mm) and the maximum depth from final grade to the bottom of the lowest module should not exceed 11' (3.35 m).

2. Finish to the surface and complete with vegetative cover.

Impervious Area

1. Place fill onto the geotextile.
 - a. Maximum 12" (305 mm) lifts compacted with a vibratory plate or walk behind roller to a minimum 90% Standard Proctor Density or to meet the Engineer of Record's specification.
 - b. Sub-base materials should be referenced by the approved Engineering Drawings.
 - c. The minimum top cover to finished grade should not be less than 24" (610 mm) and the maximum depth from final grade to the bottom of the lowest module should not exceed 11' (3.35 m).

2. Finish to the surface and complete with asphalt, concrete, etc.

Notes:

- A vibratory roller may only be utilized after a minimum 24" (610 mm) of compacted material has been installed or for the installation of the asphalt wearing course.
- If damage occurs to the geotextile fabric, repair the material in accordance with the geotextile Manufacturer's recommendations.



Appendix A - Bearing Capacity Tables

Cover		HS-25 (Unfactored)		HS-25 (Factored)			Cover		HS-25 (Unfactored)		HS-25 (Factored)	
English (in.)	Metric (mm)	English (ksf)	Metric (kPa)	English (ksf)	Metric (kPa)		English (in.)	Metric (mm)	English (ksf)	Metric (kPa)	English (ksf)	Metric (kPa)
24	610	1.89	90.45	4.75	227.43		67	1,702	1.12	53.75	2.07	99.11
25	635	1.82	86.96	4.53	216.90		68	1,727	1.13	53.91	2.07	99.11
26	660	1.75	83.78	4.34	207.80		69	1,753	1.13	54.08	2.06	98.63
27	686	1.69	80.88	4.16	199.18		70	1,778	1.13	54.26	2.06	98.63
28	711	1.63	78.24	3.99	191.04		71	1,803	1.14	54.46	2.06	98.63
29	737	1.58	75.82	3.84	183.86		72	1,829	1.14	54.67	2.06	98.63
30	762	1.54	73.62	3.70	177.16		73	1,854	1.15	54.90	2.06	98.63
31	787	1.50	71.60	3.57	170.93		74	1,880	1.15	55.13	2.06	98.63
32	813	1.46	69.75	3.45	165.19		75	1,905	1.16	55.38	2.06	98.63
33	838	1.42	68.06	3.34	159.92		76	1,930	1.16	55.64	2.06	98.63
34	864	1.39	66.51	3.24	155.13		77	1,956	1.17	55.90	2.06	98.63
35	889	1.36	65.10	3.14	150.34		78	1,981	1.17	56.18	2.06	98.63
36	914	1.33	63.80	3.05	146.03		79	2,007	1.18	56.46	2.07	99.11
37	940	1.31	62.62	2.97	142.20		80	2,032	1.19	56.76	2.07	99.11
38	965	1.29	61.54	2.90	138.85		81	2,057	1.19	57.06	2.07	99.11
39	991	1.26	60.55	2.83	135.50		82	2,083	1.20	57.37	2.08	99.59
40	1,016	1.25	59.65	2.76	132.15		83	2,108	1.20	57.69	2.08	99.59
41	1,041	1.23	58.84	2.70	129.28		84	2,134	1.21	58.02	2.09	100.07
42	1,067	1.21	58.09	2.67	127.84		85	2,159	1.22	58.35	2.09	100.07
43	1,092	1.20	57.42	2.60	124.49		86	2,184	1.23	58.69	2.10	100.55
44	1,118	1.19	56.81	2.55	122.09		87	2,210	1.23	59.04	2.11	101.03
45	1,143	1.18	56.26	2.50	119.70		88	2,235	1.24	59.39	2.11	101.03
46	1,168	1.16	55.77	2.46	117.79		89	2,261	1.25	59.75	2.12	101.51
47	1,194	1.16	55.33	2.42	115.87		90	2,286	1.26	60.11	2.13	101.98
48	1,219	1.15	54.94	2.39	114.43		91	2,311	1.26	60.48	2.13	101.98
49	1,245	1.14	54.59	2.36	113.00		92	2,337	1.27	60.86	2.14	102.46
50	1,270	1.13	54.29	2.33	111.56		93	2,362	1.28	61.24	2.15	102.94
51	1,295	1.13	54.03	2.30	110.12		94	2,388	1.29	61.62	2.16	103.42
52	1,321	1.12	53.80	2.27	108.69		95	2,413	1.30	62.01	2.17	103.90
53	1,346	1.12	53.62	2.25	107.73		96	2,438	1.30	62.41	2.18	104.38
54	1,372	1.12	53.46	2.23	106.77		97	2,464	1.31	62.81	2.19	104.86
55	1,397	1.11	53.34	2.21	105.82		98	2,489	1.32	63.21	2.20	105.34
56	1,422	1.11	53.24	2.19	104.86		99	2,515	1.33	63.62	2.21	105.82
57	1,448	1.11	53.18	2.17	103.90		100	2,540	1.34	64.03	2.22	106.29
58	1,473	1.11	53.14	2.16	103.42		101	2,565	1.35	64.45	2.23	106.77
59	1,499	1.11	53.12	2.14	102.46		102	2,591	1.35	64.87	2.24	107.25
60	1,524	1.11	53.13	2.13	101.98		103	2,616	1.36	65.29	2.25	107.73
61	1,549	1.11	53.16	2.12	101.51		104	2,642	1.37	65.72	2.27	108.69
62	1,575	1.11	53.21	2.11	101.03		105	2,667	1.38	66.15	2.28	109.17
63	1,600	1.11	53.28	2.10	100.55		106	2,692	1.39	66.58	2.29	109.65
64	1,626	1.11	53.37	2.09	100.07		107	2,718	1.40	67.02	2.30	110.12
65	1,651	1.12	53.48	2.08	99.59		108	2,743	1.41	67.45	2.31	110.60
66	1,676	1.12	53.61	2.08	99.59		109	2,769	1.42	67.90	2.33	111.56
67	1,702	1.12	53.75	2.07	99.11		110	2,794	1.43	68.34	2.34	112.04
68	1,727	1.13	53.91	2.07	99.11		111	2,819	1.44	68.79	2.35	112.52
69	1,753	1.13	54.08	2.06	98.63		112	2,845	1.45	69.24	2.36	113.00
70	1,778	1.13	54.26	2.06	98.63		113	2,870	1.46	69.69	2.38	113.96
71	1,803	1.14	54.46	2.06	98.63		114	2,896	1.47	70.15	2.39	114.43

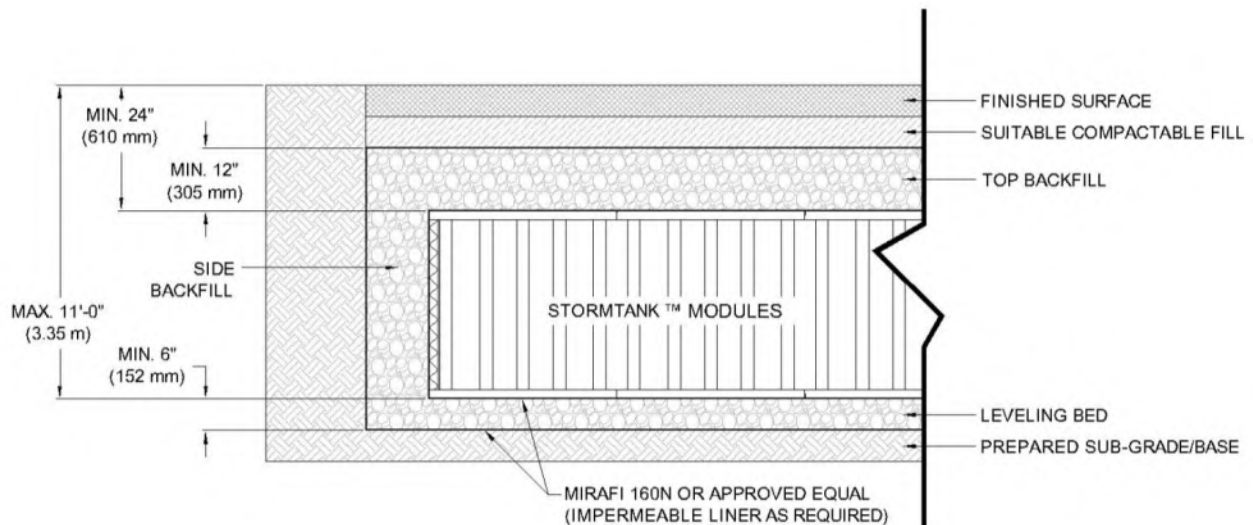
Notes:

1. Additional load ratings and associated bearing capacities may be applicable on a case by case basis. Please contact your local Brentwood Representative.

Appendix B - Acceptable Fill Materials

Material Location	Description	AASHTO M43 Designation	ASTM D2321 Class	Compaction/Density
Finished Surface	Topsoil, hardscape, stone, concrete or asphalt per engineer of record.	N/A	N/A	Prepare per engineered plans.
Suitable Compactable Fill	Granular well graded soil/aggregate, typically road base or earthen fill, maximum 4" particle size.	56, 57, 6, 67, 68 Earth	I & II III (Earth Only)	Place in max. 12" lifts to a min. 90% standard proctor density.
Top Backfill	Crushed angular stone placed between modules and road base or earthen fill.	56, 57, 6, 67, 68	I & II	Plate compacted to provide evenly distributed layers.
Side Backfill	Crushed angular stone placed between earthen wall and modules.	56, 57, 6, 67, 68	I & II	Place in uniform 12" lifts around the system
Leveling Bed	Crushed angular stone placed to provide level surface for installation of modules.	56, 57, 6, 67, 68	I & II	Plate vibrated to achieve level surface.

* See Appendix C - Material Placement for limitations



Notes:

2. All stone must be angular stone meeting ASTM D2321. Recycled concrete may be utilized when meeting acceptable gradation and ASTM standards.
3. The sub-grade is to be prepared to meet bearing and compaction requirements. Please see engineer of record's design.
4. Storage of materials such as construction materials, equipment, soils, etc. over the StormTank® system is strictly **prohibited**.
5. Please contact a Geotechnical Engineer and the Brentwood representative prior to utilization of any material not listed above.

Appendix C - Material Placement Guidelines

Material Location	Placement Methods	Tired Equipment Limitations	Tracked Equipment Limitations	Roller Limitations
Finished Surface	Numerous methods may be utilized. Material dumping onto system should be limited unless otherwise noted.	Asphalt can be dumped into pavers.		Vibratory rollers may only be utilized if compacted cover exceeds 24" (610 mm) or for pavement installation.
Suitable Compactable Fill	Utilize an excavator, skid loader or dozer to place material. (Max. gross operating load of 6,000 lbs. [2,721 kg] or less).	No DUMPING by dump trucks. No wheel loads until approved by Engineer of Record.	SMALL DOZERS ONLY (Max. gross operating load of 6,000 lbs. [2,721 kg] or less).	Static rollers ONLY are permitted until compacted cover exceeds 24" (610 mm).
Top Backfill	Utilize excavator bucket or stone conveyor, positioned off of system, to uniformly backfill on top of the modules. No DUMPING directly onto modules by dump trucks.	No DUMPING by dump trucks. No wheel loads until approved by Engineer of Record.	Utilize an excavator or skid loader (Max. gross operating load of 6,000 lbs. [2,721 kg] once a min. 12" (305 mm) has been placed and compacted.	No rollers allowed at this time.
Side Backfill	Utilize excavator bucket or stone conveyor, positioned off of system, to uniformly backfill around modules. Stone to be placed in max. 12" (305 mm) lifts until stone reaches top of modules.	No equipment is permitted on the modules during the side backfilling process.		
Leveling Bed	No limitations			

Notes:

1. *Storage of materials such as construction materials, equipment, soils, etc. over the StormTank® system is strictly **prohibited**.*
2. *Please contact a Brentwood representative/distributor prior to utilization of any equipment not listed above.*
3. *During paving operations it may be necessary to utilize dump operations for paving equipment. Additional precautions should be utilized to limit the dump distance and prevent rutting of the road base.*
4. *It is recommended that all backfilling operations be completed with low ground pressure vehicles such as mini excavators, skid steers, etc. **All** equipment is to access system by a level approach to the system.*

APPENDIX F

HYDROLOGIC AND HYDRAULIC ANALYSIS, FEBRUARY 7, 2019

HYDROLOGIC AND HYDRAULIC ANALYSIS

**East Branch Blind Brook Flood Mitigation Study
Avon Circle, Port Chester Middle School and Bowman Avenue**

Town of Rye And Village of Rye Brook

February 7, 2019



**Prepared By:
Dolph Rotfeld Engineering, a Division of AI Engineers, Inc., P.C.
570 Taxter Road
Elmsford, N.Y.**

East Branch Blind Brook Flood Mitigation Study Avon Circle, Port Chester Middle School and Bowman Avenue

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2. Hydrologic and Hydraulic Analysis
3. Conclusions

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Appendix F: Rainfall Data

Appendix G: Drawings

1. EXECUTIVE SUMMARY

The purpose of this report is to analyze the watersheds tributary to the East Branch Blind Brook in relation to their effects on flooding at Avon Circle, the Port Chester Middle School (PCMS), and in the vicinity of Bowman Avenue and Westchester Avenue in the Village of Rye Brook. The results of this analysis will be used to examine and model various improvements to mitigate flooding at Avon Circle and the Middle School while not negatively impacting upstream or downstream watersheds to the best extent practicable.

The subject area, in particular Avon Circle has experienced significant flooding that has been documented and herein modeled to simulate flood conditions and possible improvements to the existing drainage systems involved. The existing drainage infrastructure at Avon Circle consists of twin 60" reinforced concrete pipe that convey storm water from the discharge of Hidden Falls Pond through to an existing open channel located at the Port Chester Middle School.

Representatives from this office met with residents and maintenance personnel from the Avon Circle Condominiums to verify the extent of flooding experienced in the past. Of particular interest is the April 2007 nor'easter storm; data indicates 7.7 inches of rain on Sunday April 15th. Photos of Avon Circle indicate approximately a 2 foot depth of flood waters in the lower area of the roadway. This data has been used to calibrate the models and better predict the effect of the proposed improvements.

In compiling this report we have also reviewed and incorporated as needed existing data from previous studies including:

- DREPC EBBB study.
- Parsons Brinkerhoff Study
- Rizzo
- WSP Sells
- FEMA Flood Insurance Study / digital flood files

Our Investigative Approach:

- Survey key culverts, channels and roadway elevations between I-287 and Avon Circle/Hidden Falls; perform a high resolution field survey at PCMS with one foot contours and spot elevations west of the East Branch of Blind Brook to the wooded slope and east of the brook to the school building and edge of parking; with inverts of the brook at 50 foot intervals.
- Perform soil testing on PCMS field to determine soil types.
- Prepare Hydrologic model for the East Branch Blind Brook watershed updated with new survey information to replicate existing conditions.

- Prepare HEC-RAS model of the channel at @ PCMS/Bowman Avenue to verify FEMA predictions of roadway overtopping at Westchester Avenue.
- Calibrate existing condition model with anecdotal evidence.
- Conduct video inspection of existing culverts as needed to verify conditions.

Preliminary design options using the developed models and data gathered have been proposed in this report. These options primarily include additional means of conveyance for stormwater through Avon Circle in conjunction with stormwater detention constructed at the PCMS. A cost benefit analysis for each of the design options will be presented to Westchester County, the Town of Rye, Village of Rye Brook and PCMS for selection of a preferred option. Once a preferred option is identified, a detailed engineering report and design along with a final cost estimate will be provided for review and approval.

Avon Circle April 2007 Nor'easter:



2. HYDROLOGIC AND HYDRAULIC ANALYSIS

INTRODUCTION:

The East Branch of the Blind Brook travels from the Hutchinson Parkway down to the area of Bowman Avenue in the Village of Rye Brook which is about 715 acres. The Brook creates flood areas along its route that are described well in the related FEMA reports.

Of particular concern is the flooding that occurs at the Avon Circle Condominiums at the intersection of Westchester Avenue and North Ridge Street. Additionally, the ball fields of the Port Chester Middle School are also affected by the flood waters that travel past Avon Circle under a culvert at Westchester Avenue.

FEMA:

The Federal Emergency Management Agency provides flood maps and detailed reports on their methodology in the areas of concern. Unfortunately, due to the complexity of the culvert systems at Avon Circle the FEMA HEC-RAS analysis incorrectly shows overtopping of Westchester Avenue even for small storms, this would flood the first floor of some Avon Circle buildings which has never occurred according to our sources. Due to this inaccurate modeling, we needed to re-model the area prior to analyzing alternate methods of flood abatement. Our review of the FEMA study indicates that they only accounted for one culvert at Avon Circle when there are two. However, when we adjusted the FEMA model for two culverts the model still indicated overtopping of Westchester Avenue during even small storms which has never happened, therefore this model is unreliable for use in this study.

HYDROLOGY:

For this study, the entire East Branch of the Blind Brook was re-modeled to develop flows and hydrographs that are closely conforming to actual conditions in the watershed. To that end the watershed was broken down into numerous land use, zoning, and soil subareas. Each subareas was assigned an appropriate runoff curve number for that use.

The travel times in the watershed were evaluated by detailed runoff profiles that assigned velocities to each segment of the total reach. Where flood storage was found in the upper watershed the new hydrologic model represents those areas similar to the FEMA studies.

Based on the detailed watershed characteristics flows and hydrographs were developed.

HYDROLOGIC MODEL CALIBRATION:

A portion of Avon Circle flooded during the nor'easter on the date of April 15, 2007. A photograph from that flood was analyzed and the historic flood level was determined. This rainstorm was approximately 7.7 inches of rain over about a 21.5 hour period.

Accordingly, the results of new hydrologic model were compared to the 2007 flood event and a close correlation was found. This insures that the hydrologic model can accurately represent other storm events as well.

UPDATED RAINFALL AMOUNTS:

The FEMA flood studies were based on 7.2 inches of rainfall in 24 hours which represents the 100 year storm as was known when the FEMA studies were performed.

The maximum rainfall event in this report is taken from the newer Northeast Regional Climate Center at a location midway in the watershed. As noted, the newer 100 year storm event is listed as 9.02 inches in 24 hours which is used for an upper caution value in this report.

Table: Rainfall Amounts for Differing Storms NRCC Extreme Estimates – Mid Values

Storm	5min	3hr	6hr	12hr	24hr
1yr	0.34	1.5	1.86	2.31	2.85
2yr	0.4	1.84	2.28	2.8	3.45
5yr	0.47	2.31	2.86	3.52	4.31
10yr	0.53	2.75	3.41	4.19	5.11
25yr	0.62	3.46	4.3	5.28	6.4
50yr	0.71	4.12	5.13	6.27	7.6
100yr	0.8	4.91	6.11	7.47	9.02

Reference: <http://precip.eas.cornell.edu/data.php?1549210900008>

Although the 9.02 inch figure is used in this report, the values of the 100 year storms over one day range from 6.26 to 11.15 inches in 24 hours, or one day. Since it is difficult to identify the proper rainfall we rely upon the rate of 7.2 inches per 24 hours as most representative of conditions and that also conforms to the FEMA studies.

DESIGN CRITERIA:

To ensure that the proposed mitigation and improvements in the East Branch do not impact the hydrology downstream this report ensures that the peak flows and elevations at the lower limit of the study do not exceed current conditions.

The base, current conditions to serve as a basis for design for various rainfall events are indicated as:

April 2007 Storm Event 7.7 inches in 21.5 hours

Flood Level at Bowman Avenue: 38.81 feet elevation
 Flow at Bowman Avenue: 859.46 cubic per second

FEMA 7.2 inch Original 100 Year Storm Event in 24 hours

Flood Level at Bowman Avenue: 38.42 feet elevation
Flow at Bowman Avenue: 795.22 cubic per second

NRCC Updated 100 Year Storm Event, 9.02 inches in 24 hours

Flood Level at Bowman Avenue: 39.13 feet elevation
Flow at Bowman Avenue: 924.69 cubic per second

DESCRIPTION OF MODIFICATIONS:

It was reported by residents of Avon Circle that the April 2007 storm overtopped the headwall of the dual 60" diameter pipe culverts at the northerly property line. Accordingly, this report provides that a berm or the headwall at these culvert inlets be raised from about the current elevation of 61 feet to roughly elevation 68 feet. This new height would prevent flows from running down to the Avon Circle roadway, parking area and pool while forcing the dual culverts to handle additional flow. Thus, in all the options, this report requires that a berm or wall at the inlet of the Avon culverts be constructed as well as additional culvert capacity required to handle severe storm flows.

Case 1 – This is the current or existing condition.

Case 2 – In addition to creating a berm or building a wall above the entrance to the Avon Circle culverts this option also requires that a new 48 inch diameter pipe be installed under Westchester Avenue to protect the Avon Circle area from flooding. The 48 inch culvert will be directed into a new detention basin to be constructed on the north end of the ball field near Westchester Avenue to control overflow.

Case 3 - In addition to creating a berm or building a wall above the entrance to the Avon Circle culverts this option adds a 60" diameter culvert to complement the two (2) existing culverts at Avon Circle. To control the additional flows this option provides an open detention basin in the portion of the ball field near Westchester Avenue.

Case 4 – In addition to creating a berm or building a wall above the entrance to the Avon Circle culverts this option uses a new 48 inch diameter pipe under Westchester Avenue that is directed to new subsurface chambers in the ball field to provide stormwater detention to control outflows.

In all proposed cases the elevation of the ball fields would be raised to an elevation above the 100 year flood elevation.

Results of Analysis – Compare Case 2 to Case 1 Existing Conditions

Case 1 - Existing 2019				Case 2 - Increase the Avon Berm, add a 48" pipe under Westchester Avenue, add a Surface Detention Pond on School Property	
April 2007 Storm Simulation	Location	Elevation of Flood (ft)	Outflow (cfs)	Elevation of Flood (ft)	Outflow (cfs)
	Bowman Avenue	38.81	859.46	38.81	858.66
	Avon Pool Area	53.03	669.96	50.81	606.68
	Avon Parking Lot	53.18	220.74	no flood	no flood
	Avon Upstream Culvert Entrance	62.06	356.96	66.73	570.39
	Bypassing the Avon Culvert Entrance	62.06	235.65	66.73	no flood
Original 100 Year Storm	Location	Elevation of Flood (ft)	Outflow (cfs)	Elevation of Flood (ft)	Outflow (cfs)
	Bowman Avenue	38.42	795.22	38.29	773.03
	Avon Pool Area	51.62	632.01	49.03	554.58
	Avon Parking Lot	52.21	183.91	no flood	no flood
	Avon Upstream Culvert Entrance	61.8	343.39	65.22	526.94
	Bypassing the Avon Culvert Entrance	61.8	188.25	65.22	no flood
Cornell North East Regional Climate Center	Location	Elevation of Flood (ft)	Outflow (cfs)	Elevation of Flood (ft)	Outflow (cfs)
	Bowman Avenue	39.13	924.69	39.21	953.58
	Avon Pool Area	54.78	714.46	53.08	667.19
	Avon Parking Lot	54.83	273.3	no flood	no flood
	Avon Upstream Culvert Entrance	62.4	373.22	68.21	614.97
	Bypassing the Avon Culvert Entrance	62.4	301.49	68.21	37.16

Results of Analysis – Compare Case 3 to Case 1 Existing Conditions

Case 1 - Existing 2019				Case 3 - Increase the Avon Berm, add a new 60" Culvert pipe through Avon and under Westchester Avenue, add a new Surface Detention Basin on School Property	
April 2007 Storm Simulation	Location	Elevation of Flood (ft)	Outflow (cfs)	Elevation of Flood (ft)	Outflow (cfs)
	Bowman Avenue	38.81	859.46	37.35	626.42
	Avon Pool Area	53.03	669.96	46.18	751.33
	Avon Parking Lot	53.18	220.74	no flood	no flood
	Avon Upstream Culvert Entrance	62.06	356.96	61.53	559.74
	Bypassing the Avon Culvert Entrance	62.06	235.65	no flood	no flood
Original 100 Year Storm	Location	Elevation of Flood (ft)	Outflow (cfs)	Elevation of Flood (ft)	Outflow (cfs)
	Bowman Avenue	38.42	795.22	37.94	718.27
	Avon Pool Area	51.62	632.01	46.16	668.84
	Avon Parking Lot	52.21	183.91	no flood	no flood
	Avon Upstream Culvert Entrance	61.8	343.39	60.66	493.64
	Bypassing the Avon Culvert Entrance	61.8	188.25	60.66	no flood
Cornell North East Regional Climate Center	Location	Elevation of Flood (ft)	Outflow (cfs)	Elevation of Flood (ft)	Outflow (cfs)
	Bowman Avenue	39.13	924.69	38.82	860.69
	Avon Pool Area	54.78	714.46	46.21	859.33
	Avon Parking Lot	54.83	273.3	no flood	no flood
	Avon Upstream Culvert Entrance	62.4	373.22	62.82	645.83
	Bypassing the Avon Culvert Entrance	62.4	301.49	63.29	no flood
				Ran as Standard Oscillations	to avoid in output

Results of Analysis – Compare Case 4 to Case 1 Existing Conditions

Case 1 - Existing 2019				Case 4 - Increase the Avon Berm, 48" culvert under Westchester Avenue add Subsurface Chamber Detention Basin on School Property for new 48" culvert	
April 2007 Storm Simulation	Location	Elevation of Flood (ft)	Outflow (cfs)	Elevation of Flood (ft)	Outflow (cfs)
	Bowman Avenue	38.81	859.46	38.81	858.16
	Avon Pool Area	53.03	669.96	50.77	605.51
	Avon Parking Lot	53.18	220.74	no flood	no flood
	Avon Upstream Culvert Entrance	62.06	356.96	66.73	570.39
	Bypassing the Avon Culvert Entrance	62.06	235.65	no flood	no flood
Original 100 Year Storm	Location	Elevation of Flood (ft)	Outflow (cfs)	Elevation of Flood (ft)	Outflow (cfs)
	Bowman Avenue	38.42	795.22	38.28	784.19
	Avon Pool Area	51.62	632.01	48.99	553.26
	Avon Parking Lot	52.21	183.91	no flood	no flood
	Avon Upstream Culvert Entrance	61.8	343.39	65.22	520.85
	Bypassing the Avon Culvert Entrance	61.8	188.25	65.22	no flood
Cornell North East Regional Climate Center	Location	Elevation of Flood (ft)	Outflow (cfs)	Elevation of Flood (ft)	Outflow (cfs)
	Bowman Avenue	39.13	924.69	39.36	1026.48
	Avon Pool Area	54.78	714.46	53.04	661.1
	Avon Parking Lot	54.83	273.3	no flood	minor flood
	Avon Upstream Culvert Entrance	62.4	373.22	68.21	614.97
	Bypassing the Avon Culvert Entrance	62.4	301.49	68.21	37.16 (minor flood)

DISCUSSION:

It is clear that during a rainfall of 9.02 inches in 24 hours the Avon Circle condominiums would experience dangerous flood levels in current conditions. The top of Westchester Avenue is about 55 feet in elevation and the flood level for 9.02 inches of rain is about 54.8 feet. Such a flood would be disastrous for the most of residences near the pool area.

Clearly, it is important to find a solution to prevent the extreme flood levels at Avon Circle. Any attempt to reduce the flood levels at Avon must rely upon some form of stormwater detention at Port Chester Middle School. For large rainfalls a designed stormwater detention system would become large while also limiting flows to the current conditions.

It is important to note that there is a Westchester County Trunk Sewer and County Channel lines that run along the East Branch of the Blind Brook and any improvements must be coordinated with the County.

RECOMMENDATIONS:

The following are the recommendations that arise from the detailed study in the area:

1. A berm or wall at the Avon culverts should be constructed raising the overtopping elevation from 61 feet to about elevation 68 to prevent overflows onto Avon Circle.
2. Either an additional 60 inch pipe or a 48 inch diameter pipe overflow should be installed under Westchester Avenue to act as an overflow for the waters trapped at Avon Circle.
3. To offset the additional flows as a result of any new pipe installation there needs to be some type of detention system upstream of Bowman Avenue. This could be an isolated, open detention pond, or a system of subsurface chambers.
4. All of the ball field area could be raised to about elevation 44 feet based on a final study of costs. Part of the material for the raised fields would be obtained from the excavation of the detention pond or subsurface chambers and some areas that are currently undisturbed or imported fill.

3. CONCLUSIONS

Key elements for improvement that result from the detailed study and their effects can be summarized as follows:

I. Creating a berm or wall at Avon Circle culverts:

This design element is necessary under each of the options examined. The residents of Avon Circle noted that the flood water has overtopped the existing headwall at the culvert entrance at the northern property line of Avon Circle. It then flows along the roadway to ultimately pond at the southern end of the development in the larger storm events. The analysis confirmed this condition and concluded that creating a berm or wall at an elevation of 68' would prevent overtopping and some flooding in the middle of the Avon Circle property.

In addition to the berm or wall noted here; there are other required improvements as has been identified in our field reconnaissance. Currently stormwater runoff from the Hilton Westchester Hotel property located to the west of Avon Circle bypasses the catch basins located at their eastern driveway and runs uncontrolled overland entering the Avon Circle development, adding to the flooding at the swimming pool area. This infrastructure should be improved with the installation of additional inlets and/or a headwall strategically placed so as to better capture this runoff and convey it in a piped system to the 60" drain lines located in Avon Circle. This improvement has been noted on each of the preliminary design sketches.

II. Installation of a 48" diameter pipe under Westchester Avenue along with stormwater detention at the PCMS:

These improvements as noted in Case 2 and Case 4 of the analysis are effective in eliminating flooding at the roadway in Avon Circle, however, does not fully eliminate flooding at the pool area. This option can be implemented utilizing either an open pond or underground detention at PCMS. The latter being the more expensive option, however yielding the most usable space at the PCMS ball fields since all stormwater detention would be underground. For the 2007 nor'easter (7.7" in 21.5 hours) storm event analysis, no flooding would occur within the roadway areas on Avon Circle. Significant improvement to flood depths at the Avon Circle pool area would also be realized, with reductions over 2 feet in flood depth; however flooding in the pool area would not be fully eliminated. Using the "extreme" precipitation rainfall amounts (9.02" in 24 hours) flooding would still occur at the Avon Circle pool and roadway areas, although somewhat reduced.

III. Installation of a 60" diameter pipe through Avon Circle property and Westchester Avenue along with stormwater detention at the PCMS:

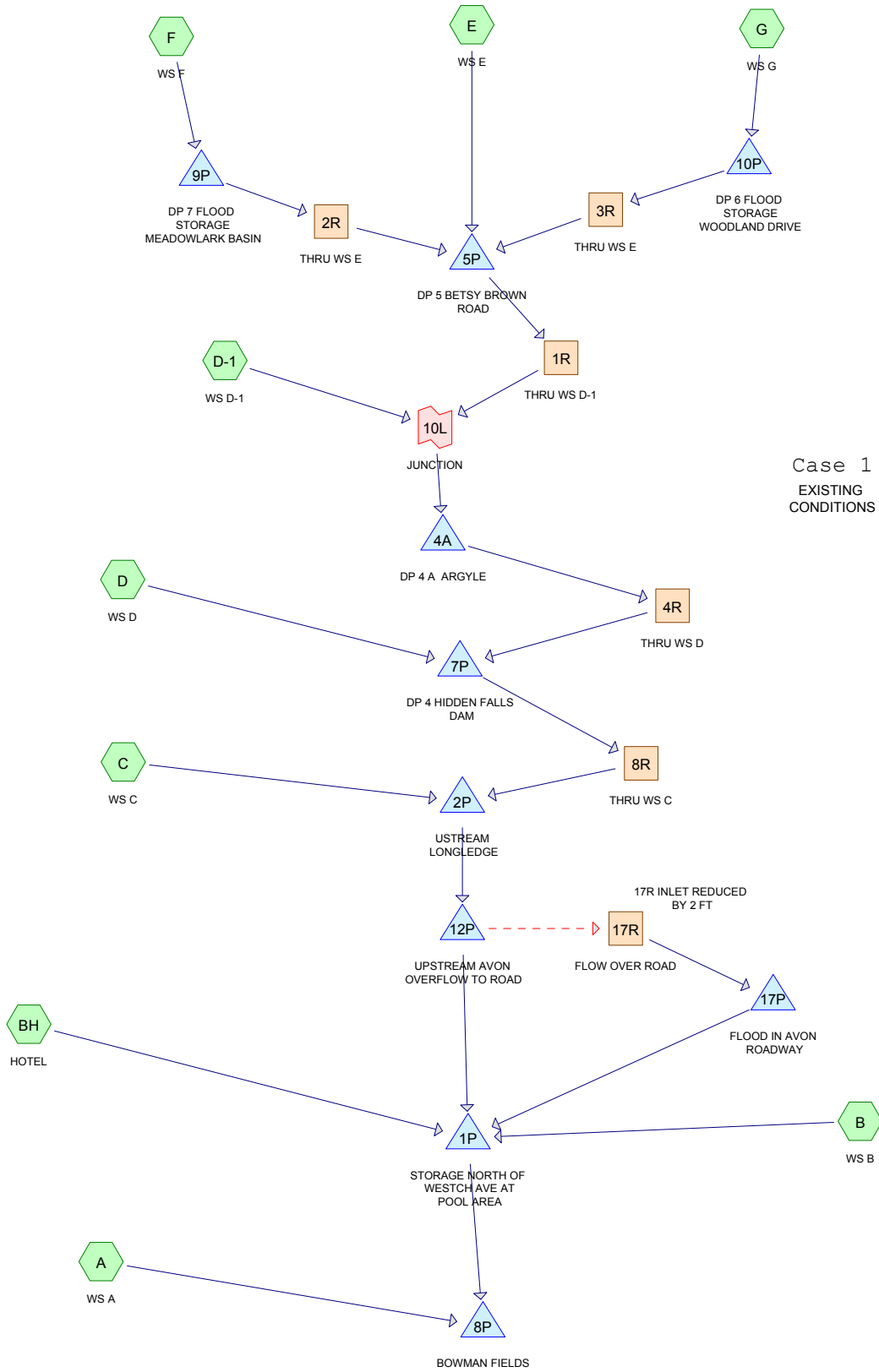
This improvement as noted in Case 3 of the analysis will produce the greatest flood reductions at Avon Circle, for all of the storm events modeled including the "extreme" precipitation event (9.02" in 24 hours). The 60" pipe installation can likely be routed to the west of the Avon Circle buildings, avoiding the existing infrastructure in Avon Circle which includes Westchester County's trunk sewer main. The open pond proposed in this option is larger than that proposed in Cases 2 and would detain all flow discharged from the Avon Circle culverts. This option is likely the most expensive and for this reason may not prove to be the best choice once a cost benefit analysis is performed.

IV. Raising the field at PCMS to an elevation of 44':

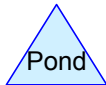
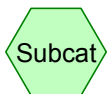
This design element would coincide with the proposed stormwater detention options studied in each case. Material excavated from the proposed pond or underground storage areas would be reused on site for raising the field. The final elevation of the new fields would be set above the predicted flood elevations at Bowman Avenue but would not increase the peak stormwater flow rates leaving the PCMS. This increase to the field elevation in conjunction with the detention pond or underground system installation will require alteration of the existing channel through the PCMS property to raise the banks sufficiently. It is for this reason that we note installation of a concrete "U" Channel at the brook in each of the options examined. The final details of this channel and field elevation would be determined when a preferred option is selected and the final engineering design is developed.

APPENDIX A

STORMWATER CALCULATIONS



Case 1
EXISTING
CONDITIONS



Routing Diagram for EBBR_HCAD_JAN_2019_exist_f
 Prepared by Microsoft, Printed 2/7/2019
 HydroCAD® 10.00-16 s/n M16359 © 2015 HydroCAD Software Solutions LLC

Summary for Subcatchment A: WS A

Runoff = 225.19 cfs @ 12.42 hrs, Volume= 31.562 af, Depth= 6.37"

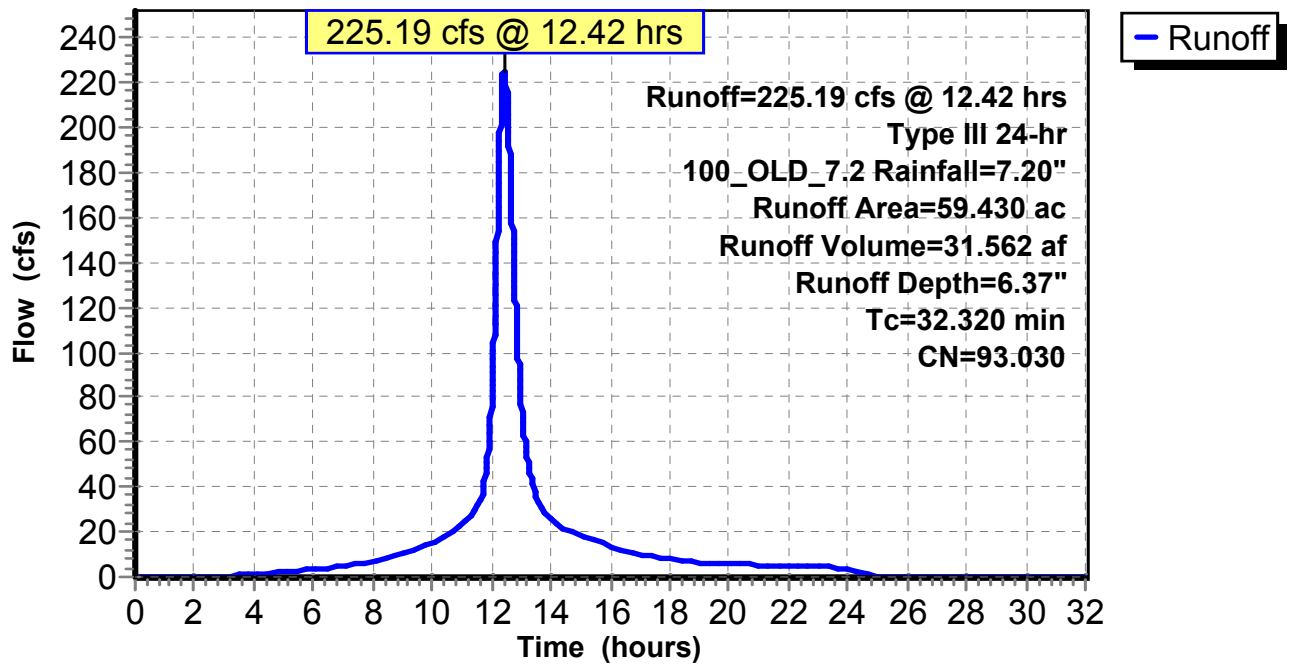
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



Summary for Subcatchment B: WS B

Runoff = 214.89 cfs @ 12.38 hrs, Volume= 27.266 af, Depth= 5.68"

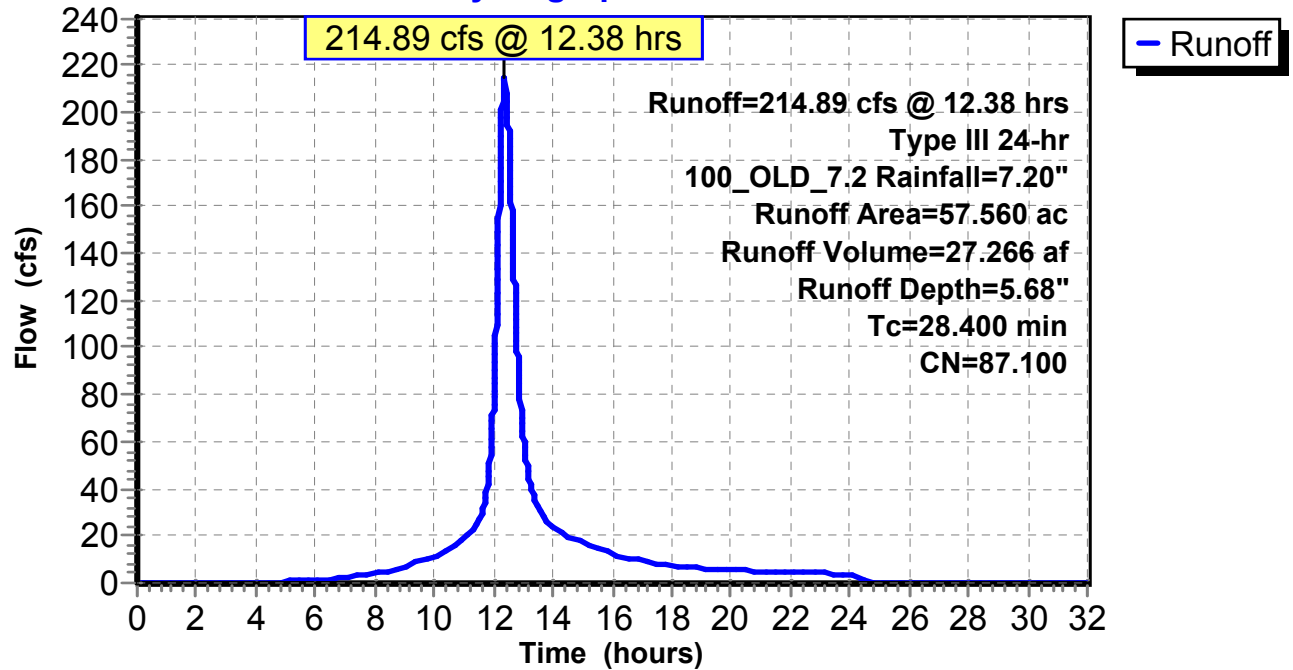
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



Summary for Subcatchment BH: HOTEL

Runoff = 54.61 cfs @ 12.42 hrs, Volume= 7.110 af, Depth= 5.58"

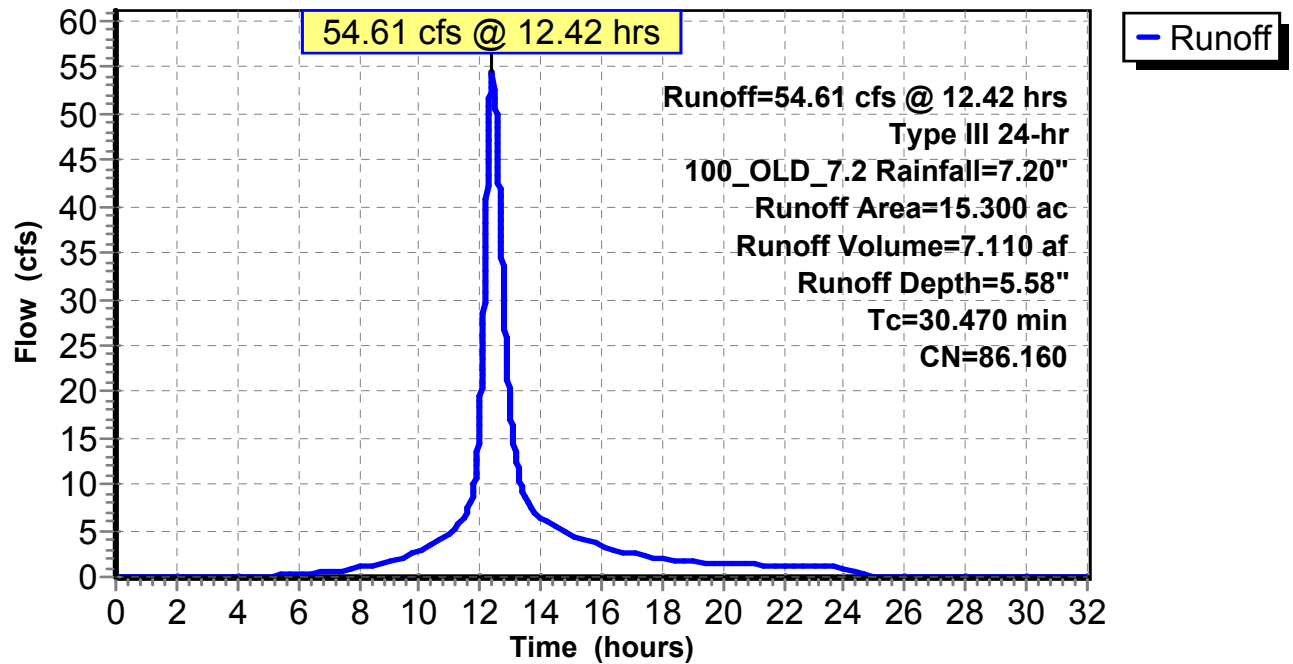
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



Summary for Subcatchment C: WS C

Runoff = 89.08 cfs @ 12.25 hrs, Volume= 9.241 af, Depth= 5.16"

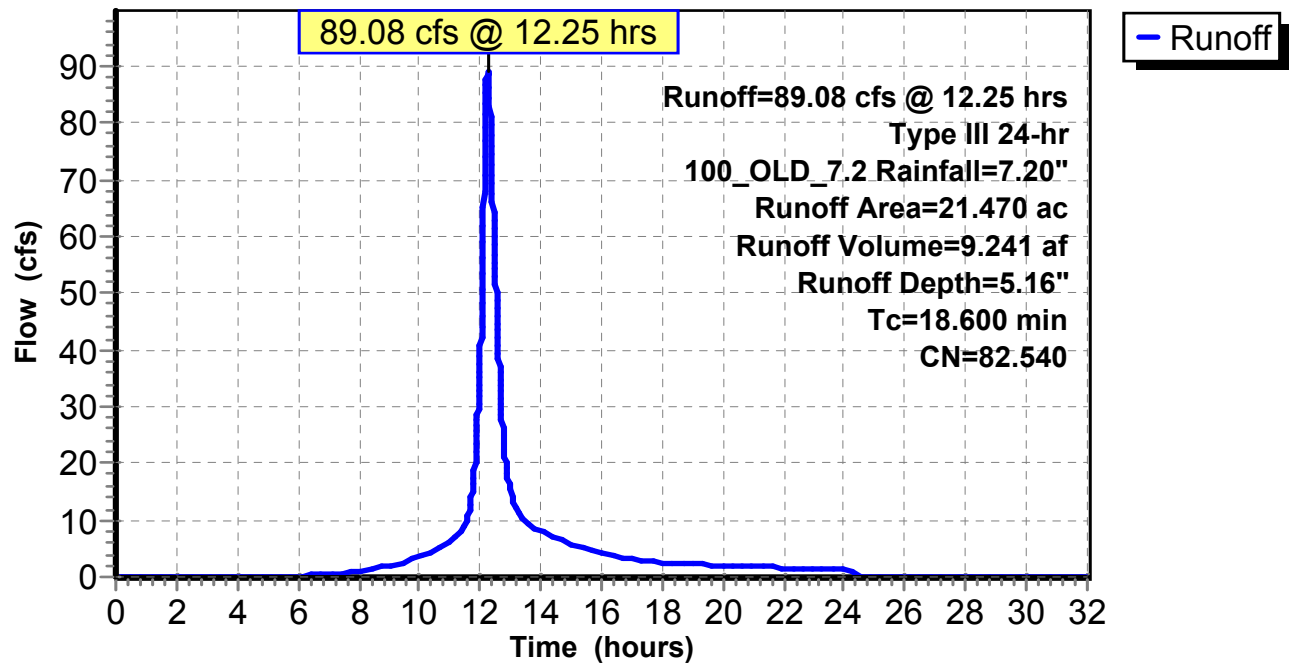
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



Summary for Subcatchment D: WS D

Runoff = 318.76 cfs @ 12.61 hrs, Volume= 49.517 af, Depth= 5.13"

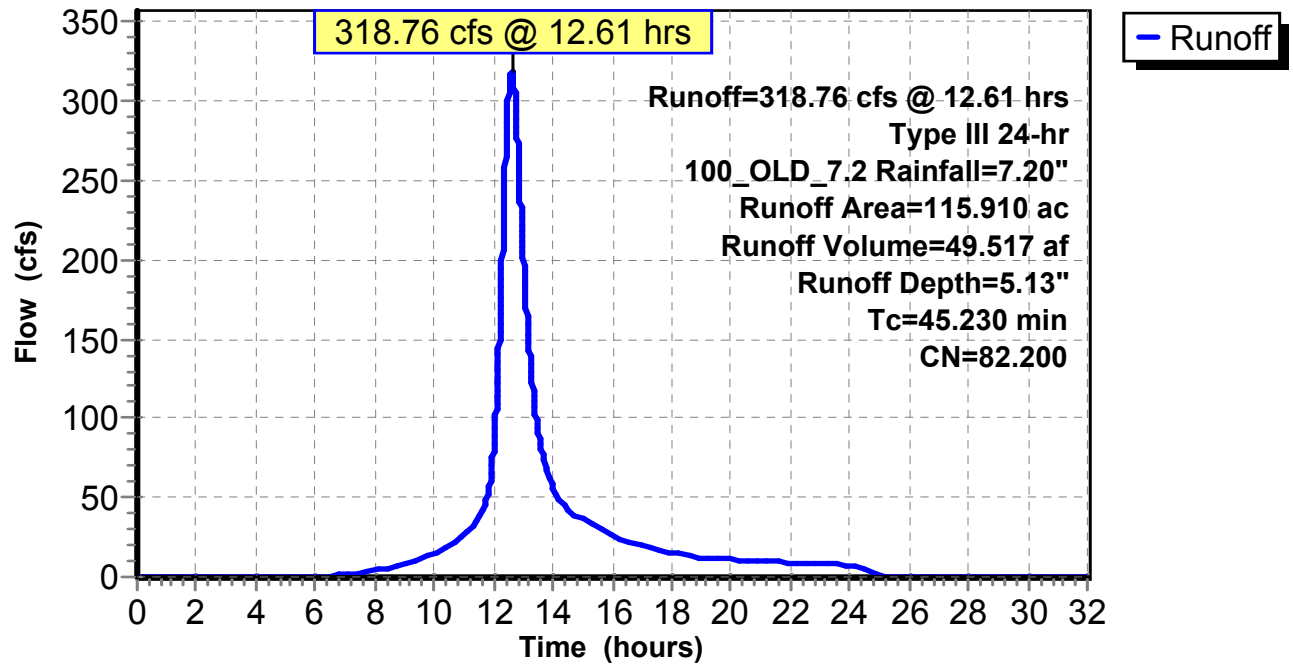
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



Summary for Subcatchment D-1: WS D-1

Runoff = 114.07 cfs @ 12.45 hrs, Volume= 14.696 af, Depth= 4.46"

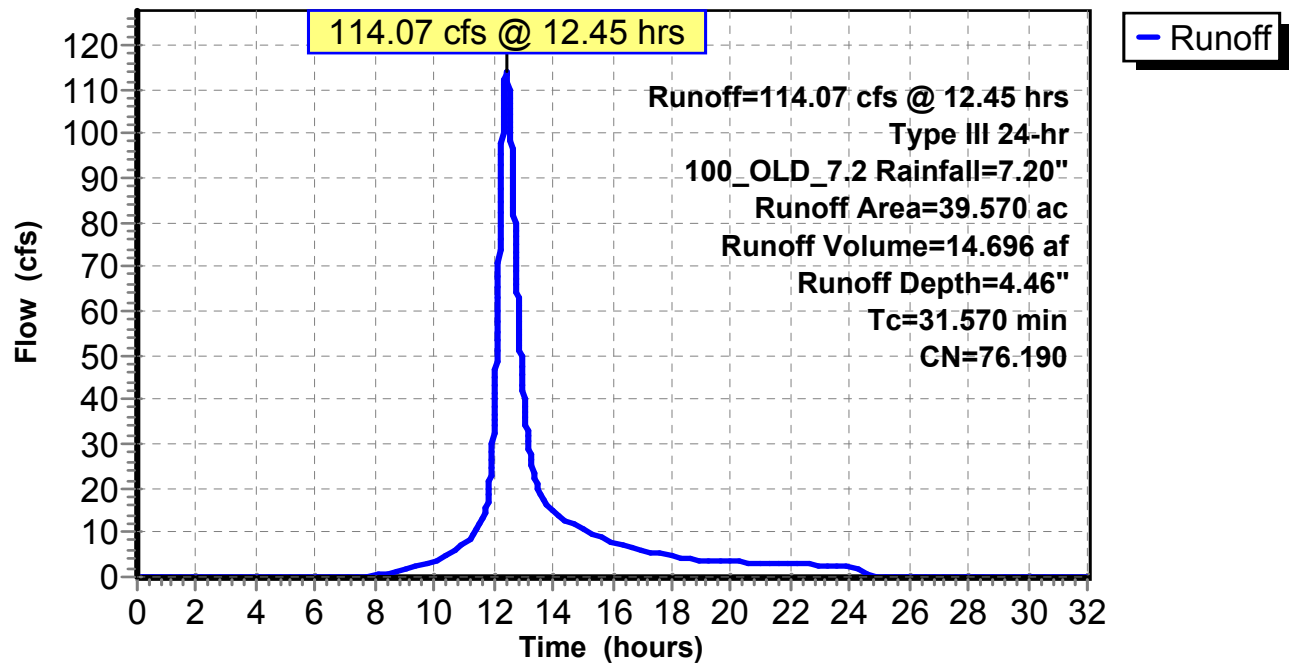
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



Summary for Subcatchment E: WS E

Runoff = 257.33 cfs @ 12.85 hrs, Volume= 48.066 af, Depth= 4.92"

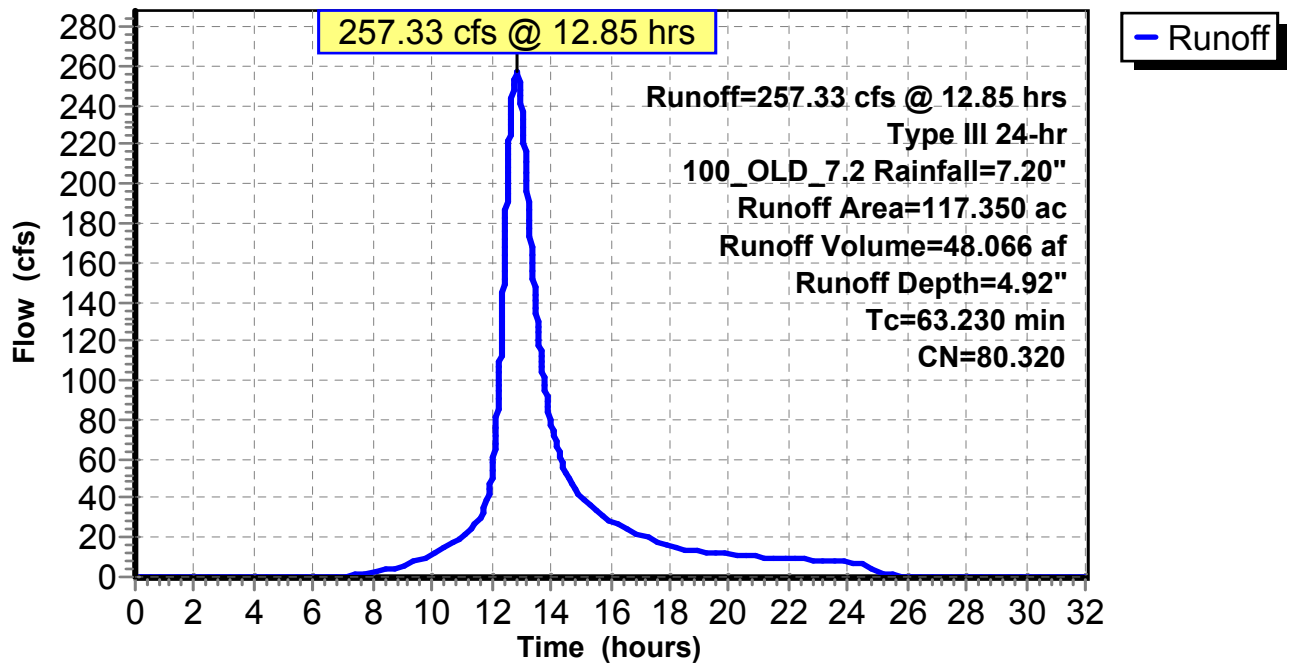
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



Summary for Subcatchment F: WS F

Runoff = 281.77 cfs @ 12.63 hrs, Volume= 42.867 af, Depth= 4.25"

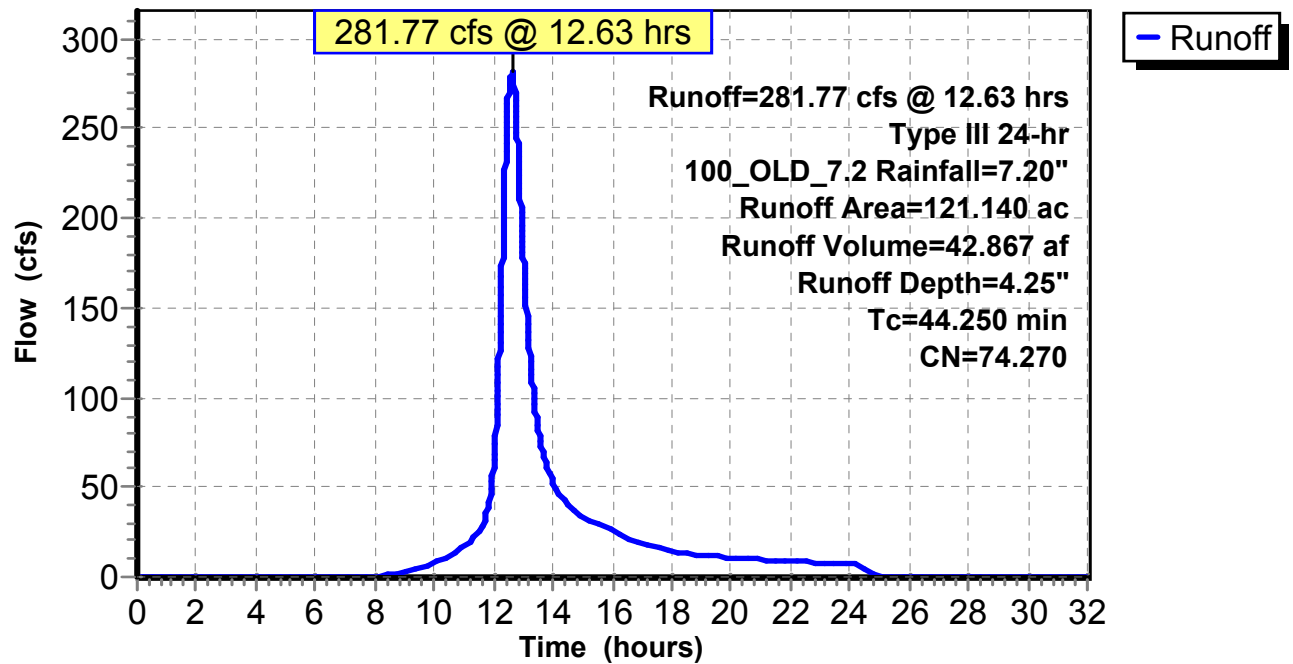
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



Summary for Subcatchment G: WS G

Runoff = 505.46 cfs @ 12.50 hrs, Volume= 70.151 af, Depth= 5.05"

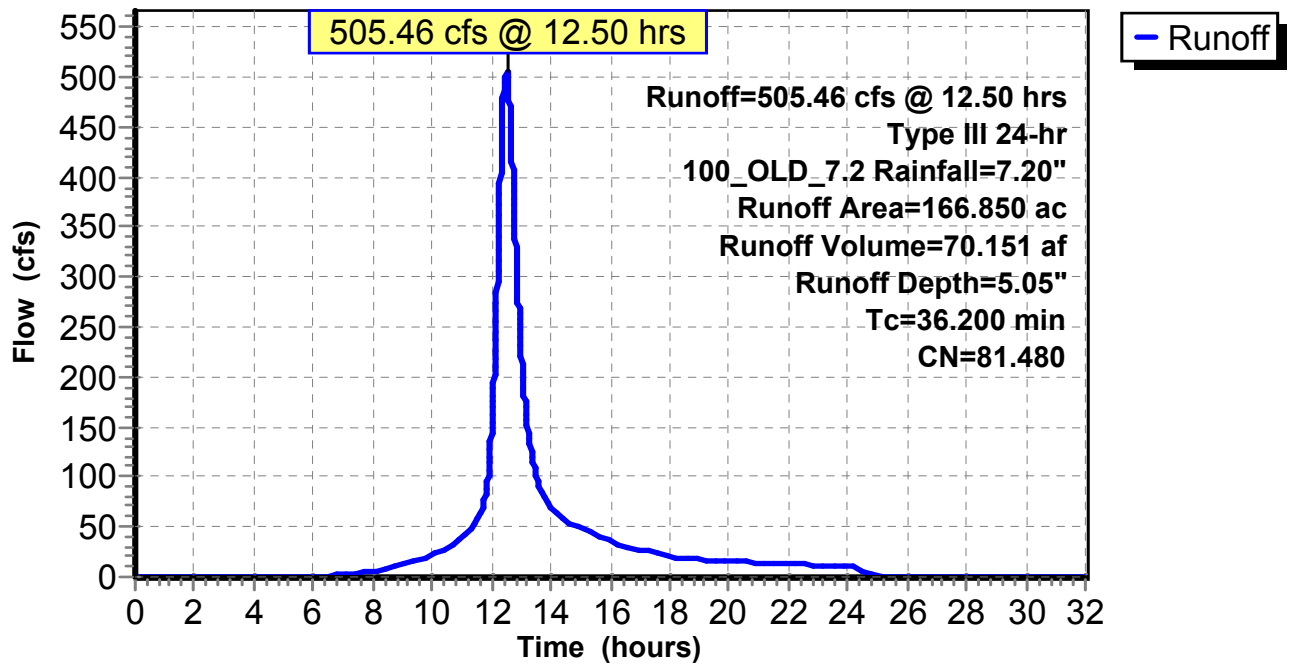
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 4.20" for 100_OLD_7.2 event
 Inflow = 278.60 cfs @ 13.57 hrs, Volume= 141.837 af
 Outflow = 278.49 cfs @ 13.60 hrs, Volume= 141.730 af, Atten= 0%, Lag= 1.407 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 4.16 fps, Min. Travel Time= 2.020 min
 Avg. Velocity = 2.19 fps, Avg. Travel Time= 3.841 min

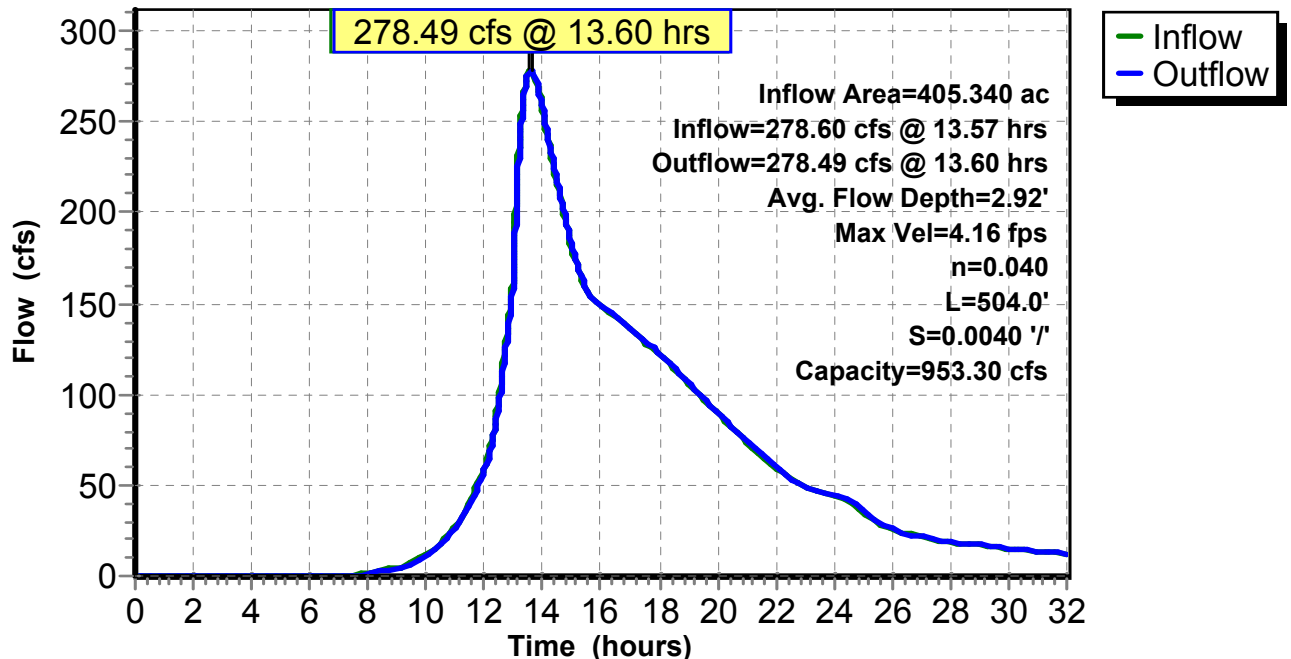
Peak Storage= 33,747 cf @ 13.60 hrs
 Average Depth at Peak Storage= 2.92'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' ' Top Width= 32.00'
 Length= 504.0' Slope= 0.0040 ' '
 Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 4.25" for 100_OLD_7.2 event
 Inflow = 281.40 cfs @ 12.63 hrs, Volume= 42.867 af
 Outflow = 250.77 cfs @ 12.79 hrs, Volume= 42.833 af, Atten= 11%, Lag= 9.845 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.25 fps, Min. Travel Time= 16.164 min
 Avg. Velocity = 0.66 fps, Avg. Travel Time= 55.196 min

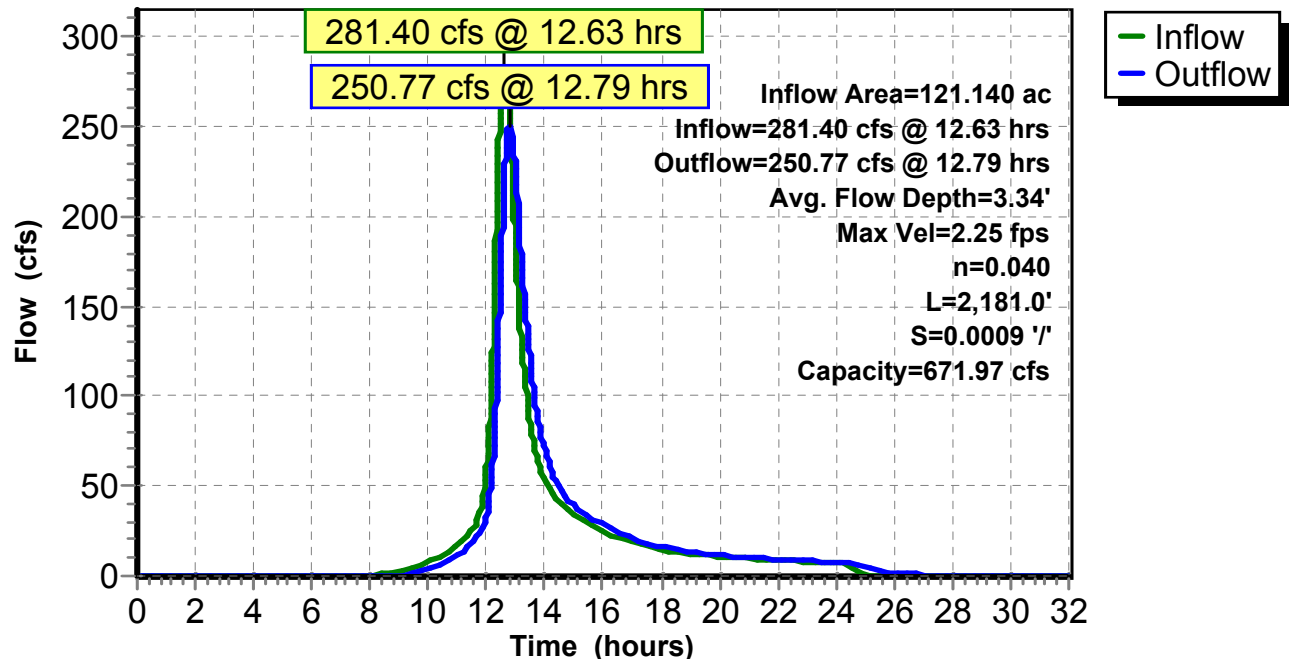
Peak Storage= 243,214 cf @ 12.79 hrs
 Average Depth at Peak Storage= 3.34'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 2,181.0' Slope= 0.0009 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 4.91" for 100_OLD_7.2 event
 Inflow = 500.99 cfs @ 12.53 hrs, Volume= 68.258 af
 Outflow = 50.96 cfs @ 14.93 hrs, Volume= 51.236 af, Atten= 90%, Lag= 144.011 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.61 fps, Min. Travel Time= 606.707 min
 Avg. Velocity = 0.45 fps, Avg. Travel Time= 812.044 min

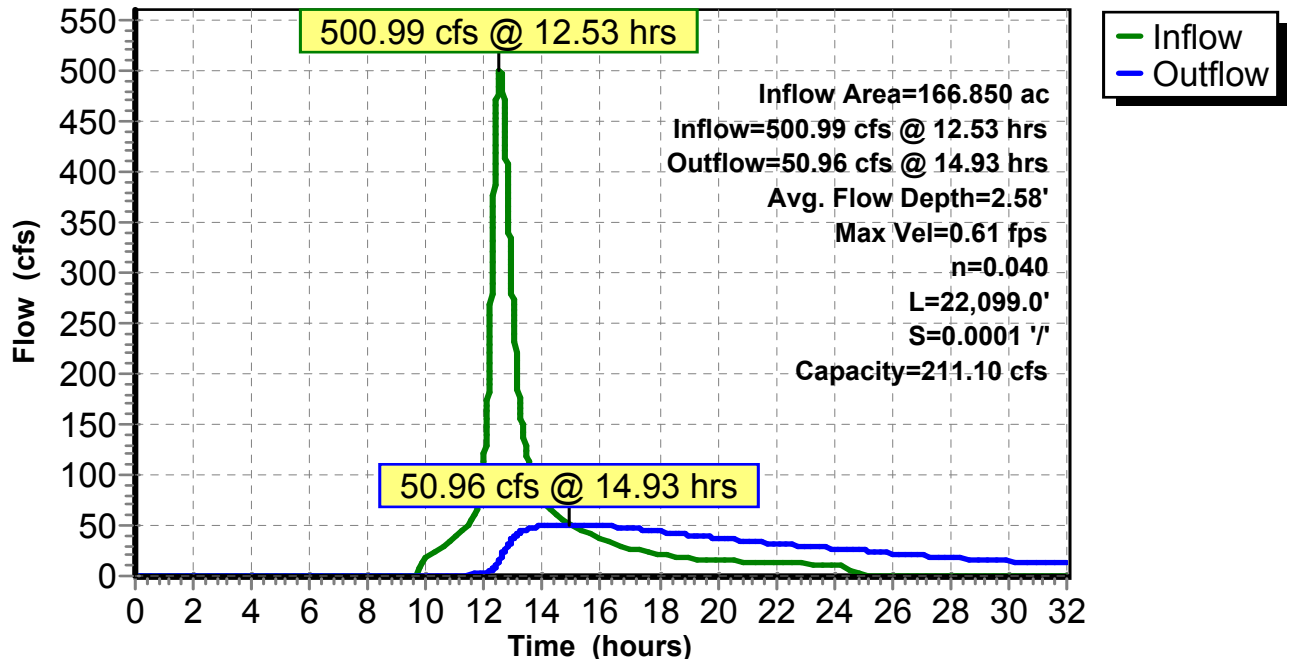
Peak Storage= 1,855,116 cf @ 14.93 hrs
 Average Depth at Peak Storage= 2.58'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 22,099.0' Slope= 0.0001 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 4.21" for 100_OLD_7.2 event
 Inflow = 297.42 cfs @ 13.59 hrs, Volume= 156.211 af
 Outflow = 295.59 cfs @ 13.69 hrs, Volume= 155.851 af, Atten= 1%, Lag= 5.921 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 6.72 fps, Min. Travel Time= 7.400 min
 Avg. Velocity = 3.88 fps, Avg. Travel Time= 12.804 min

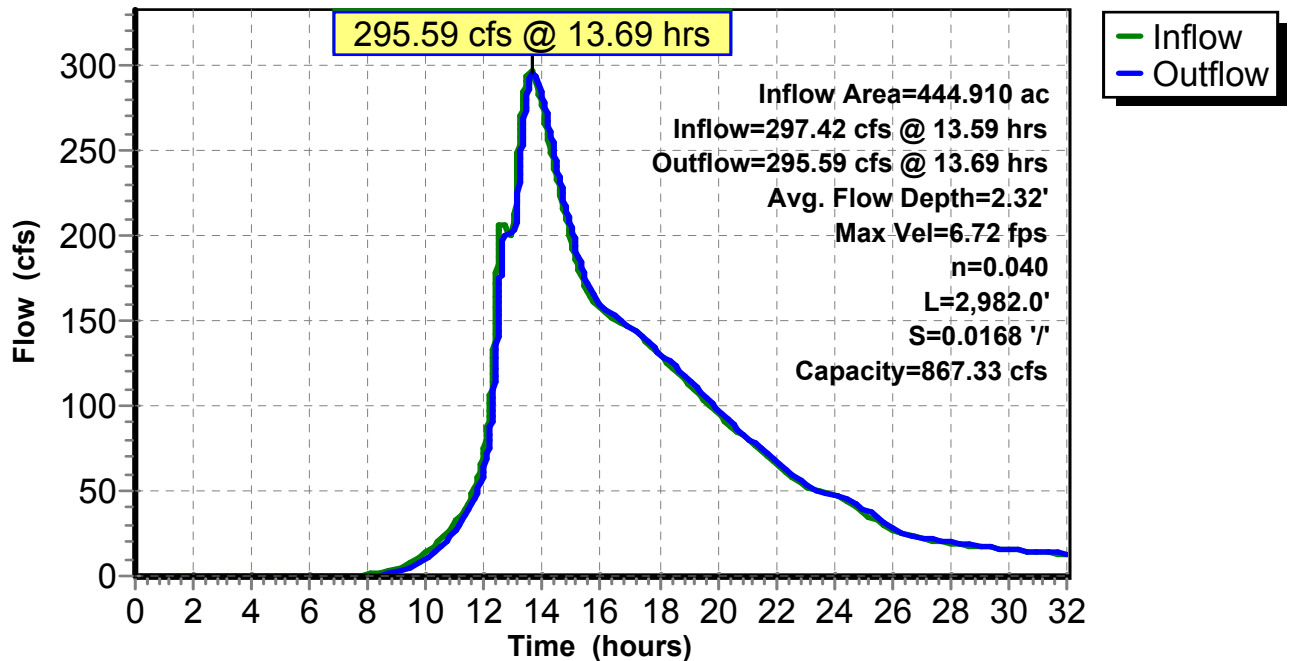
Peak Storage= 131,241 cf @ 13.69 hrs
 Average Depth at Peak Storage= 2.32'
 Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040
 Side Slope Z-value= 3.0 ' / ' Top Width= 36.00'
 Length= 2,982.0' Slope= 0.0168 ' / '
 Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



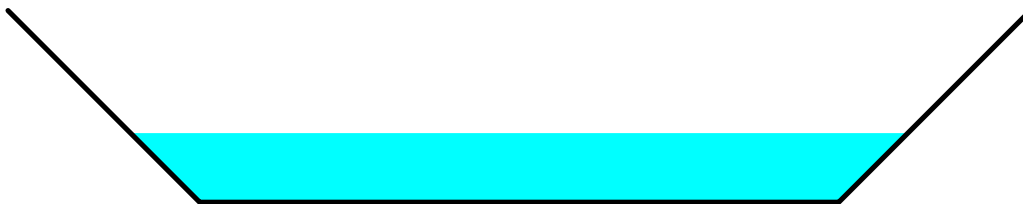
Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 4.39" for 100_OLD_7.2 event
 Inflow = 512.05 cfs @ 12.67 hrs, Volume= 205.366 af
 Outflow = 511.95 cfs @ 12.68 hrs, Volume= 205.318 af, Atten= 0%, Lag= 0.449 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 10.68 fps, Min. Travel Time= 0.679 min
 Avg. Velocity = 4.84 fps, Avg. Travel Time= 1.497 min

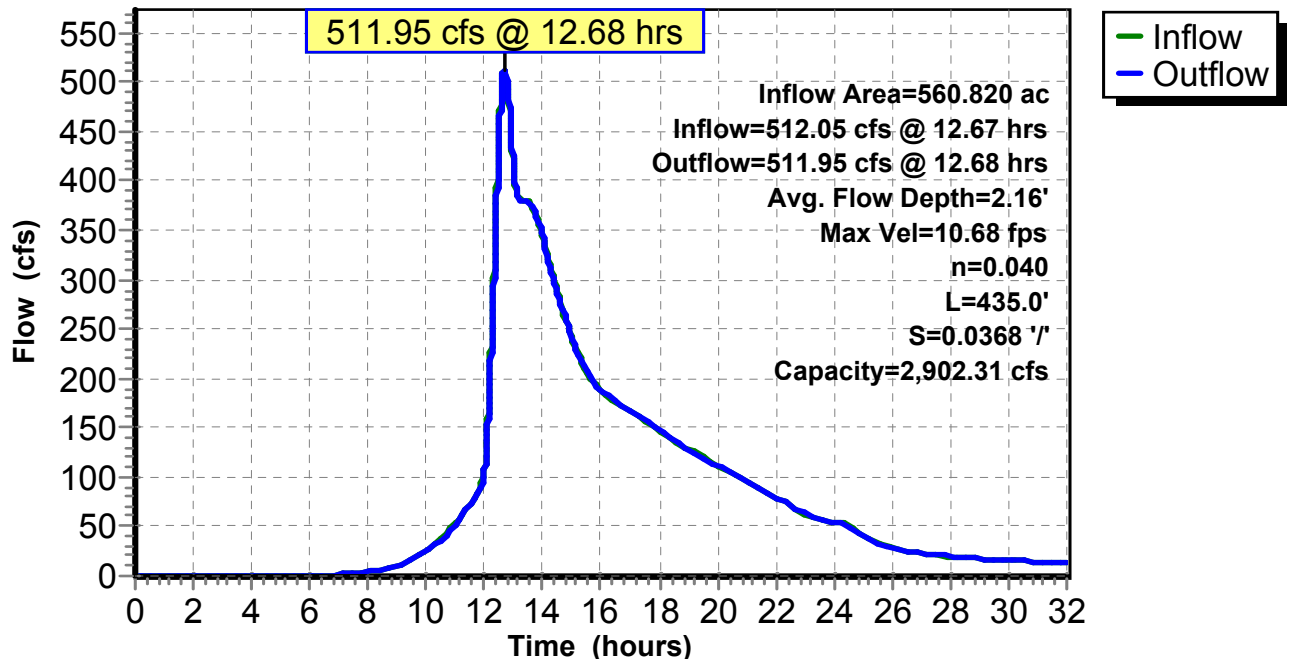
Peak Storage= 20,851 cf @ 12.68 hrs
 Average Depth at Peak Storage= 2.16'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
 Length= 435.0' Slope= 0.0368 ' / '
 Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 188.25 cfs @ 12.75 hrs, Volume= 18.419 af
 Outflow = 187.95 cfs @ 12.76 hrs, Volume= 18.419 af, Atten= 0%, Lag= 1.103 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 8.20 fps, Min. Travel Time= 1.806 min
 Avg. Velocity = 2.79 fps, Avg. Travel Time= 5.308 min

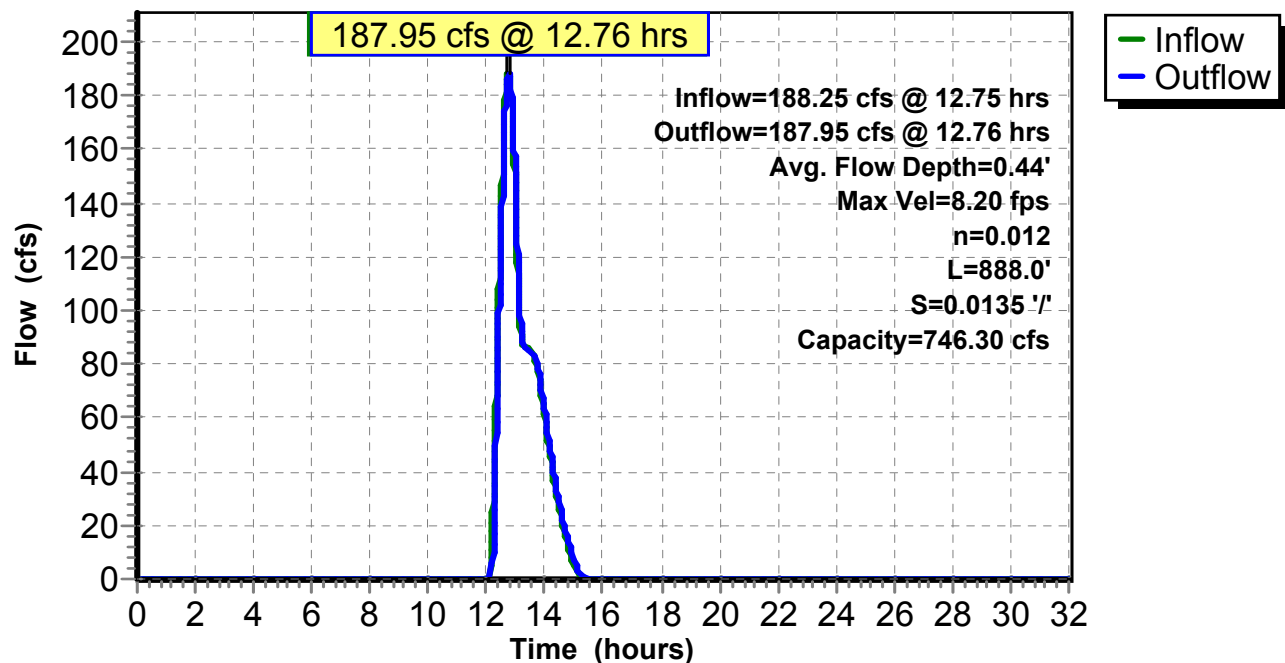
Peak Storage= 20,365 cf @ 12.76 hrs
 Average Depth at Peak Storage= 0.44'
 Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
 Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
 Length= 888.0' Slope= 0.0135 ' '
 Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



Summary for Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 4.56" for 100_OLD_7.2 event
 Inflow = 701.02 cfs @ 12.60 hrs, Volume= 248.924 af
 Outflow = 632.01 cfs @ 12.86 hrs, Volume= 248.920 af, Atten= 10%, Lag= 16.079 min
 Primary = 632.01 cfs @ 12.86 hrs, Volume= 248.920 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 51.62' @ 12.86 hrs Surf.Area= 1.302 ac Storage= 4.585 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.848 min (967.300 - 966.452)

Volume	Invert	Avail.Storage	Storage Description
#1	46.00'	82.605 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
46.00	0.695	0.000	0.000
48.00	0.695	1.390	1.390
50.00	0.800	1.495	2.885
52.00	1.420	2.220	5.105
54.00	2.270	3.690	8.795
56.00	3.160	5.430	14.225
58.00	4.070	7.230	21.455
60.00	4.980	9.050	30.505
62.00	5.710	10.690	41.195
64.00	6.620	12.330	53.525
66.00	7.170	13.790	67.315
68.00	8.120	15.290	82.605

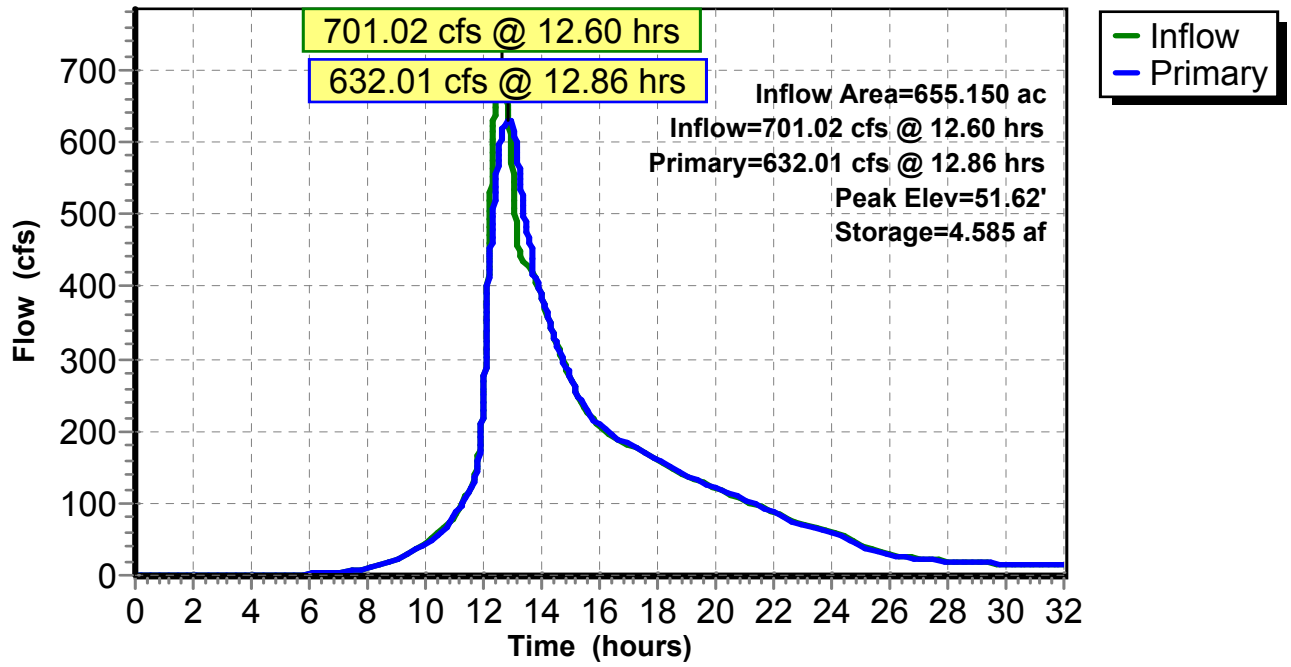
Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48

Primary OutFlow Max=632.03 cfs @ 12.86 hrs HW=51.62' TW=38.12' (Dynamic Tailwater)

1=Culvert (Inlet Controls 632.03 cfs @ 16.20 fps)
 2=WEIR WESTCH AVE (Controls 0.00 cfs)

Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 4.42" for 100_OLD_7.2 event
 Inflow = 545.22 cfs @ 12.65 hrs, Volume= 214.559 af
 Outflow = 531.64 cfs @ 12.74 hrs, Volume= 214.557 af, Atten= 2%, Lag= 5.847 min
 Primary = 531.64 cfs @ 12.74 hrs, Volume= 214.557 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 74.80' @ 12.74 hrs Surf.Area= 0.336 ac Storage= 1.075 af

Plug-Flow detention time= 0.259 min calculated for 214.490 af (100% of inflow)
 Center-of-Mass det. time= 0.251 min (991.044 - 990.793)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

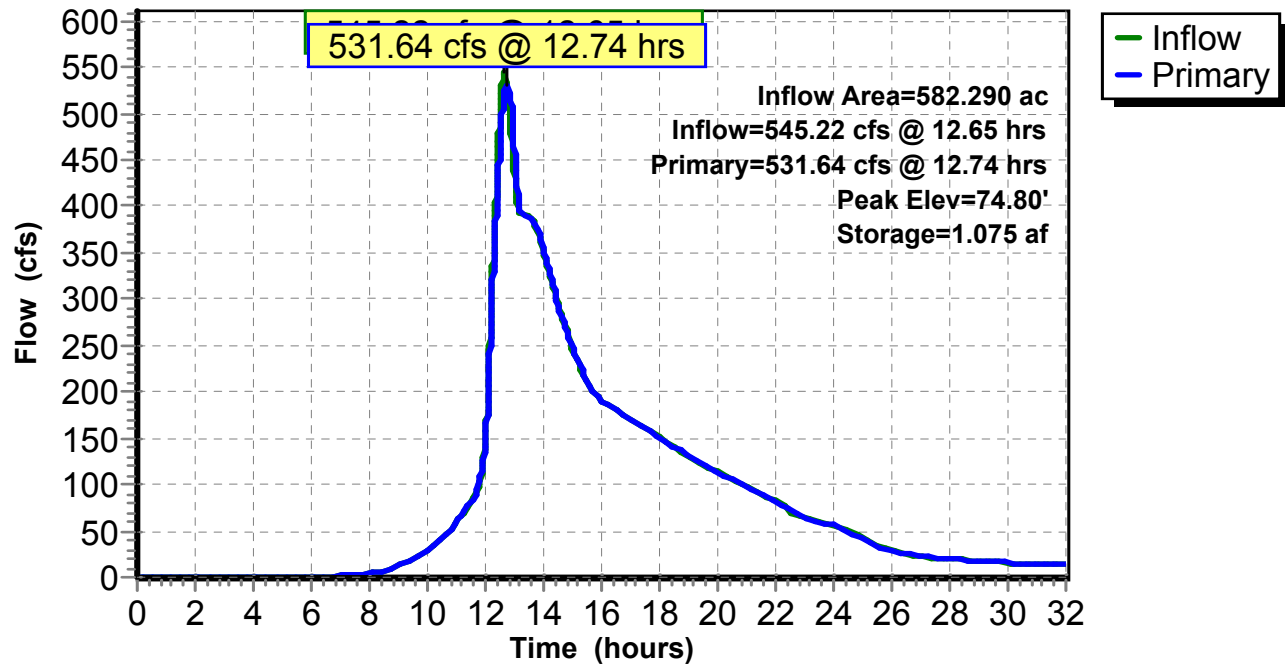
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=531.61 cfs @ 12.74 hrs HW=74.80' TW=61.80' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 315.66 cfs @ 16.08 fps)
- 2=Culvert 2 (Inlet Controls 215.95 cfs @ 11.00 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 4.22" for 100_OLD_7.2 event
 Inflow = 297.57 cfs @ 13.56 hrs, Volume= 156.426 af
 Outflow = 297.42 cfs @ 13.59 hrs, Volume= 156.211 af, Atten= 0%, Lag= 1.564 min
 Primary = 297.42 cfs @ 13.59 hrs, Volume= 156.211 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 130.46' @ 13.59 hrs Surf.Area= 1.027 ac Storage= 2.531 af

Plug-Flow detention time= 8.978 min calculated for 156.162 af (100% of inflow)
 Center-of-Mass det. time= 7.763 min (1,037.092 - 1,029.328)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

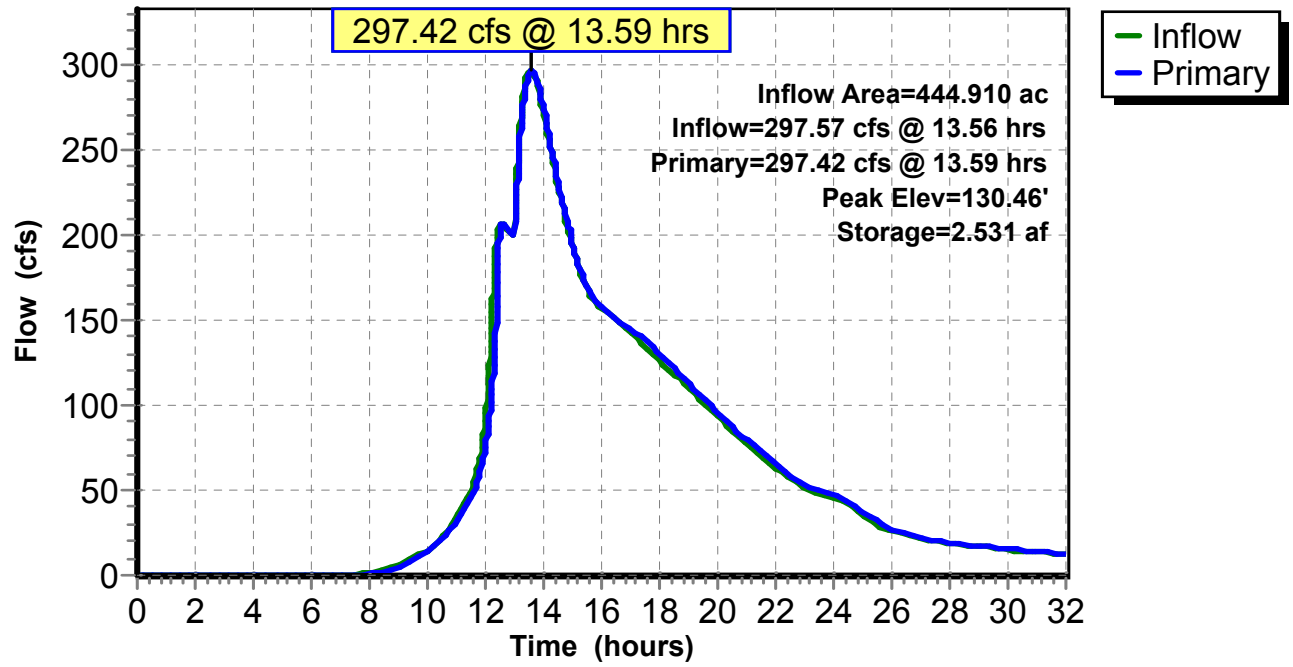
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=297.42 cfs @ 13.59 hrs HW=130.46' TW=128.31' (Dynamic Tailwater)

- 1=Culvert (Barrel Controls 169.52 cfs @ 7.55 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 127.89 cfs @ 2.22 fps)

Pond 4A: DP 4 A ARGYLE

Hydrograph



Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 4.21" for 100_OLD_7.2 event
 Inflow = 537.90 cfs @ 12.84 hrs, Volume= 142.135 af
 Outflow = 278.60 cfs @ 13.57 hrs, Volume= 141.837 af, Atten= 48%, Lag= 43.902 min
 Primary = 278.60 cfs @ 13.57 hrs, Volume= 141.837 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 132.47' @ 13.58 hrs Surf.Area= 20.711 ac Storage= 27.920 af

Plug-Flow detention time= 57.315 min calculated for 141.793 af (100% of inflow)
 Center-of-Mass det. time= 55.374 min (1,046.724 - 991.350)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

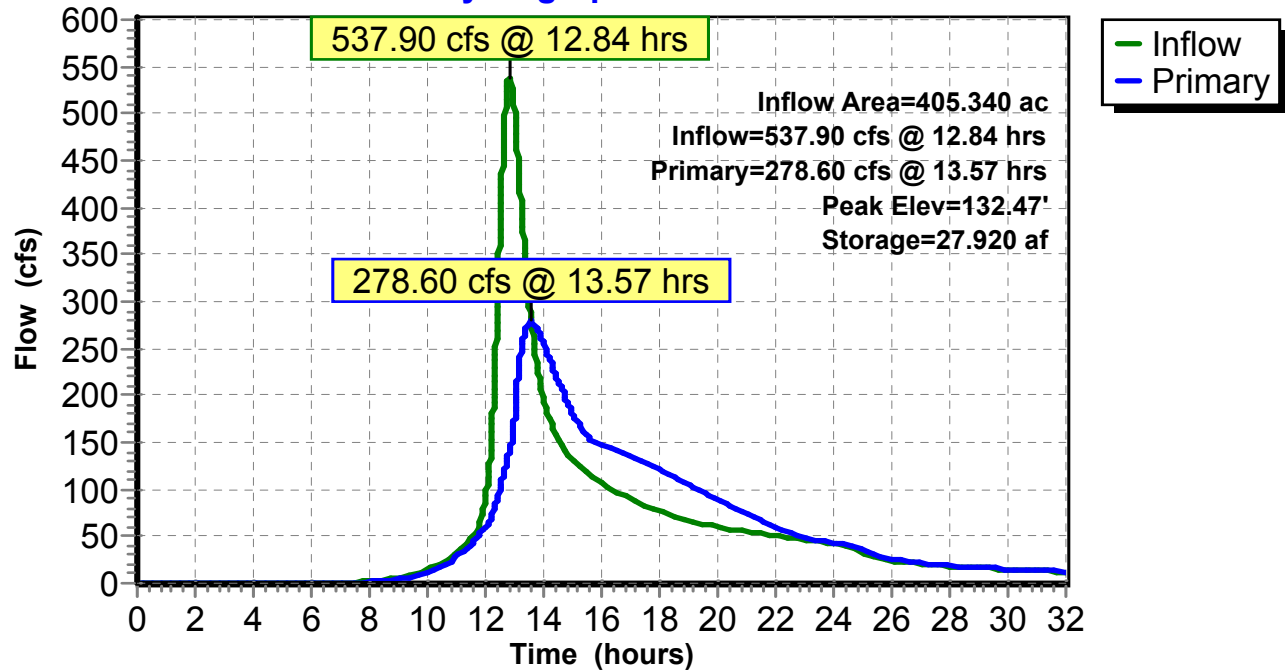
Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

Primary OutFlow Max=278.56 cfs @ 13.57 hrs HW=132.47' TW=130.92' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 150.48 cfs @ 5.99 fps)
- 2=Asymmetrical Weir (Weir Controls 128.08 cfs @ 1.93 fps)

Pond 5P: DP 5 BETSY BROWN ROAD

Hydrograph



Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 4.39" for 100_OLD_7.2 event
 Inflow = 512.98 cfs @ 12.65 hrs, Volume= 205.368 af
 Outflow = 512.05 cfs @ 12.67 hrs, Volume= 205.366 af, Atten= 0%, Lag= 1.600 min
 Primary = 512.05 cfs @ 12.67 hrs, Volume= 205.366 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 91.32' @ 12.67 hrs Surf.Area= 1.370 ac Storage= 1.804 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 2.836 min (997.960 - 995.124)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

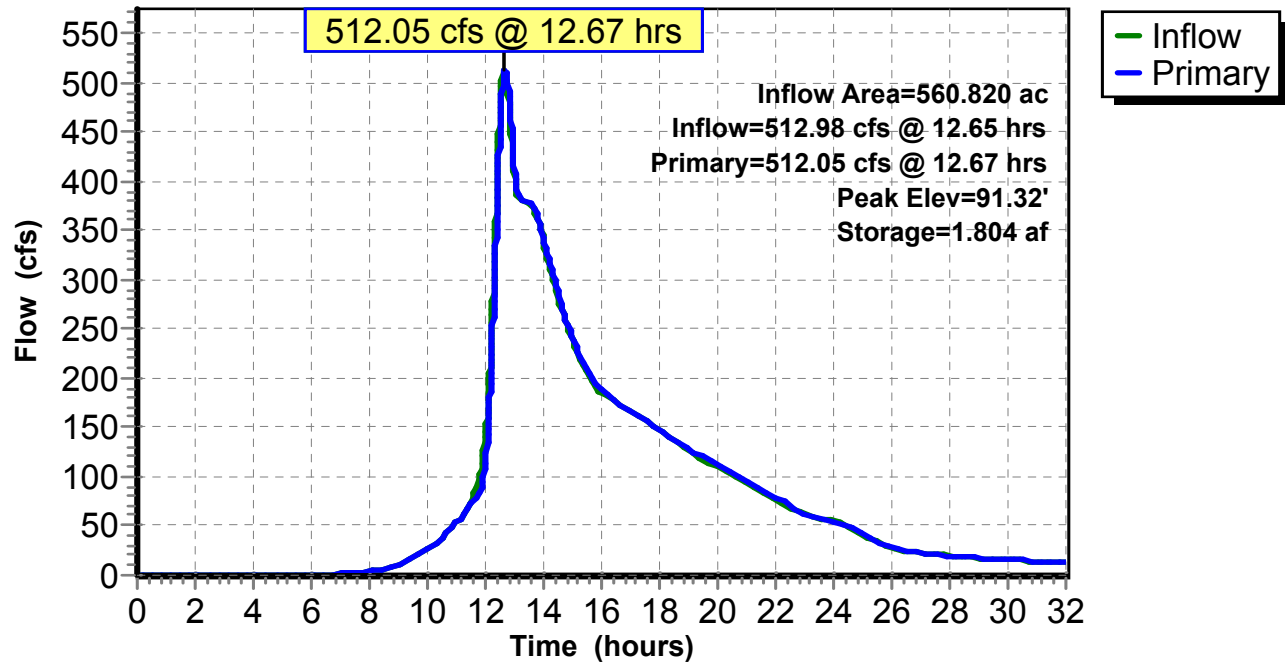
Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=512.02 cfs @ 12.67 hrs HW=91.32' TW=78.16' (Dynamic Tailwater)

- 1=Sharp-Crested Rectangular Weir(Weir Controls 187.27 cfs @ 5.44 fps)
- 2=Sharp-Crested Rectangular Weir(Weir Controls 324.75 cfs @ 2.99 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 4.71" for 100_OLD_7.2 event
 Inflow = 796.35 cfs @ 12.56 hrs, Volume= 280.482 af
 Outflow = 795.22 cfs @ 12.59 hrs, Volume= 280.476 af, Atten= 0%, Lag= 1.814 min
 Primary = 795.22 cfs @ 12.59 hrs, Volume= 280.476 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 38.42' @ 12.59 hrs Surf.Area= 0.380 ac Storage= 0.768 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.238 min (947.850 - 947.612)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

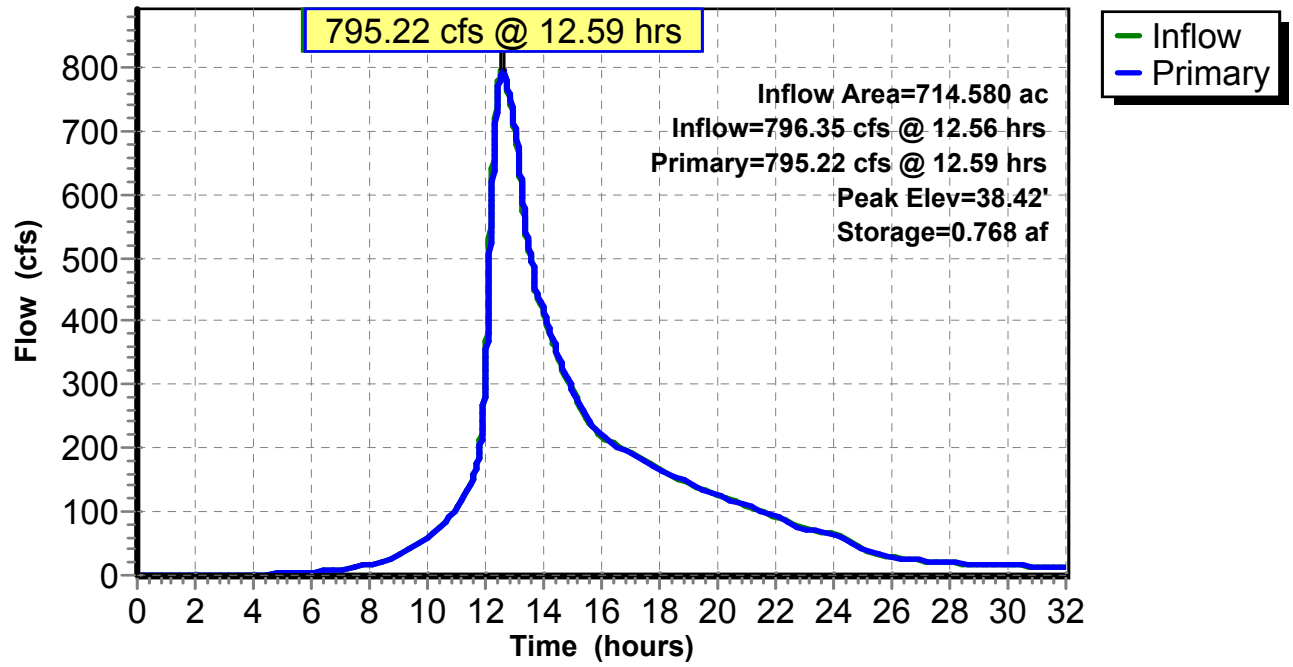
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=795.20 cfs @ 12.59 hrs HW=38.42' (Free Discharge)

- 1=Culvert (Barrel Controls 795.20 cfs @ 9.01 fps)
- 2=WEIR BOWMAN (Controls 0.00 cfs)

Pond 8P: BOWMAN FIELDS

Hydrograph



Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 4.25" for 100_OLD_7.2 event
 Inflow = 281.77 cfs @ 12.63 hrs, Volume= 42.867 af
 Outflow = 281.40 cfs @ 12.63 hrs, Volume= 42.867 af, Atten= 0%, Lag= 0.110 min
 Primary = 281.40 cfs @ 12.63 hrs, Volume= 42.867 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 134.95' @ 12.64 hrs Surf.Area= 0.199 ac Storage= 0.232 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.384 min (855.995 - 855.611)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

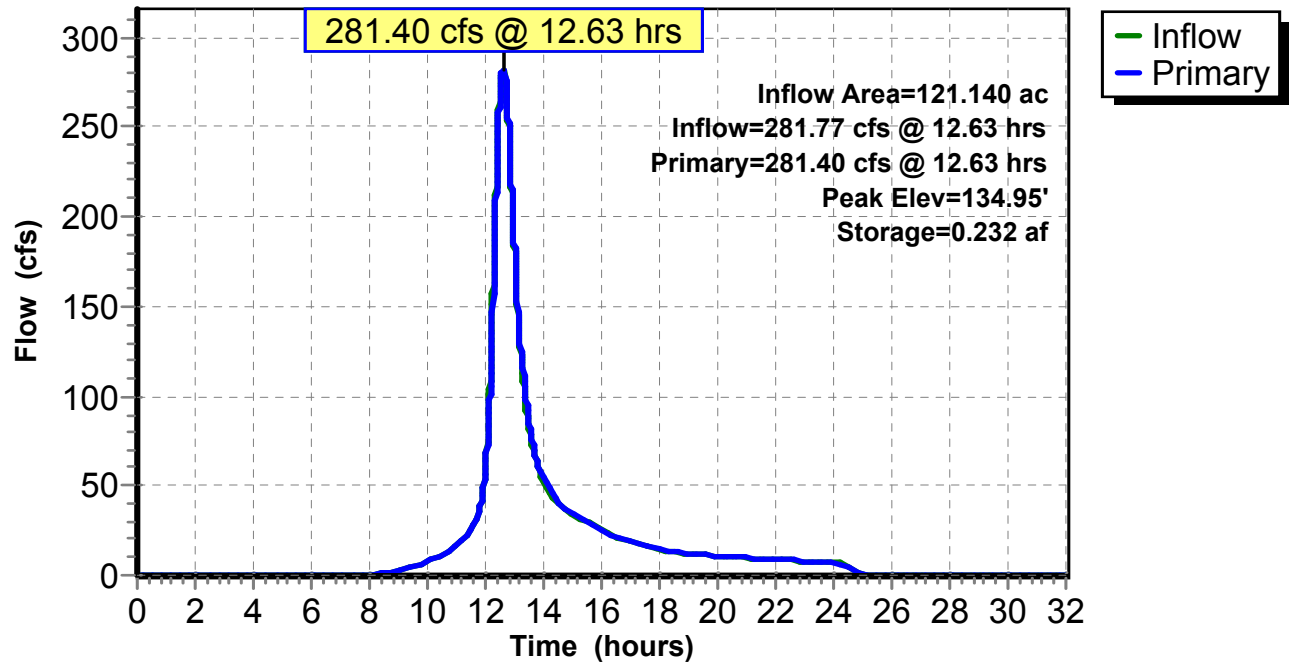
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=280.70 cfs @ 12.63 hrs HW=134.95' TW=133.14' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 45.76 cfs @ 6.47 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 80.43 cfs @ 5.41 fps)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 154.51 cfs @ 2.19 fps)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Hydrograph



Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 5.05" for 100_OLD_7.2 event
 Inflow = 505.46 cfs @ 12.50 hrs, Volume= 70.151 af
 Outflow = 500.99 cfs @ 12.53 hrs, Volume= 68.258 af, Atten= 1%, Lag= 1.620 min
 Primary = 500.99 cfs @ 12.53 hrs, Volume= 68.258 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.66' @ 12.53 hrs Surf.Area= 4.103 ac Storage= 7.233 af (4.266 af above start)

Plug-Flow detention time= 60.835 min calculated for 65.270 af (93% of inflow)
 Center-of-Mass det. time= 14.578 min (845.859 - 831.281)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

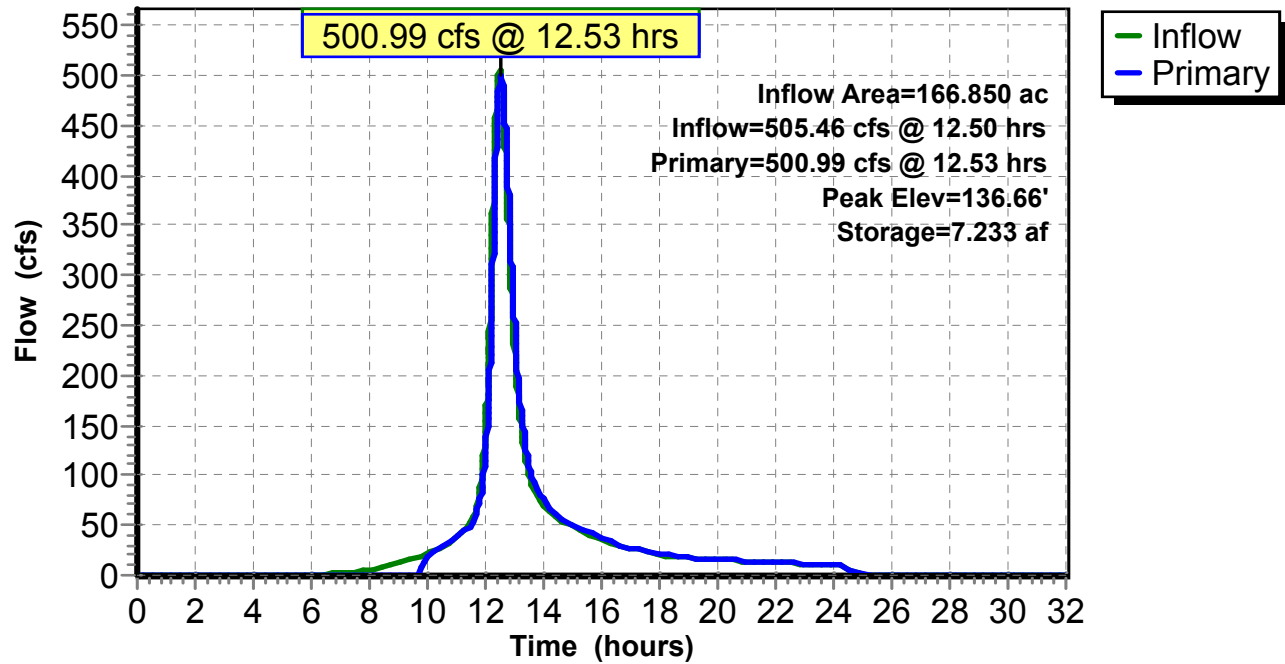
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=500.98 cfs @ 12.53 hrs HW=136.66' TW=131.32' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 3.16 cfs @ 2.76 fps)
- 2=Asymmetrical Weir (Weir Controls 497.81 cfs @ 2.28 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Hydrograph



Summary for Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 4.42" for 100_OLD_7.2 event
 Inflow = 531.64 cfs @ 12.74 hrs, Volume= 214.557 af
 Outflow = 531.63 cfs @ 12.75 hrs, Volume= 214.548 af, Atten= 0%, Lag= 0.103 min
 Primary = 343.39 cfs @ 12.75 hrs, Volume= 196.129 af
 Secondary = 188.25 cfs @ 12.75 hrs, Volume= 18.419 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 61.80' @ 12.75 hrs Surf.Area= 1,374 sf Storage= 4,894 cf

Plug-Flow detention time= 0.225 min calculated for 214.548 af (100% of inflow)
 Center-of-Mass det. time= 0.183 min (991.227 - 991.044)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	22,686 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686

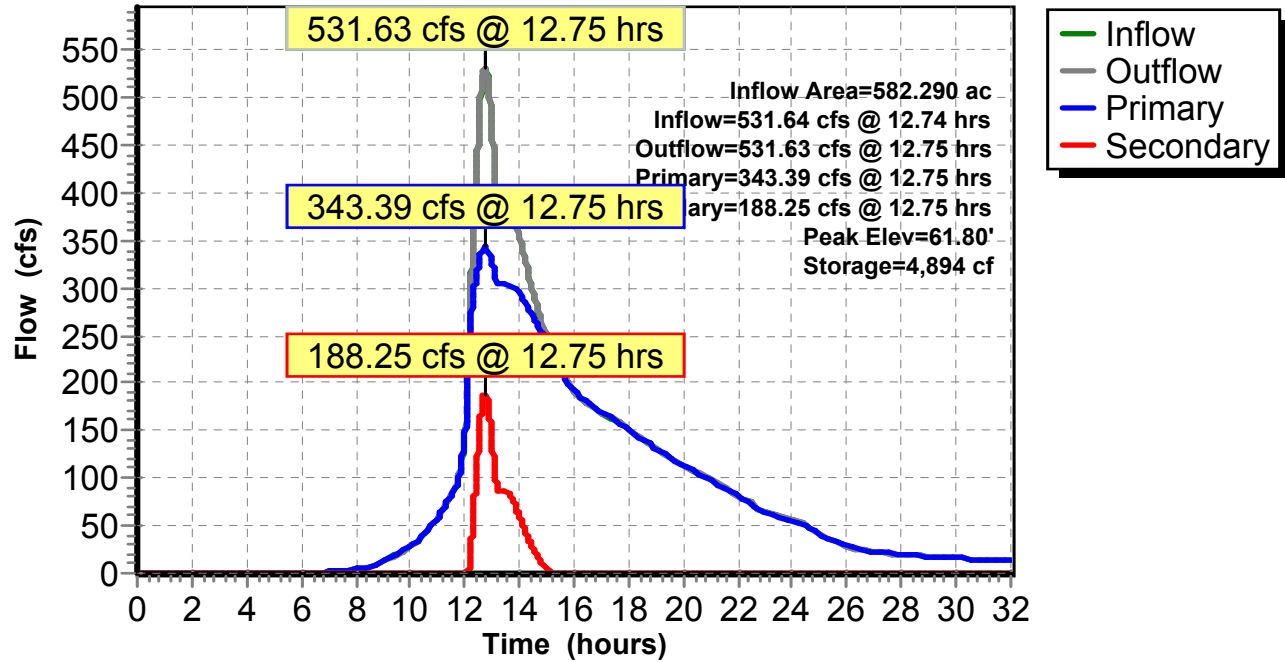
Device	Routing	Invert	Outlet Devices
#1	Primary	56.00'	60.0" Round Culvert X 2.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 56.00' / 37.90' S= 0.0217 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	60.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 66.00 64.00 62.00 60.00 60.00 62.00 64.00 66.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=343.38 cfs @ 12.75 hrs HW=61.80' TW=51.44' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 343.38 cfs @ 8.74 fps)

Secondary OutFlow Max=188.23 cfs @ 12.75 hrs HW=61.80' TW=58.44' (Dynamic Tailwater)
 ↑2=Asymmetrical Weir (Weir Controls 188.23 cfs @ 3.71 fps)

Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Hydrograph



Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 187.95 cfs @ 12.76 hrs, Volume= 18.419 af
 Outflow = 183.91 cfs @ 12.80 hrs, Volume= 18.419 af, Atten= 2%, Lag= 2.000 min
 Primary = 183.91 cfs @ 12.80 hrs, Volume= 18.419 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 52.21' @ 12.85 hrs Surf.Area= 17,809 sf Storage= 14,203 cf

Plug-Flow detention time= 1.205 min calculated for 18.413 af (100% of inflow)
 Center-of-Mass det. time= 1.208 min (794.994 - 793.786)

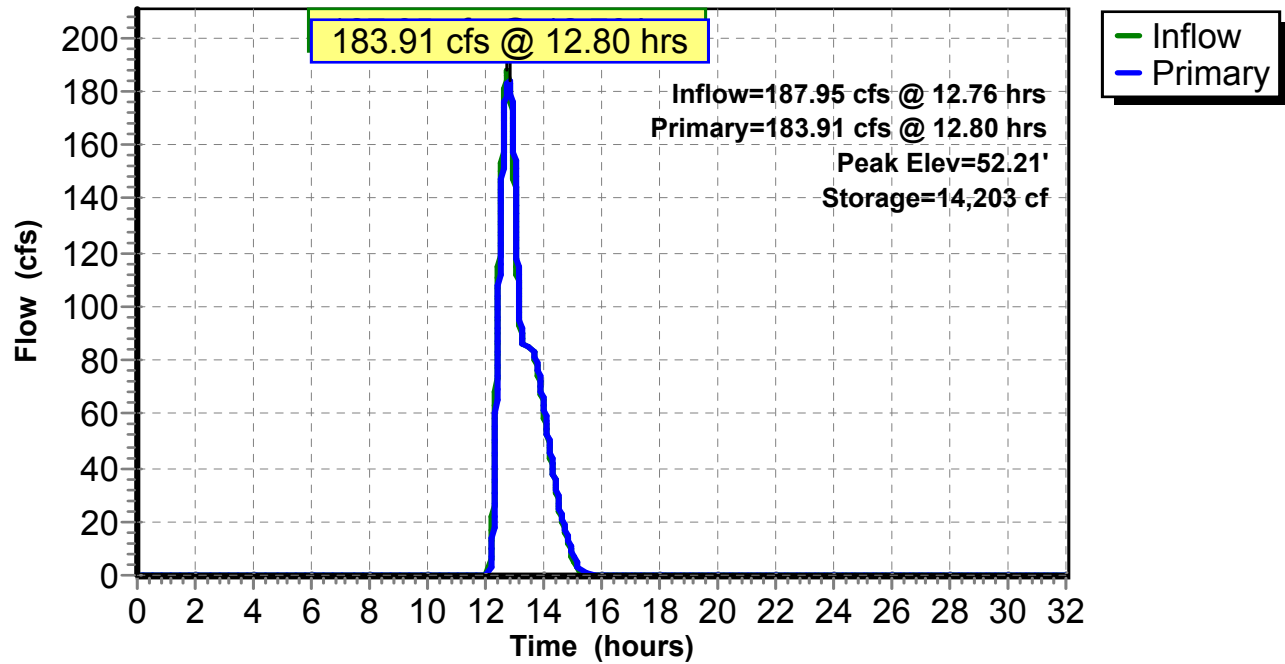
Volume	Invert	Avail.Storage	Storage Description
#1	51.00'	162,178 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
51.00	6,000	0	0
52.00	15,452	10,726	10,726
54.00	38,000	53,452	64,178
56.00	60,000	98,000	162,178

Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=182.30 cfs @ 12.80 hrs HW=52.19' TW=51.56' (Dynamic Tailwater)
 ↑1=Sharp-Crested Rectangular Weir(Weir Controls 182.30 cfs @ 3.07 fps)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



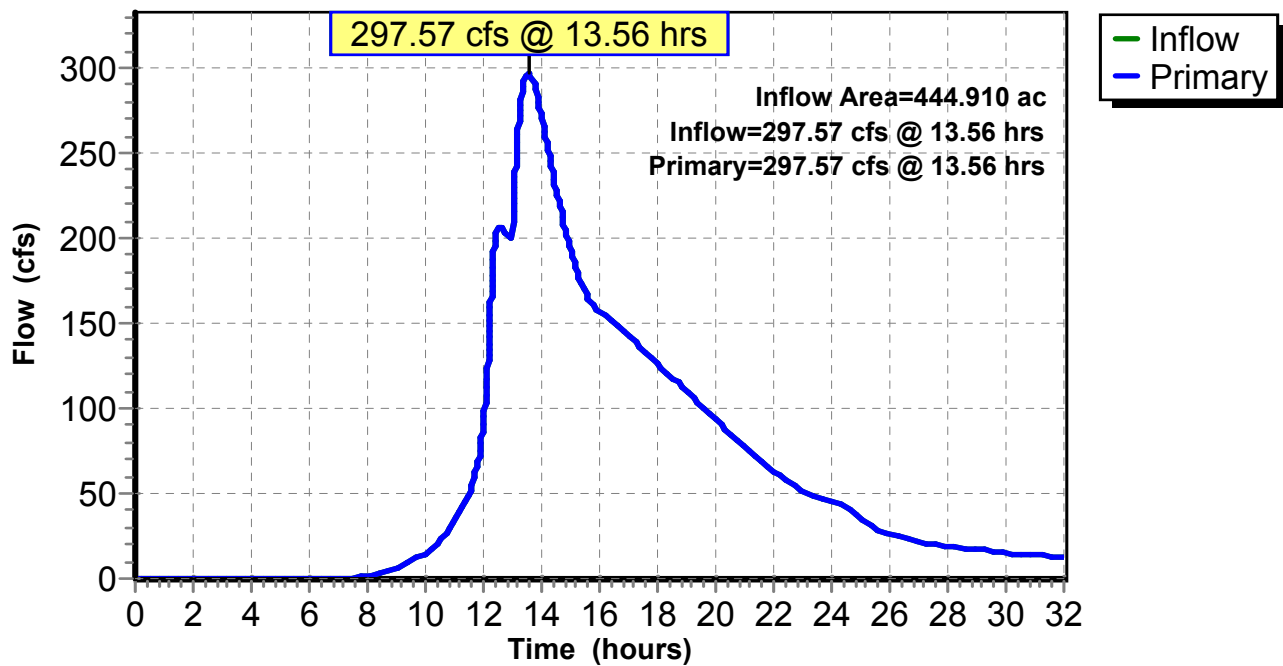
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 4.22" for 100_OLD_7.2 event
Inflow = 297.57 cfs @ 13.56 hrs, Volume= 156.426 af
Primary = 297.57 cfs @ 13.56 hrs, Volume= 156.426 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



Summary for Subcatchment A: WS A

Runoff = 285.42 cfs @ 12.42 hrs, Volume= 40.508 af, Depth= 8.18"

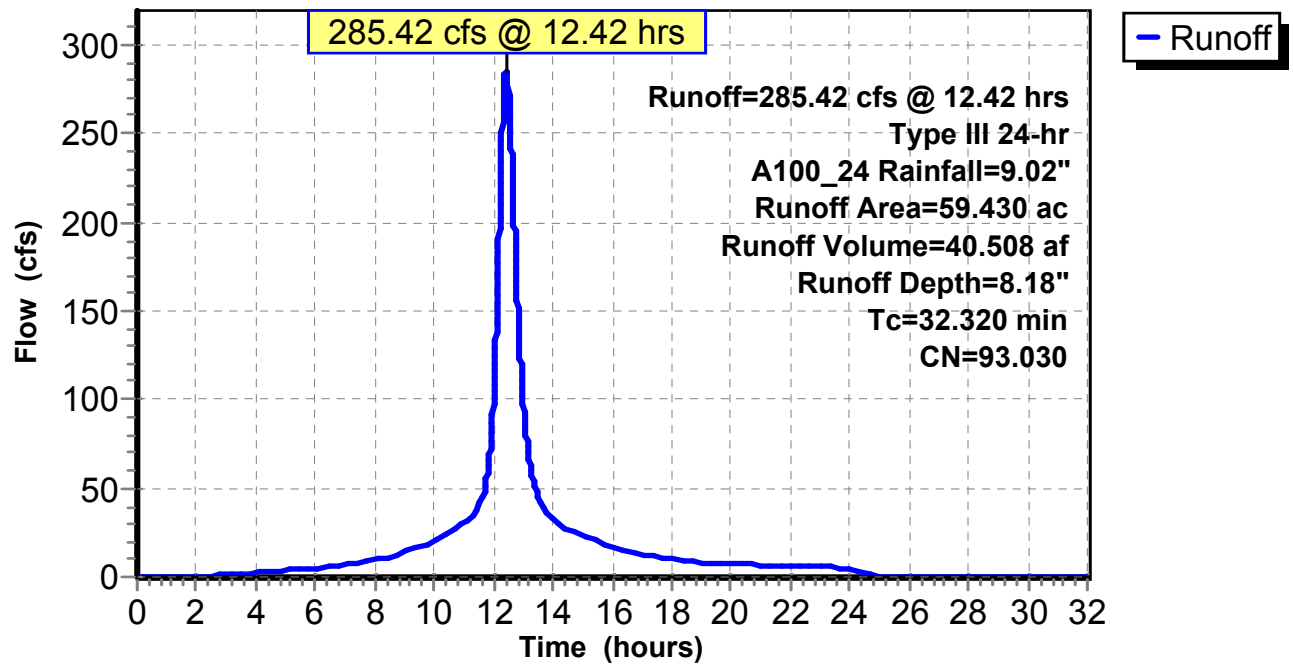
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



Summary for Subcatchment B: WS B

Runoff = 278.22 cfs @ 12.37 hrs, Volume= 35.772 af, Depth= 7.46"

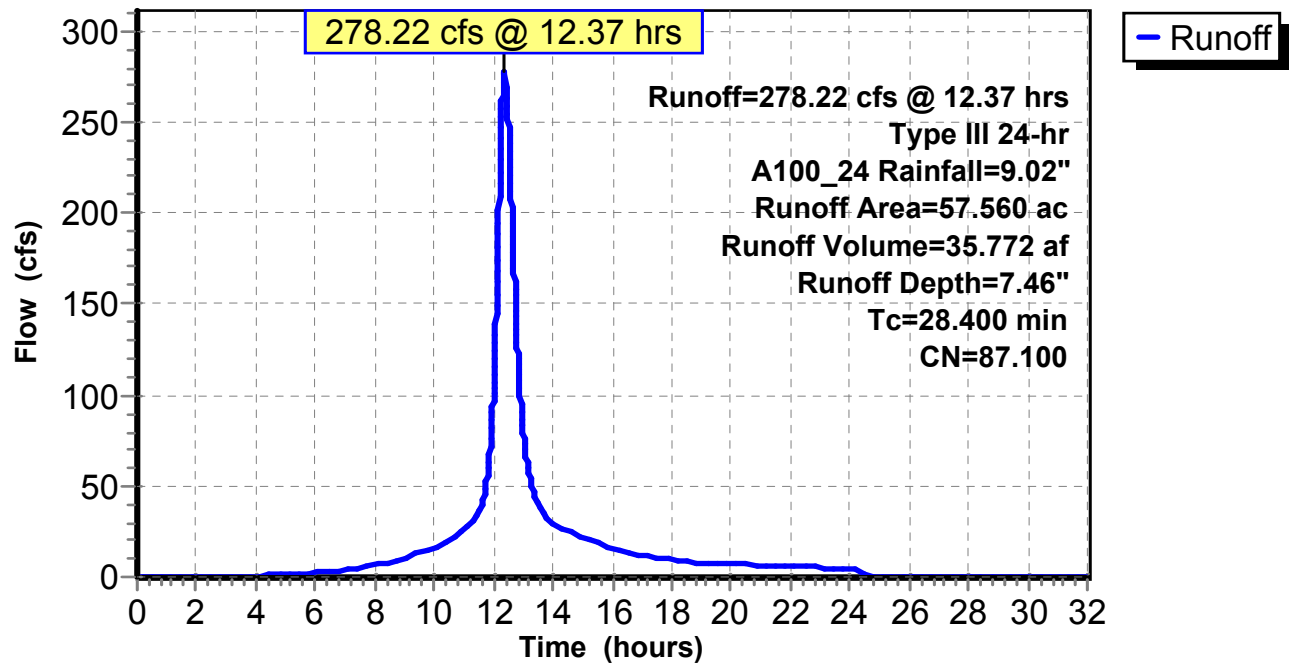
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



Summary for Subcatchment BH: HOTEL

Runoff = 70.94 cfs @ 12.42 hrs, Volume= 9.362 af, Depth= 7.34"

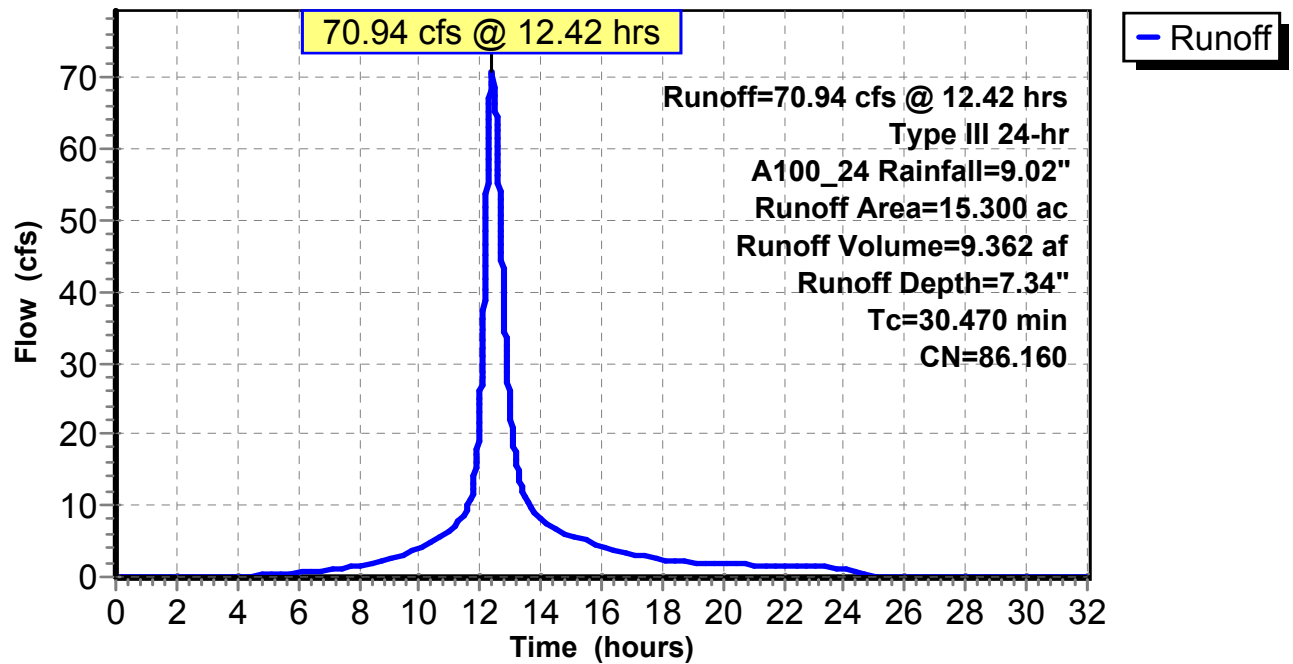
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



Summary for Subcatchment C: WS C

Runoff = 117.59 cfs @ 12.25 hrs, Volume= 12.344 af, Depth= 6.90"

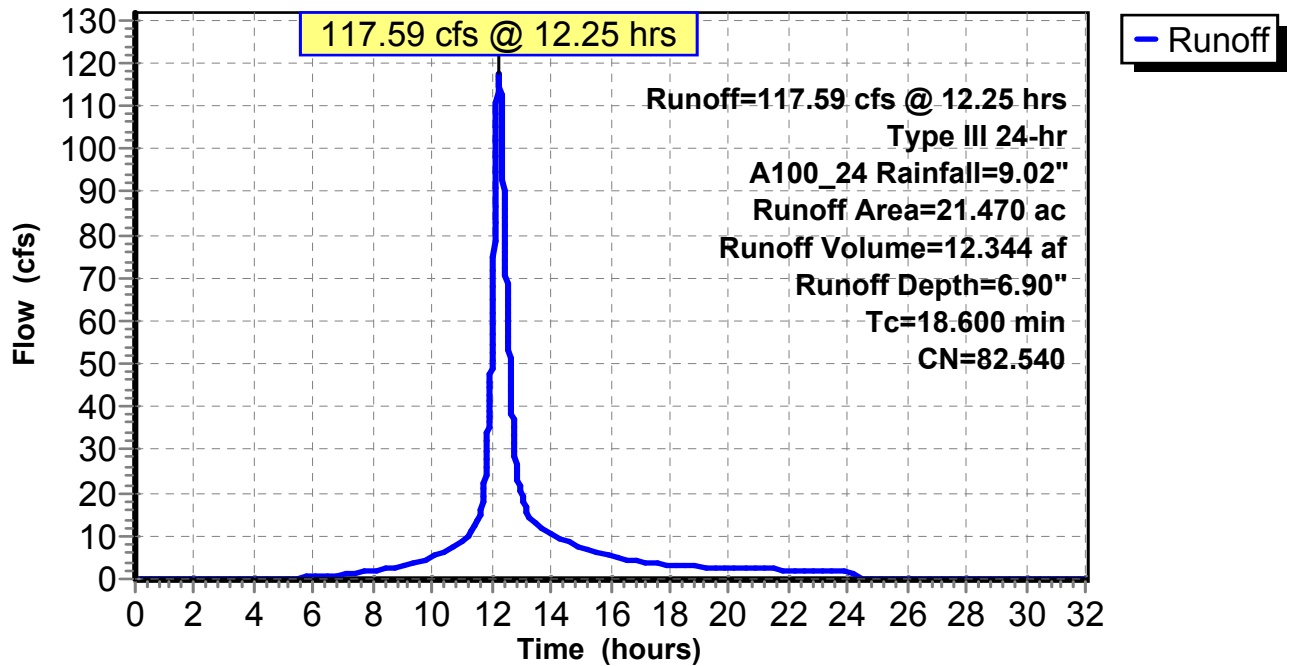
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



Summary for Subcatchment D: WS D

Runoff = 421.79 cfs @ 12.61 hrs, Volume= 66.238 af, Depth= 6.86"

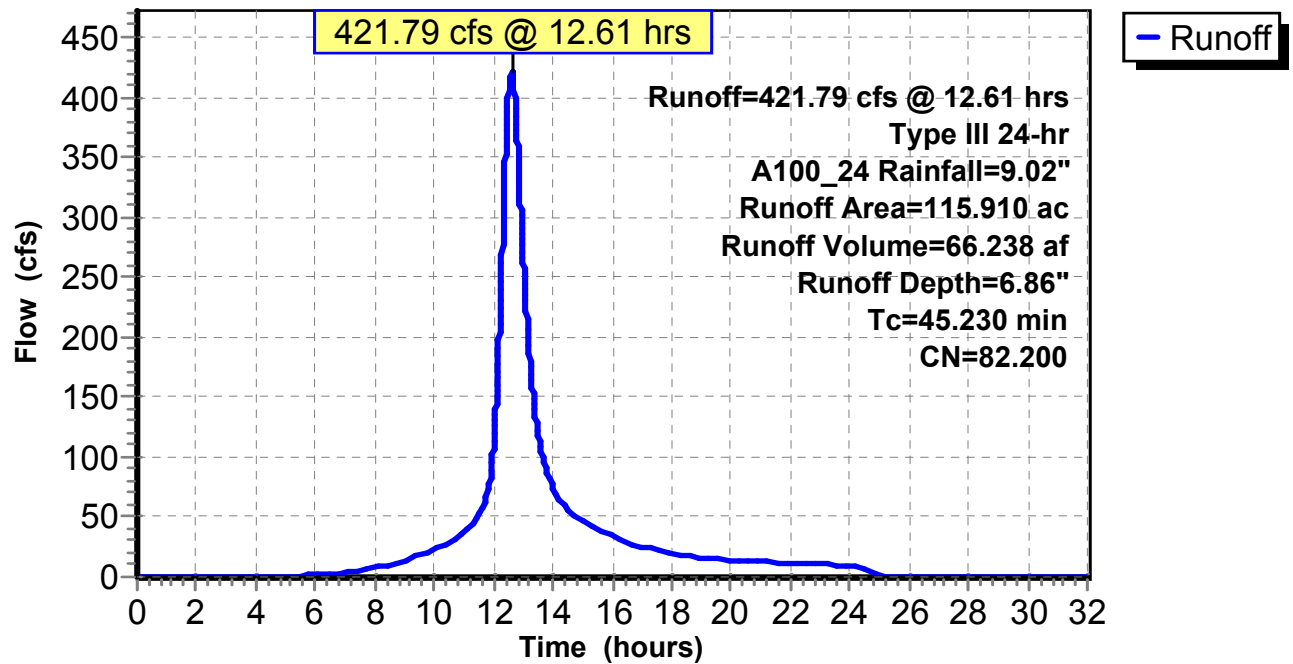
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



Summary for Subcatchment D-1: WS D-1

Runoff = 155.42 cfs @ 12.44 hrs, Volume= 20.173 af, Depth= 6.12"

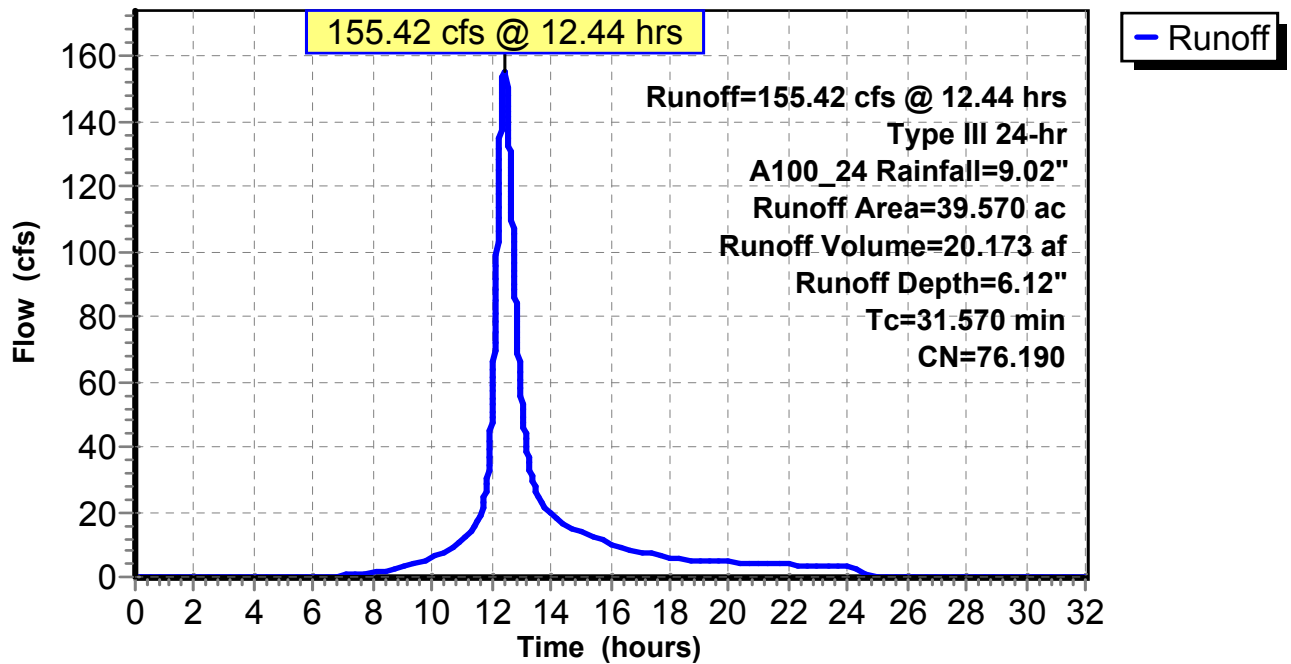
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



Summary for Subcatchment E: WS E

Runoff = 343.89 cfs @ 12.85 hrs, Volume= 64.802 af, Depth= 6.63"

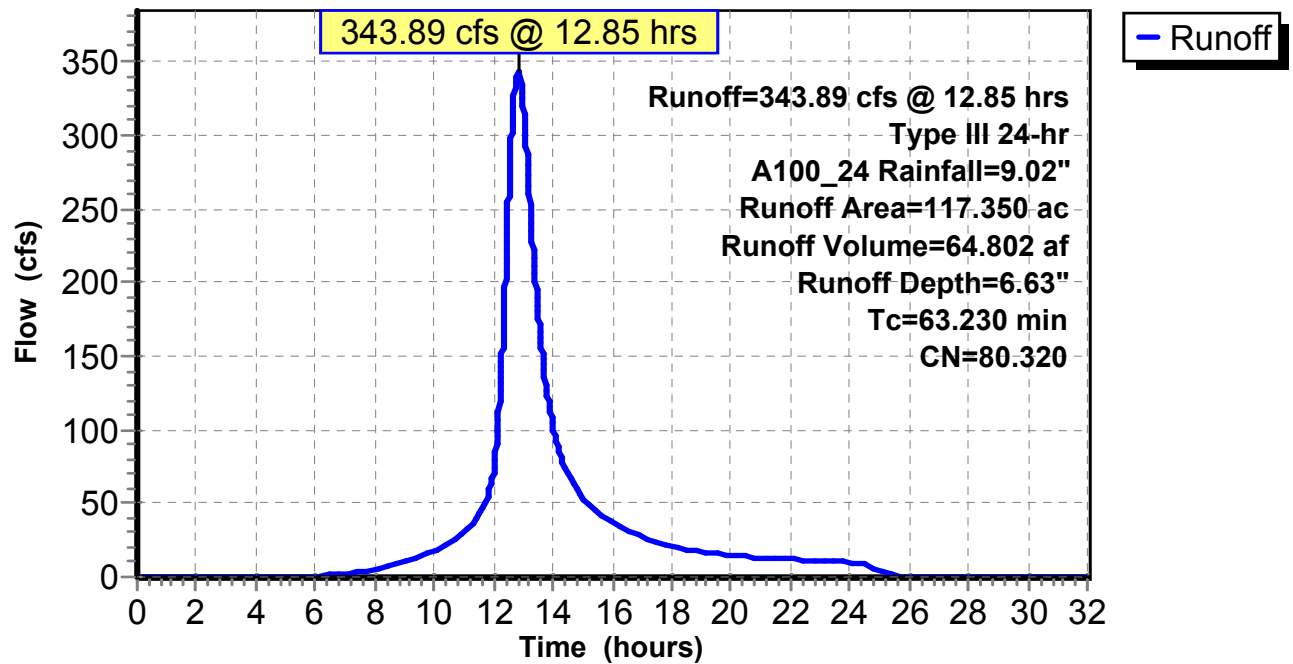
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



Summary for Subcatchment F: WS F

Runoff = 388.56 cfs @ 12.59 hrs, Volume= 59.365 af, Depth= 5.88"

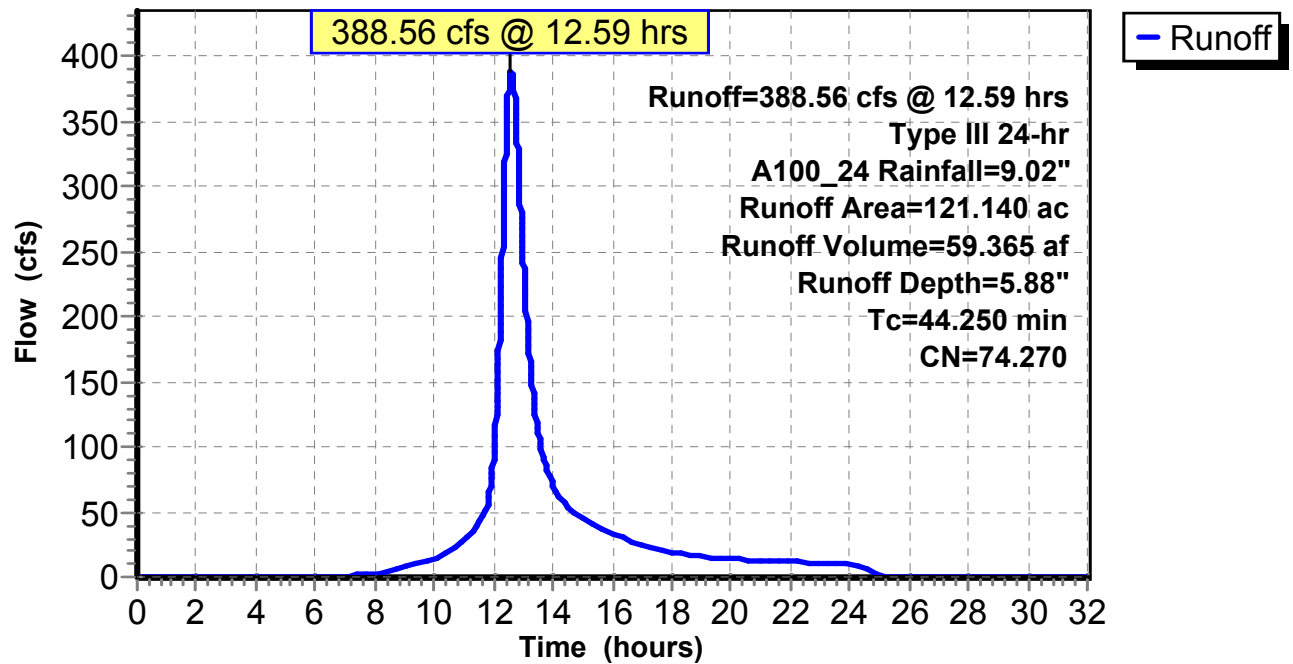
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



Summary for Subcatchment G: WS G

Runoff = 670.66 cfs @ 12.50 hrs, Volume= 94.119 af, Depth= 6.77"

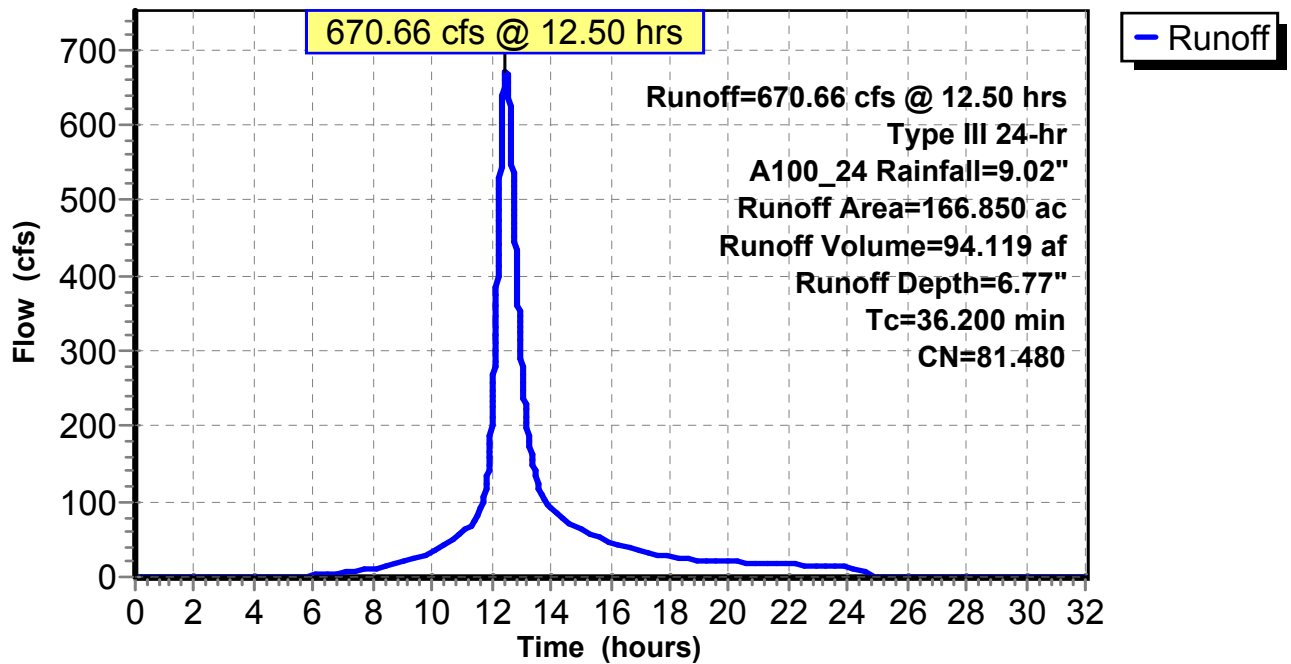
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 5.82" for A100_24 event
 Inflow = 451.66 cfs @ 13.40 hrs, Volume= 196.643 af
 Outflow = 451.47 cfs @ 13.42 hrs, Volume= 196.521 af, Atten= 0%, Lag= 1.219 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 4.86 fps, Min. Travel Time= 1.727 min
 Avg. Velocity = 2.40 fps, Avg. Travel Time= 3.500 min

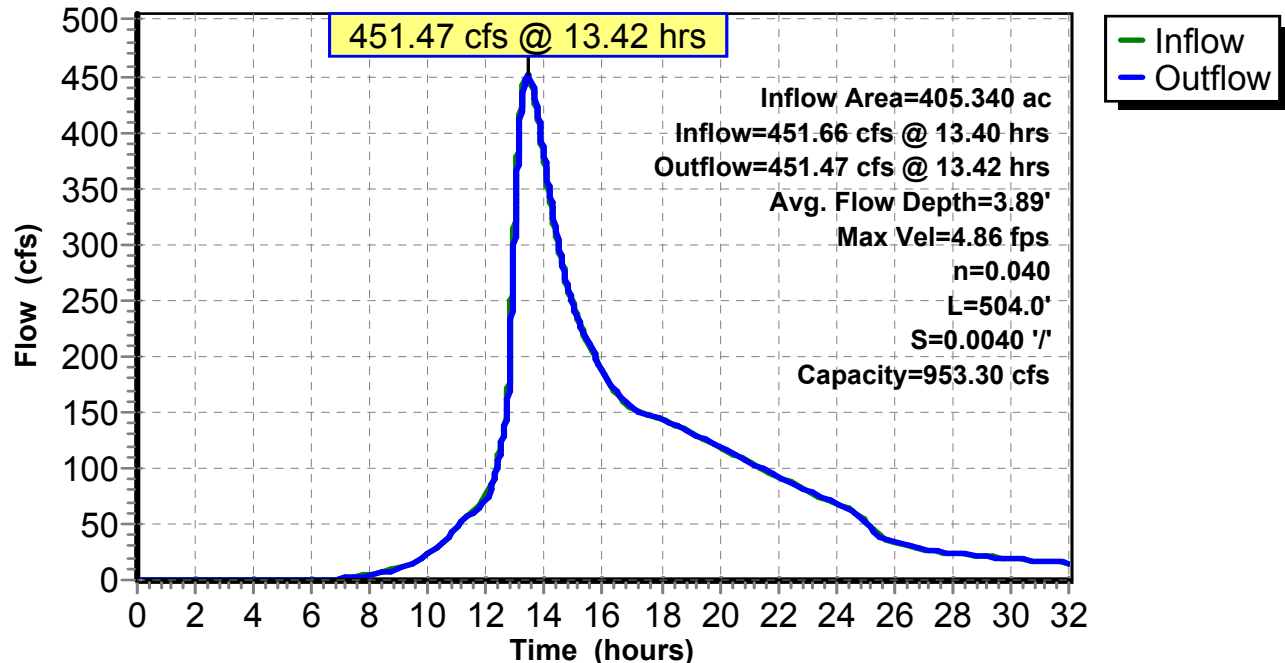
Peak Storage= 46,790 cf @ 13.42 hrs
 Average Depth at Peak Storage= 3.89'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
 Length= 504.0' Slope= 0.0040 ' / '
 Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 5.88" for A100_24 event
 Inflow = 388.04 cfs @ 12.60 hrs, Volume= 59.364 af
 Outflow = 353.10 cfs @ 12.77 hrs, Volume= 59.329 af, Atten= 9%, Lag= 9.956 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.52 fps, Min. Travel Time= 14.398 min
 Avg. Velocity = 0.73 fps, Avg. Travel Time= 50.068 min

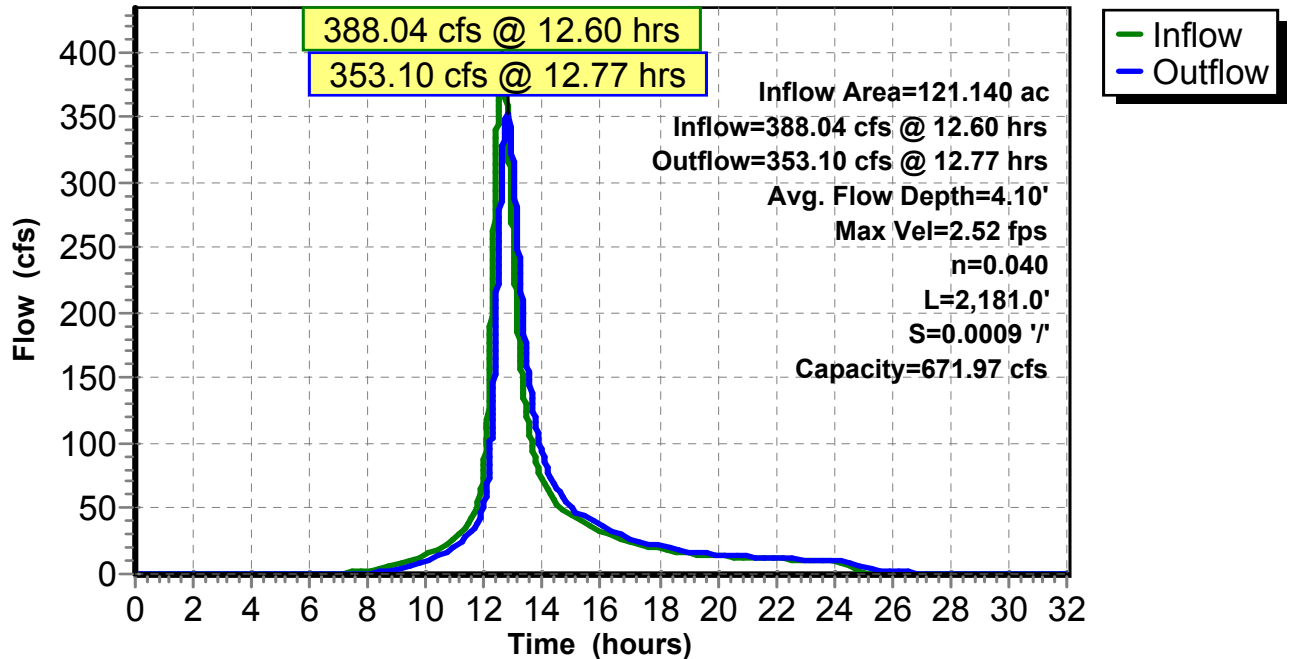
Peak Storage= 305,028 cf @ 12.77 hrs
 Average Depth at Peak Storage= 4.10'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 2,181.0' Slope= 0.0009 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 6.63" for A100_24 event
 Inflow = 666.08 cfs @ 12.52 hrs, Volume= 92.226 af
 Outflow = 78.53 cfs @ 14.39 hrs, Volume= 72.863 af, Atten= 88%, Lag= 111.923 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.71 fps, Min. Travel Time= 521.931 min
 Avg. Velocity = 0.50 fps, Avg. Travel Time= 738.756 min

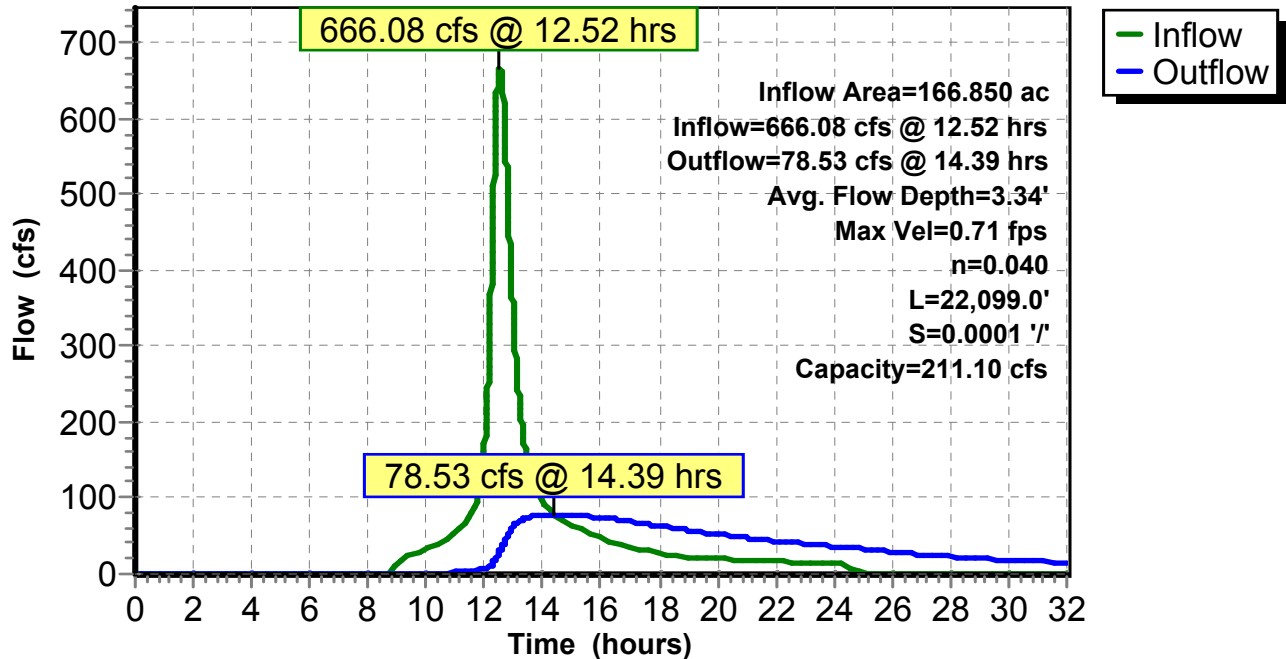
Peak Storage= 2,459,120 cf @ 14.39 hrs
 Average Depth at Peak Storage= 3.34'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 22,099.0' Slope= 0.0001 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 5.84" for A100_24 event
 Inflow = 480.50 cfs @ 13.41 hrs, Volume= 216.445 af
 Outflow = 477.17 cfs @ 13.50 hrs, Volume= 216.033 af, Atten= 1%, Lag= 5.311 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 7.68 fps, Min. Travel Time= 6.470 min
 Avg. Velocity = 4.21 fps, Avg. Travel Time= 11.805 min

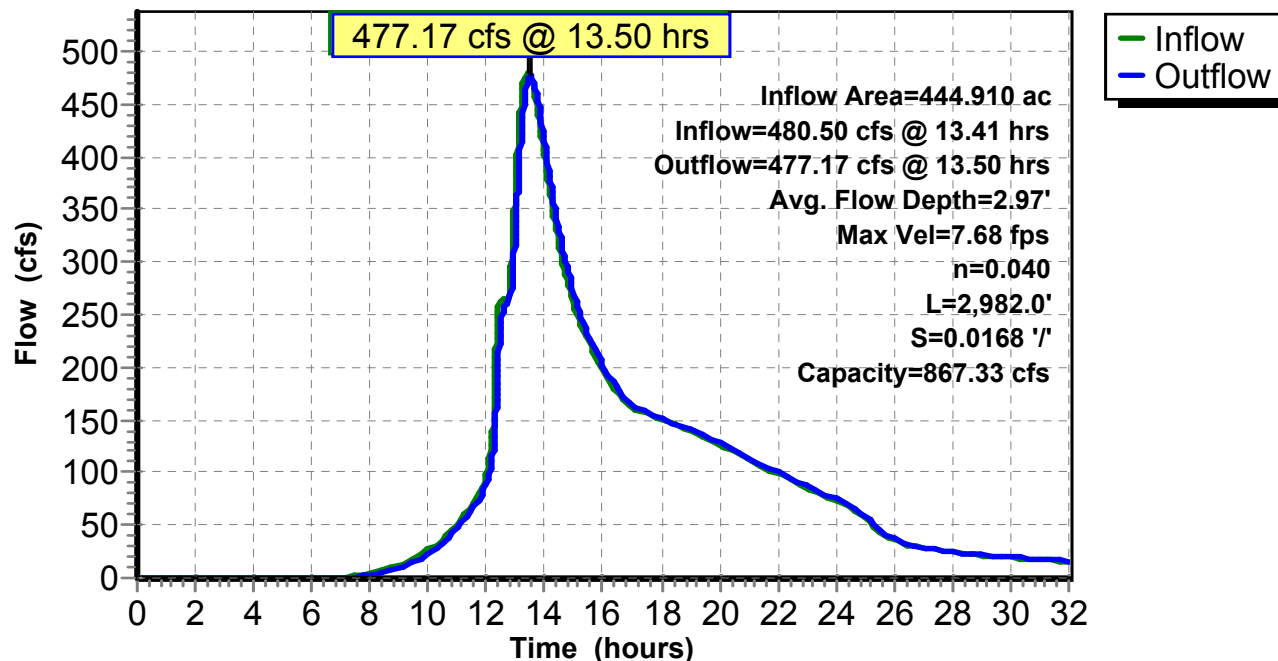
Peak Storage= 185,243 cf @ 13.50 hrs
 Average Depth at Peak Storage= 2.97'
 Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040
 Side Slope Z-value= 3.0 ' / ' Top Width= 36.00'
 Length= 2,982.0' Slope= 0.0168 ' / '
 Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 6.04" for A100_24 event
 Inflow = 679.39 cfs @ 12.64 hrs, Volume= 282.271 af
 Outflow = 679.26 cfs @ 12.65 hrs, Volume= 282.217 af, Atten= 0%, Lag= 0.440 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 11.76 fps, Min. Travel Time= 0.617 min
 Avg. Velocity = 5.35 fps, Avg. Travel Time= 1.356 min

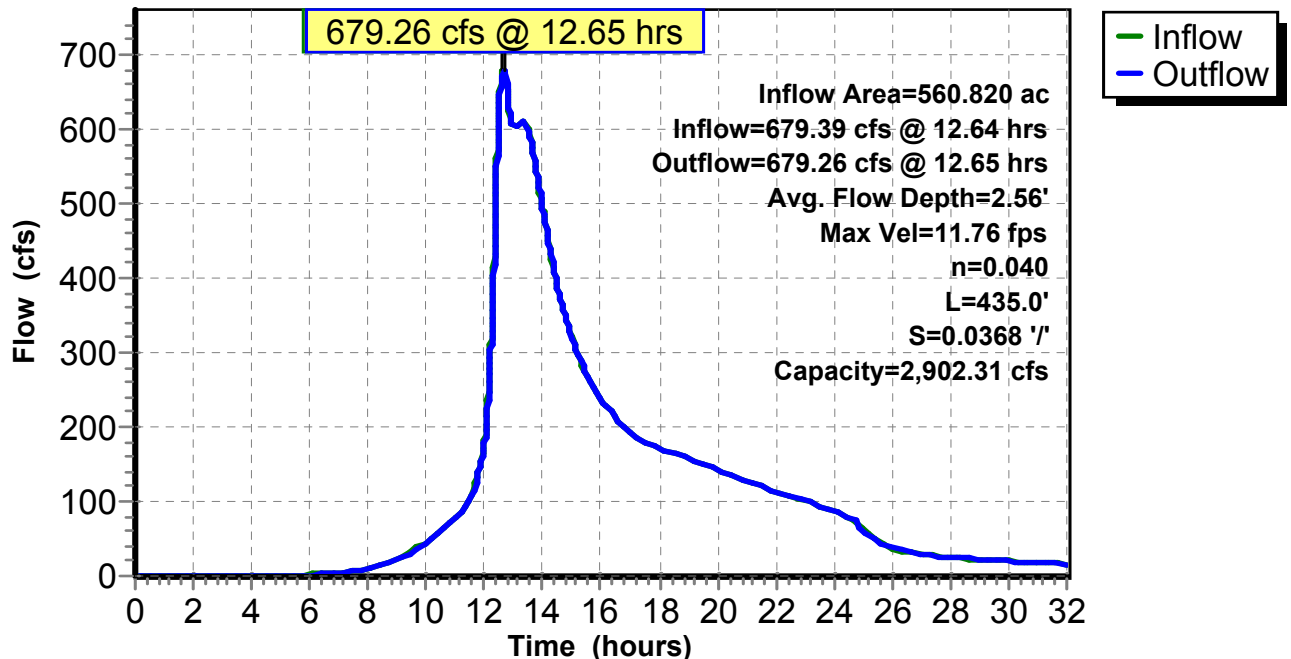
Peak Storage= 25,126 cf @ 12.65 hrs
 Average Depth at Peak Storage= 2.56'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
 Length= 435.0' Slope= 0.0368 ' / '
 Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 301.49 cfs @ 12.79 hrs, Volume= 47.376 af
 Outflow = 301.32 cfs @ 12.81 hrs, Volume= 47.376 af, Atten= 0%, Lag= 0.946 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 9.85 fps, Min. Travel Time= 1.502 min
 Avg. Velocity = 3.84 fps, Avg. Travel Time= 3.859 min

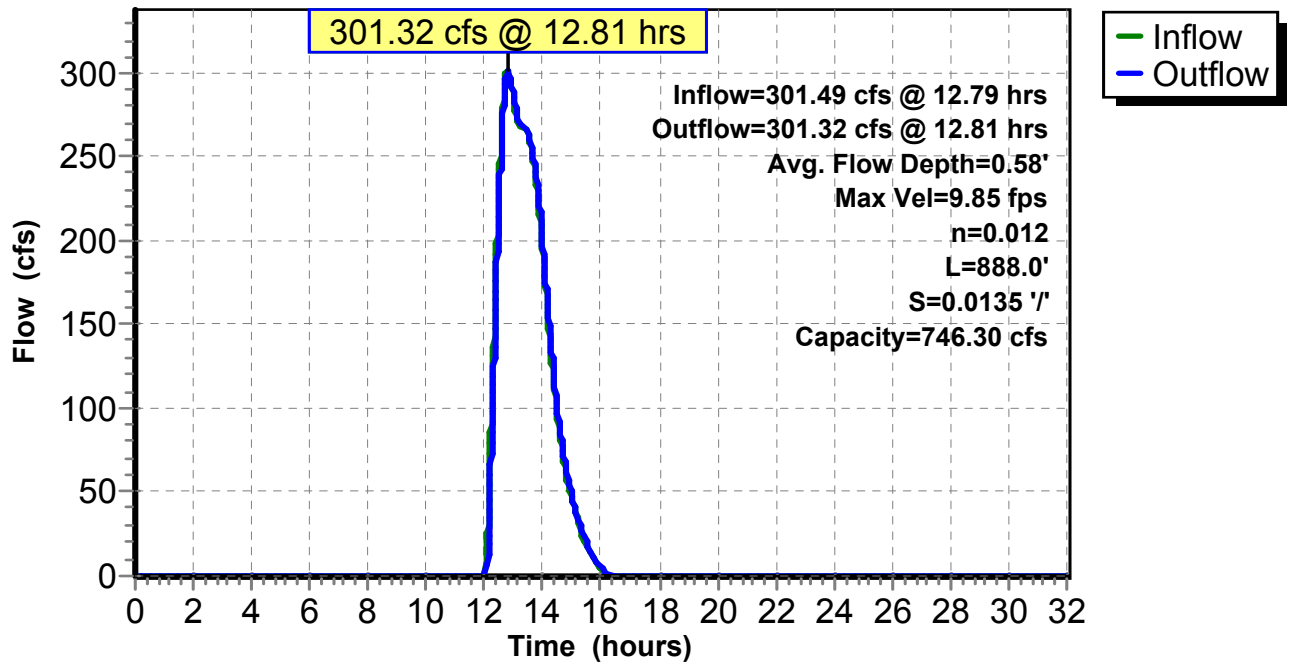
Peak Storage= 27,161 cf @ 12.81 hrs
 Average Depth at Peak Storage= 0.58'
 Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
 Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
 Length= 888.0' Slope= 0.0135 ' '
 Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



Summary for Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 6.22" for A100_24 event
 Inflow = 858.56 cfs @ 12.43 hrs, Volume= 339.682 af
 Outflow = 714.46 cfs @ 13.18 hrs, Volume= 339.675 af, Atten= 17%, Lag= 44.931 min
 Primary = 714.46 cfs @ 13.18 hrs, Volume= 339.675 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 54.78' @ 13.16 hrs Surf.Area= 2.615 ac Storage= 10.689 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 3.323 min (963.023 - 959.701)

Volume	Invert	Avail.Storage	Storage Description
#1	46.00'	82.605 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
46.00	0.695	0.000	0.000
48.00	0.695	1.390	1.390
50.00	0.800	1.495	2.885
52.00	1.420	2.220	5.105
54.00	2.270	3.690	8.795
56.00	3.160	5.430	14.225
58.00	4.070	7.230	21.455
60.00	4.980	9.050	30.505
62.00	5.710	10.690	41.195
64.00	6.620	12.330	53.525
66.00	7.170	13.790	67.315
68.00	8.120	15.290	82.605

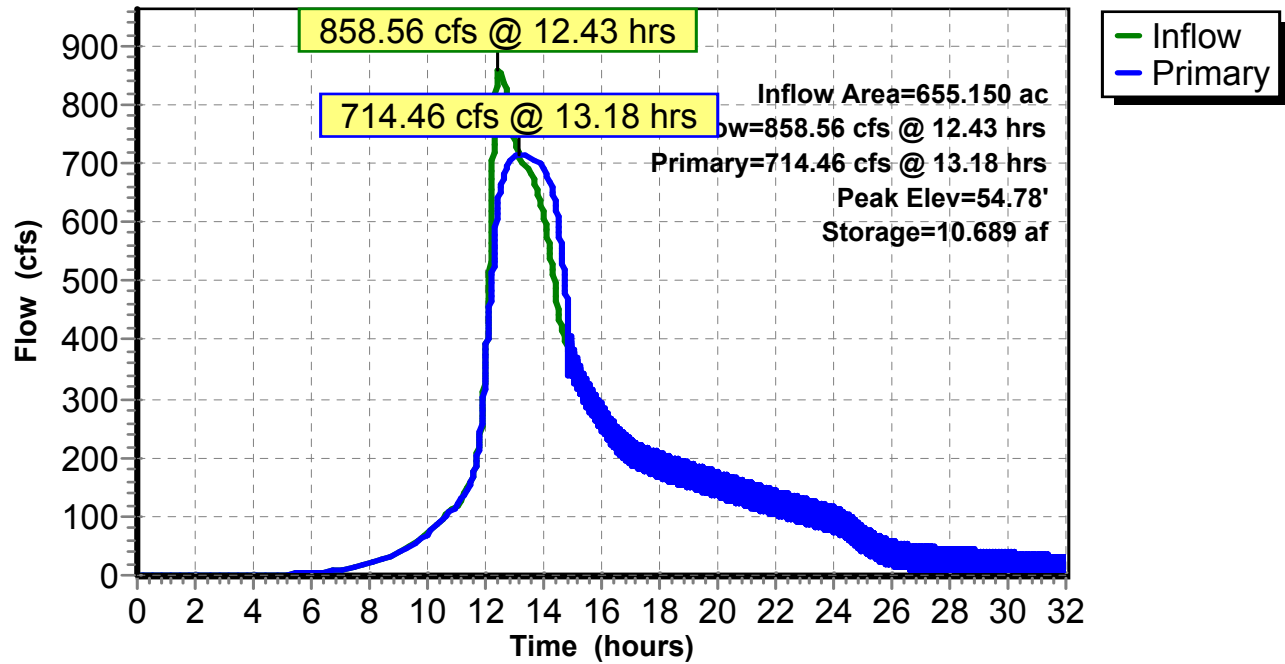
Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48

Primary OutFlow Max=714.47 cfs @ 13.18 hrs HW=54.77' TW=38.39' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 714.47 cfs @ 18.32 fps)
- 2=WEIR WESTCH AVE (Controls 0.00 cfs)

Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



EBBR_HCAD_JAN_2019_exist_f

Prepared by Microsoft

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Case 1 - Exist
Type III 24-hr A100_24 Rainfall=9.02"

Printed 2/7/2019

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Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 6.07" for A100_24 event
 Inflow = 727.12 cfs @ 12.62 hrs, Volume= 294.561 af
 Outflow = 674.71 cfs @ 12.79 hrs, Volume= 294.558 af, Atten= 7%, Lag= 10.081 min
 Primary = 674.71 cfs @ 12.79 hrs, Volume= 294.558 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 79.52' @ 12.79 hrs Surf.Area= 0.588 ac Storage= 3.312 af

Plug-Flow detention time= 0.904 min calculated for 294.466 af (100% of inflow)
 Center-of-Mass det. time= 0.896 min (982.627 - 981.731)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

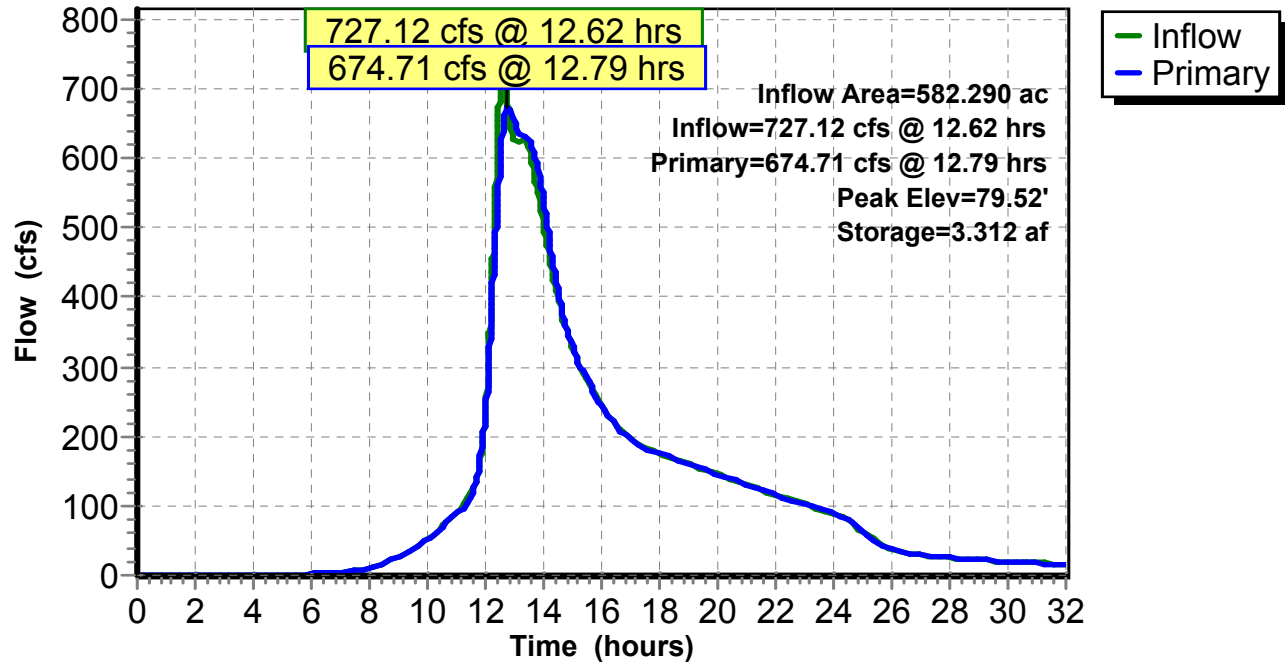
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=674.70 cfs @ 12.79 hrs HW=79.52' TW=62.40' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 376.63 cfs @ 19.18 fps)
- 2=Culvert 2 (Inlet Controls 298.07 cfs @ 15.18 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



EBBR_HCAD_JAN_2019_exist_f

Prepared by Microsoft

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Case 1 - Exist
Type III 24-hr A100_24 Rainfall=9.02"

Printed 2/7/2019

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Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 5.84" for A100_24 event
Inflow = 481.18 cfs @ 13.38 hrs, Volume= 216.694 af
Outflow = 480.50 cfs @ 13.41 hrs, Volume= 216.445 af, Atten= 0%, Lag= 1.730 min
Primary = 480.50 cfs @ 13.41 hrs, Volume= 216.445 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 130.84' @ 13.42 hrs Surf.Area= 1.106 ac Storage= 2.936 af

Plug-Flow detention time= 8.005 min calculated for 216.377 af (100% of inflow)
Center-of-Mass det. time= 6.979 min (1,026.245 - 1,019.266)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

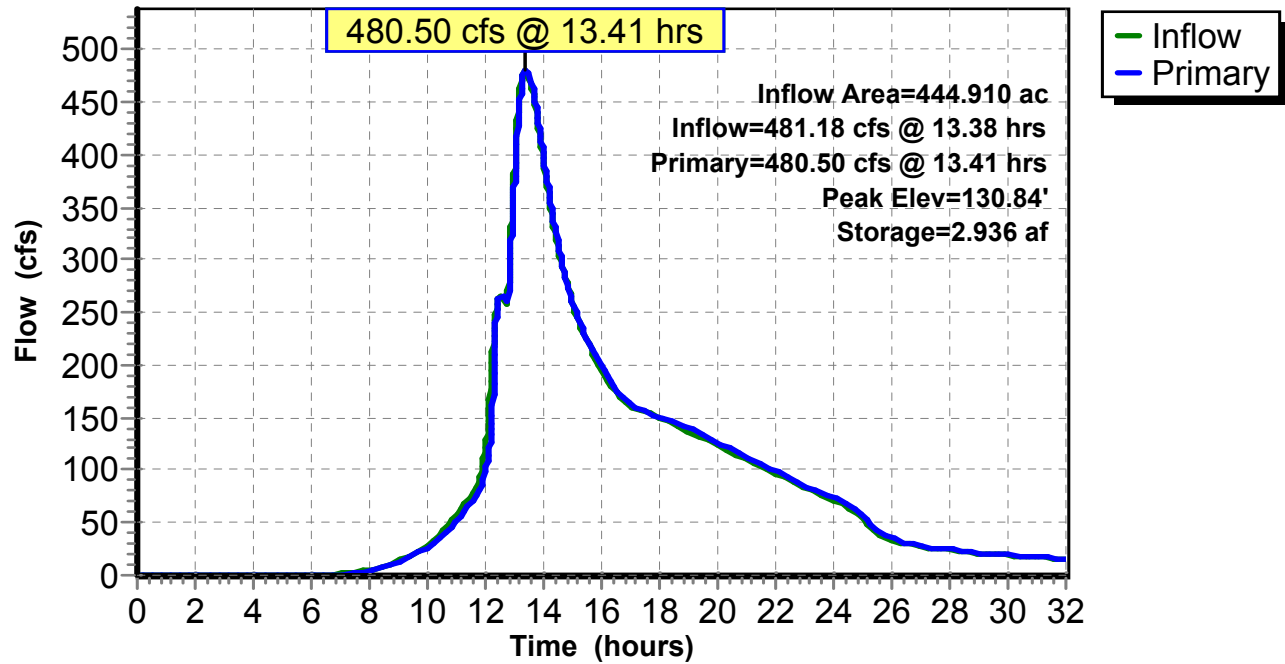
Primary OutFlow Max=480.36 cfs @ 13.41 hrs HW=130.84' TW=128.96' (Dynamic Tailwater)

1=Culvert (Inlet Controls 166.02 cfs @ 6.61 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 314.34 cfs @ 3.00 fps)

Pond 4A: DP 4 A ARGYLE

Hydrograph



Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 5.83" for A100_24 event
 Inflow = 745.59 cfs @ 12.81 hrs, Volume= 196.994 af
 Outflow = 451.66 cfs @ 13.40 hrs, Volume= 196.643 af, Atten= 39%, Lag= 35.252 min
 Primary = 451.66 cfs @ 13.40 hrs, Volume= 196.643 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 132.84' @ 13.41 hrs Surf.Area= 23.470 ac Storage= 36.117 af

Plug-Flow detention time= 59.524 min calculated for 196.581 af (100% of inflow)
 Center-of-Mass det. time= 57.851 min (1,036.551 - 978.700)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

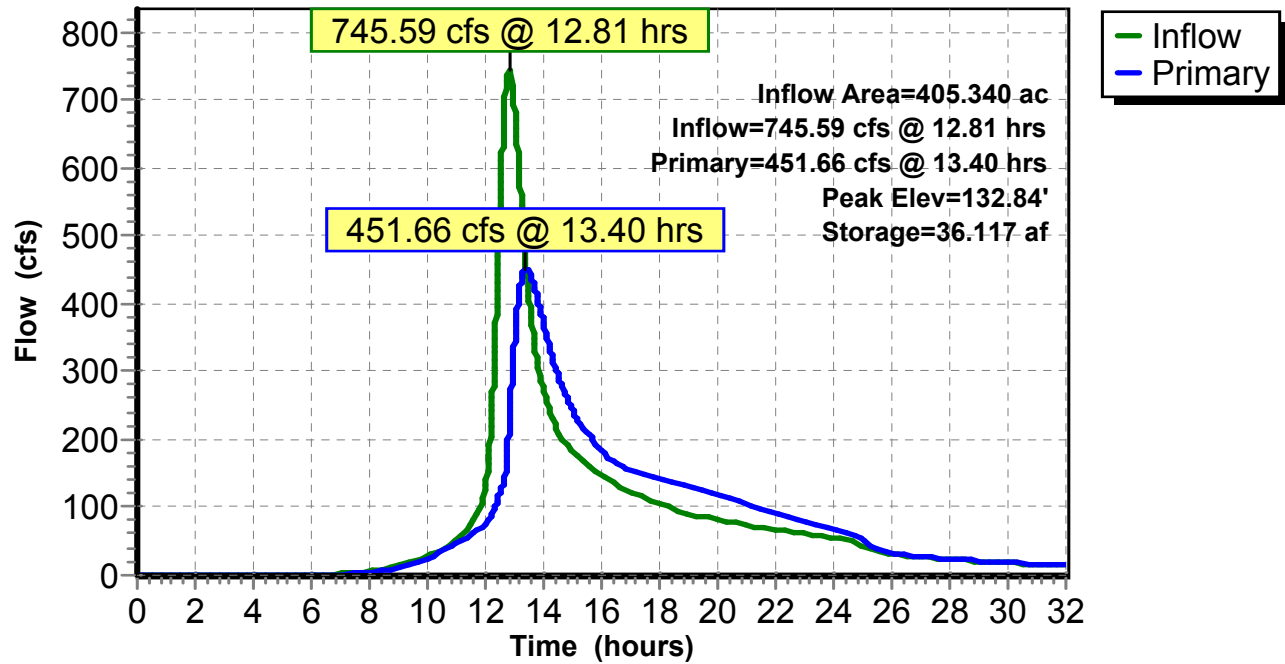
Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

Primary OutFlow Max=451.58 cfs @ 13.40 hrs HW=132.84' TW=131.89' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 118.10 cfs @ 4.70 fps)
- 2=Asymmetrical Weir (Weir Controls 333.48 cfs @ 2.38 fps)

Pond 5P: DP 5 BETSY BROWN ROAD

Hydrograph



Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 6.04" for A100_24 event
 Inflow = 681.20 cfs @ 12.62 hrs, Volume= 282.272 af
 Outflow = 679.39 cfs @ 12.64 hrs, Volume= 282.271 af, Atten= 0%, Lag= 1.333 min
 Primary = 679.39 cfs @ 12.64 hrs, Volume= 282.271 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 91.55' @ 12.64 hrs Surf.Area= 1.370 ac Storage= 2.122 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 2.881 min (988.703 - 985.822)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

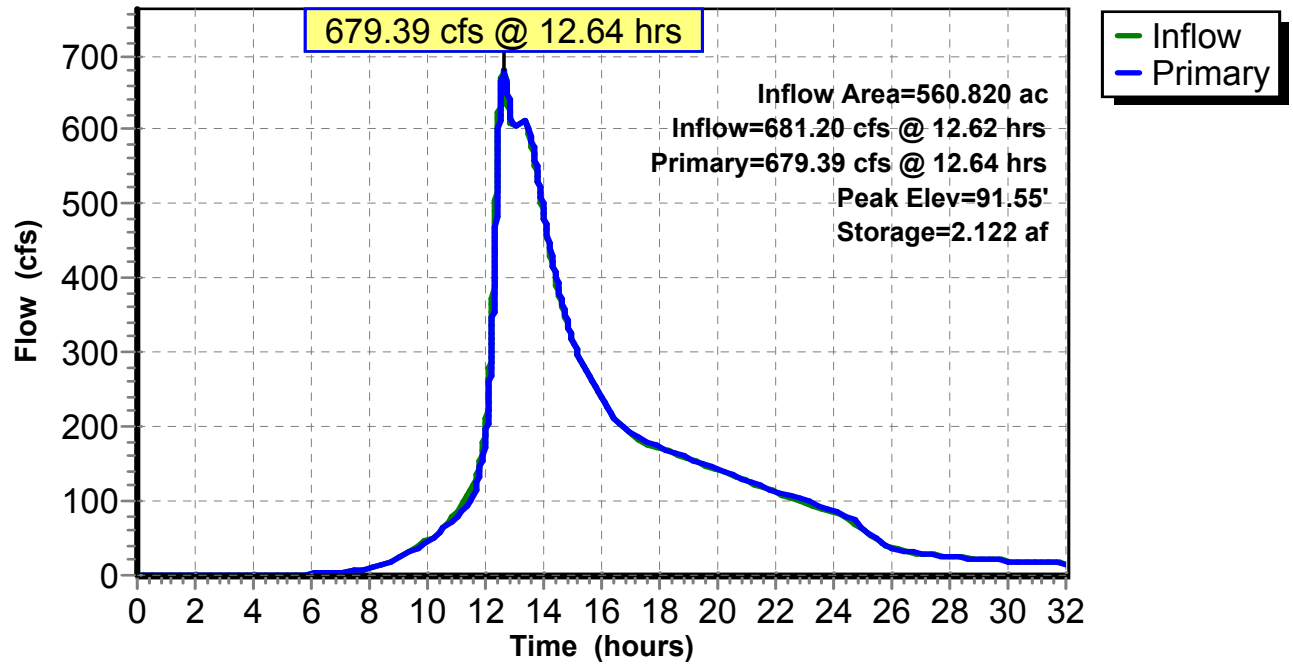
Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=679.35 cfs @ 12.64 hrs HW=91.55' TW=78.56' (Dynamic Tailwater)

- 1=Sharp-Crested Rectangular Weir (Weir Controls 210.55 cfs @ 5.66 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 468.80 cfs @ 3.38 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 6.38" for A100_24 event
 Inflow = 925.56 cfs @ 12.52 hrs, Volume= 380.183 af
 Outflow = 924.69 cfs @ 12.54 hrs, Volume= 380.185 af, Atten= 0%, Lag= 1.258 min
 Primary = 924.69 cfs @ 12.54 hrs, Volume= 380.185 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 39.13' @ 12.54 hrs Surf.Area= 0.565 ac Storage= 1.103 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.362 min (944.601 - 944.239)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

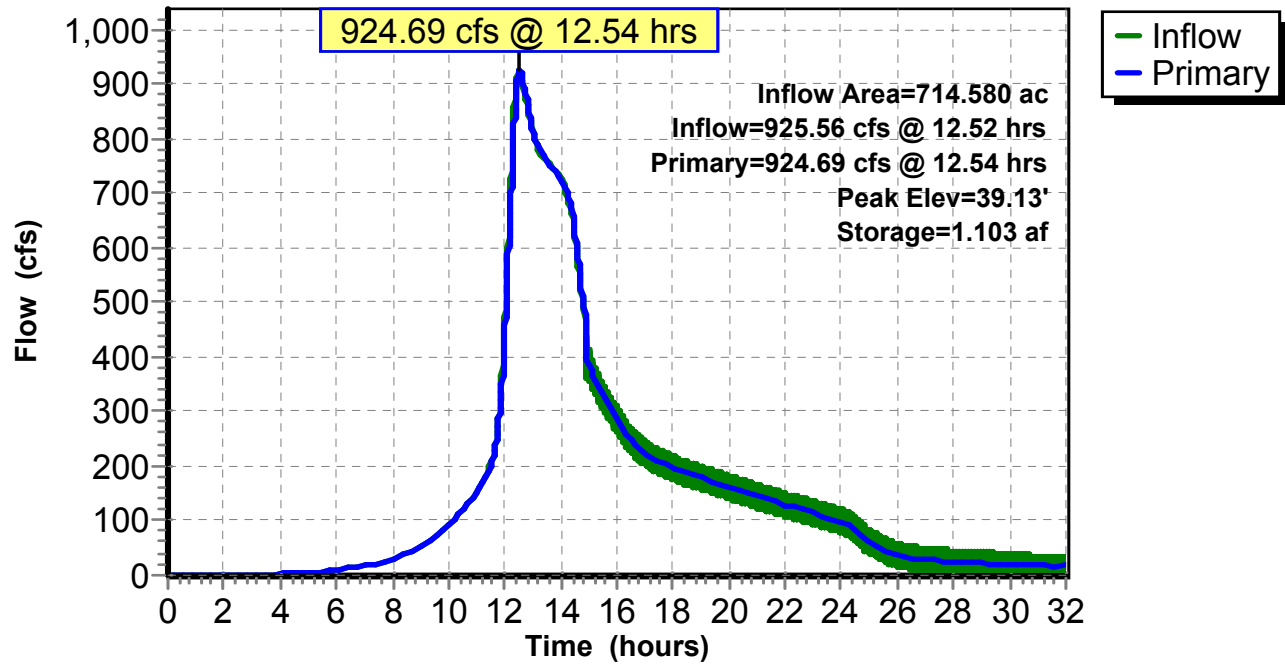
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=924.67 cfs @ 12.54 hrs HW=39.13' (Free Discharge)

- 1=Culvert (Barrel Controls 913.78 cfs @ 9.42 fps)
- 2=WEIR BOWMAN (Weir Controls 10.89 cfs @ 0.85 fps)

Pond 8P: BOWMAN FIELDS

Hydrograph



Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 5.88" for A100_24 event
 Inflow = 388.56 cfs @ 12.59 hrs, Volume= 59.365 af
 Outflow = 388.04 cfs @ 12.60 hrs, Volume= 59.364 af, Atten= 0%, Lag= 0.474 min
 Primary = 388.04 cfs @ 12.60 hrs, Volume= 59.364 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 135.16' @ 12.64 hrs Surf.Area= 0.225 ac Storage= 0.277 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.389 min (846.715 - 846.326)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

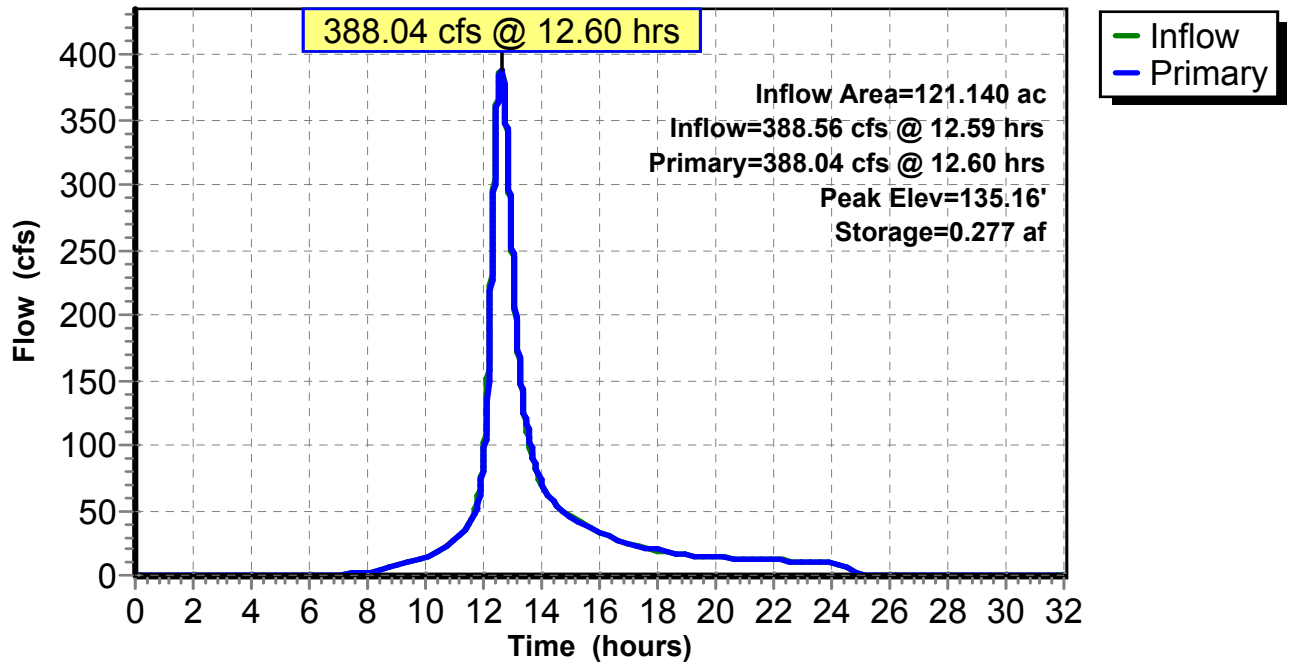
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=386.91 cfs @ 12.60 hrs HW=135.15' TW=133.85' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 38.93 cfs @ 5.51 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 76.84 cfs @ 4.93 fps)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 271.13 cfs @ 2.64 fps)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Hydrograph



EBBR_HCAD_JAN_2019_exist_f

Prepared by Microsoft

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Case 1 - Exist
Type III 24-hr A100_24 Rainfall=9.02"

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Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 6.77" for A100_24 event
Inflow = 670.66 cfs @ 12.50 hrs, Volume= 94.119 af
Outflow = 666.08 cfs @ 12.52 hrs, Volume= 92.226 af, Atten= 1%, Lag= 1.511 min
Primary = 666.08 cfs @ 12.52 hrs, Volume= 92.226 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
Peak Elev= 136.78' @ 12.52 hrs Surf.Area= 4.292 ac Storage= 7.764 af (4.796 af above start)

Plug-Flow detention time= 50.147 min calculated for 89.231 af (95% of inflow)
Center-of-Mass det. time= 12.886 min (835.965 - 823.078)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

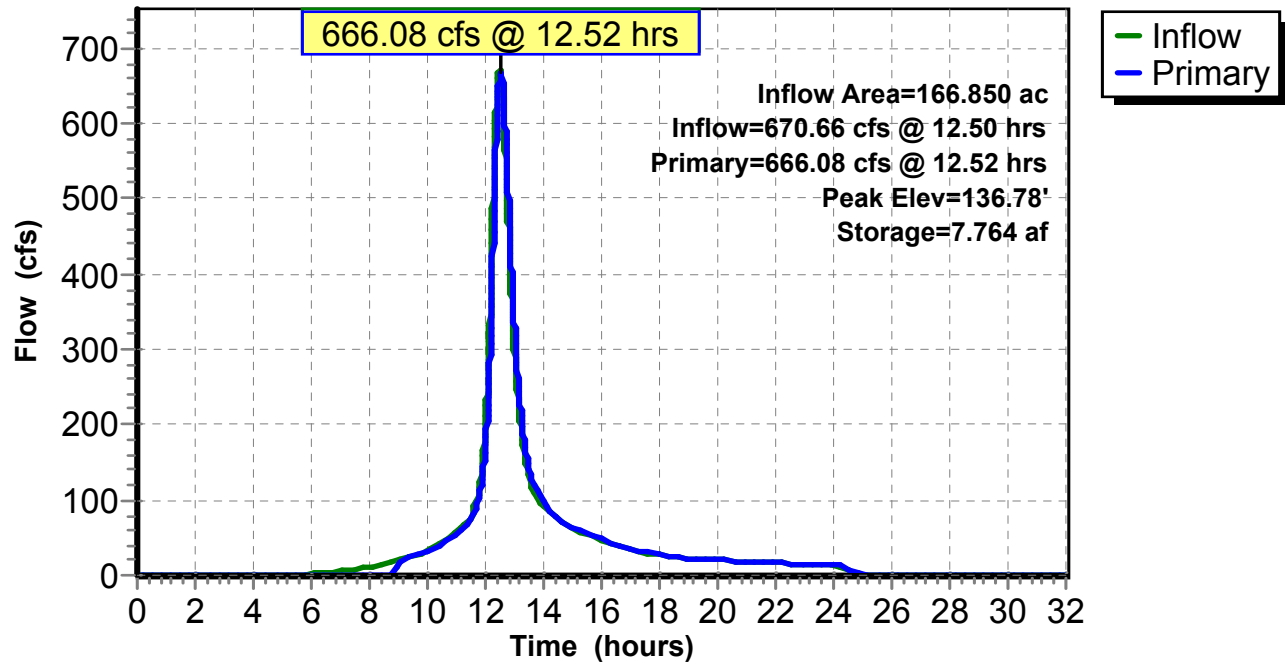
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=665.97 cfs @ 12.52 hrs HW=136.78' TW=131.87' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 4.43 cfs @ 3.01 fps)
- 2=Asymmetrical Weir (Weir Controls 661.54 cfs @ 2.44 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Hydrograph



Summary for Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 6.07" for A100_24 event
 Inflow = 674.71 cfs @ 12.79 hrs, Volume= 294.558 af
 Outflow = 674.71 cfs @ 12.79 hrs, Volume= 294.547 af, Atten= 0%, Lag= 0.113 min
 Primary = 373.22 cfs @ 12.79 hrs, Volume= 247.172 af
 Secondary = 301.49 cfs @ 12.79 hrs, Volume= 47.376 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 62.40' @ 12.79 hrs Surf.Area= 1,732 sf Storage= 5,800 cf

Plug-Flow detention time= 0.204 min calculated for 294.455 af (100% of inflow)
 Center-of-Mass det. time= 0.170 min (982.797 - 982.627)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	22,686 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686

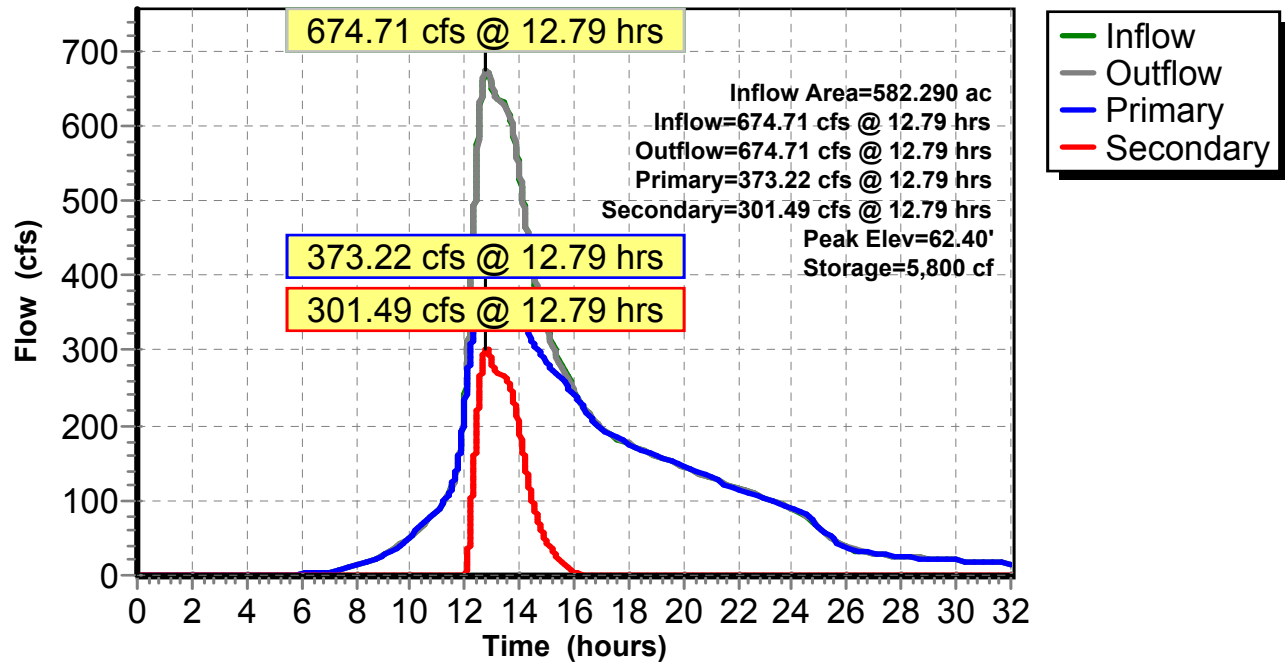
Device	Routing	Invert	Outlet Devices
#1	Primary	56.00'	60.0" Round Culvert X 2.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 56.00' / 37.90' S= 0.0217 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	60.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 66.00 64.00 62.00 60.00 60.00 62.00 64.00 66.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=373.22 cfs @ 12.79 hrs HW=62.40' TW=54.25' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 373.22 cfs @ 9.50 fps)

Secondary OutFlow Max=301.49 cfs @ 12.79 hrs HW=62.40' TW=58.58' (Dynamic Tailwater)
 ↑2=Asymmetrical Weir (Weir Controls 301.49 cfs @ 4.28 fps)

Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Hydrograph



Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 301.32 cfs @ 12.81 hrs, Volume= 47.376 af
 Outflow = 273.30 cfs @ 13.40 hrs, Volume= 47.376 af, Atten= 9%, Lag= 35.898 min
 Primary = 273.30 cfs @ 13.40 hrs, Volume= 47.376 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 54.83' @ 13.17 hrs Surf.Area= 47,112 sf Storage= 99,430 cf

Plug-Flow detention time= 4.193 min calculated for 47.361 af (100% of inflow)
 Center-of-Mass det. time= 4.194 min (811.992 - 807.797)

Volume	Invert	Avail.Storage	Storage Description
#1	51.00'	162,178 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
51.00	6,000	0	0
52.00	15,452	10,726	10,726
54.00	38,000	53,452	64,178
56.00	60,000	98,000	162,178

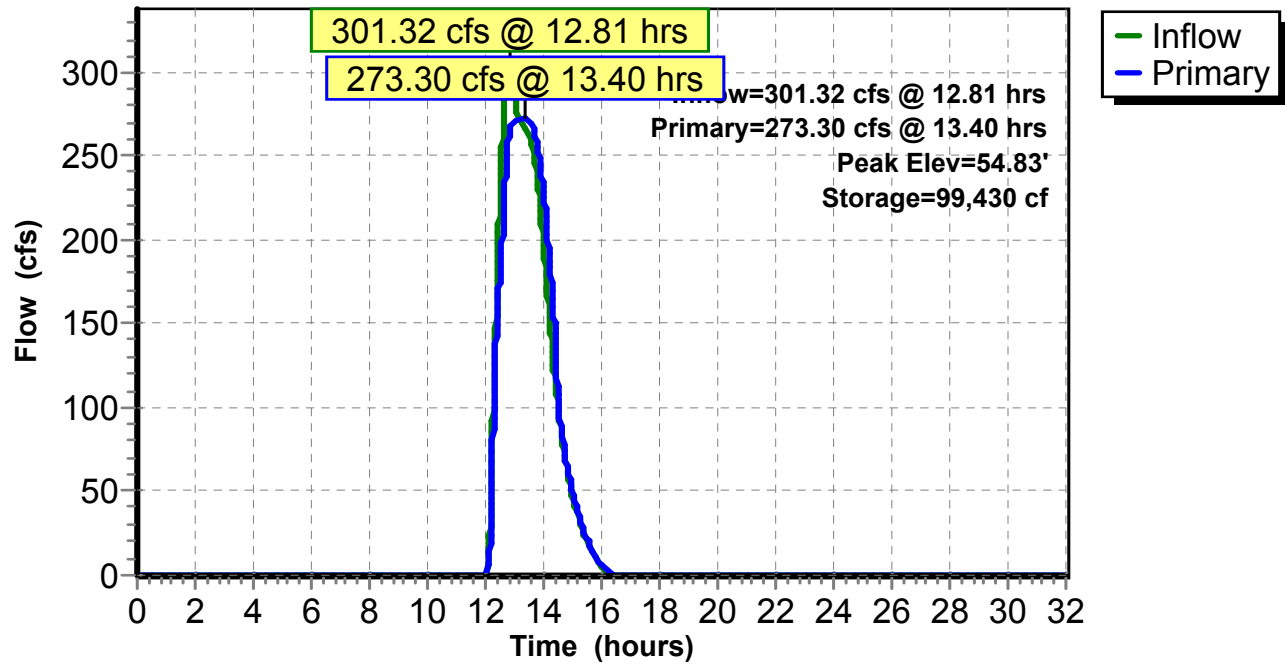
Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=283.97 cfs @ 13.40 hrs HW=54.75' TW=54.69' (Dynamic Tailwater)

↑1=Sharp-Crested Rectangular Weir(Weir Controls 283.97 cfs @ 1.54 fps)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



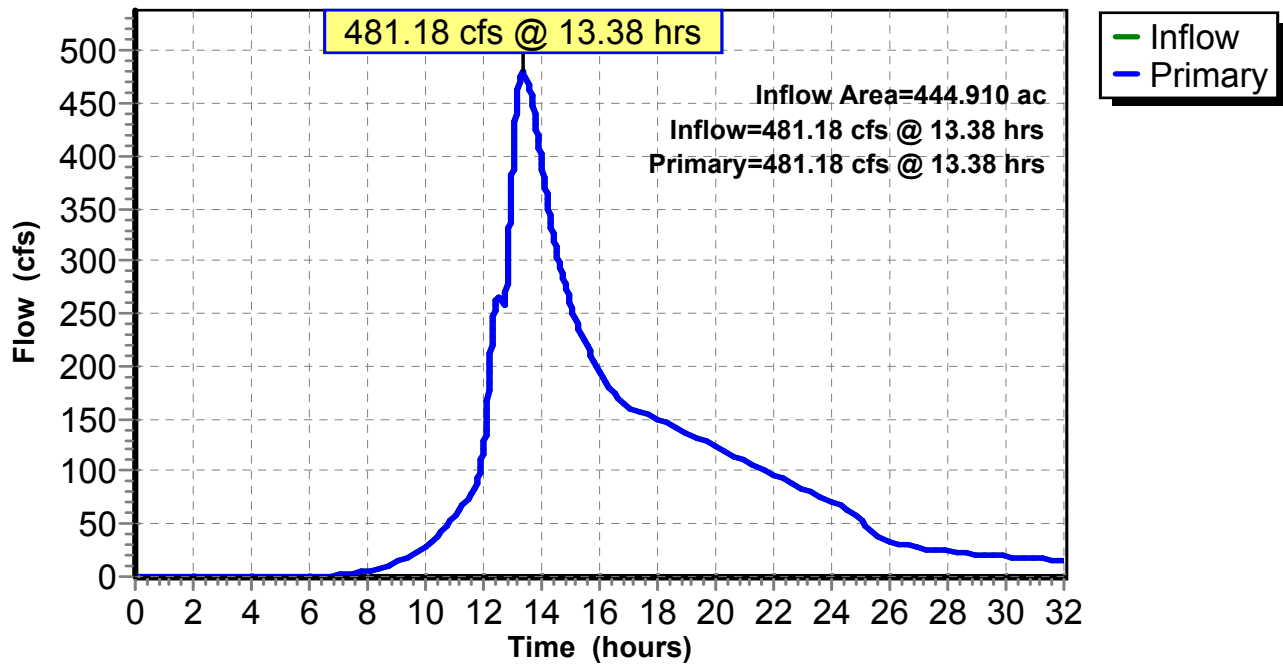
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 5.84" for A100_24 event
Inflow = 481.18 cfs @ 13.38 hrs, Volume= 216.694 af
Primary = 481.18 cfs @ 13.38 hrs, Volume= 216.694 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



Summary for Subcatchment A: WS A

Runoff = 257.02 cfs @ 11.17 hrs, Volume= 34.017 af, Depth= 6.87"

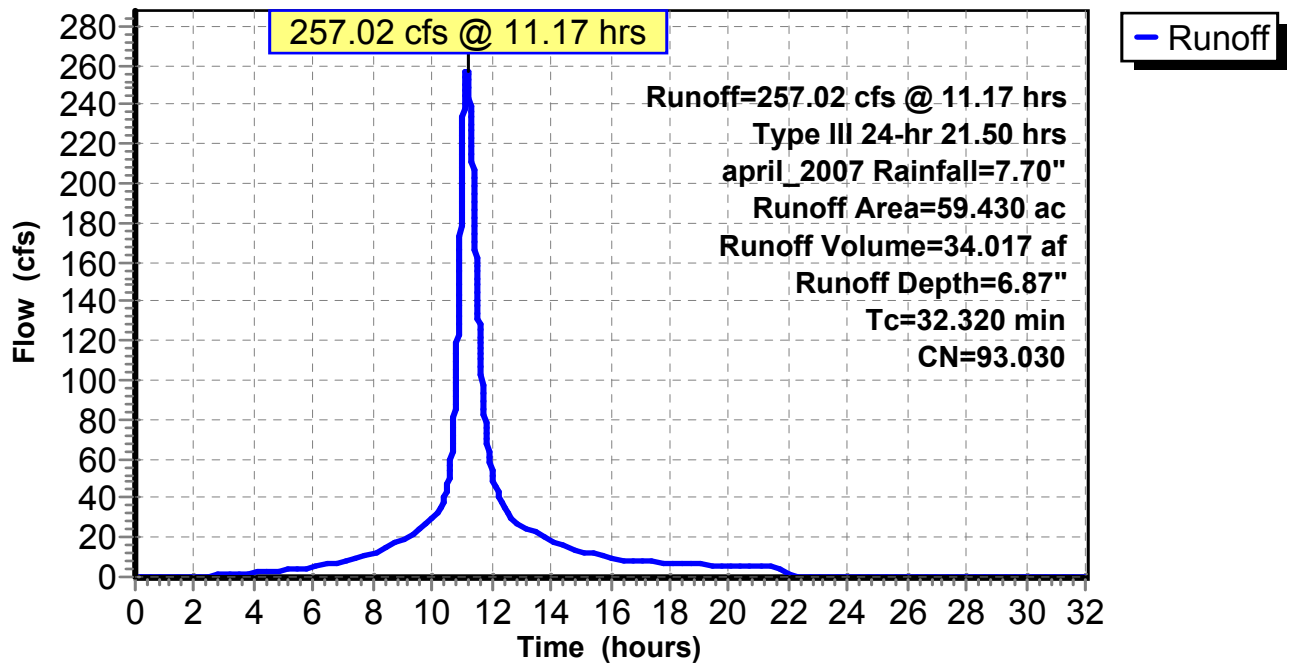
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



Summary for Subcatchment B: WS B

Runoff = 247.26 cfs @ 11.14 hrs, Volume= 29.594 af, Depth= 6.17"

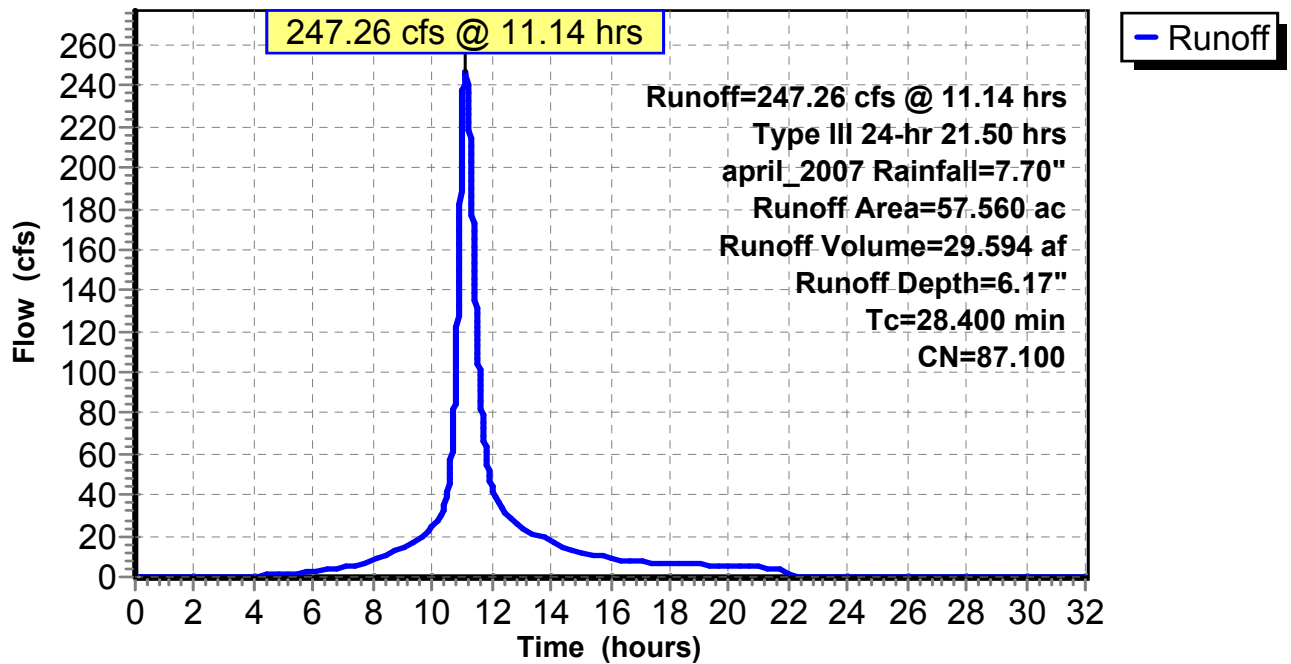
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



Summary for Subcatchment BH: HOTEL

Runoff = 62.73 cfs @ 11.14 hrs, Volume= 7.726 af, Depth= 6.06"

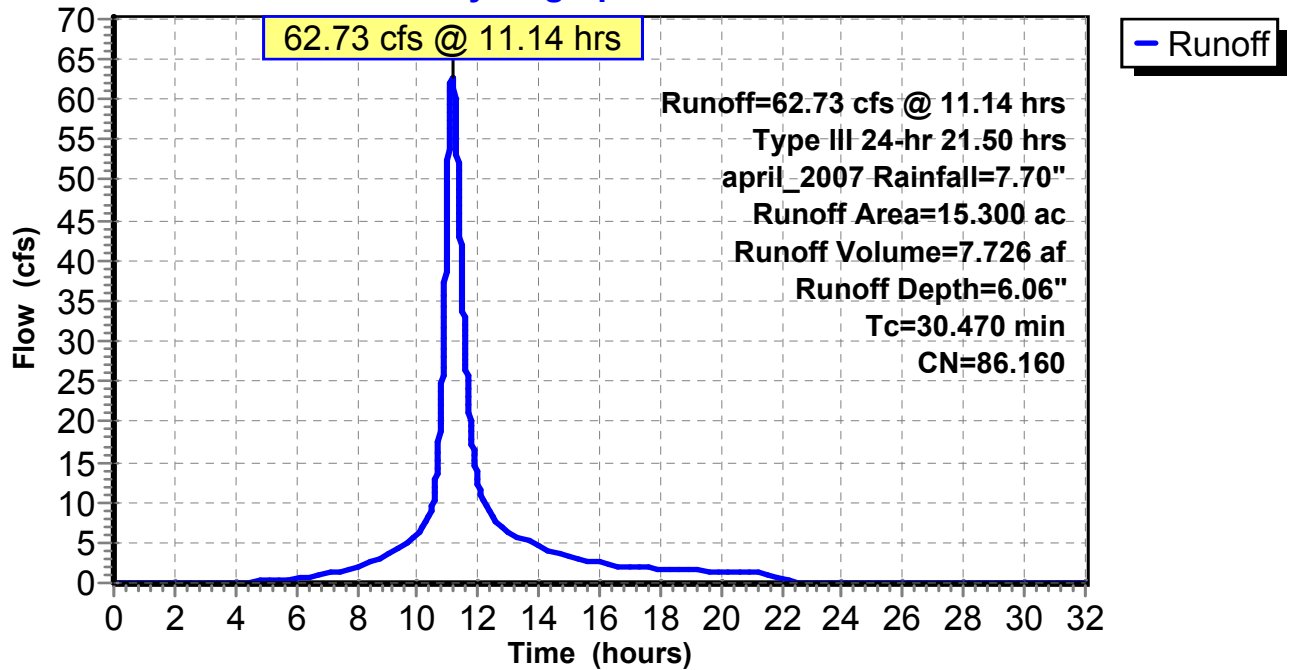
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



Summary for Subcatchment C: WS C

Runoff = 103.29 cfs @ 11.00 hrs, Volume= 10.087 af, Depth= 5.64"

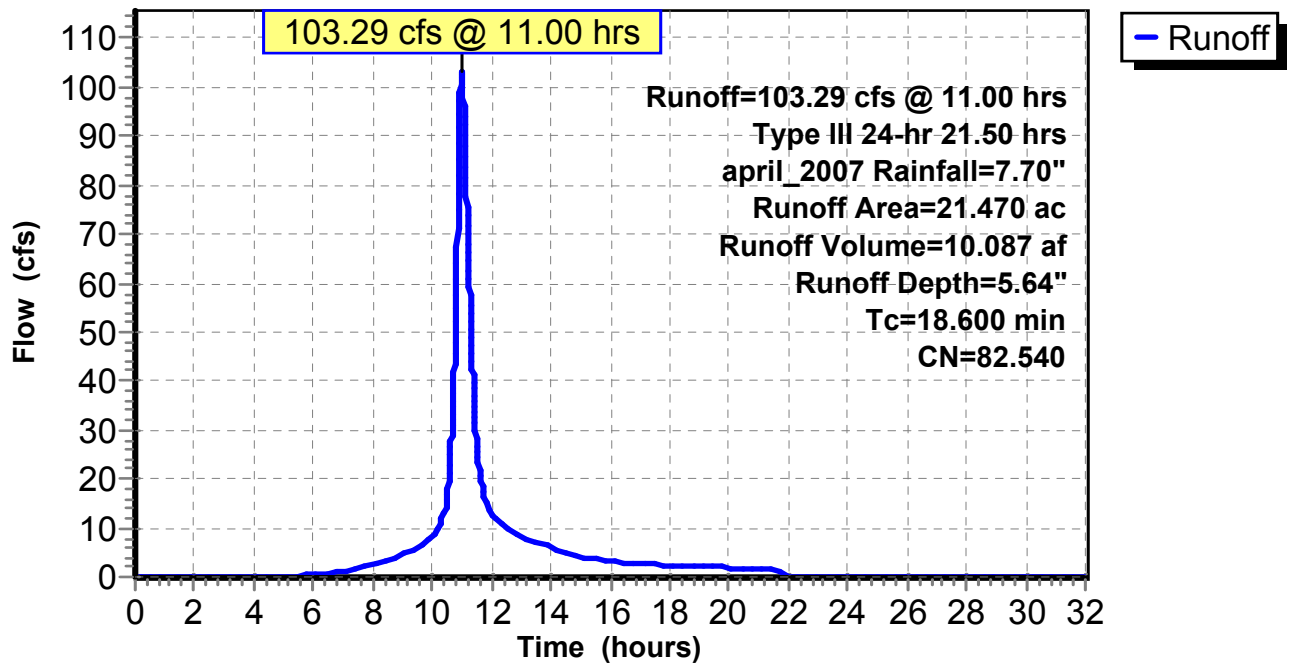
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



Summary for Subcatchment D: WS D

Runoff = 363.73 cfs @ 11.36 hrs, Volume= 54.078 af, Depth= 5.60"

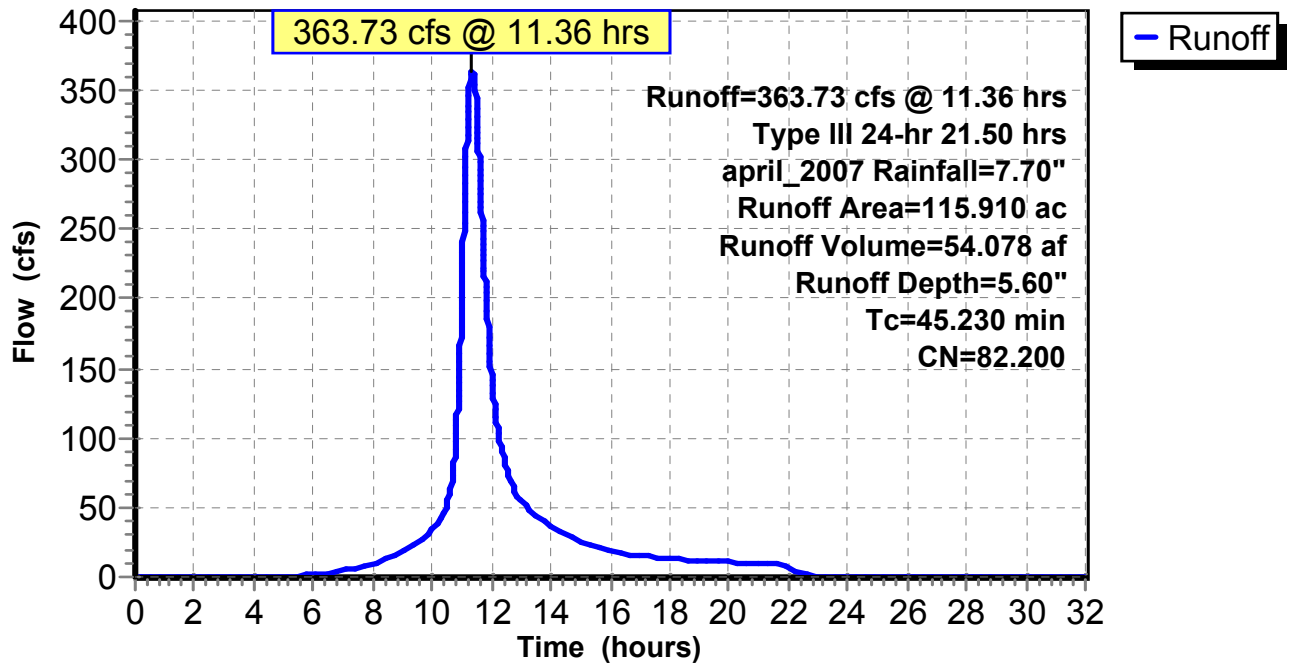
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



Summary for Subcatchment D-1: WS D-1

Runoff = 133.15 cfs @ 11.19 hrs, Volume= 16.182 af, Depth= 4.91"

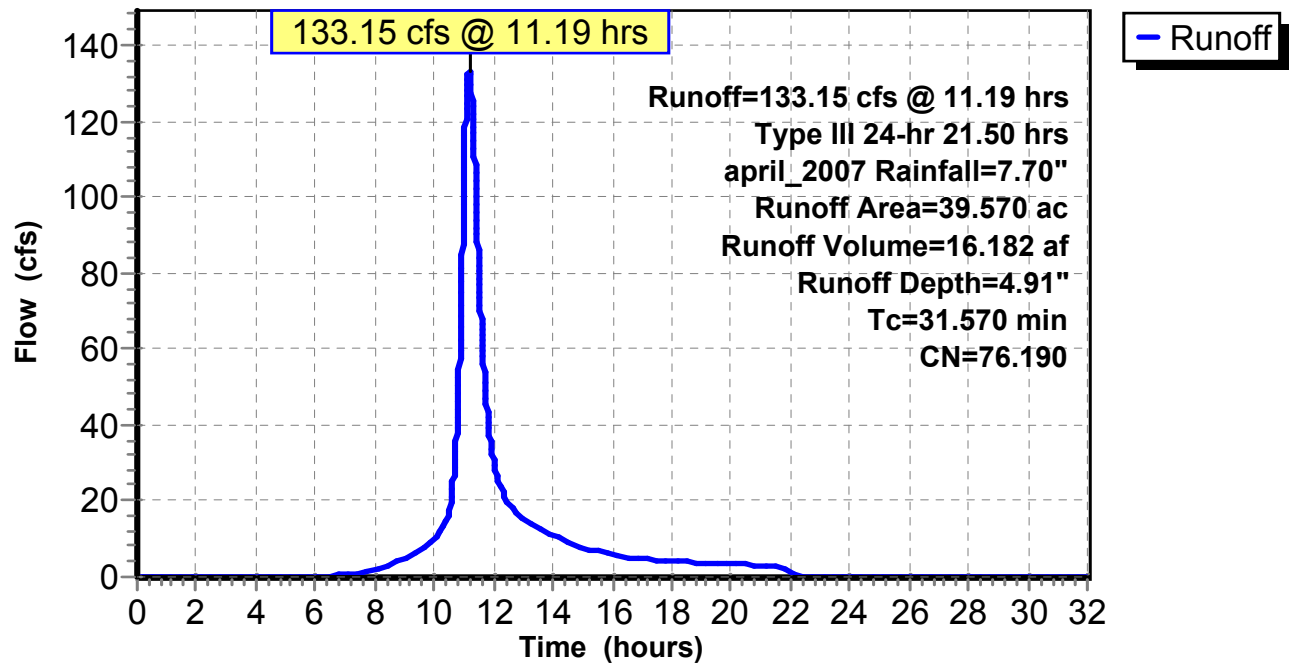
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



Summary for Subcatchment E: WS E

Runoff = 293.65 cfs @ 11.59 hrs, Volume= 52.624 af, Depth= 5.38"

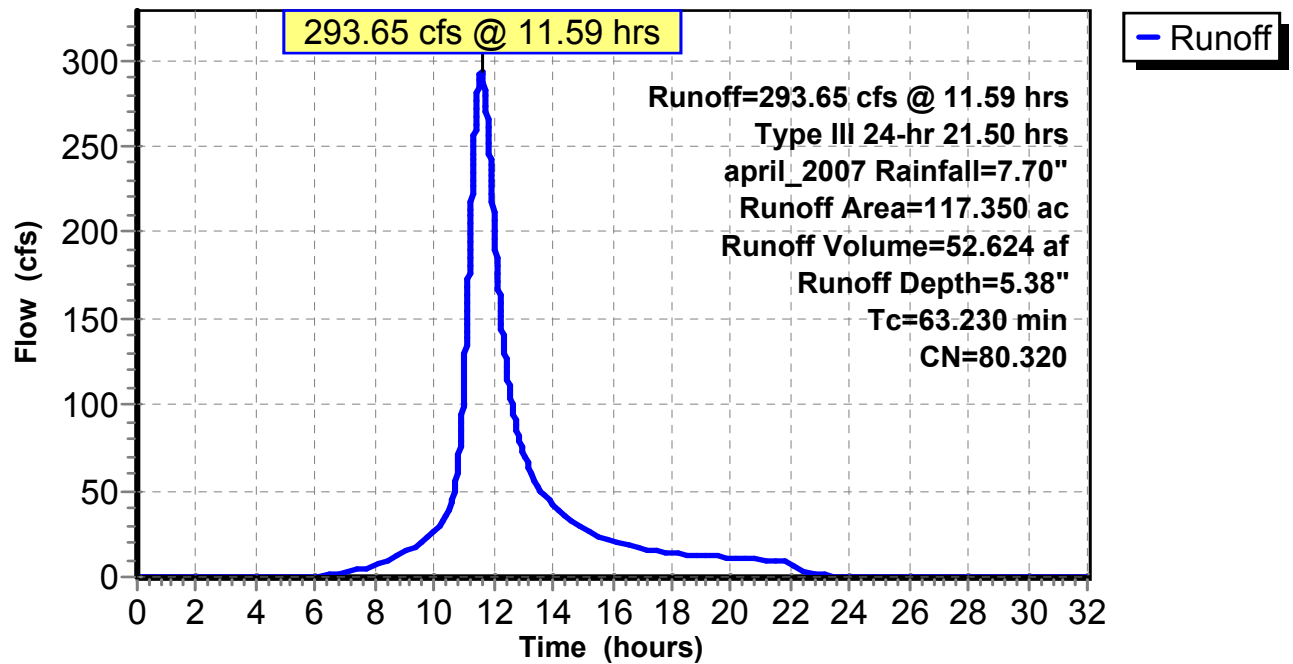
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



Summary for Subcatchment F: WS F

Runoff = 328.06 cfs @ 11.36 hrs, Volume= 47.334 af, Depth= 4.69"

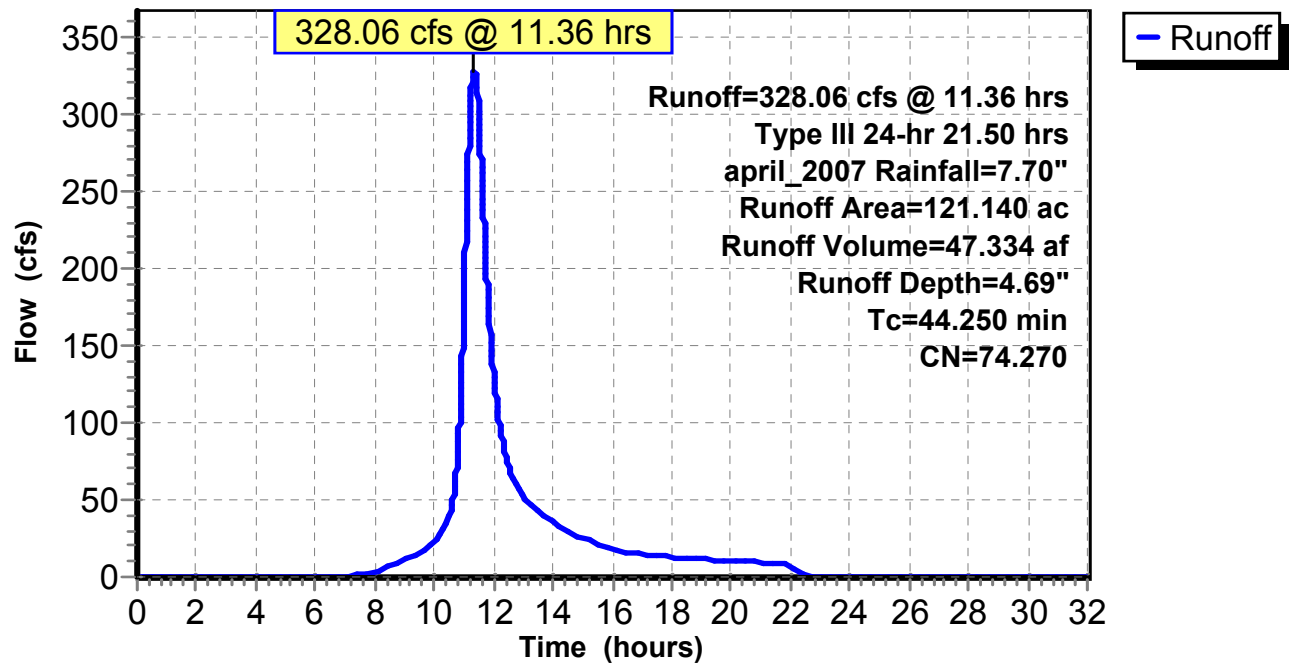
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



Summary for Subcatchment G: WS G

Runoff = 583.01 cfs @ 11.22 hrs, Volume= 76.685 af, Depth= 5.52"

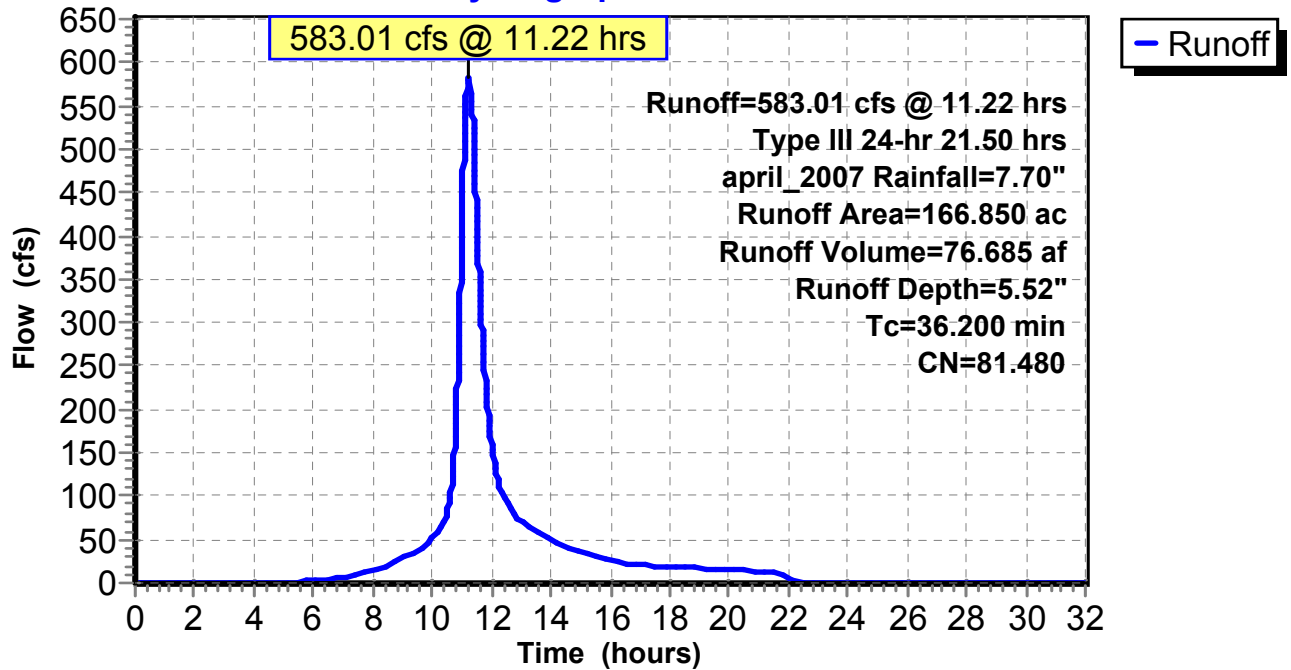
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 4.69" for april_2007 event
 Inflow = 338.72 cfs @ 12.25 hrs, Volume= 158.325 af
 Outflow = 338.58 cfs @ 12.27 hrs, Volume= 158.223 af, Atten= 0%, Lag= 1.325 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 4.43 fps, Min. Travel Time= 1.894 min
 Avg. Velocity = 2.22 fps, Avg. Travel Time= 3.781 min

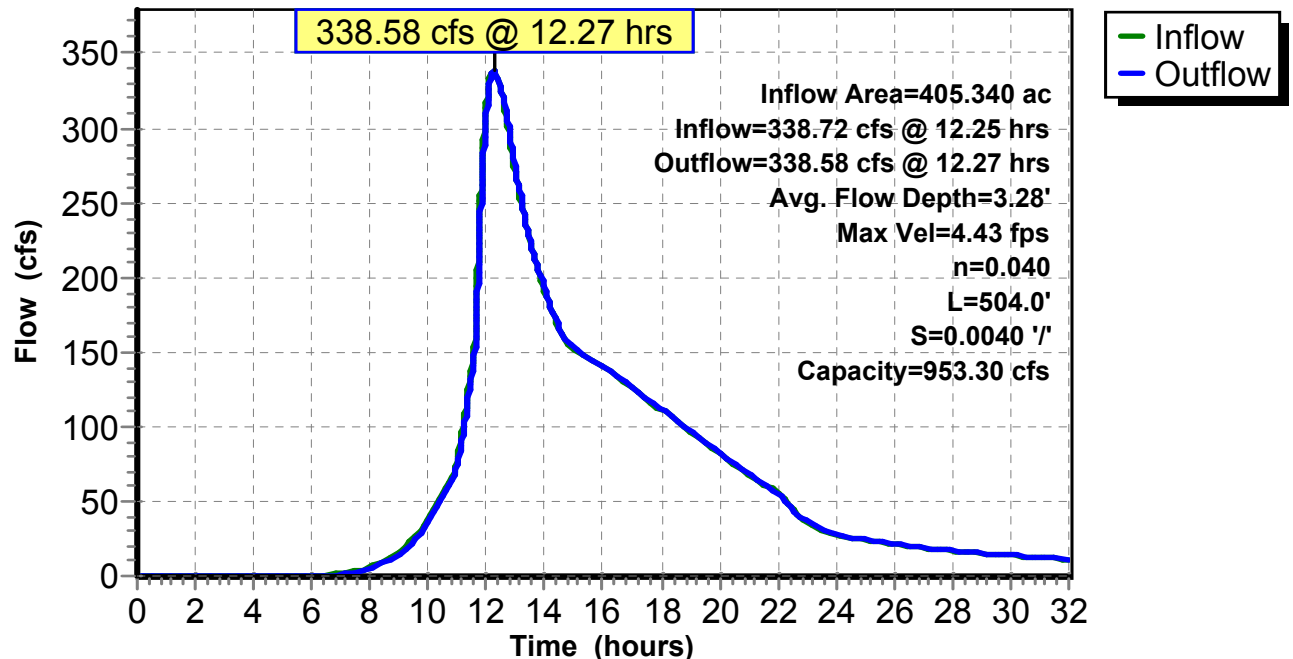
Peak Storage= 38,484 cf @ 12.27 hrs
 Average Depth at Peak Storage= 3.28'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' ' Top Width= 32.00'
 Length= 504.0' Slope= 0.0040 ' '
 Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 4.69" for april_2007 event
 Inflow = 327.54 cfs @ 11.36 hrs, Volume= 47.334 af
 Outflow = 292.10 cfs @ 11.53 hrs, Volume= 47.317 af, Atten= 11%, Lag= 10.139 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.37 fps, Min. Travel Time= 15.346 min
 Avg. Velocity = 0.64 fps, Avg. Travel Time= 56.913 min

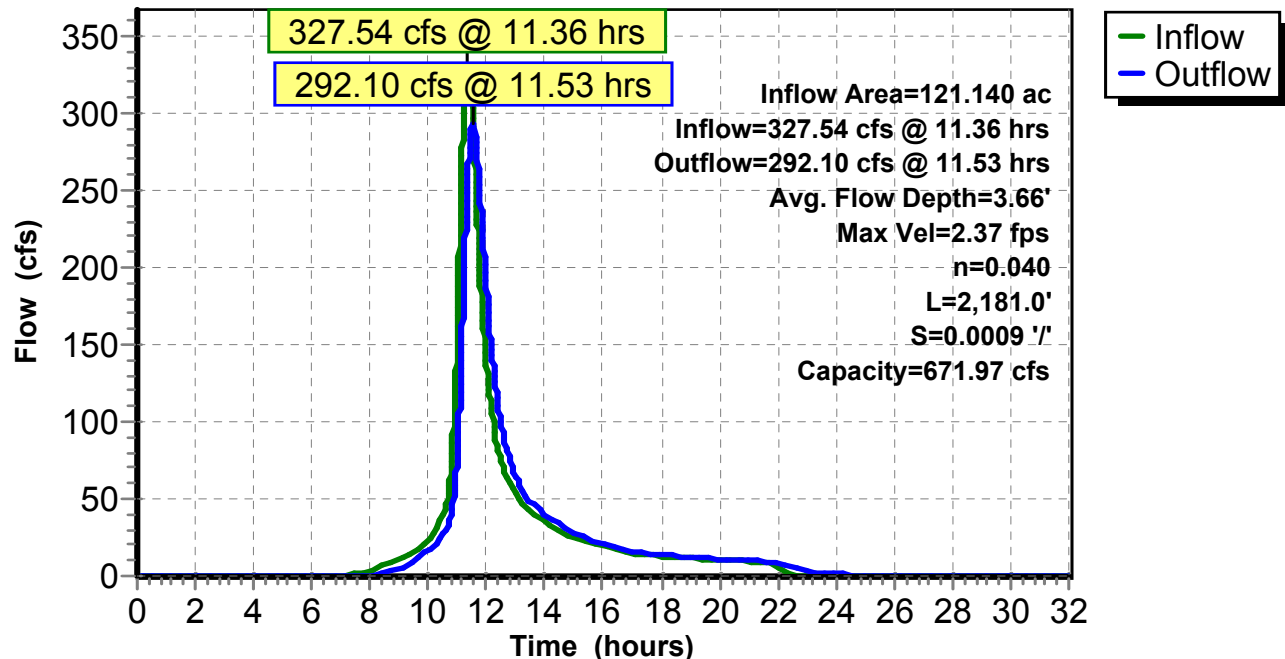
Peak Storage= 268,947 cf @ 11.53 hrs
 Average Depth at Peak Storage= 3.66'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 2,181.0' Slope= 0.0009 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 5.38" for april_2007 event
 Inflow = 576.75 cfs @ 11.28 hrs, Volume= 74.792 af
 Outflow = 59.92 cfs @ 13.52 hrs, Volume= 58.661 af, Atten= 90%, Lag= 134.880 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.64 fps, Min. Travel Time= 573.152 min
 Avg. Velocity = 0.47 fps, Avg. Travel Time= 791.270 min

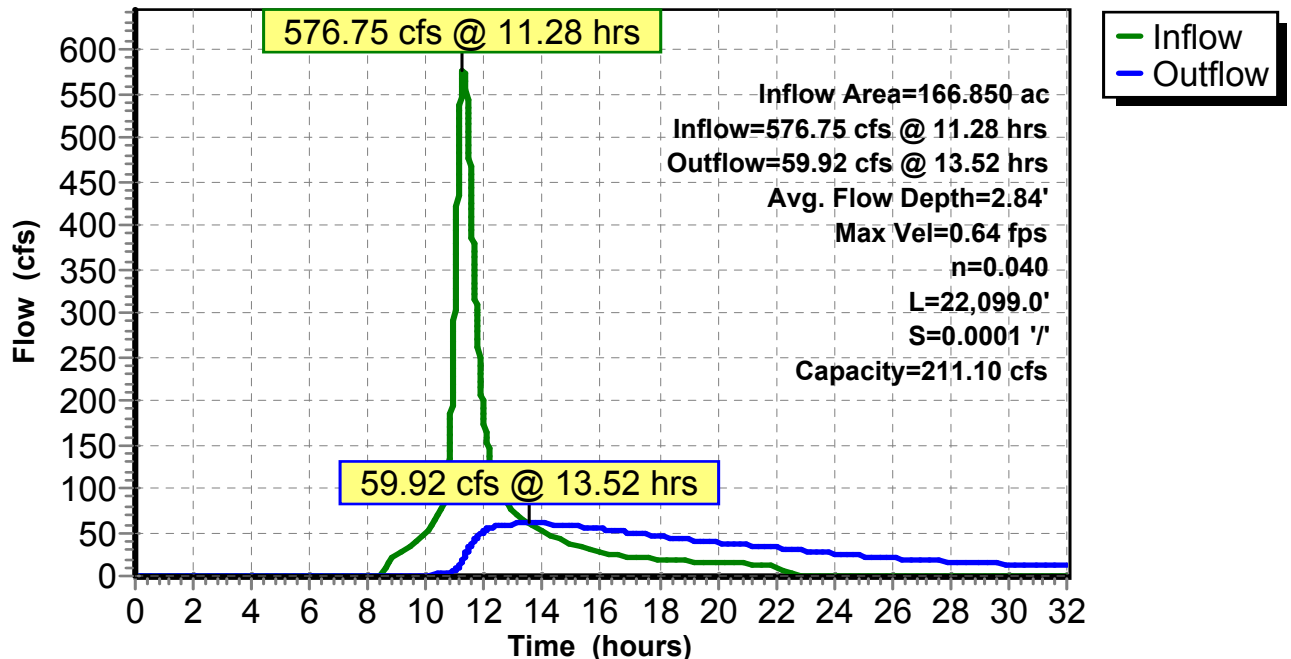
Peak Storage= 2,060,515 cf @ 13.52 hrs
 Average Depth at Peak Storage= 2.84'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 22,099.0' Slope= 0.0001 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 4.70" for april_2007 event
 Inflow = 361.14 cfs @ 12.27 hrs, Volume= 174.204 af
 Outflow = 358.87 cfs @ 12.36 hrs, Volume= 173.864 af, Atten= 1%, Lag= 5.614 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 7.10 fps, Min. Travel Time= 7.005 min
 Avg. Velocity= 3.92 fps, Avg. Travel Time= 12.677 min

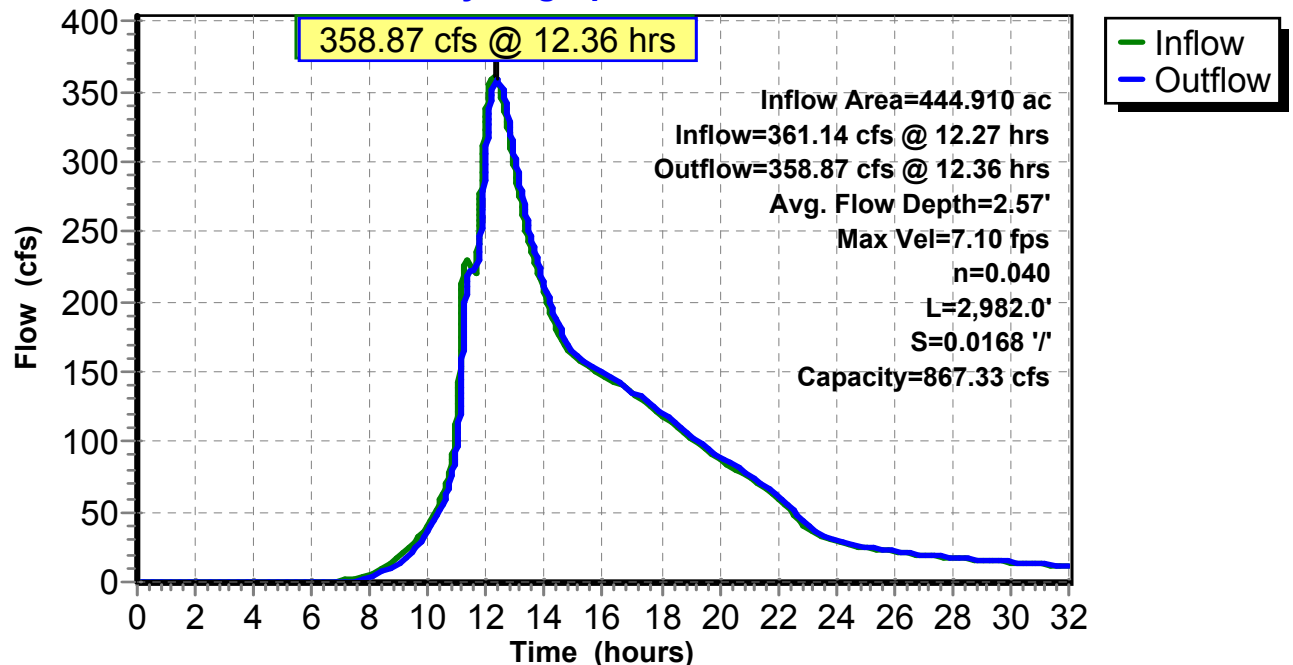
Peak Storage= 150,826 cf @ 12.36 hrs
 Average Depth at Peak Storage= 2.57'
 Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040
 Side Slope Z-value= 3.0 ' / ' Top Width= 36.00'
 Length= 2,982.0' Slope= 0.0168 ' / '
 Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 4.88" for april_2007 event
 Inflow = 582.97 cfs @ 11.41 hrs, Volume= 227.941 af
 Outflow = 582.86 cfs @ 11.42 hrs, Volume= 227.896 af, Atten= 0%, Lag= 0.398 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 11.17 fps, Min. Travel Time= 0.649 min
 Avg. Velocity = 4.91 fps, Avg. Travel Time= 1.476 min

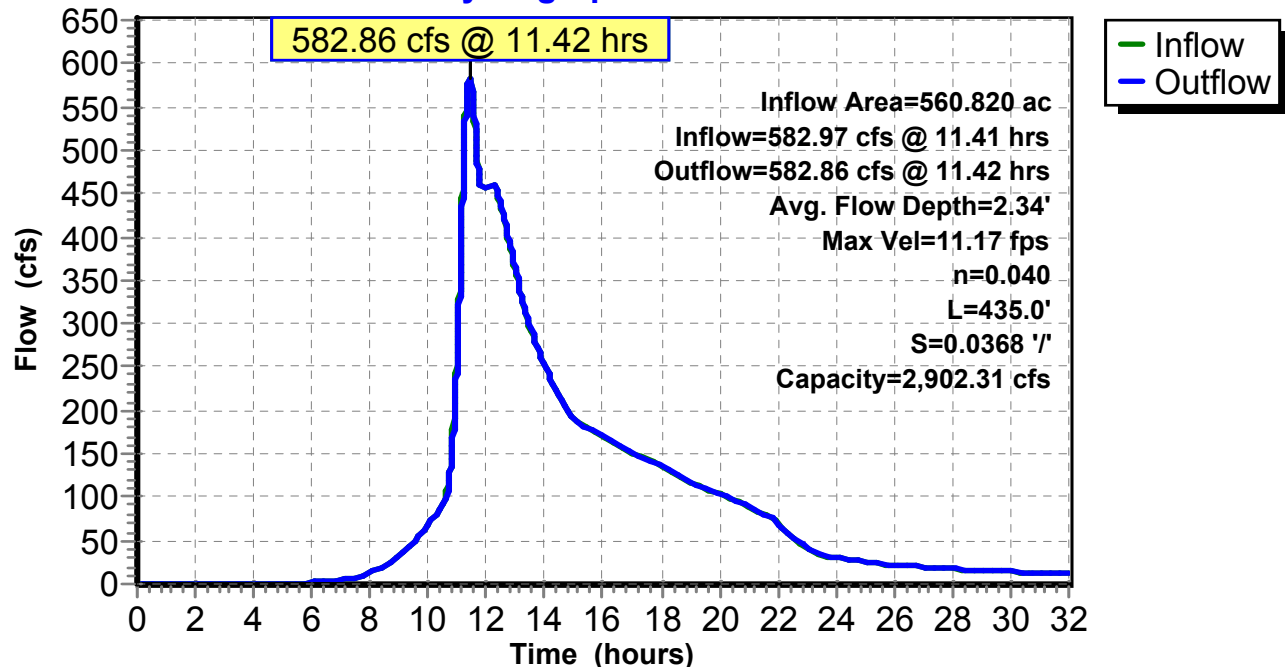
Peak Storage= 22,708 cf @ 11.42 hrs
 Average Depth at Peak Storage= 2.34'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
 Length= 435.0' Slope= 0.0368 ' / '
 Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



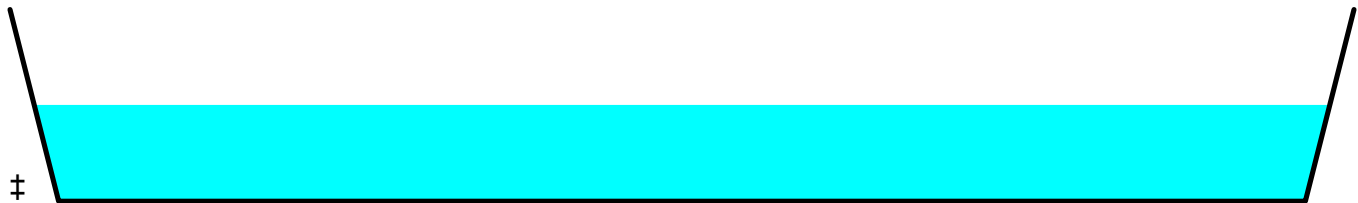
Summary for Reach 17R: FLOW OVER ROAD

Inflow = 235.65 cfs @ 11.51 hrs, Volume= 28.162 af
Outflow = 235.41 cfs @ 11.53 hrs, Volume= 28.162 af, Atten= 0%, Lag= 1.015 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 8.95 fps, Min. Travel Time= 1.654 min
Avg. Velocity = 3.23 fps, Avg. Travel Time= 4.578 min

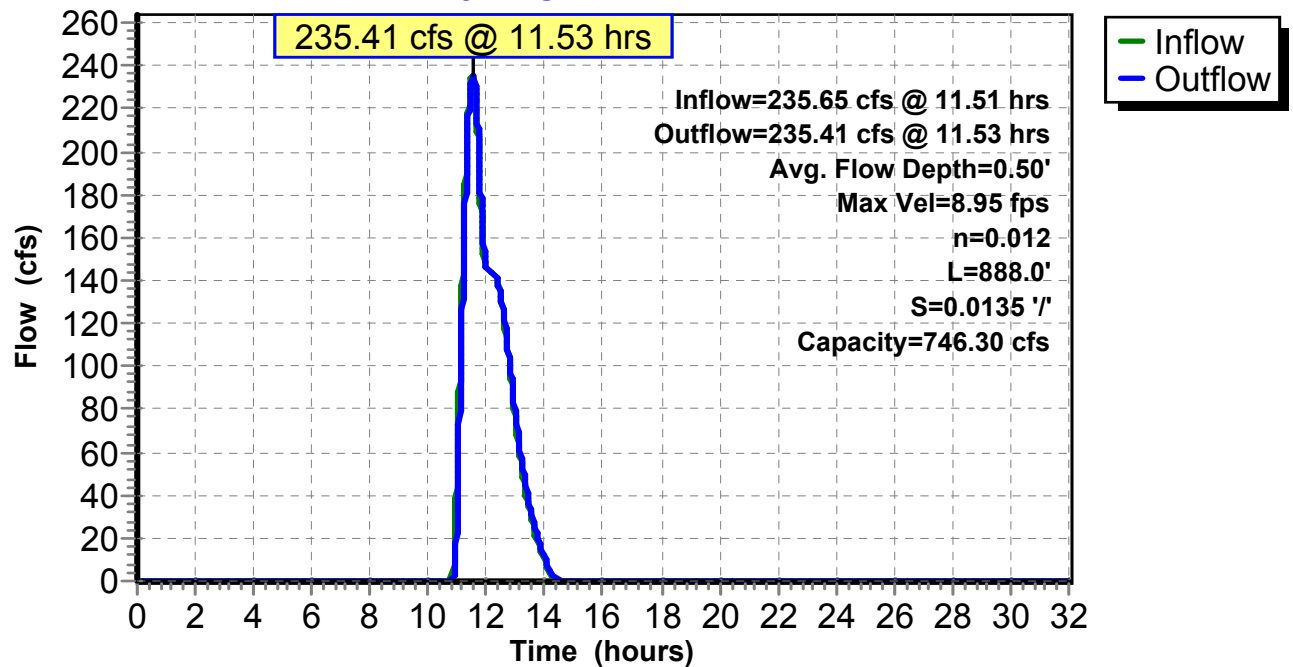
Peak Storage= 23,360 cf @ 11.53 hrs
Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
Length= 888.0' Slope= 0.0135 ' '
Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



Summary for Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 5.04" for april_2007 event
 Inflow = 781.41 cfs @ 11.26 hrs, Volume= 275.292 af
 Outflow = 669.96 cfs @ 11.69 hrs, Volume= 275.290 af, Atten= 14%, Lag= 25.240 min
 Primary = 669.96 cfs @ 11.69 hrs, Volume= 275.290 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 53.03' @ 11.68 hrs Surf.Area= 1.856 ac Storage= 6.786 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 1.583 min (888.865 - 887.282)

Volume	Invert	Avail.Storage	Storage Description
#1	46.00'	82.605 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
46.00	0.695	0.000	0.000
48.00	0.695	1.390	1.390
50.00	0.800	1.495	2.885
52.00	1.420	2.220	5.105
54.00	2.270	3.690	8.795
56.00	3.160	5.430	14.225
58.00	4.070	7.230	21.455
60.00	4.980	9.050	30.505
62.00	5.710	10.690	41.195
64.00	6.620	12.330	53.525
66.00	7.170	13.790	67.315
68.00	8.120	15.290	82.605

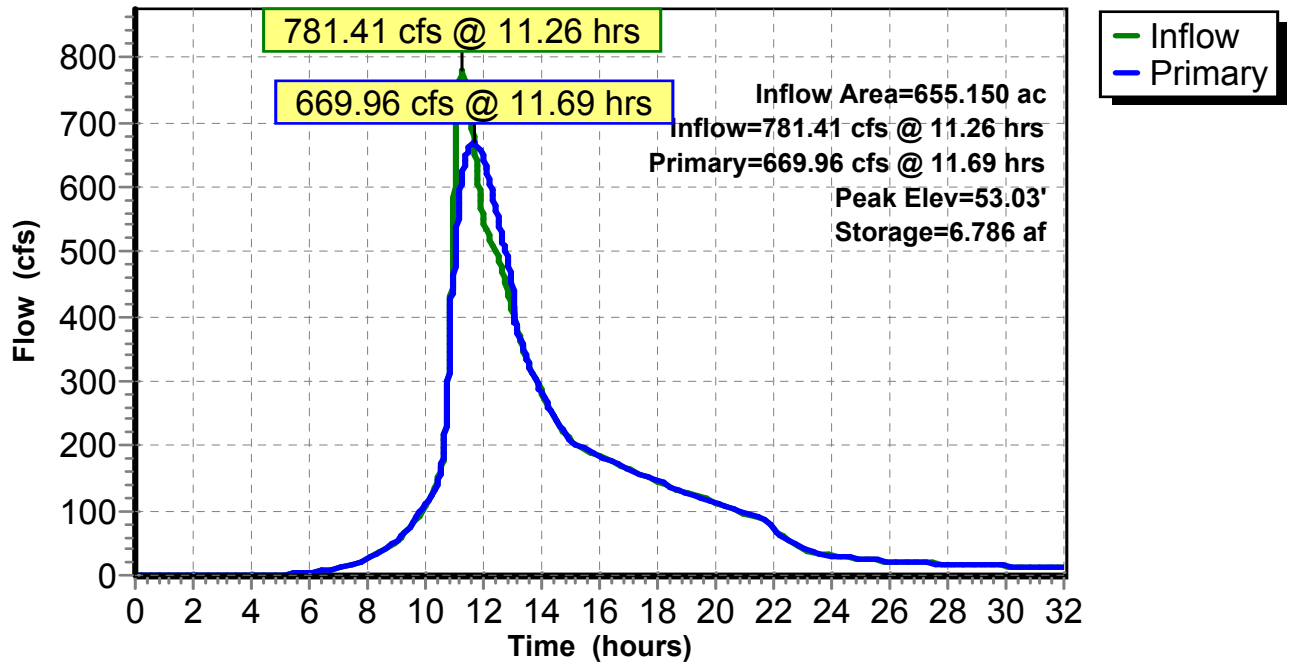
Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48

Primary OutFlow Max=669.98 cfs @ 11.69 hrs HW=53.03' TW=38.31' (Dynamic Tailwater)

1=Culvert (Inlet Controls 669.98 cfs @ 17.17 fps)
 2=WEIR WESTCH AVE (Controls 0.00 cfs)

Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 4.90" for april_2007 event
 Inflow = 620.12 cfs @ 11.38 hrs, Volume= 237.983 af
 Outflow = 592.61 cfs @ 11.51 hrs, Volume= 237.981 af, Atten= 4%, Lag= 7.713 min
 Primary = 592.61 cfs @ 11.51 hrs, Volume= 237.981 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 76.66' @ 11.51 hrs Surf.Area= 0.453 ac Storage= 1.818 af

Plug-Flow detention time= 0.435 min calculated for 237.907 af (100% of inflow)
 Center-of-Mass det. time= 0.426 min (911.893 - 911.467)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

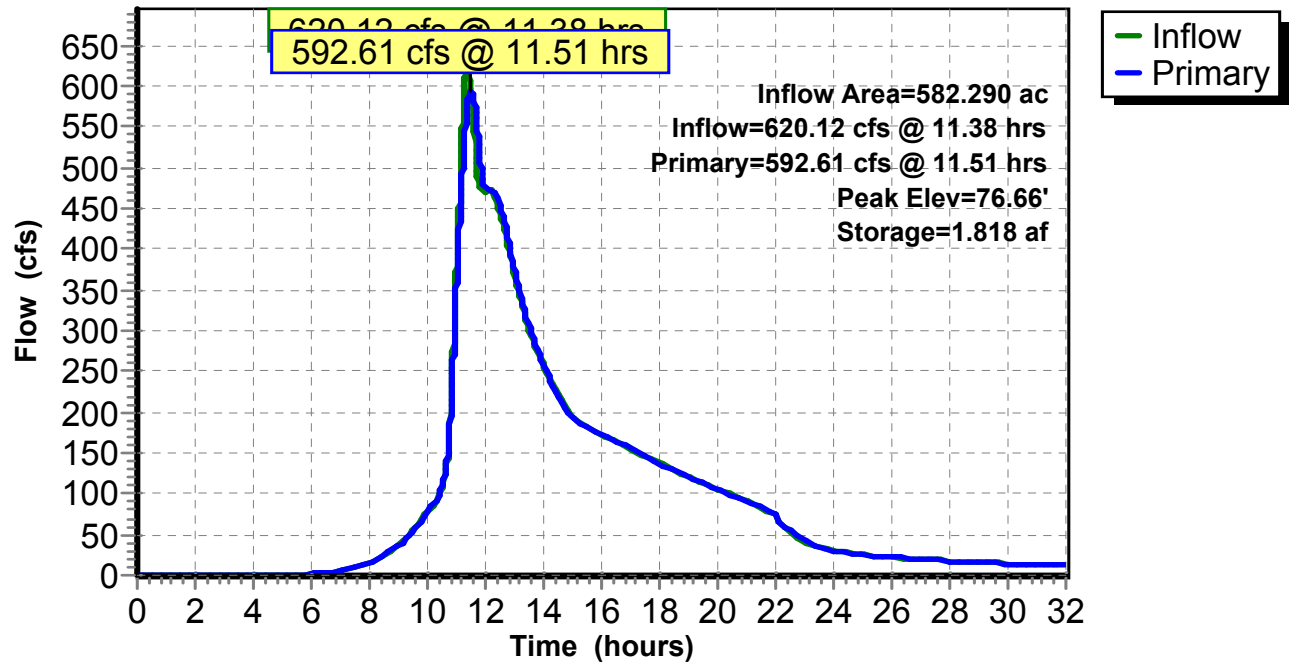
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=592.60 cfs @ 11.51 hrs HW=76.66' TW=62.06' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 341.02 cfs @ 17.37 fps)
- 2=Culvert 2 (Inlet Controls 251.58 cfs @ 12.81 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 4.70" for april_2007 event
 Inflow = 361.67 cfs @ 12.24 hrs, Volume= 174.405 af
 Outflow = 361.14 cfs @ 12.27 hrs, Volume= 174.204 af, Atten= 0%, Lag= 1.768 min
 Primary = 361.14 cfs @ 12.27 hrs, Volume= 174.204 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 130.60' @ 12.28 hrs Surf.Area= 1.055 ac Storage= 2.672 af

Plug-Flow detention time= 8.594 min calculated for 174.204 af (100% of inflow)
 Center-of-Mass det. time= 7.482 min (958.792 - 951.310)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

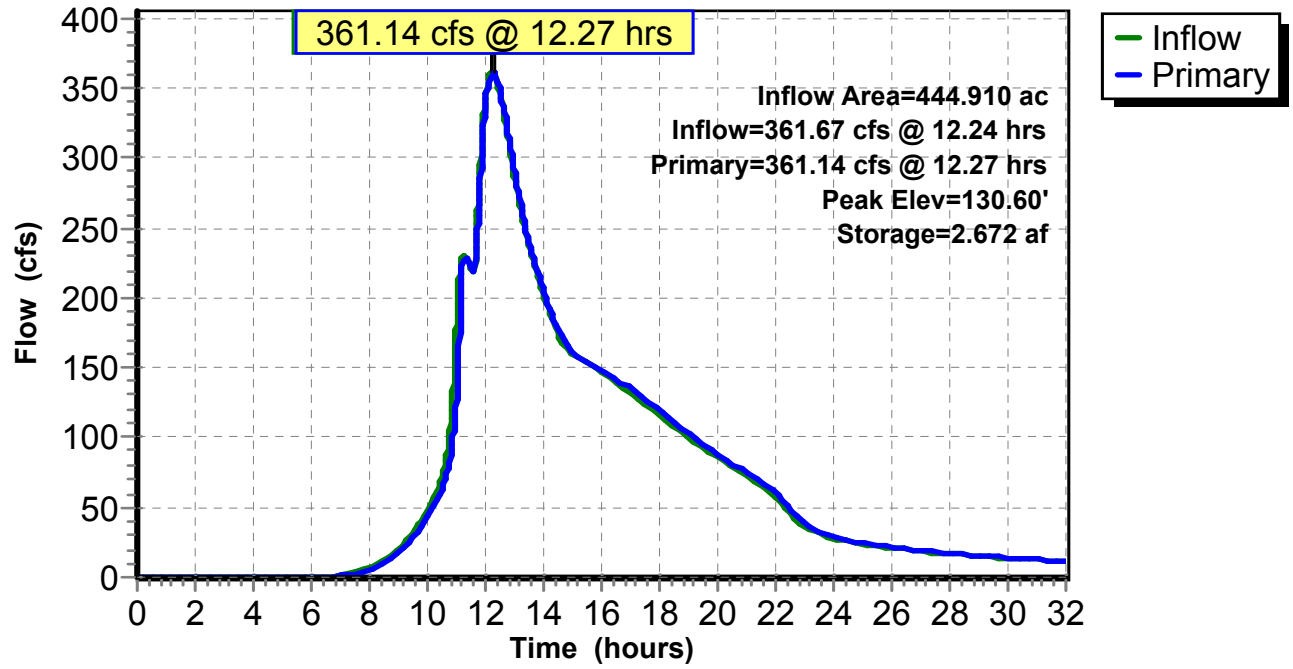
Primary OutFlow Max=361.04 cfs @ 12.27 hrs HW=130.60' TW=128.56' (Dynamic Tailwater)

1=Culvert (Inlet Controls 172.81 cfs @ 6.88 fps)

2=Sharp-Crested Rectangular Weir(Weir Controls 188.23 cfs @ 2.53 fps)

Pond 4A: DP 4 A ARGYLE

Hydrograph



Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 4.70" for april_2007 event
 Inflow = 620.86 cfs @ 11.58 hrs, Volume= 158.602 af
 Outflow = 338.72 cfs @ 12.25 hrs, Volume= 158.325 af, Atten= 45%, Lag= 40.039 min
 Primary = 338.72 cfs @ 12.25 hrs, Volume= 158.325 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 132.61' @ 12.25 hrs Surf.Area= 21.797 ac Storage= 31.022 af

Plug-Flow detention time= 58.794 min calculated for 158.275 af (100% of inflow)
 Center-of-Mass det. time= 57.034 min (969.395 - 912.361)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

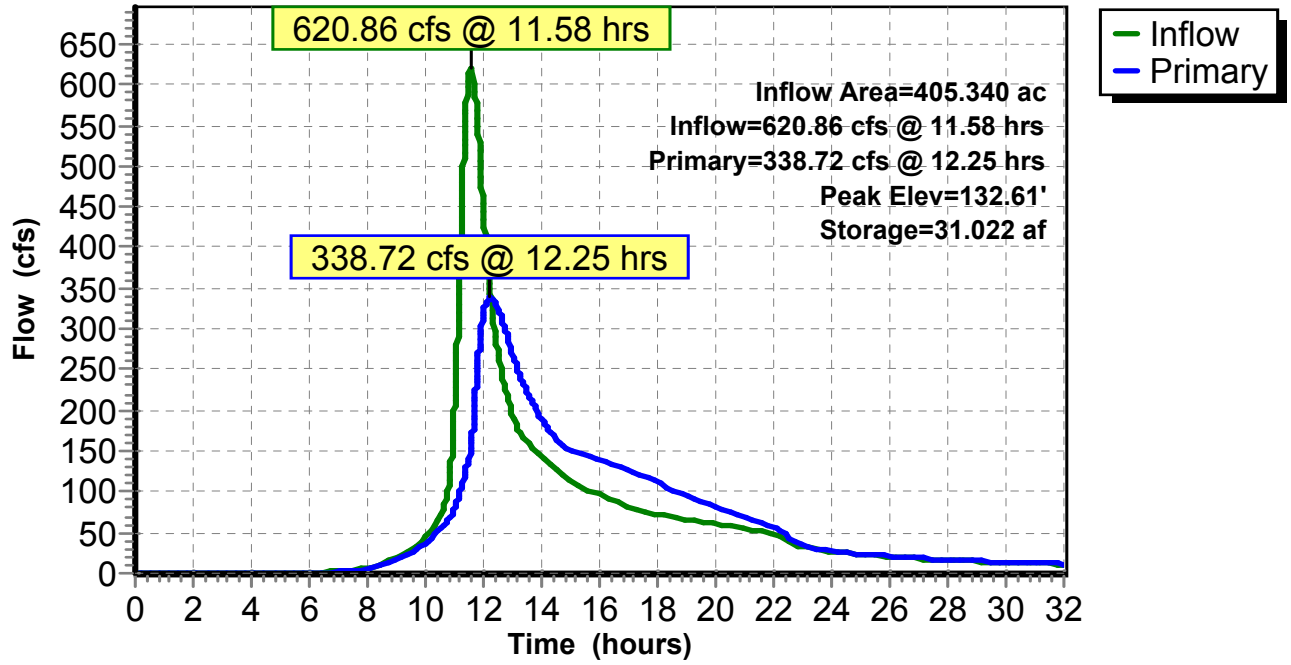
Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

Primary OutFlow Max=338.66 cfs @ 12.25 hrs HW=132.61' TW=131.28' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 139.76 cfs @ 5.56 fps)
- 2=Asymmetrical Weir (Weir Controls 198.91 cfs @ 2.14 fps)

Pond 5P: DP 5 BETSY BROWN ROAD

Hydrograph



Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 4.88" for april_2007 event
 Inflow = 583.76 cfs @ 11.39 hrs, Volume= 227.942 af
 Outflow = 582.97 cfs @ 11.41 hrs, Volume= 227.941 af, Atten= 0%, Lag= 1.087 min
 Primary = 582.97 cfs @ 11.41 hrs, Volume= 227.941 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 91.42' @ 11.41 hrs Surf.Area= 1.370 ac Storage= 1.943 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 2.884 min (918.778 - 915.893)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

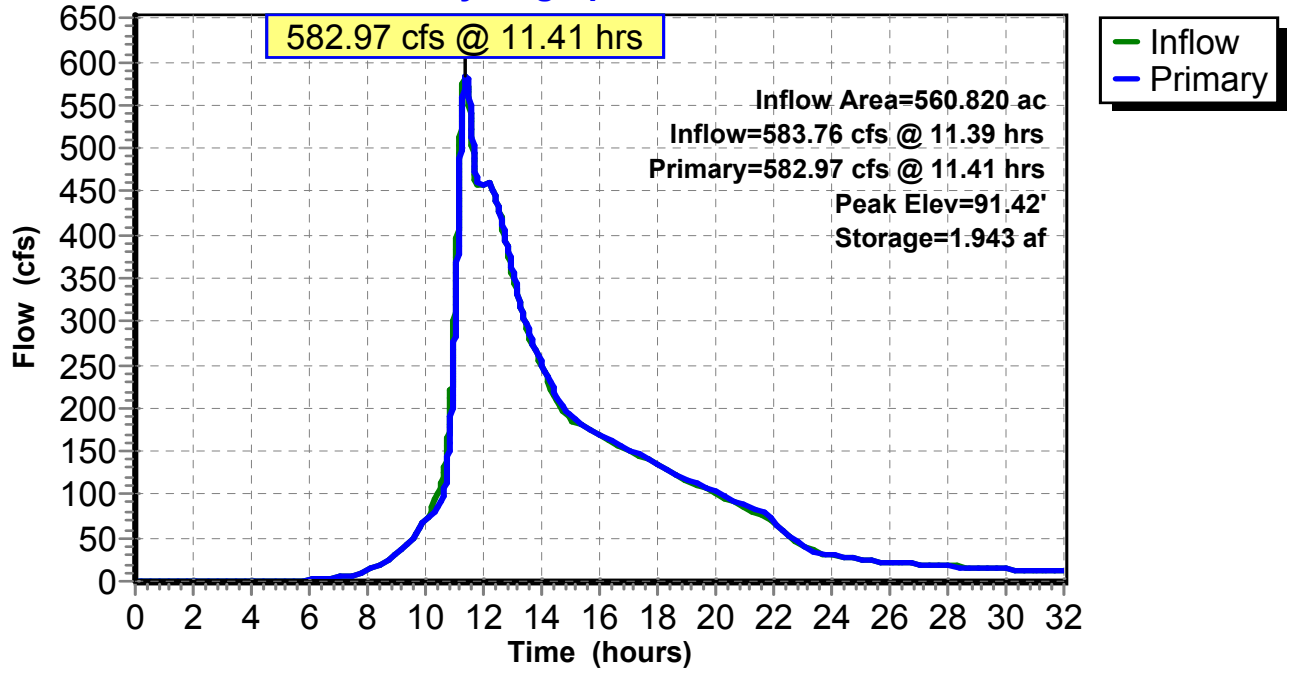
Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=582.97 cfs @ 11.41 hrs HW=91.42' TW=78.34' (Dynamic Tailwater)

- 1=Sharp-Crested Rectangular Weir (Weir Controls 197.36 cfs @ 5.54 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 385.61 cfs @ 3.17 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 5.19" for april_2007 event
 Inflow = 861.70 cfs @ 11.28 hrs, Volume= 309.307 af
 Outflow = 859.46 cfs @ 11.32 hrs, Volume= 309.301 af, Atten= 0%, Lag= 2.261 min
 Primary = 859.46 cfs @ 11.32 hrs, Volume= 309.301 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 38.81' @ 11.32 hrs Surf.Area= 0.481 ac Storage= 0.935 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.283 min (869.629 - 869.346)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

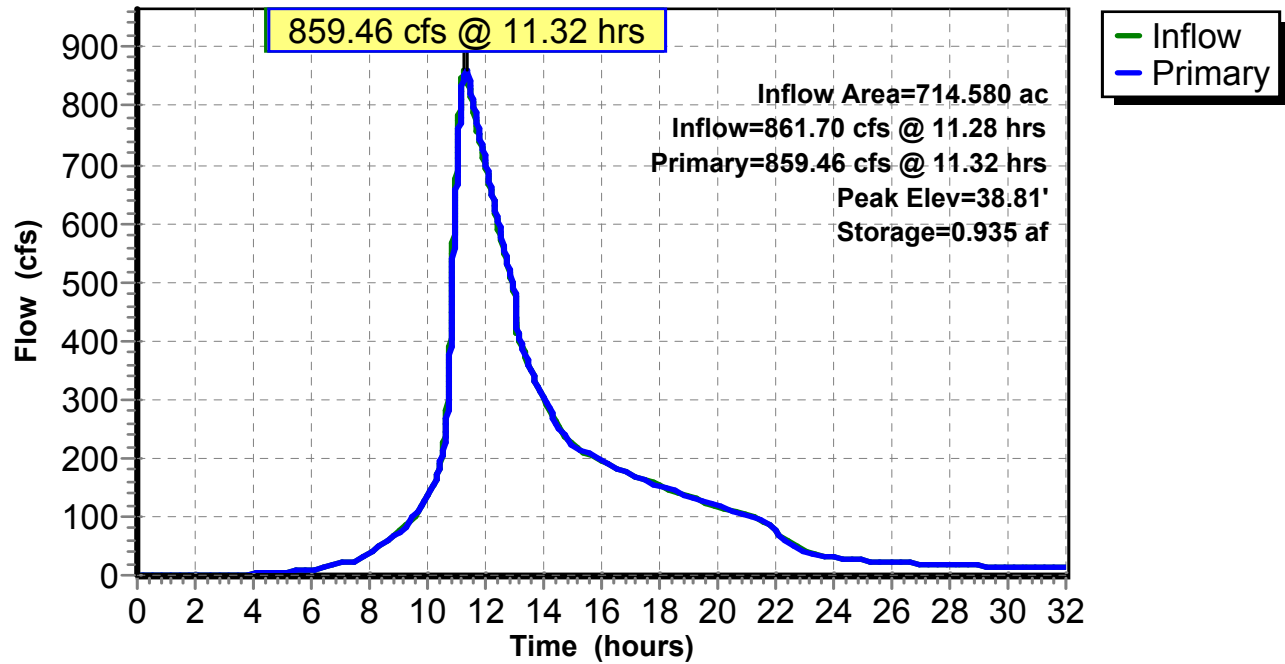
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=859.44 cfs @ 11.32 hrs HW=38.81' (Free Discharge)

- 1=Culvert (Barrel Controls 859.44 cfs @ 9.24 fps)
- 2=WEIR BOWMAN (Controls 0.00 cfs)

Pond 8P: BOWMAN FIELDS

Hydrograph



Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 4.69" for april_2007 event
 Inflow = 328.06 cfs @ 11.36 hrs, Volume= 47.334 af
 Outflow = 327.54 cfs @ 11.36 hrs, Volume= 47.334 af, Atten= 0%, Lag= 0.196 min
 Primary = 327.54 cfs @ 11.36 hrs, Volume= 47.334 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 135.04' @ 11.37 hrs Surf.Area= 0.210 ac Storage= 0.251 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.397 min (768.620 - 768.223)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

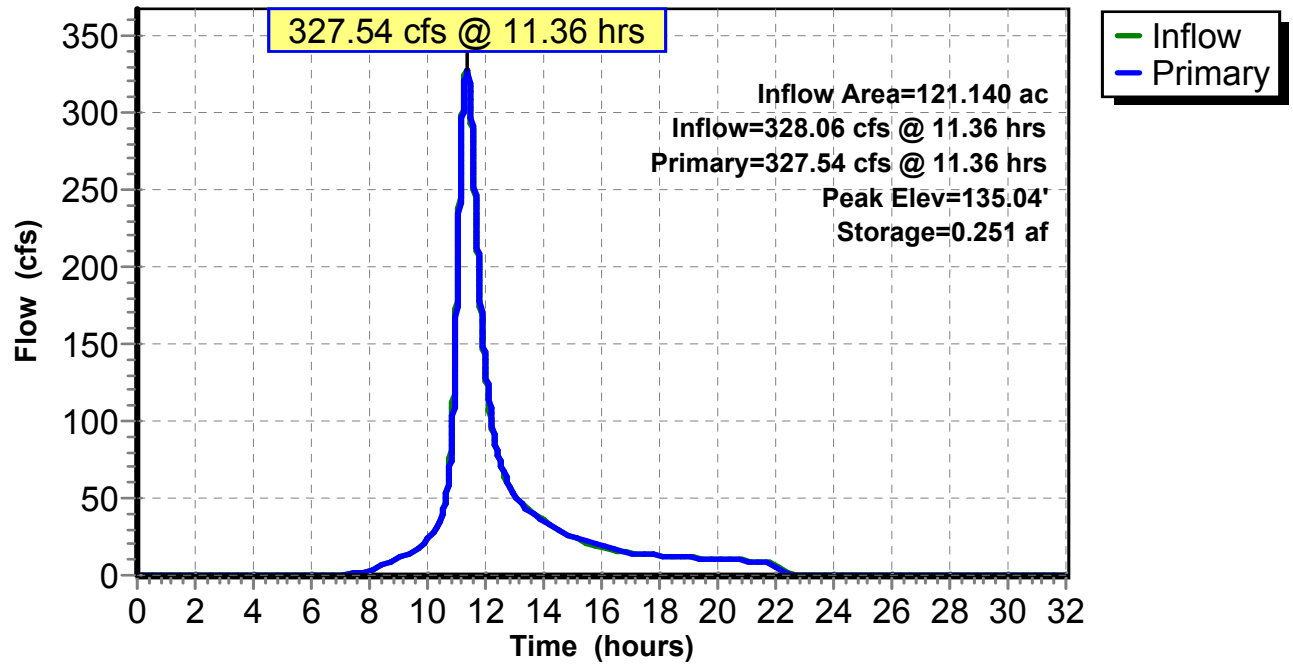
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=326.62 cfs @ 11.36 hrs HW=135.04' TW=133.42' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 43.37 cfs @ 6.14 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 79.90 cfs @ 5.26 fps)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 203.35 cfs @ 2.40 fps)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Hydrograph



Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 5.52" for april_2007 event
 Inflow = 583.01 cfs @ 11.22 hrs, Volume= 76.685 af
 Outflow = 576.75 cfs @ 11.28 hrs, Volume= 74.792 af, Atten= 1%, Lag= 3.010 min
 Primary = 576.75 cfs @ 11.28 hrs, Volume= 74.792 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.72' @ 11.28 hrs Surf.Area= 4.192 ac Storage= 7.482 af (4.514 af above start)

Plug-Flow detention time= 51.858 min calculated for 71.802 af (94% of inflow)
 Center-of-Mass det. time= 13.013 min (758.954 - 745.941)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

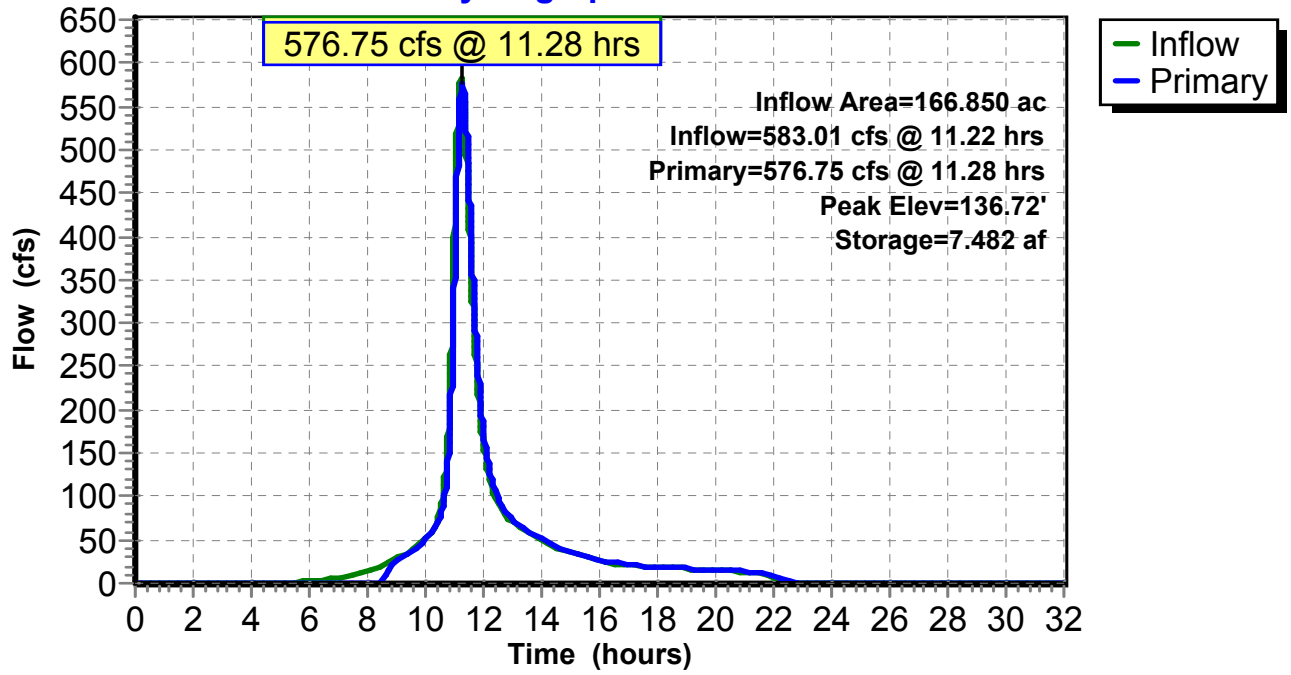
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=576.68 cfs @ 11.28 hrs HW=136.72' TW=131.46' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 3.74 cfs @ 2.88 fps)
- 2=Asymmetrical Weir (Weir Controls 572.94 cfs @ 2.36 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Hydrograph



Summary for Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 4.90" for april_2007 event
 Inflow = 592.61 cfs @ 11.51 hrs, Volume= 237.981 af
 Outflow = 592.61 cfs @ 11.51 hrs, Volume= 237.972 af, Atten= 0%, Lag= 0.104 min
 Primary = 356.96 cfs @ 11.51 hrs, Volume= 209.810 af
 Secondary = 235.65 cfs @ 11.51 hrs, Volume= 28.162 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 62.06' @ 11.51 hrs Surf.Area= 1,472 sf Storage= 5,269 cf

Plug-Flow detention time= 0.217 min calculated for 237.898 af (100% of inflow)
 Center-of-Mass det. time= 0.179 min (912.072 - 911.893)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	22,686 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686

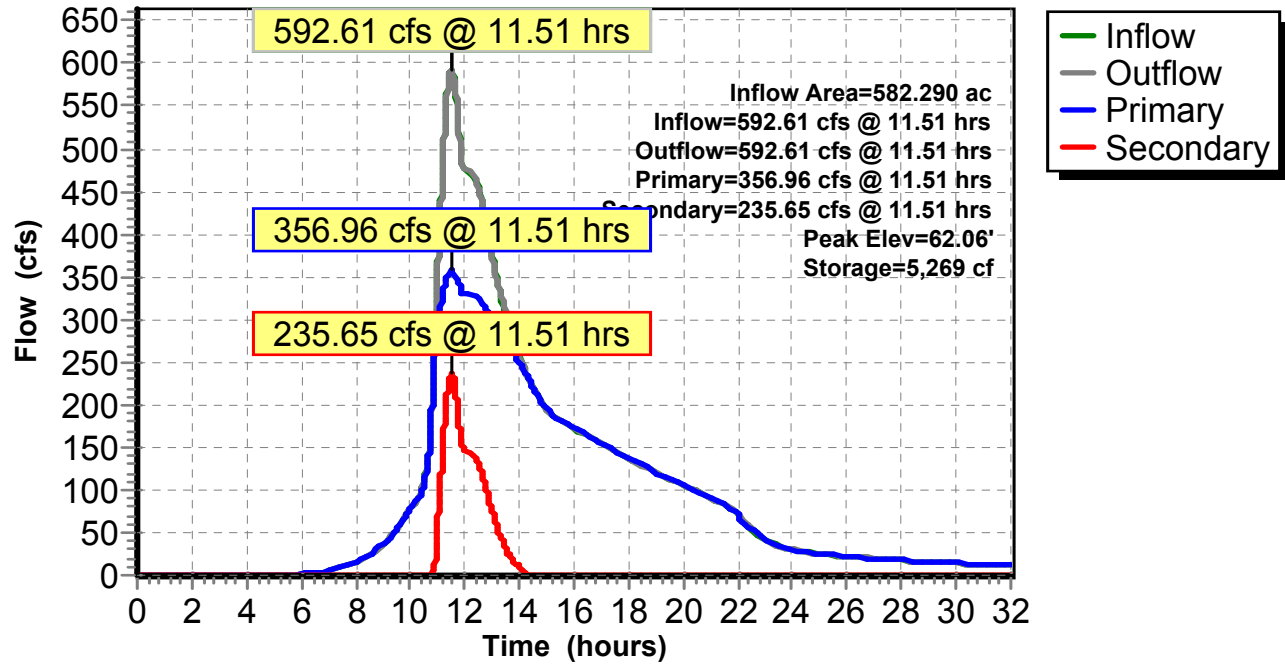
Device	Routing	Invert	Outlet Devices
#1	Primary	56.00'	60.0" Round Culvert X 2.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 56.00' / 37.90' S= 0.0217 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	60.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 66.00 64.00 62.00 60.00 60.00 62.00 64.00 66.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=356.96 cfs @ 11.51 hrs HW=62.06' TW=52.77' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 356.96 cfs @ 9.09 fps)

Secondary OutFlow Max=235.64 cfs @ 11.51 hrs HW=62.06' TW=58.50' (Dynamic Tailwater)
 ↑2=Asymmetrical Weir (Weir Controls 235.64 cfs @ 3.94 fps)

Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Hydrograph



Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 235.41 cfs @ 11.53 hrs, Volume= 28.162 af
 Outflow = 220.74 cfs @ 11.60 hrs, Volume= 28.162 af, Atten= 6%, Lag= 4.357 min
 Primary = 220.74 cfs @ 11.60 hrs, Volume= 28.162 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 53.18' @ 11.68 hrs Surf.Area= 28,719 sf Storage= 36,715 cf

Plug-Flow detention time= 1.682 min calculated for 28.153 af (100% of inflow)
 Center-of-Mass det. time= 1.684 min (726.712 - 725.028)

Volume	Invert	Avail.Storage	Storage Description
#1	51.00'	162,178 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
51.00	6,000	0	0
52.00	15,452	10,726	10,726
54.00	38,000	53,452	64,178
56.00	60,000	98,000	162,178

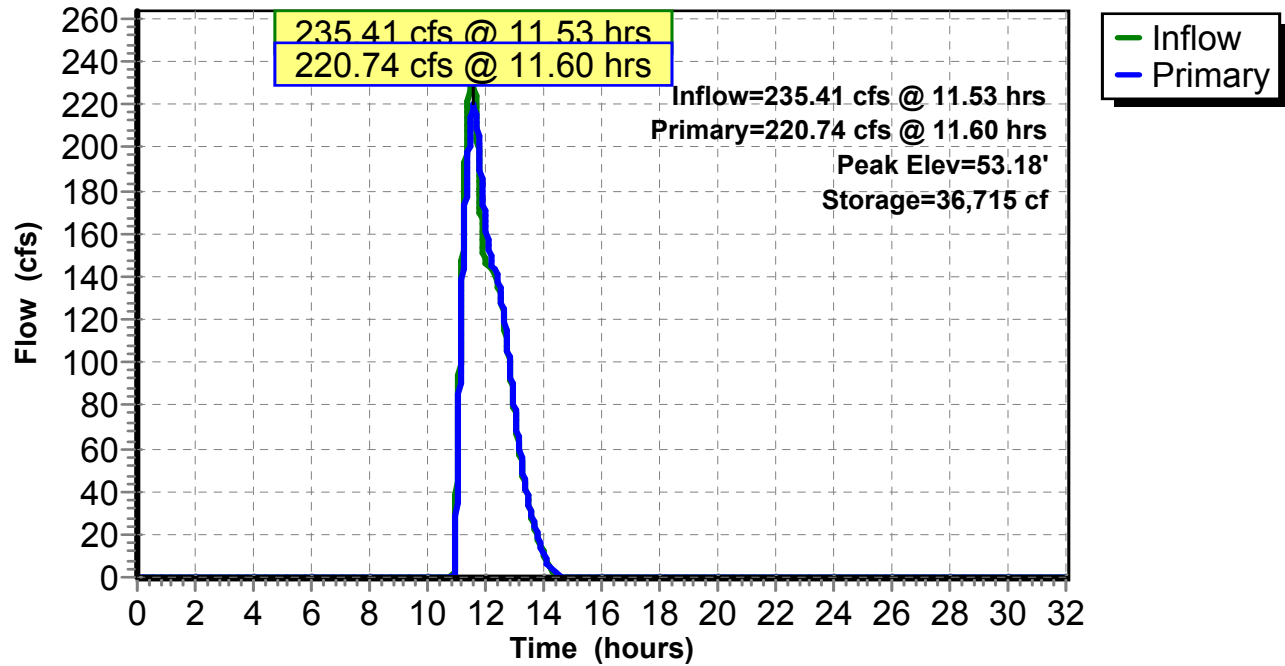
Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=213.12 cfs @ 11.60 hrs HW=53.13' TW=52.97' (Dynamic Tailwater)

↑1=Sharp-Crested Rectangular Weir (Weir Controls 213.12 cfs @ 2.02 fps)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



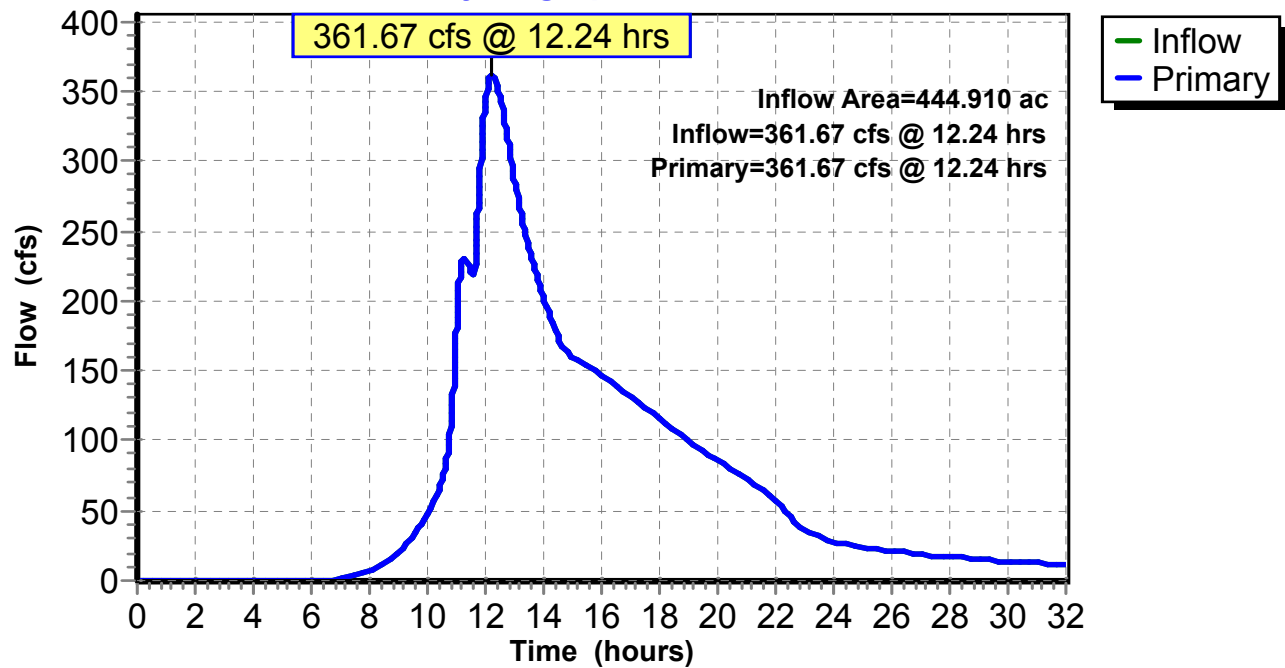
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 4.70" for april_2007 event
Inflow = 361.67 cfs @ 12.24 hrs, Volume= 174.405 af
Primary = 361.67 cfs @ 12.24 hrs, Volume= 174.405 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



Summary for Subcatchment A: WS A

Runoff = 155.42 cfs @ 12.43 hrs, Volume= 21.342 af, Depth= 4.31"

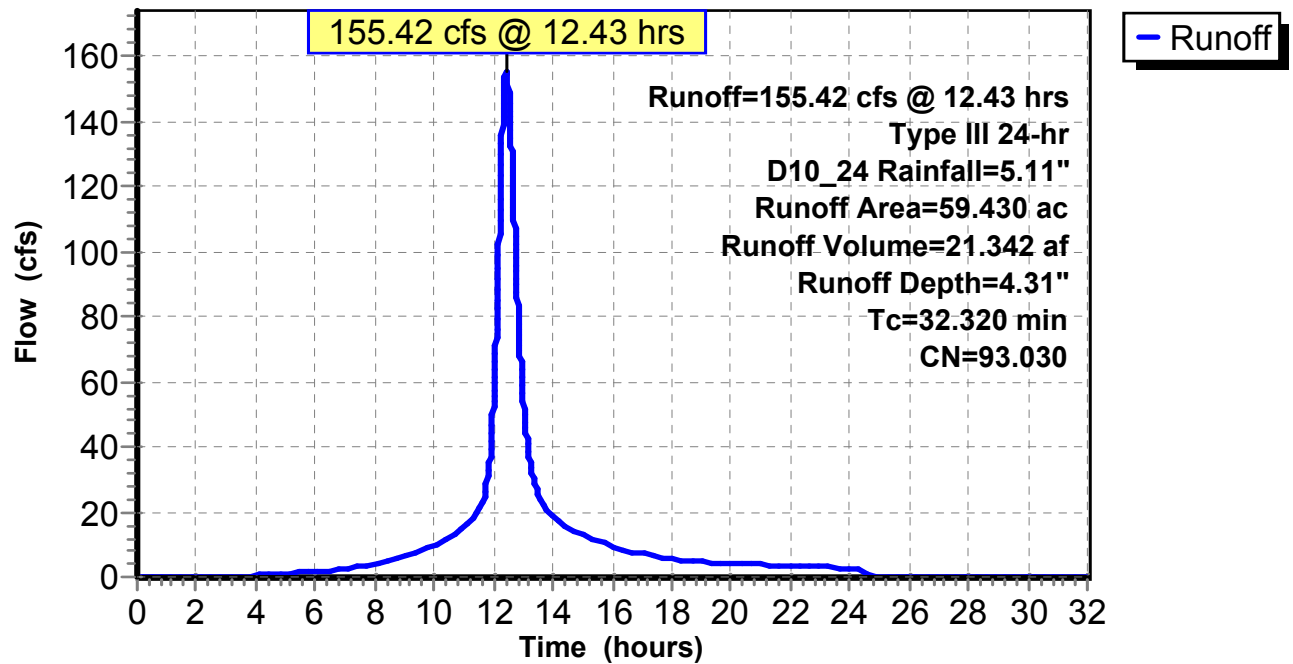
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



Summary for Subcatchment B: WS B

Runoff = 141.78 cfs @ 12.40 hrs, Volume= 17.657 af, Depth= 3.68"

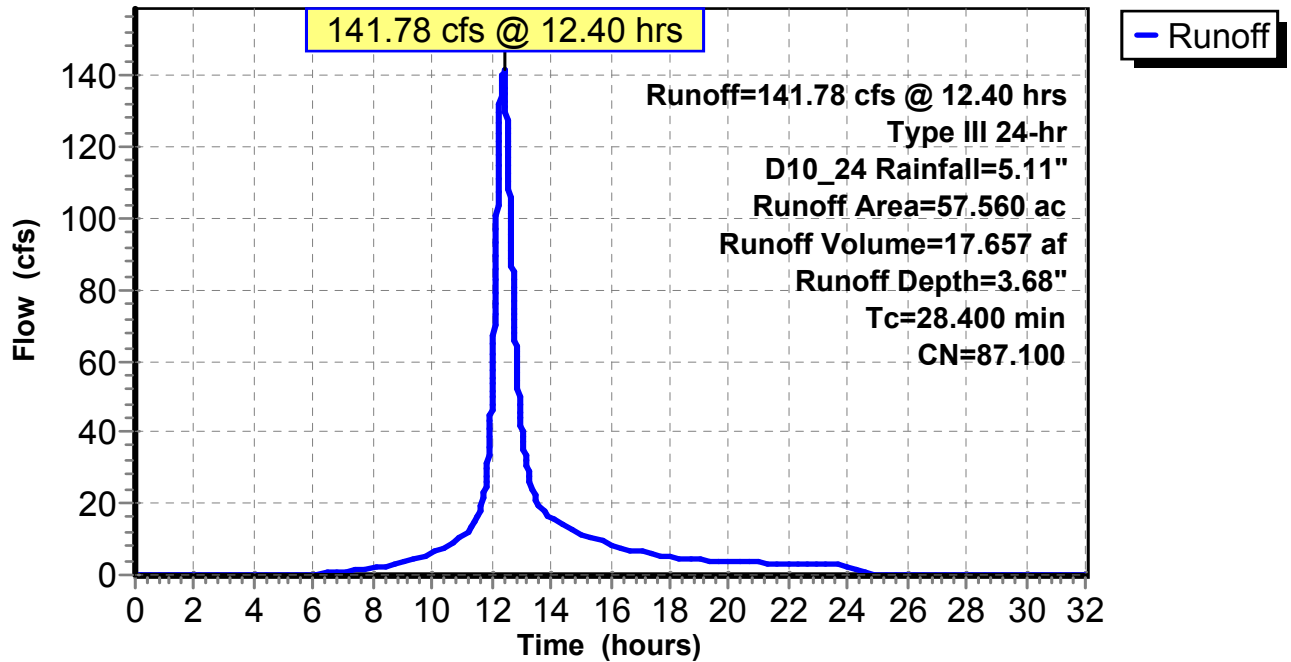
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



Summary for Subcatchment BH: HOTEL

Runoff = 35.75 cfs @ 12.42 hrs, Volume= 4.572 af, Depth= 3.59"

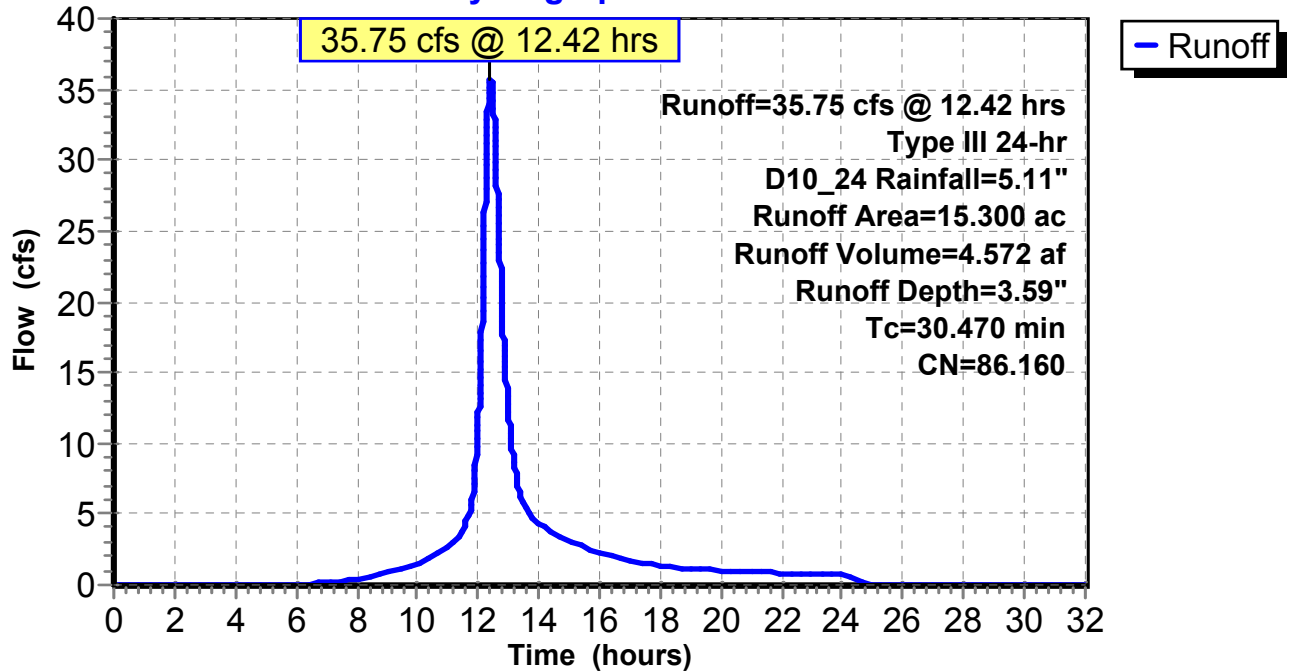
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



Summary for Subcatchment C: WS C

Runoff = 56.40 cfs @ 12.25 hrs, Volume= 5.778 af, Depth= 3.23"

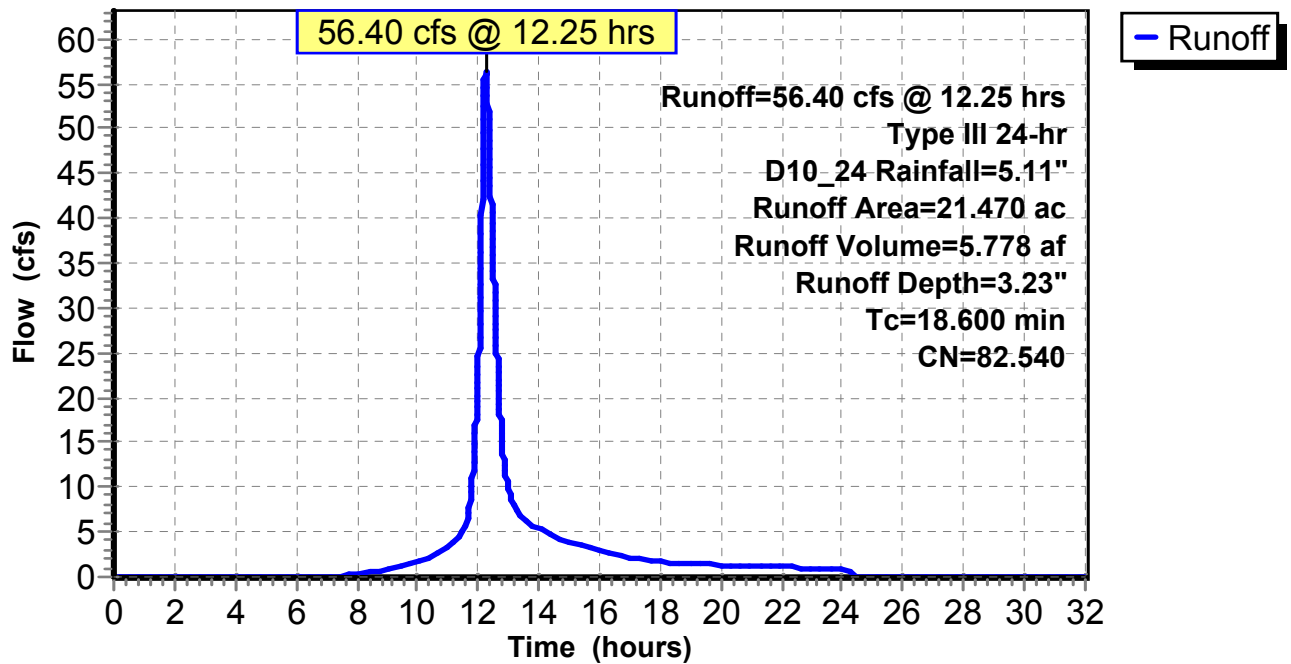
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



Summary for Subcatchment D: WS D

Runoff = 200.91 cfs @ 12.61 hrs, Volume= 30.878 af, Depth= 3.20"

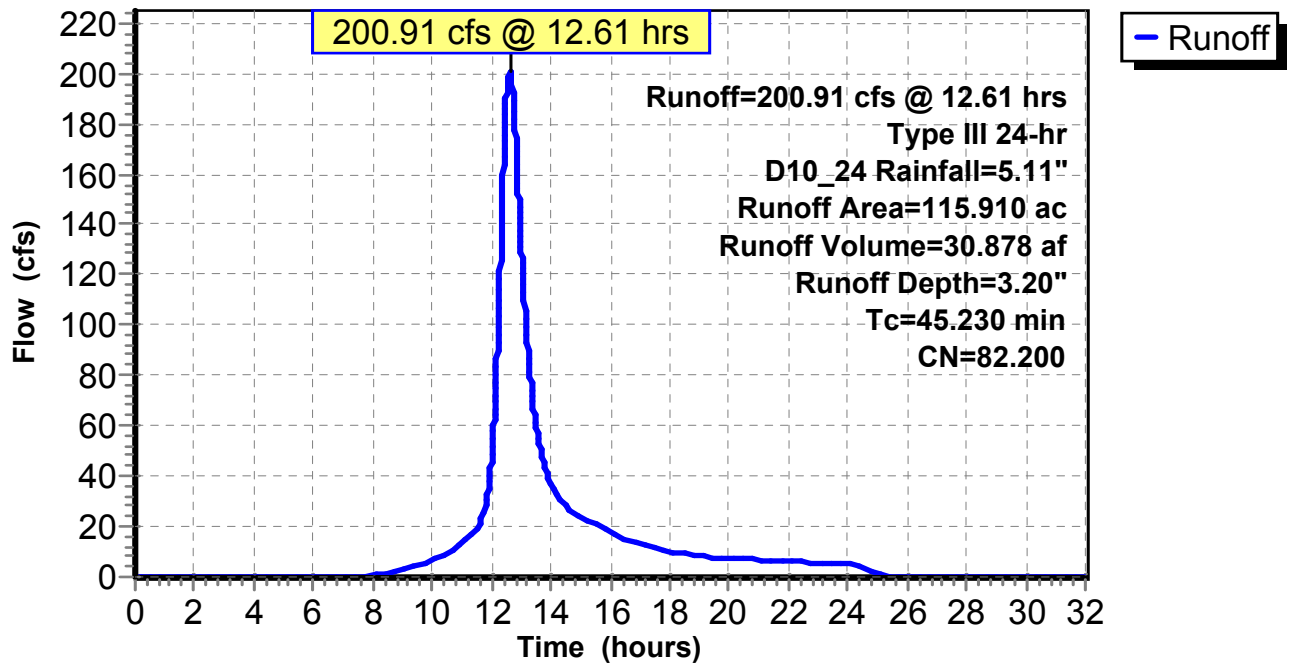
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



Summary for Subcatchment D-1: WS D-1

Runoff = 67.70 cfs @ 12.45 hrs, Volume= 8.716 af, Depth= 2.64"

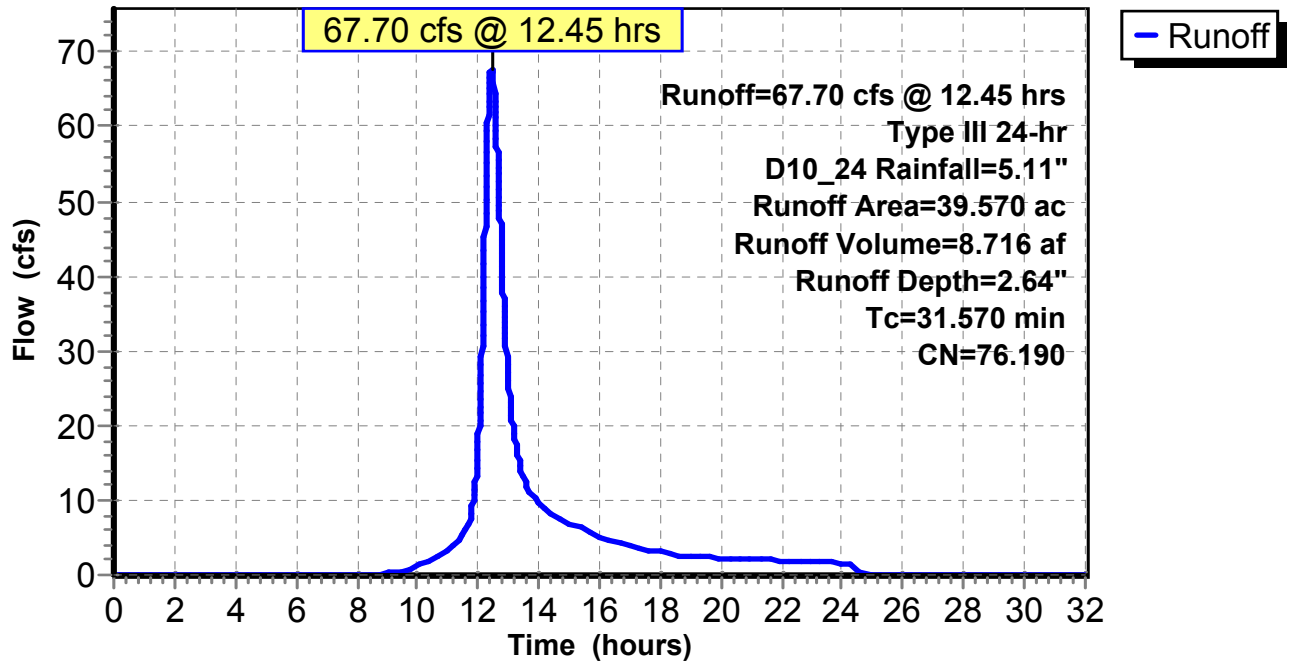
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



Summary for Subcatchment E: WS E

Runoff = 159.06 cfs @ 12.86 hrs, Volume= 29.522 af, Depth= 3.02"

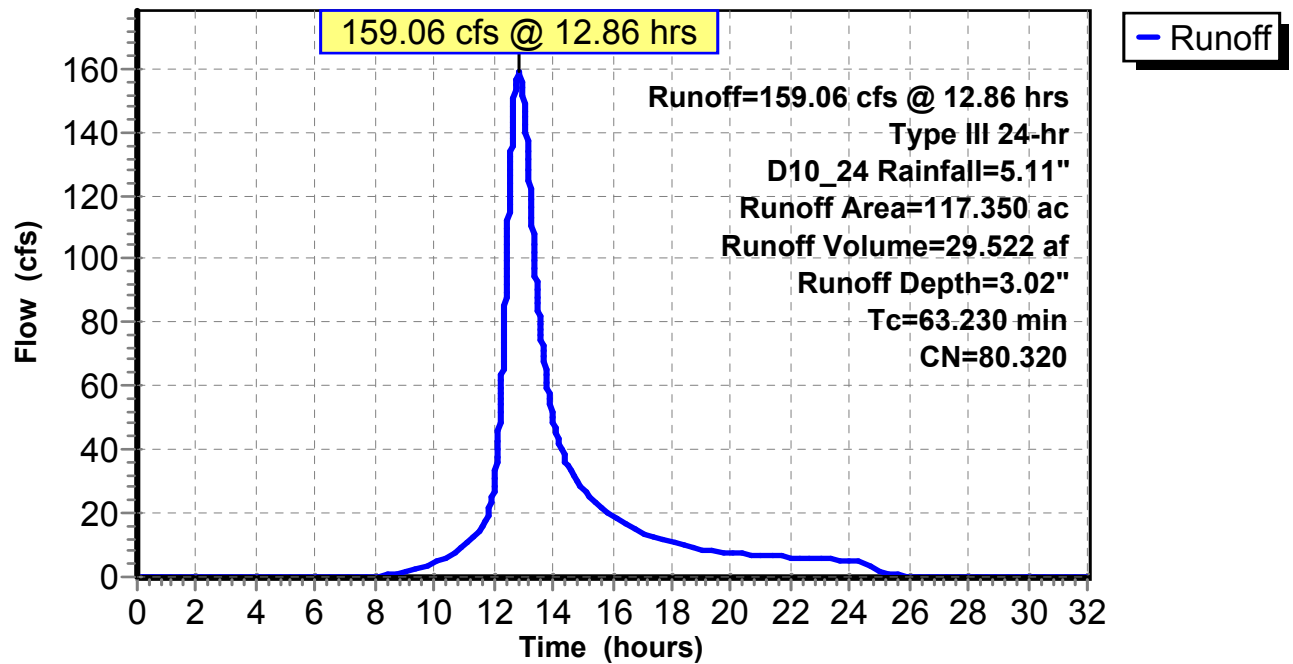
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



Summary for Subcatchment F: WS F

Runoff = 163.60 cfs @ 12.63 hrs, Volume= 24.991 af, Depth= 2.48"

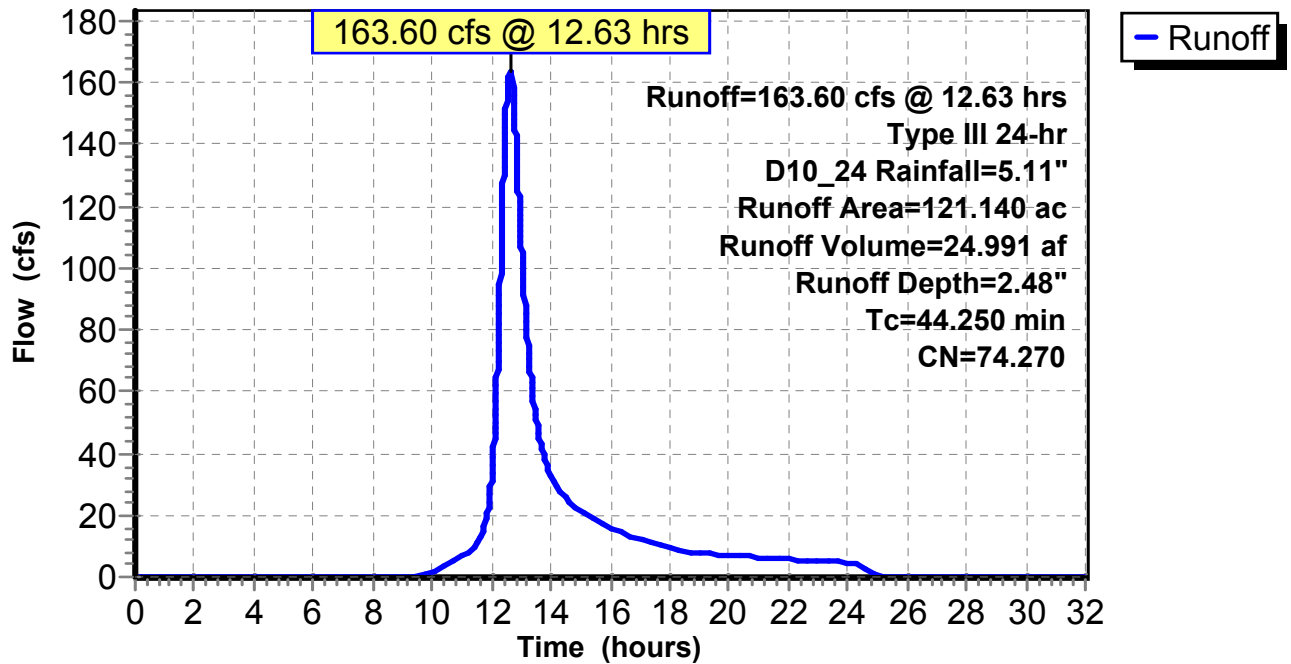
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



Summary for Subcatchment G: WS G

Runoff = 316.99 cfs @ 12.51 hrs, Volume= 43.494 af, Depth= 3.13"

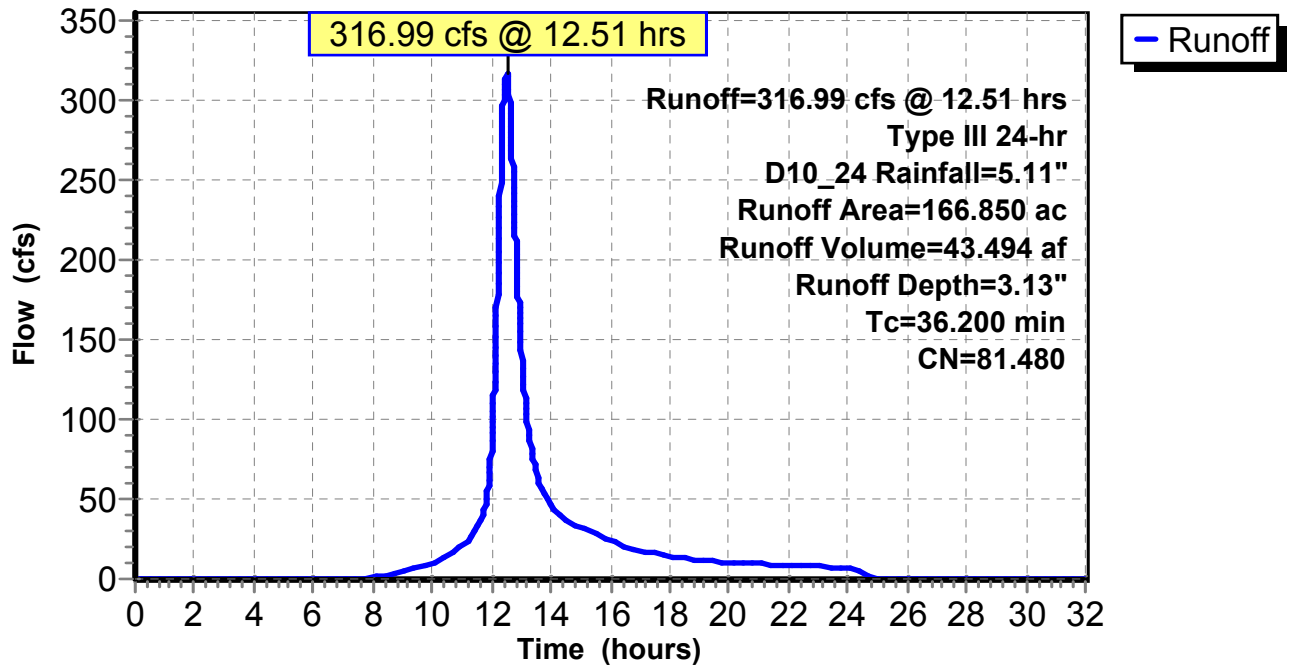
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 2.44" for D10_24 event
 Inflow = 138.62 cfs @ 13.79 hrs, Volume= 82.358 af
 Outflow = 138.61 cfs @ 13.82 hrs, Volume= 82.273 af, Atten= 0%, Lag= 1.715 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 3.28 fps, Min. Travel Time= 2.560 min
 Avg. Velocity = 1.85 fps, Avg. Travel Time= 4.534 min

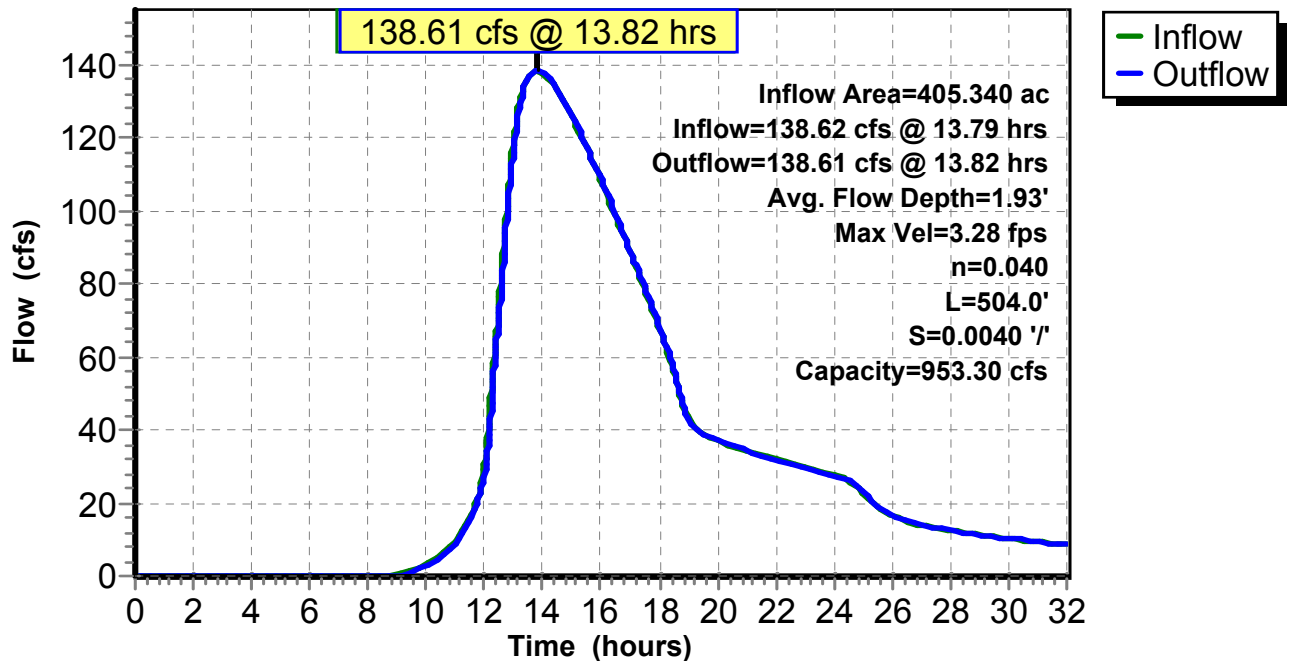
Peak Storage= 21,292 cf @ 13.82 hrs
 Average Depth at Peak Storage= 1.93'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' ' Top Width= 32.00'
 Length= 504.0' Slope= 0.0040 ' '
 Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 2.48" for D10_24 event
 Inflow = 163.32 cfs @ 12.64 hrs, Volume= 24.990 af
 Outflow = 138.47 cfs @ 12.85 hrs, Volume= 24.960 af, Atten= 15%, Lag= 12.635 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 1.83 fps, Min. Travel Time= 19.897 min
 Avg. Velocity = 0.56 fps, Avg. Travel Time= 64.665 min

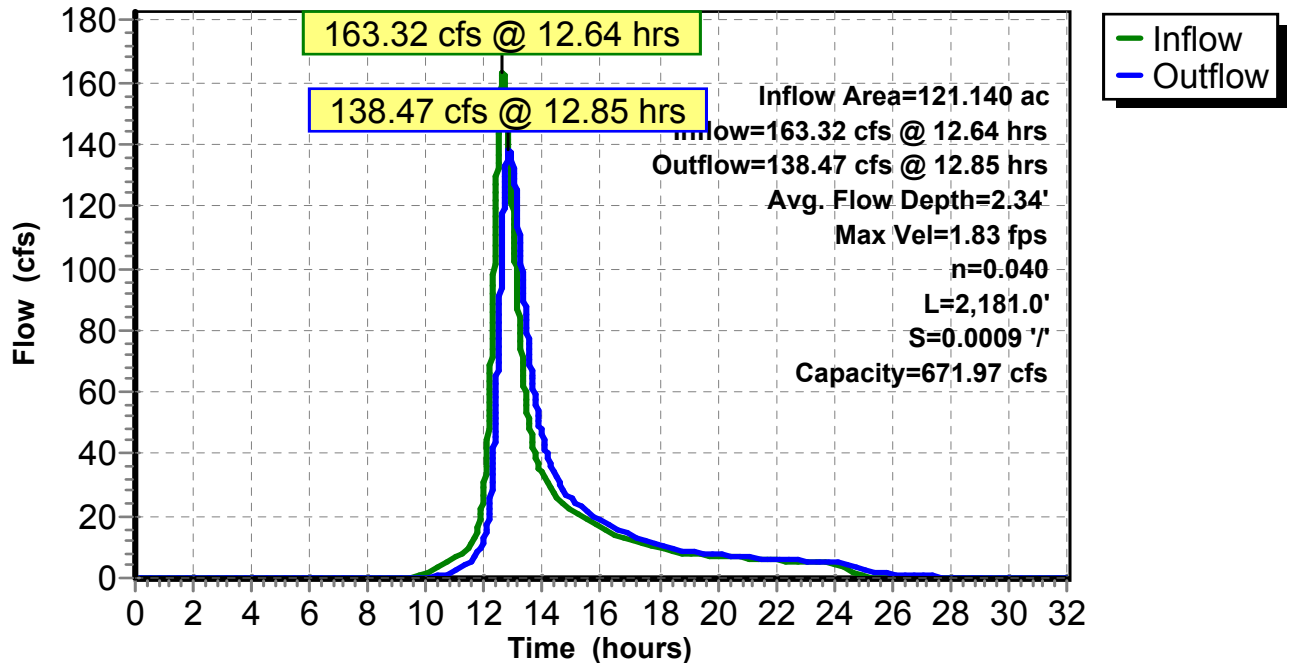
Peak Storage= 165,313 cf @ 12.85 hrs
 Average Depth at Peak Storage= 2.34'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 2,181.0' Slope= 0.0009 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 2.99" for D10_24 event
 Inflow = 312.80 cfs @ 12.55 hrs, Volume= 41.601 af
 Outflow = 24.92 cfs @ 16.01 hrs, Volume= 28.101 af, Atten= 92%, Lag= 207.966 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.47 fps, Min. Travel Time= 785.161 min
 Avg. Velocity = 0.38 fps, Avg. Travel Time= 962.848 min

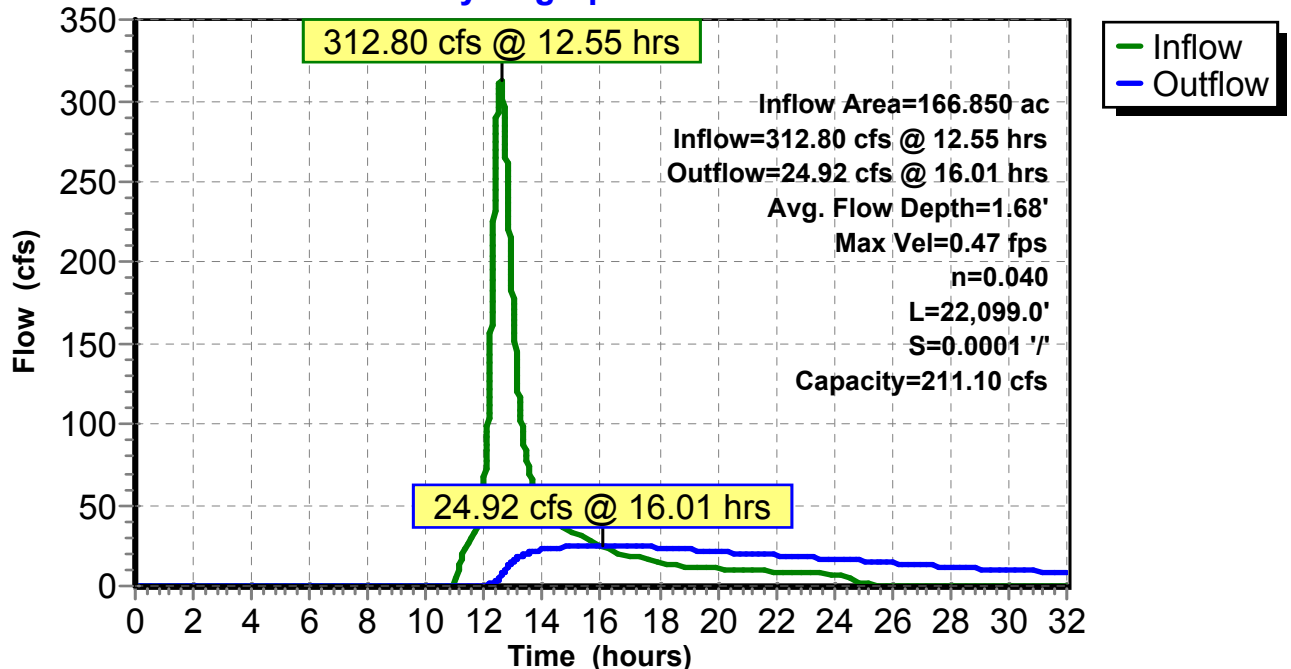
Peak Storage= 1,174,070 cf @ 16.01 hrs
 Average Depth at Peak Storage= 1.68'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 '/' Top Width= 42.00'
 Length= 22,099.0' Slope= 0.0001 '/'
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 2.45" for D10_24 event
 Inflow = 149.37 cfs @ 13.75 hrs, Volume= 90.822 af
 Outflow = 149.09 cfs @ 13.87 hrs, Volume= 90.538 af, Atten= 0%, Lag= 7.506 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 5.50 fps, Min. Travel Time= 9.038 min
 Avg. Velocity = 3.35 fps, Avg. Travel Time= 14.834 min

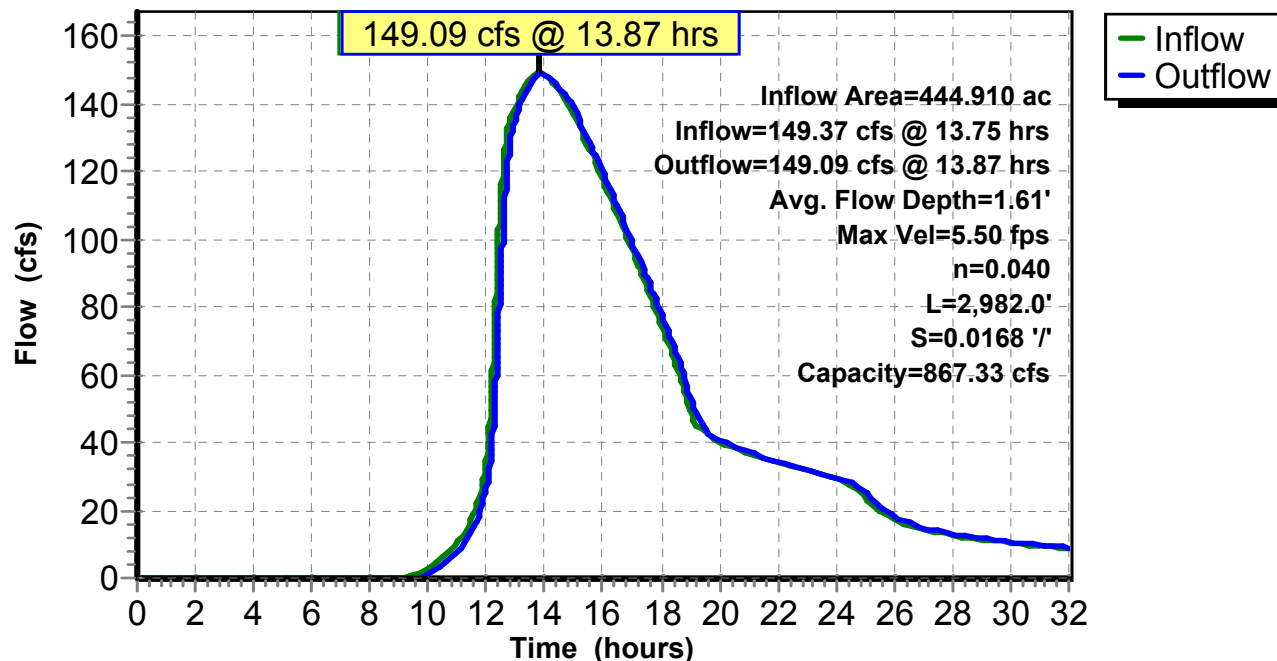
Peak Storage= 80,852 cf @ 13.87 hrs
 Average Depth at Peak Storage= 1.61'
 Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040
 Side Slope Z-value= 3.0 ' / ' Top Width= 36.00'
 Length= 2,982.0' Slope= 0.0168 ' / '
 Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 2.60" for D10_24 event
 Inflow = 314.45 cfs @ 12.72 hrs, Volume= 121.416 af
 Outflow = 314.37 cfs @ 12.73 hrs, Volume= 121.378 af, Atten= 0%, Lag= 0.500 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 9.01 fps, Min. Travel Time= 0.805 min
 Avg. Velocity = 4.10 fps, Avg. Travel Time= 1.769 min

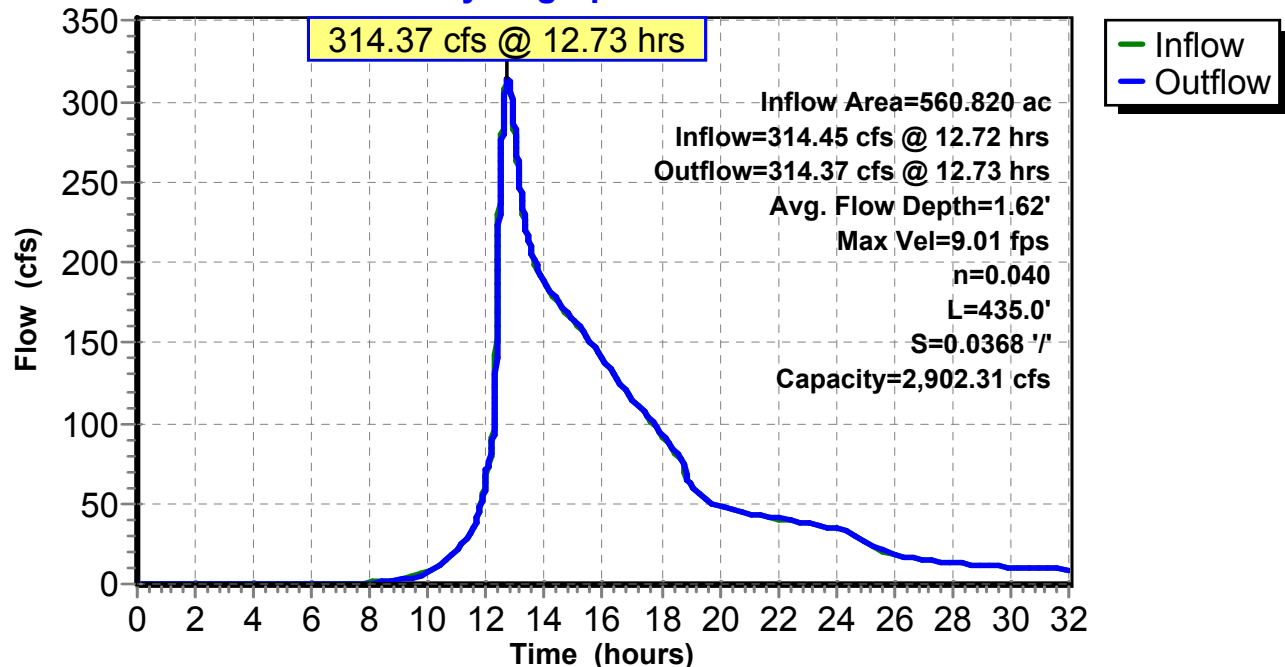
Peak Storage= 15,185 cf @ 12.73 hrs
 Average Depth at Peak Storage= 1.62'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' ' Top Width= 32.00'
 Length= 435.0' Slope= 0.0368 ' '
 Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 46.83 cfs @ 12.72 hrs, Volume= 1.933 af
 Outflow = 46.32 cfs @ 12.75 hrs, Volume= 1.933 af, Atten= 1%, Lag= 2.063 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 4.72 fps, Min. Travel Time= 3.136 min
 Avg. Velocity = 1.27 fps, Avg. Travel Time= 11.618 min

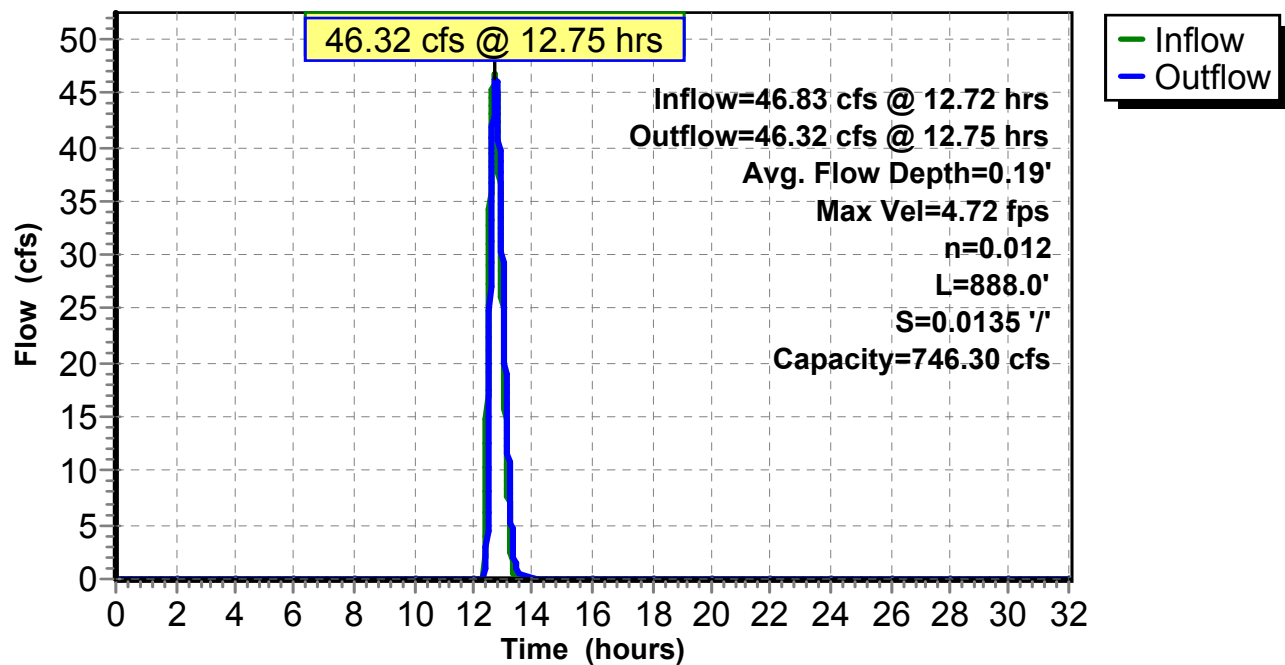
Peak Storage= 8,714 cf @ 12.75 hrs
 Average Depth at Peak Storage= 0.19'
 Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
 Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
 Length= 888.0' Slope= 0.0135 ' '
 Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



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Summary for Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 2.74" for D10_24 event
 Inflow = 447.80 cfs @ 12.61 hrs, Volume= 149.376 af
 Outflow = 446.90 cfs @ 12.64 hrs, Volume= 149.370 af, Atten= 0%, Lag= 1.825 min
 Primary = 446.90 cfs @ 12.64 hrs, Volume= 149.370 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 46.03' @ 12.64 hrs Surf.Area= 0.695 ac Storage= 0.021 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.011 min (970.150 - 970.140)

Volume	Invert	Avail.Storage	Storage Description
#1	46.00'	82.605 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
46.00	0.695	0.000	0.000
48.00	0.695	1.390	1.390
50.00	0.800	1.495	2.885
52.00	1.420	2.220	5.105
54.00	2.270	3.690	8.795
56.00	3.160	5.430	14.225
58.00	4.070	7.230	21.455
60.00	4.980	9.050	30.505
62.00	5.710	10.690	41.195
64.00	6.620	12.330	53.525
66.00	7.170	13.790	67.315
68.00	8.120	15.290	82.605

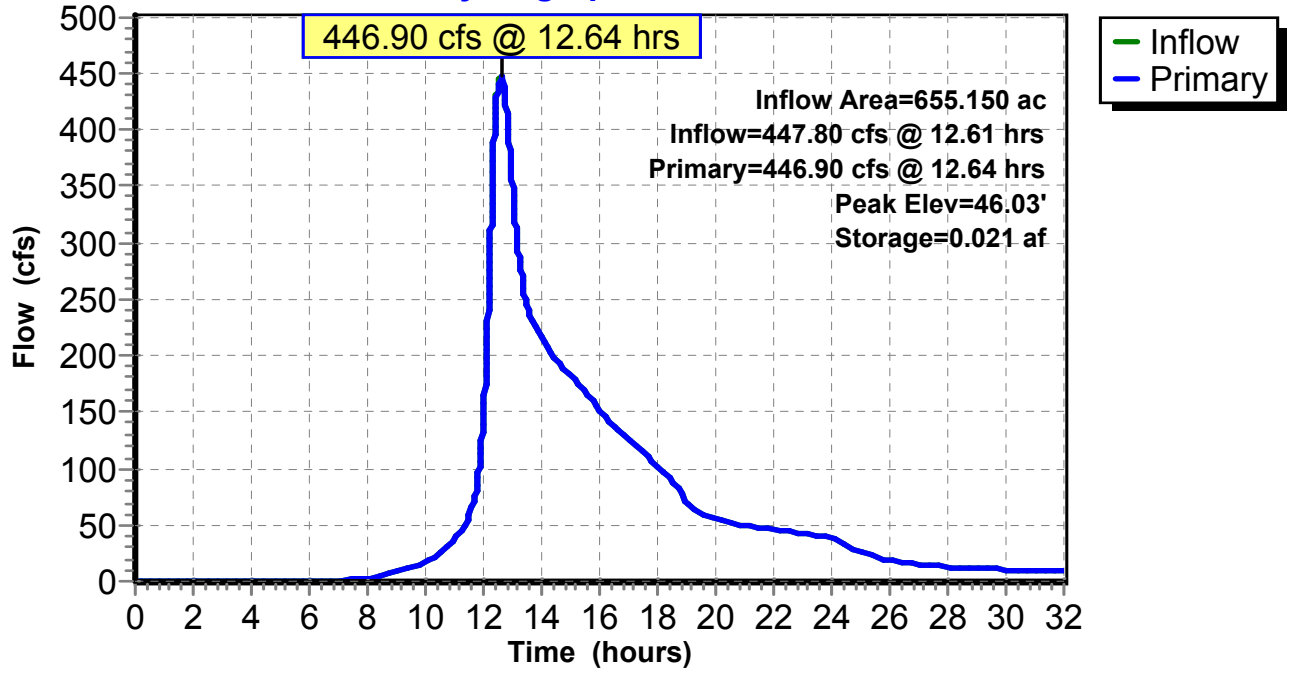
Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48

Primary OutFlow Max=448.37 cfs @ 12.64 hrs HW=46.03' TW=36.99' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 448.37 cfs @ 11.49 fps)
- 2=WEIR WESTCH AVE (Controls 0.00 cfs)

Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 2.62" for D10_24 event
 Inflow = 332.91 cfs @ 12.69 hrs, Volume= 127.156 af
 Outflow = 332.57 cfs @ 12.72 hrs, Volume= 127.155 af, Atten= 0%, Lag= 1.424 min
 Primary = 332.57 cfs @ 12.72 hrs, Volume= 127.155 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 70.42' @ 12.72 hrs Surf.Area= 0.109 ac Storage= 0.141 af

Plug-Flow detention time= 0.050 min calculated for 127.155 af (100% of inflow)
 Center-of-Mass det. time= 0.040 min (995.770 - 995.731)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

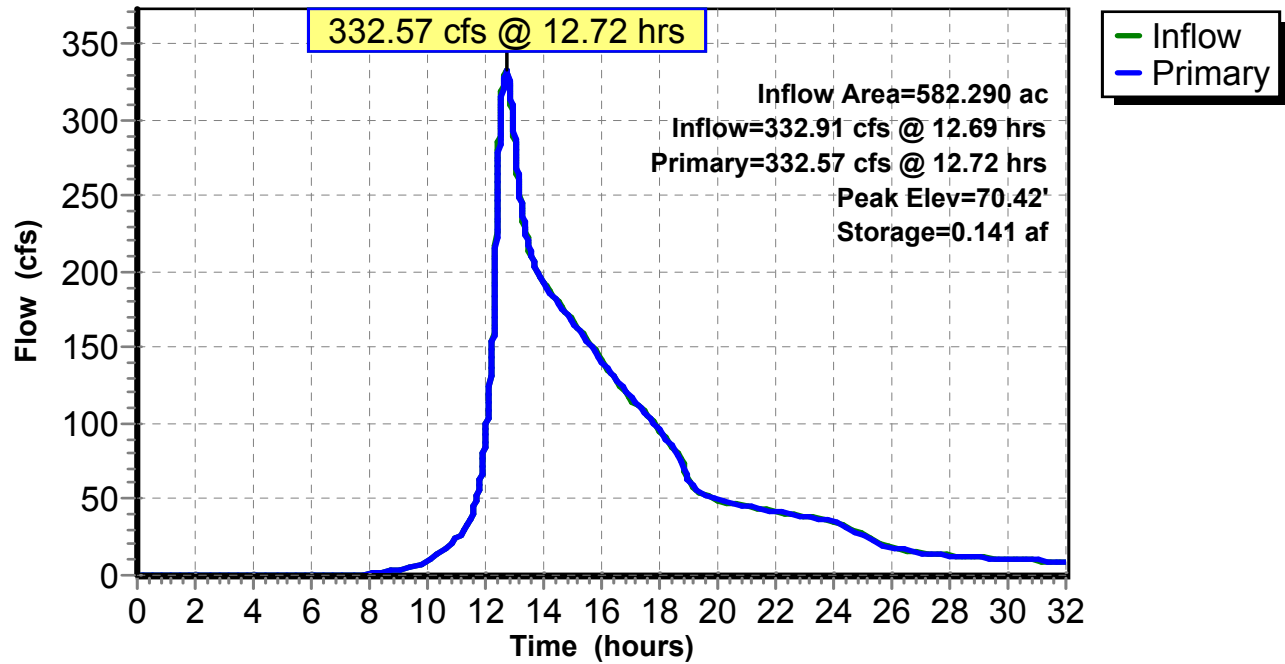
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=332.55 cfs @ 12.72 hrs HW=70.42' TW=60.75' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 245.94 cfs @ 12.53 fps)
- 2=Culvert 2 (Inlet Controls 86.61 cfs @ 6.22 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



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Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 2.45" for D10_24 event
Inflow = 149.62 cfs @ 13.64 hrs, Volume= 90.989 af
Outflow = 149.37 cfs @ 13.75 hrs, Volume= 90.822 af, Atten= 0%, Lag= 6.569 min
Primary = 149.37 cfs @ 13.75 hrs, Volume= 90.822 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 130.02' @ 13.75 hrs Surf.Area= 0.935 ac Storage= 2.100 af

Plug-Flow detention time= 10.109 min calculated for 90.822 af (100% of inflow)
Center-of-Mass det. time= 8.497 min (1,041.996 - 1,033.499)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

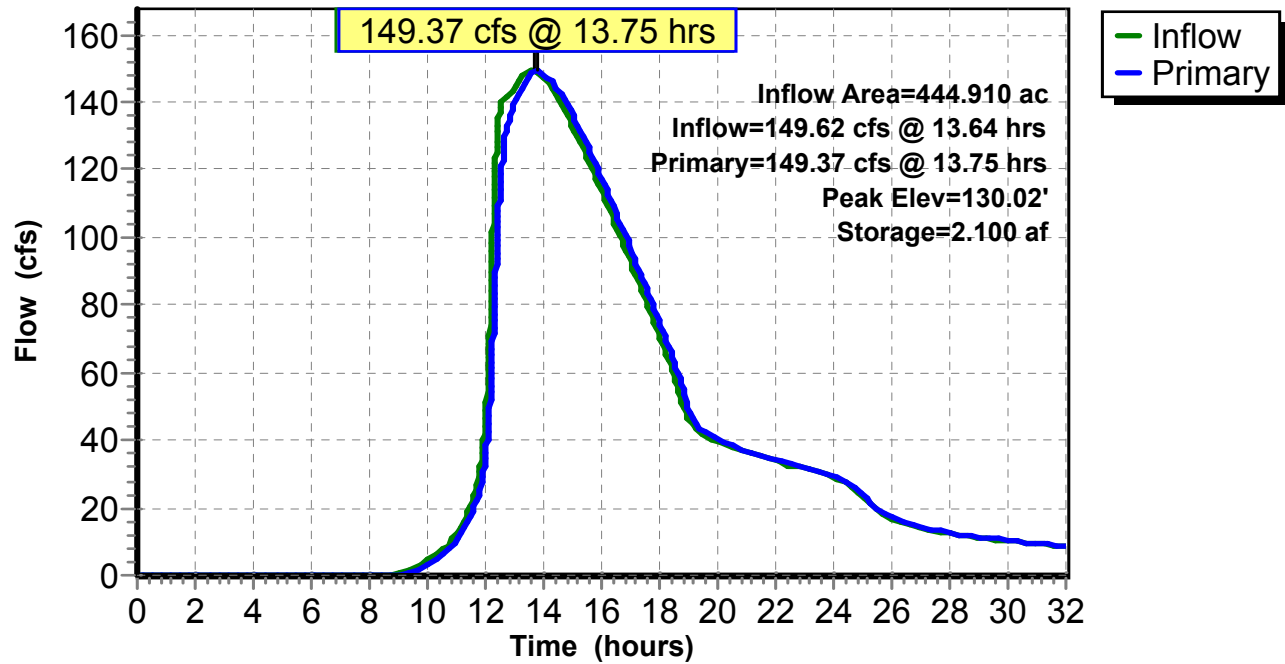
Primary OutFlow Max=149.37 cfs @ 13.75 hrs HW=130.02' TW=127.61' (Dynamic Tailwater)

1=Culvert (Barrel Controls 148.08 cfs @ 7.28 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 1.30 cfs @ 0.48 fps)

Pond 4A: DP 4 A ARGYLE

Hydrograph



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Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 2.44" for D10_24 event
 Inflow = 310.43 cfs @ 12.86 hrs, Volume= 82.583 af
 Outflow = 138.62 cfs @ 13.79 hrs, Volume= 82.358 af, Atten= 55%, Lag= 55.811 min
 Primary = 138.62 cfs @ 13.79 hrs, Volume= 82.358 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 131.76' @ 13.79 hrs Surf.Area= 15.297 ac Storage= 15.203 af

Plug-Flow detention time= 42.191 min calculated for 82.358 af (100% of inflow)
 Center-of-Mass det. time= 39.740 min (1,049.835 - 1,010.095)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

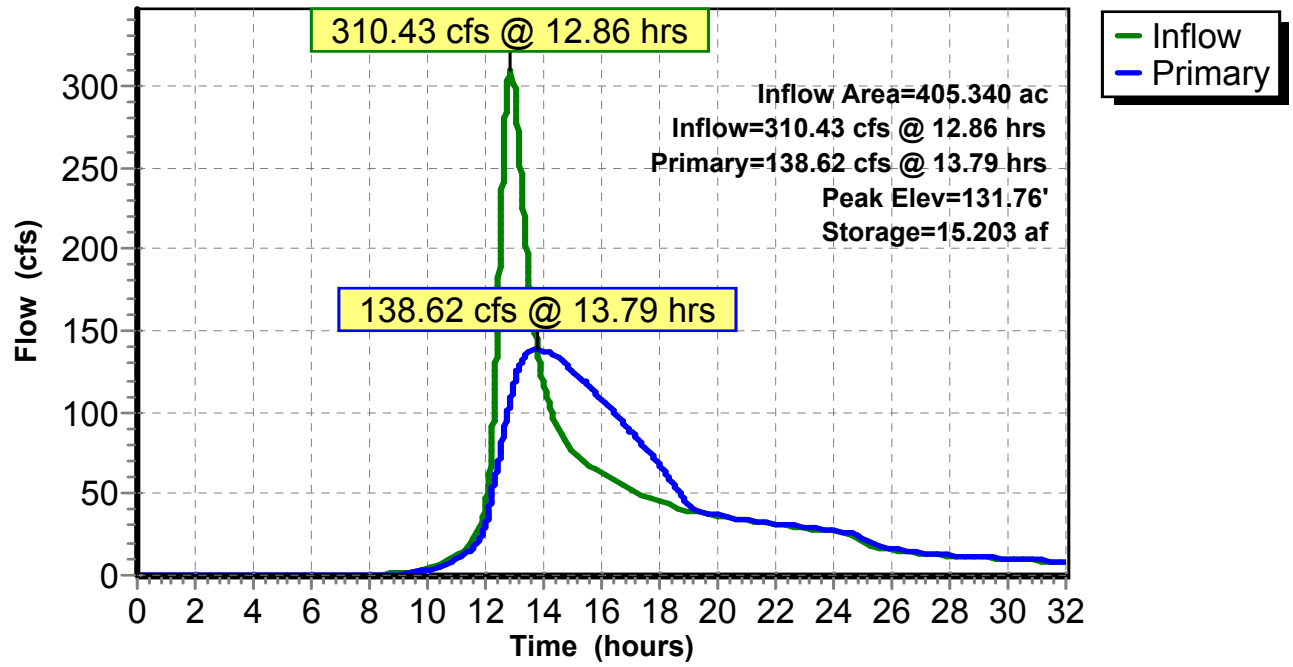
Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

Primary OutFlow Max=138.62 cfs @ 13.79 hrs HW=131.76' TW=129.93' (Dynamic Tailwater)

- 1=Culvert (Barrel Controls 138.62 cfs @ 7.31 fps)
- 2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 5P: DP 5 BETSY BROWN ROAD

Hydrograph



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Case 1 - Exist

Type III 24-hr D10_24 Rainfall=5.11"

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Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 2.60" for D10_24 event
 Inflow = 315.08 cfs @ 12.71 hrs, Volume= 121.417 af
 Outflow = 314.45 cfs @ 12.72 hrs, Volume= 121.416 af, Atten= 0%, Lag= 0.774 min
 Primary = 314.45 cfs @ 12.72 hrs, Volume= 121.416 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 91.00' @ 12.72 hrs Surf.Area= 1.370 ac Storage= 1.366 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 2.643 min (1,002.826 - 1,000.183)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

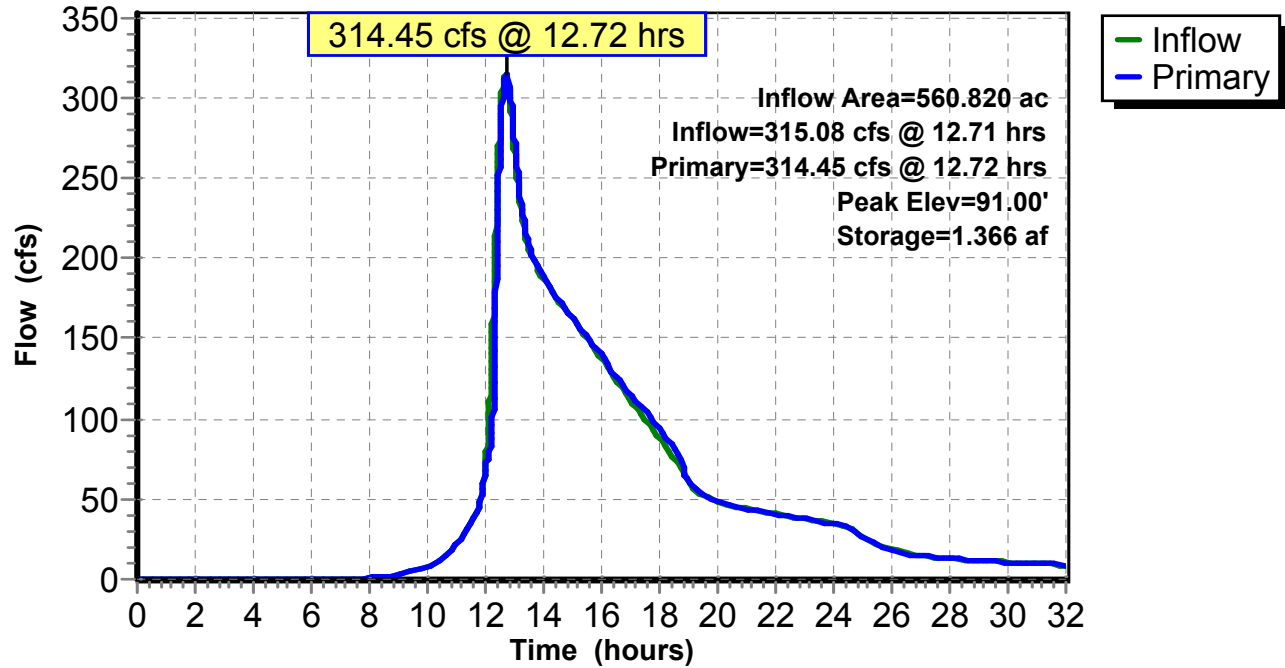
Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=314.42 cfs @ 12.72 hrs HW=91.00' TW=77.61' (Dynamic Tailwater)

- 1=Sharp-Crested Rectangular Weir (Weir Controls 156.58 cfs @ 5.12 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 157.84 cfs @ 2.35 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



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Case 1 - Exist
Type III 24-hr D10_24 Rainfall=5.11"

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Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 2.87" for D10_24 event
 Inflow = 586.26 cfs @ 12.53 hrs, Volume= 170.712 af
 Outflow = 585.95 cfs @ 12.54 hrs, Volume= 170.708 af, Atten= 0%, Lag= 0.601 min
 Primary = 585.95 cfs @ 12.54 hrs, Volume= 170.708 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 37.08' @ 12.54 hrs Surf.Area= 0.210 ac Storage= 0.409 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.127 min (949.244 - 949.117)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

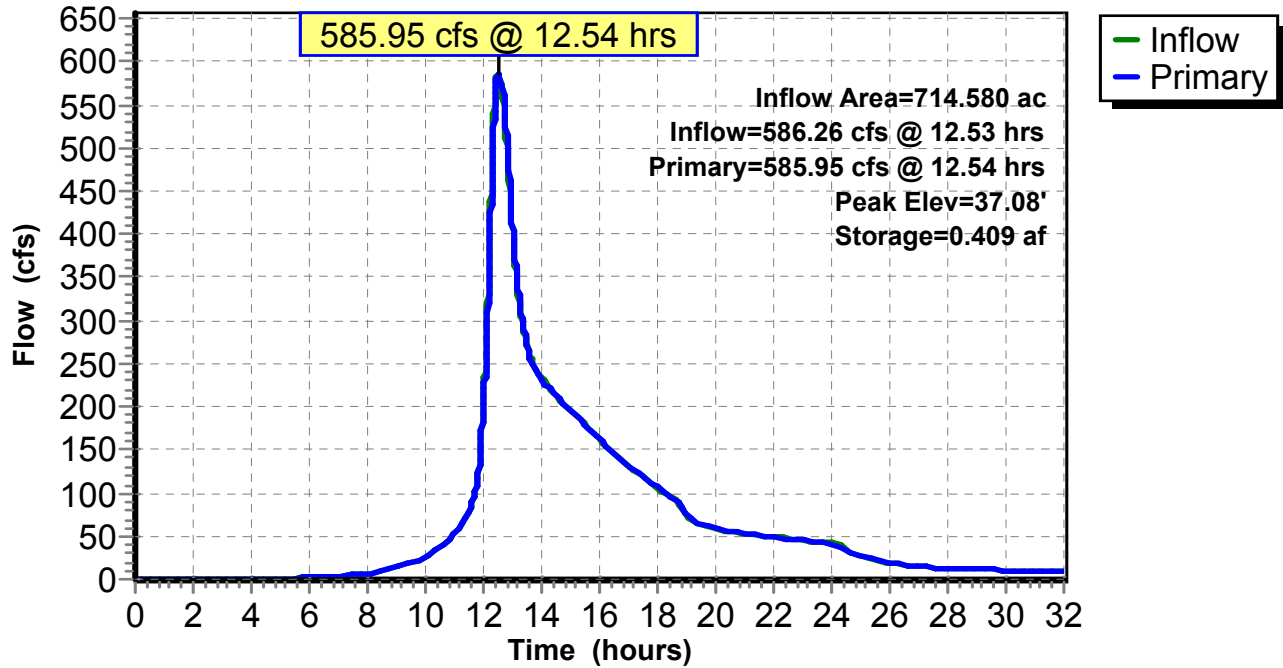
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=585.93 cfs @ 12.54 hrs HW=37.08' (Free Discharge)

- 1=Culvert (Barrel Controls 585.93 cfs @ 8.17 fps)
- 2=WEIR BOWMAN (Controls 0.00 cfs)

Pond 8P: BOWMAN FIELDS

Hydrograph



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Case 1 - Exist
Type III 24-hr D10_24 Rainfall=5.11"

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Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 2.48" for D10_24 event
 Inflow = 163.60 cfs @ 12.63 hrs, Volume= 24.991 af
 Outflow = 163.32 cfs @ 12.64 hrs, Volume= 24.990 af, Atten= 0%, Lag= 0.312 min
 Primary = 163.32 cfs @ 12.64 hrs, Volume= 24.990 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 134.65' @ 12.65 hrs Surf.Area= 0.161 ac Storage= 0.178 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.345 min (871.502 - 871.157)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

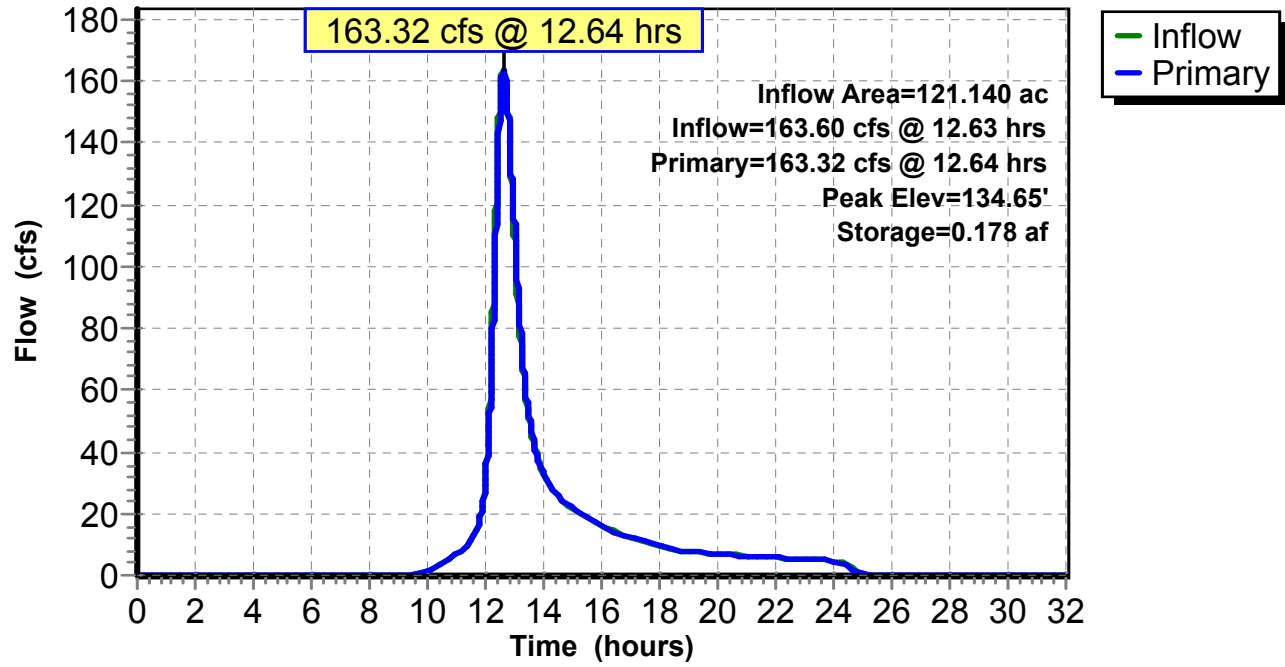
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=162.88 cfs @ 12.64 hrs HW=134.65' TW=132.12' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 54.15 cfs @ 7.66 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 79.76 cfs @ 5.80 fps)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 28.97 cfs @ 1.25 fps)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Hydrograph



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Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 3.13" for D10_24 event
 Inflow = 316.99 cfs @ 12.51 hrs, Volume= 43.494 af
 Outflow = 312.80 cfs @ 12.55 hrs, Volume= 41.601 af, Atten= 1%, Lag= 2.338 min
 Primary = 312.80 cfs @ 12.55 hrs, Volume= 41.601 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.49' @ 12.55 hrs Surf.Area= 3.851 ac Storage= 6.566 af (3.598 af above start)

Plug-Flow detention time= 82.878 min calculated for 38.622 af (89% of inflow)
 Center-of-Mass det. time= 17.842 min (862.681 - 844.839)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

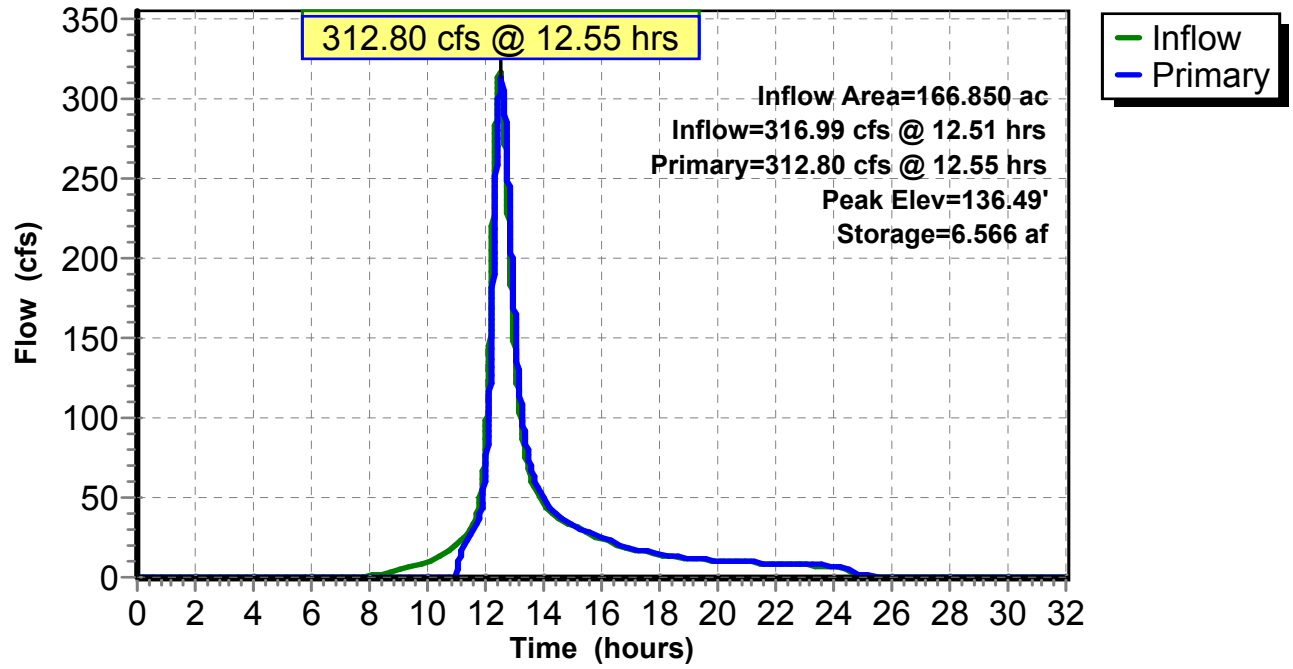
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=312.76 cfs @ 12.55 hrs HW=136.49' TW=130.71' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 1.79 cfs @ 2.38 fps)
- 2=Asymmetrical Weir (Weir Controls 310.98 cfs @ 2.04 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Hydrograph



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Type III 24-hr D10_24 Rainfall=5.11"

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Summary for Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 2.62" for D10_24 event
 Inflow = 332.57 cfs @ 12.72 hrs, Volume= 127.155 af
 Outflow = 332.57 cfs @ 12.72 hrs, Volume= 127.147 af, Atten= 0%, Lag= 0.116 min
 Primary = 285.74 cfs @ 12.72 hrs, Volume= 125.214 af
 Secondary = 46.83 cfs @ 12.72 hrs, Volume= 1.933 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 60.75' @ 12.72 hrs Surf.Area= 1,126 sf Storage= 3,580 cf

Plug-Flow detention time= 0.262 min calculated for 127.107 af (100% of inflow)
 Center-of-Mass det. time= 0.206 min (995.976 - 995.770)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	22,686 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686

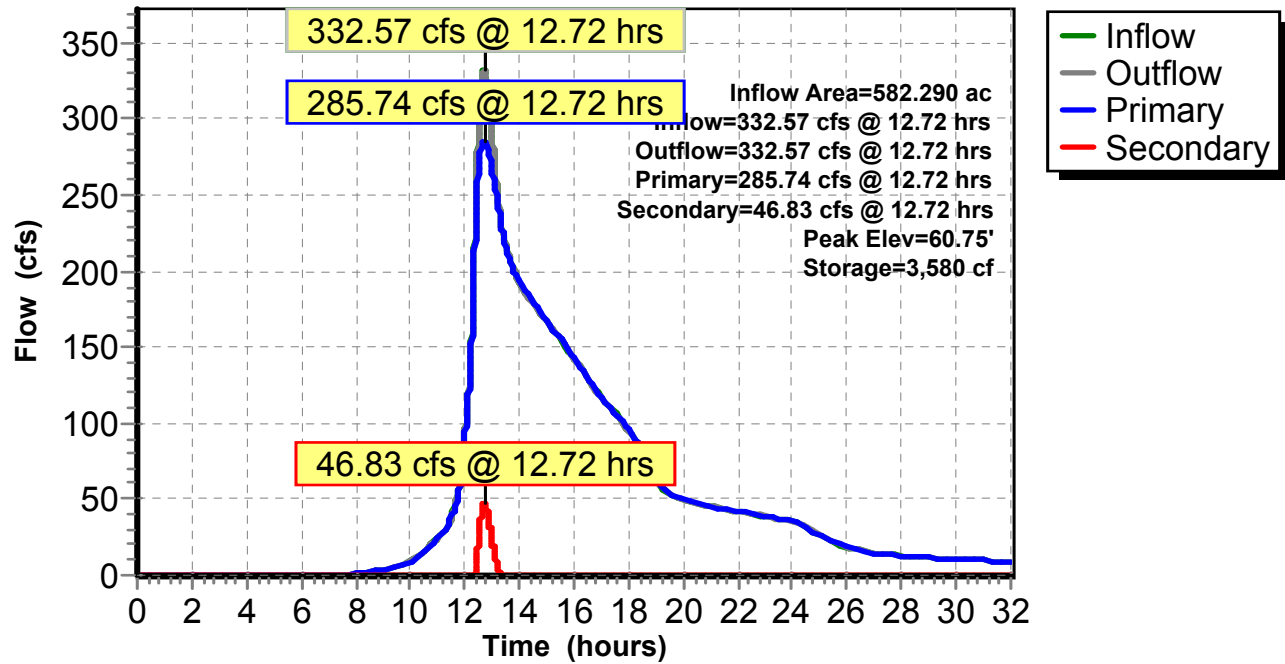
Device	Routing	Invert	Outlet Devices
#1	Primary	56.00'	60.0" Round Culvert X 2.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 56.00' / 37.90' S= 0.0217 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	60.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 66.00 64.00 62.00 60.00 60.00 62.00 64.00 66.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=285.74 cfs @ 12.72 hrs HW=60.75' TW=46.01' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 285.74 cfs @ 7.42 fps)

Secondary OutFlow Max=46.82 cfs @ 12.72 hrs HW=60.75' TW=58.19' (Dynamic Tailwater)
 ↑2=Asymmetrical Weir (Weir Controls 46.82 cfs @ 2.61 fps)

Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Hydrograph



EBBR_HCAD_JAN_2019_exist_f

Prepared by Microsoft

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Case 1 - Exist
Type III 24-hr D10_24 Rainfall=5.11"

Printed 2/7/2019

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Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 46.32 cfs @ 12.75 hrs, Volume= 1.933 af
Outflow = 46.17 cfs @ 12.77 hrs, Volume= 1.933 af, Atten= 0%, Lag= 1.071 min
Primary = 46.17 cfs @ 12.77 hrs, Volume= 1.933 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 51.43' @ 12.77 hrs Surf.Area= 10,073 sf Storage= 3,463 cf

Plug-Flow detention time= 1.425 min calculated for 1.932 af (100% of inflow)
Center-of-Mass det. time= 1.433 min (771.924 - 770.491)

Volume	Invert	Avail.Storage	Storage Description
#1	51.00'	162,178 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
51.00	6,000	0	0
52.00	15,452	10,726	10,726
54.00	38,000	53,452	64,178
56.00	60,000	98,000	162,178

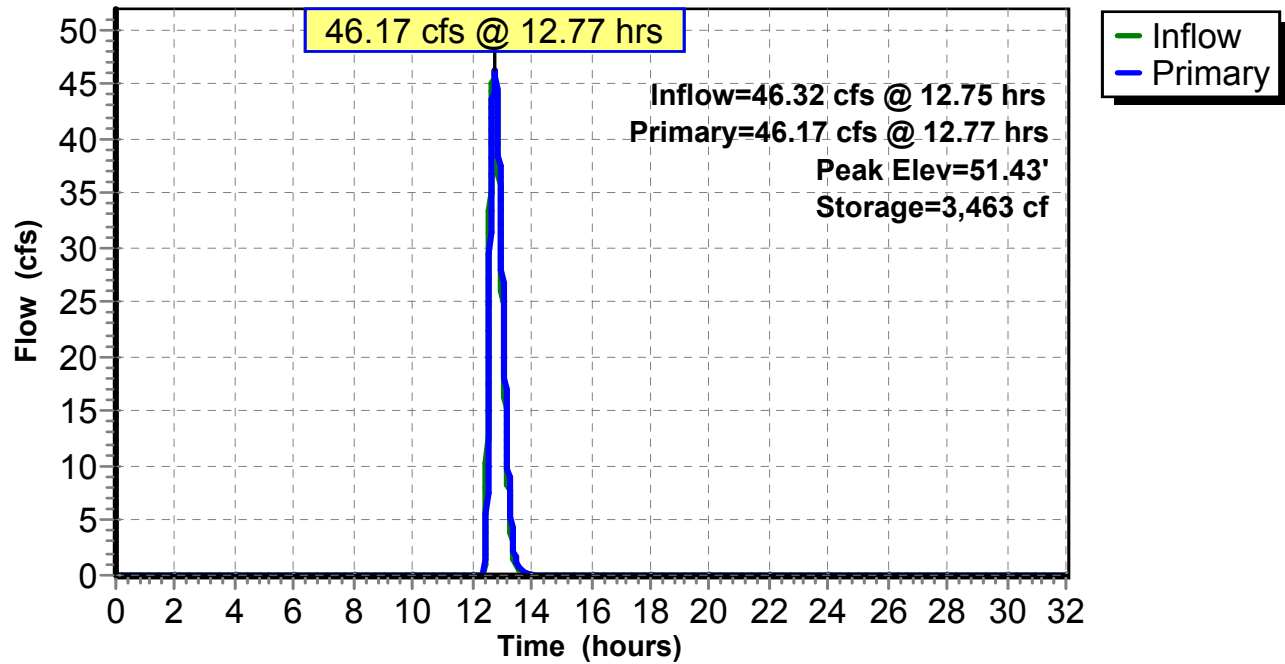
Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=46.17 cfs @ 12.77 hrs HW=51.43' TW=46.00' (Dynamic Tailwater)

↑1=Sharp-Crested Rectangular Weir(Weir Controls 46.17 cfs @ 2.15 fps)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



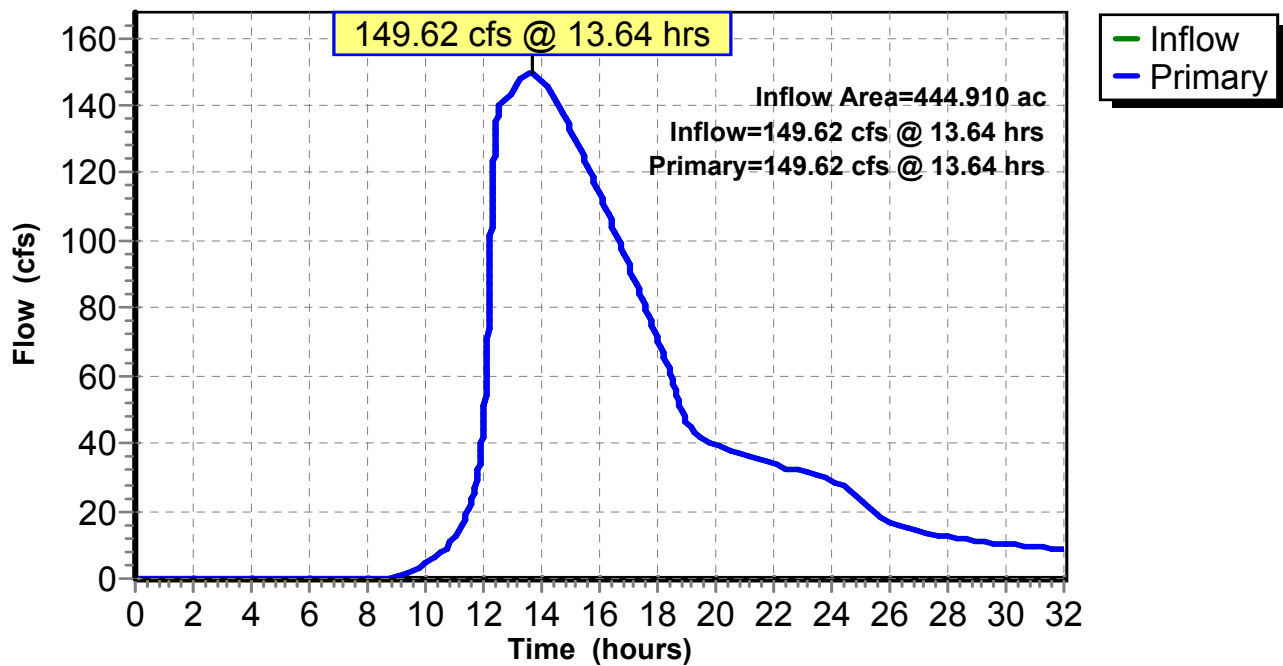
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 2.45" for D10_24 event
Inflow = 149.62 cfs @ 13.64 hrs, Volume= 90.989 af
Primary = 149.62 cfs @ 13.64 hrs, Volume= 90.989 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



Summary for Subcatchment A: WS A

Runoff = 99.30 cfs @ 12.43 hrs, Volume= 13.320 af, Depth= 2.69"

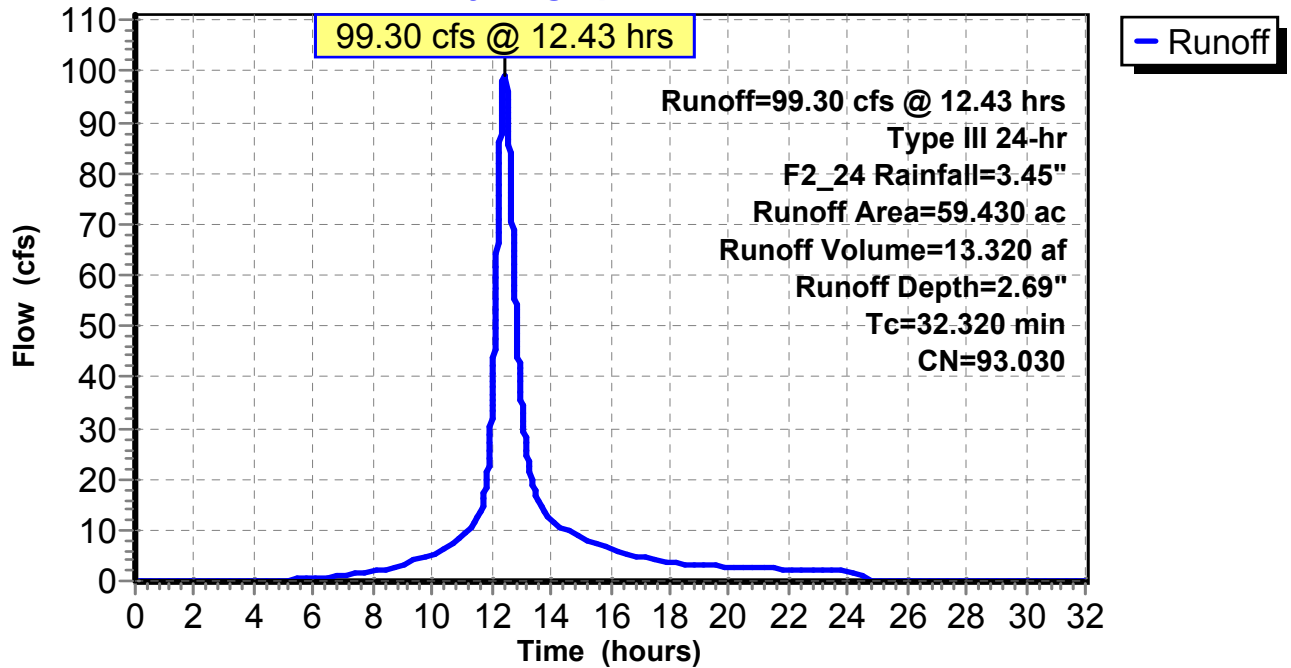
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



Summary for Subcatchment B: WS B

Runoff = 83.90 cfs @ 12.40 hrs, Volume= 10.294 af, Depth= 2.15"

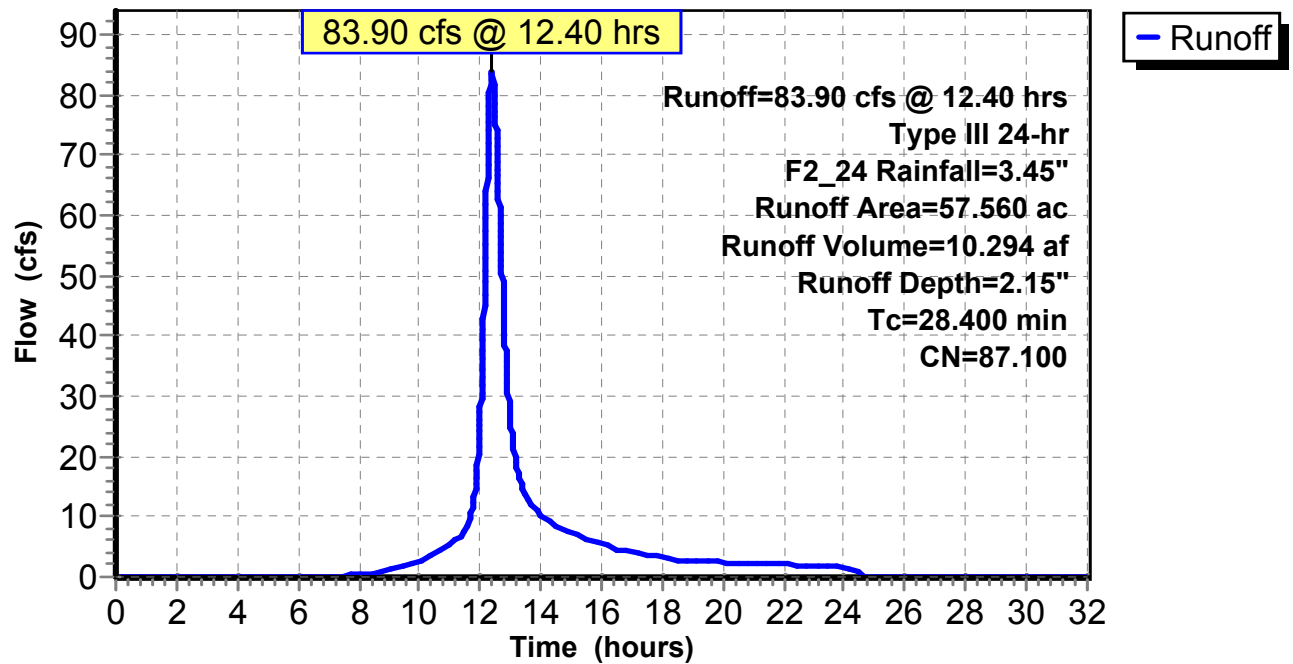
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



Summary for Subcatchment BH: HOTEL

Runoff = 20.85 cfs @ 12.42 hrs, Volume= 2.636 af, Depth= 2.07"

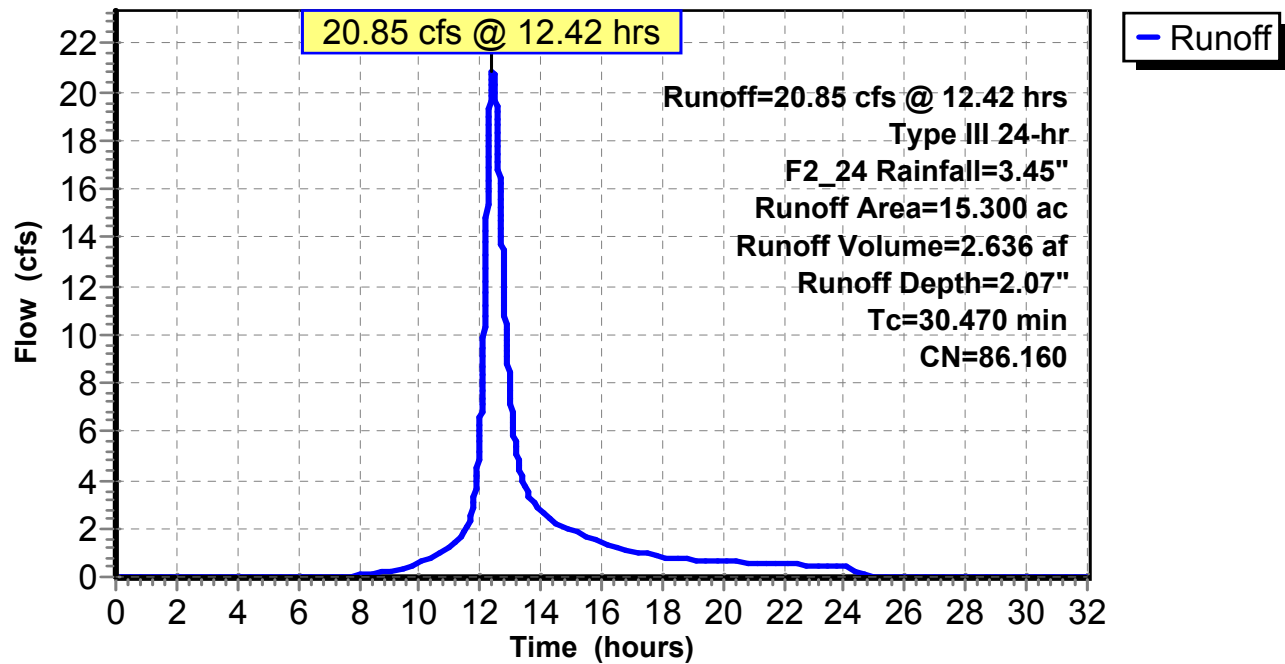
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



Summary for Subcatchment C: WS C

Runoff = 31.12 cfs @ 12.26 hrs, Volume= 3.188 af, Depth= 1.78"

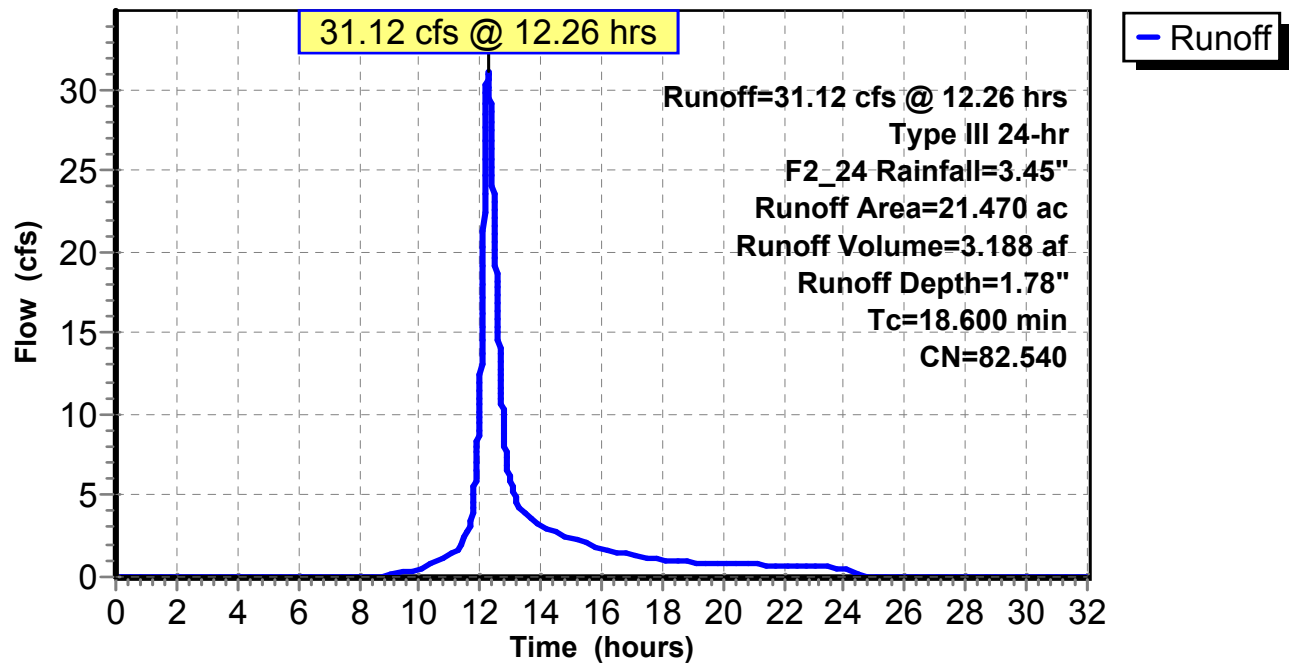
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



Summary for Subcatchment D: WS D

Runoff = 110.10 cfs @ 12.62 hrs, Volume= 16.964 af, Depth= 1.76"

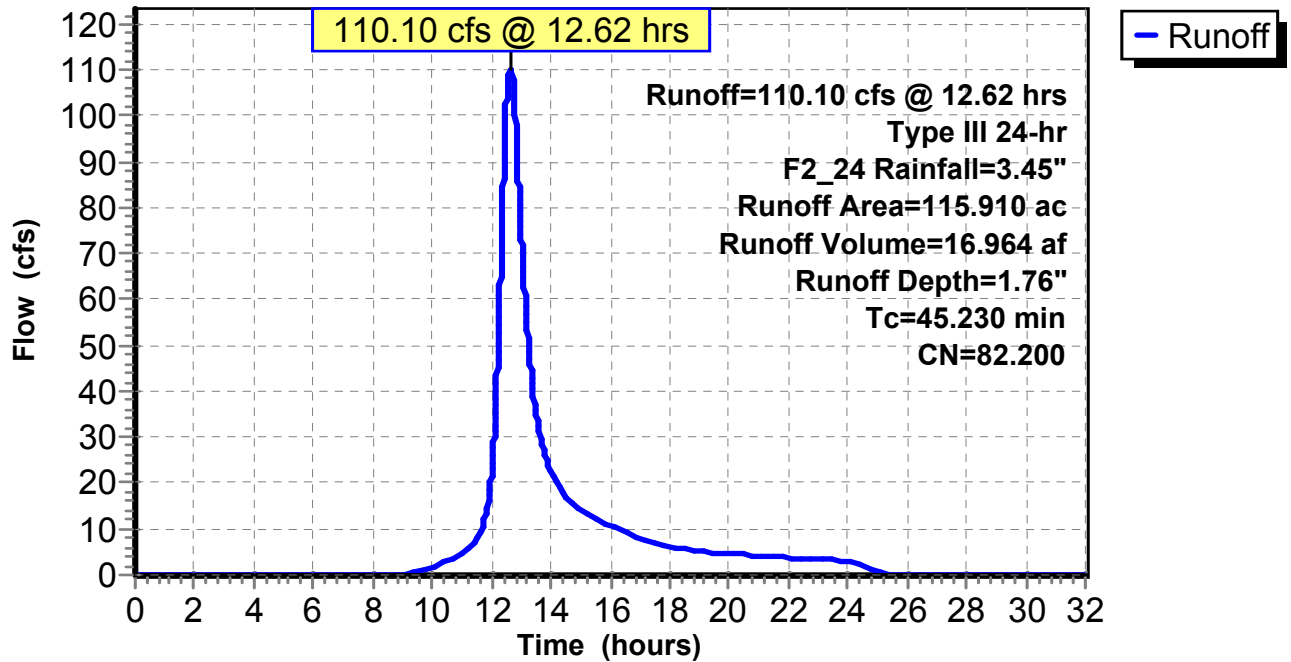
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



Summary for Subcatchment D-1: WS D-1

Runoff = 33.48 cfs @ 12.46 hrs, Volume= 4.423 af, Depth= 1.34"

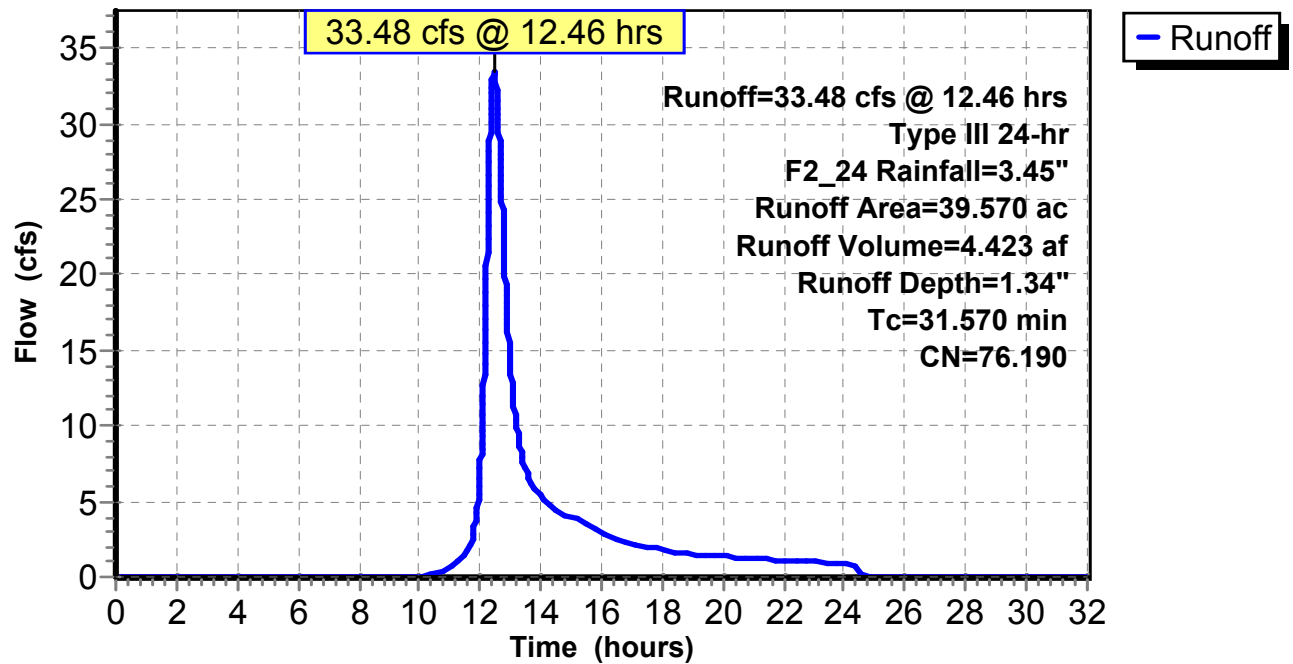
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



Summary for Subcatchment E: WS E

Runoff = 84.40 cfs @ 12.86 hrs, Volume= 15.837 af, Depth= 1.62"

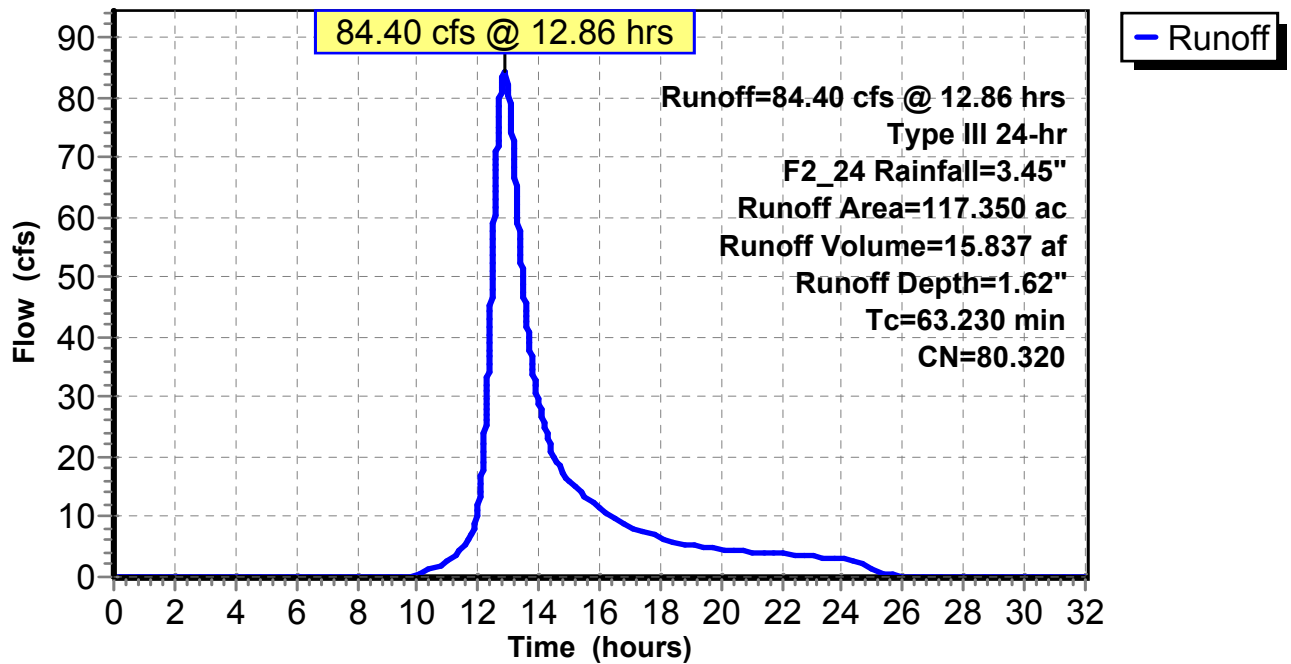
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



Summary for Subcatchment F: WS F

Runoff = 77.91 cfs @ 12.64 hrs, Volume= 12.335 af, Depth= 1.22"

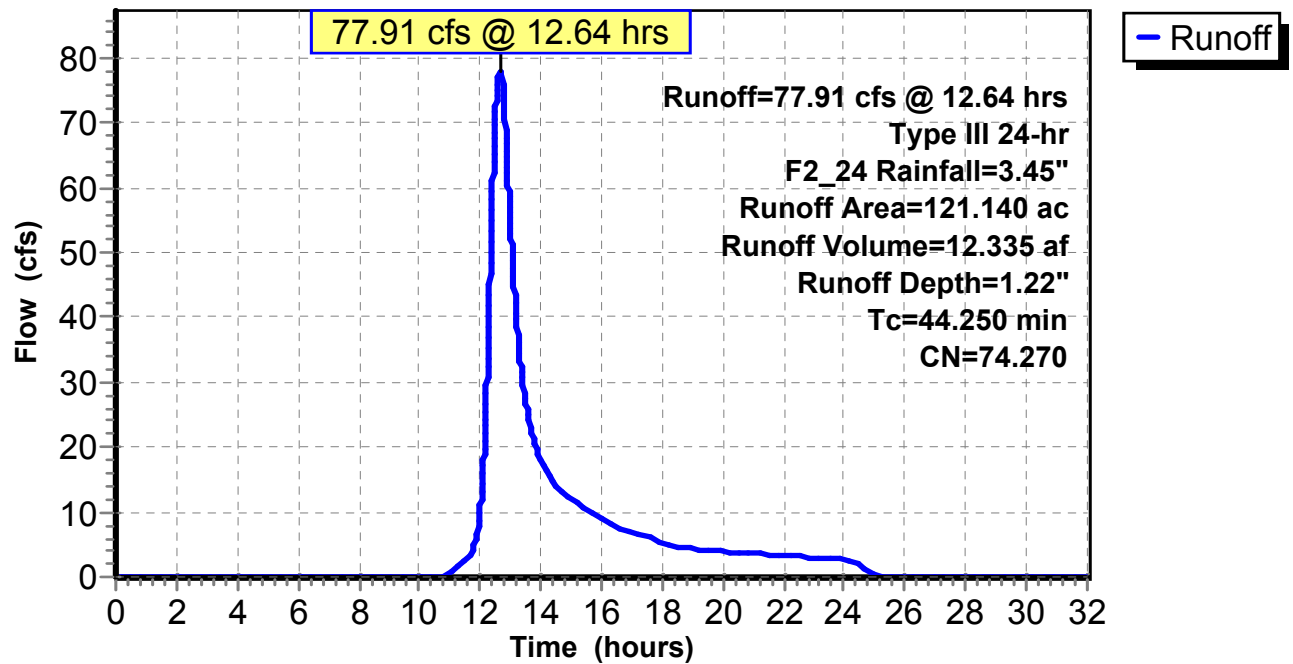
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



Summary for Subcatchment G: WS G

Runoff = 172.12 cfs @ 12.51 hrs, Volume= 23.680 af, Depth= 1.70"

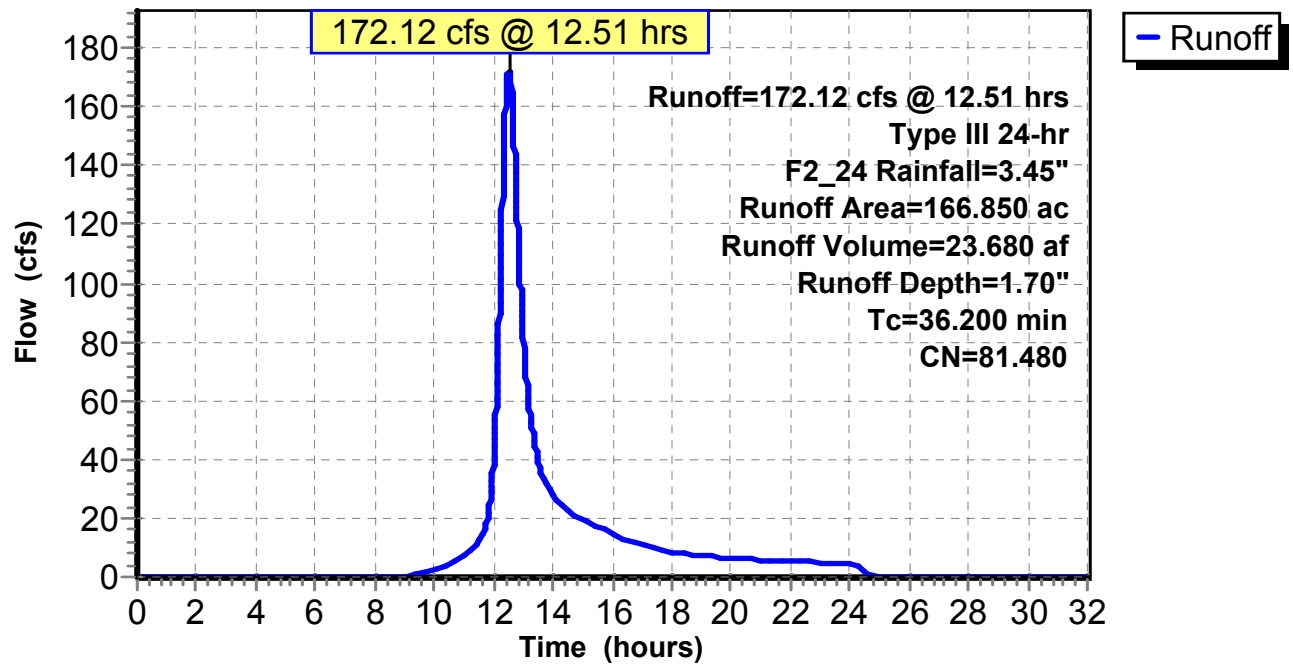
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 1.19" for F2_24 event
 Inflow = 91.32 cfs @ 13.53 hrs, Volume= 40.235 af
 Outflow = 91.29 cfs @ 13.56 hrs, Volume= 40.174 af, Atten= 0%, Lag= 1.979 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.83 fps, Min. Travel Time= 2.967 min
 Avg. Velocity = 1.47 fps, Avg. Travel Time= 5.723 min

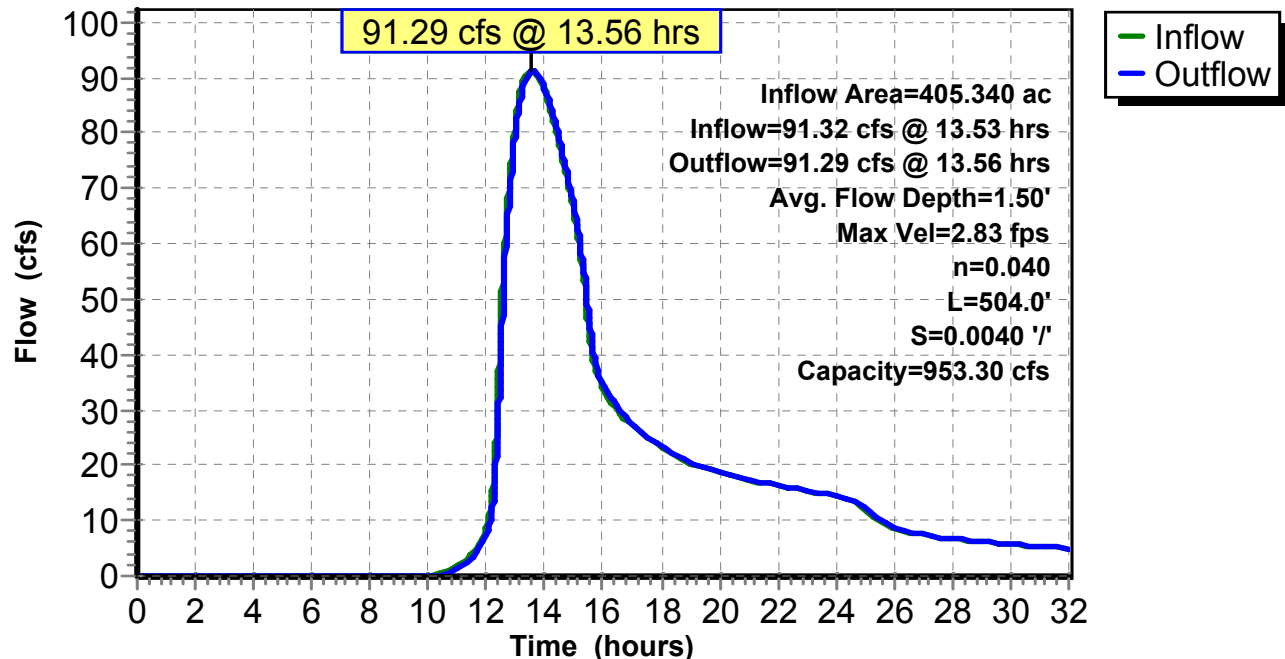
Peak Storage= 16,254 cf @ 13.56 hrs
 Average Depth at Peak Storage= 1.50'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' ' Top Width= 32.00'
 Length= 504.0' Slope= 0.0040 ' '
 Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 1.22" for F2_24 event
 Inflow = 77.39 cfs @ 12.66 hrs, Volume= 12.334 af
 Outflow = 60.06 cfs @ 12.95 hrs, Volume= 12.308 af, Atten= 22%, Lag= 17.263 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 1.35 fps, Min. Travel Time= 26.977 min
 Avg. Velocity = 0.46 fps, Avg. Travel Time= 78.913 min

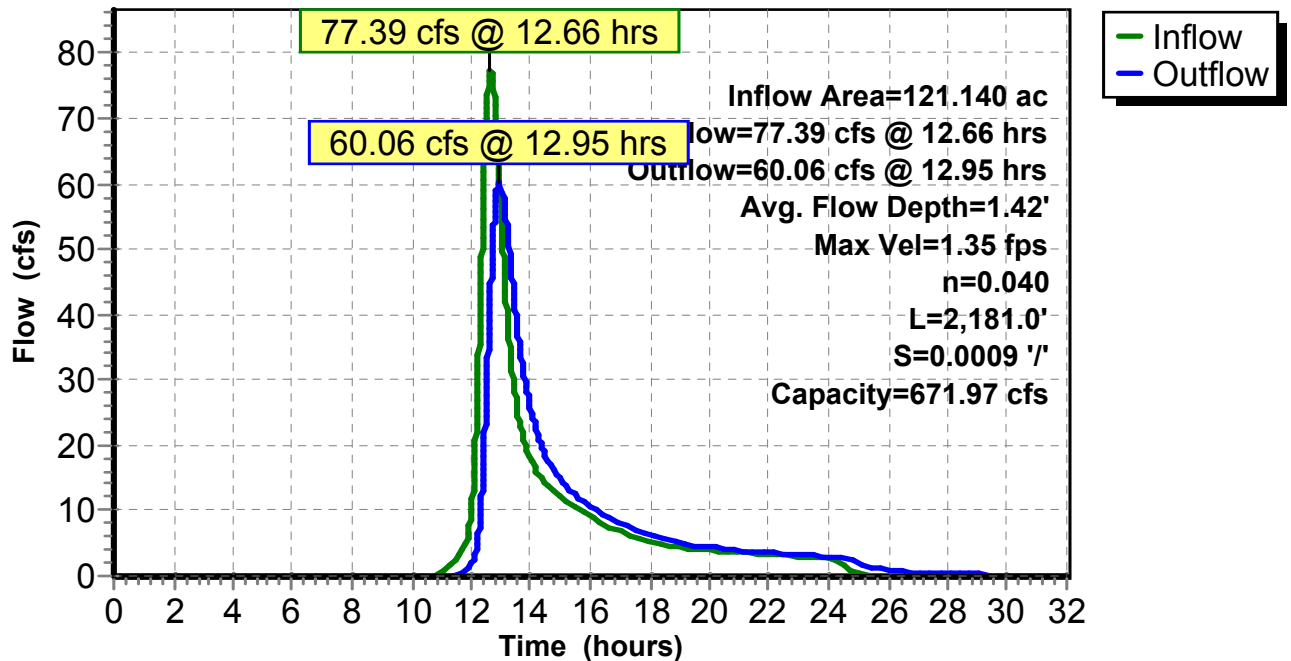
Peak Storage= 97,215 cf @ 12.95 hrs
 Average Depth at Peak Storage= 1.42'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 2,181.0' Slope= 0.0009 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



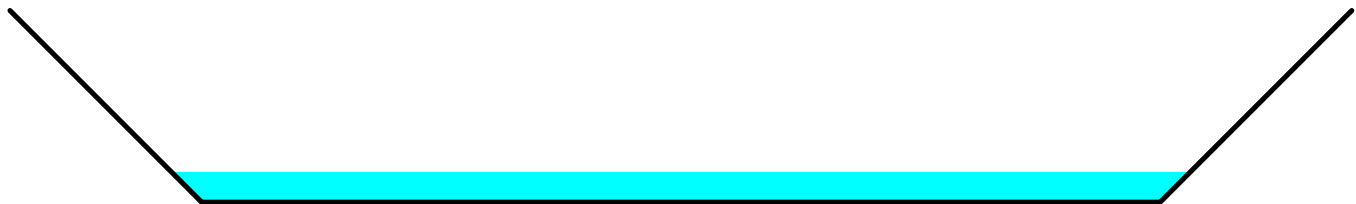
Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 1.57" for F2_24 event
 Inflow = 168.82 cfs @ 12.57 hrs, Volume= 21.787 af
 Outflow = 9.66 cfs @ 17.68 hrs, Volume= 12.241 af, Atten= 94%, Lag= 306.502 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.33 fps, Min. Travel Time= 1,119.307 min
 Avg. Velocity = 0.29 fps, Avg. Travel Time= 1,258.649 min

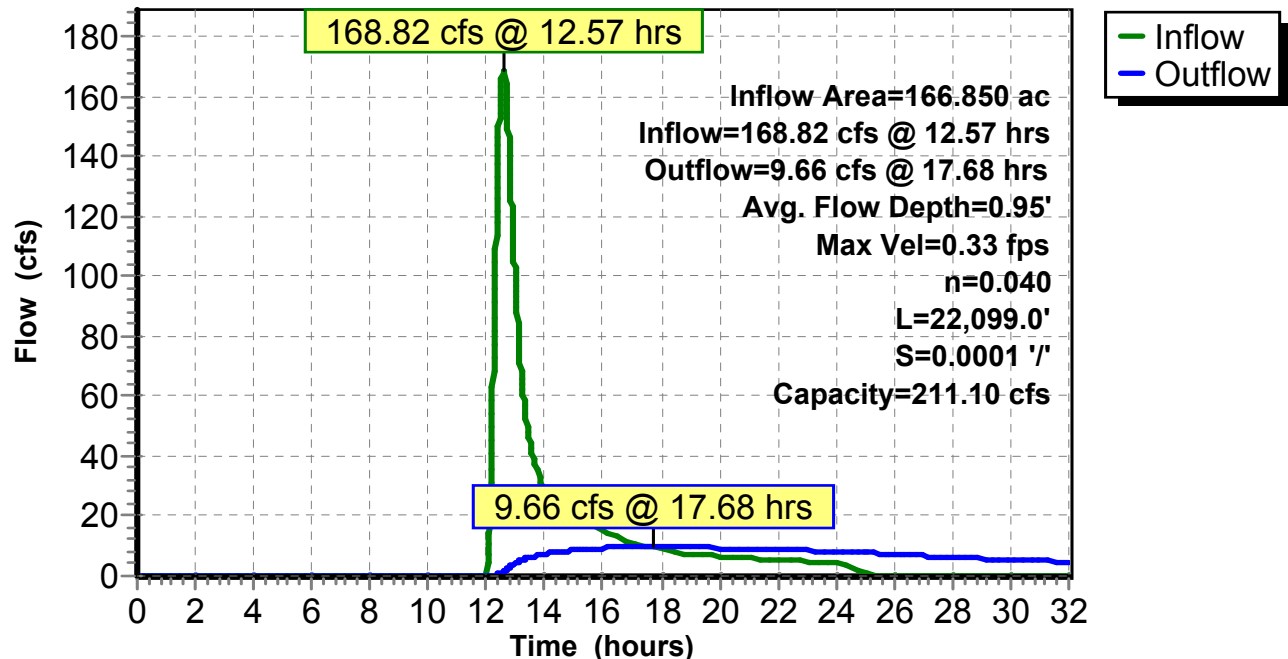
Peak Storage= 648,566 cf @ 17.68 hrs
 Average Depth at Peak Storage= 0.95'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 22,099.0' Slope= 0.0001 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 1.20" for F2_24 event
 Inflow = 97.78 cfs @ 13.61 hrs, Volume= 44.480 af
 Outflow = 97.49 cfs @ 13.74 hrs, Volume= 44.281 af, Atten= 0%, Lag= 7.529 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 4.83 fps, Min. Travel Time= 10.290 min
 Avg. Velocity = 2.71 fps, Avg. Travel Time= 18.311 min

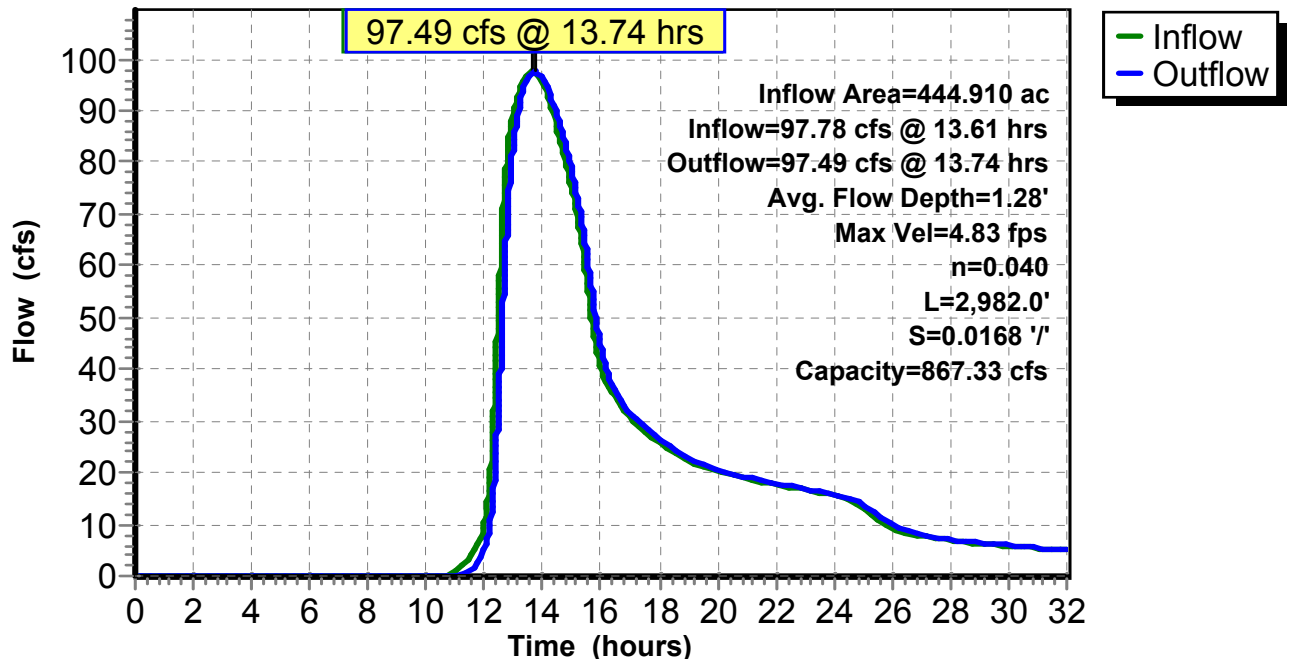
Peak Storage= 60,194 cf @ 13.74 hrs
 Average Depth at Peak Storage= 1.28'
 Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040
 Side Slope Z-value= 3.0 ' / ' Top Width= 36.00'
 Length= 2,982.0' Slope= 0.0168 ' / '
 Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 1.31" for F2_24 event
 Inflow = 169.73 cfs @ 12.83 hrs, Volume= 61.244 af
 Outflow = 169.67 cfs @ 12.84 hrs, Volume= 61.218 af, Atten= 0%, Lag= 0.635 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 7.21 fps, Min. Travel Time= 1.006 min
 Avg. Velocity = 3.27 fps, Avg. Travel Time= 2.216 min

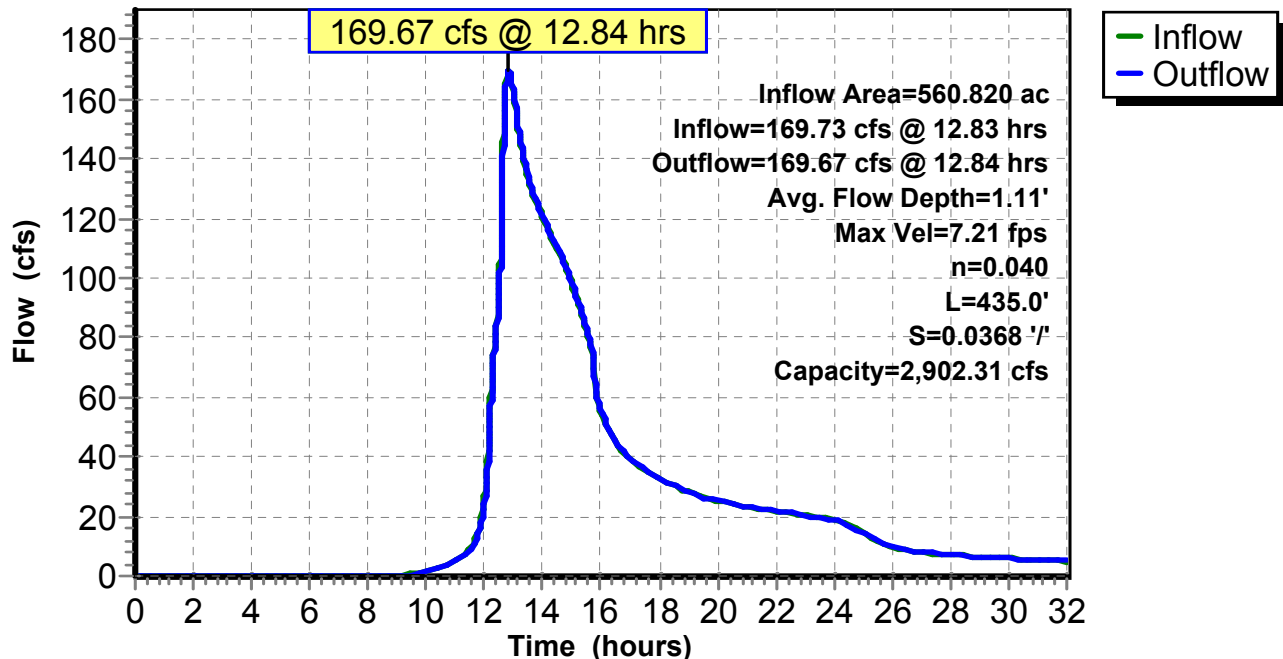
Peak Storage= 10,241 cf @ 12.84 hrs
 Average Depth at Peak Storage= 1.11'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' ' Top Width= 32.00'
 Length= 435.0' Slope= 0.0368 ' '
 Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.000 min
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.000 min

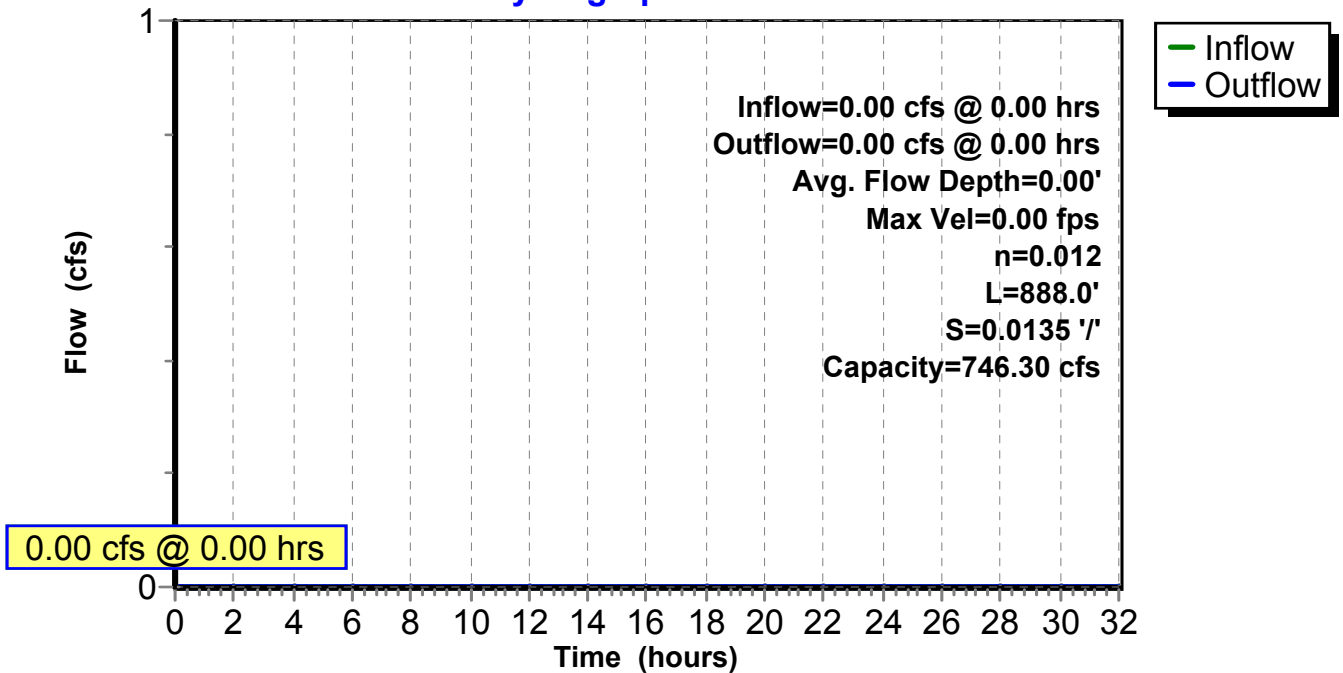
Peak Storage= 0 cf @ 0.00 hrs
 Average Depth at Peak Storage= 0.00'
 Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
 Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
 Length= 888.0' Slope= 0.0135 ' '
 Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



Summary for Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 1.42" for F2_24 event
 Inflow = 235.95 cfs @ 12.71 hrs, Volume= 77.328 af
 Outflow = 235.95 cfs @ 12.71 hrs, Volume= 77.328 af, Atten= 0%, Lag= 0.000 min
 Primary = 235.95 cfs @ 12.71 hrs, Volume= 77.328 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 46.00' @ 12.71 hrs Surf.Area= 0.695 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.000 min (970.306 - 970.306)

Volume	Invert	Avail.Storage	Storage Description
#1	46.00'	82.605 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
46.00	0.695	0.000	0.000
48.00	0.695	1.390	1.390
50.00	0.800	1.495	2.885
52.00	1.420	2.220	5.105
54.00	2.270	3.690	8.795
56.00	3.160	5.430	14.225
58.00	4.070	7.230	21.455
60.00	4.980	9.050	30.505
62.00	5.710	10.690	41.195
64.00	6.620	12.330	53.525
66.00	7.170	13.790	67.315
68.00	8.120	15.290	82.605

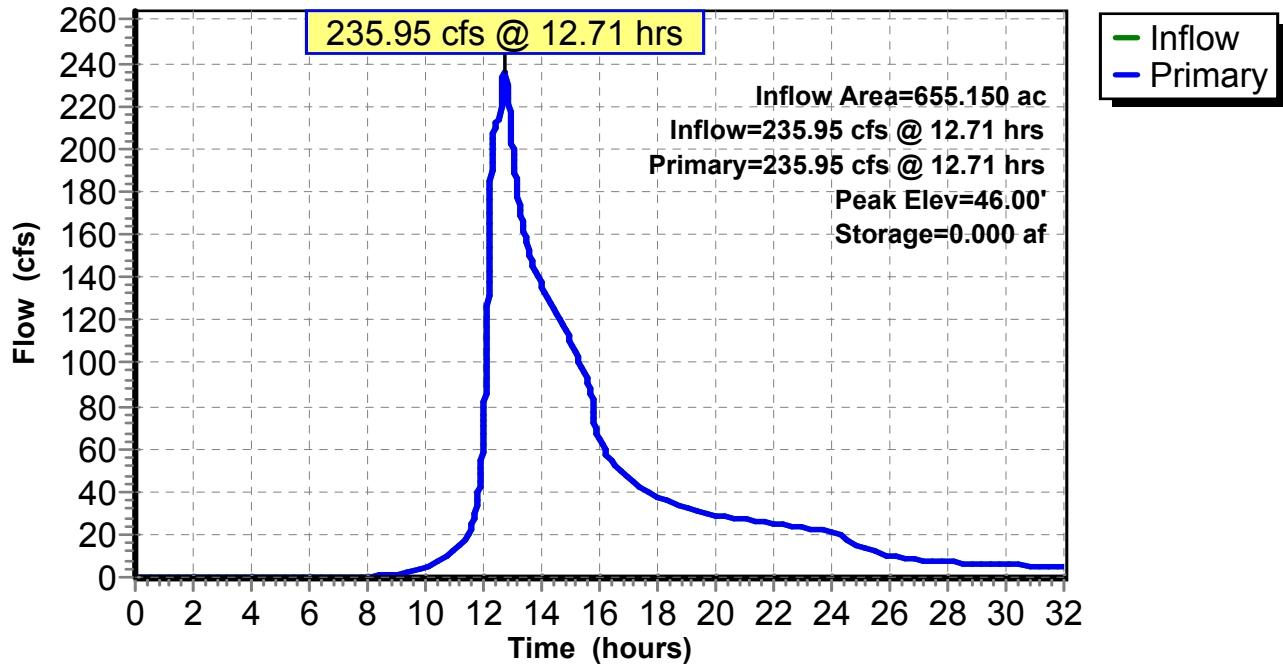
Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48

Primary OutFlow Max=447.17 cfs @ 12.71 hrs HW=46.00' TW=34.99' (Dynamic Tailwater)

1=Culvert (Inlet Controls 447.17 cfs @ 11.46 fps)
 2=WEIR WESTCH AVE (Controls 0.00 cfs)

Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



EBBR_HCAD_JAN_2019_exist_f

Prepared by Microsoft

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Case 1 - Exist
Type III 24-hr F2_24 Rainfall=3.45"

Printed 2/7/2019

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Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 1.33" for F2_24 event
 Inflow = 177.65 cfs @ 12.82 hrs, Volume= 64.406 af
 Outflow = 177.65 cfs @ 12.82 hrs, Volume= 64.405 af, Atten= 0%, Lag= 0.064 min
 Primary = 177.65 cfs @ 12.82 hrs, Volume= 64.405 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 67.18' @ 12.82 hrs Surf.Area= 0.003 ac Storage= 0.002 af

Plug-Flow detention time= 0.017 min calculated for 64.385 af (100% of inflow)
 Center-of-Mass det. time= 0.004 min (996.785 - 996.782)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

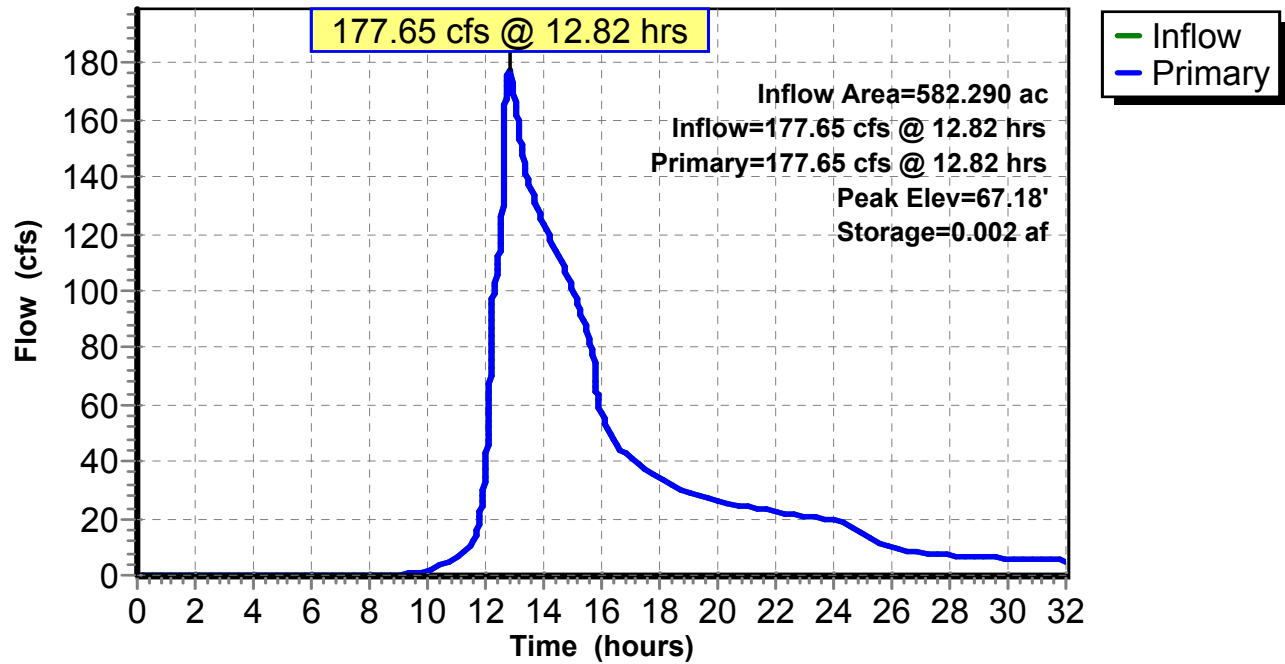
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=177.65 cfs @ 12.82 hrs HW=67.18' TW=59.39' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 177.55 cfs @ 9.04 fps)
- 2=Culvert 2 (Inlet Controls 0.09 cfs @ 1.06 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



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Case 1 - Exist
Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 1.20" for F2_24 event
Inflow = 98.41 cfs @ 13.43 hrs, Volume= 44.597 af
Outflow = 97.78 cfs @ 13.61 hrs, Volume= 44.480 af, Atten= 1%, Lag= 10.959 min
Primary = 97.78 cfs @ 13.61 hrs, Volume= 44.480 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Peak Elev= 129.05' @ 13.61 hrs Surf.Area= 0.735 ac Storage= 1.290 af

Plug-Flow detention time= 10.481 min calculated for 44.466 af (100% of inflow)
Center-of-Mass det. time= 8.185 min (1,041.937 - 1,033.752)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

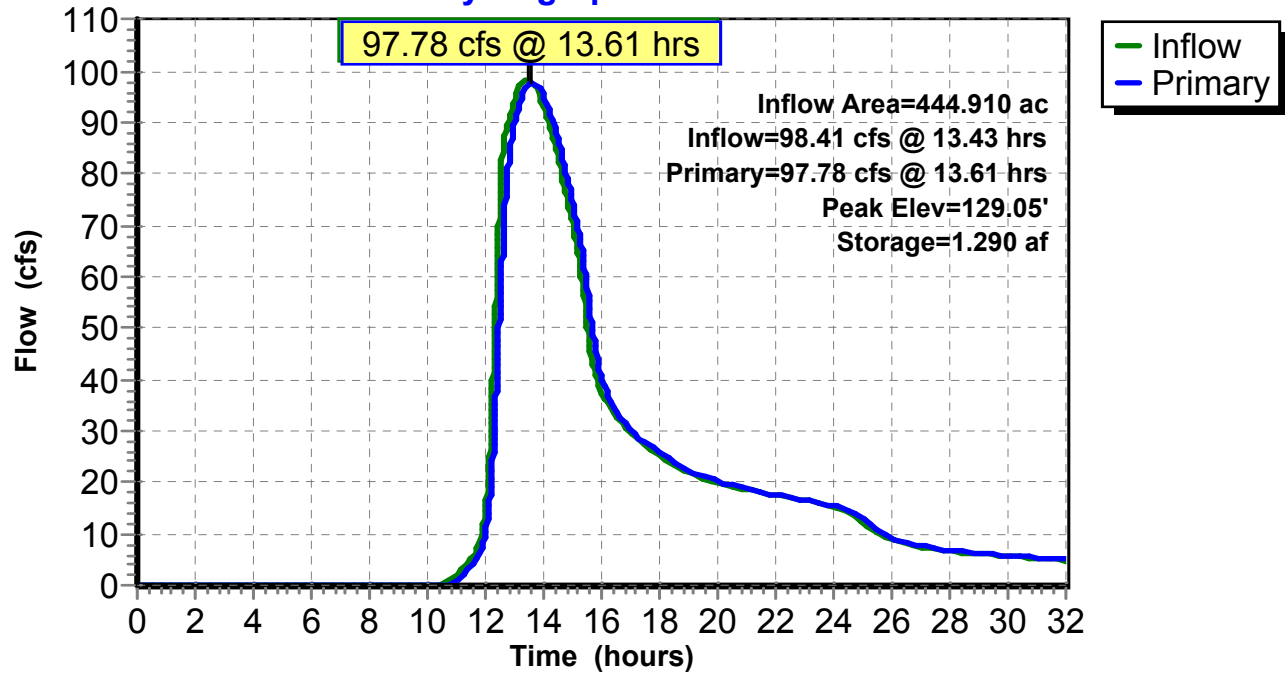
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=97.78 cfs @ 13.61 hrs HW=129.05' TW=127.27' (Dynamic Tailwater)

- 1=Culvert (Barrel Controls 97.78 cfs @ 6.58 fps)
- 2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 4A: DP 4 A ARGYLE

Hydrograph



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Case 1 - Exist
Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 1.20" for F2_24 event
 Inflow = 147.35 cfs @ 12.92 hrs, Volume= 40.385 af
 Outflow = 91.32 cfs @ 13.53 hrs, Volume= 40.235 af, Atten= 38%, Lag= 36.621 min
 Primary = 91.32 cfs @ 13.53 hrs, Volume= 40.235 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 130.87' @ 13.53 hrs Surf.Area= 7.943 ac Storage= 4.775 af

Plug-Flow detention time= 22.387 min calculated for 40.235 af (100% of inflow)
 Center-of-Mass det. time= 19.097 min (1,048.111 - 1,029.015)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

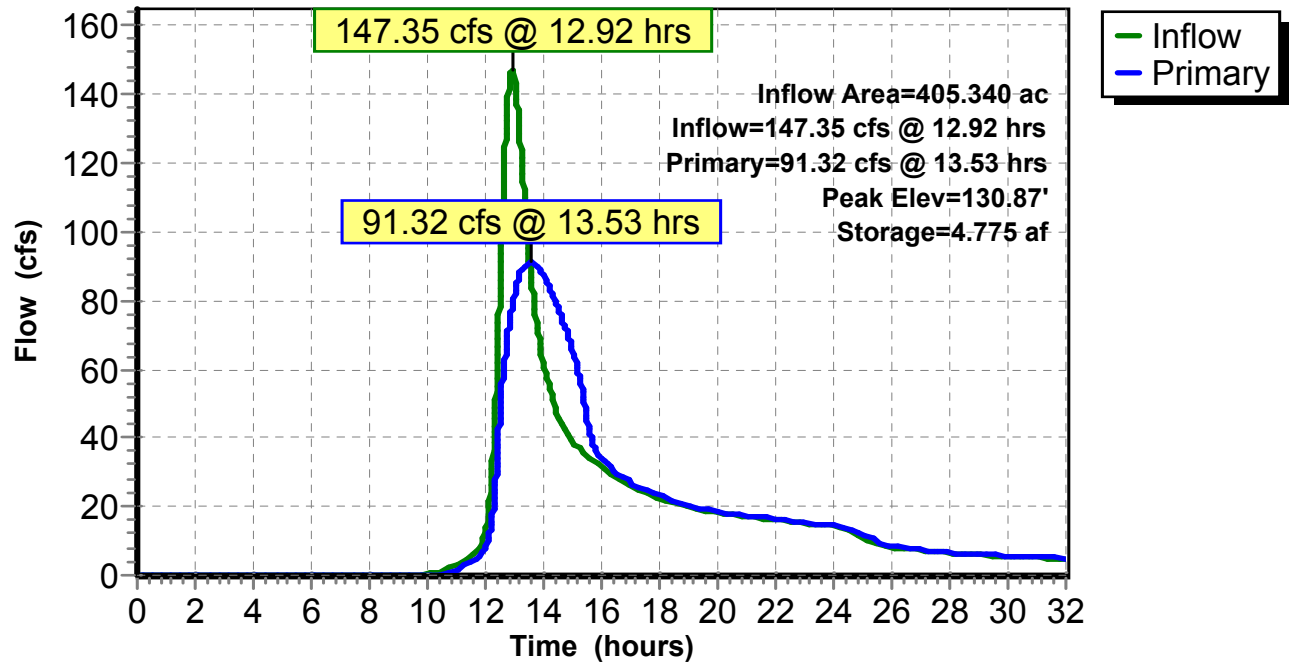
Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

Primary OutFlow Max=91.32 cfs @ 13.53 hrs HW=130.87' TW=129.50' (Dynamic Tailwater)

- 1=Culvert (Barrel Controls 91.32 cfs @ 6.64 fps)
- 2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 5P: DP 5 BETSY BROWN ROAD

Hydrograph



Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 1.31" for F2_24 event
 Inflow = 170.72 cfs @ 12.77 hrs, Volume= 61.245 af
 Outflow = 169.73 cfs @ 12.83 hrs, Volume= 61.244 af, Atten= 1%, Lag= 3.324 min
 Primary = 169.73 cfs @ 12.83 hrs, Volume= 61.244 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 90.69' @ 12.83 hrs Surf.Area= 1.370 ac Storage= 0.946 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 2.038 min (1,003.576 - 1,001.537)

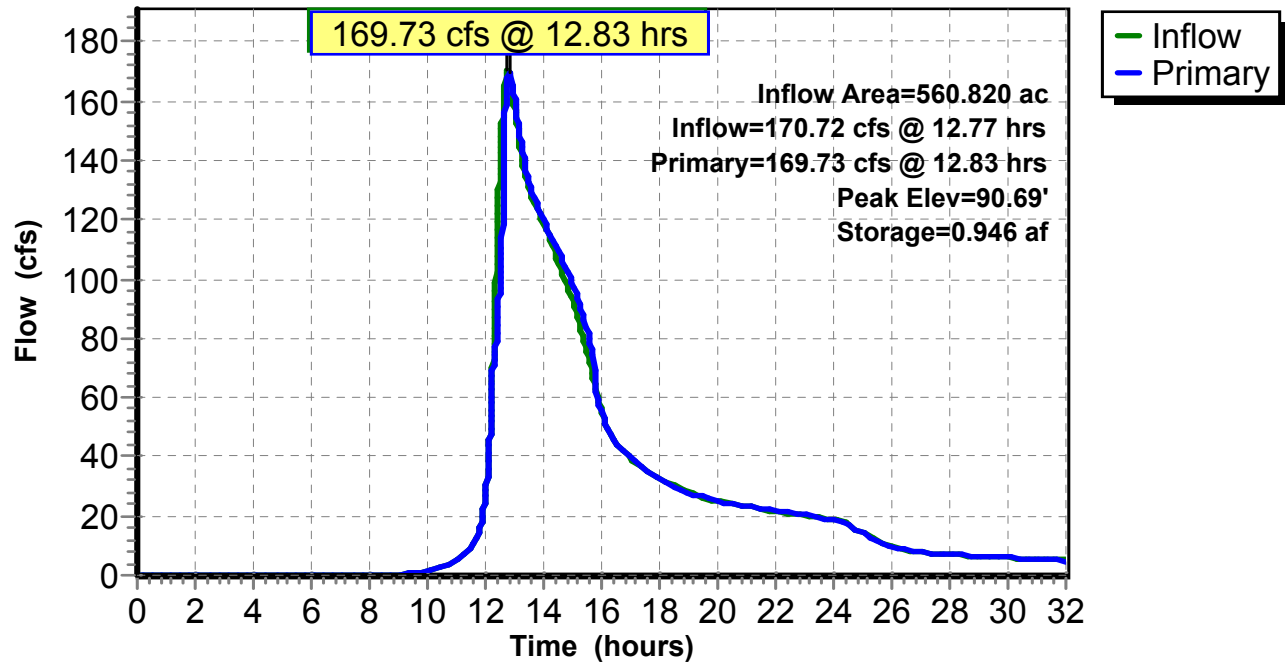
Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=169.71 cfs @ 12.83 hrs HW=90.69' TW=77.11' (Dynamic Tailwater)
 1=Sharp-Crested Rectangular Weir(Weir Controls 128.73 cfs @ 4.78 fps)
 2=Sharp-Crested Rectangular Weir(Weir Controls 40.99 cfs @ 1.50 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



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Case 1 - Exist
Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 1.52" for F2_24 event
 Inflow = 311.58 cfs @ 12.46 hrs, Volume= 90.648 af
 Outflow = 311.36 cfs @ 12.47 hrs, Volume= 90.647 af, Atten= 0%, Lag= 0.560 min
 Primary = 311.36 cfs @ 12.47 hrs, Volume= 90.647 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 35.03' @ 12.47 hrs Surf.Area= 0.111 ac Storage= 0.098 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.046 min (947.436 - 947.390)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

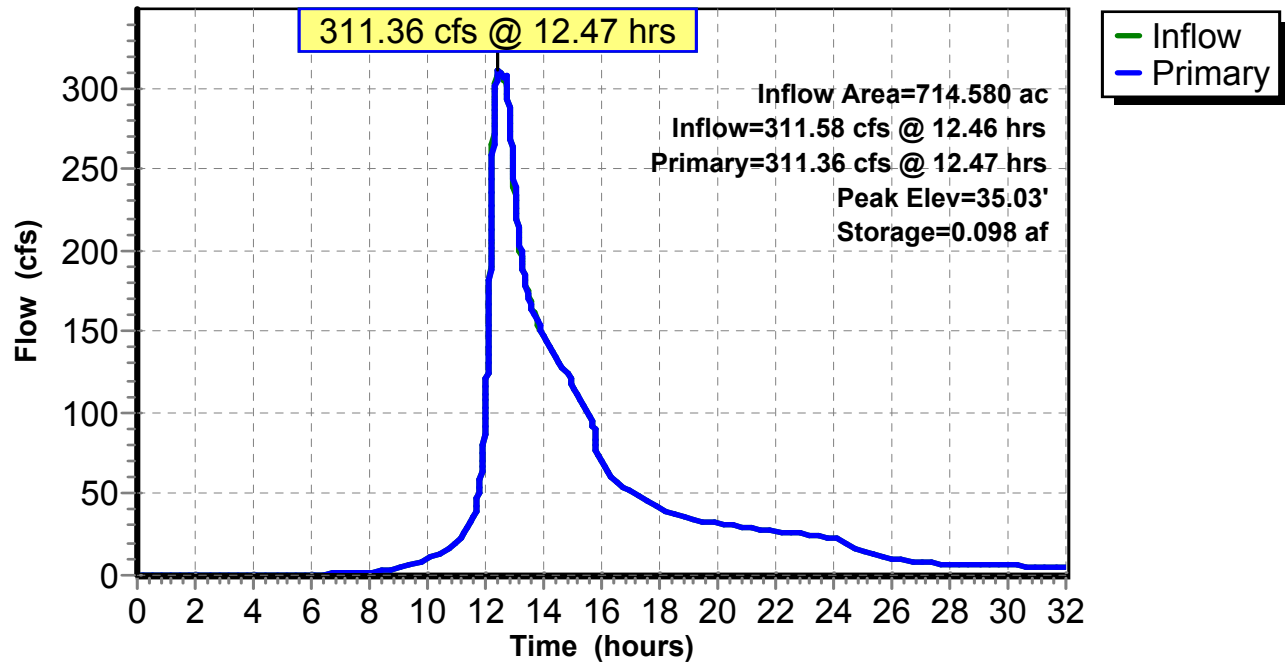
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=311.35 cfs @ 12.47 hrs HW=35.03' (Free Discharge)

- 1=Culvert (Barrel Controls 311.35 cfs @ 6.70 fps)
- 2=WEIR BOWMAN (Controls 0.00 cfs)

Pond 8P: BOWMAN FIELDS

Hydrograph



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Case 1 - Exist
Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 1.22" for F2_24 event
 Inflow = 77.91 cfs @ 12.64 hrs, Volume= 12.335 af
 Outflow = 77.39 cfs @ 12.66 hrs, Volume= 12.334 af, Atten= 1%, Lag= 1.070 min
 Primary = 77.39 cfs @ 12.66 hrs, Volume= 12.334 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 133.07' @ 12.70 hrs Surf.Area= 0.052 ac Storage= 0.039 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.097 min (892.176 - 892.079)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

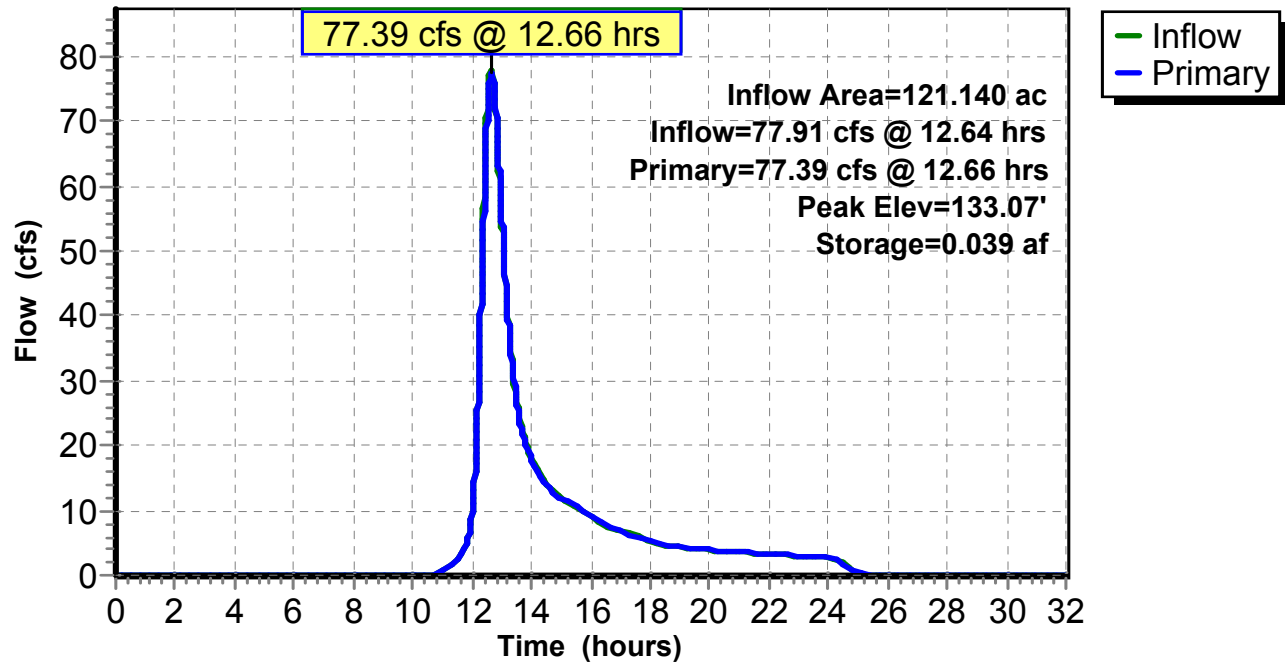
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=77.17 cfs @ 12.66 hrs HW=133.06' TW=131.18' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 46.68 cfs @ 6.60 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 30.50 cfs @ 4.16 fps)
- 3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Hydrograph



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Case 1 - Exist
Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 1.70" for F2_24 event
 Inflow = 172.12 cfs @ 12.51 hrs, Volume= 23.680 af
 Outflow = 168.82 cfs @ 12.57 hrs, Volume= 21.787 af, Atten= 2%, Lag= 3.638 min
 Primary = 168.82 cfs @ 12.57 hrs, Volume= 21.787 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.33' @ 12.57 hrs Surf.Area= 3.614 ac Storage= 5.973 af (3.005 af above start)

Plug-Flow detention time= 126.747 min calculated for 18.820 af (79% of inflow)
 Center-of-Mass det. time= 23.680 min (886.000 - 862.320)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

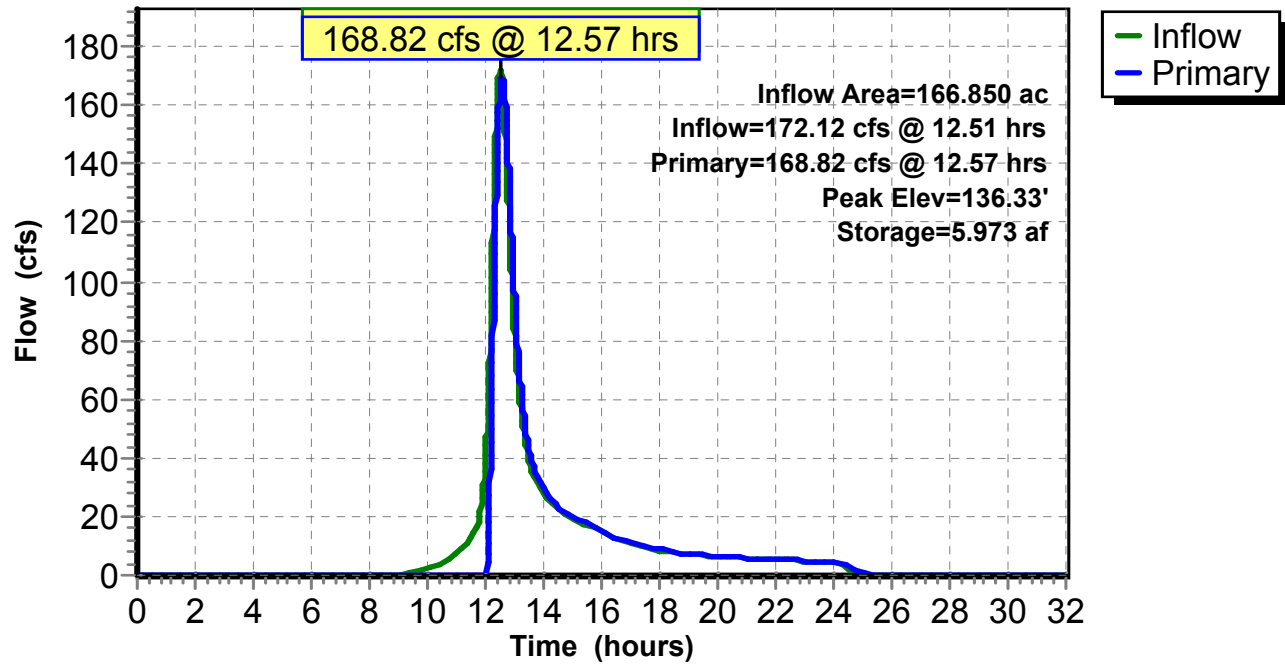
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=168.81 cfs @ 12.57 hrs HW=136.33' TW=130.27' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 0.83 cfs @ 1.96 fps)
- 2=Asymmetrical Weir (Weir Controls 167.98 cfs @ 1.73 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Hydrograph



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Case 1 - Exist
Type III 24-hr F2_24 Rainfall=3.45"

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Summary for Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 1.33" for F2_24 event
 Inflow = 177.65 cfs @ 12.82 hrs, Volume= 64.405 af
 Outflow = 177.65 cfs @ 12.82 hrs, Volume= 64.399 af, Atten= 0%, Lag= 0.170 min
 Primary = 177.65 cfs @ 12.82 hrs, Volume= 64.399 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 59.39' @ 12.82 hrs Surf.Area= 871 sf Storage= 2,249 cf

Plug-Flow detention time= 0.323 min calculated for 64.399 af (100% of inflow)
 Center-of-Mass det. time= 0.241 min (997.026 - 996.785)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	22,686 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686

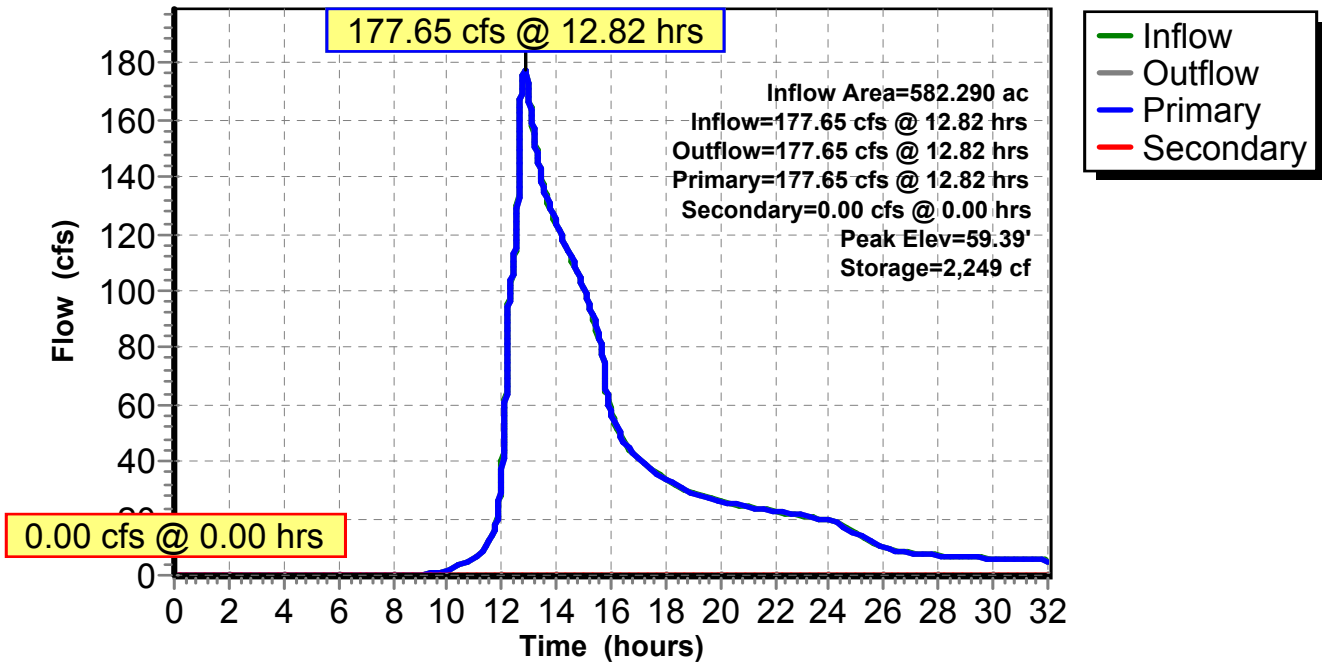
Device	Routing	Invert	Outlet Devices
#1	Primary	56.00'	60.0" Round Culvert X 2.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 56.00' / 37.90' S= 0.0217 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	60.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 66.00 64.00 62.00 60.00 60.00 62.00 64.00 66.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=177.64 cfs @ 12.82 hrs HW=59.39' TW=46.00' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 177.64 cfs @ 6.27 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=56.00' TW=58.00' (Dynamic Tailwater)
 ↑2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD

Hydrograph



Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 51.00' @ 0.00 hrs Surf.Area= 6,000 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	51.00'	162,178 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
51.00	6,000	0	0
52.00	15,452	10,726	10,726
54.00	38,000	53,452	64,178
56.00	60,000	98,000	162,178

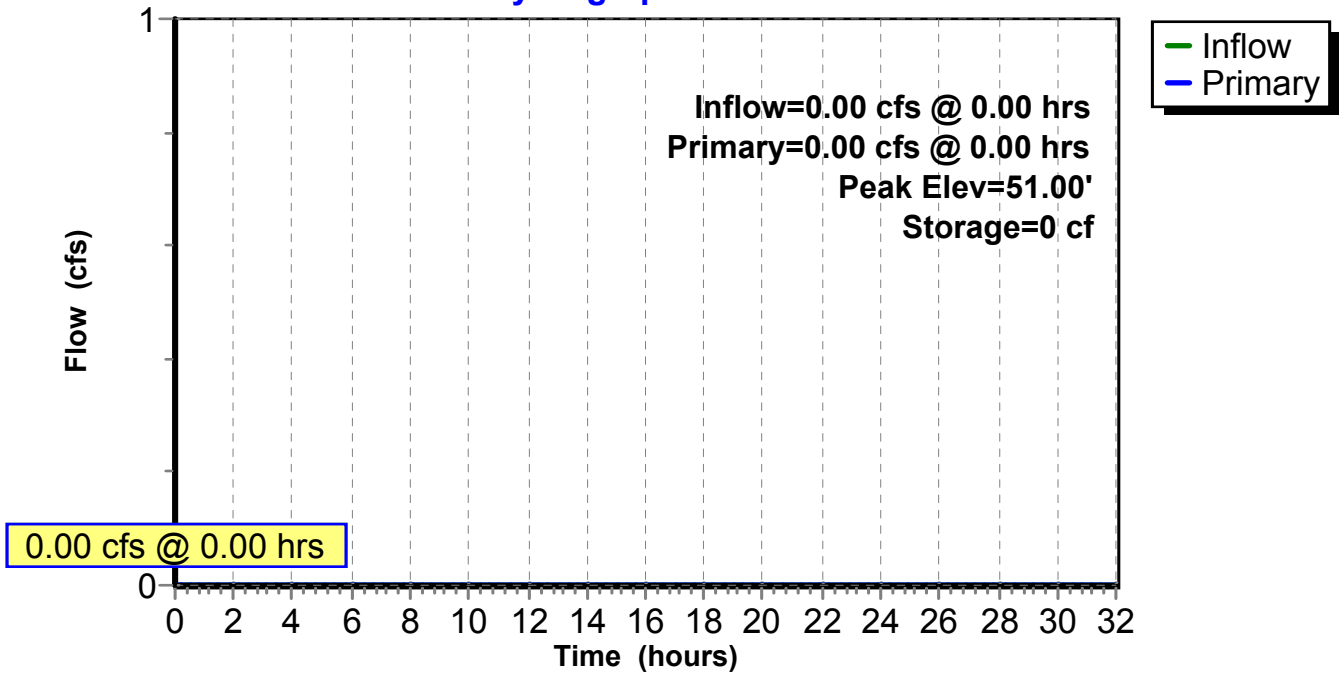
Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=51.00' TW=46.00' (Dynamic Tailwater)

↑1=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



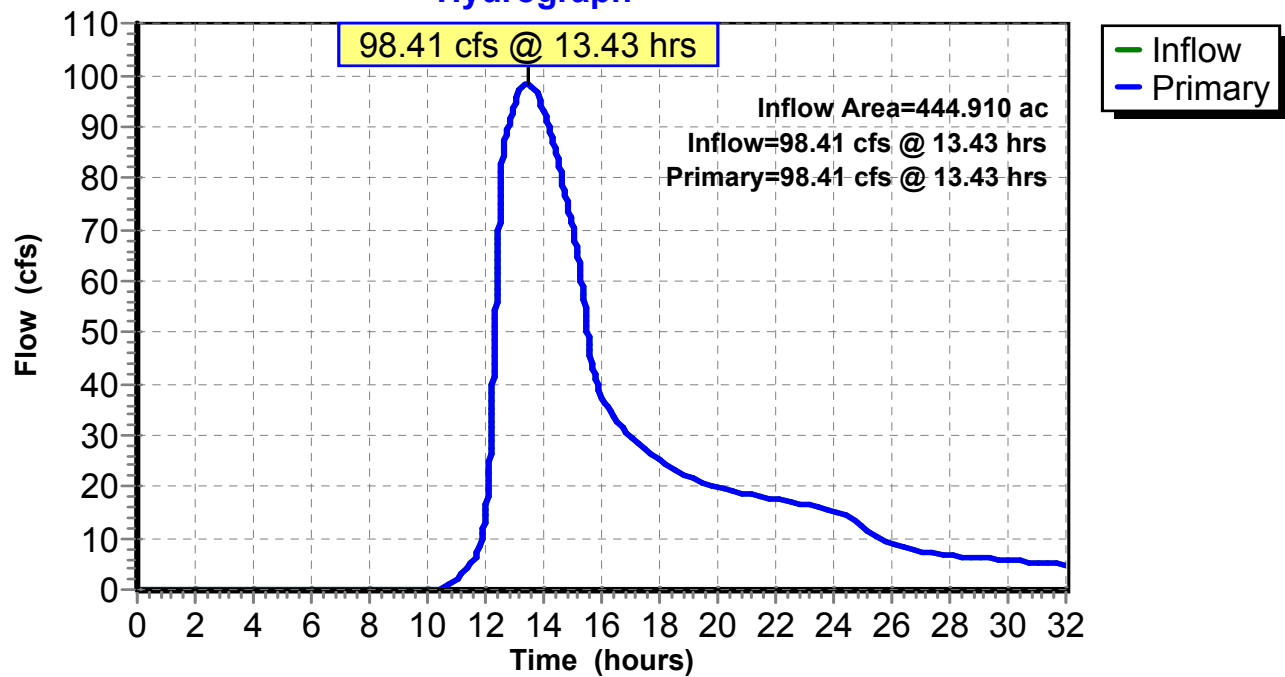
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 1.20" for F2_24 event
Inflow = 98.41 cfs @ 13.43 hrs, Volume= 44.597 af
Primary = 98.41 cfs @ 13.43 hrs, Volume= 44.597 af, Atten= 0%, Lag= 0.000 min

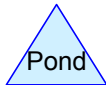
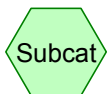
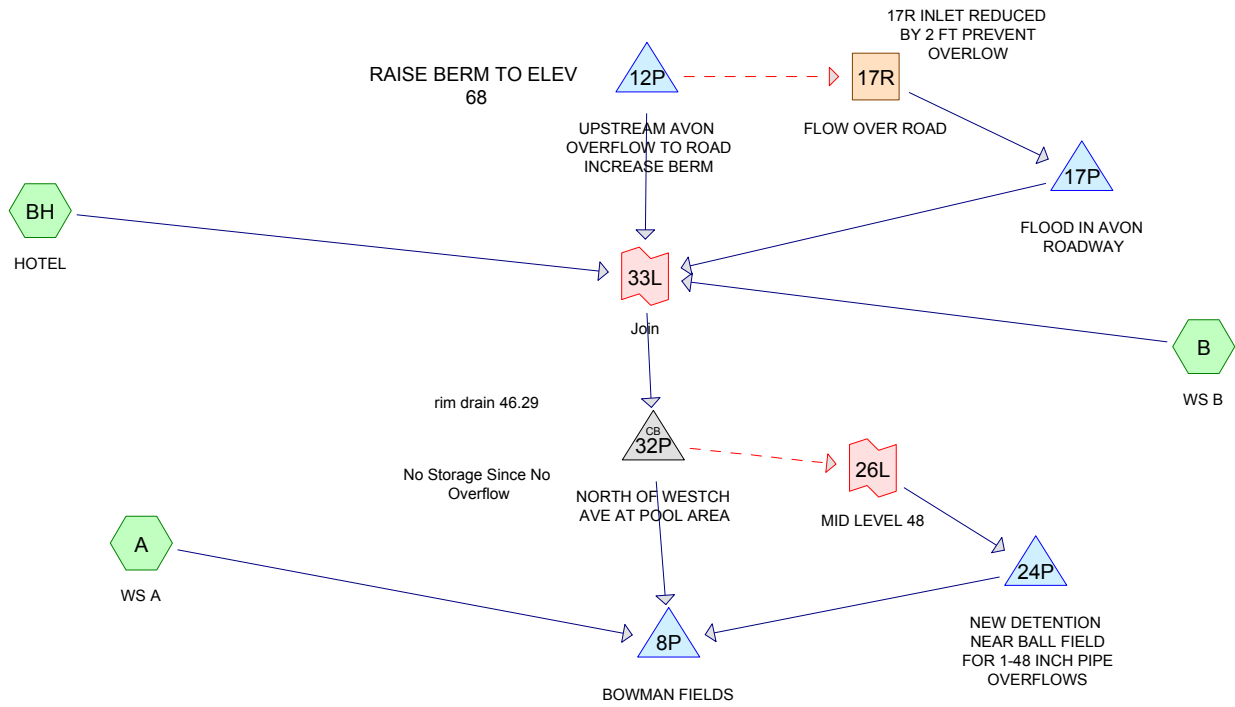
Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



CASE 2



Summary for Subcatchment A: WS A

Runoff = 225.19 cfs @ 12.42 hrs, Volume= 29.426 af, Depth> 5.94"

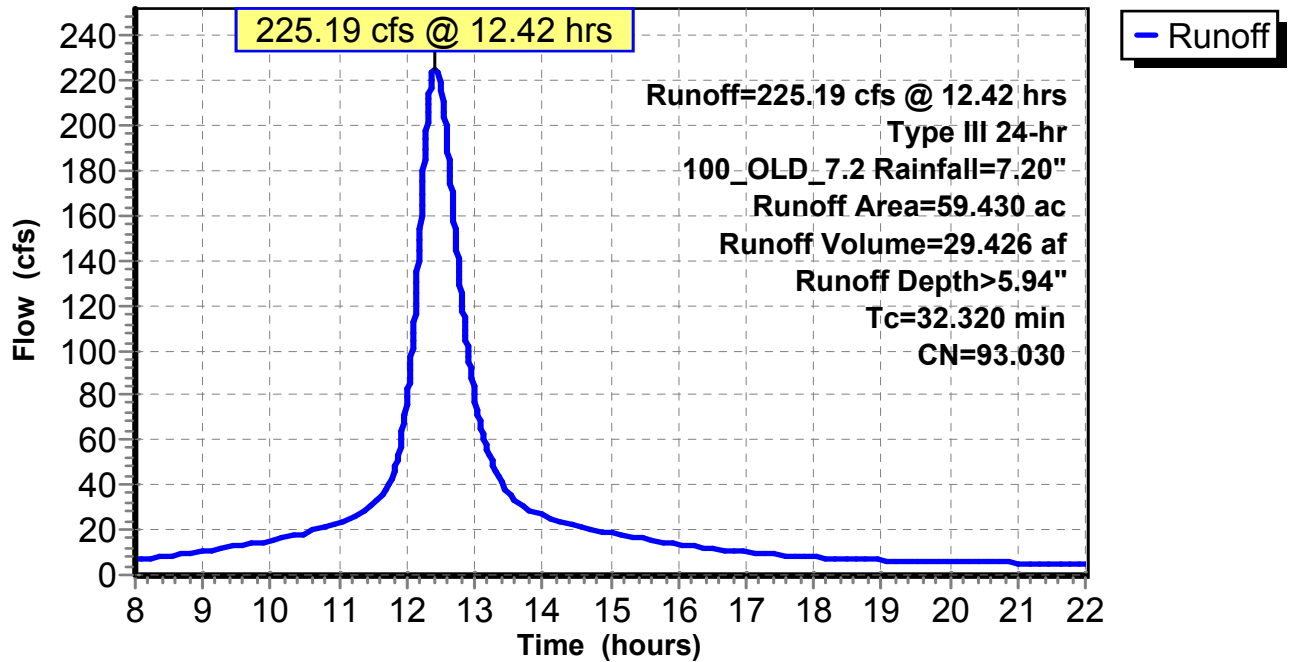
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



Summary for Subcatchment B: WS B

Runoff = 214.89 cfs @ 12.38 hrs, Volume= 25.965 af, Depth> 5.41"

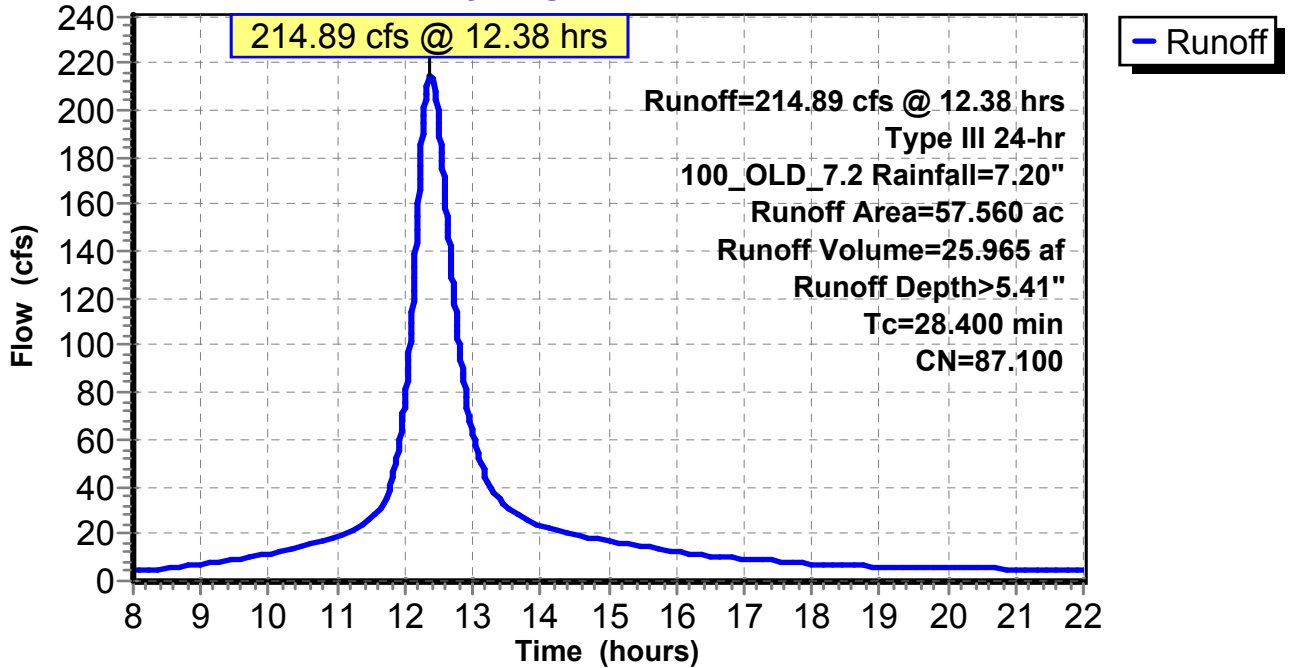
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



Summary for Subcatchment BH: HOTEL

Runoff = 54.61 cfs @ 12.42 hrs, Volume= 6.785 af, Depth> 5.32"

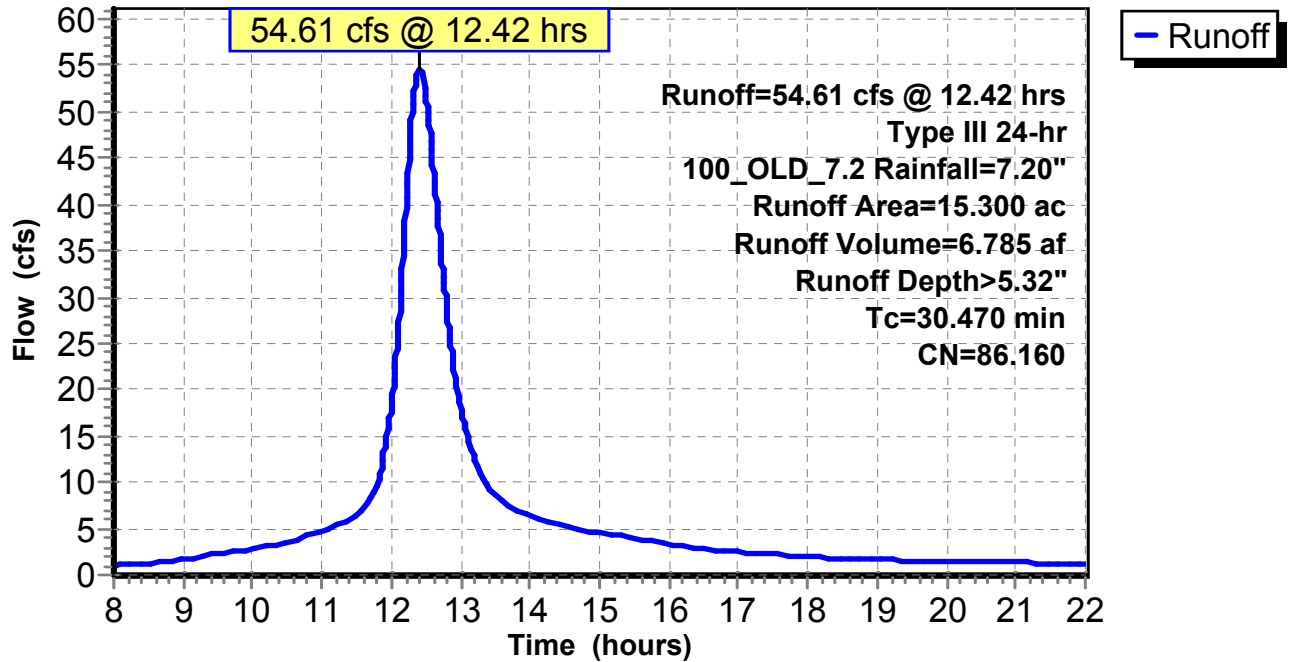
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.000 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.000 min

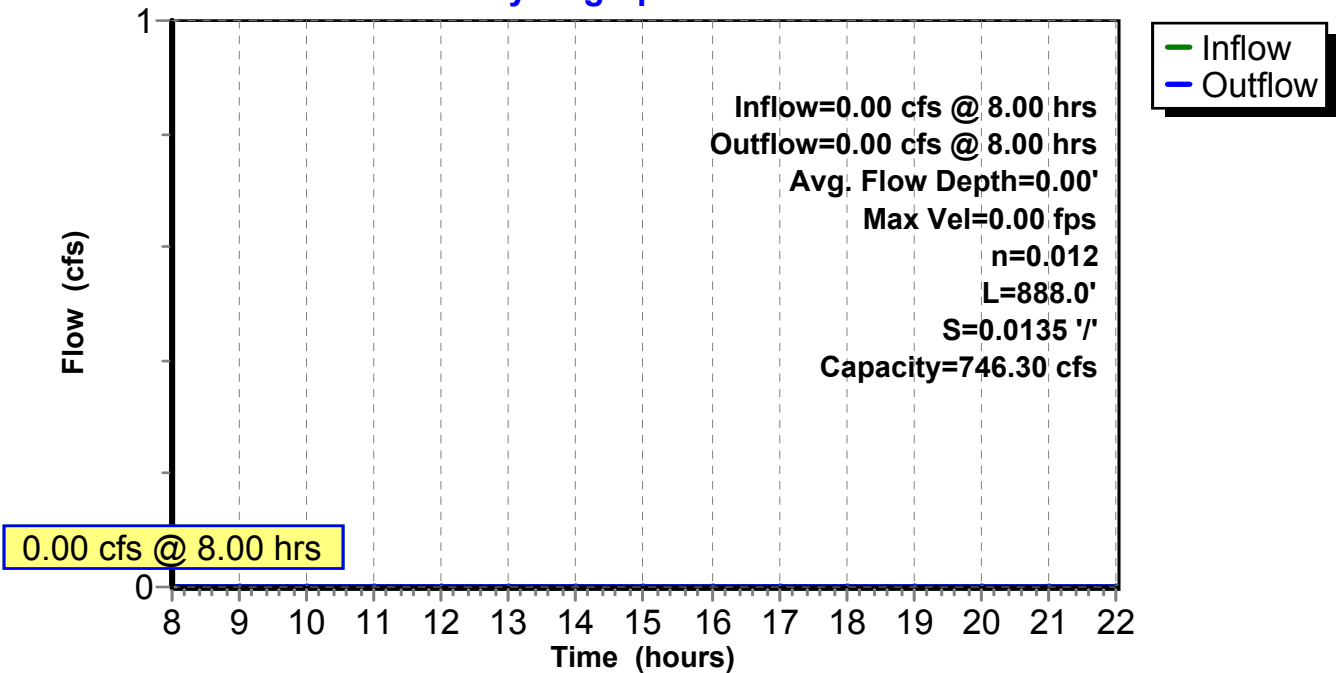
Peak Storage= 0 cf @ 8.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
Length= 888.0' Slope= 0.0135 ' '
Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 4.07" for 100_OLD_7.2 event
 Inflow = 774.24 cfs @ 12.47 hrs, Volume= 242.397 af
 Outflow = 773.03 cfs @ 12.51 hrs, Volume= 242.392 af, Atten= 0%, Lag= 2.364 min
 Primary = 773.03 cfs @ 12.51 hrs, Volume= 242.392 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 38.29' @ 12.51 hrs Surf.Area= 0.345 ac Storage= 0.718 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.229 min (896.980 - 896.751)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

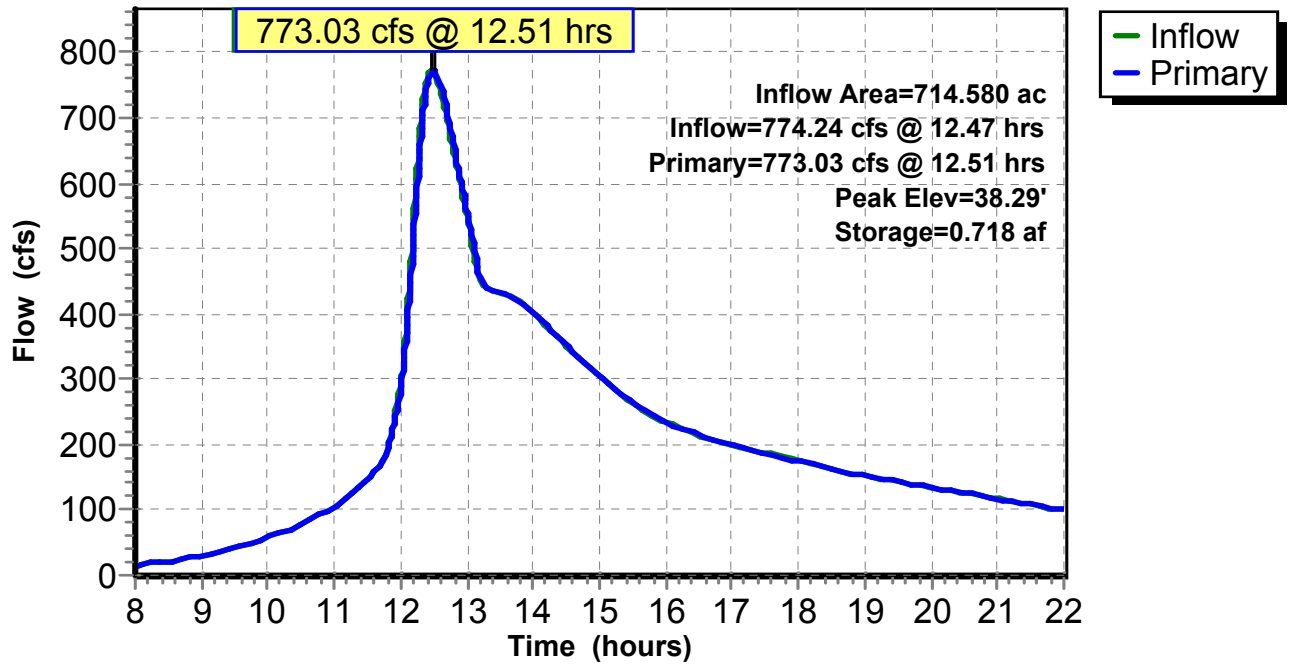
Primary OutFlow Max=773.02 cfs @ 12.51 hrs HW=38.29' (Free Discharge)

1=Culvert (Barrel Controls 773.02 cfs @ 8.93 fps)

2=WEIR BOWMAN (Controls 0.00 cfs)

Pond 8P: BOWMAN FIELDS

Hydrograph



Summary for Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD INCREASE BERM

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 3.85" for 100_OLD_7.2 event
 Inflow = 523.13 cfs @ 12.76 hrs, Volume= 186.819 af
 Outflow = 520.85 cfs @ 12.81 hrs, Volume= 186.803 af, Atten= 0%, Lag= 3.092 min
 Primary = 520.85 cfs @ 12.81 hrs, Volume= 186.803 af
 Secondary = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 65.22' @ 12.81 hrs Surf.Area= 7,325 sf Storage= 15,865 cf

Plug-Flow detention time= 0.195 min calculated for 186.669 af (100% of inflow)
 Center-of-Mass det. time= 0.160 min (916.060 - 915.900)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	63,134 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686
70.00	10,112	40,448	63,134

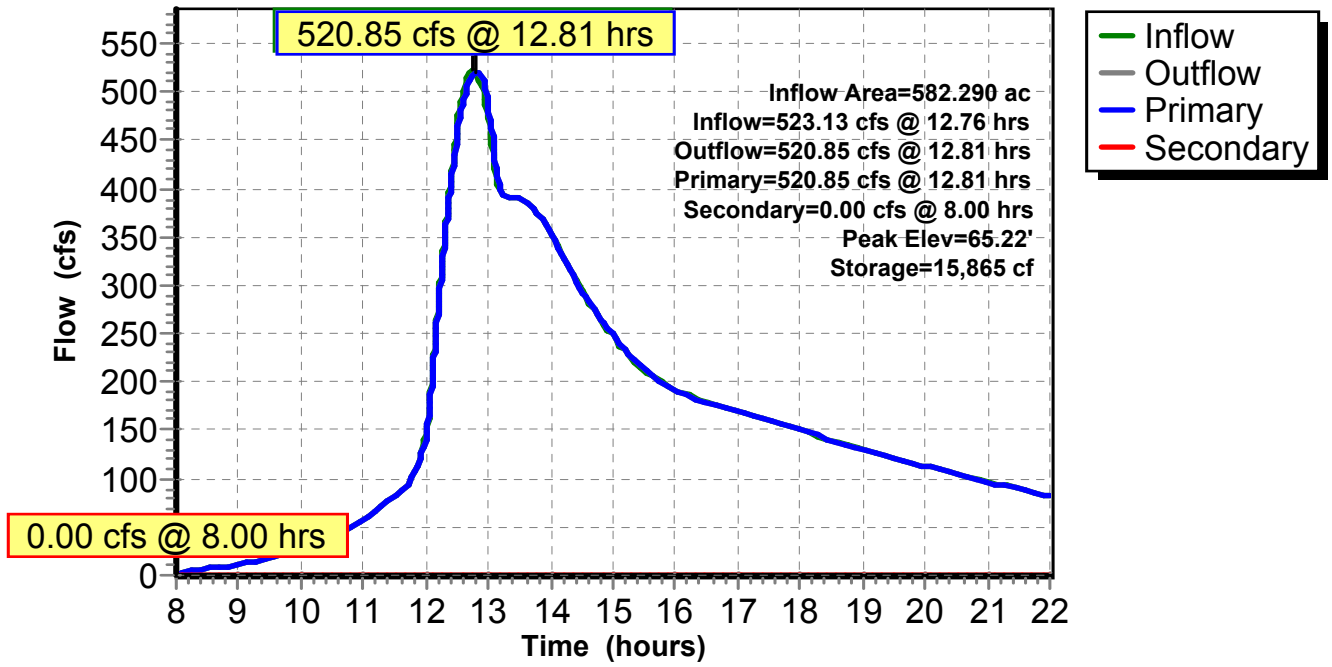
Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert X 2.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 55.13' / 37.90' S= 0.0206 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	68.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=520.84 cfs @ 12.81 hrs HW=65.22' TW=0.00' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 520.84 cfs @ 13.26 fps)

Secondary OutFlow Max=0.00 cfs @ 8.00 hrs HW=56.00' TW=58.00' (Dynamic Tailwater)
 ↑2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD INCREASE BERM

Hydrograph



Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min
 Primary = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 45.00' @ 8.00 hrs Surf.Area= 100 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	45.00'	171,628 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	100	0	0
48.00	100	300	300
51.00	6,000	9,150	9,450
52.00	15,452	10,726	20,176
54.00	38,000	53,452	73,628
56.00	60,000	98,000	171,628

Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	45.00'	24.0" Round Culvert L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 45.00' / 44.00' S= 0.0100 '/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

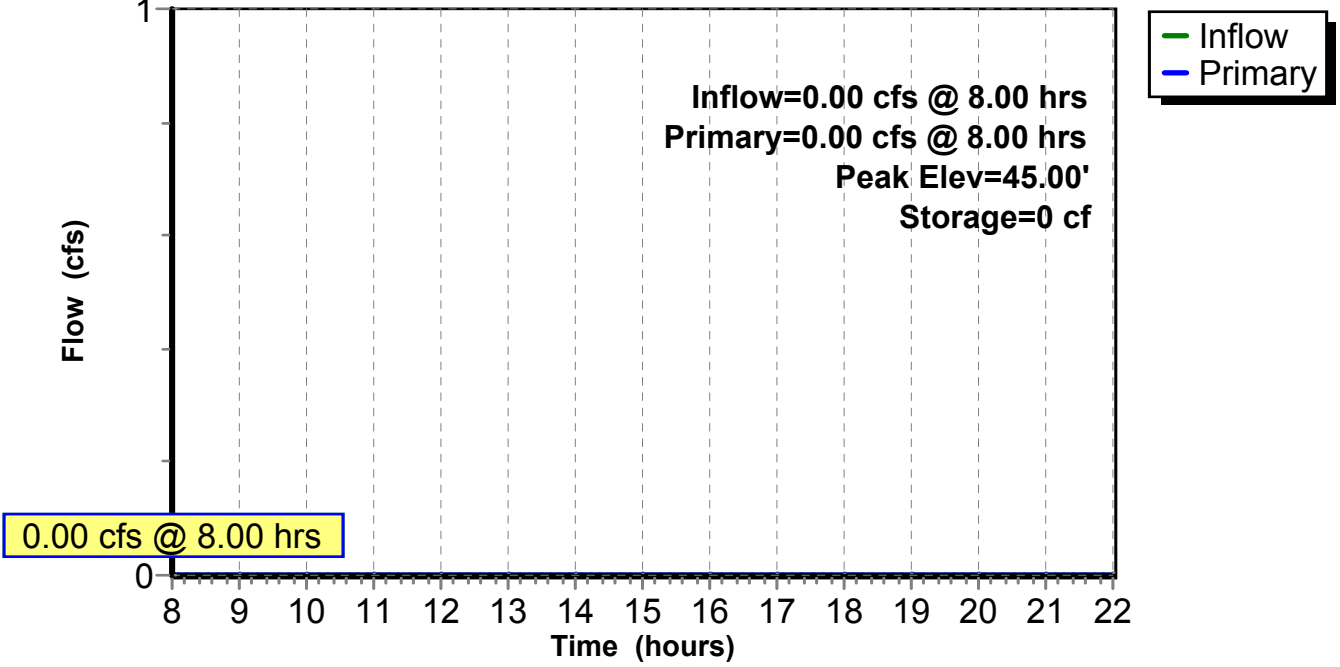
Primary OutFlow Max=0.00 cfs @ 8.00 hrs HW=45.00' TW=0.00' (Dynamic Tailwater)

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

2=Culvert (Controls 0.00 cfs)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



Summary for Pond 24P: NEW DETENTION NEAR BALL FIELD FOR 1-48 INCH PIPE OVERFLOWS

Inflow = 148.64 cfs @ 12.54 hrs, Volume= 24.040 af
 Outflow = 58.61 cfs @ 14.17 hrs, Volume= 17.459 af, Atten= 61%, Lag= 97.892 min
 Primary = 58.61 cfs @ 14.17 hrs, Volume= 17.459 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 43.91' @ 14.17 hrs Surf.Area= 99,289 sf Storage= 550,556 cf

Plug-Flow detention time= 166.506 min calculated for 17.446 af (73% of inflow)
 Center-of-Mass det. time= 124.347 min (946.090 - 821.743)

Volume	Invert	Avail.Storage	Storage Description
#1	36.00'	560,000 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.00	40,000	0	0
44.00	100,000	560,000	560,000

Device	Routing	Invert	Outlet Devices
#1	Primary	36.00'	12.0" Round Culvert L= 18.0' Ke= 0.500 Inlet / Outlet Invert= 36.00' / 35.50' S= 0.0278 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Primary	42.00'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

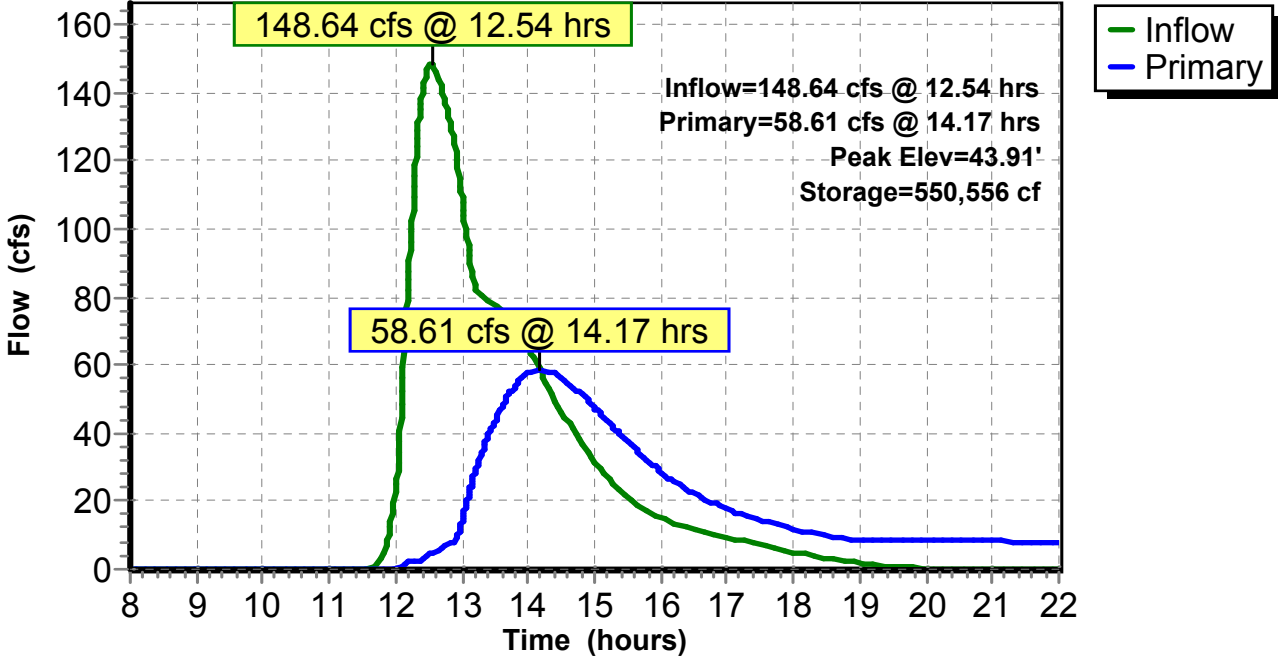
Primary OutFlow Max=58.61 cfs @ 14.17 hrs HW=43.91' TW=35.64' (Dynamic Tailwater)

1=Culvert (Inlet Controls 10.29 cfs @ 13.10 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 48.32 cfs @ 4.51 fps)

Pond 24P: NEW DETENTION NEAR BALL FIELD FOR 1-48 INCH PIPE OVERFLOWS

Hydrograph



Summary for Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 4.02" for 100_OLD_7.2 event
 Inflow = 703.22 cfs @ 12.54 hrs, Volume= 219.553 af
 Outflow = 703.22 cfs @ 12.54 hrs, Volume= 219.553 af, Atten= 0%, Lag= 0.000 min
 Primary = 554.58 cfs @ 12.54 hrs, Volume= 195.513 af
 Secondary = 148.64 cfs @ 12.54 hrs, Volume= 24.040 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 49.03' @ 12.54 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48
#3	Secondary	41.00'	48.0" Round Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 41.00' / 39.75' S= 0.0156 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf

Primary OutFlow Max=554.59 cfs @ 12.54 hrs HW=49.03' TW=38.28' (Dynamic Tailwater)

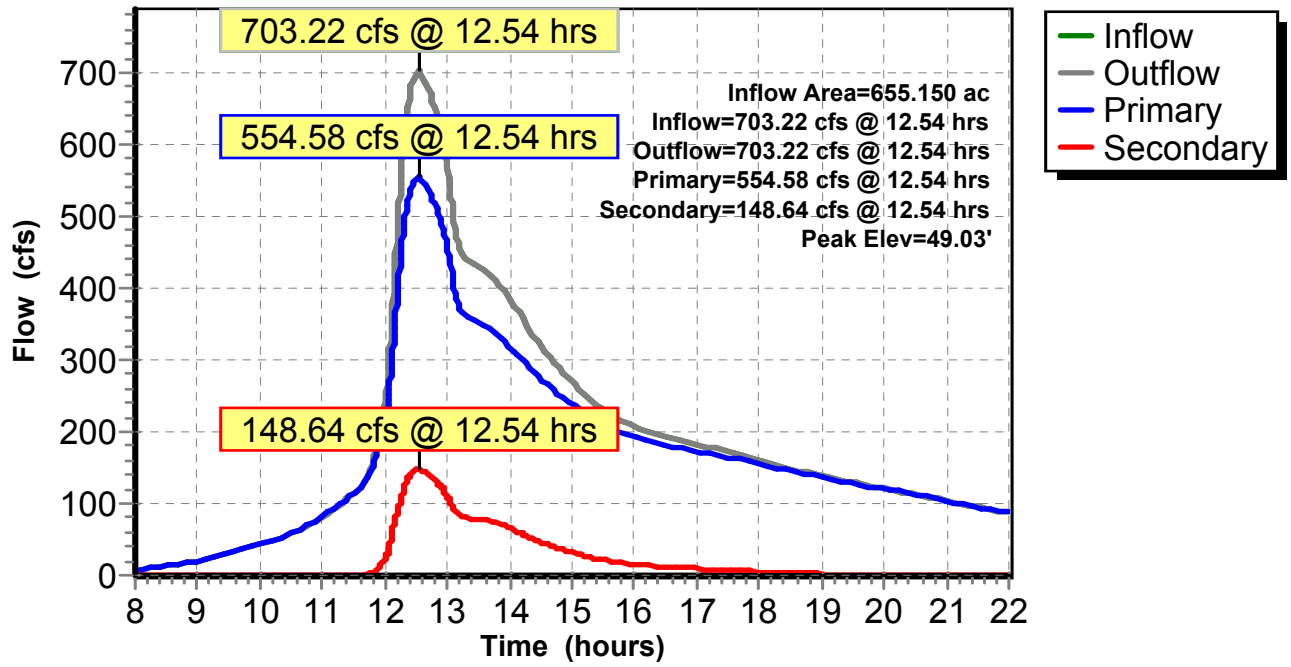
↑1=Culvert (Inlet Controls 554.59 cfs @ 14.22 fps)
 ↓2=WEIR WESTCH AVE (Controls 0.00 cfs)

Secondary OutFlow Max=148.64 cfs @ 12.54 hrs HW=49.03' TW=0.00' (Dynamic Tailwater)

↑3=Culvert (Inlet Controls 148.64 cfs @ 11.83 fps)

Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



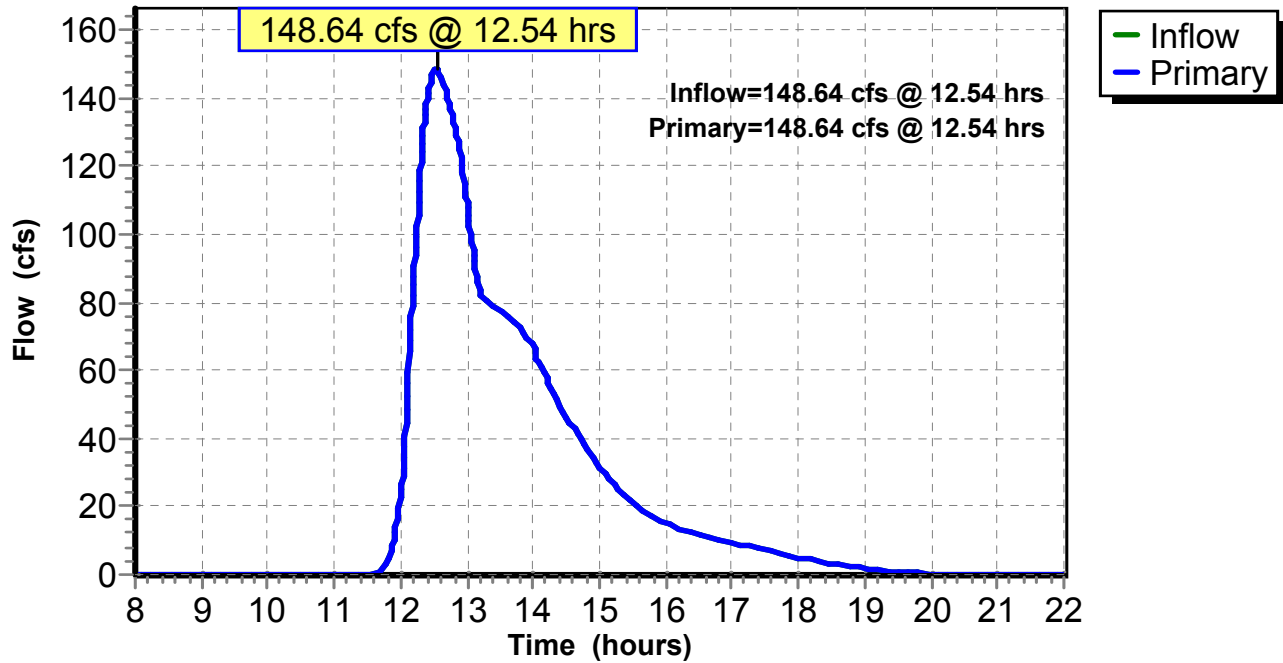
Summary for Link 26L: MID LEVEL 48

Inflow = 148.64 cfs @ 12.54 hrs, Volume= 24.040 af
Primary = 148.64 cfs @ 12.54 hrs, Volume= 24.040 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 26L: MID LEVEL 48

Hydrograph



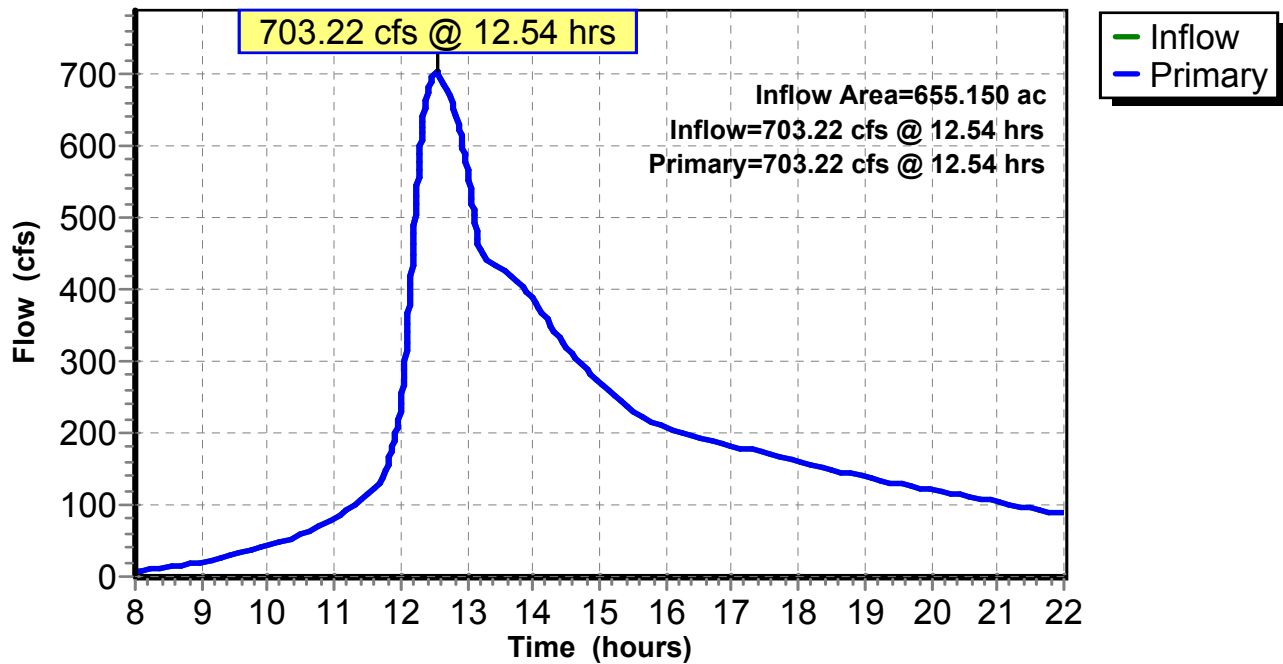
Summary for Link 33L: Join

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 4.02" for 100_OLD_7.2 event
Inflow = 703.22 cfs @ 12.54 hrs, Volume= 219.553 af
Primary = 703.22 cfs @ 12.54 hrs, Volume= 219.553 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 33L: Join

Hydrograph



Summary for Subcatchment A: WS A

Runoff = 285.42 cfs @ 12.42 hrs, Volume= 37.486 af, Depth> 7.57"

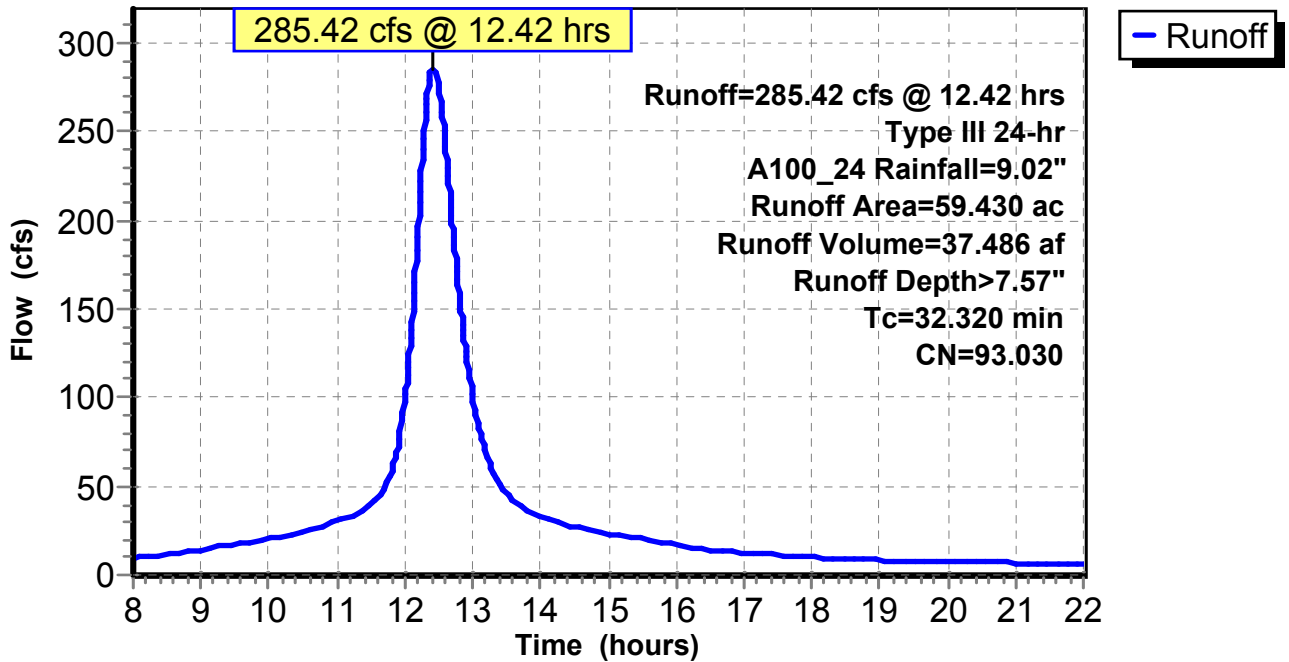
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



Summary for Subcatchment B: WS B

Runoff = 278.22 cfs @ 12.37 hrs, Volume= 33.842 af, Depth> 7.06"

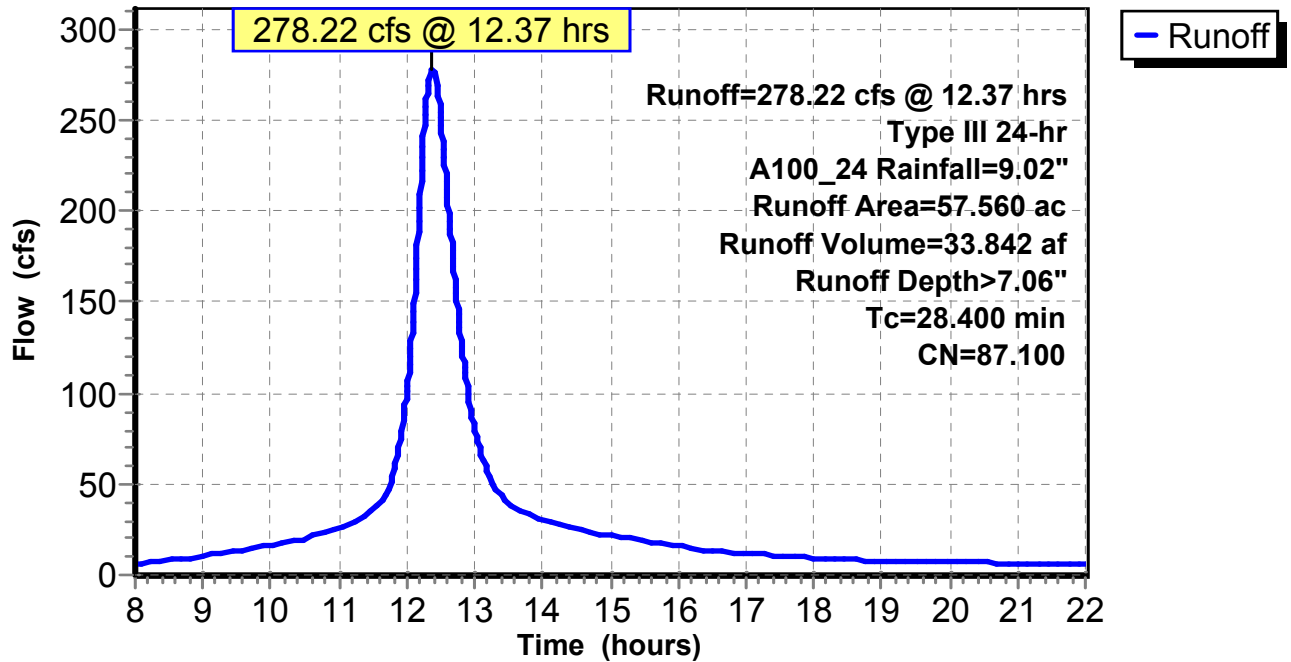
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



Summary for Subcatchment BH: HOTEL

Runoff = 70.94 cfs @ 12.42 hrs, Volume= 8.879 af, Depth> 6.96"

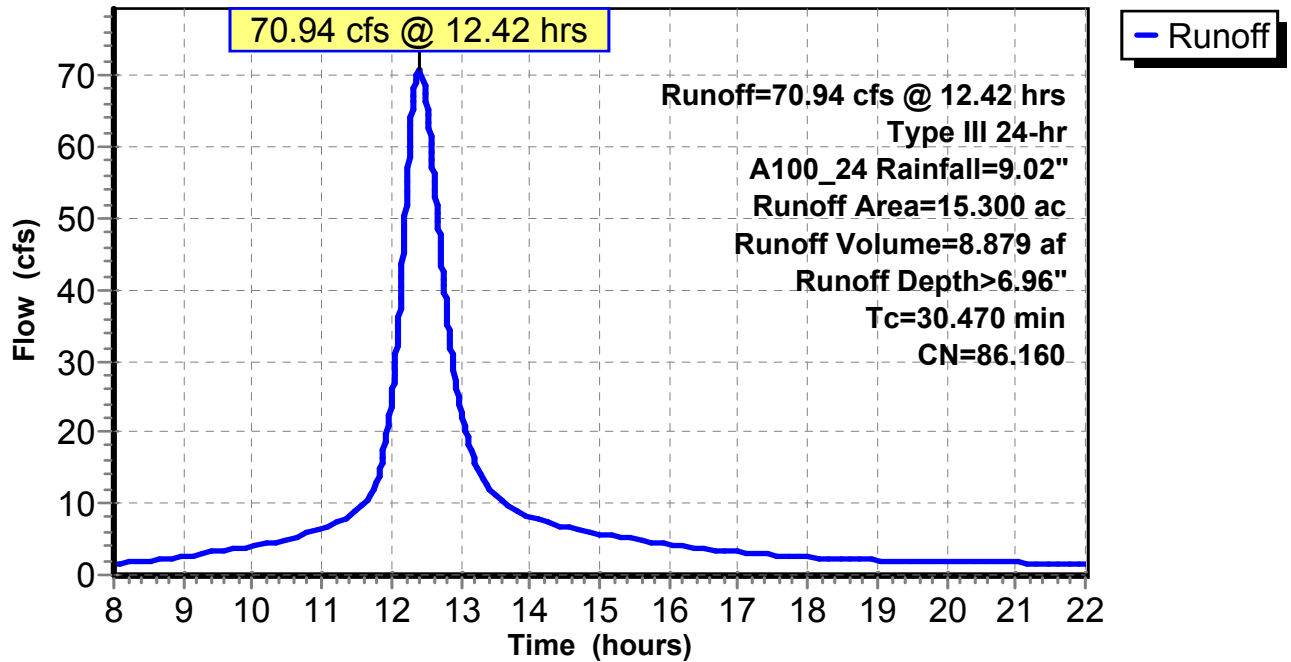
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 37.16 cfs @ 12.85 hrs, Volume= 1.719 af
 Outflow = 35.91 cfs @ 12.90 hrs, Volume= 1.719 af, Atten= 3%, Lag= 2.957 min

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Max. Velocity= 4.27 fps, Min. Travel Time= 3.468 min
 Avg. Velocity = 1.28 fps, Avg. Travel Time= 11.521 min

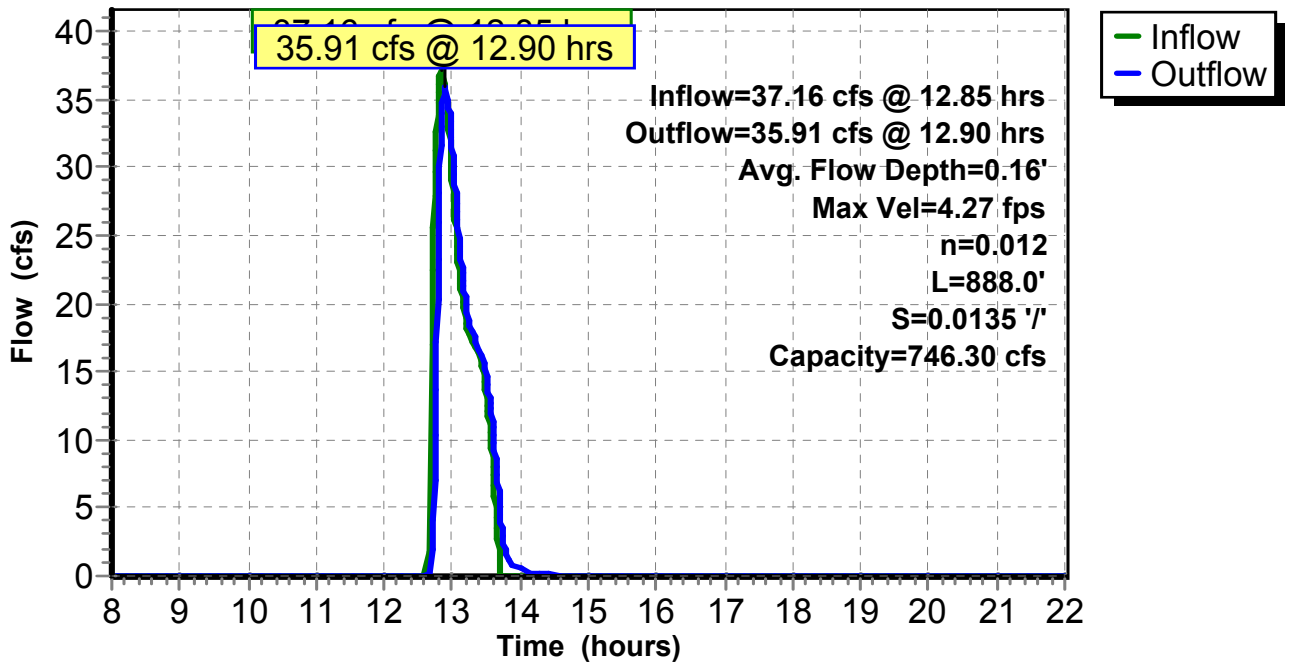
Peak Storage= 7,472 cf @ 12.90 hrs
 Average Depth at Peak Storage= 0.16'
 Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
 Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
 Length= 888.0' Slope= 0.0135 ' '
 Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 5.47" for A100_24 event
 Inflow = 954.99 cfs @ 12.46 hrs, Volume= 325.988 af
 Outflow = 953.58 cfs @ 12.47 hrs, Volume= 325.980 af, Atten= 0%, Lag= 0.813 min
 Primary = 953.58 cfs @ 12.47 hrs, Volume= 325.980 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 39.21' @ 12.47 hrs Surf.Area= 0.585 ac Storage= 1.148 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.360 min (887.642 - 887.282)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

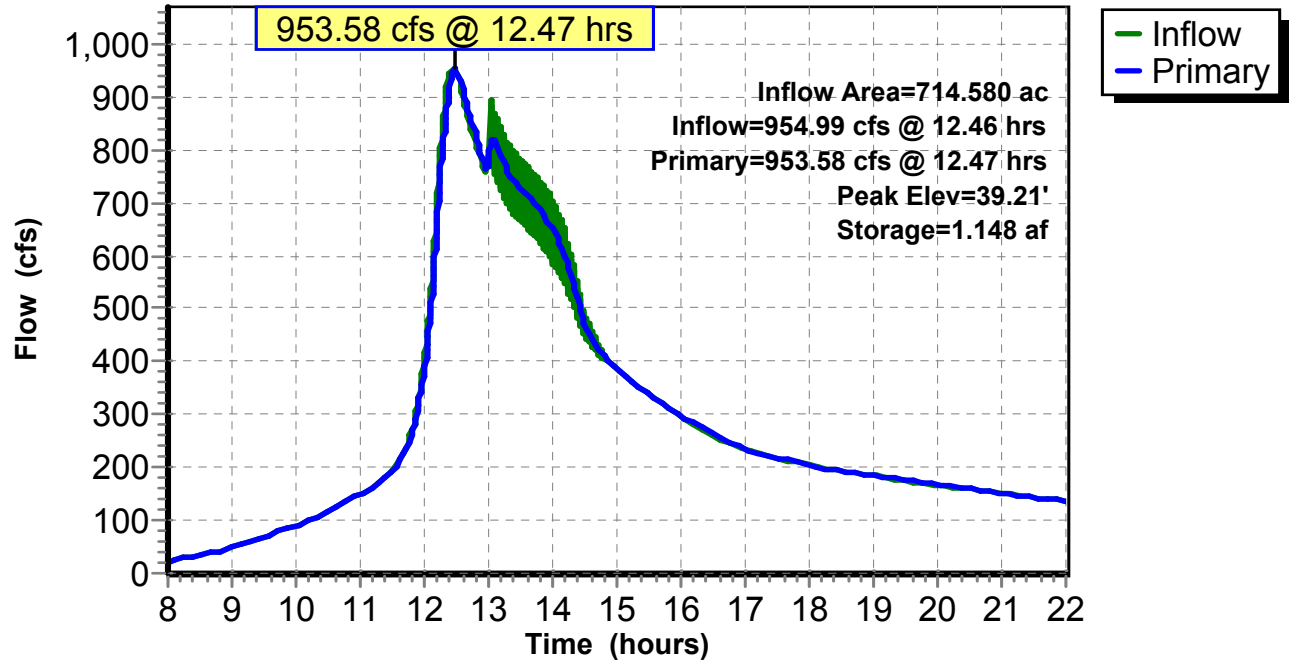
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=953.50 cfs @ 12.47 hrs HW=39.21' (Free Discharge)

- 1=Culvert (Barrel Controls 927.06 cfs @ 9.47 fps)
- 2=WEIR BOWMAN (Weir Controls 26.44 cfs @ 1.01 fps)

Pond 8P: BOWMAN FIELDS

Hydrograph



Summary for Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD INCREASE BERM

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 5.22" for A100_24 event
 Inflow = 652.20 cfs @ 12.84 hrs, Volume= 253.462 af
 Outflow = 652.14 cfs @ 12.85 hrs, Volume= 253.439 af, Atten= 0%, Lag= 0.578 min
 Primary = 614.97 cfs @ 12.85 hrs, Volume= 251.720 af
 Secondary = 37.16 cfs @ 12.85 hrs, Volume= 1.719 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 68.21' @ 12.85 hrs Surf.Area= 10,112 sf Storage= 45,014 cf

Plug-Flow detention time= 0.484 min calculated for 253.258 af (100% of inflow)
 Center-of-Mass det. time= 0.447 min (906.137 - 905.690)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	63,134 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686
70.00	10,112	40,448	63,134

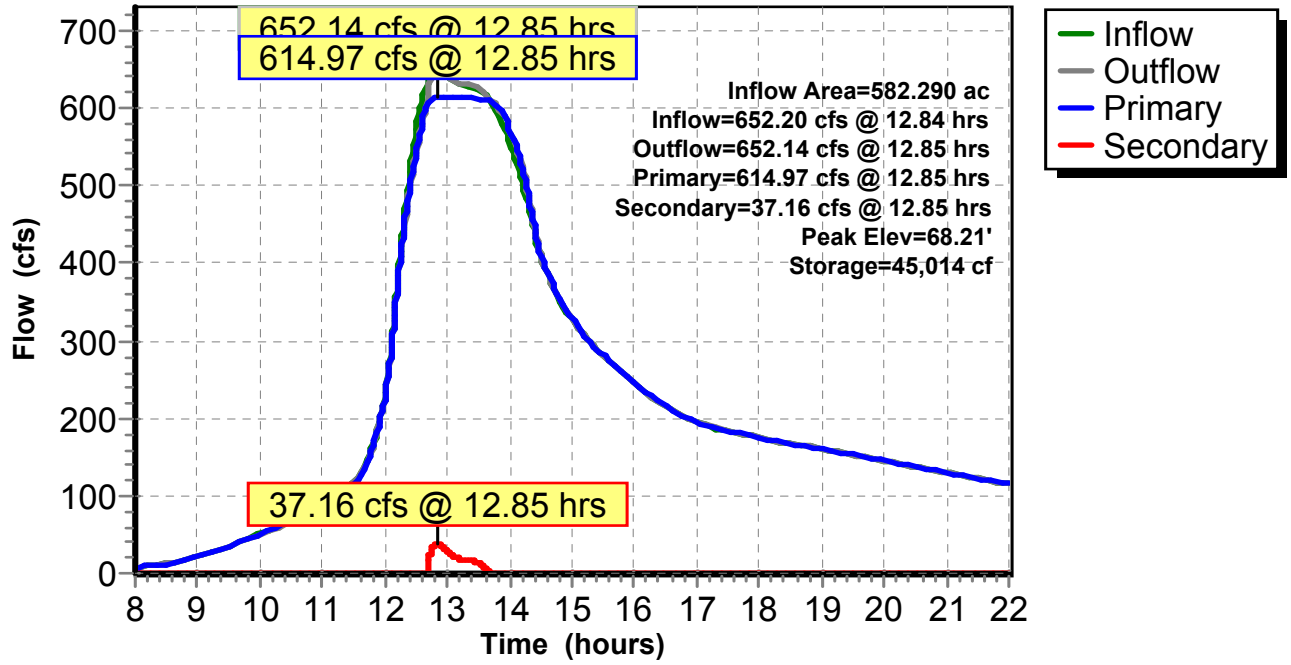
Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert X 2.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 55.13' / 37.90' S= 0.0206 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	68.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=614.97 cfs @ 12.85 hrs HW=68.21' TW=0.00' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 614.97 cfs @ 15.66 fps)

Secondary OutFlow Max=37.15 cfs @ 12.85 hrs HW=68.21' TW=58.16' (Dynamic Tailwater)
 ↑2=Asymmetrical Weir (Weir Controls 37.15 cfs @ 1.44 fps)

Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD INCREASE BERM

Hydrograph



Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 35.91 cfs @ 12.90 hrs, Volume= 1.719 af
 Outflow = 30.34 cfs @ 13.02 hrs, Volume= 1.719 af, Atten= 16%, Lag= 7.178 min
 Primary = 30.34 cfs @ 13.02 hrs, Volume= 1.719 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 50.02' @ 13.02 hrs Surf.Area= 4,080 sf Storage= 4,529 cf

Plug-Flow detention time= 1.252 min calculated for 1.719 af (100% of inflow)
 Center-of-Mass det. time= 1.150 min (790.241 - 789.091)

Volume	Invert	Avail.Storage	Storage Description
#1	45.00'	171,628 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	100	0	0
48.00	100	300	300
51.00	6,000	9,150	9,450
52.00	15,452	10,726	20,176
54.00	38,000	53,452	73,628
56.00	60,000	98,000	171,628

Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	45.00'	24.0" Round Culvert L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 45.00' / 44.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

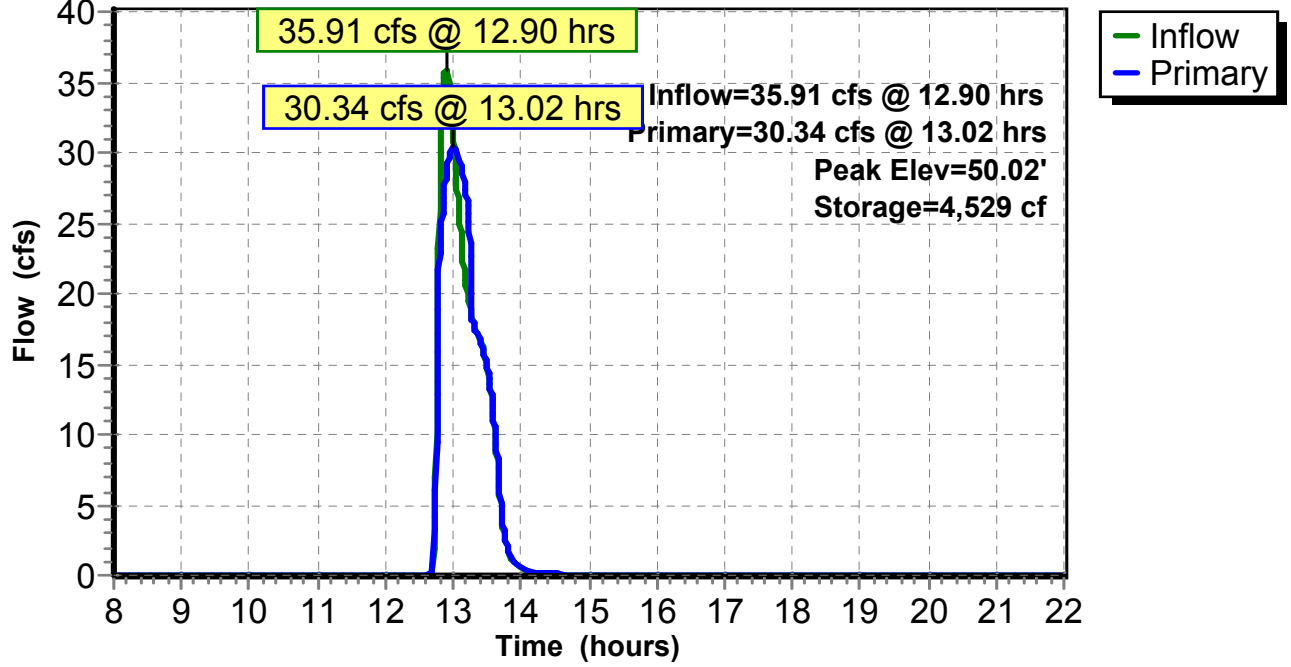
Primary OutFlow Max=30.34 cfs @ 13.02 hrs HW=50.02' TW=0.00' (Dynamic Tailwater)

↑ **1=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

└ **2=Culvert** (Inlet Controls 30.34 cfs @ 9.66 fps)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



Summary for Pond 24P: NEW DETENTION NEAR BALL FIELD FOR 1-48 INCH PIPE OVERFLOWS

Inflow = 192.06 cfs @ 12.47 hrs, Volume= 40.669 af
 Outflow = 216.17 cfs @ 13.01 hrs, Volume= 33.011 af, Atten= 0%, Lag= 32.136 min
 Primary = 216.17 cfs @ 13.01 hrs, Volume= 33.011 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 47.46' @ 13.01 hrs Surf.Area= 100,000 sf Storage= 560,000 cf

Plug-Flow detention time= 110.297 min calculated for 32.988 af (81% of inflow)
 Center-of-Mass det. time= 71.792 min (907.146 - 835.354)

Volume	Invert	Avail.Storage	Storage Description
#1	36.00'	560,000 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.00	40,000	0	0
44.00	100,000	560,000	560,000

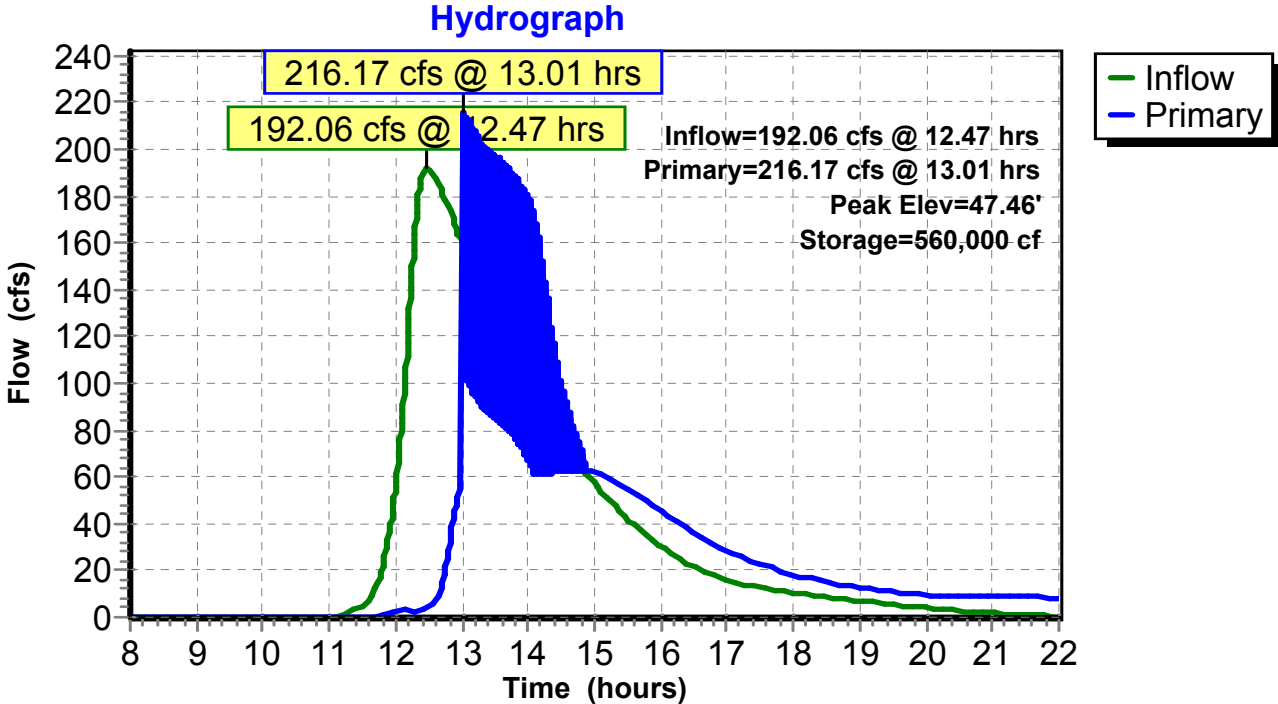
Device	Routing	Invert	Outlet Devices
#1	Primary	36.00'	12.0" Round Culvert L= 18.0' Ke= 0.500 Inlet / Outlet Invert= 36.00' / 35.50' S= 0.0278 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Primary	42.00'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=216.08 cfs @ 13.01 hrs HW=47.46' TW=38.31' (Dynamic Tailwater)

1=Culvert (Inlet Controls 11.44 cfs @ 14.56 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 204.64 cfs @ 7.64 fps)

Pond 24P: NEW DETENTION NEAR BALL FIELD FOR 1-48 INCH PIPE OVERFLOWS



Summary for Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 5.42" for A100_24 event
 Inflow = 859.25 cfs @ 12.47 hrs, Volume= 296.160 af
 Outflow = 859.25 cfs @ 12.47 hrs, Volume= 296.160 af, Atten= 0%, Lag= 0.000 min
 Primary = 667.19 cfs @ 12.47 hrs, Volume= 255.490 af
 Secondary = 192.06 cfs @ 12.47 hrs, Volume= 40.669 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 53.08' @ 12.47 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48
#3	Secondary	41.00'	48.0" Round Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 41.00' / 39.75' S= 0.0156 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf

Primary OutFlow Max=667.13 cfs @ 12.47 hrs HW=53.07' TW=39.21' (Dynamic Tailwater)

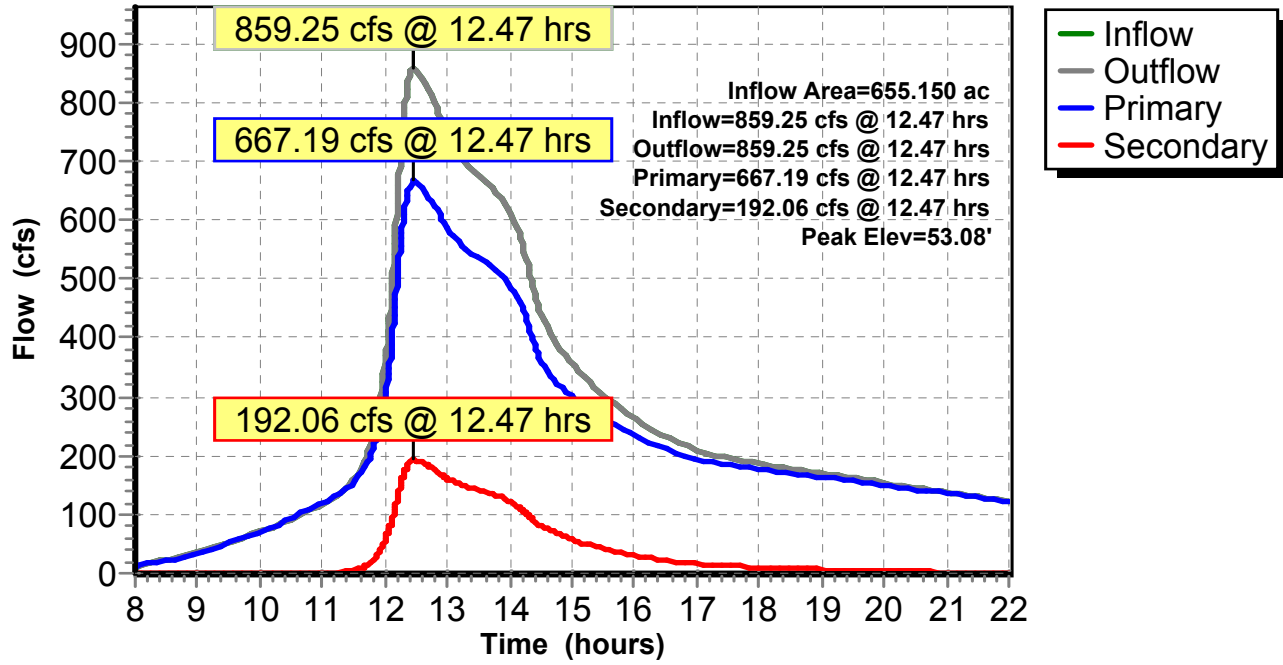
↑1=Culvert (Inlet Controls 667.13 cfs @ 17.10 fps)
 ↓2=WEIR WESTCH AVE (Controls 0.00 cfs)

Secondary OutFlow Max=192.04 cfs @ 12.47 hrs HW=53.07' TW=0.00' (Dynamic Tailwater)

↑3=Culvert (Inlet Controls 192.04 cfs @ 15.28 fps)

Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



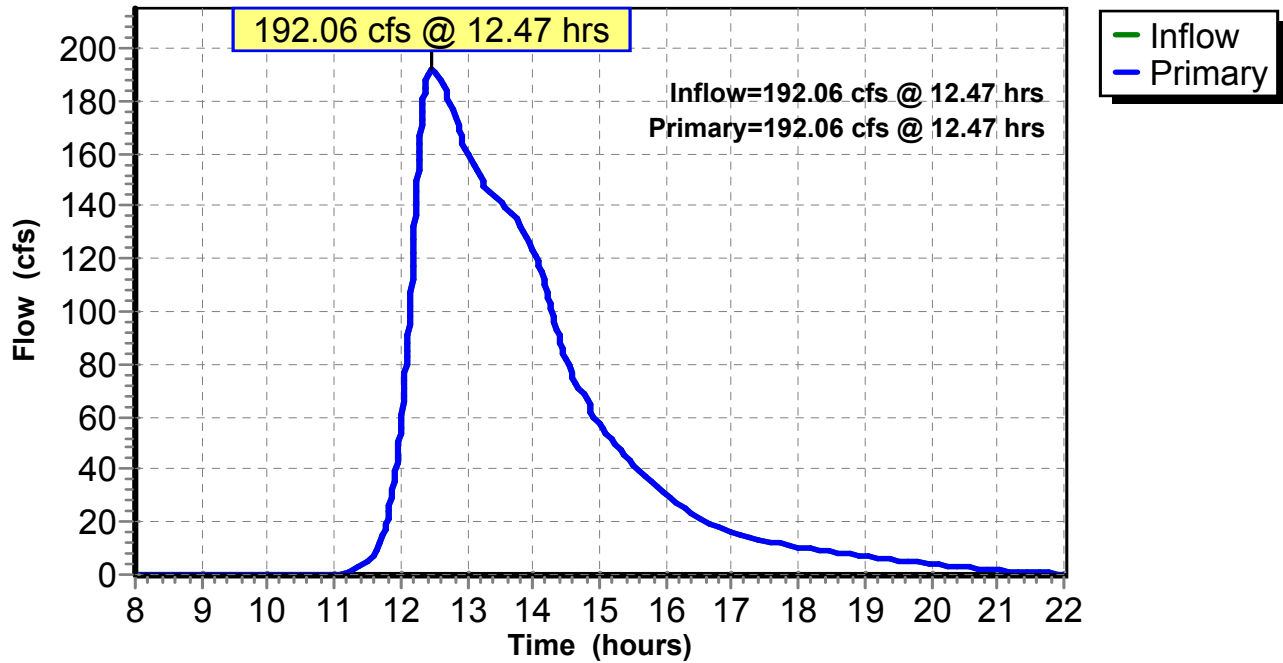
Summary for Link 26L: MID LEVEL 48

Inflow = 192.06 cfs @ 12.47 hrs, Volume= 40.669 af
Primary = 192.06 cfs @ 12.47 hrs, Volume= 40.669 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 26L: MID LEVEL 48

Hydrograph



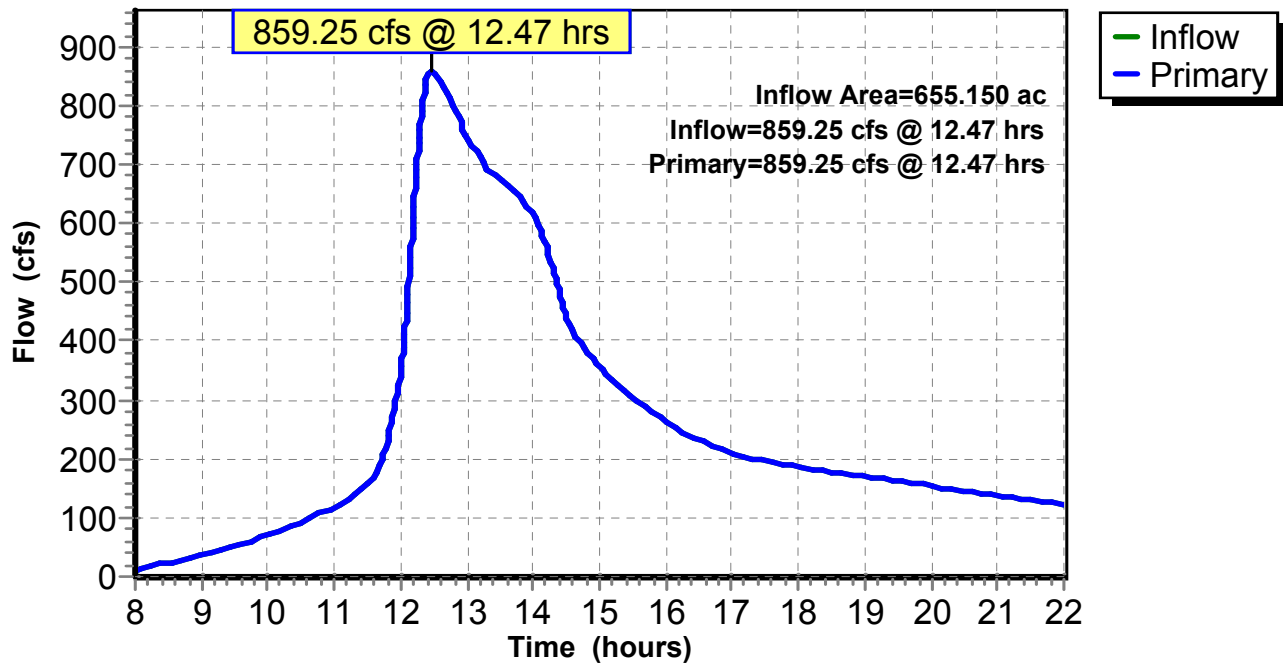
Summary for Link 33L: Join

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 5.42" for A100_24 event
Inflow = 859.25 cfs @ 12.47 hrs, Volume= 296.160 af
Primary = 859.25 cfs @ 12.47 hrs, Volume= 296.160 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 33L: Join

Hydrograph



Summary for Subcatchment A: WS A

Runoff = 257.02 cfs @ 11.17 hrs, Volume= 31.896 af, Depth> 6.44"

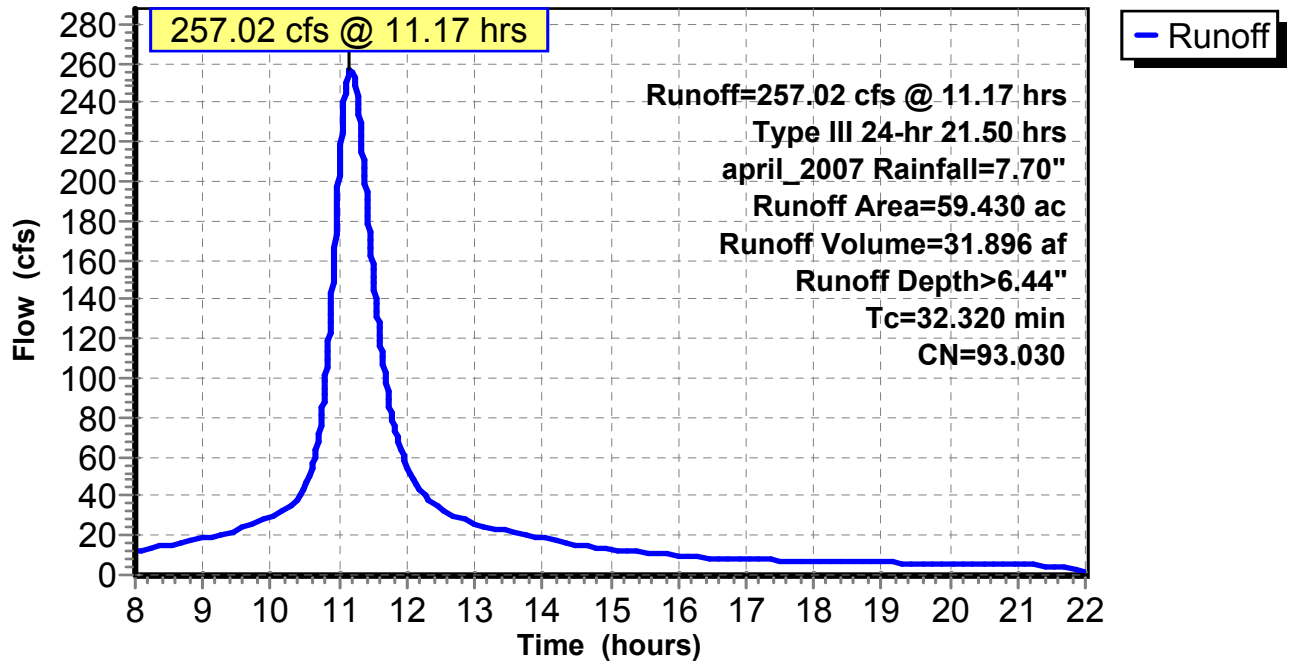
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



Summary for Subcatchment B: WS B

Runoff = 247.26 cfs @ 11.14 hrs, Volume= 28.546 af, Depth> 5.95"

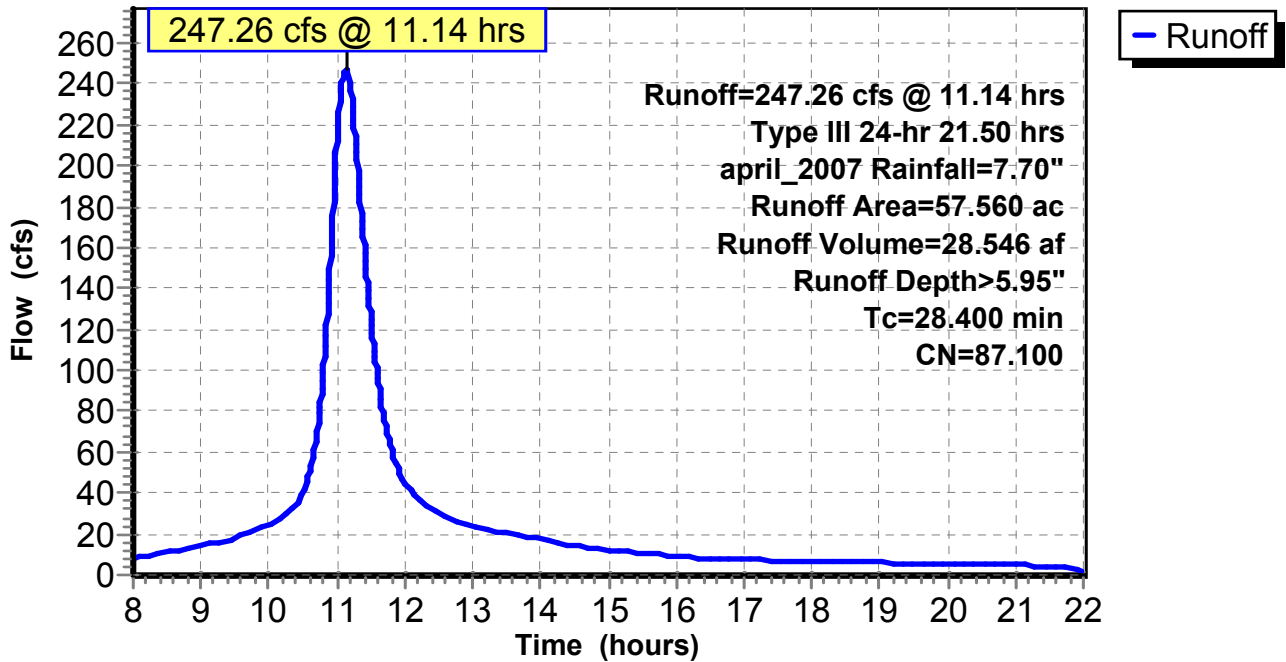
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



Summary for Subcatchment BH: HOTEL

Runoff = 62.73 cfs @ 11.14 hrs, Volume= 7.482 af, Depth> 5.87"

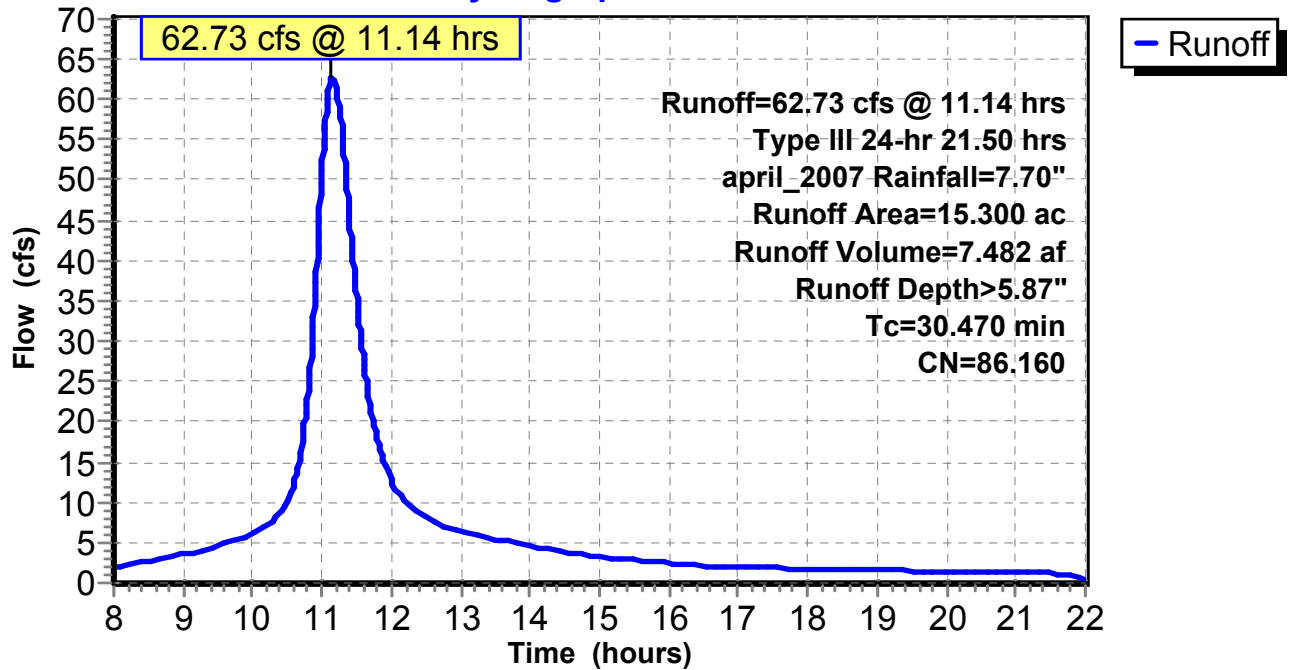
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.000 min
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.000 min

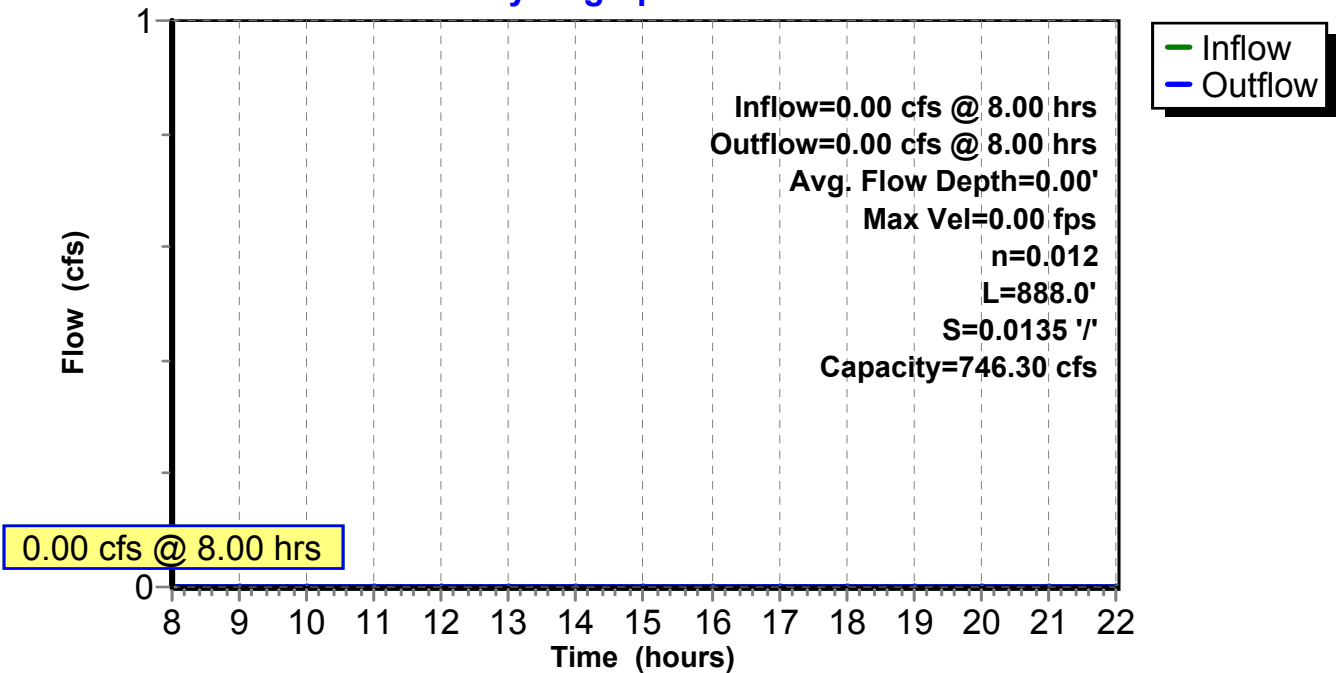
Peak Storage= 0 cf @ 8.00 hrs
 Average Depth at Peak Storage= 0.00'
 Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
 Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
 Length= 888.0' Slope= 0.0135 ' '
 Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 4.66" for april_2007 event
 Inflow = 862.74 cfs @ 11.21 hrs, Volume= 277.448 af
 Outflow = 858.66 cfs @ 11.25 hrs, Volume= 277.443 af, Atten= 0%, Lag= 2.204 min
 Primary = 858.66 cfs @ 11.25 hrs, Volume= 277.443 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 38.81' @ 11.25 hrs Surf.Area= 0.480 ac Storage= 0.933 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.273 min (840.792 - 840.519)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

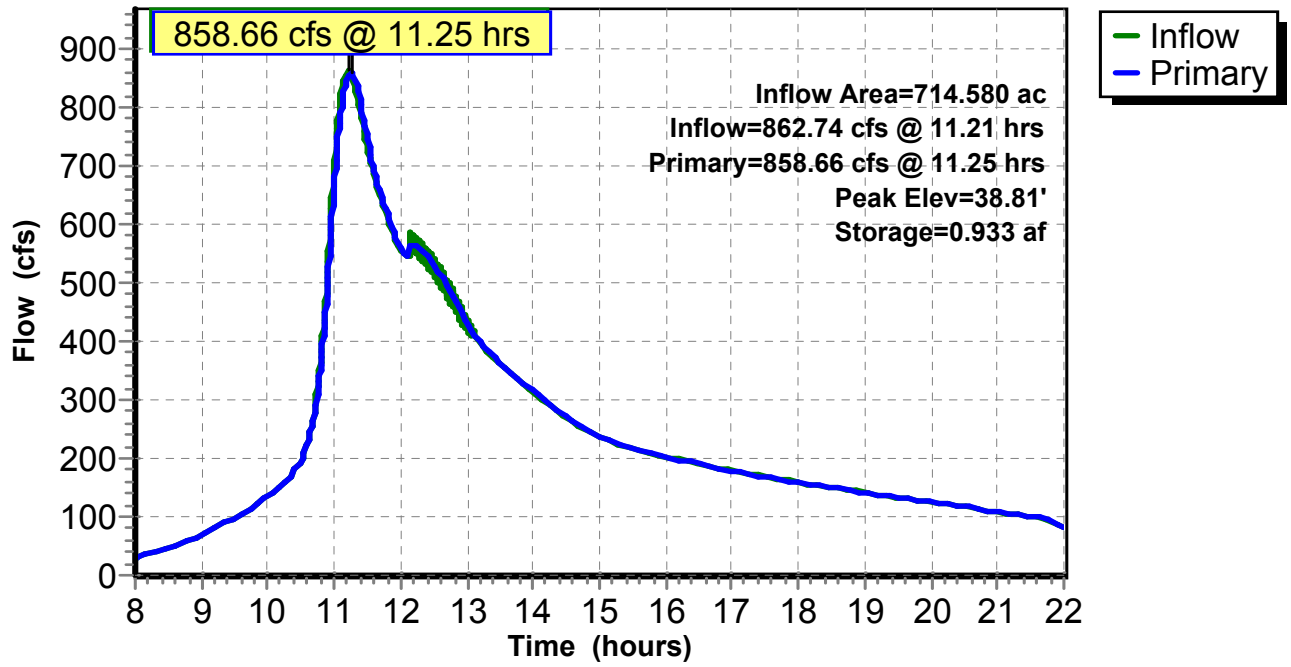
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=858.62 cfs @ 11.25 hrs HW=38.81' (Free Discharge)

- 1=Culvert (Barrel Controls 858.62 cfs @ 9.24 fps)
- 2=WEIR BOWMAN (Controls 0.00 cfs)

Pond 8P: BOWMAN FIELDS

Hydrograph



Summary for Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD INCREASE BERM

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 4.44" for april_2007 event
 Inflow = 575.83 cfs @ 11.52 hrs, Volume= 215.621 af
 Outflow = 570.39 cfs @ 11.61 hrs, Volume= 215.607 af, Atten= 1%, Lag= 4.945 min
 Primary = 570.39 cfs @ 11.61 hrs, Volume= 215.607 af
 Secondary = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 66.73' @ 11.61 hrs Surf.Area= 10,112 sf Storage= 30,067 cf

Plug-Flow detention time= 0.260 min calculated for 215.453 af (100% of inflow)
 Center-of-Mass det. time= 0.231 min (858.523 - 858.292)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	63,134 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686
70.00	10,112	40,448	63,134

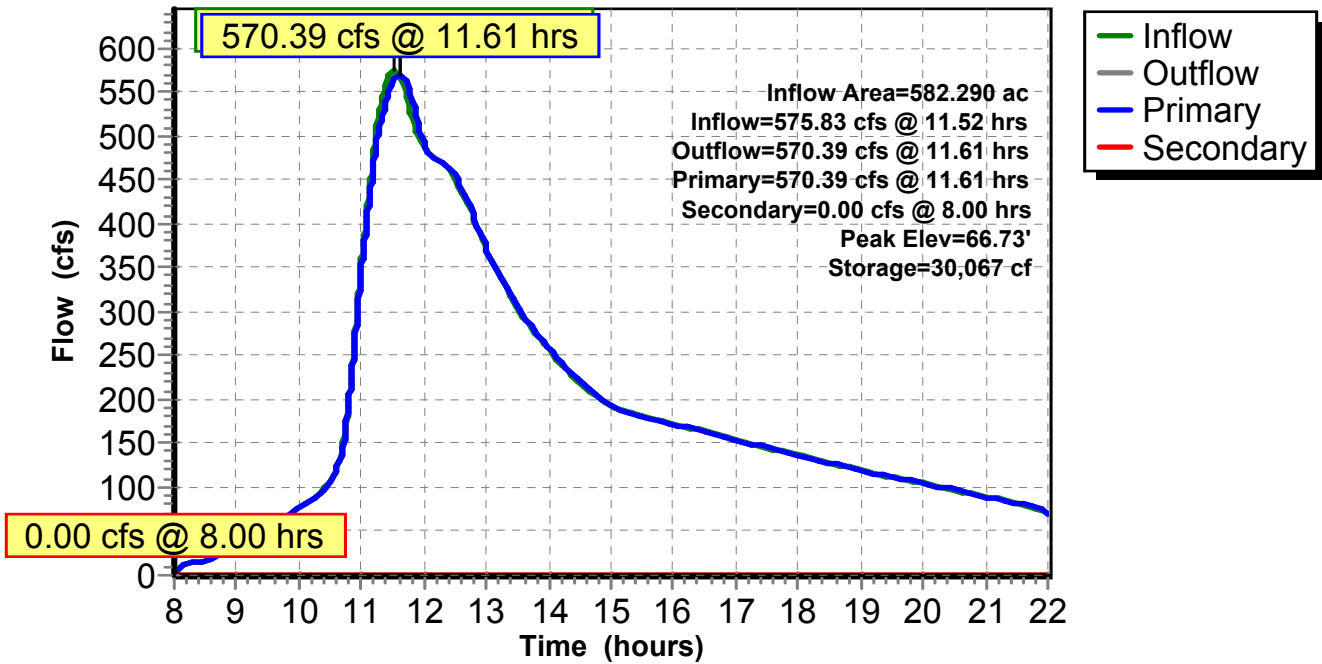
Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert X 2.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 55.13' / 37.90' S= 0.0206 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	68.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=570.37 cfs @ 11.61 hrs HW=66.73' TW=0.00' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 570.37 cfs @ 14.52 fps)

Secondary OutFlow Max=0.00 cfs @ 8.00 hrs HW=56.00' TW=58.00' (Dynamic Tailwater)
 ↑2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD INCREASE BERM

Hydrograph



Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min
 Primary = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 45.00' @ 8.00 hrs Surf.Area= 100 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	45.00'	171,628 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	100	0	0
48.00	100	300	300
51.00	6,000	9,150	9,450
52.00	15,452	10,726	20,176
54.00	38,000	53,452	73,628
56.00	60,000	98,000	171,628

Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	45.00'	24.0" Round Culvert L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 45.00' / 44.00' S= 0.0100 '/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

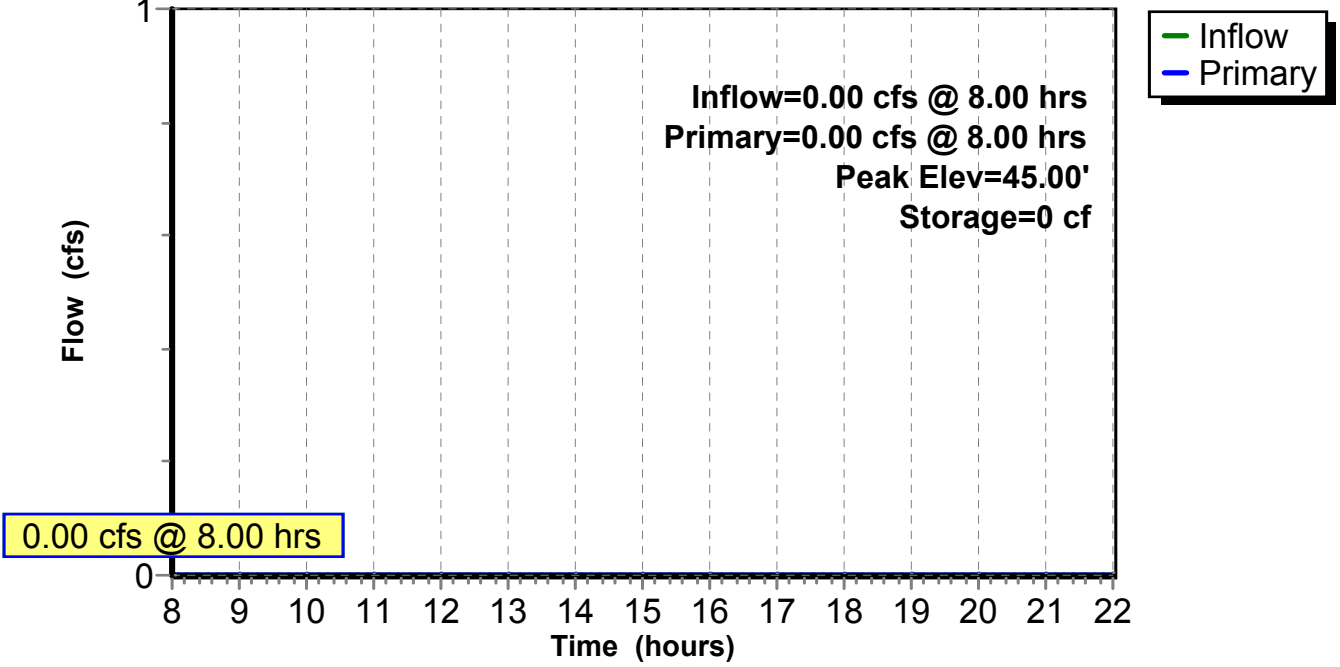
Primary OutFlow Max=0.00 cfs @ 8.00 hrs HW=45.00' TW=0.00' (Dynamic Tailwater)

↑ **1=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

└ **2=Culvert** (Controls 0.00 cfs)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



Summary for Pond 24P: NEW DETENTION NEAR BALL FIELD FOR 1-48 INCH PIPE OVERFLOWS

Inflow = 169.05 cfs @ 11.24 hrs, Volume= 29.534 af
 Outflow = 112.11 cfs @ 12.15 hrs, Volume= 23.451 af, Atten= 34%, Lag= 54.451 min
 Primary = 112.11 cfs @ 12.15 hrs, Volume= 23.451 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 45.22' @ 12.15 hrs Surf.Area= 100,000 sf Storage= 560,000 cf

Plug-Flow detention time= 153.125 min calculated for 23.451 af (79% of inflow)
 Center-of-Mass det. time= 116.715 min (867.336 - 750.622)

Volume	Invert	Avail.Storage	Storage Description
#1	36.00'	560,000 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.00	40,000	0	0
44.00	100,000	560,000	560,000

Device	Routing	Invert	Outlet Devices
#1	Primary	36.00'	12.0" Round Culvert L= 18.0' Ke= 0.500 Inlet / Outlet Invert= 36.00' / 35.50' S= 0.0278 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Primary	42.00'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

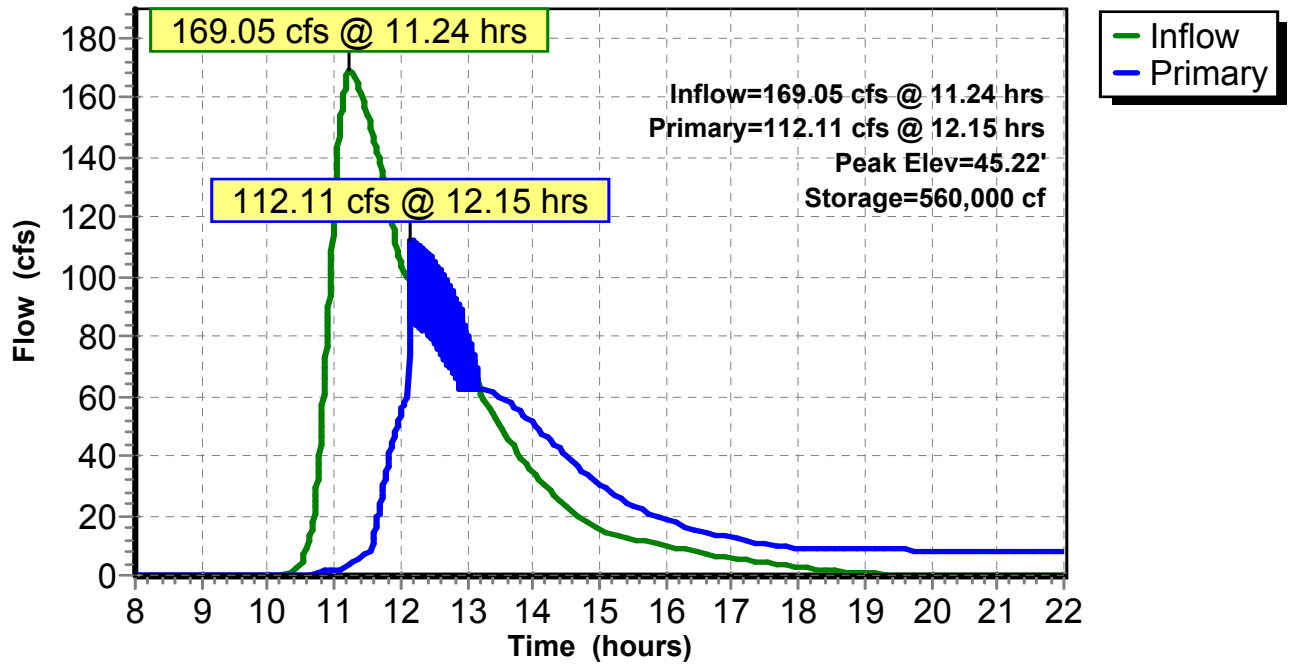
Primary OutFlow Max=112.05 cfs @ 12.15 hrs HW=45.22' TW=36.88' (Dynamic Tailwater)

1=Culvert (Inlet Controls 10.92 cfs @ 13.91 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 101.13 cfs @ 5.87 fps)

Pond 24P: NEW DETENTION NEAR BALL FIELD FOR 1-48 INCH PIPE OVERFLOWS

Hydrograph



Summary for Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 4.61" for april_2007 event
 Inflow = 775.74 cfs @ 11.24 hrs, Volume= 251.636 af
 Outflow = 775.74 cfs @ 11.24 hrs, Volume= 251.636 af, Atten= 0%, Lag= 0.000 min
 Primary = 606.68 cfs @ 11.24 hrs, Volume= 222.101 af
 Secondary = 169.05 cfs @ 11.24 hrs, Volume= 29.534 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 50.81' @ 11.24 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48
#3	Secondary	41.00'	48.0" Round Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 41.00' / 39.75' S= 0.0156 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf

Primary OutFlow Max=606.64 cfs @ 11.24 hrs HW=50.81' TW=38.81' (Dynamic Tailwater)

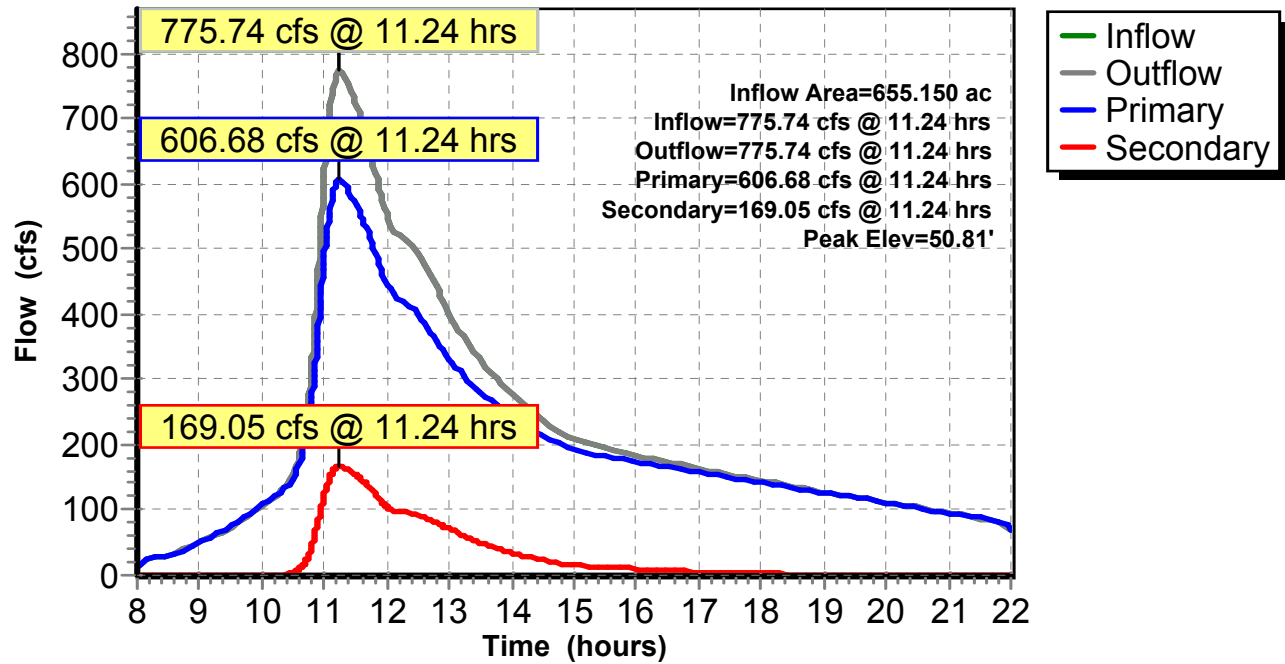
↑1=Culvert (Inlet Controls 606.64 cfs @ 15.55 fps)
 ↓2=WEIR WESTCH AVE (Controls 0.00 cfs)

Secondary OutFlow Max=169.04 cfs @ 11.24 hrs HW=50.81' TW=0.00' (Dynamic Tailwater)

↑3=Culvert (Inlet Controls 169.04 cfs @ 13.45 fps)

Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



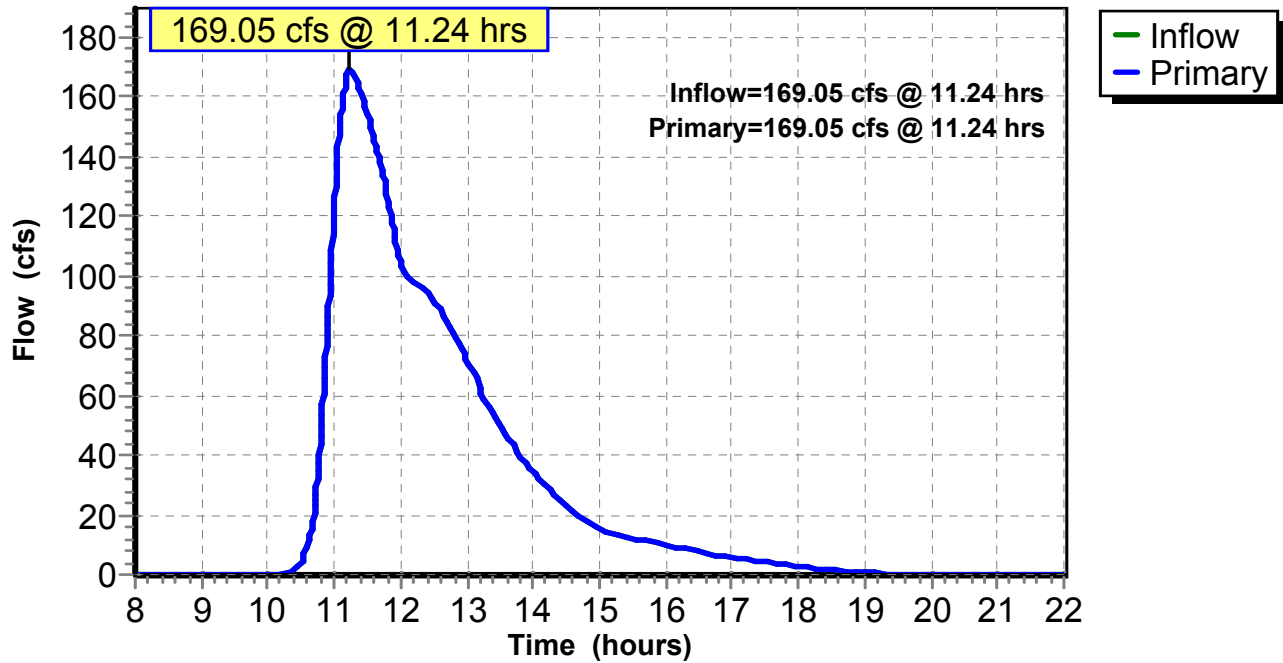
Summary for Link 26L: MID LEVEL 48

Inflow = 169.05 cfs @ 11.24 hrs, Volume= 29.534 af
Primary = 169.05 cfs @ 11.24 hrs, Volume= 29.534 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 26L: MID LEVEL 48

Hydrograph



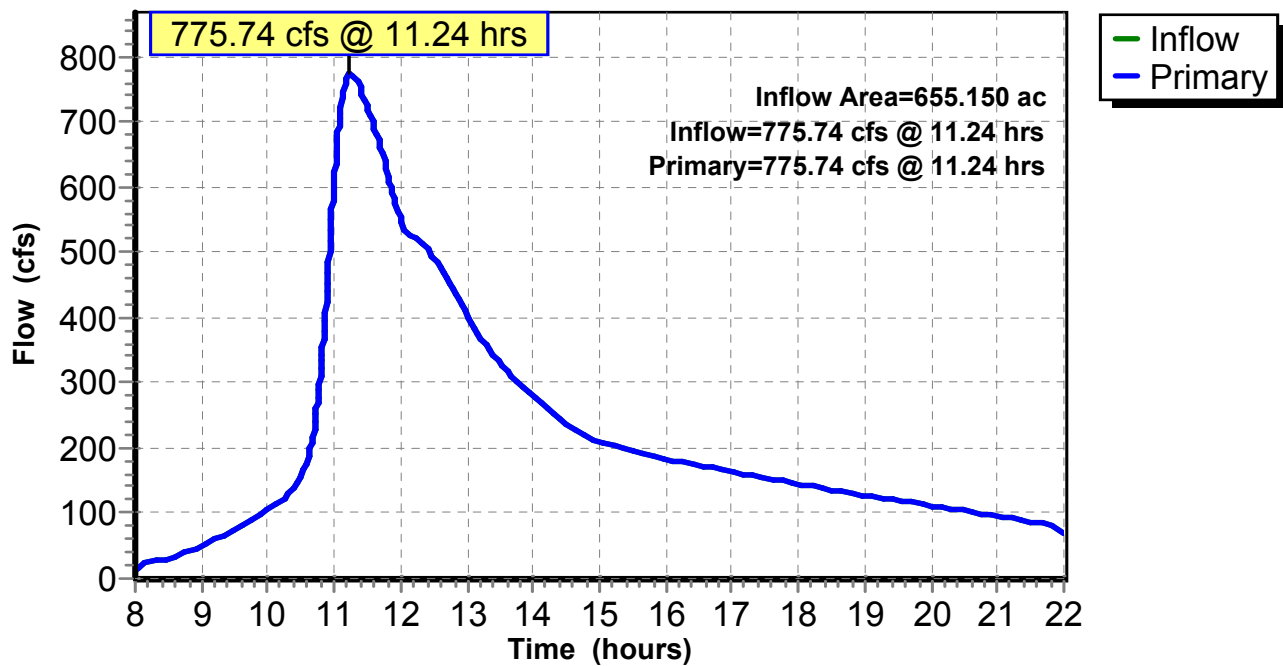
Summary for Link 33L: Join

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 4.61" for april_2007 event
Inflow = 775.74 cfs @ 11.24 hrs, Volume= 251.636 af
Primary = 775.74 cfs @ 11.24 hrs, Volume= 251.636 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 33L: Join

Hydrograph



Summary for Subcatchment A: WS A

Runoff = 155.42 cfs @ 12.43 hrs, Volume= 20.120 af, Depth> 4.06"

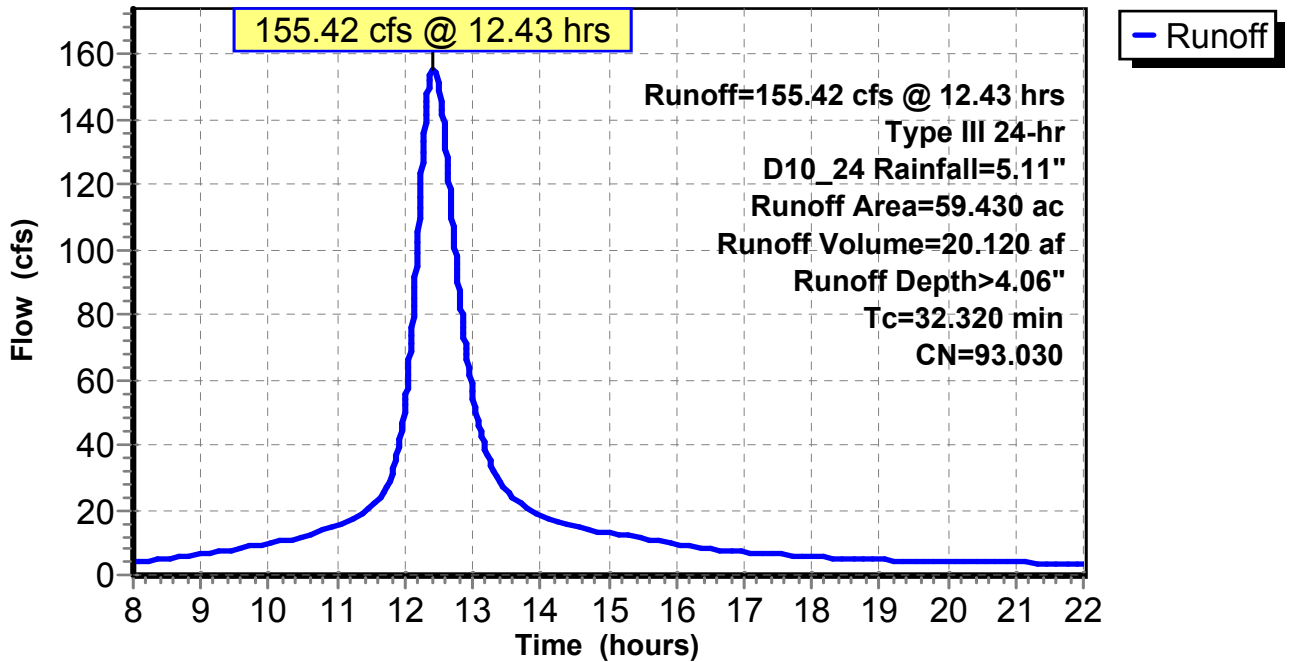
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



Summary for Subcatchment B: WS B

Runoff = 141.78 cfs @ 12.40 hrs, Volume= 16.951 af, Depth> 3.53"

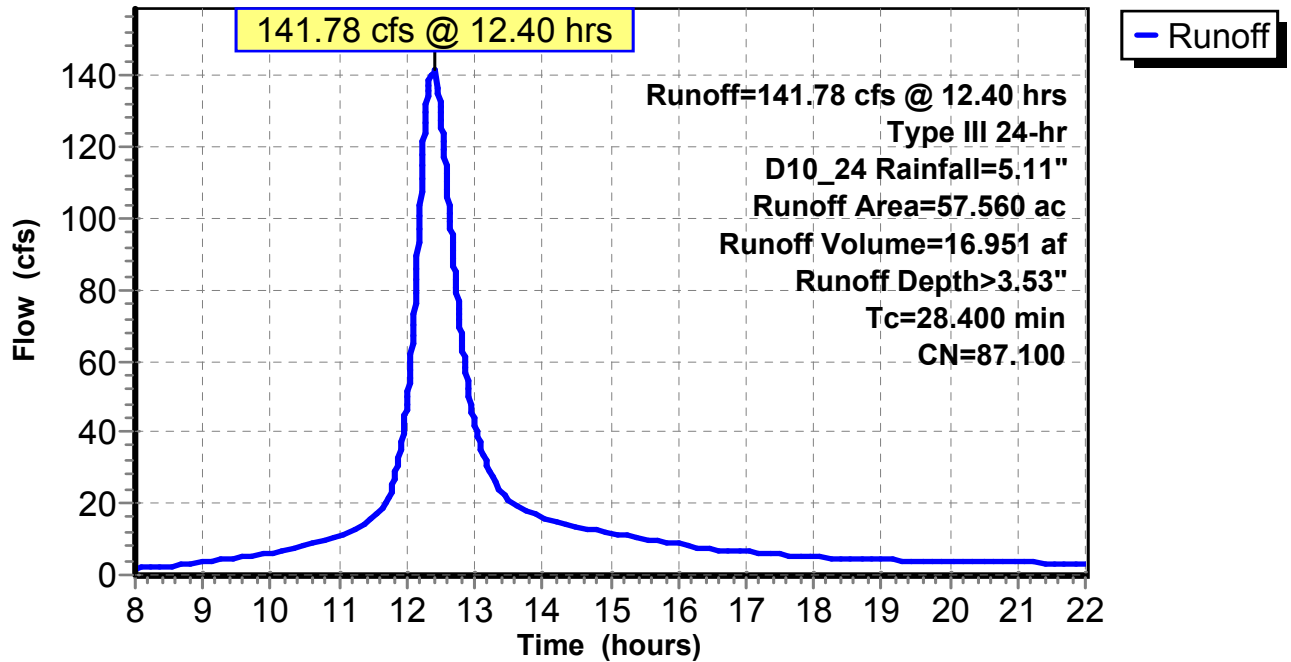
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



Summary for Subcatchment BH: HOTEL

Runoff = 35.75 cfs @ 12.42 hrs, Volume= 4.394 af, Depth> 3.45"

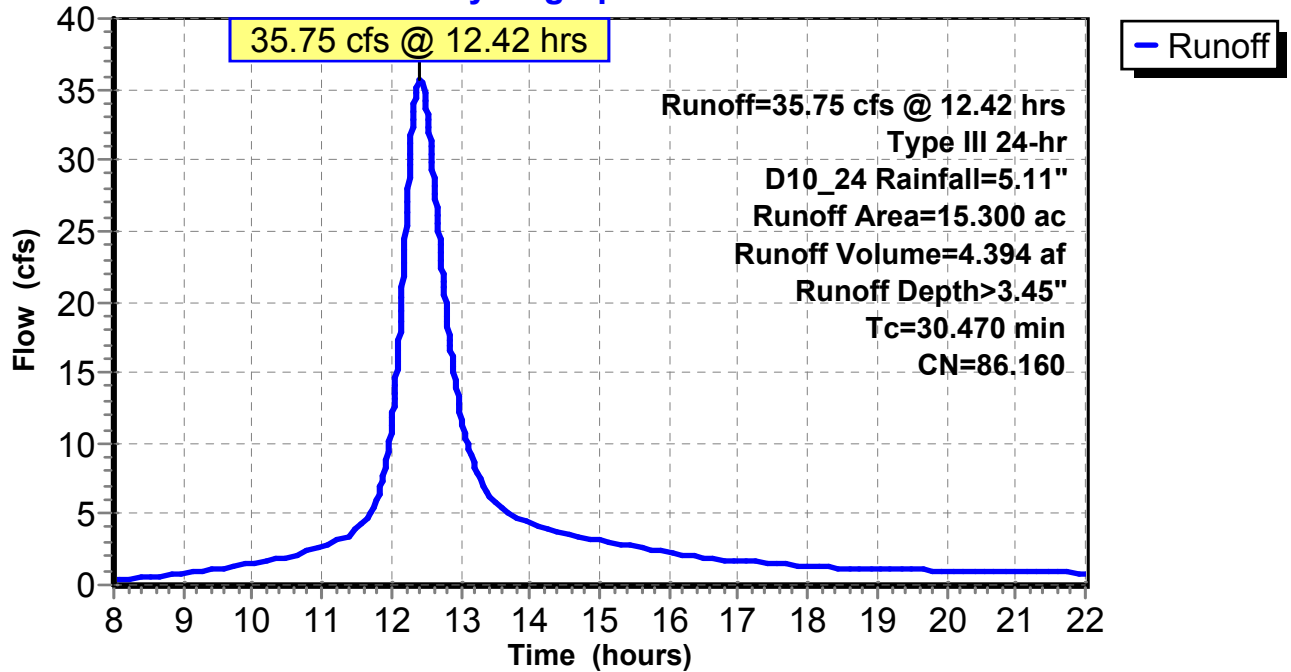
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.000 min
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.000 min

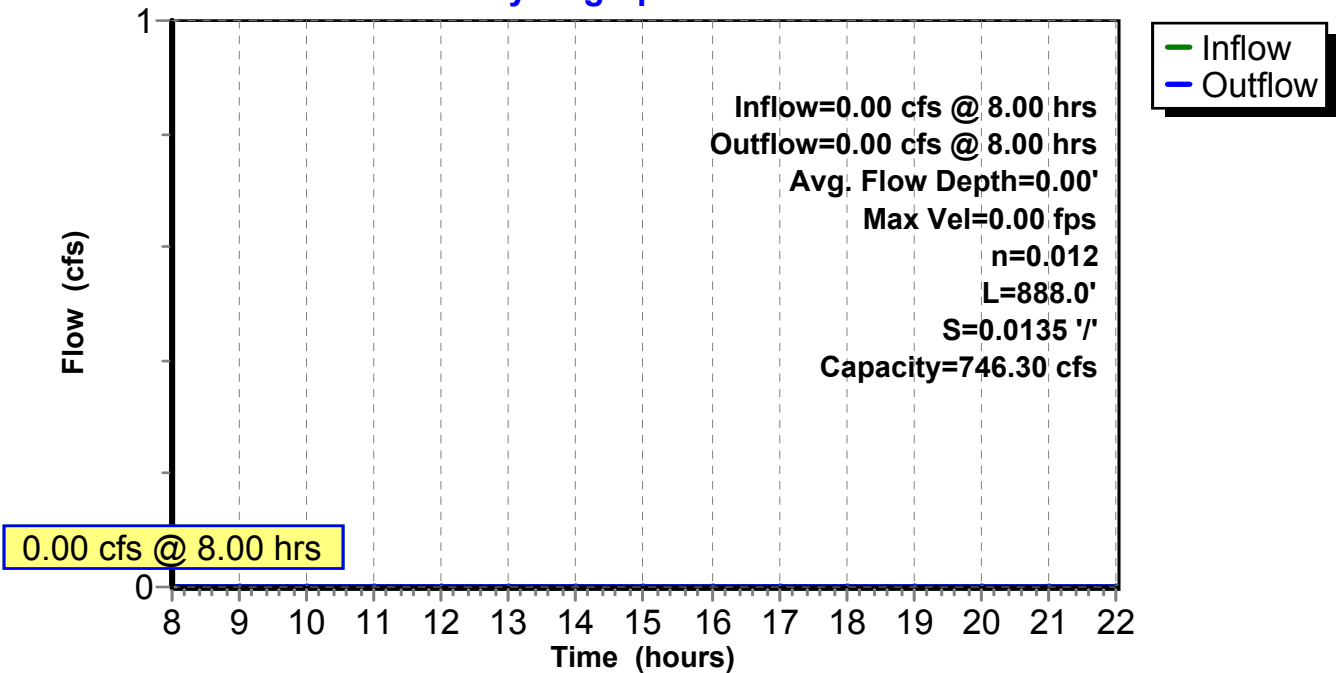
Peak Storage= 0 cf @ 8.00 hrs
 Average Depth at Peak Storage= 0.00'
 Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
 Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
 Length= 888.0' Slope= 0.0135 ' '
 Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 2.49" for D10_24 event
 Inflow = 524.20 cfs @ 12.50 hrs, Volume= 148.403 af
 Outflow = 523.72 cfs @ 12.52 hrs, Volume= 148.399 af, Atten= 0%, Lag= 1.133 min
 Primary = 523.72 cfs @ 12.52 hrs, Volume= 148.399 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 36.65' @ 12.52 hrs Surf.Area= 0.182 ac Storage= 0.324 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.110 min (894.177 - 894.067)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

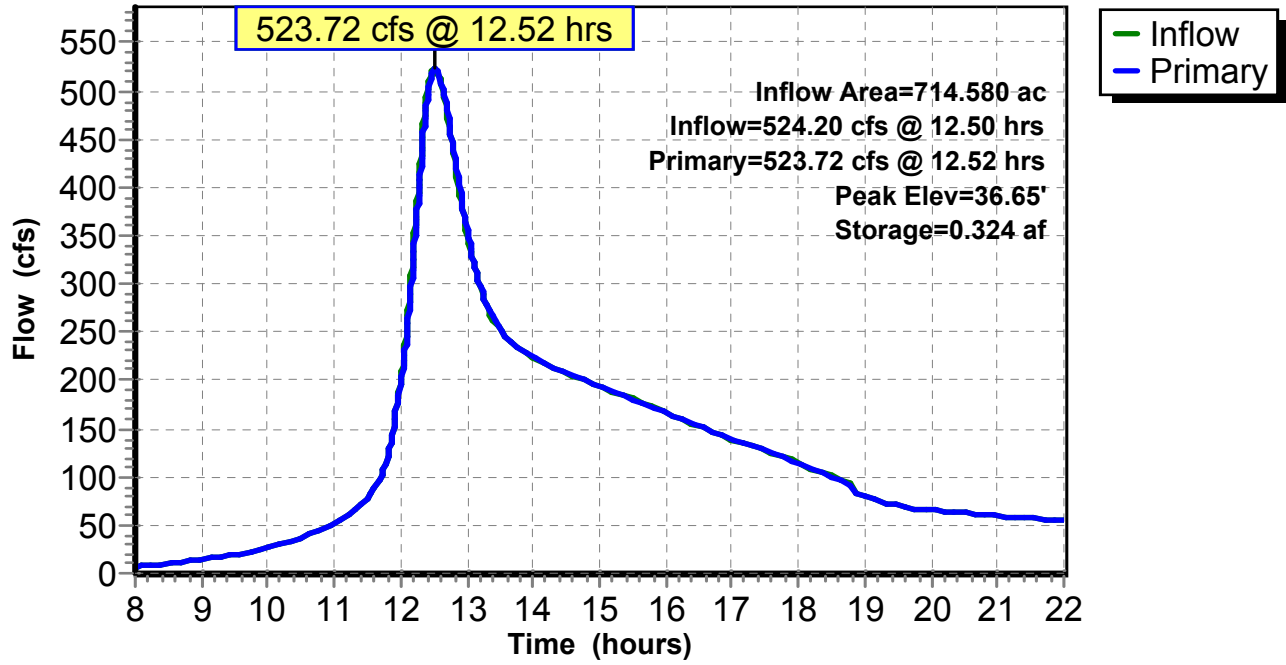
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=523.69 cfs @ 12.52 hrs HW=36.65' (Free Discharge)

- 1=Culvert (Barrel Controls 523.69 cfs @ 7.89 fps)
- 2=WEIR BOWMAN (Controls 0.00 cfs)

Pond 8P: BOWMAN FIELDS

Hydrograph



Summary for Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD INCREASE BERM

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 2.27" for D10_24 event
 Inflow = 332.57 cfs @ 12.72 hrs, Volume= 110.255 af
 Outflow = 332.54 cfs @ 12.72 hrs, Volume= 110.248 af, Atten= 0%, Lag= 0.347 min
 Primary = 332.54 cfs @ 12.72 hrs, Volume= 110.248 af
 Secondary = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 60.72' @ 12.72 hrs Surf.Area= 1,120 sf Storage= 3,553 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.117 min (914.261 - 914.143)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	63,134 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686
70.00	10,112	40,448	63,134

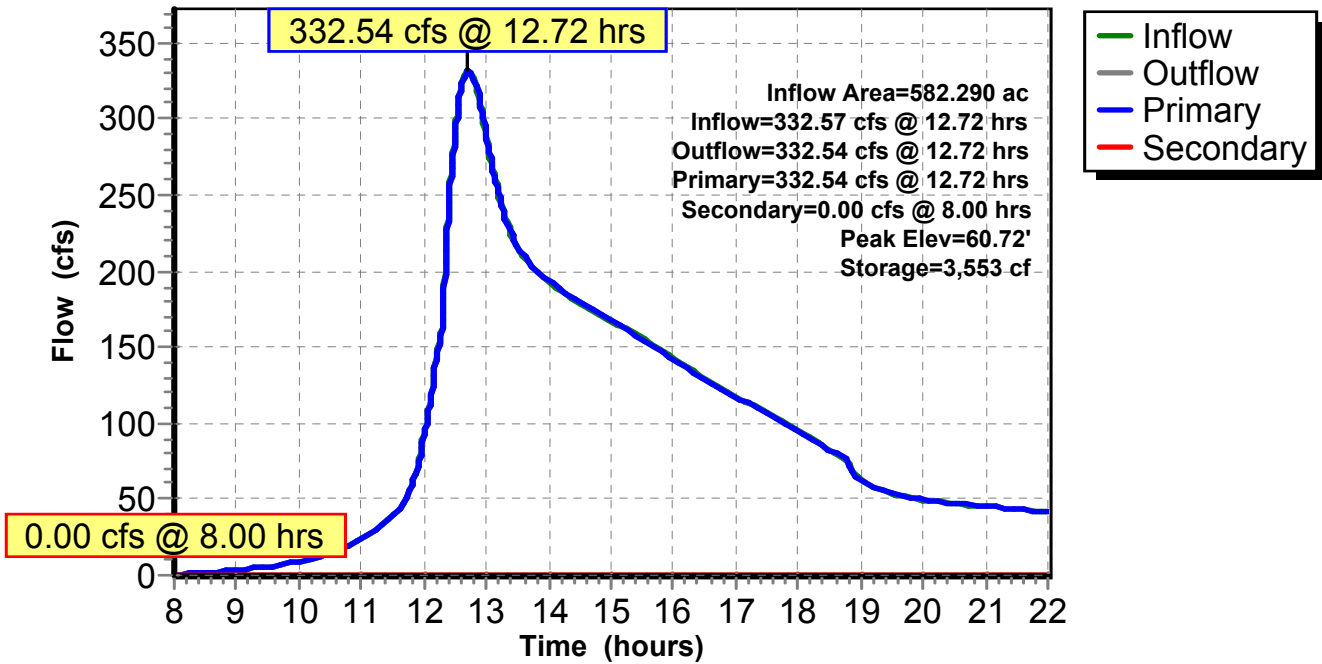
Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert X 2.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 55.13' / 37.90' S= 0.0206 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	68.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=332.54 cfs @ 12.72 hrs HW=60.72' TW=0.00' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 332.54 cfs @ 8.47 fps)

Secondary OutFlow Max=0.00 cfs @ 8.00 hrs HW=56.00' TW=58.00' (Dynamic Tailwater)
 ↑2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD INCREASE BERM

Hydrograph



Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min
 Primary = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 45.00' @ 8.00 hrs Surf.Area= 100 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	45.00'	171,628 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	100	0	0
48.00	100	300	300
51.00	6,000	9,150	9,450
52.00	15,452	10,726	20,176
54.00	38,000	53,452	73,628
56.00	60,000	98,000	171,628

Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	45.00'	24.0" Round Culvert L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 45.00' / 44.00' S= 0.0100 '/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

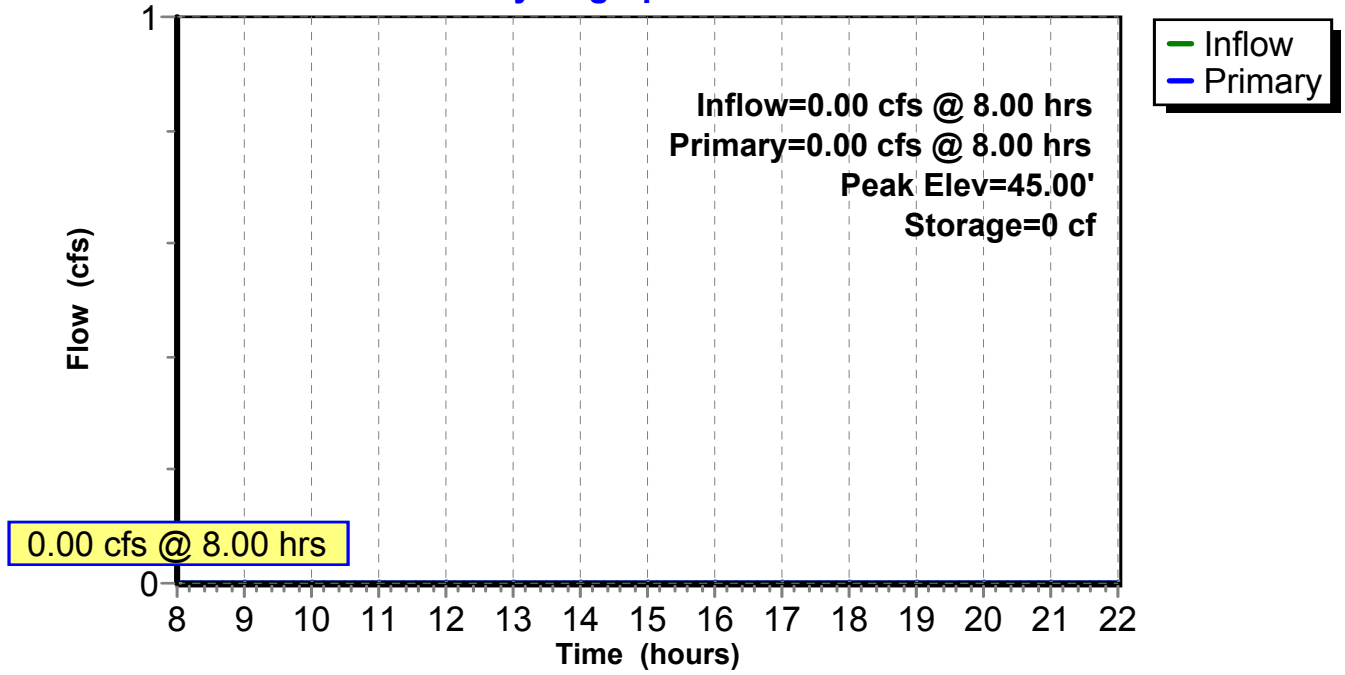
Primary OutFlow Max=0.00 cfs @ 8.00 hrs HW=45.00' TW=0.00' (Dynamic Tailwater)

↑ **1=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

└ **2=Culvert** (Controls 0.00 cfs)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



Summary for Pond 24P: NEW DETENTION NEAR BALL FIELD FOR 1-48 INCH PIPE OVERFLOWS

Inflow = 84.36 cfs @ 12.57 hrs, Volume= 8.975 af
 Outflow = 8.01 cfs @ 15.25 hrs, Volume= 5.665 af, Atten= 91%, Lag= 160.840 min
 Primary = 8.01 cfs @ 15.25 hrs, Volume= 5.665 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 40.99' @ 15.25 hrs Surf.Area= 77,393 sf Storage= 292,640 cf

Plug-Flow detention time= 264.049 min calculated for 5.661 af (63% of inflow)
 Center-of-Mass det. time= 227.959 min (1,023.779 - 795.820)

Volume	Invert	Avail.Storage	Storage Description
#1	36.00'	560,000 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.00	40,000	0	0
44.00	100,000	560,000	560,000

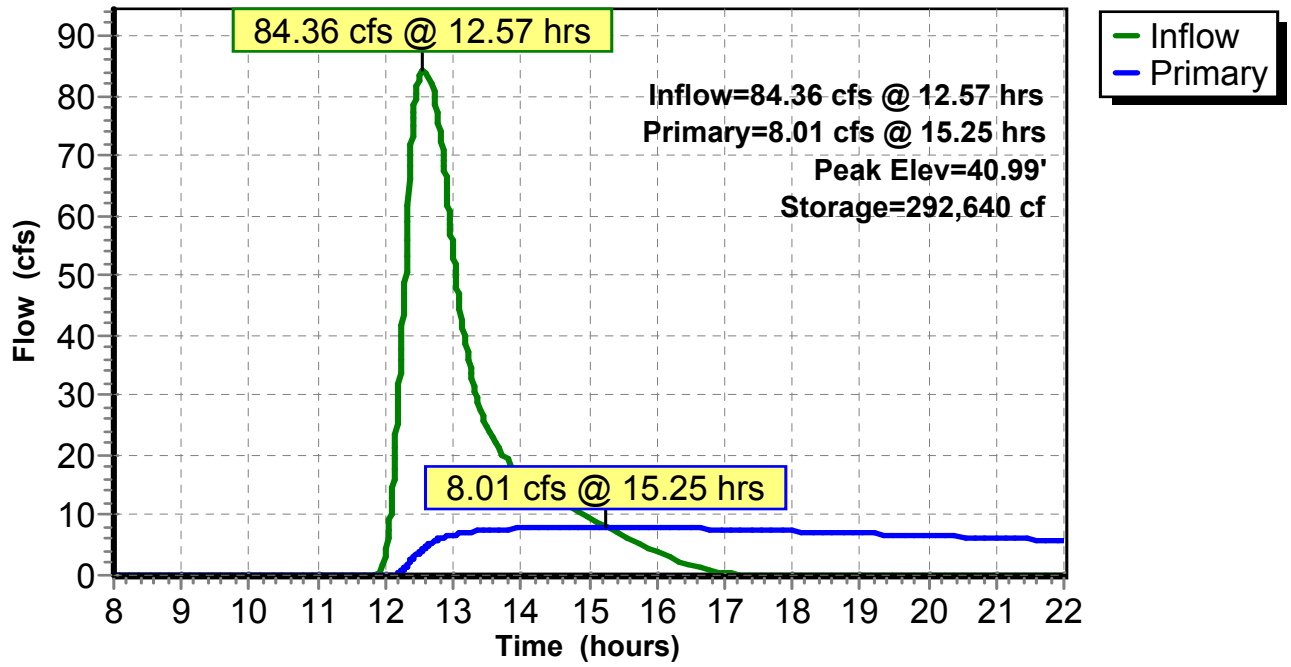
Device	Routing	Invert	Outlet Devices
#1	Primary	36.00'	12.0" Round Culvert L= 18.0' Ke= 0.500 Inlet / Outlet Invert= 36.00' / 35.50' S= 0.0278 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Primary	42.00'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=8.01 cfs @ 15.25 hrs HW=40.99' TW=34.01' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 8.01 cfs @ 10.20 fps)
- 2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 24P: NEW DETENTION NEAR BALL FIELD FOR 1-48 INCH PIPE OVERFLOWS

Hydrograph



Summary for Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 2.41" for D10_24 event
 Inflow = 458.49 cfs @ 12.57 hrs, Volume= 131.593 af
 Outflow = 458.49 cfs @ 12.57 hrs, Volume= 131.593 af, Atten= 0%, Lag= 0.000 min
 Primary = 374.13 cfs @ 12.57 hrs, Volume= 122.618 af
 Secondary = 84.36 cfs @ 12.57 hrs, Volume= 8.975 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 44.92' @ 12.57 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48
#3	Secondary	41.00'	48.0" Round Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 41.00' / 39.75' S= 0.0156 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf

Primary OutFlow Max=374.11 cfs @ 12.57 hrs HW=44.92' TW=36.62' (Dynamic Tailwater)

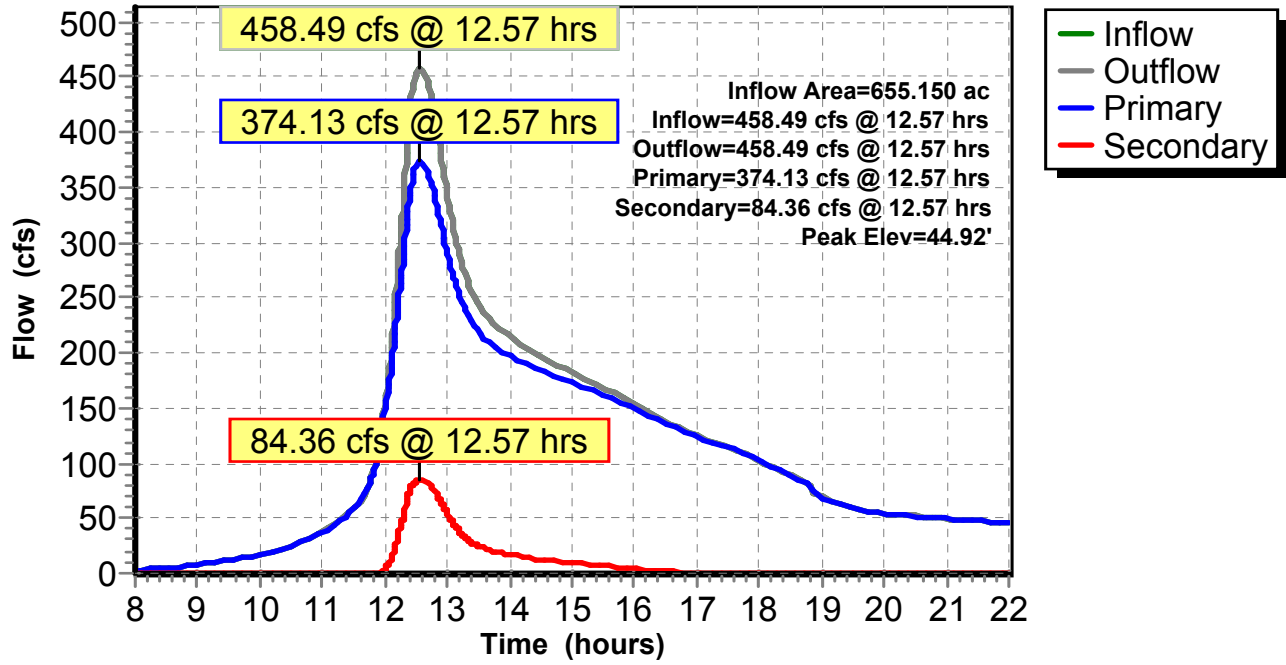
↑1=Culvert (Barrel Controls 374.11 cfs @ 9.59 fps)
 ↓2=WEIR WESTCH AVE (Controls 0.00 cfs)

Secondary OutFlow Max=84.35 cfs @ 12.57 hrs HW=44.92' TW=0.00' (Dynamic Tailwater)

↑3=Culvert (Inlet Controls 84.35 cfs @ 6.74 fps)

Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



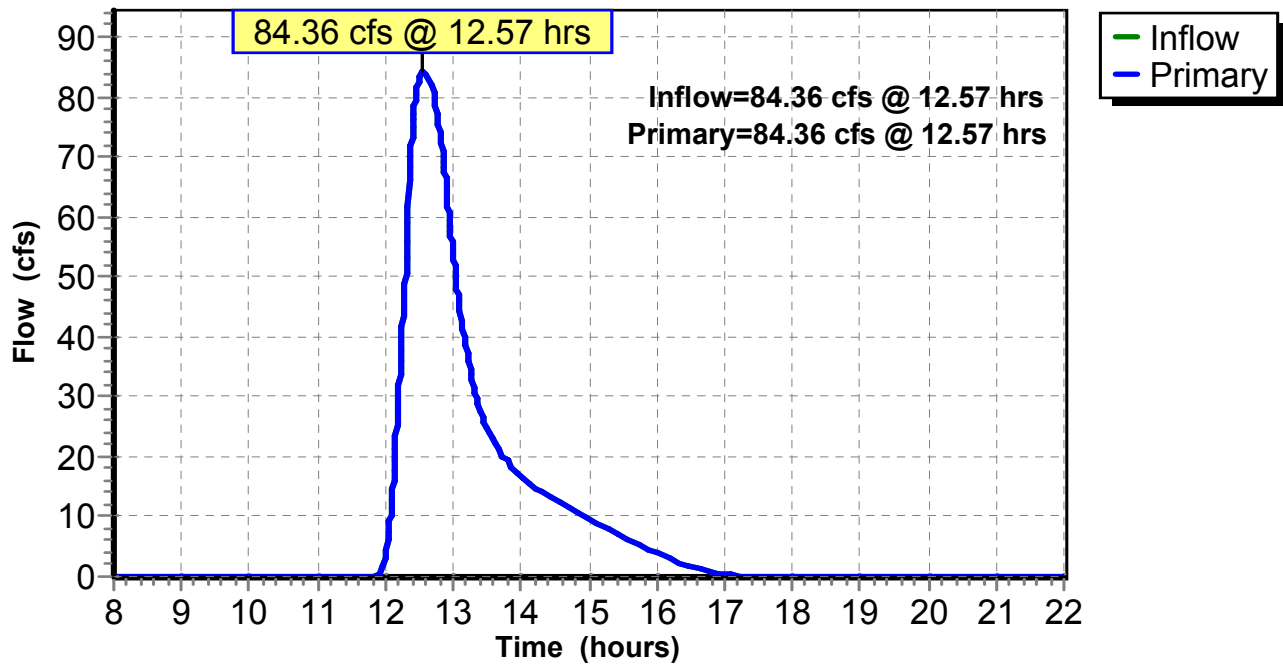
Summary for Link 26L: MID LEVEL 48

Inflow = 84.36 cfs @ 12.57 hrs, Volume= 8.975 af
Primary = 84.36 cfs @ 12.57 hrs, Volume= 8.975 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 26L: MID LEVEL 48

Hydrograph



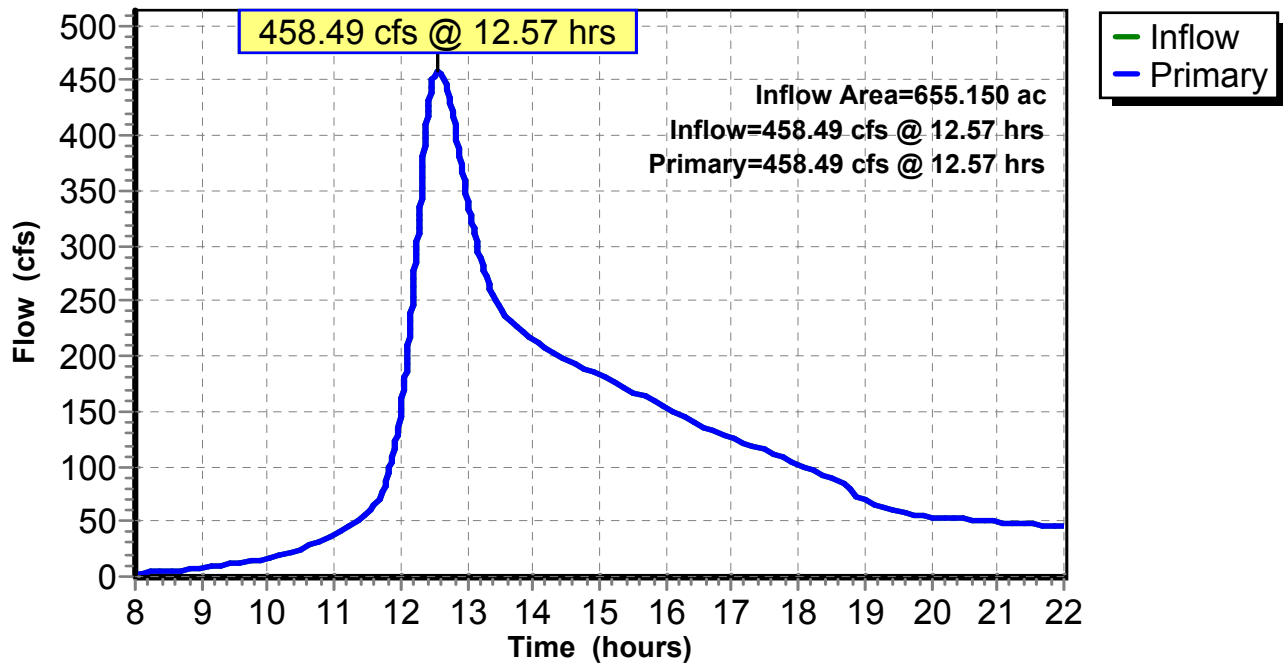
Summary for Link 33L: Join

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 2.41" for D10_24 event
Inflow = 458.49 cfs @ 12.57 hrs, Volume= 131.593 af
Primary = 458.49 cfs @ 12.57 hrs, Volume= 131.593 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 33L: Join

Hydrograph



Summary for Subcatchment A: WS A

Runoff = 99.30 cfs @ 12.43 hrs, Volume= 12.701 af, Depth> 2.56"

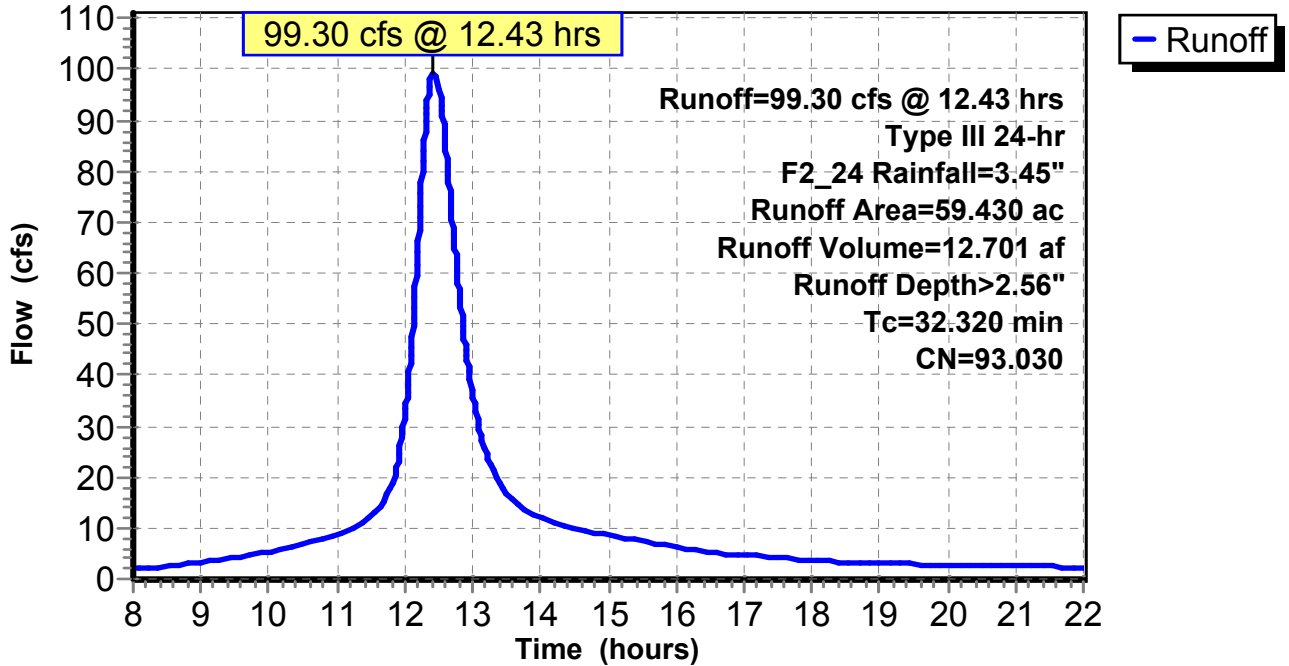
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



Summary for Subcatchment B: WS B

Runoff = 83.90 cfs @ 12.40 hrs, Volume= 9.925 af, Depth> 2.07"

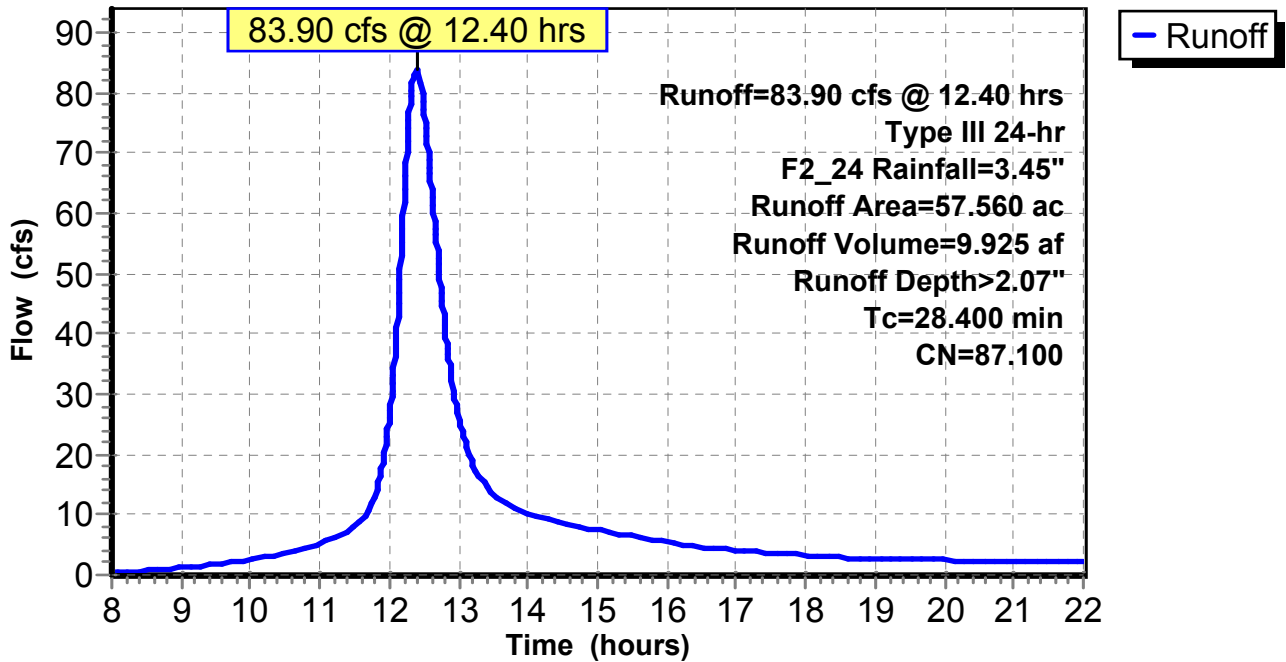
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



Summary for Subcatchment BH: HOTEL

Runoff = 20.85 cfs @ 12.42 hrs, Volume= 2.540 af, Depth> 1.99"

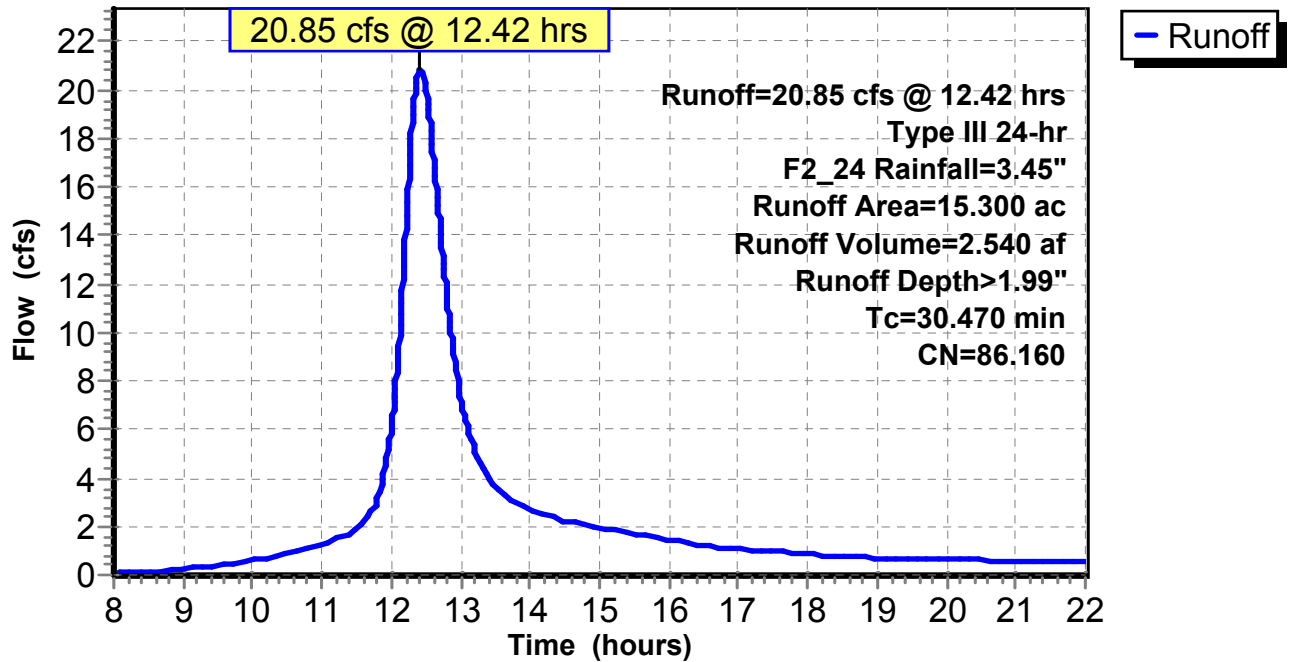
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.000 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.000 min

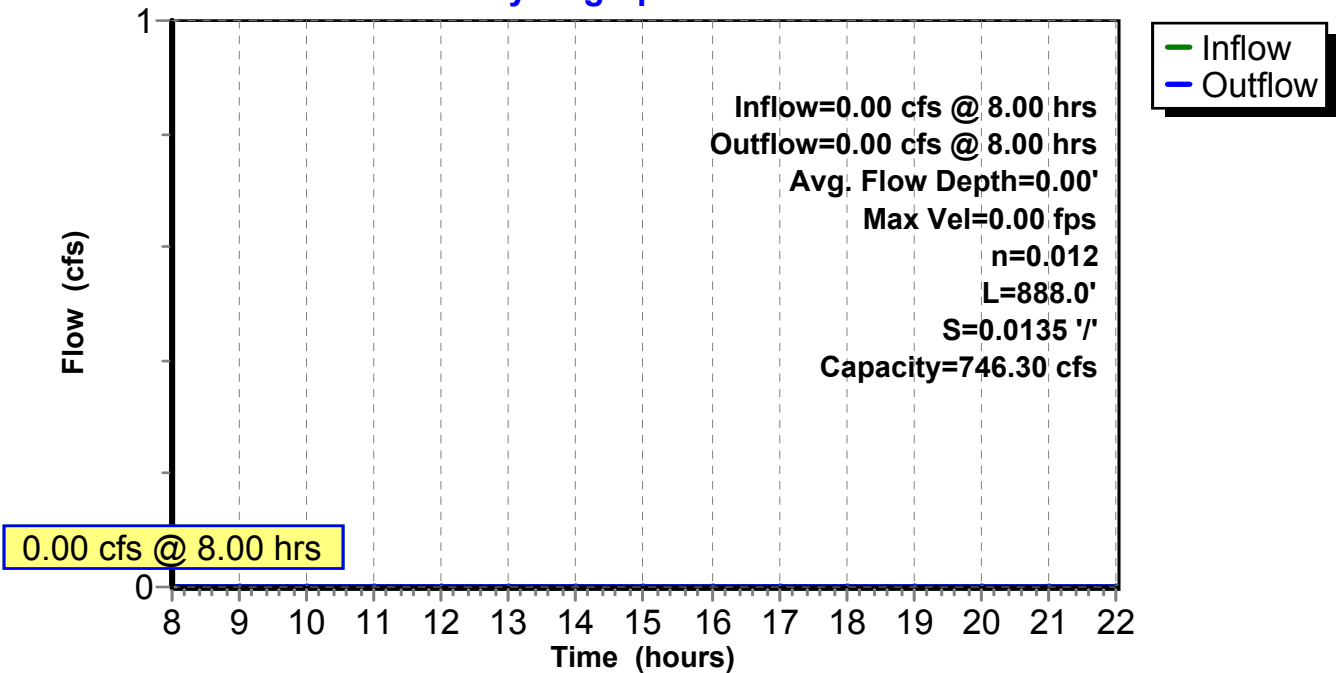
Peak Storage= 0 cf @ 8.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
Side Slope Z-value= 2.0 '/' Top Width= 55.43'
Length= 888.0' Slope= 0.0135 '/'
Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 1.34" for F2_24 event
 Inflow = 295.49 cfs @ 12.46 hrs, Volume= 80.081 af
 Outflow = 295.29 cfs @ 12.47 hrs, Volume= 80.079 af, Atten= 0%, Lag= 0.515 min
 Primary = 295.29 cfs @ 12.47 hrs, Volume= 80.079 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 34.90' @ 12.47 hrs Surf.Area= 0.107 ac Storage= 0.084 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.042 min (880.508 - 880.467)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

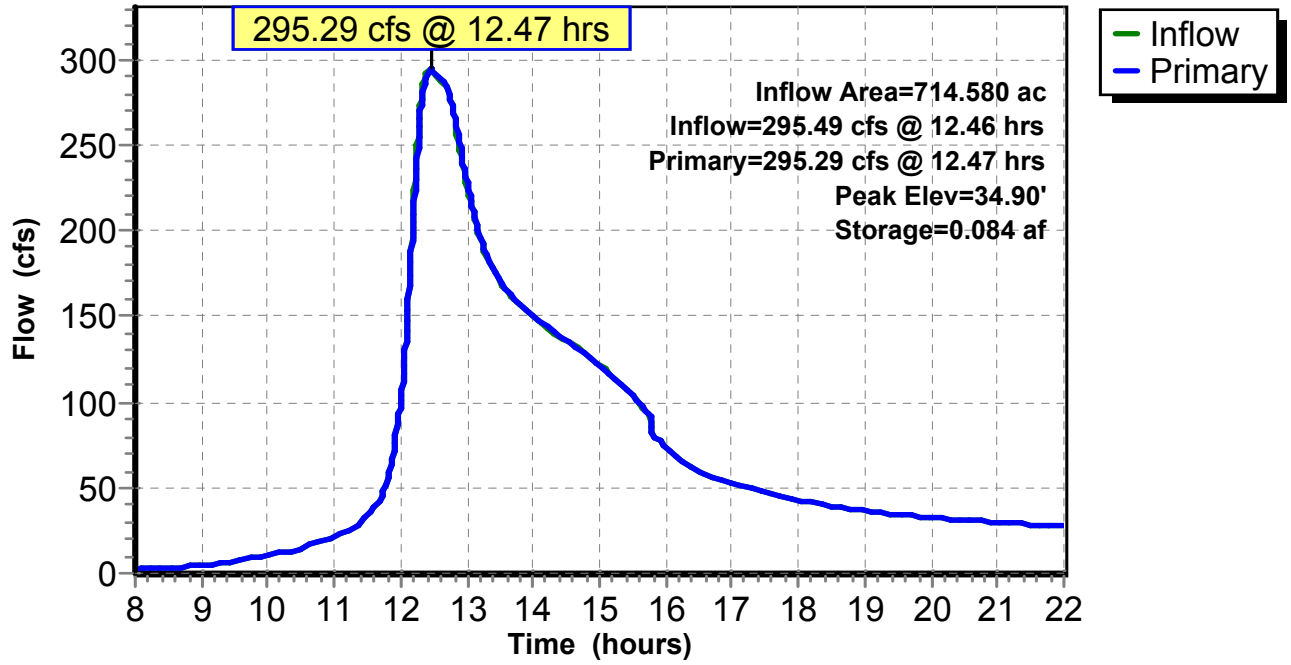
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=295.27 cfs @ 12.47 hrs HW=34.89' (Free Discharge)

- 1=Culvert (Barrel Controls 295.27 cfs @ 6.59 fps)
- 2=WEIR BOWMAN (Controls 0.00 cfs)

Pond 8P: BOWMAN FIELDS

Hydrograph



Summary for Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD INCREASE BERM

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 1.14" for F2_24 event
 Inflow = 177.65 cfs @ 12.82 hrs, Volume= 55.228 af
 Outflow = 177.65 cfs @ 12.82 hrs, Volume= 55.226 af, Atten= 0%, Lag= 0.148 min
 Primary = 177.65 cfs @ 12.82 hrs, Volume= 55.226 af
 Secondary = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 58.52' @ 12.82 hrs Surf.Area= 761 sf Storage= 1,539 cf

Plug-Flow detention time= 0.132 min calculated for 55.186 af (100% of inflow)
 Center-of-Mass det. time= 0.113 min (907.825 - 907.711)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	63,134 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686
70.00	10,112	40,448	63,134

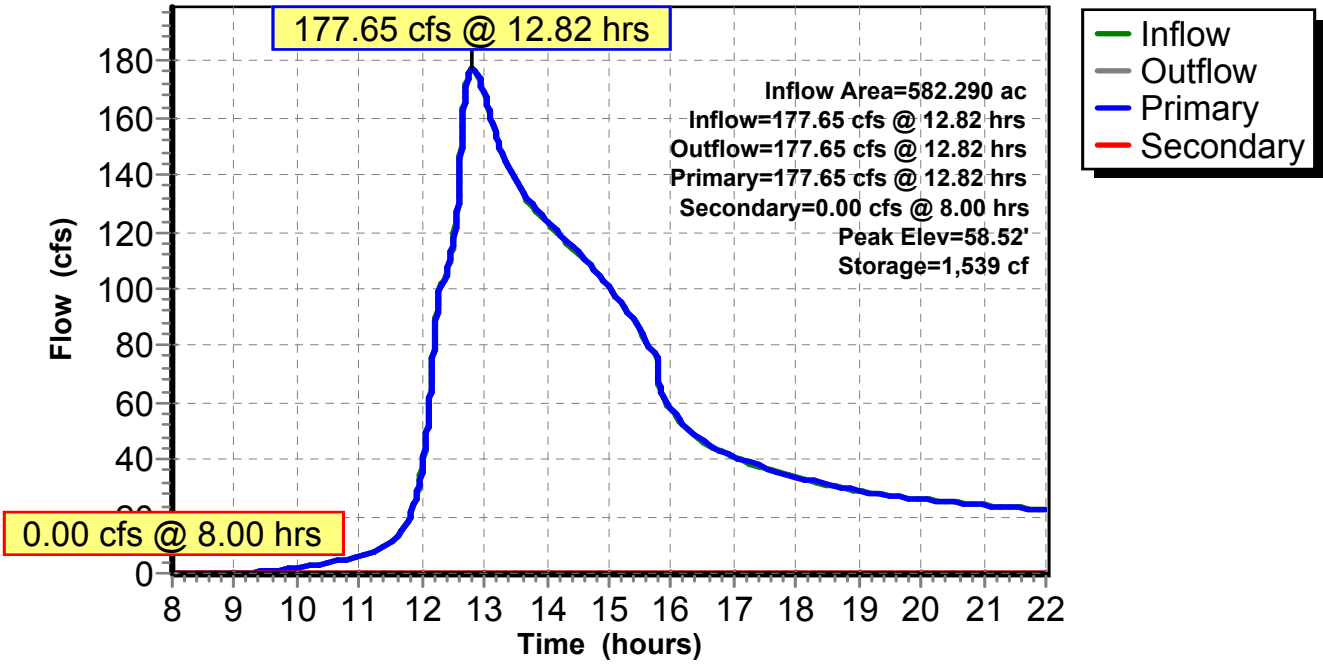
Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert X 2.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 55.13' / 37.90' S= 0.0206 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	68.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=177.64 cfs @ 12.82 hrs HW=58.52' TW=0.00' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 177.64 cfs @ 6.27 fps)

Secondary OutFlow Max=0.00 cfs @ 8.00 hrs HW=56.00' TW=58.00' (Dynamic Tailwater)
 ↑2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD INCREASE BERM

Hydrograph



Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min
 Primary = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 45.00' @ 8.00 hrs Surf.Area= 100 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	45.00'	171,628 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	100	0	0
48.00	100	300	300
51.00	6,000	9,150	9,450
52.00	15,452	10,726	20,176
54.00	38,000	53,452	73,628
56.00	60,000	98,000	171,628

Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	45.00'	24.0" Round Culvert L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 45.00' / 44.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

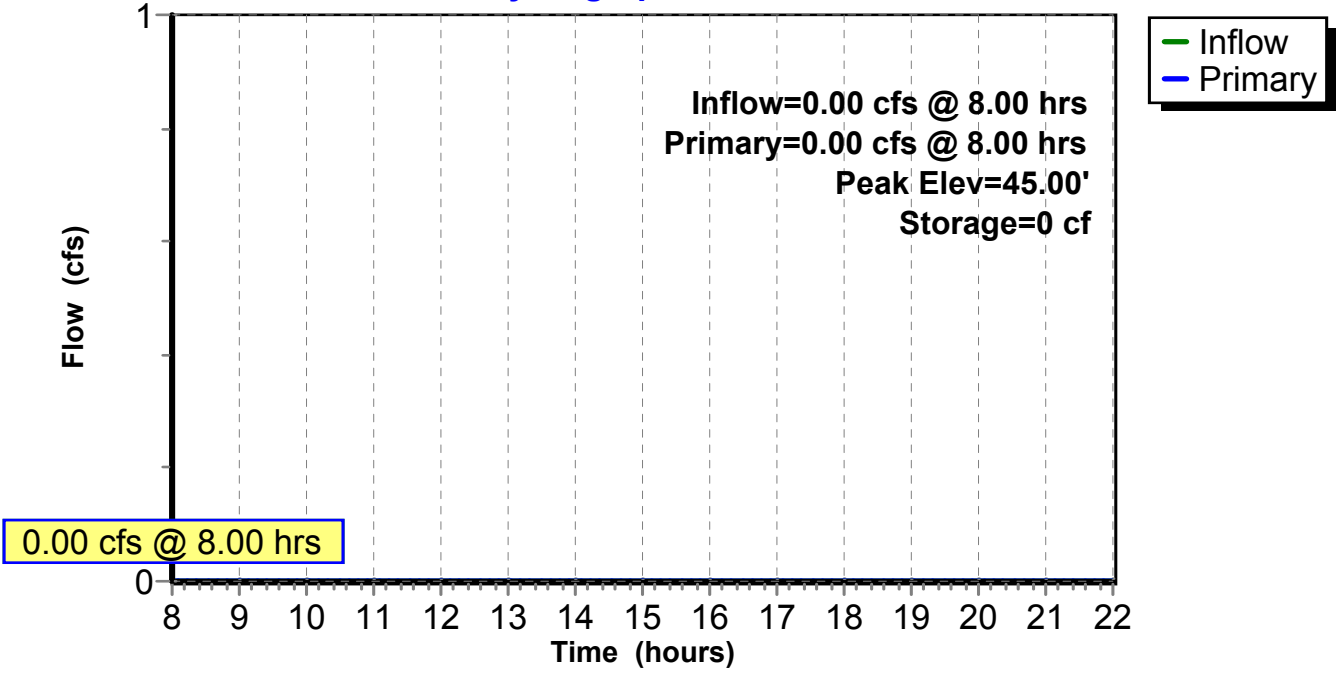
Primary OutFlow Max=0.00 cfs @ 8.00 hrs HW=45.00' TW=0.00' (Dynamic Tailwater)

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

2=Culvert (Controls 0.00 cfs)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



Summary for Pond 24P: NEW DETENTION NEAR BALL FIELD FOR 1-48 INCH PIPE OVERFLOWS

Inflow = 22.58 cfs @ 12.71 hrs, Volume= 1.613 af
 Outflow = 3.23 cfs @ 13.63 hrs, Volume= 1.302 af, Atten= 86%, Lag= 55.333 min
 Primary = 3.23 cfs @ 13.63 hrs, Volume= 1.302 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 37.23' @ 13.63 hrs Surf.Area= 49,209 sf Storage= 54,771 cf

Plug-Flow detention time= 187.842 min calculated for 1.302 af (81% of inflow)
 Center-of-Mass det. time= 177.337 min (949.325 - 771.988)

Volume	Invert	Avail.Storage	Storage Description
#1	36.00'	560,000 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.00	40,000	0	0
44.00	100,000	560,000	560,000

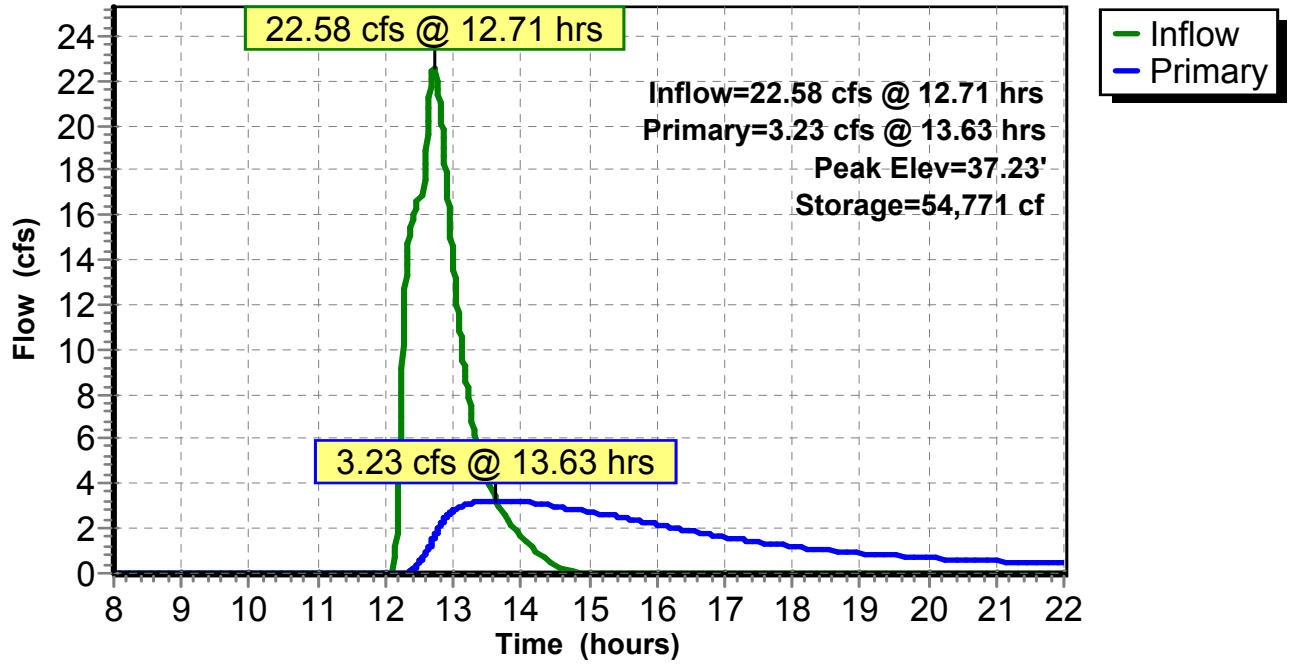
Device	Routing	Invert	Outlet Devices
#1	Primary	36.00'	12.0" Round Culvert L= 18.0' Ke= 0.500 Inlet / Outlet Invert= 36.00' / 35.50' S= 0.0278 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Primary	42.00'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=3.23 cfs @ 13.63 hrs HW=37.23' TW=34.00' (Dynamic Tailwater)

- 1=Culvert (Inlet Controls 3.23 cfs @ 4.11 fps)
- 2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 24P: NEW DETENTION NEAR BALL FIELD FOR 1-48 INCH PIPE OVERFLOWS

Hydrograph



Summary for Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 1.24" for F2_24 event
 Inflow = 236.01 cfs @ 12.71 hrs, Volume= 67.691 af
 Outflow = 236.01 cfs @ 12.71 hrs, Volume= 67.691 af, Atten= 0%, Lag= 0.000 min
 Primary = 213.43 cfs @ 12.71 hrs, Volume= 66.078 af
 Secondary = 22.58 cfs @ 12.71 hrs, Volume= 1.613 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 42.70' @ 12.71 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48
#3	Secondary	41.00'	48.0" Round Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 41.00' / 39.75' S= 0.0156 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf

Primary OutFlow Max=213.42 cfs @ 12.71 hrs HW=42.70' TW=34.81' (Dynamic Tailwater)

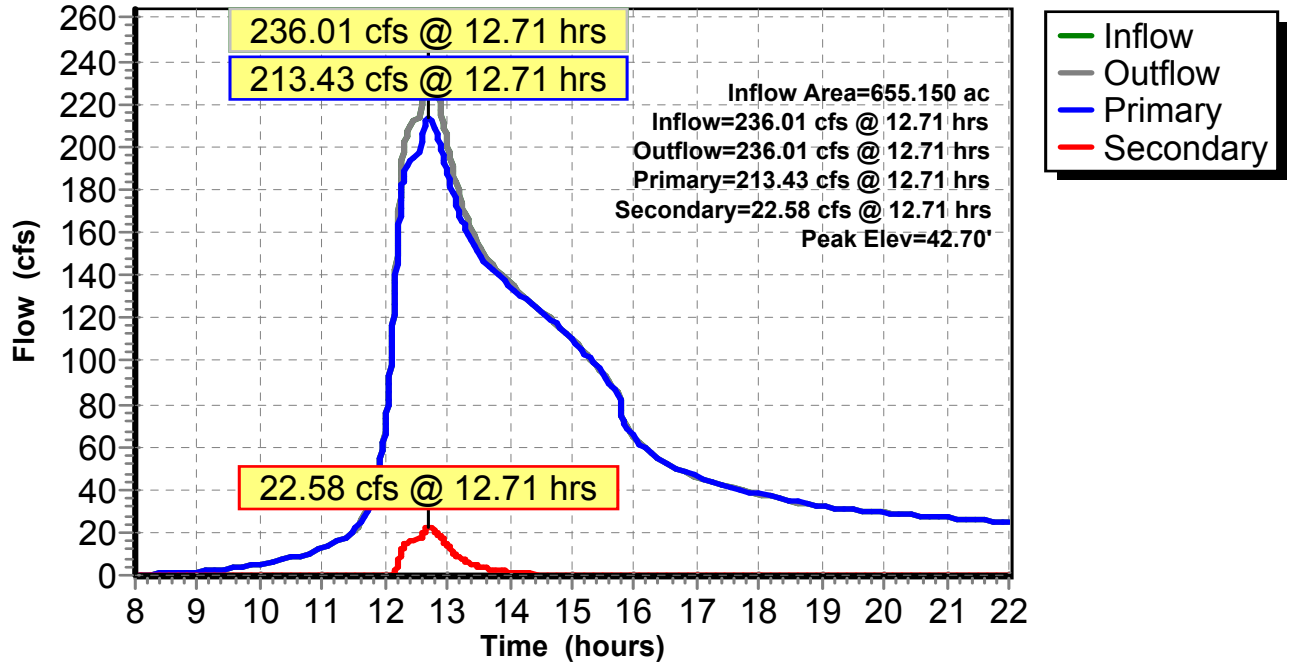
↑1=Culvert (Barrel Controls 213.42 cfs @ 7.14 fps)
 ↓2=WEIR WESTCH AVE (Controls 0.00 cfs)

Secondary OutFlow Max=22.57 cfs @ 12.71 hrs HW=42.70' TW=0.00' (Dynamic Tailwater)

↑3=Culvert (Inlet Controls 22.57 cfs @ 4.44 fps)

Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



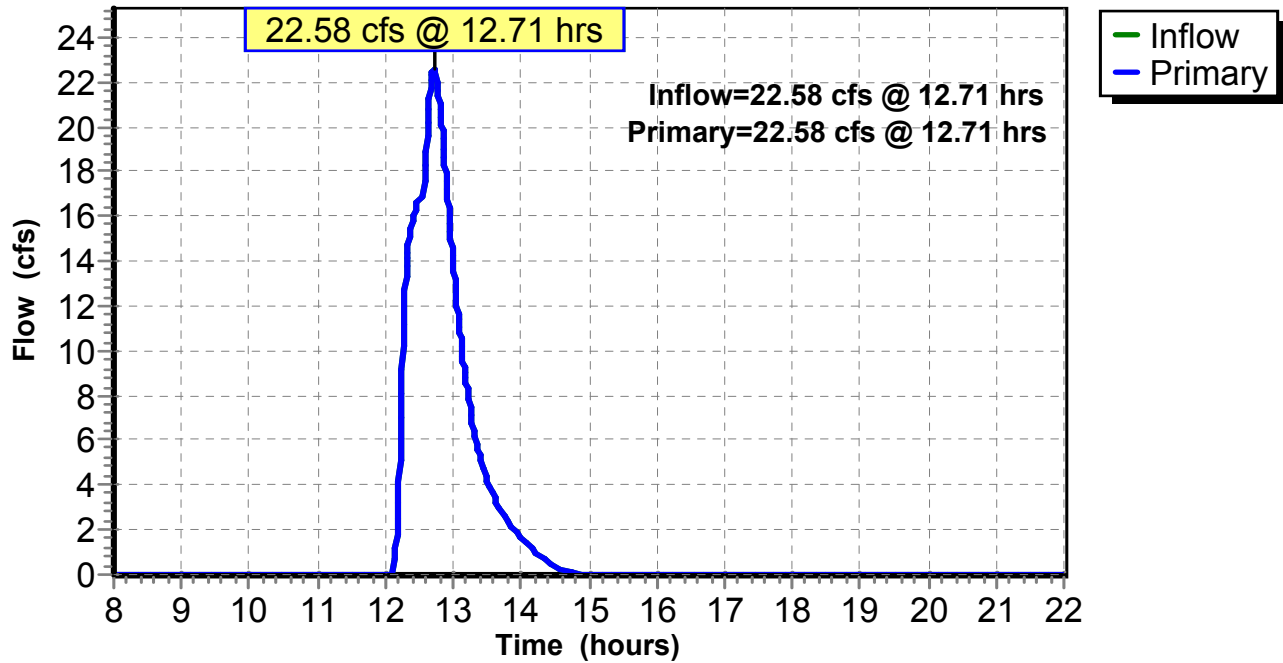
Summary for Link 26L: MID LEVEL 48

Inflow = 22.58 cfs @ 12.71 hrs, Volume= 1.613 af
Primary = 22.58 cfs @ 12.71 hrs, Volume= 1.613 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 26L: MID LEVEL 48

Hydrograph



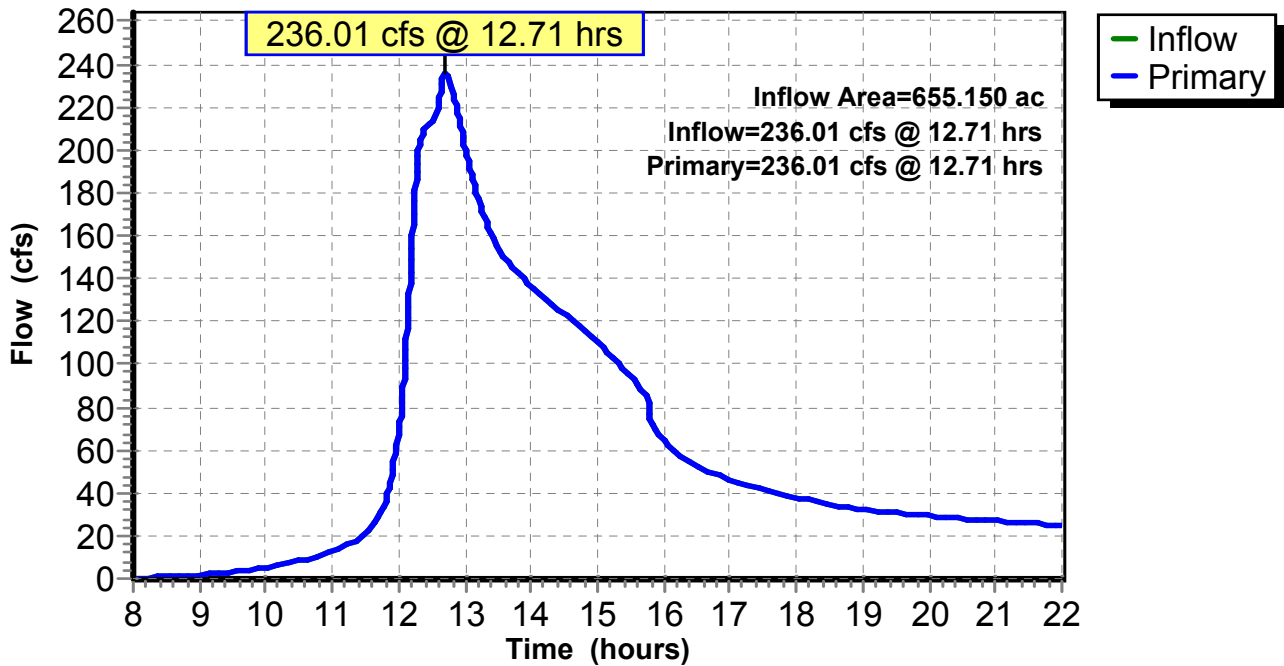
Summary for Link 33L: Join

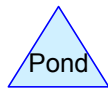
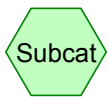
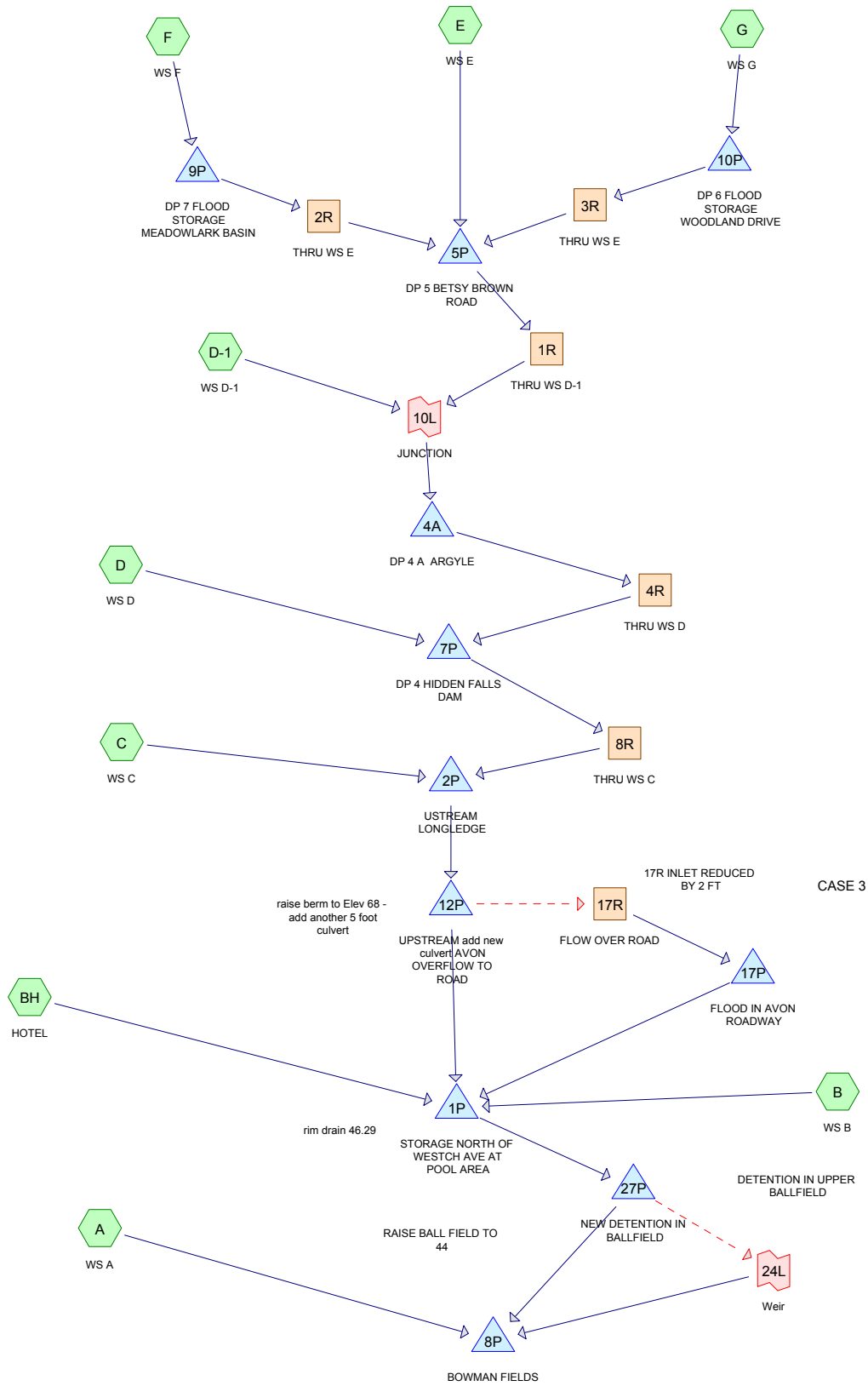
Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 1.24" for F2_24 event
Inflow = 236.01 cfs @ 12.71 hrs, Volume= 67.691 af
Primary = 236.01 cfs @ 12.71 hrs, Volume= 67.691 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 33L: Join

Hydrograph





Routing Diagram for EBBR_HCAD_JAN_2019_w_mitigation_1_new_culvert+detention_in_ballfield_f

Prepared by Microsoft, Printed 2/7/2019

HydroCAD® 10.00-16 s/n M16359 © 2015 HydroCAD Software Solutions LLC

Summary for Subcatchment A: WS A

Runoff = 225.19 cfs @ 12.42 hrs, Volume= 31.562 af, Depth= 6.37"

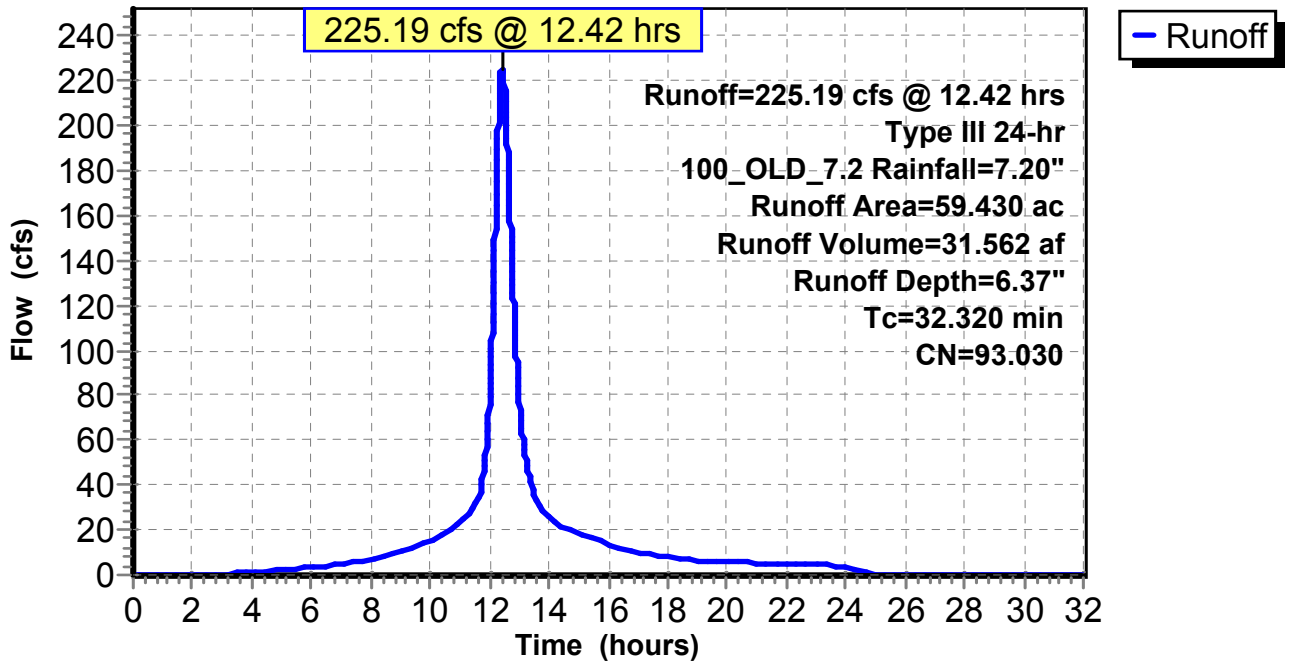
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



Summary for Subcatchment B: WS B

Runoff = 214.89 cfs @ 12.38 hrs, Volume= 27.266 af, Depth= 5.68"

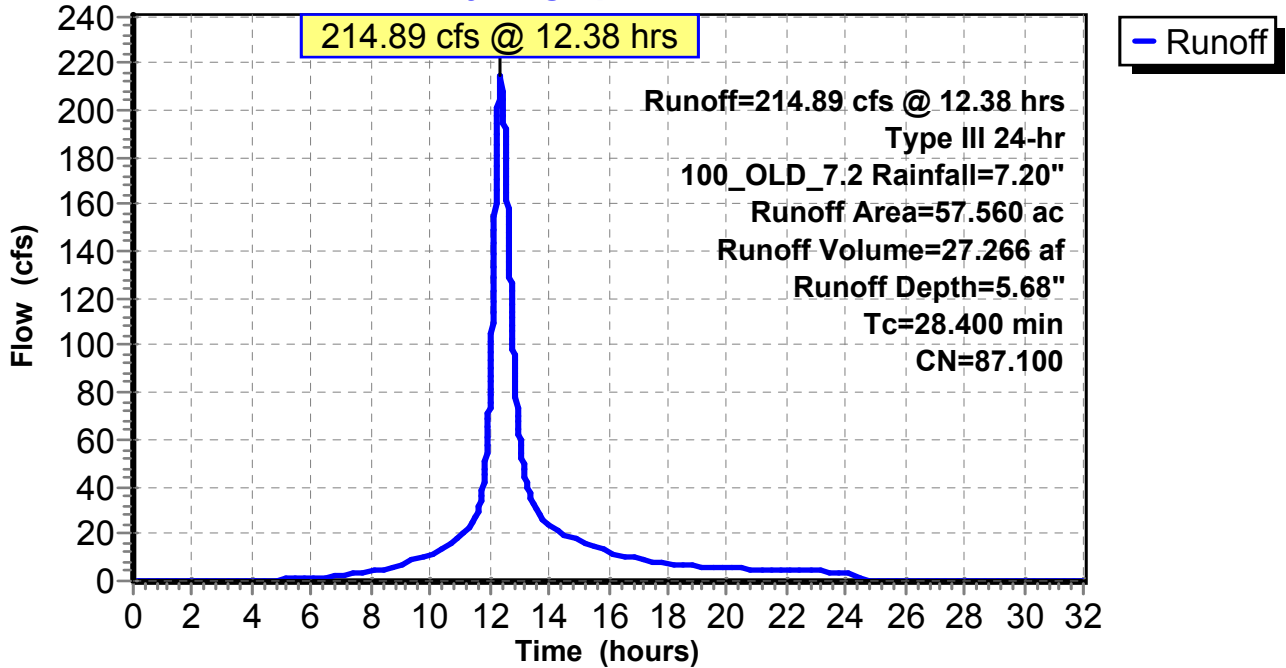
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



Summary for Subcatchment BH: HOTEL

Runoff = 54.61 cfs @ 12.42 hrs, Volume= 7.110 af, Depth= 5.58"

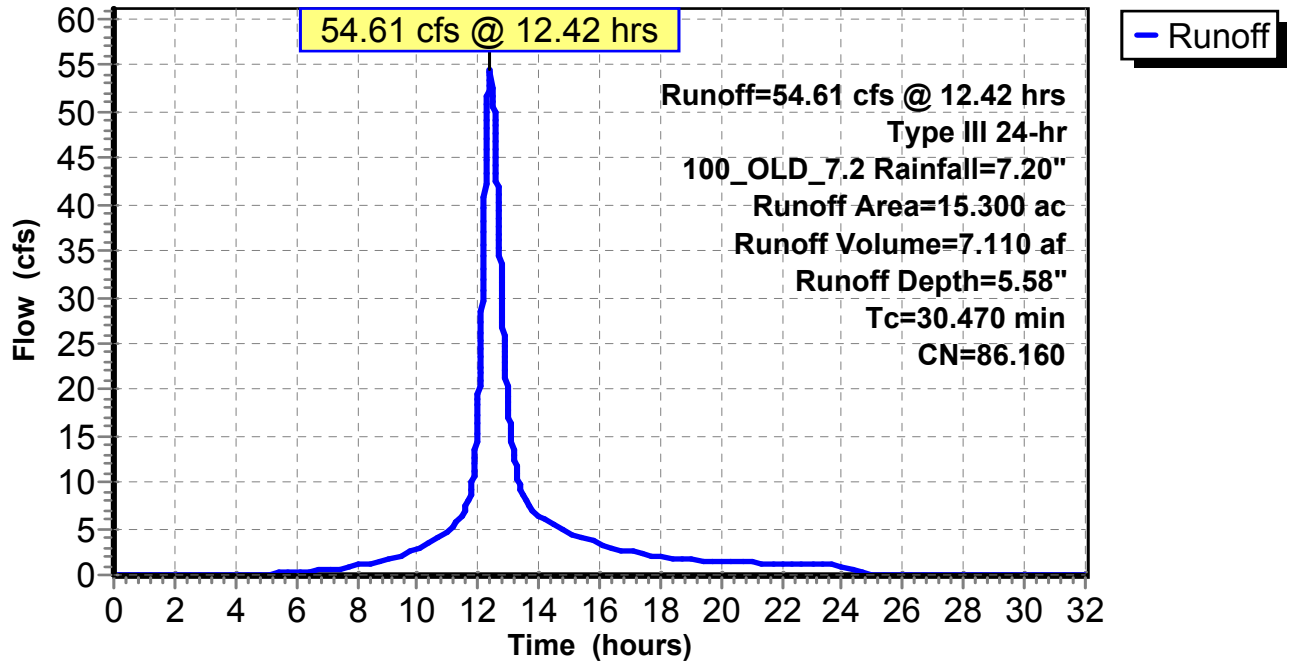
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



Summary for Subcatchment C: WS C

Runoff = 89.08 cfs @ 12.25 hrs, Volume= 9.241 af, Depth= 5.16"

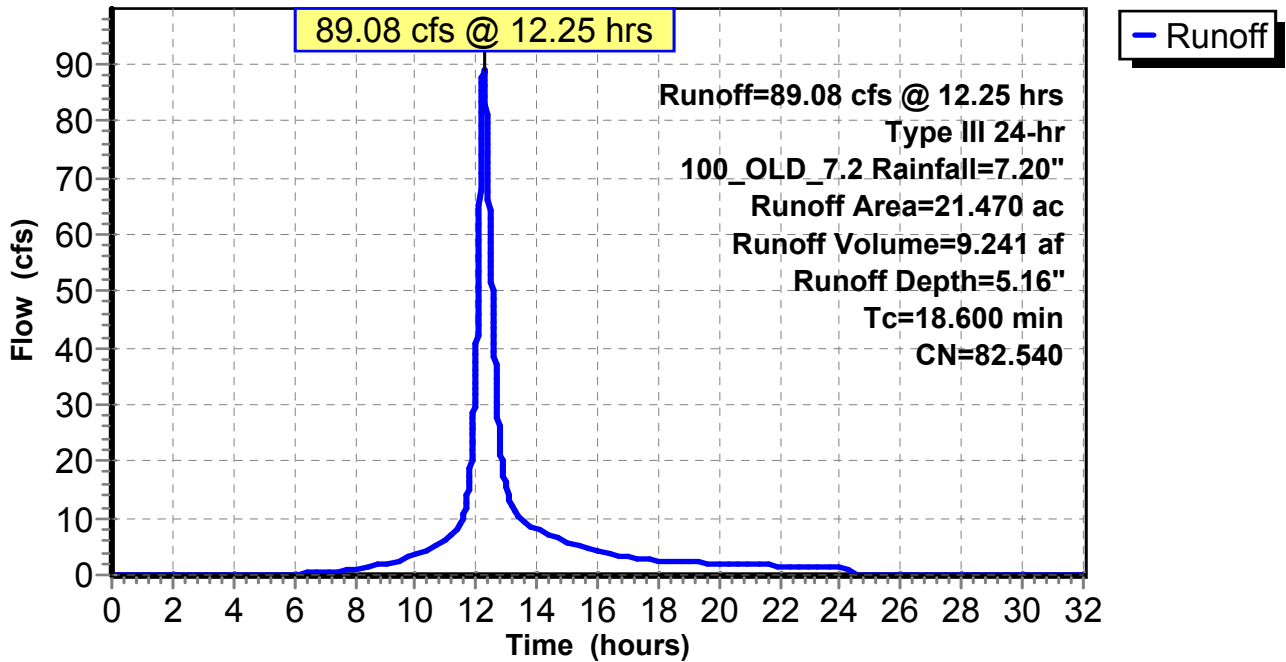
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



Summary for Subcatchment D: WS D

Runoff = 318.76 cfs @ 12.61 hrs, Volume= 49.517 af, Depth= 5.13"

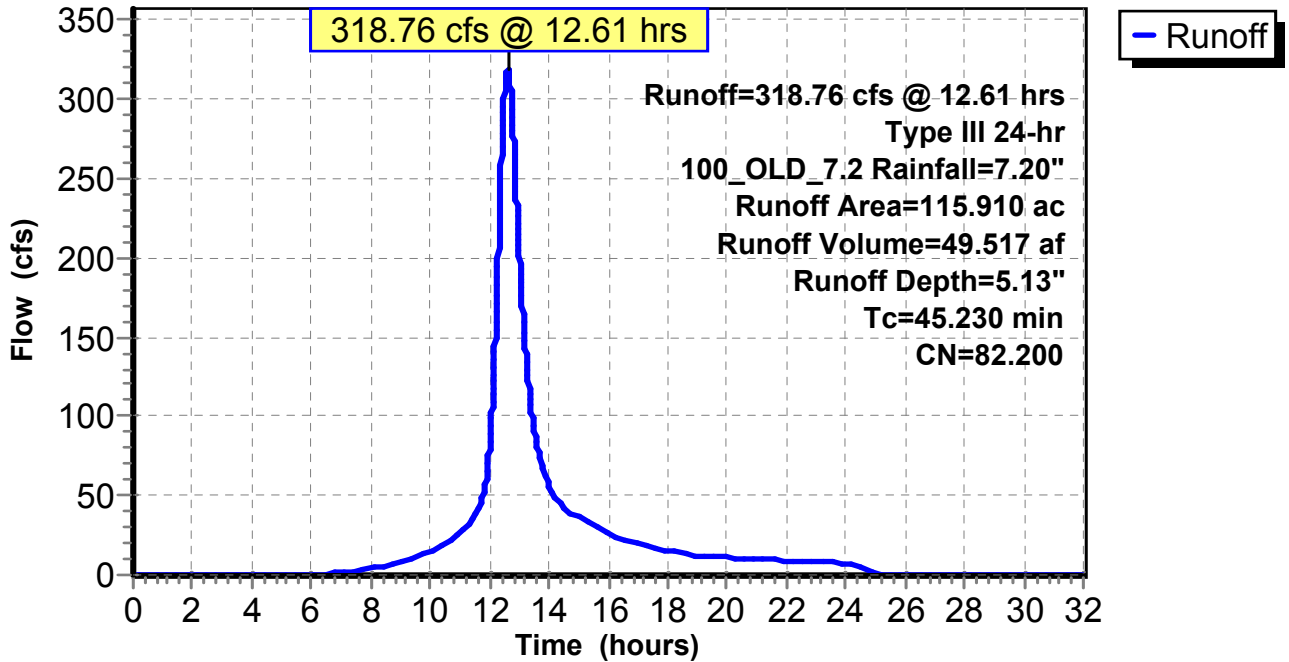
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



Summary for Subcatchment D-1: WS D-1

Runoff = 114.07 cfs @ 12.45 hrs, Volume= 14.696 af, Depth= 4.46"

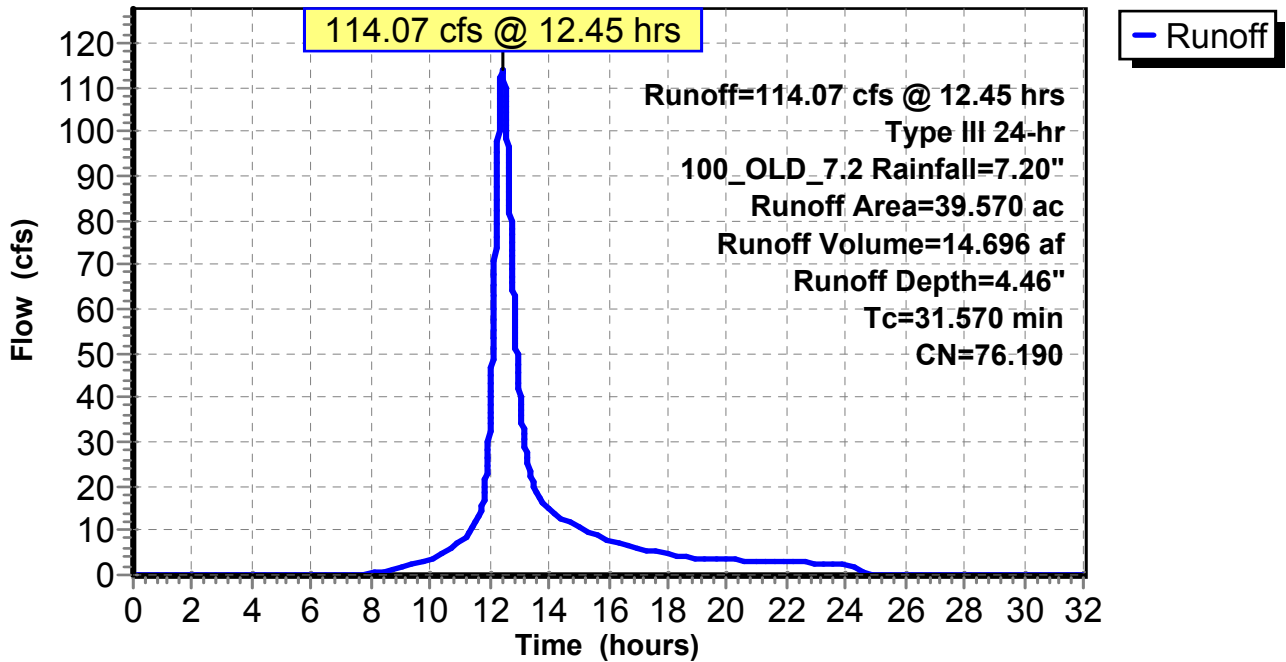
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



Summary for Subcatchment E: WS E

Runoff = 257.33 cfs @ 12.85 hrs, Volume= 48.066 af, Depth= 4.92"

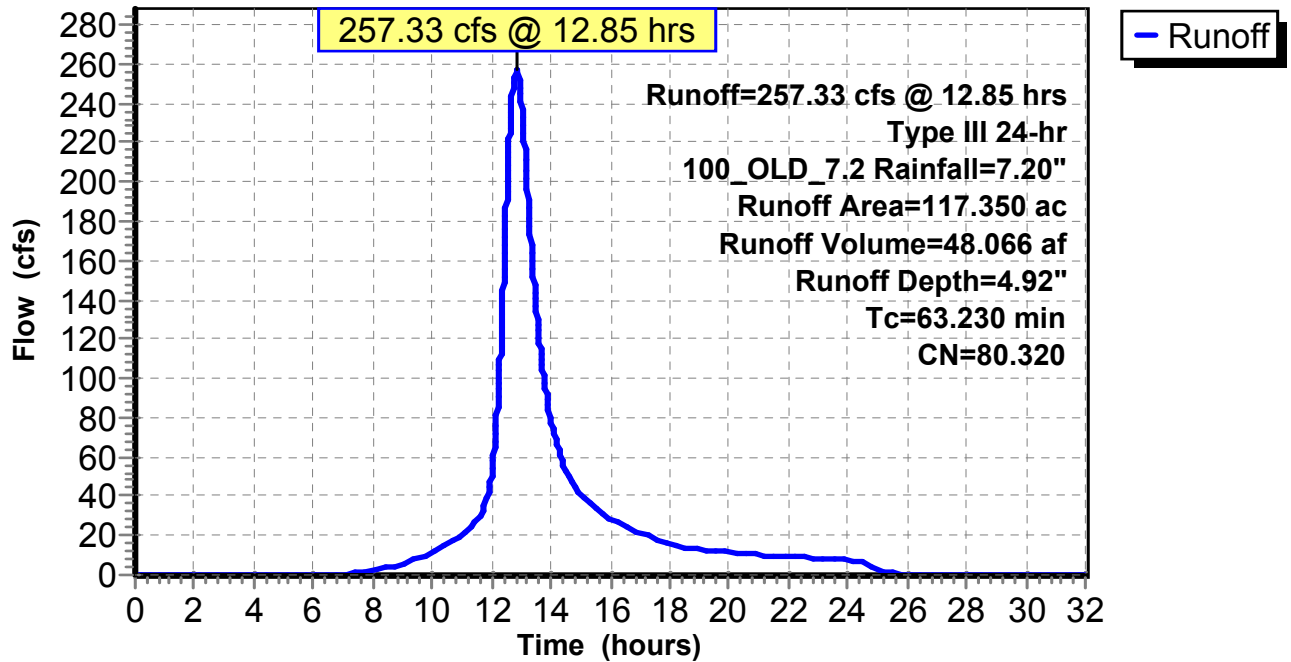
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



Summary for Subcatchment F: WS F

Runoff = 281.77 cfs @ 12.63 hrs, Volume= 42.867 af, Depth= 4.25"

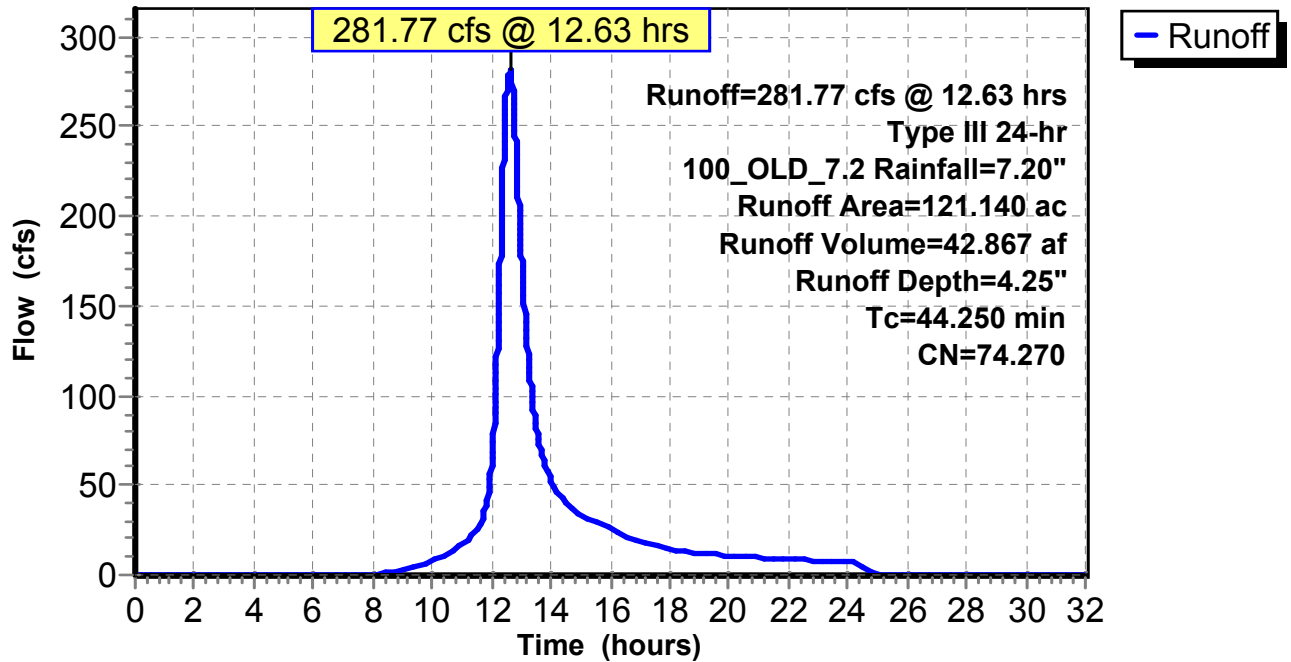
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



Summary for Subcatchment G: WS G

Runoff = 505.46 cfs @ 12.50 hrs, Volume= 70.151 af, Depth= 5.05"

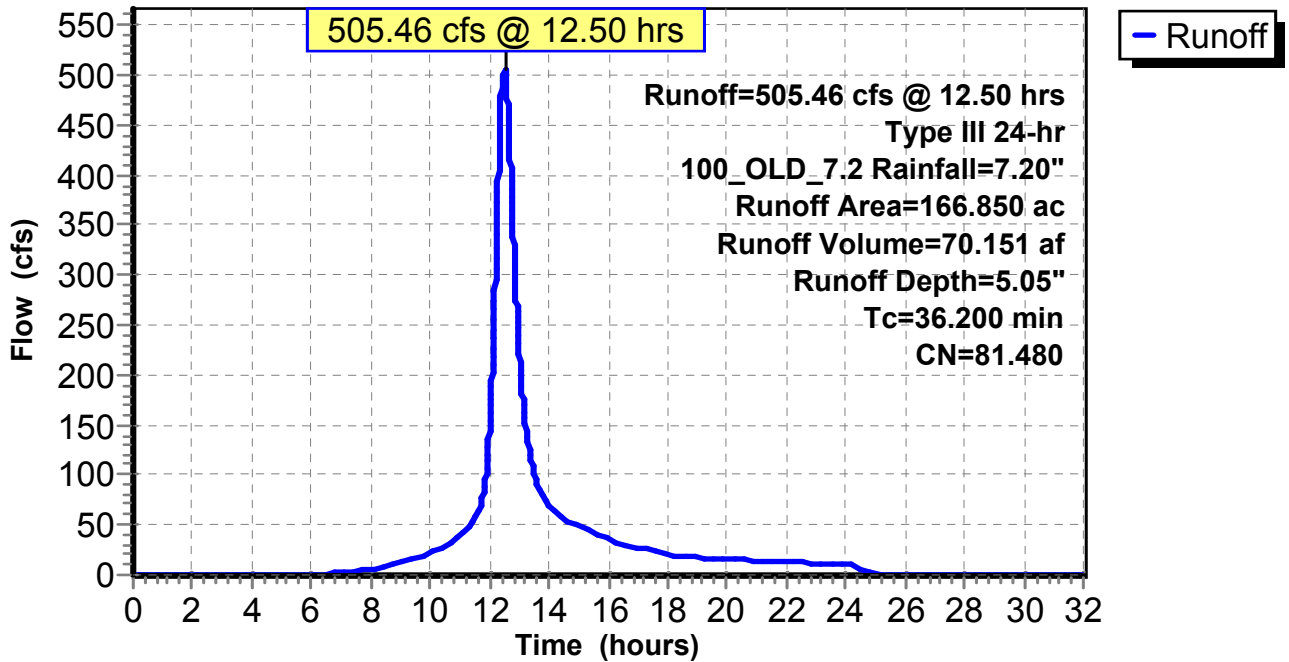
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 3.67" for 100_OLD_7.2 event
 Inflow = 250.72 cfs @ 13.66 hrs, Volume= 124.003 af
 Outflow = 250.56 cfs @ 13.72 hrs, Volume= 123.710 af, Atten= 0%, Lag= 3.545 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 4.02 fps, Min. Travel Time= 2.092 min
 Avg. Velocity = 2.12 fps, Avg. Travel Time= 3.957 min

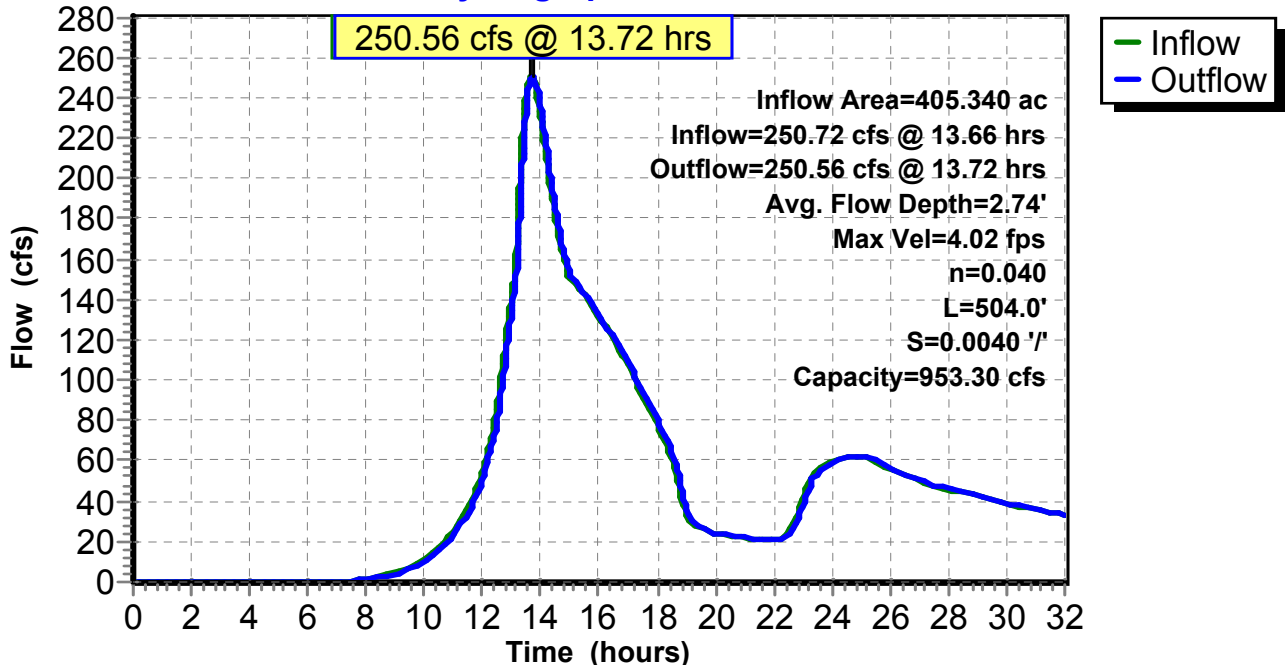
Peak Storage= 31,447 cf @ 13.68 hrs
 Average Depth at Peak Storage= 2.74'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 '/' Top Width= 32.00'
 Length= 504.0' Slope= 0.0040 '/'
 Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 4.25" for 100_OLD_7.2 event
 Inflow = 281.70 cfs @ 12.63 hrs, Volume= 42.867 af
 Outflow = 250.92 cfs @ 13.06 hrs, Volume= 42.831 af, Atten= 11%, Lag= 26.046 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.25 fps, Min. Travel Time= 16.161 min
 Avg. Velocity = 0.66 fps, Avg. Travel Time= 55.201 min

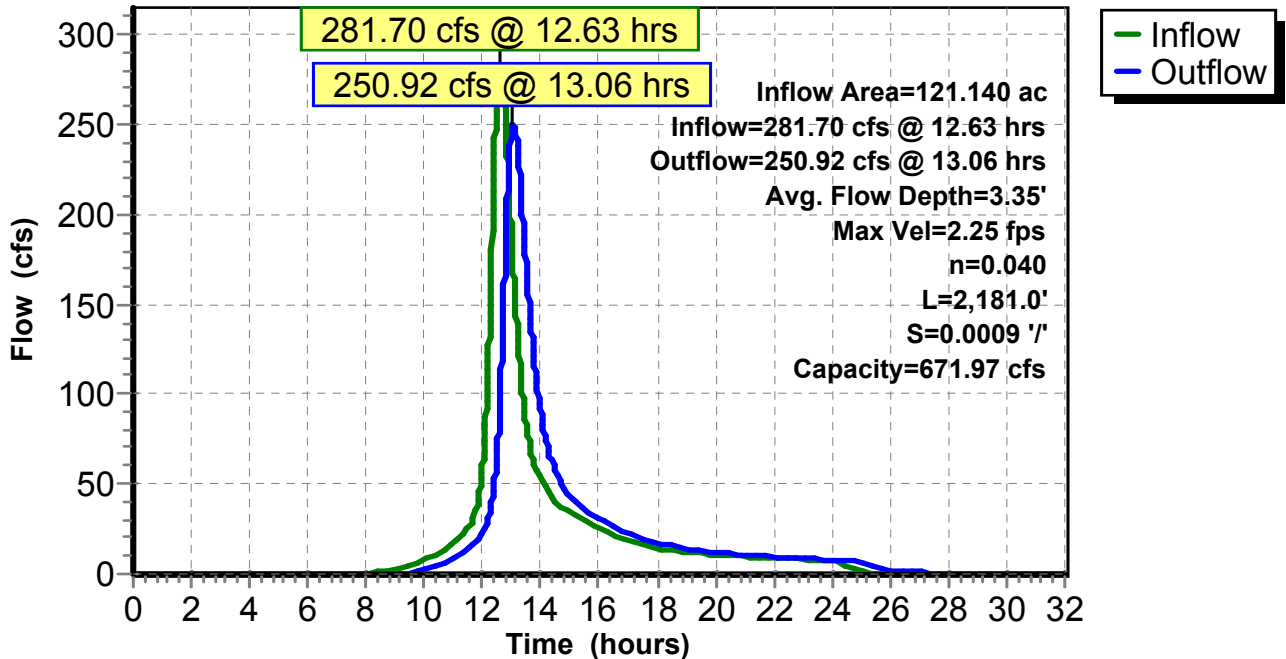
Peak Storage= 243,312 cf @ 12.79 hrs
 Average Depth at Peak Storage= 3.35'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 2,181.0' Slope= 0.0009 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 4.91" for 100_OLD_7.2 event
 Inflow = 501.02 cfs @ 12.53 hrs, Volume= 68.259 af
 Outflow = 50.98 cfs @ 25.04 hrs, Volume= 33.745 af, Atten= 90%, Lag= 750.645 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.61 fps, Min. Travel Time= 606.624 min
 Avg. Velocity = 0.45 fps, Avg. Travel Time= 811.978 min

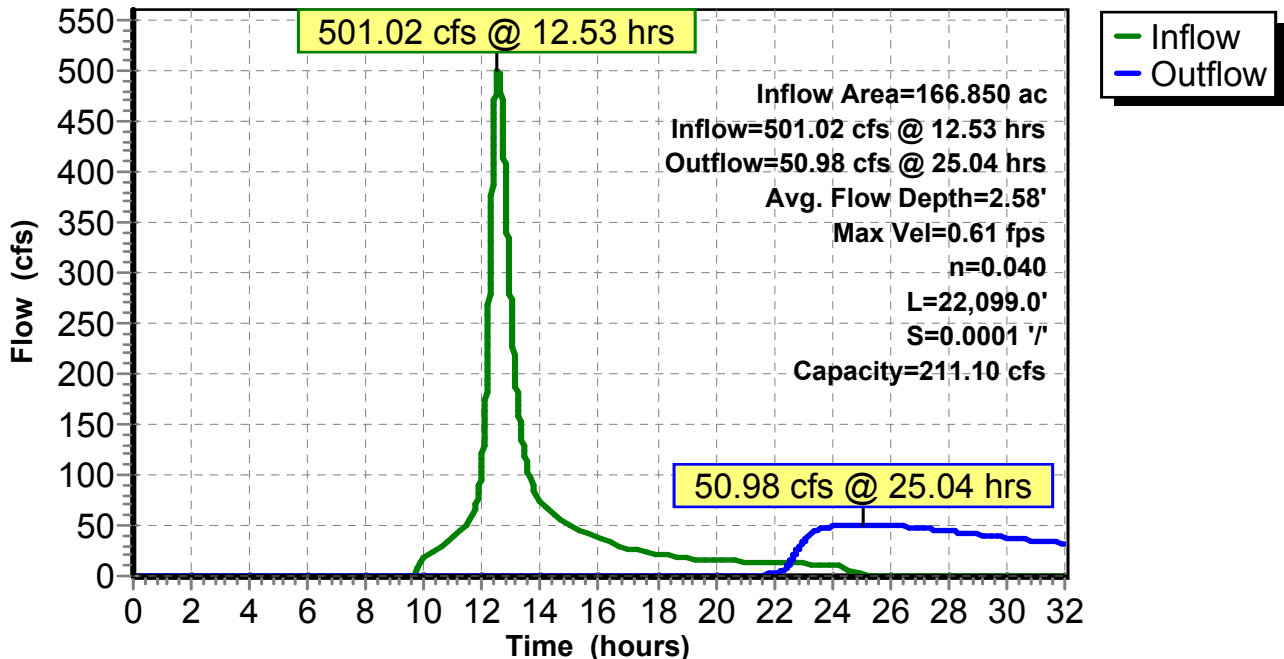
Peak Storage= 1,855,591 cf @ 14.93 hrs
 Average Depth at Peak Storage= 2.58'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 22,099.0' Slope= 0.0001 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 3.72" for 100_OLD_7.2 event
 Inflow = 267.76 cfs @ 13.73 hrs, Volume= 137.953 af
 Outflow = 265.13 cfs @ 13.96 hrs, Volume= 136.911 af, Atten= 1%, Lag= 13.750 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 6.51 fps, Min. Travel Time= 7.634 min
 Avg. Velocity = 3.76 fps, Avg. Travel Time= 13.221 min

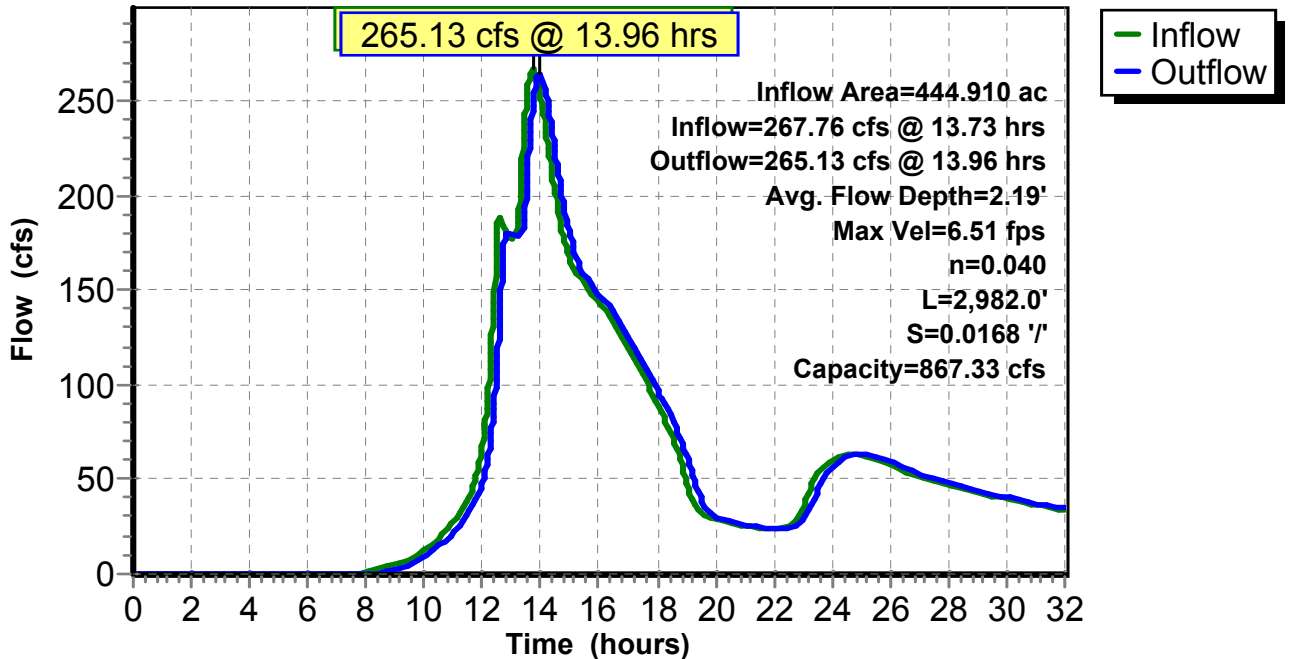
Peak Storage= 121,436 cf @ 13.83 hrs
 Average Depth at Peak Storage= 2.19'
 Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040
 Side Slope Z-value= 3.0 ' / ' Top Width= 36.00'
 Length= 2,982.0' Slope= 0.0168 ' / '
 Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 3.99" for 100_OLD_7.2 event
 Inflow = 474.62 cfs @ 12.73 hrs, Volume= 186.369 af
 Outflow = 474.45 cfs @ 12.75 hrs, Volume= 186.248 af, Atten= 0%, Lag= 1.164 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 10.40 fps, Min. Travel Time= 0.697 min
 Avg. Velocity = 4.82 fps, Avg. Travel Time= 1.503 min

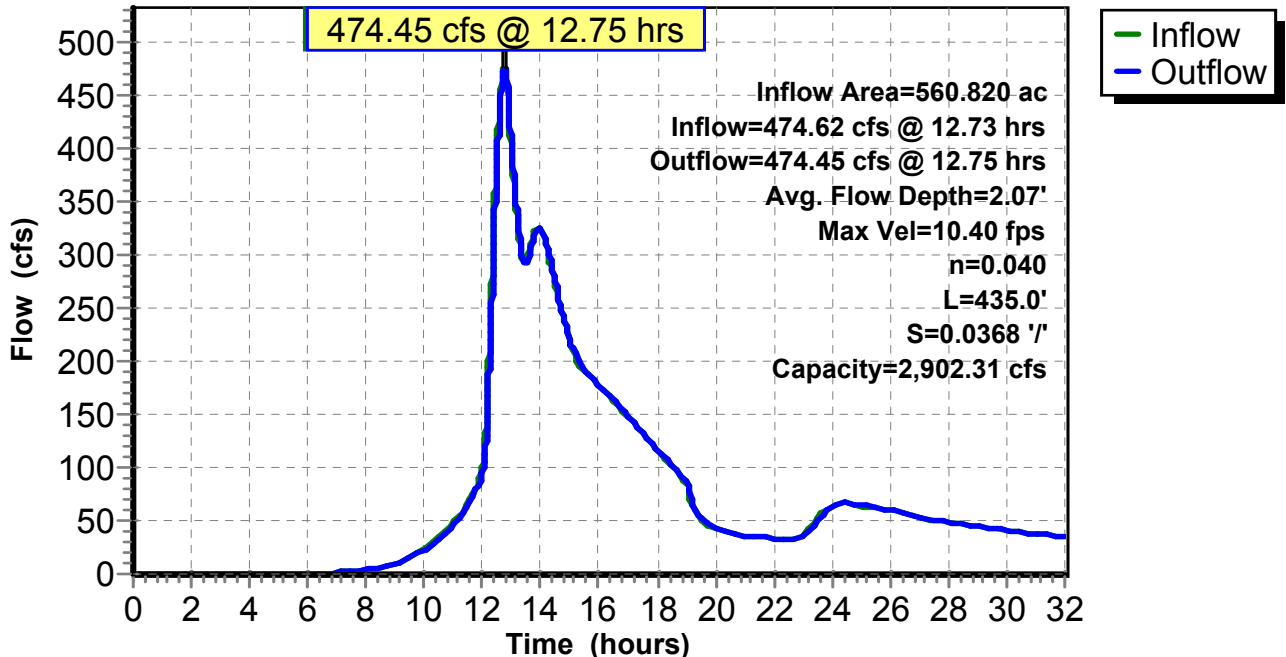
Peak Storage= 19,837 cf @ 12.74 hrs
 Average Depth at Peak Storage= 2.07'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' ' Top Width= 32.00'
 Length= 435.0' Slope= 0.0368 ' '
 Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.000 min
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.000 min

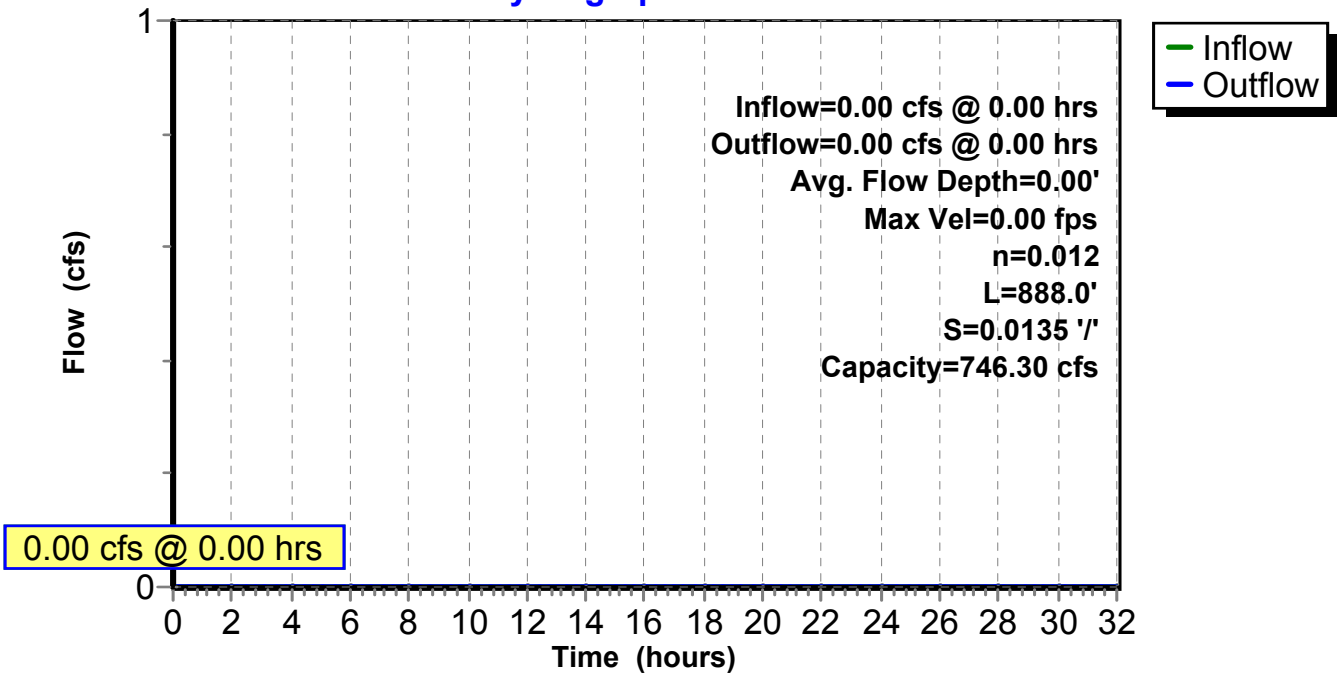
Peak Storage= 0 cf @ 0.00 hrs
 Average Depth at Peak Storage= 0.00'
 Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
 Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
 Length= 888.0' Slope= 0.0135 ' '
 Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



Summary for Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 4.21" for 100_OLD_7.2 event
 Inflow = 668.89 cfs @ 12.53 hrs, Volume= 229.862 af
 Outflow = 668.84 cfs @ 12.53 hrs, Volume= 229.856 af, Atten= 0%, Lag= 0.099 min
 Primary = 668.84 cfs @ 12.53 hrs, Volume= 229.856 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 46.16' @ 12.53 hrs Surf.Area= 0.695 ac Storage= 0.112 af

Plug-Flow detention time= 0.122 min calculated for 229.784 af (100% of inflow)
 Center-of-Mass det. time= 0.098 min (1,000.376 - 1,000.278)

Volume	Invert	Avail.Storage	Storage Description
#1	46.00'	82.605 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
46.00	0.695	0.000	0.000
48.00	0.695	1.390	1.390
50.00	0.800	1.495	2.885
52.00	1.420	2.220	5.105
54.00	2.270	3.690	8.795
56.00	3.160	5.430	14.225
58.00	4.070	7.230	21.455
60.00	4.980	9.050	30.505
62.00	5.710	10.690	41.195
64.00	6.620	12.330	53.525
66.00	7.170	13.790	67.315
68.00	8.120	15.290	82.605

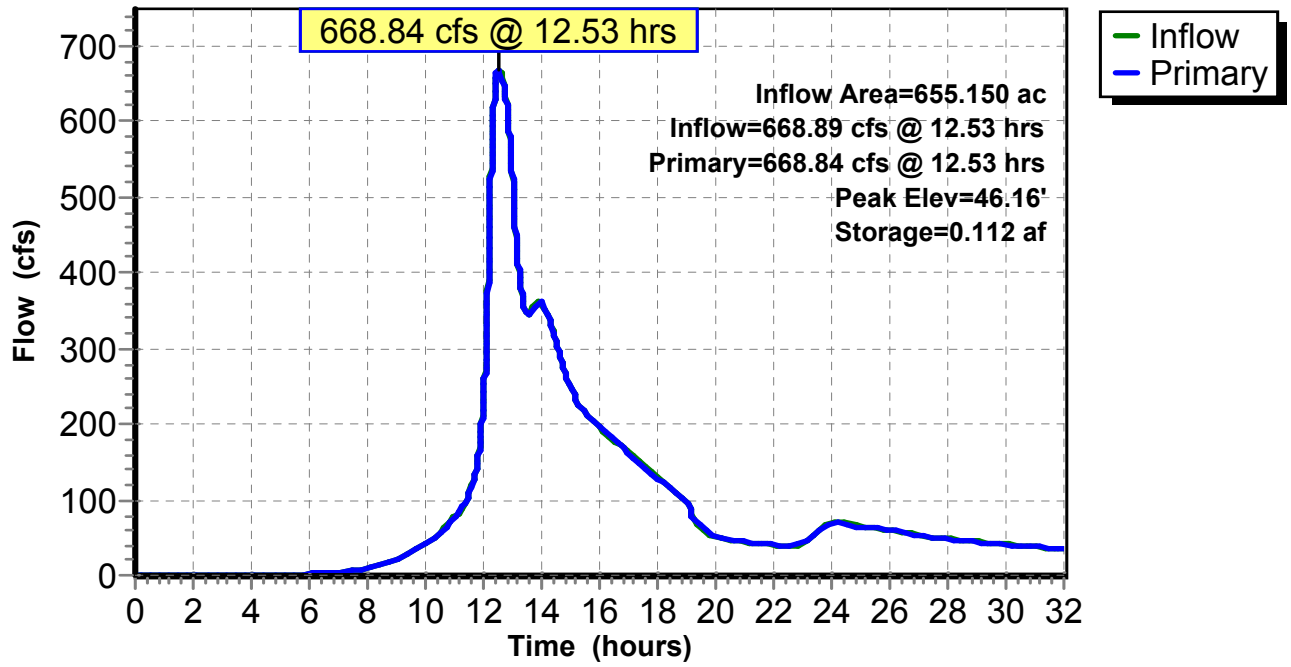
Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert X 2.00 L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48

Primary OutFlow Max=907.16 cfs @ 12.53 hrs HW=46.16' (Free Discharge)

- 1=Culvert (Inlet Controls 907.16 cfs @ 11.63 fps)
- 2=WEIR WESTCH AVE (Controls 0.00 cfs)

Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 4.03" for 100_OLD_7.2 event
 Inflow = 500.51 cfs @ 12.73 hrs, Volume= 195.489 af
 Outflow = 493.66 cfs @ 12.79 hrs, Volume= 195.489 af, Atten= 1%, Lag= 3.767 min
 Primary = 493.66 cfs @ 12.79 hrs, Volume= 195.489 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 73.75' @ 12.79 hrs Surf.Area= 0.268 ac Storage= 0.762 af

Plug-Flow detention time= 0.184 min calculated for 195.489 af (100% of inflow)
 Center-of-Mass det. time= 0.184 min (1,033.683 - 1,033.499)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

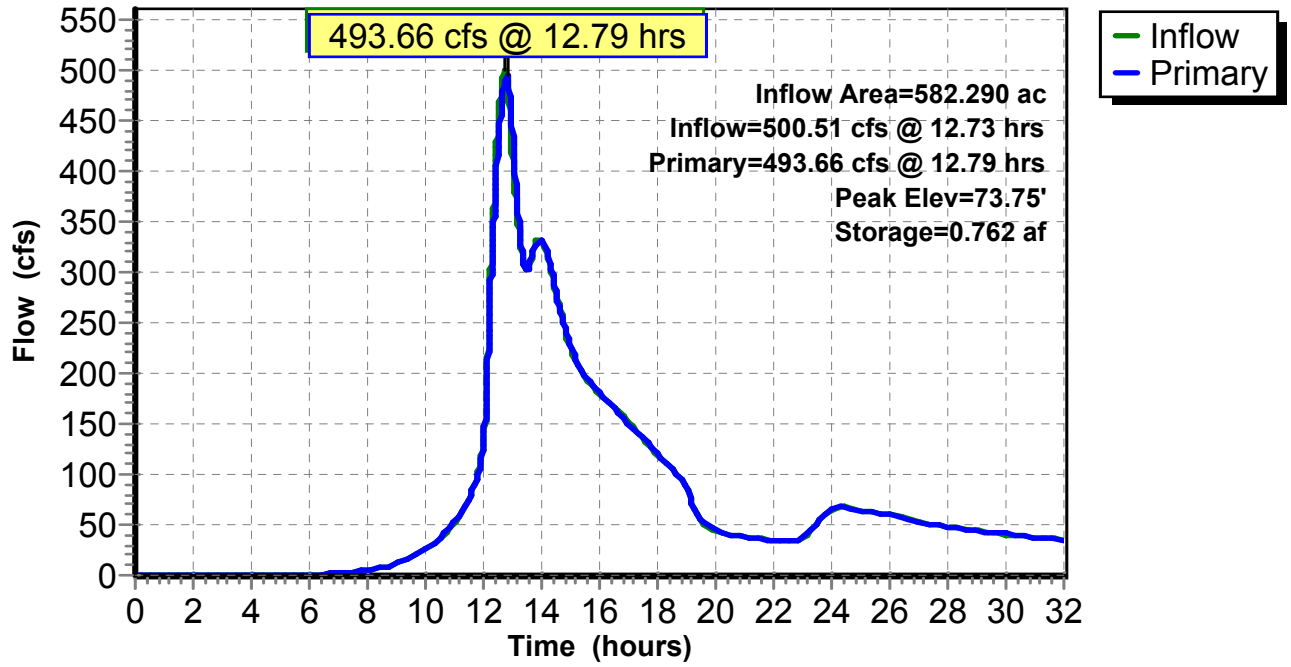
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=493.66 cfs @ 12.79 hrs HW=73.75' (Free Discharge)

- 1=Culvert (Inlet Controls 300.52 cfs @ 15.31 fps)
- 2=Culvert 2 (Inlet Controls 193.15 cfs @ 9.84 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 3.73" for 100_OLD_7.2 event
 Inflow = 268.01 cfs @ 13.70 hrs, Volume= 138.406 af
 Outflow = 267.76 cfs @ 13.73 hrs, Volume= 137.953 af, Atten= 0%, Lag= 1.752 min
 Primary = 267.76 cfs @ 13.73 hrs, Volume= 137.953 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 130.39' @ 13.73 hrs Surf.Area= 1.013 ac Storage= 2.463 af

Plug-Flow detention time= 9.171 min calculated for 137.910 af (100% of inflow)
 Center-of-Mass det. time= 6.483 min (1,101.996 - 1,095.513)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

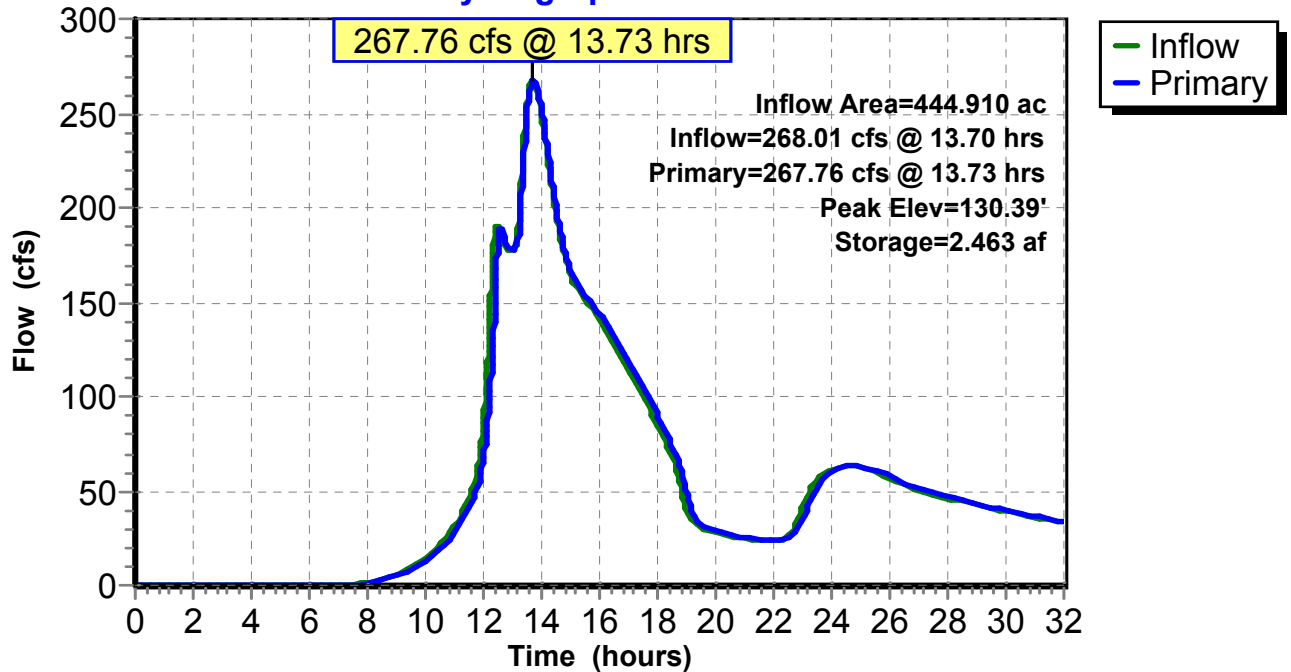
Primary OutFlow Max=267.65 cfs @ 13.73 hrs HW=130.39' (Free Discharge)

1=Culvert (Barrel Controls 166.42 cfs @ 7.51 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 101.24 cfs @ 2.05 fps)

Pond 4A: DP 4 A ARGYLE

Hydrograph



Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 3.69" for 100_OLD_7.2 event
 Inflow = 490.74 cfs @ 12.99 hrs, Volume= 124.642 af
 Outflow = 250.72 cfs @ 13.66 hrs, Volume= 124.003 af, Atten= 49%, Lag= 40.025 min
 Primary = 250.72 cfs @ 13.66 hrs, Volume= 124.003 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 132.35' @ 13.66 hrs Surf.Area= 19.844 ac Storage= 25.553 af

Plug-Flow detention time= 46.419 min calculated for 124.003 af (99% of inflow)
 Center-of-Mass det. time= 42.131 min (1,122.546 - 1,080.415)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

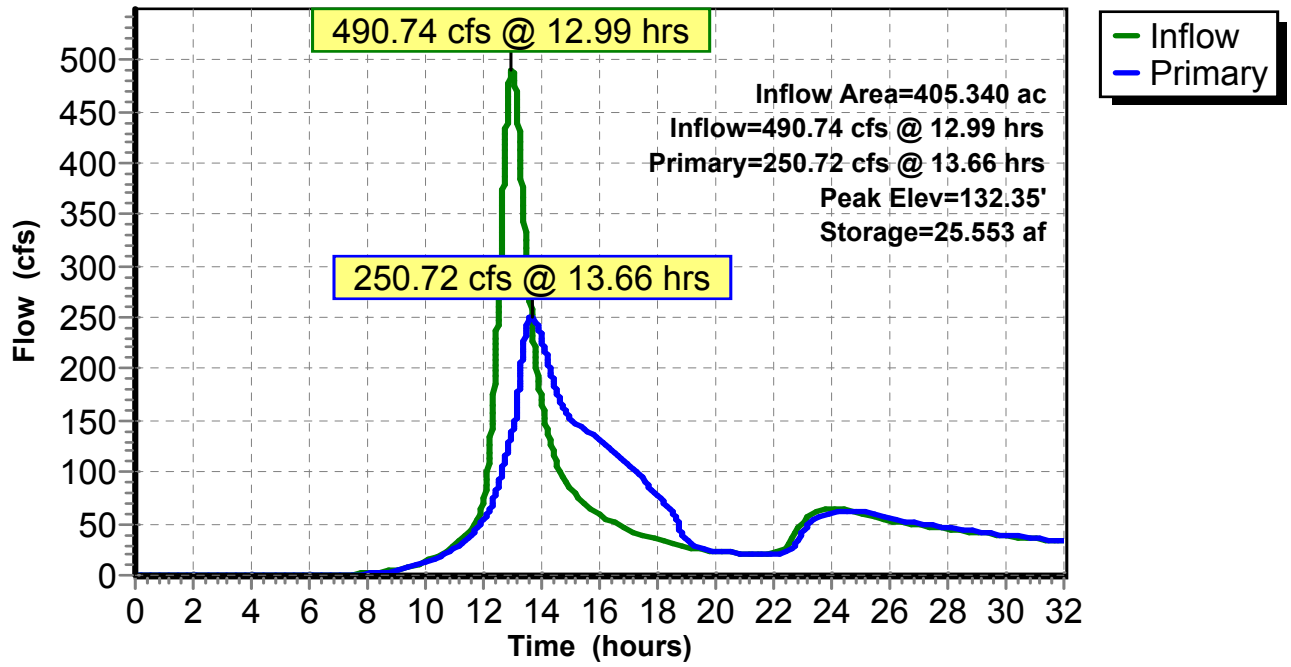
Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

Primary OutFlow Max=249.91 cfs @ 13.66 hrs HW=132.35' (Free Discharge)

- 1=Culvert (Barrel Controls 168.88 cfs @ 7.69 fps)
- 2=Asymmetrical Weir (Weir Controls 81.03 cfs @ 1.73 fps)

Pond 5P: DP 5 BETSY BROWN ROAD

Hydrograph



Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 3.99" for 100_OLD_7.2 event
 Inflow = 475.99 cfs @ 12.71 hrs, Volume= 186.428 af
 Outflow = 474.62 cfs @ 12.73 hrs, Volume= 186.369 af, Atten= 0%, Lag= 1.179 min
 Primary = 474.62 cfs @ 12.73 hrs, Volume= 186.369 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 91.26' @ 12.73 hrs Surf.Area= 1.370 ac Storage= 1.726 af

Plug-Flow detention time= 2.741 min calculated for 186.311 af (100% of inflow)
 Center-of-Mass det. time= 2.461 min (1,043.197 - 1,040.736)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

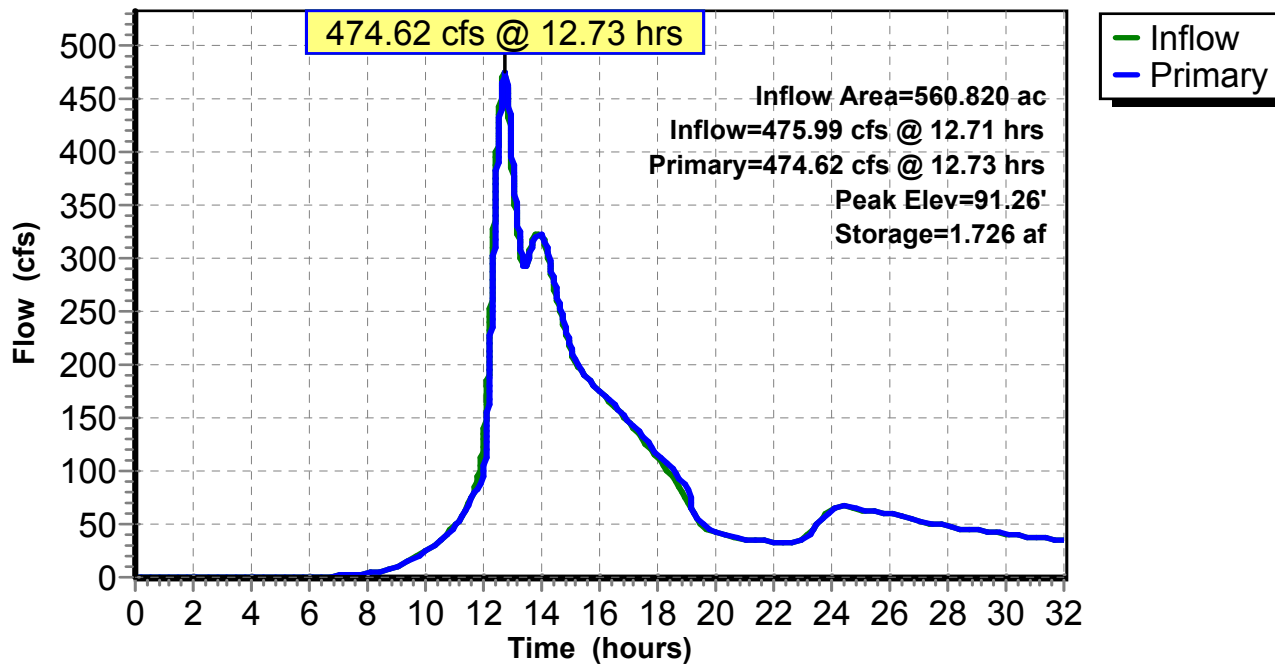
Primary OutFlow Max=474.16 cfs @ 12.73 hrs HW=91.26' (Free Discharge)

1=Sharp-Crested Rectangular Weir (Weir Controls 181.73 cfs @ 5.38 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 292.43 cfs @ 2.89 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 4.12" for 100_OLD_7.2 event
 Inflow = 737.18 cfs @ 12.52 hrs, Volume= 245.602 af
 Outflow = 718.27 cfs @ 12.58 hrs, Volume= 245.600 af, Atten= 3%, Lag= 3.783 min
 Primary = 718.27 cfs @ 12.58 hrs, Volume= 245.600 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 37.94' @ 12.58 hrs Surf.Area= 0.266 ac Storage= 0.615 af

Plug-Flow detention time= 0.160 min calculated for 245.600 af (100% of inflow)
 Center-of-Mass det. time= 0.155 min (1,023.348 - 1,023.193)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

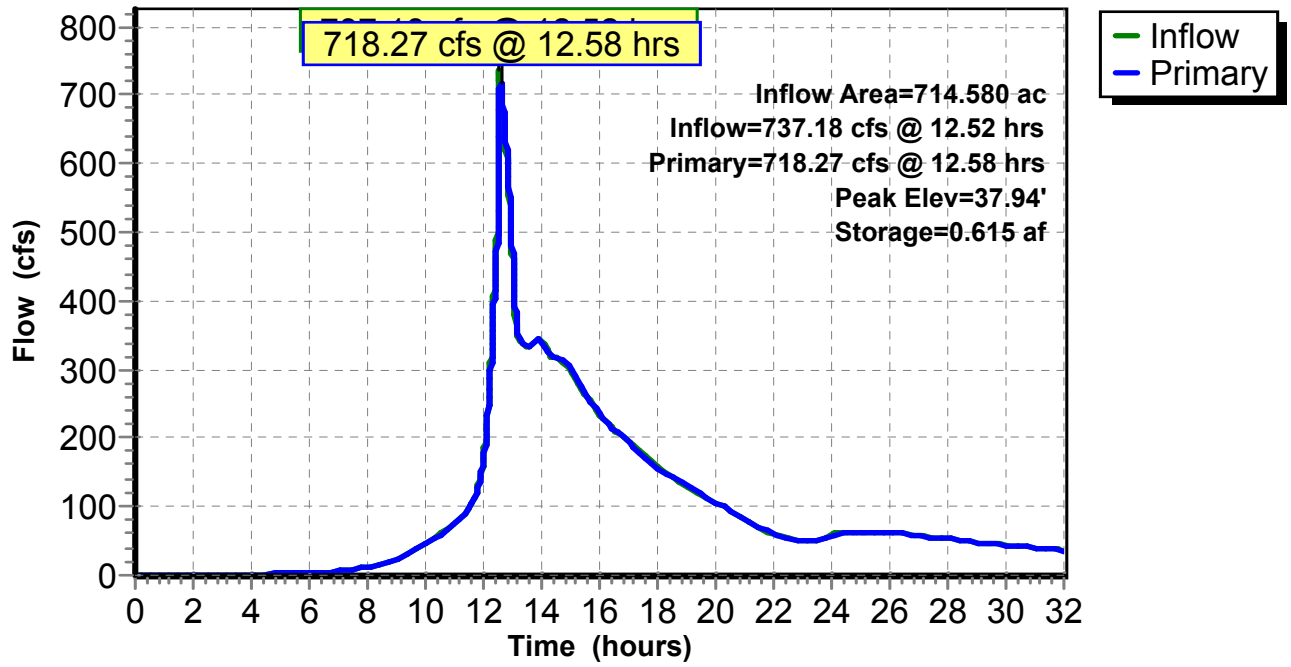
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=718.01 cfs @ 12.58 hrs HW=37.94' (Free Discharge)

- 1=Culvert (Barrel Controls 718.01 cfs @ 8.72 fps)
- 2=WEIR BOWMAN (Controls 0.00 cfs)

Pond 8P: BOWMAN FIELDS

Hydrograph



Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 4.25" for 100_OLD_7.2 event
 Inflow = 281.77 cfs @ 12.63 hrs, Volume= 42.867 af
 Outflow = 281.70 cfs @ 12.63 hrs, Volume= 42.867 af, Atten= 0%, Lag= 0.089 min
 Primary = 281.70 cfs @ 12.63 hrs, Volume= 42.867 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 134.83' @ 12.63 hrs Surf.Area= 0.184 ac Storage= 0.210 af

Plug-Flow detention time= 0.270 min calculated for 42.854 af (100% of inflow)
 Center-of-Mass det. time= 0.270 min (855.880 - 855.611)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

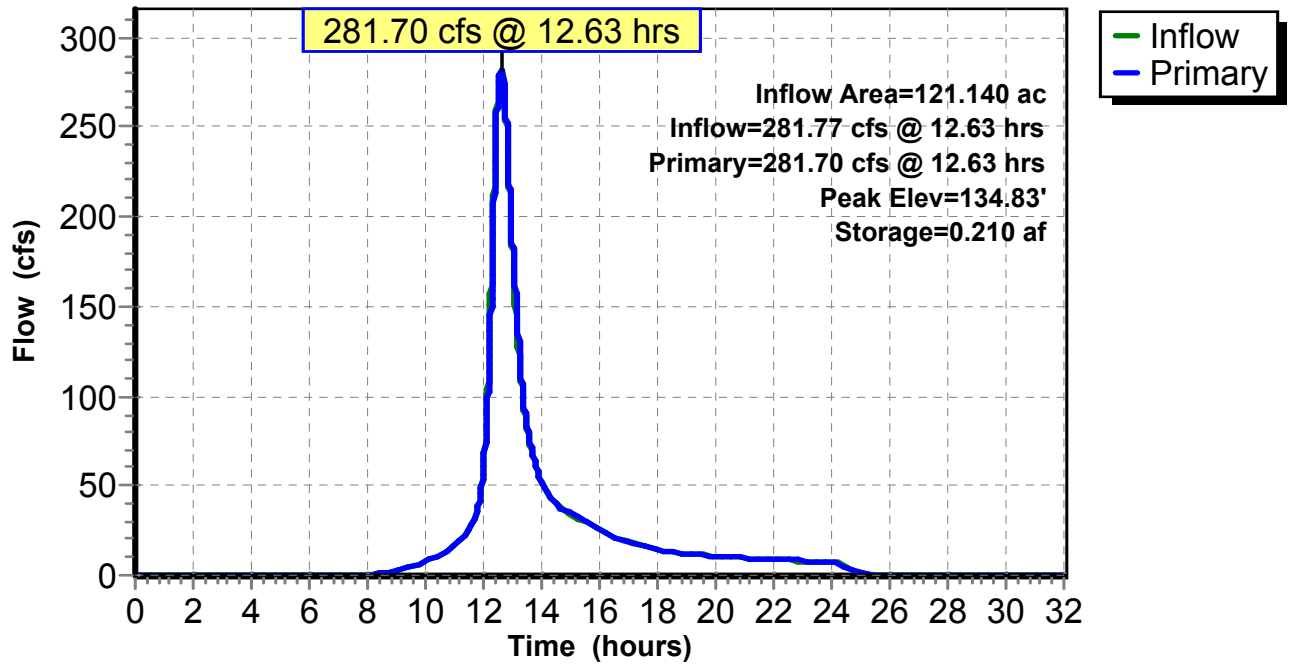
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=280.52 cfs @ 12.63 hrs HW=134.83' (Free Discharge)

- 1=Culvert (Inlet Controls 92.17 cfs @ 13.04 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 89.44 cfs @ 6.19 fps)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 98.90 cfs @ 1.89 fps)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Hydrograph



Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 5.05" for 100_OLD_7.2 event
 Inflow = 505.46 cfs @ 12.50 hrs, Volume= 70.151 af
 Outflow = 501.02 cfs @ 12.53 hrs, Volume= 68.259 af, Atten= 1%, Lag= 1.614 min
 Primary = 501.02 cfs @ 12.53 hrs, Volume= 68.259 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.66' @ 12.53 hrs Surf.Area= 4.101 ac Storage= 7.228 af (4.261 af above start)

Plug-Flow detention time= 60.646 min calculated for 65.291 af (93% of inflow)
 Center-of-Mass det. time= 14.256 min (845.537 - 831.281)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

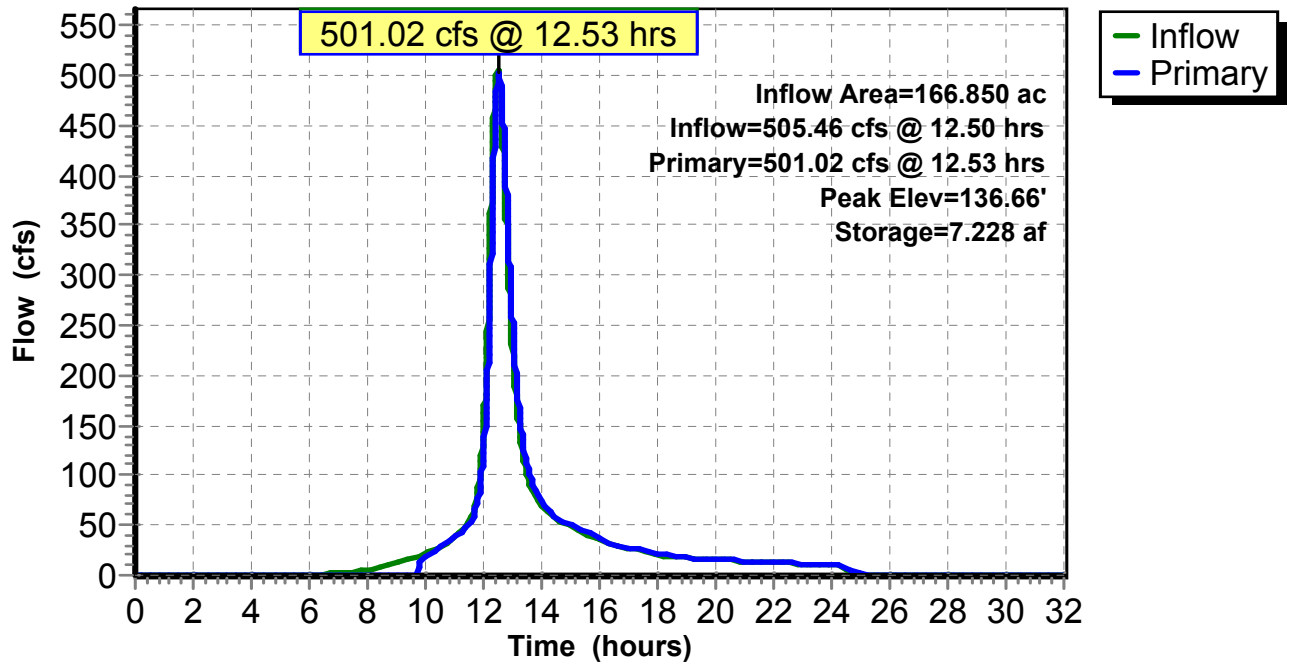
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=499.46 cfs @ 12.53 hrs HW=136.66' (Free Discharge)

- 1=Culvert (Inlet Controls 3.15 cfs @ 2.76 fps)
- 2=Asymmetrical Weir (Weir Controls 496.31 cfs @ 2.28 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Hydrograph



Summary for Pond 12P: UPSTREAM add new culvert AVON OVERFLOW TO ROAD

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 4.03" for 100_OLD_7.2 event
 Inflow = 493.66 cfs @ 12.79 hrs, Volume= 195.489 af
 Outflow = 493.64 cfs @ 12.80 hrs, Volume= 195.486 af, Atten= 0%, Lag= 0.223 min
 Primary = 493.64 cfs @ 12.80 hrs, Volume= 195.486 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 60.66' @ 12.80 hrs Surf.Area= 1,105 sf Storage= 3,484 cf

Plug-Flow detention time= 0.091 min calculated for 195.425 af (100% of inflow)
 Center-of-Mass det. time= 0.078 min (1,033.761 - 1,033.683)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	63,134 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686
70.00	10,112	40,448	63,134

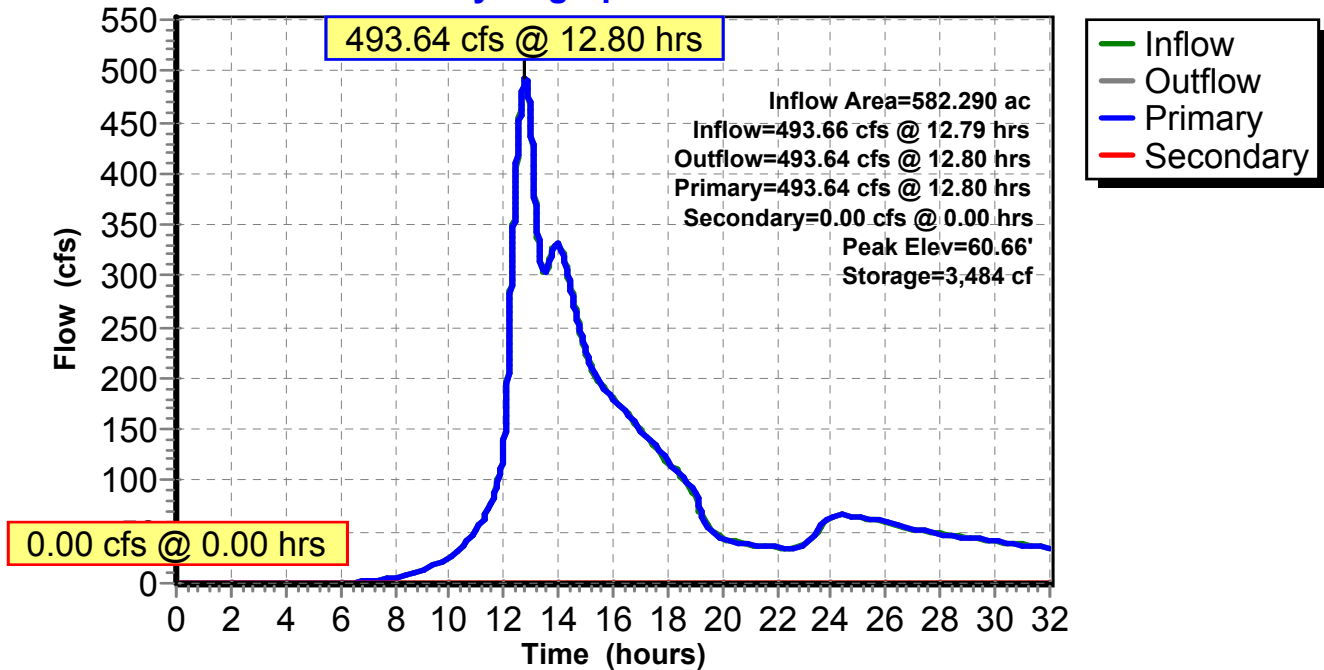
Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert X 3.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 55.13' / 37.90' S= 0.0206 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	68.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=493.73 cfs @ 12.80 hrs HW=60.66' (Free Discharge)
 ↑1=Culvert (Inlet Controls 493.73 cfs @ 8.38 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=56.00' (Free Discharge)
 ↑2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 12P: UPSTREAM add new culvert AVON OVERFLOW TO ROAD

Hydrograph



Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 45.00' @ 0.00 hrs Surf.Area= 100 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	45.00'	171,628 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	100	0	0
48.00	100	300	300
51.00	6,000	9,150	9,450
52.00	15,452	10,726	20,176
54.00	38,000	53,452	73,628
56.00	60,000	98,000	171,628

Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	45.00'	24.0" Round Culvert L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 45.00' / 44.00' S= 0.0100 '/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

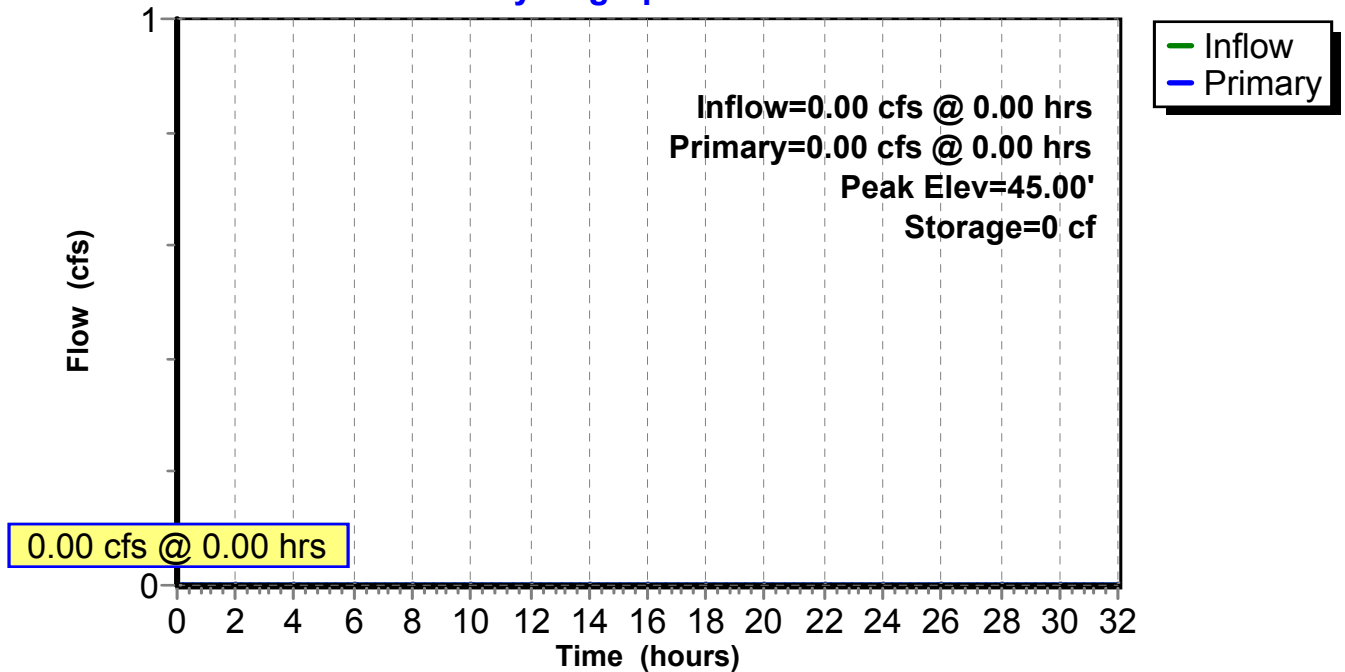
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=45.00' (Free Discharge)

↑1=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

└2=Culvert (Controls 0.00 cfs)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



Summary for Pond 27P: NEW DETENTION IN BALLFIELD

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 4.21" for 100_OLD_7.2 event
 Inflow = 668.84 cfs @ 12.53 hrs, Volume= 229.856 af
 Outflow = 523.54 cfs @ 12.53 hrs, Volume= 214.040 af, Atten= 22%, Lag= 0.000 min
 Primary = 190.43 cfs @ 12.53 hrs, Volume= 161.341 af
 Secondary = 333.11 cfs @ 12.53 hrs, Volume= 52.699 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 51.16' @ 12.53 hrs Surf.Area= 120,000 sf Storage= 937,500 cf

Plug-Flow detention time= 114.047 min calculated for 213.973 af (93% of inflow)
 Center-of-Mass det. time= 56.857 min (1,057.234 - 1,000.376)

Volume	Invert	Avail.Storage	Storage Description
#1	36.50'	937,500 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.50	80,000	0	0
44.00	90,000	637,500	637,500
46.00	100,000	190,000	827,500
47.00	120,000	110,000	937,500

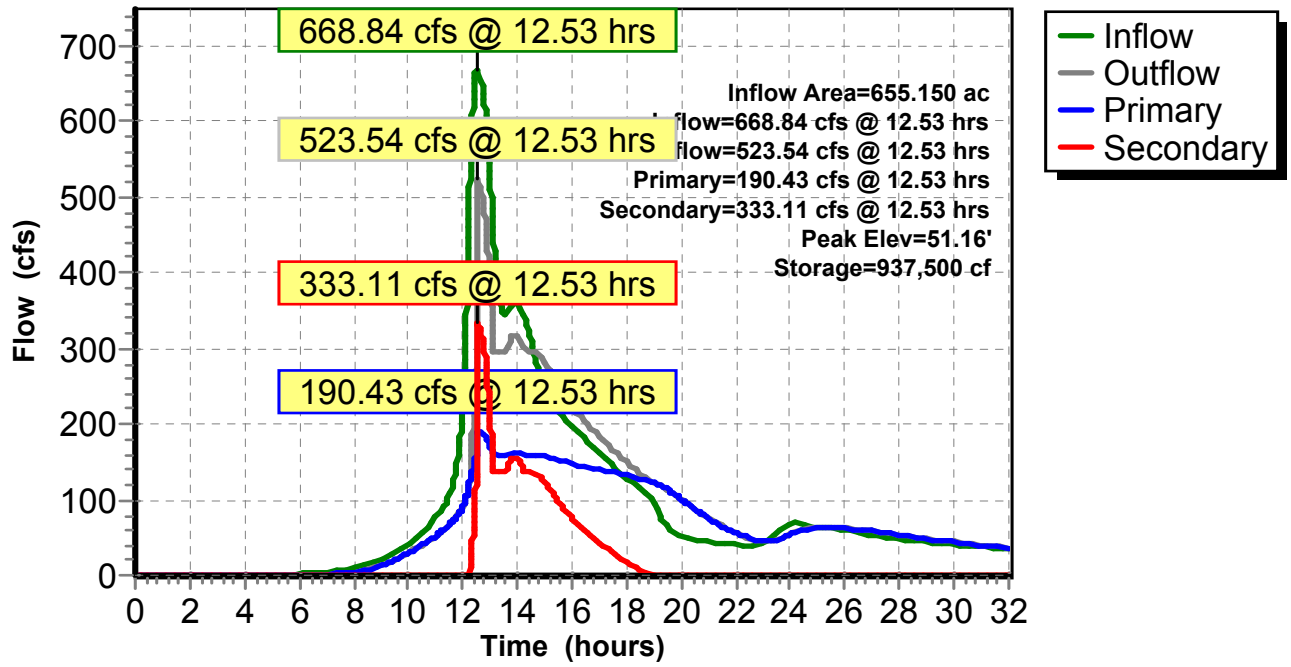
Device	Routing	Invert	Outlet Devices
#1	Primary	36.50'	18.0" Vert. Orifice/Grate X 6.00 C= 0.600
#2	Secondary	43.00'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=190.43 cfs @ 12.53 hrs HW=51.16' (Free Discharge)
 ↑1=Orifice/Grate (Orifice Controls 190.43 cfs @ 17.96 fps)

Secondary OutFlow Max=333.12 cfs @ 12.53 hrs HW=51.16' (Free Discharge)
 ↑2=Sharp-Crested Rectangular Weir (Weir Controls 333.12 cfs @ 9.34 fps)

Pond 27P: NEW DETENTION IN BALLFIELD

Hydrograph



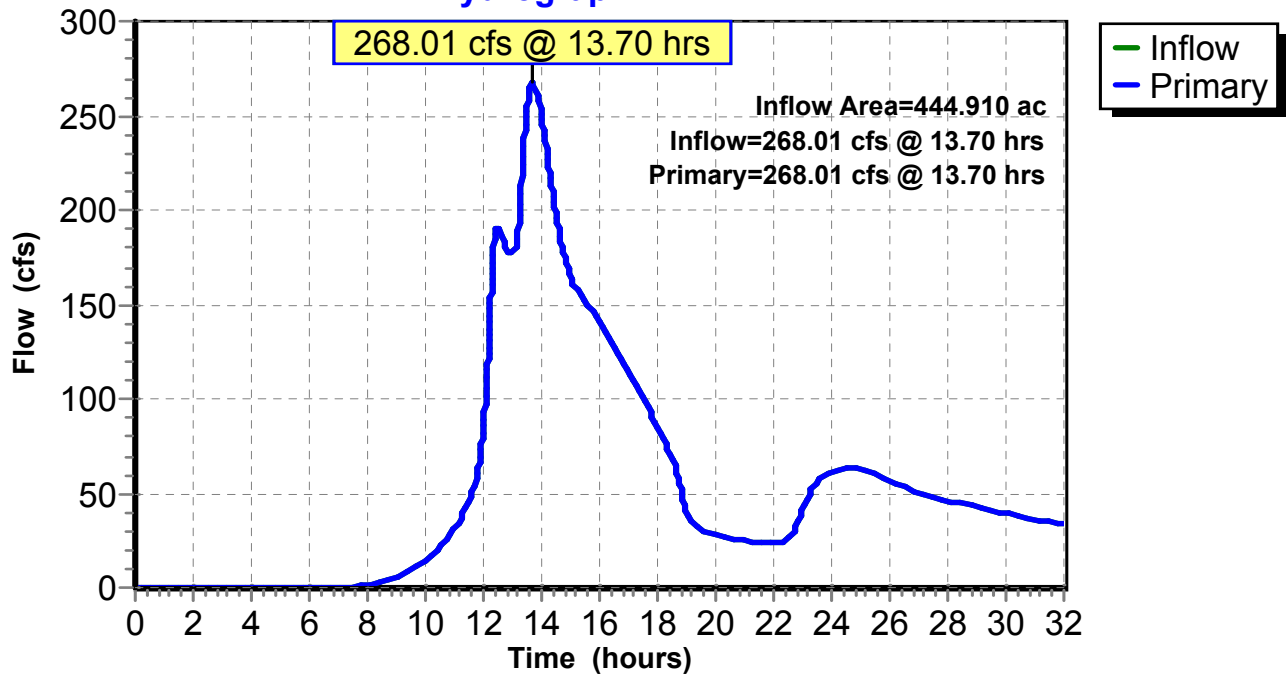
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 3.73" for 100_OLD_7.2 event
Inflow = 268.01 cfs @ 13.70 hrs, Volume= 138.406 af
Primary = 268.01 cfs @ 13.70 hrs, Volume= 138.406 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



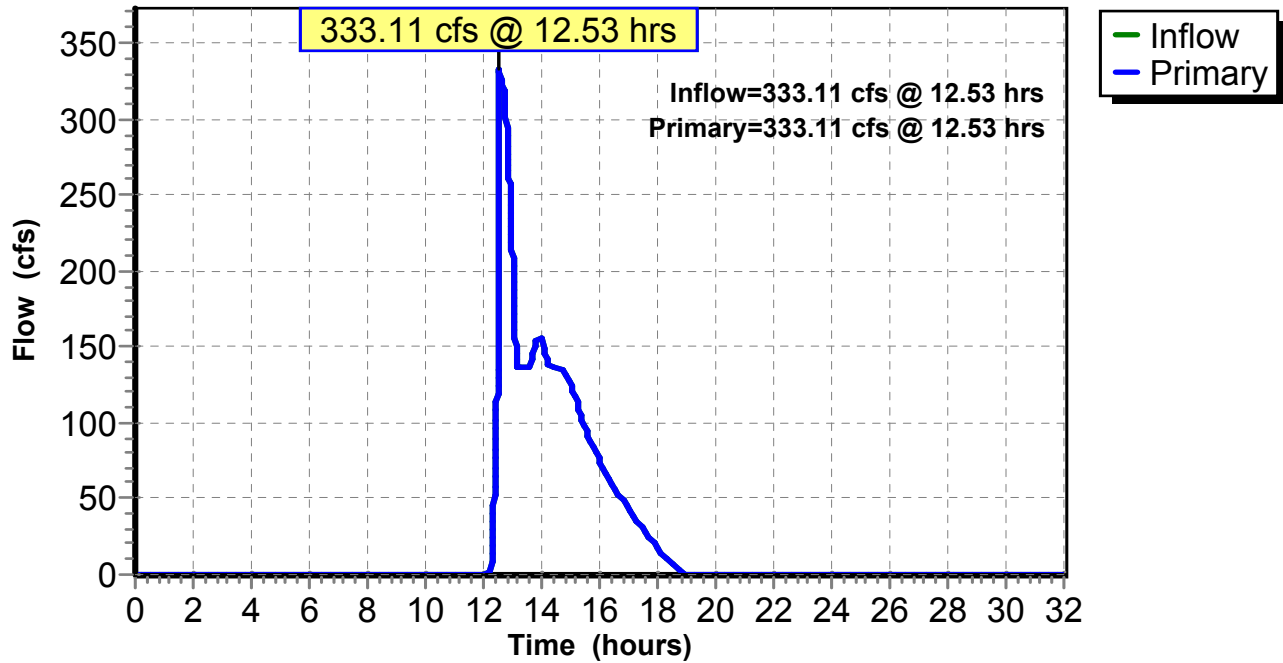
Summary for Link 24L: Weir

Inflow = 333.11 cfs @ 12.53 hrs, Volume= 52.699 af
Primary = 333.11 cfs @ 12.53 hrs, Volume= 52.699 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 24L: Weir

Hydrograph



Summary for Subcatchment A: WS A

Runoff = 285.42 cfs @ 12.42 hrs, Volume= 40.508 af, Depth= 8.18"

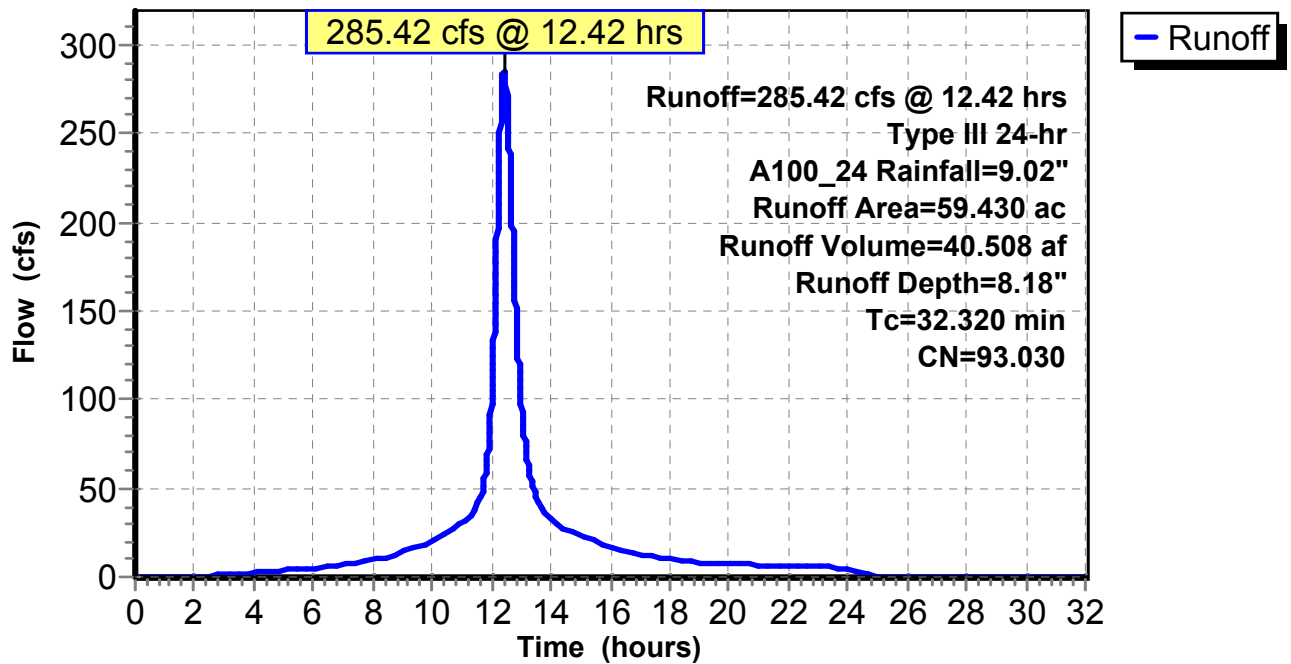
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



Summary for Subcatchment B: WS B

Runoff = 278.22 cfs @ 12.37 hrs, Volume= 35.772 af, Depth= 7.46"

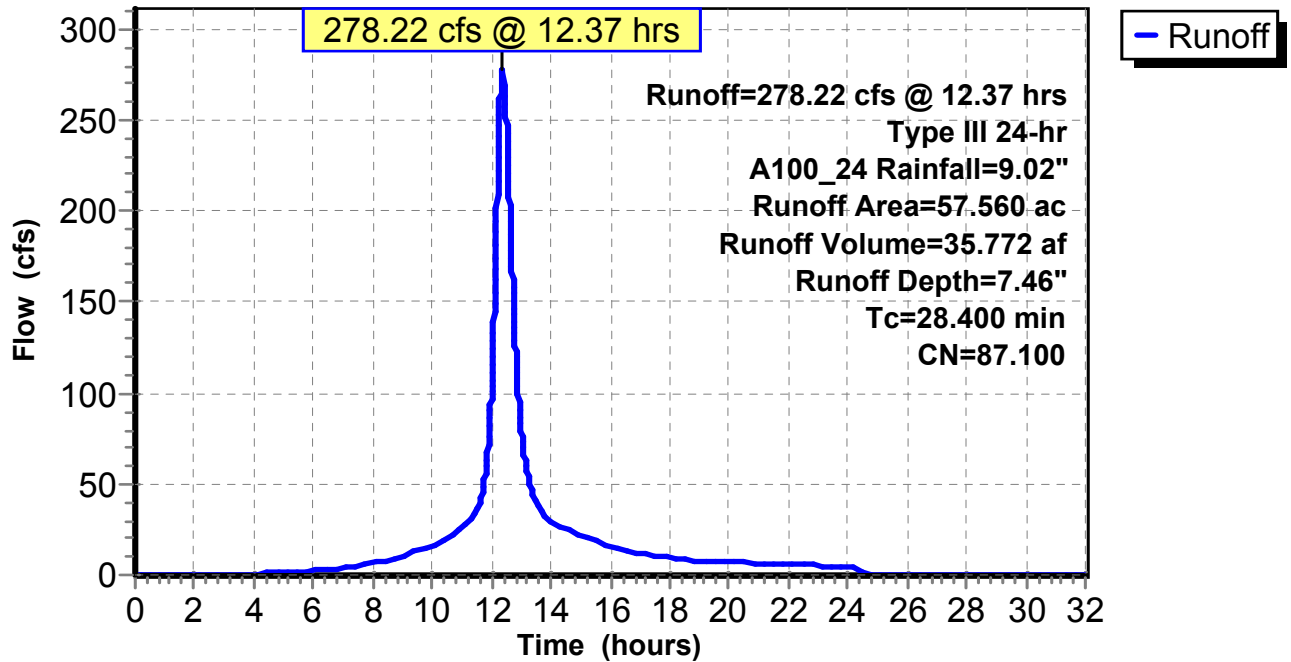
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



Summary for Subcatchment BH: HOTEL

Runoff = 70.94 cfs @ 12.42 hrs, Volume= 9.362 af, Depth= 7.34"

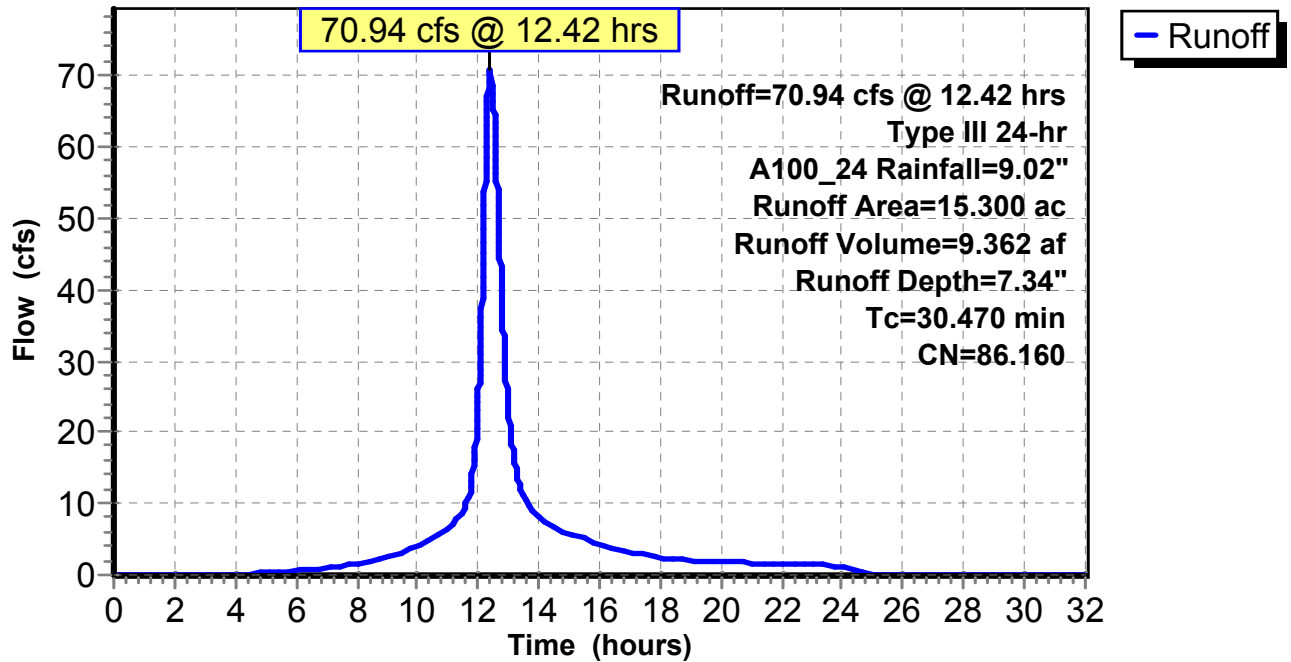
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



Summary for Subcatchment C: WS C

Runoff = 117.59 cfs @ 12.25 hrs, Volume= 12.344 af, Depth= 6.90"

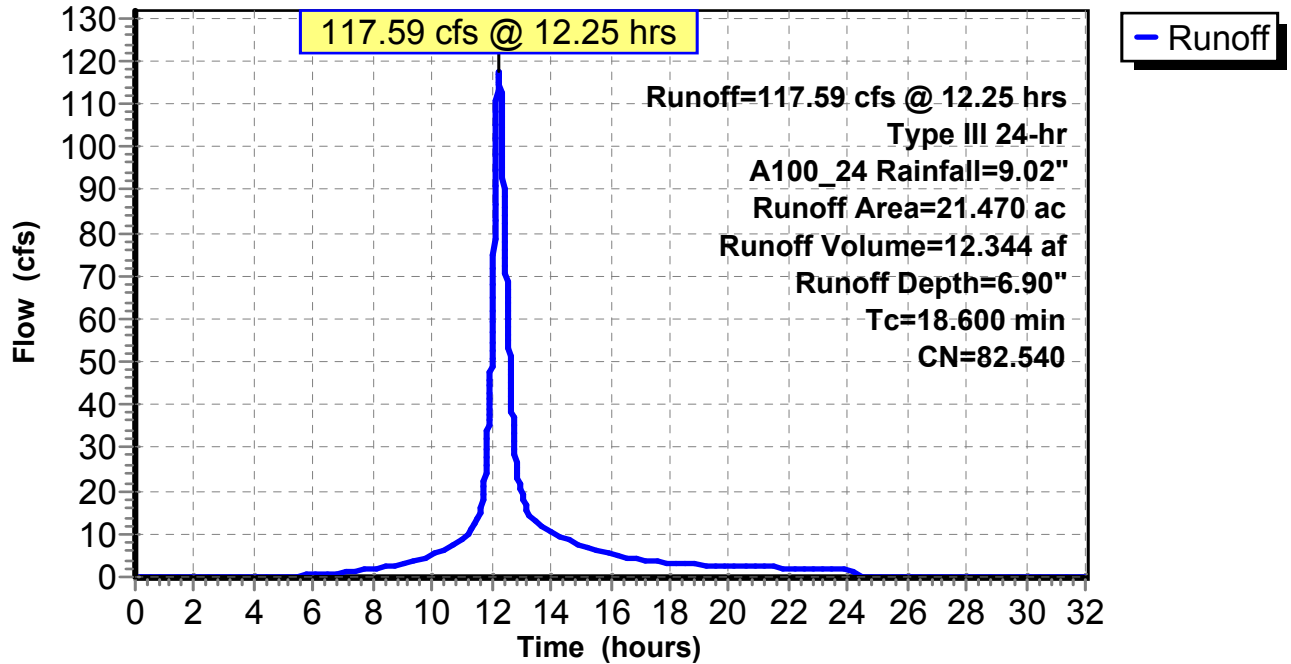
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



Summary for Subcatchment D: WS D

Runoff = 421.79 cfs @ 12.61 hrs, Volume= 66.238 af, Depth= 6.86"

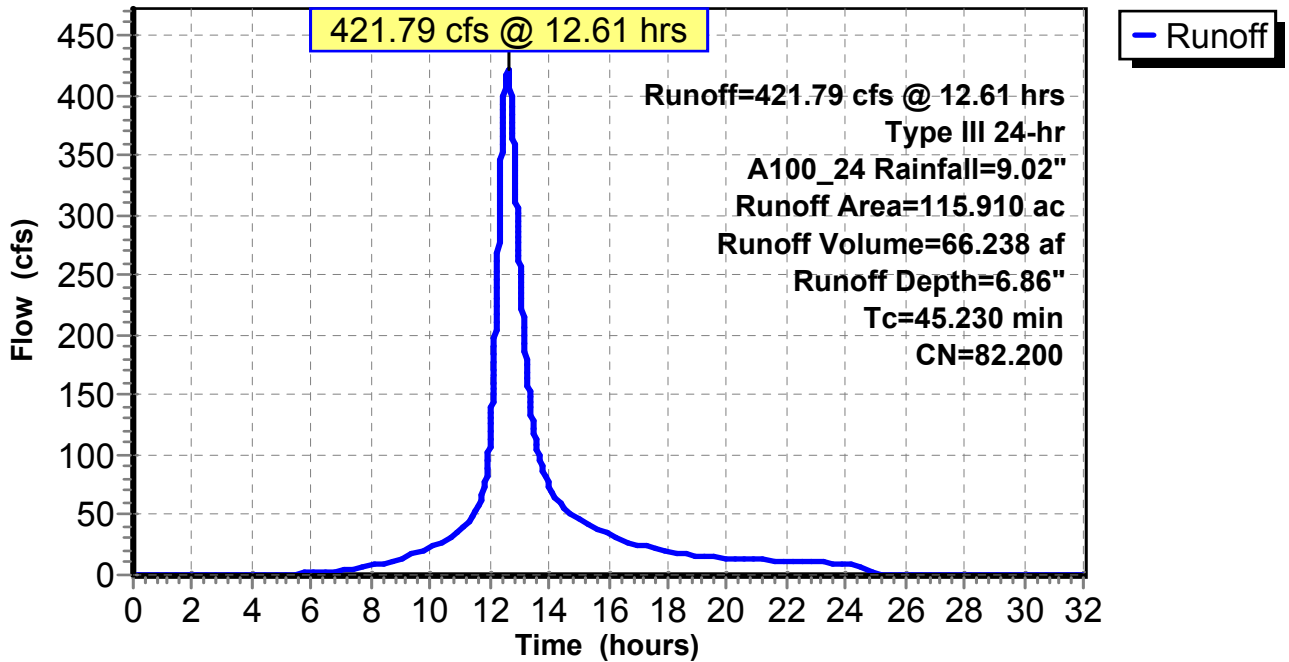
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



Summary for Subcatchment D-1: WS D-1

Runoff = 155.42 cfs @ 12.44 hrs, Volume= 20.173 af, Depth= 6.12"

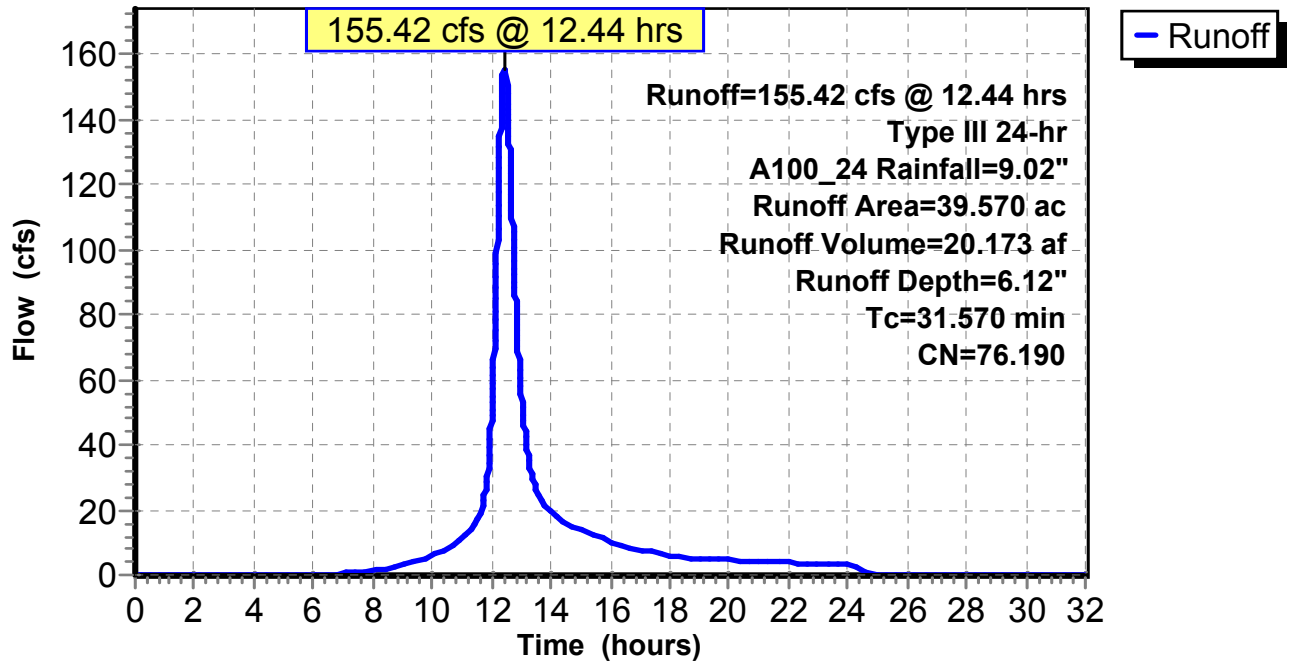
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



Summary for Subcatchment E: WS E

Runoff = 343.89 cfs @ 12.85 hrs, Volume= 64.802 af, Depth= 6.63"

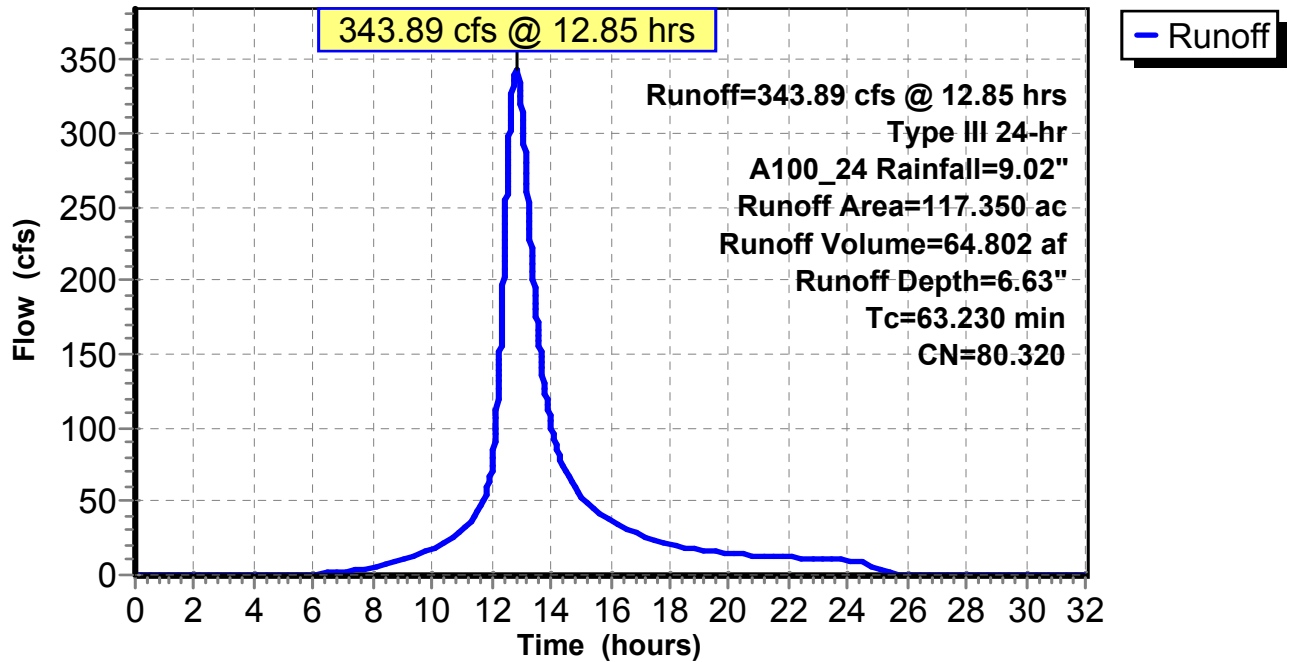
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



Summary for Subcatchment F: WS F

Runoff = 388.56 cfs @ 12.59 hrs, Volume= 59.365 af, Depth= 5.88"

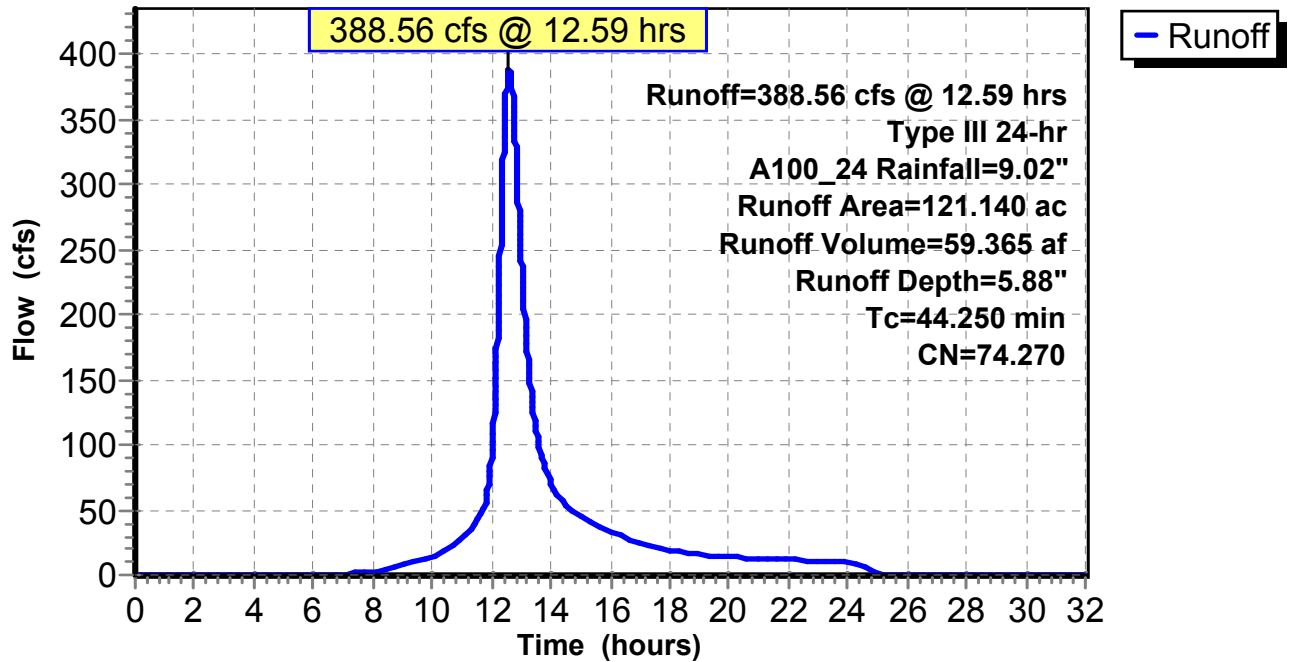
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



Summary for Subcatchment G: WS G

Runoff = 670.66 cfs @ 12.50 hrs, Volume= 94.119 af, Depth= 6.77"

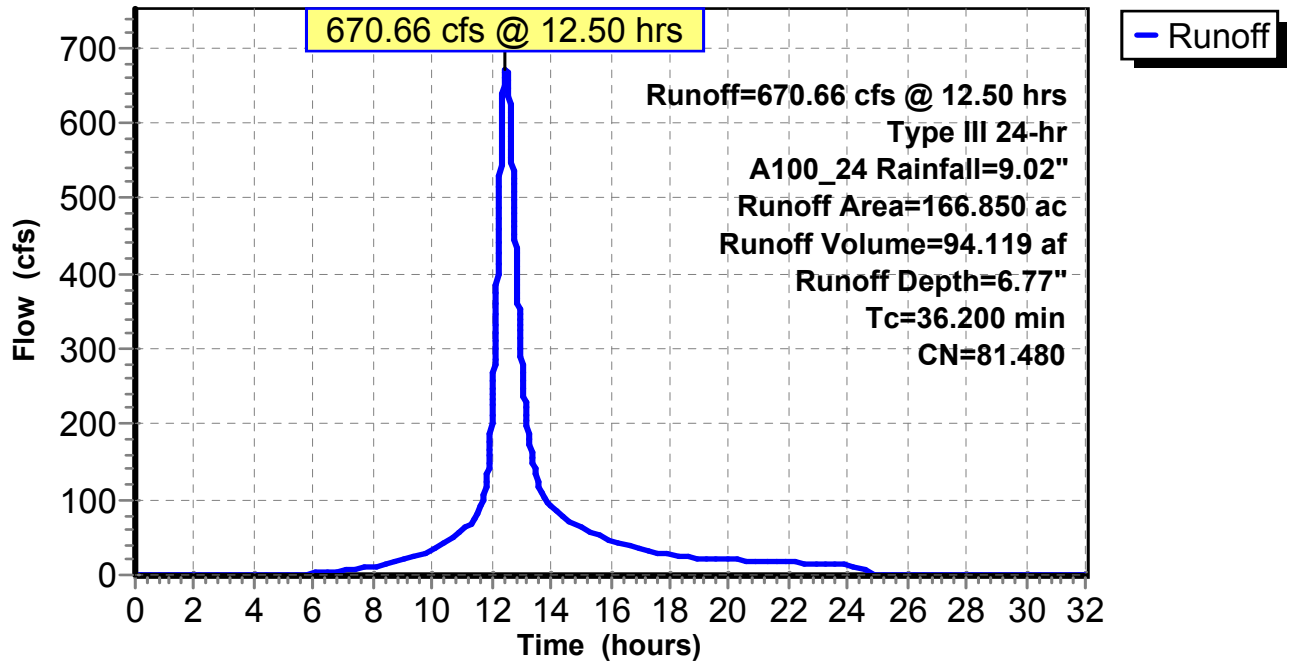
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 5.28" for A100_24 event
 Inflow = 419.94 cfs @ 13.45 hrs, Volume= 178.342 af
 Outflow = 419.67 cfs @ 13.50 hrs, Volume= 178.025 af, Atten= 0%, Lag= 3.014 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 4.75 fps, Min. Travel Time= 1.768 min
 Avg. Velocity = 2.39 fps, Avg. Travel Time= 3.515 min

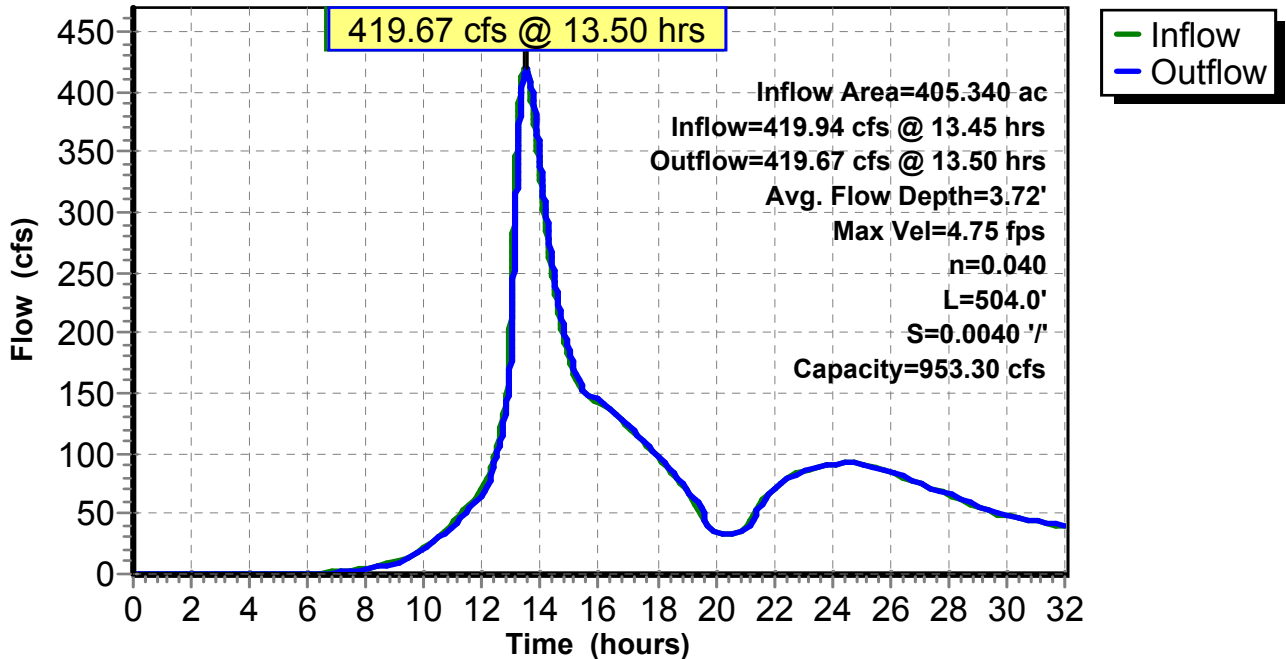
Peak Storage= 44,516 cf @ 13.48 hrs
 Average Depth at Peak Storage= 3.72'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
 Length= 504.0' Slope= 0.0040 ' / '
 Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 5.88" for A100_24 event
 Inflow = 388.50 cfs @ 12.60 hrs, Volume= 59.365 af
 Outflow = 353.36 cfs @ 13.01 hrs, Volume= 59.327 af, Atten= 9%, Lag= 24.351 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.53 fps, Min. Travel Time= 14.394 min
 Avg. Velocity = 0.73 fps, Avg. Travel Time= 50.073 min

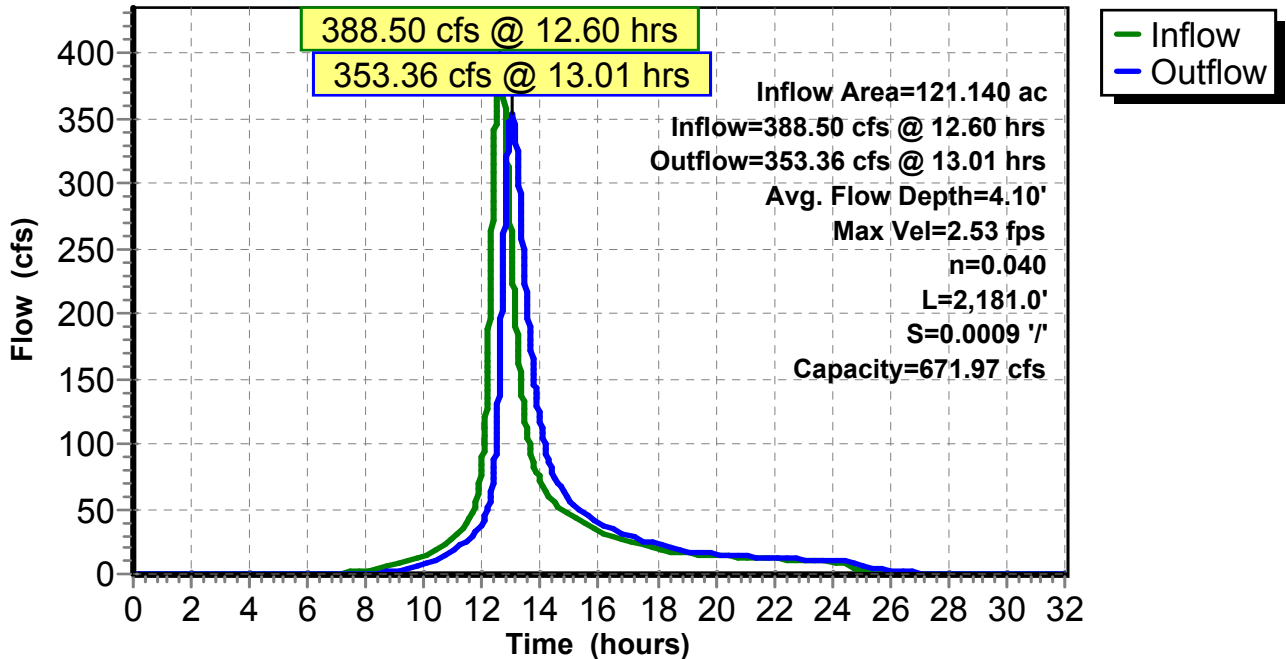
Peak Storage= 305,177 cf @ 12.77 hrs
 Average Depth at Peak Storage= 4.10'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 2,181.0' Slope= 0.0009 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 6.63" for A100_24 event
 Inflow = 665.98 cfs @ 12.52 hrs, Volume= 92.227 af
 Outflow = 78.53 cfs @ 23.08 hrs, Volume= 54.976 af, Atten= 88%, Lag= 633.458 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.71 fps, Min. Travel Time= 521.932 min
 Avg. Velocity = 0.50 fps, Avg. Travel Time= 738.709 min

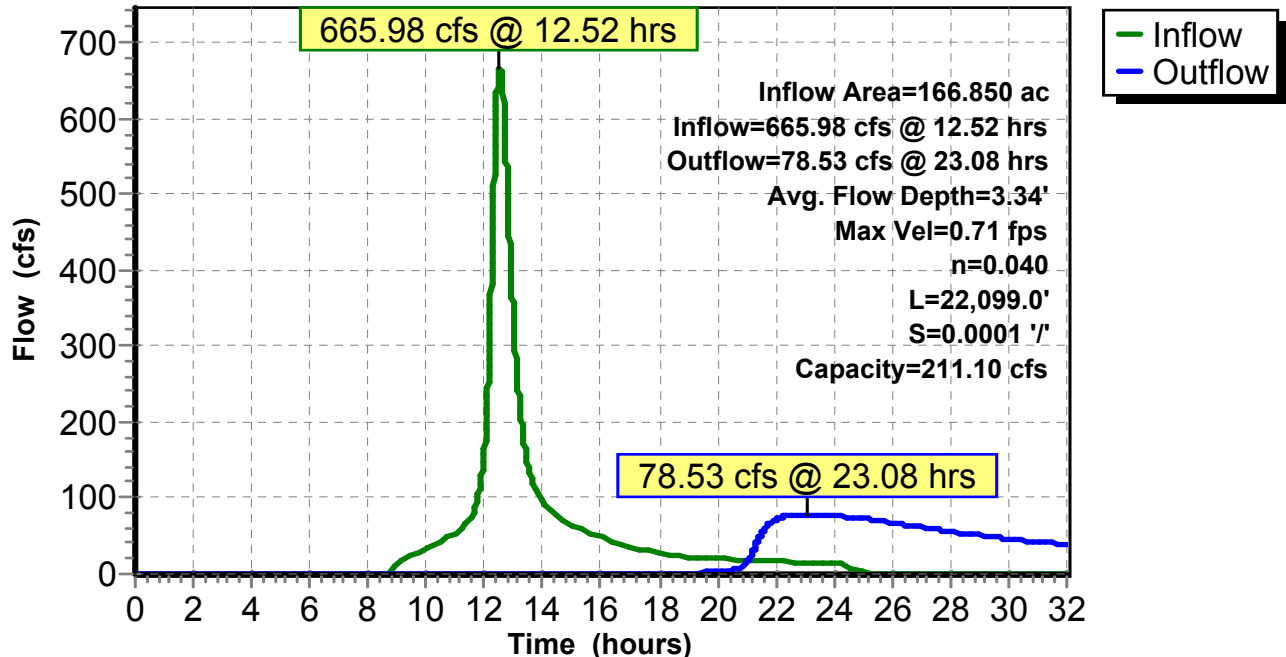
Peak Storage= 2,459,117 cf @ 14.38 hrs
 Average Depth at Peak Storage= 3.34'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 22,099.0' Slope= 0.0001 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 5.33" for A100_24 event
 Inflow = 446.28 cfs @ 13.51 hrs, Volume= 197.663 af
 Outflow = 441.53 cfs @ 13.71 hrs, Volume= 196.520 af, Atten= 1%, Lag= 12.084 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 7.52 fps, Min. Travel Time= 6.611 min
 Avg. Velocity = 4.17 fps, Avg. Travel Time= 11.908 min

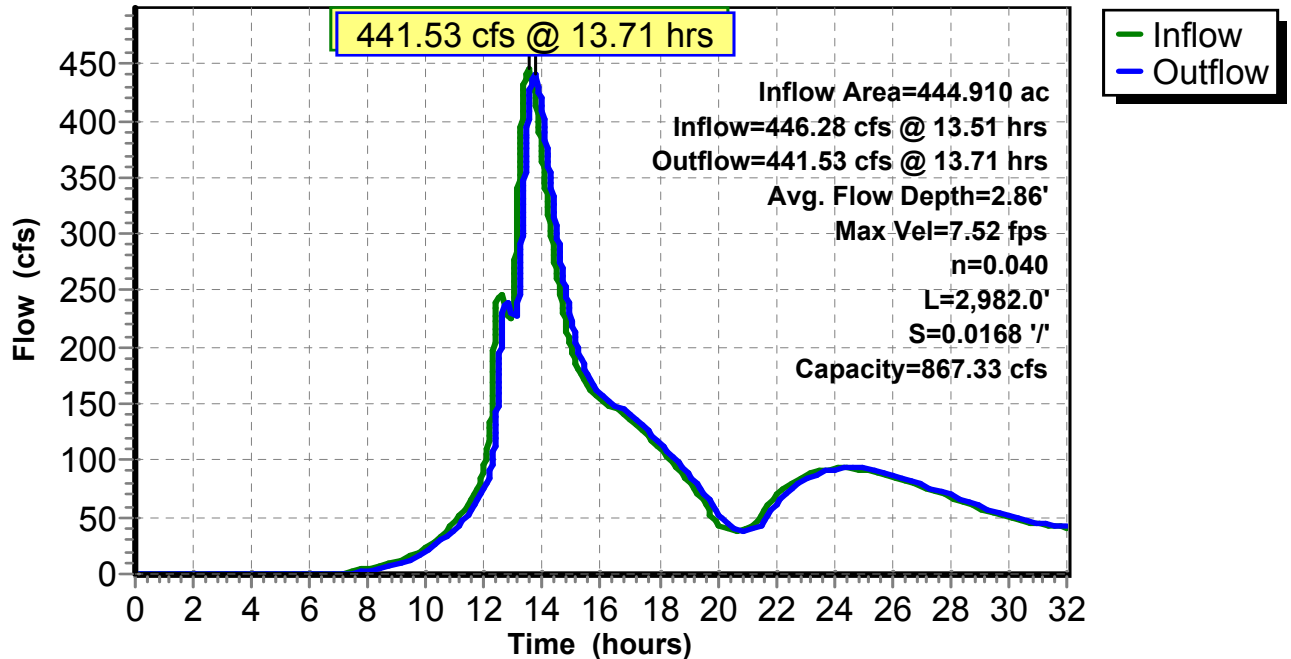
Peak Storage= 175,131 cf @ 13.60 hrs
 Average Depth at Peak Storage= 2.86'
 Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040
 Side Slope Z-value= 3.0 ' / ' Top Width= 36.00'
 Length= 2,982.0' Slope= 0.0168 ' / '
 Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 5.62" for A100_24 event
 Inflow = 648.64 cfs @ 12.68 hrs, Volume= 262.687 af
 Outflow = 648.51 cfs @ 12.69 hrs, Volume= 262.553 af, Atten= 0%, Lag= 1.054 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 11.58 fps, Min. Travel Time= 0.626 min
 Avg. Velocity= 5.43 fps, Avg. Travel Time= 1.336 min

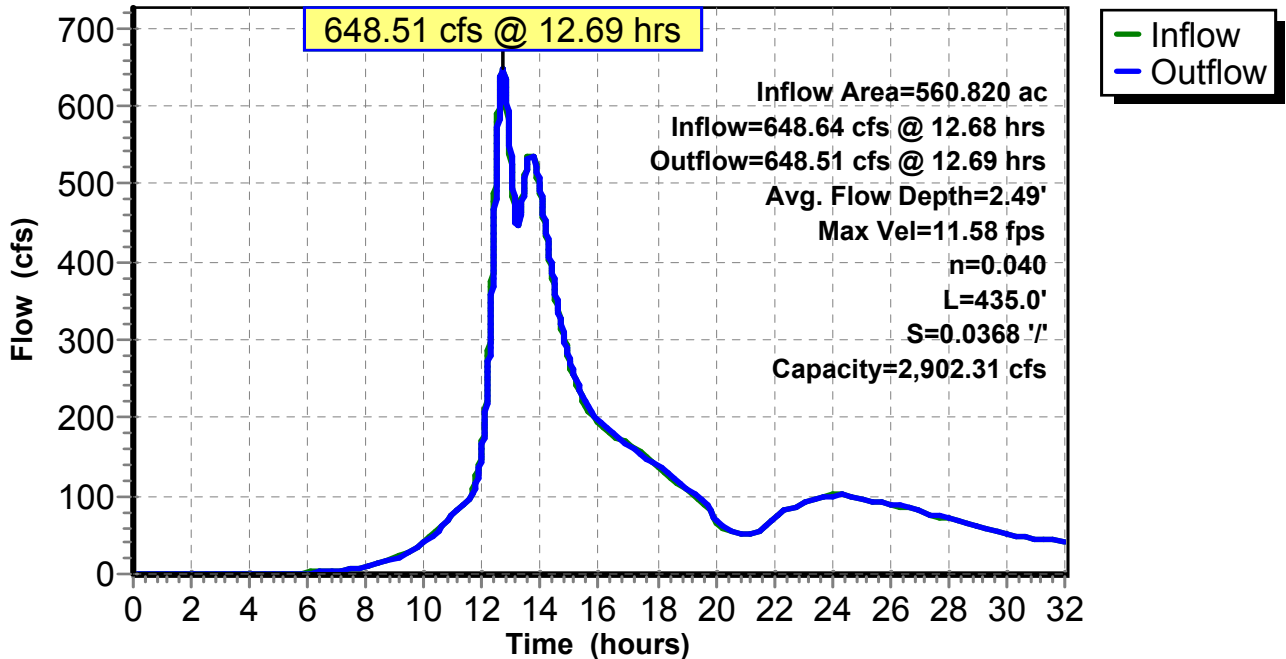
Peak Storage= 24,367 cf @ 12.68 hrs
 Average Depth at Peak Storage= 2.49'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
 Length= 435.0' Slope= 0.0368 ' / '
 Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.000 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.000 min

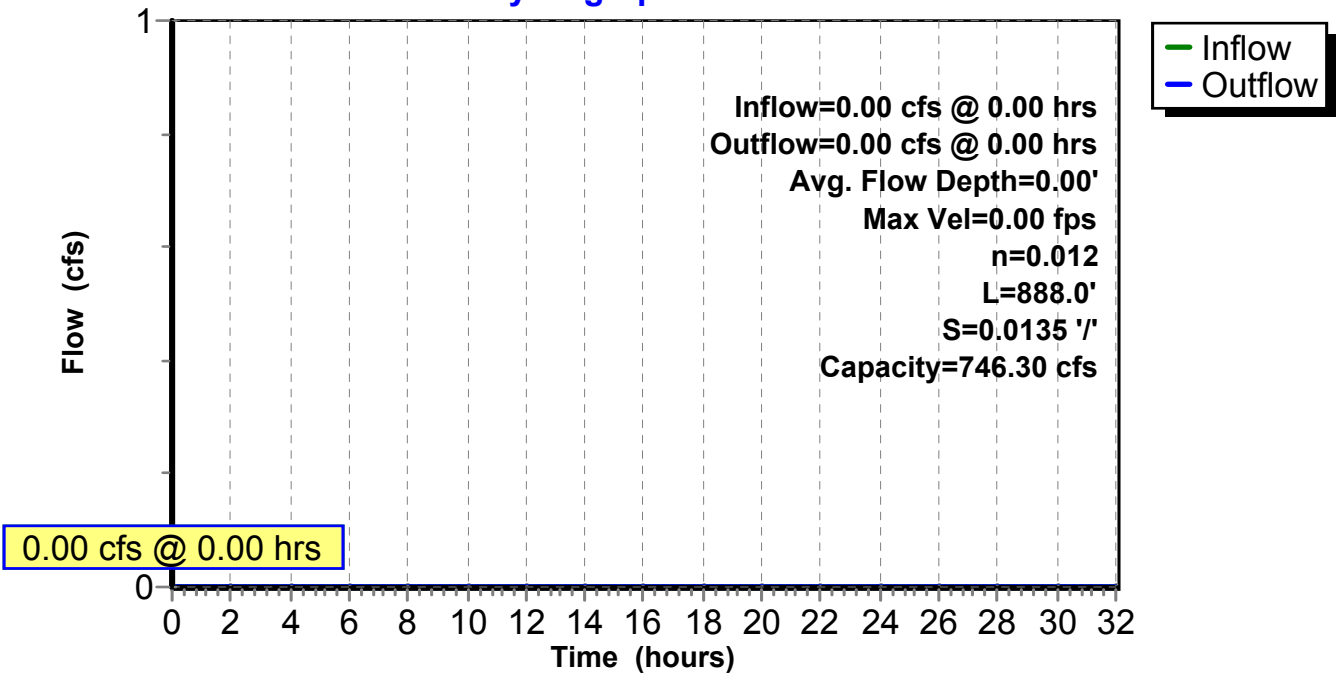
Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
Length= 888.0' Slope= 0.0135 ' '
Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



Summary for Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 5.86" for A100_24 event
 Inflow = 859.33 cfs @ 12.54 hrs, Volume= 320.028 af
 Outflow = 859.33 cfs @ 12.54 hrs, Volume= 320.021 af, Atten= 0%, Lag= 0.152 min
 Primary = 859.33 cfs @ 12.54 hrs, Volume= 320.021 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 46.21' @ 12.54 hrs Surf.Area= 0.695 ac Storage= 0.144 af

Plug-Flow detention time= 0.122 min calculated for 320.021 af (100% of inflow)
 Center-of-Mass det. time= 0.102 min (1,003.409 - 1,003.307)

Volume	Invert	Avail.Storage	Storage Description
#1	46.00'	82.605 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
46.00	0.695	0.000	0.000
48.00	0.695	1.390	1.390
50.00	0.800	1.495	2.885
52.00	1.420	2.220	5.105
54.00	2.270	3.690	8.795
56.00	3.160	5.430	14.225
58.00	4.070	7.230	21.455
60.00	4.980	9.050	30.505
62.00	5.710	10.690	41.195
64.00	6.620	12.330	53.525
66.00	7.170	13.790	67.315
68.00	8.120	15.290	82.605

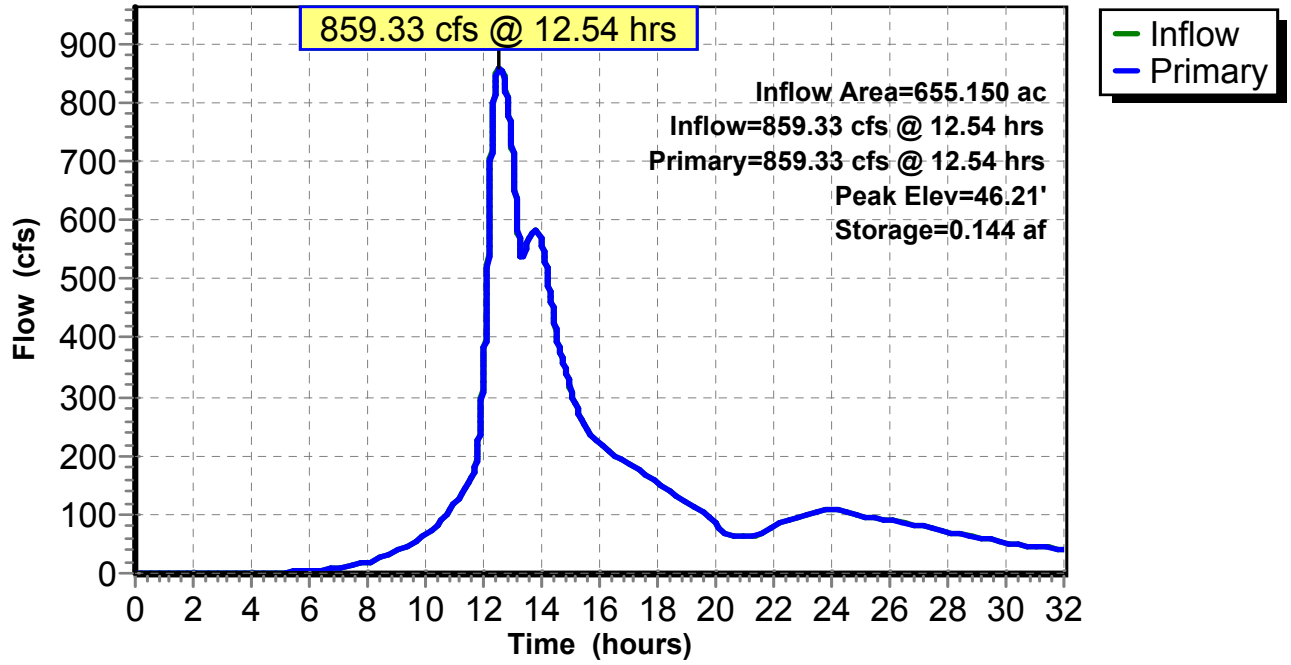
Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert X 2.00 L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48

Primary OutFlow Max=910.78 cfs @ 12.54 hrs HW=46.21' (Free Discharge)

1=Culvert (Inlet Controls 910.78 cfs @ 11.67 fps)
 2=WEIR WESTCH AVE (Controls 0.00 cfs)

Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 5.67" for A100_24 event
 Inflow = 689.56 cfs @ 12.66 hrs, Volume= 274.897 af
 Outflow = 645.93 cfs @ 12.82 hrs, Volume= 274.897 af, Atten= 6%, Lag= 9.104 min
 Primary = 645.93 cfs @ 12.82 hrs, Volume= 274.897 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 78.47' @ 12.82 hrs Surf.Area= 0.541 ac Storage= 2.720 af

Plug-Flow detention time= 0.598 min calculated for 274.897 af (100% of inflow)
 Center-of-Mass det. time= 0.598 min (1,036.165 - 1,035.567)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

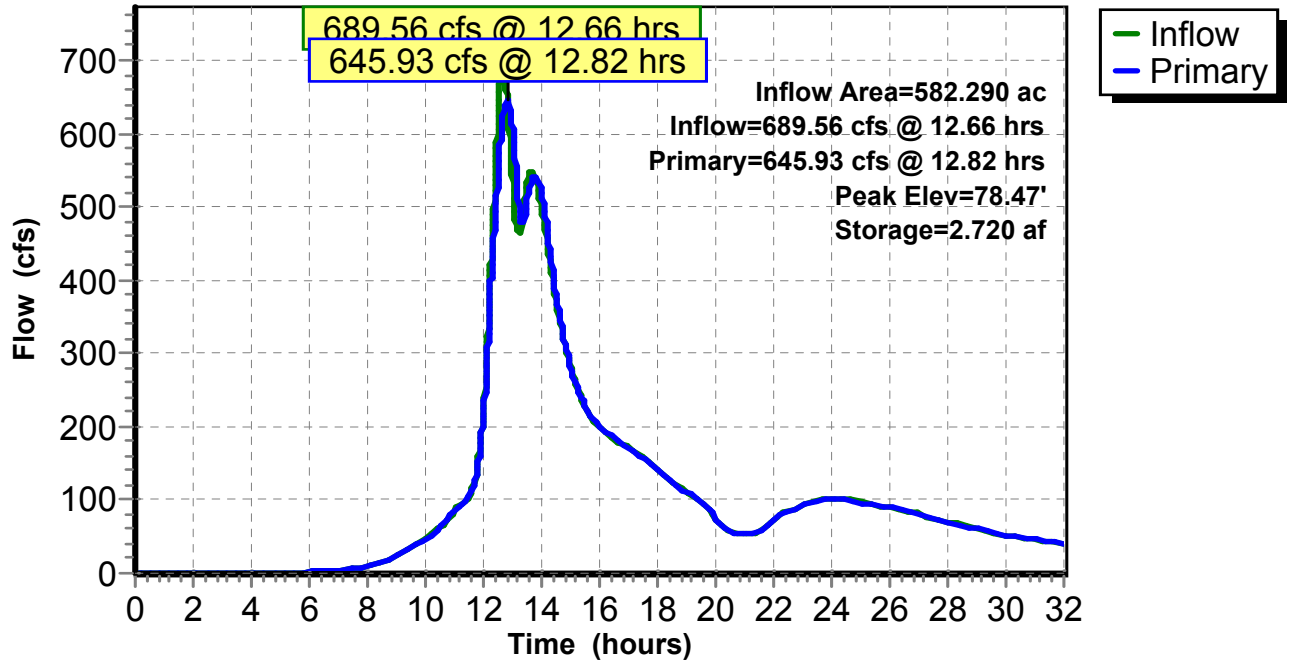
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=645.90 cfs @ 12.82 hrs HW=78.47' (Free Discharge)

- 1=Culvert (Inlet Controls 363.98 cfs @ 18.54 fps)
- 2=Culvert 2 (Inlet Controls 281.92 cfs @ 14.36 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 5.35" for A100_24 event
 Inflow = 446.63 cfs @ 13.49 hrs, Volume= 198.198 af
 Outflow = 446.28 cfs @ 13.51 hrs, Volume= 197.663 af, Atten= 0%, Lag= 1.382 min
 Primary = 446.28 cfs @ 13.51 hrs, Volume= 197.663 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 130.75' @ 13.51 hrs Surf.Area= 1.087 ac Storage= 2.834 af

Plug-Flow detention time= 8.368 min calculated for 197.663 af (100% of inflow)
 Center-of-Mass det. time= 6.158 min (1,102.949 - 1,096.791)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

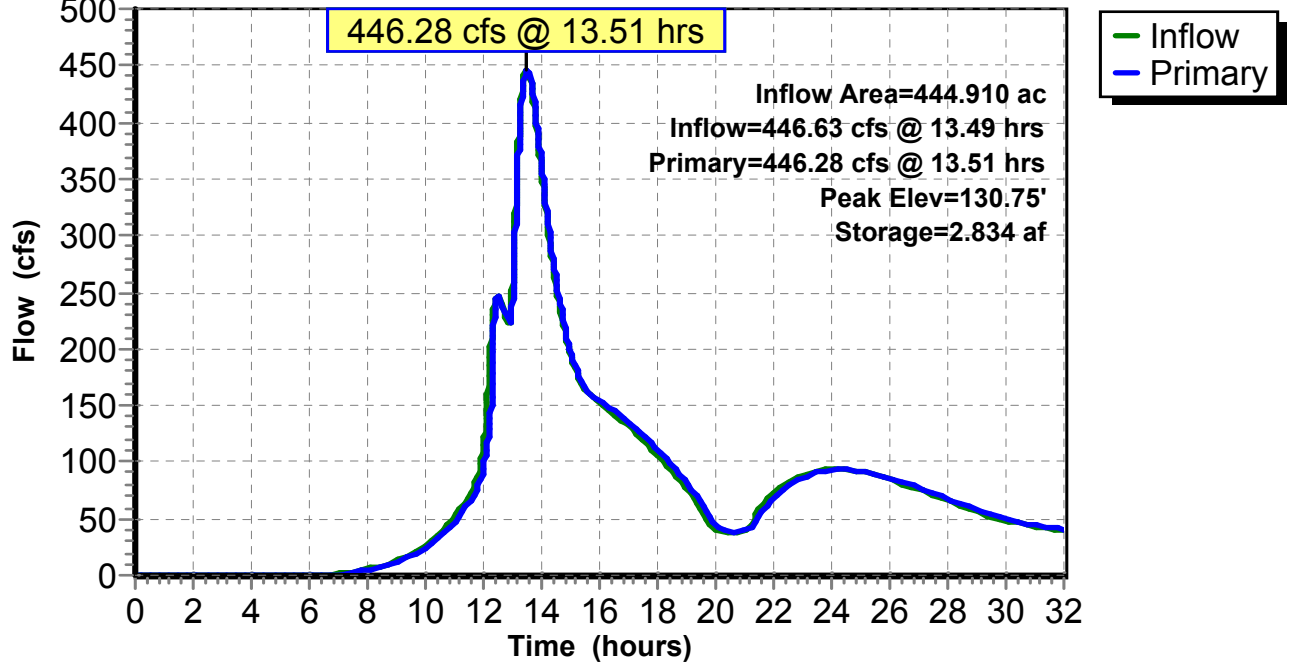
Primary OutFlow Max=446.04 cfs @ 13.51 hrs HW=130.75' (Free Discharge)

1=Culvert (Barrel Controls 182.02 cfs @ 7.70 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 264.02 cfs @ 2.83 fps)

Pond 4A: DP 4 A ARGYLE

Hydrograph



Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 5.30" for A100_24 event
 Inflow = 681.51 cfs @ 12.94 hrs, Volume= 179.105 af
 Outflow = 419.94 cfs @ 13.45 hrs, Volume= 178.342 af, Atten= 38%, Lag= 30.737 min
 Primary = 419.94 cfs @ 13.45 hrs, Volume= 178.342 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 132.68' @ 13.45 hrs Surf.Area= 22.288 ac Storage= 32.478 af

Plug-Flow detention time= 47.459 min calculated for 178.286 af (100% of inflow)
 Center-of-Mass det. time= 43.887 min (1,123.790 - 1,079.903)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

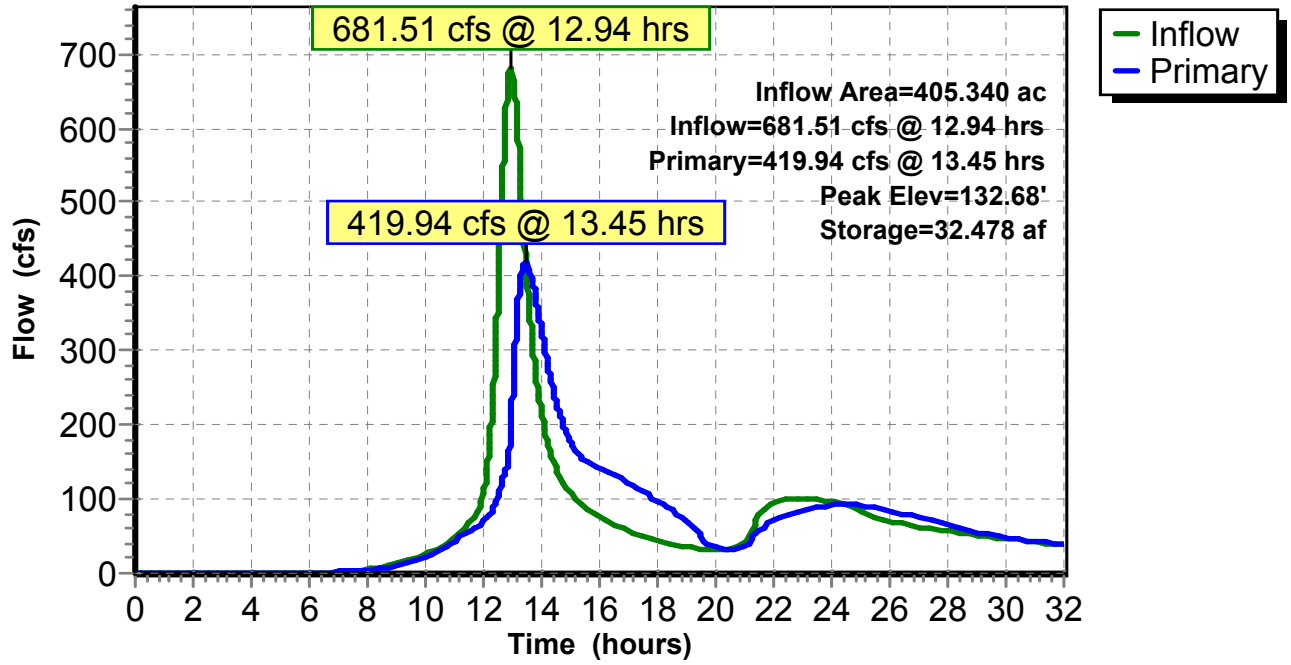
Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

Primary OutFlow Max=419.44 cfs @ 13.45 hrs HW=132.68' (Free Discharge)

- 1=Culvert (Barrel Controls 184.21 cfs @ 7.88 fps)
- 2=Asymmetrical Weir (Weir Controls 235.23 cfs @ 2.21 fps)

Pond 5P: DP 5 BETSY BROWN ROAD

Hydrograph



Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 5.62" for A100_24 event
 Inflow = 649.83 cfs @ 12.66 hrs, Volume= 262.758 af
 Outflow = 648.64 cfs @ 12.68 hrs, Volume= 262.687 af, Atten= 0%, Lag= 1.124 min
 Primary = 648.64 cfs @ 12.68 hrs, Volume= 262.687 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 91.51' @ 12.68 hrs Surf.Area= 1.370 ac Storage= 2.065 af

Plug-Flow detention time= 2.754 min calculated for 262.605 af (100% of inflow)
 Center-of-Mass det. time= 2.516 min (1,045.234 - 1,042.718)

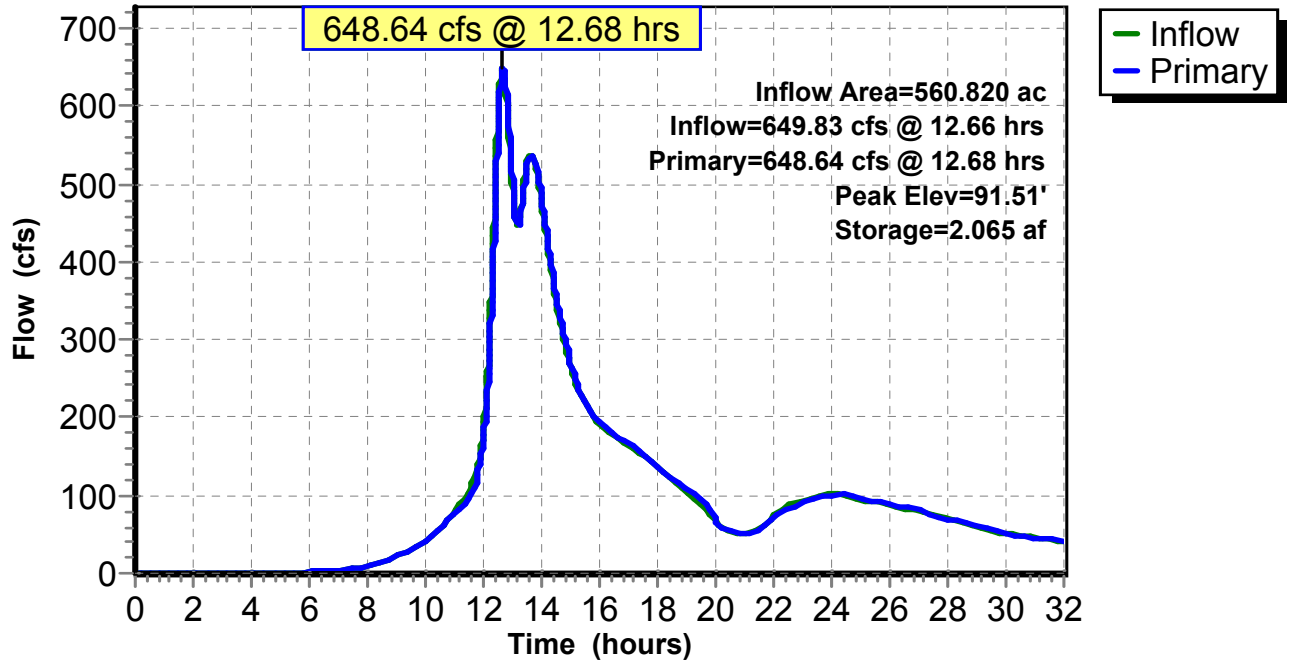
Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=648.47 cfs @ 12.68 hrs HW=91.51' (Free Discharge)
 1=Sharp-Crested Rectangular Weir(Weir Controls 206.38 cfs @ 5.62 fps)
 2=Sharp-Crested Rectangular Weir(Weir Controls 442.09 cfs @ 3.31 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 5.23" for A100_24 event
 Inflow = 864.72 cfs @ 12.47 hrs, Volume= 311.352 af
 Outflow = 860.69 cfs @ 12.52 hrs, Volume= 311.350 af, Atten= 0%, Lag= 2.632 min
 Primary = 860.69 cfs @ 12.52 hrs, Volume= 311.350 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 38.82' @ 12.52 hrs Surf.Area= 0.483 ac Storage= 0.939 af

Plug-Flow detention time= 0.196 min calculated for 311.350 af (100% of inflow)
 Center-of-Mass det. time= 0.191 min (1,043.588 - 1,043.397)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

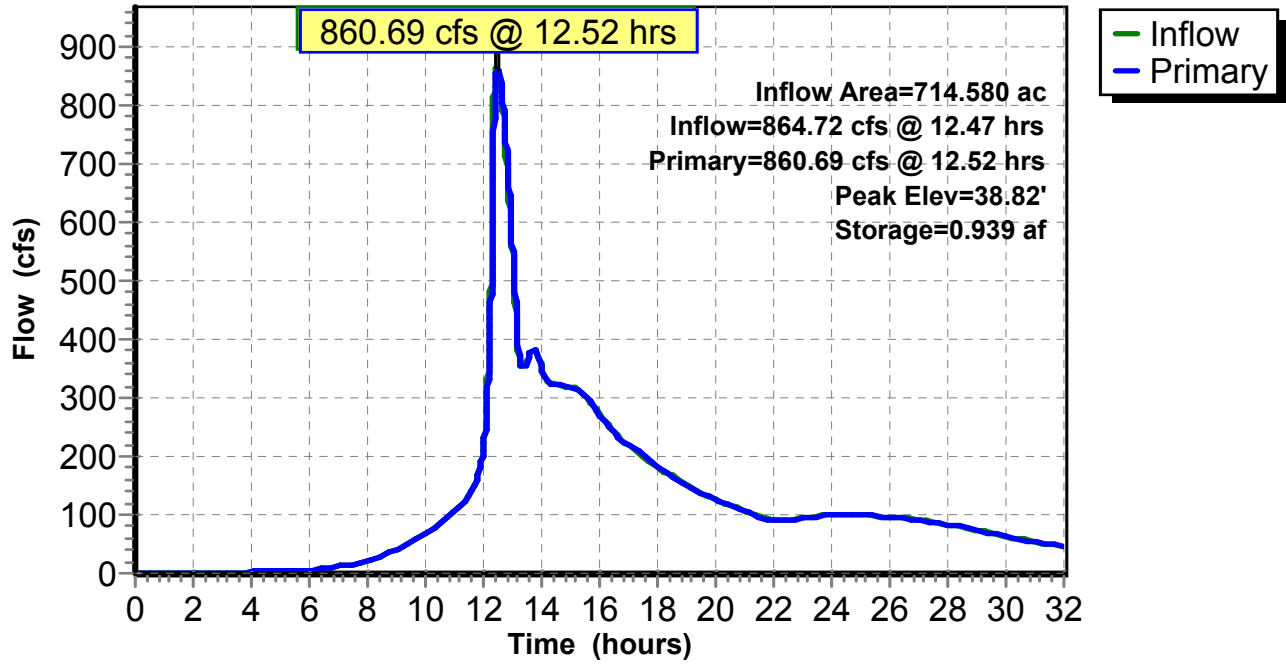
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=860.62 cfs @ 12.52 hrs HW=38.82' (Free Discharge)

- 1=Culvert (Barrel Controls 860.62 cfs @ 9.24 fps)
- 2=WEIR BOWMAN (Controls 0.00 cfs)

Pond 8P: BOWMAN FIELDS

Hydrograph



Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 5.88" for A100_24 event
 Inflow = 388.56 cfs @ 12.59 hrs, Volume= 59.365 af
 Outflow = 388.50 cfs @ 12.60 hrs, Volume= 59.365 af, Atten= 0%, Lag= 0.454 min
 Primary = 388.50 cfs @ 12.60 hrs, Volume= 59.365 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 135.03' @ 12.60 hrs Surf.Area= 0.209 ac Storage= 0.248 af

Plug-Flow detention time= 0.277 min calculated for 59.346 af (100% of inflow)
 Center-of-Mass det. time= 0.277 min (846.603 - 846.326)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

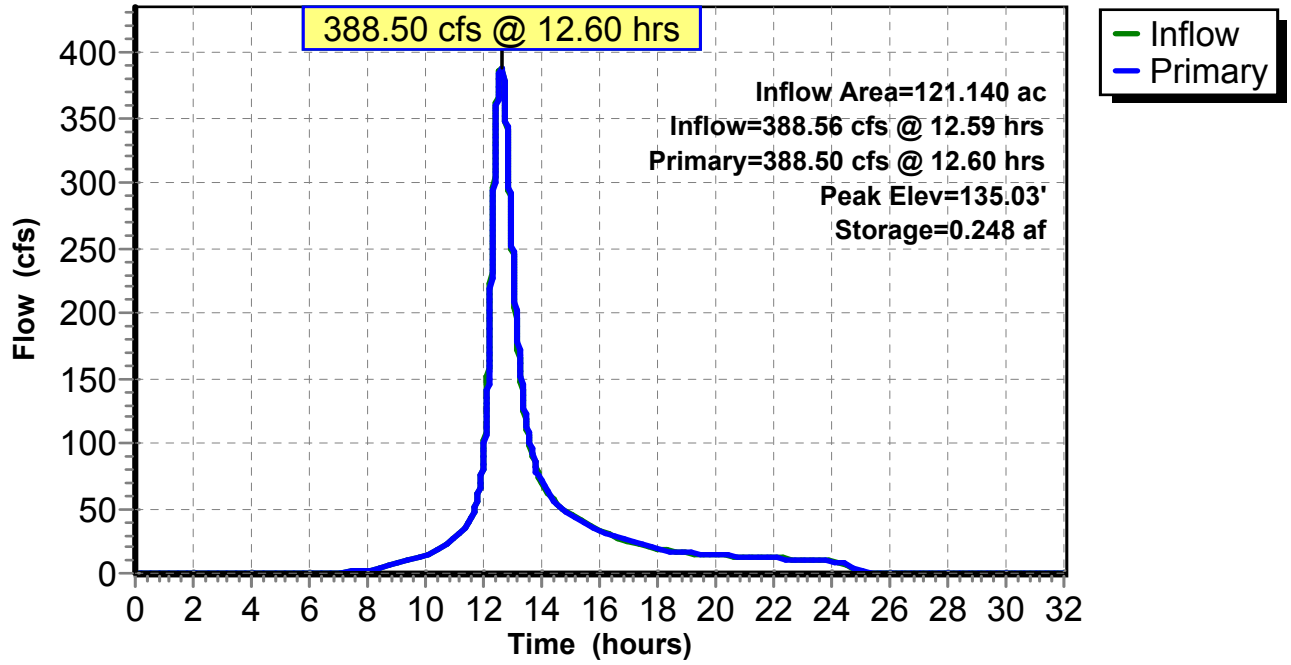
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=387.26 cfs @ 12.60 hrs HW=135.03' (Free Discharge)

- 1=Culvert (Inlet Controls 93.39 cfs @ 13.21 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 96.73 cfs @ 6.38 fps)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 197.14 cfs @ 2.38 fps)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Hydrograph



Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 6.77" for A100_24 event
 Inflow = 670.66 cfs @ 12.50 hrs, Volume= 94.119 af
 Outflow = 665.98 cfs @ 12.52 hrs, Volume= 92.227 af, Atten= 1%, Lag= 1.528 min
 Primary = 665.98 cfs @ 12.52 hrs, Volume= 92.227 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.78' @ 12.52 hrs Surf.Area= 4.291 ac Storage= 7.761 af (4.793 af above start)

Plug-Flow detention time= 49.969 min calculated for 89.231 af (95% of inflow)
 Center-of-Mass det. time= 12.684 min (835.763 - 823.078)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

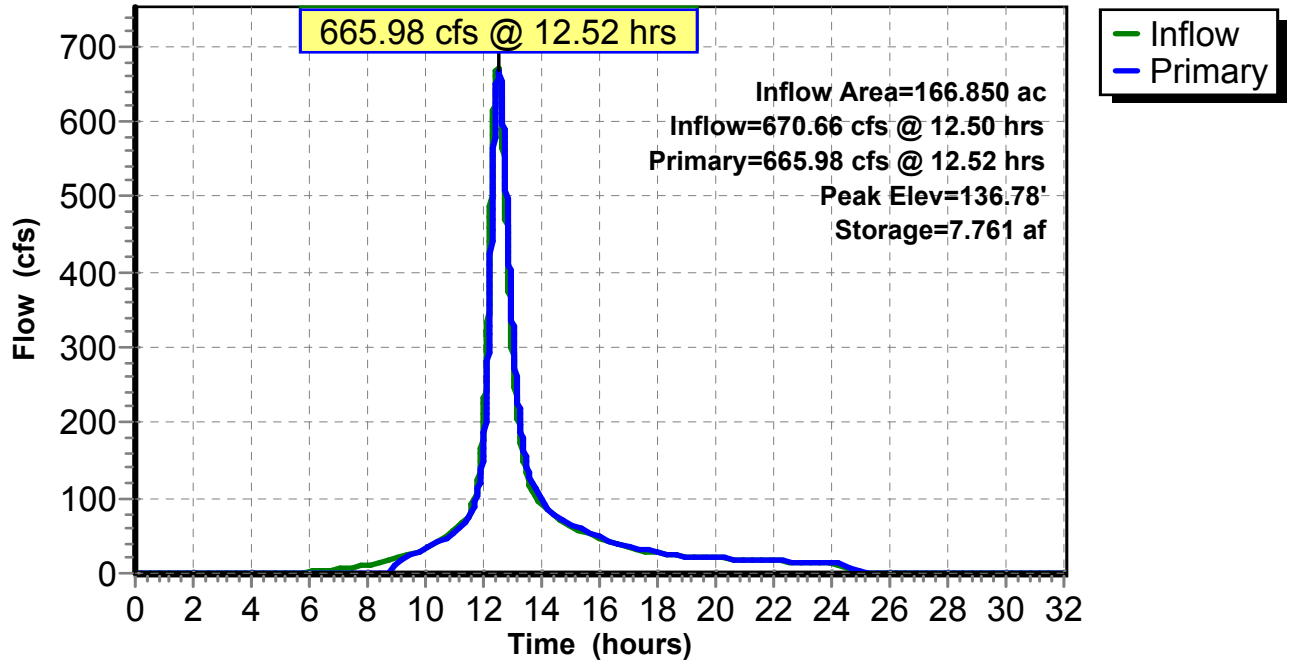
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=664.99 cfs @ 12.52 hrs HW=136.78' (Free Discharge)

- 1=Culvert (Inlet Controls 4.42 cfs @ 3.01 fps)
- 2=Asymmetrical Weir (Weir Controls 660.57 cfs @ 2.43 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Hydrograph



Summary for Pond 12P: UPSTREAM add new culvert AVON OVERFLOW TO ROAD

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 5.67" for A100_24 event
 Inflow = 645.93 cfs @ 12.82 hrs, Volume= 274.897 af
 Outflow = 645.83 cfs @ 12.83 hrs, Volume= 274.894 af, Atten= 0%, Lag= 0.566 min
 Primary = 645.83 cfs @ 12.83 hrs, Volume= 274.894 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 62.82' @ 12.83 hrs Surf.Area= 2,061 sf Storage= 6,597 cf

Plug-Flow detention time= 0.105 min calculated for 274.808 af (100% of inflow)
 Center-of-Mass det. time= 0.093 min (1,036.257 - 1,036.165)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	63,134 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686
70.00	10,112	40,448	63,134

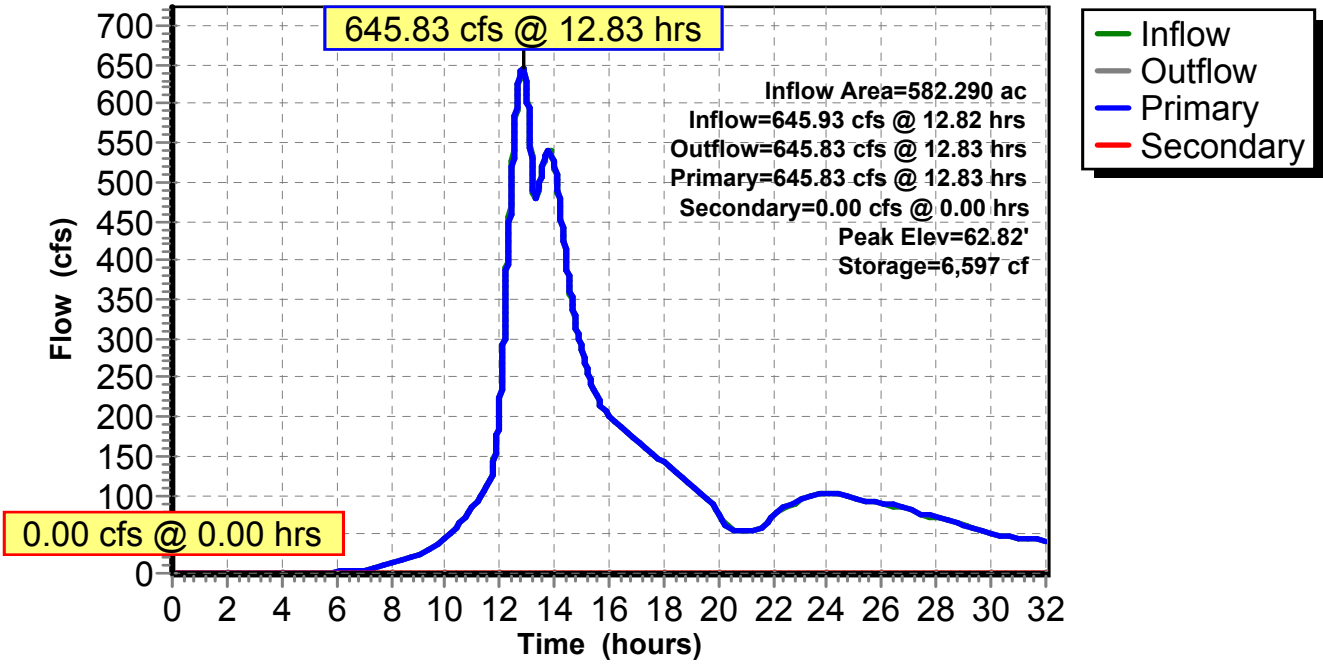
Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert X 3.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 55.13' / 37.90' S= 0.0206 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	68.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=645.85 cfs @ 12.83 hrs HW=62.82' (Free Discharge)
 ↑1=Culvert (Inlet Controls 645.85 cfs @ 10.96 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=56.00' (Free Discharge)
 ↑2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 12P: UPSTREAM add new culvert AVON OVERFLOW TO ROAD

Hydrograph



Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 45.00' @ 0.00 hrs Surf.Area= 100 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	45.00'	171,628 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	100	0	0
48.00	100	300	300
51.00	6,000	9,150	9,450
52.00	15,452	10,726	20,176
54.00	38,000	53,452	73,628
56.00	60,000	98,000	171,628

Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	45.00'	24.0" Round Culvert L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 45.00' / 44.00' S= 0.0100 '/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

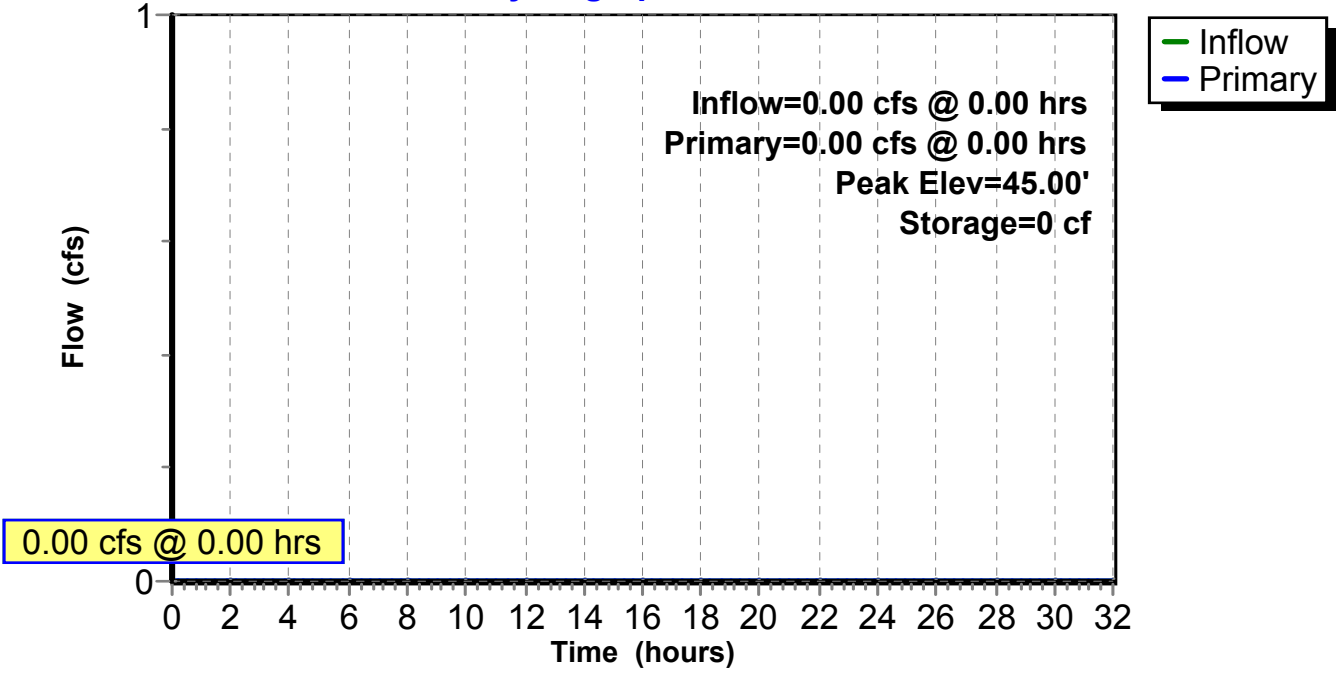
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=45.00' (Free Discharge)

↑1=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

└2=Culvert (Controls 0.00 cfs)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



Summary for Pond 27P: NEW DETENTION IN BALLFIELD

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 5.86" for A100_24 event
 Inflow = 859.33 cfs @ 12.54 hrs, Volume= 320.021 af
 Outflow = 589.77 cfs @ 12.54 hrs, Volume= 270.844 af, Atten= 31%, Lag= 0.000 min
 Primary = 199.08 cfs @ 12.54 hrs, Volume= 201.365 af
 Secondary = 390.69 cfs @ 12.54 hrs, Volume= 69.479 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 52.46' @ 12.54 hrs Surf.Area= 120,000 sf Storage= 937,500 cf

Plug-Flow detention time= 192.537 min calculated for 270.844 af (85% of inflow)
 Center-of-Mass det. time= 78.377 min (1,081.786 - 1,003.409)

Volume	Invert	Avail.Storage	Storage Description
#1	36.50'	937,500 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.50	80,000	0	0
44.00	90,000	637,500	637,500
46.00	100,000	190,000	827,500
47.00	120,000	110,000	937,500

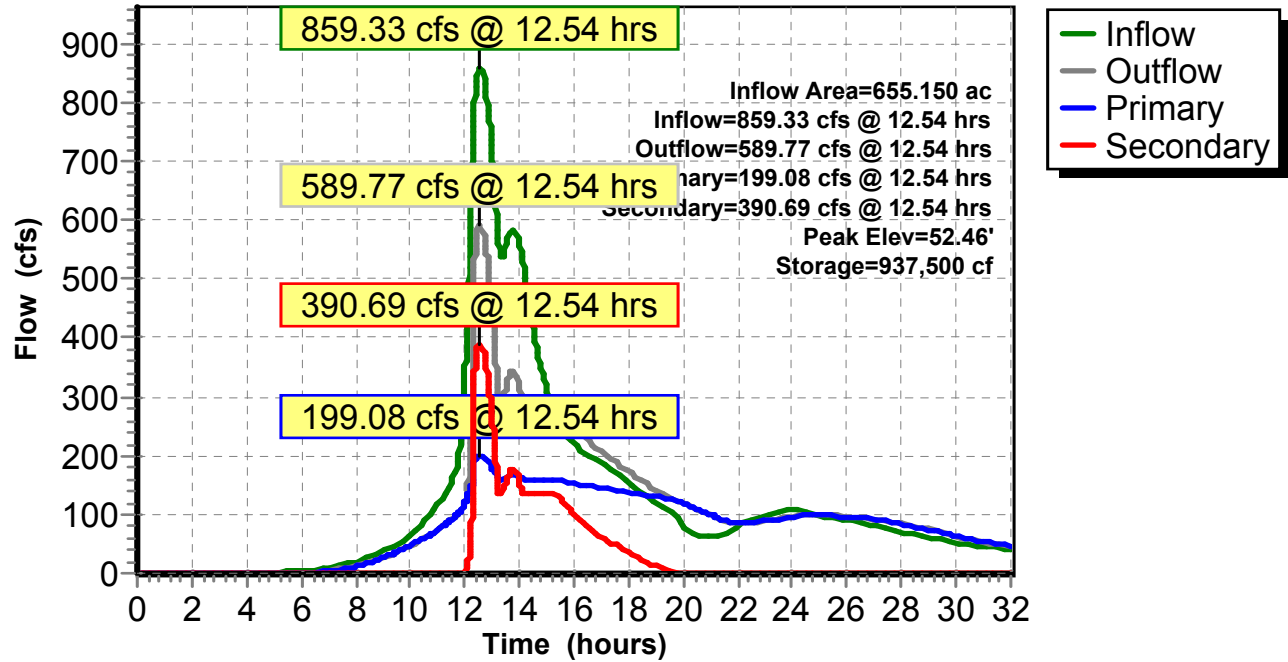
Device	Routing	Invert	Outlet Devices
#1	Primary	36.50'	18.0" Vert. Orifice/Grate X 6.00 C= 0.600
#2	Secondary	43.00'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=199.08 cfs @ 12.54 hrs HW=52.46' (Free Discharge)
 ↑1=Orifice/Grate (Orifice Controls 199.08 cfs @ 18.78 fps)

Secondary OutFlow Max=390.67 cfs @ 12.54 hrs HW=52.46' (Free Discharge)
 ↑2=Sharp-Crested Rectangular Weir (Weir Controls 390.67 cfs @ 10.06 fps)

Pond 27P: NEW DETENTION IN BALLFIELD

Hydrograph



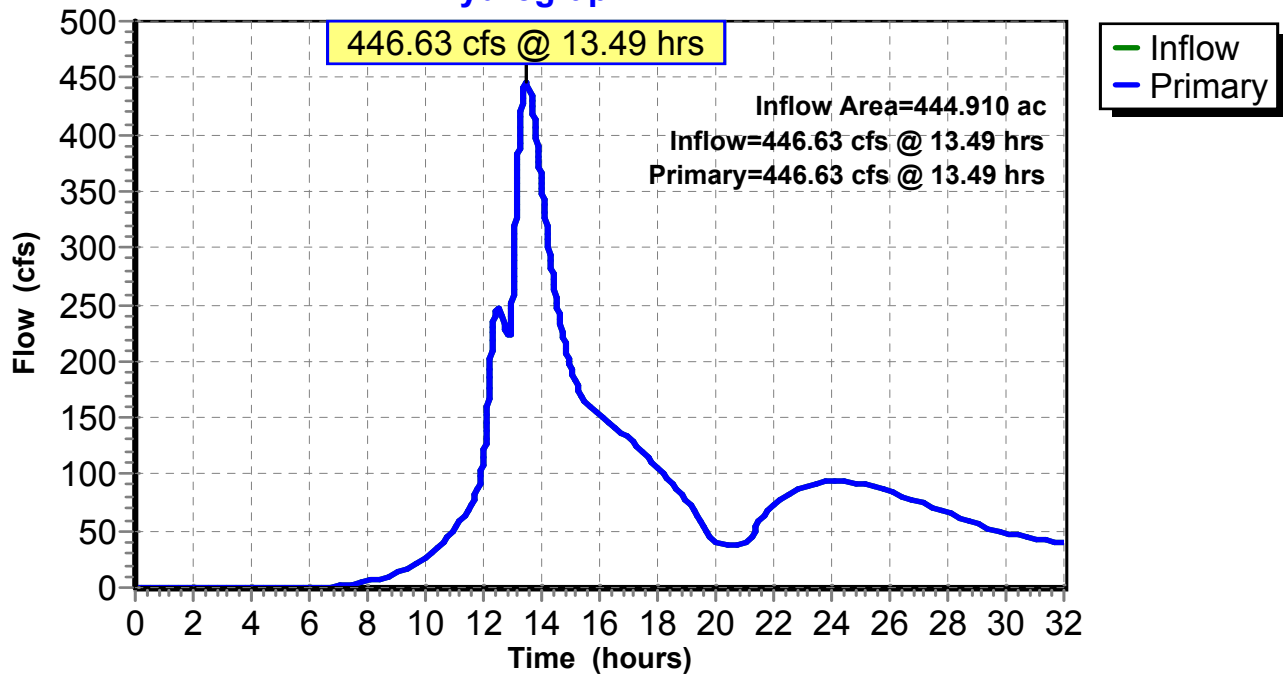
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 5.35" for A100_24 event
Inflow = 446.63 cfs @ 13.49 hrs, Volume= 198.198 af
Primary = 446.63 cfs @ 13.49 hrs, Volume= 198.198 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



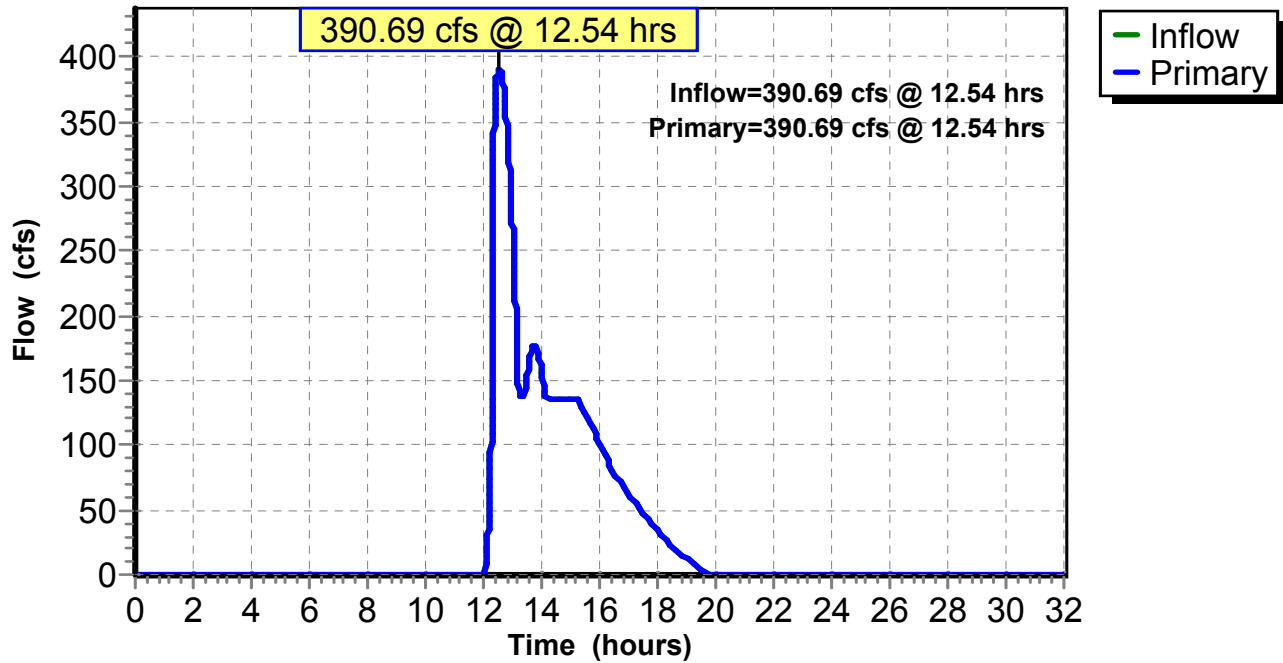
Summary for Link 24L: Weir

Inflow = 390.69 cfs @ 12.54 hrs, Volume= 69.479 af
Primary = 390.69 cfs @ 12.54 hrs, Volume= 69.479 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 24L: Weir

Hydrograph



Summary for Subcatchment A: WS A

Runoff = 257.02 cfs @ 11.17 hrs, Volume= 34.017 af, Depth= 6.87"

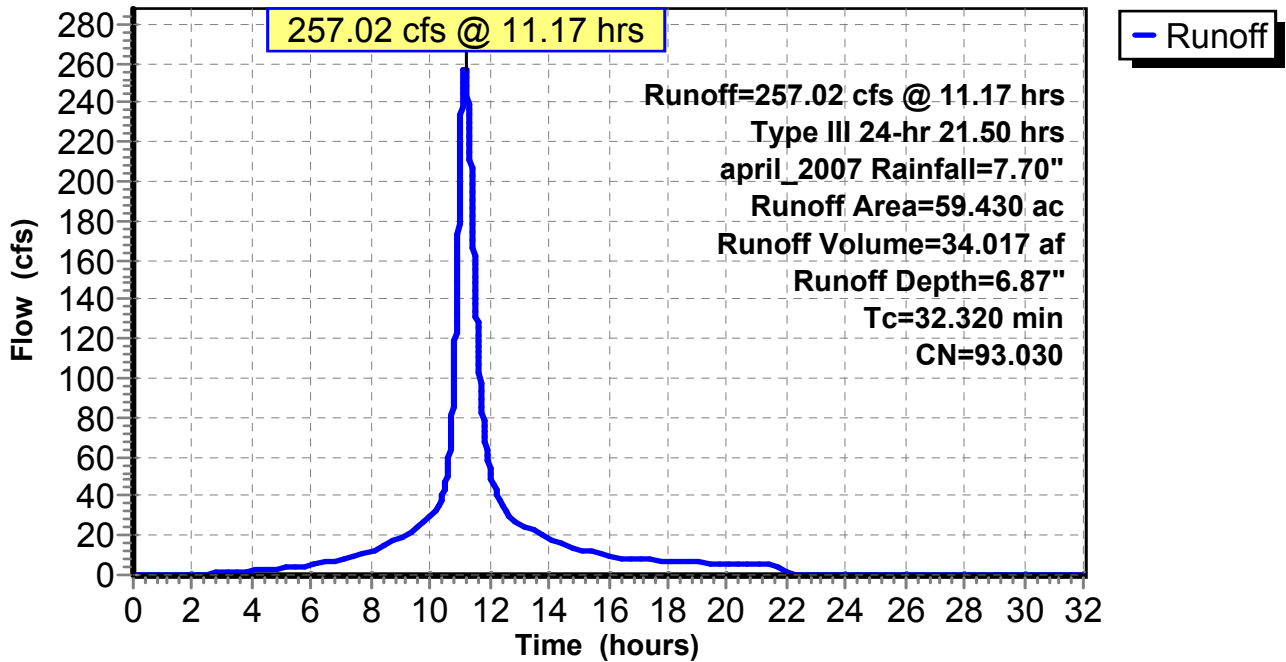
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



Summary for Subcatchment B: WS B

Runoff = 247.26 cfs @ 11.14 hrs, Volume= 29.594 af, Depth= 6.17"

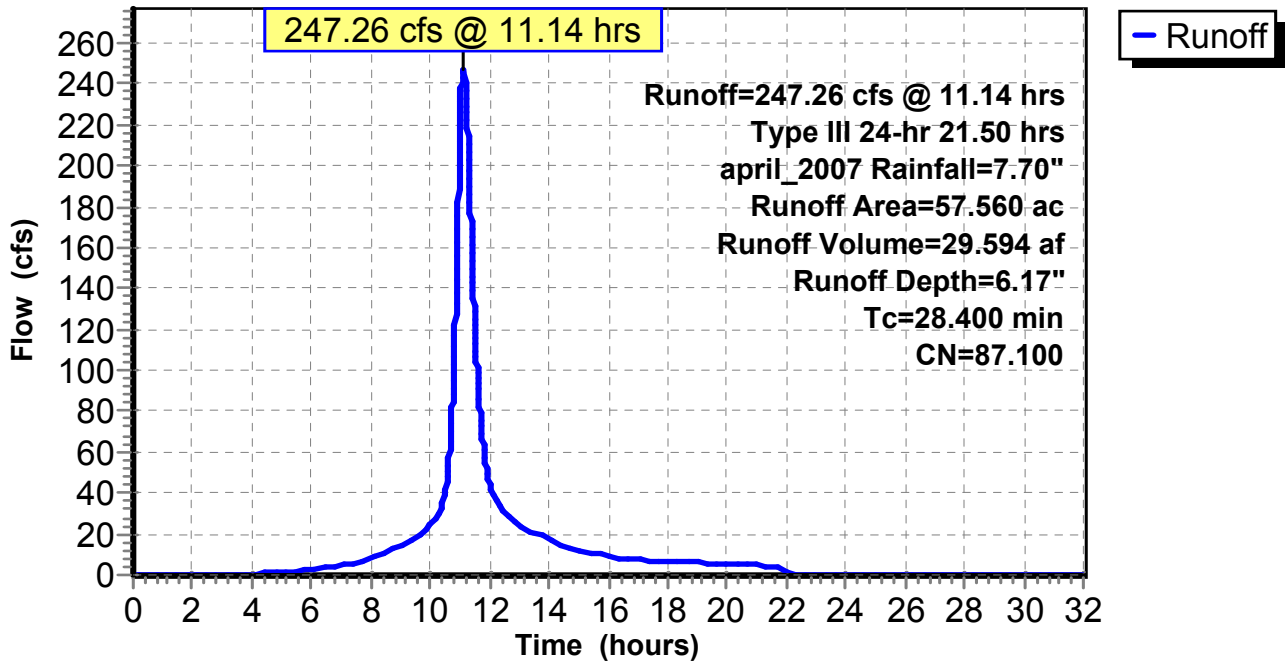
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



Summary for Subcatchment BH: HOTEL

Runoff = 62.73 cfs @ 11.14 hrs, Volume= 7.726 af, Depth= 6.06"

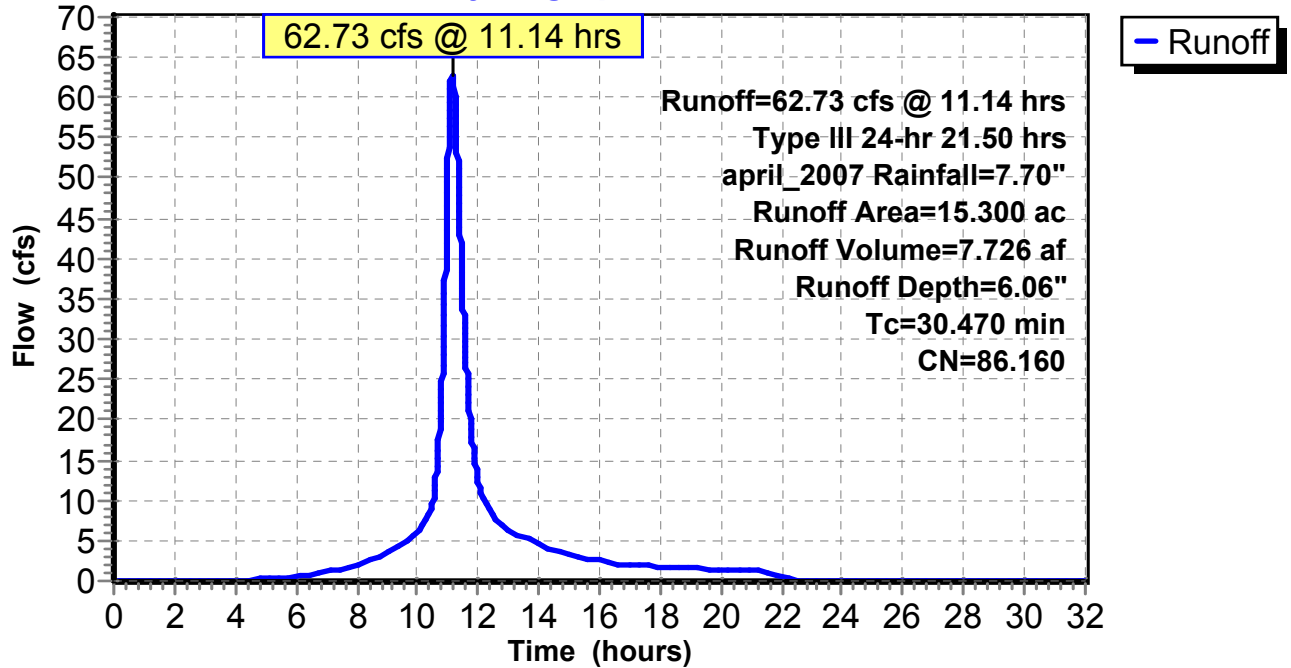
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



Summary for Subcatchment C: WS C

Runoff = 103.29 cfs @ 11.00 hrs, Volume= 10.087 af, Depth= 5.64"

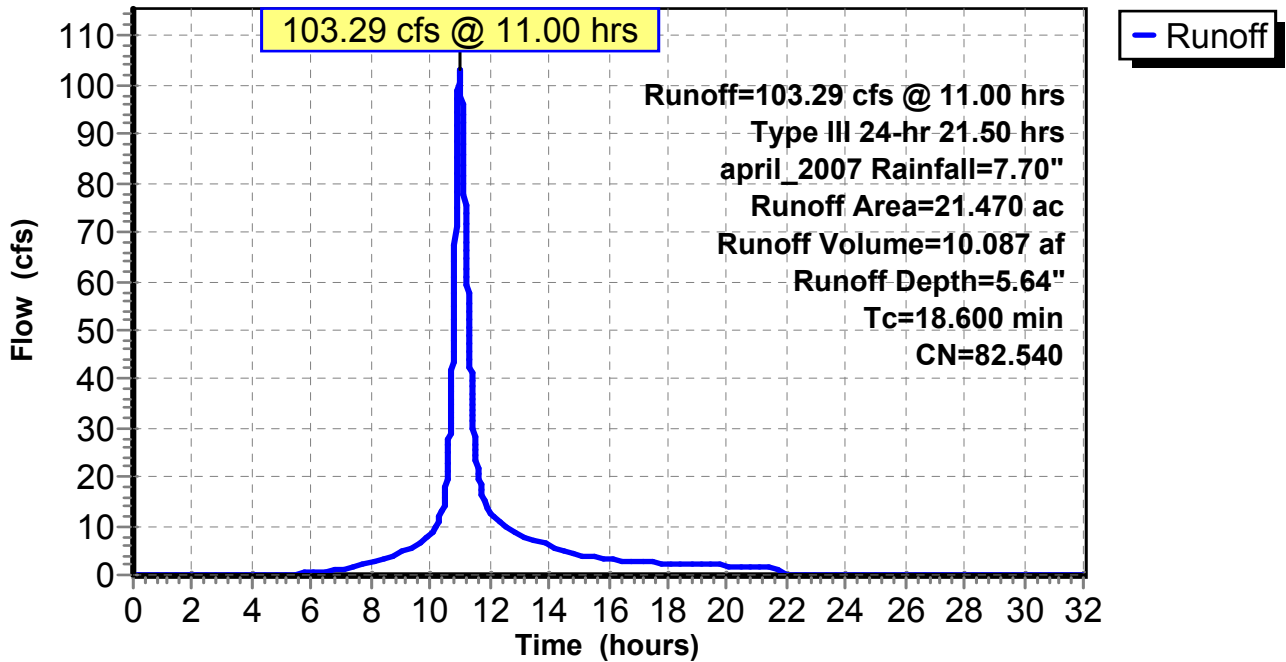
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



Summary for Subcatchment D: WS D

Runoff = 363.73 cfs @ 11.36 hrs, Volume= 54.078 af, Depth= 5.60"

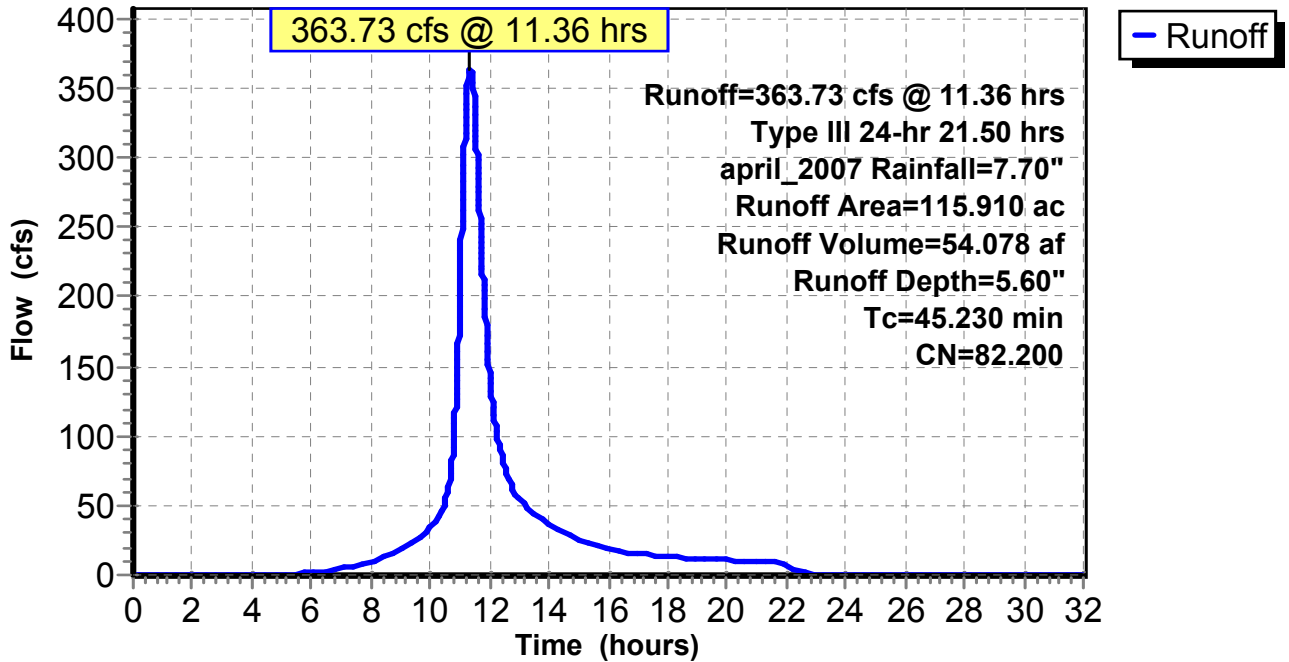
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



Summary for Subcatchment D-1: WS D-1

Runoff = 133.15 cfs @ 11.19 hrs, Volume= 16.182 af, Depth= 4.91"

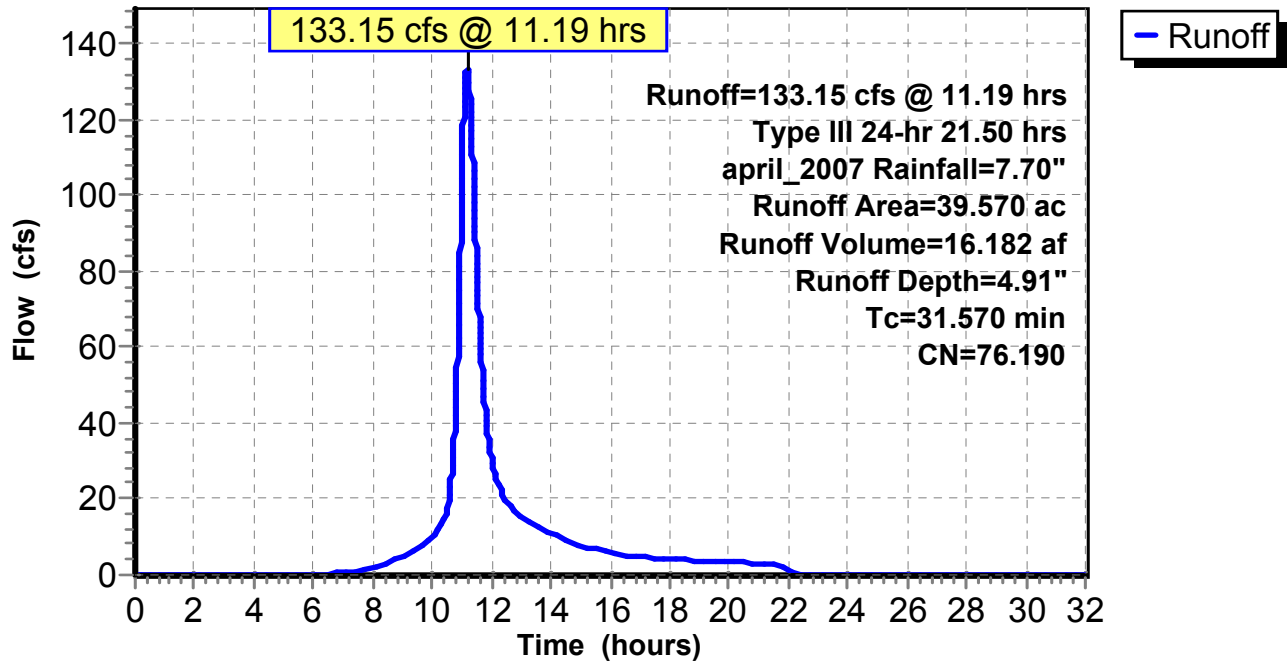
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



Summary for Subcatchment E: WS E

Runoff = 293.65 cfs @ 11.59 hrs, Volume= 52.624 af, Depth= 5.38"

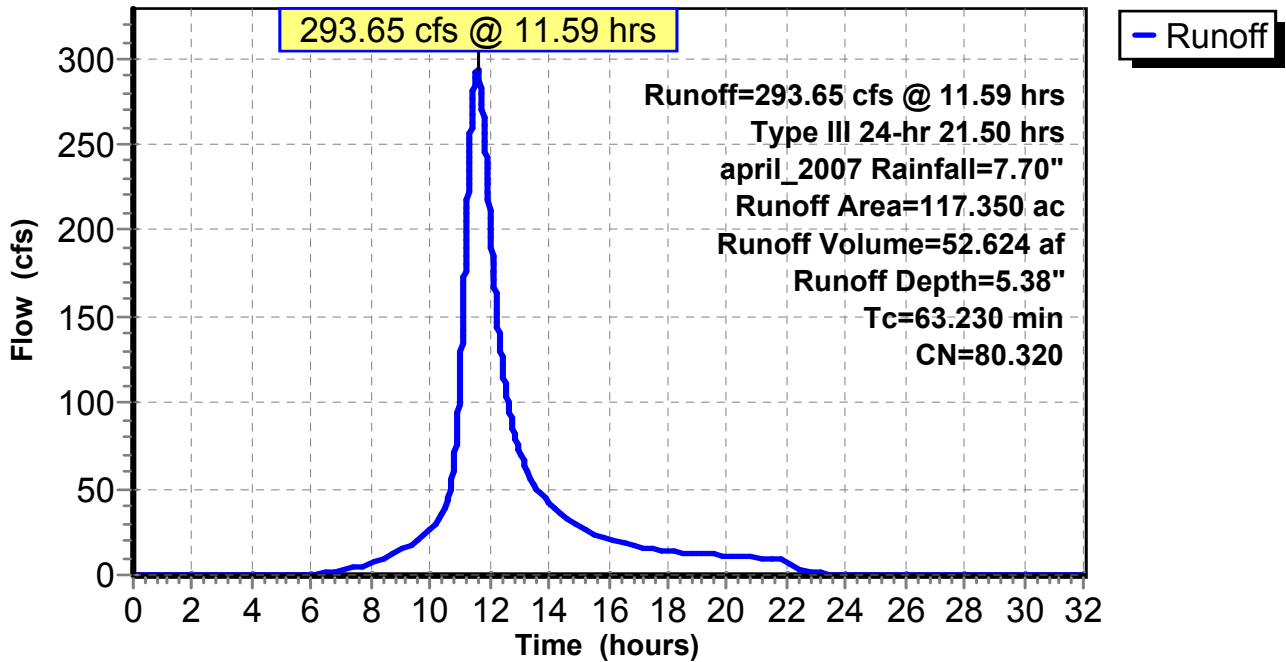
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



Summary for Subcatchment F: WS F

Runoff = 328.06 cfs @ 11.36 hrs, Volume= 47.334 af, Depth= 4.69"

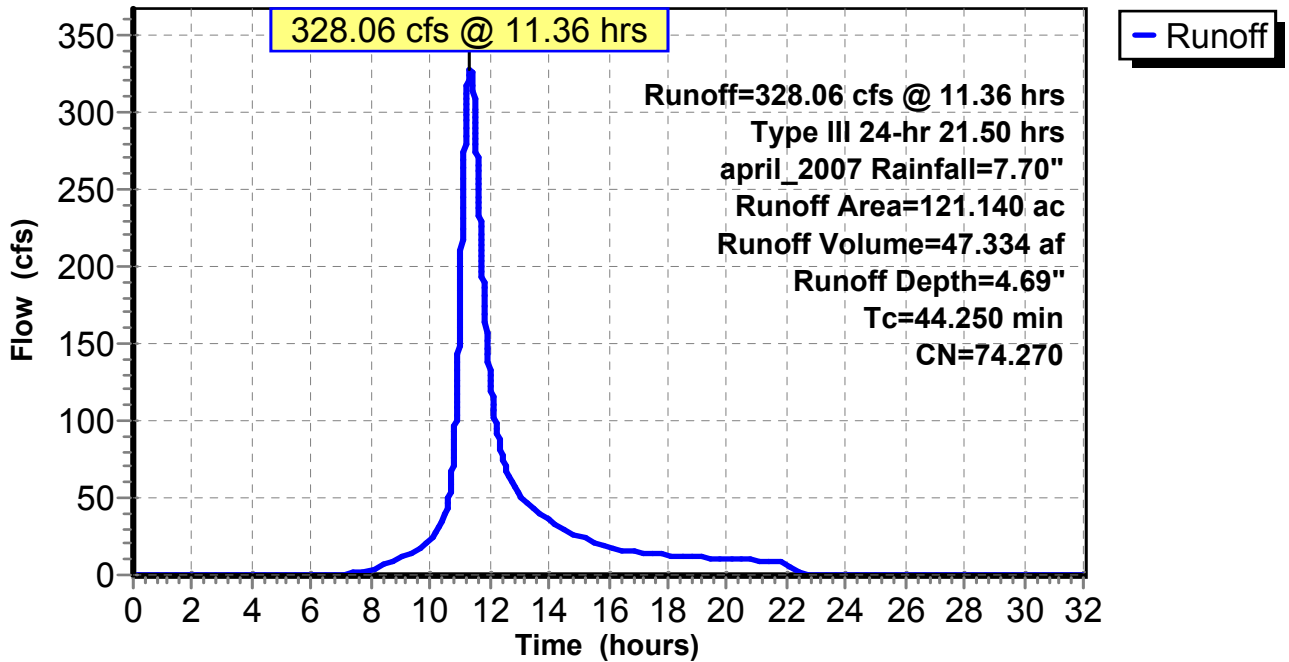
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



Summary for Subcatchment G: WS G

Runoff = 583.01 cfs @ 11.22 hrs, Volume= 76.685 af, Depth= 5.52"

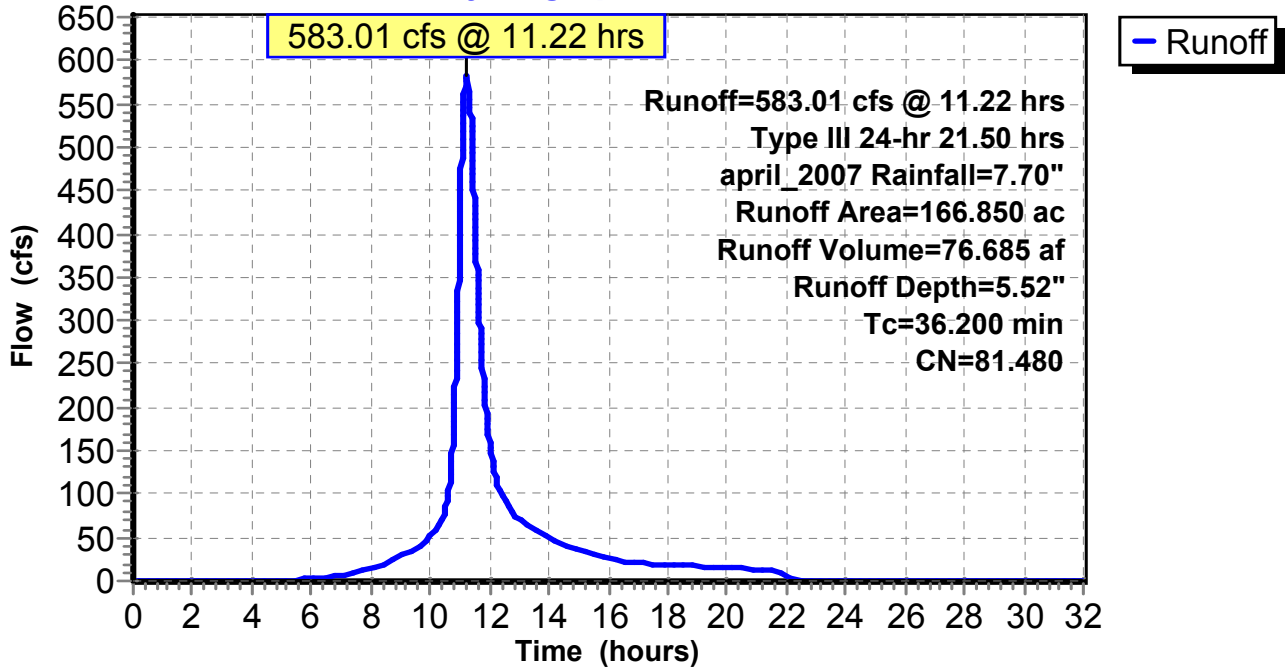
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 4.24" for april_2007 event
 Inflow = 311.64 cfs @ 12.32 hrs, Volume= 143.290 af
 Outflow = 311.44 cfs @ 12.37 hrs, Volume= 143.014 af, Atten= 0%, Lag= 3.309 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 4.31 fps, Min. Travel Time= 1.947 min
 Avg. Velocity = 2.22 fps, Avg. Travel Time= 3.776 min

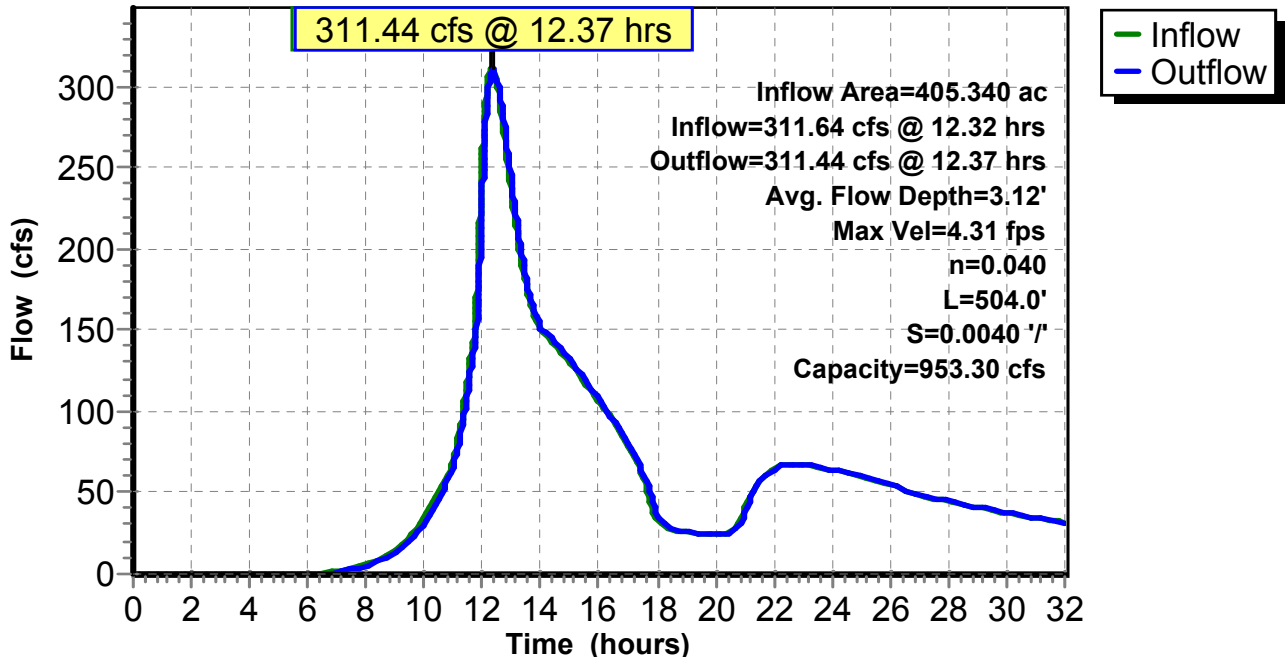
Peak Storage= 36,378 cf @ 12.34 hrs
 Average Depth at Peak Storage= 3.12'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' ' Top Width= 32.00'
 Length= 504.0' Slope= 0.0040 ' '
 Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 4.69" for april_2007 event
 Inflow = 327.91 cfs @ 11.36 hrs, Volume= 47.334 af
 Outflow = 292.28 cfs @ 11.78 hrs, Volume= 47.316 af, Atten= 11%, Lag= 25.465 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.37 fps, Min. Travel Time= 15.342 min
 Avg. Velocity = 0.64 fps, Avg. Travel Time= 56.903 min

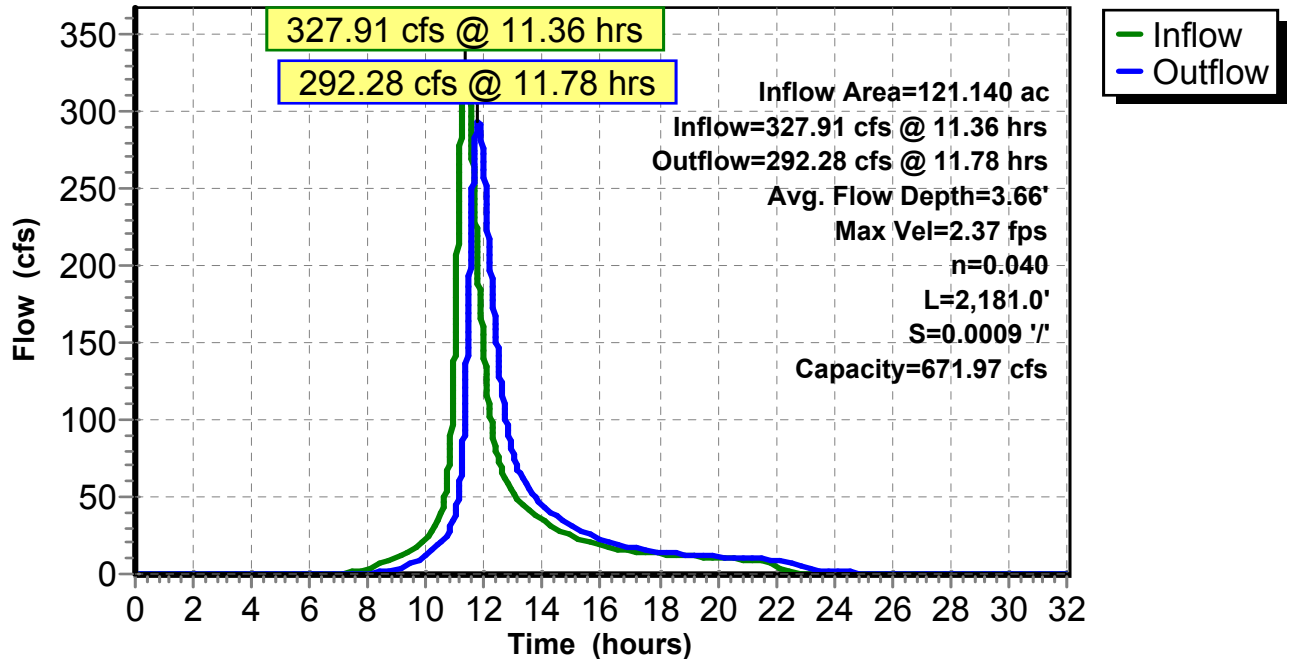
Peak Storage= 269,072 cf @ 11.53 hrs
 Average Depth at Peak Storage= 3.66'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 2,181.0' Slope= 0.0009 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 5.38" for april_2007 event
 Inflow = 576.84 cfs @ 11.27 hrs, Volume= 74.792 af
 Outflow = 59.93 cfs @ 23.08 hrs, Volume= 43.960 af, Atten= 90%, Lag= 708.271 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.64 fps, Min. Travel Time= 573.094 min
 Avg. Velocity = 0.47 fps, Avg. Travel Time= 791.246 min

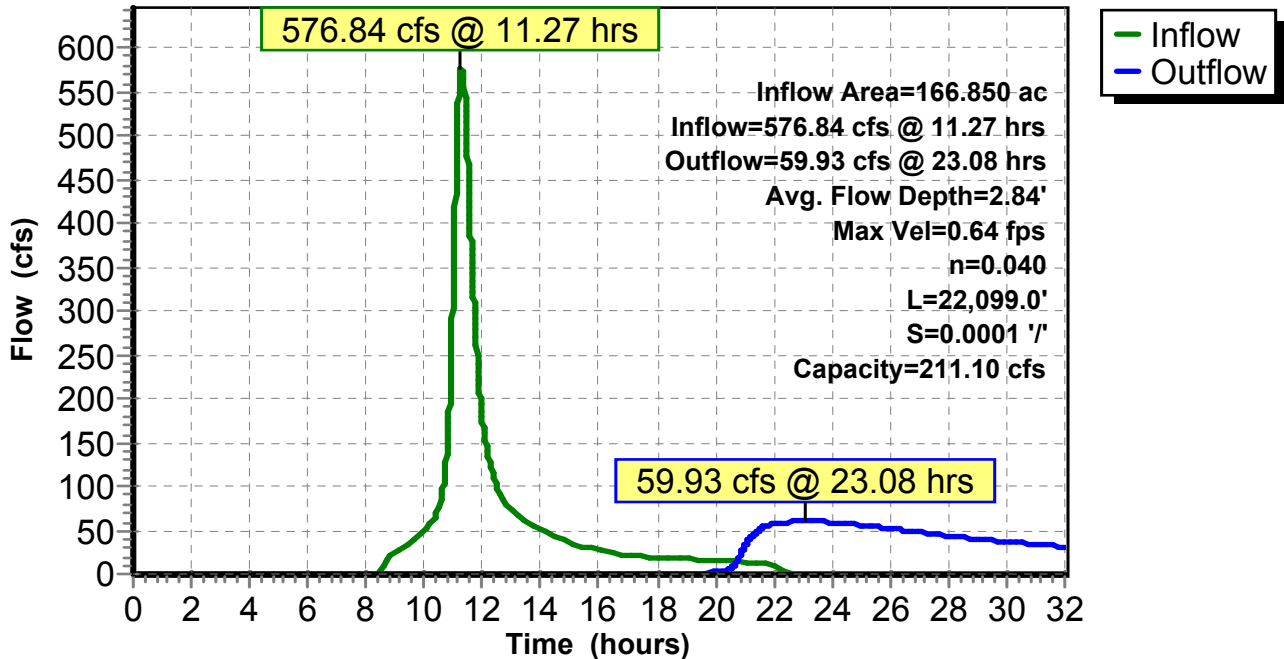
Peak Storage= 2,060,901 cf @ 13.53 hrs
 Average Depth at Peak Storage= 2.84'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 22,099.0' Slope= 0.0001 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 4.28" for april_2007 event
 Inflow = 332.39 cfs @ 12.38 hrs, Volume= 158.760 af
 Outflow = 328.98 cfs @ 12.60 hrs, Volume= 157.771 af, Atten= 1%, Lag= 13.010 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 6.92 fps, Min. Travel Time= 7.178 min
 Avg. Velocity = 3.92 fps, Avg. Travel Time= 12.691 min

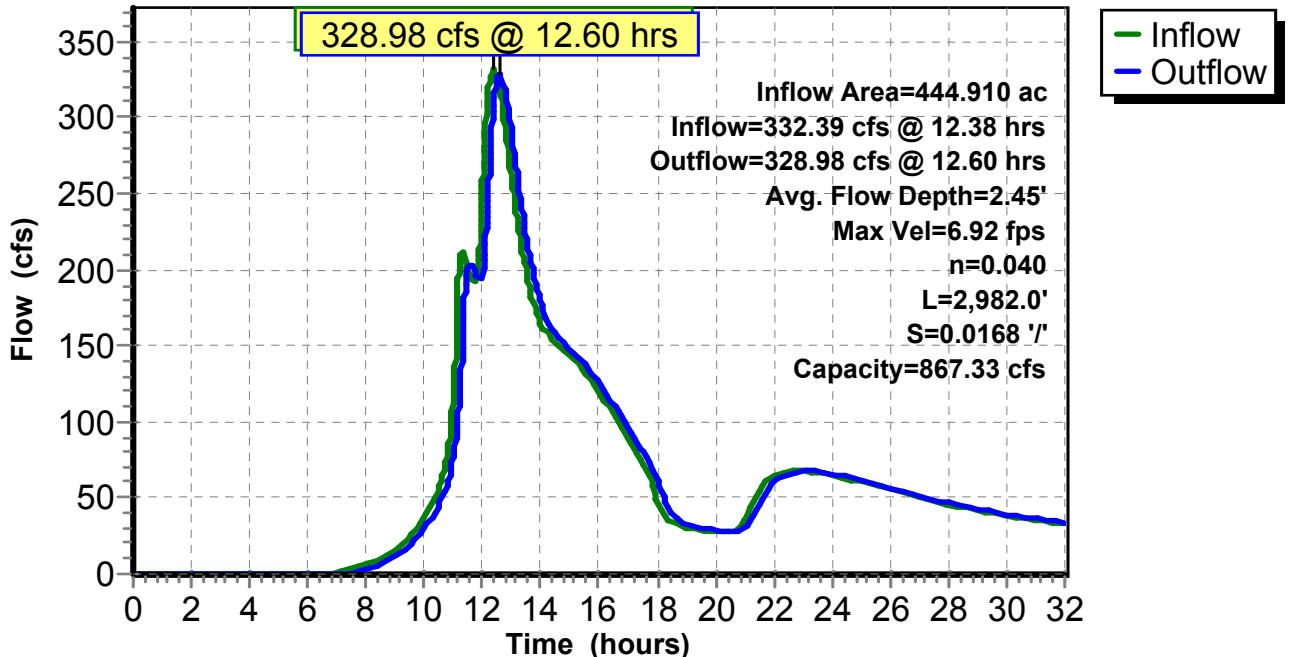
Peak Storage= 141,695 cf @ 12.48 hrs
 Average Depth at Peak Storage= 2.45'
 Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040
 Side Slope Z-value= 3.0 ' / ' Top Width= 36.00'
 Length= 2,982.0' Slope= 0.0168 ' / '
 Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 4.53" for april_2007 event
 Inflow = 548.53 cfs @ 11.45 hrs, Volume= 211.792 af
 Outflow = 548.41 cfs @ 11.47 hrs, Volume= 211.677 af, Atten= 0%, Lag= 1.099 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 10.94 fps, Min. Travel Time= 0.663 min
 Avg. Velocity = 5.02 fps, Avg. Travel Time= 1.444 min

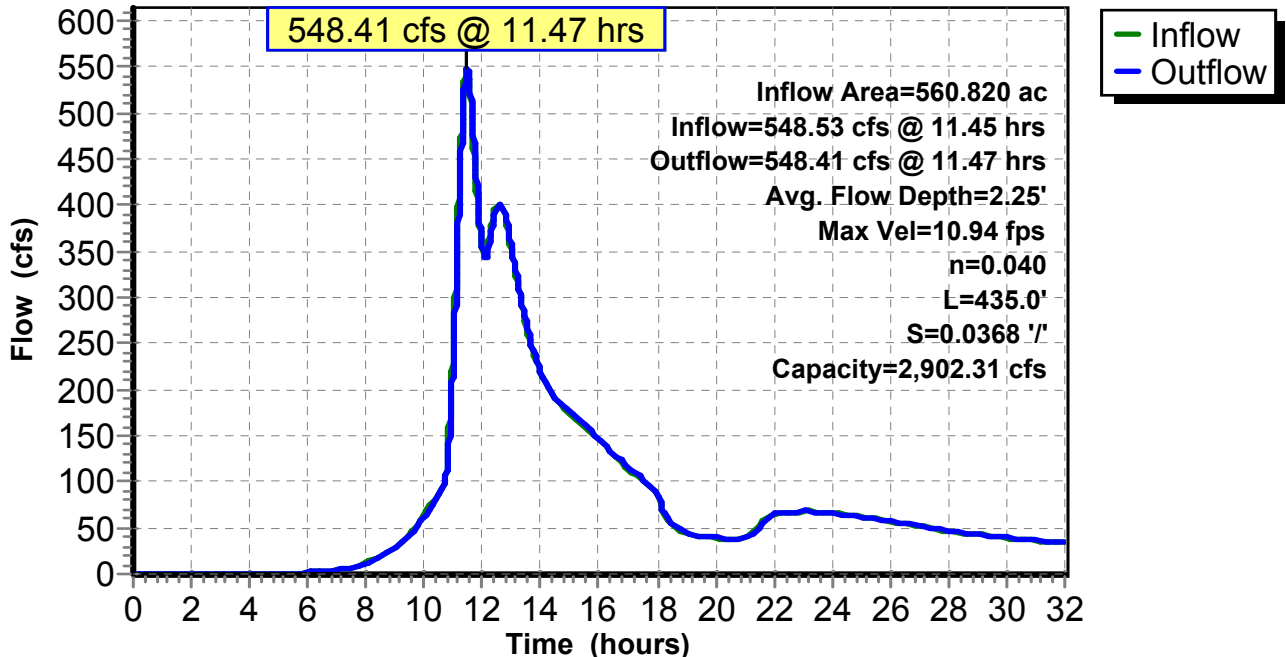
Peak Storage= 21,814 cf @ 11.46 hrs
 Average Depth at Peak Storage= 2.25'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' ' Top Width= 32.00'
 Length= 435.0' Slope= 0.0368 ' '
 Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.000 min
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.000 min

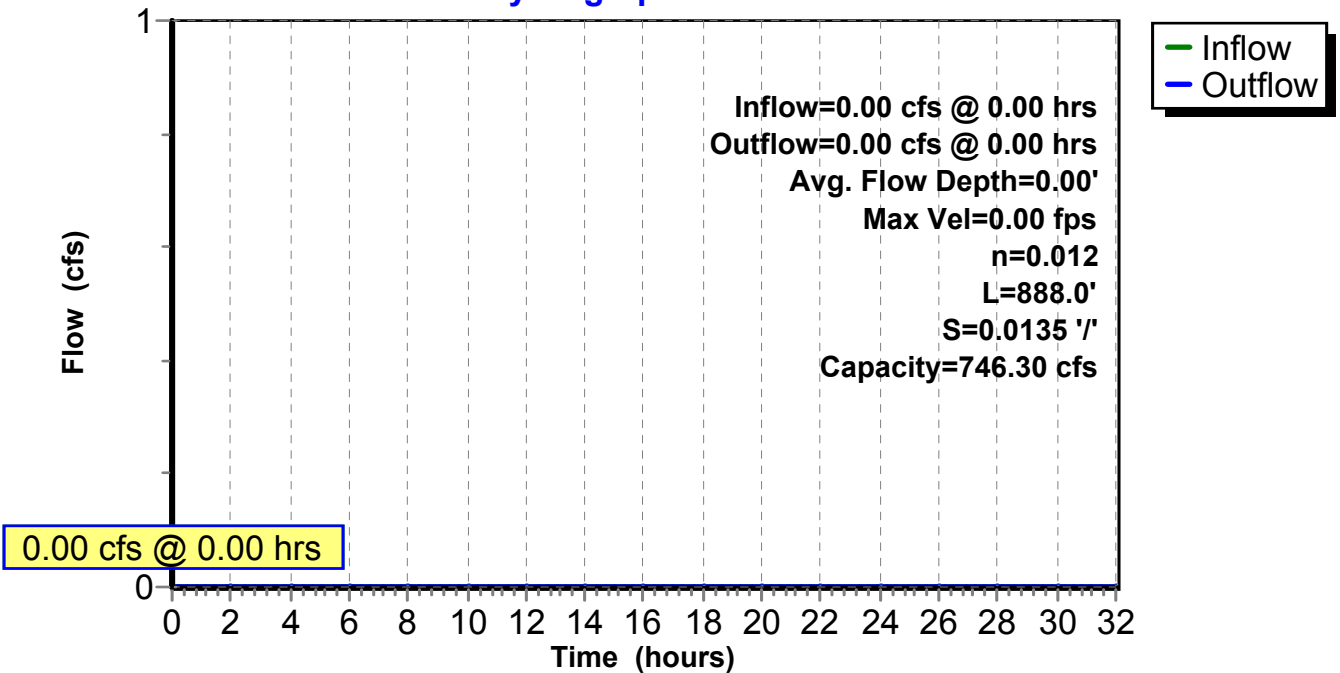
Peak Storage= 0 cf @ 0.00 hrs
 Average Depth at Peak Storage= 0.00'
 Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
 Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
 Length= 888.0' Slope= 0.0135 ' '
 Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



Summary for Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 4.75" for april_2007 event
 Inflow = 751.40 cfs @ 11.27 hrs, Volume= 259.081 af
 Outflow = 751.33 cfs @ 11.27 hrs, Volume= 259.075 af, Atten= 0%, Lag= 0.091 min
 Primary = 751.33 cfs @ 11.27 hrs, Volume= 259.075 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 46.18' @ 11.27 hrs Surf.Area= 0.695 ac Storage= 0.126 af

Plug-Flow detention time= 0.122 min calculated for 259.075 af (100% of inflow)
 Center-of-Mass det. time= 0.100 min (935.438 - 935.338)

Volume	Invert	Avail.Storage	Storage Description
#1	46.00'	82.605 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
46.00	0.695	0.000	0.000
48.00	0.695	1.390	1.390
50.00	0.800	1.495	2.885
52.00	1.420	2.220	5.105
54.00	2.270	3.690	8.795
56.00	3.160	5.430	14.225
58.00	4.070	7.230	21.455
60.00	4.980	9.050	30.505
62.00	5.710	10.690	41.195
64.00	6.620	12.330	53.525
66.00	7.170	13.790	67.315
68.00	8.120	15.290	82.605

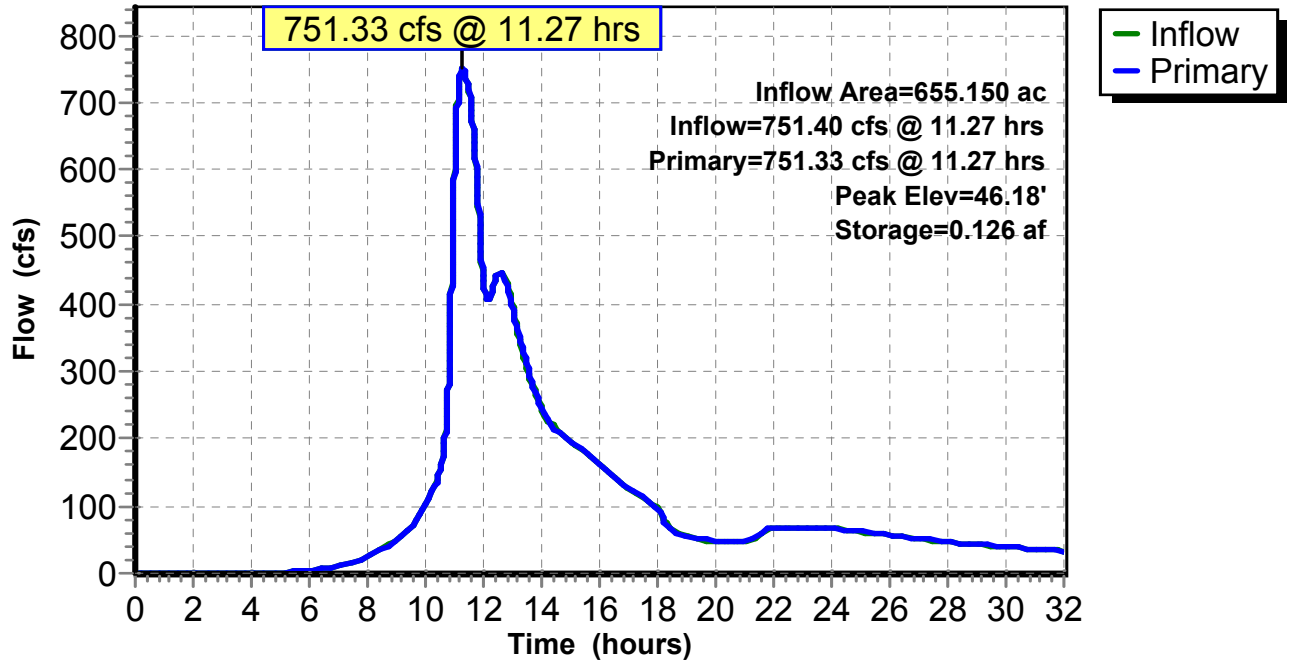
Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert X 2.00 L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48

Primary OutFlow Max=908.73 cfs @ 11.27 hrs HW=46.18' (Free Discharge)

- 1=Culvert (Inlet Controls 908.73 cfs @ 11.65 fps)
- 2=WEIR WESTCH AVE (Controls 0.00 cfs)

Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 4.57" for april_2007 event
 Inflow = 579.04 cfs @ 11.45 hrs, Volume= 221.764 af
 Outflow = 559.77 cfs @ 11.55 hrs, Volume= 221.764 af, Atten= 3%, Lag= 6.049 min
 Primary = 559.77 cfs @ 11.55 hrs, Volume= 221.764 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 75.63' @ 11.55 hrs Surf.Area= 0.394 ac Storage= 1.378 af

Plug-Flow detention time= 0.303 min calculated for 221.695 af (100% of inflow)
 Center-of-Mass det. time= 0.302 min (970.432 - 970.129)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

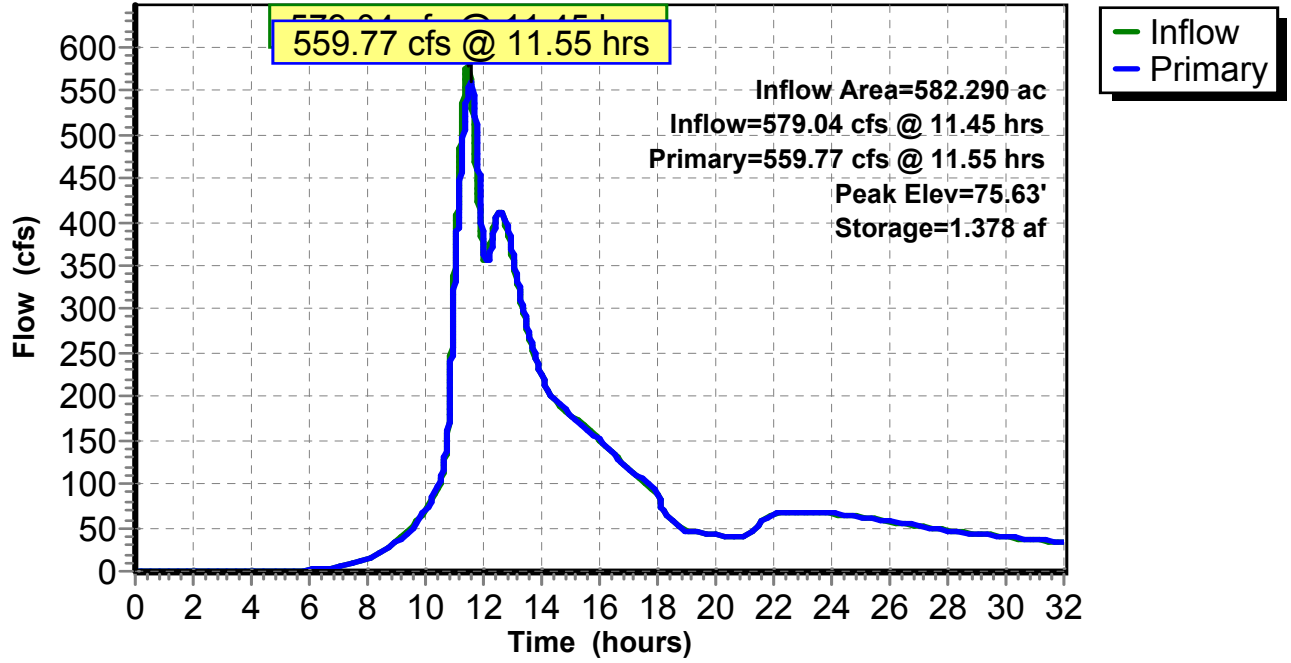
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=559.76 cfs @ 11.55 hrs HW=75.63' (Free Discharge)

- 1=Culvert (Inlet Controls 327.22 cfs @ 16.67 fps)
- 2=Culvert 2 (Inlet Controls 232.53 cfs @ 11.84 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 4.29" for april_2007 event
 Inflow = 332.65 cfs @ 12.35 hrs, Volume= 159.196 af
 Outflow = 332.39 cfs @ 12.38 hrs, Volume= 158.760 af, Atten= 0%, Lag= 1.558 min
 Primary = 332.39 cfs @ 12.38 hrs, Volume= 158.760 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 130.53' @ 12.38 hrs Surf.Area= 1.042 ac Storage= 2.606 af

Plug-Flow detention time= 8.815 min calculated for 158.760 af (100% of inflow)
 Center-of-Mass det. time= 6.407 min (1,043.203 - 1,036.796)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

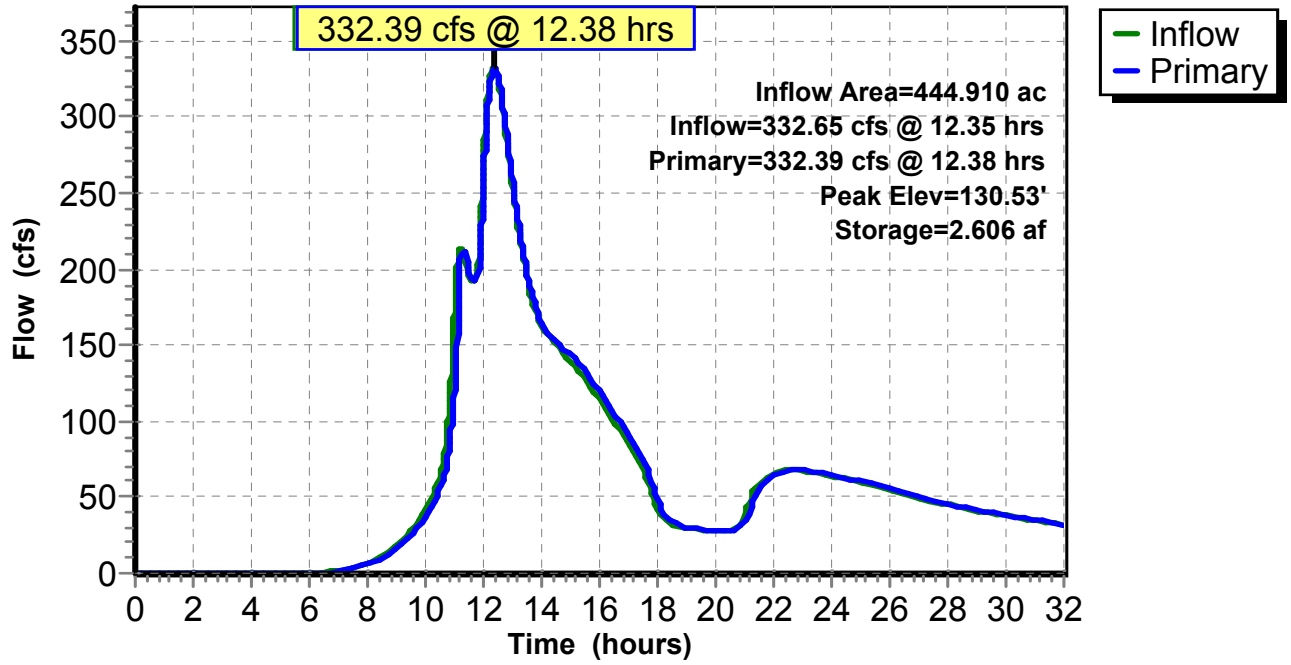
Primary OutFlow Max=332.11 cfs @ 12.38 hrs HW=130.53' (Free Discharge)

1=Culvert (Barrel Controls 172.84 cfs @ 7.59 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 159.27 cfs @ 2.39 fps)

Pond 4A: DP 4 A ARGYLE

Hydrograph



Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 4.26" for april_2007 event
 Inflow = 568.17 cfs @ 11.73 hrs, Volume= 143.900 af
 Outflow = 311.64 cfs @ 12.32 hrs, Volume= 143.290 af, Atten= 45%, Lag= 35.486 min
 Primary = 311.64 cfs @ 12.32 hrs, Volume= 143.290 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 132.48' @ 12.32 hrs Surf.Area= 20.841 ac Storage= 28.283 af

Plug-Flow detention time= 45.730 min calculated for 143.290 af (100% of inflow)
 Center-of-Mass det. time= 41.949 min (1,065.589 - 1,023.640)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

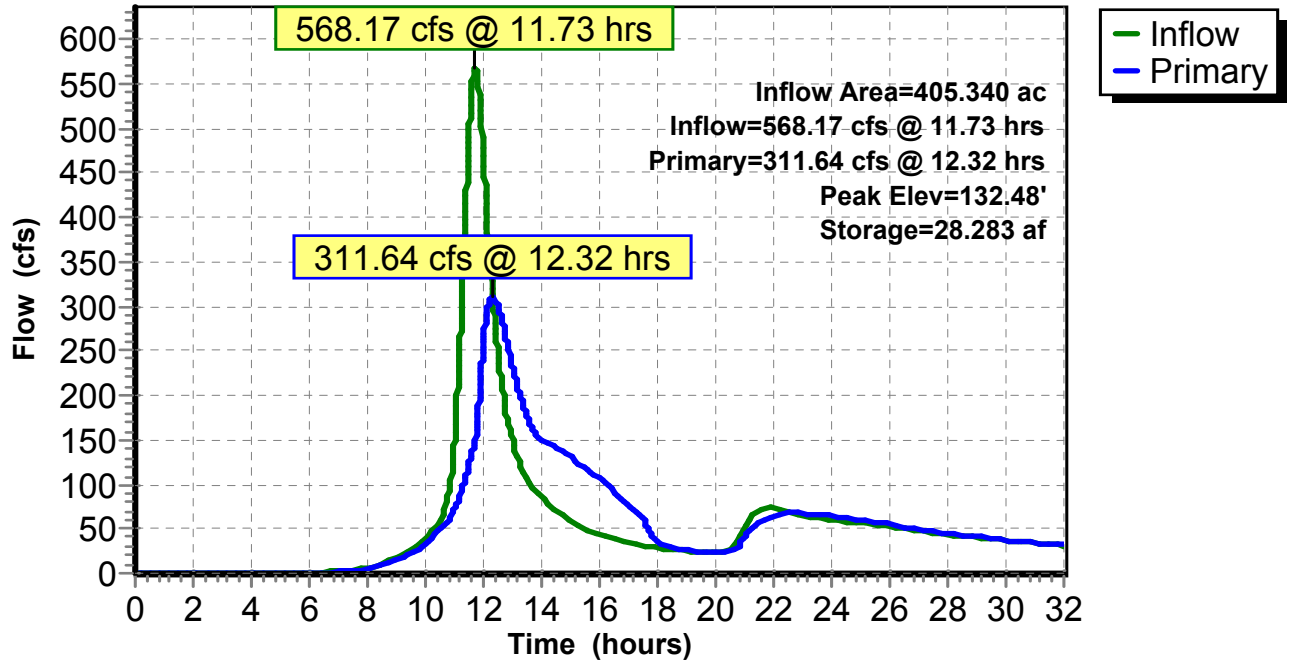
Primary OutFlow Max=311.23 cfs @ 12.32 hrs HW=132.48' (Free Discharge)

1=Culvert (Barrel Controls 175.34 cfs @ 7.77 fps)

2=Asymmetrical Weir (Weir Controls 135.89 cfs @ 1.96 fps)

Pond 5P: DP 5 BETSY BROWN ROAD

Hydrograph



Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 4.53" for april_2007 event
 Inflow = 550.10 cfs @ 11.42 hrs, Volume= 211.849 af
 Outflow = 548.53 cfs @ 11.45 hrs, Volume= 211.792 af, Atten= 0%, Lag= 2.054 min
 Primary = 548.53 cfs @ 11.45 hrs, Volume= 211.792 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 91.37' @ 11.45 hrs Surf.Area= 1.370 ac Storage= 1.875 af

Plug-Flow detention time= 2.653 min calculated for 211.726 af (100% of inflow)
 Center-of-Mass det. time= 2.400 min (980.443 - 978.043)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)

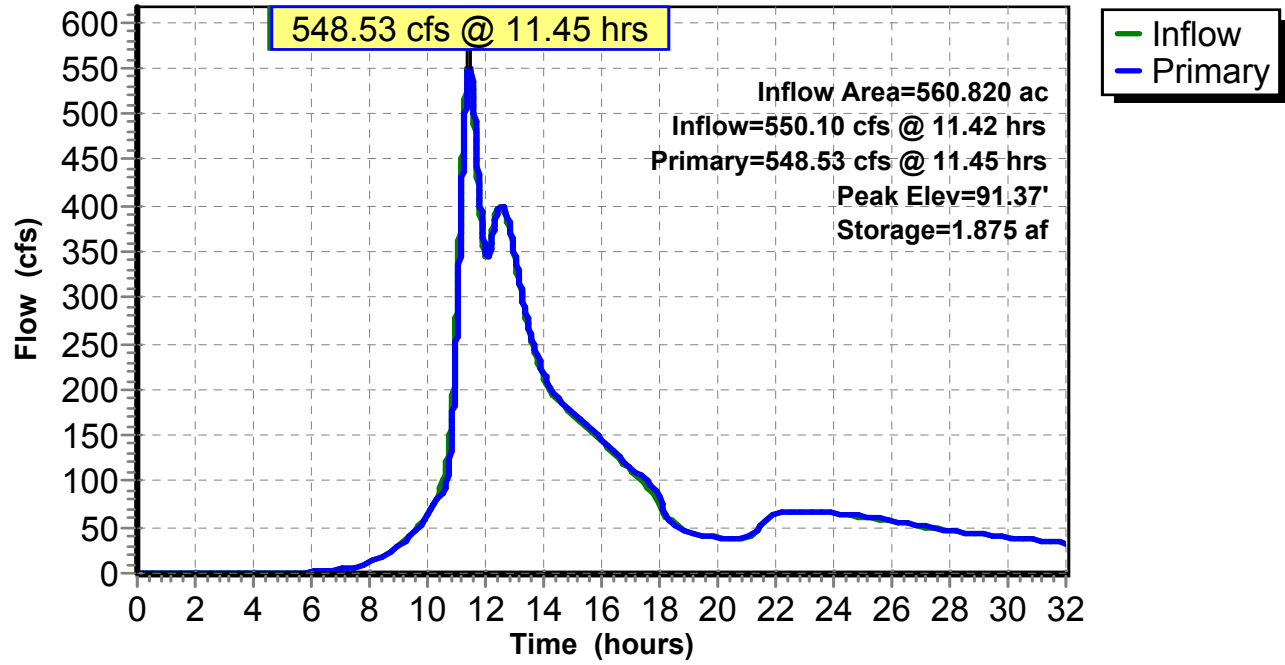
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=548.13 cfs @ 11.45 hrs HW=91.37' (Free Discharge)
 1=Sharp-Crested Rectangular Weir (Weir Controls 192.45 cfs @ 5.49 fps)
 2=Sharp-Crested Rectangular Weir (Weir Controls 355.68 cfs @ 3.08 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 4.33" for april_2007 event
 Inflow = 629.09 cfs @ 11.23 hrs, Volume= 258.082 af
 Outflow = 626.42 cfs @ 11.26 hrs, Volume= 258.080 af, Atten= 0%, Lag= 1.430 min
 Primary = 626.42 cfs @ 11.26 hrs, Volume= 258.080 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 37.35' @ 11.26 hrs Surf.Area= 0.228 ac Storage= 0.468 af

Plug-Flow detention time= 0.150 min calculated for 258.080 af (100% of inflow)
 Center-of-Mass det. time= 0.145 min (972.939 - 972.794)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

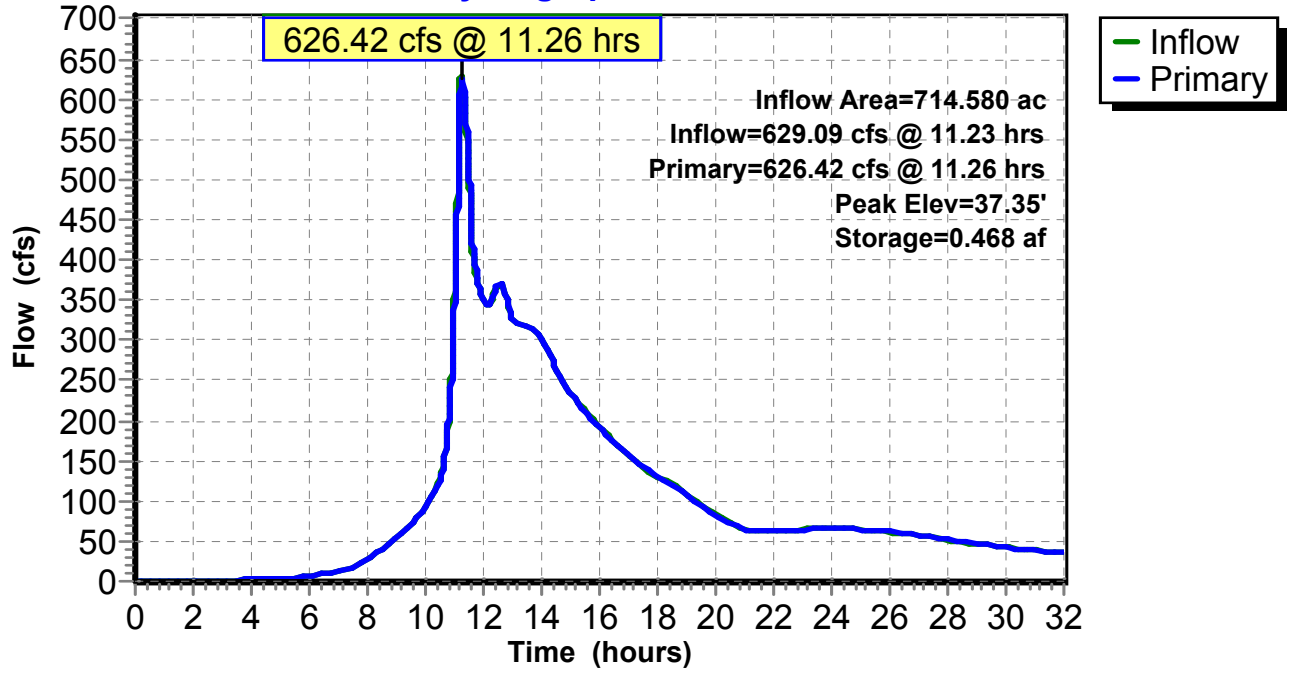
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=626.30 cfs @ 11.26 hrs HW=37.35' (Free Discharge)

- 1=Culvert (Barrel Controls 626.30 cfs @ 8.35 fps)
- 2=WEIR BOWMAN (Controls 0.00 cfs)

Pond 8P: BOWMAN FIELDS

Hydrograph



Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 4.69" for april_2007 event
 Inflow = 328.06 cfs @ 11.36 hrs, Volume= 47.334 af
 Outflow = 327.91 cfs @ 11.36 hrs, Volume= 47.334 af, Atten= 0%, Lag= 0.202 min
 Primary = 327.91 cfs @ 11.36 hrs, Volume= 47.334 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 134.92' @ 11.36 hrs Surf.Area= 0.196 ac Storage= 0.227 af

Plug-Flow detention time= 0.281 min calculated for 47.320 af (100% of inflow)
 Center-of-Mass det. time= 0.281 min (768.503 - 768.223)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

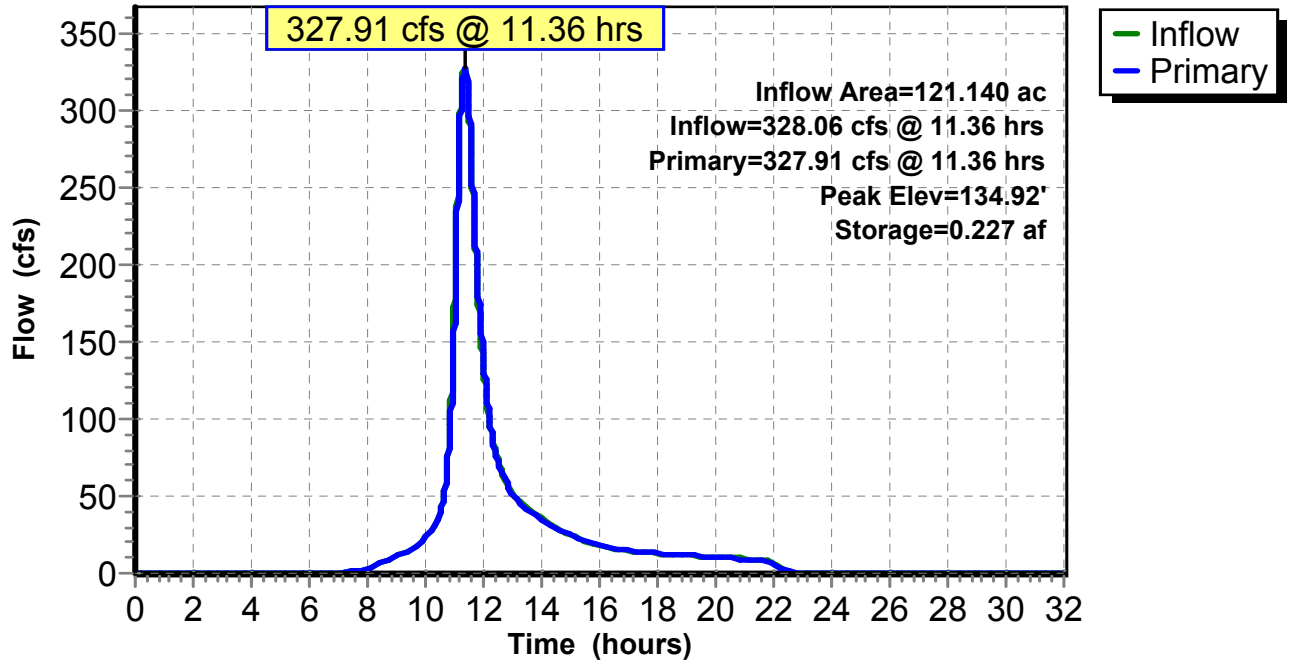
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=327.28 cfs @ 11.36 hrs HW=134.92' (Free Discharge)

- 1=Culvert (Inlet Controls 92.74 cfs @ 13.12 fps)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 92.81 cfs @ 6.28 fps)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 141.73 cfs @ 2.13 fps)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Hydrograph



Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 5.52" for april_2007 event
 Inflow = 583.01 cfs @ 11.22 hrs, Volume= 76.685 af
 Outflow = 576.84 cfs @ 11.27 hrs, Volume= 74.792 af, Atten= 1%, Lag= 2.991 min
 Primary = 576.84 cfs @ 11.27 hrs, Volume= 74.792 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.72' @ 11.27 hrs Surf.Area= 4.191 ac Storage= 7.479 af (4.512 af above start)

Plug-Flow detention time= 51.747 min calculated for 71.825 af (94% of inflow)
 Center-of-Mass det. time= 12.777 min (758.718 - 745.941)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

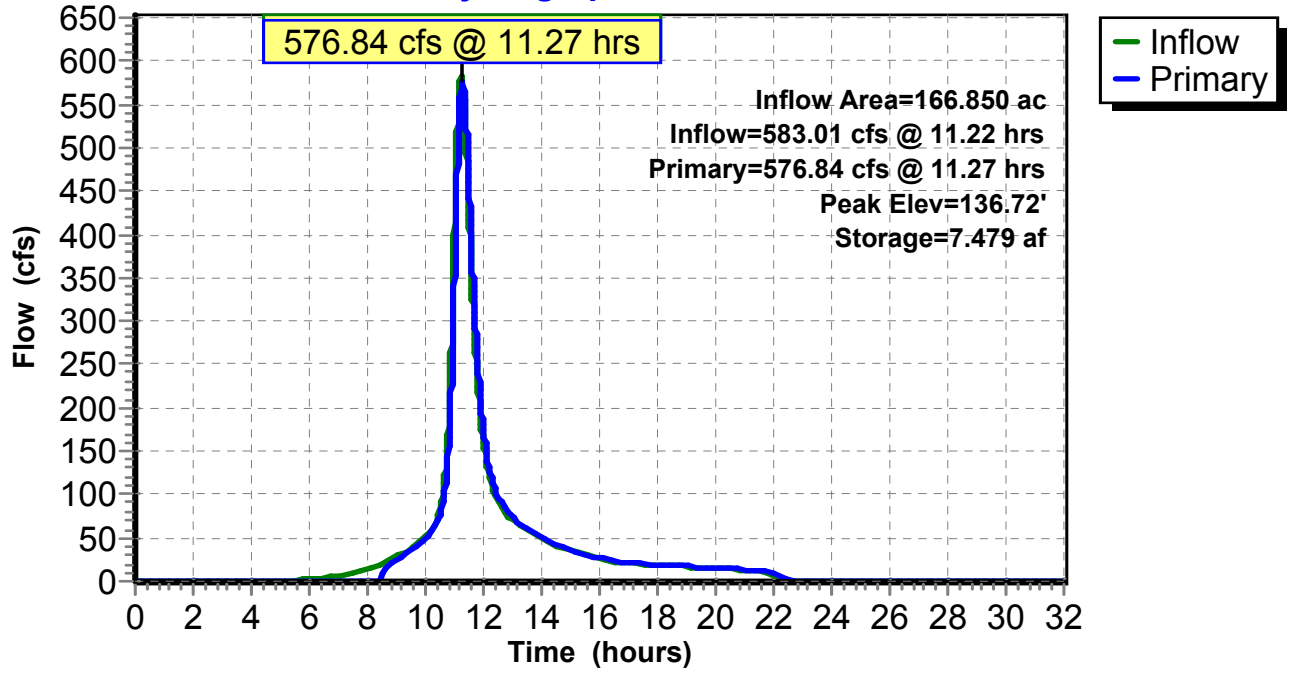
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=575.91 cfs @ 11.27 hrs HW=136.72' (Free Discharge)

- 1=Culvert (Inlet Controls 3.73 cfs @ 2.88 fps)
- 2=Asymmetrical Weir (Weir Controls 572.17 cfs @ 2.36 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Hydrograph



Summary for Pond 12P: UPSTREAM add new culvert AVON OVERFLOW TO ROAD

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 4.57" for april_2007 event
 Inflow = 559.77 cfs @ 11.55 hrs, Volume= 221.764 af
 Outflow = 559.74 cfs @ 11.55 hrs, Volume= 221.761 af, Atten= 0%, Lag= 0.296 min
 Primary = 559.74 cfs @ 11.55 hrs, Volume= 221.761 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 61.53' @ 11.55 hrs Surf.Area= 1,310 sf Storage= 4,528 cf

Plug-Flow detention time= 0.095 min calculated for 221.692 af (100% of inflow)
 Center-of-Mass det. time= 0.083 min (970.515 - 970.432)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	63,134 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686
70.00	10,112	40,448	63,134

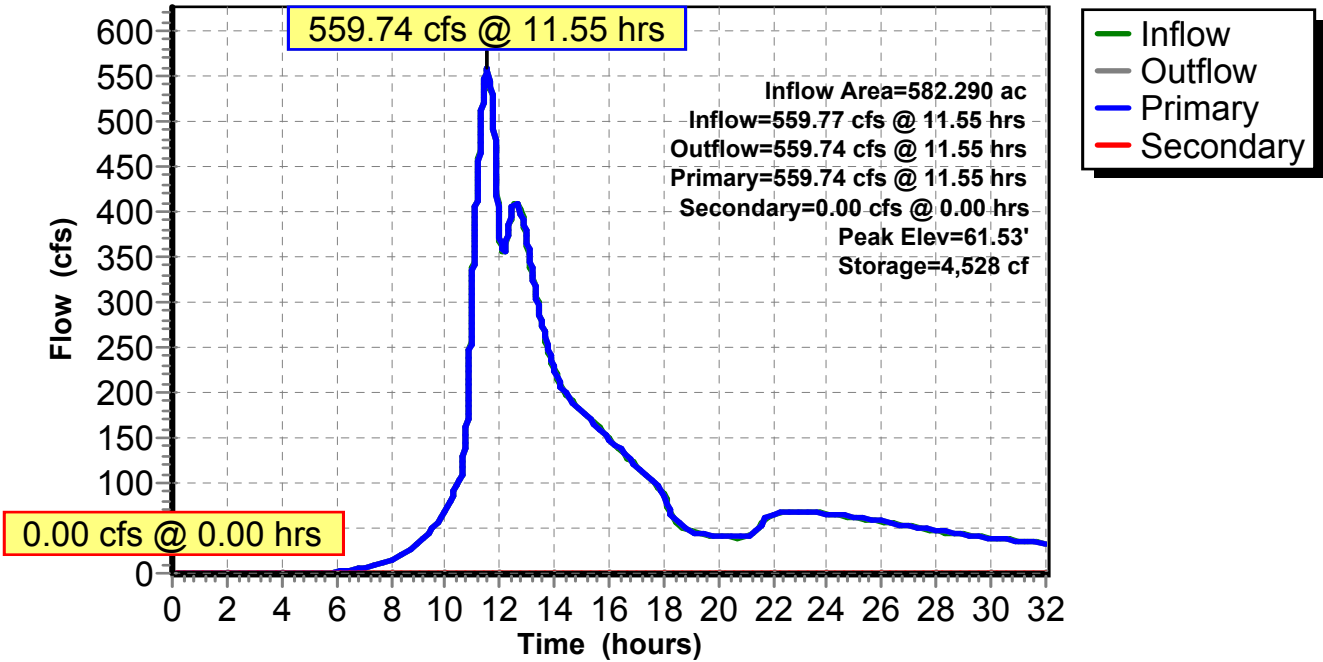
Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert X 3.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 55.13' / 37.90' S= 0.0206 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	68.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=559.78 cfs @ 11.55 hrs HW=61.53' (Free Discharge)
 ↑1=Culvert (Inlet Controls 559.78 cfs @ 9.50 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=56.00' (Free Discharge)
 ↑2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 12P: UPSTREAM add new culvert AVON OVERFLOW TO ROAD

Hydrograph



Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 45.00' @ 0.00 hrs Surf.Area= 100 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	45.00'	171,628 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	100	0	0
48.00	100	300	300
51.00	6,000	9,150	9,450
52.00	15,452	10,726	20,176
54.00	38,000	53,452	73,628
56.00	60,000	98,000	171,628

Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	45.00'	24.0" Round Culvert L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 45.00' / 44.00' S= 0.0100 '/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

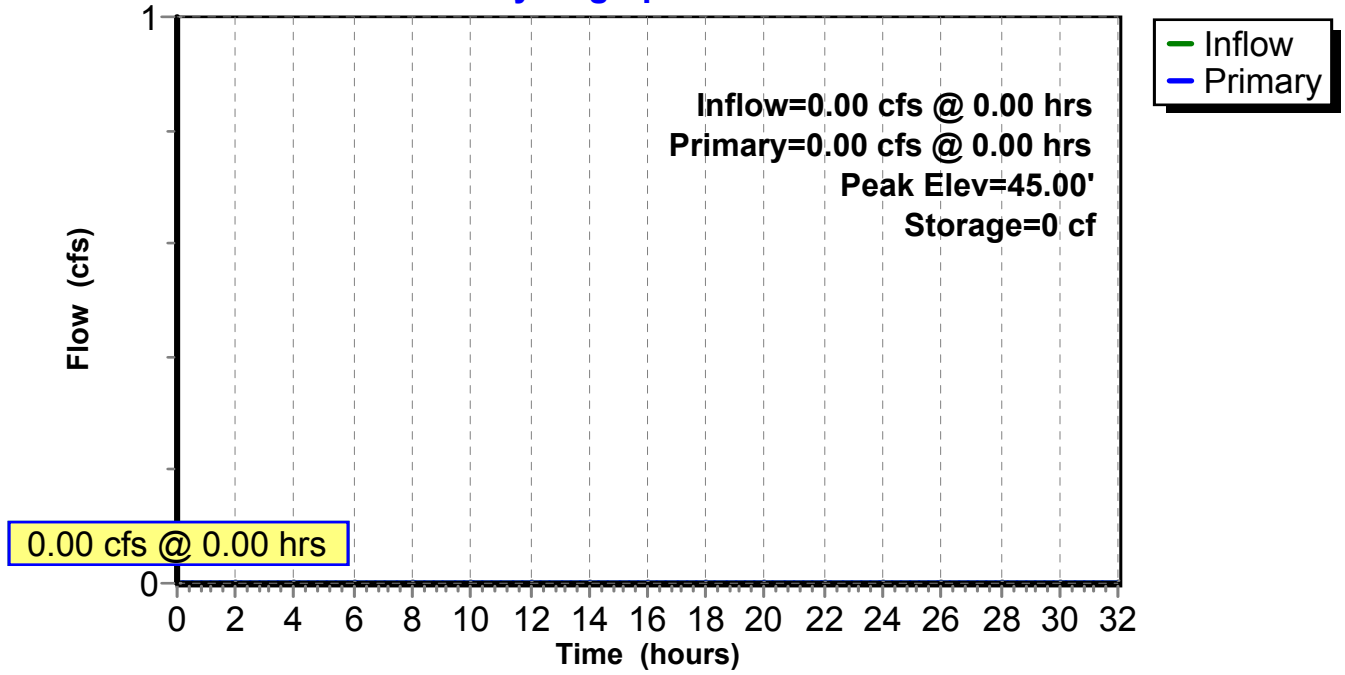
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=45.00' (Free Discharge)

↑ **1=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

└ **2=Culvert** (Controls 0.00 cfs)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



Summary for Pond 27P: NEW DETENTION IN BALLFIELD

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 4.75" for april_2007 event
 Inflow = 751.33 cfs @ 11.27 hrs, Volume= 259.075 af
 Outflow = 381.09 cfs @ 11.27 hrs, Volume= 224.065 af, Atten= 49%, Lag= 0.000 min
 Primary = 171.67 cfs @ 11.27 hrs, Volume= 172.148 af
 Secondary = 209.42 cfs @ 11.27 hrs, Volume= 51.917 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 48.56' @ 11.27 hrs Surf.Area= 120,000 sf Storage= 937,500 cf

Plug-Flow detention time= 185.809 min calculated for 224.065 af (86% of inflow)
 Center-of-Mass det. time= 77.043 min (1,012.481 - 935.438)

Volume	Invert	Avail.Storage	Storage Description
#1	36.50'	937,500 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.50	80,000	0	0
44.00	90,000	637,500	637,500
46.00	100,000	190,000	827,500
47.00	120,000	110,000	937,500

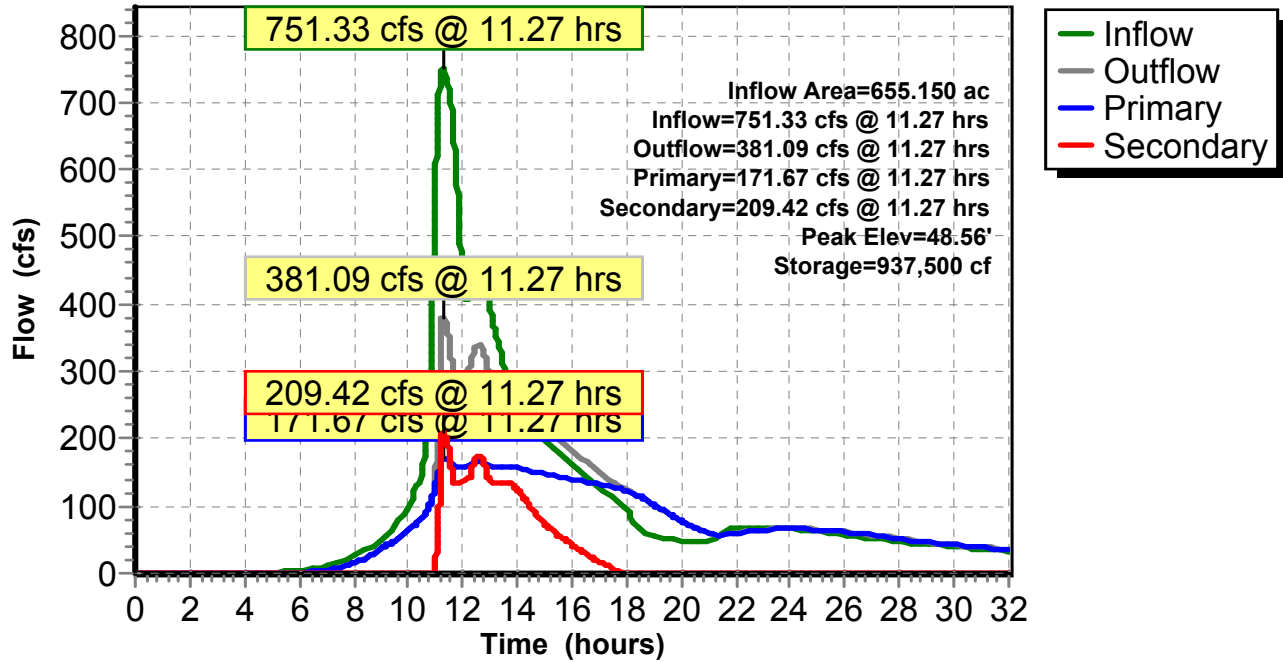
Device	Routing	Invert	Outlet Devices
#1	Primary	36.50'	18.0" Vert. Orifice/Grate X 6.00 C= 0.600
#2	Secondary	43.00'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=171.67 cfs @ 11.27 hrs HW=48.56' (Free Discharge)
 ↑1=Orifice/Grate (Orifice Controls 171.67 cfs @ 16.19 fps)

Secondary OutFlow Max=209.40 cfs @ 11.27 hrs HW=48.56' (Free Discharge)
 ↑2=Sharp-Crested Rectangular Weir(Weir Controls 209.40 cfs @ 7.71 fps)

Pond 27P: NEW DETENTION IN BALLFIELD

Hydrograph



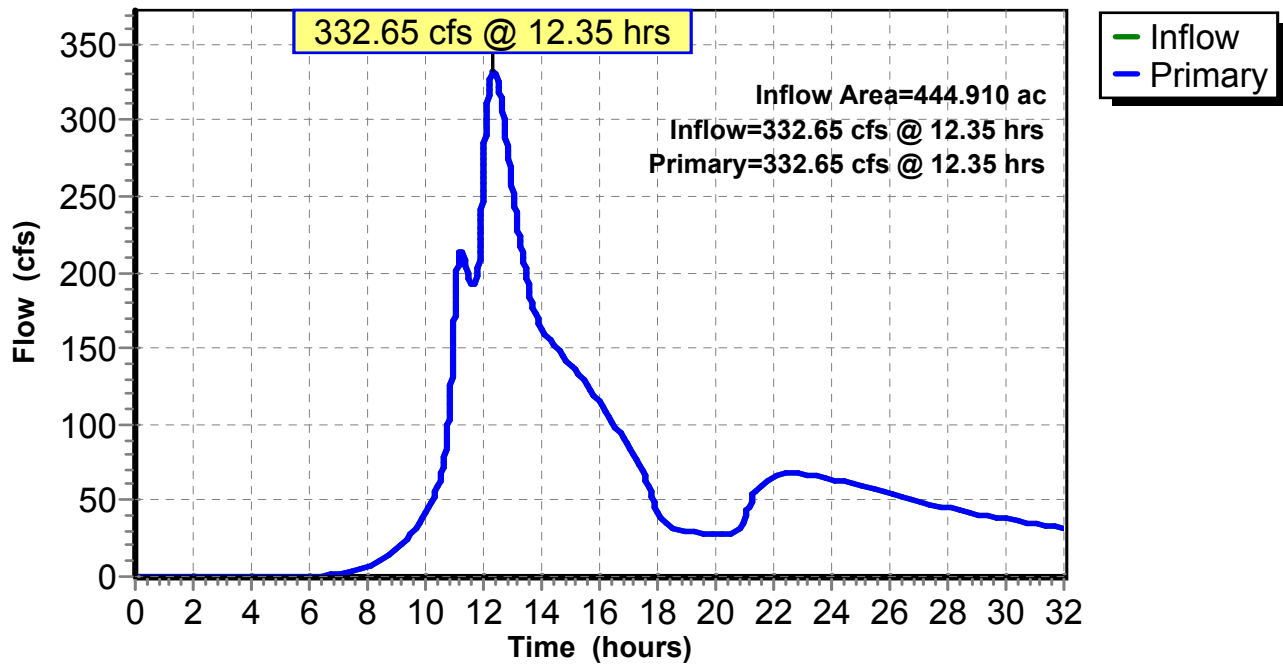
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 4.29" for april_2007 event
Inflow = 332.65 cfs @ 12.35 hrs, Volume= 159.196 af
Primary = 332.65 cfs @ 12.35 hrs, Volume= 159.196 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



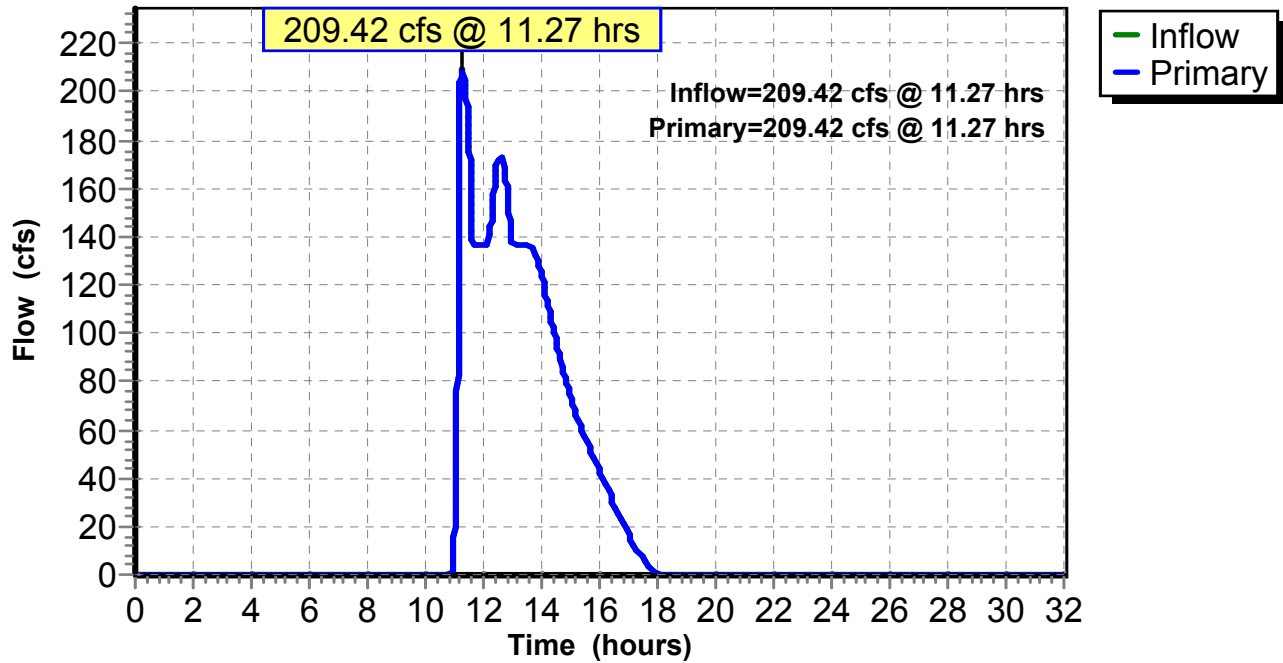
Summary for Link 24L: Weir

Inflow = 209.42 cfs @ 11.27 hrs, Volume= 51.917 af
Primary = 209.42 cfs @ 11.27 hrs, Volume= 51.917 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 24L: Weir

Hydrograph



Summary for Subcatchment A: WS A

Runoff = 155.42 cfs @ 12.43 hrs, Volume= 21.342 af, Depth= 4.31"

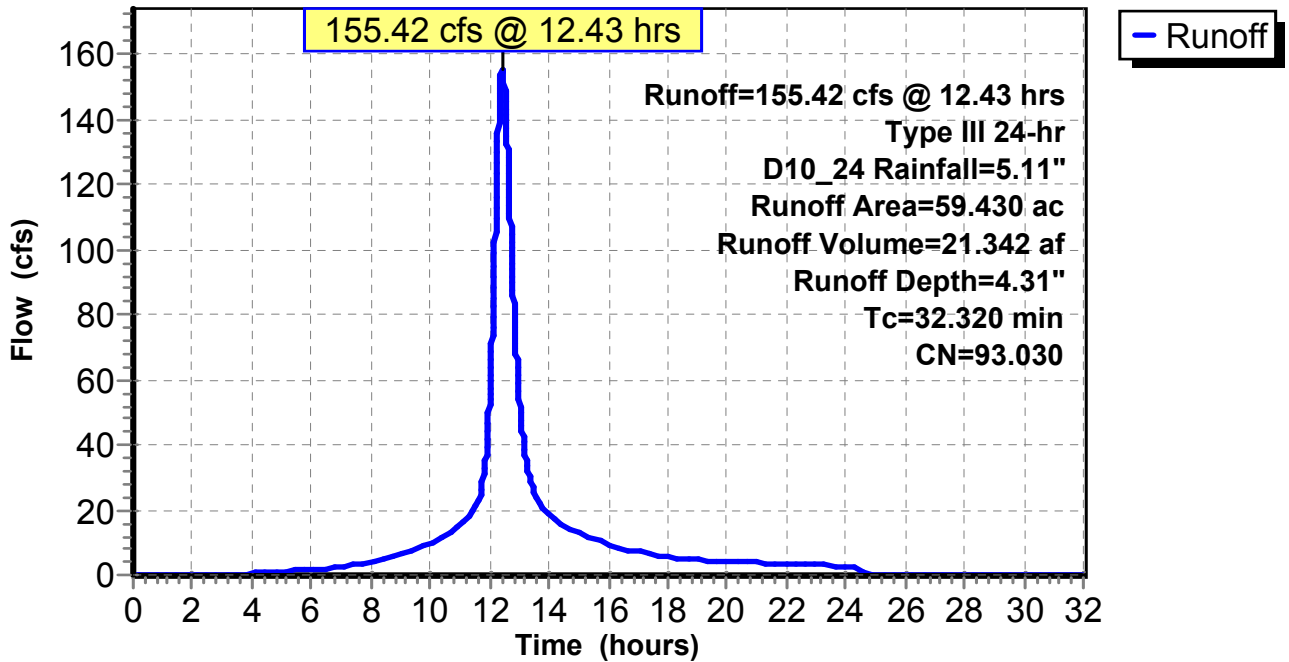
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



Summary for Subcatchment B: WS B

Runoff = 141.78 cfs @ 12.40 hrs, Volume= 17.657 af, Depth= 3.68"

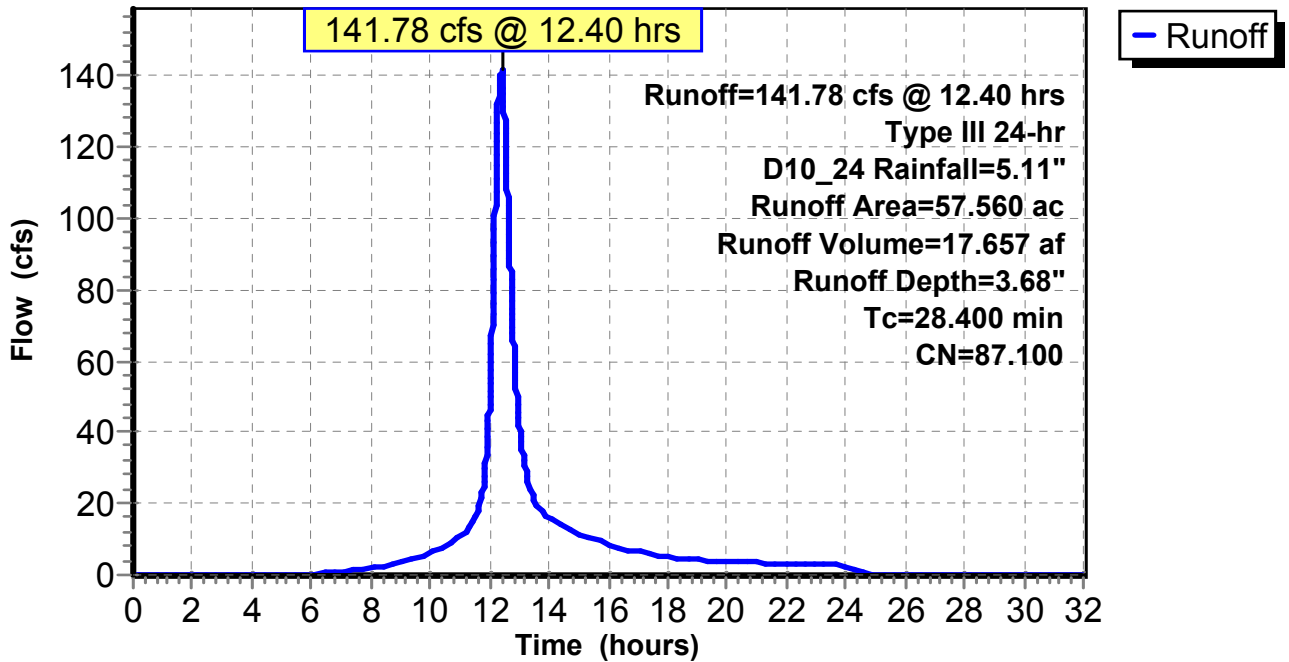
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



Summary for Subcatchment BH: HOTEL

Runoff = 35.75 cfs @ 12.42 hrs, Volume= 4.572 af, Depth= 3.59"

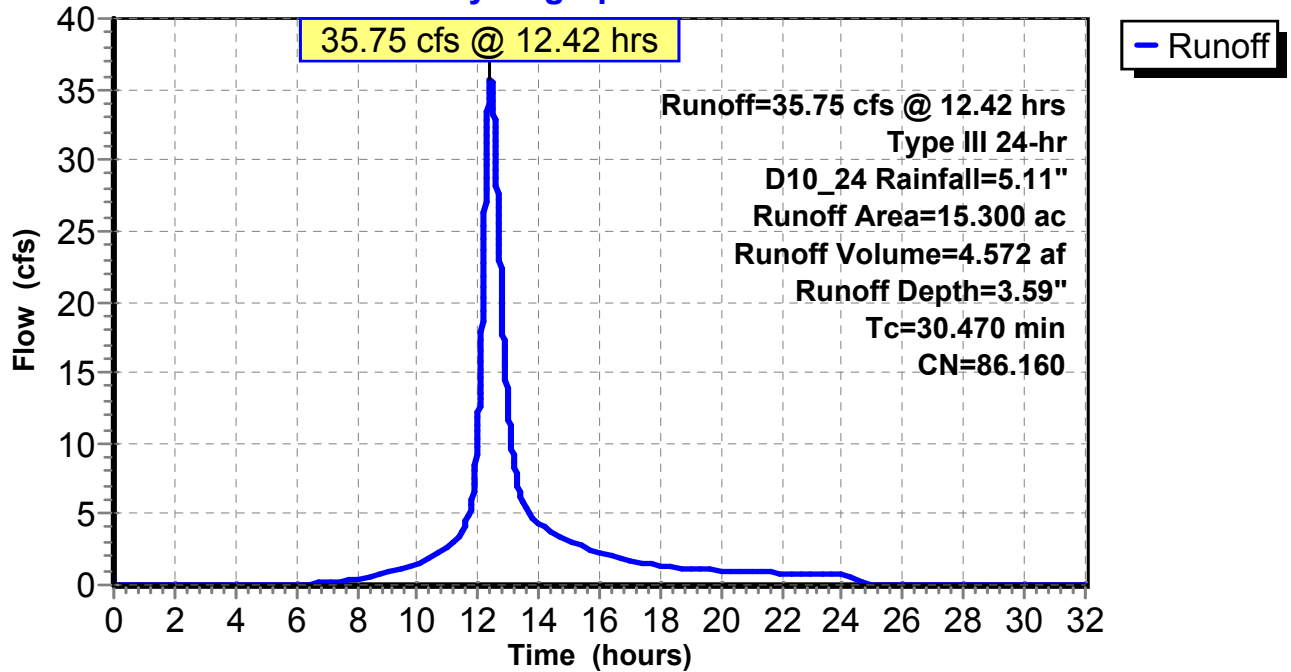
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



Summary for Subcatchment C: WS C

Runoff = 56.40 cfs @ 12.25 hrs, Volume= 5.778 af, Depth= 3.23"

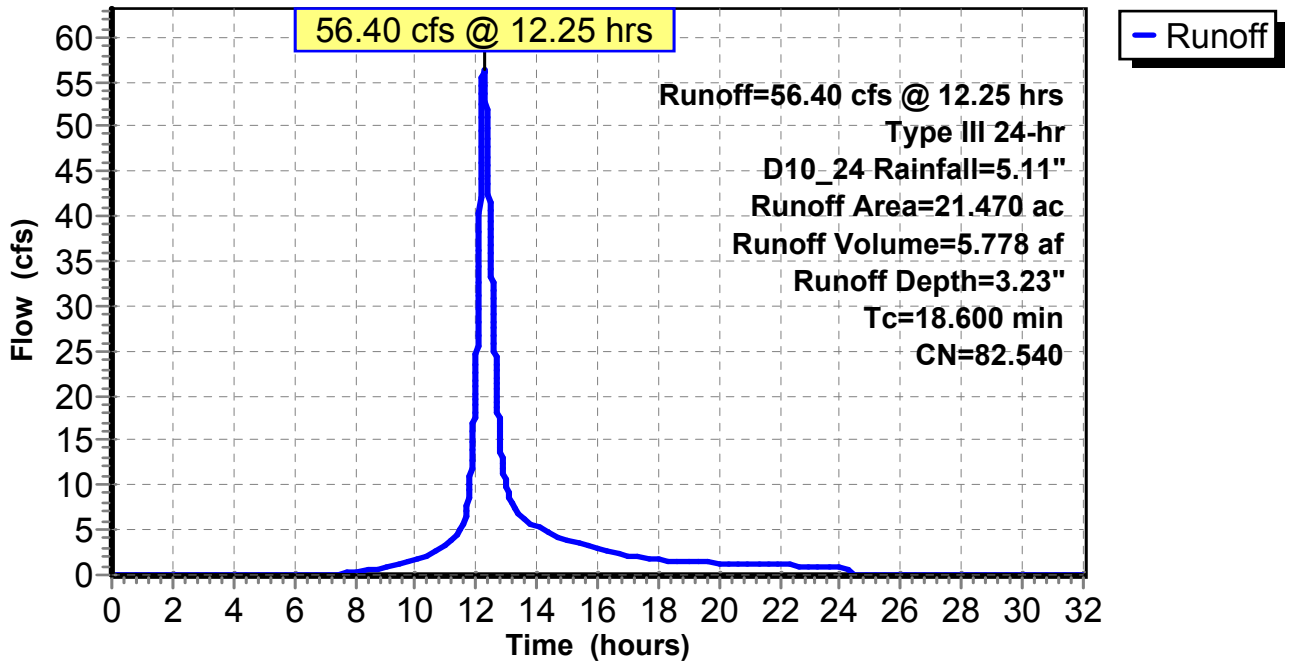
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



Summary for Subcatchment D: WS D

Runoff = 200.91 cfs @ 12.61 hrs, Volume= 30.878 af, Depth= 3.20"

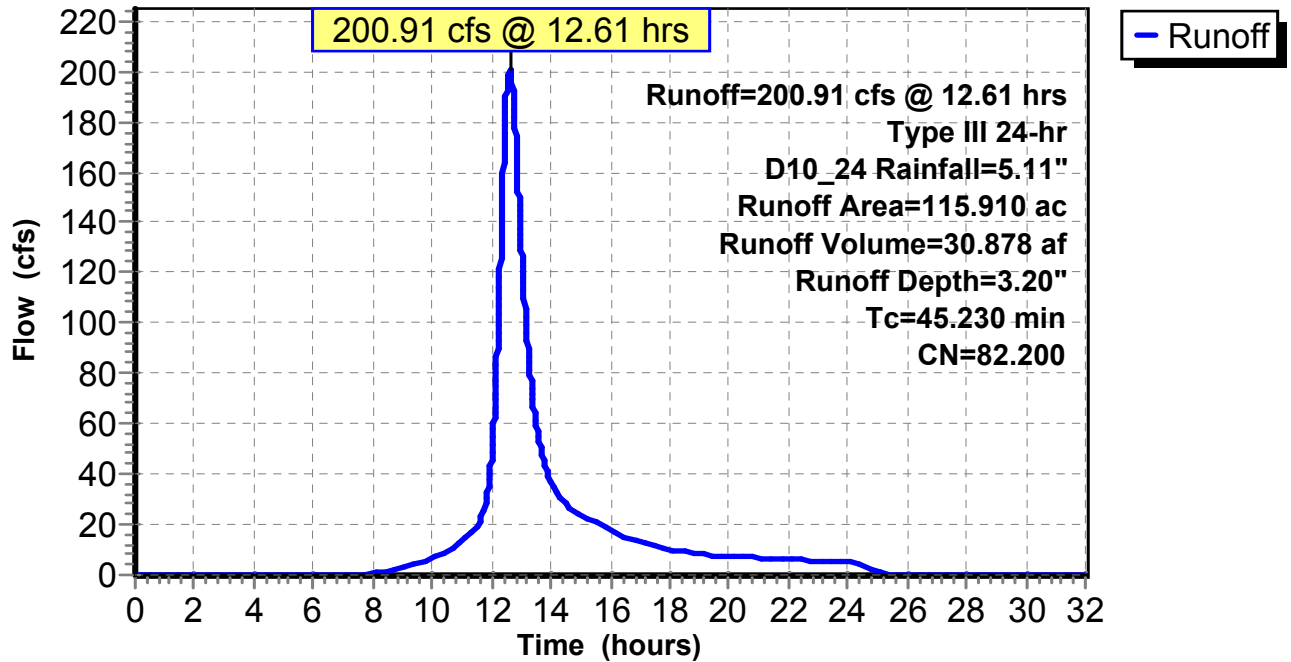
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



Summary for Subcatchment D-1: WS D-1

Runoff = 67.70 cfs @ 12.45 hrs, Volume= 8.716 af, Depth= 2.64"

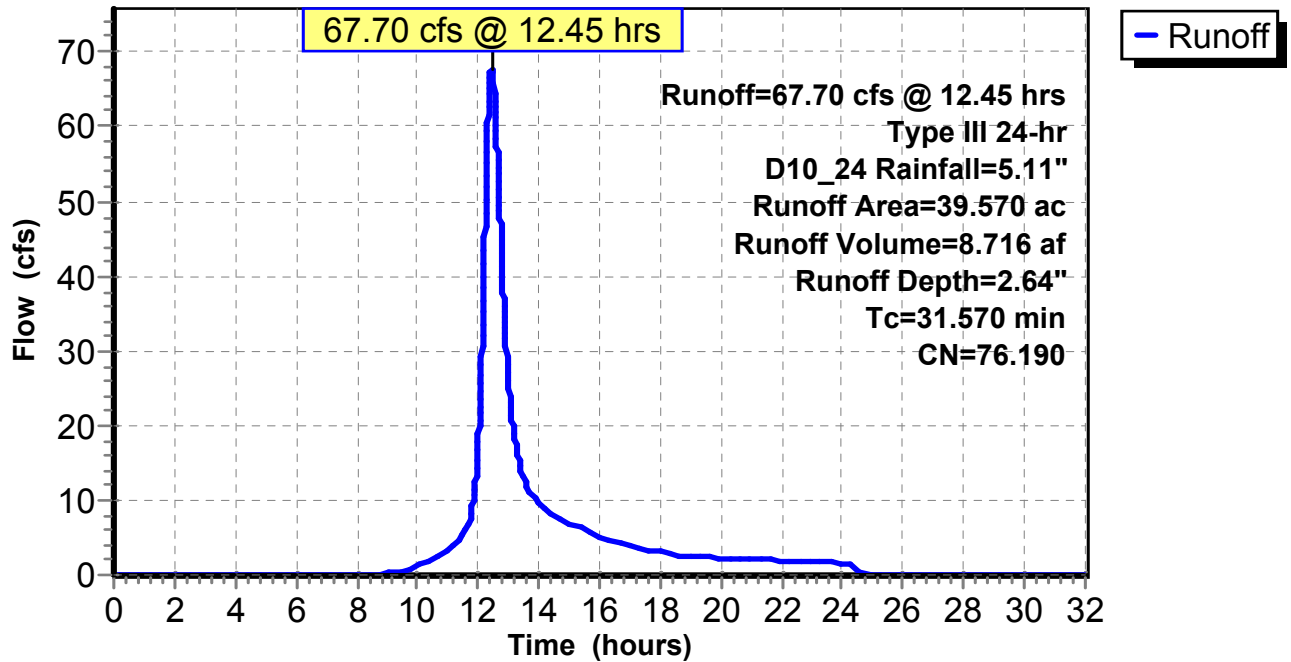
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



Summary for Subcatchment E: WS E

Runoff = 159.06 cfs @ 12.86 hrs, Volume= 29.522 af, Depth= 3.02"

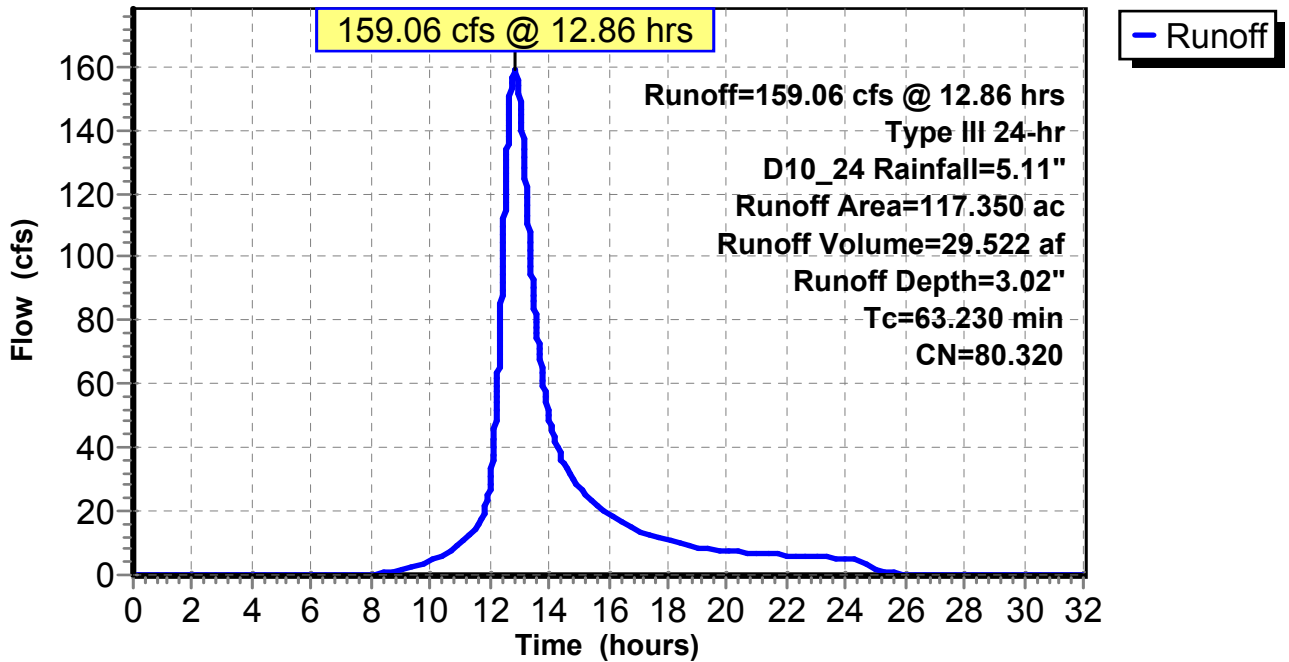
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



Summary for Subcatchment F: WS F

Runoff = 163.60 cfs @ 12.63 hrs, Volume= 24.991 af, Depth= 2.48"

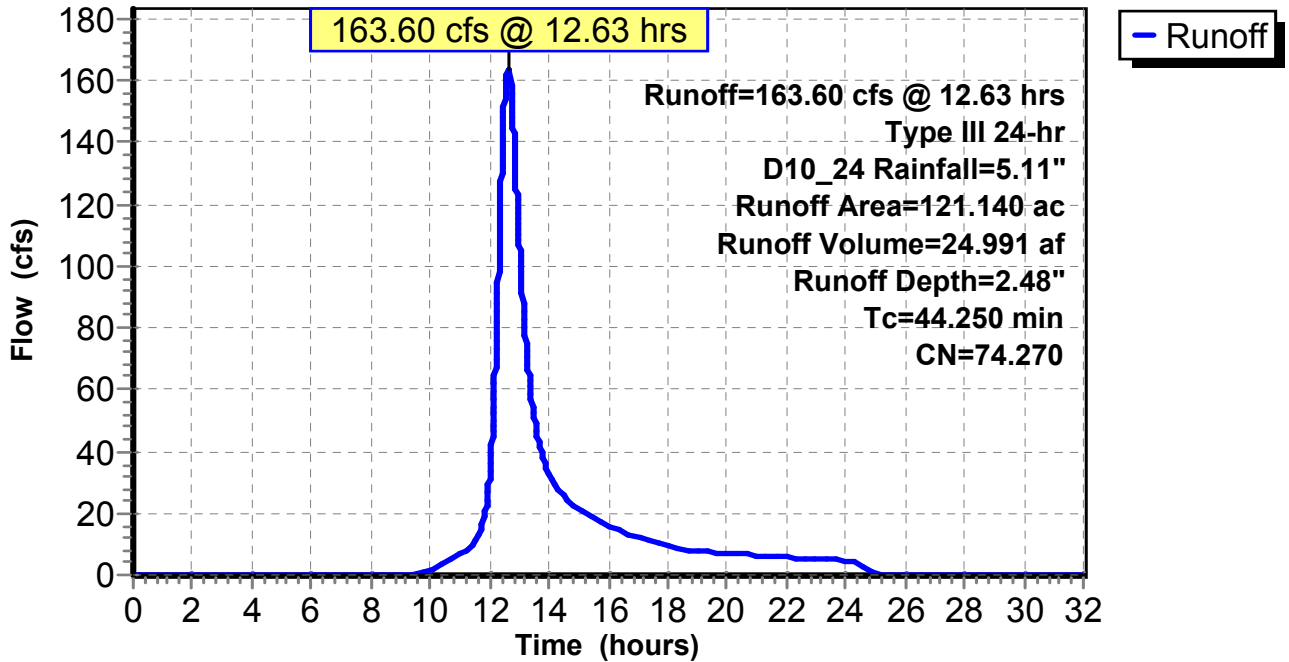
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



Summary for Subcatchment G: WS G

Runoff = 316.99 cfs @ 12.51 hrs, Volume= 43.494 af, Depth= 3.13"

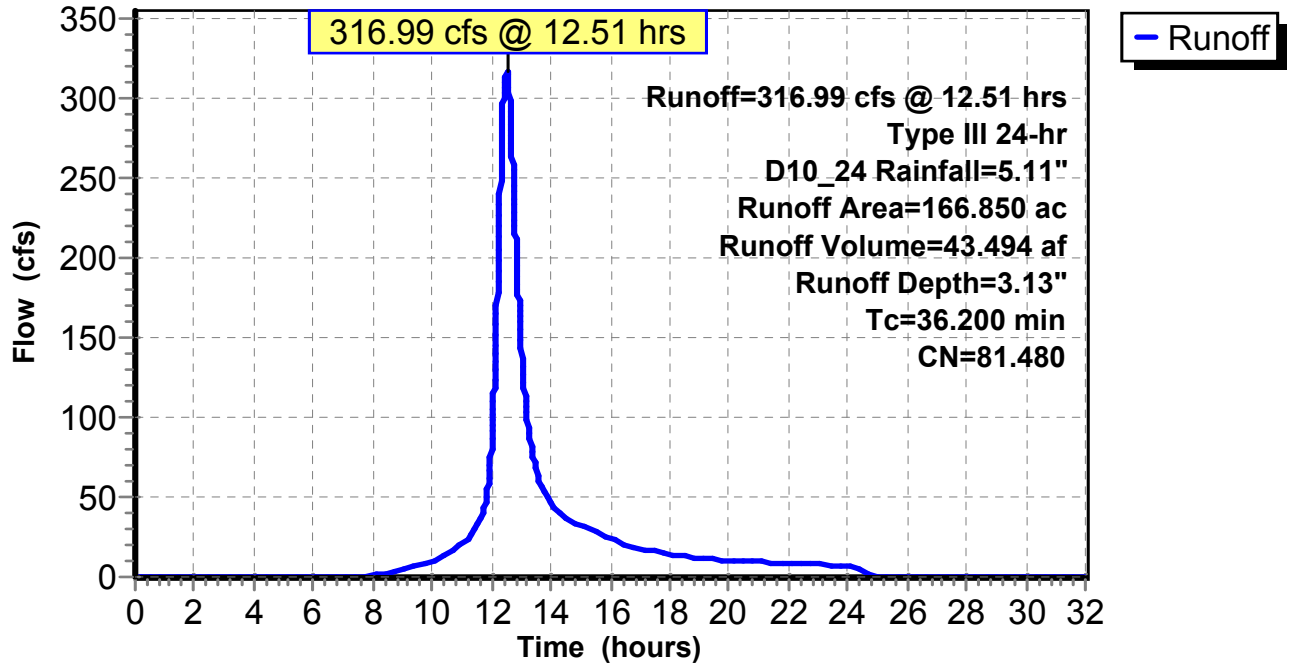
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 1.95" for D10_24 event
 Inflow = 132.05 cfs @ 13.84 hrs, Volume= 65.992 af
 Outflow = 132.03 cfs @ 13.92 hrs, Volume= 65.753 af, Atten= 0%, Lag= 4.339 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 3.23 fps, Min. Travel Time= 2.604 min
 Avg. Velocity = 1.68 fps, Avg. Travel Time= 5.000 min

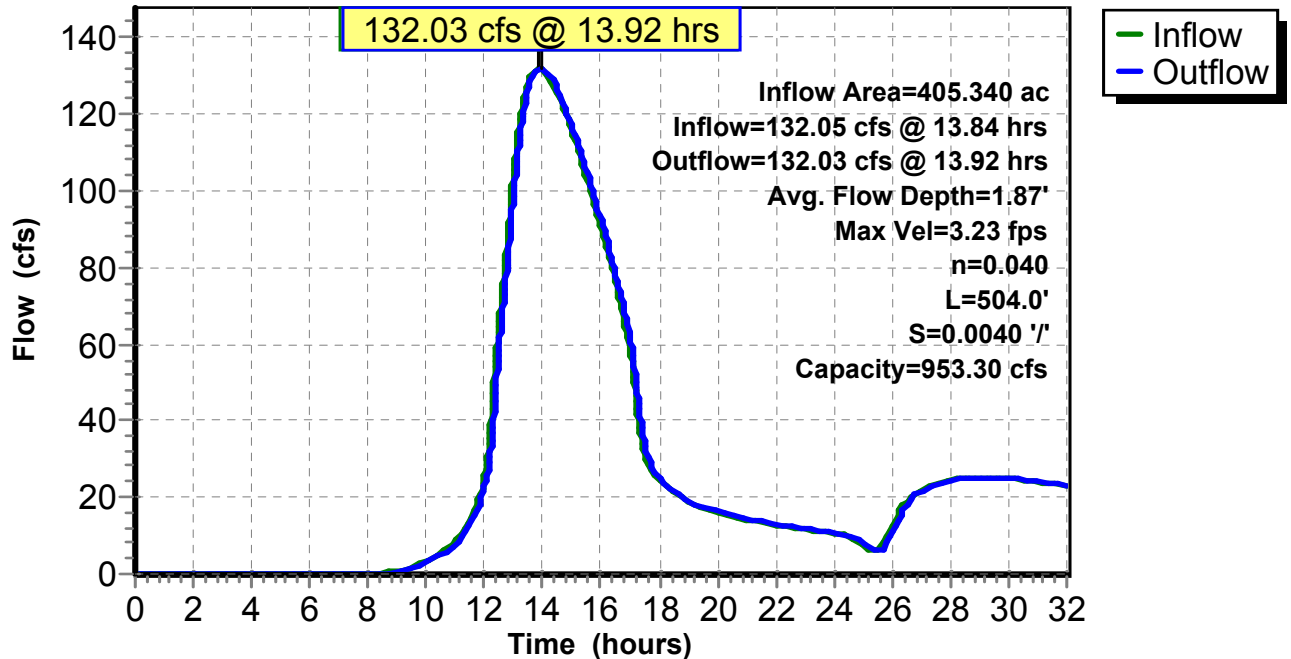
Peak Storage= 20,628 cf @ 13.87 hrs
 Average Depth at Peak Storage= 1.87'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' ' Top Width= 32.00'
 Length= 504.0' Slope= 0.0040 ' '
 Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 2.48" for D10_24 event
 Inflow = 162.68 cfs @ 12.66 hrs, Volume= 24.991 af
 Outflow = 140.10 cfs @ 13.19 hrs, Volume= 24.957 af, Atten= 14%, Lag= 31.871 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 1.83 fps, Min. Travel Time= 19.814 min
 Avg. Velocity = 0.56 fps, Avg. Travel Time= 64.668 min

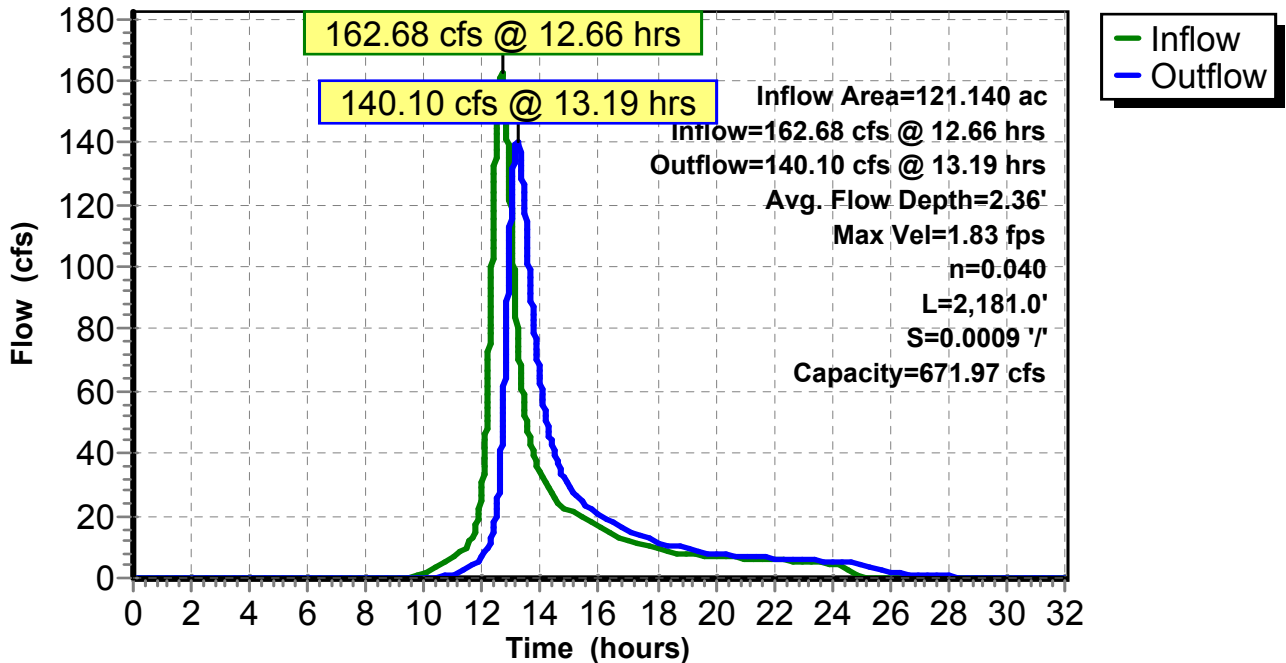
Peak Storage= 166,556 cf @ 12.86 hrs
 Average Depth at Peak Storage= 2.36'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 2,181.0' Slope= 0.0009 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 2.99" for D10_24 event
 Inflow = 312.64 cfs @ 12.55 hrs, Volume= 41.602 af
 Outflow = 24.93 cfs @ 29.13 hrs, Volume= 11.963 af, Atten= 92%, Lag= 995.245 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.47 fps, Min. Travel Time= 785.127 min
 Avg. Velocity = 0.38 fps, Avg. Travel Time= 963.102 min

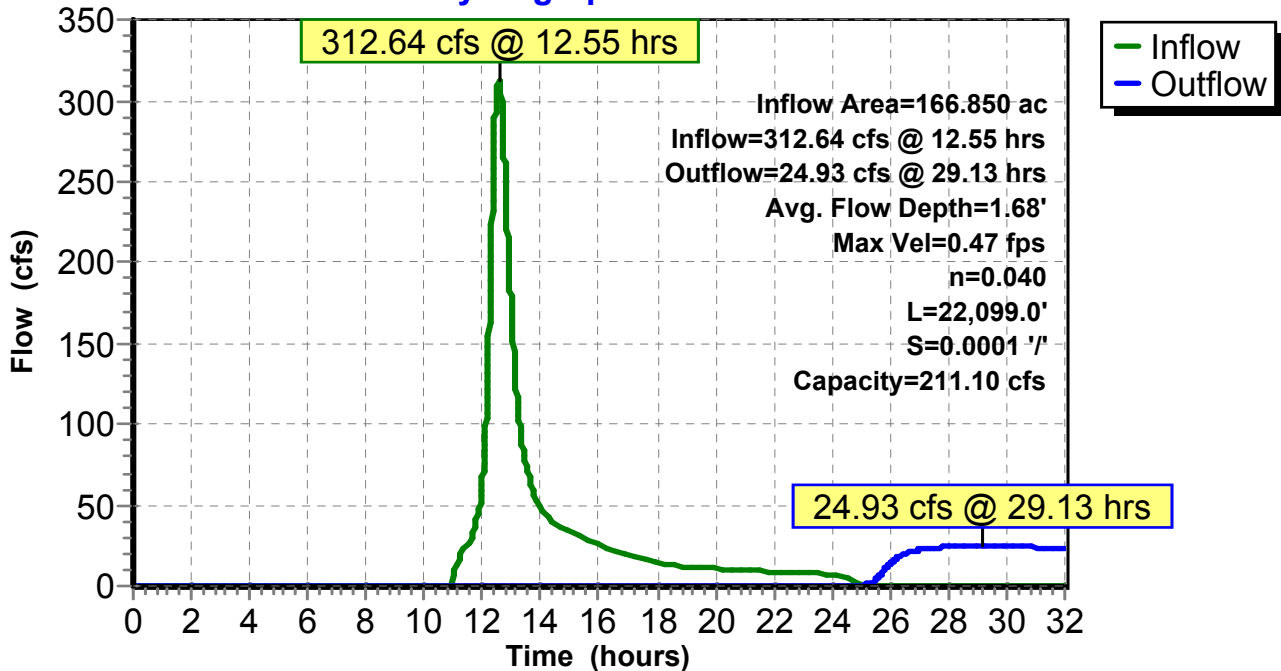
Peak Storage= 1,174,160 cf @ 16.05 hrs
 Average Depth at Peak Storage= 1.68'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 '/' Top Width= 42.00'
 Length= 22,099.0' Slope= 0.0001 '/'
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 2.00" for D10_24 event
 Inflow = 141.20 cfs @ 14.03 hrs, Volume= 74.142 af
 Outflow = 140.95 cfs @ 14.30 hrs, Volume= 73.313 af, Atten= 0%, Lag= 15.961 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 5.41 fps, Min. Travel Time= 9.193 min
 Avg. Velocity = 3.05 fps, Avg. Travel Time= 16.302 min

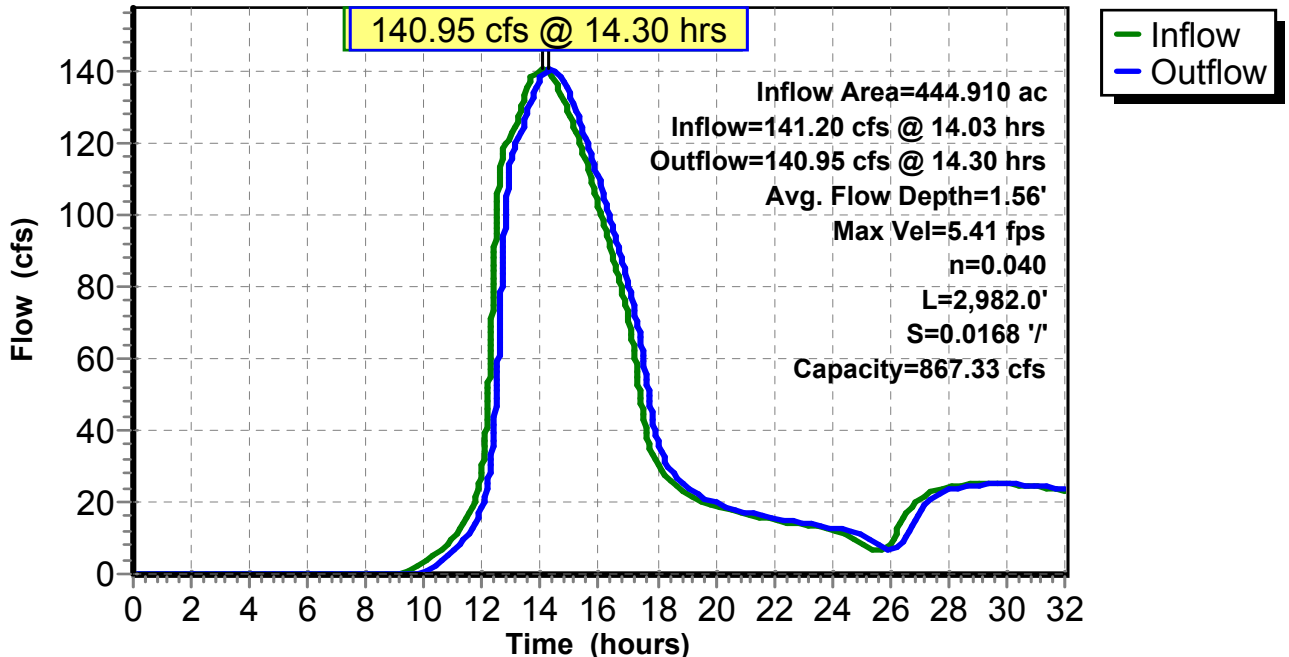
Peak Storage= 77,744 cf @ 14.15 hrs
 Average Depth at Peak Storage= 1.56'
 Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040
 Side Slope Z-value= 3.0 ' / ' Top Width= 36.00'
 Length= 2,982.0' Slope= 0.0168 ' / '
 Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 2.23" for D10_24 event
 Inflow = 283.57 cfs @ 12.76 hrs, Volume= 104.151 af
 Outflow = 283.50 cfs @ 12.78 hrs, Volume= 104.054 af, Atten= 0%, Lag= 1.371 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 8.68 fps, Min. Travel Time= 0.835 min
 Avg. Velocity = 3.87 fps, Avg. Travel Time= 1.874 min

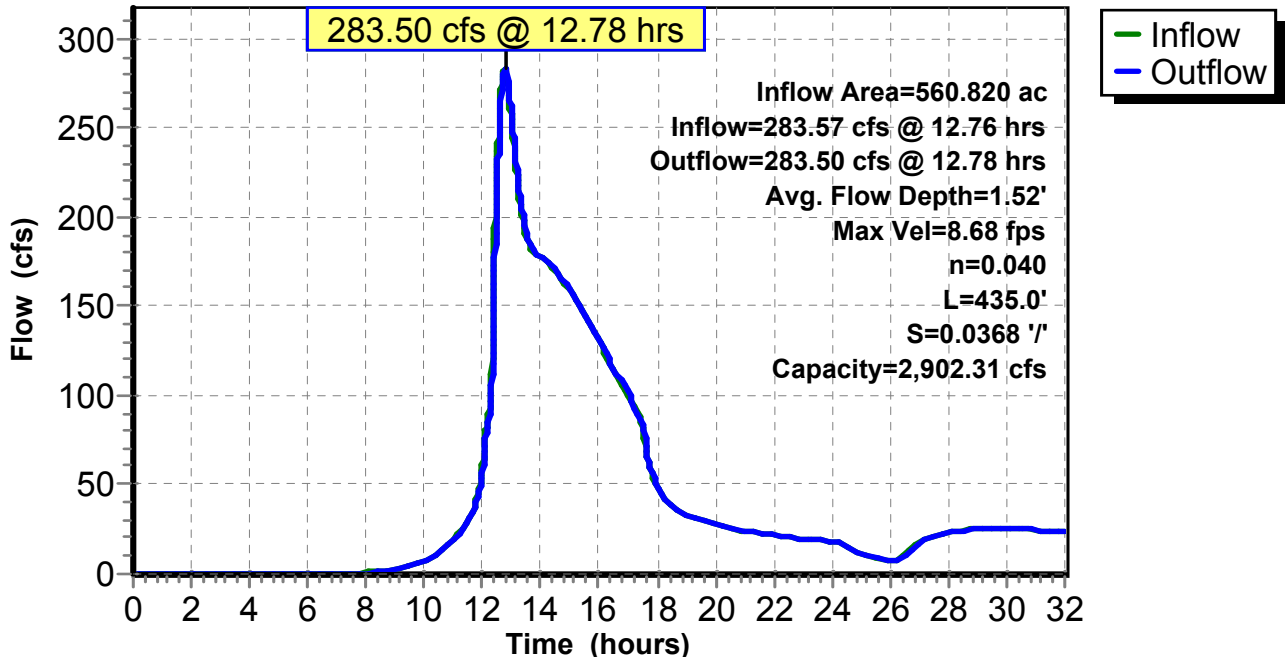
Peak Storage= 14,208 cf @ 12.77 hrs
 Average Depth at Peak Storage= 1.52'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' ' Top Width= 32.00'
 Length= 435.0' Slope= 0.0368 ' '
 Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.000 min
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.000 min

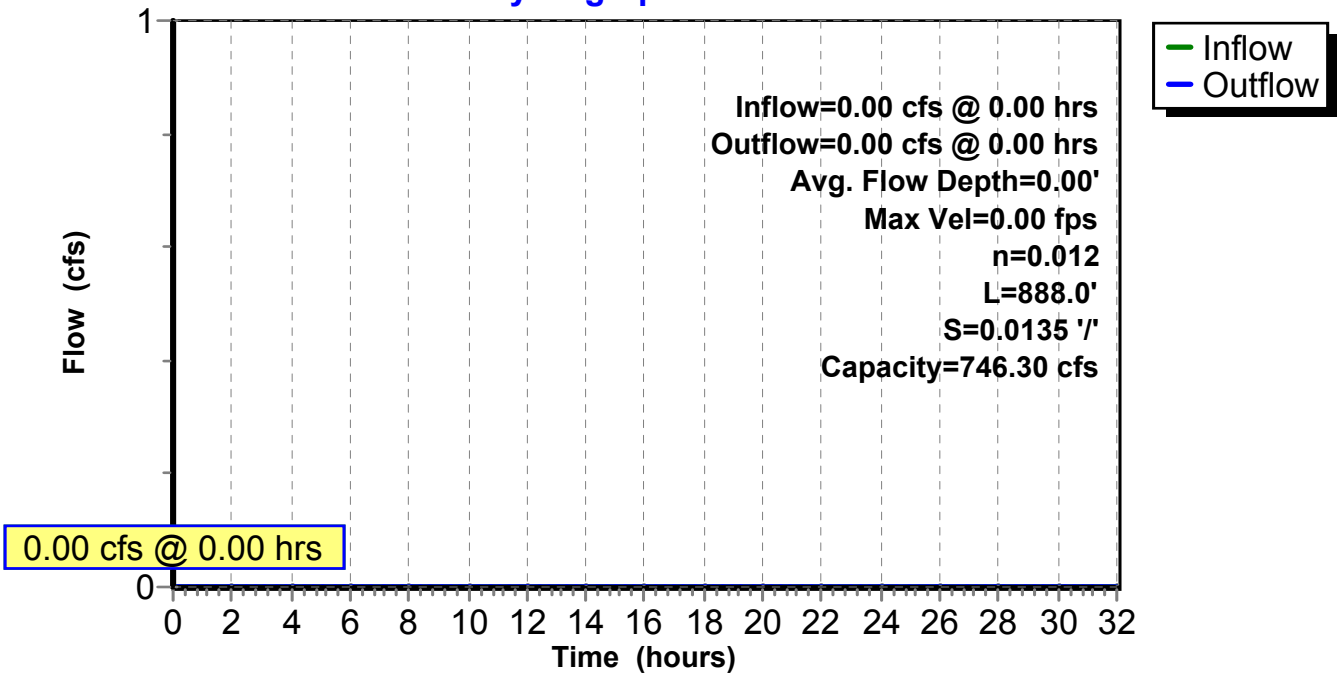
Peak Storage= 0 cf @ 0.00 hrs
 Average Depth at Peak Storage= 0.00'
 Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
 Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
 Length= 888.0' Slope= 0.0135 ' '
 Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



Summary for Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 2.42" for D10_24 event
 Inflow = 417.57 cfs @ 12.57 hrs, Volume= 132.060 af
 Outflow = 417.55 cfs @ 12.57 hrs, Volume= 132.056 af, Atten= 0%, Lag= 0.136 min
 Primary = 417.55 cfs @ 12.57 hrs, Volume= 132.056 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 46.10' @ 12.57 hrs Surf.Area= 0.695 ac Storage= 0.070 af

Plug-Flow detention time= 0.122 min calculated for 132.015 af (100% of inflow)
 Center-of-Mass det. time= 0.093 min (972.872 - 972.779)

Volume	Invert	Avail.Storage	Storage Description
#1	46.00'	82.605 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
46.00	0.695	0.000	0.000
48.00	0.695	1.390	1.390
50.00	0.800	1.495	2.885
52.00	1.420	2.220	5.105
54.00	2.270	3.690	8.795
56.00	3.160	5.430	14.225
58.00	4.070	7.230	21.455
60.00	4.980	9.050	30.505
62.00	5.710	10.690	41.195
64.00	6.620	12.330	53.525
66.00	7.170	13.790	67.315
68.00	8.120	15.290	82.605

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert X 2.00 L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48

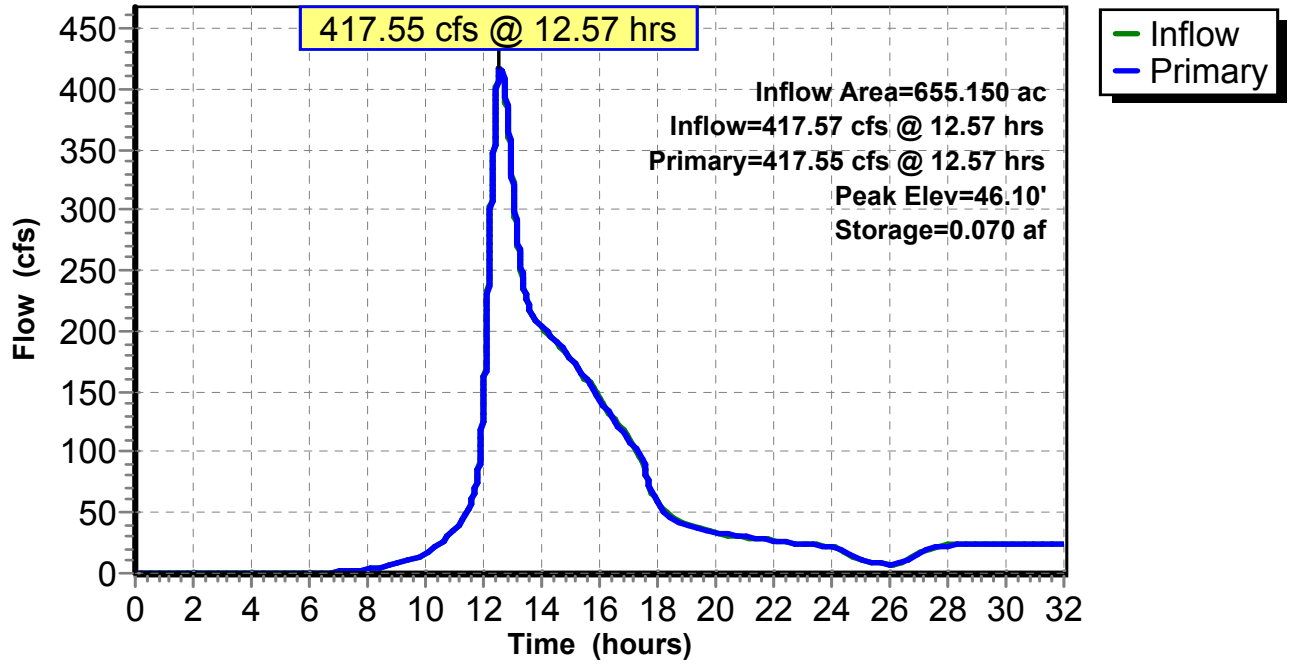
Primary OutFlow Max=902.36 cfs @ 12.57 hrs HW=46.10' (Free Discharge)

1=Culvert (Inlet Controls 902.36 cfs @ 11.57 fps)

2=WEIR WESTCH AVE (Controls 0.00 cfs)

Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 2.26" for D10_24 event
 Inflow = 299.39 cfs @ 12.75 hrs, Volume= 109.832 af
 Outflow = 299.16 cfs @ 12.77 hrs, Volume= 109.832 af, Atten= 0%, Lag= 1.005 min
 Primary = 299.16 cfs @ 12.77 hrs, Volume= 109.832 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 69.86' @ 12.77 hrs Surf.Area= 0.084 ac Storage= 0.087 af

Plug-Flow detention time= 0.027 min calculated for 109.832 af (100% of inflow)
 Center-of-Mass det. time= 0.027 min (1,003.249 - 1,003.223)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

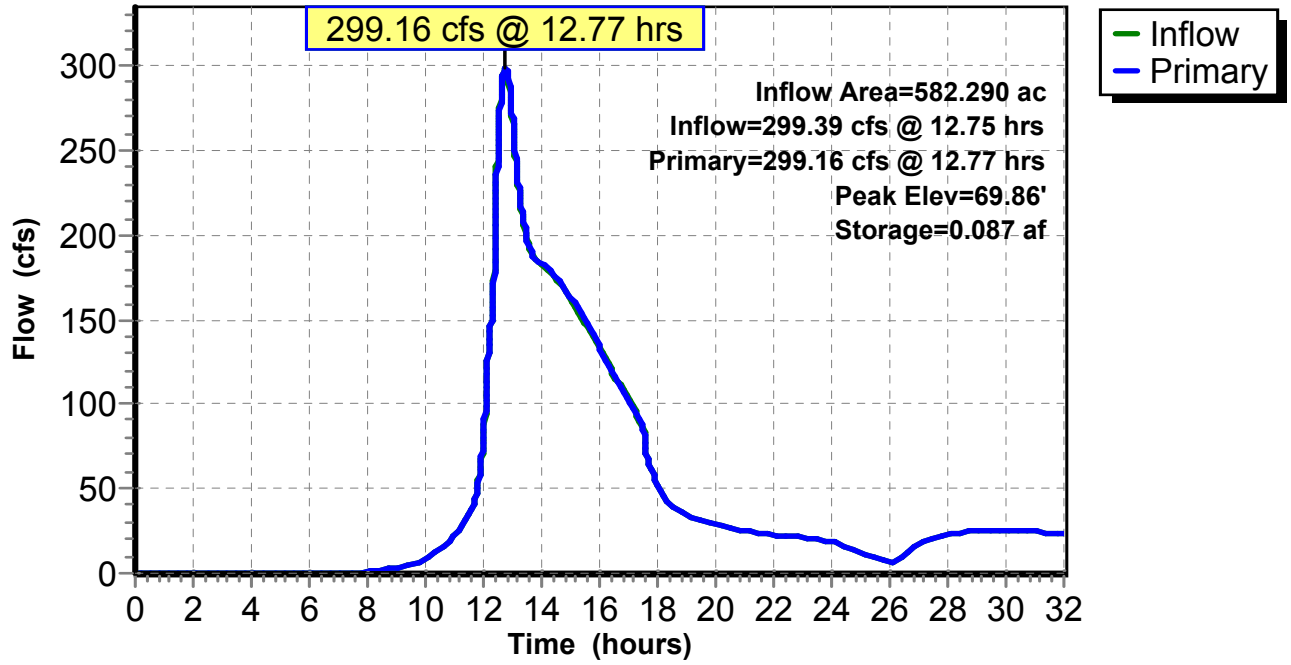
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=299.14 cfs @ 12.77 hrs HW=69.86' (Free Discharge)

- 1=Culvert (Inlet Controls 235.56 cfs @ 12.00 fps)
- 2=Culvert 2 (Inlet Controls 63.58 cfs @ 5.67 fps)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 2.01" for D10_24 event
 Inflow = 142.25 cfs @ 13.80 hrs, Volume= 74.469 af
 Outflow = 141.20 cfs @ 14.03 hrs, Volume= 74.142 af, Atten= 1%, Lag= 14.322 min
 Primary = 141.20 cfs @ 14.03 hrs, Volume= 74.142 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 129.89' @ 14.03 hrs Surf.Area= 0.907 ac Storage= 1.977 af

Plug-Flow detention time= 10.074 min calculated for 74.142 af (100% of inflow)
 Center-of-Mass det. time= 6.298 min (1,063.491 - 1,057.193)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

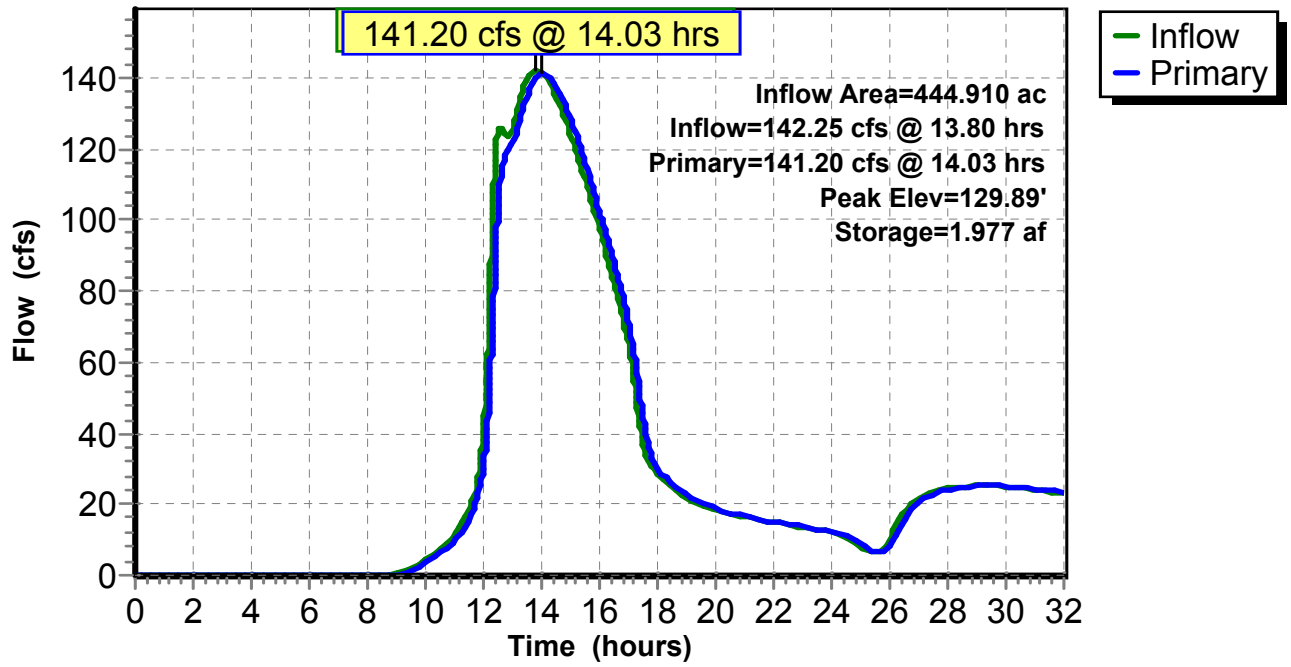
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=141.21 cfs @ 14.03 hrs HW=129.89' (Free Discharge)

1=Culvert (Barrel Controls 141.21 cfs @ 7.19 fps)
 2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 4A: DP 4 A ARGYLE

Hydrograph



Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 1.97" for D10_24 event
 Inflow = 277.14 cfs @ 13.07 hrs, Volume= 66.442 af
 Outflow = 132.05 cfs @ 13.84 hrs, Volume= 65.992 af, Atten= 52%, Lag= 46.545 min
 Primary = 132.05 cfs @ 13.84 hrs, Volume= 65.992 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 131.64' @ 13.84 hrs Surf.Area= 14.284 ac Storage= 13.374 af

Plug-Flow detention time= 37.759 min calculated for 65.972 af (99% of inflow)
 Center-of-Mass det. time= 31.861 min (1,080.689 - 1,048.829)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

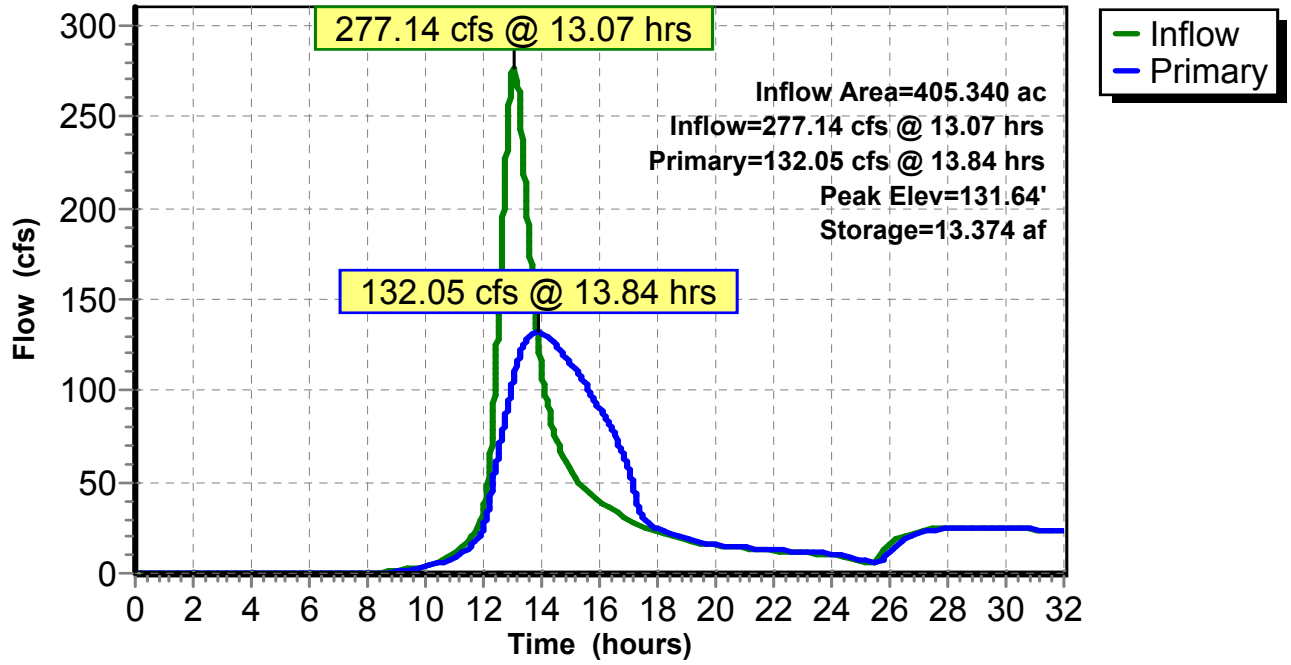
Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

Primary OutFlow Max=132.05 cfs @ 13.84 hrs HW=131.64' (Free Discharge)

- 1=Culvert (Barrel Controls 132.05 cfs @ 7.23 fps)
- 2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 5P: DP 5 BETSY BROWN ROAD

Hydrograph



Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 2.23" for D10_24 event
 Inflow = 284.55 cfs @ 12.72 hrs, Volume= 104.191 af
 Outflow = 283.57 cfs @ 12.76 hrs, Volume= 104.151 af, Atten= 0%, Lag= 2.308 min
 Primary = 283.57 cfs @ 12.76 hrs, Volume= 104.151 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 90.94' @ 12.76 hrs Surf.Area= 1.370 ac Storage= 1.286 af

Plug-Flow detention time= 3.005 min calculated for 104.151 af (100% of inflow)
 Center-of-Mass det. time= 2.651 min (1,011.729 - 1,009.078)

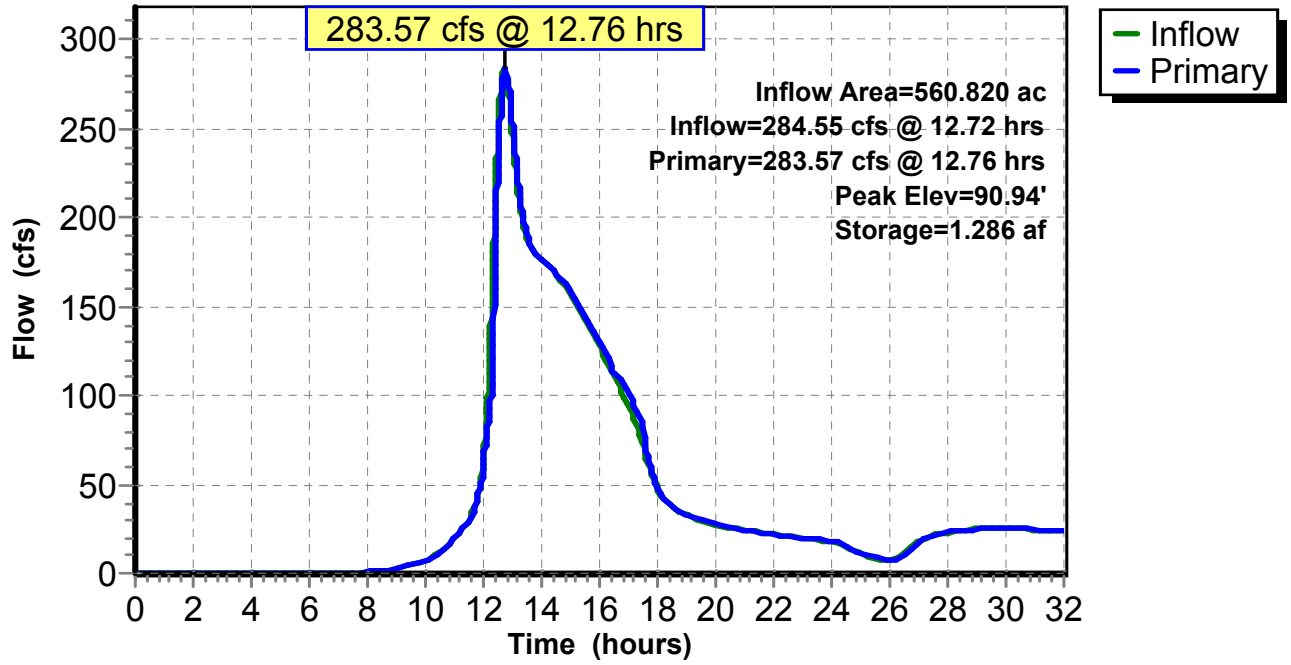
Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=282.99 cfs @ 12.76 hrs HW=90.94' (Free Discharge)
 1=Sharp-Crested Rectangular Weir(Weir Controls 151.15 cfs @ 5.05 fps)
 2=Sharp-Crested Rectangular Weir(Weir Controls 131.84 cfs @ 2.21 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 2.55" for D10_24 event
 Inflow = 317.32 cfs @ 12.98 hrs, Volume= 151.608 af
 Outflow = 317.28 cfs @ 12.99 hrs, Volume= 151.607 af, Atten= 0%, Lag= 0.622 min
 Primary = 317.28 cfs @ 12.99 hrs, Volume= 151.607 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 35.08' @ 12.99 hrs Surf.Area= 0.112 ac Storage= 0.104 af

Plug-Flow detention time= 0.078 min calculated for 151.559 af (100% of inflow)
 Center-of-Mass det. time= 0.072 min (989.903 - 989.830)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

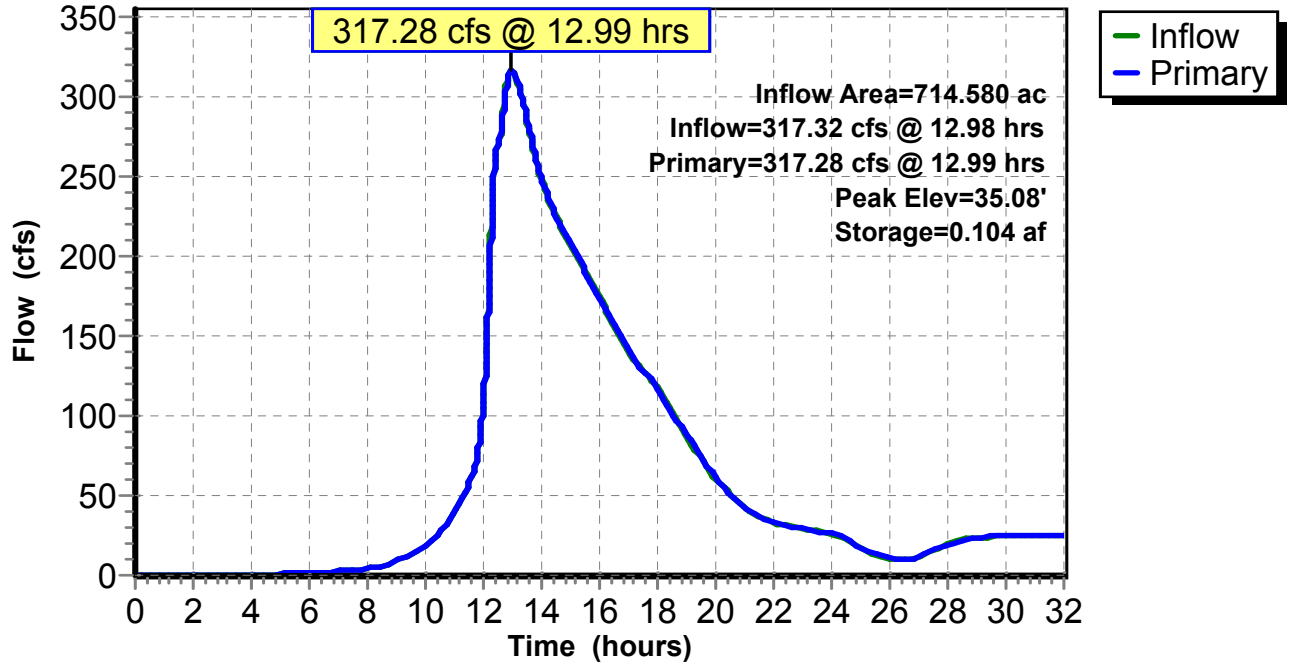
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=317.27 cfs @ 12.99 hrs HW=35.08' (Free Discharge)

- 1=Culvert (Barrel Controls 317.27 cfs @ 6.74 fps)
- 2=WEIR BOWMAN (Controls 0.00 cfs)

Pond 8P: BOWMAN FIELDS

Hydrograph



Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 2.48" for D10_24 event
 Inflow = 163.60 cfs @ 12.63 hrs, Volume= 24.991 af
 Outflow = 162.68 cfs @ 12.66 hrs, Volume= 24.991 af, Atten= 1%, Lag= 1.370 min
 Primary = 162.68 cfs @ 12.66 hrs, Volume= 24.991 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 134.39' @ 12.66 hrs Surf.Area= 0.129 ac Storage= 0.141 af

Plug-Flow detention time= 0.182 min calculated for 24.983 af (100% of inflow)
 Center-of-Mass det. time= 0.182 min (871.339 - 871.157)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

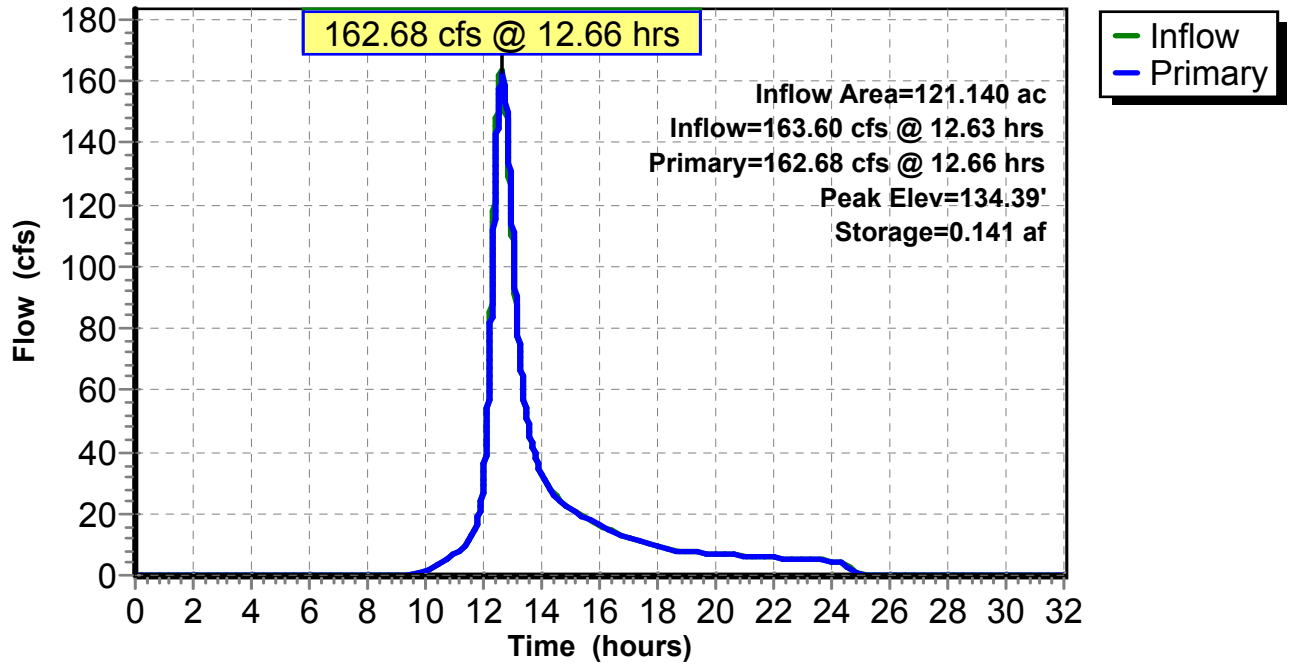
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=162.67 cfs @ 12.66 hrs HW=134.39' (Free Discharge)

1=Culvert (Inlet Controls 89.34 cfs @ 12.64 fps)
 2=Sharp-Crested Rectangular Weir (Weir Controls 73.33 cfs @ 5.74 fps)
 3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Hydrograph



Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 3.13" for D10_24 event
 Inflow = 316.99 cfs @ 12.51 hrs, Volume= 43.494 af
 Outflow = 312.64 cfs @ 12.55 hrs, Volume= 41.602 af, Atten= 1%, Lag= 2.404 min
 Primary = 312.64 cfs @ 12.55 hrs, Volume= 41.602 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.49' @ 12.55 hrs Surf.Area= 3.850 ac Storage= 6.562 af (3.595 af above start)

Plug-Flow detention time= 82.262 min calculated for 38.622 af (89% of inflow)
 Center-of-Mass det. time= 17.225 min (862.064 - 844.839)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

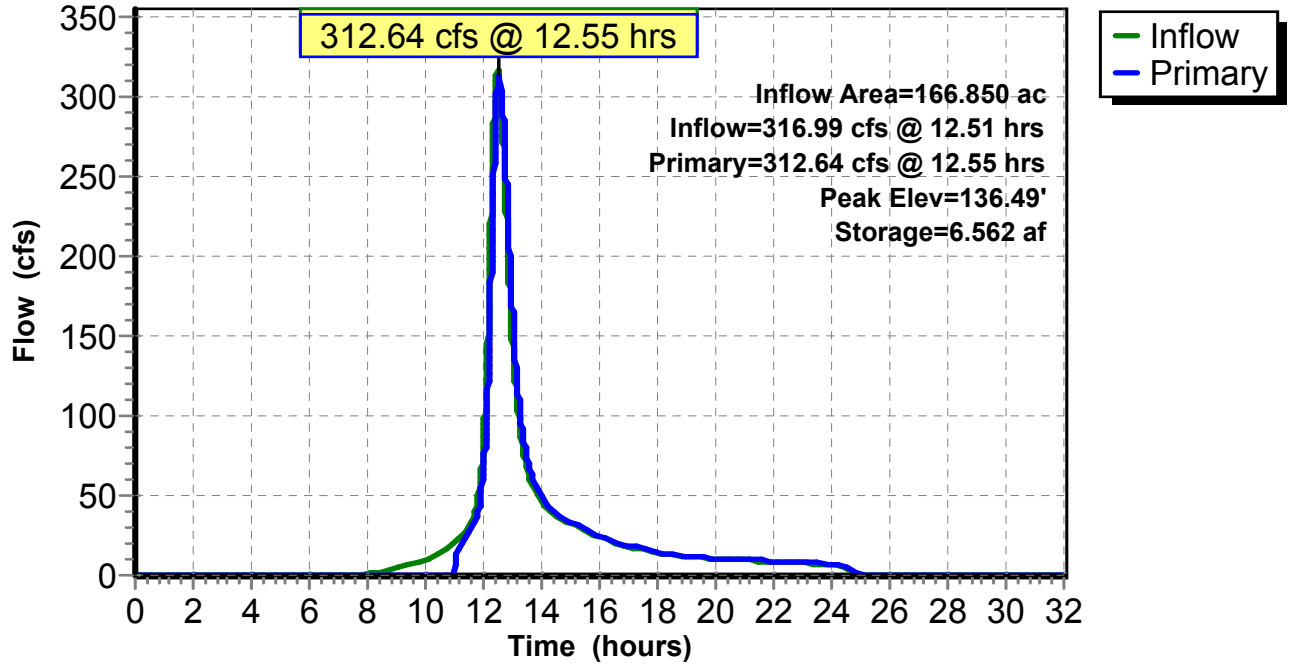
Primary OutFlow Max=311.93 cfs @ 12.55 hrs HW=136.49' (Free Discharge)

1=Culvert (Inlet Controls 1.78 cfs @ 2.38 fps)

2=Asymmetrical Weir (Weir Controls 310.15 cfs @ 2.03 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Hydrograph



Summary for Pond 12P: UPSTREAM add new culvert AVON OVERFLOW TO ROAD

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 2.26" for D10_24 event
 Inflow = 299.16 cfs @ 12.77 hrs, Volume= 109.832 af
 Outflow = 299.16 cfs @ 12.77 hrs, Volume= 109.830 af, Atten= 0%, Lag= 0.103 min
 Primary = 299.16 cfs @ 12.77 hrs, Volume= 109.830 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 58.78' @ 12.77 hrs Surf.Area= 794 sf Storage= 1,738 cf

Plug-Flow detention time= 0.086 min calculated for 109.830 af (100% of inflow)
 Center-of-Mass det. time= 0.069 min (1,003.319 - 1,003.249)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	63,134 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686
70.00	10,112	40,448	63,134

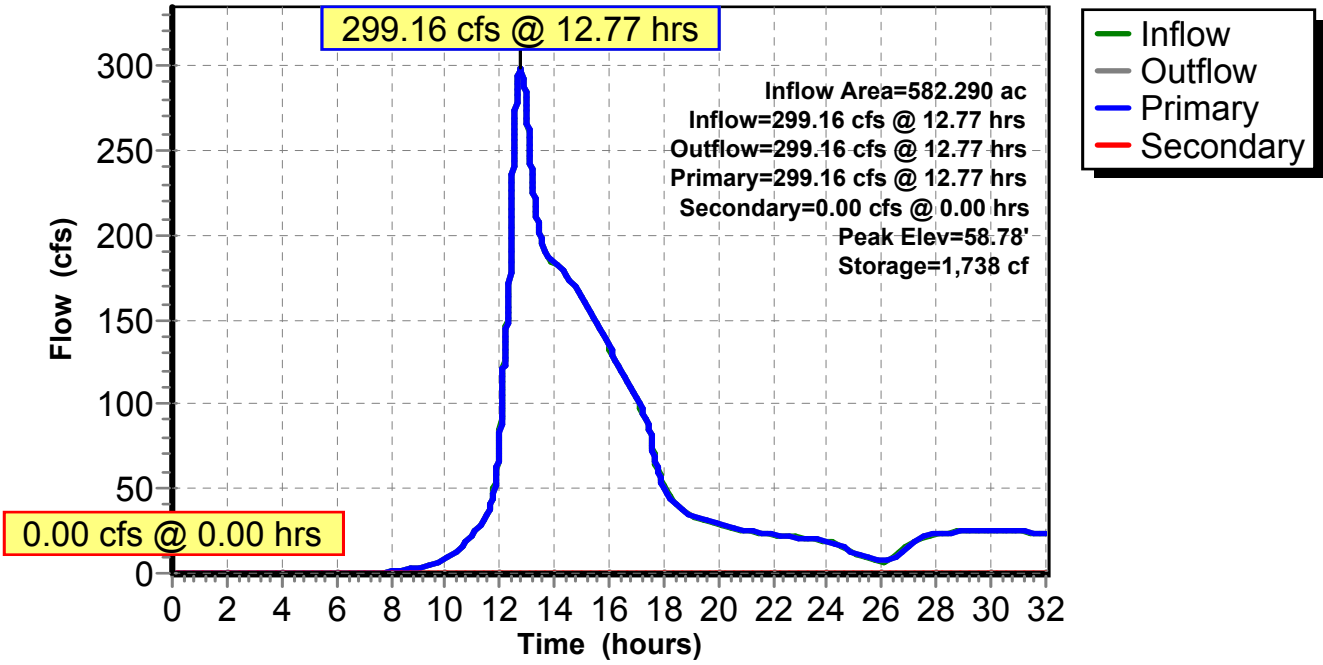
Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert X 3.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 55.13' / 37.90' S= 0.0206 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	68.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=299.15 cfs @ 12.77 hrs HW=58.78' (Free Discharge)
 ↑1=Culvert (Inlet Controls 299.15 cfs @ 6.50 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=56.00' (Free Discharge)
 ↑2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 12P: UPSTREAM add new culvert AVON OVERFLOW TO ROAD

Hydrograph



Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 45.00' @ 0.00 hrs Surf.Area= 100 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	45.00'	171,628 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	100	0	0
48.00	100	300	300
51.00	6,000	9,150	9,450
52.00	15,452	10,726	20,176
54.00	38,000	53,452	73,628
56.00	60,000	98,000	171,628

Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	45.00'	24.0" Round Culvert L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 45.00' / 44.00' S= 0.0100 '/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

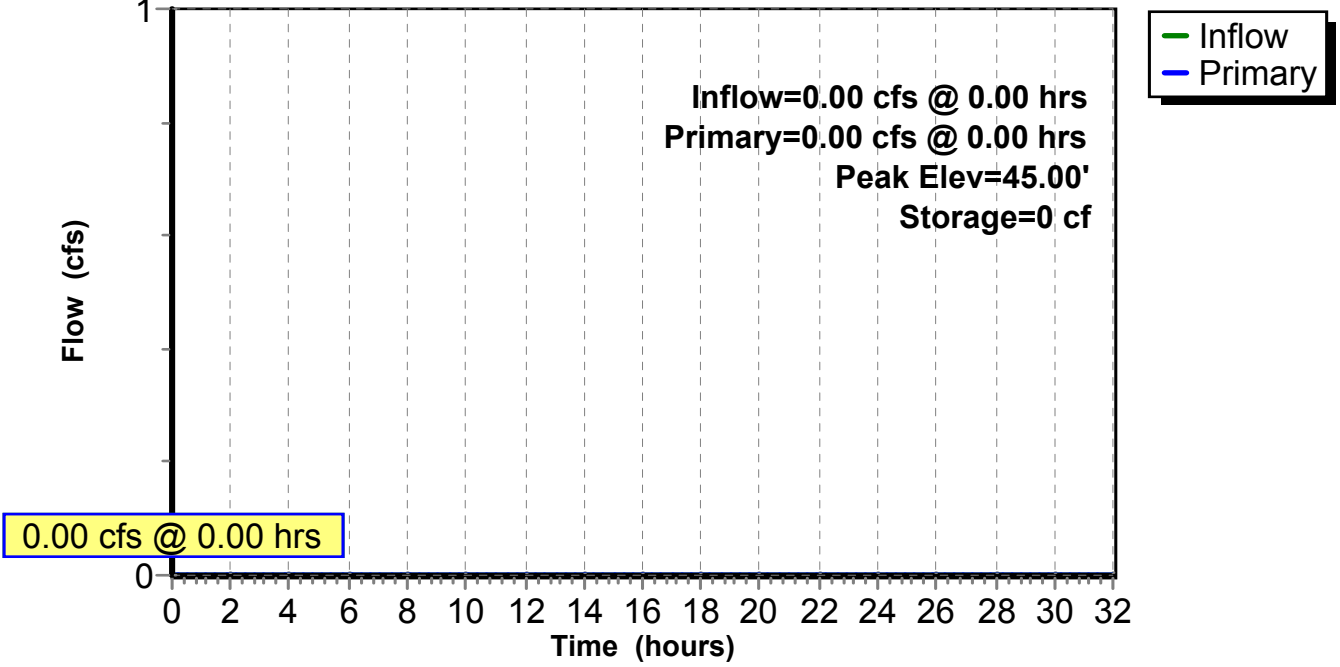
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=45.00' (Free Discharge)

↑ **1=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

└ **2=Culvert** (Controls 0.00 cfs)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



Summary for Pond 27P: NEW DETENTION IN BALLFIELD

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 2.42" for D10_24 event
 Inflow = 417.55 cfs @ 12.57 hrs, Volume= 132.056 af
 Outflow = 271.76 cfs @ 13.20 hrs, Volume= 130.266 af, Atten= 35%, Lag= 37.809 min
 Primary = 155.75 cfs @ 13.20 hrs, Volume= 109.112 af
 Secondary = 116.01 cfs @ 13.20 hrs, Volume= 21.154 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 46.56' @ 13.20 hrs Surf.Area= 111,138 sf Storage= 886,294 cf

Plug-Flow detention time= 60.380 min calculated for 130.266 af (99% of inflow)
 Center-of-Mass det. time= 47.746 min (1,020.618 - 972.872)

Volume	Invert	Avail.Storage	Storage Description
#1	36.50'	937,500 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.50	80,000	0	0
44.00	90,000	637,500	637,500
46.00	100,000	190,000	827,500
47.00	120,000	110,000	937,500

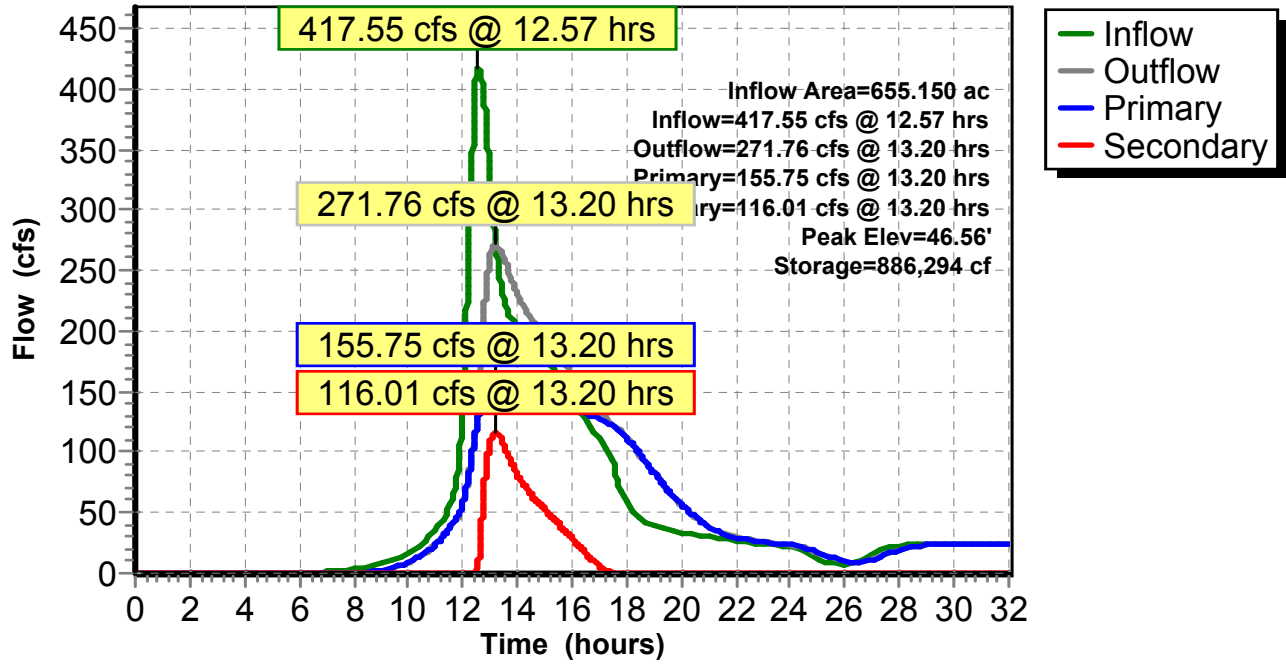
Device	Routing	Invert	Outlet Devices
#1	Primary	36.50'	18.0" Vert. Orifice/Grate X 6.00 C= 0.600
#2	Secondary	43.00'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=155.75 cfs @ 13.20 hrs HW=46.56' (Free Discharge)
 ↑1=Orifice/Grate (Orifice Controls 155.75 cfs @ 14.69 fps)

Secondary OutFlow Max=116.01 cfs @ 13.20 hrs HW=46.56' (Free Discharge)
 ↑2=Sharp-Crested Rectangular Weir (Weir Controls 116.01 cfs @ 6.17 fps)

Pond 27P: NEW DETENTION IN BALLFIELD

Hydrograph



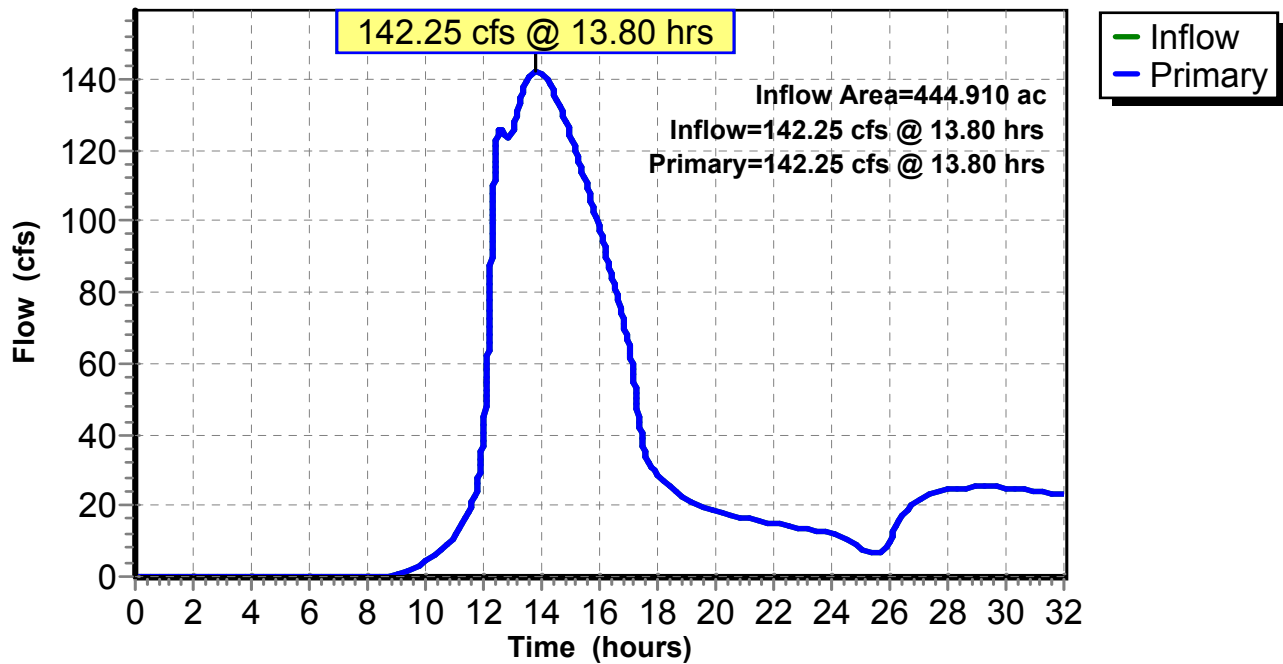
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 2.01" for D10_24 event
Inflow = 142.25 cfs @ 13.80 hrs, Volume= 74.469 af
Primary = 142.25 cfs @ 13.80 hrs, Volume= 74.469 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



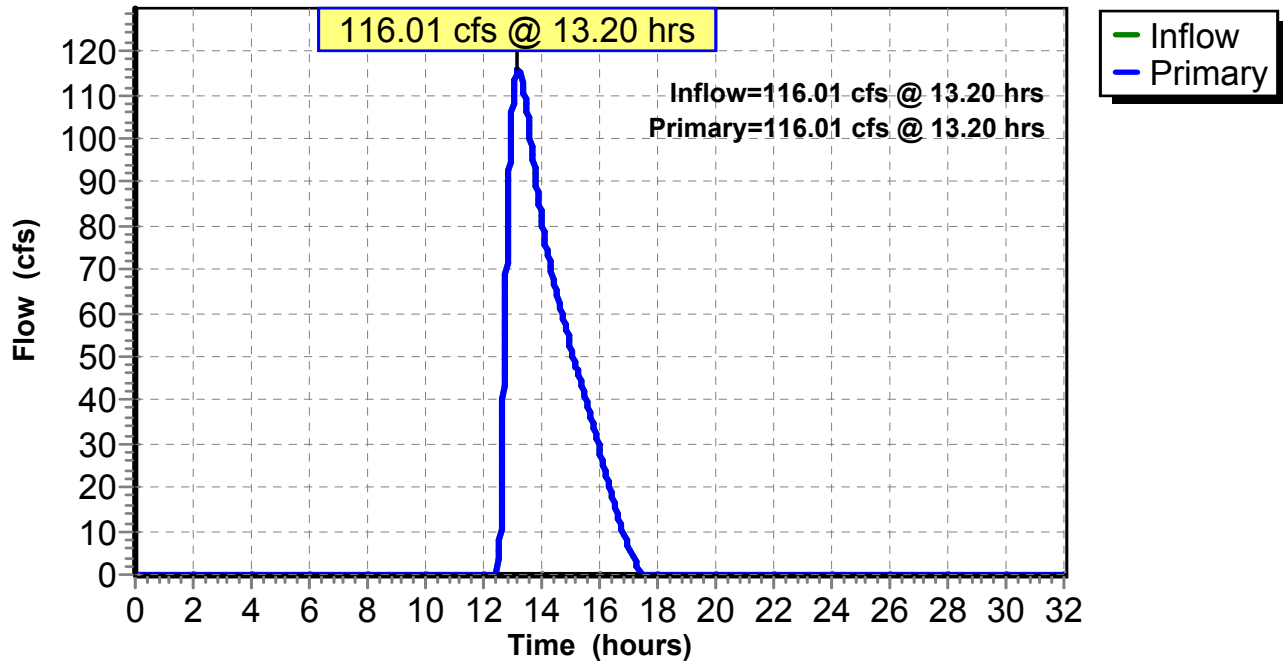
Summary for Link 24L: Weir

Inflow = 116.01 cfs @ 13.20 hrs, Volume= 21.154 af
Primary = 116.01 cfs @ 13.20 hrs, Volume= 21.154 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 24L: Weir

Hydrograph



Summary for Subcatchment A: WS A

Runoff = 99.30 cfs @ 12.43 hrs, Volume= 13.320 af, Depth= 2.69"

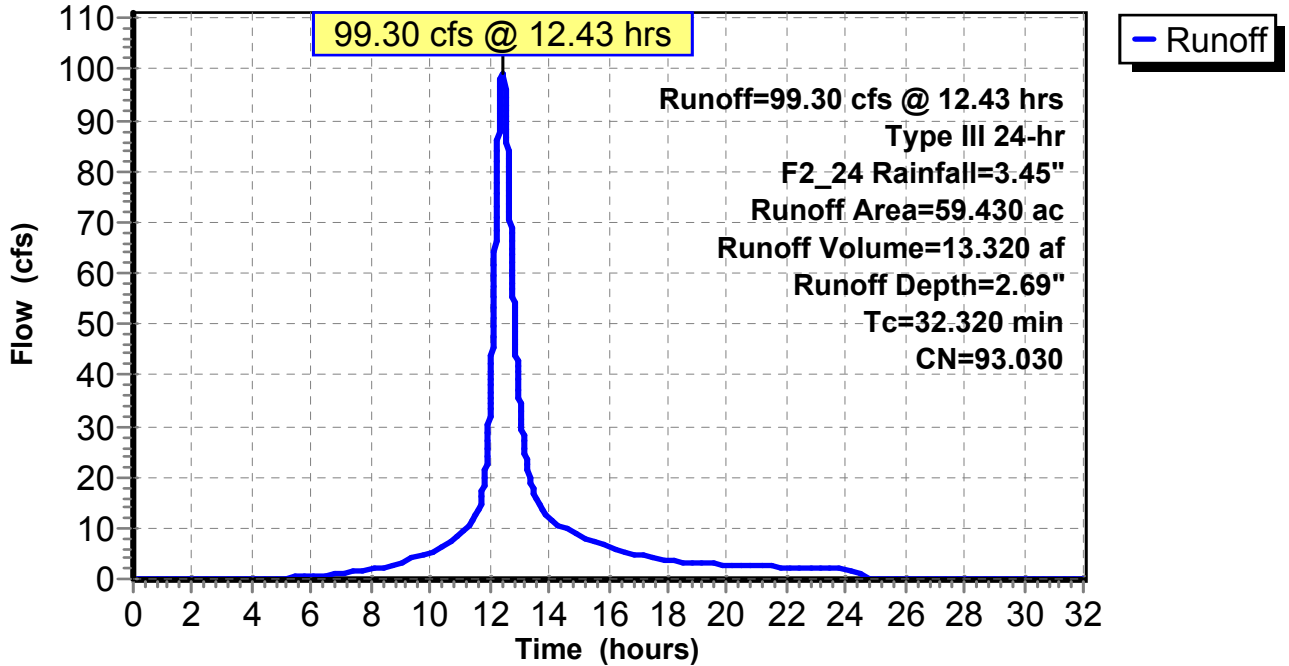
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



Summary for Subcatchment B: WS B

Runoff = 83.90 cfs @ 12.40 hrs, Volume= 10.294 af, Depth= 2.15"

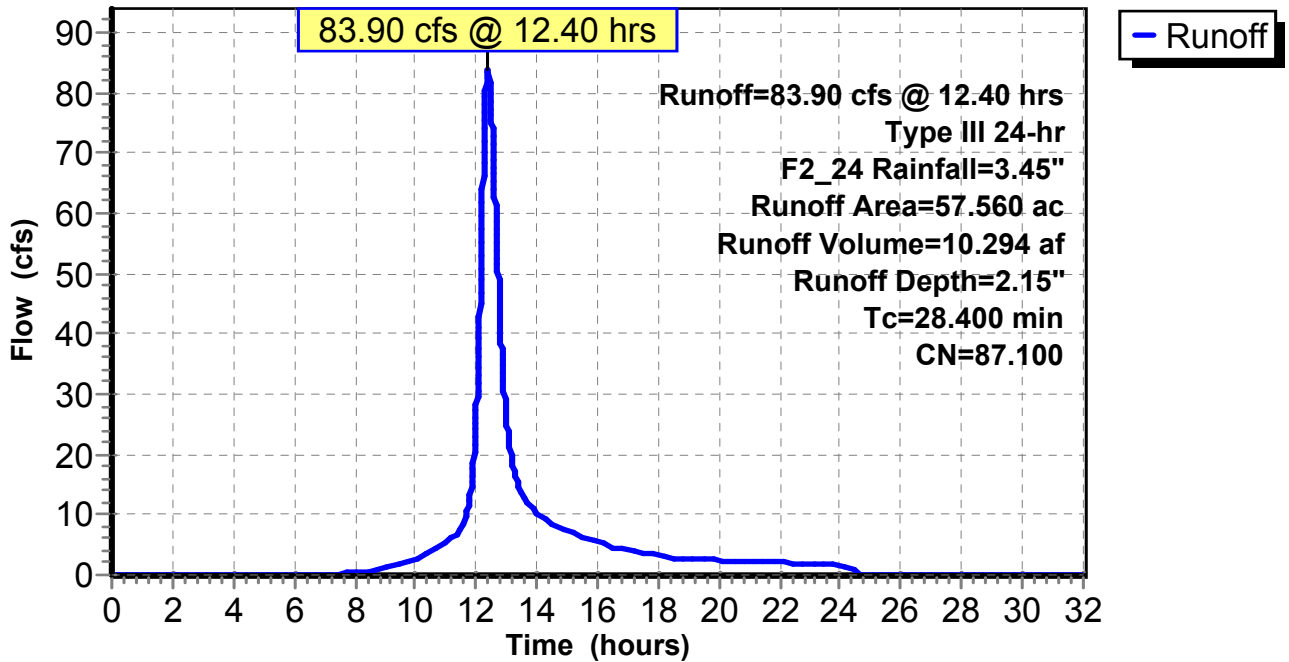
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



Summary for Subcatchment BH: HOTEL

Runoff = 20.85 cfs @ 12.42 hrs, Volume= 2.636 af, Depth= 2.07"

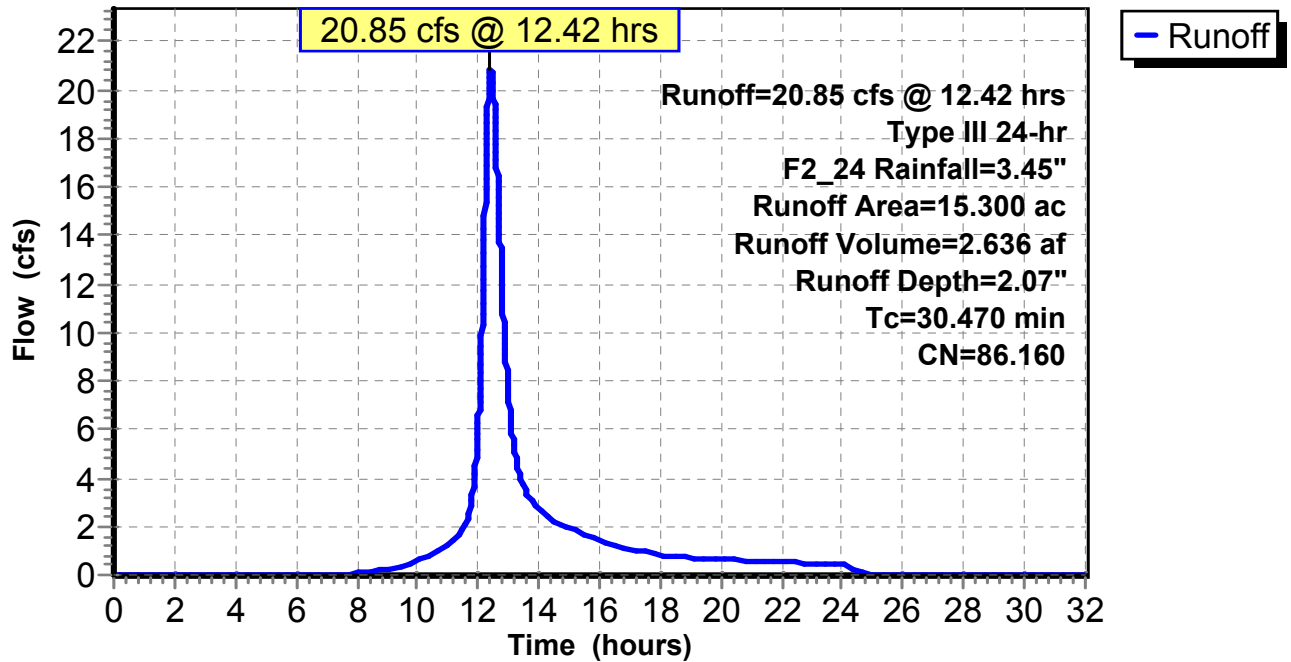
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



Summary for Subcatchment C: WS C

Runoff = 31.12 cfs @ 12.26 hrs, Volume= 3.188 af, Depth= 1.78"

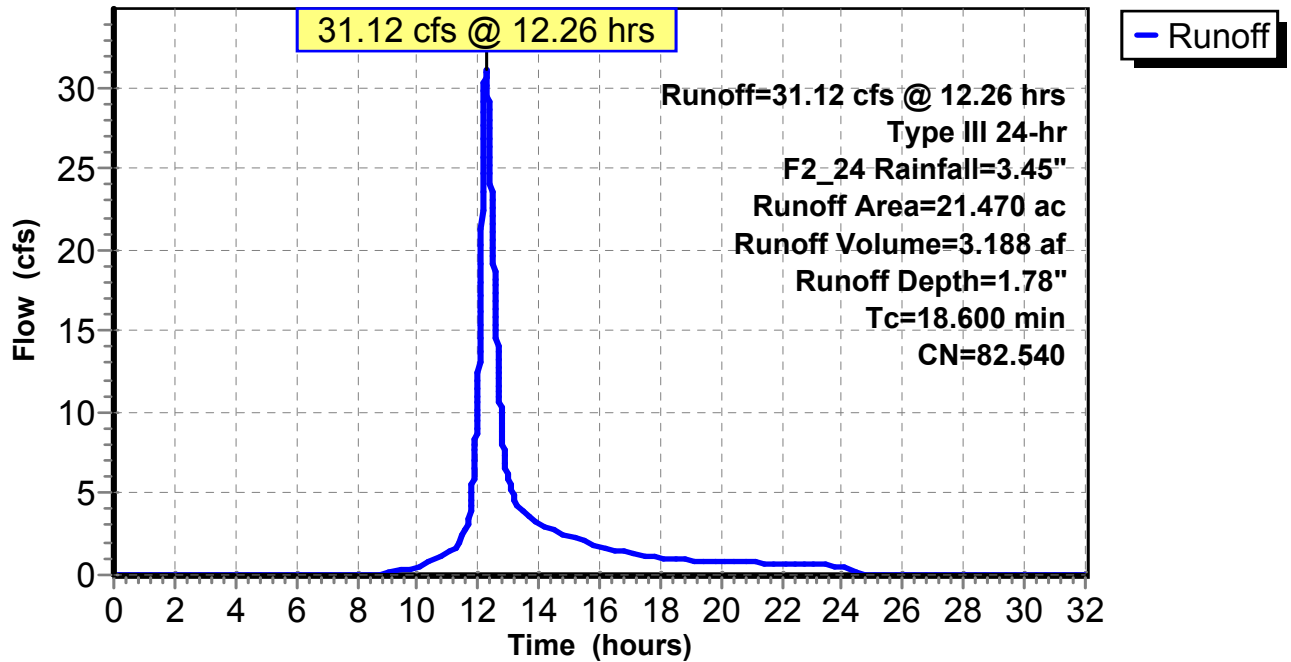
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 21.470	82.540	
21.470		100.00% Pervious Area

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

Subcatchment C: WS C

Hydrograph



Summary for Subcatchment D: WS D

Runoff = 110.10 cfs @ 12.62 hrs, Volume= 16.964 af, Depth= 1.76"

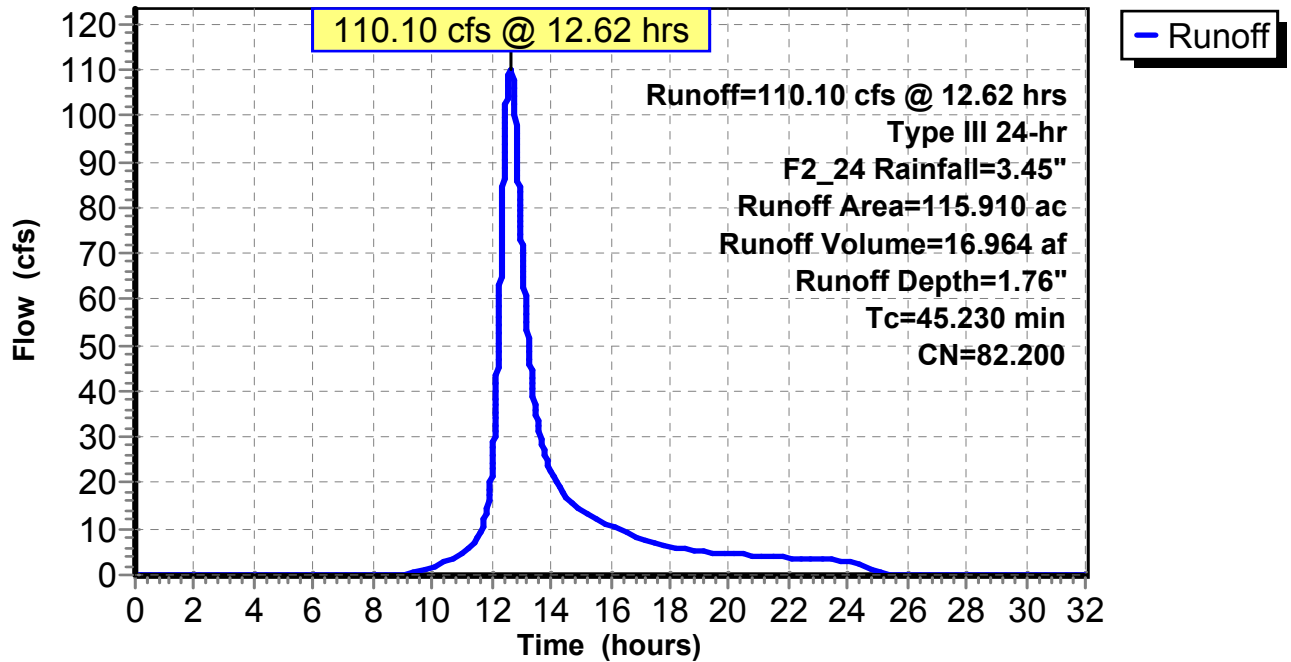
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 115.910	82.200	
115.910		100.00% Pervious Area

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

Subcatchment D: WS D

Hydrograph



Summary for Subcatchment D-1: WS D-1

Runoff = 33.48 cfs @ 12.46 hrs, Volume= 4.423 af, Depth= 1.34"

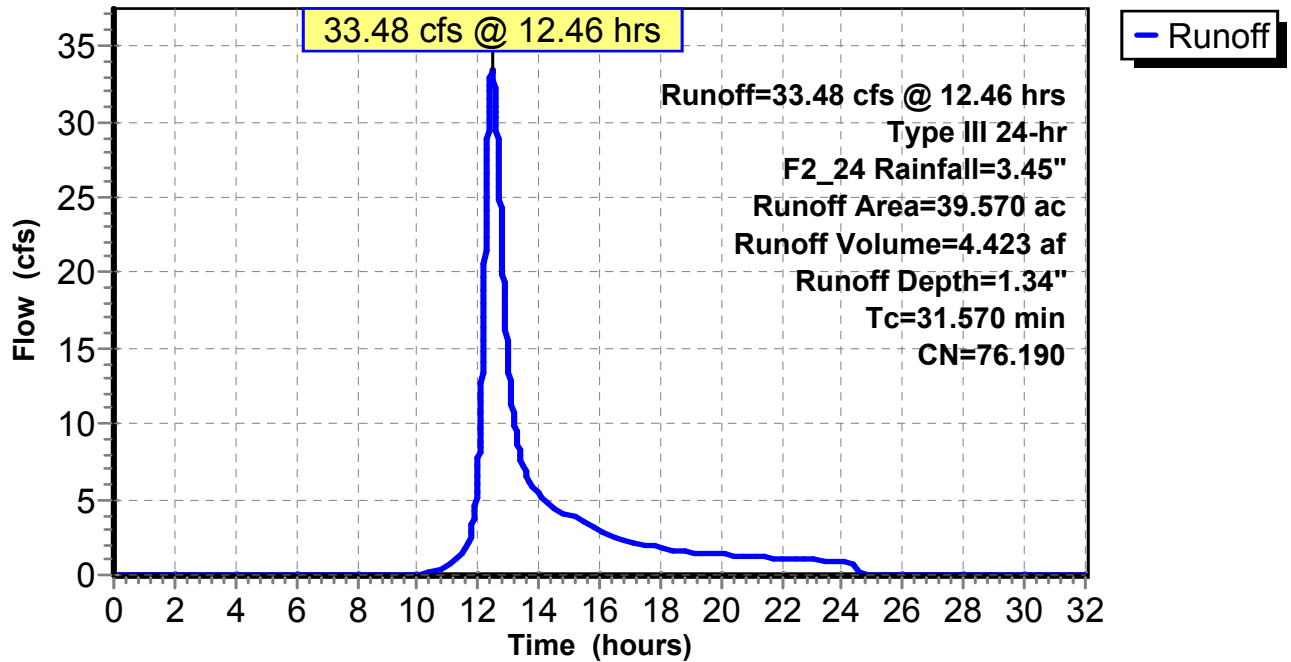
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 39.570	76.190	
39.570		100.00% Pervious Area

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

Subcatchment D-1: WS D-1

Hydrograph



Summary for Subcatchment E: WS E

Runoff = 84.40 cfs @ 12.86 hrs, Volume= 15.837 af, Depth= 1.62"

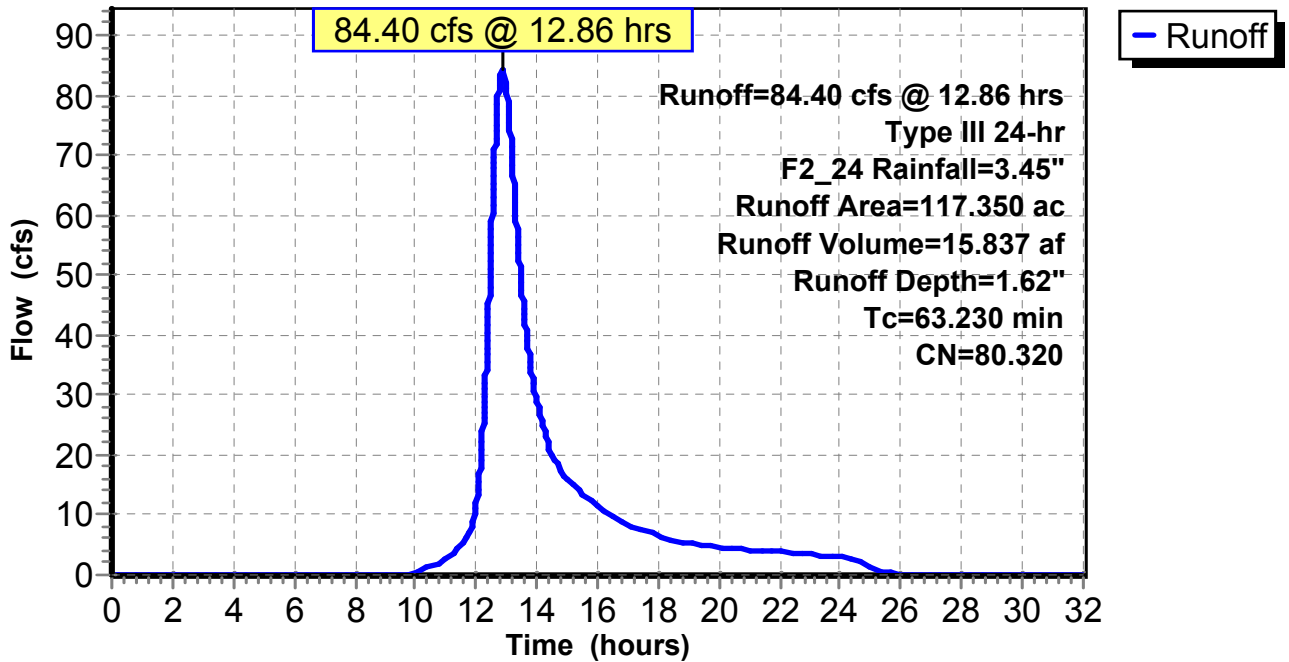
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 117.350	80.320	
117.350		100.00% Pervious Area

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

Subcatchment E: WS E

Hydrograph



Summary for Subcatchment F: WS F

Runoff = 77.91 cfs @ 12.64 hrs, Volume= 12.335 af, Depth= 1.22"

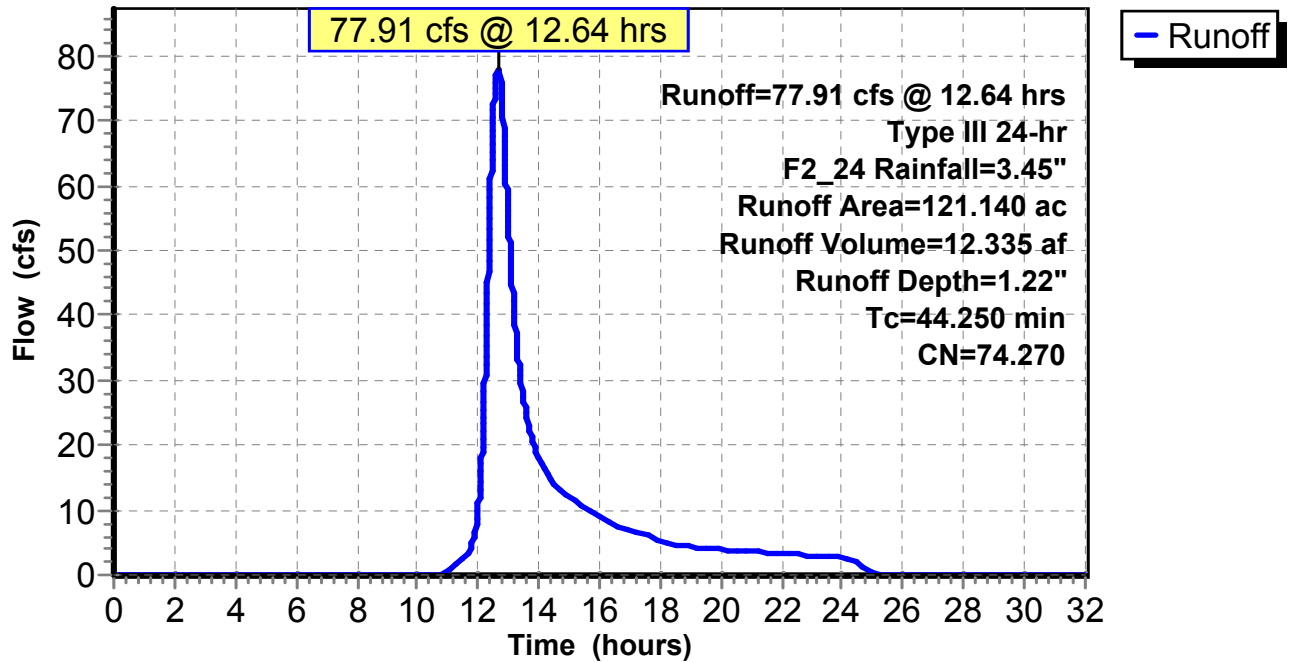
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 121.140	74.270	
121.140		100.00% Pervious Area

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

Subcatchment F: WS F

Hydrograph



Summary for Subcatchment G: WS G

Runoff = 172.12 cfs @ 12.51 hrs, Volume= 23.680 af, Depth= 1.70"

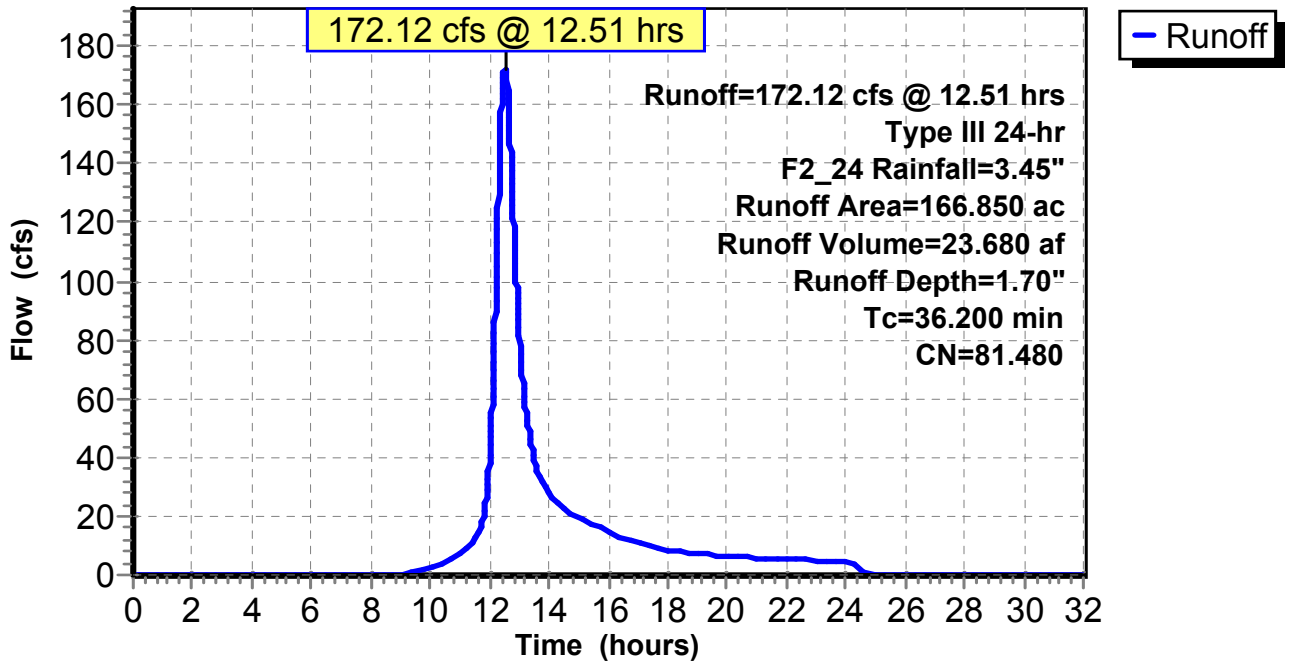
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 166.850	81.480	
166.850		100.00% Pervious Area

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

Subcatchment G: WS G

Hydrograph



Summary for Reach 1R: THRU WS D-1

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 0.84" for F2_24 event
 Inflow = 85.37 cfs @ 13.74 hrs, Volume= 28.289 af
 Outflow = 85.34 cfs @ 13.82 hrs, Volume= 28.216 af, Atten= 0%, Lag= 5.027 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.76 fps, Min. Travel Time= 3.040 min
 Avg. Velocity = 1.12 fps, Avg. Travel Time= 7.487 min

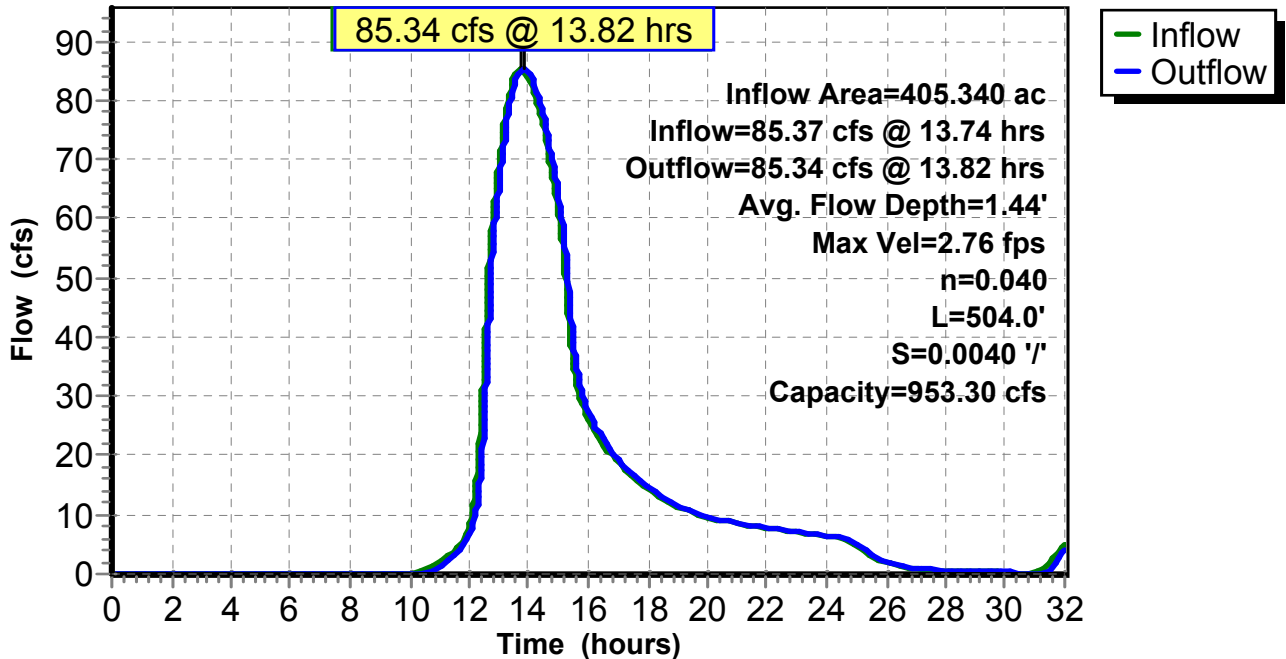
Peak Storage= 15,567 cf @ 13.77 hrs
 Average Depth at Peak Storage= 1.44'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 953.30 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' ' Top Width= 32.00'
 Length= 504.0' Slope= 0.0040 ' '
 Inlet Invert= 128.00', Outlet Invert= 126.00'



Reach 1R: THRU WS D-1

Hydrograph



Summary for Reach 2R: THRU WS E

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 1.22" for F2_24 event
 Inflow = 77.91 cfs @ 12.64 hrs, Volume= 12.335 af
 Outflow = 59.94 cfs @ 13.38 hrs, Volume= 12.304 af, Atten= 23%, Lag= 44.660 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 1.35 fps, Min. Travel Time= 26.996 min
 Avg. Velocity = 0.46 fps, Avg. Travel Time= 78.910 min

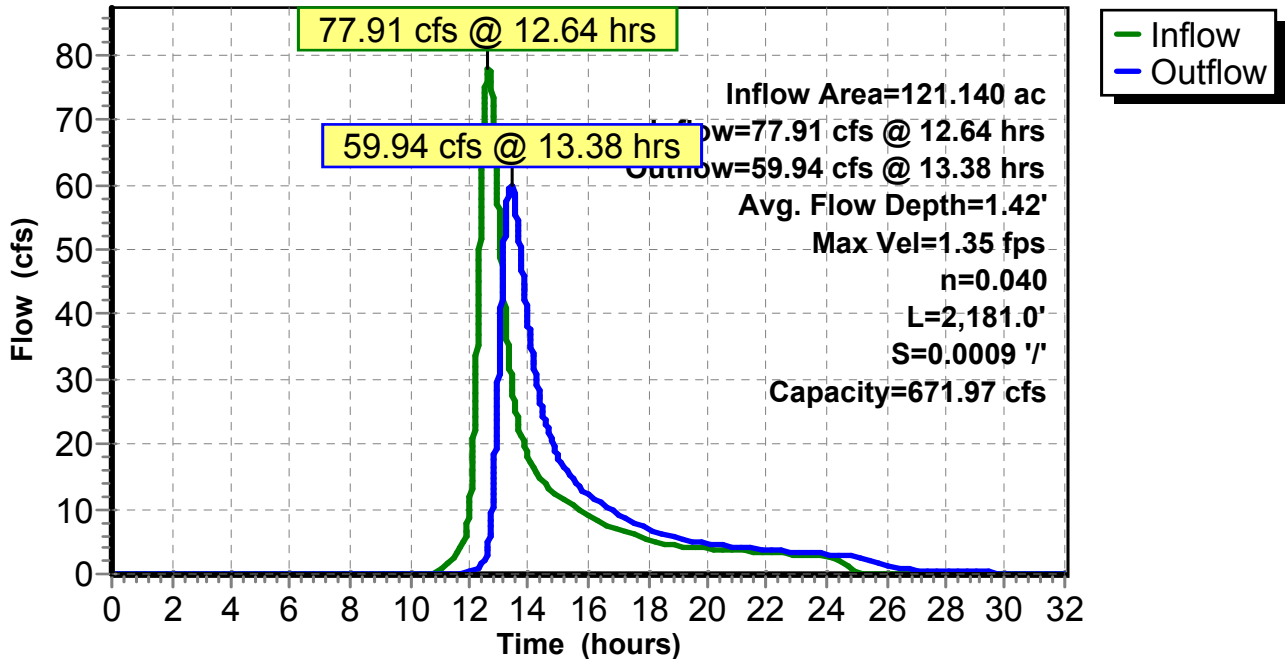
Peak Storage= 97,095 cf @ 12.93 hrs
 Average Depth at Peak Storage= 1.42'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 671.97 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 2,181.0' Slope= 0.0009 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 2R: THRU WS E

Hydrograph



Summary for Reach 3R: THRU WS E

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 1.57" for F2_24 event
 Inflow = 168.93 cfs @ 12.57 hrs, Volume= 21.788 af
 Outflow = 5.86 cfs @ 32.00 hrs, Volume= 0.270 af, Atten= 97%, Lag= 1,165.807 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.33 fps, Min. Travel Time= 1,117.672 min
 Avg. Velocity = 0.29 fps, Avg. Travel Time= 1,258.155 min

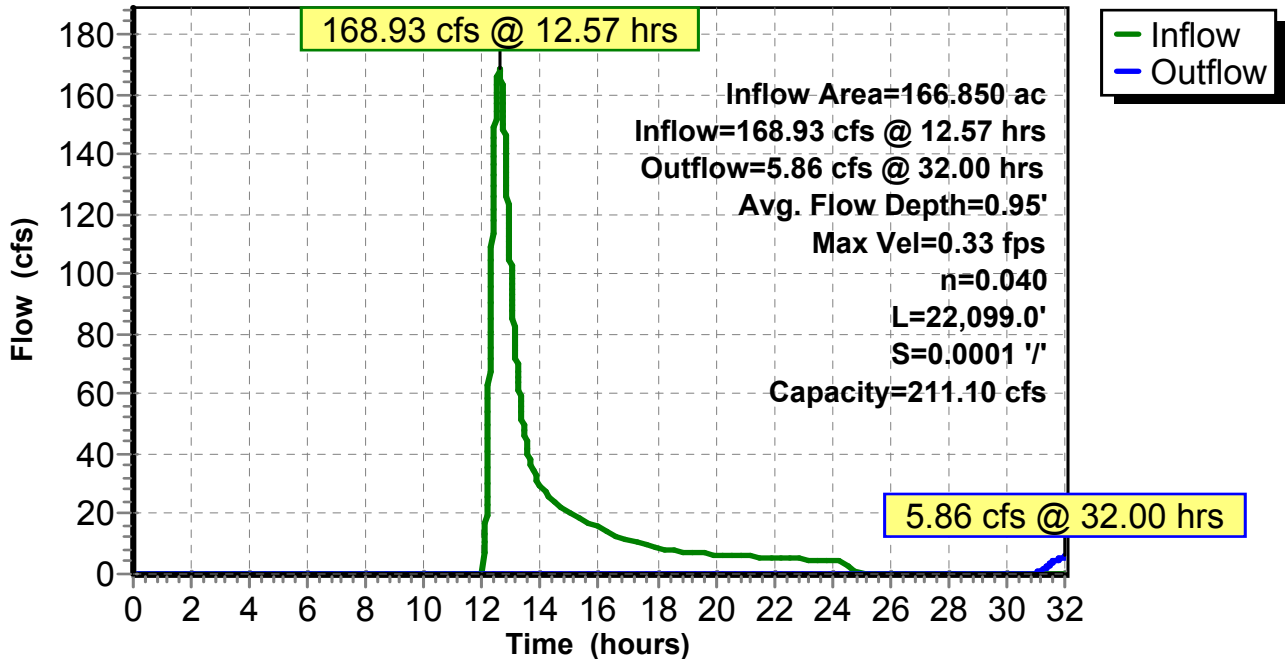
Peak Storage= 650,167 cf @ 17.67 hrs
 Average Depth at Peak Storage= 0.95'
 Bank-Full Depth= 6.00' Flow Area= 216.0 sf, Capacity= 211.10 cfs

30.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 42.00'
 Length= 22,099.0' Slope= 0.0001 ' / '
 Inlet Invert= 130.00', Outlet Invert= 128.00'



Reach 3R: THRU WS E

Hydrograph



Summary for Reach 4R: THRU WS D

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 0.88" for F2_24 event
 Inflow = 90.60 cfs @ 13.94 hrs, Volume= 32.574 af
 Outflow = 90.28 cfs @ 14.23 hrs, Volume= 32.504 af, Atten= 0%, Lag= 17.912 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 4.72 fps, Min. Travel Time= 10.539 min
 Avg. Velocity = 2.11 fps, Avg. Travel Time= 23.513 min

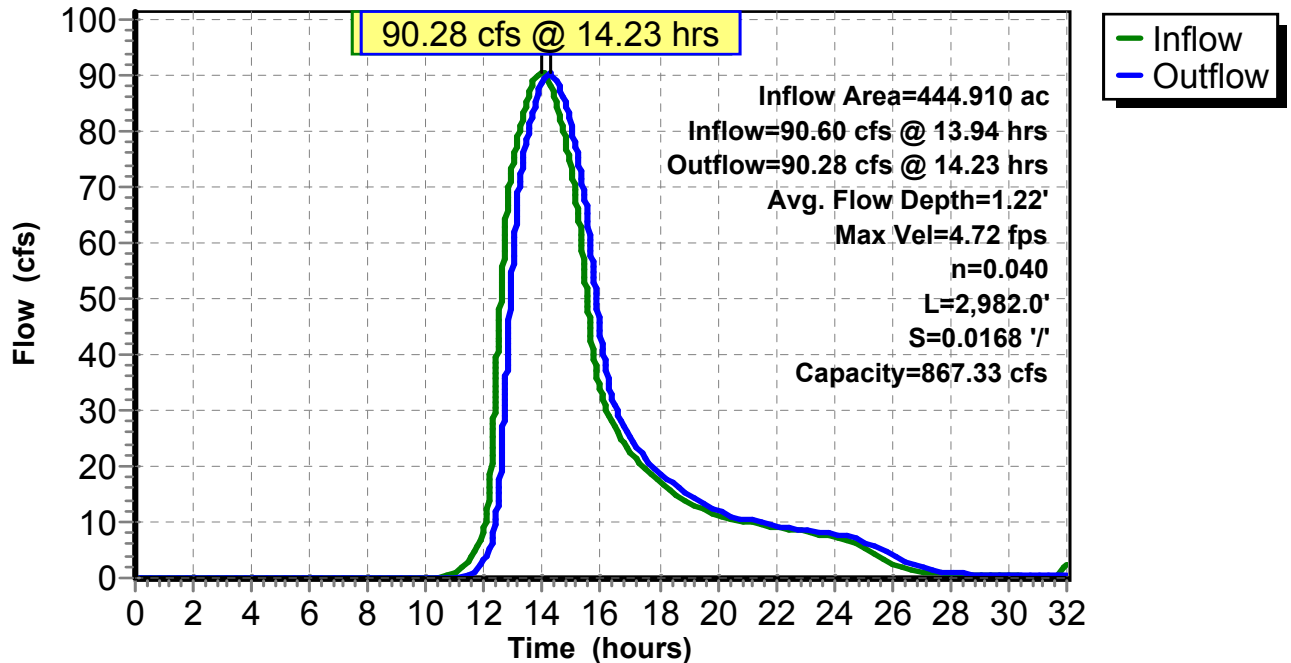
Peak Storage= 57,091 cf @ 14.06 hrs
 Average Depth at Peak Storage= 1.22'
 Bank-Full Depth= 4.00' Flow Area= 96.0 sf, Capacity= 867.33 cfs

12.00' x 4.00' deep channel, n= 0.040
 Side Slope Z-value= 3.0 ' / ' Top Width= 36.00'
 Length= 2,982.0' Slope= 0.0168 ' / '
 Inlet Invert= 126.00', Outlet Invert= 76.00'



Reach 4R: THRU WS D

Hydrograph



Summary for Reach 8R: THRU WS C

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 1.06" for F2_24 event
 Inflow = 140.13 cfs @ 12.85 hrs, Volume= 49.467 af
 Outflow = 140.06 cfs @ 12.88 hrs, Volume= 49.464 af, Atten= 0%, Lag= 1.846 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 6.72 fps, Min. Travel Time= 1.080 min
 Avg. Velocity = 2.80 fps, Avg. Travel Time= 2.591 min

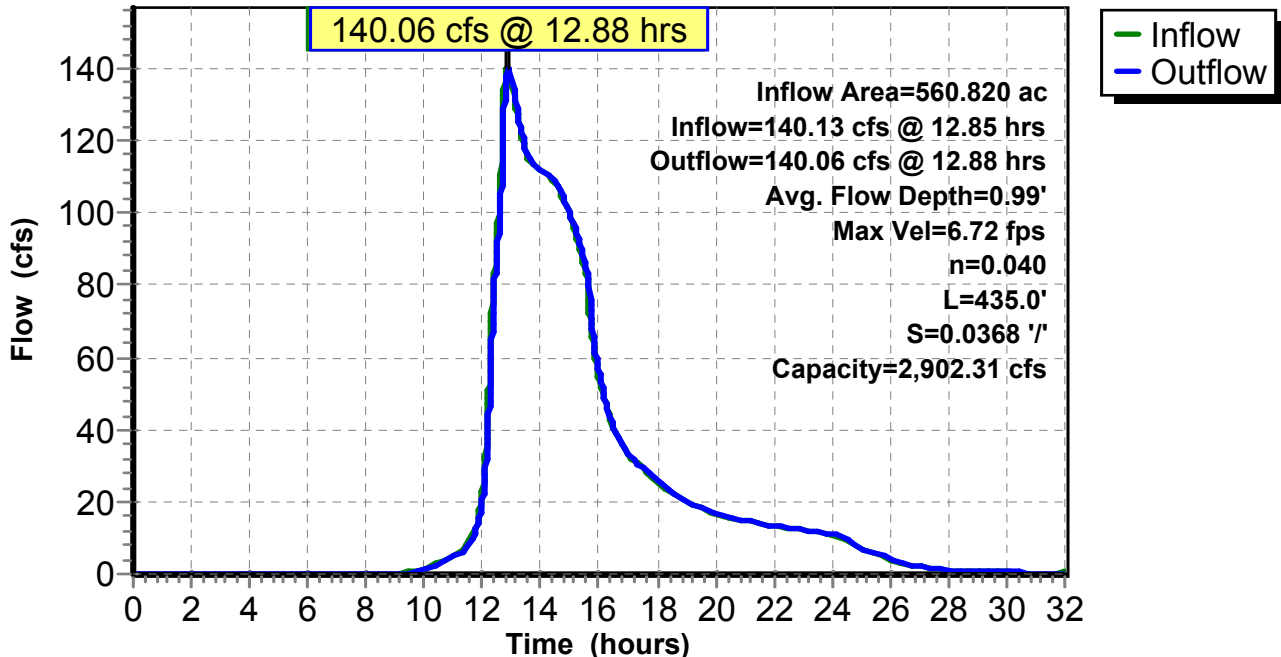
Peak Storage= 9,073 cf @ 12.86 hrs
 Average Depth at Peak Storage= 0.99'
 Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 2,902.31 cfs

20.00' x 6.00' deep channel, n= 0.040
 Side Slope Z-value= 1.0 ' / ' Top Width= 32.00'
 Length= 435.0' Slope= 0.0368 ' / '
 Inlet Invert= 76.00', Outlet Invert= 60.00'



Reach 8R: THRU WS C

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.000 min
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.000 min

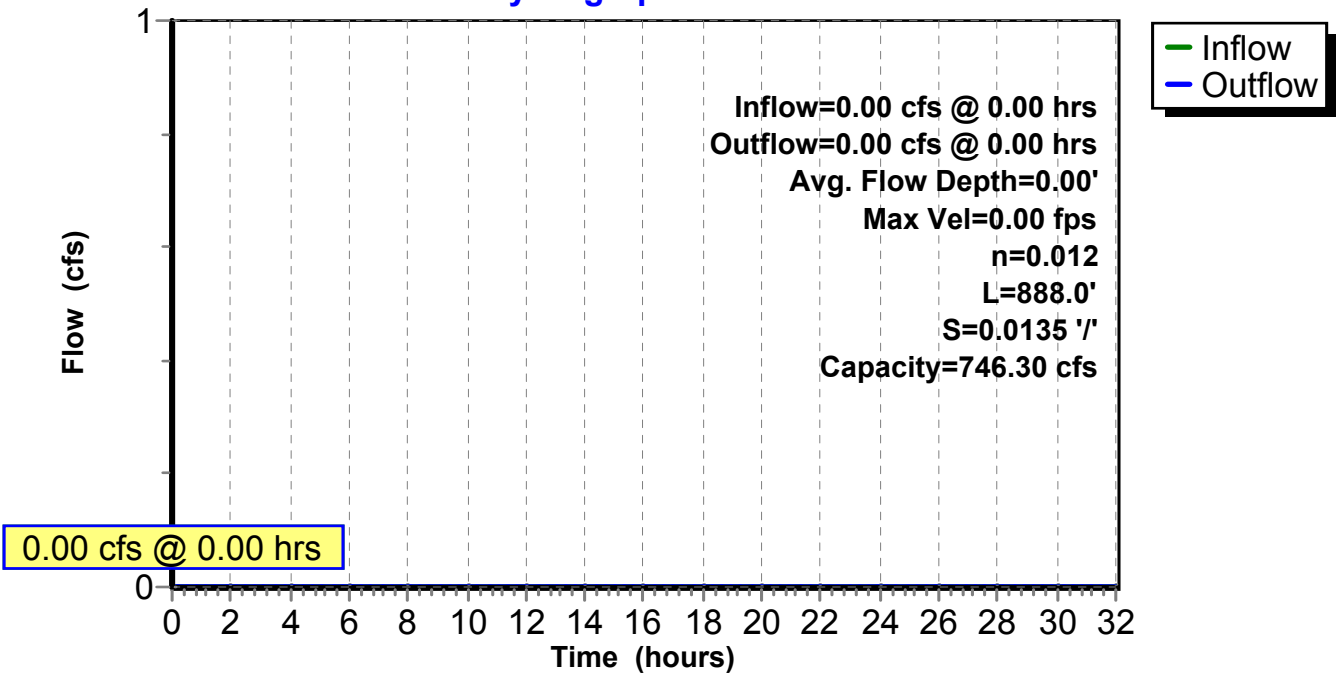
Peak Storage= 0 cf @ 0.00 hrs
 Average Depth at Peak Storage= 0.00'
 Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
 Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
 Length= 888.0' Slope= 0.0135 ' '
 Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



Summary for Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 1.20" for F2_24 event
 Inflow = 210.20 cfs @ 12.40 hrs, Volume= 65.581 af
 Outflow = 210.16 cfs @ 12.40 hrs, Volume= 65.581 af, Atten= 0%, Lag= 0.122 min
 Primary = 210.16 cfs @ 12.40 hrs, Volume= 65.581 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 46.05' @ 12.40 hrs Surf.Area= 0.695 ac Storage= 0.035 af

Plug-Flow detention time= 0.122 min calculated for 65.561 af (100% of inflow)
 Center-of-Mass det. time= 0.121 min (918.487 - 918.366)

Volume	Invert	Avail.Storage	Storage Description
#1	46.00'	82.605 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
46.00	0.695	0.000	0.000
48.00	0.695	1.390	1.390
50.00	0.800	1.495	2.885
52.00	1.420	2.220	5.105
54.00	2.270	3.690	8.795
56.00	3.160	5.430	14.225
58.00	4.070	7.230	21.455
60.00	4.980	9.050	30.505
62.00	5.710	10.690	41.195
64.00	6.620	12.330	53.525
66.00	7.170	13.790	67.315
68.00	8.120	15.290	82.605

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert X 2.00 L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/ Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48

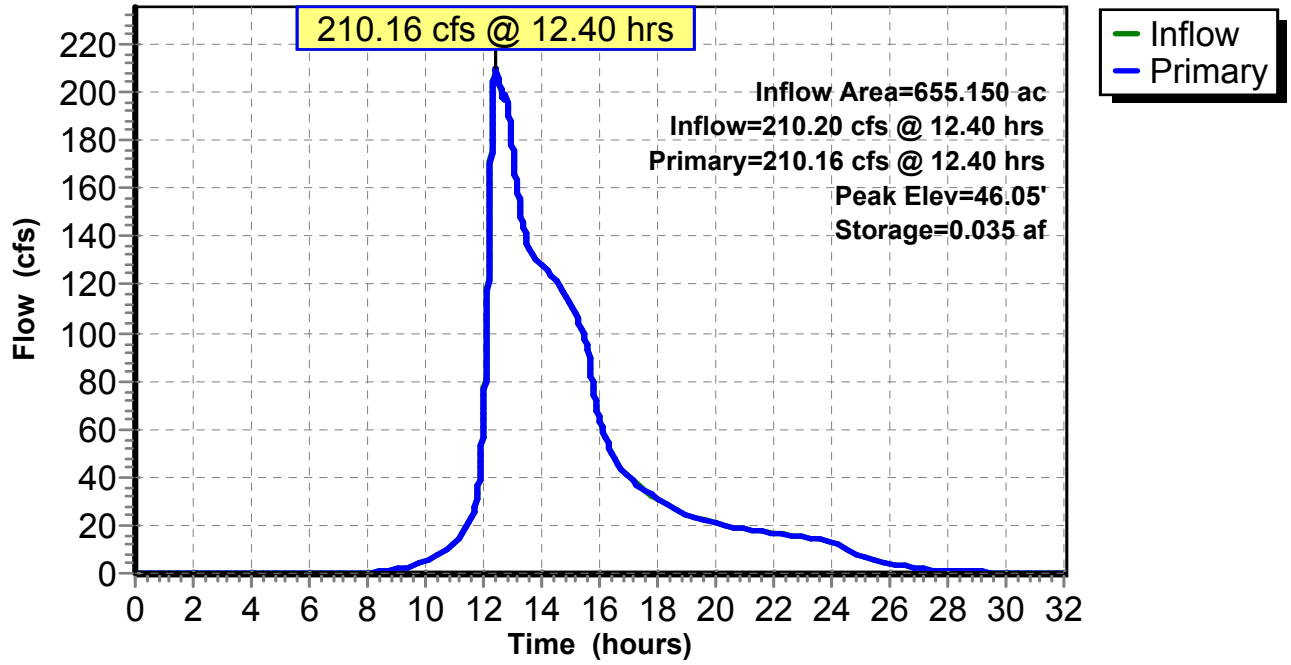
Primary OutFlow Max=898.38 cfs @ 12.40 hrs HW=46.05' (Free Discharge)

1=Culvert (Inlet Controls 898.38 cfs @ 11.51 fps)

2=WEIR WESTCH AVE (Controls 0.00 cfs)

Pond 1P: STORAGE NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



Summary for Pond 2P: USTREAM LONGLEDGE

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 1.09" for F2_24 event
 Inflow = 147.35 cfs @ 12.87 hrs, Volume= 52.652 af
 Outflow = 147.35 cfs @ 12.87 hrs, Volume= 52.652 af, Atten= 0%, Lag= 0.004 min
 Primary = 147.35 cfs @ 12.87 hrs, Volume= 52.652 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 66.23' @ 12.87 hrs Surf.Area= 0.001 ac Storage= 0.000 af

Plug-Flow detention time= 0.001 min calculated for 52.652 af (100% of inflow)
 Center-of-Mass det. time= 0.001 min (938.210 - 938.209)

Volume	Invert	Avail.Storage	Storage Description
#1	66.00'	11.939 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
66.00	0.001	0.000	0.000
68.00	0.004	0.005	0.005
70.00	0.090	0.094	0.099
72.00	0.180	0.270	0.369
74.00	0.280	0.460	0.829
76.00	0.420	0.700	1.529
78.00	0.520	0.940	2.469
80.00	0.610	1.130	3.599
82.00	0.710	1.320	4.919
84.00	0.780	1.490	6.409
86.00	0.850	1.630	8.039
88.00	0.960	1.810	9.849
90.00	1.130	2.090	11.939

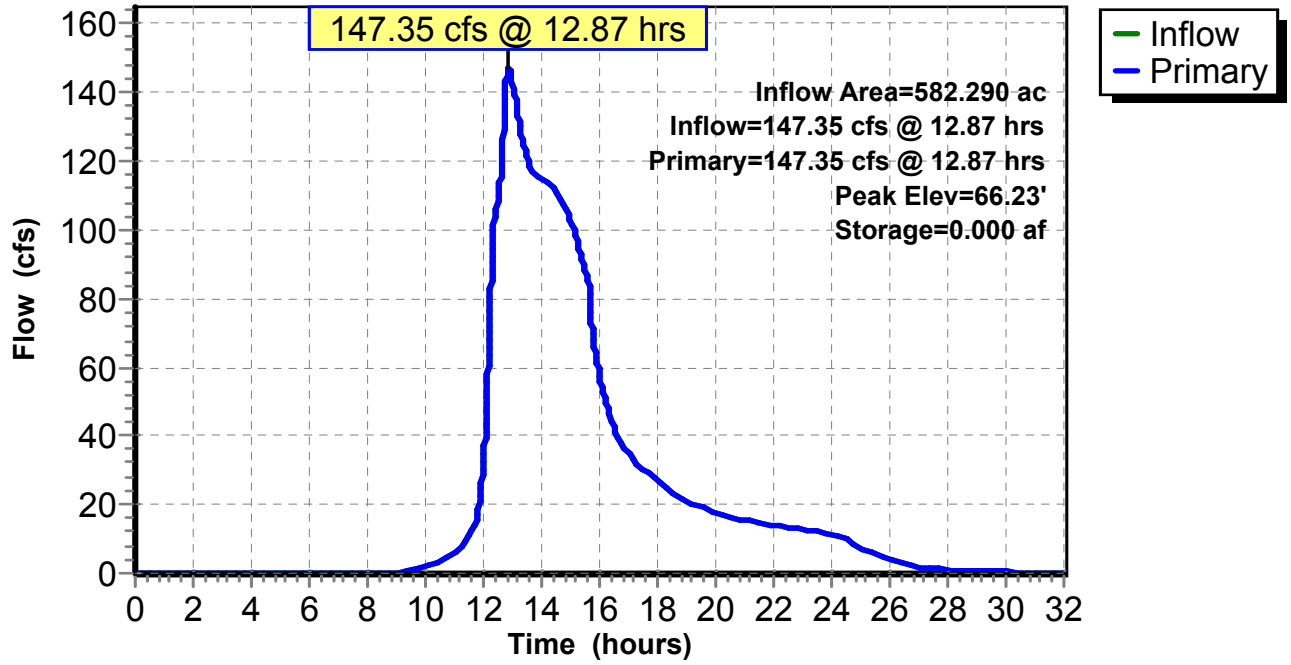
Device	Routing	Invert	Outlet Devices
#1	Primary	61.15'	60.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 61.15' / 59.76' S= 0.0103 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Primary	67.08'	60.0" Round Culvert 2 L= 130.0' Ke= 0.500 Inlet / Outlet Invert= 67.08' / 59.63' S= 0.0573 '/ Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#3	Primary	85.78'	Weir LONG LEDGE, C= 3.27 Offset (feet) 0.00 65.00 92.00 133.00 175.00 Elev. (feet) 88.57 86.07 85.78 86.93 88.57

Primary OutFlow Max=151.93 cfs @ 12.87 hrs HW=66.23' (Free Discharge)

- 1=Culvert (Inlet Controls 151.93 cfs @ 7.74 fps)
- 2=Culvert 2 (Controls 0.00 cfs)
- 3=Weir LONG LEDGE (Controls 0.00 cfs)

Pond 2P: USTREAM LONGLEDGE

Hydrograph



Summary for Pond 4A: DP 4 A ARGYLE

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 0.88" for F2_24 event
 Inflow = 91.25 cfs @ 13.77 hrs, Volume= 32.639 af
 Outflow = 90.60 cfs @ 13.94 hrs, Volume= 32.574 af, Atten= 1%, Lag= 9.911 min
 Primary = 90.60 cfs @ 13.94 hrs, Volume= 32.574 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 128.91' @ 13.94 hrs Surf.Area= 0.706 ac Storage= 1.188 af

Plug-Flow detention time= 10.351 min calculated for 32.564 af (100% of inflow)
 Center-of-Mass det. time= 8.430 min (952.426 - 943.996)

Volume	Invert	Avail.Storage	Storage Description
#1	126.00'	8.370 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
126.00	0.110	0.000	0.000
128.00	0.520	0.630	0.630
130.00	0.930	1.450	2.080
132.00	1.350	2.280	4.360
134.00	2.660	4.010	8.370

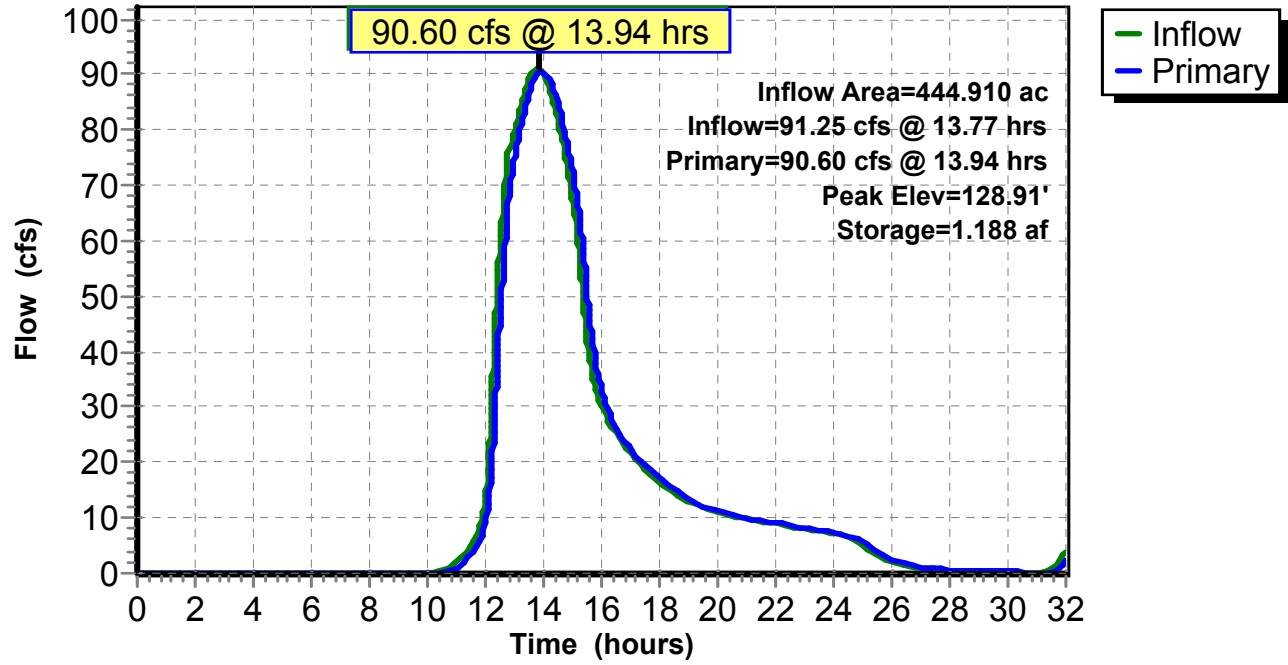
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	48.0" Round Culvert X 2.00 L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	130.00'	125.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=90.60 cfs @ 13.94 hrs HW=128.91' (Free Discharge)

1=Culvert (Barrel Controls 90.60 cfs @ 6.46 fps)
 2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 4A: DP 4 A ARGYLE

Hydrograph



Summary for Pond 5P: DP 5 BETSY BROWN ROAD

Inflow Area = 405.340 ac, 0.00% Impervious, Inflow Depth > 0.84" for F2_24 event
 Inflow = 122.11 cfs @ 13.18 hrs, Volume= 28.411 af
 Outflow = 85.37 cfs @ 13.74 hrs, Volume= 28.289 af, Atten= 30%, Lag= 33.451 min
 Primary = 85.37 cfs @ 13.74 hrs, Volume= 28.289 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 130.75' @ 13.74 hrs Surf.Area= 6.980 ac Storage= 3.898 af

Plug-Flow detention time= 21.413 min calculated for 28.289 af (100% of inflow)
 Center-of-Mass det. time= 17.206 min (949.773 - 932.566)

Volume	Invert	Avail.Storage	Storage Description
#1	128.00'	68.410 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.00	0.120	0.000	0.000
130.00	0.850	0.970	0.970
132.00	17.240	18.090	19.060
134.00	32.110	49.350	68.410

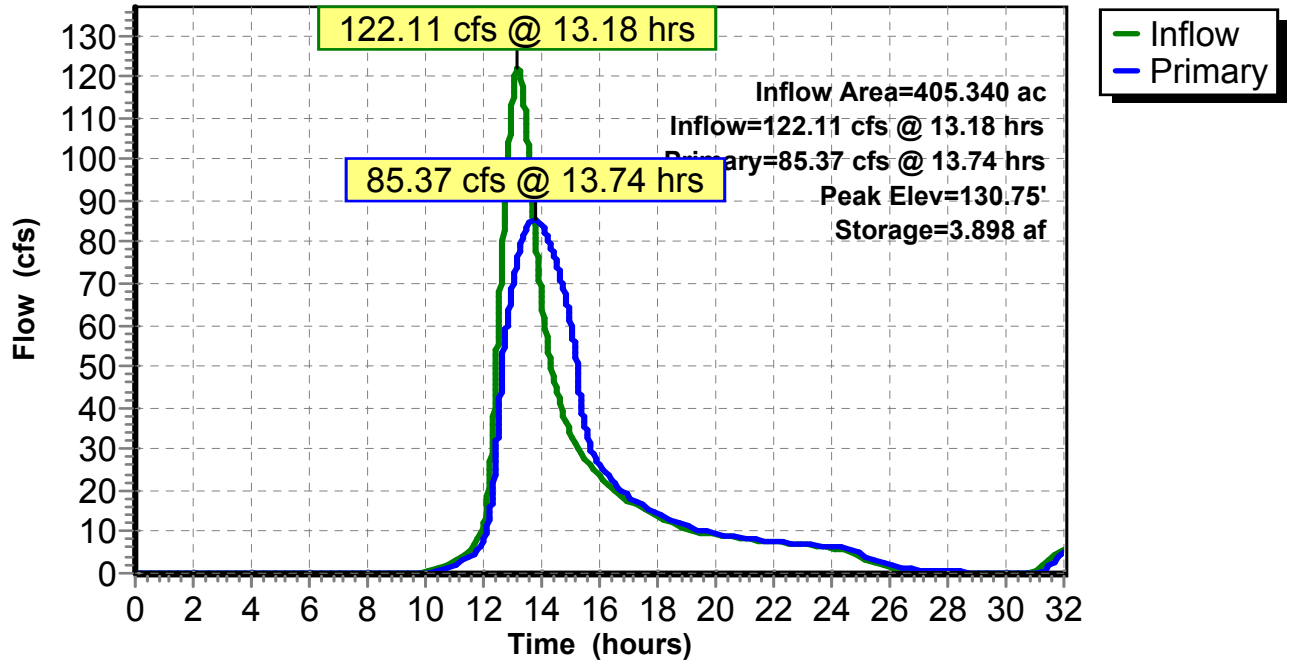
Device	Routing	Invert	Outlet Devices
#1	Primary	128.00'	48.0" Round Culvert X 2.00 L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 128.00' / 127.50' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Primary	132.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 55.00 121.00 231.00 302.00 416.00 Elev. (feet) 138.00 134.00 132.00 132.00 134.00 138.00

Primary OutFlow Max=85.36 cfs @ 13.74 hrs HW=130.75' (Free Discharge)

- 1=Culvert (Barrel Controls 85.36 cfs @ 6.54 fps)
- 2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 5P: DP 5 BETSY BROWN ROAD

Hydrograph



Summary for Pond 7P: DP 4 HIDDEN FALLS DAM

Inflow Area = 560.820 ac, 0.00% Impervious, Inflow Depth > 1.06" for F2_24 event
 Inflow = 142.02 cfs @ 12.77 hrs, Volume= 49.468 af
 Outflow = 140.13 cfs @ 12.85 hrs, Volume= 49.467 af, Atten= 1%, Lag= 4.981 min
 Primary = 140.13 cfs @ 12.85 hrs, Volume= 49.467 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 90.60' @ 12.85 hrs Surf.Area= 1.370 ac Storage= 0.828 af

Plug-Flow detention time= 2.823 min calculated for 49.467 af (100% of inflow)
 Center-of-Mass det. time= 2.810 min (941.727 - 938.917)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	17.700 af	Custom Stage Data (Prismatic) Listed below (Recalc)

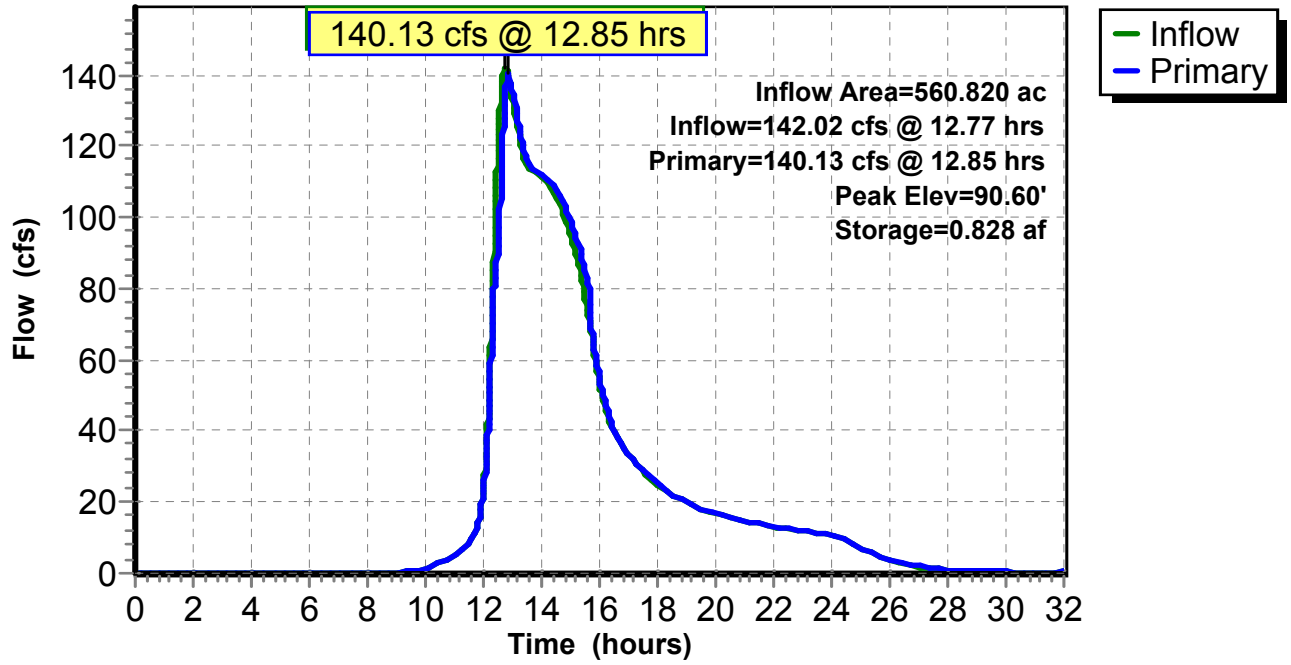
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
90.00	1.370	0.000	0.000
92.00	1.370	2.740	2.740
94.00	1.500	2.870	5.610
96.00	1.860	3.360	8.970
98.00	2.150	4.010	12.980
100.00	2.570	4.720	17.700

Device	Routing	Invert	Outlet Devices
#1	Primary	88.55'	13.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	90.48'	130.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=139.94 cfs @ 12.85 hrs HW=90.60' (Free Discharge)
 1=Sharp-Crested Rectangular Weir(Weir Controls 121.24 cfs @ 4.69 fps)
 2=Sharp-Crested Rectangular Weir(Weir Controls 18.70 cfs @ 1.15 fps)

Pond 7P: DP 4 HIDDEN FALLS DAM

Hydrograph



Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 1.32" for F2_24 event
 Inflow = 176.83 cfs @ 12.52 hrs, Volume= 78.651 af
 Outflow = 176.82 cfs @ 12.52 hrs, Volume= 78.651 af, Atten= 0%, Lag= 0.000 min
 Primary = 176.82 cfs @ 12.52 hrs, Volume= 78.651 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 34.09' @ 12.52 hrs Surf.Area= 0.083 ac Storage= 0.007 af

Plug-Flow detention time= 0.029 min calculated for 78.651 af (100% of inflow)
 Center-of-Mass det. time= 0.028 min (952.931 - 952.902)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

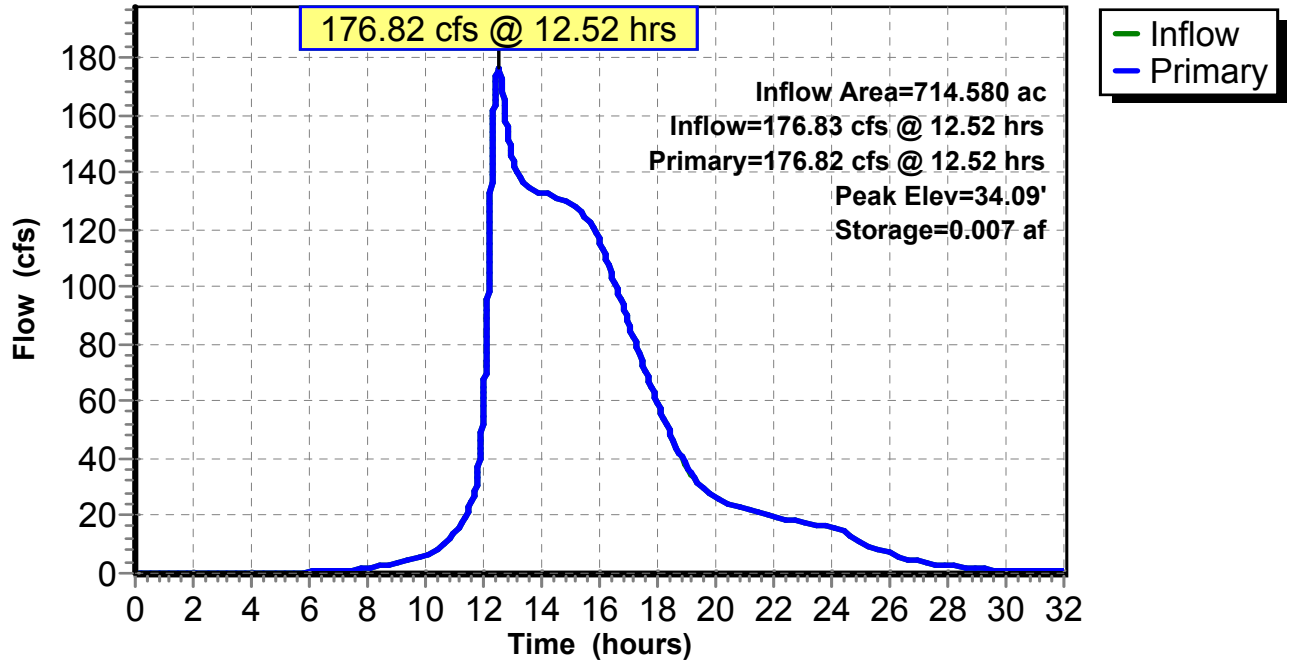
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=205.13 cfs @ 12.52 hrs HW=34.09' (Free Discharge)

- 1=Culvert (Barrel Controls 205.13 cfs @ 5.88 fps)
- 2=WEIR BOWMAN (Controls 0.00 cfs)

Pond 8P: BOWMAN FIELDS

Hydrograph



Summary for Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Inflow Area = 121.140 ac, 0.00% Impervious, Inflow Depth = 1.22" for F2_24 event
 Inflow = 77.91 cfs @ 12.64 hrs, Volume= 12.335 af
 Outflow = 77.91 cfs @ 12.64 hrs, Volume= 12.335 af, Atten= 0%, Lag= 0.027 min
 Primary = 77.91 cfs @ 12.64 hrs, Volume= 12.335 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 132.13' @ 12.64 hrs Surf.Area= 0.024 ac Storage= 0.003 af

Plug-Flow detention time= 0.028 min calculated for 12.331 af (100% of inflow)
 Center-of-Mass det. time= 0.028 min (892.106 - 892.079)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	22.450 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.020	0.000	0.000
134.00	0.080	0.100	0.100
136.00	0.330	0.410	0.510
138.00	0.820	1.150	1.660
140.00	1.380	2.200	3.860
142.00	2.200	3.580	7.440
144.00	3.550	5.750	13.190
146.00	5.710	9.260	22.450

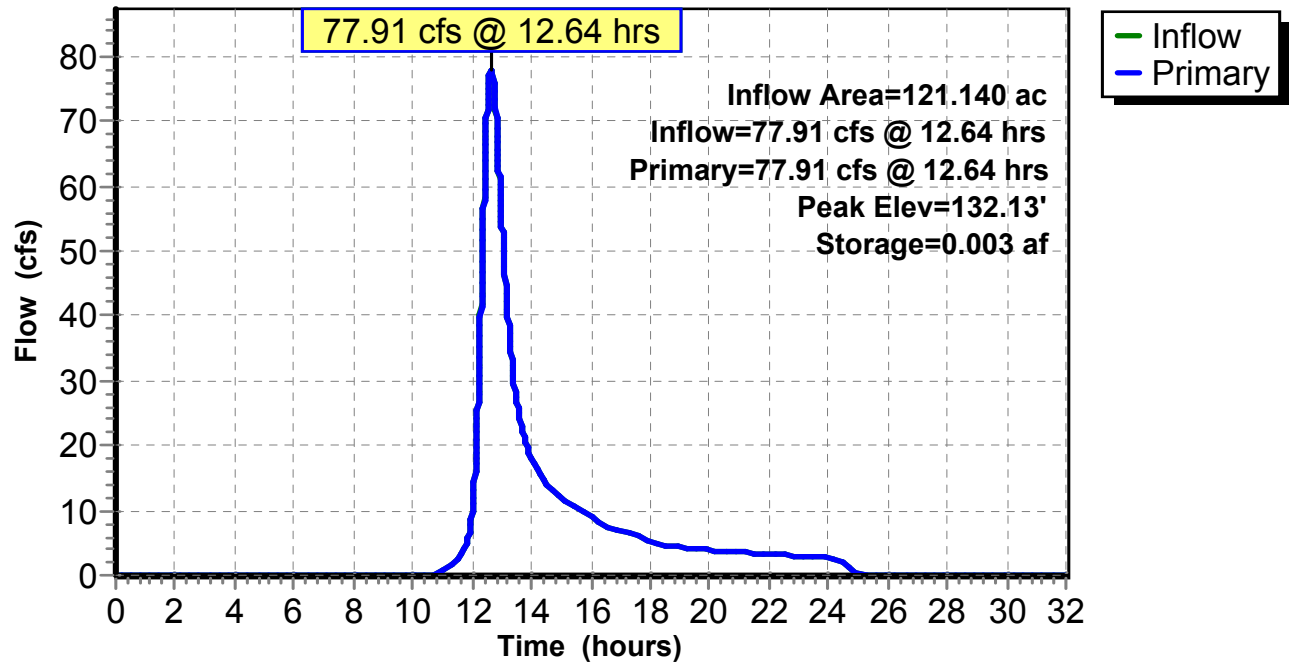
Device	Routing	Invert	Outlet Devices
#1	Primary	126.00'	36.0" Round Culvert L= 72.0' Ke= 0.500 Inlet / Outlet Invert= 126.00' / 125.68' S= 0.0044 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	131.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 11.0' Crest Height
#3	Primary	134.50'	157.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=81.36 cfs @ 12.64 hrs HW=132.13' (Free Discharge)

1=Culvert (Inlet Controls 73.26 cfs @ 10.36 fps)
 2=Sharp-Crested Rectangular Weir (Weir Controls 8.10 cfs @ 2.62 fps)
 3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 9P: DP 7 FLOOD STORAGE MEADOWLARK BASIN

Hydrograph



Summary for Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Inflow Area = 166.850 ac, 0.00% Impervious, Inflow Depth = 1.70" for F2_24 event
 Inflow = 172.12 cfs @ 12.51 hrs, Volume= 23.680 af
 Outflow = 168.93 cfs @ 12.57 hrs, Volume= 21.788 af, Atten= 2%, Lag= 3.560 min
 Primary = 168.93 cfs @ 12.57 hrs, Volume= 21.788 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Starting Elev= 135.30' Surf.Area= 2.287 ac Storage= 2.968 af
 Peak Elev= 136.33' @ 12.57 hrs Surf.Area= 3.611 ac Storage= 5.966 af (2.999 af above start)

Plug-Flow detention time= 125.091 min calculated for 18.814 af (79% of inflow)
 Center-of-Mass det. time= 22.389 min (884.709 - 862.320)

Volume	Invert	Avail.Storage	Storage Description
#1	132.00'	29.220 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
132.00	0.260	0.000	0.000
134.00	0.740	1.000	1.000
136.00	3.120	3.860	4.860
138.00	6.110	9.230	14.090
140.00	9.020	15.130	29.220

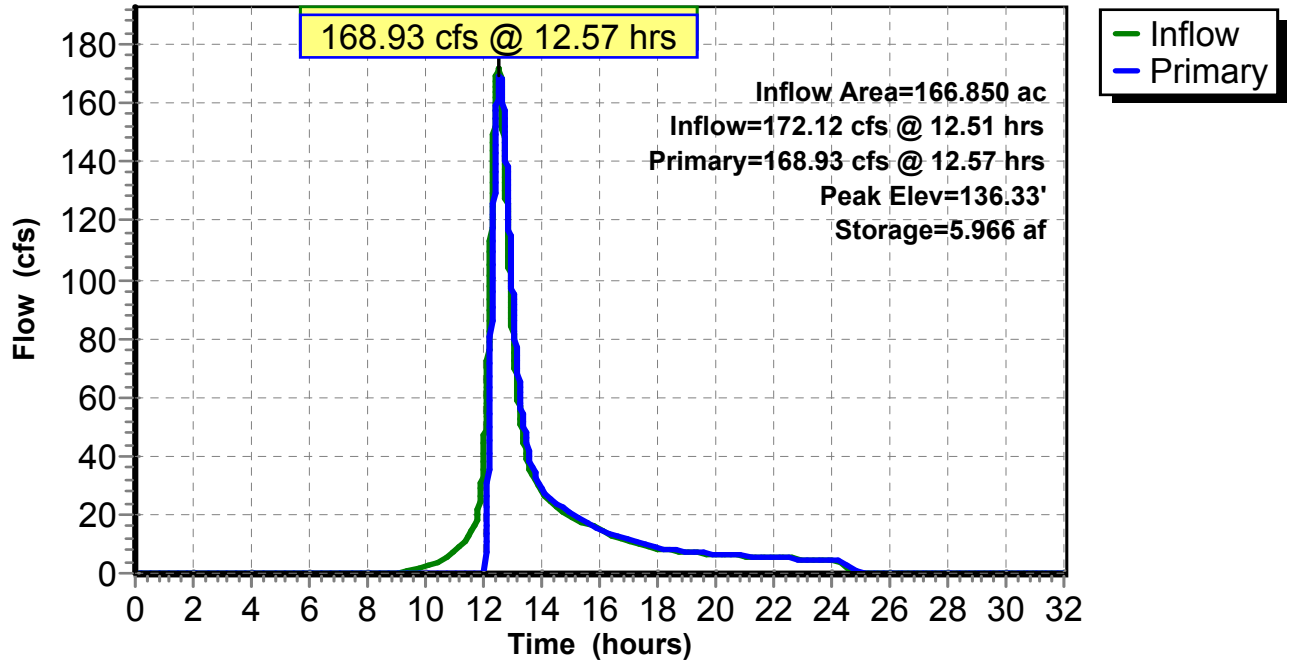
Device	Routing	Invert	Outlet Devices
#1	Primary	136.00'	36.0" Round Culvert L= 535.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 132.00' S= 0.0075 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Primary	136.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 0.00 74.00 144.00 278.00 399.00 563.00 804.00 Elev. (feet) 142.00 138.00 136.00 136.00 136.00 138.00 142.00

Primary OutFlow Max=167.48 cfs @ 12.57 hrs HW=136.33' (Free Discharge)

- 1=Culvert (Inlet Controls 0.82 cfs @ 1.95 fps)
- 2=Asymmetrical Weir (Weir Controls 166.66 cfs @ 1.73 fps)

Pond 10P: DP 6 FLOOD STORAGE WOODLAND DRIVE

Hydrograph



Summary for Pond 12P: UPSTREAM add new culvert AVON OVERFLOW TO ROAD

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 1.09" for F2_24 event
 Inflow = 147.35 cfs @ 12.87 hrs, Volume= 52.652 af
 Outflow = 147.35 cfs @ 12.87 hrs, Volume= 52.652 af, Atten= 0%, Lag= 0.097 min
 Primary = 147.35 cfs @ 12.87 hrs, Volume= 52.652 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 57.53' @ 12.87 hrs Surf.Area= 641 sf Storage= 845 cf

Plug-Flow detention time= 0.083 min calculated for 52.635 af (100% of inflow)
 Center-of-Mass det. time= 0.083 min (938.293 - 938.210)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	63,134 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686
70.00	10,112	40,448	63,134

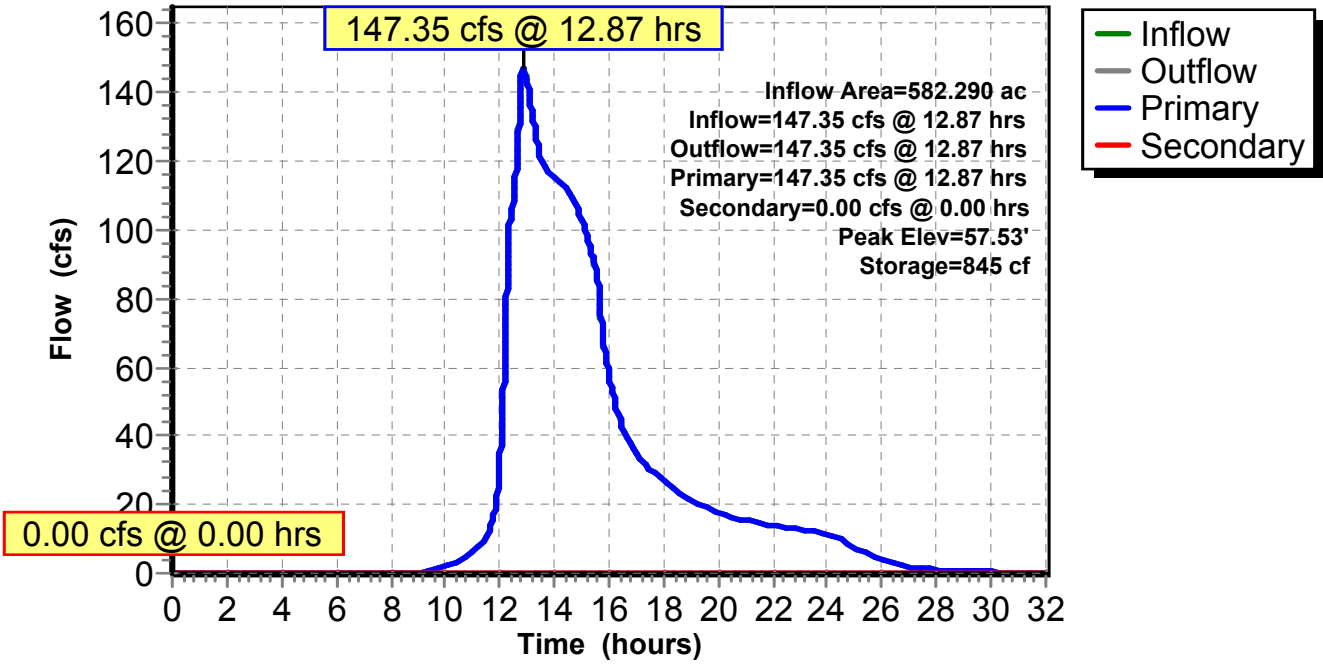
Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert X 3.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 55.13' / 37.90' S= 0.0206 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	68.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=147.07 cfs @ 12.87 hrs HW=57.53' (Free Discharge)
 ↑1=Culvert (Inlet Controls 147.07 cfs @ 5.27 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=56.00' (Free Discharge)
 ↑2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 12P: UPSTREAM add new culvert AVON OVERFLOW TO ROAD

Hydrograph



Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs
 Peak Elev= 45.00' @ 0.00 hrs Surf.Area= 100 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	45.00'	171,628 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	100	0	0
48.00	100	300	300
51.00	6,000	9,150	9,450
52.00	15,452	10,726	20,176
54.00	38,000	53,452	73,628
56.00	60,000	98,000	171,628

Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	45.00'	24.0" Round Culvert L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 45.00' / 44.00' S= 0.0100 '/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

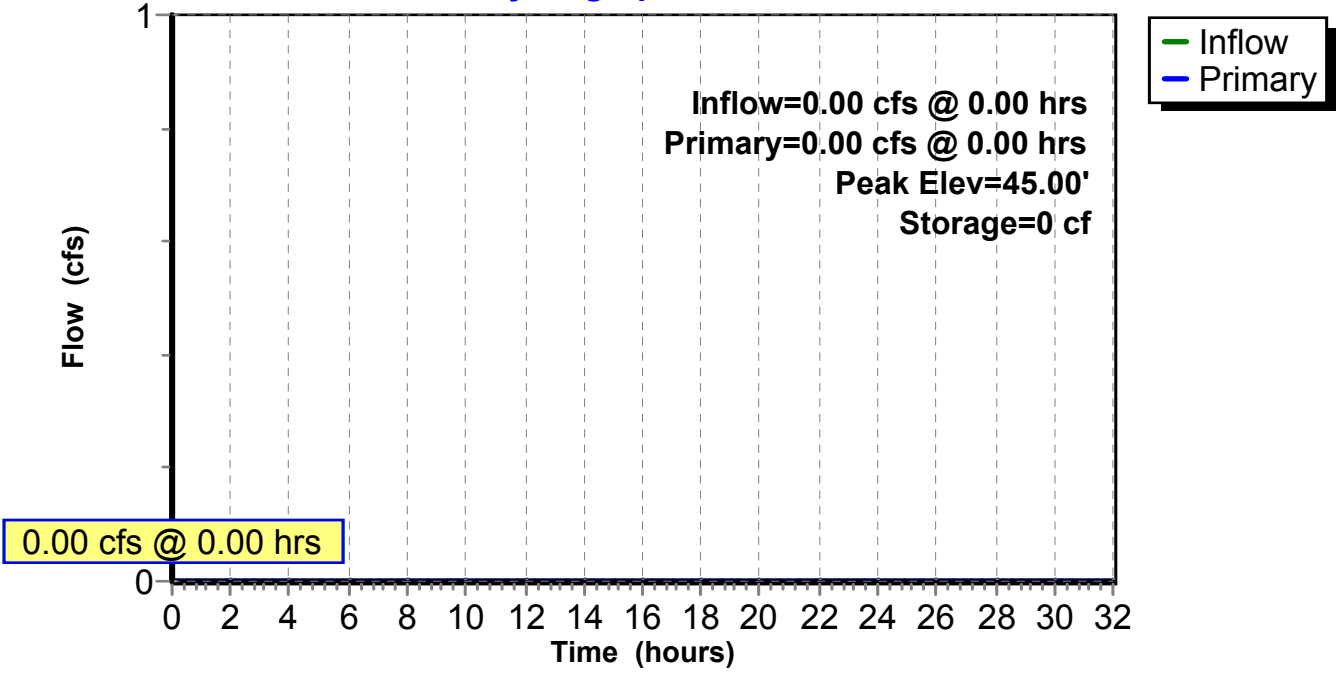
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=45.00' (Free Discharge)

↑ **1=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

└ **2=Culvert** (Controls 0.00 cfs)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



Summary for Pond 27P: NEW DETENTION IN BALLFIELD

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 1.20" for F2_24 event
 Inflow = 210.16 cfs @ 12.40 hrs, Volume= 65.581 af
 Outflow = 121.73 cfs @ 14.54 hrs, Volume= 65.331 af, Atten= 42%, Lag= 127.878 min
 Primary = 121.73 cfs @ 14.54 hrs, Volume= 65.331 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 42.94' @ 14.54 hrs Surf.Area= 88,580 sf Storage= 542,430 cf

Plug-Flow detention time= 65.767 min calculated for 65.331 af (100% of inflow)
 Center-of-Mass det. time= 62.664 min (981.150 - 918.487)

Volume	Invert	Avail.Storage	Storage Description
#1	36.50'	937,500 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.50	80,000	0	0
44.00	90,000	637,500	637,500
46.00	100,000	190,000	827,500
47.00	120,000	110,000	937,500

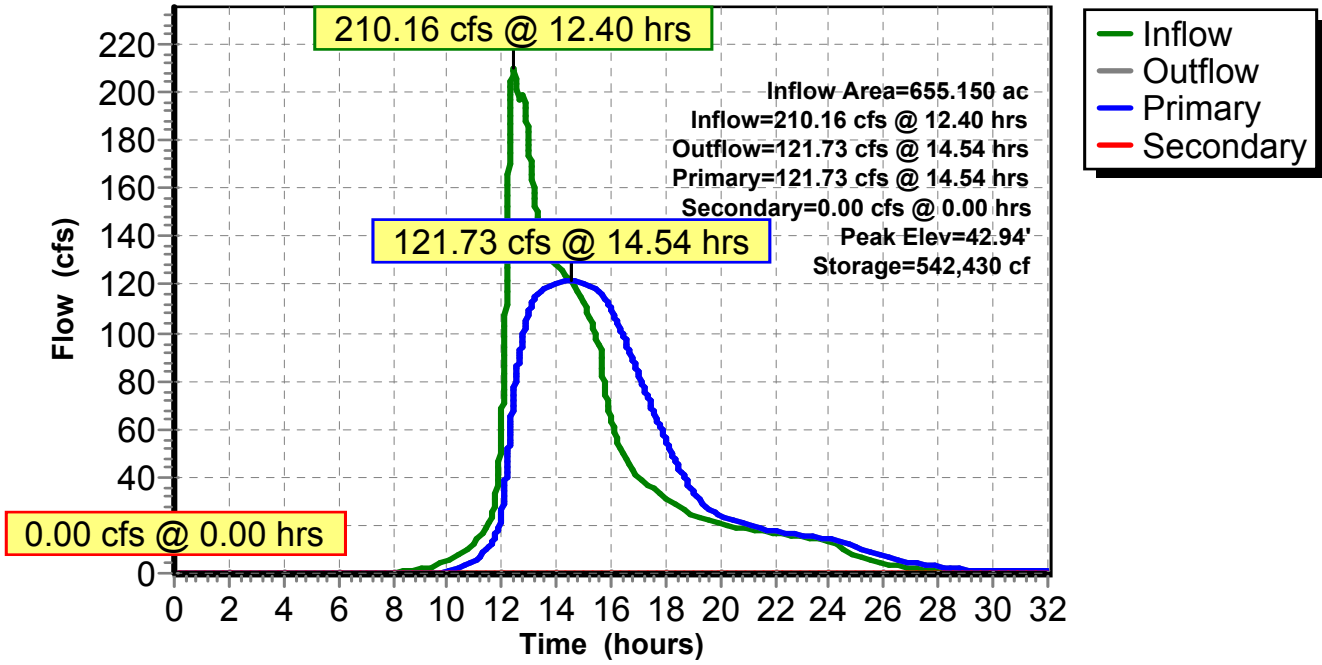
Device	Routing	Invert	Outlet Devices
#1	Primary	36.50'	18.0" Vert. Orifice/Grate X 6.00 C= 0.600
#2	Secondary	43.00'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=121.73 cfs @ 14.54 hrs HW=42.94' (Free Discharge)
 ↑1=Orifice/Grate (Orifice Controls 121.73 cfs @ 11.48 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=36.50' (Free Discharge)
 ↑2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 27P: NEW DETENTION IN BALLFIELD

Hydrograph



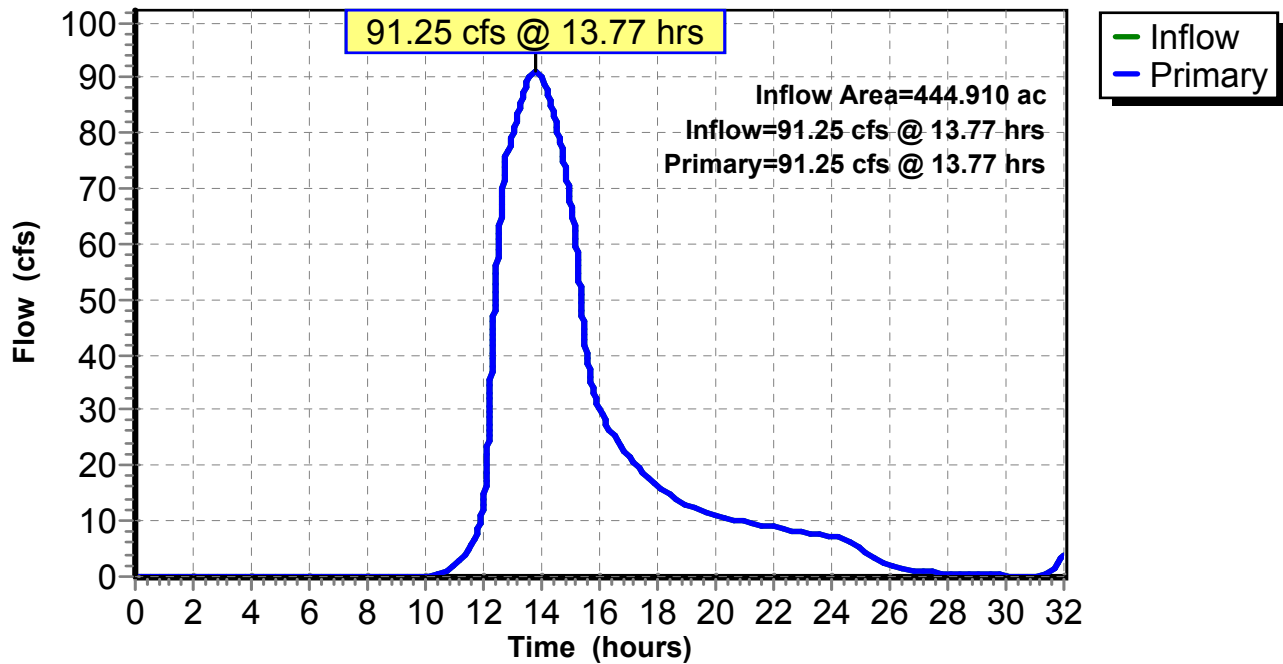
Summary for Link 10L: JUNCTION

Inflow Area = 444.910 ac, 0.00% Impervious, Inflow Depth > 0.88" for F2_24 event
Inflow = 91.25 cfs @ 13.77 hrs, Volume= 32.639 af
Primary = 91.25 cfs @ 13.77 hrs, Volume= 32.639 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 10L: JUNCTION

Hydrograph



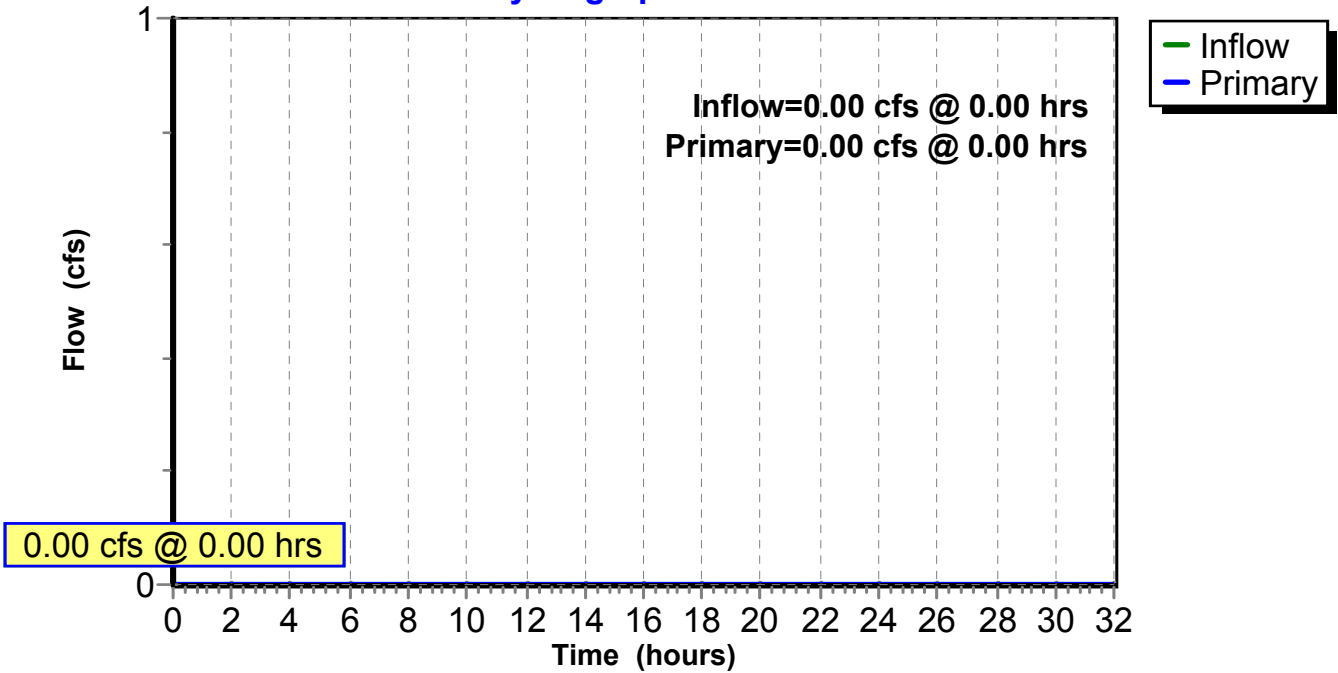
Summary for Link 24L: Weir

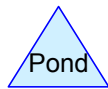
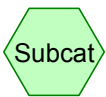
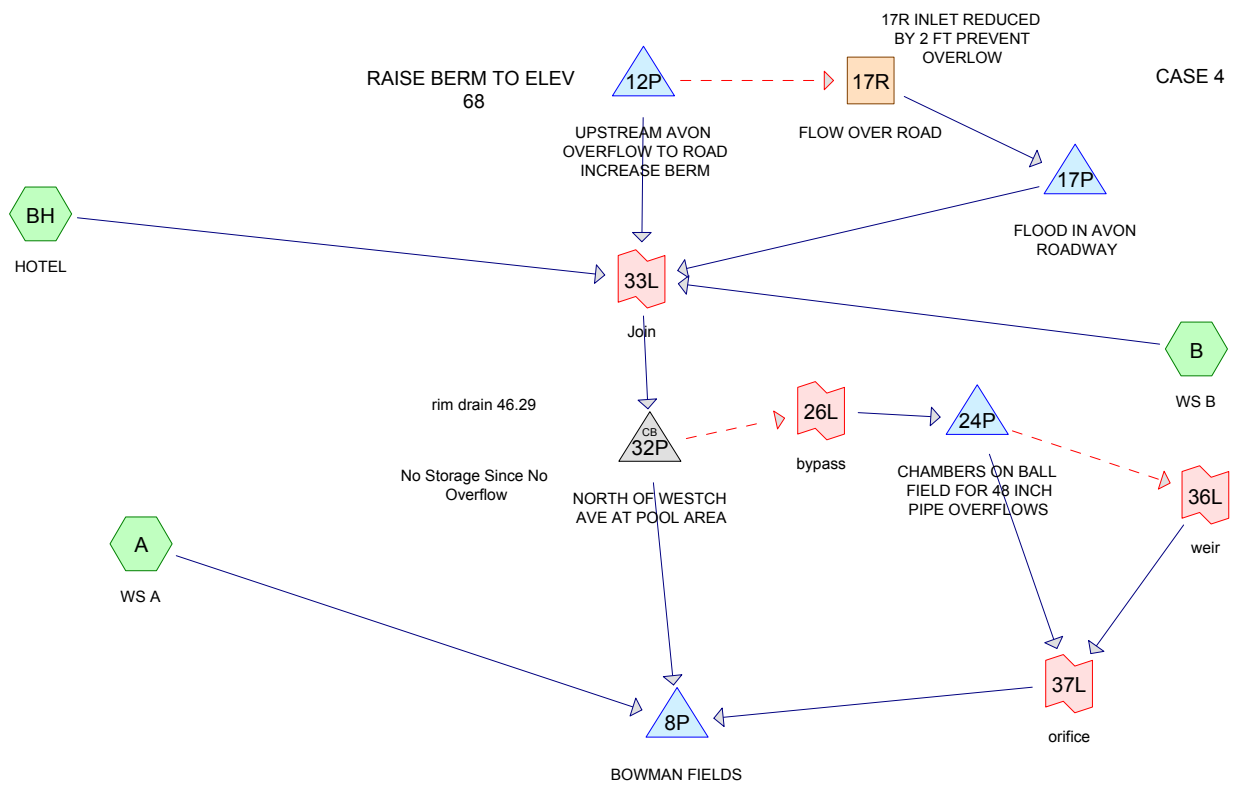
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 0.00-32.00 hrs, dt= 0.01 hrs

Link 24L: Weir

Hydrograph





Routing Diagram for EBBR_HCAD_JAN_2019_w_mitigation_chambers_1_new_48IN_culvert_no_pool_storage_f

Prepared by Microsoft, Printed 2/7/2019

HydroCAD® 10.00-16 s/n M16359 © 2015 HydroCAD Software Solutions LLC

Summary for Subcatchment A: WS A

Runoff = 225.19 cfs @ 12.42 hrs, Volume= 29.426 af, Depth> 5.94"

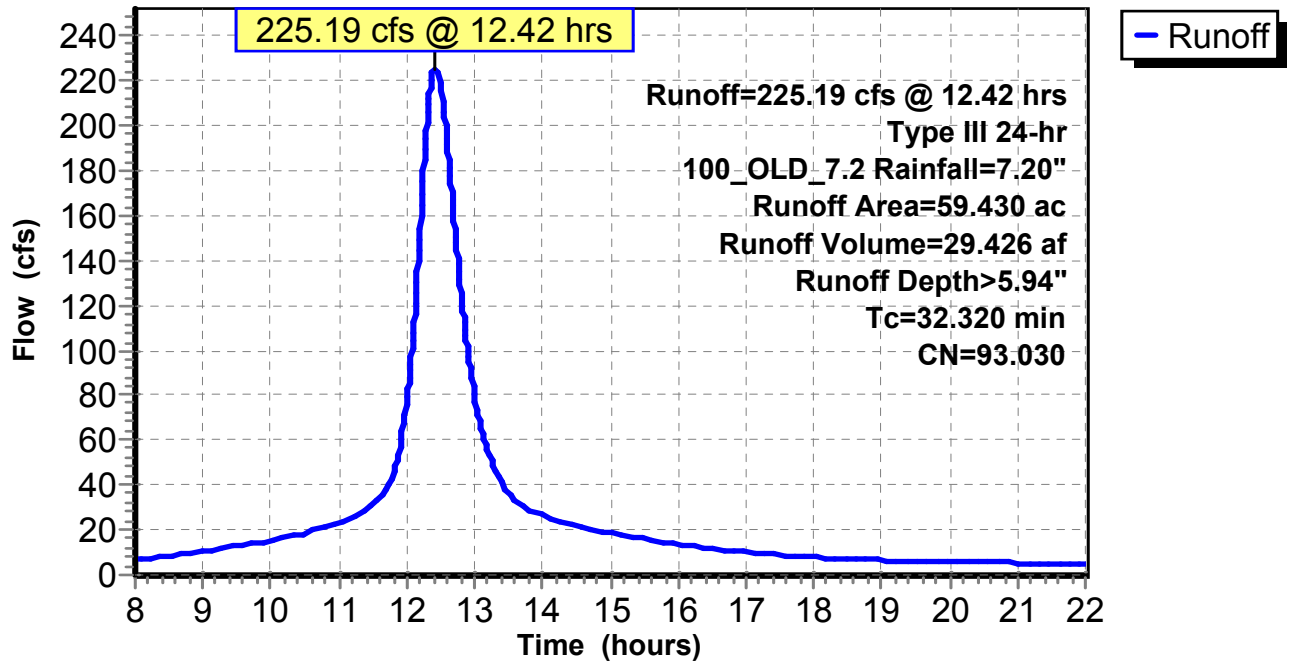
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



Summary for Subcatchment B: WS B

Runoff = 214.89 cfs @ 12.38 hrs, Volume= 25.965 af, Depth> 5.41"

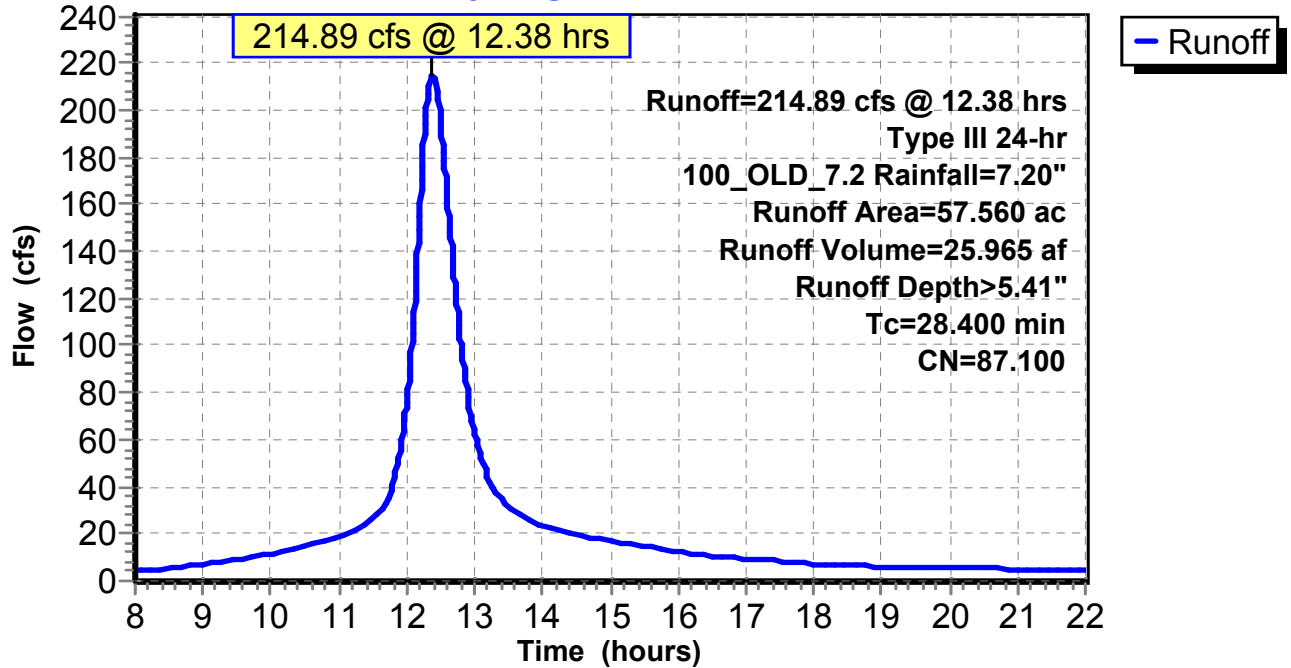
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



Summary for Subcatchment BH: HOTEL

Runoff = 54.61 cfs @ 12.42 hrs, Volume= 6.785 af, Depth> 5.32"

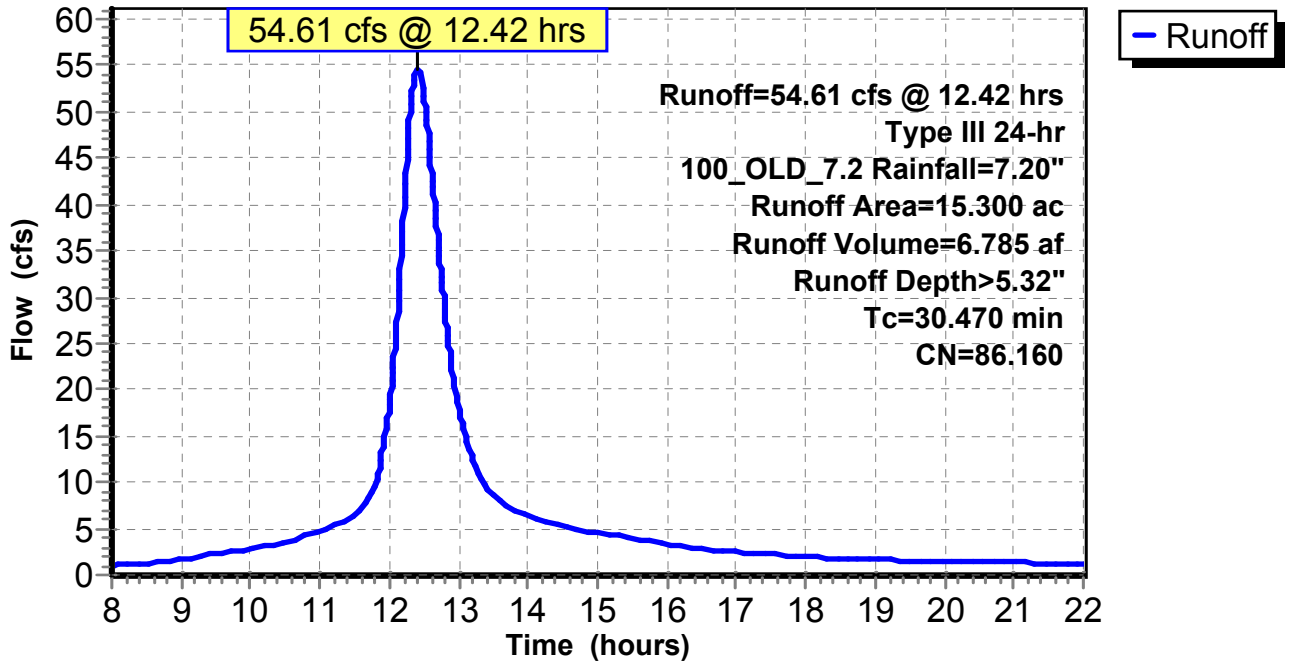
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100_OLD_7.2 Rainfall=7.20"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.000 min
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.000 min

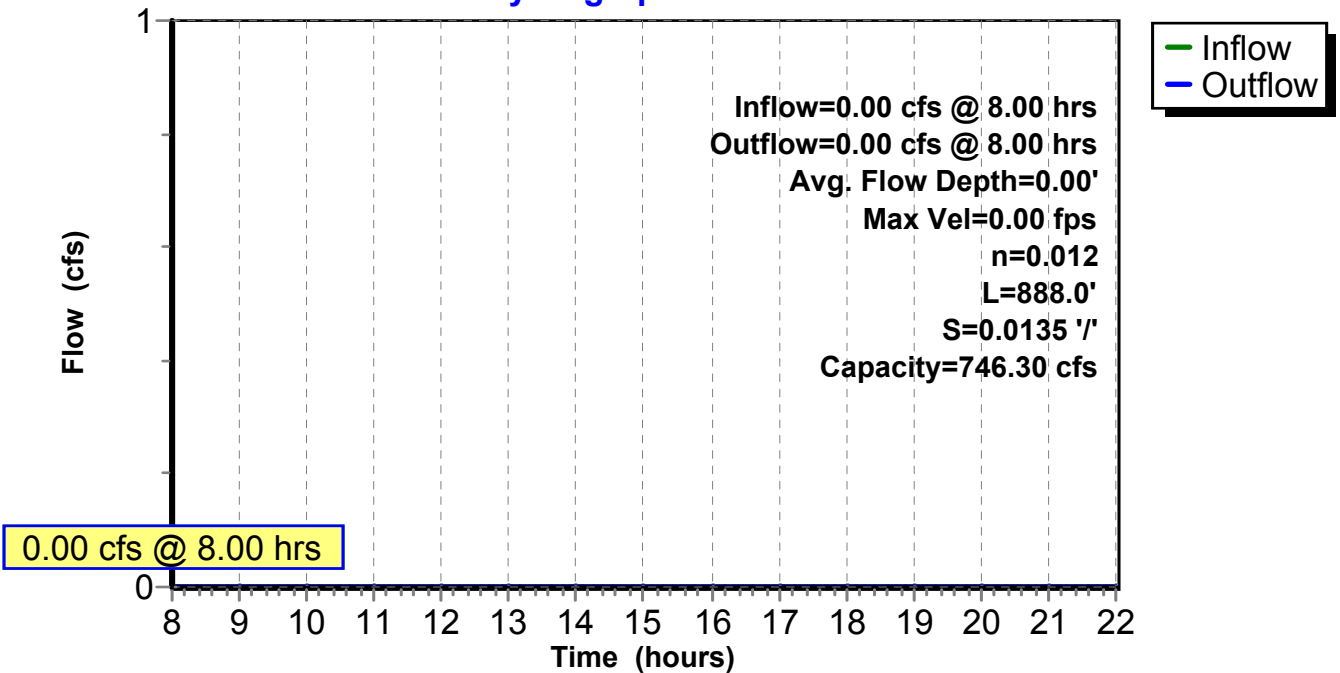
Peak Storage= 0 cf @ 8.00 hrs
 Average Depth at Peak Storage= 0.00'
 Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
 Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
 Length= 888.0' Slope= 0.0135 ' '
 Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 4.08" for 100_OLD_7.2 event
 Inflow = 773.13 cfs @ 12.47 hrs, Volume= 242.942 af
 Outflow = 771.81 cfs @ 12.51 hrs, Volume= 242.937 af, Atten= 0%, Lag= 2.029 min
 Primary = 771.81 cfs @ 12.51 hrs, Volume= 242.937 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 38.28' @ 12.51 hrs Surf.Area= 0.343 ac Storage= 0.716 af

Plug-Flow detention time= 0.255 min calculated for 242.763 af (100% of inflow)
 Center-of-Mass det. time= 0.245 min (891.571 - 891.326)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

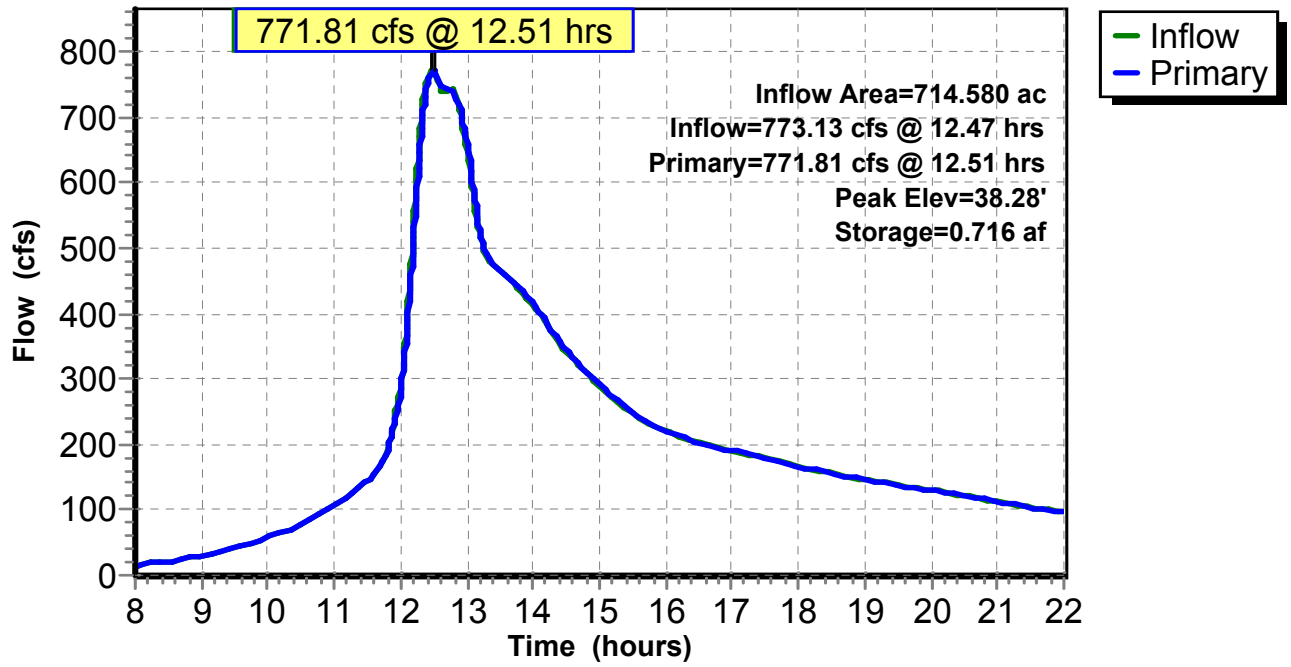
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=771.78 cfs @ 12.51 hrs HW=38.28' (Free Discharge)

- 1=Culvert (Barrel Controls 771.78 cfs @ 8.93 fps)
- 2=WEIR BOWMAN (Controls 0.00 cfs)

Pond 8P: BOWMAN FIELDS

Hydrograph



Summary for Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD INCREASE BERM

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 3.85" for 100_OLD_7.2 event
 Inflow = 523.13 cfs @ 12.76 hrs, Volume= 186.819 af
 Outflow = 520.85 cfs @ 12.81 hrs, Volume= 186.803 af, Atten= 0%, Lag= 3.092 min
 Primary = 520.85 cfs @ 12.81 hrs, Volume= 186.803 af
 Secondary = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 65.22' @ 12.81 hrs Surf.Area= 7,325 sf Storage= 15,865 cf

Plug-Flow detention time= 0.195 min calculated for 186.669 af (100% of inflow)
 Center-of-Mass det. time= 0.160 min (916.060 - 915.900)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	63,134 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686
70.00	10,112	40,448	63,134

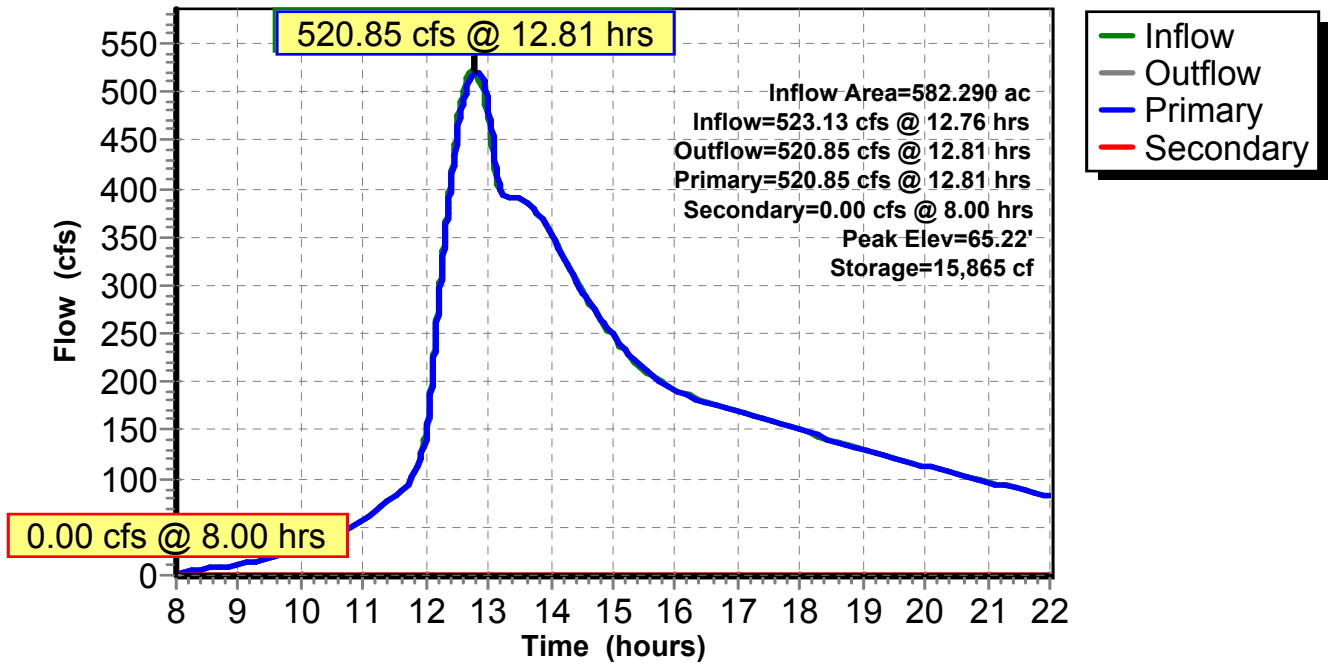
Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert X 2.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 55.13' / 37.90' S= 0.0206 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	68.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=520.84 cfs @ 12.81 hrs HW=65.22' TW=0.00' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 520.84 cfs @ 13.26 fps)

Secondary OutFlow Max=0.00 cfs @ 8.00 hrs HW=56.00' TW=58.00' (Dynamic Tailwater)
 ↑2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD INCREASE BERM

Hydrograph



Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min
 Primary = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 45.00' @ 8.00 hrs Surf.Area= 100 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	45.00'	171,628 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	100	0	0
48.00	100	300	300
51.00	6,000	9,150	9,450
52.00	15,452	10,726	20,176
54.00	38,000	53,452	73,628
56.00	60,000	98,000	171,628

Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	45.00'	24.0" Round Culvert L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 45.00' / 44.00' S= 0.0100 '/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

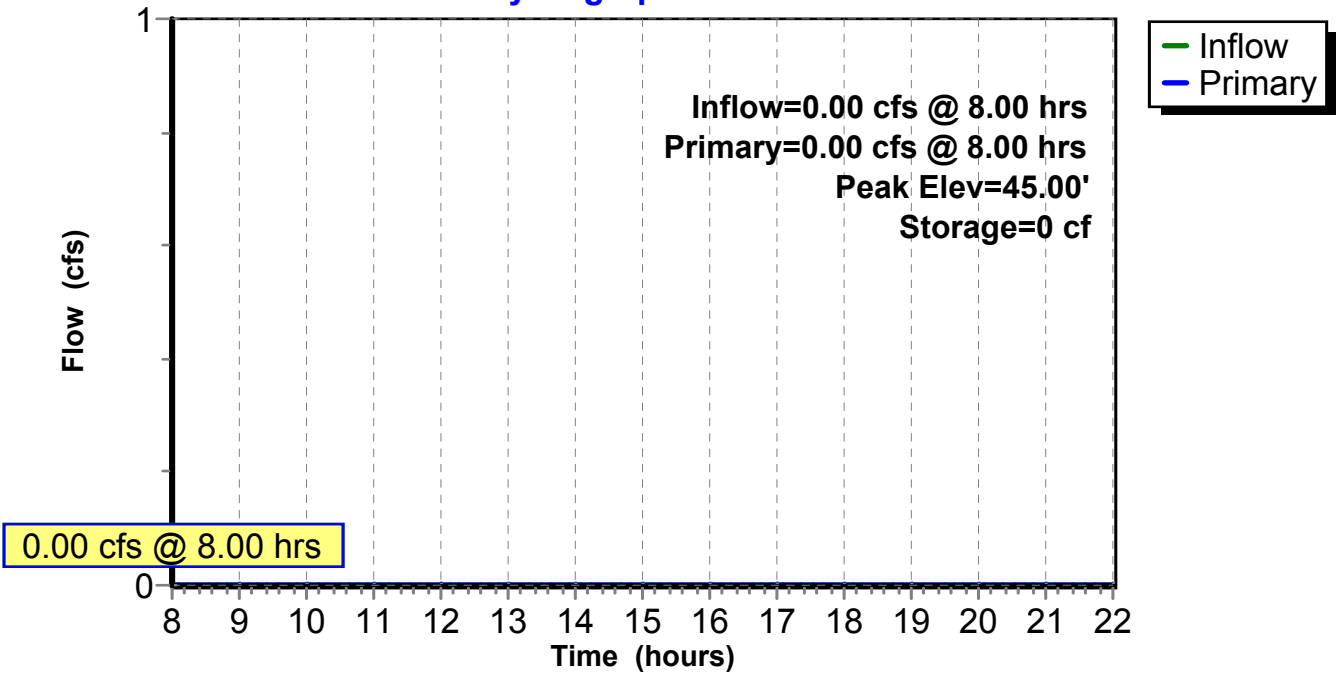
Primary OutFlow Max=0.00 cfs @ 8.00 hrs HW=45.00' TW=0.00' (Dynamic Tailwater)

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

2=Culvert (Controls 0.00 cfs)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



Summary for Pond 24P: CHAMBERS ON BALL FIELD FOR 48 INCH PIPE OVERFLOWS

Inflow = 149.96 cfs @ 12.54 hrs, Volume= 25.480 af
 Outflow = 118.45 cfs @ 12.95 hrs, Volume= 21.839 af, Atten= 21%, Lag= 24.787 min
 Discarded = 2.79 cfs @ 11.90 hrs, Volume= 2.395 af
 Primary = 5.96 cfs @ 12.95 hrs, Volume= 3.949 af
 Secondary = 109.70 cfs @ 12.95 hrs, Volume= 15.494 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 47.23' @ 12.95 hrs Surf.Area= 60,248 sf Storage= 301,147 cf

Plug-Flow detention time= 91.883 min calculated for 21.823 af (86% of inflow)
 Center-of-Mass det. time= 62.381 min (889.927 - 827.546)

Volume	Invert	Avail.Storage	Storage Description
#1A	39.00'	166,356 cf	147.08'W x 409.62'L x 9.75'H Field A 587,416 cf Overall - 171,527 cf Embedded = 415,889 cf x 40.0% Voids
#2A	39.75'	171,527 cf	ADS_StormTech MC-4500 +Cap x 1600 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 16 Rows of 100 Chambers Cap Storage= +35.7 cf x 2 x 16 rows = 1,142.4 cf
		337,883 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Secondary	44.50'	8.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Discarded	39.00'	2.000 in/hr Exfiltration over Surface area
#3	Primary	39.00'	9.0" Vert. Orifice/Grate C= 0.600

Discarded OutFlow Max=2.79 cfs @ 11.90 hrs HW=39.11' (Free Discharge)

↑**2=Exfiltration** (Exfiltration Controls 2.79 cfs)

Primary OutFlow Max=5.96 cfs @ 12.95 hrs HW=47.23' TW=0.00' (Dynamic Tailwater)

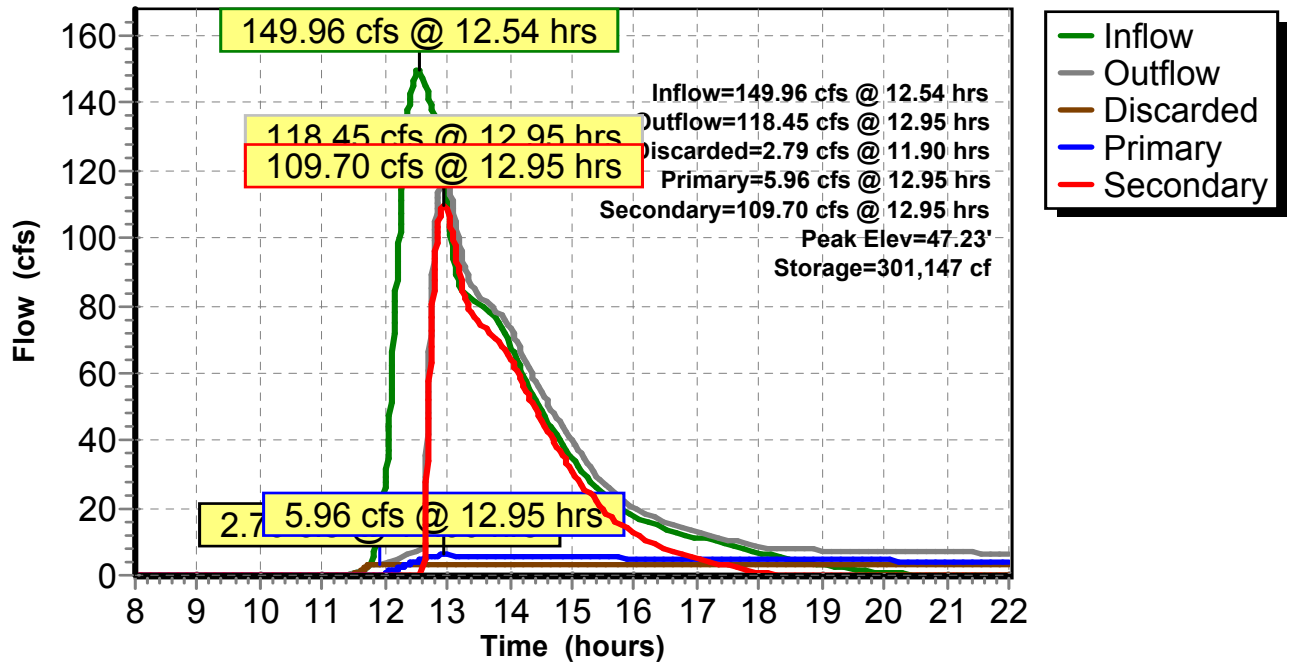
↑**3=Orifice/Grate** (Orifice Controls 5.96 cfs @ 13.49 fps)

Secondary OutFlow Max=109.68 cfs @ 12.95 hrs HW=47.23' TW=0.00' (Dynamic Tailwater)

↑**1=Sharp-Crested Rectangular Weir** (Weir Controls 109.68 cfs @ 5.40 fps)

Pond 24P: CHAMBERS ON BALL FIELD FOR 48 INCH PIPE OVERFLOWS

Hydrograph



Summary for Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 4.02" for 100_OLD_7.2 event
 Inflow = 703.22 cfs @ 12.54 hrs, Volume= 219.553 af
 Outflow = 703.22 cfs @ 12.54 hrs, Volume= 219.553 af, Atten= 0%, Lag= 0.000 min
 Primary = 553.26 cfs @ 12.54 hrs, Volume= 194.073 af
 Secondary = 149.96 cfs @ 12.54 hrs, Volume= 25.480 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 48.99' @ 12.54 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48
#3	Secondary	40.85'	48.0" Round Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 40.85' / 39.75' S= 0.0138 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf

Primary OutFlow Max=553.27 cfs @ 12.54 hrs HW=48.99' TW=38.27' (Dynamic Tailwater)

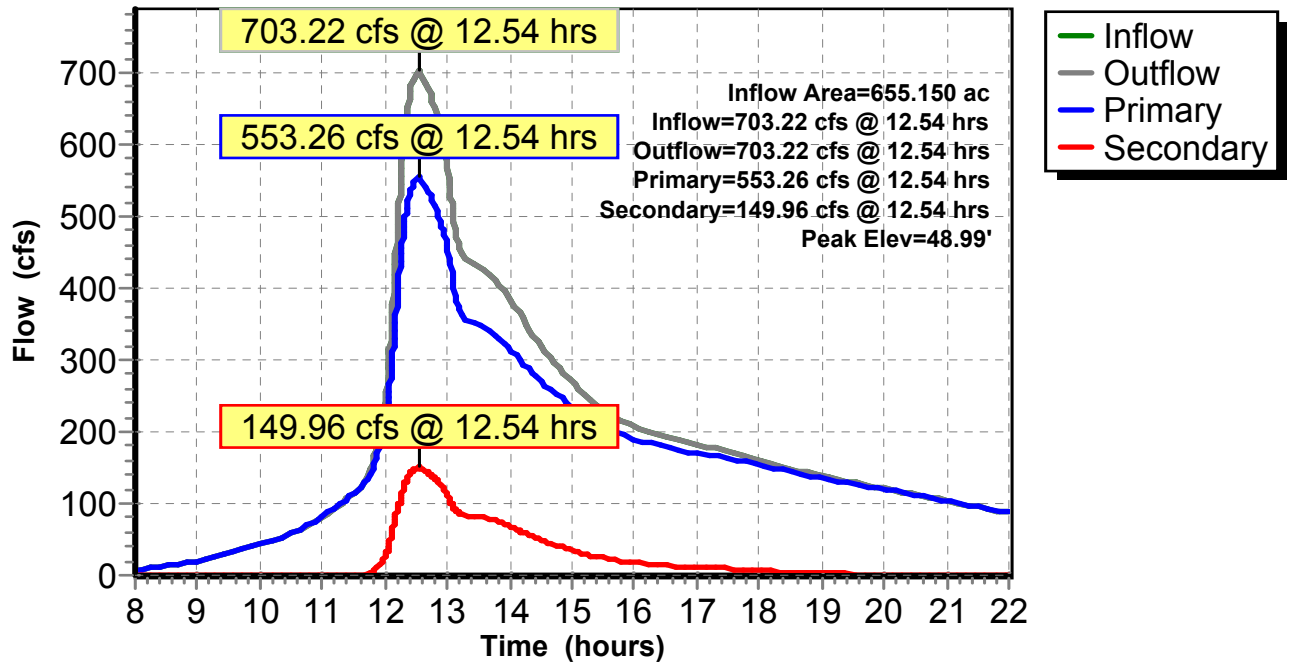
- ↑1=Culvert (Inlet Controls 553.27 cfs @ 14.18 fps)
- ↳2=WEIR WESTCH AVE (Controls 0.00 cfs)

Secondary OutFlow Max=149.96 cfs @ 12.54 hrs HW=48.99' TW=0.00' (Dynamic Tailwater)

- ↑3=Culvert (Inlet Controls 149.96 cfs @ 11.93 fps)

Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



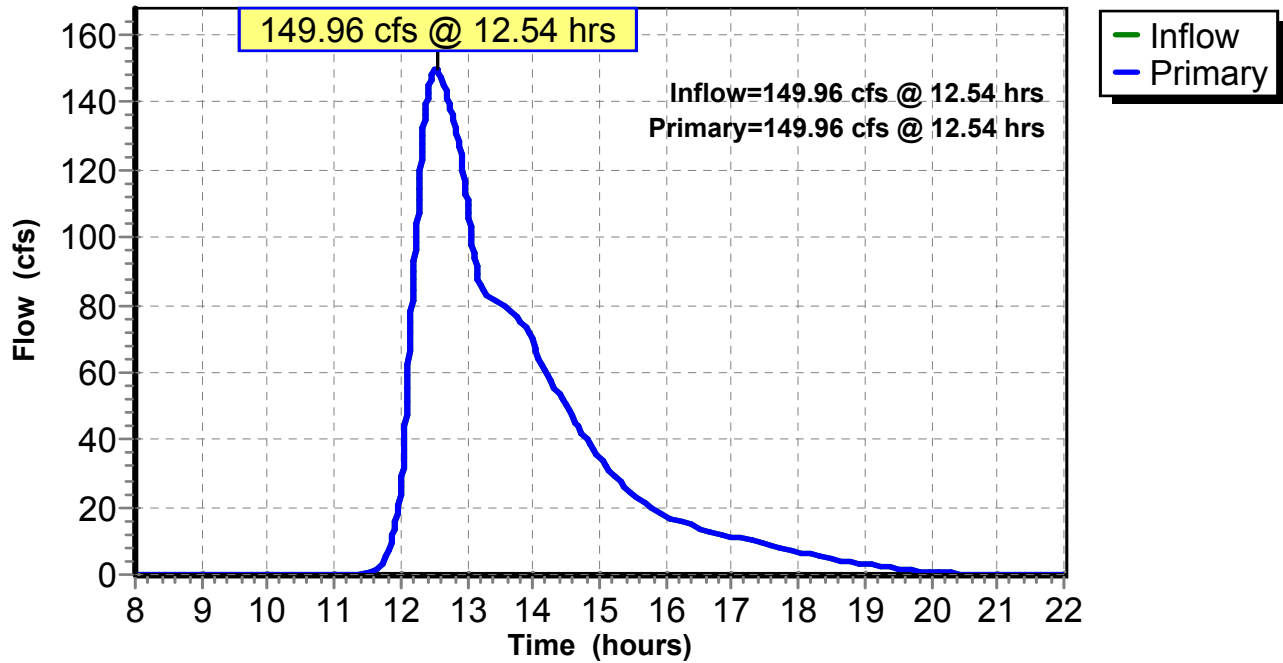
Summary for Link 26L: bypass

Inflow = 149.96 cfs @ 12.54 hrs, Volume= 25.480 af
Primary = 149.96 cfs @ 12.54 hrs, Volume= 25.480 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 26L: bypass

Hydrograph



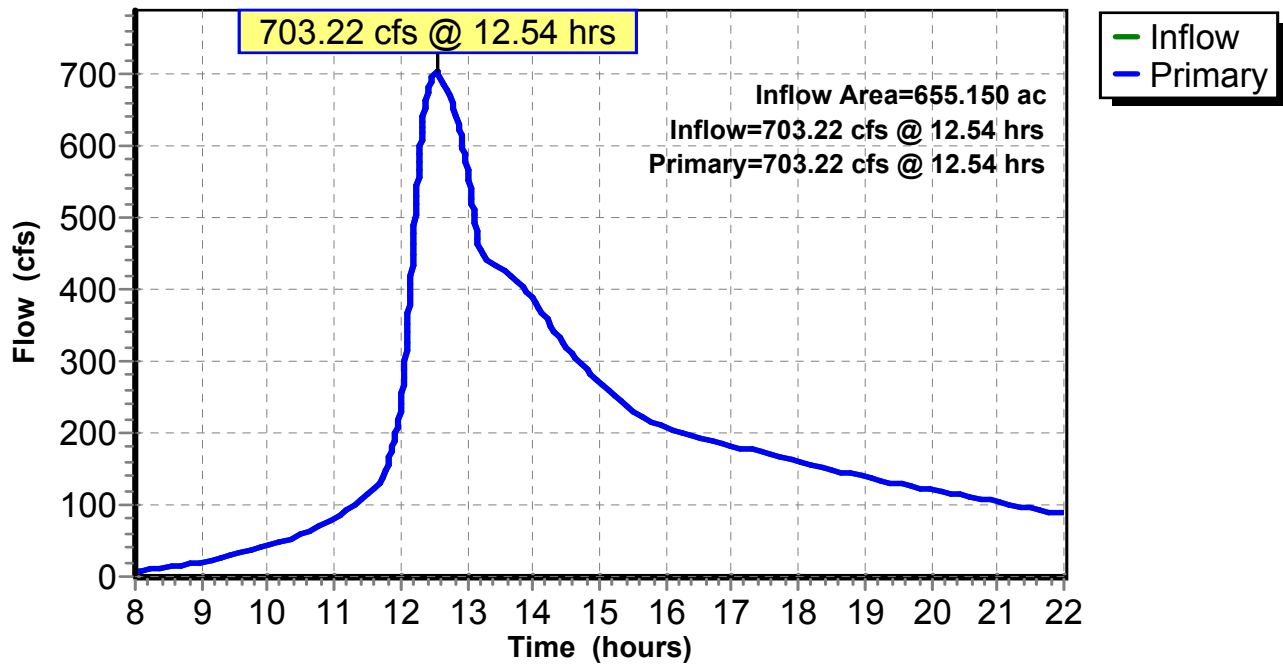
Summary for Link 33L: Join

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 4.02" for 100_OLD_7.2 event
Inflow = 703.22 cfs @ 12.54 hrs, Volume= 219.553 af
Primary = 703.22 cfs @ 12.54 hrs, Volume= 219.553 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 33L: Join

Hydrograph



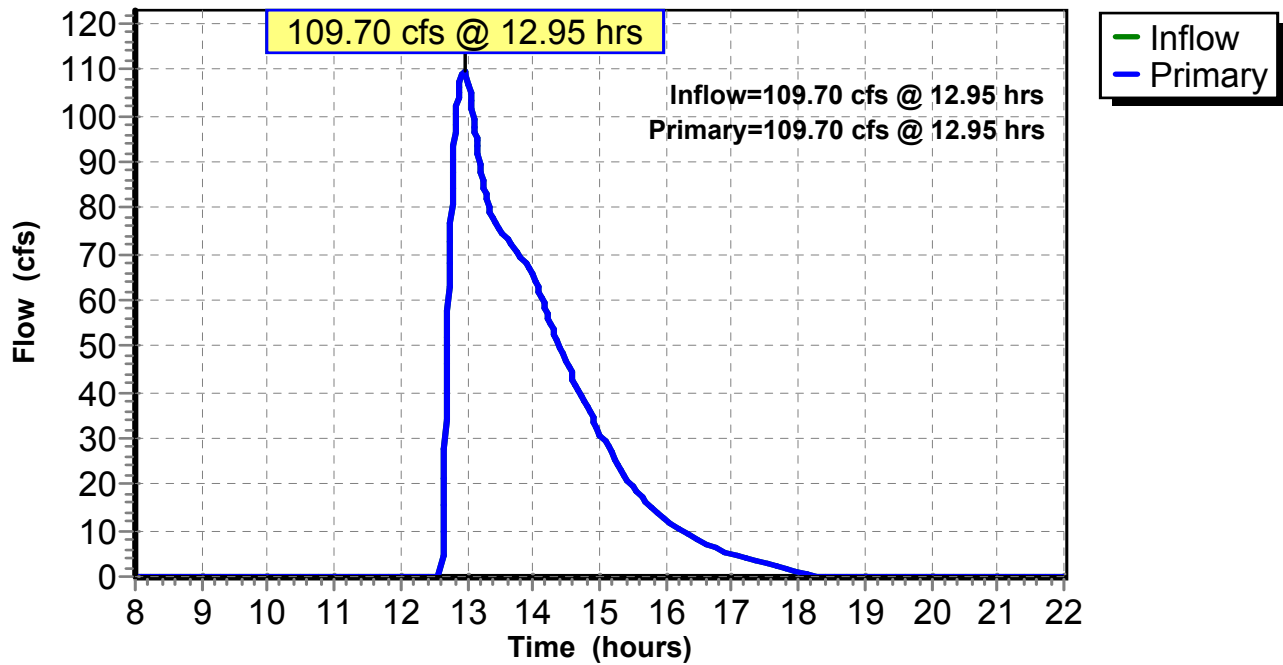
Summary for Link 36L: weir

Inflow = 109.70 cfs @ 12.95 hrs, Volume= 15.494 af
Primary = 109.70 cfs @ 12.95 hrs, Volume= 15.494 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 36L: weir

Hydrograph



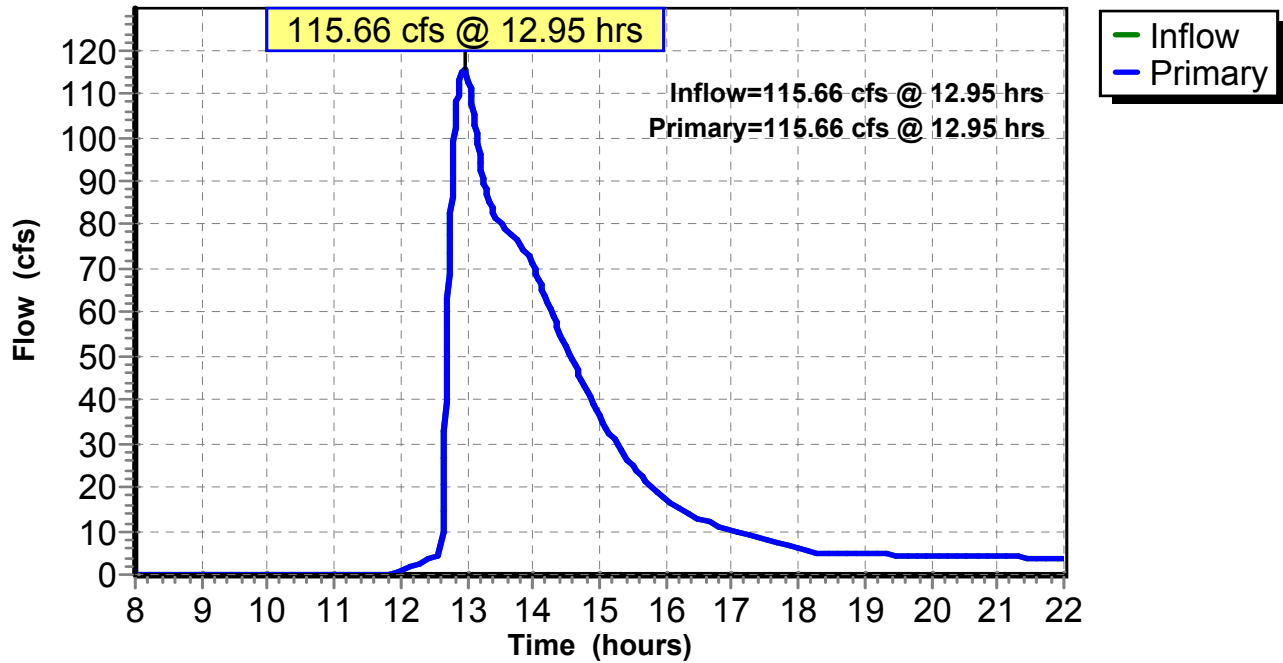
Summary for Link 37L: orifice

Inflow = 115.66 cfs @ 12.95 hrs, Volume= 19.443 af
Primary = 115.66 cfs @ 12.95 hrs, Volume= 19.443 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 37L: orifice

Hydrograph



Summary for Subcatchment A: WS A

Runoff = 285.42 cfs @ 12.42 hrs, Volume= 37.486 af, Depth> 7.57"

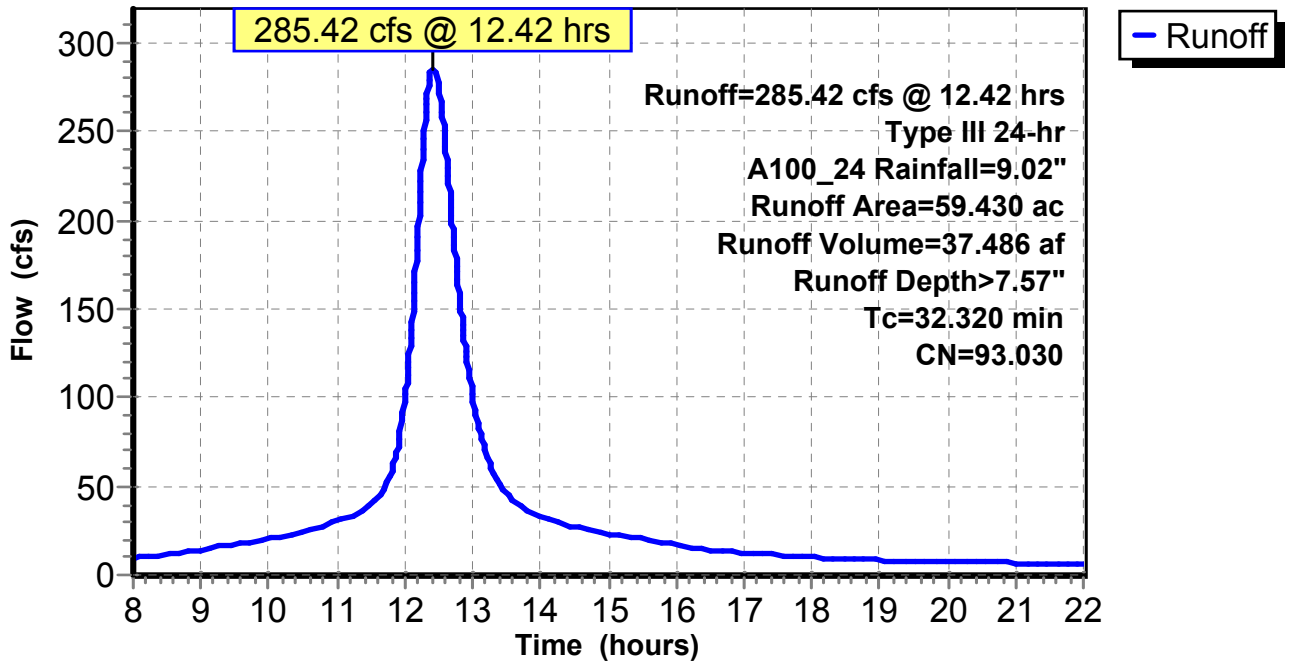
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



Summary for Subcatchment B: WS B

Runoff = 278.22 cfs @ 12.37 hrs, Volume= 33.842 af, Depth> 7.06"

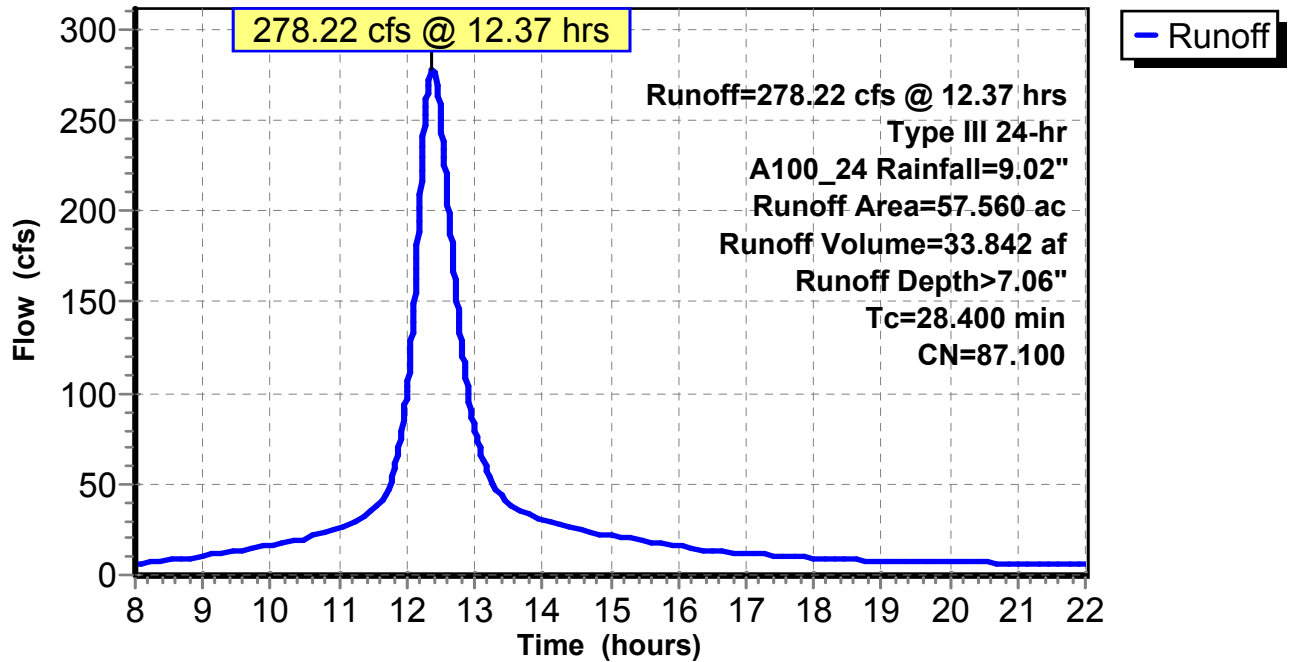
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



Summary for Subcatchment BH: HOTEL

Runoff = 70.94 cfs @ 12.42 hrs, Volume= 8.879 af, Depth> 6.96"

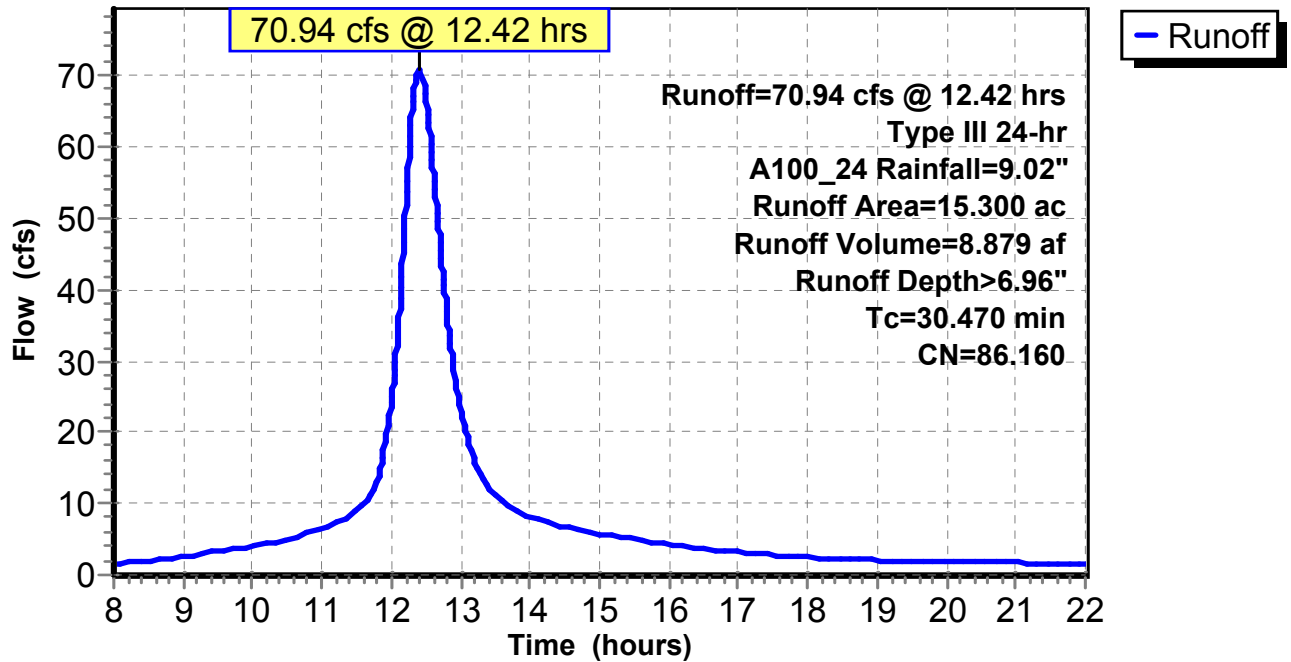
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
Type III 24-hr A100_24 Rainfall=9.02"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 37.16 cfs @ 12.85 hrs, Volume= 1.719 af
 Outflow = 35.91 cfs @ 12.90 hrs, Volume= 1.719 af, Atten= 3%, Lag= 2.957 min

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Max. Velocity= 4.27 fps, Min. Travel Time= 3.468 min
 Avg. Velocity = 1.28 fps, Avg. Travel Time= 11.521 min

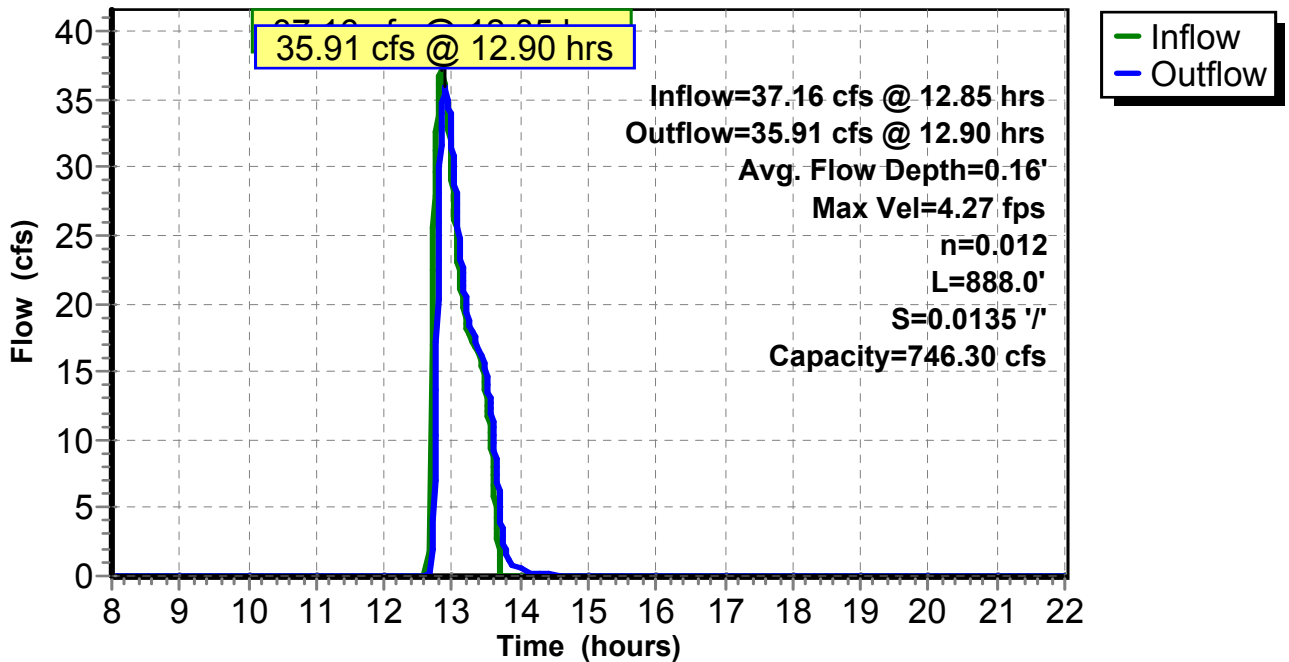
Peak Storage= 7,472 cf @ 12.90 hrs
 Average Depth at Peak Storage= 0.16'
 Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
 Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
 Length= 888.0' Slope= 0.0135 ' '
 Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 5.48" for A100_24 event
 Inflow = 1,027.04 cfs @ 12.60 hrs, Volume= 326.464 af
 Outflow = 1,026.48 cfs @ 12.61 hrs, Volume= 326.457 af, Atten= 0%, Lag= 0.712 min
 Primary = 1,026.48 cfs @ 12.61 hrs, Volume= 326.457 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 39.36' @ 12.61 hrs Surf.Area= 0.623 ac Storage= 1.237 af

Plug-Flow detention time= 0.389 min calculated for 326.224 af (100% of inflow)
 Center-of-Mass det. time= 0.379 min (882.860 - 882.481)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

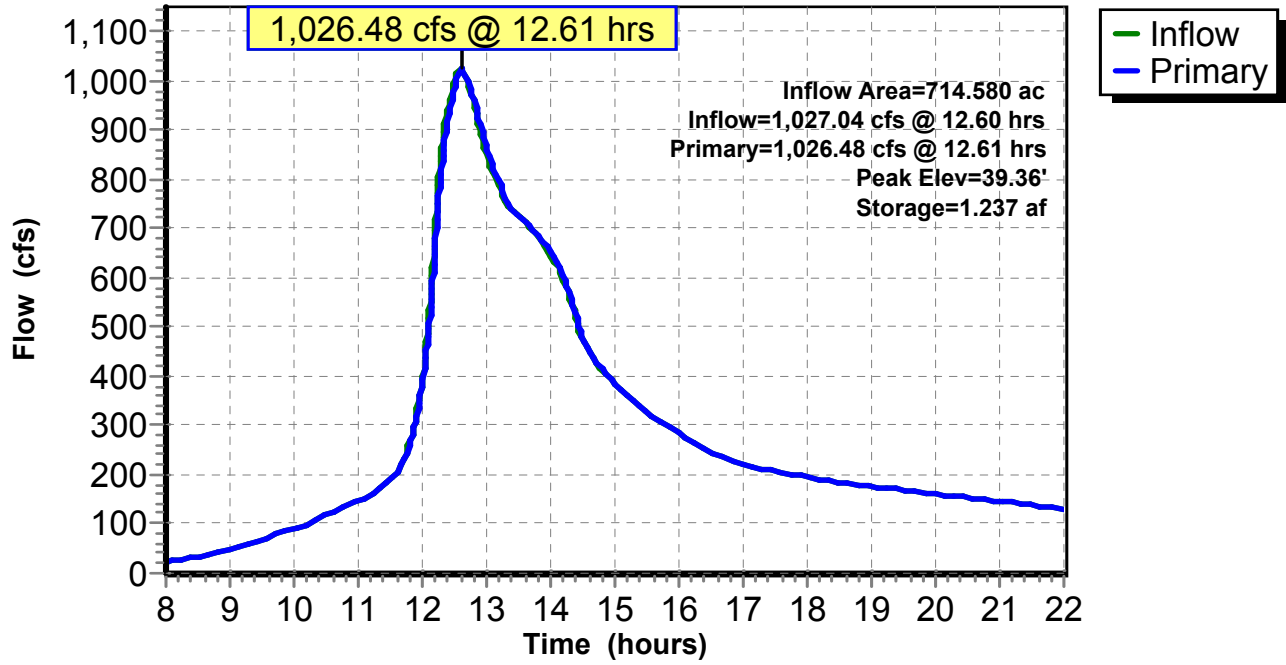
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=1,026.43 cfs @ 12.61 hrs HW=39.36' (Free Discharge)

- 1=Culvert (Barrel Controls 952.32 cfs @ 9.55 fps)
- 2=WEIR BOWMAN (Weir Controls 74.10 cfs @ 1.29 fps)

Pond 8P: BOWMAN FIELDS

Hydrograph



Summary for Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD INCREASE BERM

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 5.22" for A100_24 event
 Inflow = 652.20 cfs @ 12.84 hrs, Volume= 253.462 af
 Outflow = 652.14 cfs @ 12.85 hrs, Volume= 253.439 af, Atten= 0%, Lag= 0.578 min
 Primary = 614.97 cfs @ 12.85 hrs, Volume= 251.720 af
 Secondary = 37.16 cfs @ 12.85 hrs, Volume= 1.719 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 68.21' @ 12.85 hrs Surf.Area= 10,112 sf Storage= 45,014 cf

Plug-Flow detention time= 0.484 min calculated for 253.258 af (100% of inflow)
 Center-of-Mass det. time= 0.447 min (906.137 - 905.690)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	63,134 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686
70.00	10,112	40,448	63,134

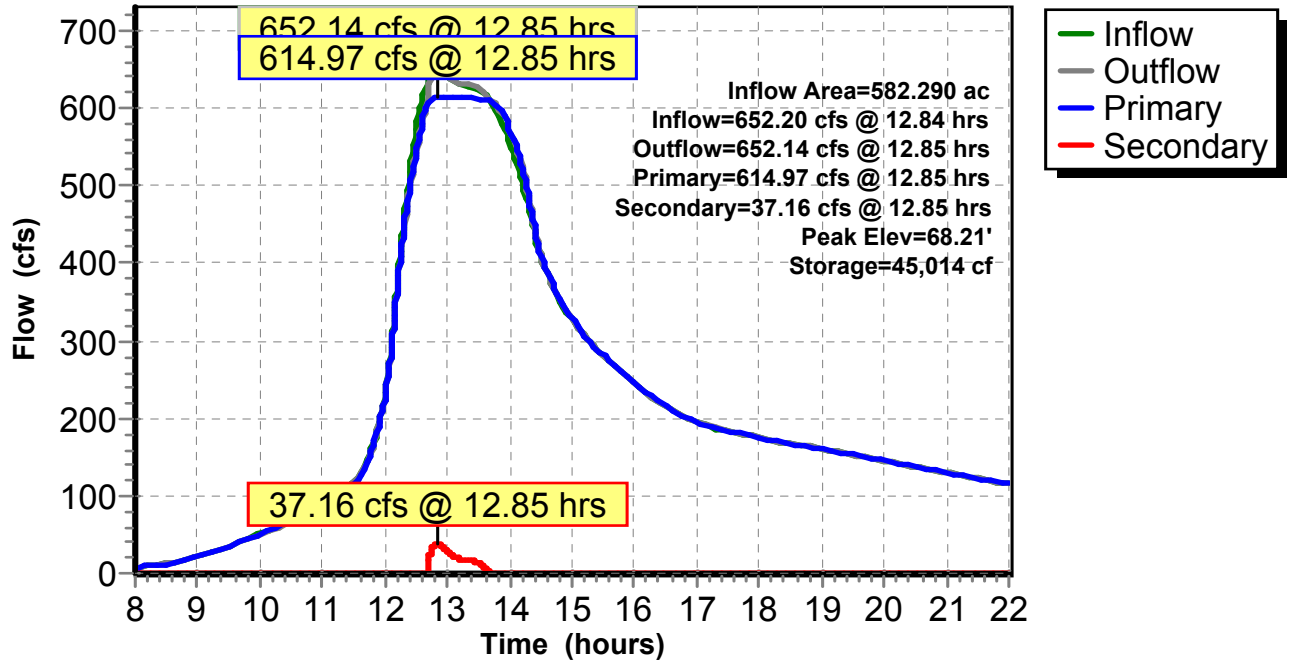
Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert X 2.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 55.13' / 37.90' S= 0.0206 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	68.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=614.97 cfs @ 12.85 hrs HW=68.21' TW=0.00' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 614.97 cfs @ 15.66 fps)

Secondary OutFlow Max=37.15 cfs @ 12.85 hrs HW=68.21' TW=58.16' (Dynamic Tailwater)
 ↑2=Asymmetrical Weir (Weir Controls 37.15 cfs @ 1.44 fps)

Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD INCREASE BERM

Hydrograph



Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 35.91 cfs @ 12.90 hrs, Volume= 1.719 af
 Outflow = 30.34 cfs @ 13.02 hrs, Volume= 1.719 af, Atten= 16%, Lag= 7.178 min
 Primary = 30.34 cfs @ 13.02 hrs, Volume= 1.719 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 50.02' @ 13.02 hrs Surf.Area= 4,080 sf Storage= 4,529 cf

Plug-Flow detention time= 1.252 min calculated for 1.719 af (100% of inflow)
 Center-of-Mass det. time= 1.150 min (790.241 - 789.091)

Volume	Invert	Avail.Storage	Storage Description
#1	45.00'	171,628 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	100	0	0
48.00	100	300	300
51.00	6,000	9,150	9,450
52.00	15,452	10,726	20,176
54.00	38,000	53,452	73,628
56.00	60,000	98,000	171,628

Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	45.00'	24.0" Round Culvert L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 45.00' / 44.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

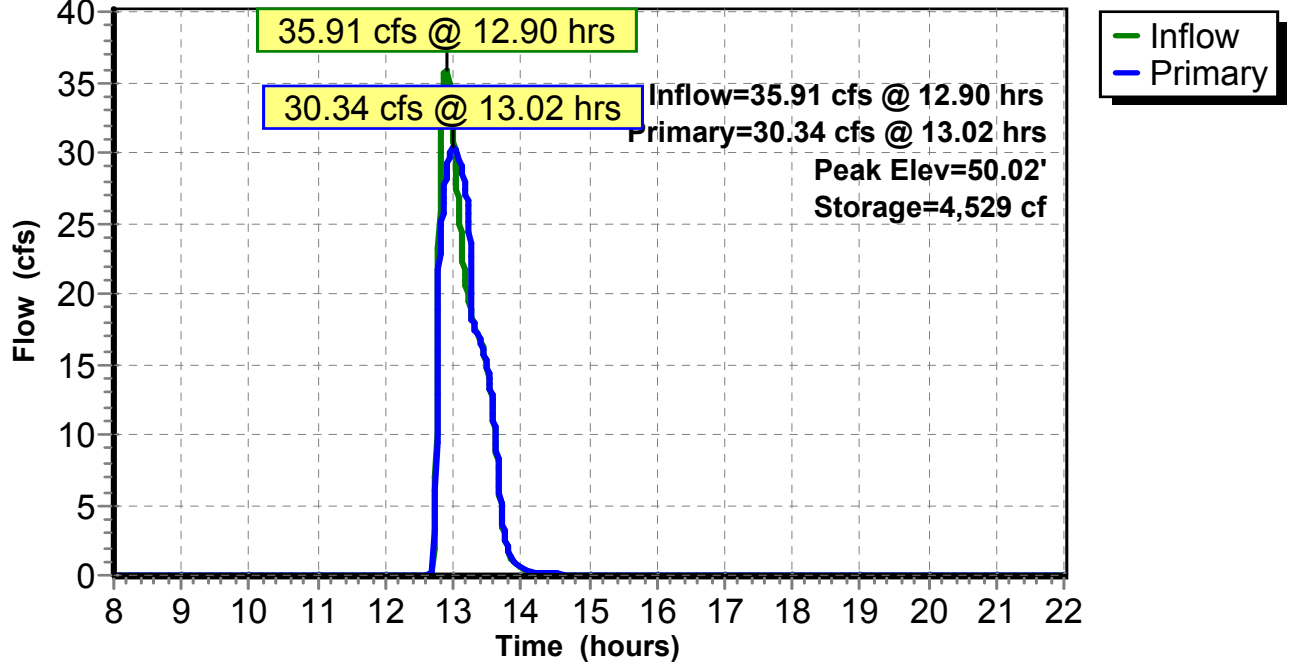
Primary OutFlow Max=30.34 cfs @ 13.02 hrs HW=50.02' TW=0.00' (Dynamic Tailwater)

↑ **1=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

└ **2=Culvert** (Inlet Controls 30.34 cfs @ 9.66 fps)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



Summary for Pond 24P: CHAMBERS ON BALL FIELD FOR 48 INCH PIPE OVERFLOWS

Inflow = 193.13 cfs @ 12.48 hrs, Volume= 42.428 af
 Outflow = 175.19 cfs @ 12.84 hrs, Volume= 37.760 af, Atten= 9%, Lag= 21.216 min
 Discarded = 2.79 cfs @ 11.56 hrs, Volume= 2.514 af
 Primary = 6.30 cfs @ 12.84 hrs, Volume= 4.279 af
 Secondary = 166.09 cfs @ 12.84 hrs, Volume= 30.967 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 48.15' @ 12.84 hrs Surf.Area= 60,248 sf Storage= 323,543 cf

Plug-Flow detention time= 62.315 min calculated for 37.733 af (89% of inflow)
 Center-of-Mass det. time= 33.100 min (874.069 - 840.969)

Volume	Invert	Avail.Storage	Storage Description
#1A	39.00'	166,356 cf	147.08'W x 409.62'L x 9.75'H Field A 587,416 cf Overall - 171,527 cf Embedded = 415,889 cf x 40.0% Voids
#2A	39.75'	171,527 cf	ADS_StormTech MC-4500 +Capx 1600 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 16 Rows of 100 Chambers Cap Storage= +35.7 cf x 2 x 16 rows = 1,142.4 cf
		337,883 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Secondary	44.50'	8.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Discarded	39.00'	2.000 in/hr Exfiltration over Surface area
#3	Primary	39.00'	9.0" Vert. Orifice/Grate C= 0.600

Discarded OutFlow Max=2.79 cfs @ 11.56 hrs HW=39.10' (Free Discharge)

↑**2=Exfiltration** (Exfiltration Controls 2.79 cfs)

Primary OutFlow Max=6.30 cfs @ 12.84 hrs HW=48.15' TW=0.00' (Dynamic Tailwater)

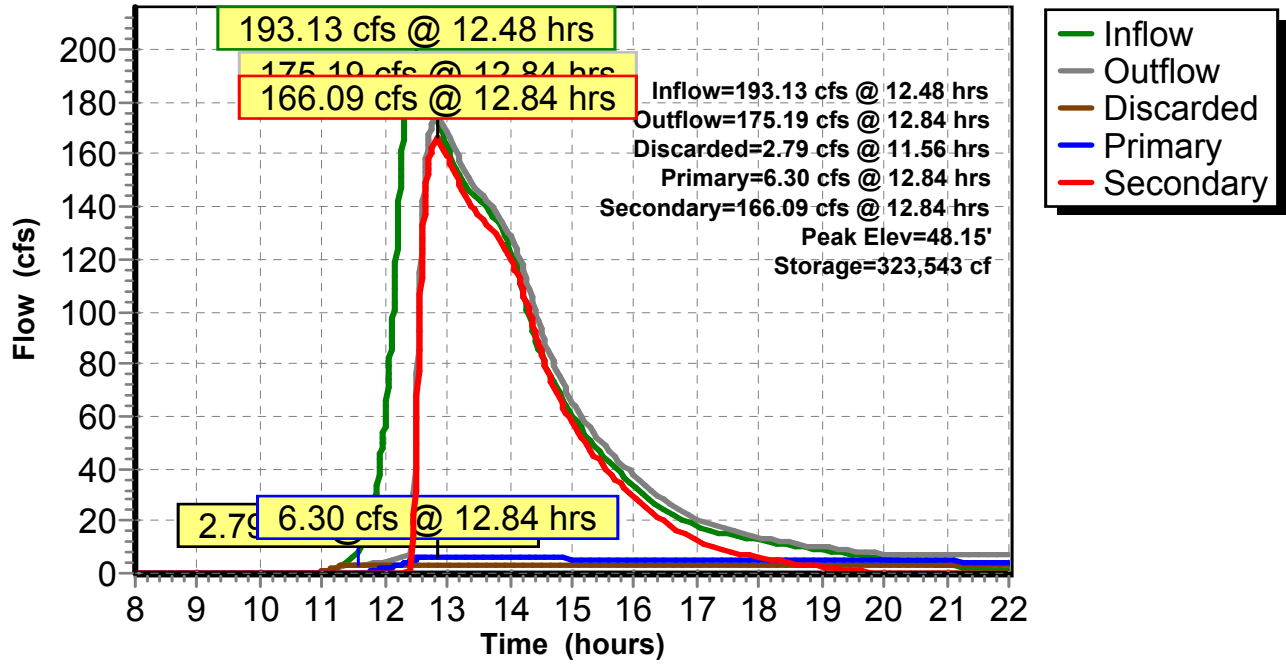
↑**3=Orifice/Grate** (Orifice Controls 6.30 cfs @ 14.27 fps)

Secondary OutFlow Max=166.08 cfs @ 12.84 hrs HW=48.15' TW=0.00' (Dynamic Tailwater)

↑**1=Sharp-Crested Rectangular Weir**(Weir Controls 166.08 cfs @ 6.25 fps)

Pond 24P: CHAMBERS ON BALL FIELD FOR 48 INCH PIPE OVERFLOWS

Hydrograph



Summary for Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 5.42" for A100_24 event
 Inflow = 859.25 cfs @ 12.47 hrs, Volume= 296.160 af
 Outflow = 859.25 cfs @ 12.47 hrs, Volume= 296.160 af, Atten= 0%, Lag= 0.000 min
 Primary = 666.10 cfs @ 12.47 hrs, Volume= 253.732 af
 Secondary = 193.13 cfs @ 12.48 hrs, Volume= 42.428 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 53.04' @ 12.48 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48
#3	Secondary	40.85'	48.0" Round Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 40.85' / 39.75' S= 0.0138 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf

Primary OutFlow Max=665.94 cfs @ 12.47 hrs HW=53.04' TW=39.24' (Dynamic Tailwater)

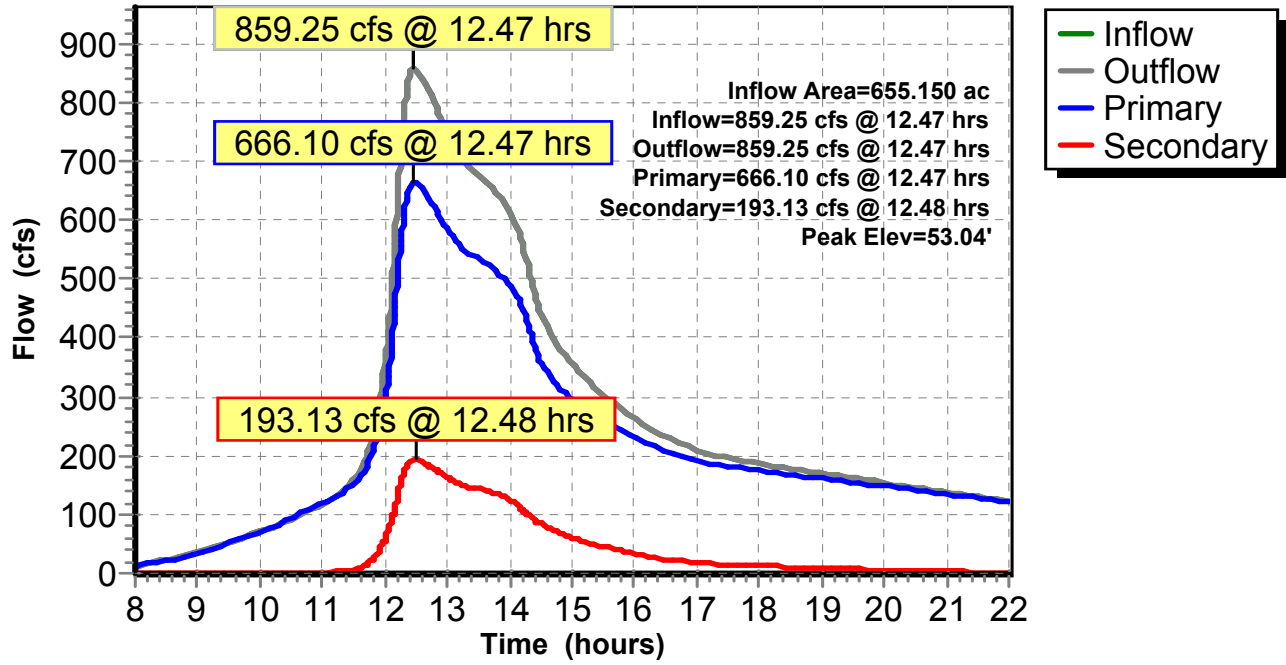
↑1=Culvert (Inlet Controls 665.94 cfs @ 17.07 fps)
 ↓2=WEIR WESTCH AVE (Controls 0.00 cfs)

Secondary OutFlow Max=193.13 cfs @ 12.48 hrs HW=53.04' TW=0.00' (Dynamic Tailwater)

↑3=Culvert (Inlet Controls 193.13 cfs @ 15.37 fps)

Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



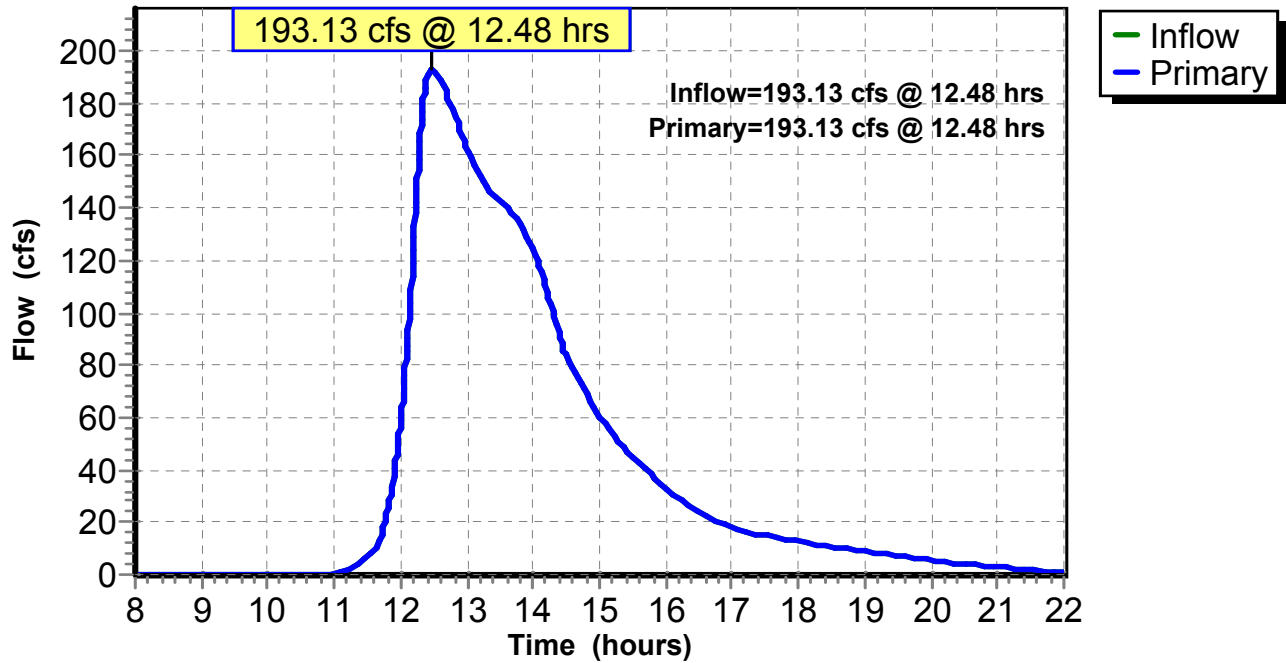
Summary for Link 26L: bypass

Inflow = 193.13 cfs @ 12.48 hrs, Volume= 42.428 af
Primary = 193.13 cfs @ 12.48 hrs, Volume= 42.428 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 26L: bypass

Hydrograph



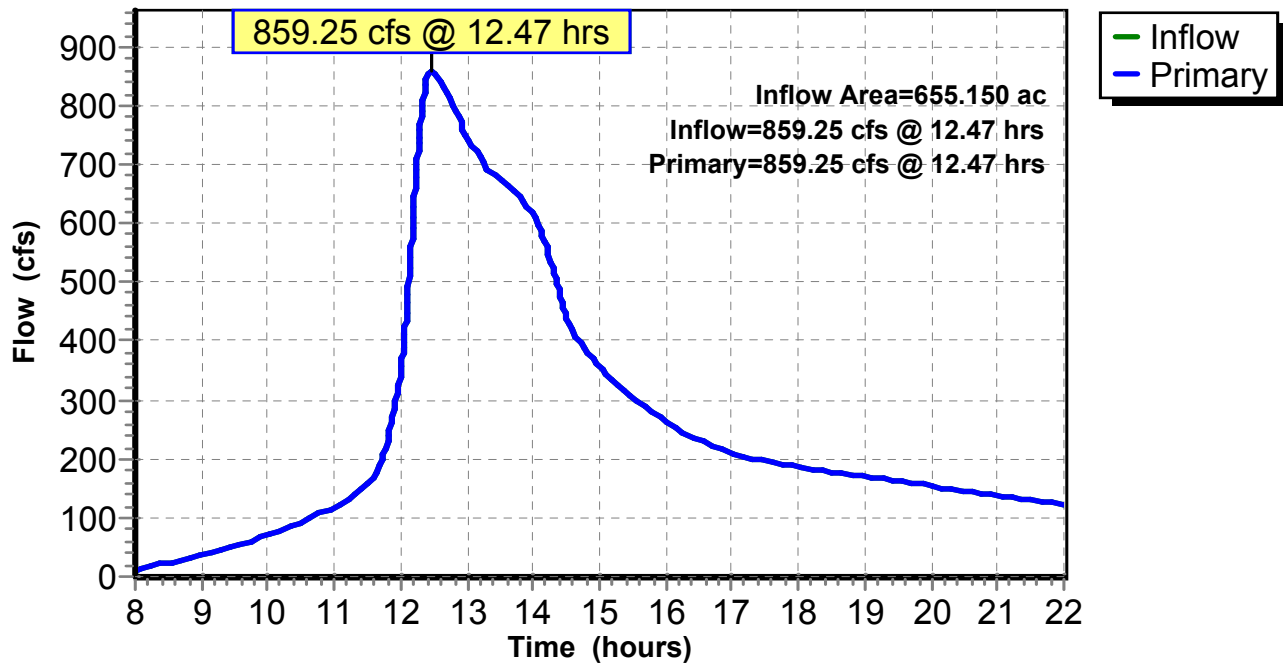
Summary for Link 33L: Join

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 5.42" for A100_24 event
Inflow = 859.25 cfs @ 12.47 hrs, Volume= 296.160 af
Primary = 859.25 cfs @ 12.47 hrs, Volume= 296.160 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 33L: Join

Hydrograph



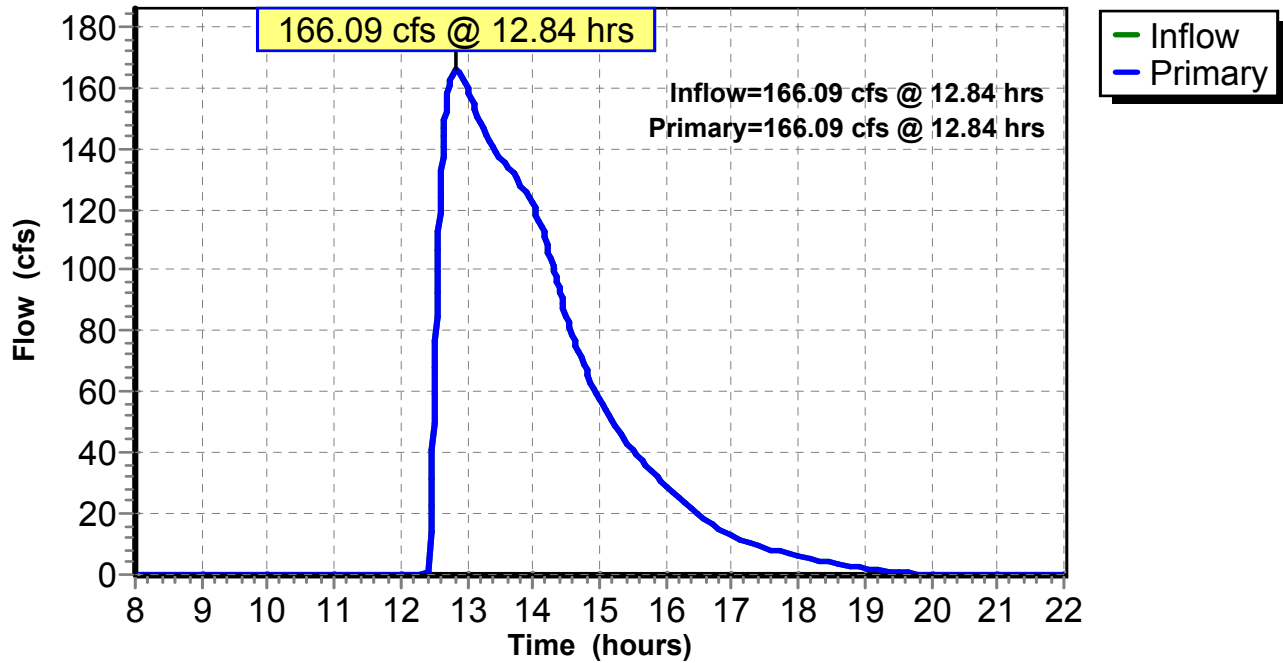
Summary for Link 36L: weir

Inflow = 166.09 cfs @ 12.84 hrs, Volume= 30.967 af
Primary = 166.09 cfs @ 12.84 hrs, Volume= 30.967 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 36L: weir

Hydrograph



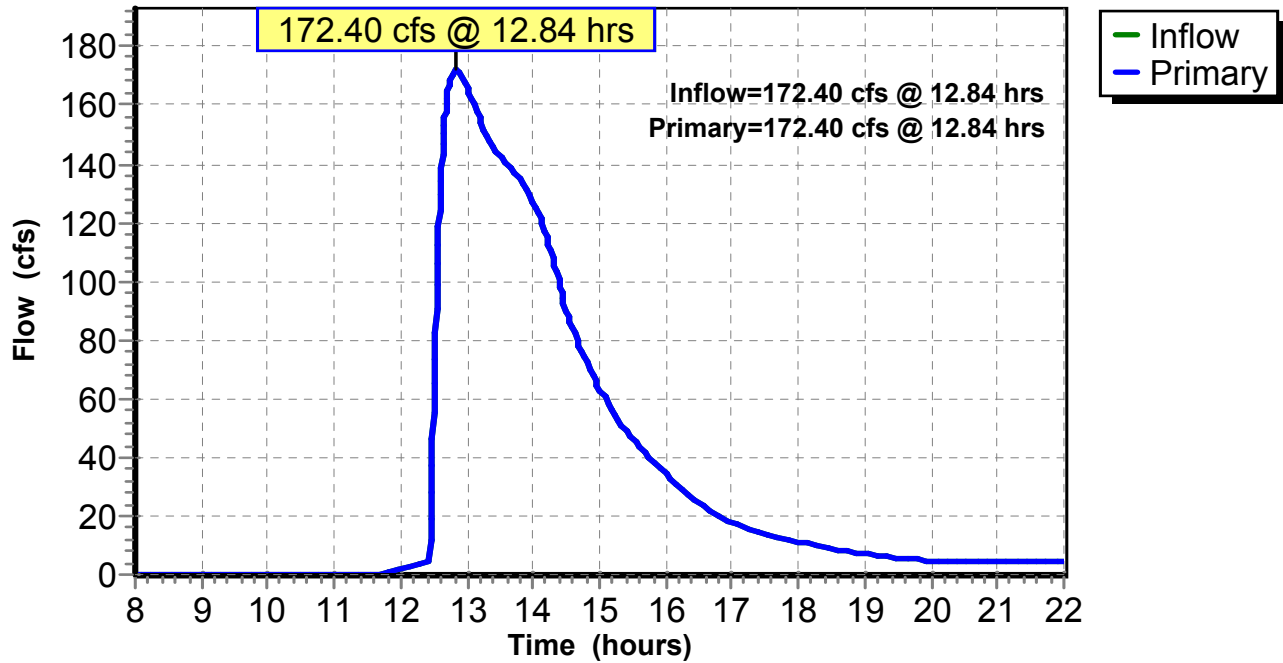
Summary for Link 37L: orifice

Inflow = 172.40 cfs @ 12.84 hrs, Volume= 35.246 af
Primary = 172.40 cfs @ 12.84 hrs, Volume= 35.246 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 37L: orifice

Hydrograph



Summary for Subcatchment A: WS A

Runoff = 257.02 cfs @ 11.17 hrs, Volume= 31.896 af, Depth> 6.44"

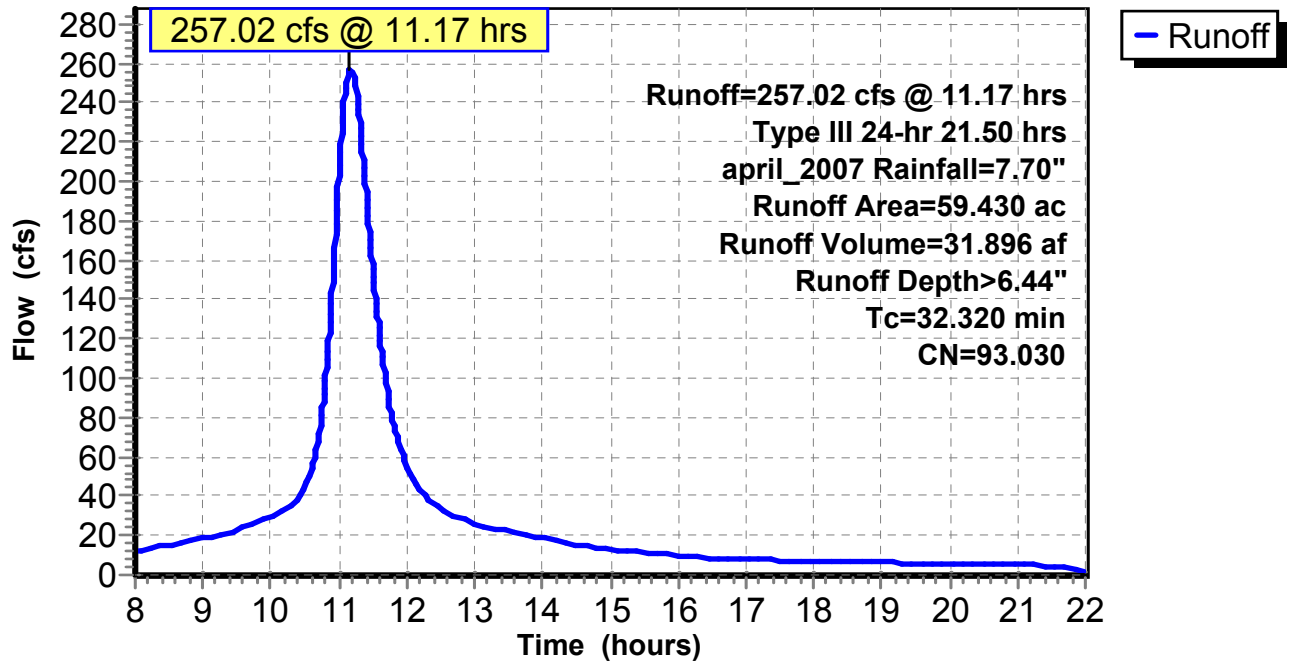
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



Summary for Subcatchment B: WS B

Runoff = 247.26 cfs @ 11.14 hrs, Volume= 28.546 af, Depth> 5.95"

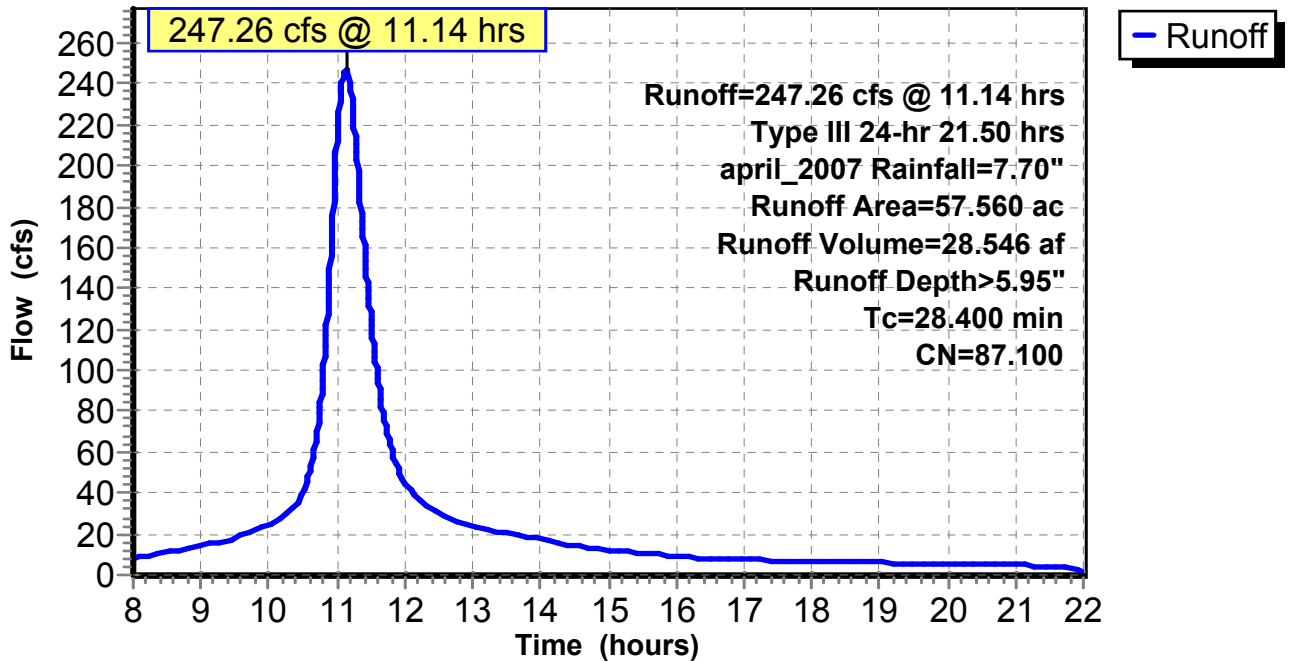
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



Summary for Subcatchment BH: HOTEL

Runoff = 62.73 cfs @ 11.14 hrs, Volume= 7.482 af, Depth> 5.87"

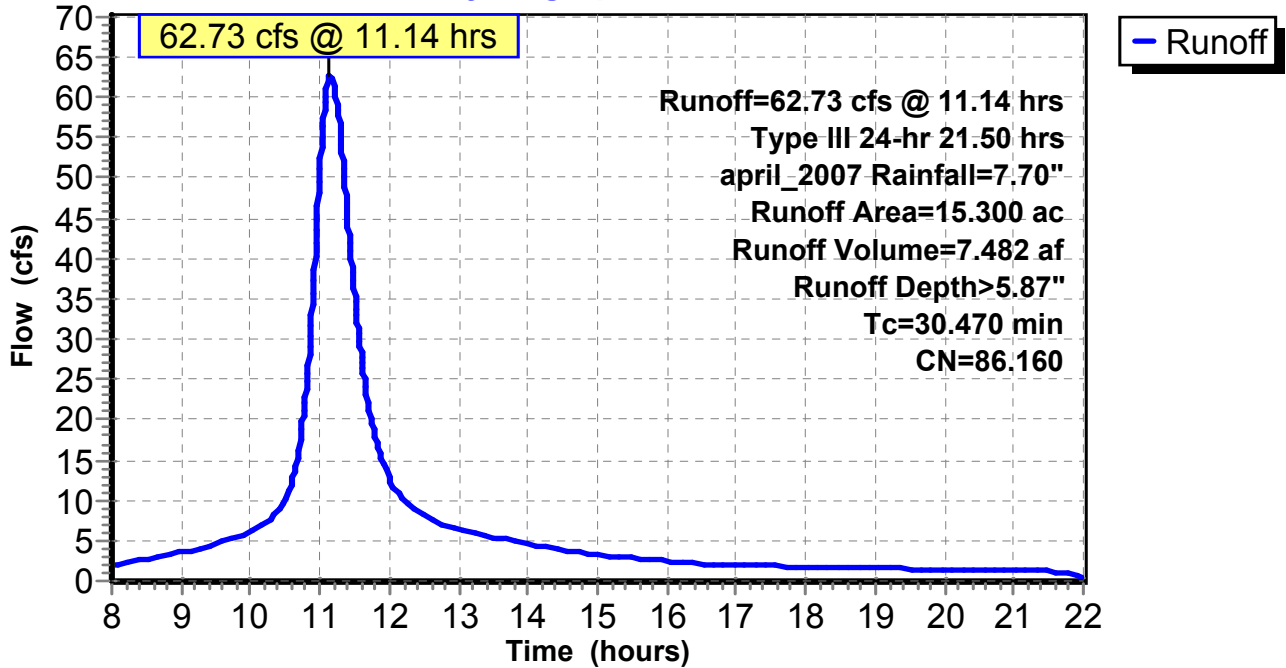
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
Type III 24-hr 21.50 hrs april_2007 Rainfall=7.70"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.000 min
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.000 min

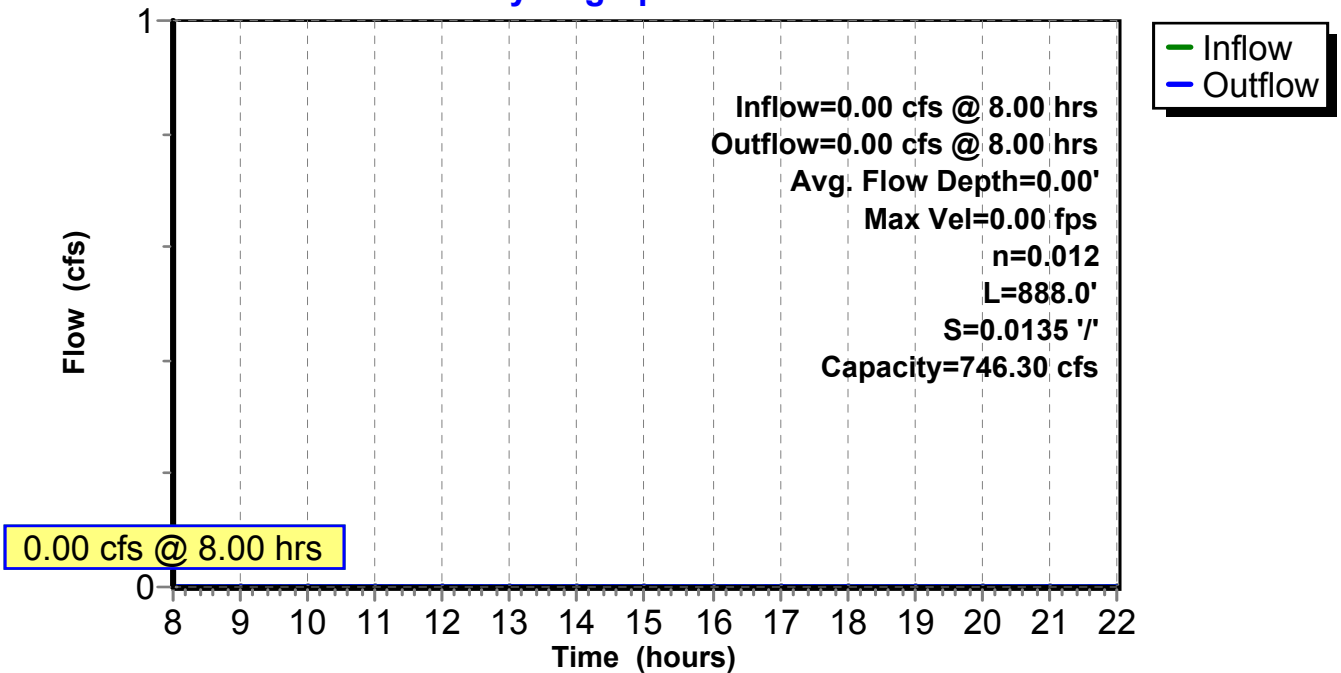
Peak Storage= 0 cf @ 8.00 hrs
 Average Depth at Peak Storage= 0.00'
 Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
 Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
 Length= 888.0' Slope= 0.0135 ' '
 Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 4.66" for april_2007 event
 Inflow = 862.25 cfs @ 11.21 hrs, Volume= 277.544 af
 Outflow = 858.16 cfs @ 11.25 hrs, Volume= 277.538 af, Atten= 0%, Lag= 2.181 min
 Primary = 858.16 cfs @ 11.25 hrs, Volume= 277.538 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 38.81' @ 11.25 hrs Surf.Area= 0.479 ac Storage= 0.932 af

Plug-Flow detention time= 0.304 min calculated for 277.538 af (100% of inflow)
 Center-of-Mass det. time= 0.294 min (834.845 - 834.551)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

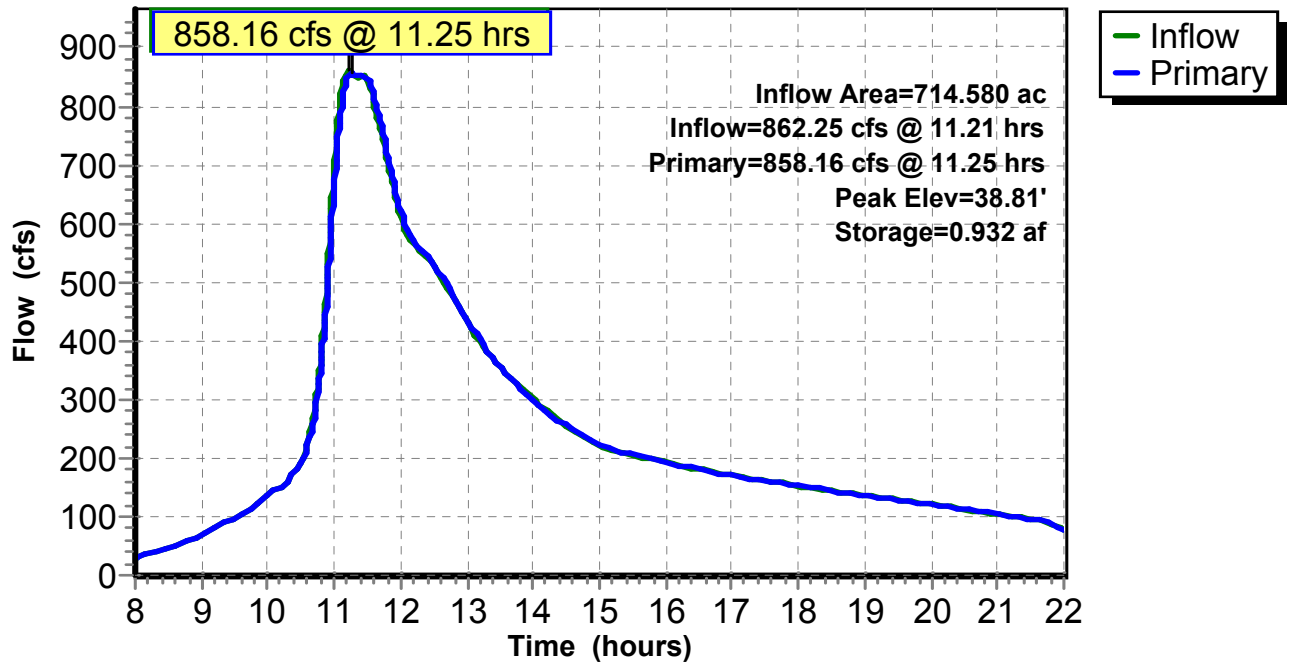
Primary OutFlow Max=858.09 cfs @ 11.25 hrs HW=38.80' (Free Discharge)

1=Culvert (Barrel Controls 858.09 cfs @ 9.23 fps)

2=WEIR BOWMAN (Controls 0.00 cfs)

Pond 8P: BOWMAN FIELDS

Hydrograph



Summary for Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD INCREASE BERM

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 4.44" for april_2007 event
 Inflow = 575.83 cfs @ 11.52 hrs, Volume= 215.621 af
 Outflow = 570.39 cfs @ 11.61 hrs, Volume= 215.607 af, Atten= 1%, Lag= 4.945 min
 Primary = 570.39 cfs @ 11.61 hrs, Volume= 215.607 af
 Secondary = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 66.73' @ 11.61 hrs Surf.Area= 10,112 sf Storage= 30,067 cf

Plug-Flow detention time= 0.260 min calculated for 215.453 af (100% of inflow)
 Center-of-Mass det. time= 0.231 min (858.523 - 858.292)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	63,134 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686
70.00	10,112	40,448	63,134

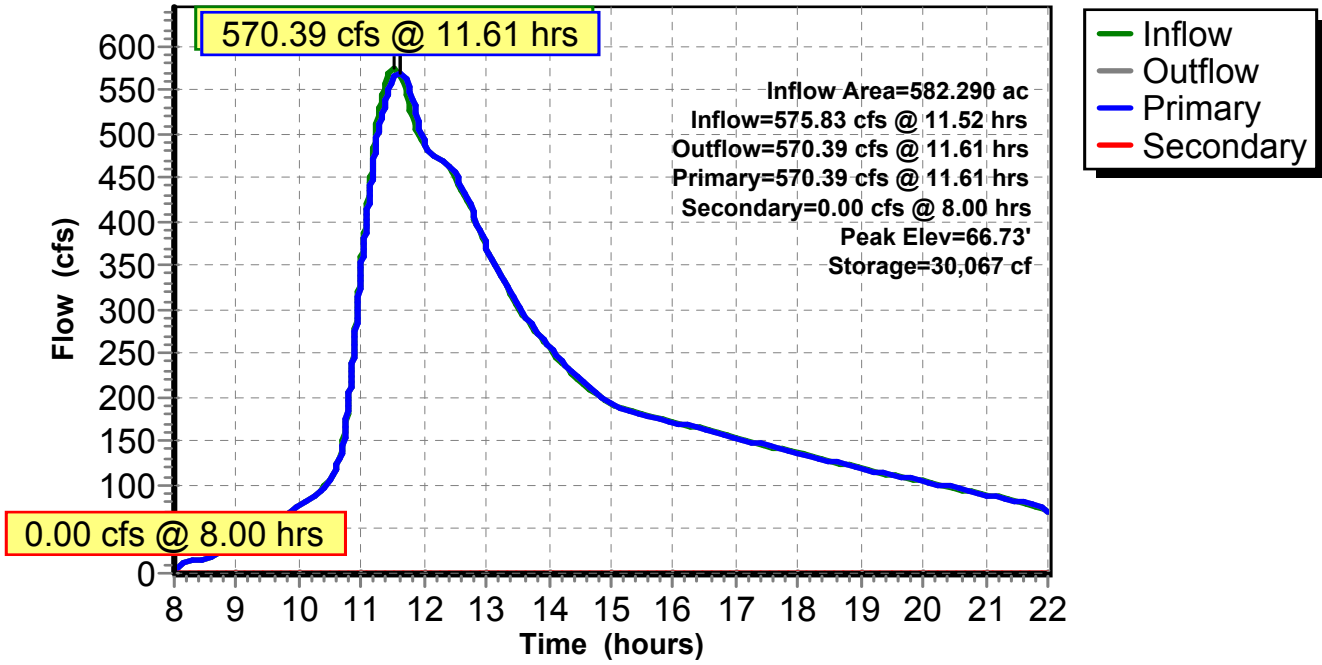
Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert X 2.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 55.13' / 37.90' S= 0.0206 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	68.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=570.37 cfs @ 11.61 hrs HW=66.73' TW=0.00' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 570.37 cfs @ 14.52 fps)

Secondary OutFlow Max=0.00 cfs @ 8.00 hrs HW=56.00' TW=58.00' (Dynamic Tailwater)
 ↑2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD INCREASE BERM

Hydrograph



Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min
 Primary = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 45.00' @ 8.00 hrs Surf.Area= 100 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	45.00'	171,628 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	100	0	0
48.00	100	300	300
51.00	6,000	9,150	9,450
52.00	15,452	10,726	20,176
54.00	38,000	53,452	73,628
56.00	60,000	98,000	171,628

Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	45.00'	24.0" Round Culvert L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 45.00' / 44.00' S= 0.0100 '/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

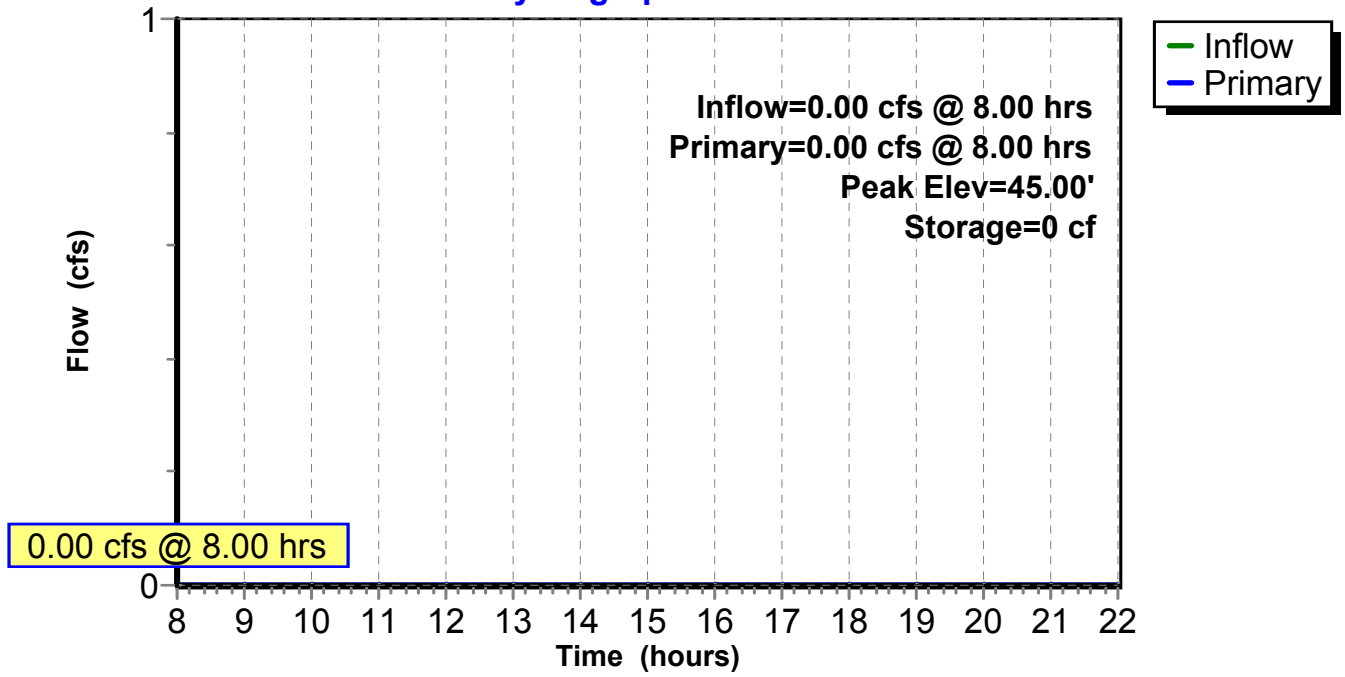
Primary OutFlow Max=0.00 cfs @ 8.00 hrs HW=45.00' TW=0.00' (Dynamic Tailwater)

↑1=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

└2=Culvert (Controls 0.00 cfs)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



Summary for Pond 24P: CHAMBERS ON BALL FIELD FOR 48 INCH PIPE OVERFLOWS

Inflow = 170.23 cfs @ 11.24 hrs, Volume= 31.062 af
 Outflow = 142.39 cfs @ 11.66 hrs, Volume= 27.785 af, Atten= 16%, Lag= 25.082 min
 Discarded = 2.79 cfs @ 10.59 hrs, Volume= 2.710 af
 Primary = 6.11 cfs @ 11.66 hrs, Volume= 4.448 af
 Secondary = 133.49 cfs @ 11.66 hrs, Volume= 20.626 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 47.63' @ 11.66 hrs Surf.Area= 60,248 sf Storage= 310,875 cf

Plug-Flow detention time= 86.019 min calculated for 27.765 af (89% of inflow)
 Center-of-Mass det. time= 61.043 min (817.452 - 756.409)

Volume	Invert	Avail.Storage	Storage Description
#1A	39.00'	166,356 cf	147.08'W x 409.62'L x 9.75'H Field A 587,416 cf Overall - 171,527 cf Embedded = 415,889 cf x 40.0% Voids
#2A	39.75'	171,527 cf	ADS_StormTech MC-4500 +Cap x 1600 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 16 Rows of 100 Chambers Cap Storage= +35.7 cf x 2 x 16 rows = 1,142.4 cf
		337,883 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Secondary	44.50'	8.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Discarded	39.00'	2.000 in/hr Exfiltration over Surface area
#3	Primary	39.00'	9.0" Vert. Orifice/Grate C= 0.600

Discarded OutFlow Max=2.79 cfs @ 10.59 hrs HW=39.10' (Free Discharge)

↑**2=Exfiltration** (Exfiltration Controls 2.79 cfs)

Primary OutFlow Max=6.11 cfs @ 11.66 hrs HW=47.63' TW=0.00' (Dynamic Tailwater)

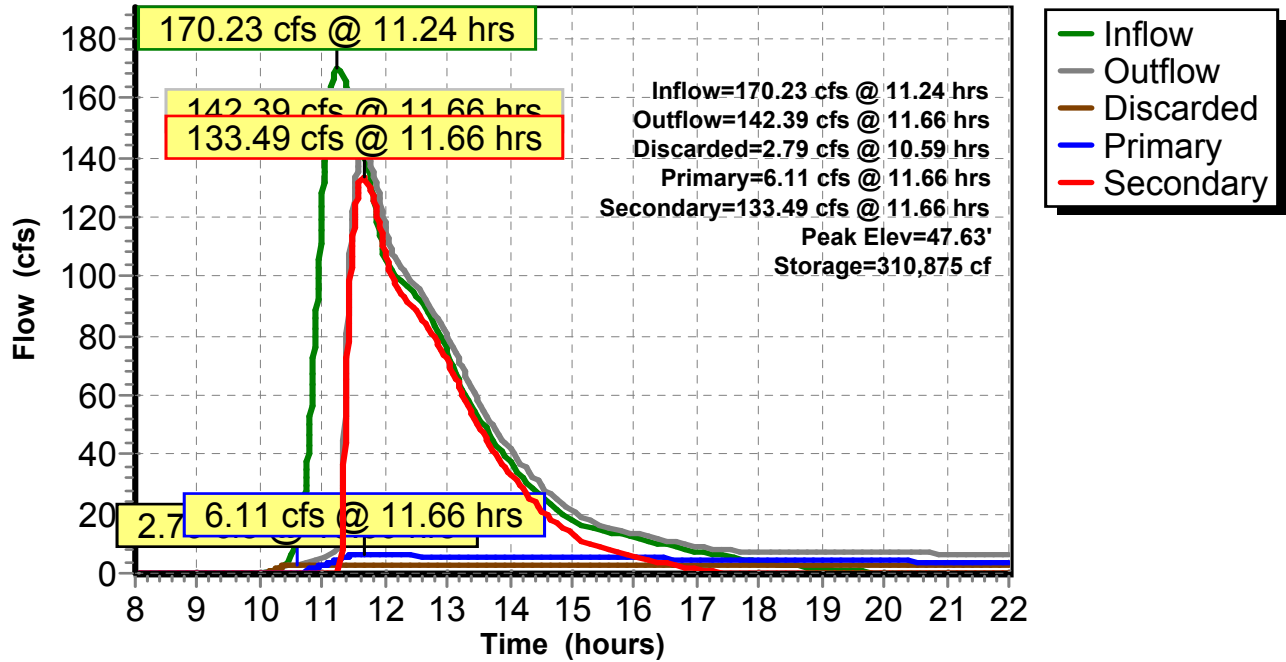
↑**3=Orifice/Grate** (Orifice Controls 6.11 cfs @ 13.83 fps)

Secondary OutFlow Max=133.48 cfs @ 11.66 hrs HW=47.63' TW=0.00' (Dynamic Tailwater)

↑**1=Sharp-Crested Rectangular Weir**(Weir Controls 133.48 cfs @ 5.78 fps)

Pond 24P: CHAMBERS ON BALL FIELD FOR 48 INCH PIPE OVERFLOWS

Hydrograph



Summary for Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 4.61" for april_2007 event
 Inflow = 775.74 cfs @ 11.24 hrs, Volume= 251.636 af
 Outflow = 775.74 cfs @ 11.24 hrs, Volume= 251.636 af, Atten= 0%, Lag= 0.000 min
 Primary = 605.51 cfs @ 11.24 hrs, Volume= 220.573 af
 Secondary = 170.23 cfs @ 11.24 hrs, Volume= 31.062 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 50.77' @ 11.24 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48
#3	Secondary	40.85'	48.0" Round Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 40.85' / 39.75' S= 0.0138 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf

Primary OutFlow Max=605.47 cfs @ 11.24 hrs HW=50.76' TW=38.80' (Dynamic Tailwater)

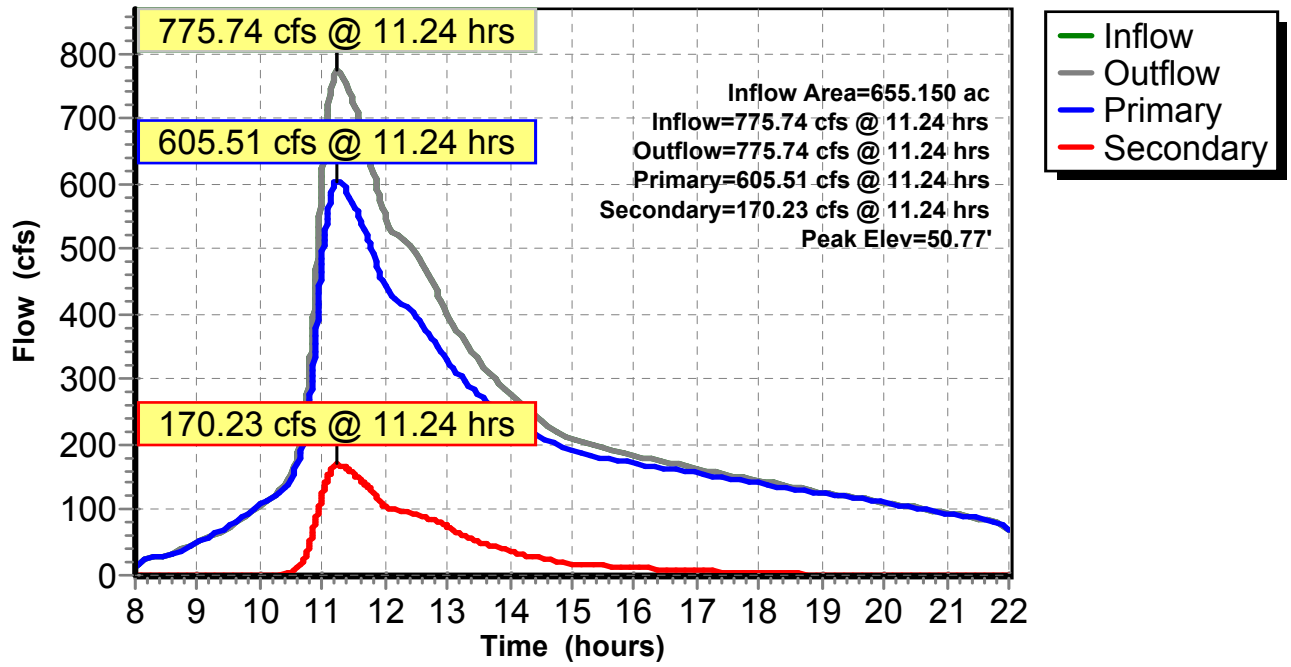
↑1=Culvert (Inlet Controls 605.47 cfs @ 15.52 fps)
 ↓2=WEIR WESTCH AVE (Controls 0.00 cfs)

Secondary OutFlow Max=170.22 cfs @ 11.24 hrs HW=50.76' TW=0.00' (Dynamic Tailwater)

↑3=Culvert (Inlet Controls 170.22 cfs @ 13.55 fps)

Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



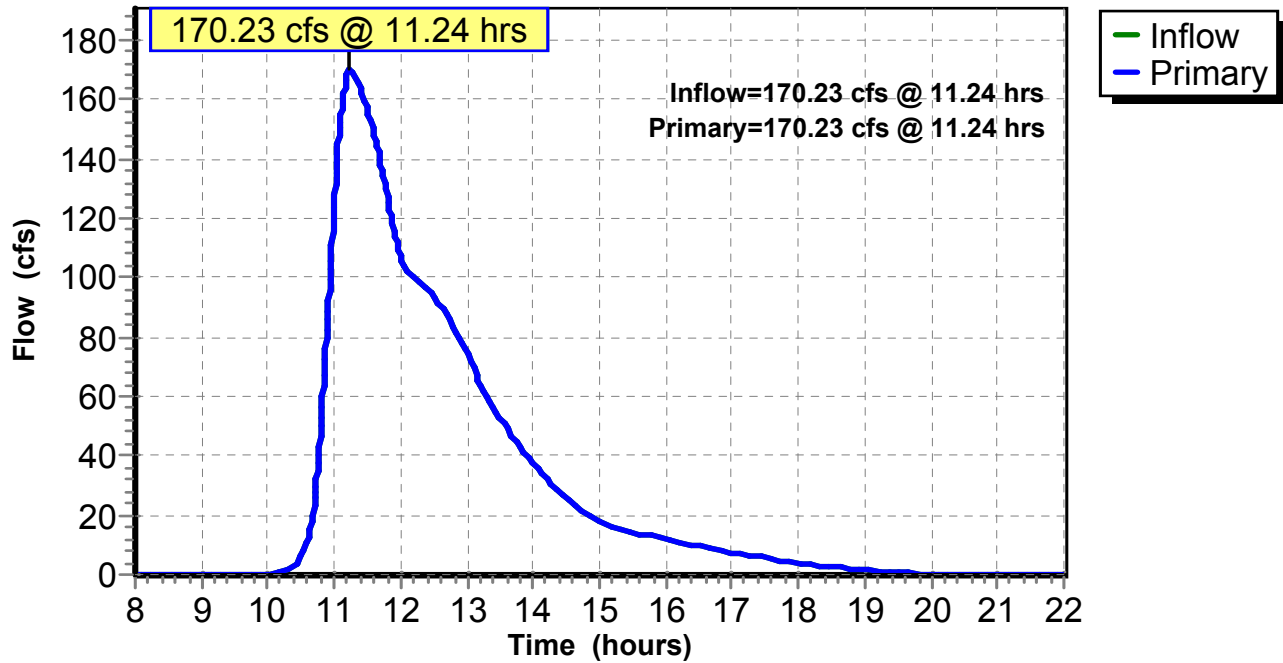
Summary for Link 26L: bypass

Inflow = 170.23 cfs @ 11.24 hrs, Volume= 31.062 af
Primary = 170.23 cfs @ 11.24 hrs, Volume= 31.062 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 26L: bypass

Hydrograph



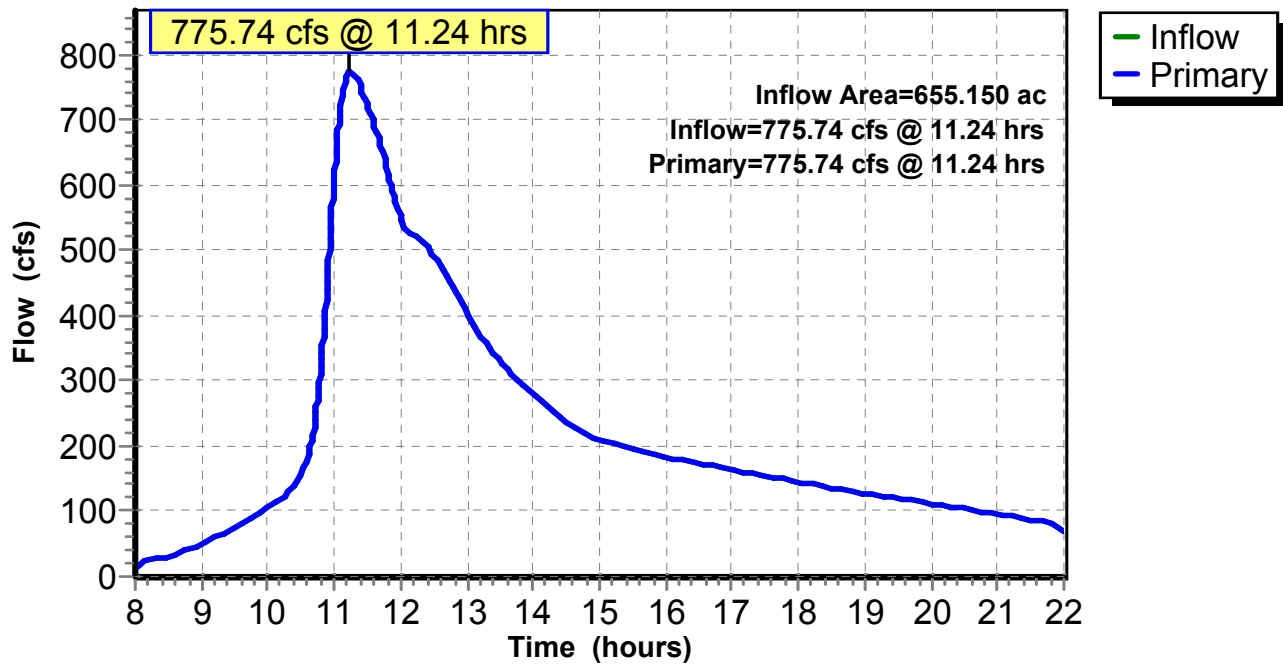
Summary for Link 33L: Join

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 4.61" for april_2007 event
Inflow = 775.74 cfs @ 11.24 hrs, Volume= 251.636 af
Primary = 775.74 cfs @ 11.24 hrs, Volume= 251.636 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 33L: Join

Hydrograph



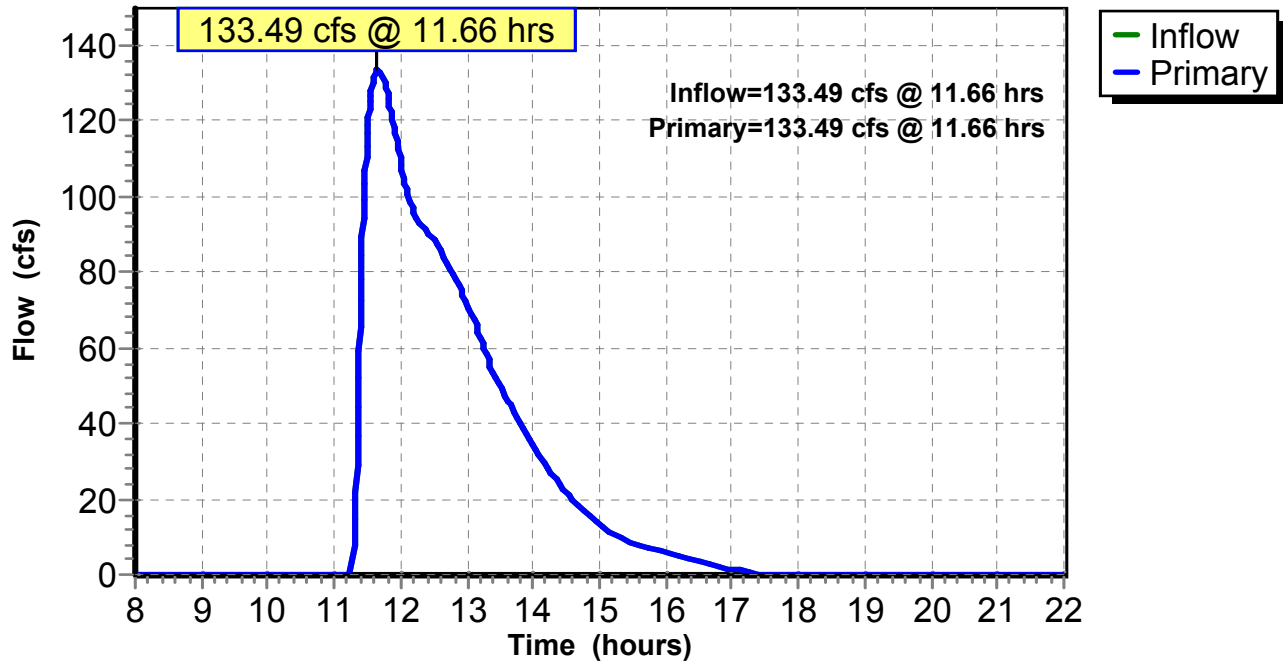
Summary for Link 36L: weir

Inflow = 133.49 cfs @ 11.66 hrs, Volume= 20.626 af
Primary = 133.49 cfs @ 11.66 hrs, Volume= 20.626 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 36L: weir

Hydrograph



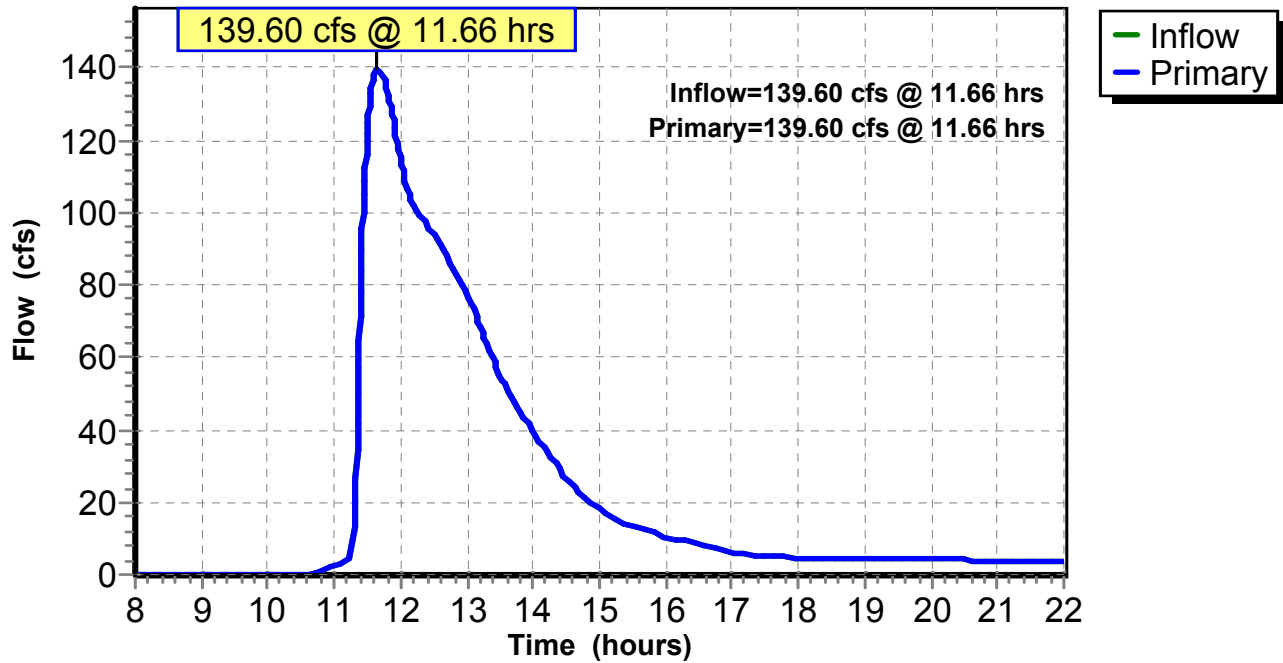
Summary for Link 37L: orifice

Inflow = 139.60 cfs @ 11.66 hrs, Volume= 25.074 af
Primary = 139.60 cfs @ 11.66 hrs, Volume= 25.074 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 37L: orifice

Hydrograph



Summary for Subcatchment A: WS A

Runoff = 155.42 cfs @ 12.43 hrs, Volume= 20.120 af, Depth> 4.06"

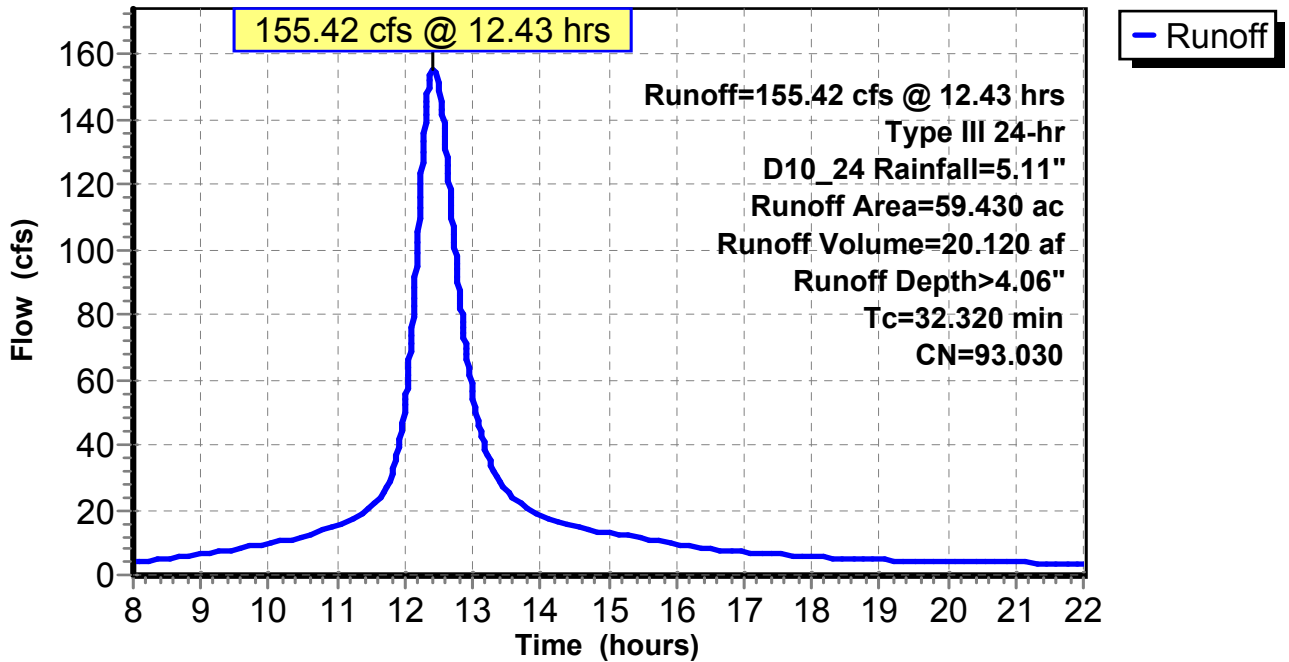
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



Summary for Subcatchment B: WS B

Runoff = 141.78 cfs @ 12.40 hrs, Volume= 16.951 af, Depth> 3.53"

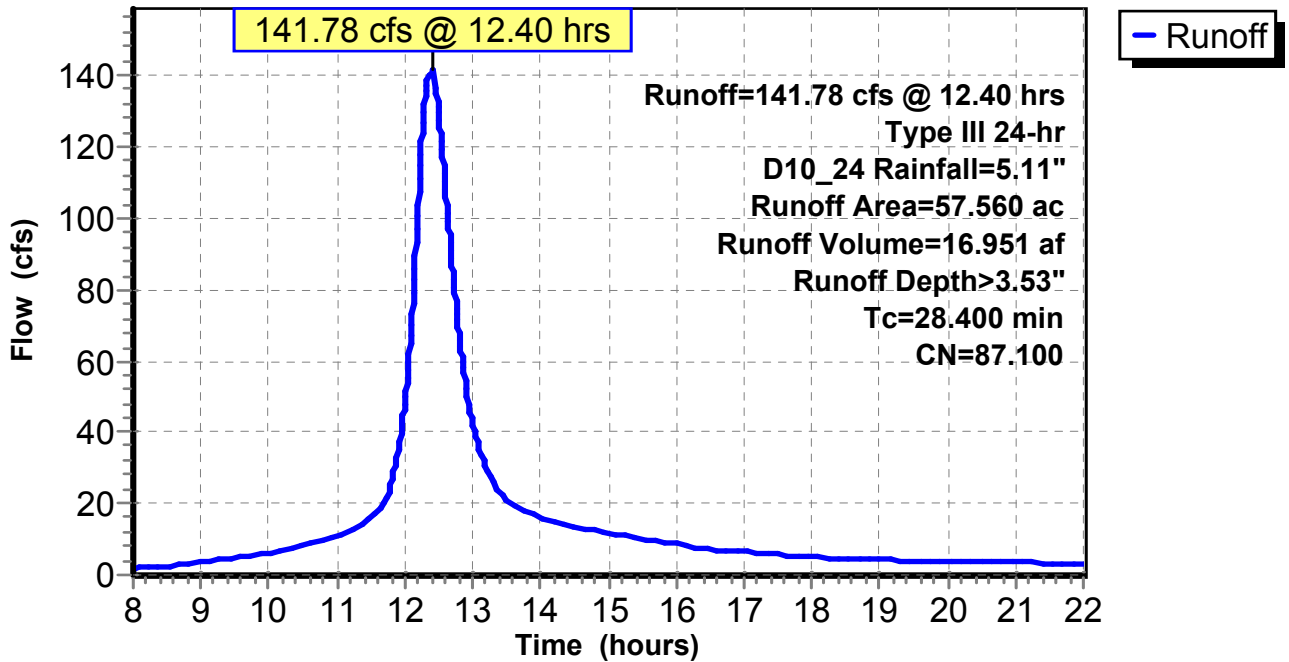
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



Summary for Subcatchment BH: HOTEL

Runoff = 35.75 cfs @ 12.42 hrs, Volume= 4.394 af, Depth> 3.45"

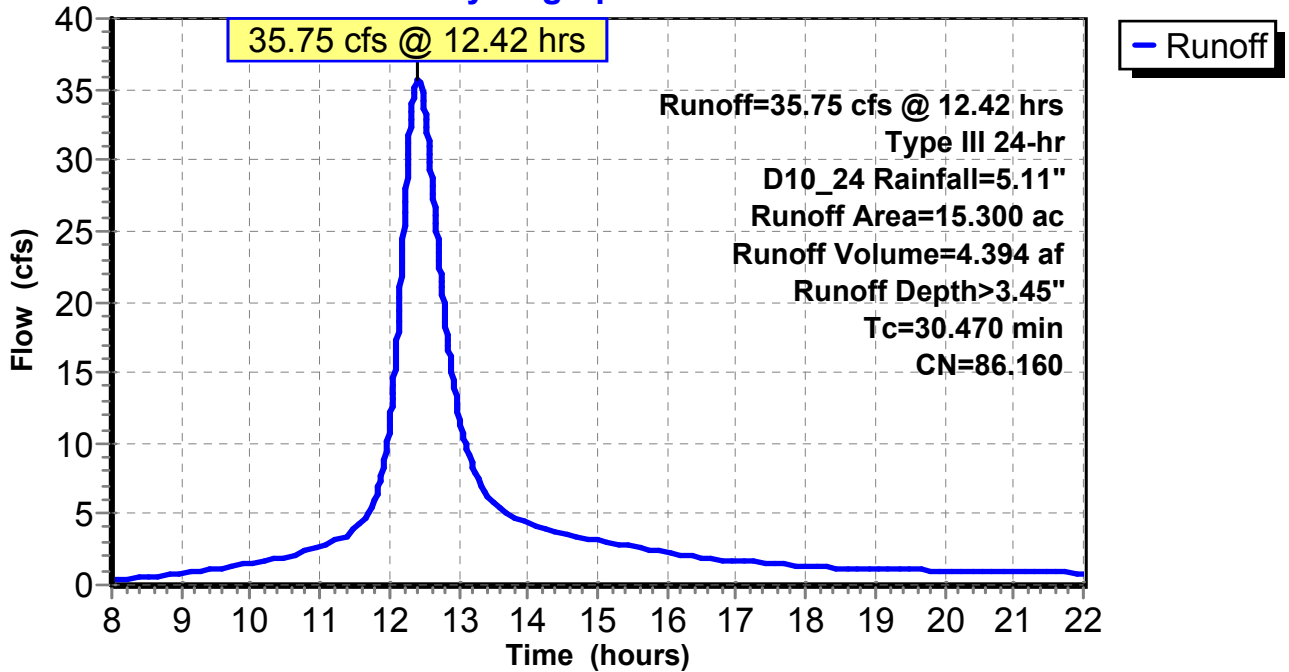
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
Type III 24-hr D10_24 Rainfall=5.11"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.000 min
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.000 min

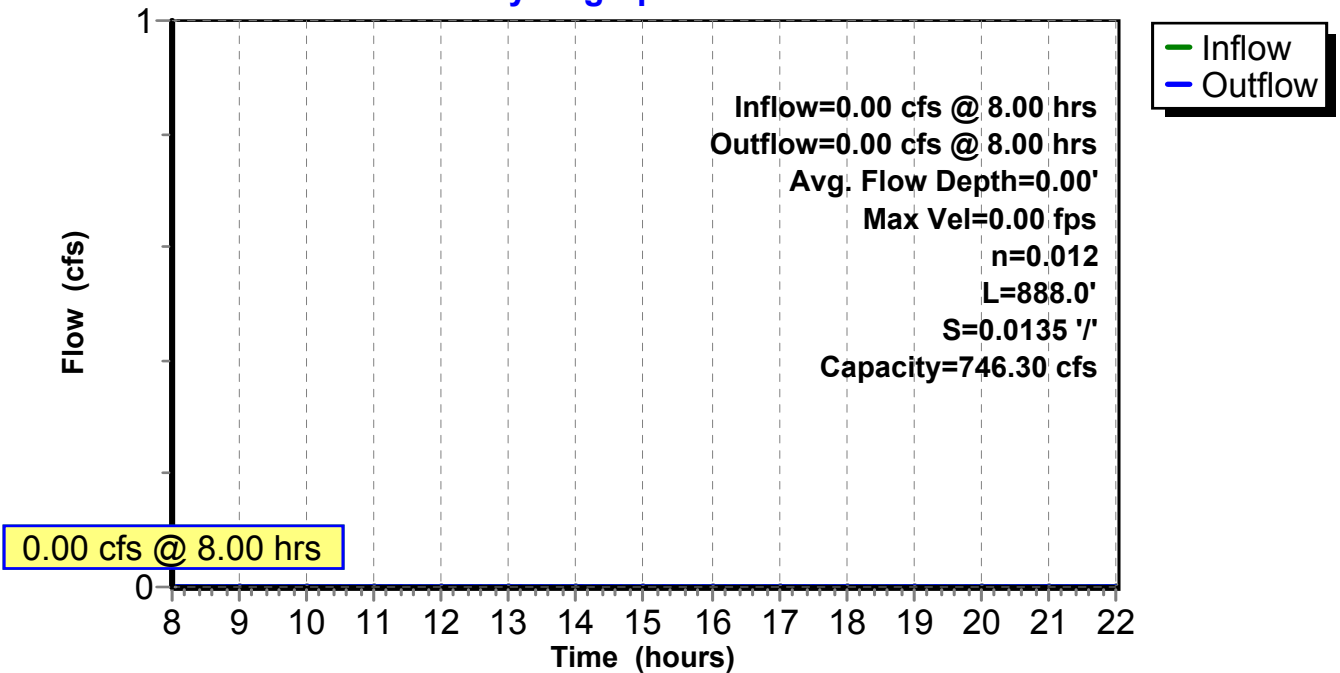
Peak Storage= 0 cf @ 8.00 hrs
 Average Depth at Peak Storage= 0.00'
 Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
 Side Slope Z-value= 2.0 ' ' Top Width= 55.43'
 Length= 888.0' Slope= 0.0135 ' '
 Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 2.47" for D10_24 event
 Inflow = 520.82 cfs @ 12.50 hrs, Volume= 147.012 af
 Outflow = 520.32 cfs @ 12.52 hrs, Volume= 147.008 af, Atten= 0%, Lag= 1.069 min
 Primary = 520.32 cfs @ 12.52 hrs, Volume= 147.008 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 36.62' @ 12.52 hrs Surf.Area= 0.181 ac Storage= 0.320 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.112 min (891.647 - 891.536)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

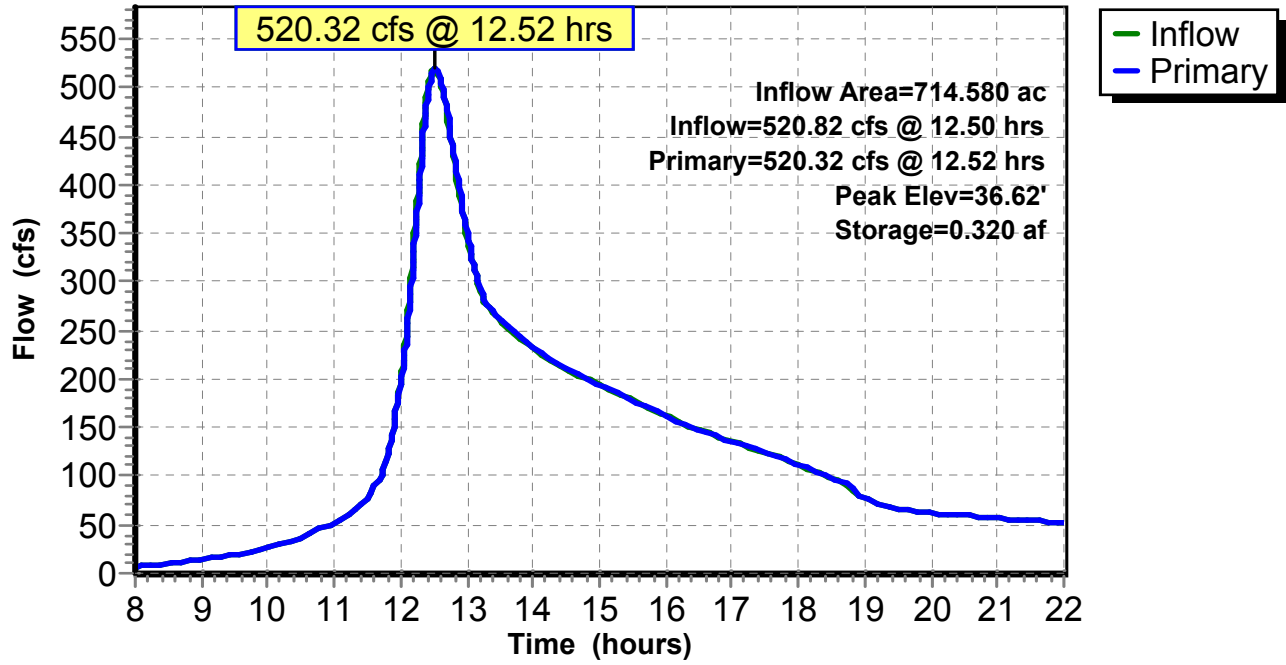
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=520.29 cfs @ 12.52 hrs HW=36.62' (Free Discharge)

- 1=Culvert (Barrel Controls 520.29 cfs @ 7.87 fps)
- 2=WEIR BOWMAN (Controls 0.00 cfs)

Pond 8P: BOWMAN FIELDS

Hydrograph



Summary for Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD INCREASE BERM

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 2.27" for D10_24 event
 Inflow = 332.57 cfs @ 12.72 hrs, Volume= 110.255 af
 Outflow = 332.54 cfs @ 12.72 hrs, Volume= 110.248 af, Atten= 0%, Lag= 0.347 min
 Primary = 332.54 cfs @ 12.72 hrs, Volume= 110.248 af
 Secondary = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 60.72' @ 12.72 hrs Surf.Area= 1,120 sf Storage= 3,553 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.117 min (914.261 - 914.143)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	63,134 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686
70.00	10,112	40,448	63,134

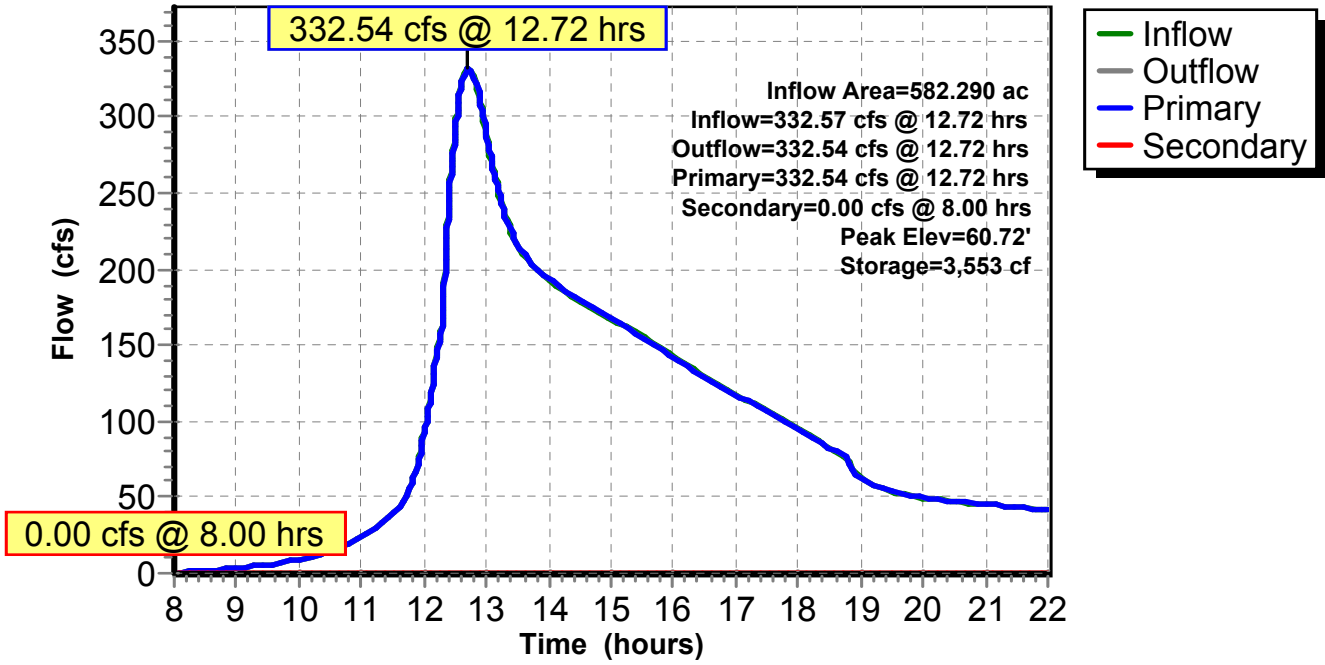
Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert X 2.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 55.13' / 37.90' S= 0.0206 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	68.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=332.54 cfs @ 12.72 hrs HW=60.72' TW=0.00' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 332.54 cfs @ 8.47 fps)

Secondary OutFlow Max=0.00 cfs @ 8.00 hrs HW=56.00' TW=58.00' (Dynamic Tailwater)
 ↑2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD INCREASE BERM

Hydrograph



Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min
 Primary = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 45.00' @ 8.00 hrs Surf.Area= 100 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	45.00'	171,628 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	100	0	0
48.00	100	300	300
51.00	6,000	9,150	9,450
52.00	15,452	10,726	20,176
54.00	38,000	53,452	73,628
56.00	60,000	98,000	171,628

Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	45.00'	24.0" Round Culvert L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 45.00' / 44.00' S= 0.0100 '/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

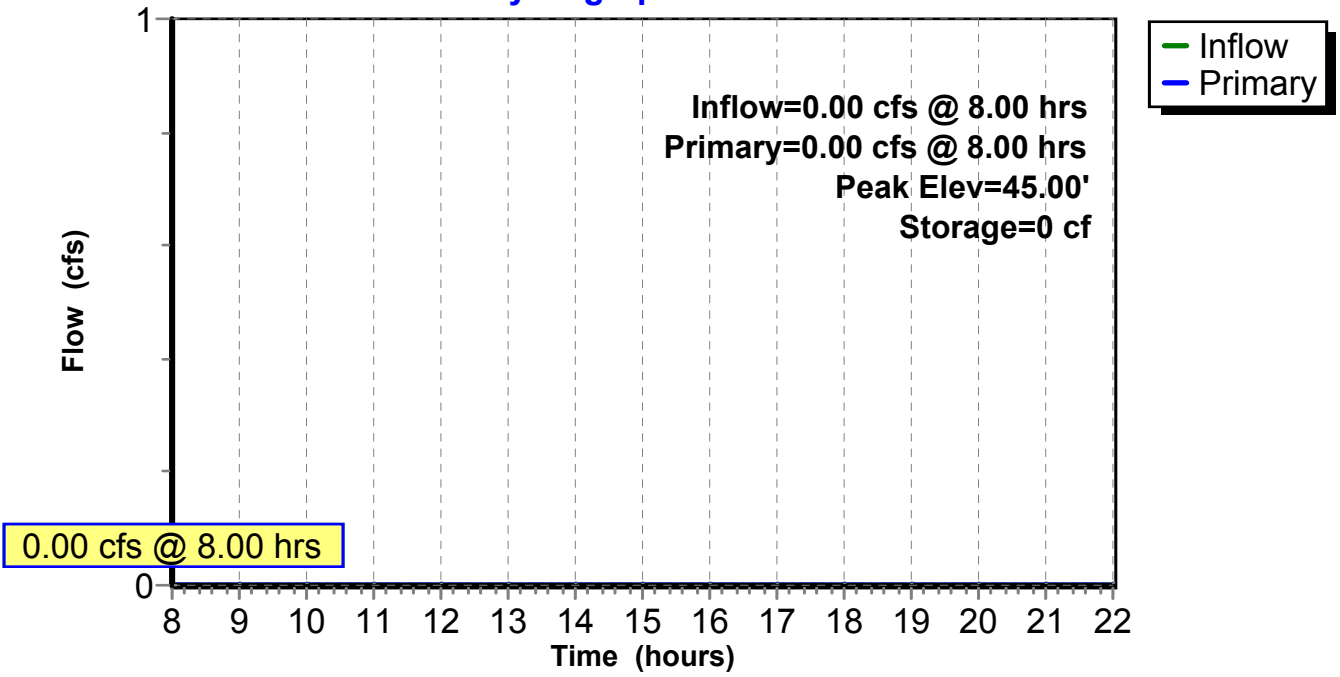
Primary OutFlow Max=0.00 cfs @ 8.00 hrs HW=45.00' TW=0.00' (Dynamic Tailwater)

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

2=Culvert (Controls 0.00 cfs)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



Summary for Pond 24P: CHAMBERS ON BALL FIELD FOR 48 INCH PIPE OVERFLOWS

Inflow = 86.52 cfs @ 12.57 hrs, Volume= 9.887 af
 Outflow = 23.87 cfs @ 13.66 hrs, Volume= 7.507 af, Atten= 72%, Lag= 65.437 min
 Discarded = 2.79 cfs @ 12.10 hrs, Volume= 2.322 af
 Primary = 5.15 cfs @ 13.66 hrs, Volume= 3.387 af
 Secondary = 15.94 cfs @ 13.66 hrs, Volume= 1.798 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 45.23' @ 13.66 hrs Surf.Area= 60,248 sf Storage= 252,992 cf

Plug-Flow detention time= 205.121 min calculated for 7.502 af (76% of inflow)
 Center-of-Mass det. time= 174.628 min (975.573 - 800.945)

Volume	Invert	Avail.Storage	Storage Description
#1A	39.00'	166,356 cf	147.08'W x 409.62'L x 9.75'H Field A 587,416 cf Overall - 171,527 cf Embedded = 415,889 cf x 40.0% Voids
#2A	39.75'	171,527 cf	ADS_StormTech MC-4500 +Capx 1600 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 16 Rows of 100 Chambers Cap Storage= +35.7 cf x 2 x 16 rows = 1,142.4 cf
		337,883 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Secondary	44.50'	8.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Discarded	39.00'	2.000 in/hr Exfiltration over Surface area
#3	Primary	39.00'	9.0" Vert. Orifice/Grate C= 0.600

Discarded OutFlow Max=2.79 cfs @ 12.10 hrs HW=39.11' (Free Discharge)

↑**2=Exfiltration** (Exfiltration Controls 2.79 cfs)

Primary OutFlow Max=5.15 cfs @ 13.66 hrs HW=45.23' TW=0.00' (Dynamic Tailwater)

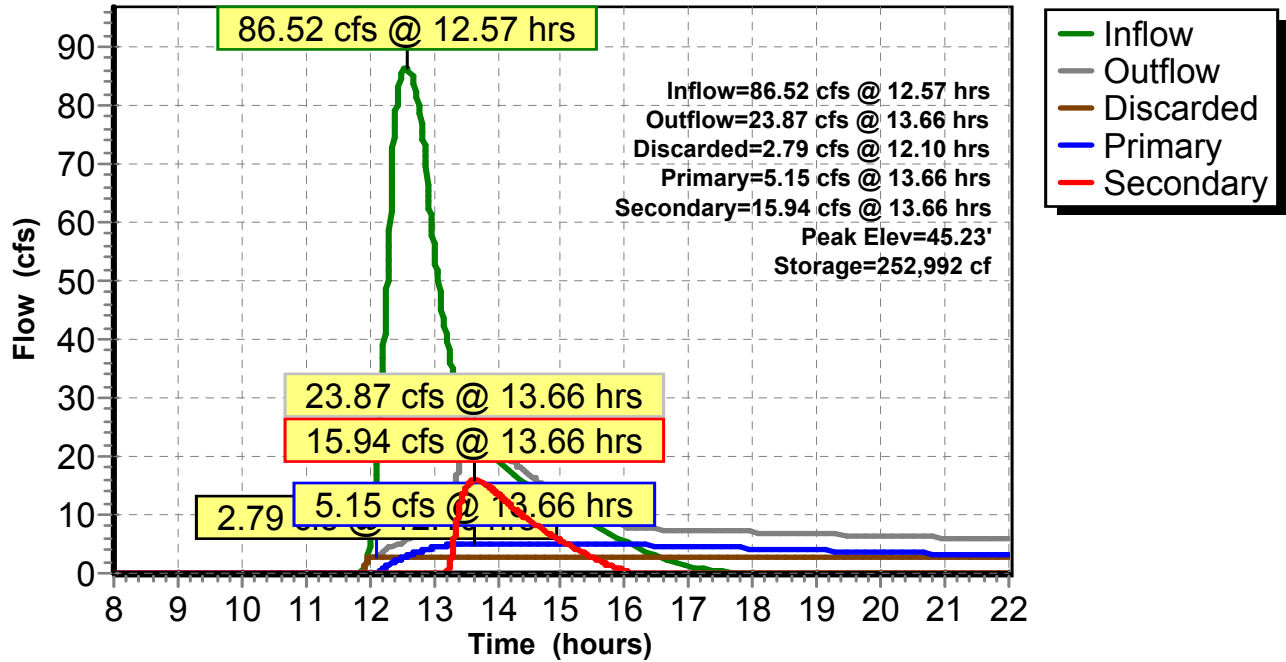
↑**3=Orifice/Grate** (Orifice Controls 5.15 cfs @ 11.65 fps)

Secondary OutFlow Max=15.93 cfs @ 13.66 hrs HW=45.23' TW=0.00' (Dynamic Tailwater)

↑**1=Sharp-Crested Rectangular Weir** (Weir Controls 15.93 cfs @ 2.79 fps)

Pond 24P: CHAMBERS ON BALL FIELD FOR 48 INCH PIPE OVERFLOWS

Hydrograph



Summary for Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 2.41" for D10_24 event
 Inflow = 458.49 cfs @ 12.57 hrs, Volume= 131.593 af
 Outflow = 458.49 cfs @ 12.57 hrs, Volume= 131.593 af, Atten= 0%, Lag= 0.000 min
 Primary = 371.96 cfs @ 12.57 hrs, Volume= 121.707 af
 Secondary = 86.52 cfs @ 12.57 hrs, Volume= 9.887 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 44.89' @ 12.57 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48
#3	Secondary	40.85'	48.0" Round Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 40.85' / 39.75' S= 0.0138 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf

Primary OutFlow Max=371.95 cfs @ 12.57 hrs HW=44.89' TW=36.60' (Dynamic Tailwater)

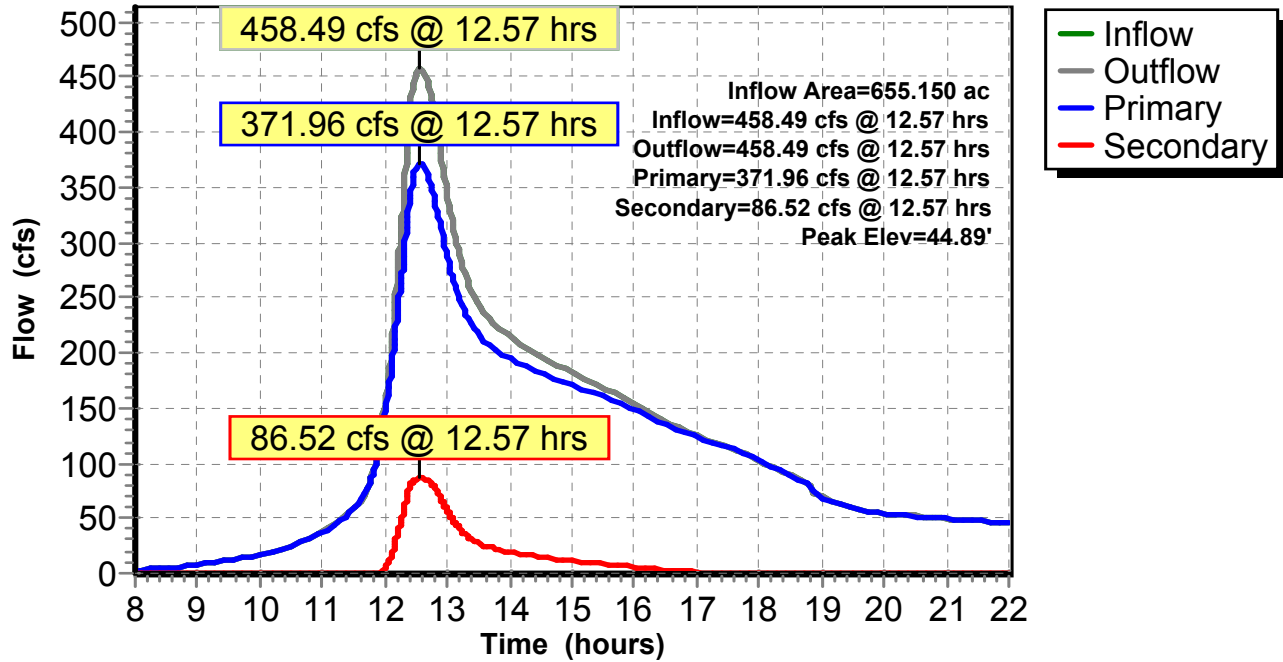
↑1=Culvert (Barrel Controls 371.95 cfs @ 9.53 fps)
 ↓2=WEIR WESTCH AVE (Controls 0.00 cfs)

Secondary OutFlow Max=86.52 cfs @ 12.57 hrs HW=44.89' TW=0.00' (Dynamic Tailwater)

↑3=Culvert (Inlet Controls 86.52 cfs @ 6.88 fps)

Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



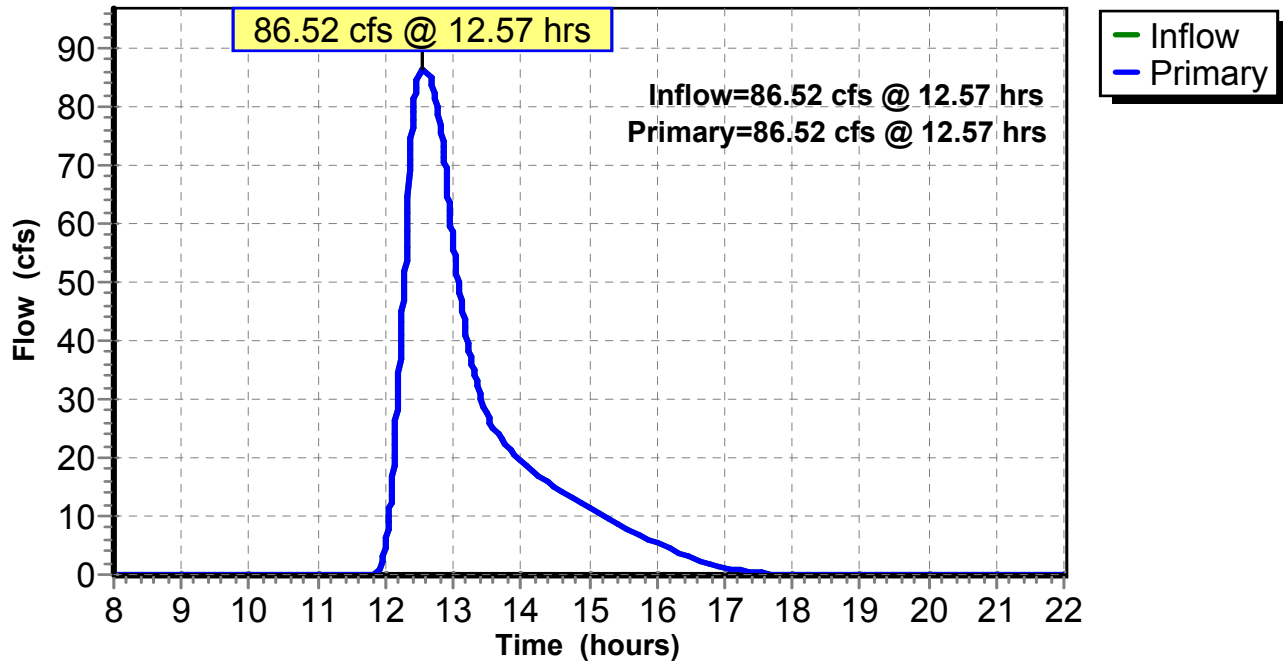
Summary for Link 26L: bypass

Inflow = 86.52 cfs @ 12.57 hrs, Volume= 9.887 af
Primary = 86.52 cfs @ 12.57 hrs, Volume= 9.887 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 26L: bypass

Hydrograph



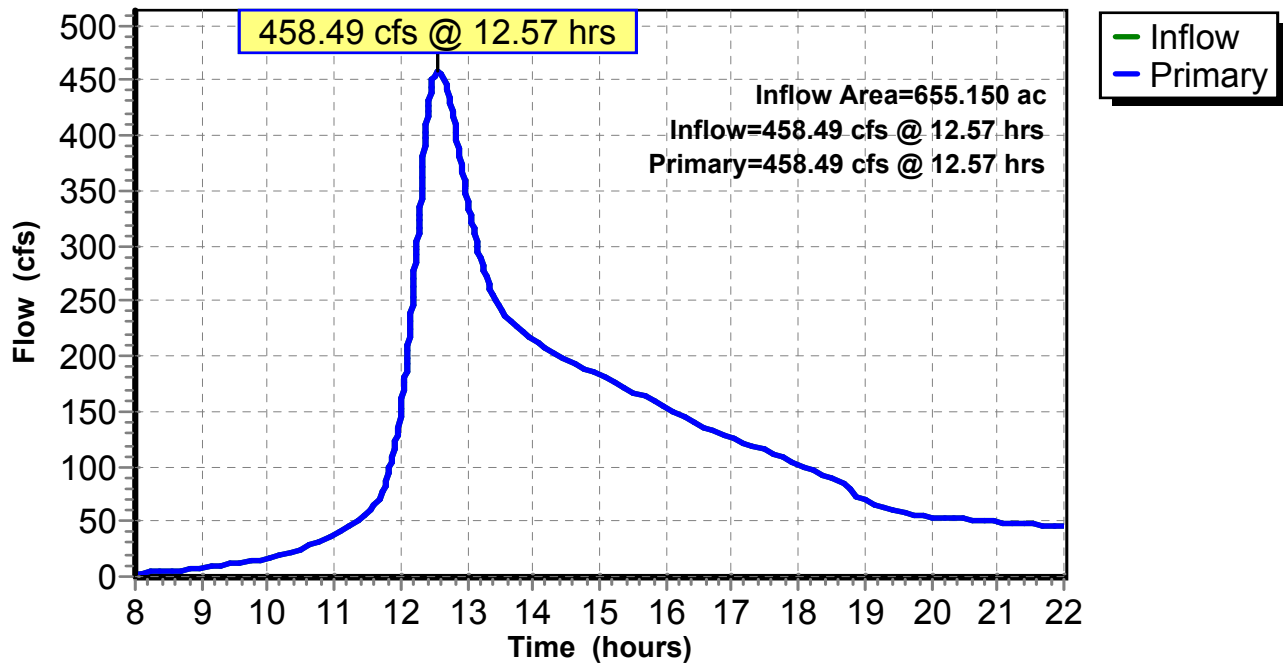
Summary for Link 33L: Join

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 2.41" for D10_24 event
Inflow = 458.49 cfs @ 12.57 hrs, Volume= 131.593 af
Primary = 458.49 cfs @ 12.57 hrs, Volume= 131.593 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 33L: Join

Hydrograph



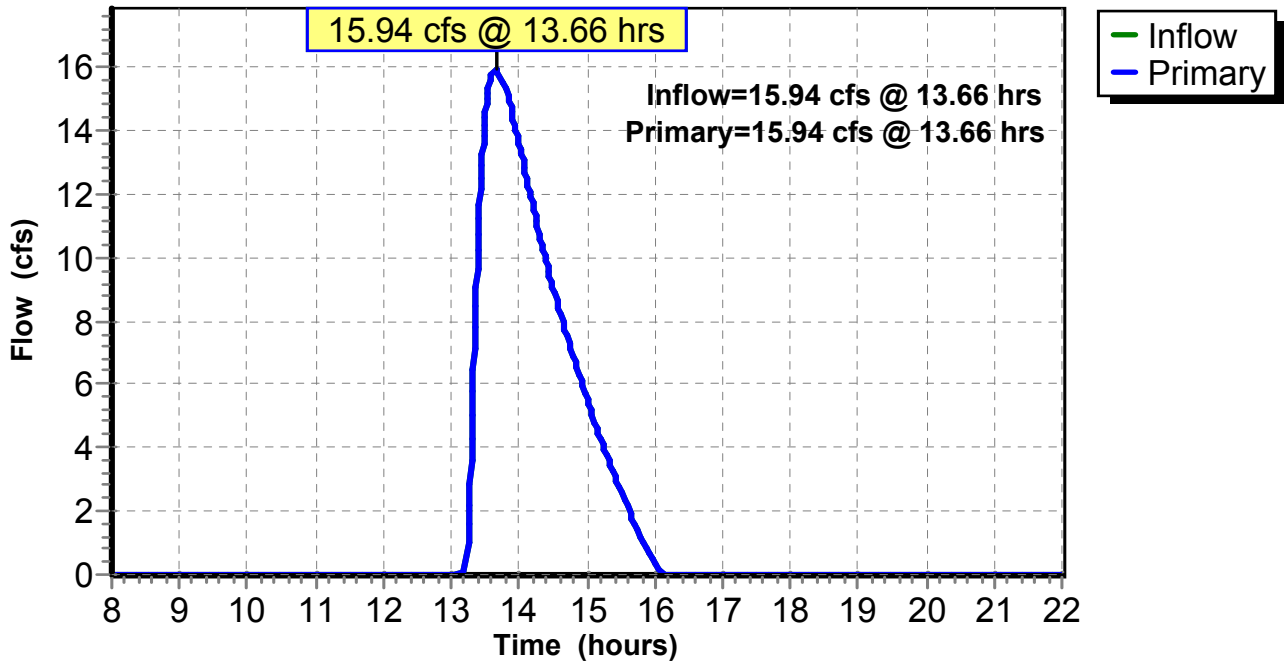
Summary for Link 36L: weir

Inflow = 15.94 cfs @ 13.66 hrs, Volume= 1.798 af
Primary = 15.94 cfs @ 13.66 hrs, Volume= 1.798 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 36L: weir

Hydrograph



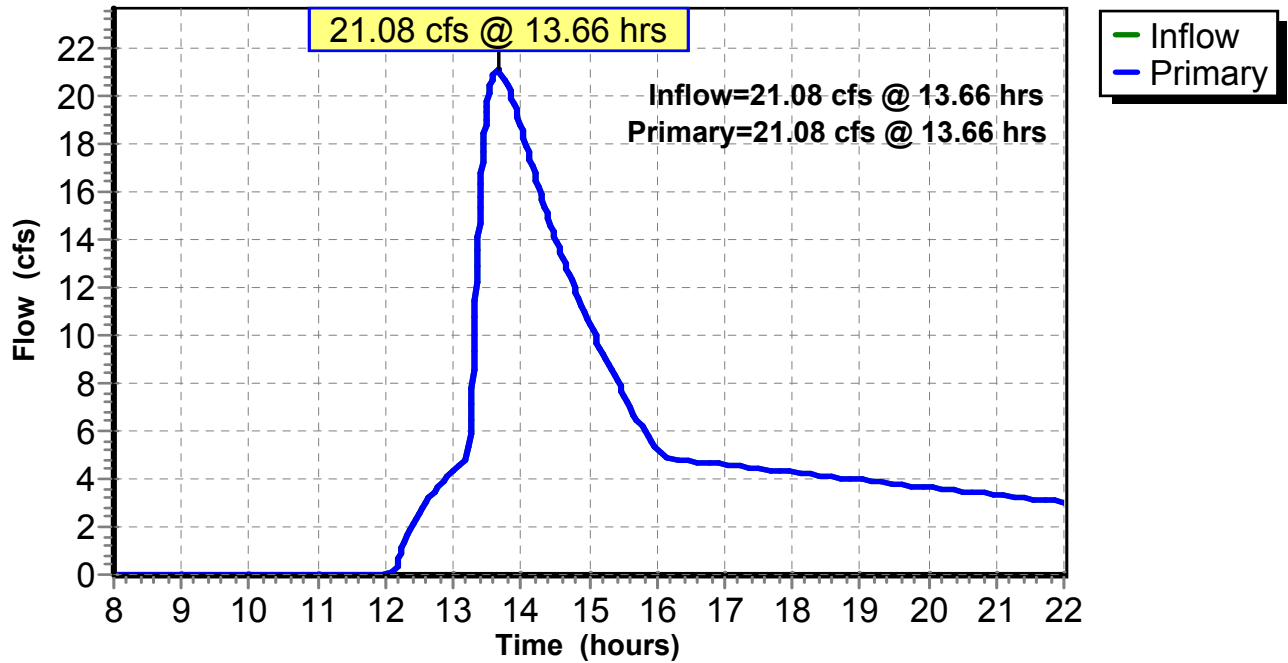
Summary for Link 37L: orifice

Inflow = 21.08 cfs @ 13.66 hrs, Volume= 5.185 af
Primary = 21.08 cfs @ 13.66 hrs, Volume= 5.185 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 37L: orifice

Hydrograph



Summary for Subcatchment A: WS A

Runoff = 99.30 cfs @ 12.43 hrs, Volume= 12.701 af, Depth> 2.56"

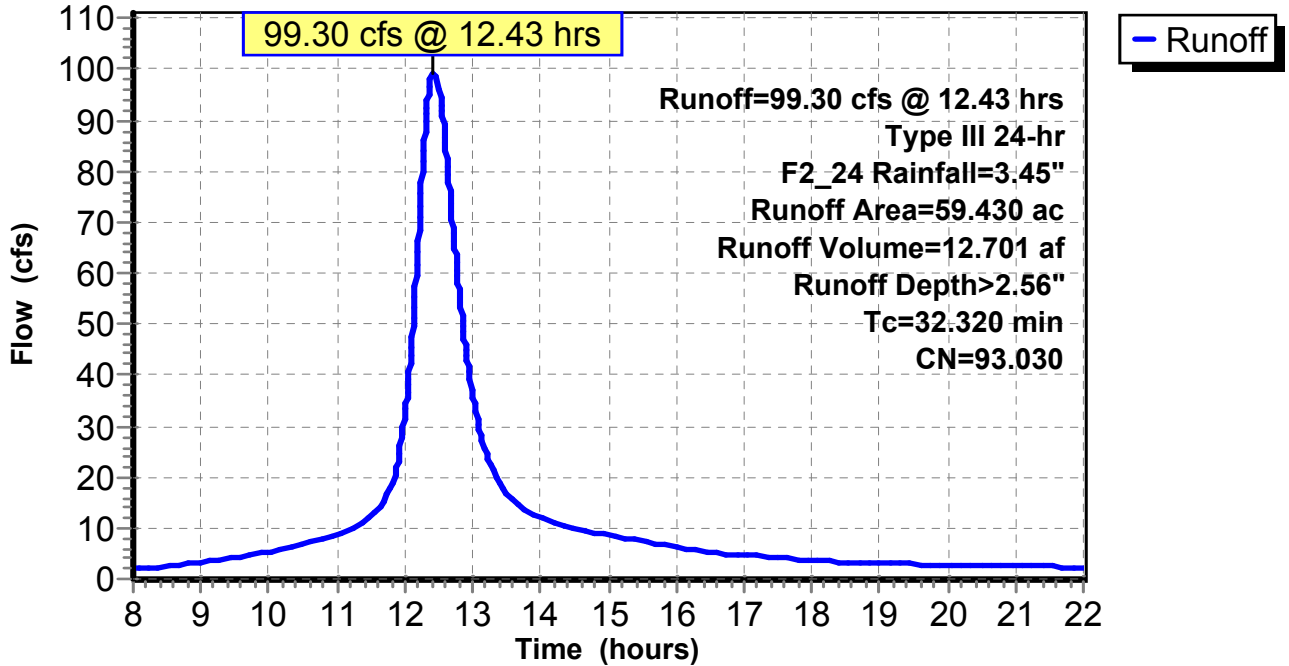
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 59.430	93.030	
59.430		100.00% Pervious Area

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

Subcatchment A: WS A

Hydrograph



Summary for Subcatchment B: WS B

Runoff = 83.90 cfs @ 12.40 hrs, Volume= 9.925 af, Depth> 2.07"

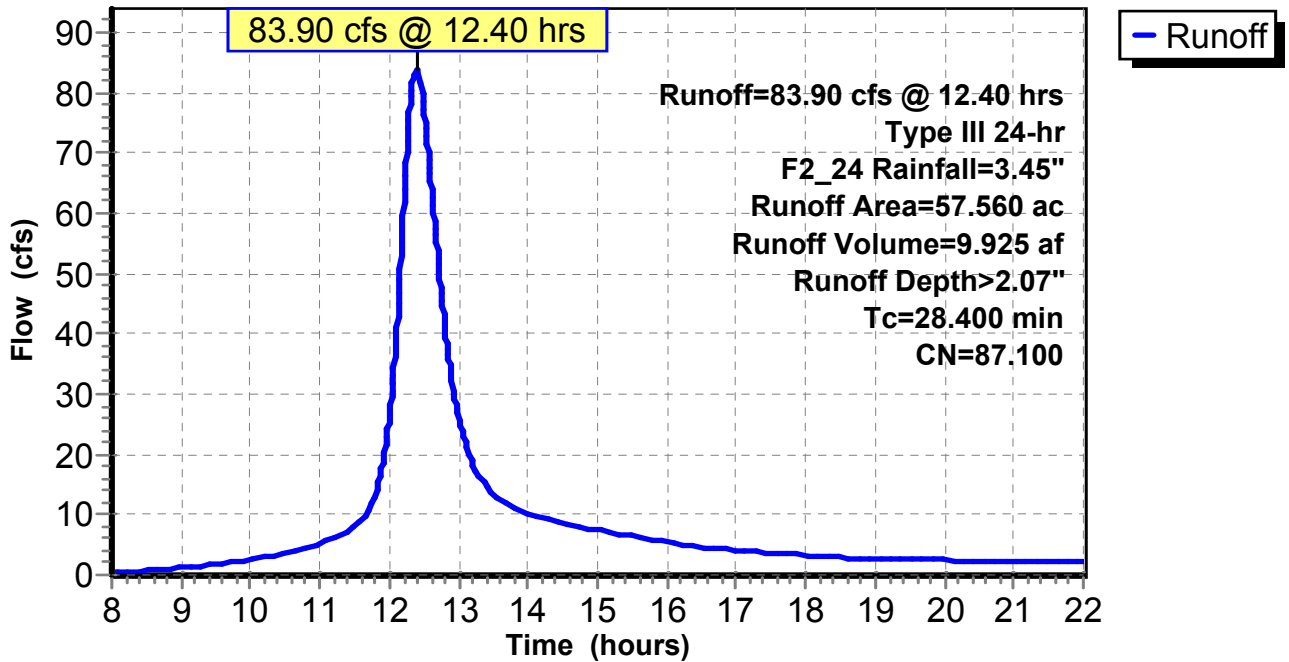
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 57.560	87.100	
57.560		100.00% Pervious Area

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

Subcatchment B: WS B

Hydrograph



Summary for Subcatchment BH: HOTEL

Runoff = 20.85 cfs @ 12.42 hrs, Volume= 2.540 af, Depth> 1.99"

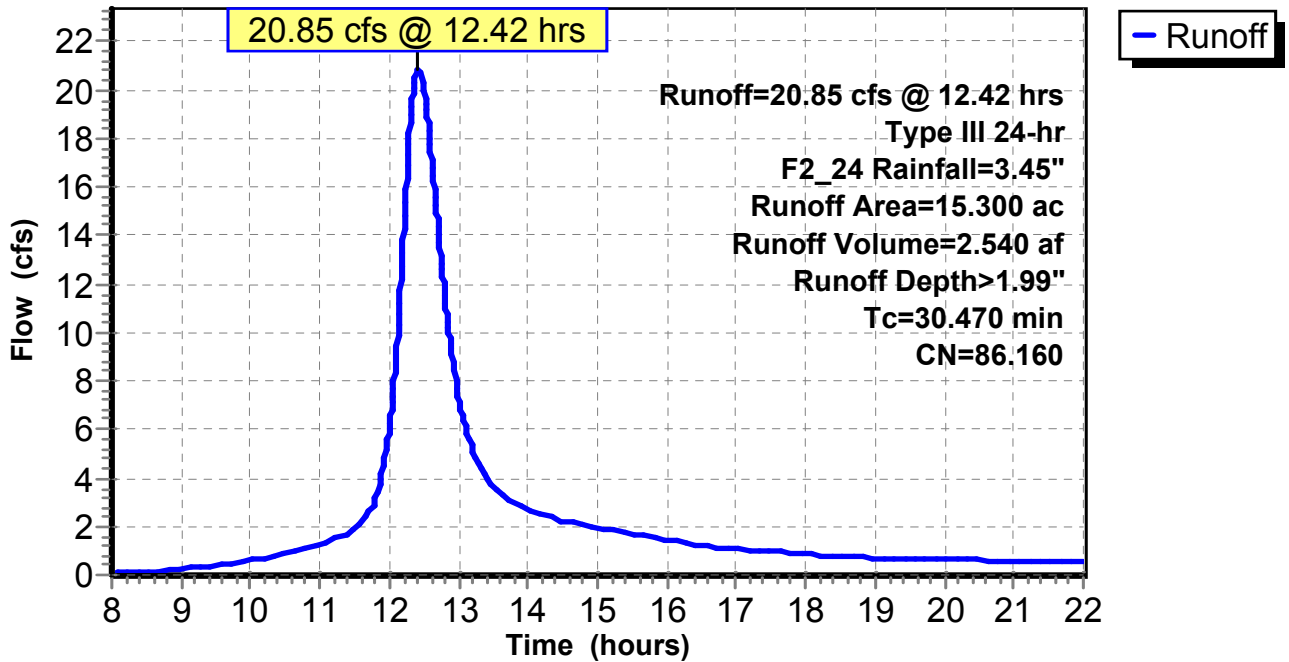
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Type III 24-hr F2_24 Rainfall=3.45"

Area (ac)	CN	Description
* 15.300	86.160	
15.300		100.00% Pervious Area

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

Subcatchment BH: HOTEL

Hydrograph



Summary for Reach 17R: FLOW OVER ROAD

Inflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.000 min
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.000 min

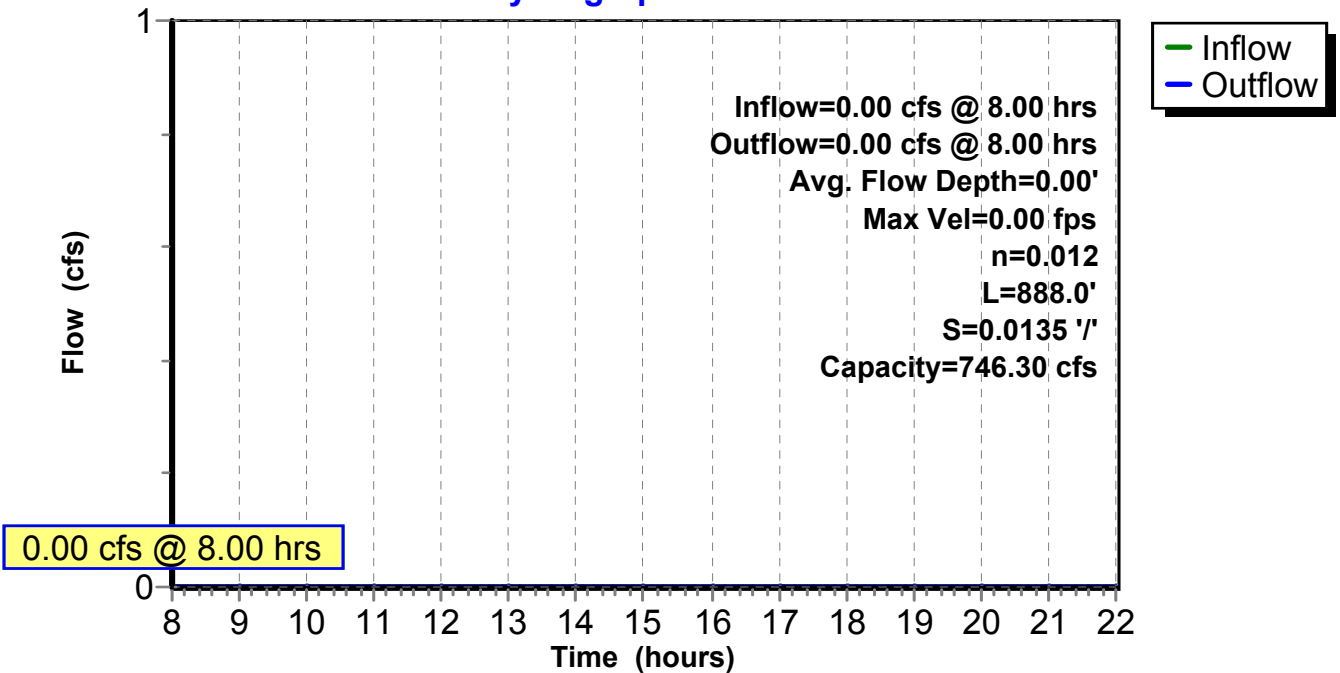
Peak Storage= 0 cf @ 8.00 hrs
 Average Depth at Peak Storage= 0.00'
 Bank-Full Depth= 1.00' Flow Area= 53.4 sf, Capacity= 746.30 cfs

51.43' x 1.00' deep channel, n= 0.012
 Side Slope Z-value= 2.0 '/' Top Width= 55.43'
 Length= 888.0' Slope= 0.0135 '/'
 Inlet Invert= 58.00', Outlet Invert= 46.00'



Reach 17R: FLOW OVER ROAD

Hydrograph



Summary for Pond 8P: BOWMAN FIELDS

Inflow Area = 714.580 ac, 0.00% Impervious, Inflow Depth > 1.33" for F2_24 event
 Inflow = 293.35 cfs @ 12.46 hrs, Volume= 79.074 af
 Outflow = 293.15 cfs @ 12.47 hrs, Volume= 79.072 af, Atten= 0%, Lag= 0.532 min
 Primary = 293.15 cfs @ 12.47 hrs, Volume= 79.072 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 34.88' @ 12.47 hrs Surf.Area= 0.106 ac Storage= 0.082 af

Plug-Flow detention time= 0.048 min calculated for 79.072 af (100% of inflow)
 Center-of-Mass det. time= 0.040 min (879.709 - 879.668)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	20.620 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
34.00	0.080	0.000	0.000
36.00	0.140	0.220	0.220
38.00	0.270	0.410	0.630
40.00	0.790	1.060	1.690
42.00	4.160	4.950	6.640
44.00	9.820	13.980	20.620

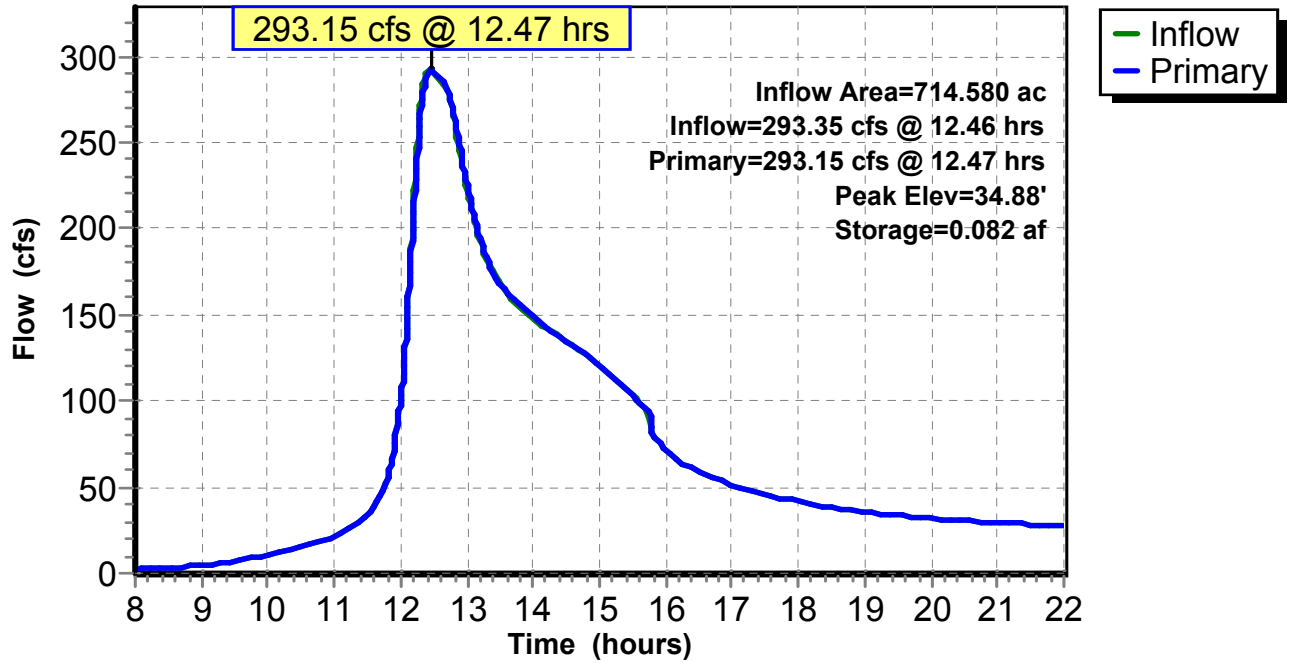
Device	Routing	Invert	Outlet Devices
#1	Primary	31.25'	196.8" W x 100.8" H Box Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 31.25' / 31.08' S= 0.0026 '/' Cc= 0.900 n= 0.012, Flow Area= 137.76 sf
#2	Primary	39.01'	WEIR BOWMAN, C= 3.27 Offset (feet) 0.00 49.40 91.24 152.57 200.10 228.10 269.57 323.00 382.76 418.24 452.27 500.00 Elev. (feet) 42.85 40.89 40.07 39.38 39.03 39.02 39.01 39.28 40.01 40.72 41.50 42.85

Primary OutFlow Max=293.14 cfs @ 12.47 hrs HW=34.88' (Free Discharge)

- 1=Culvert (Barrel Controls 293.14 cfs @ 6.57 fps)
- 2=WEIR BOWMAN (Controls 0.00 cfs)

Pond 8P: BOWMAN FIELDS

Hydrograph



Summary for Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD INCREASE BERM

Inflow Area = 582.290 ac, 0.00% Impervious, Inflow Depth > 1.14" for F2_24 event
 Inflow = 177.65 cfs @ 12.82 hrs, Volume= 55.228 af
 Outflow = 177.65 cfs @ 12.82 hrs, Volume= 55.226 af, Atten= 0%, Lag= 0.148 min
 Primary = 177.65 cfs @ 12.82 hrs, Volume= 55.226 af
 Secondary = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 58.52' @ 12.82 hrs Surf.Area= 761 sf Storage= 1,539 cf

Plug-Flow detention time= 0.132 min calculated for 55.186 af (100% of inflow)
 Center-of-Mass det. time= 0.113 min (907.825 - 907.711)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	63,134 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	466	0	0
58.00	695	1,161	1,161
60.00	949	1,644	2,805
62.00	1,422	2,371	5,176
64.00	2,988	4,410	9,586
66.00	10,112	13,100	22,686
70.00	10,112	40,448	63,134

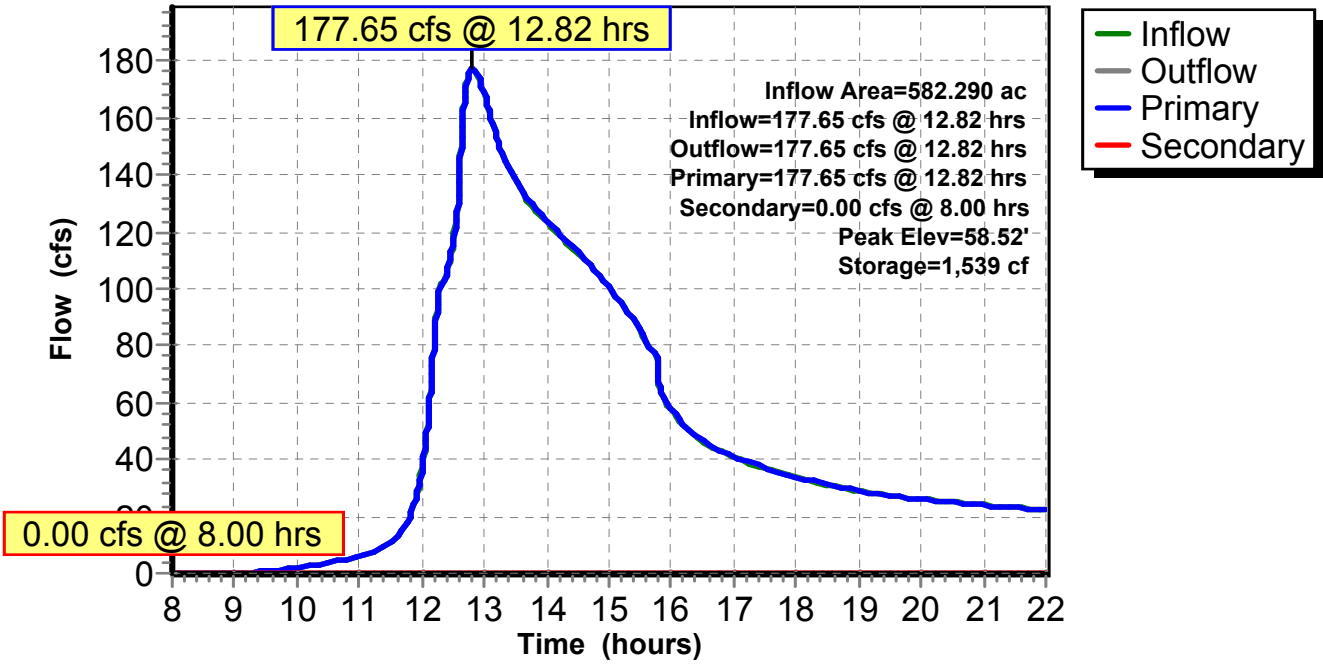
Device	Routing	Invert	Outlet Devices
#1	Primary	55.13'	60.0" Round Culvert X 2.00 L= 835.0' Ke= 0.500 Inlet / Outlet Invert= 55.13' / 37.90' S= 0.0206 '/' Cc= 0.900 n= 0.012, Flow Area= 19.63 sf
#2	Secondary	68.00'	Asymmetrical Weir, C= 3.27 Offset (feet) 17.00 21.00 25.00 31.00 38.00 46.00 80.00 120.00 173.00 191.00 198.00 202.00 207.00 228.00 231.00 240.00 281.00 290.00 303.00 317.00 339.00 358.00 373.00 383.00 394.00 426.00 Elev. (feet) 84.00 82.00 80.00 78.00 76.00 74.00 72.00 70.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 70.00 72.00 74.00 76.00 78.00 80.00 82.00 84.00

Primary OutFlow Max=177.64 cfs @ 12.82 hrs HW=58.52' TW=0.00' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 177.64 cfs @ 6.27 fps)

Secondary OutFlow Max=0.00 cfs @ 8.00 hrs HW=56.00' TW=58.00' (Dynamic Tailwater)
 ↑2=Asymmetrical Weir (Controls 0.00 cfs)

Pond 12P: UPSTREAM AVON OVERFLOW TO ROAD INCREASE BERM

Hydrograph



Summary for Pond 17P: FLOOD IN AVON ROADWAY

Inflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min
 Primary = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 45.00' @ 8.00 hrs Surf.Area= 100 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	45.00'	171,628 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	100	0	0
48.00	100	300	300
51.00	6,000	9,150	9,450
52.00	15,452	10,726	20,176
54.00	38,000	53,452	73,628
56.00	60,000	98,000	171,628

Device	Routing	Invert	Outlet Devices
#1	Primary	51.00'	50.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	45.00'	24.0" Round Culvert L= 100.0' Ke= 0.500 Inlet / Outlet Invert= 45.00' / 44.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

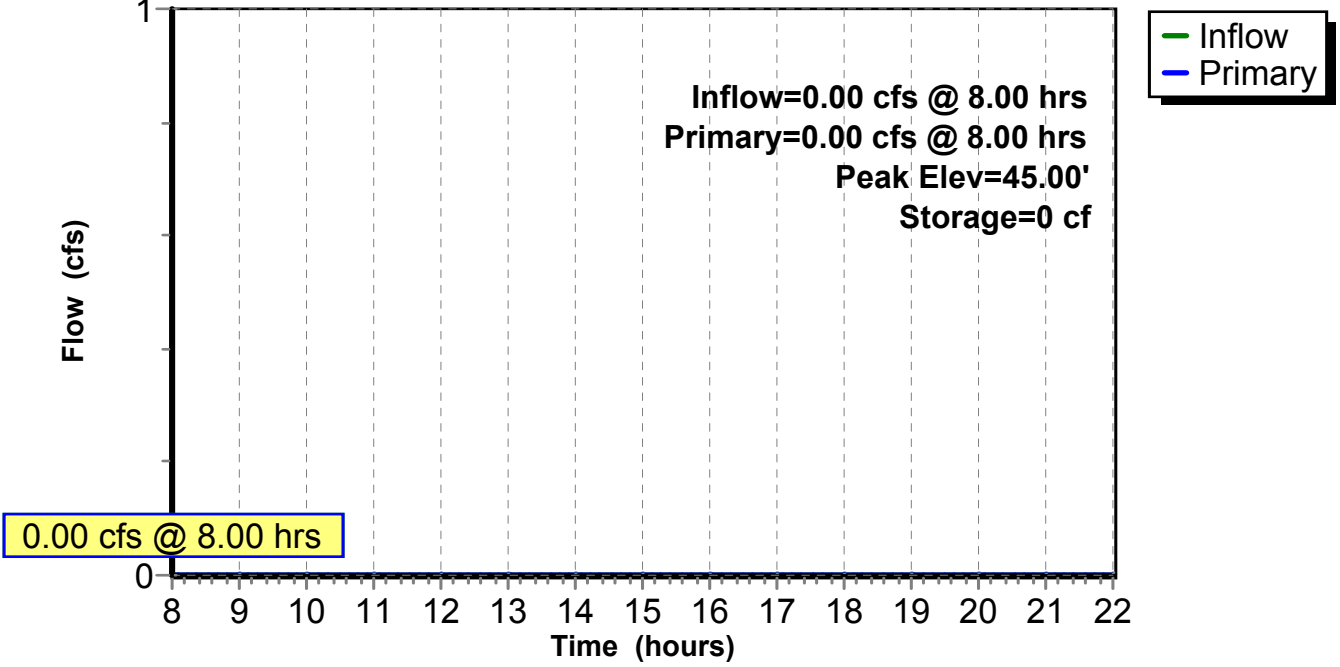
Primary OutFlow Max=0.00 cfs @ 8.00 hrs HW=45.00' TW=0.00' (Dynamic Tailwater)

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

2=Culvert (Controls 0.00 cfs)

Pond 17P: FLOOD IN AVON ROADWAY

Hydrograph



Summary for Pond 24P: CHAMBERS ON BALL FIELD FOR 48 INCH PIPE OVERFLOWS

Inflow = 25.28 cfs @ 12.71 hrs, Volume= 1.971 af
 Outflow = 4.97 cfs @ 13.59 hrs, Volume= 1.971 af, Atten= 80%, Lag= 52.673 min
 Discarded = 2.79 cfs @ 12.29 hrs, Volume= 1.318 af
 Primary = 2.18 cfs @ 13.59 hrs, Volume= 0.653 af
 Secondary = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 40.42' @ 13.59 hrs Surf.Area= 60,248 sf Storage= 53,701 cf

Plug-Flow detention time= 115.432 min calculated for 1.970 af (100% of inflow)
 Center-of-Mass det. time= 115.498 min (891.033 - 775.534)

Volume	Invert	Avail.Storage	Storage Description
#1A	39.00'	166,356 cf	147.08'W x 409.62'L x 9.75'H Field A 587,416 cf Overall - 171,527 cf Embedded = 415,889 cf x 40.0% Voids
#2A	39.75'	171,527 cf	ADS_StormTech MC-4500 +Cap x 1600 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 16 Rows of 100 Chambers Cap Storage= +35.7 cf x 2 x 16 rows = 1,142.4 cf
		337,883 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Secondary	44.50'	8.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Discarded	39.00'	2.000 in/hr Exfiltration over Surface area
#3	Primary	39.00'	9.0" Vert. Orifice/Grate C= 0.600

Discarded OutFlow Max=2.79 cfs @ 12.29 hrs HW=39.11' (Free Discharge)

↑**2=Exfiltration** (Exfiltration Controls 2.79 cfs)

Primary OutFlow Max=2.18 cfs @ 13.59 hrs HW=40.42' TW=0.00' (Dynamic Tailwater)

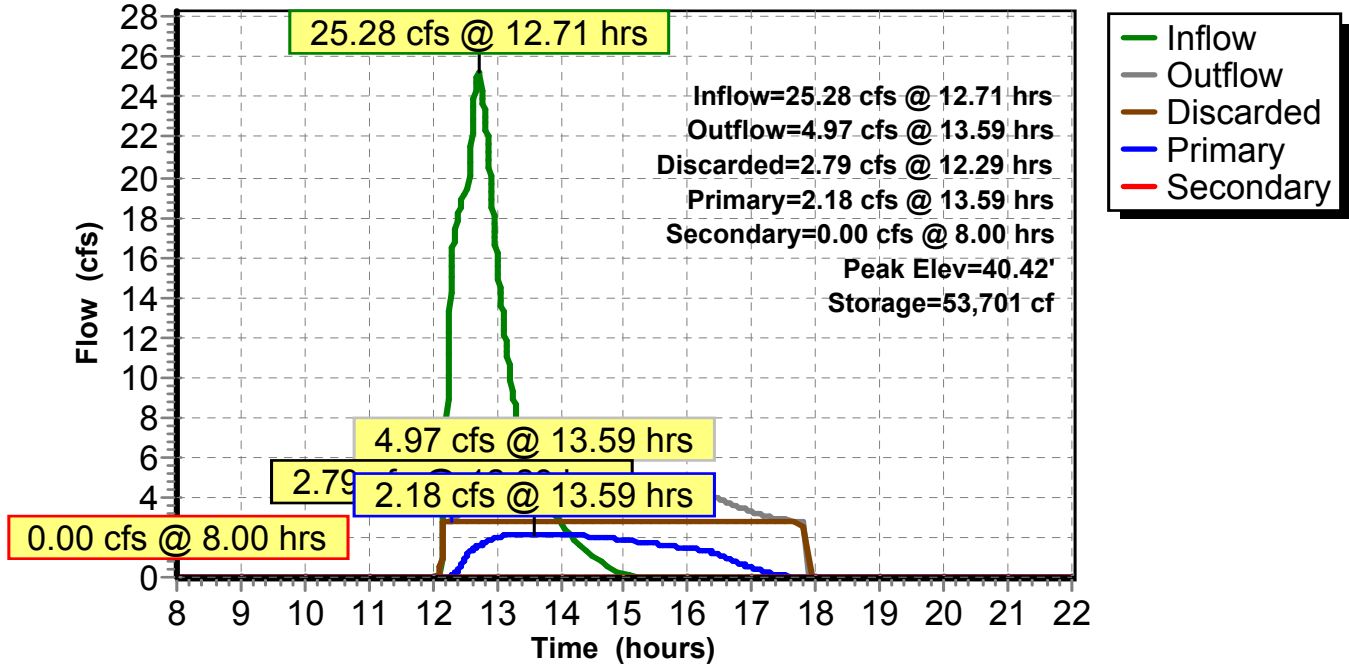
↑**3=Orifice/Grate** (Orifice Controls 2.18 cfs @ 4.93 fps)

Secondary OutFlow Max=0.00 cfs @ 8.00 hrs HW=39.00' TW=0.00' (Dynamic Tailwater)

↑**1=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 24P: CHAMBERS ON BALL FIELD FOR 48 INCH PIPE OVERFLOWS

Hydrograph



Summary for Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 1.24" for F2_24 event
 Inflow = 236.01 cfs @ 12.71 hrs, Volume= 67.691 af
 Outflow = 236.01 cfs @ 12.71 hrs, Volume= 67.691 af, Atten= 0%, Lag= 0.000 min
 Primary = 210.73 cfs @ 12.71 hrs, Volume= 65.720 af
 Secondary = 25.28 cfs @ 12.71 hrs, Volume= 1.971 af

Routing by Dyn-Stor-Ind method, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs
 Peak Elev= 42.66' @ 12.71 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	37.90'	99.6" W x 56.4" H Box Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 37.90' / 37.80' S= 0.0013 '/' Cc= 0.900 n= 0.012, Flow Area= 39.01 sf
#2	Primary	55.88'	WEIR WESTCH AVE, C= 3.27 Offset (feet) 0.00 70.00 118.00 160.00 Elev. (feet) 56.48 55.88 55.98 56.48
#3	Secondary	40.85'	48.0" Round Culvert L= 80.0' Ke= 0.500 Inlet / Outlet Invert= 40.85' / 39.75' S= 0.0138 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf

Primary OutFlow Max=210.72 cfs @ 12.71 hrs HW=42.66' TW=34.78' (Dynamic Tailwater)

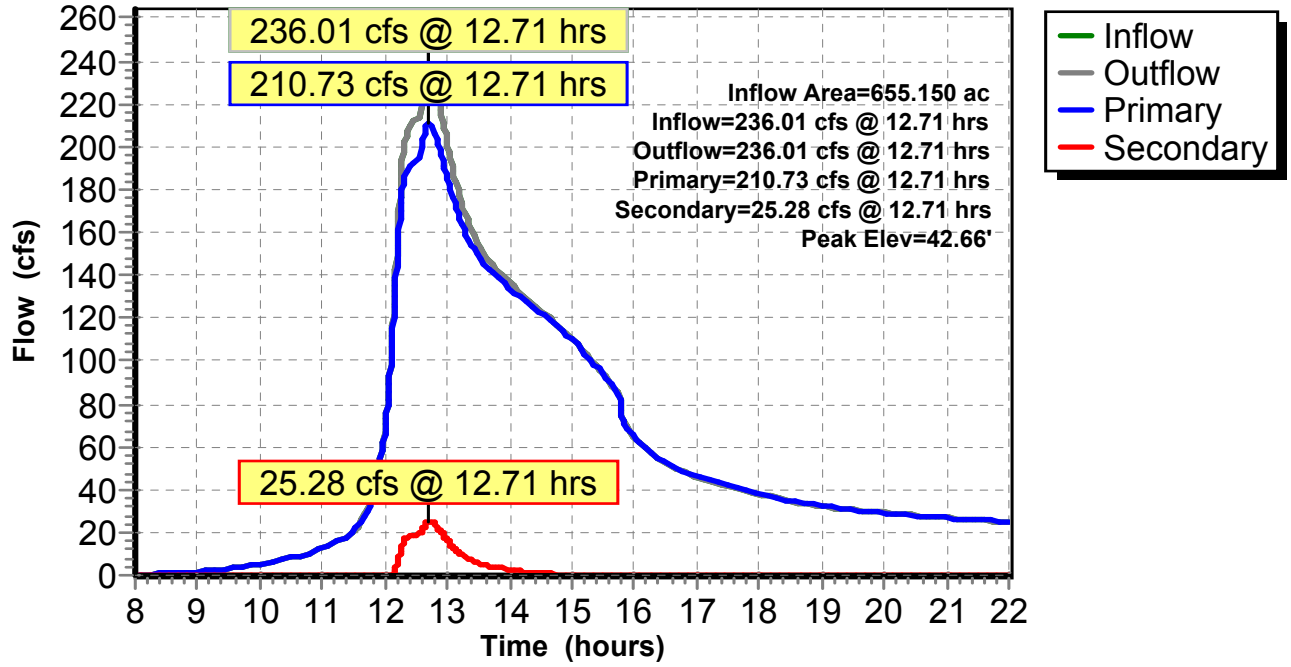
↑1=Culvert (Barrel Controls 210.72 cfs @ 7.11 fps)
 ↓2=WEIR WESTCH AVE (Controls 0.00 cfs)

Secondary OutFlow Max=25.27 cfs @ 12.71 hrs HW=42.66' TW=0.00' (Dynamic Tailwater)

↑3=Culvert (Inlet Controls 25.27 cfs @ 4.58 fps)

Pond 32P: NORTH OF WESTCH AVE AT POOL AREA

Hydrograph



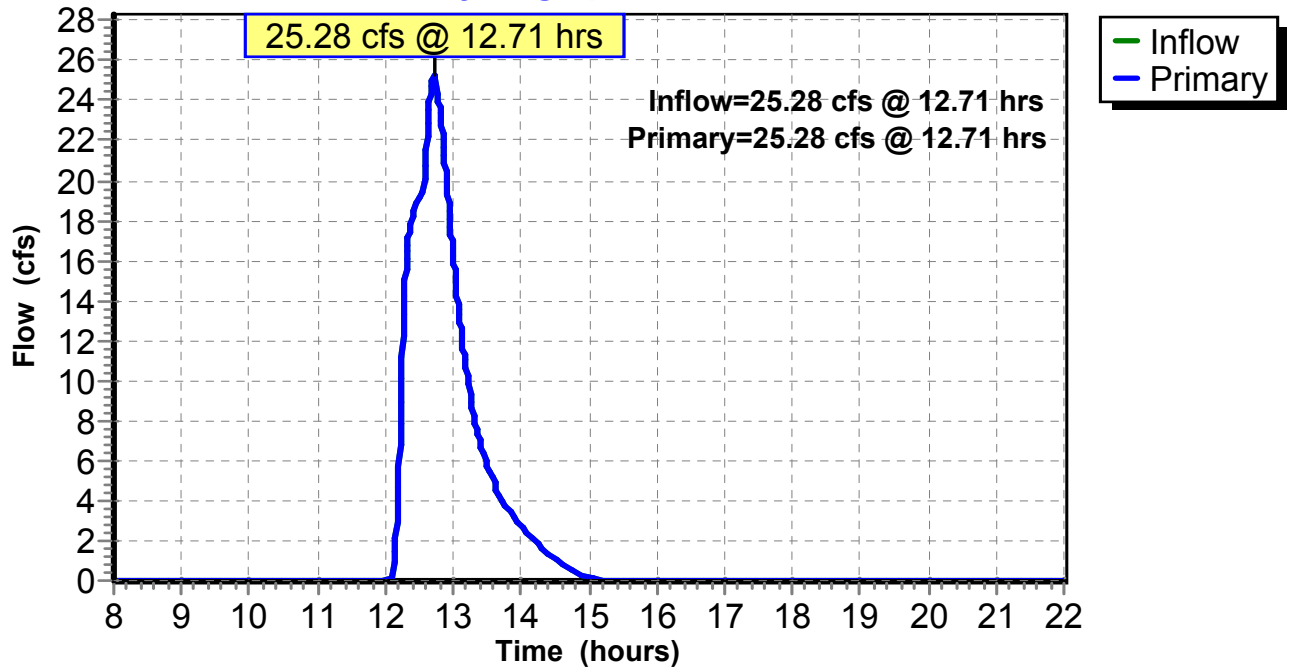
Summary for Link 26L: bypass

Inflow = 25.28 cfs @ 12.71 hrs, Volume= 1.971 af
Primary = 25.28 cfs @ 12.71 hrs, Volume= 1.971 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 26L: bypass

Hydrograph



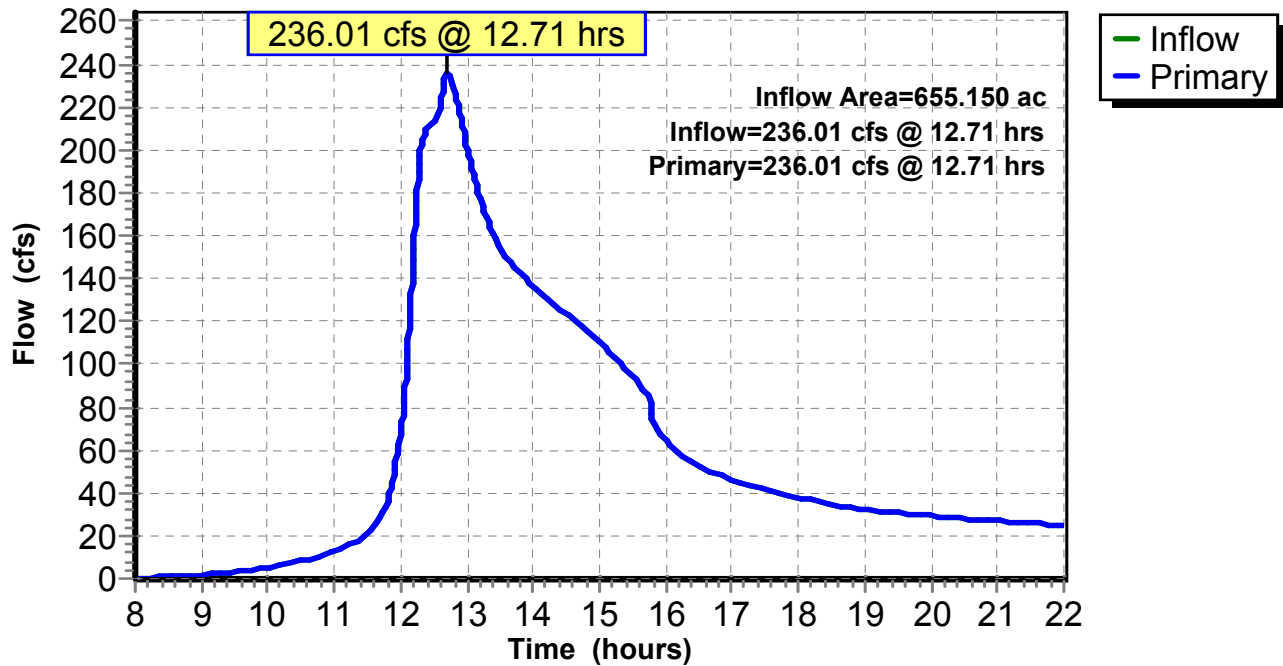
Summary for Link 33L: Join

Inflow Area = 655.150 ac, 0.00% Impervious, Inflow Depth > 1.24" for F2_24 event
Inflow = 236.01 cfs @ 12.71 hrs, Volume= 67.691 af
Primary = 236.01 cfs @ 12.71 hrs, Volume= 67.691 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 33L: Join

Hydrograph



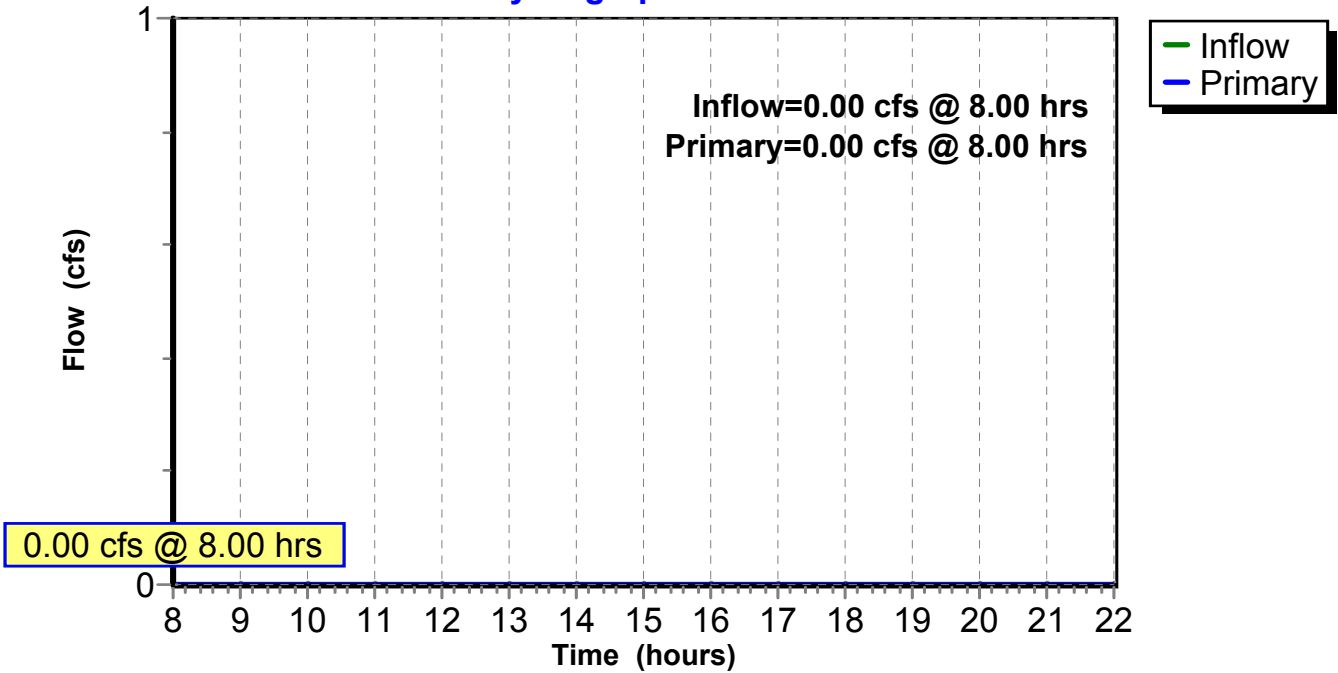
Summary for Link 36L: weir

Inflow = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 8.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 36L: weir

Hydrograph



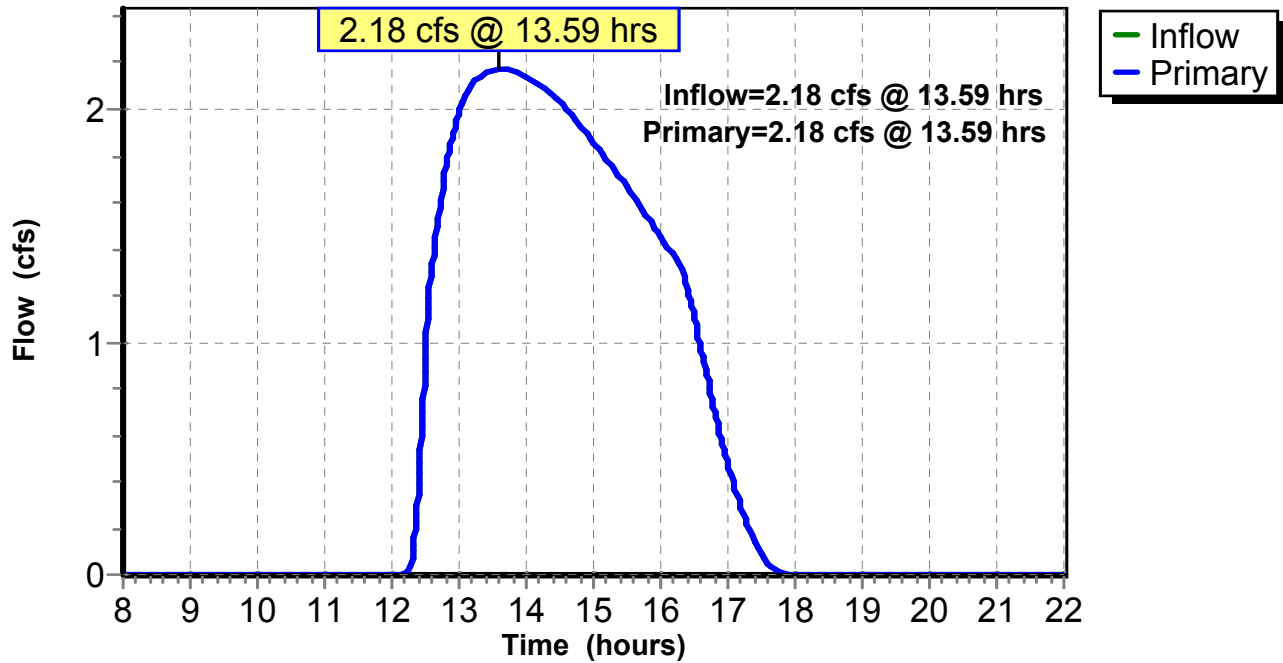
Summary for Link 37L: orifice

Inflow = 2.18 cfs @ 13.59 hrs, Volume= 0.653 af
Primary = 2.18 cfs @ 13.59 hrs, Volume= 0.653 af, Atten= 0%, Lag= 0.000 min

Primary outflow = Inflow, Time Span= 8.00-22.00 hrs, dt= 0.01 hrs

Link 37L: orifice

Hydrograph



APPENDIX B

WATERSHED MAPS

COMPUTATION OF RUNOFF CURVE NUMBERS:

WATERSHED 'A'					WATERSHED 'B'					WATERSHED 'BH'				
WS AREA		59.25			WS AREA		57.56			WS AREA		15.36		
ZONE	HYDROSOIL	AREA	CURVE #	AxC	ZONE	HYDROSOIL	AREA	CURVE #	AxC	ZONE	HYDROSOIL	AREA	CURVE #	AxC
OB-2	B	13.8	92	1269.6	OB-2	B		92	0	OB-2	B		92	0
	C		94	0		C		94	0		C		94	0
	D	24.9	95	2365.5		D		95	0		D		95	0
	W		98	0		W		98	0		W		98	0
OB-S	B		92	0	OB-S	B		92	0	OB-S	B		92	0
	C		94	0		C		94	0		C		94	0
	D	4.06	95	385.7		D		95	0		D		95	0
	W		98	0		W		98	0		W		98	0
CDS	B		92	0	CDS	B		92	0	CDS	B		92	0
	C		94	0		C		94	0		C		94	0
	D	3.79	95	360.05		D	11.02	95	1046.9		D		95	0
	W		98	0		W		98	0		W		98	0
C1-D	B		92	0	C1-D	B		92	0	C1-D	B		92	0
	C		94	0		C		94	0		C		94	0
	D		95	0		D		95	0		D		95	0
	W		98	0		W		98	0		W		98	0
RA-1	B		65	0	RA-1	B	1.39	65	90.35	RA-1	B		65	0
	C		77	0		C		77	0		C		77	0
	D		82	0		D	13.83	82	1134.06		D		82	0
	W		98	0		W		98	0		W		98	0
H-1	B		92	0	H-1	B	6.8	92	625.6	H-1	B	9.03	92	830.76
	C		94	0		C		94	0		C		94	0
	D		95	0		D	0.99	95	94.05		D	1.06	95	100.415
	W		98	0		W		98	0		W		98	0
R2F	B		85	0	R2F	B		85	0	R2F	B		85	0
	C		90	0		C		90	0		C		90	0
	D	2.07	92	190.44		D		92	0		D		92	0
	W		98	0		W		98	0		W		98	0
R-2.5	B		85	0	R-2.5	B		85	0	R-2.5	B		85	0
	C		90	0		C		90	0		C		90	0
	D		92	0		D		92	0		D		92	0
	W		98	0		W		98	0		W		98	0
R-5	B		85	0	R-5	B		85	0	R-5	B		85	0
	C		90	0		C		90	0		C		90	0
	D		92	0		D	2.73	92	251.16		D		92	0
	W		98	0		W		98	0		W		98	0
R5	B		86	0	R5	B		86	0	R5	B		86	0
	C		90	0		C		90	0		C		90	0
	D	1.37	92	126.04		D	0.38	92	34.96		D		92	0
	W		98	0		W		98	0		W		98	0
R-7	B		75	0	R-7	B		75	0	R-7	B		75	0
	C		83	0		C		83	0		C		83	0
	D		87	0		D	12.45	87	1083.15		D		87	0
	W		98	0		W		98	0		W		98	0
R7	B		75	0	R7	B		75	0	R7	B		75	0
	C		83	0		C		83	0		C		83	0
	D	2.99	87	260.13		D		87	0		D		87	0
	W		98	0		W		98	0		W		98	0
R-10	B		75	0	R-10	B	3.48	75	261	R-10	B	5.23	75	392.25
	C		83	0		C		83	0		C		83	0
	D		87	0		D	0.86	87	74.82		D		87	0
	W		98	0		W		98	0		W		98	0
R-12	B		72	0	R-12	B		72	0	R-12	B		72	0
	C		81	0		C		81	0		C		81	0
	D		86	0		D		86	0		D		86	0
	W		98	0		W		98	0		W		98	0
R-15	B		72	0	R-15	B		72	0	R-15	B		72	0
	C		81	0		C		81	0		C		81	0
	D	6.45	86	554.7		D	3.69	86	317.34		D		86	0
	W		98	0		W		98	0		W		98	0
R-15A	B		72	0	R-15A	B		72	0	R-15A	B		72	0
	C		81	0		C		81	0		C		81	0
	D		86	0		D		86	0		D		86	0
	W		98	0		W		98	0		W		98	0
R-20	B		70	0	R-20	B		70	0	R-20	B		70	0
	C		80	0		C		80	0		C		80	0
	D		85	0		D		85	0		D		85	0
	W		98	0		W		98	0		W		98	0
R-25	B		70	0	R-25	B		70	0	R-25	B		70	0
	C		80	0		C		80	0		C		80	0
	D		85	0		D		85	0		D		85	0
	W		98	0		W		98	0		W		98	0
PUD	B		85	0	PUD	B		85	0	PUD	B		85	0
	C		90	0		C		90	0		C		90	0
	D		92	0		D		92	0		D		92	0
	W		98	0		W		98	0		W		98	0
PRD	B		85	0	PRD	B		85	0	PRD	B		85	0
	C		90	0		C		90	0		C		90	0
	D		92	0		D		92	0		D		92	0
	W		98	0		W		98	0		W		98	0
TOTAL		59.43	SUM(AxC)	5512.16	TOTAL		57.62	SUM(AxC)	5013.39	TOTAL		15.317	SUM(AxC)	1323.425
ERROR		-0.18	AVG. 'C'	93.03	ERROR		-0.06	AVG. 'C'	87.10	ERROR		0.043	AVG. 'C'	86.16

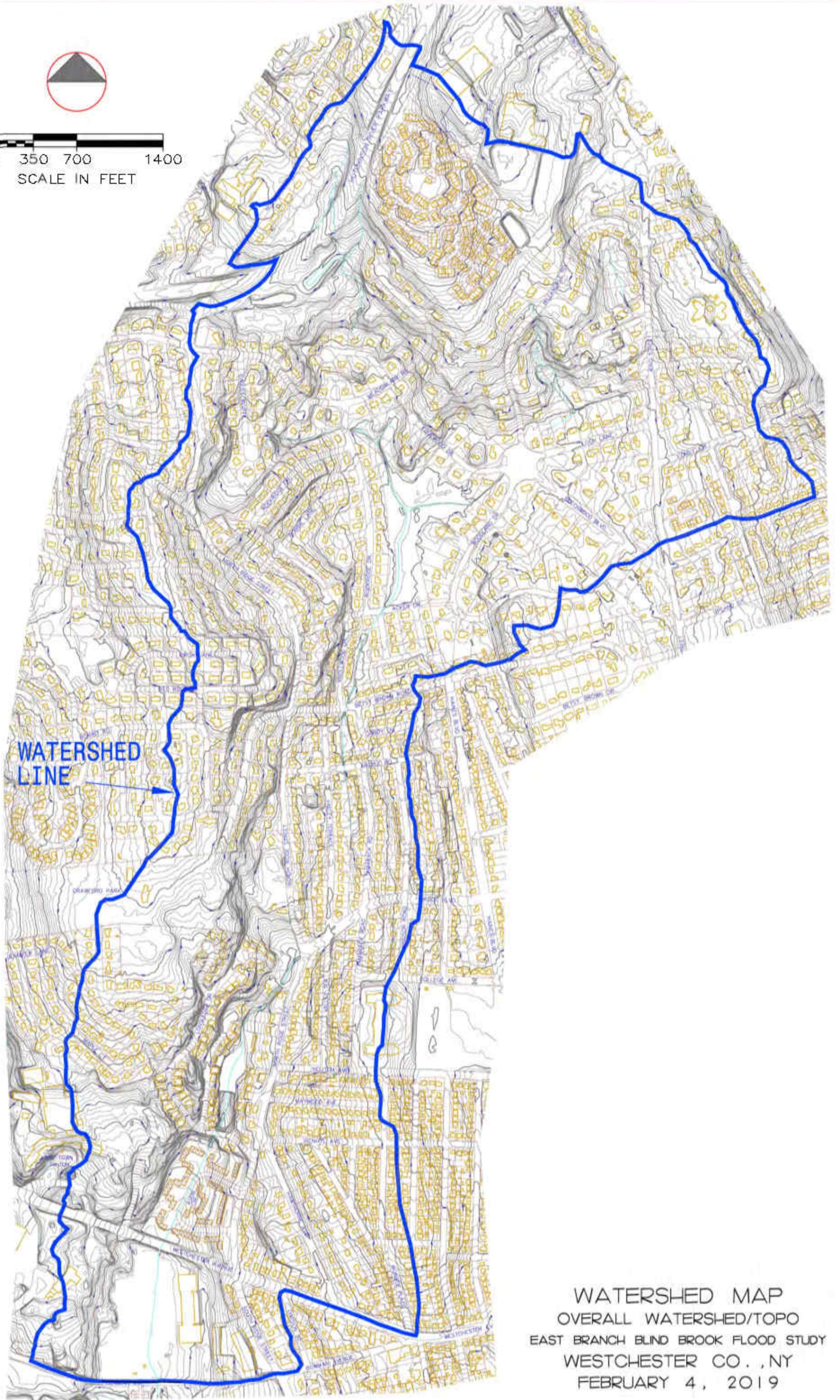
WATERSHED 'C'					WATERSHED 'D'					WATERSHED 'D-1'					
WS AREA		21.47			WS AREA		115.91			WS AREA		39.57			
ZONE	HYDROSOIL	AREA	CURVE #	AxC	ZONE	HYDROSOIL	AREA	CURVE #	AxC	ZONE	HYDROSOIL	AREA	CURVE #	AxC	
OB-2	B		92	0	OB-2	B		92	0	OB-2	B		92	0.0	
	C		94	0		C		94	0		C		94	0.0	
	D		95	0		D		95	0		D		95	0.0	
	W		98	0		W		98	0		W		98	0.0	
OB-S	B		92	0	OB-S	B		92	0	OB-S	B		92	0.0	
	C		94	0		C		94	0		C		94	0.0	
	D		95	0		D		95	0		D		95	0.0	
	W		98	0		W		98	0		W		98	0.0	
CDS	B		92	0	CDS	B		92	0	CDS	B		92	0.0	
	C		94	0		C		94	0		C		94	0.0	
	D	0.43	95	40.85		D	0.9	95	85.5		D		95	0.0	
	W		98	0		W		98	0		W		98	0.0	
C1-D	B		92	0	C1-D	B		92	0	C1-D	B		92	0.0	
	C		94	0		C		94	0		C		94	0.0	
	D		95	0		D		95	0		D		95	0.0	
	W		98	0		W		98	0		W		98	0.0	
RA-1	B		65	0	RA-1	B		65	0	RA-1	B		65	0.0	
	C		77	0		C		77	0		C		77	0.0	
	D	0.05	82	4.1		D		82	0		D		82	0.0	
	W		98	0		W		98	0		W		98	0.0	
H-1	B	0.23	92	21.16	H-1	B		92	0	H-1	B		92	0.0	
	C		94	0		C		94	0		C		94	0.0	
	D		95	0		D		95	0		D		95	0.0	
	W		98	0		W		98	0		W		98	0.0	
R2F	B		85	0	R2F	B		85	0	R2F	B		85	0.0	
	C		90	0		C		90	0		C		90	0.0	
	D		92	0		D		92	0		D		92	0.0	
	W		98	0		W		98	0		W		98	0.0	
R-2.5	B		85	0	R-2.5	B		85	0	R-2.5	B		85	0.0	
	C		90	0		C		90	0		C		90	0.0	
	D		92	0		D		92	0		D		92	0.0	
	W		98	0		W		98	0		W		98	0.0	
R-5	B		85	0	R-5	B		85	0	R-5	B		85	0.0	
	C		90	0		C		90	0		C		90	0.0	
	D	4.28	92	393.76		D	7.07	92	650.44		D		92	0.0	
	W		98	0		W		98	0		W		98	0.0	
R5	B		85	0	R5	B		85	0	R5	B		85	0.0	
	C		90	0		C		90	0		C		90	0.0	
	D		92	0		D		92	0		D		92	0.0	
	W		98	0		W		98	0		W		98	0.0	
R-7	B		75	0	R-7	B	1.04	75	78	R-7	B	0.20	75	14.6	
	C		83	0		C		83	0		C		83	0.0	
	D		87	0		D	43.56	87	3789.285		D	6.93	87	602.5	
	W		98	0		W		98	0		W		98	0.0	
R7	B		75	0	R7	B		75	0	R7	B		75	0.0	
	C		83	0		C		83	0		C		83	0.0	
	D	0.06	87	5.22		D	0.74	87	64.38		D		87	0.0	
	W		98	0		W		98	0		W		98	0.0	
R-10	B	7.06	75	529.5	R-10	B	7.03	75	527.325	R-10	B	3.63	75	272.2	
	C		83	0		C		83	0		C		83	0.0	
	D	6.98	87	607.26		D	12.36	87	1075.494		D	3.37	87	293.0	
	W	0.07	98	6.86		W	1.51	98	147.98		W		98	0.0	
R-12	B	2.27	72	163.44	R-12	B	34.54	72	2487.024	R-12	B	18.58	72	1337.6	
	C		81	0		C		81	0		C		81	0.0	
	D		86	0		D	7.24	86	622.64		D		86	0.0	
	W		98	0		W		98	0		W		98	0.0	
R-15	B		72	0	R-15	B		72	0	R-15	B	6.88	72	495.0	
	C		81	0		C		81	0		C		81	0.0	
	D		86	0		D		86	0		D		86	0.0	
	W		98	0		W		98	0		W		98	0.0	
R-15A	B		72	0	R-15A	B		72	0	R-15A	B		72	0.0	
	C		81	0		C		81	0		C		81	0.0	
	D		86	0		D		86	0		D		86	0.0	
	W		98	0		W		98	0		W		98	0.0	
R-20	B		70	0	R-20	B		70	0	R-20	B		70	0.0	
	C		80	0		C		80	0		C		80	0.0	
	D		85	0		D		85	0		D		85	0.0	
	W		98	0		W		98	0		W		98	0.0	
R-25	B		70	0	R-25	B		70	0	R-25	B		70	0.0	
	C		80	0		C		80	0		C		80	0.0	
	D		85	0		D		85	0		D		85	0.0	
	W		98	0		W		98	0		W		98	0.0	
PUD	B		85	0	PUD	B		85	0	PUD	B		85	0.0	
	C		90	0		C		90	0		C		90	0.0	
	D		92	0		D		92	0		D		92	0.0	
	W		98	0		W		98	0		W		98	0.0	
PRD	B		85	0	PRD	B		85	0	PRD	B		85	0.0	
	C		90	0		C		90	0		C		90	0.0	
	D		92	0		D		92	0		D		92	0.0	
	W		98	0		W		98	0		W		98	0.0	
		TOTAL	21.43	SUM(AxC)	1772.15		TOTAL	115.99	SUM(AxC)	9528.068		TOTAL	39.57	SUM(AxC)	3014.9
		ERROR	0.04	AVG. 'C'	82.54		ERROR	-0.08	AVG. 'C'	82.20		ERROR	0	AVG. 'C'	76.19

11 Avon and Rye Brook Ball Fields

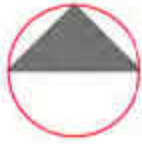
WATERSHED 'E'					WATERSHED 'F'					WATERSHED 'G'				
WS AREA		117.35			WS AREA		121.14			WS AREA		166.85		
ZONE	HYDROSOIL	AREA	CURVE #	AxC	ZONE	HYDROSOIL	AREA	CURVE #	AxC	ZONE	HYDROSOIL	AREA	CURVE #	AxC
OB-2	B		92	0	OB-2	B		92	0	OB-2	B		92	0
	C		94	0		C		94	0		C		94	0
	D		95	0		D		95	0		D		95	0
	W		98	0		W		98	0		W		98	0
OB-S	B		92	0	OB-S	B		92	0	OB-S	B		92	0
	C		94	0		C		94	0		C		94	0
	D		95	0		D		95	0		D		95	0
	W		98	0		W		98	0		W		98	0
C1	B		92	0	C1	B		92	0	C1	B		92	0
	C		94	0		C		94	0		C		94	0
	D		95	0		D		95	0		D		95	0
	W		98	0		W		98	0		W		98	0
C1-D	B		92	0	C1-D	B		92	0	C1-D	B		92	0
	C		94	0		C		94	0		C		94	0
	D		95	0		D		95	0		D		95	0
	W		98	0		W		98	0		W		98	0
RA-1	B		65	0	RA-1	B		65	0	RA-1	B		65	0
	C		77	0		C		77	0		C		77	0
	D		82	0		D		82	0		D		82	0
	W		98	0		W		98	0		W		98	0
H-1	B		92	0	H-1	B		92	0	H-1	B		92	0
	C		94	0		C		94	0		C		94	0
	D		95	0		D		95	0		D		95	0
	W		98	0		W		98	0		W		98	0
R2F	B		85	0	R2F	B		85	0	R2F	B		85	0
	C		90	0		C		90	0		C		90	0
	D		92	0		D		92	0		D		92	0
	W		98	0		W		98	0		W		98	0
R-2.5	B		85	0	R-2.5	B		85	0	R-2.5	B		85	0
	C		90	0		C		90	0		C		90	0
	D		92	0		D		92	0		D		92	0
	W		98	0		W		98	0		W		98	0
R-5	B		85	0	R-5	B		85	0	R-5	B		85	0
	C		90	0		C		90	0		C		90	0
	D		92	0		D		92	0		D		92	0
	W		98	0		W		98	0		W		98	0
R5	B		85	0	R5	B		85	0	R5	B		85	0
	C		90	0		C		90	0		C		90	0
	D		92	0		D		92	0		D		92	0
	W		98	0		W		98	0		W		98	0
R-7	B		75	0	R-7	B		75	0	R-7	B		75	0
	C	0.37	83	30.71		C		83	0		C	1.89	83	156.87
	D	0.32	87	27.84		D		87	0		D	5.89	87	512.43
	W		98	0		W		98	0		W		98	0
R7	B		75	0	R7	B		75	0	R7	B		75	0
	C		83	0		C		83	0		C		83	0
	D		87	0		D		87	0		D		87	0
	W		98	0		W		98	0		W		98	0
R-10	B	26.85	75	2013.75	R-10	B	3.97	75	297.75	R-10	B		75	0
	C		83	0		C		83	0		C		83	0
	D	27.99	87	2435.13		D	0.69	87	60.03		D		87	0
	W		98	0		W		98	0		W		98	0
R-12	B		72	0	R-12	B		72	0	R-12	B		72	0
	C		81	0		C		81	0		C		81	0
	D		86	0		D		86	0		D		86	0
	W		98	0		W		98	0		W		98	0
R-15	B	17.78	72	1280.16	R-15	B	47.88	72	3447.36	R-15	B	0.71	72	51.12
	C		81	0		C		81	0		C	46.89	81	3798.09
	D		86	0		D	6.07	86	522.02		D	1.99	86	171.14
	W		98	0		W		98	0		W		98	0
R-15A	B		72	0	R-15A	B		72	0	R-15A	B		72	0
	C		81	0		C		81	0		C		81	0
	D		86	0		D		86	0		D		86	0
	W		98	0		W		98	0		W		98	0
R-20	B		70	0	R-20	B	39.38	70	2756.6	R-20	B	12.51	70	875.7
	C		80	0		C		80	0		C	1.48	80	118.4
	D	0.65	85	55.25		D	9.98	85	848.3		D	5.3	85	450.5
	W		98	0		W		98	0		W		98	0
R-25	B	4.65	70	325.5	R-25	B	3.25	70	227.5	R-25	B	11.83	70	828.1
	C	7.16	80	572.8		C		80	0		C	18.43	80	1474.4
	D	30.93	85	2629.05		D	0.32	85	27.2		D	30.97	85	2632.45
	W		98	0		W		98	0		W		98	0
PUD	B	0.65	85	55.25	PUD	B	9.53	85	810.05	PUD	B	16.13	85	1371.05
	C		90	0		C		90	0		C	10.27	90	924.3
	D		92	0		D		92	0		D		92	0
	W		98	0		W		98	0		W		98	0
PRD	B		85	0	PRD	B		85	0	PRD	B		85	0
	C		90	0		C		90	0		C	2.56	90	230.4
	D		92	0		D		92	0		D		92	0
	W		98	0		W		98	0		W		98	0
TOTAL		117.35	SUM(AxC)	9425.44	TOTAL		121.07	SUM(AxC)	8996.81	TOTAL		166.85	SUM(AxC)	13594.95
ERROR		0	AVG. 'C'	80.32	ERROR		0.07	AVG. 'C'	74.27	ERROR		0	AVG. 'C'	81.48



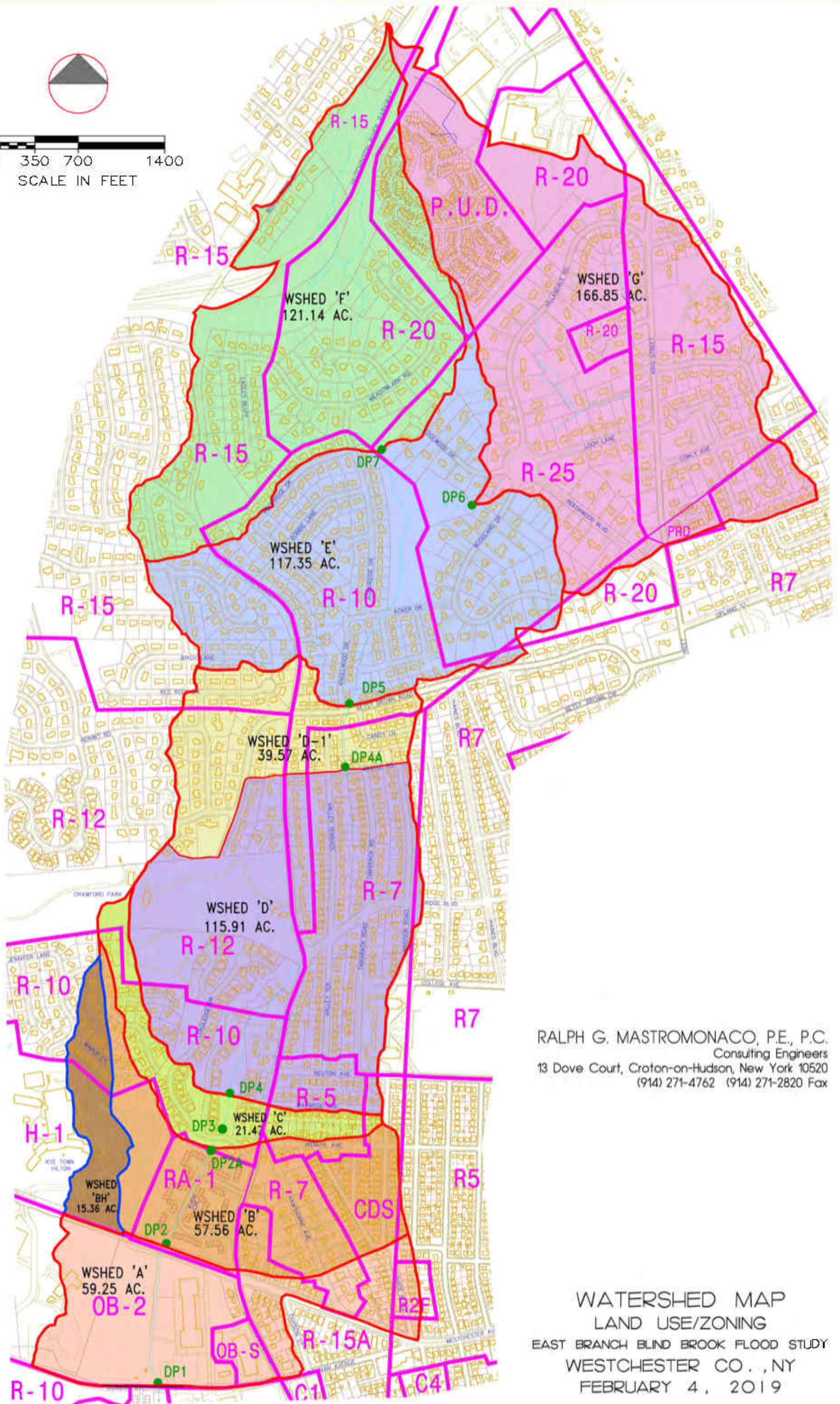
0 350 700 1400
SCALE IN FEET



WATERSHED MAP
OVERALL WATERSHED/TOPO
EAST BRANCH BLIND BROOK FLOOD STUDY
WESTCHESTER CO., NY
FEBRUARY 4, 2019



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SCALE IN FEET

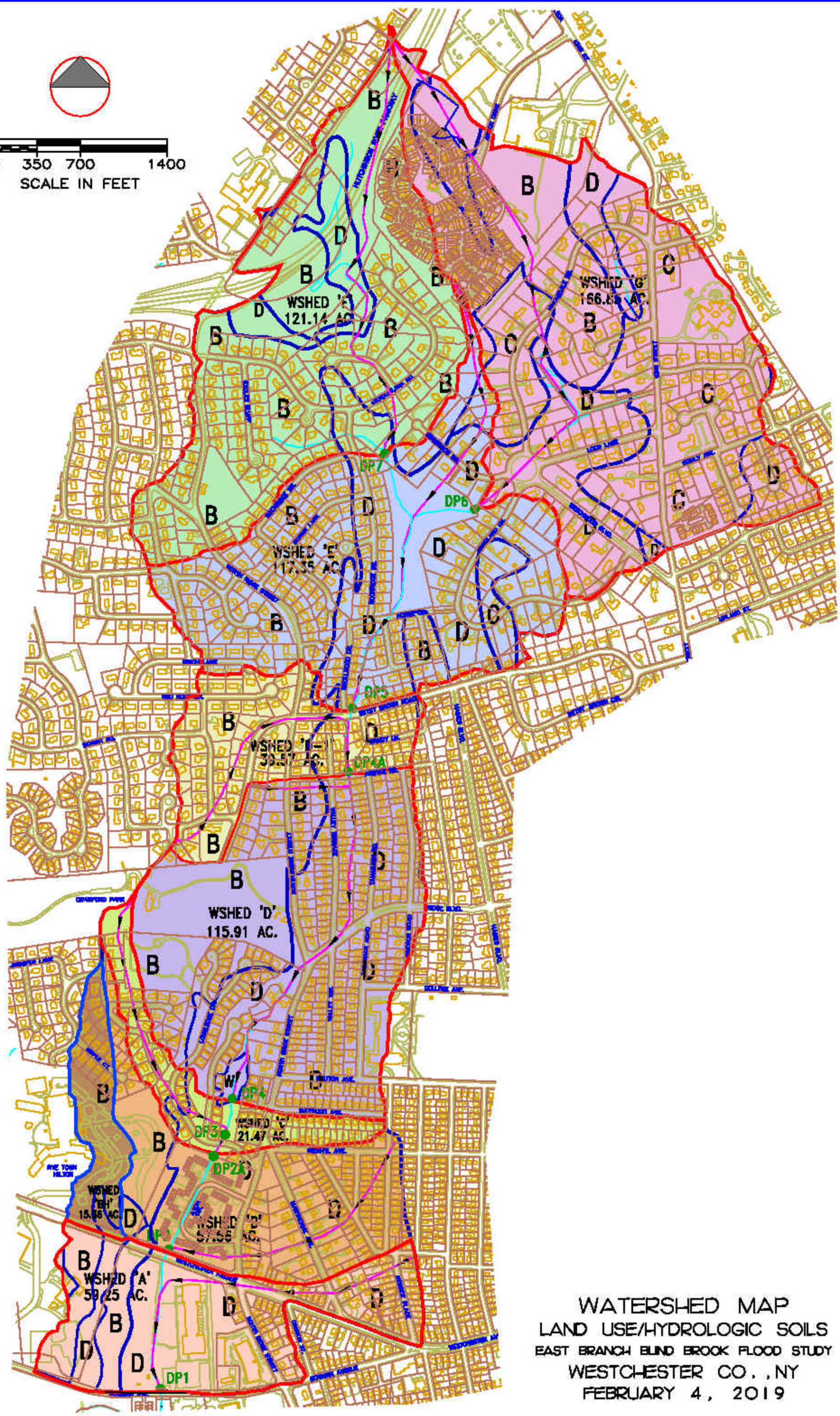


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WATERSHED MAP
LAND USE/ZONING
EAST BRANCH BLIND BROOK FLOOD STUDY
WESTCHESTER CO., NY
FEBRUARY 4, 2019



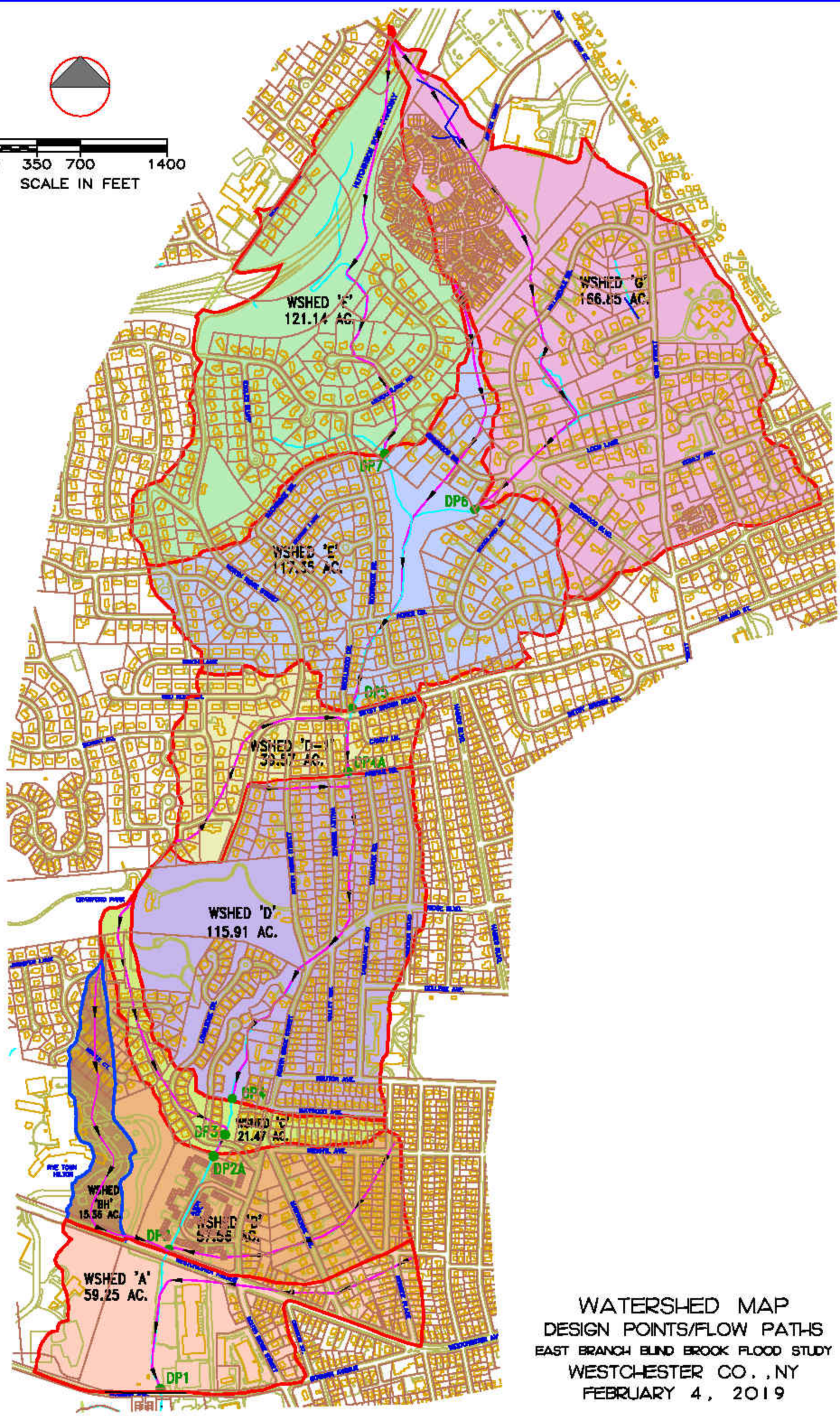
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SCALE IN FEET



WATERSHED MAP
LAND USE/HYDROLOGIC SOILS
EAST BRANCH BLIND BROOK FLOOD STUDY
WESTCHESTER CO., NY
FEBRUARY 4, 2019



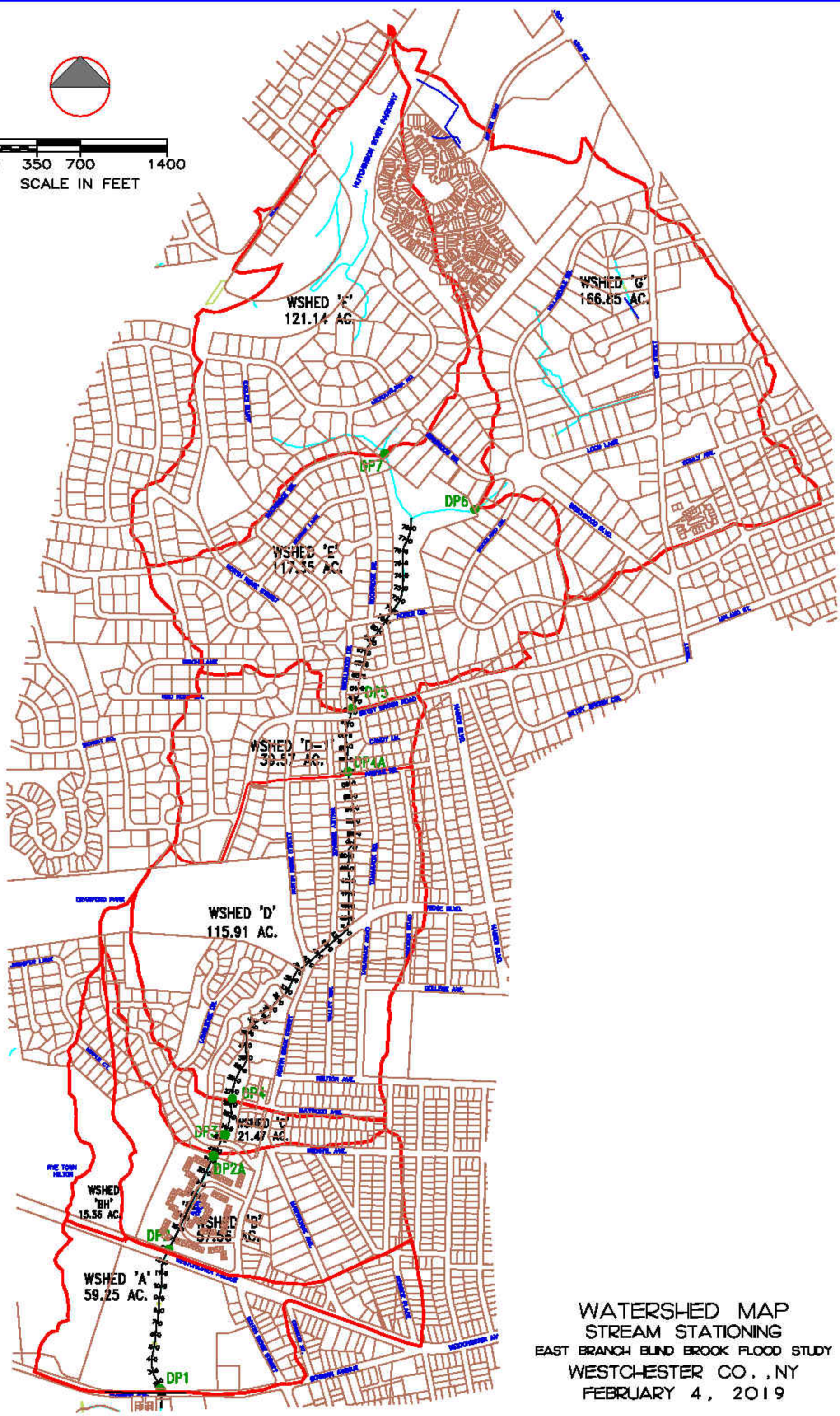
0 350 700 1400
SCALE IN FEET



WATERSHED MAP
DESIGN POINTS/FLOW PATHS
EAST BRANCH BLIND BROOK FLOOD STUDY
WESTCHESTER CO., NY
FEBRUARY 4, 2019



0 350 700 1400
SCALE IN FEET



WATERSHED MAP
STREAM STATIONING
EAST BRANCH BLIND BROOK FLOOD STUDY
WESTCHESTER CO., NY
FEBRUARY 4, 2019

TT_CALCES EAST BRANCH BLIND BROOK FLOOD STUDY							
WS A (FLOW PATH=N.W.CORNER OF W.S. 'A' TO DP1)							
SHEET FLOW (L.T. 150 FT)							
LENGTH	SLOPE	MANNING	2 YR PRP			DELTA Y	TRAVEL TIME
(FT)	PERCENT	n	(INCHES)			(FT)	HOURS MINUTES
100.00	5.100	0.400	3.450			5.100	0.237 14.22
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH	SLOPE					DELTA Y	TRAVEL
(FT)	PERCENT					(FT)	TIME
1456.00	5.100					74.256	0.111 6.66
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH	SLOPE					DELTA Y	TRAVEL
(FT)	PERCENT					(FT)	TIME
316.00	11.800					37.288	0.016 0.95
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH	SLOPE					DELTA Y	TRAVEL
(FT)	PERCENT					(FT)	TIME
1112.00	1.200					13.344	0.175 10.49
						TOTAL HRS.	0.539 32.32
WS B (FLOW PATH=N.E. CORNER OF W.S. 'B' TO DP2)							
SHEET FLOW (L.T. 150 FT)							
LENGTH	SLOPE	MANNING	2 YR PRP			DELTA Y	TRAVEL
(FT)	PERCENT	n	(INCHES)			(FT)	TIME
100.00	3.000	0.400	3.450			3.000	0.293 17.58
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH	SLOPE					DELTA Y	TRAVEL
(FT)	PERCENT					(FT)	TIME
1263.00	3.00					37.89	0.13 7.53
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH	SLOPE					DELTA Y	TRAVEL
(FT)	PERCENT					(FT)	TIME
111.00	25.10					27.86	0.00 0.23
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH	SLOPE					DELTA Y	TRAVEL
(FT)	PERCENT					(FT)	TIME
347.00	4.20					14.57	0.03 1.75
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH	SLOPE					DELTA Y	TRAVEL
(FT)	PERCENT					(FT)	TIME
78.00	20.80					16.22	0.00 0.18
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH	SLOPE					DELTA Y	TRAVEL
(FT)	PERCENT					(FT)	TIME
370.00	4.50					16.65	0.03 1.80
						TOTAL HRS.	0.485 29.07

TT_CALC_ EAST BRANCH BLIND BROOK FLOOD STUDY									
WS B-TT (FLOW PATH = DP3 TO DP2)									
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)									
LENGTH	SLOPE							DELTA Y	TRAVEL
(FT)	PERCENT							(FT)	TIME
870.00	1.60							13.92	0.12 7.10
								TOTAL HRS.	0.12 7.10
WS BH (FLOW PATH=NORTHERN CORNER OF W.S. 'BH' THROUGH HILTON TO DP2)									
SHEET FLOW (L.T. 150 FT)									
LENGTH	SLOPE	MANNING	2 YR PRP					DELTA Y	TRAVEL
(FT)	PERCENT	n	(INCHES)					(FT)	TIME
100.00	3.000	0.400	3.450					3.000	0.293 17.58
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)									
LENGTH	SLOPE							DELTA Y	TRAVEL
(FT)	PERCENT							(FT)	TIME
298.00	3.00							8.94	0.03 1.78
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)									
LENGTH	SLOPE							DELTA Y	TRAVEL
(FT)	PERCENT							(FT)	TIME
864.00	6.20							53.57	0.06 3.58
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)									
LENGTH	SLOPE							DELTA Y	TRAVEL
(FT)	PERCENT							(FT)	TIME
674.00	4.70							31.68	0.05 3.21
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)									
LENGTH	SLOPE							DELTA Y	TRAVEL
(FT)	PERCENT							(FT)	TIME
704.00	7.50							52.80	0.04 2.66
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)									
LENGTH	SLOPE							DELTA Y	TRAVEL
(FT)	PERCENT							(FT)	TIME
209.00	1.70							3.55	0.03 1.66
								TOTAL HRS.	0.508 30.47

TT_CALC_S EAST BRANCH BLIND BROOK FLOOD STUDY							
WS C (FLOW PATH=N.W. CORNER OF W.S. 'C' TO DP3)							
SHEET FLOW (L.T. 150 FT)							
LENGTH (FT)	SLOPE PERCENT	MANNING n	2 YR PRP (INCHES)			DELTA Y (FT)	TRAVEL TIME
100.00	1.300	0.400	3.450			1.300	0.410 24.57
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH (FT)	SLOPE PERCENT					DELTA Y (FT)	TRAVEL TIME
533.00	1.30					6.93	0.08 4.83
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH (FT)	SLOPE PERCENT					DELTA Y (FT)	TRAVEL TIME
342.00	4.10					14.02	0.03 1.74
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH (FT)	SLOPE PERCENT					DELTA Y (FT)	TRAVEL TIME
952.00	7.00					66.64	0.06 3.72
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH (FT)	SLOPE PERCENT					DELTA Y (FT)	TRAVEL TIME
184.00	10.70					19.69	0.01 0.58
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH (FT)	SLOPE PERCENT					DELTA Y (FT)	TRAVEL TIME
72.00	44.30					31.90	0.00 0.11
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH (FT)	SLOPE PERCENT					DELTA Y (FT)	TRAVEL TIME
244.00	4.80					11.71	0.02 1.15
						TOTAL HRS.	0.612 36.70
WS C-TT (FLOW PATH=DP4 TO DP3)							
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH (FT)	SLOPE PERCENT					DELTA Y (FT)	TRAVEL TIME
158.00	0.50					0.79	0.04 2.31
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH (FT)	SLOPE PERCENT					DELTA Y (FT)	TRAVEL TIME
277.00	2.88					7.98	0.03 1.69
						TOTAL HRS.	0.067 3.99

TT_CALC_S EAST BRANCH BLIND BROOK FLOOD STUDY									
WS D (FLOW PATH=N.W. CORNER OF W.S. 'D' TO DP4)									
SHEET FLOW (L.T. 150 FT)									
LENGTH	SLOPE	MANNING	2 YR PRP					DELTA Y	TRAVEL
(FT)	PERCENT	n	(INCHES)					(FT)	TIME
100.00	6.600	0.400	3.450					6.600	0.214 12.83
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)									
LENGTH	SLOPE							DELTA Y	TRAVEL
(FT)	PERCENT							(FT)	TIME
162.00	6.60							10.69	0.01 0.65
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)									
LENGTH	SLOPE							DELTA Y	TRAVEL
(FT)	PERCENT							(FT)	TIME
70.00	41.00							28.70	0.00 0.11
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)									
LENGTH	SLOPE							DELTA Y	TRAVEL
(FT)	PERCENT							(FT)	TIME
549.00	3.60							19.76	0.05 2.99
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)									
LENGTH	SLOPE							DELTA Y	TRAVEL
(FT)	PERCENT							(FT)	TIME
1258.00	0.70							8.81	0.26 15.53
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)									
LENGTH	SLOPE							DELTA Y	TRAVEL
(FT)	PERCENT							(FT)	TIME
1651.00	1.69							27.90	0.22 13.12
								TOTAL HRS.	0.754 45.23
WS D - TT STREAM PATH (FLOW PATH=DP4A TO DP4)									
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)									
LENGTH	SLOPE							DELTA Y	TRAVEL
(FT)	PERCENT							(FT)	TIME
1331.00	0.70							9.32	0.27 16.43
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)									
LENGTH	SLOPE							DELTA Y	TRAVEL
(FT)	PERCENT							(FT)	TIME
1651.00	1.69							27.90	0.22 13.12
								TOTAL HRS.	0.493 29.55

TT_CALC EAST BRANCH BLIND BROOK FLOOD STUDY							
WS D-1 (FLOW PATH=S.W. CORNER OF W.S. 'D' TO DP4A)							
SHEET FLOW (L.T. 150 FT)							
LENGTH (FT)	SLOPE PERCENT	MANNING n	2 YR PRP (INCHES)			DELTA Y (FT)	TRAVEL TIME
100.00	2.900	0.400	3.450			2.900	0.297 17.82
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH (FT)	SLOPE PERCENT					DELTA Y (FT)	TRAVEL TIME
963.00	2.90					27.93	0.10 5.84
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH (FT)	SLOPE PERCENT					DELTA Y (FT)	TRAVEL TIME
862.00	7.50					64.65	0.05 3.25
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH (FT)	SLOPE PERCENT					DELTA Y (FT)	TRAVEL TIME
427.00	0.90					3.84	0.08 4.65
						TOTAL HRS.	0.526 31.57
WS D-1 TT (FLOW PATH=DP5 TO DP4)							
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH (FT)	SLOPE PERCENT					DELTA Y (FT)	TRAVEL TIME
504.00	0.40					2.02	0.14 8.23
						TOTAL HRS.	0.137 8.23
WS E (FLOW PATH=NORTHERN CORNER OF W.S. 'E' TO DP5)							
SHEET FLOW (L.T. 150 FT)							
LENGTH (FT)	SLOPE PERCENT	MANNING n	2 YR PRP (INCHES)			DELTA Y (FT)	TRAVEL TIME
100.00	5.210	0.400	3.450			5.210	0.235 14.10
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH (FT)	SLOPE PERCENT					DELTA Y (FT)	TRAVEL TIME
507.00	5.21					26.41	0.04 2.29
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH (FT)	SLOPE PERCENT					DELTA Y (FT)	TRAVEL TIME
707.00	10.33					73.03	0.04 2.27
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH (FT)	SLOPE PERCENT					DELTA Y (FT)	TRAVEL TIME
2478.00	0.33					8.18	0.74 44.56
						TOTAL HRS.	1.054 63.23
WS E TT (FLOW PATH=DP7 TO DP5)							
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH (FT)	SLOPE PERCENT					DELTA Y (FT)	TRAVEL TIME
2181.00	0.09					1.96	1.25 75.10
						TOTAL HRS.	1.252 75.10

TT_CALC_S EAST BRANCH BLIND BROOK FLOOD STUDY							
WS F (FLOW PATH=NORTHERN CORNER OF W.S. 'F' TO DP7)							
SHEET FLOW (L.T. 150 FT)							
LENGTH (FT)	SLOPE PERCENT	MANNING n	2 YR PRP (INCHES)			DELTA Y (FT)	TRAVEL TIME
100.00	4.230	0.400	3.450			4.230	0.255 15.33
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH (FT)	SLOPE PERCENT					DELTA Y (FT)	TRAVEL TIME
3373.00	4.23					142.68	0.28 16.94
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH (FT)	SLOPE PERCENT					DELTA Y (FT)	TRAVEL TIME
1131.00	0.95					10.74	0.20 11.99
						TOTAL HRS.	0.738 44.25
WS G (FLOW PATH=N.W. CORNER OF W.S. 'G' TO DP6)							
SHEET FLOW (L.T. 150 FT)							
LENGTH (FT)	SLOPE PERCENT	MANNING n	2 YR PRP (INCHES)			DELTA Y (FT)	TRAVEL TIME
100.00	2.890	0.400	3.450			2.890	0.297 17.85
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH (FT)	SLOPE PERCENT					DELTA Y (FT)	TRAVEL TIME
773.00	2.89					22.34	0.08 4.70
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH (FT)	SLOPE PERCENT					DELTA Y (FT)	TRAVEL TIME
1301.00	6.08					79.10	0.09 5.45
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH (FT)	SLOPE PERCENT					DELTA Y (FT)	TRAVEL TIME
1525.00	3.69					56.27	0.14 8.20
						TOTAL HRS.	0.603 36.20
WS G TT (FLOW PATH=DP6 TO DP5)							
SHALLOW CONCENTRATED FLOW (UN-PAVED PATH)							
LENGTH (FT)	SLOPE PERCENT					DELTA Y (FT)	TRAVEL TIME
2209.00	0.09					1.99	1.27 76.06
						TOTAL HRS.	1.268 76.06

APPENDIX C

SURVEY DATA

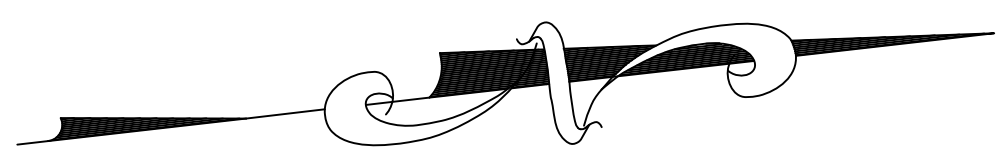


PHOTO #1

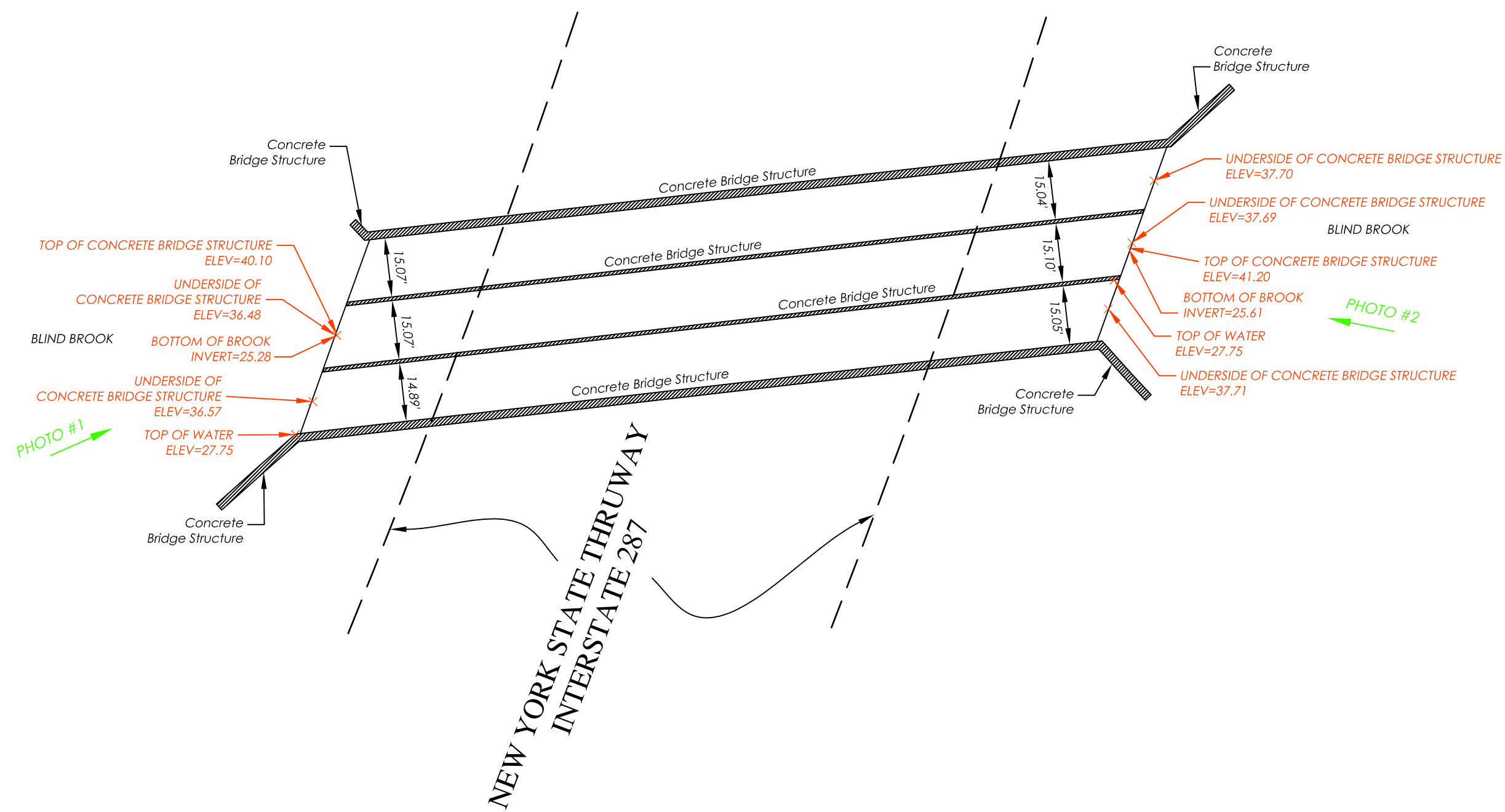


PHOTO #2

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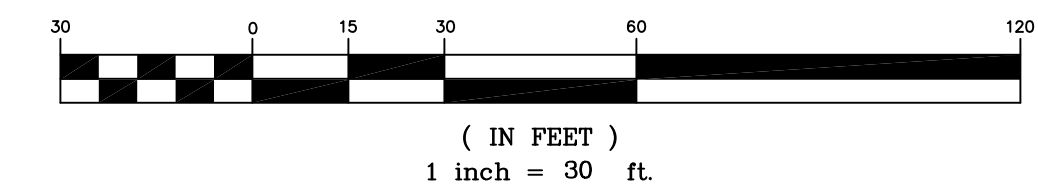
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Elevations shown hereon generally in accordance with North American Vertical Datum 88. Property Reference generally in accordance with North American Datum 83.

**ELEVATION STUDY OF BLIND BROOK
PREPARED FOR
VILLAGE OF RYE BROOK**
SITUATE IN THE
VILLAGE OF RYE BROOK
WESTCHESTER COUNTY, NEW YORK

SCALE: 1" = 30'
GRAPHIC SCALE



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TC MERRITTS LAND SURVEYORS

394 BEDFORD ROAD • PLEASANTVILLE • NY 10570
(914) 769-8003 • (203) 622-8899

Surveyed: December 4, 2018
Map Prepared: December 7, 2018
Map Revised: December 18, 2018

By: *Daniel T. Merritt*
New York State Licensed Land Surveyor No. 050604

Project: 18-395	Field Survey By: BC/CR
Drawn By: DA	Checked By: DM



Vicinity Map



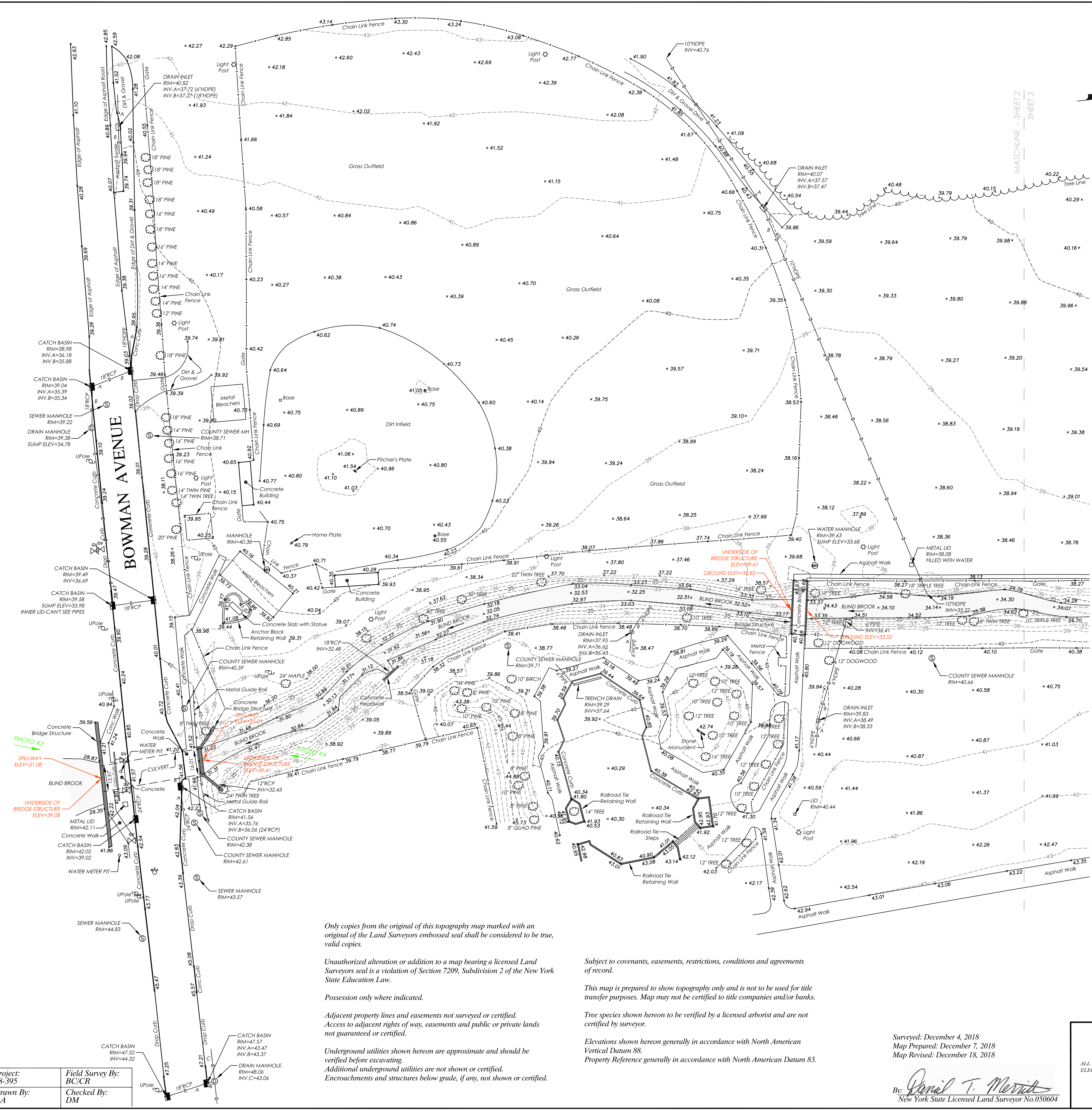
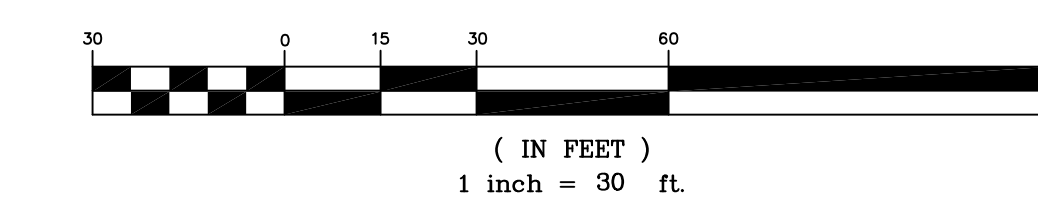
PHOTO #3



PHOTO #4

ELEVATION STUDY OF BLIND BROOK
PREPARED FOR
VILLAGE OF RYE BROOK
SITUATE IN THE
VILLAGE OF RYE BROOK
WESTCHESTER COUNTY, NEW YORK

SCALE: 1" = 30'
GRAPHIC SCALE



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Surveyed: December 4, 2018
Map Prepared: December 7, 2018
Map Revised: December 18, 2018

By: *Donal T. Merritt*
New York State Licensed Land Surveyor No. 050604

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Project: 18-395
Field Survey By: BC/CR
Checked By: DM
Drawn By: DA



PHOTO #5



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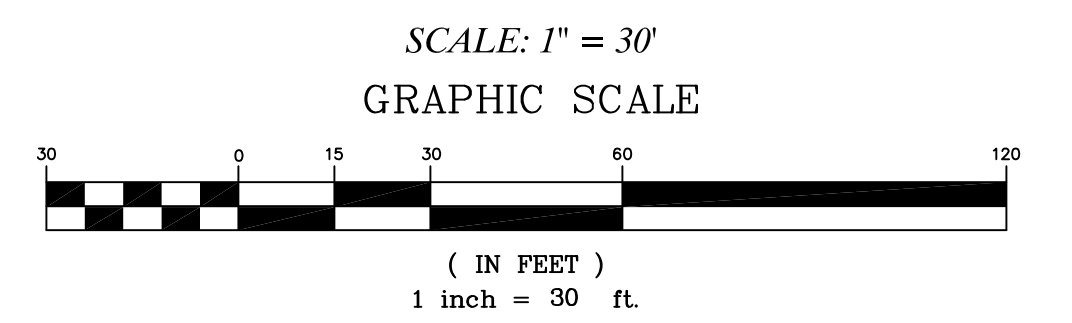
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**ELEVATION STUDY OF BLIND BROOK
PREPARED FOR
VILLAGE OF RYE BROOK
SITUATE IN THE
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Surveyed: December 4, 2018
Map Prepared: December 7, 2018
Map Revised: December 18, 2018
By: *Daniel T. Merritt*
New York State Licensed Land Surveyor No. 050604

Project: 18-395	Field Survey By: BC/CR
Drawn By: DA	Checked By: DM

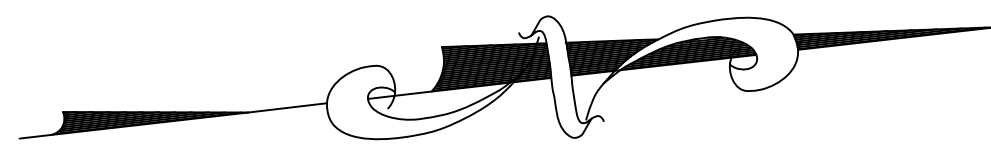


PHOTO #6



PHOTO #7



PHOTO #8



Vicinity Map

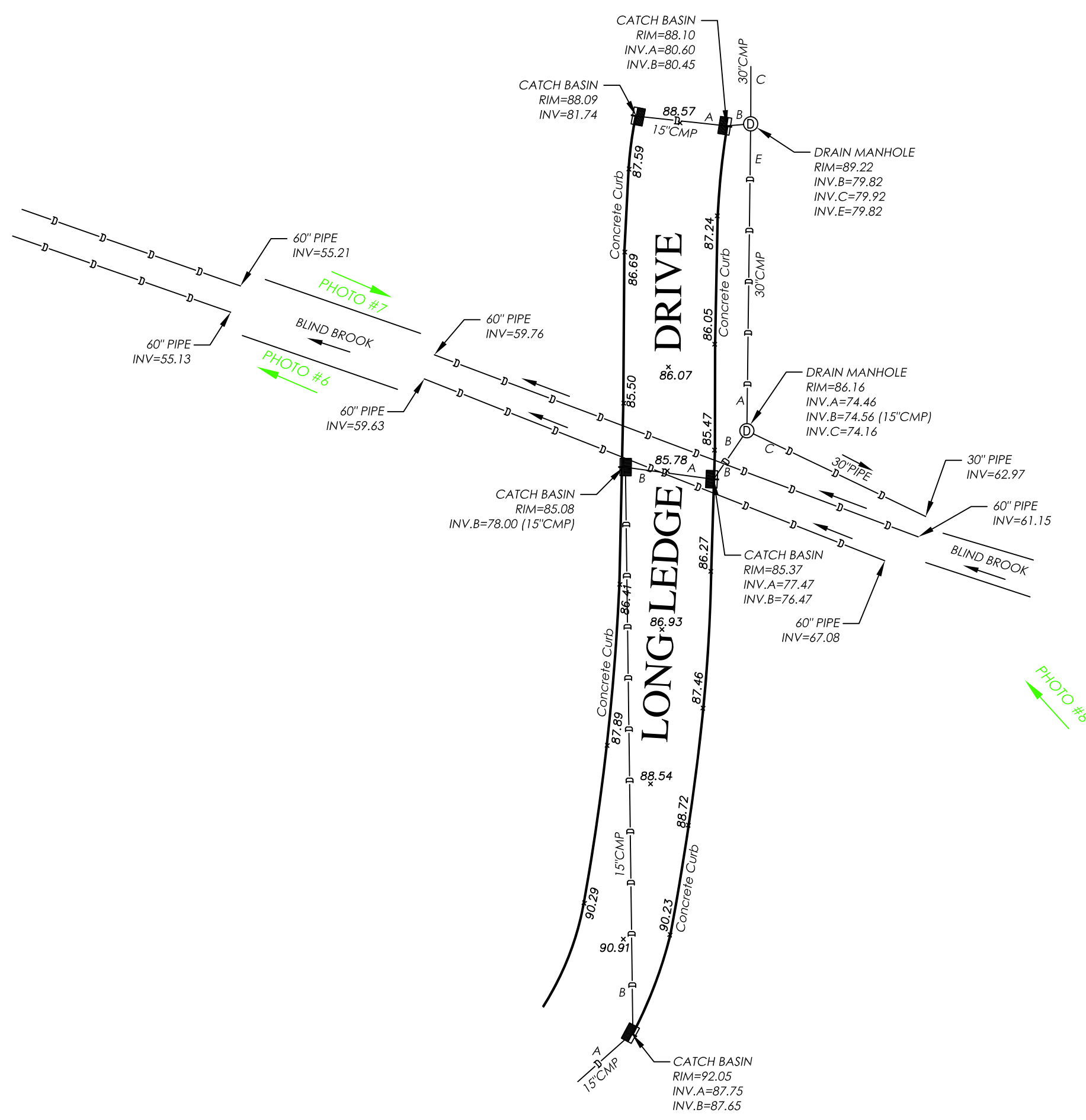


PHOTO #9

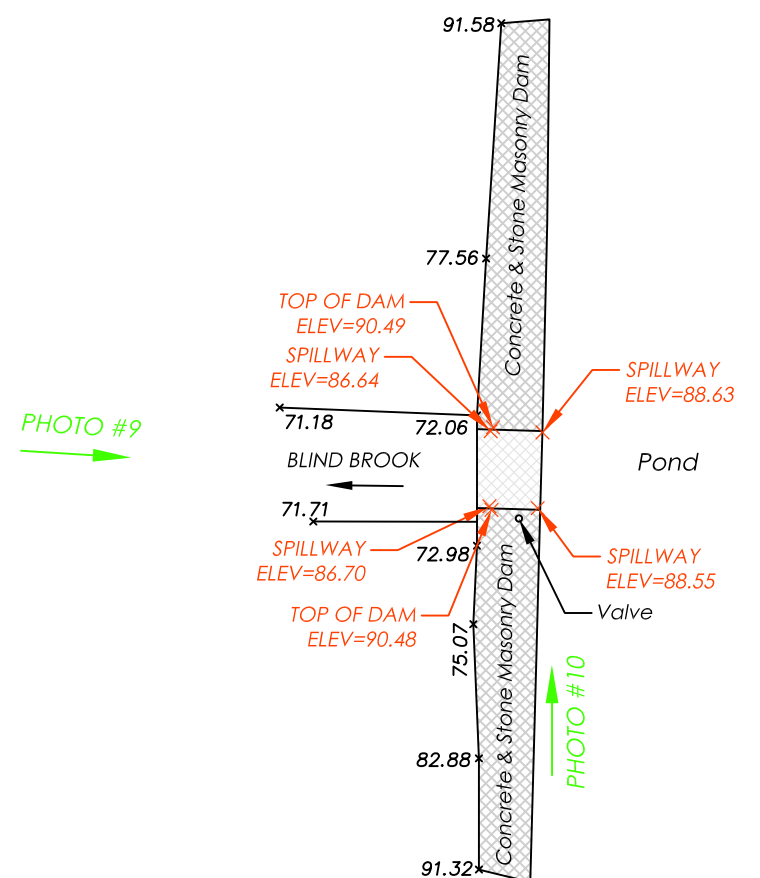


PHOTO #10

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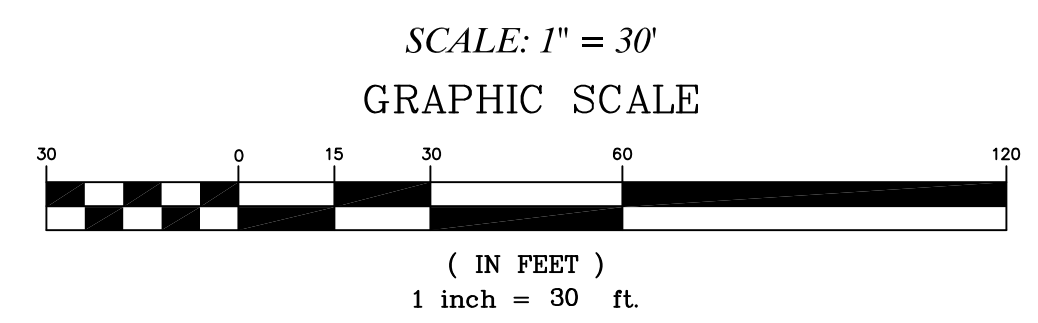
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Property Reference generally in accordance with North American Datum 83.

**ELEVATION STUDY OF BLIND BROOK
PREPARED FOR
VILLAGE OF RYE BROOK**
SITUATE IN THE
VILLAGE OF RYE BROOK
WESTCHESTER COUNTY, NEW YORK



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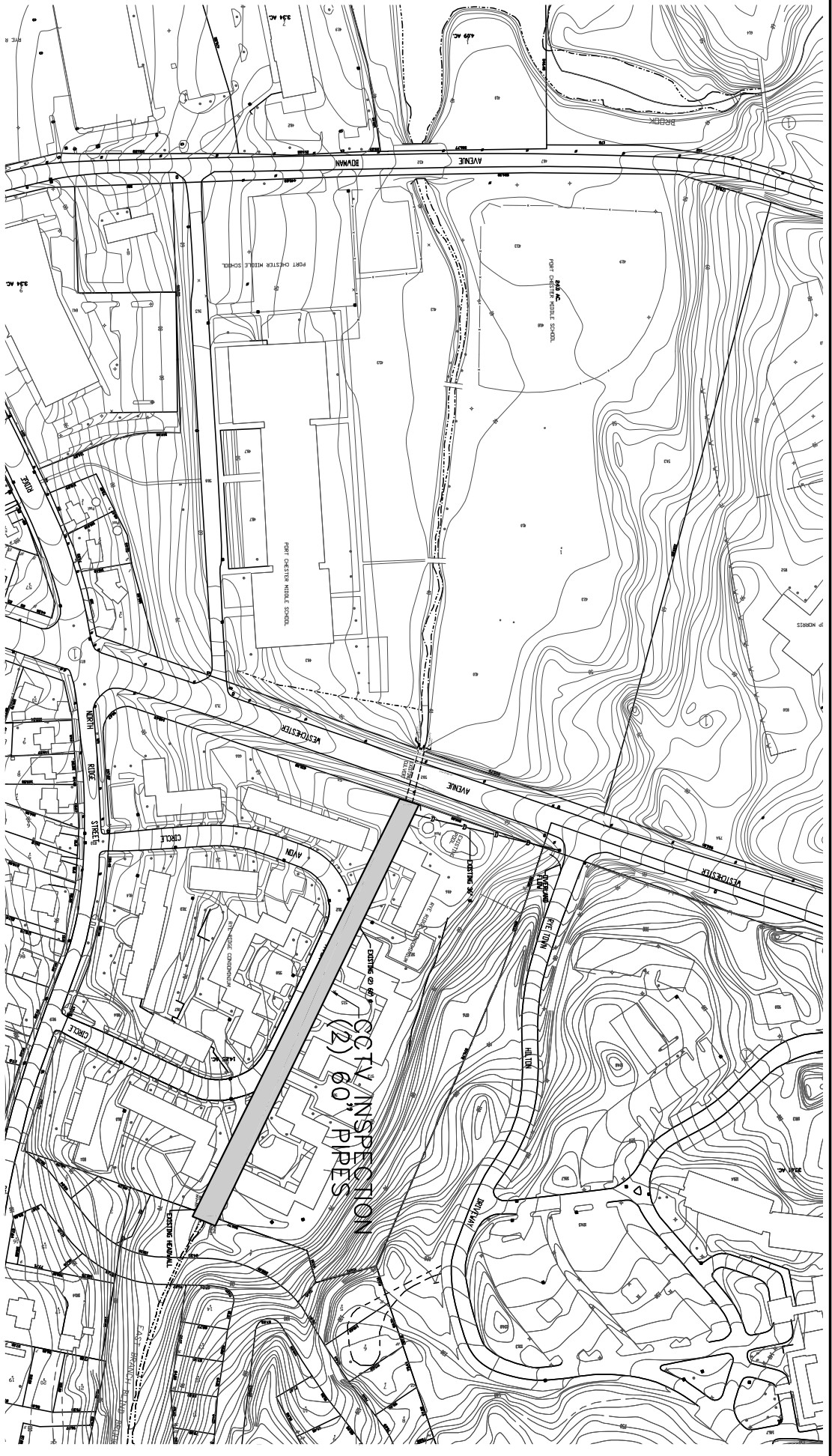
Surveyed: December 4, 2018
Map Prepared: December 7, 2018
Map Revised: December 18, 2018
By: *Daniel T. Merritt*
New York State Licensed Land Surveyor No. 050604

Project: 18-395	Field Survey By: BC/CR
Drawn By: DA	Checked By: DM

APPENDIX D

CCTV INSPECTION

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THIS PLAN NOT VALID FOR CONSTRUCTION WITHOUT ENGINEERS SEAL & SIGNATURE

DATE	2/1/19
DESIGNED BY	DE
CHECKED BY	DE
DATE	02/01/19

PROPOSED DRAINAGE IMPROVEMENTS
EAST BRANCH BLIND BROOK
VILLAGE OF RYE BROOK, N.Y.

CCTV INSPECTION

dolph petfield engineering
DIVISION OF AI ENGINEERS, INC. P.C.
870 TAXTER ROAD, ELMSFORD, NY 10523
(914) 831-8800

Sheet 1 of 1

Defect Listing Plot Left

Pipe Segment Refere... *	City Rye Brook NY	Street Avon Circle Ease	Material Corrugated Metal Pi...	Location C... Easement/R...	
Upstream MH Outfall 1	Total Length	Flow Control Not Controlled	Shape Circular	Location Details	
DS Manhole MH-2	Length surveyed 232.1	Lining Method	Height 60	Width 60	Pipe Joint...
MPRI N/A		PO Number		Customer	
QSR N/A	QMR N/A	Purpose		Sewer Use Stormwater	
OPR N/A	Surveyed By AM	Direction Downstream	Date 20181211		Owner
Drainage Feature/As...	Certificate Number U-315-060R0967	Pre-Cleaning No Pre-Cleaning	Time 09:05		Weather Dry
Work Order		Date Cleaned	Additional Info		



Outfall 1

	Code:	Continuous:	Pos:	Val 1 / 2 :	% :	Gallons:
0.0 ft.	Access Point Manhole Outfall 1				0	
6.0 ft.	Water Level				5	
8.5 ft.	Tap Factory Made Active Storm grate		12	60	0	
24.6 ft.	Tap Break-In Active		9	12	0	
36.7 ft.	Tap Break-In Active		9	6	0	
101.4 ft.	Tap Break-In Active		2	6	0	
110.1 ft.	Infiltration Stain		10		0	
192.6 ft.	Tap Break-In Active		9	12	0	
232.1 ft.	Access Point Manhole MH-02				0	

MH-2

Defect Listing Plot Left

Pipe Segment Refere...	City Rye Brook NY	Street Avon Circle Ease	Material Corrugated Metal Pi...	Location C... Easement/R...	
Upstream MH MH-02	Total Length	Flow Control Not Controlled	Shape Circular	Location Details	
DS Manhole MH-03	Length surveyed 291	Lining Method	Height 60	Width 60	Pipe Joint...
MPRI N/A		PO Number		Customer	
QSR N/A	QMR N/A	Purpose		Sewer Use Stormwater	
OPR N/A	Surveyed By AM	Direction Downstream	Date 20181211	Owner	
Drainage Feature/As...	Certificate Number U-315-060R0967	Pre-Cleaning No Pre-Cleaning	Time 09:47	Weather Dry	
Work Order		Date Cleaned	Additional Info		



MH-02

	Code:	Continuous:	Pos:	Val 1 / 2 :	% :	Gallons:
0.0 ft.	Access Point Manhole MH-02				0	
0.0 ft.	Water Level				5	
69.2 ft.	Infiltration Stain		9		0	
124.2 ft.	Tap Break-In Active		9	8	0	
235.5 ft.	Tap Break-In Active		8	8	0	
291.0 ft.	Access Point Manhole MH-03				0	

MH-03

Defect Listing Plot Left

Pipe Segment Refere...	City Rye Brook NY	Street Avon Circle Ease	Material Corrugated Metal Pi...	Location C... Easement/R...	
Upstream MH MH-03	Total Length	Flow Control Not Controlled	Shape Circular	Location Details	
DS Manhole MH-04	Length surveyed 299.4	Lining Method	Height 60	Width 60	Pipe Joint...
MPRI 2		PO Number		Customer	
QSR N/A	QMR 2100	Purpose		Sewer Use Stormwater	
OPR 2	Surveyed By AM	Direction Downstream	Date 20181211	Owner	
Drainage Feature/As...	Certificate Number U-315-060R0967	Pre-Cleaning No Pre-Cleaning	Time 10:11	Weather Dry	
Work Order		Date Cleaned	Additional Info		



MH-03

Code:	Continuous:	Pos:	Val 1 / 2 :	% :	Gallons:
0.0 ft. Access Point Manhole MH-03				0	
0.0 ft. Water Level				5	
85.8 ft. Tap Break-In Active		9	8	0	
142.2 ft. Tap Break-In Active		9	18	0	
226.0 ft. Tap Break-In Active		9	8	0	
297.0 ft. Tap Break-In Intruding		9	12 / 4	0	
299.4 ft. Access Point Manhole Outfall 2				0	

MH-04

Defect Listing Plot Left

Pipe Segment Refere...	City Rye Brook NY	Street Avon Circle Ease	Material Corrugated Metal Pi...	Location C... Easement/R...	
Upstream MH Outfall1	Total Length	Flow Control Not Controlled	Shape Circular	Location Details	
DS Manhole MH-04	Length surveyed 231.4	Lining Method	Height 60	Width 60	Pipe Joint...
MPRI N/A		PO Number		Customer	
QSR N/A	QMR N/A	Purpose		Sewer Use Stormwater	
OPR N/A	Surveyed By AM	Direction Downstream	Date 20181211		Owner
Drainage Feature/As...	Certificate Number U-315-060R0967	Pre-Cleaning No Pre-Cleaning	Time 13:10		Weather Dry
Work Order		Date Cleaned	Additional Info		



Outfall1

	Code:	Continuous:	Pos:	Val 1 / 2 :	% :	Gallons:
0.0 ft.	Access Point Manhole Outfall 1				0	
0.0 ft.	Water Level				5	
9.3 ft.	Tap Factory Made Active Storm grate		12	60	0	
27.3 ft.	Tap Break-In Active		3	8	0	
99.5 ft.	Tap Break-In Active		2	6	0	
109.9 ft.	Infiltration Stain		8		0	
162.8 ft.	Tap Break-In Active		3	8	0	
211.2 ft.	Tap Break-In Active		12	8	0	
231.4 ft.	Access Point Manhole MH-04				0	

MH-04

Defect Listing Plot Left

Pipe Segment Refere...	City Rye Brook NY	Street Avon Circle Ease	Material Corrugated Metal Pi...	Location C... Easement/R...	
Upstream MH MH-04	Total Length	Flow Control Not Controlled	Shape Circular	Location Details	
DS Manhole MH-05	Length surveyed 295.2	Lining Method	Height 60	Width 60	Pipe Joint...
MPRI 2		PO Number		Customer	
QSR N/A	QMR 2100	Purpose		Sewer Use Stormwater	
OPR 2	Surveyed By AM	Direction Downstream	Date 20181211		Owner
Drainage Feature/As...	Certificate Number U-315-060R0967	Pre-Cleaning No Pre-Cleaning	Time 13:39		Weather Dry
Work Order		Date Cleaned	Additional Info		



MH-04

	Code:	Continuous:	Pos:	Val 1 / 2 :	% :	Gallons:
0.0 ft.	Access Point Manhole MH-04				0	
0.0 ft.	Water Level				5	
6.4 ft.	Tap Break-In Active		3	4	0	
39.5 ft.	Tap Break-In Active		9	8	0	
53.7 ft.	Tap Break-In Active		3	8	0	
124.1 ft.	Tap Break-In Intruding		2	4 / 6	0	
239.0 ft.	Tap Break-In Active		3	12	0	
295.2 ft.	Access Point Manhole MH-05				0	

MH-05

Defect Listing Plot Left

Pipe Segment Refere...	City Rye Brook NY	Street Avon Circle Ease	Material Corrugated Metal Pi...	Location C... Easement/R...	
Upstream MH MH-05	Total Length	Flow Control Not Controlled	Shape Circular	Location Details	
DS Manhole MH-06	Length surveyed 299	Lining Method	Height 60	Width 60	Pipe Joint...
MPRI N/A		PO Number		Customer	
QSR N/A	QMR N/A	Purpose		Sewer Use Stormwater	
OPR N/A	Surveyed By Jestin	Direction Downstream	Date 20181211	Owner	
Drainage Feature/As...	Certificate Number U-315-060R0967	Pre-Cleaning No Pre-Cleaning	Time 14:00	Weather Dry	
Work Order		Date Cleaned	Additional Info		



MH-05

	Code:	Continuous:	Pos:	Val 1 / 2 :	% :	Gallons:
0.0 ft.	Access Point Manhole MH-05				0	
0.0 ft.	Water Level				5	
76.1 ft.	Tap Break-In Active		4	8	0	
174.5 ft.	Tap Break-In Active		3	12	0	
283.2 ft.	Tap Break-In Active		2	8	0	
299.0 ft.	Access Point Manhole MH-06				0	

MH-06

APPENDIX E

SOIL BORINGS



D. K. Drilling of NY, Inc.

214-41 42nd Avenue
Suite 4A
Bayside, NY 11361

BORING NO. A

SHEET 1 of 1

BORING LOG

PROJECT Port Chester-Rye Union-Free School District Ball Field
 LOCATION 113 Bowman Avenue, Port Chester, NY 10573 START DATE 01/04/2019
 CLIENT Dolph Rotfeld Engineering, P.C. FINISH DATE 01/04/2019
 INSPECTOR Ken Kakos DRILLER K. Tsiakas HELPER T. Tsiougris RIG SIMCO

DEPTH (FEET)	SAMPLE NO.	DEPTH (FROM/TO)	SOIL BLOWS / 6"				RECOVERY (INCHES)	ROCK CORE		DEPTH (FROM/TO)	SOIL/ROCK DESCRIPTION & REMARKS	CASING BLOWS
			0"-6"	6"-12"	12"-18"	18"-24"		RUN (IN.)	REC. (IN.)			
—	S-1	0-2	6	12	17	13	14				Brown m-f SAND, trace SILT	
— 5	S-2	5-7	6	28	40	56	23				Brown Silty m-f SAND	
—											E.O.B. @ 8.0' Auger Refusal @ 8'	
— 10											NOTE: Driller's Boring Log	
—												
— 15												
—												
— 20												
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— 25												
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— 35												

TOOLS & EQUIPMENT USED				GROUND WATER DATA		
CASING SIZE		SPOON SIZE	2"	DATE	TIME	DEPTH (FT.)
CASING HAMMER		SPOON HAMMER	140 #			
HAMMER FALL - CASING		HAMMER FALL - SPOON	30"		E.O.B.	8'
CORE BARREL USED		DRILLING MUD USED				
CORE BIT USED		UNDISTURBED SAMPLER		OBSERVATION WELL		
AUGER SIZE	3"	STANDBY TIME		DEPTH (FT.)		SCREEN LENGTH (FT)
MISCELLANEOUS ITEMS:	N/A				N/A	

D. K. Drilling of NY, Inc.

214-41 42nd Avenue
Suite 4A
Bayside, NY 11361

BORING NO. B

SHEET 1 of 1

BORING LOG

PROJECT Port Chester-Rye Union-Free School District Ball Field
 LOCATION 113 Bowman Avenue, Port Chester, NY 10573 START DATE 01/04/2019
 CLIENT Dolph Rotfeld Engineering, P.C. FINISH DATE 01/04/2019
 INSPECTOR Ken Kakos DRILLER K. Tsiakas HELPER T. Tsiougris RIG SIMCO

DEPTH (FEET)	SAMPLE NO.	DEPTH (FROM/TO)	SOIL BLOWS / 6"				RECOVERY (INCHES)	ROCK CORE		DEPTH (FROM/TO)	SOIL/ROCK DESCRIPTION & REMARKS	CASING BLOWS
			0"-6"	6"-12"	12"-18"	18"-24"		RUN (IN.)	REC. (IN.)			
—	S-1	0-2	6	12	9	7	8				Brown m-f SAND, trace SILT	
— 5	S-2	5-7	9	20	34	32	24				Brown m-f SAND, trace SILT	
— 10	S-3	10-12	14	12	13	13	18				Brown m-f SAND, trace SILT, mixed w/ROCK FRAG.	
— 15											E.O.B. @ 12'	
— 20											NOTE: Driller's Boring Log	
— 25												
— 30												
— 35												

TOOLS & EQUIPMENT USED				GROUND WATER DATA		
CASING SIZE	SPOON SIZE	2"	DATE	TIME	DEPTH (FT.)	
CASING HAMMER	SPOON HAMMER	140 #				
HAMMER FALL - CASING	HAMMER FALL - SPOON	30"		E.O.B.	8'	
CORE BARREL USED	DRILLING MUD USED					
CORE BIT USED	UNDISTURBED SAMPLER					
AUGER SIZE	STANDBY TIME	3"				
MISCELLANEOUS ITEMS:	N/A					

D. K. Drilling of NY, Inc.

214-41 42nd Avenue
Suite 4A
Bayside, NY 11361

BORING NO. C

SHEET 1 of 1

BORING LOG

PROJECT Port Chester-Rye Union-Free School District Ball Field
 LOCATION 113 Bowman Avenue, Port Chester, NY 10573 START DATE 01/04/2019
 CLIENT Dolph Rotfeld Engineering, P.C. FINISH DATE 01/04/2019
 INSPECTOR Ken Kakos DRILLER K. Tsiakas HELPER T. Tsiougris RIG SIMCO

DEPTH (FEET)	SAMPLE NO.	DEPTH (FROM/TO)	SOIL BLOWS / 6"				RECOVERY (INCHES)	ROCK CORE		DEPTH (FROM/TO)	SOIL/ROCK DESCRIPTION & REMARKS	CASING BLOWS
			0"-6"	6"-12"	12"-18"	18"-24"		RUN (IN.)	REC. (IN.)			
—	S-1	0-2	6	8	10	6	12				Brown m-f SAND, trace SILT	
— 5	S-2	5-7	12	12	50	60	23				Brown m-f SAND, trace SILT	
—											E.O.B. @ 8.0' Auger Refusal	
— 10											NOTE: Driller's Boring Log	
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TOOLS & EQUIPMENT USED				GROUND WATER DATA		
CASING SIZE		SPOON SIZE	2"	DATE	TIME	DEPTH (FT.)
CASING HAMMER		SPOON HAMMER	140 #			
HAMMER FALL - CASING		HAMMER FALL - SPOON	30"		E.O.B.	8'
CORE BARREL USED		DRILLING MUD USED				
CORE BIT USED		UNDISTURBED SAMPLER		OBSERVATION WELL		
AUGER SIZE	3"	STANDBY TIME		DEPTH (FT.)		SCREEN LENGTH (FT)
MISCELLANEOUS ITEMS:	N/A				N/A	

D. K. Drilling of NY, Inc.

214-41 42nd Avenue
Suite 4A
Bayside, NY 11361

BORING NO. D

SHEET 1 of 1

BORING LOG

PROJECT Port Chester-Rye Union-Free School District Ball Field
 LOCATION 113 Bowman Avenue, Port Chester, NY 10573 START DATE 01/04/2019
 CLIENT Dolph Rotfeld Engineering, P.C. FINISH DATE 01/04/2019
 INSPECTOR Ken Kakos DRILLER K. Tsiakas HELPER T. Tsiougris RIG SIMCO

DEPTH (FEET)	SAMPLE NO.	DEPTH (FROM/TO)	SOIL BLOWS / 6"				RECOVERY (INCHES)	ROCK CORE		DEPTH (FROM/TO)	SOIL/ROCK DESCRIPTION & REMARKS	CASING BLOWS
			0"-6"	6"-12"	12"-18"	18"-24"		RUN (IN.)	REC. (IN.)			
—											<p>NOT DRILLED</p> <p>AREA TOO WET TO ACCESS</p>	
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TOOLS & EQUIPMENT USED		GROUND WATER DATA		
CASING SIZE	SPOON SIZE	DATE	TIME	DEPTH (FT.)
CASING HAMMER	SPOON HAMMER			
HAMMER FALL - CASING	HAMMER FALL - SPOON			
CORE BARREL USED	DRILLING MUD USED			
CORE BIT USED	UNDISTURBED SAMPLER	OBSERVATION WELL		
AUGER SIZE	STANDBY TIME	DEPTH (FT.)	N/A	SCREEN LENGTH (FT)
MISCELLANEOUS ITEMS:				

D. K. Drilling of NY, Inc.

214-41 42nd Avenue
Suite 4A
Bayside, NY 11361

BORING NO. E

SHEET 1 of 1

BORING LOG

PROJECT Port Chester-Rye Union-Free School District Ball Field
 LOCATION 113 Bowman Avenue, Port Chester, NY 10573 START DATE 01/04/2019
 CLIENT Dolph Rotfeld Engineering, P.C. FINISH DATE 01/04/2019
 INSPECTOR Ken Kakos DRILLER K. Tsiakas HELPER T. Tsiougris RIG SIMCO

DEPTH (FEET)	SAMPLE NO.	DEPTH (FROM/TO)	SOIL BLOWS / 6"				RECOVERY (INCHES)	ROCK CORE		DEPTH (FROM/TO)	SOIL/ROCK DESCRIPTION & REMARKS	CASING BLOWS
			0"-6"	6"-12"	12"-18"	18"-24"		RUN (IN.)	REC. (IN.)			
—											<p>NOT DRILLED</p> <p>AREA TOO WET TO ACCESS</p>	
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TOOLS & EQUIPMENT USED		GROUND WATER DATA		
CASING SIZE	SPOON SIZE	DATE	TIME	DEPTH (FT.)
CASING HAMMER	SPOON HAMMER			
HAMMER FALL - CASING	HAMMER FALL - SPOON			
CORE BARREL USED	DRILLING MUD USED			
CORE BIT USED	UNDISTURBED SAMPLER	OBSERVATION WELL		
AUGER SIZE	STANDBY TIME	DEPTH (FT.)	N/A	SCREEN LENGTH (FT)
MISCELLANEOUS ITEMS:				

D. K. Drilling of NY, Inc.

214-41 42nd Avenue
Suite 4A
Bayside, NY 11361

BORING NO. F

SHEET 1 of 1

BORING LOG

PROJECT Port Chester-Rye Union-Free School District Ball Field
 LOCATION 113 Bowman Avenue, Port Chester, NY 10573 START DATE 01/04/2019
 CLIENT Dolph Rotfeld Engineering, P.C. FINISH DATE 01/04/2019
 INSPECTOR Ken Kakos DRILLER K. Tsiakas HELPER T. Tsiougris RIG SIMCO

DEPTH (FEET)	SAMPLE NO.	DEPTH (FROM/TO)	SOIL BLOWS / 6"				RECOVERY (INCHES)	ROCK CORE		DEPTH (FROM/TO)	SOIL/ROCK DESCRIPTION & REMARKS	CASING BLOWS
			0"-6"	6"-12"	12"-18"	18"-24"		RUN (IN.)	REC. (IN.)			
—	S-1	0-2	19	17	14	12	10				Brown Silty m-f SAND	
— 5	S-2	5-7	23	53	100 0	-	2				Completely Weathered ROCK E.O.B. @ 6.0' Auger Refusal	
— 10											NOTE: Driller's Boring Log	
— 15												
— 20												
— 25												
— 30												
— 35												

TOOLS & EQUIPMENT USED				GROUND WATER DATA		
CASING SIZE	SPOON SIZE	2"	DATE	TIME	DEPTH (FT.)	
CASING HAMMER	SPOON HAMMER	140 #				
HAMMER FALL - CASING	HAMMER FALL - SPOON	30"		E.O.B.	Dry	
CORE BARREL USED	DRILLING MUD USED		OBSERVATION WELL			
CORE BIT USED	UNDISTURBED SAMPLER		DEPTH (FT.)		SCREEN LENGTH (FT)	
AUGER SIZE	STANDBY TIME	3"		N/A		
MISCELLANEOUS ITEMS:	N/A					

D. K. Drilling of NY, Inc.

214-41 42nd Avenue
Suite 4A
Bayside, NY 11361

BORING NO. G

SHEET 1 of 1

BORING LOG

PROJECT Port Chester-Rye Union-Free School District Ball Field
 LOCATION 113 Bowman Avenue, Port Chester, NY 10573 START DATE 01/04/2019
 CLIENT Dolph Rotfeld Engineering, P.C. FINISH DATE 01/04/2019
 INSPECTOR Ken Kakos DRILLER K. Tsiakas HELPER T. Tsiougris RIG SIMCO

DEPTH (FEET)	SAMPLE NO.	DEPTH (FROM/TO)	SOIL BLOWS / 6"				RECOVERY (INCHES)	ROCK CORE		DEPTH (FROM/TO)	SOIL/ROCK DESCRIPTION & REMARKS	CASING BLOWS
			0"-6"	6"-12"	12"-18"	18"-24"		RUN (IN.)	REC. (IN.)			
—	S-1	0-2	5	15	19	23	6				Brown Silty m-f SAND	
— 5	S-2	5-7	3	5	7	53	8				Brown m-f SAND, some SILT	
— 10	S-3	10-12	10	12	13	10	3				Brown m-f SAND, trace SILT	
— 15											E.O.B. @ 12'	
— 20											NOTE: Driller's Boring Log	
— 25												
— 30												
— 35												

TOOLS & EQUIPMENT USED				GROUND WATER DATA		
CASING SIZE	SPOON SIZE	2"	DATE	TIME	DEPTH (FT.)	
CASING HAMMER	SPOON HAMMER	140 #				
HAMMER FALL - CASING	HAMMER FALL - SPOON	30"		E.O.B.	8'	
CORE BARREL USED	DRILLING MUD USED		OBSERVATION WELL			
CORE BIT USED	UNDISTURBED SAMPLER		DEPTH (FT.)		SCREEN LENGTH (FT)	
AUGER SIZE	STANDBY TIME	3"		N/A		
MISCELLANEOUS ITEMS:	N/A					

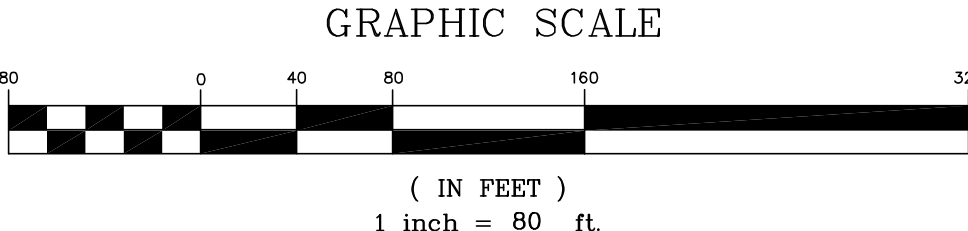
APPENDIX F

RAINFALL DATA

Time	Temperatu	Dew Point	Humidity	Wind	Wind Spee	Wind Gust	Pressure	Precip.	Precip Accum	Precip.
11:56:00 PM	45 F	31 F	58 %	SSE	3 mph	0 mph	29.5 in	0.0 in	0.0 in	0.00
12:56:00 AM	45 F	31 F	58 %	SE	5 mph	0 mph	29.5 in	0.0 in	0.0 in	0.00
1:56:00 AM	44 F	31 F	60 %	E	6 mph	0 mph	29.5 in	0.0 in	0.0 in	0.00
2:56:00 AM	43 F	33 F	68 %	E	6 mph	0 mph	29.4 in	0.0 in	0.0 in	0.00
3:56:00 AM	42 F	34 F	73 %	E	3 mph	0 mph	29.4 in	0.0 in	0.0 in	0.00
4:56:00 AM	40 F	37 F	89 %	ESE	6 mph	0 mph	29.4 in	0.0 in	0.0 in	0.00
5:56:00 AM	40 F	38 F	93 %	ESE	9 mph	0 mph	29.4 in	0.1 in	0.0 in	0.10
6:39:00 AM	39 F	37 F	93 %	E	9 mph	0 mph	29.4 in	0.1 in	0.0 in	0.10
6:56:00 AM	39 F	37 F	93 %	E	10 mph	0 mph	29.4 in	0.2 in	0.0 in	0.20
7:31:00 AM	39 F	37 F	93 %	ESE	10 mph	0 mph	29.4 in	0.1 in	0.0 in	0.10
7:56:00 AM	39 F	37 F	93 %	E	12 mph	0 mph	29.4 in	0.2 in	0.0 in	0.20
8:56:00 AM	39 F	37 F	93 %	E	14 mph	22 mph	29.3 in	0.2 in	0.0 in	0.20
9:16:00 AM	39 F	37 F	93 %	E	14 mph	21 mph	29.3 in	0.0 in	0.0 in	0.00
9:56:00 AM	39 F	37 F	93 %	E	13 mph	21 mph	29.3 in	0.1 in	0.0 in	0.10
10:30:00 AM	39 F	37 F	93 %	E	13 mph	24 mph	29.3 in	0.1 in	0.0 in	0.10
10:56:00 AM	40 F	38 F	93 %	E	16 mph	24 mph	29.2 in	0.2 in	0.0 in	0.20
11:45:00 AM	41 F	39 F	93 %	E	17 mph	29 mph	29.2 in	0.2 in	0.0 in	0.20
11:56:00 AM	41 F	39 F	93 %	E	12 mph	21 mph	29.2 in	0.3 in	0.0 in	0.30
12:56:00 PM	41 F	39 F	93 %	E	21 mph	29 mph	29.1 in	0.3 in	0.0 in	0.30
1:56:00 PM	41 F	39 F	93 %	E	17 mph	30 mph	29.1 in	0.4 in	0.0 in	0.40
2:56:00 PM	41 F	40 F	96 %	E	17 mph	28 mph	29.0 in	0.7 in	0.0 in	0.70
3:01:00 PM	41 F	39 F	93 %	E	17 mph	32 mph	29.0 in	0.1 in	0.0 in	0.10
3:56:00 PM	43 F	39 F	87 %	E	14 mph	22 mph	29.0 in	0.0 in	0.0 in	0.00
4:56:00 PM	43 F	41 F	93 %	ENE	15 mph	21 mph	28.9 in	0.7 in	0.0 in	0.70
5:56:00 PM	44 F	43 F	96 %	ENE	14 mph	20 mph	28.9 in	0.5 in	0.0 in	0.50
6:26:00 PM	45 F	45 F	100 %	E	13 mph	18 mph	28.9 in	0.5 in	0.0 in	0.50
6:56:00 PM	48 F	46 F	93 %	E	13 mph	0 mph	28.8 in	0.7 in	0.0 in	0.70
7:56:00 PM	50 F	48 F	93 %	ESE	13 mph	23 mph	28.8 in	0.0 in	0.0 in	0.00
8:07:00 PM	50 F	48 F	94 %	E	12 mph	23 mph	28.8 in	0.0 in	0.0 in	0.00
8:56:00 PM	49 F	47 F	93 %	ENE	16 mph	22 mph	28.7 in	0.1 in	0.0 in	0.10
9:56:00 PM	50 F	49 F	96 %	E	14 mph	22 mph	28.7 in	0.1 in	0.0 in	0.10
10:56:00 PM	51 F	49 F	92 %	NE	13 mph	21 mph	28.6 in	0.3 in	0.0 in	0.30
11:42:00 PM	50 F	48 F	94 %	NE	10 mph	0 mph	28.5 in	0.4 in	0.0 in	0.40
11:56:00 PM	50 F	48 F	93 %	NE	10 mph	21 mph	28.5 in	0.4 in	0.0 in	0.40
12:56:00 AM	51 F	49 F	92 %	NE	9 mph	0 mph	28.4 in	0.3 in	0.0 in	0.30
1:56:00 AM	52 F	50 F	93 %	ENE	7 mph	0 mph	28.4 in	0.4 in	0.0 in	0.40
2:23:00 AM	54 F	52 F	94 %	E	9 mph	0 mph	28.3 in	0.0 in	0.0 in	0.00
2:35:00 AM	54 F	54 F	100 %	ESE	12 mph	0 mph	28.3 in	0.0 in	0.0 in	0.00
2:56:00 AM	54 F	53 F	97 %	ESE	15 mph	23 mph	28.3 in	0.0 in	0.0 in	0.00
3:56:00 AM	54 F	52 F	93 %	E	8 mph	0 mph	28.3 in	0.0 in	0.0 in	0.00

APPENDIX G

DRAWINGS



ANY ALTERATIONS OR REVISIONS OF THESE PLANS, UNLESS DONE BY OR UNDER THE DIRECTION OF THE NYS LICENSED AND REGISTERED ENGINEER THAT PREPARED THEM, IS A VIOLATION OF THE NYS EDUCATION LAW.

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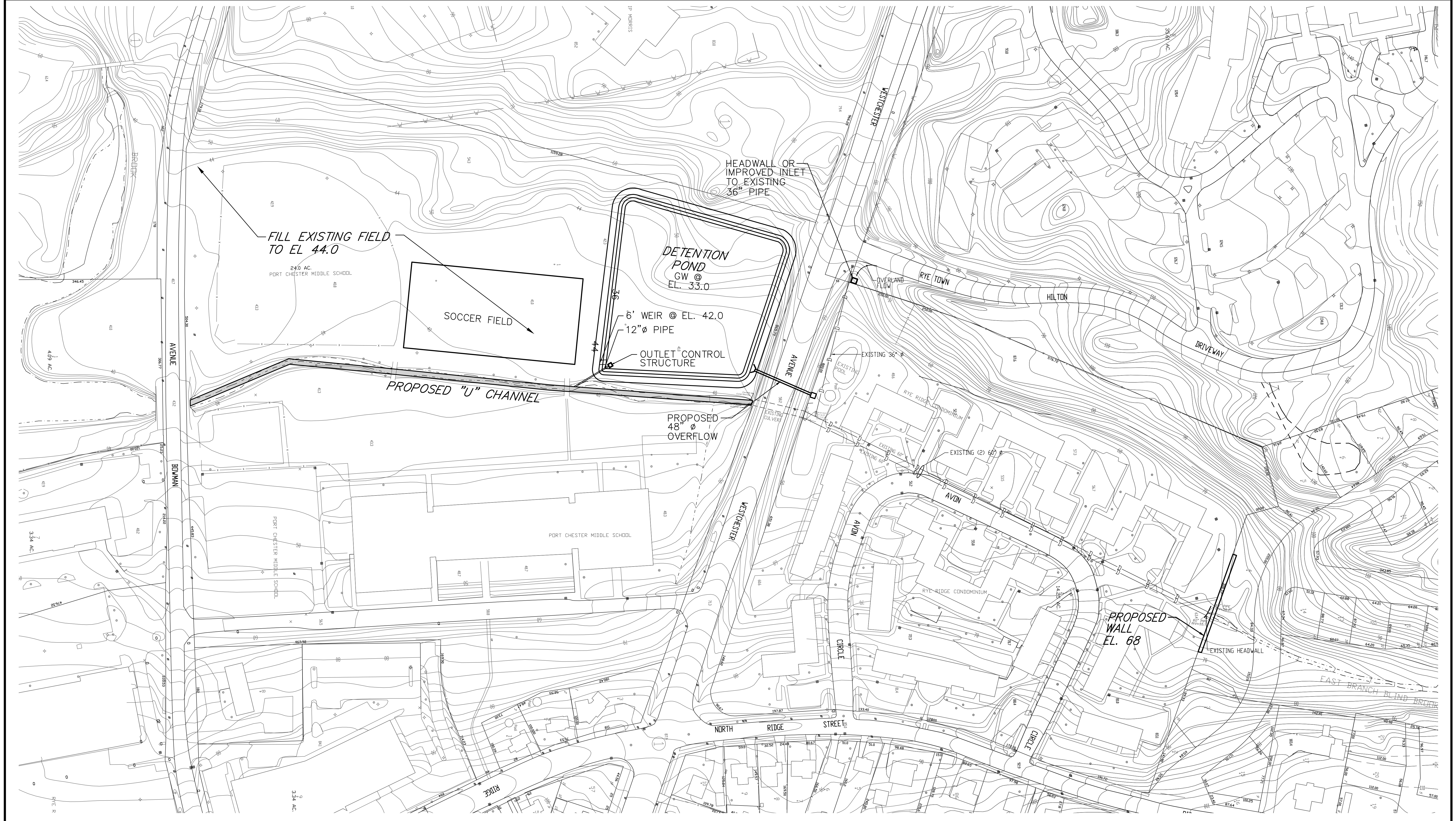
Rev. _____
 Orig: 2/4/19
 design by: DR
 drawn by: PF
 chkd by: DR
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PROPOSED DRAINAGE IMPROVEMENTS
 EAST BRANCH BLIND BROOK
 VILLAGE OF RYE BROOK, N.Y.

CASE #1-EXISTING CONDITIONS

dolph rotfeld engineering
 DIVISION OF AI ENGINEERS, INC. P.C.
 570 TAXTER ROAD, ELMSFORD, NY 10523
 (914) 831-8500

sheet
 1 of 4



FILL EXISTING FIELD TO EL. 44.0

2.40 AC.
PORT CHESTER MIDDLE SCHOOL

SOCCER FIELD

DETONATION POND
GW @ EL. 33.0

6' WEIR @ EL. 42.0
12" Ø PIPE

OUTLET CONTROL STRUCTURE

PROPOSED "U" CHANNEL

PROPOSED 48" Ø OVERFLOW

HEADWALL OR IMPROVED INLET TO EXISTING 36" PIPE

PROPOSED WALL EL. 68

EXISTING HEADWALL

GRAPHIC SCALE



(IN FEET)
1 inch = 80 ft.

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Orig: 2/4/19
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drawn by: PF
chkd by: DR
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PROPOSED DRAINAGE IMPROVEMENTS
EAST BRANCH BLIND BROOK
VILLAGE OF RYE BROOK, N.Y.

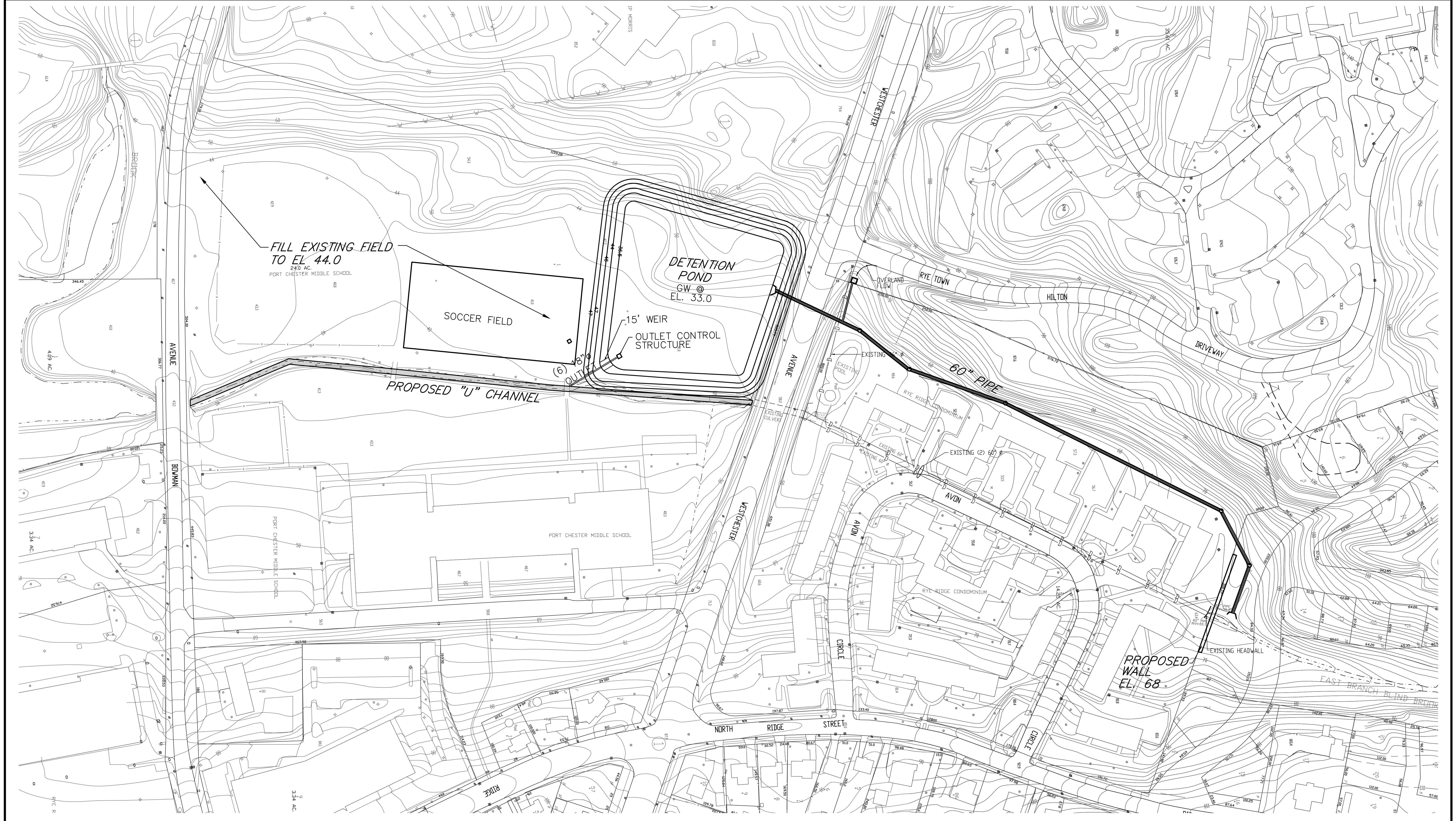
CASE #2-48" PIPE WITH POND

dolph rotfeld engineering
DIVISION OF AI ENGINEERS, INC. P.C.
570 TAXTER ROAD, ELMSFORD, NY 10523

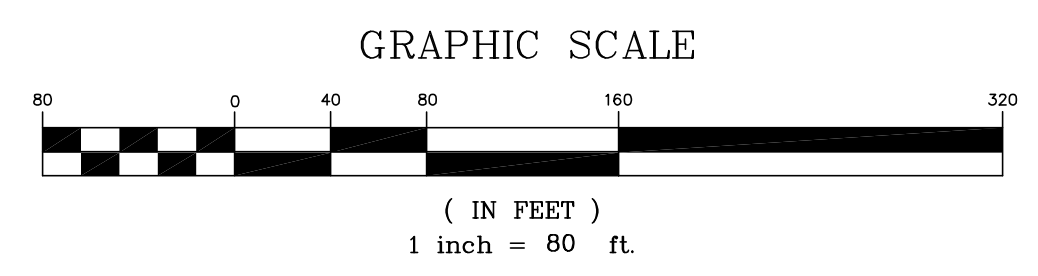
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sheet
2 of 4

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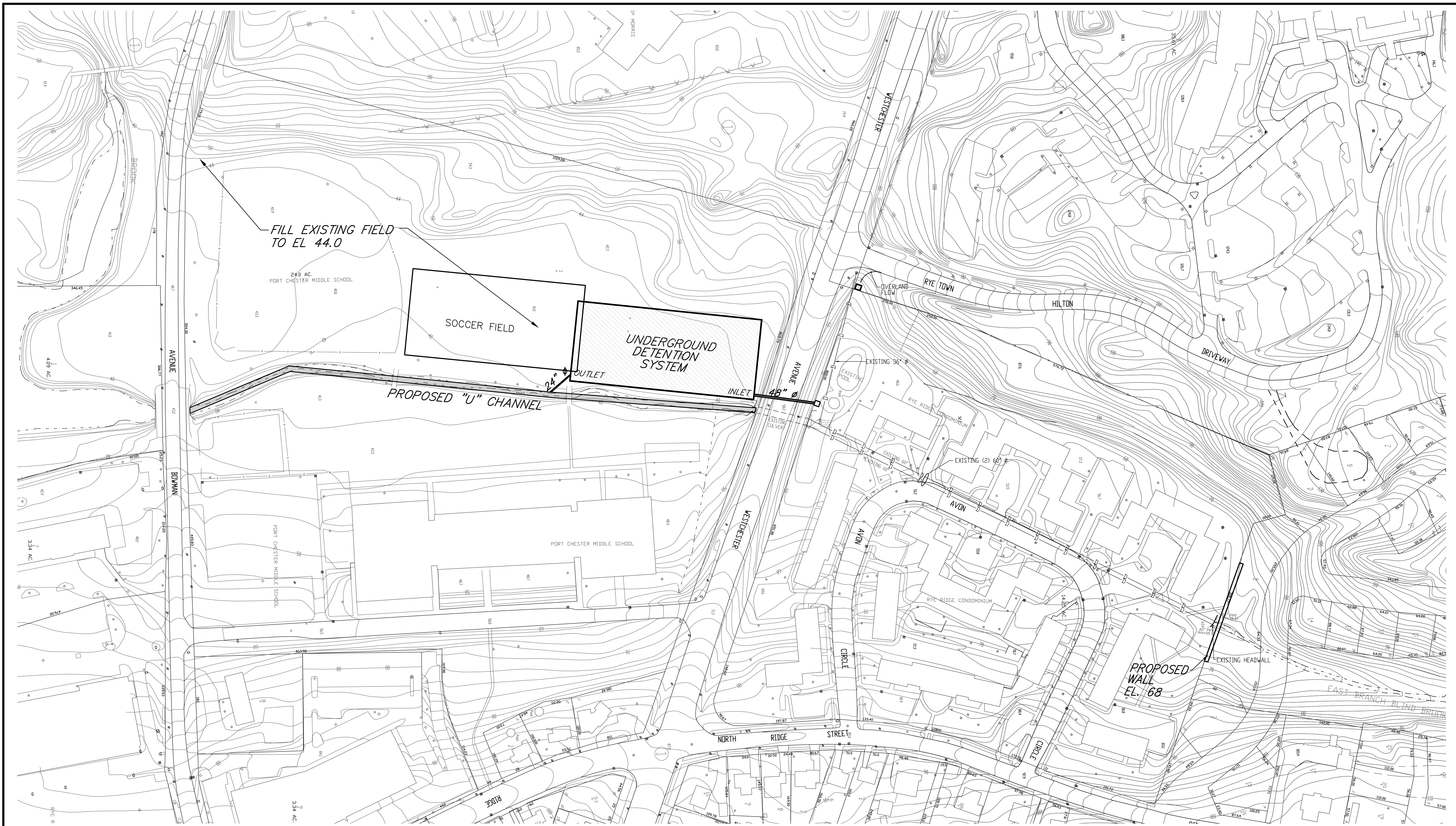


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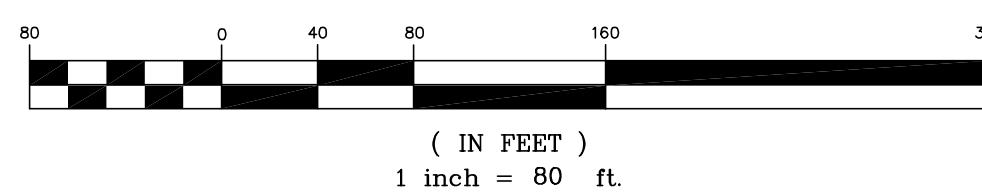


THIS PLAN NOT VALID FOR CONSTRUCTION WITHOUT ENGINEERS SEAL & SIGNATURE	PROPOSED DRAINAGE IMPROVEMENTS EAST BRANCH BLIND BROOK VILLAGE OF RYE BROOK, N.Y.
	CASE #3-60" PIPE WITH POND
Rev. _____ Orig: 2/4/19 design by: DR drawn by: PF chkd by: DR Copyright © 2019	dolph rotfeld engineering DIVISION OF AI ENGINEERS, INC. P.C. 570 TAXTER ROAD, ELMSFORD, NY 10523 (914) 831-8500
	sheet 3 of 4

Y:\Projects\Municipalities\Rye Brook (V)\2019 DRAINAGE\BALLFIELD DRAINAGE 2-4-19.dwg, 1:40



GRAPHIC SCALE



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 drawn by: PF
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PROPOSED DRAINAGE IMPROVEMENTS
 EAST BRANCH BLIND BROOK
 VILLAGE OF RYE BROOK, N.Y.

CASE #4-48" PIPE WITH UNDERGROUND DETENTION

dolph rotfeld engineering
 DIVISION OF AI ENGINEERS, INC. P.C.
 570 TAXTER ROAD, ELMSFORD, NY 10523

(914) 831-8500

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 4
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 4

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APPENDIX G

PRELIMINARY ENGINEERING REPORT, JUNE 17, 2019

**East Branch Blind Brook Flood Study
Avon Circle, Port Chester Middle School and Bowman Avenue
Town of Rye and Village of Rye Brook**

PRELIMINARY ENGINEERING REPORT
PHASE 2A

June 17, 2019

Dolph Rotfeld Engineering, Division of AI engineers Inc., P.C. (DRE/AI) was tasked under our agreement dated July 14, 2016, to prepare preliminary design options and tentative construction budgets for the flood mitigation projects proposed under Phase I of our agreement and as detailed in the **Hydrologic and Hydraulic Analysis** prepared by this office dated February 7th, 2019 (the study). The purpose of this report is to present a preferred option based on cost and benefit.

Under Phase I of the study, the following 4 cases were analyzed to establish and calibrate current flood elevations as well as expected flood elevations under different proposed options:

Case 1 – This is the existing condition.

Case 2 –This option proposed a new 48 inch diameter pipe to be installed under Westchester Avenue to alleviate flooding in the Avon Circle area. The 48 inch culvert will be directed into a new detention basin to be constructed on the School property at the north end of the ball field near Westchester Avenue.

Case 3 - This option proposed a new 60 inch diameter pipe to complement the two (2) existing culverts at Avon Circle. To control the additional flows at the School property, this option provides a new detention basin to be constructed on the School property at the north end of the ball field near Westchester Avenue.

Case 4 – This option proposed a new a new 48 inch diameter pipe under Westchester Avenue that is directed to new subsurface chambers to be constructed on the School property at the north end of the ball field near Westchester Avenue.

In all proposed cases the elevation of the ball fields would be raised to an elevation above the 100 year flood elevation and a new headwall constructed prior to the entrance of the dual 60" diameter pipe culverts at the northerly property line of the Avon Circle development. The new headwall would be constructed to an elevation of 68 feet.

As budget estimates were developed it became apparent that a subsurface detention system would likely be more cost effective than an open pond. This would avoid large amounts of

excavation into the hill along the west side of the Port Chester Middle School fields. This would also allow for maximum utilization of the existing field areas. Therefore, we added an option for subsurface detention under Case 3, creating a Case 3a and 3b.

The following tables list preliminary budget estimates for construction of each of the Cases discussed (Case 1 being zero cost – no build condition):

PROJECT:		East Branch Blind Brook Flood Mitigation Study - Case 2			
LOCATION:		Avon Circle, Port Chester Middle School			
OWNER:		Village of Rye Brook, NY			
Estimated by:	OS	Date:	June 13, 2019		
Checked by:	AO	Approved by:			
ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete Wall (Top El. 68.0)	150	C.Y.	\$500	\$75,000
	Overflow Chamber (6'x6'x8'deep)	1	EA.	\$15,000	\$15,000
	48" Overflow Pipe	110	L.F.	\$200	\$22,000
	60" casing pipe	110	L.S.	\$450,000	\$450,000
	Headwall (exist. 36" pipe)	1	EA.	\$20,000	\$20,000
	Pond Inlet Headwall	1	EA.	\$20,000	\$20,000
	Detention Pond - hill excavation 30% rock	11400	C.Y.	\$70	\$798,000
	Detention Pond - hill excavation 70% soil	26600	C.Y.	\$20	\$532,000
	Detention Pond	1	EA.	\$200,000	\$200,000
	Pond Outlet Control Structure	1	EA.	\$20,000	\$20,000
	12" Pond Outlet Pipe	80	L.F.	\$200	\$16,000
	Field Fill to El. 44.0 (use borrow fill)	16000	C.Y.	\$6	\$96,000
	Field Underdrain	1	L.S.	\$50,000	\$50,000
	Ball Field Restoration (top soil and sod)	190000	S.F.	\$3	\$570,000
	Baseball Diamond Restoration (clay/backstop)	1	L.S.	\$100,000	\$100,000
	Precast Concrete U Channel (10w x 5'd)	1200	L.F.	\$280	\$336,000
	Precast Concrete U Channel Installation	1200	L.F.	\$150	\$180,000
	Retaining Wall (West side of Pond)	7200	S.F.	\$50	\$360,000
				Sub-total	\$3,860,000
			20% Contingency		\$772,000
				Total	\$4,632,000

PROJECT: East Branch Blind Brook Flood Mitigation Study - Case 3a					
LOCATION: Avon Circle, Port Chester Middle School					
OWNER: Village of Rye Brook, NY					
Estimated by: OS			Date: June 13, 2019		
Checked by: AO			Approved by:		
ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete Wall (Top El. 68.0)	150	C.Y.	\$500	\$75,000
	Headwall (60" pipe)	1	EA.	\$25,000	\$25,000
	60" Pipe	1100	L.F.	\$250	\$275,000
	72" Casing Pipe	110	L.S.	\$500,000	\$500,000
	Pond Inlet Headwall (60" pipe)	1	EA.	\$3,000	\$3,000
	48" Pipe	100	L.F.	\$200	\$20,000
	Headwall/Improved Inlet (48" pipe)	1	EA.	\$2,300	\$2,300
	96" Dia. Manholes (aver. 10' deep)	5	EA.	\$15,000	\$75,000
	Detention Pond - hill excavation 30% rock	11400	C.Y.	\$70	\$798,000
	Detention Pond - hill excavation 70% soil	26600	C.Y.	\$20	\$532,000
	Detention Pond	1	L.S.	\$200,000	\$200,000
	Pond Outlet Control Structure	1	E.A.	\$1,500	\$1,500
	18" Pond Outlet Structure Pipe	100	L.F.	\$220	\$22,000
	Field Fill to El. 44.0 (use borrow fill)	16,000	C.Y.	\$6	\$96,000
	Field Underdrain	1	L.S.	\$50,000	\$50,000
	Ball Field Restoration (2" top soil & sod)	190000	S.F.	\$3	\$570,000
	Baseball Diamond Restoration (clay/backstop)	1	L.S.	\$100,000	\$100,000
	Precast Concrete U-Channel (10'w x 5'd)	1200	L.F.	\$280	\$336,000
	Precast Concrete U-Channel Installation	1200	L.F.	150	\$180,000
	Retaining Wall (West side of Pond)	7200	S.F.	\$50	\$360,000
				Sub-total	\$4,220,800
			20%	Contingency	\$844,160
				Total	\$5,064,960

PROJECT:		East Branch Blind Brook Flood Mitigation Study - Case 3b			
LOCATION:		Avon Circle, Port Chester Middle School			
OWNER:		Village of Rye Brook, NY			
Estimated by:	OS	Date:	June 13, 2019		
Checked by:	AO	Approved by:			
ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
	Concrete Wall (Top El. 68.0)	150	C.Y.	\$500	\$75,000
	Headwall (60" pipe)	1	E.A.	\$25,000	\$25,000
	60" Pipe	1210	L.F.	\$250	\$302,500
	72" Casing Pipe	110	L.S.	\$500,000	\$500,000
	96" Dia. Manholes (aver. 10' deep)	5	E.A.	\$15,000	\$75,000
	Underground Detention System (installed)	1	L.S.	\$1,200,000	\$1,200,000
	24" Detention System Outlet Pipe	60	L.F.	\$200	\$12,000
	Field Fill to El. 44.0 (use borrow fill)	18000	C.Y.	\$6	\$108,000
	Field Fill to El. 44.0 (additional fill)	1200	C.Y.	\$40	\$48,000
	Field Underdrain	1	L.S.	\$50,000	\$50,000
	Ball Field Restoration (top soil/sod)	240000	S.F.	\$3	\$720,000
	Baseball Diamond Restoration	1	L.S.	\$100,000	\$100,000
	Precast Concrete U-Channel (10'wx5"d)	1200	L.F.	\$280	\$336,000
	U-Channel Installation	1200	L.F.	\$150	\$180,000
				Sub-total	\$3,731,500
			20%	Contingency	\$746,300
				Total	\$4,477,800

PROJECT:		East Branch Blind Brook Flood Mitigation Study - Case 4			
LOCATION:		Avon Circle, Port Chester Middle School			
OWNER:		Village of Rye Brook, NY			
Estimated by: OS		Date:		June 13, 2019	
Checked by: AO		Approved by:			
ITEM NO.	DESCRIPTION	ESTIMATE D QUANTITY	UNI T	UNIT PRICE	ESTIMATE D AMOUNT
	Concrete Wall (Top El. 68.0)	150	C.Y.	\$500	75,000
	Headwall (exist. 36" pipe)	1	EA.	\$20,000	\$20,000
	Overflow Chamber (6'X6'X8' deep installed)	1	EA.	\$15,000	\$15,000
	48" Overflow Pipe	110	L.F.	\$200	\$22,000
	60" Casing Pipe	110	L.S.	\$450,000	\$455,000
	Underground Detention System (Installed)	1	L.S.	\$1,200,000	\$1,200,000
	24" Detention System Outlet Pipe	60	L.F.	\$200	\$12,000
	Field Fill to El. 44.0 (use excavated spoils)	18000	C.Y.	\$6	\$108,000
	Field Fill to El. 44.0 (additional fill installed)	1200	C.Y.	\$40	\$48,000
	Field Underdrain	1	L.S.	\$50,000	\$50,000
	Ball Field Restoration (top soil/sod)	240000	S.F.	\$3	\$720,000
	Baseball Diamond Restoration (clay/B.S.)	1	L.S.	\$100,000	\$100,000
	Precast Concrete U-Channel (10'wx5'd)	1200	L.F.	\$280	\$336,000
	Precast Concrete U-Channel Installation	1200	L.F.	\$150	\$180,000
				Sub-total	\$3,341,000
			20%	Contingency	\$668,200
				Total	\$4,009,200

The estimated costs as detailed above are as follows:

Case 2: \$4,632,000.00
Case 3a \$5,064,960.00
Case 3b: \$4,477,800.00
Case 4: \$4,009,200.00

The Hydrologic and Hydraulic Analysis concluded that Case 3a would produce the greatest flood reductions at Avon Circle, for all of the storm events modeled including the "extreme" precipitation event (9.02" in 24 hours). This case also included the large open detention pond, which increased costs by as much as \$500,000.00 due to the excessive excavation required into the hill along the

School property. This increased cost can also be seen under Case 2. However, Cases 3b and 4 utilize a subsurface detention system which reduces the cost; with Case 4 being the least expensive option.

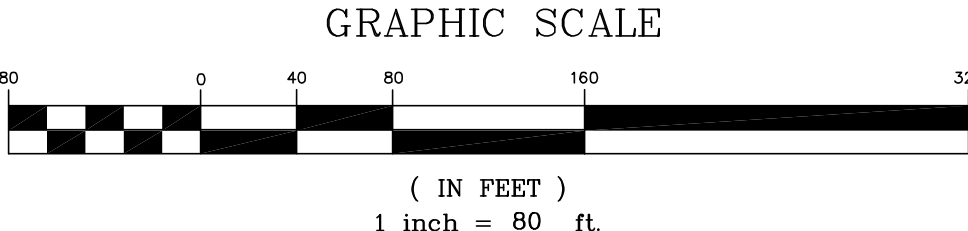
In balancing cost and benefit, it is apparent that Case 3b, while not the least expensive option would offer the greatest benefit in reducing flood elevations even in the extreme storm event (9.2" in 24 hours). It makes little sense to invest in such a project without trying to maximize the flood reduction benefits; and at the estimated costs the marginally higher costs for Case 3b are easily justified.

Attached please find further refined preliminary engineering plans depicting the now four cases estimated in this report.

Our recommendation is to move forward with Case 3b which includes:

- a new headwall constructed prior to the entrance of the dual 60" diameter pipe culverts at the northerly property line of the Avon Circle development,
- a new 60 inch diameter pipe to complement the two (2) existing culverts at Avon Circle,
- an underground stormwater detention system at the Middle School ball fields,
- raising the elevation of the ball fields to an elevation above the 100 year flood elevation,
- installation of a concrete "U" Channel at the brook to facilitate raising the ball field elevation,
- stormwater infrastructure improvements at the Hilton Westchester Hotel property eastern driveway to better direct runoff into a piped conveyance rather than overland.

Once this preferred option is deemed to be acceptable, a detailed engineering report will be submitted with a final layout, further identifying environmental concerns, required permitting, FEMA CLOMR-F requirements, needed easements, preliminary Stormwater Pollution Prevention Plan and a final cost estimate for review and approval. Additional survey information will be required at Avon Circle for a final engineering design, construction documents and permitting.



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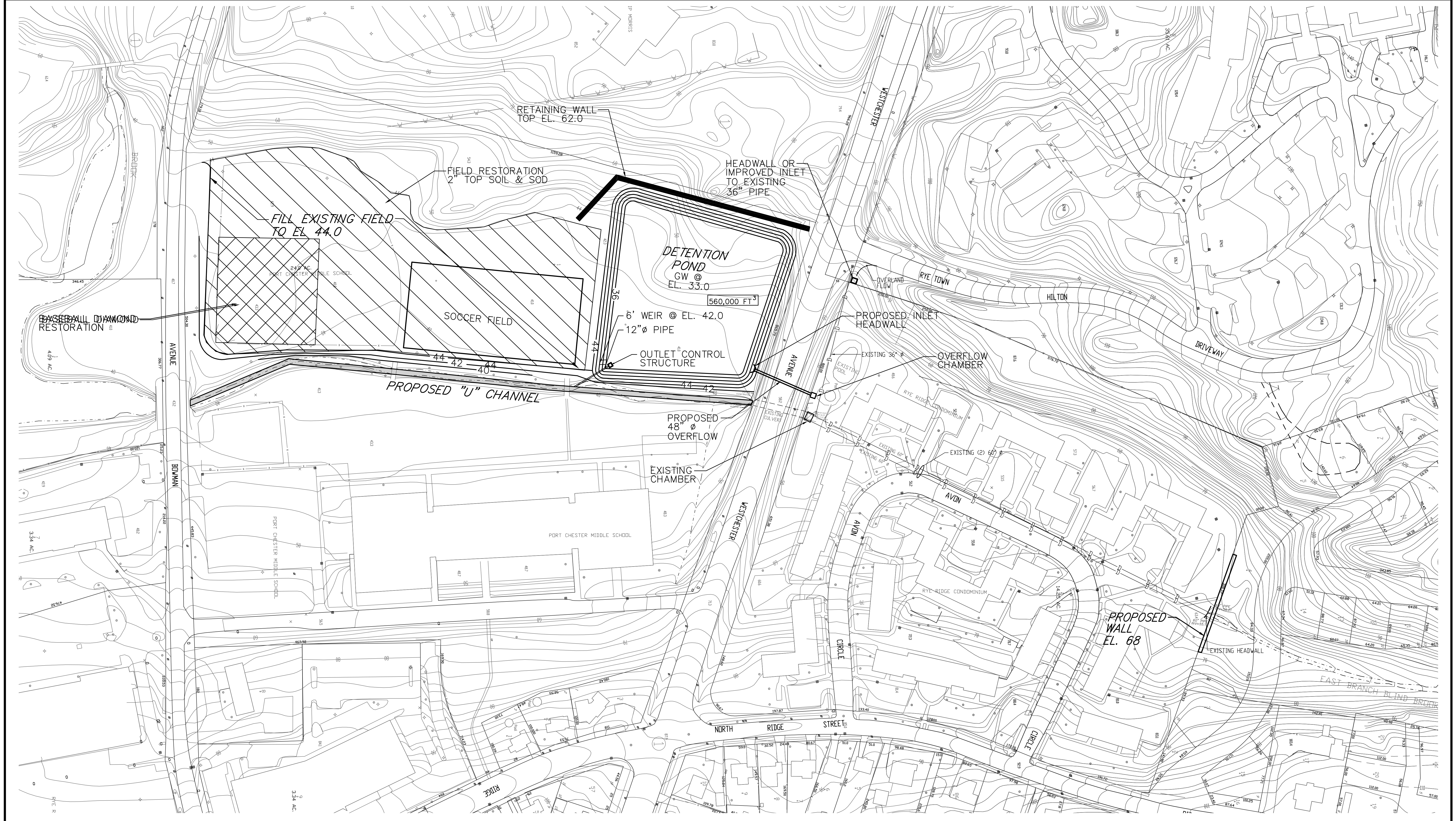
PROPOSED DRAINAGE IMPROVEMENTS
 EAST BRANCH BLIND BROOK
 VILLAGE OF RYE BROOK, N.Y.

CASE #1-EXISTING CONDITIONS

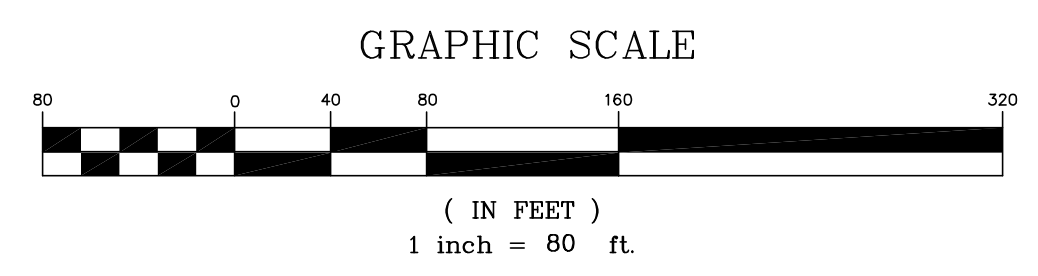
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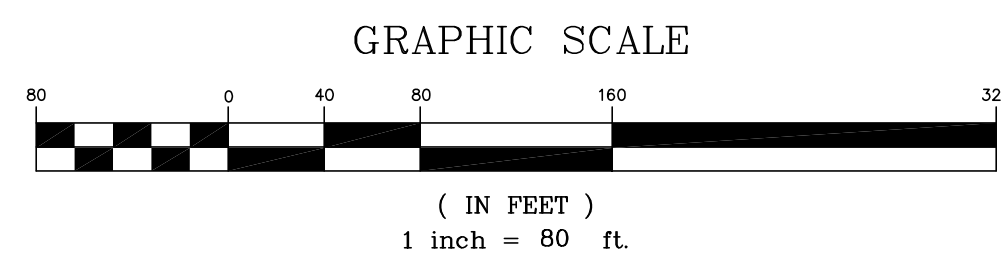
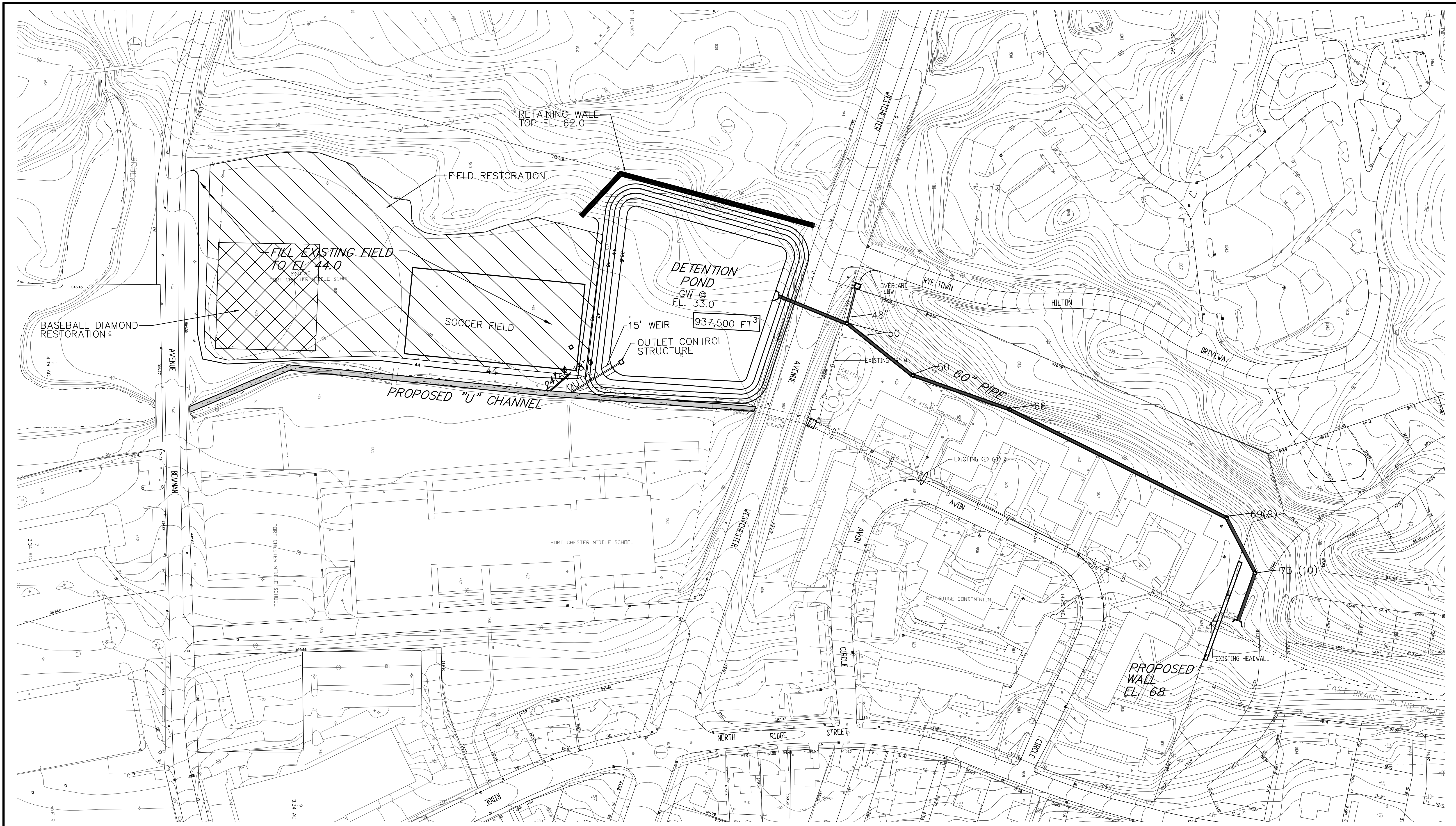


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	<p>CASE #2-48" PIPE WITH POND</p>
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	<p>sheet 2 of 4</p>

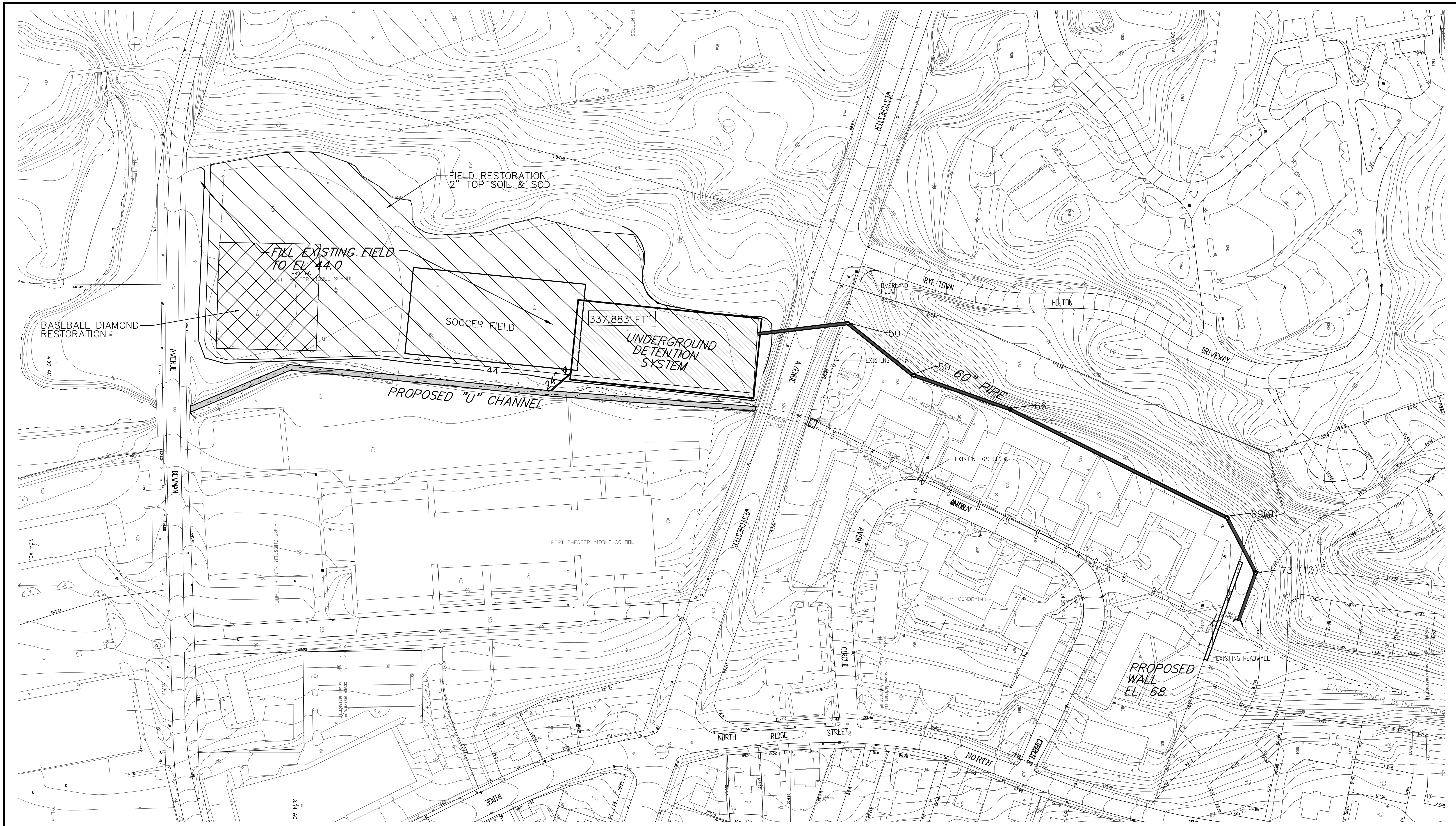
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	CASE #3A-60" PIPE WITH POND
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	sheet 3 / 4

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FIELD RESTORATION
2" TOP SOIL & SOD

FILL EXISTING FIELD
TO EL. 44.0

SOCCER FIELD

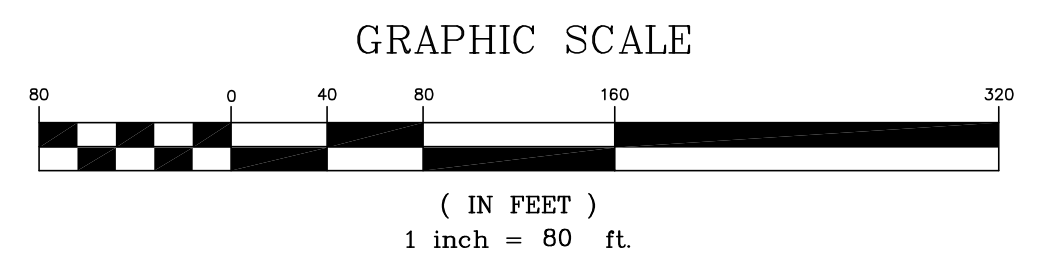
337,883 FT

UNDERGROUND
DETENTION
SYSTEM

PROPOSED "U" CHANNEL

60" PIPE

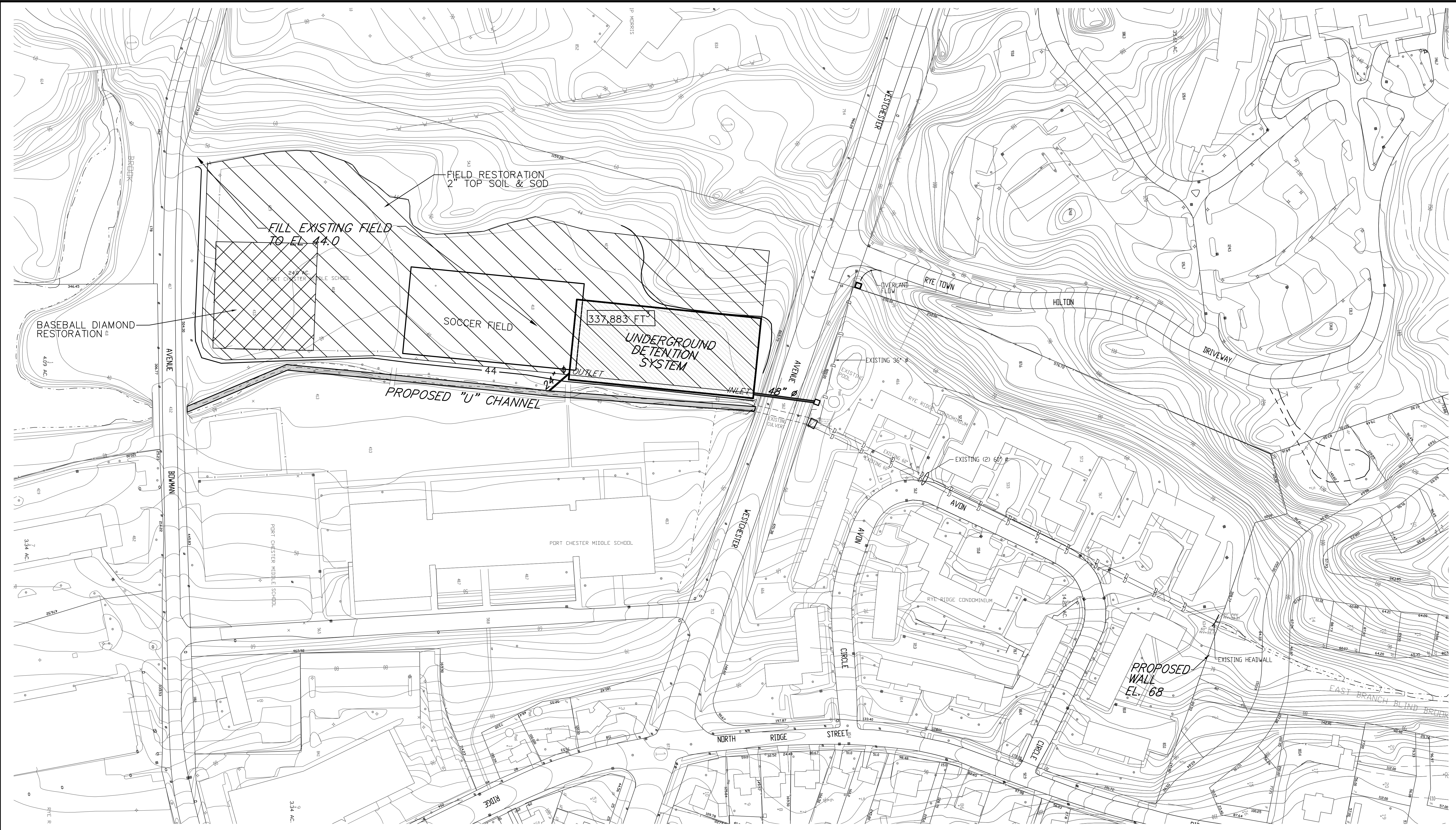
PROPOSED WALL
EL. 68



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	<p>CASE #3B-60" PIPE WITH POND</p>
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	<p>sheet 3 of 4</p>

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BASEBALL DIAMOND RESTORATION
4.03 AC.

FILL EXISTING FIELD TO EL. 44.0

FIELD RESTORATION
2" TOP SOIL & SOD

SOCCER FIELD

337,883 FT

UNDERGROUND DETENTION SYSTEM

PROPOSED "U" CHANNEL

PROPOSED WALL
EL. 68

GRAPHIC SCALE



(IN FEET)
1 inch = 80 ft.

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PROPOSED DRAINAGE IMPROVEMENTS
EAST BRANCH BLIND BROOK
VILLAGE OF RYE BROOK, N.Y.
CASE #4-48" PIPE WITH UNDERGROUND DETENTION

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