Drainage Report

for

The Links at Franklin

MultiPro, LLC

State Road 44

Franklin, Indiana

Prepared by:

TLF, INC.
3901 West 86th Street, Suite 200
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Phone (317) 334-1500

Submitted by:

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Micheal T. Pando, EI

June 4, 2021

Project No. 2020-493

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Project Narrative

for

The Links at Franklin

MultiPro, LLC

State Road 44

Franklin, Indiana

I. Project Location

The proposed project is located on the 32-acre site located southwest of the intersection of State Road 44 and I-65, immediately west of Franklin Cove Apartments. The site soils consist of Brookston silty clay, Crosby silt loam, Miami silt loam, and small areas of Brookston silty clay and Crosby-Miami silt loams. The site does not lie within a floodway or floodplain per FEMA panel 18081C0232D effective August 2, 2007. Refer to the site location map, soil map and data, and flood insurance rate map provided in Appendix A.

II. Project Description

The proposed project is located across the entire portion of the 32-acre site. The proposed improvements will consist of a multi-family residential development, related underground utilities and storm drainage facilities. It will be built in two phases.

III. Existing Drainage Conditions

The existing site is located to the south of East King Street and west of Umbarger Lane. The majority of the existing site drains to a 1-acre wet detention basin located just south of Franklin Cove Apartments. Off-site flows are also draining towards the site from King Street to the north, a portion of the residential development to the west, and Franklin Cove Apartments to the north and east. These off-site flows eventually drain to the on-site wet detention pond as well. The discharge point for the existing site basin is at the southern end of the wet detention pond where it leaves the site via a 12 inch concrete pipe and an at-grade spillway into Ragsdale Open Ditch Legal Drain.

In order to determine the post-developed release rates, two different HydroCAD models were created. Both models analyzed storm durations for the 1, 2, 3, 6, 12, and 24 hour events. Model 1 consists of the on-site area only. Model 2 includes the on-site and off-site area. Refer to Appendix B for the Existing Drainage Conditions Exhibit, along with the existing drainage calculations. Both models have been summarized in the following table:

Table 1: Existing Conditions				
Basin	**Area**	**2-yr Peak Flow**	**10-yr Peak Flow**	**100-yr Peak Flow**
	(ac)	(cfs)	(cfs)	(cfs)
Model 1 – On-Site Only	30.97	4.79	11.84	30.81
Model 2 – On-Site and Off-Site	43.06	8.92	23.02	50.53

IV. Proposed Drainage Conditions

The proposed development utilizes storm inlets and reinforced concrete pipes to convey runoff to multiple stormwater detention basins including a dry detention basin, a new wet detention pond, and an expanded wet detention pond situated where the existing pond is located. Drainage from King Street and the north 7.5 acres flows into the north dry detention basin. The bottom of the dry detention basin is 735 feet and the top of bank is 742 feet.

The controlled discharge from the north dry basin is then conveyed via storm sewer pipe, along with the southwest portion of the developed site, approximately 15 acres, to the southwest wet detention pond. The off-site basins from Franklin Cove Apartments and the southeast portion of the developed site, approximately 8.5 acres, flow to the modified and expanded southeast wet detention pond. There is an equalizer pipe between the southwest and southeast wet ponds to maintain a consistent normal pool and similar stage elevation between the two ponds. The bottom of the two wet detention ponds is at 723 feet, the normal pool is 731 feet, and the top of bank is at 737 feet.

Per the General Drainage Standards in the Franklin Subdivision Control Ordinance Chapter 6.19, the stormwater detention shall control stormwater for the 10-year post-development storm to the 2-year pre-development rainfall event rate, and the 100-year post-development storm to the 10-year pre-development rainfall event rate. The proposed on-site flows will be restricted to these allowable release rates and the off-site flows will bypass through the pond undetained.

Table 2: Allowable Release Rates		
Basin	**10-yr Discharge (Ex 2-yr peak)**	**100-yr Discharge (Ex 10-yr peak)**
	(cfs)	(cfs)
On-Site	4.79	11.84

Similar to the existing conditions, two different HydroCAD models were created. Both models analyzed storm durations for the 1, 2, 3, 6, 12, and 24 hour events. Model 1 consists of the on-site area only. Model 2 includes the on-site and off-site area.

The Proposed Drainage Conditions Exhibit, along with the proposed drainage calculations, are provided in Appendix C. The results for the proposed conditions can be found in the following table:

Table 3: Proposed Conditions – Model 1 – On-Site Only				
Basin	**10-yr Peak Discharge**	**10-yr Stage Elevation**	**100-yr Peak Flow**	**100-yr Stage Elevation**
	(cfs)	(ft)	(cfs)	(ft)
North Dry Pond	-	736.93	-	738.71
SW Wet Pond	-	732.51	-	733.26
SE Wet Pond	4.41	732.37	6.11	733.17

Table 4: Proposed Conditions – Model 2 – On-Site and Off-Site				
Basin	**10-yr Peak Discharge**	**10-yr Stage Elevation**	**100-yr Peak Flow**	**100-yr Stage Elevation**
	(cfs)	(ft)	(cfs)	(ft)
North Dry Pond	-	737.57	-	739.44
SW Wet Pond	-	732.92	-	734.05
SE Wet Pond	5.50	732.85	7.17	733.97

In summary, comparing the on-site discharge in Table 3 to the allowable release rates in Table 2, the 10-yr peak discharge of 4.41 cfs does not exceed the allowable release rate of 4.79 cfs. The 100-yr peak discharge of 6.11 cfs does not exceed the allowable release rate of 11.84 cfs.

When the off-site bypass flow is added in Model 2 (Table 4), the 10-yr peak discharge increases to 5.5 cfs, which is still well below the existing 10-yr discharge of 23.02 cfs. The 100-yr peak discharge increases to 7.17 cfs, which is still well below the existing 100-yr discharge of 50.53 cfs. While not required per the drainage standards, the proposed off-site flow is being reduced from the existing rates because of the additional storage volume provided in the proposed stormwater ponds.

The proposed stage elevations in all three basins provide over 2 feet of freeboard as summarized in Table 4, which includes the off-site flow.

V. Proposed Storm Sewer Design

The proposed storm sewer is designed to convey the design 10-yr flows from the proposed basins, in accordance with the City of Franklin Subdivision Control Ordinance Chapter 6.19. In addition, the 100-year hydraulic grade line (HGL) is below the rim elevations of all castings. The Proposed Storm Sewer Map, calculations, and storm sewer plan are provided in Appendix D.

VI. Proposed Water Quality Design

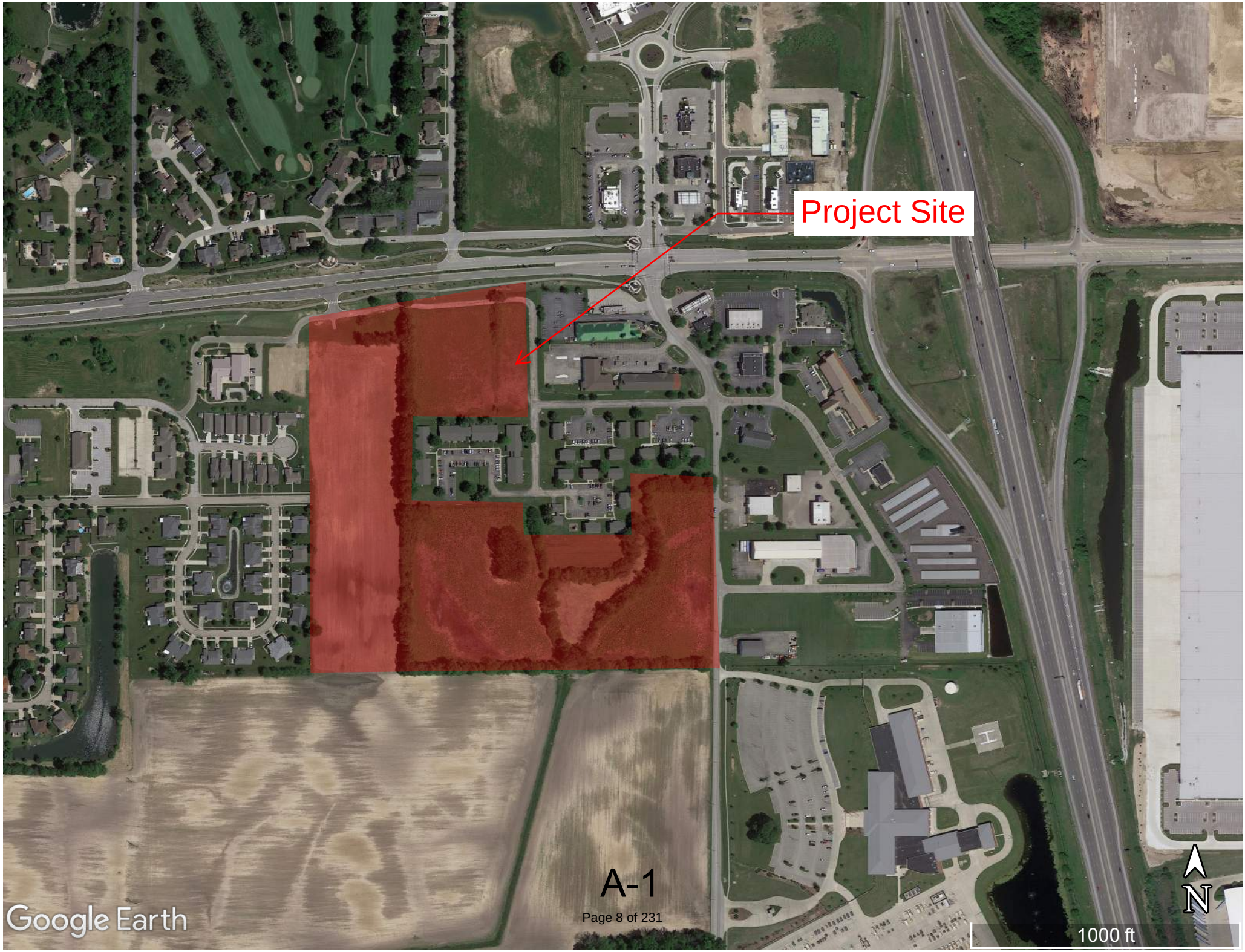
Water quality is addressed in the design of the site by utilizing the storage volume below normal pool for the two proposed wet detention ponds at the south end of the site. Water quality volumes were calculated for both wet detention ponds based on the amount of impervious and pervious surface for each contributing watershed. The required water quality volume for the southwest basin is 0.857 ac-ft and the provided volume is 3.74 ac-ft. The required water quality volume for the southeast basin is 0.266 ac-ft and the provided volume is over 9 ac-ft. The water quality calculations for both wet detention ponds can be found in Appendix E.

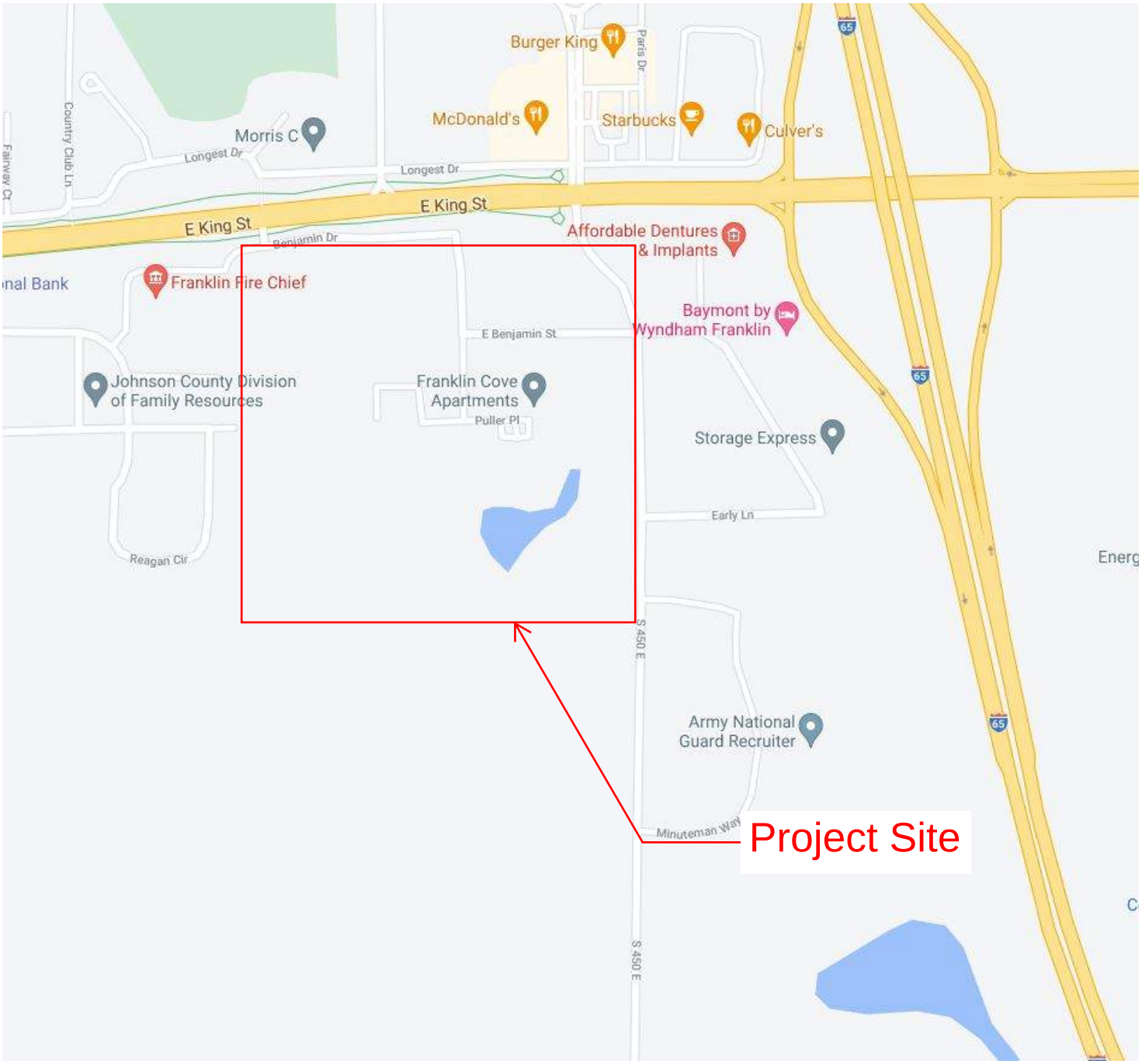
VII. Summary and Conclusions

This project will disturb approximately 32 acres on the overall site. Erosion control measures will be implemented before construction begins and maintained during construction to comply with IDEM Rule 5, Notice of Intent for Construction and Land Disturbance.

The drainage from the proposed site has been designed to accept the off-site flow through the site and reduce the overall site discharge; therefore no adverse impacts are anticipated to affect adjacent or downstream landowners.

Appendix A
Maps


Project Site
A-1
Page 8 of 231
Google Earth
N
1000 ft


Burger King
Paris Dr
McDonald's
Starbucks
Culver's
Morris C
Longest Dr
Country Club Ln
Fairway Ct
E King St
Affordable Dentures & Implants
Franklin Fire Chief
Baymont by Wyndham Franklin
E Benjamin St
Johnson County Division of Family Resources
Franklin Cove Apartments
Puller Pl
Storage Express
Early Ln
Reagan Cir
S 450 E
Army National Guard Recruiter
Minuteman Way
Project Site

A-2

Exhibit A5
Custom Soil Resource Report
Map—Hydrologic Soil Group

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A-3

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Johnson County, Indiana
Survey Area Data: Version 28, Jun 4, 2020

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

Date(s) aerial images were photographed: Oct 17, 2019—Oct 20, 2019

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

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Br	Brookston silty clay loam, 0 to 2 percent slopes	B/D	20.5	63.2%
CrA	Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes	C/D	7.7	23.7%
CsB2	Crosby-Miami silt loams, 2 to 4 percent slopes, eroded	C/D	0.5	1.4%
MnB2	Miami silt loam, 2 to 6 percent slopes, eroded	C	1.4	4.4%
W	Water		1.6	5.0%
YbvA	Brookston silty clay loam-Urban land complex, 0 to 2 percent slopes	B/D	0.7	2.3%
Totals for Area of Interest			**32.4**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Drainage Class

"Drainage class (natural)" refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized-excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."

National Flood Hazard Layer FIRMette

Exhibit A4

FEMA

86°1'30"W 39°29'2"N

86°0'53"W 39°28'34"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 — Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

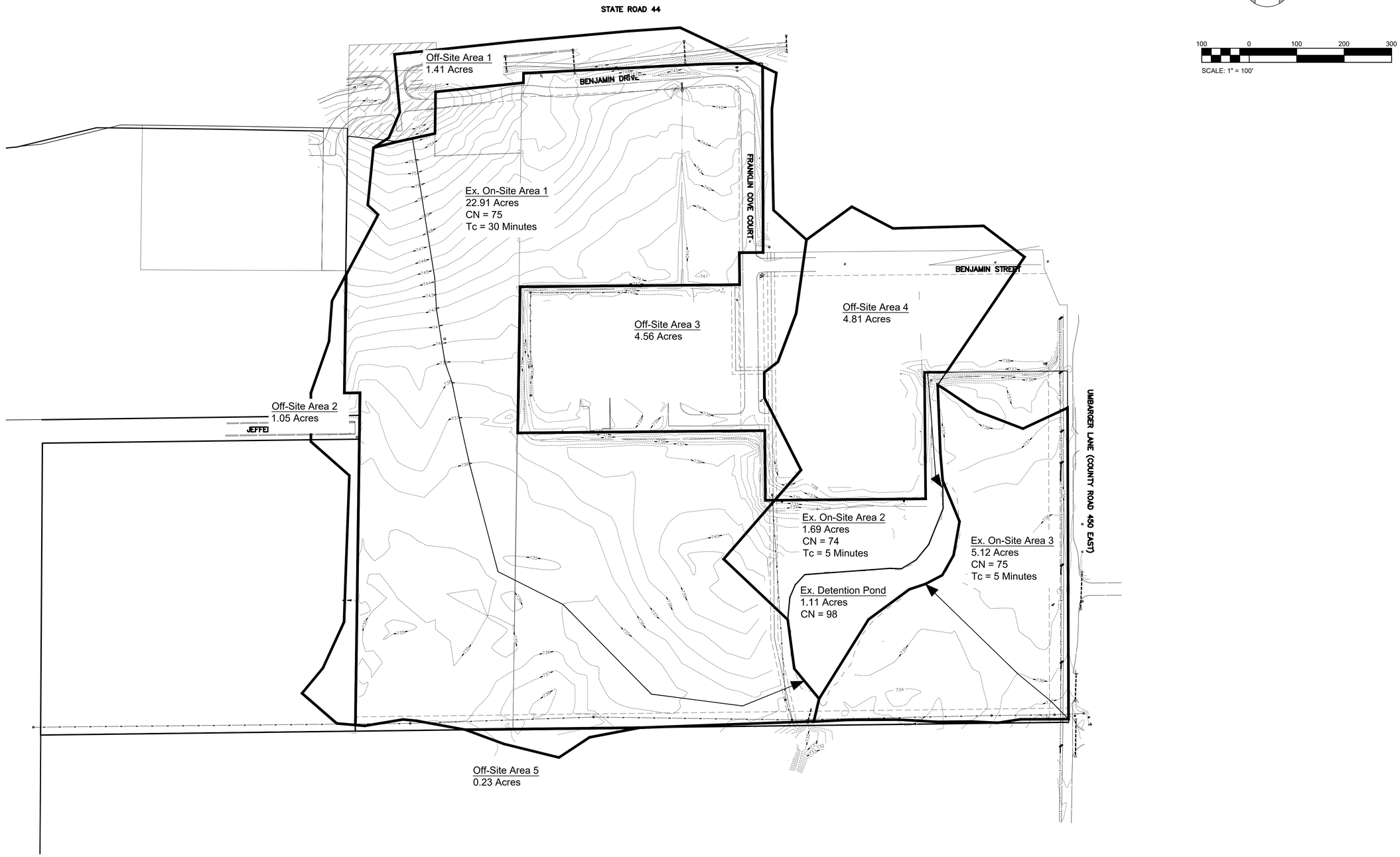
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 12/13/2020 at 9:24 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Appendix B
Existing Drainage Conditions



N

100 0 100 200 300

SCALE: 1" = 100'

TLF, INC.
3901 West 86th Street, Suite 200
Indianapolis, Indiana 46268
Phone: 317-334-1500
Fax: 317-334-1552

Certified By:

REVISIONS

LEVEL	DESCRIPTION	DATE

Project No.: 2020-493
Date: 05/24/2021
Designed By: DBS
Drawn By: DBS
Checked By: BNH

THE LINKS AT FRANKLIN MULTIPRO, LLC

STATE ROAD 44
FRANKLIN, INDIANA

Title:

EXISTING CONDITIONS EXHIBIT

Sheet No.:

B-1

Drawing Path: P:\2020\400\493\Engr\Calcs_Civil\Exhibits Drawing.dwg Last Edited: 6/3/21 - 4:31pm
Plotted By: mpando Time of Plot: 6/3/21 - 5:17pm

Existing Runoff Coefficient Calculations

Existing Conditions

On-Site Areas

Area 1 Tc = 30 minutes

Surface Description	Area (sft)	Area (Acres)	c	CN
Roof	2546	0.06	0.90	98
Concrete/Asphalt	23902	0.55	0.85	98
Grass	971459	22.30	0.30	74
Total	997907	22.91	0.31	75

Area 2 Tc = 5 minutes

Surface Description	Area (sft)	Area (Acres)	c	CN
Roof	0	0.00	0.90	98
Concrete/Asphalt	0	0.00	0.85	98
Grass	73662	1.69	0.30	74
Total	73662	1.69	0.30	74

Area 3 Tc = 5 minutes

Surface Description	Area (sft)	Area (Acres)	c	CN
Roof	0	0.00	0.90	98
Concrete/Asphalt	6731	0.15	0.85	98
Grass	216274	4.96	0.30	74
Total	223005	5.12	0.32	75

Off-Site Areas

Area 1 Tc = 5 minutes

Surface Description	Area (sft)	Area (Acres)	c	CN
Roof	0	0.00	0.90	98
Concrete/Asphalt	28109	0.65	0.85	98
Grass	33393	0.77	0.30	74
Total	61502	1.41	0.55	85

Area 2 Tc = 5 minutes

Surface Description	Area (sft)	Area (Acres)	c	CN
Roof	14269	0.33	0.90	98
Concrete/Asphalt	8740	0.20	0.85	98
Grass	22788	0.52	0.30	74
Total	45797	1.05	0.59	86

Area 3 Tc = 5 minutes

Surface Description	Area (sft)	Area (Acres)	c	CN
Roof	36519	0.84	0.90	98
Concrete/Asphalt	48525	1.11	0.85	98
Grass	113763	2.61	0.30	74
Total	198807	4.56	0.54	84

Area 4 Tc = 10 minutes

Surface Description	Area (sft)	Area (Acres)	c	CN
Roof	38309	0.88	0.90	98
Concrete/Asphalt	70438	1.62	0.85	98
Grass	100854	2.32	0.30	74
Total	209601	4.81	0.59	86

Area 5 Tc = 5 minutes

Surface Description	Area (sft)	Area (Acres)	c	CN
Roof	0	0.00	0.90	98
Concrete/Asphalt	0	0.00	0.85	98
Grass	10130	0.23	0.30	74
Total	10130	0.23	0.30	74

Time of Concentration (T_c) or Travel Time (T_t)

Project:	MultiPro, LLC	By:	MTP	Date:	6/3/2021
Location:	City of Franklin	Checked:	BNH	Date:	
Basin:	On-Site Area 1				

Present X Developed -

Tc X T_t - through subarea

Sheet Flow		Segment ID						
Surface description (Table 3-1)			Unpaved					
Manning's roughness coeff., n (Table 3-1)			0.035					
Flow Length, L (L < 300 ft)		ft	300					
Rainfall Calculation Method			Entity Rainfall Data					
Two-year 24-hr rainfall, P2		in	2.91					
U.S. Elev.		ft	755					
D.S. Elev.		ft	748					
Land slope, s		ft/ft	0.02					
$T_t = \frac{.007\ (nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$		hr	0.12	+		+		= 0.12

Shallow Concentrated Flow		Segment ID						
Surface description, (paved or unpaved)			Unpaved		-		-	
Flow length, L		ft	1493		-		-	
U.S. Elev.		ft	748		-		-	
D.S. Elev.		ft	734		-		-	
Watercourse slope, s		ft/ft	0.009		-		-	
Average velocity, V (Figure 3-1)		ft/s	1.56		-		-	
$T_t = \frac{L}{3600\ V}$		hr	0.27	+	-	+	-	= 0.27

Channel Flow		Segment ID						
Channel Geometry			-		-		-	
Discharge (cfs)			-		-		-	
Diameter (ft)			-		-		-	
Bottom Width (ft)			-		-		-	
Side Slope (x:1) (ft)			-		-		-	
Slope of Channel (ft)			-		-		-	
Manning's Roughness Coefficient			-		-		-	
Depth (ft)			-		-		-	
Cross Sectional Area (ft^2)			-		-		-	
Wetted Perimeter (ft)			-		-		-	
Hydraulic Radius (ft)			-		-		-	
Velocity (ft/s)			-		-		-	
Flow length, L		ft	-		-		-	
$T_t = \frac{L}{3600\ V}$		hr	-	+	-	+	-	= 0.00

Watershed or subarea T_c or T_t	hr	0.39
	min	23.19

Time of Concentration (T_c) or Travel Time (T_t)

Project:	MultiPro, LLC	By:	MTP	Date:	6/3/2021
Location:	City of Franklin	Checked:	BNH	Date:	
Basin:	On-Site Area 2				

Present X Developed -

Tc X T_t - through subarea

Sheet Flow		Segment ID						
Surface description (Table 3-1)			Paved					
Manning's roughness coeff., n (Table 3-1)			0.013					
Flow Length, L (L < 300 ft)		ft	86					
Rainfall Calculation Method			Entity Rainfall Data					
Two-year 24-hr rainfall, P2		in	2.91					
U.S. Elev.		ft	743					
D.S. Elev.		ft	741					
Land slope, s		ft/ft	0.02					
$T_t = \frac{.007\ (nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$		hr	0.02	+		+		= 0.02

Shallow Concentrated Flow		Segment ID						
Surface description, (paved or unpaved)			Unpaved		-		-	
Flow length, L		ft	446		-		-	
U.S. Elev.		ft	741		-		-	
D.S. Elev.		ft	734		-		-	
Watercourse slope, s		ft/ft	0.016		-		-	
Average velocity, V (Figure 3-1)		ft/s	2.02		-		-	
$T_t = \frac{L}{3600\ V}$		hr	0.06	+	-	+	-	= 0.06

Channel Flow		Segment ID						
Channel Geometry			-		-		-	
Discharge (cfs)			-		-		-	
Diameter (ft)			-		-		-	
Bottom Width (ft)			-		-		-	
Side Slope (x:1) (ft)			-		-		-	
Slope of Channel (ft)			-		-		-	
Manning's Roughness Coefficient			-		-		-	
Depth (ft)			-		-		-	
Cross Sectional Area (ft^2)			-		-		-	
Wetted Perimeter (ft)			-		-		-	
Hydraulic Radius (ft)			-		-		-	
Velocity (ft/s)			-		-		-	
Flow length, L		ft	-		-		-	
$T_t = \frac{L}{3600\ V}$		hr	-	+	-	+	-	= 0.00

Watershed or subarea T_c or T_t	hr	0.08
	min	4.89

*A velocity of 5 ft/s was assumed for pipe travel time.

Estimation						
Time to Inlet					(min.)	5
Travel Length in Pipe					(ft)	1500
Assumed Velocity					(ft/s)	5
					Tc (min.) =	10.00

Time of Concentration (T_c) or Travel Time (T_t)

Project:	MultiPro, LLC	By:	MTP	Date:	6/3/2021
Location:	City of Franklin	Checked:	BNH	Date:	
Basin:	On-Site Area 3				

Present X Developed -

Tc X T_t - through subarea

Sheet Flow		Segment ID						
Surface description (Table 3-1)			Paved					
Manning's roughness coeff., n (Table 3-1)			0.013					
Flow Length, L (L < 300 ft)		ft	17					
Rainfall Calculation Method			Entity Rainfall Data					
Two-year 24-hr rainfall, P2		in	2.91					
U.S. Elev.		ft	739					
D.S. Elev.		ft	737.75					
Land slope, s		ft/ft	0.07					
$T_t = \frac{.007\ (nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$		hr	0.00	+		+		= 0.00

Shallow Concentrated Flow		Segment ID						
Surface description, (paved or unpaved)			Unpaved		-		-	
Flow length, L		ft	398		-		-	
U.S. Elev.		ft	737.75		-		-	
D.S. Elev.		ft	734		-		-	
Watercourse slope, s		ft/ft	0.009		-		-	
Average velocity, V (Figure 3-1)		ft/s	1.57		-		-	
$T_t = \frac{L}{3600\ V}$		hr	0.07	+	-	+	-	= 0.07

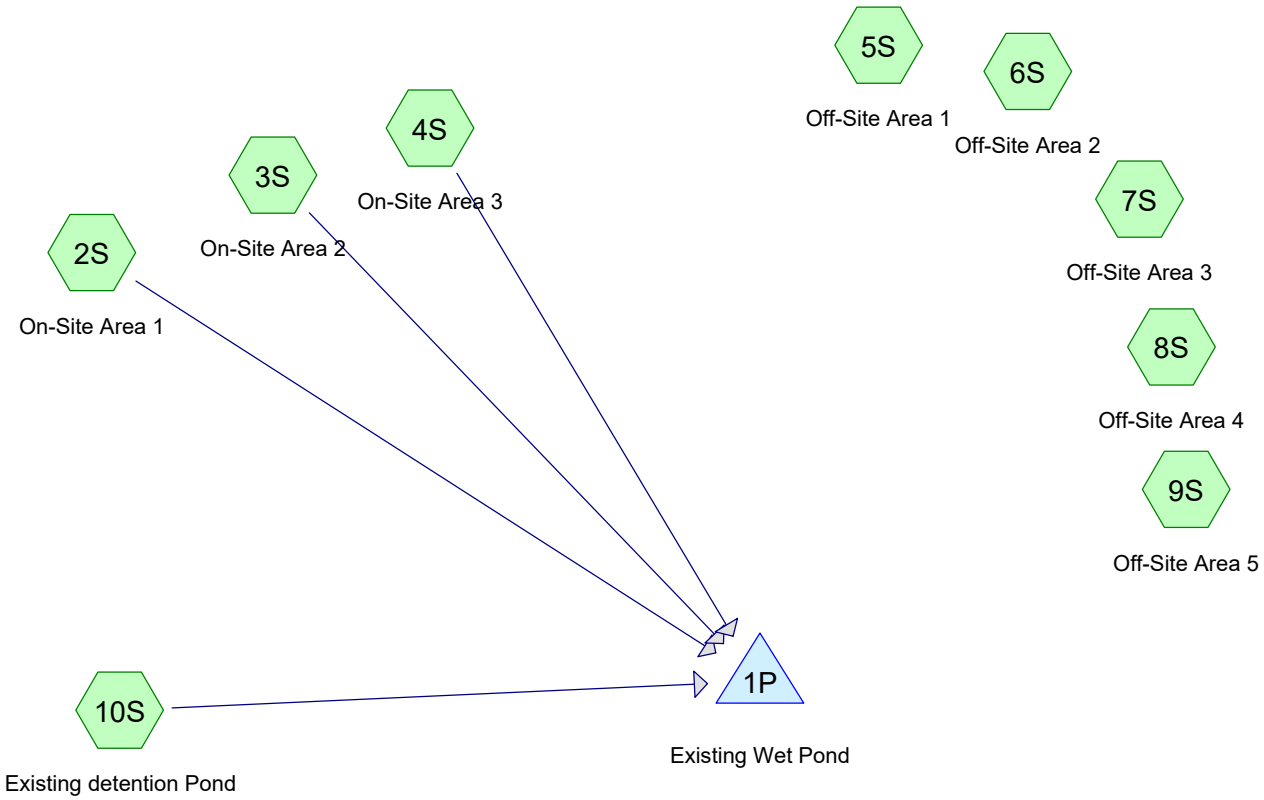
Channel Flow		Segment ID						
Channel Geometry			-		-		-	
Discharge (cfs)			-		-		-	
Diameter (ft)			-		-		-	
Bottom Width (ft)			-		-		-	
Side Slope (x:1) (ft)			-		-		-	
Slope of Channel (ft)			-		-		-	
Manning's Roughness Coefficient			-		-		-	
Depth (ft)			-		-		-	
Cross Sectional Area (ft^2)			-		-		-	
Wetted Perimeter (ft)			-		-		-	
Hydraulic Radius (ft)			-		-		-	
Velocity (ft/s)			-		-		-	
Flow length, L		ft	-		-		-	
$T_t = \frac{L}{3600\ V}$		hr	-	+	-	+	-	= 0.00

Watershed or subarea T_c or T_t	hr	0.07
	min	4.44

*A velocity of 5 ft/s was assumed for pipe travel time.

Estimation						
Time to Inlet					(min.)	5
Travel Length in Pipe					(ft)	1500
Assumed Velocity					(ft/s)	5
					Tc (min.) =	10.00

Existing Model 1
On-Site Only



B-4

Subcat Reach Pond Link

Routing Diagram for Ex. Conditions HydroCAD model
Prepared by TLF, Inc.

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
28.170	75	(2S, 4S)
1.920	74	(3S, 9S)
1.440	85	(5S)
5.860	86	(6S, 8S)
4.560	84	(7S)
1.110	98	(10S)
43.060	**78**	**TOTAL AREA**

Events for Pond 1P: Existing Wet Pond

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
2 YR - 01 HR	6.18	3.82	732.33	0.193
2 YR - 02 HR	5.54	4.79	732.35	0.225
2 YR - 03 HR	4.36	4.13	732.34	0.204
2 YR - 06 HR	3.25	3.18	732.32	0.171
2 YR - 12 HR	3.57	3.41	732.32	0.179
2 YR - 24 HR	3.82	3.75	732.33	0.191
10 YR - 01 HR	15.75	11.84	732.48	0.410
10 YR - 02 HR	12.44	11.81	732.48	0.409
10 YR - 03 HR	9.46	9.22	732.44	0.348
10 YR - 06 HR	8.03	7.10	732.40	0.293
10 YR - 12 HR	7.38	7.24	732.40	0.296
10 YR - 24 HR	6.82	6.75	732.39	0.283
100 YR - 01 HR	**34.45**	**30.81**	**732.71**	**0.760**
100 YR - 02 HR	26.37	25.63	732.66	0.677
100 YR - 03 HR	23.54	20.84	732.60	0.594
100 YR - 06 HR	20.38	19.12	732.58	0.561
100 YR - 12 HR	13.28	12.97	732.50	0.435
100 YR - 24 HR	11.71	11.64	732.48	0.405

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment2S: On-Site Area 1	Runoff Area=23.050 ac 0.00% Impervious Runoff Depth=0.21" Tc=30.0 min CN=75 Runoff=3.97 cfs 0.407 af
Subcatchment3S: On-Site Area 2	Runoff Area=1.690 ac 0.00% Impervious Runoff Depth=0.19" Tc=5.0 min CN=74 Runoff=0.29 cfs 0.027 af
Subcatchment4S: On-Site Area 3	Runoff Area=5.120 ac 0.00% Impervious Runoff Depth=0.21" Tc=5.0 min CN=75 Runoff=0.95 cfs 0.090 af
Subcatchment5S: Off-Site Area 1	Runoff Area=1.440 ac 0.00% Impervious Runoff Depth=0.53" Tc=5.0 min CN=85 Runoff=0.61 cfs 0.064 af
Subcatchment6S: Off-Site Area 2	Runoff Area=1.050 ac 0.00% Impervious Runoff Depth=0.57" Tc=5.0 min CN=86 Runoff=0.50 cfs 0.050 af
Subcatchment7S: Off-Site Area 3	Runoff Area=4.560 ac 0.00% Impervious Runoff Depth=0.49" Tc=5.0 min CN=84 Runoff=1.74 cfs 0.186 af
Subcatchment8S: Off-Site Area 4	Runoff Area=4.810 ac 0.00% Impervious Runoff Depth=0.57" Tc=10.0 min CN=86 Runoff=2.17 cfs 0.230 af
Subcatchment9S: Off-Site Area 5	Runoff Area=0.230 ac 0.00% Impervious Runoff Depth=0.19" Tc=5.0 min CN=74 Runoff=0.04 cfs 0.004 af
Subcatchment10S: Existing detention	Runoff Area=1.110 ac 100.00% Impervious Runoff Depth=1.40" Tc=5.0 min CN=98 Runoff=1.71 cfs 0.129 af
Pond 1P: Existing Wet Pond	Peak Elev=732.35' Storage=0.225 af Inflow=5.54 cfs 0.654 af Outflow=4.79 cfs 0.654 af

Total Runoff Area = 43.060 ac Runoff Volume = 1.187 af Average Runoff Depth = 0.33"
97.42% Pervious = 41.950 ac 2.58% Impervious = 1.110 ac

Summary for Subcatchment 2S: On-Site Area 1

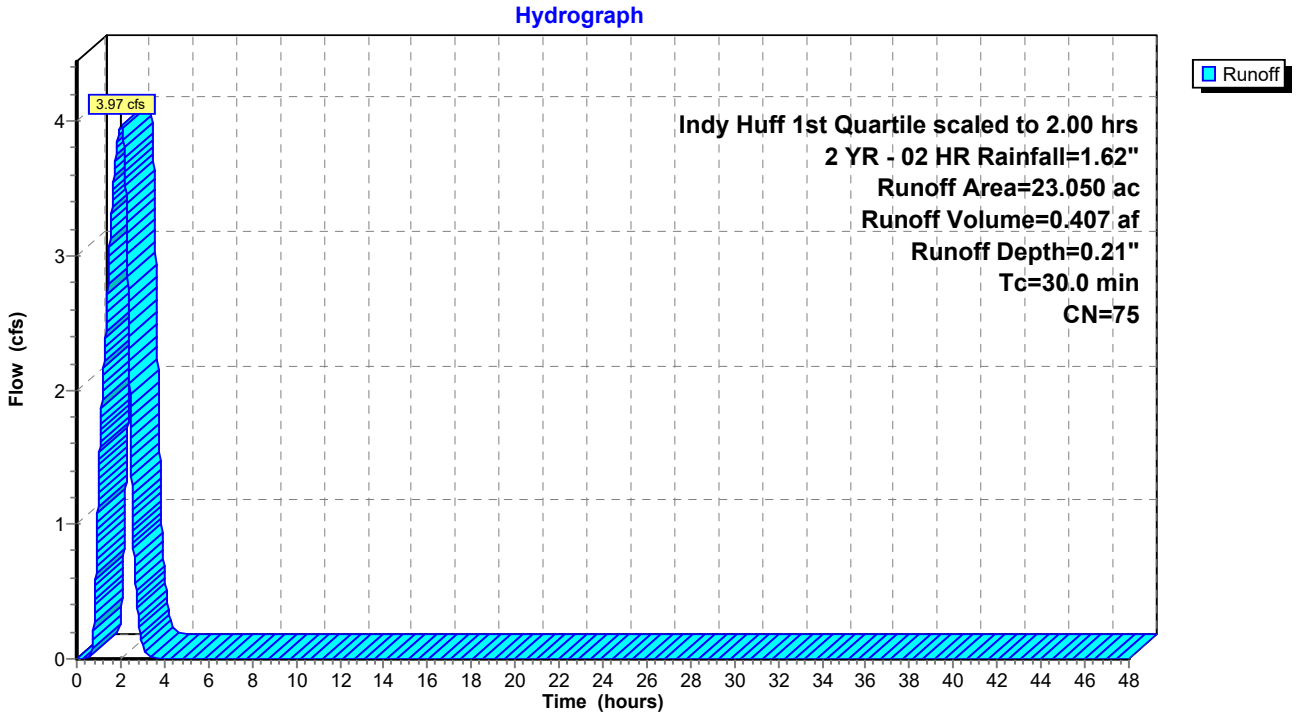
Runoff = 3.97 cfs @ 2.03 hrs, Volume= 0.407 af, Depth= 0.21"
Routed to Pond 1P : Existing Wet Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 2.00 hrs 2 YR - 02 HR Rainfall=1.62"

	Area (ac)	CN	Description
*	23.050	75	
	23.050		100.00% Pervious Area

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

Subcatchment 2S: On-Site Area 1



Summary for Subcatchment 3S: On-Site Area 2

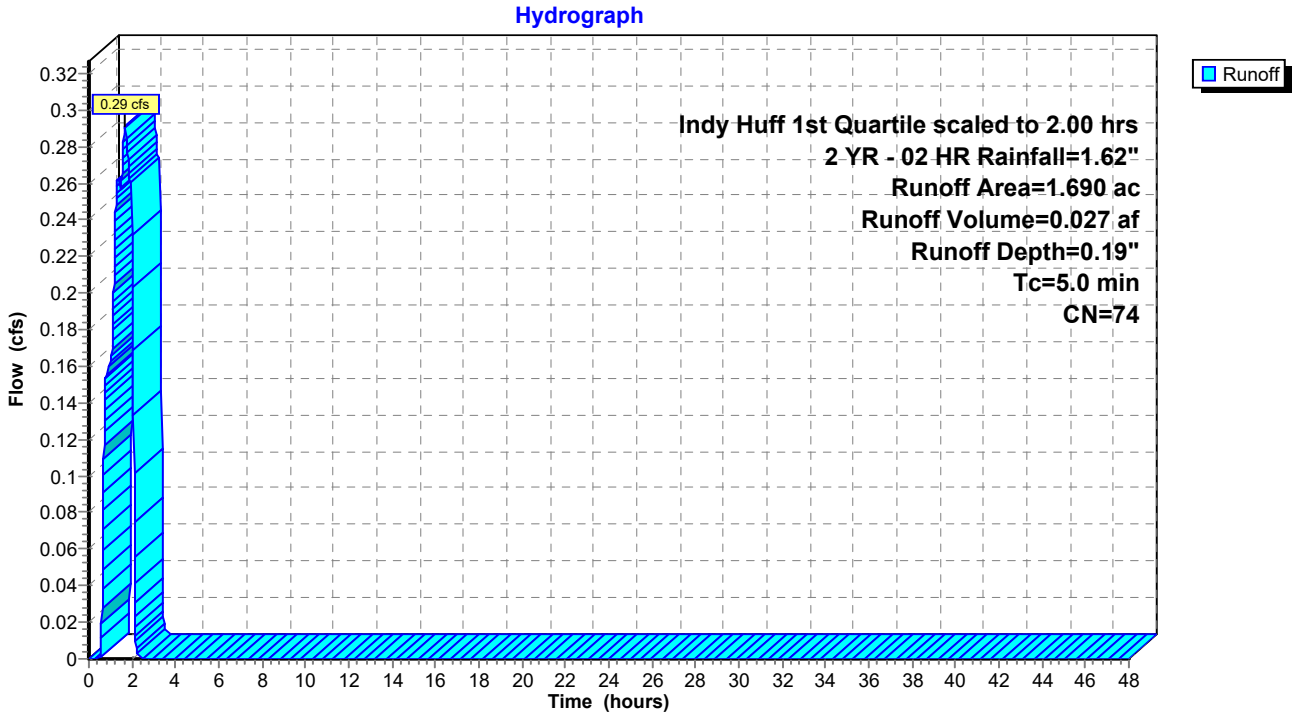
Runoff = 0.29 cfs @ 1.68 hrs, Volume= 0.027 af, Depth= 0.19"
Routed to Pond 1P : Existing Wet Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 2.00 hrs 2 YR - 02 HR Rainfall=1.62"

	Area (ac)	CN	Description
*	1.690	74	
	1.690		100.00% Pervious Area

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

Subcatchment 3S: On-Site Area 2



Summary for Subcatchment 4S: On-Site Area 3

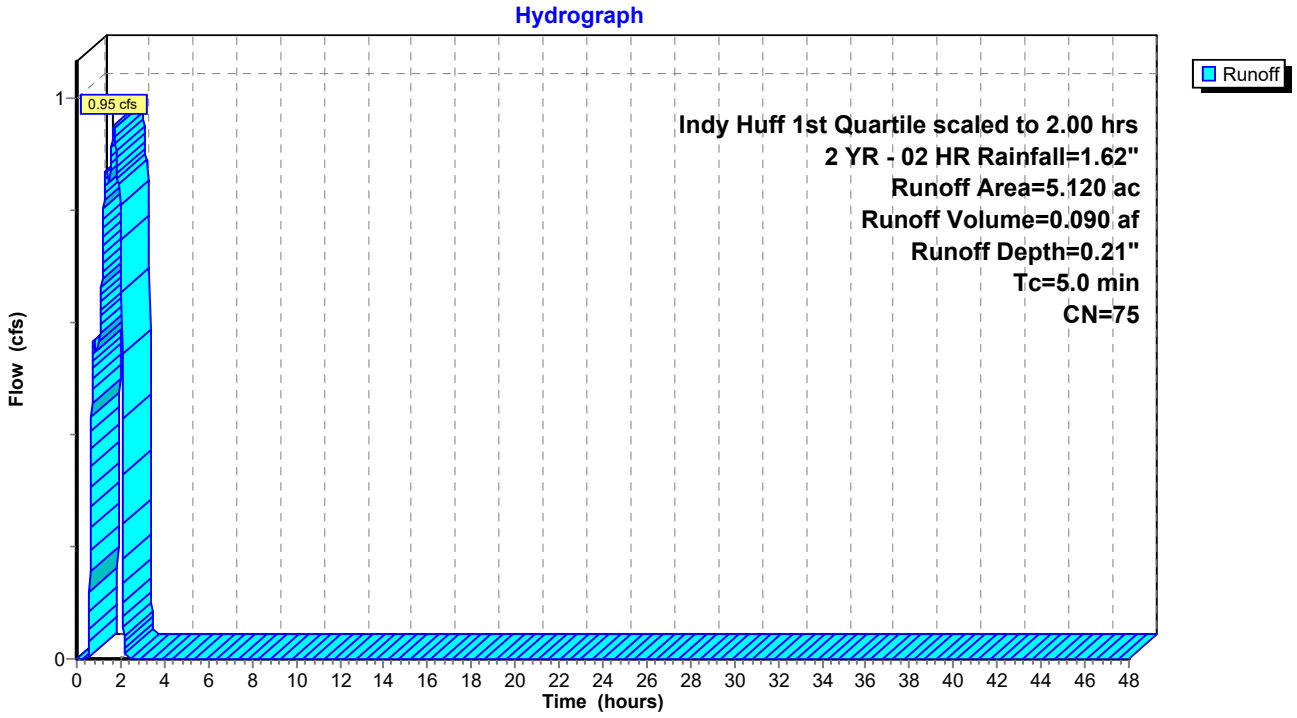
Runoff = 0.95 cfs @ 1.68 hrs, Volume= 0.090 af, Depth= 0.21"
Routed to Pond 1P : Existing Wet Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 2.00 hrs 2 YR - 02 HR Rainfall=1.62"

	Area (ac)	CN	Description
*	5.120	75	
	5.120		100.00% Pervious Area

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

Subcatchment 4S: On-Site Area 3



Summary for Subcatchment 5S: Off-Site Area 1

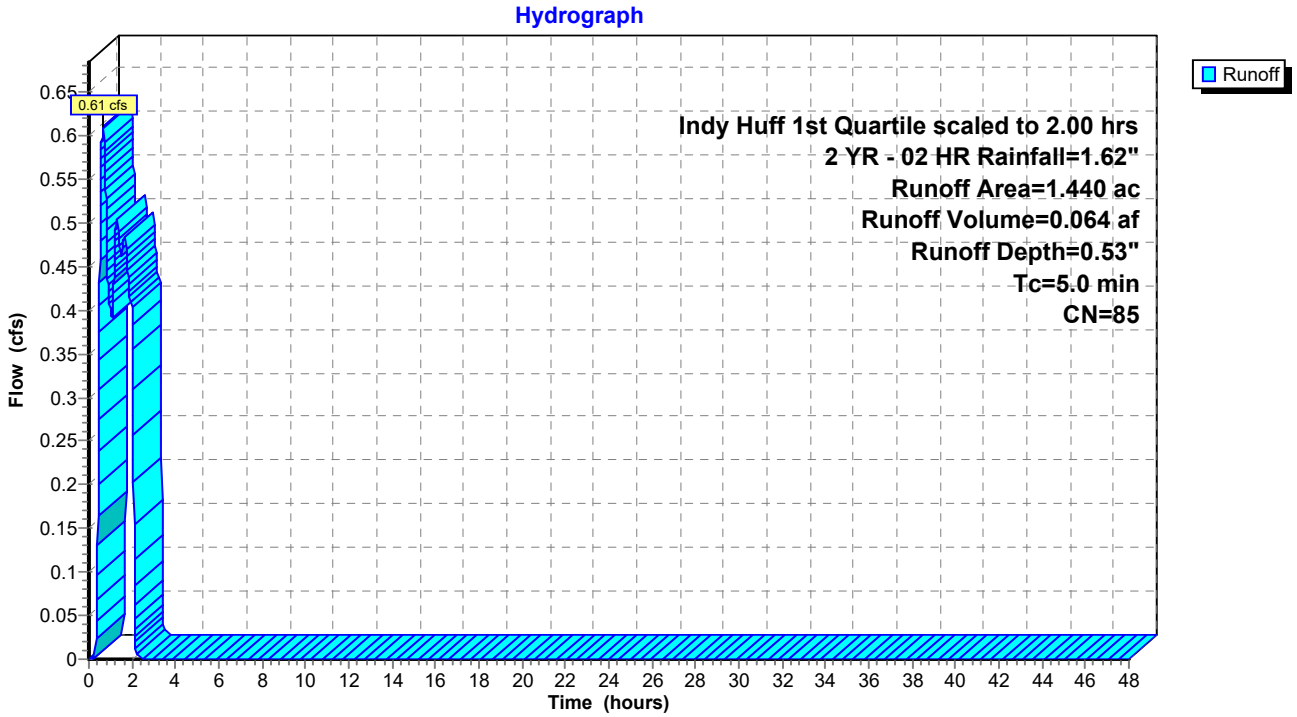
Runoff = 0.61 cfs @ 0.65 hrs, Volume= 0.064 af, Depth= 0.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 2.00 hrs 2 YR - 02 HR Rainfall=1.62"

	Area (ac)	CN	Description
*	1.440	85	
	1.440		100.00% Pervious Area

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

Subcatchment 5S: Off-Site Area 1



Summary for Subcatchment 6S: Off-Site Area 2

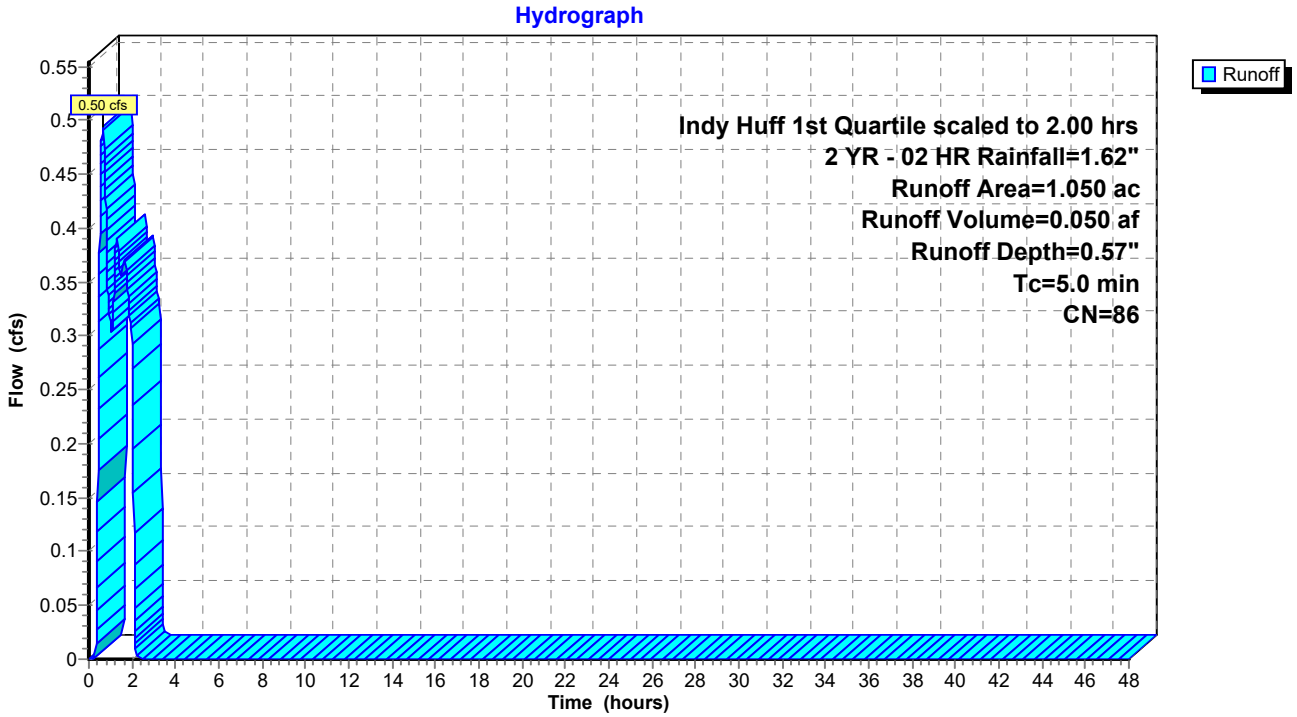
Runoff = 0.50 cfs @ 0.64 hrs, Volume= 0.050 af, Depth= 0.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 2.00 hrs 2 YR - 02 HR Rainfall=1.62"

	Area (ac)	CN	Description
*	1.050	86	
	1.050		100.00% Pervious Area

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

Subcatchment 6S: Off-Site Area 2



Summary for Subcatchment 7S: Off-Site Area 3

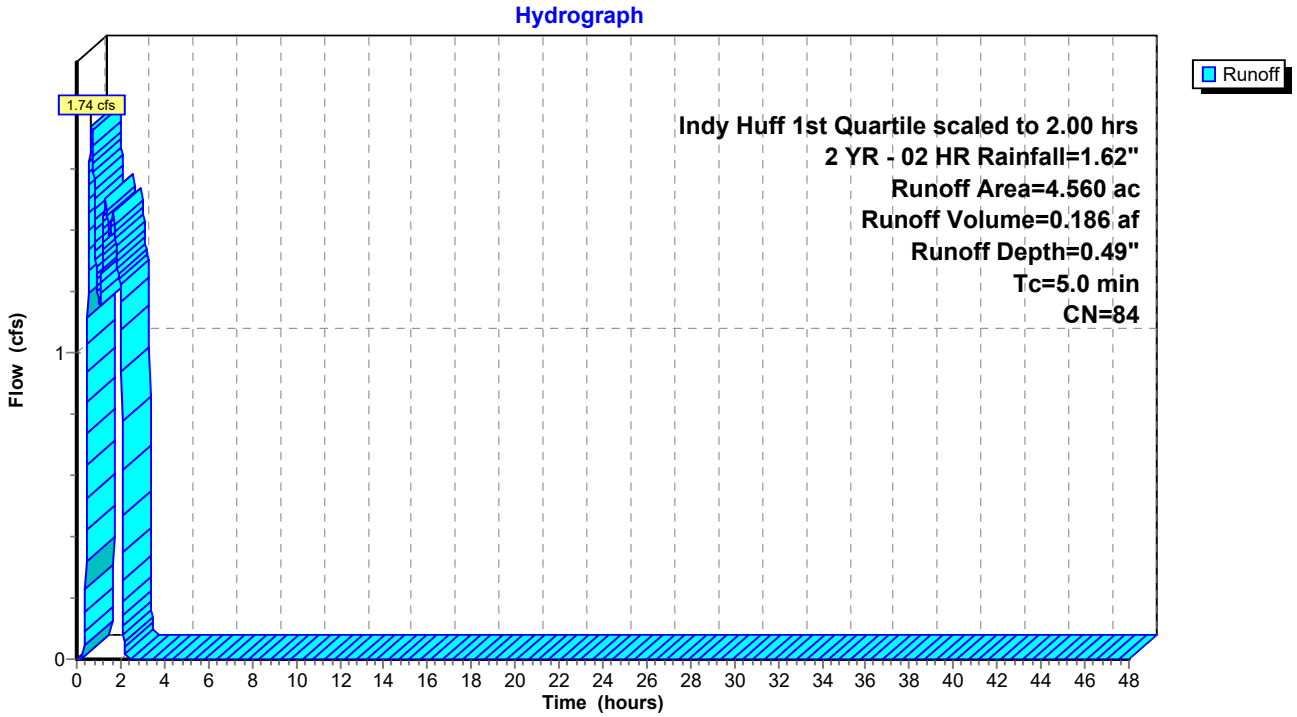
Runoff = 1.74 cfs @ 0.67 hrs, Volume= 0.186 af, Depth= 0.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 2.00 hrs 2 YR - 02 HR Rainfall=1.62"

	Area (ac)	CN	Description
*	4.560	84	
	4.560		100.00% Pervious Area

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

Subcatchment 7S: Off-Site Area 3



Summary for Subcatchment 8S: Off-Site Area 4

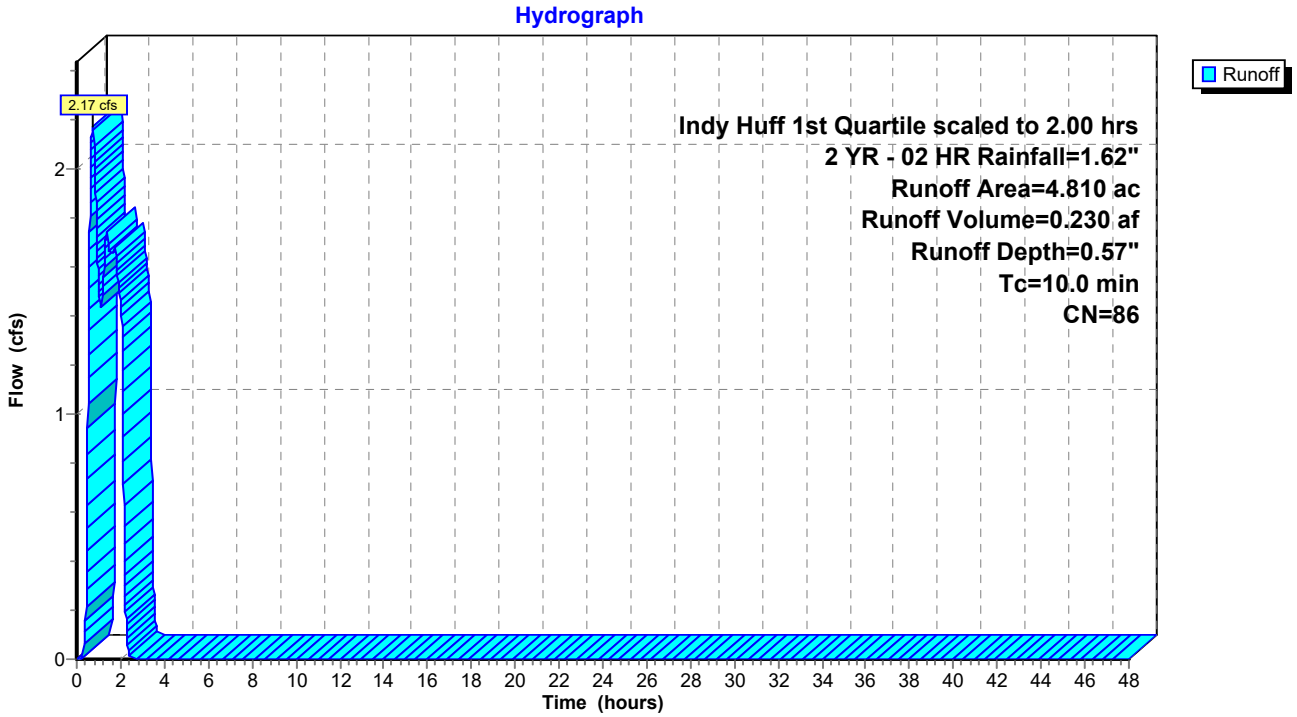
Runoff = 2.17 cfs @ 0.72 hrs, Volume= 0.230 af, Depth= 0.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 2.00 hrs 2 YR - 02 HR Rainfall=1.62"

	Area (ac)	CN	Description
*	4.810	86	
	4.810		100.00% Pervious Area

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

Subcatchment 8S: Off-Site Area 4



Summary for Subcatchment 9S: Off-Site Area 5

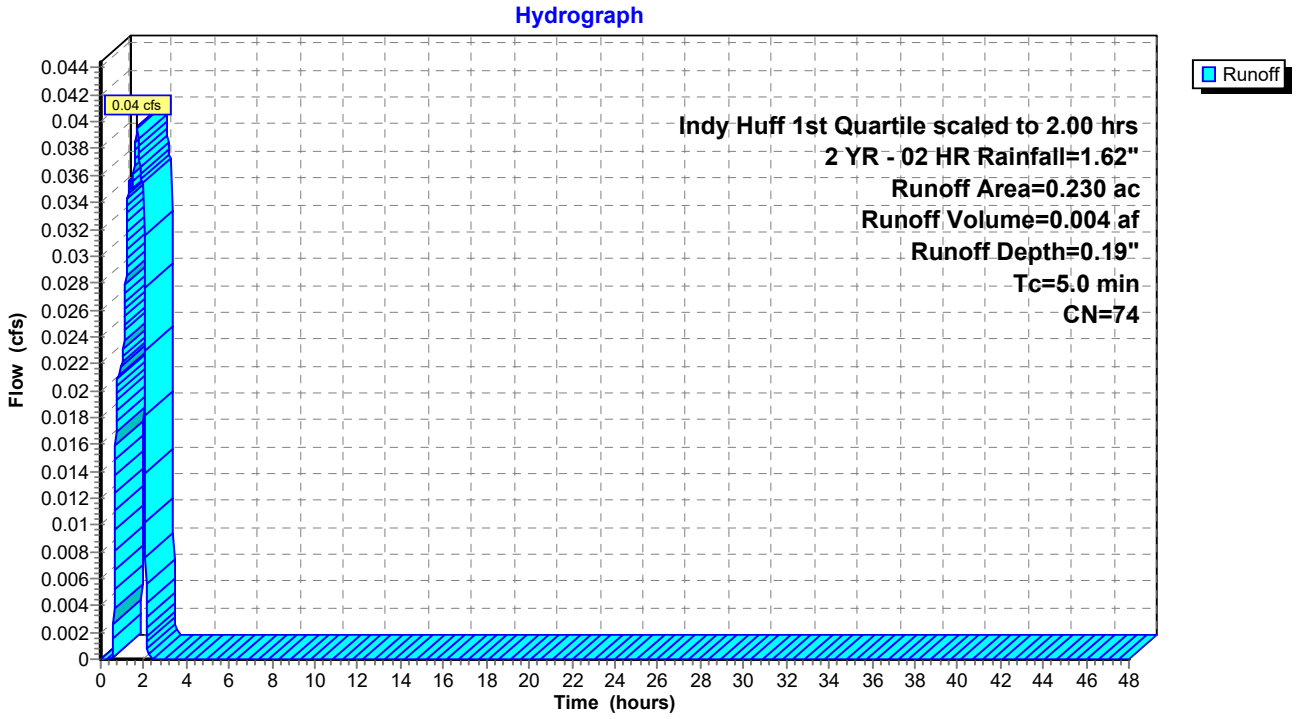
Runoff = 0.04 cfs @ 1.68 hrs, Volume= 0.004 af, Depth= 0.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 2.00 hrs 2 YR - 02 HR Rainfall=1.62"

	Area (ac)	CN	Description
*	0.230	74	
	0.230		100.00% Pervious Area

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

Subcatchment 9S: Off-Site Area 5



Summary for Subcatchment 10S: Existing detention Pond

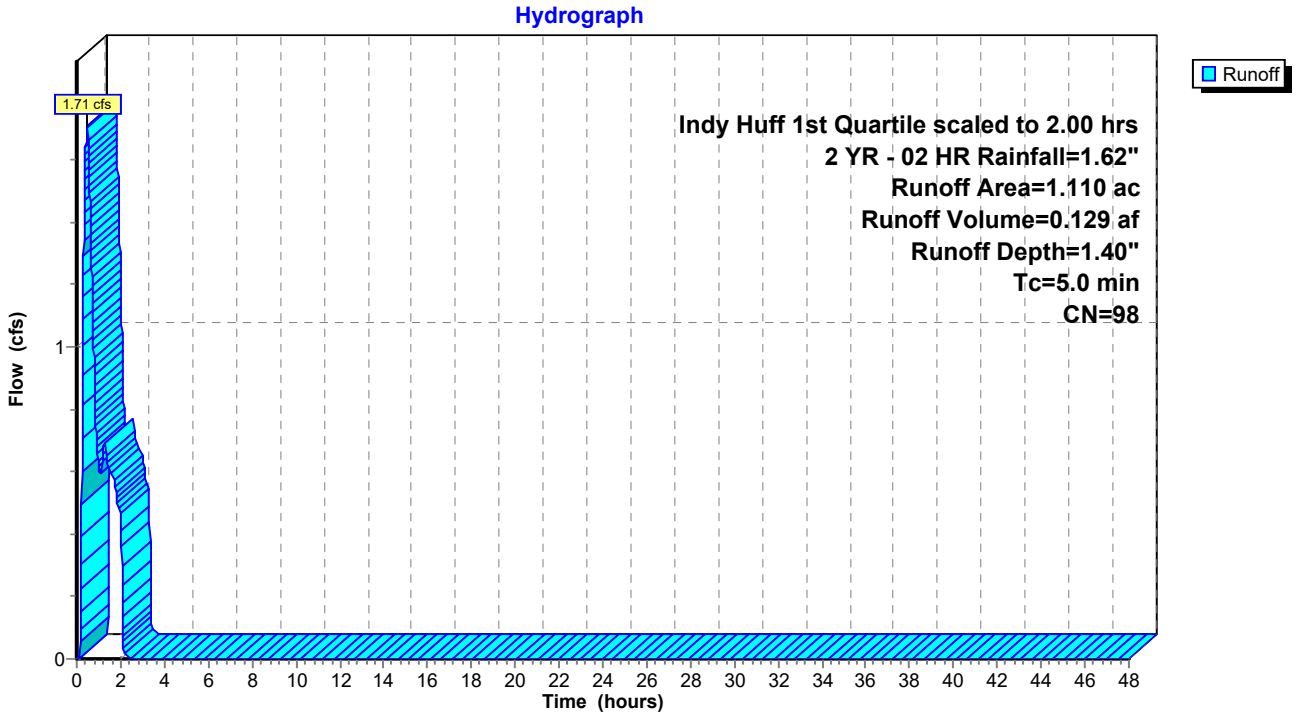
Runoff = 1.71 cfs @ 0.47 hrs, Volume= 0.129 af, Depth= 1.40"
Routed to Pond 1P : Existing Wet Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 2.00 hrs 2 YR - 02 HR Rainfall=1.62"

	Area (ac)	CN	Description
*	1.110	98	
	1.110		100.00% Impervious Area

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

Subcatchment 10S: Existing detention Pond



Summary for Pond 1P: Existing Wet Pond

Inflow Area = 30.970 ac, 3.58% Impervious, Inflow Depth = 0.25" for 2 YR - 02 HR event
Inflow = 5.54 cfs @ 2.01 hrs, Volume= 0.654 af
Outflow = 4.79 cfs @ 2.07 hrs, Volume= 0.654 af, Atten= 14%, Lag= 3.5 min
Primary = 4.79 cfs @ 2.07 hrs, Volume= 0.654 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 732.35' @ 2.07 hrs Surf.Area= 1.471 ac Storage= 0.225 af

Plug-Flow detention time= 48.3 min calculated for 0.654 af (100% of inflow)
Center-of-Mass det. time= 48.7 min (143.0 - 94.3)

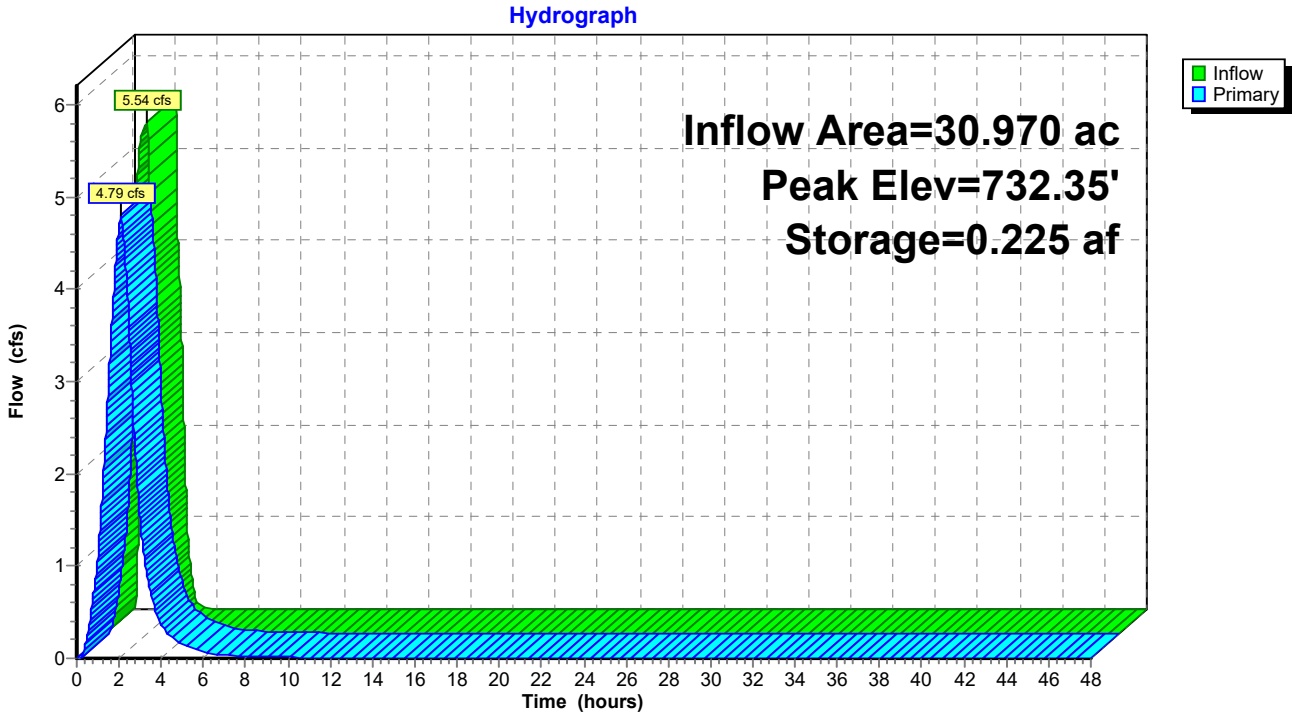
Volume	Invert	Avail.Storage	Storage Description
#1	732.20'	2.896 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
732.20	1.440	0.000	0.000
733.00	1.600	1.216	1.216
734.00	1.760	1.680	2.896

Device	Routing	Invert	Outlet Devices
#1	Primary	732.20'	**30.8' long x 9.9' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	732.20'	**12.0" Round RCP_Round 12"** L= 26.3' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 732.20' / 729.84' S= 0.0897 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=4.79 cfs @ 2.07 hrs HW=732.35' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 4.66 cfs @ 0.98 fps)
└**2=RCP_Round 12"** (Inlet Controls 0.13 cfs @ 1.67 fps)

Pond 1P: Existing Wet Pond



Stage-Area-Storage for Pond 1P: Existing Wet Pond

Elevation (feet)	Surface (acres)	Storage (acre-feet)
732.20	1.440	0.000
732.22	1.444	0.029
732.24	1.448	0.058
732.26	1.452	0.087
732.28	1.456	0.116
732.30	1.460	0.145
732.32	1.464	0.174
732.34	1.468	0.204
732.36	1.472	0.233
732.38	1.476	0.262
732.40	1.480	0.292
732.42	1.484	0.322
732.44	1.488	0.351
732.46	1.492	0.381
732.48	1.496	0.411
732.50	1.500	0.441
732.52	1.504	0.471
732.54	1.508	0.501
732.56	1.512	0.531
732.58	1.516	0.562
732.60	1.520	0.592
732.62	1.524	0.622
732.64	1.528	0.653
732.66	1.532	0.684
732.68	1.536	0.714
732.70	1.540	0.745
732.72	1.544	0.776
732.74	1.548	0.807
732.76	1.552	0.838
732.78	1.556	0.869
732.80	1.560	0.900
732.82	1.564	0.931
732.84	1.568	0.963
732.86	1.572	0.994
732.88	1.576	1.025
732.90	1.580	1.057
732.92	1.584	1.089
732.94	1.588	1.120
732.96	1.592	1.152
732.98	1.596	1.184
733.00	1.600	1.216
733.02	1.603	1.248
733.04	1.606	1.280
733.06	1.610	1.312
733.08	1.613	1.345
733.10	1.616	1.377
733.12	1.619	1.409
733.14	1.622	1.442
733.16	1.626	1.474
733.18	1.629	1.507
733.20	1.632	1.539
733.22	1.635	1.572
733.24	1.638	1.605
733.26	1.642	1.637
733.28	1.645	1.670
733.30	1.648	1.703
733.32	1.651	1.736
733.34	1.654	1.769
733.36	1.658	1.802
733.38	1.661	1.836
733.40	1.664	1.869
733.42	1.667	1.902
733.44	1.670	1.935
733.46	1.674	1.969
733.48	1.677	2.002
733.50	1.680	2.036
733.52	1.683	2.070
733.54	1.686	2.103
733.56	1.690	2.137
733.58	1.693	2.171
733.60	1.696	2.205
733.62	1.699	2.239
733.64	1.702	2.273
733.66	1.706	2.307
733.68	1.709	2.341
733.70	1.712	2.375
733.72	1.715	2.409
733.74	1.718	2.444
733.76	1.722	2.478
733.78	1.725	2.513
733.80	1.728	2.547
733.82	1.731	2.582
733.84	1.734	2.616
733.86	1.738	2.651
733.88	1.741	2.686
733.90	1.744	2.721
733.92	1.747	2.756
733.94	1.750	2.791
733.96	1.754	2.826
733.98	1.757	2.861
734.00	**1.760**	**2.896**

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment2S: On-Site Area 1 Runoff Area=23.050 ac 0.00% Impervious Runoff Depth=0.39"
Tc=30.0 min CN=75 Runoff=11.69 cfs 0.751 af

Subcatchment3S: On-Site Area 2 Runoff Area=1.690 ac 0.00% Impervious Runoff Depth=0.36"
Tc=5.0 min CN=74 Runoff=0.95 cfs 0.051 af

Subcatchment4S: On-Site Area 3 Runoff Area=5.120 ac 0.00% Impervious Runoff Depth=0.39"
Tc=5.0 min CN=75 Runoff=3.03 cfs 0.167 af

Subcatchment5S: Off-Site Area 1 Runoff Area=1.440 ac 0.00% Impervious Runoff Depth=0.81"
Tc=5.0 min CN=85 Runoff=1.91 cfs 0.097 af

Subcatchment6S: Off-Site Area 2 Runoff Area=1.050 ac 0.00% Impervious Runoff Depth=0.86"
Tc=5.0 min CN=86 Runoff=1.52 cfs 0.076 af

Subcatchment7S: Off-Site Area 3 Runoff Area=4.560 ac 0.00% Impervious Runoff Depth=0.76"
Tc=5.0 min CN=84 Runoff=5.55 cfs 0.288 af

Subcatchment8S: Off-Site Area 4 Runoff Area=4.810 ac 0.00% Impervious Runoff Depth=0.86"
Tc=10.0 min CN=86 Runoff=6.14 cfs 0.346 af

Subcatchment9S: Off-Site Area 5 Runoff Area=0.230 ac 0.00% Impervious Runoff Depth=0.36"
Tc=5.0 min CN=74 Runoff=0.13 cfs 0.007 af

Subcatchment10S: Existing detention Runoff Area=1.110 ac 100.00% Impervious Runoff Depth=1.79"
Tc=5.0 min CN=98 Runoff=4.20 cfs 0.166 af

Pond 1P: Existing Wet Pond Peak Elev=732.48' Storage=0.410 af Inflow=15.75 cfs 1.134 af
Outflow=11.84 cfs 1.134 af

Total Runoff Area = 43.060 ac Runoff Volume = 1.948 af Average Runoff Depth = 0.54"
97.42% Pervious = 41.950 ac 2.58% Impervious = 1.110 ac

Summary for Subcatchment 2S: On-Site Area 1

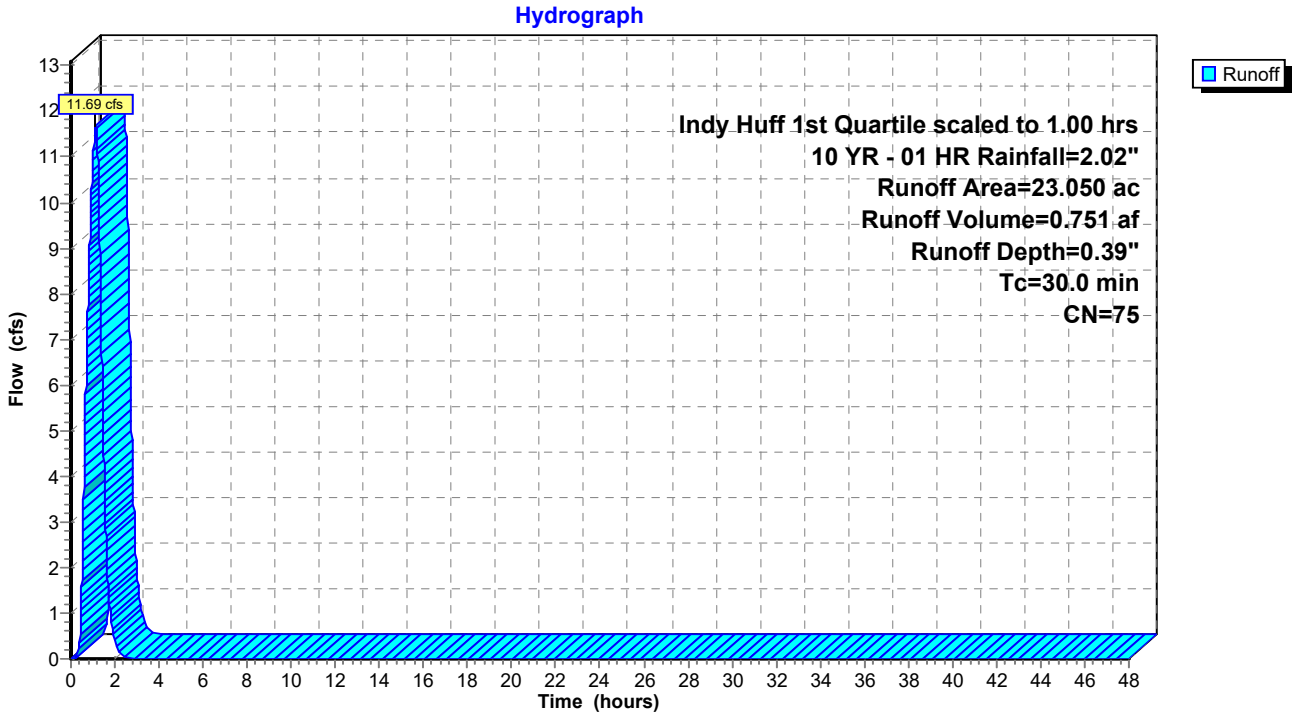
Runoff = 11.69 cfs @ 1.13 hrs, Volume= 0.751 af, Depth= 0.39"
Routed to Pond 1P : Existing Wet Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 1.00 hrs 10 YR - 01 HR Rainfall=2.02"

	Area (ac)	CN	Description
*	23.050	75	
	23.050		100.00% Pervious Area

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

Subcatchment 2S: On-Site Area 1



Summary for Subcatchment 3S: On-Site Area 2

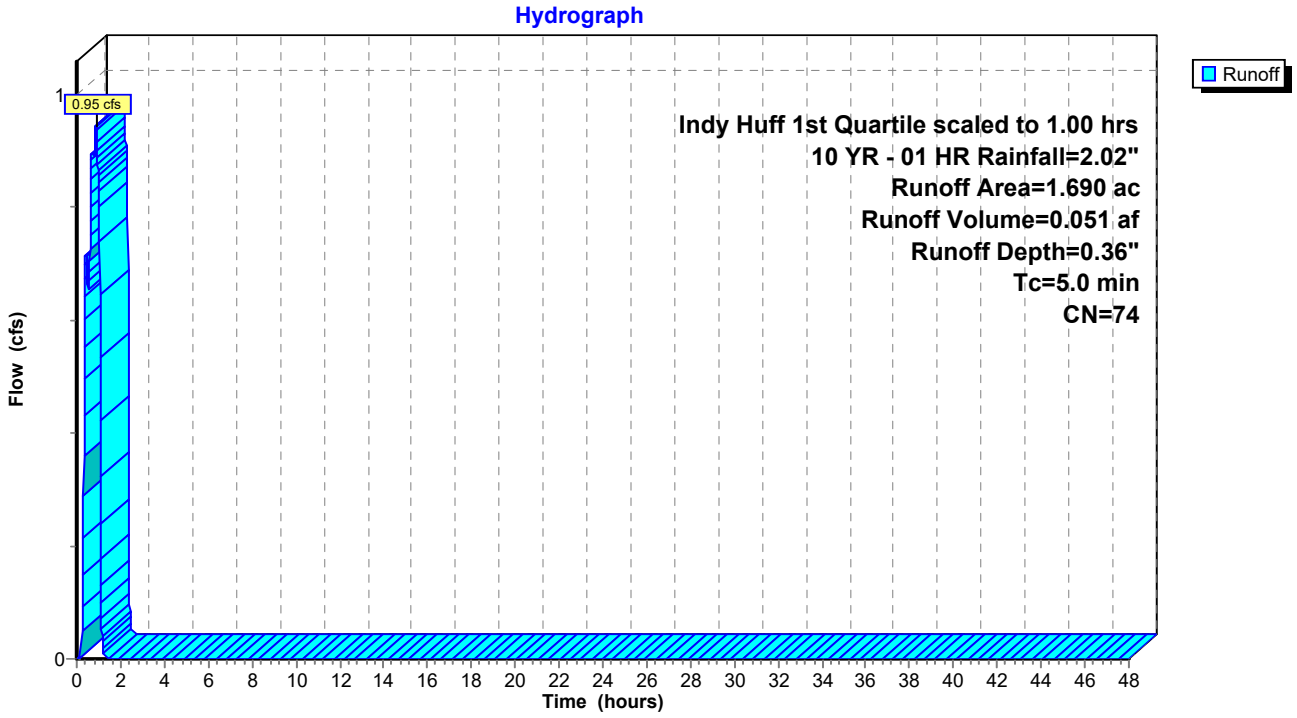
Runoff = 0.95 cfs @ 0.87 hrs, Volume= 0.051 af, Depth= 0.36"
Routed to Pond 1P : Existing Wet Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 1.00 hrs 10 YR - 01 HR Rainfall=2.02"

	Area (ac)	CN	Description
*	1.690	74	
	1.690		100.00% Pervious Area

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

Subcatchment 3S: On-Site Area 2



Summary for Subcatchment 4S: On-Site Area 3

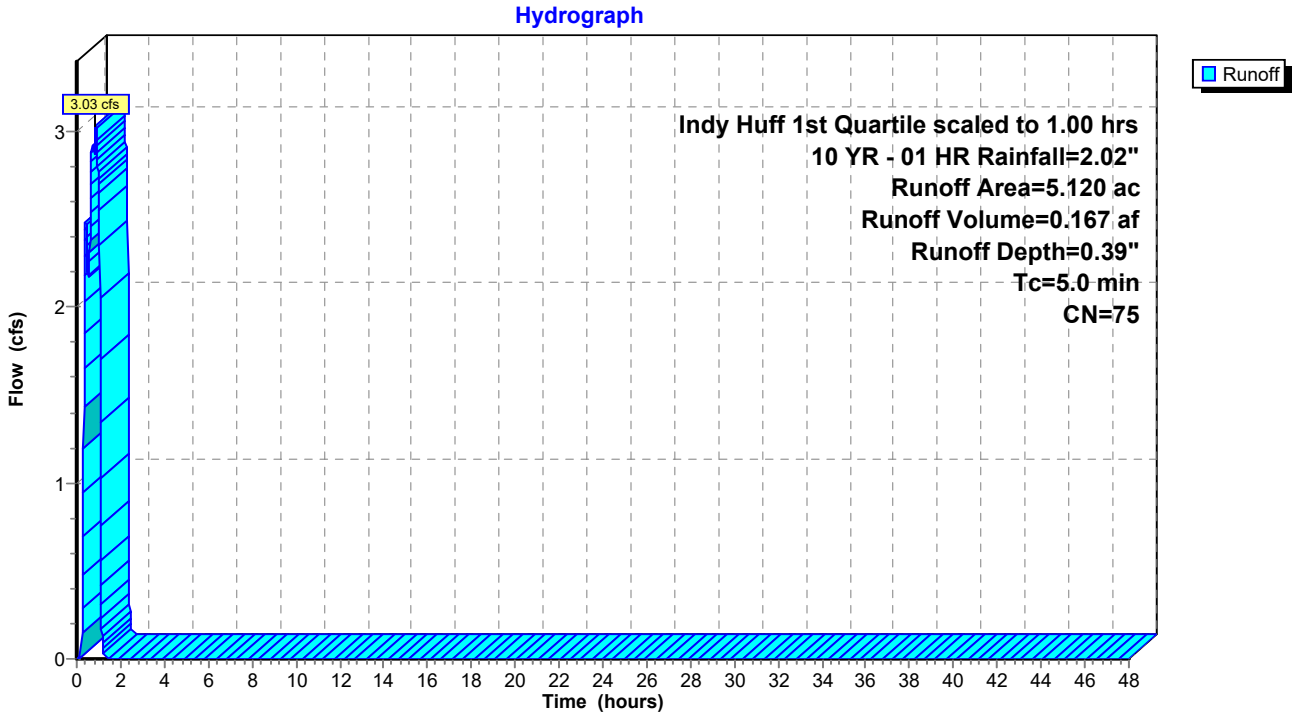
Runoff = 3.03 cfs @ 0.87 hrs, Volume= 0.167 af, Depth= 0.39"
Routed to Pond 1P : Existing Wet Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 1.00 hrs 10 YR - 01 HR Rainfall=2.02"

	Area (ac)	CN	Description
*	5.120	75	
	5.120		100.00% Pervious Area

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

Subcatchment 4S: On-Site Area 3



Summary for Subcatchment 5S: Off-Site Area 1

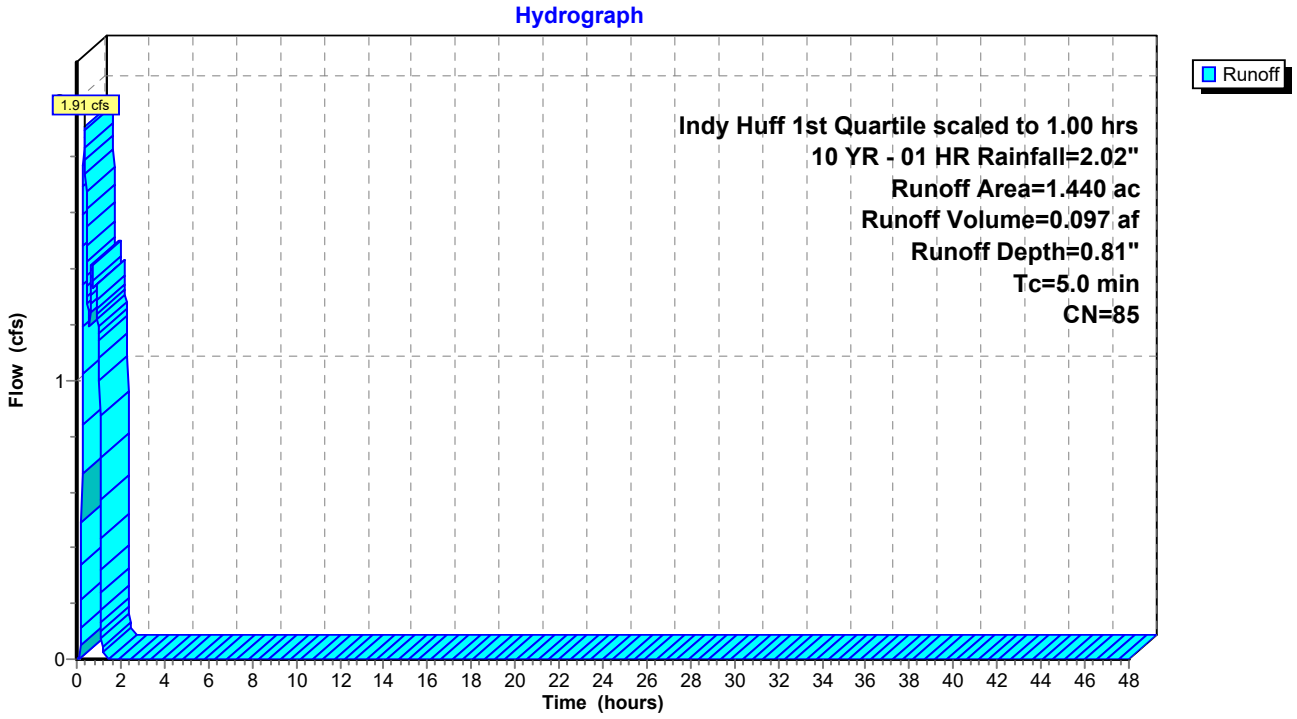
Runoff = 1.91 cfs @ 0.35 hrs, Volume= 0.097 af, Depth= 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 1.00 hrs 10 YR - 01 HR Rainfall=2.02"

	Area (ac)	CN	Description
*	1.440	85	
	1.440		100.00% Pervious Area

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

Subcatchment 5S: Off-Site Area 1



Summary for Subcatchment 6S: Off-Site Area 2

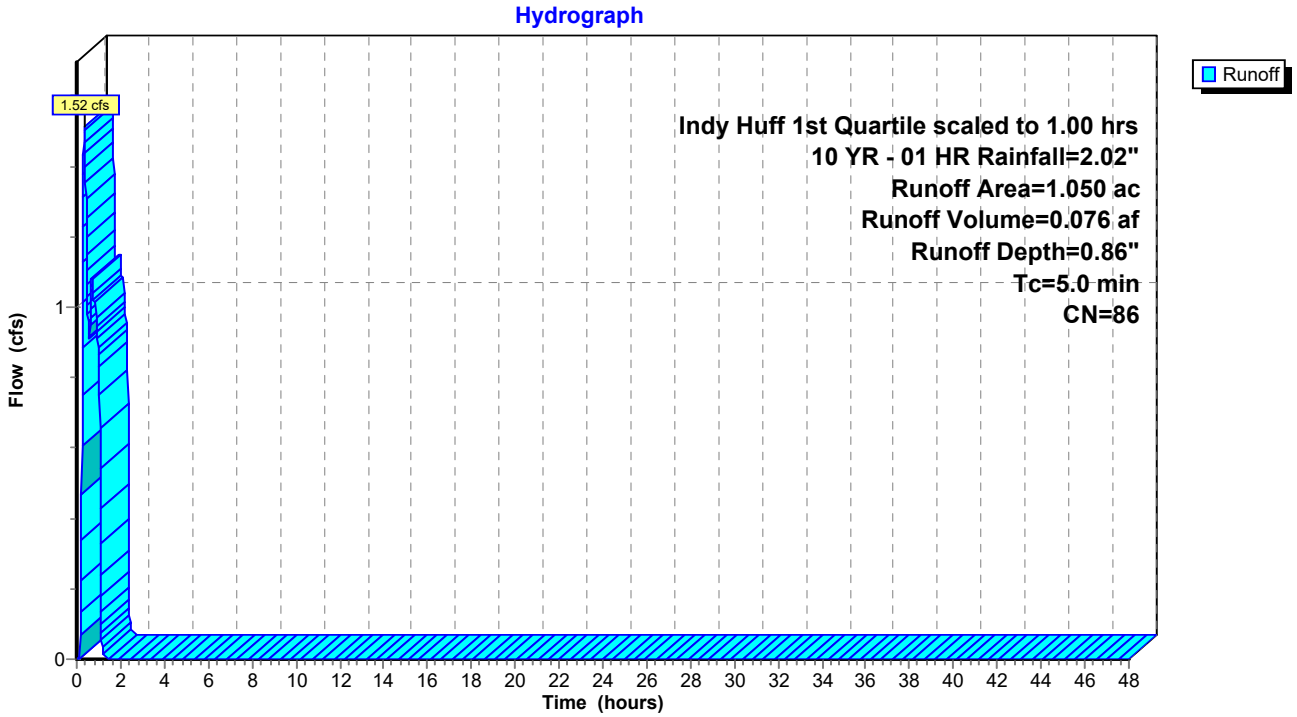
Runoff = 1.52 cfs @ 0.35 hrs, Volume= 0.076 af, Depth= 0.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 1.00 hrs 10 YR - 01 HR Rainfall=2.02"

	Area (ac)	CN	Description
*	1.050	86	
	1.050		100.00% Pervious Area

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

Subcatchment 6S: Off-Site Area 2



Summary for Subcatchment 7S: Off-Site Area 3

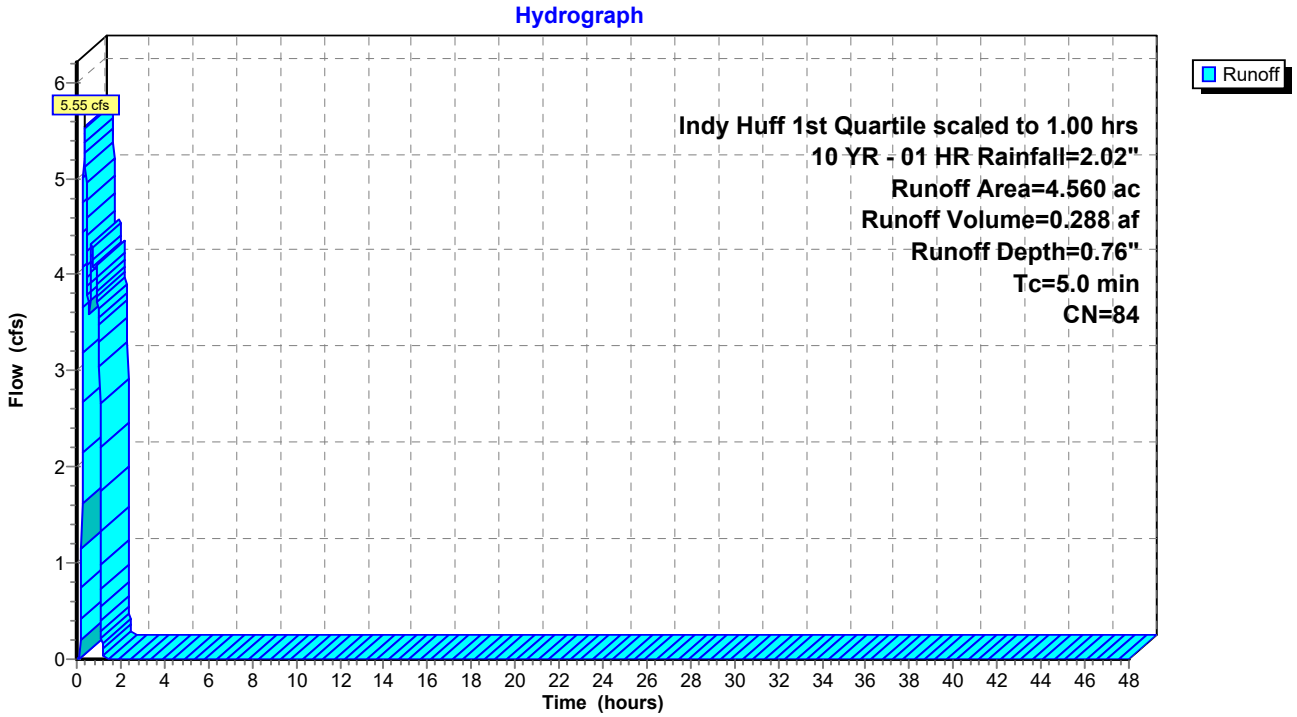
Runoff = 5.55 cfs @ 0.36 hrs, Volume= 0.288 af, Depth= 0.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 1.00 hrs 10 YR - 01 HR Rainfall=2.02"

	Area (ac)	CN	Description
*	4.560	84	
	4.560		100.00% Pervious Area

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

Subcatchment 7S: Off-Site Area 3



Summary for Subcatchment 8S: Off-Site Area 4

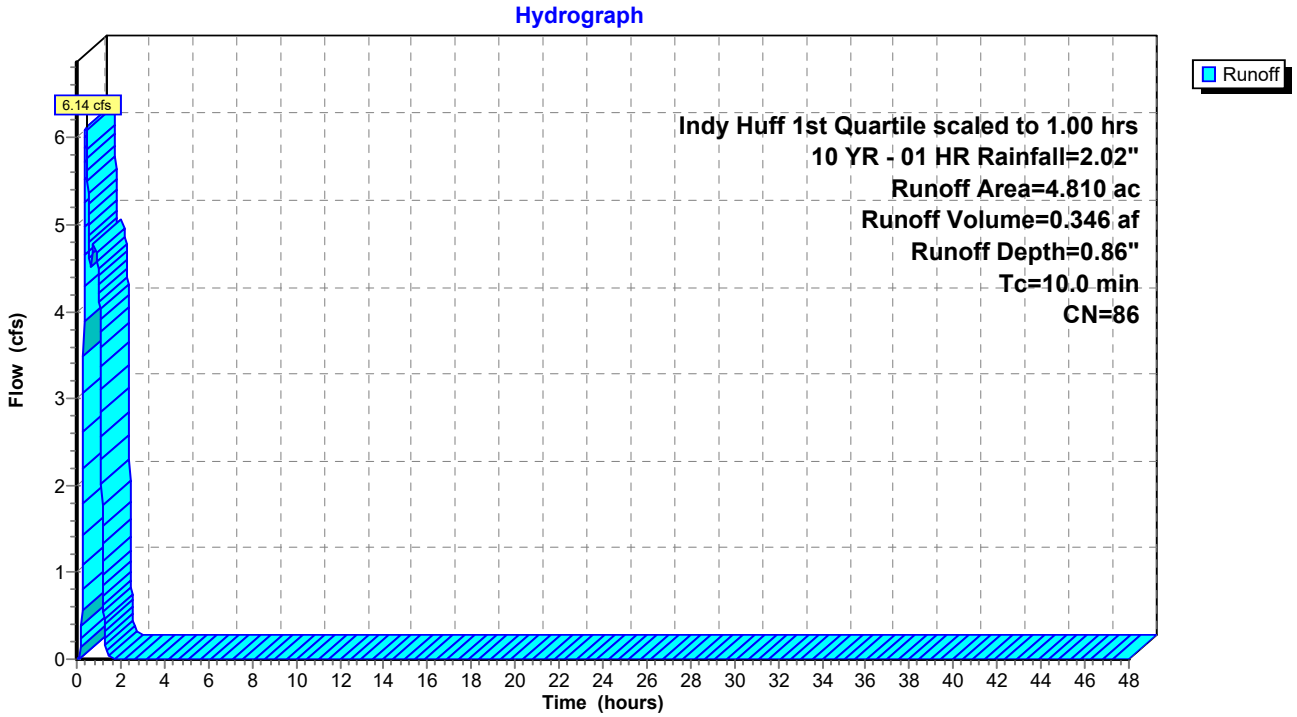
Runoff = 6.14 cfs @ 0.43 hrs, Volume= 0.346 af, Depth= 0.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 1.00 hrs 10 YR - 01 HR Rainfall=2.02"

	Area (ac)	CN	Description
*	4.810	86	
	4.810		100.00% Pervious Area

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

Subcatchment 8S: Off-Site Area 4



Summary for Subcatchment 9S: Off-Site Area 5

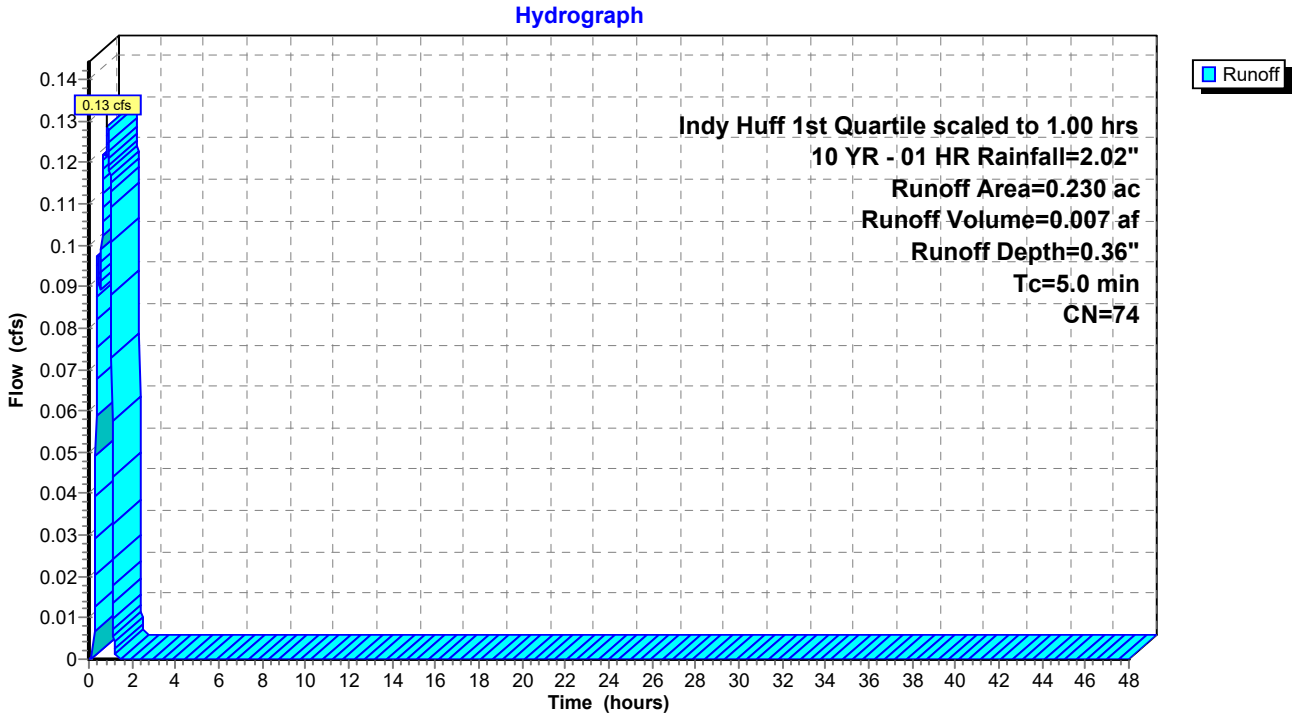
Runoff = 0.13 cfs @ 0.87 hrs, Volume= 0.007 af, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 1.00 hrs 10 YR - 01 HR Rainfall=2.02"

	Area (ac)	CN	Description
*	0.230	74	
	0.230		100.00% Pervious Area

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

Subcatchment 9S: Off-Site Area 5



Summary for Subcatchment 10S: Existing detention Pond

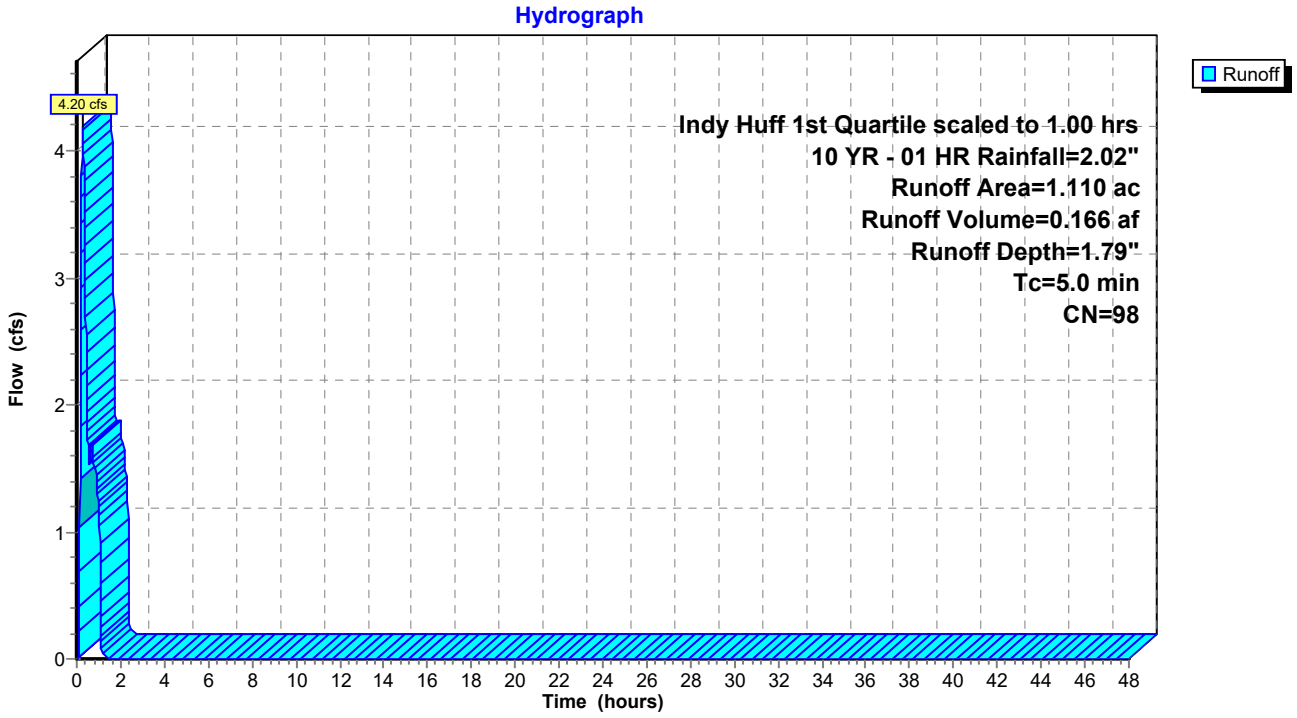
Runoff = 4.20 cfs @ 0.27 hrs, Volume= 0.166 af, Depth= 1.79"
Routed to Pond 1P : Existing Wet Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 1.00 hrs 10 YR - 01 HR Rainfall=2.02"

	Area (ac)	CN	Description
*	1.110	98	
	1.110		100.00% Impervious Area

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

Subcatchment 10S: Existing detention Pond



Summary for Pond 1P: Existing Wet Pond

Inflow Area = 30.970 ac, 3.58% Impervious, Inflow Depth = 0.44" for 10 YR - 01 HR event
Inflow = 15.75 cfs @ 1.02 hrs, Volume= 1.134 af
Outflow = 11.84 cfs @ 1.15 hrs, Volume= 1.134 af, Atten= 25%, Lag= 8.1 min
Primary = 11.84 cfs @ 1.15 hrs, Volume= 1.134 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 732.48' @ 1.15 hrs Surf.Area= 1.496 ac Storage= 0.410 af

Plug-Flow detention time= 35.8 min calculated for 1.134 af (100% of inflow)
Center-of-Mass det. time= 36.2 min (92.3 - 56.2)

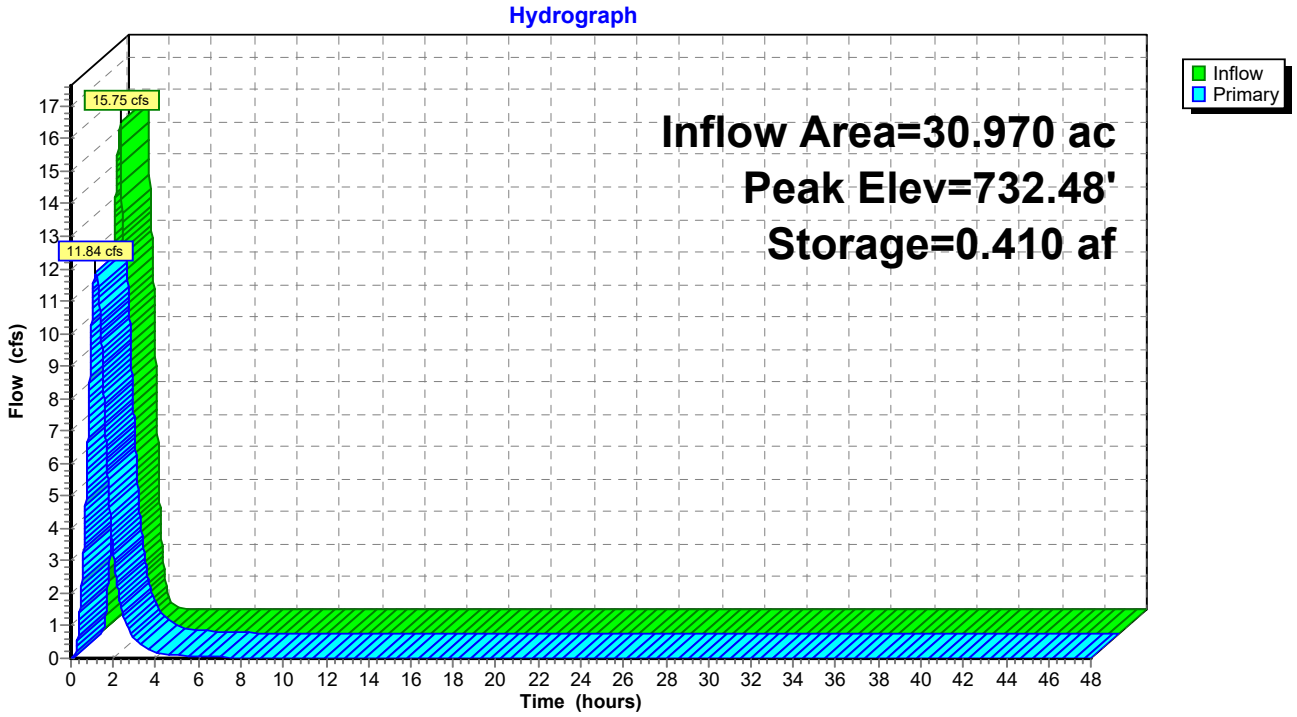
Volume	Invert	Avail.Storage	Storage Description
#1	732.20'	2.896 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
732.20	1.440	0.000	0.000
733.00	1.600	1.216	1.216
734.00	1.760	1.680	2.896

Device	Routing	Invert	Outlet Devices
#1	Primary	732.20'	**30.8' long x 9.9' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	732.20'	**12.0" Round RCP_Round 12"** L= 26.3' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 732.20' / 729.84' S= 0.0897 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=11.84 cfs @ 1.15 hrs HW=732.48' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 11.44 cfs @ 1.33 fps)
└**2=RCP_Round 12"** (Inlet Controls 0.40 cfs @ 2.25 fps)

Pond 1P: Existing Wet Pond



Stage-Area-Storage for Pond 1P: Existing Wet Pond

Elevation (feet)	Surface (acres)	Storage (acre-feet)
732.20	1.440	0.000
732.22	1.444	0.029
732.24	1.448	0.058
732.26	1.452	0.087
732.28	1.456	0.116
732.30	1.460	0.145
732.32	1.464	0.174
732.34	1.468	0.204
732.36	1.472	0.233
732.38	1.476	0.262
732.40	1.480	0.292
732.42	1.484	0.322
732.44	1.488	0.351
732.46	1.492	0.381
732.48	1.496	0.411
732.50	1.500	0.441
732.52	1.504	0.471
732.54	1.508	0.501
732.56	1.512	0.531
732.58	1.516	0.562
732.60	1.520	0.592
732.62	1.524	0.622
732.64	1.528	0.653
732.66	1.532	0.684
732.68	1.536	0.714
732.70	1.540	0.745
732.72	1.544	0.776
732.74	1.548	0.807
732.76	1.552	0.838
732.78	1.556	0.869
732.80	1.560	0.900
732.82	1.564	0.931
732.84	1.568	0.963
732.86	1.572	0.994
732.88	1.576	1.025
732.90	1.580	1.057
732.92	1.584	1.089
732.94	1.588	1.120
732.96	1.592	1.152
732.98	1.596	1.184
733.00	1.600	1.216
733.02	1.603	1.248
733.04	1.606	1.280
733.06	1.610	1.312
733.08	1.613	1.345
733.10	1.616	1.377
733.12	1.619	1.409
733.14	1.622	1.442
733.16	1.626	1.474
733.18	1.629	1.507
733.20	1.632	1.539
733.22	1.635	1.572
733.24	1.638	1.605
733.26	1.642	1.637
733.28	1.645	1.670
733.30	1.648	1.703
733.32	1.651	1.736
733.34	1.654	1.769
733.36	1.658	1.802
733.38	1.661	1.836
733.40	1.664	1.869
733.42	1.667	1.902
733.44	1.670	1.935
733.46	1.674	1.969
733.48	1.677	2.002
733.50	1.680	2.036
733.52	1.683	2.070
733.54	1.686	2.103
733.56	1.690	2.137
733.58	1.693	2.171
733.60	1.696	2.205
733.62	1.699	2.239
733.64	1.702	2.273
733.66	1.706	2.307
733.68	1.709	2.341
733.70	1.712	2.375
733.72	1.715	2.409
733.74	1.718	2.444
733.76	1.722	2.478
733.78	1.725	2.513
733.80	1.728	2.547
733.82	1.731	2.582
733.84	1.734	2.616
733.86	1.738	2.651
733.88	1.741	2.686
733.90	1.744	2.721
733.92	1.747	2.756
733.94	1.750	2.791
733.96	1.754	2.826
733.98	1.757	2.861
734.00	**1.760**	**2.896**

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment2S: On-Site Area 1 Runoff Area=23.050 ac 0.00% Impervious Runoff Depth=0.97"
Tc=30.0 min CN=75 Runoff=26.00 cfs 1.858 af

Subcatchment3S: On-Site Area 2 Runoff Area=1.690 ac 0.00% Impervious Runoff Depth=0.91"
Tc=5.0 min CN=74 Runoff=2.31 cfs 0.129 af

Subcatchment4S: On-Site Area 3 Runoff Area=5.120 ac 0.00% Impervious Runoff Depth=0.97"
Tc=5.0 min CN=75 Runoff=7.55 cfs 0.413 af

Subcatchment5S: Off-Site Area 1 Runoff Area=1.440 ac 0.00% Impervious Runoff Depth=1.60"
Tc=5.0 min CN=85 Runoff=4.12 cfs 0.192 af

Subcatchment6S: Off-Site Area 2 Runoff Area=1.050 ac 0.00% Impervious Runoff Depth=1.67"
Tc=5.0 min CN=86 Runoff=3.19 cfs 0.146 af

Subcatchment7S: Off-Site Area 3 Runoff Area=4.560 ac 0.00% Impervious Runoff Depth=1.52"
Tc=5.0 min CN=84 Runoff=12.27 cfs 0.579 af

Subcatchment8S: Off-Site Area 4 Runoff Area=4.810 ac 0.00% Impervious Runoff Depth=1.67"
Tc=10.0 min CN=86 Runoff=12.92 cfs 0.670 af

Subcatchment9S: Off-Site Area 5 Runoff Area=0.230 ac 0.00% Impervious Runoff Depth=0.91"
Tc=5.0 min CN=74 Runoff=0.31 cfs 0.018 af

Subcatchment10S: Existing detention Runoff Area=1.110 ac 100.00% Impervious Runoff Depth=2.78"
Tc=5.0 min CN=98 Runoff=6.54 cfs 0.257 af

Pond 1P: Existing Wet Pond Peak Elev=732.71' Storage=0.760 af Inflow=34.45 cfs 2.657 af
Outflow=30.81 cfs 2.656 af

Total Runoff Area = 43.060 ac Runoff Volume = 4.261 af Average Runoff Depth = 1.19"
97.42% Pervious = 41.950 ac 2.58% Impervious = 1.110 ac

Summary for Subcatchment 2S: On-Site Area 1

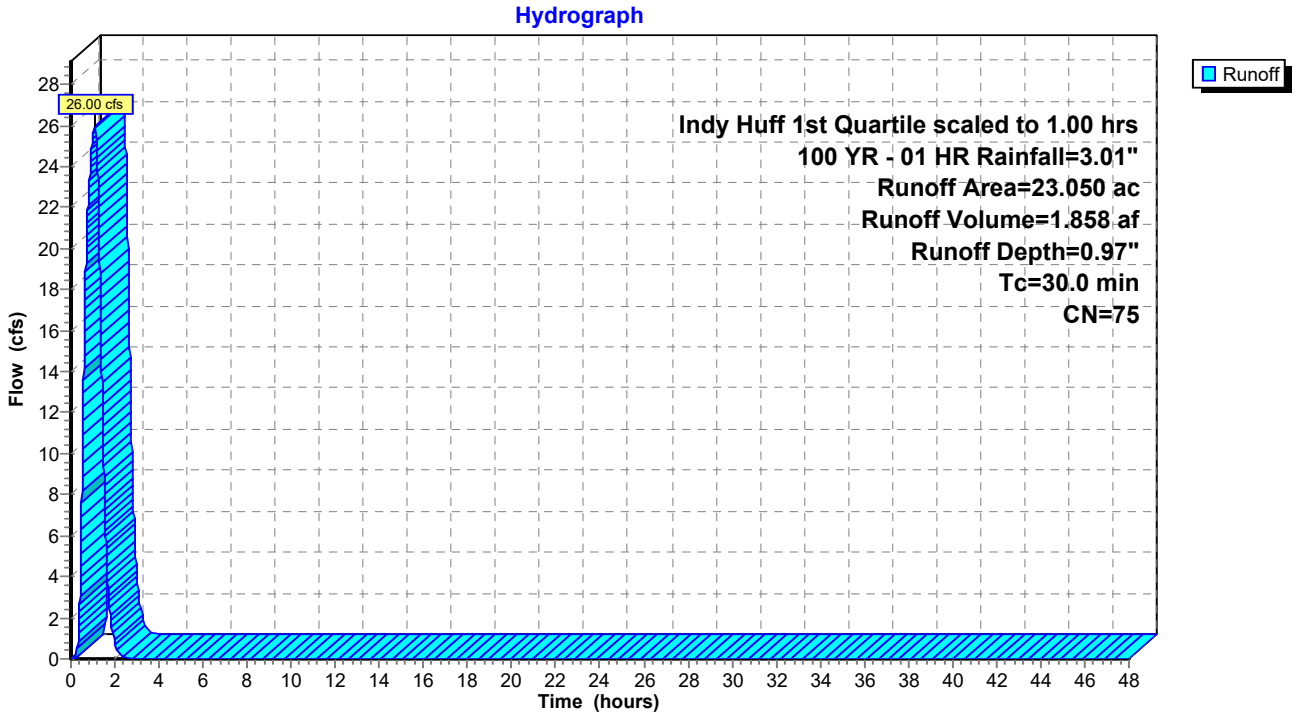
Runoff = 26.00 cfs @ 1.09 hrs, Volume= 1.858 af, Depth= 0.97"
Routed to Pond 1P : Existing Wet Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 1.00 hrs 100 YR - 01 HR Rainfall=3.01"

	Area (ac)	CN	Description
*	23.050	75	
	23.050		100.00% Pervious Area

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

Subcatchment 2S: On-Site Area 1



Summary for Subcatchment 3S: On-Site Area 2

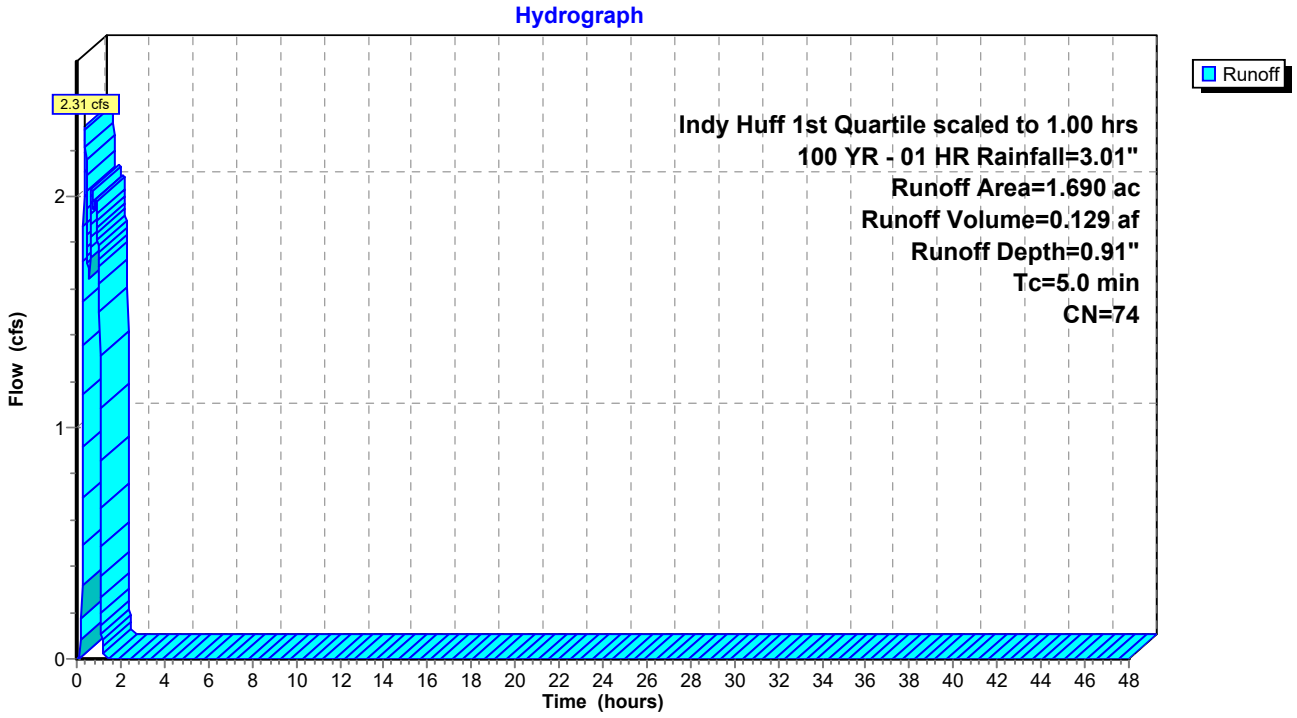
Runoff = 2.31 cfs @ 0.38 hrs, Volume= 0.129 af, Depth= 0.91"
Routed to Pond 1P : Existing Wet Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 1.00 hrs 100 YR - 01 HR Rainfall=3.01"

	Area (ac)	CN	Description
*	1.690	74	
	1.690		100.00% Pervious Area

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

Subcatchment 3S: On-Site Area 2



Summary for Subcatchment 4S: On-Site Area 3

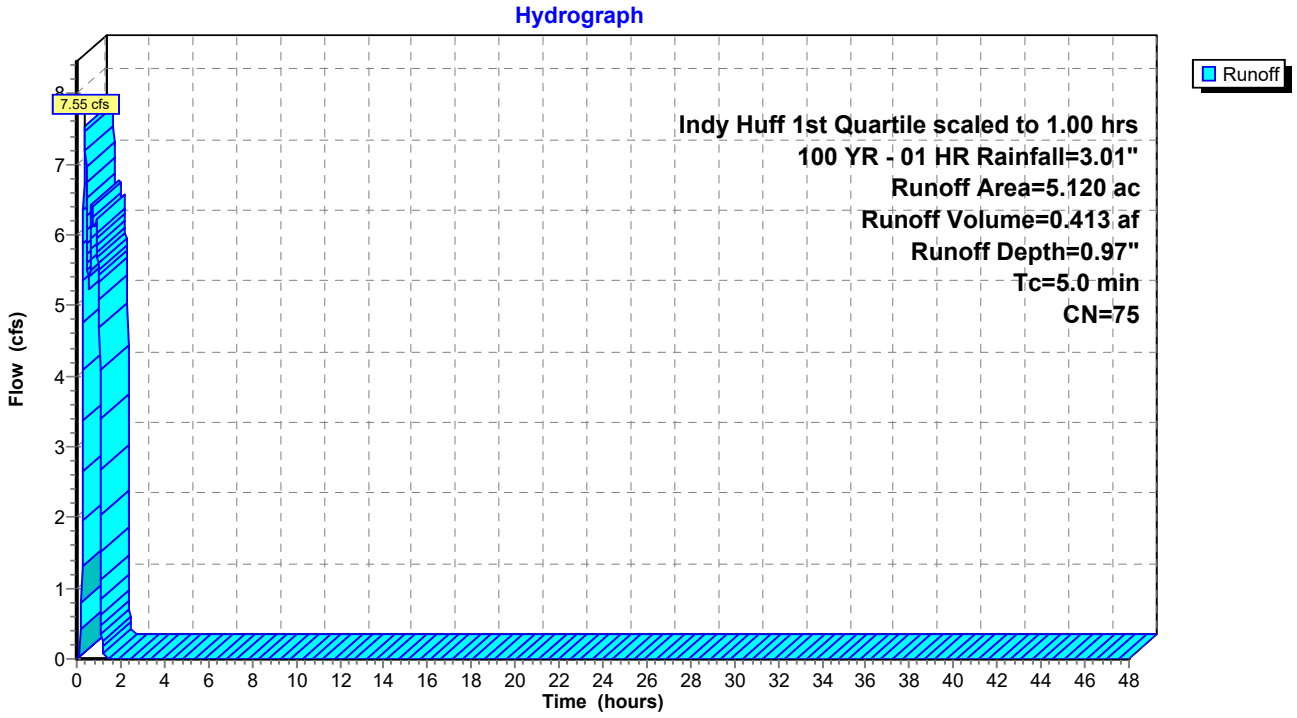
Runoff = 7.55 cfs @ 0.37 hrs, Volume= 0.413 af, Depth= 0.97"
Routed to Pond 1P : Existing Wet Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 1.00 hrs 100 YR - 01 HR Rainfall=3.01"

	Area (ac)	CN	Description
*	5.120	75	
	5.120		100.00% Pervious Area

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

Subcatchment 4S: On-Site Area 3



Summary for Subcatchment 5S: Off-Site Area 1

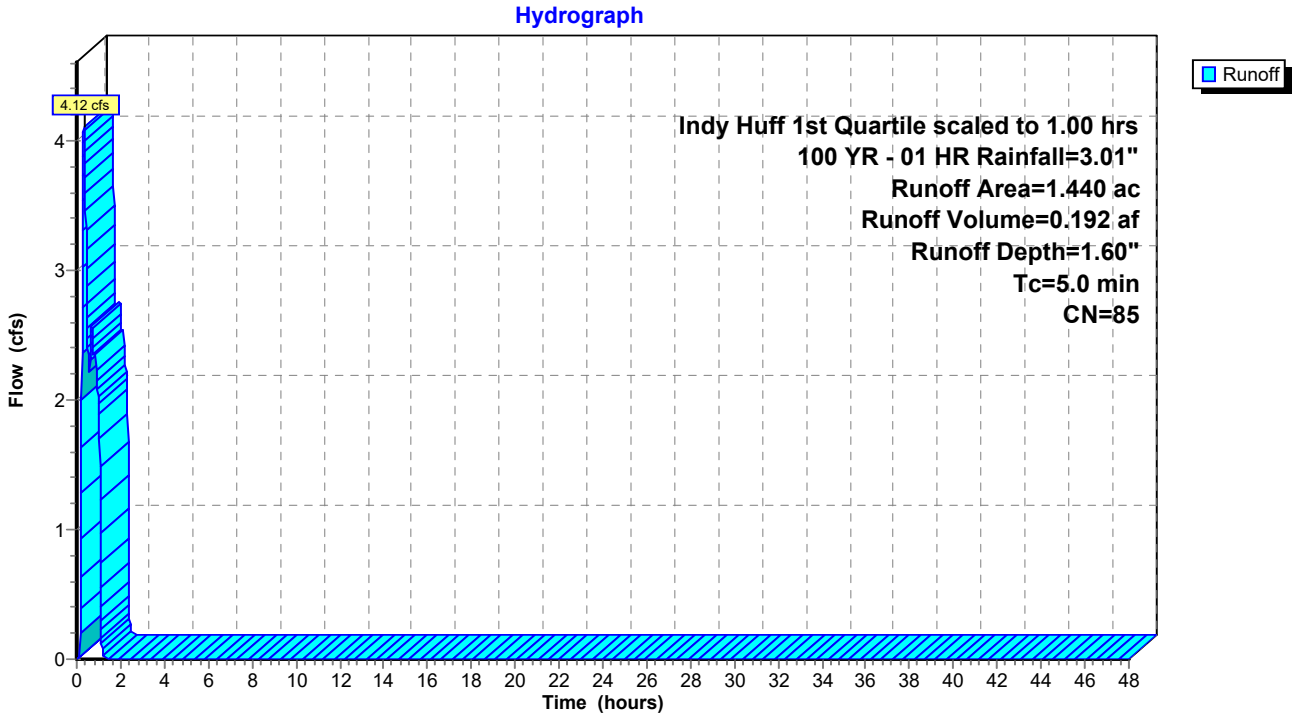
Runoff = 4.12 cfs @ 0.33 hrs, Volume= 0.192 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 1.00 hrs 100 YR - 01 HR Rainfall=3.01"

	Area (ac)	CN	Description
*	1.440	85	
	1.440		100.00% Pervious Area

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

Subcatchment 5S: Off-Site Area 1



Summary for Subcatchment 6S: Off-Site Area 2

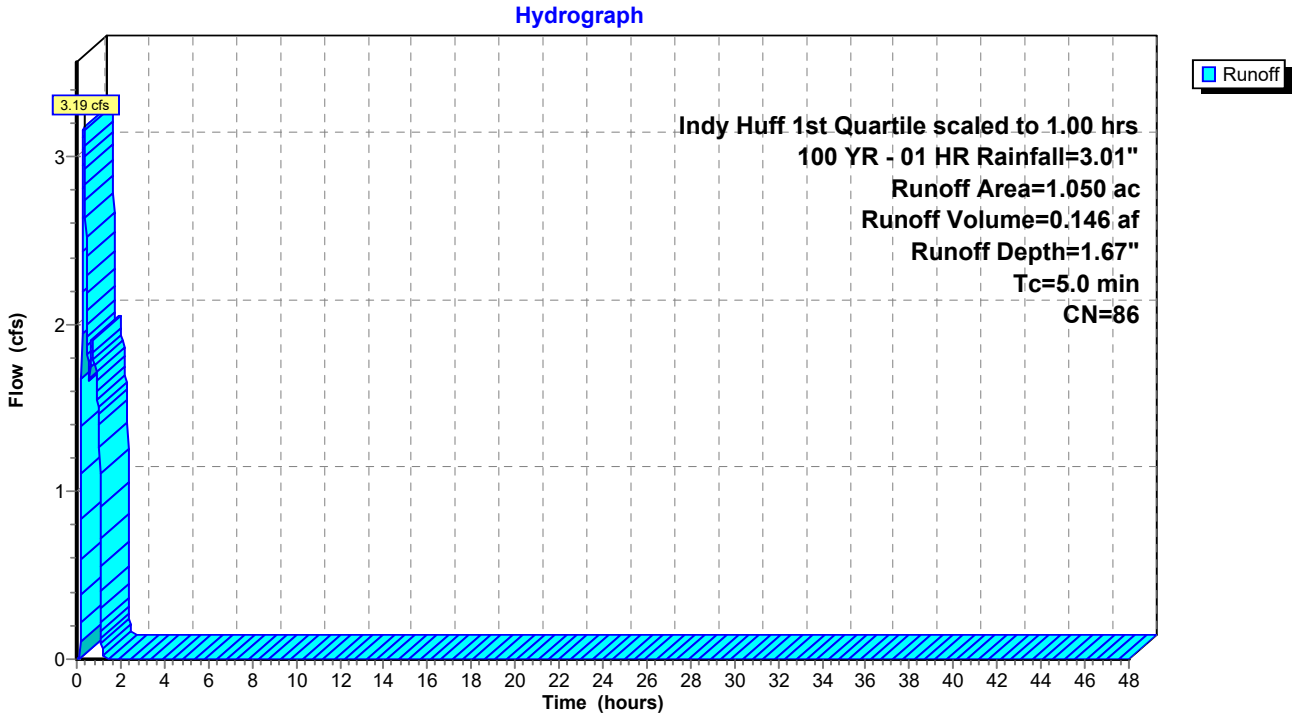
Runoff = 3.19 cfs @ 0.32 hrs, Volume= 0.146 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 1.00 hrs 100 YR - 01 HR Rainfall=3.01"

	Area (ac)	CN	Description
*	1.050	86	
	1.050		100.00% Pervious Area

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

Subcatchment 6S: Off-Site Area 2



Summary for Subcatchment 7S: Off-Site Area 3

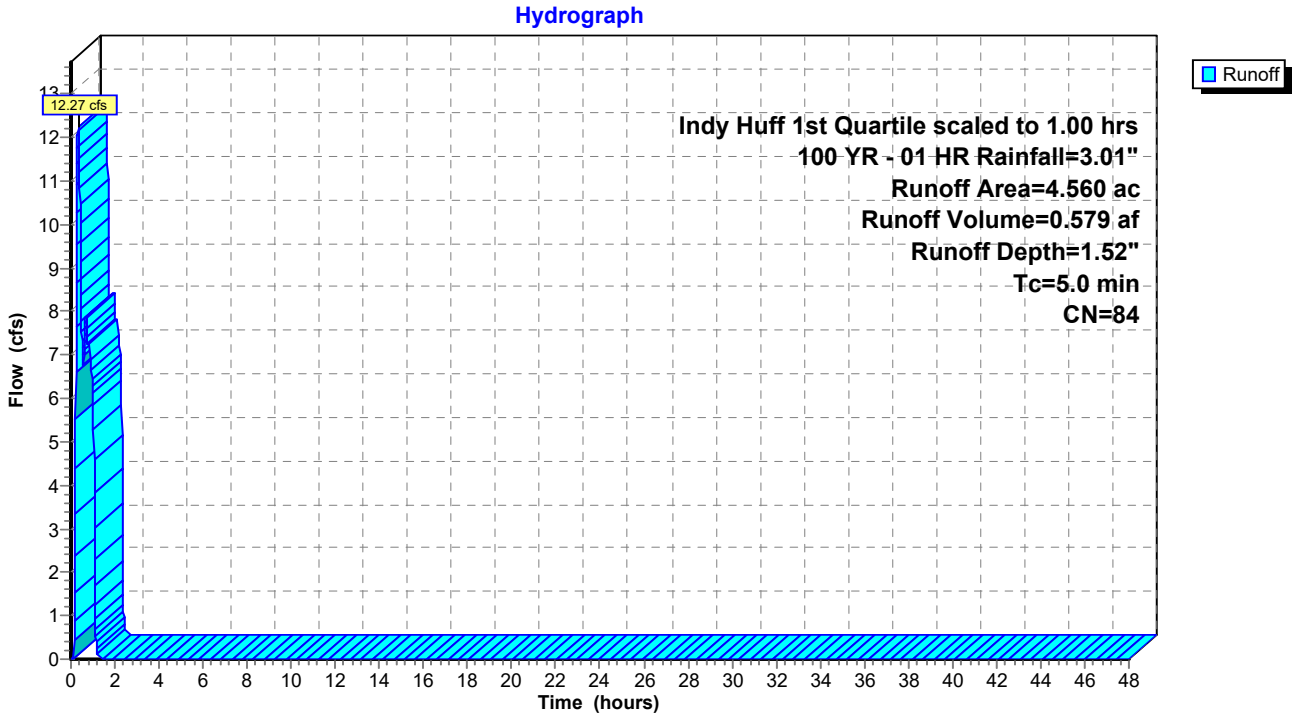
Runoff = 12.27 cfs @ 0.33 hrs, Volume= 0.579 af, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 1.00 hrs 100 YR - 01 HR Rainfall=3.01"

	Area (ac)	CN	Description
*	4.560	84	
	4.560		100.00% Pervious Area

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

Subcatchment 7S: Off-Site Area 3



Summary for Subcatchment 8S: Off-Site Area 4

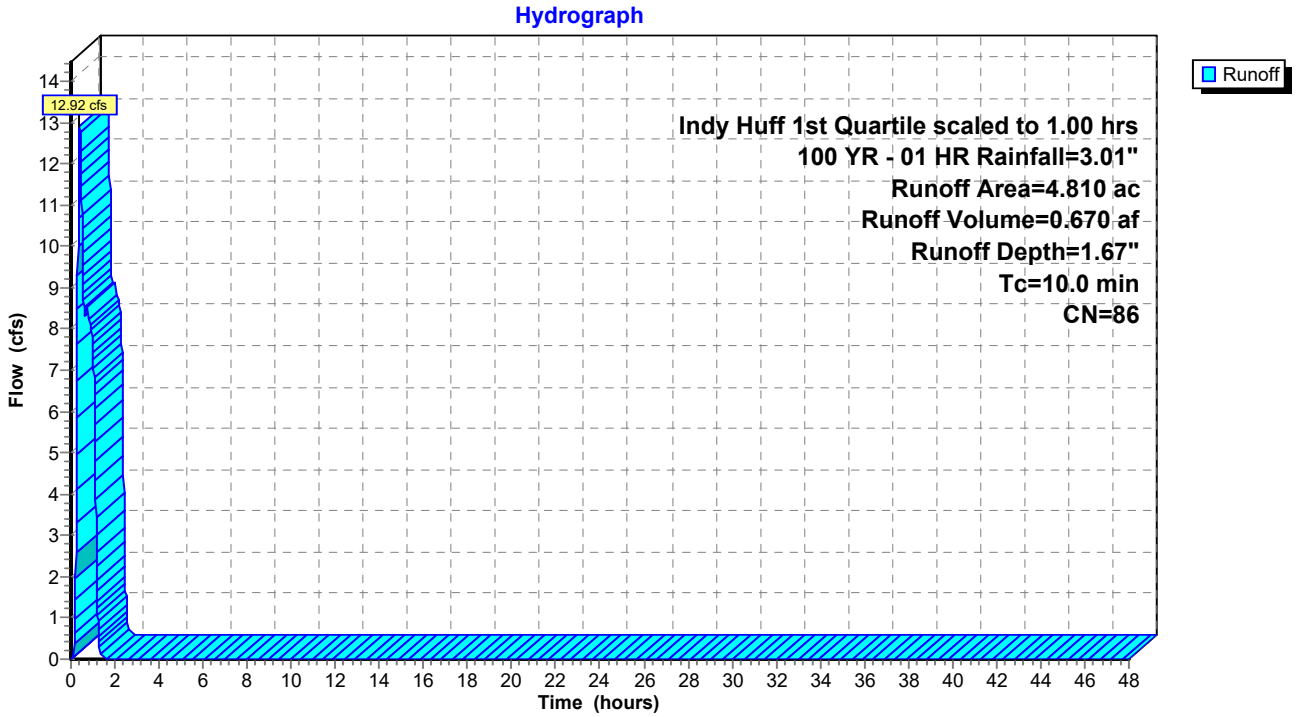
Runoff = 12.92 cfs @ 0.41 hrs, Volume= 0.670 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 1.00 hrs 100 YR - 01 HR Rainfall=3.01"

	Area (ac)	CN	Description
*	4.810	86	
	4.810		100.00% Pervious Area

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

Subcatchment 8S: Off-Site Area 4



Summary for Subcatchment 9S: Off-Site Area 5

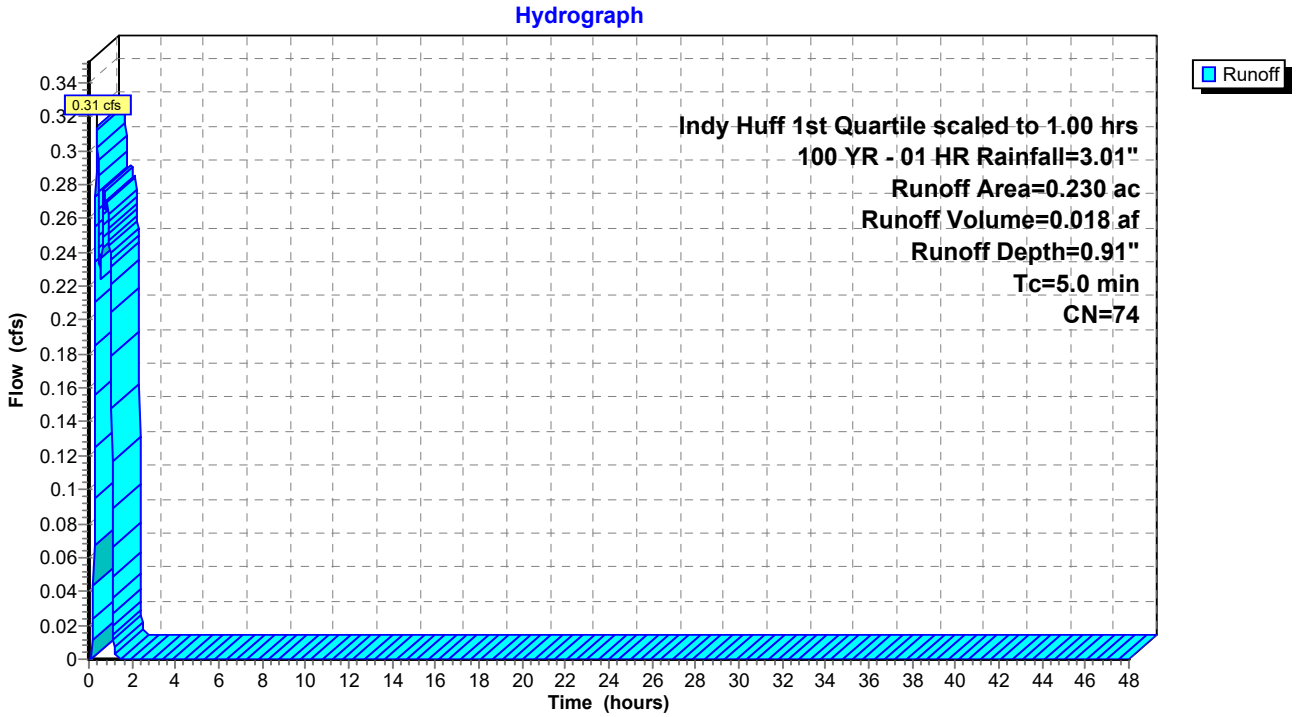
Runoff = 0.31 cfs @ 0.38 hrs, Volume= 0.018 af, Depth= 0.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 1.00 hrs 100 YR - 01 HR Rainfall=3.01"

	Area (ac)	CN	Description
*	0.230	74	
	0.230		100.00% Pervious Area

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

Subcatchment 9S: Off-Site Area 5



Summary for Subcatchment 10S: Existing detention Pond

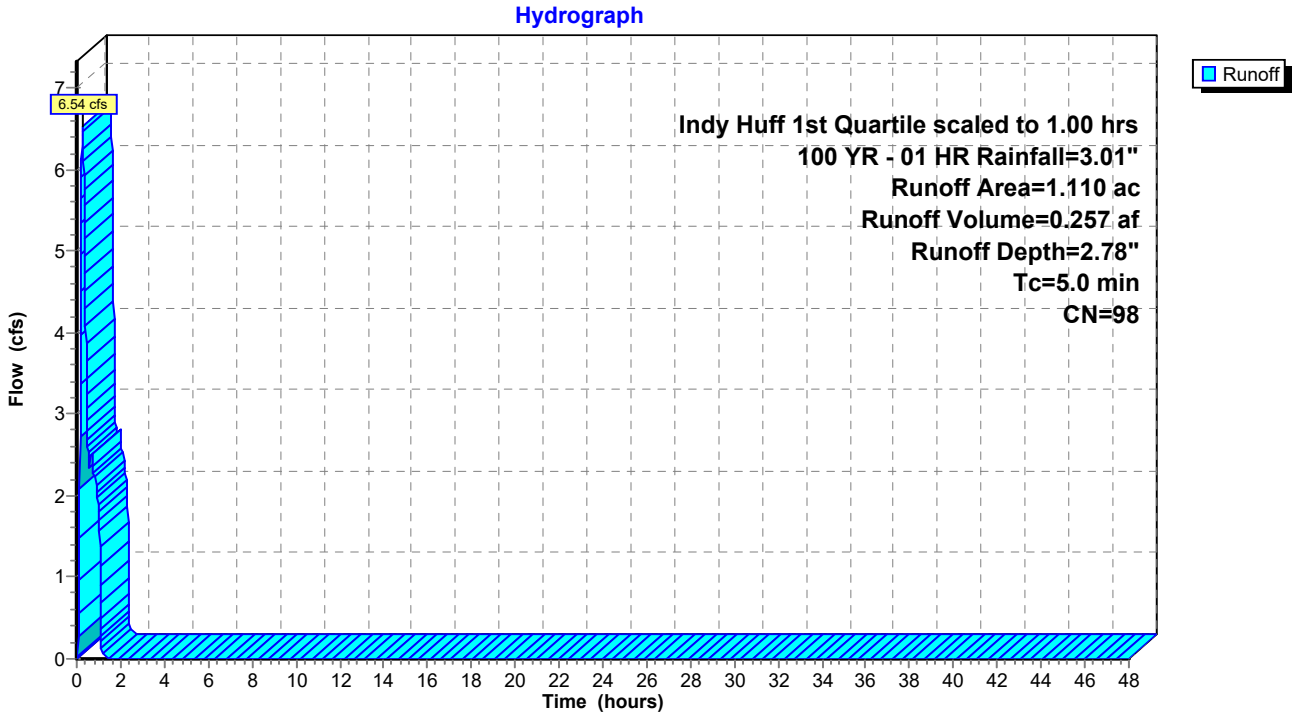
Runoff = 6.54 cfs @ 0.26 hrs, Volume= 0.257 af, Depth= 2.78"
Routed to Pond 1P : Existing Wet Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile scaled to 1.00 hrs 100 YR - 01 HR Rainfall=3.01"

	Area (ac)	CN	Description
*	1.110	98	
	1.110		100.00% Impervious Area

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

Subcatchment 10S: Existing detention Pond



Summary for Pond 1P: Existing Wet Pond

Inflow Area = 30.970 ac, 3.58% Impervious, Inflow Depth = 1.03" for 100 YR - 01 HR event
Inflow = 34.45 cfs @ 1.01 hrs, Volume= 2.657 af
Outflow = 30.81 cfs @ 1.07 hrs, Volume= 2.656 af, Atten= 11%, Lag= 3.4 min
Primary = 30.81 cfs @ 1.07 hrs, Volume= 2.656 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 732.71' @ 1.07 hrs Surf.Area= 1.542 ac Storage= 0.760 af

Plug-Flow detention time= 24.9 min calculated for 2.656 af (100% of inflow)
Center-of-Mass det. time= 25.2 min (79.8 - 54.5)

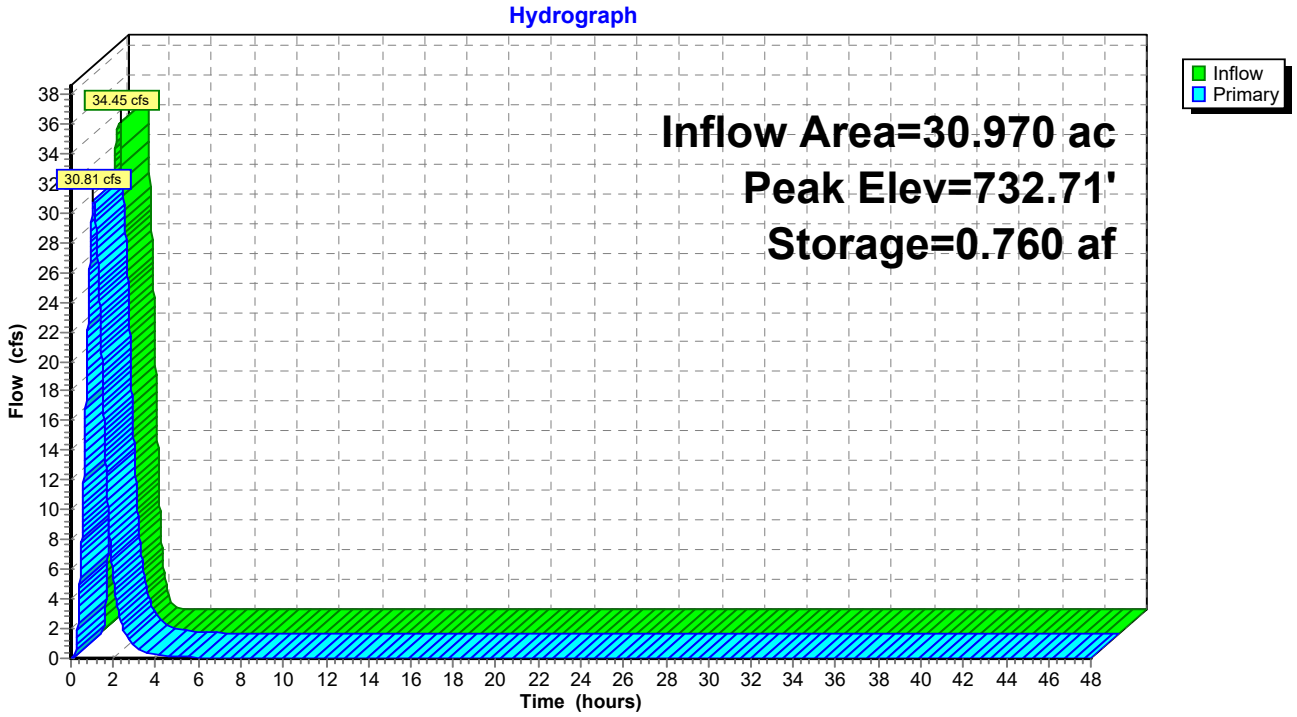
Volume	Invert	Avail.Storage	Storage Description
#1	732.20'	2.896 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
732.20	1.440	0.000	0.000
733.00	1.600	1.216	1.216
734.00	1.760	1.680	2.896

Device	Routing	Invert	Outlet Devices
#1	Primary	732.20'	**30.8' long x 9.9' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	732.20'	**12.0" Round RCP_Round 12"** L= 26.3' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 732.20' / 729.84' S= 0.0897 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=30.80 cfs @ 1.07 hrs HW=732.71' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 29.58 cfs @ 1.88 fps)
└**2=RCP_Round 12"** (Inlet Controls 1.22 cfs @ 3.04 fps)

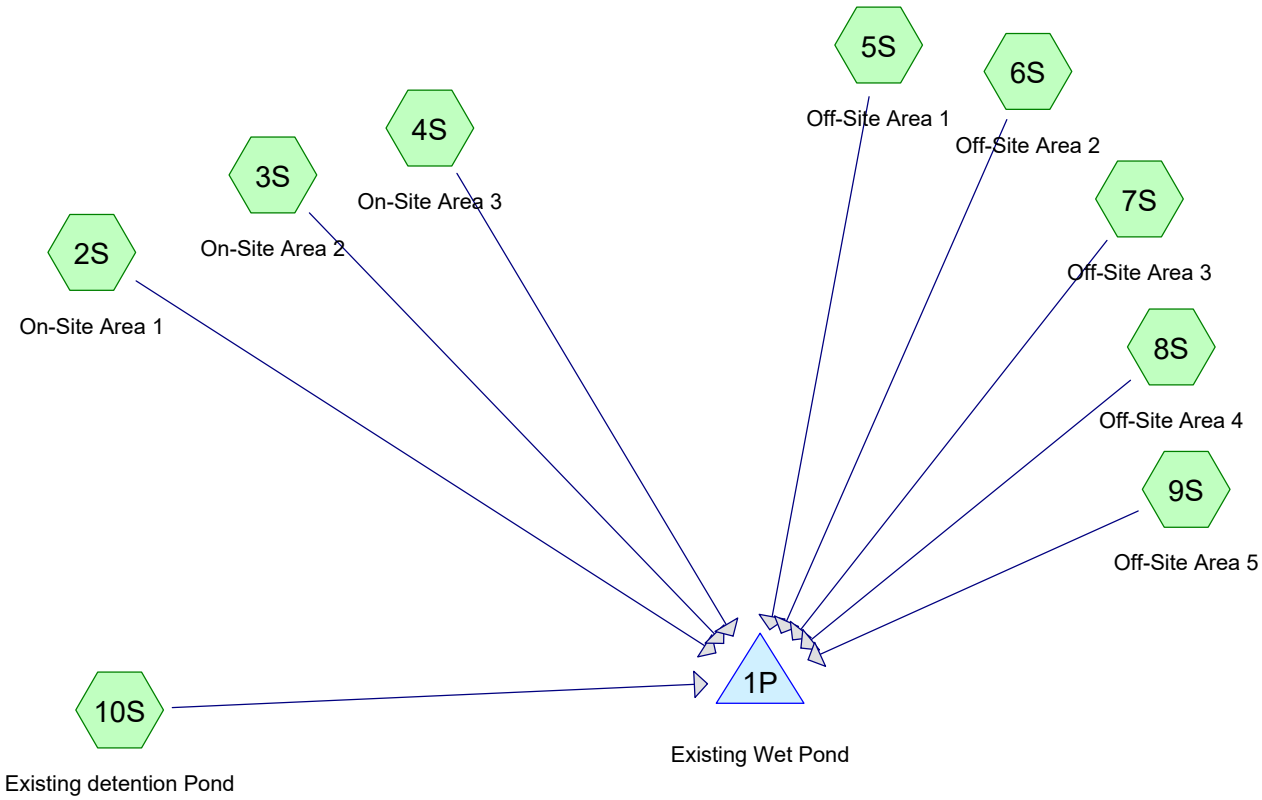
Pond 1P: Existing Wet Pond



Stage-Area-Storage for Pond 1P: Existing Wet Pond

Elevation (feet)	Surface (acres)	Storage (acre-feet)
732.20	1.440	0.000
732.22	1.444	0.029
732.24	1.448	0.058
732.26	1.452	0.087
732.28	1.456	0.116
732.30	1.460	0.145
732.32	1.464	0.174
732.34	1.468	0.204
732.36	1.472	0.233
732.38	1.476	0.262
732.40	1.480	0.292
732.42	1.484	0.322
732.44	1.488	0.351
732.46	1.492	0.381
732.48	1.496	0.411
732.50	1.500	0.441
732.52	1.504	0.471
732.54	1.508	0.501
732.56	1.512	0.531
732.58	1.516	0.562
732.60	1.520	0.592
732.62	1.524	0.622
732.64	1.528	0.653
732.66	1.532	0.684
732.68	1.536	0.714
732.70	1.540	0.745
732.72	1.544	0.776
732.74	1.548	0.807
732.76	1.552	0.838
732.78	1.556	0.869
732.80	1.560	0.900
732.82	1.564	0.931
732.84	1.568	0.963
732.86	1.572	0.994
732.88	1.576	1.025
732.90	1.580	1.057
732.92	1.584	1.089
732.94	1.588	1.120
732.96	1.592	1.152
732.98	1.596	1.184
733.00	1.600	1.216
733.02	1.603	1.248
733.04	1.606	1.280
733.06	1.610	1.312
733.08	1.613	1.345
733.10	1.616	1.377
733.12	1.619	1.409
733.14	1.622	1.442
733.16	1.626	1.474
733.18	1.629	1.507
733.20	1.632	1.539
733.22	1.635	1.572
733.24	1.638	1.605
733.26	1.642	1.637
733.28	1.645	1.670
733.30	1.648	1.703
733.32	1.651	1.736
733.34	1.654	1.769
733.36	1.658	1.802
733.38	1.661	1.836
733.40	1.664	1.869
733.42	1.667	1.902
733.44	1.670	1.935
733.46	1.674	1.969
733.48	1.677	2.002
733.50	1.680	2.036
733.52	1.683	2.070
733.54	1.686	2.103
733.56	1.690	2.137
733.58	1.693	2.171
733.60	1.696	2.205
733.62	1.699	2.239
733.64	1.702	2.273
733.66	1.706	2.307
733.68	1.709	2.341
733.70	1.712	2.375
733.72	1.715	2.409
733.74	1.718	2.444
733.76	1.722	2.478
733.78	1.725	2.513
733.80	1.728	2.547
733.82	1.731	2.582
733.84	1.734	2.616
733.86	1.738	2.651
733.88	1.741	2.686
733.90	1.744	2.721
733.92	1.747	2.756
733.94	1.750	2.791
733.96	1.754	2.826
733.98	1.757	2.861
734.00	**1.760**	**2.896**

Existing Model 2
On-Site and
Off-Site



B-5

Subcat Reach Pond Link

Routing Diagram for Ex. Conditions HydroCAD model
Prepared by {enter your company name here}, Printed 6/3/2021

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
28.170	75	(2S, 4S)
1.920	74	(3S, 9S)
1.440	85	(5S)
5.860	86	(6S, 8S)
4.560	84	(7S)
1.110	98	(10S)
43.060	**78**	**TOTAL AREA**

Events for Pond 1P: Existing Wet Pond

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
2 YR - 01 HR	11.65	8.92	732.43	0.340
2 YR - 02 HR	9.43	8.71	732.43	0.335
2 YR - 03 HR	7.33	6.97	732.40	0.289
2 YR - 06 HR	5.26	5.11	732.36	0.235
2 YR - 12 HR	5.90	5.72	732.37	0.253
2 YR - 24 HR	5.97	5.89	732.38	0.258
10 YR - 01 HR	26.13	23.02	732.63	0.633
10 YR - 02 HR	19.66	18.92	732.58	0.557
10 YR - 03 HR	14.97	14.49	732.52	0.468
10 YR - 06 HR	13.34	12.35	732.49	0.421
10 YR - 12 HR	11.49	11.33	732.47	0.398
10 YR - 24 HR	10.26	10.17	732.45	0.371
100 YR - 01 HR	**54.05**	**50.53**	**732.90**	**1.054**
100 YR - 02 HR	41.52	39.01	732.79	0.882
100 YR - 03 HR	37.74	34.27	732.74	0.813
100 YR - 06 HR	31.64	30.40	732.71	0.754
100 YR - 12 HR	20.48	20.14	732.59	0.581
100 YR - 24 HR	17.09	17.02	732.55	0.520

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 2S: On-Site Area 1 Runoff Area=23.050 ac 0.00% Impervious Runoff Depth=0.13"
Tc=30.0 min CN=75 Runoff=4.48 cfs 0.248 af

Subcatchment 3S: On-Site Area 2 Runoff Area=1.690 ac 0.00% Impervious Runoff Depth=0.11"
Tc=5.0 min CN=74 Runoff=0.38 cfs 0.016 af

Subcatchment 4S: On-Site Area 3 Runoff Area=5.120 ac 0.00% Impervious Runoff Depth=0.13"
Tc=5.0 min CN=75 Runoff=1.27 cfs 0.055 af

Subcatchment 5S: Off-Site Area 1 Runoff Area=1.440 ac 0.00% Impervious Runoff Depth=0.38"
Tc=5.0 min CN=85 Runoff=0.80 cfs 0.046 af

Subcatchment 6S: Off-Site Area 2 Runoff Area=1.050 ac 0.00% Impervious Runoff Depth=0.42"
Tc=5.0 min CN=86 Runoff=0.66 cfs 0.037 af

Subcatchment 7S: Off-Site Area 3 Runoff Area=4.560 ac 0.00% Impervious Runoff Depth=0.35"
Tc=5.0 min CN=84 Runoff=2.22 cfs 0.133 af

Subcatchment 8S: Off-Site Area 4 Runoff Area=4.810 ac 0.00% Impervious Runoff Depth=0.42"
Tc=10.0 min CN=86 Runoff=2.65 cfs 0.169 af

Subcatchment 9S: Off-Site Area 5 Runoff Area=0.230 ac 0.00% Impervious Runoff Depth=0.11"
Tc=5.0 min CN=74 Runoff=0.05 cfs 0.002 af

Subcatchment 10S: Existing detention Runoff Area=1.110 ac 100.00% Impervious Runoff Depth=1.17"
Tc=5.0 min CN=98 Runoff=2.71 cfs 0.108 af

Pond 1P: Existing Wet Pond Peak Elev=732.43' Storage=0.340 af Inflow=11.65 cfs 0.814 af
Outflow=8.92 cfs 0.813 af

Total Runoff Area = 43.060 ac Runoff Volume = 0.814 af Average Runoff Depth = 0.23"
97.42% Pervious = 41.950 ac 2.58% Impervious = 1.110 ac

Summary for Subcatchment 2S: On-Site Area 1

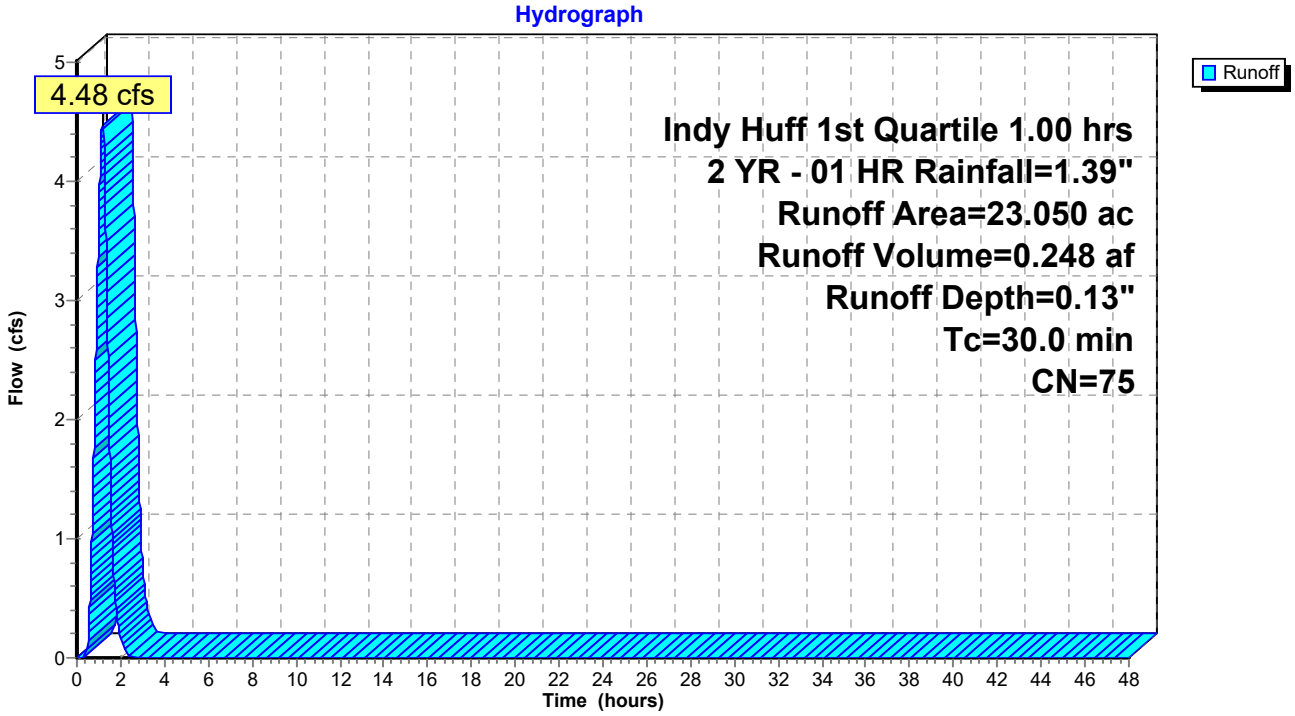
Runoff = 4.48 cfs @ 1.17 hrs, Volume= 0.248 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 2 YR - 01 HR Rainfall=1.39"

	Area (ac)	CN	Description
*	23.050	75	
	23.050		100.00% Pervious Area

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

Subcatchment 2S: On-Site Area 1



Summary for Subcatchment 3S: On-Site Area 2

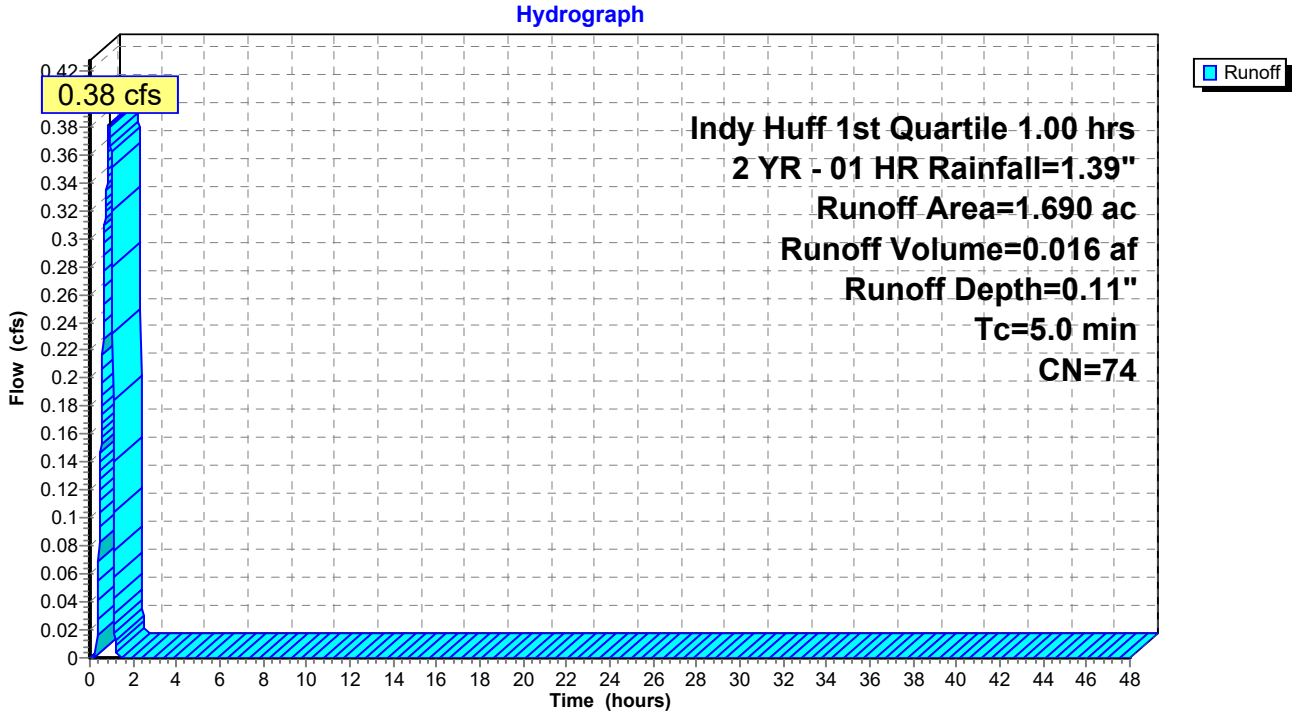
Runoff = 0.38 cfs @ 0.89 hrs, Volume= 0.016 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 2 YR - 01 HR Rainfall=1.39"

	Area (ac)	CN	Description
*	1.690	74	
	1.690		100.00% Pervious Area

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

Subcatchment 3S: On-Site Area 2



Summary for Subcatchment 4S: On-Site Area 3

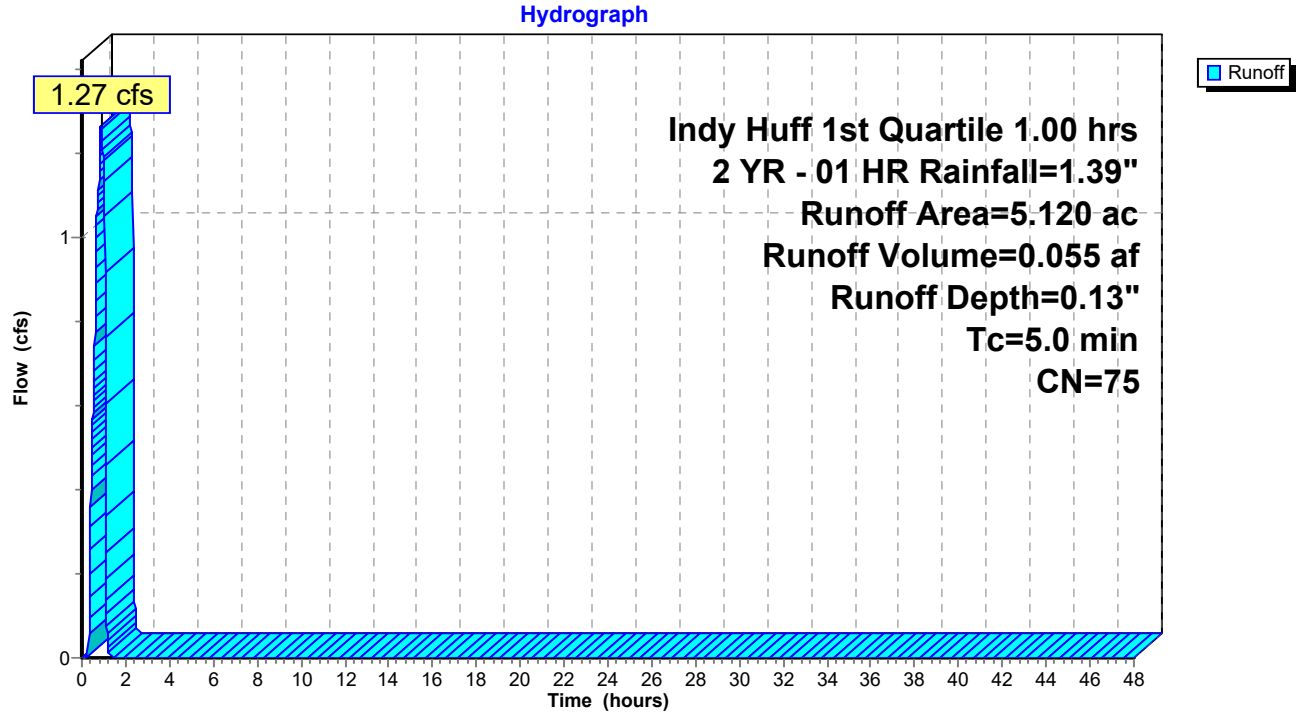
Runoff = 1.27 cfs @ 0.88 hrs, Volume= 0.055 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 2 YR - 01 HR Rainfall=1.39"

	Area (ac)	CN	Description
*	5.120	75	
	5.120		100.00% Pervious Area

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

Subcatchment 4S: On-Site Area 3



Summary for Subcatchment 5S: Off-Site Area 1

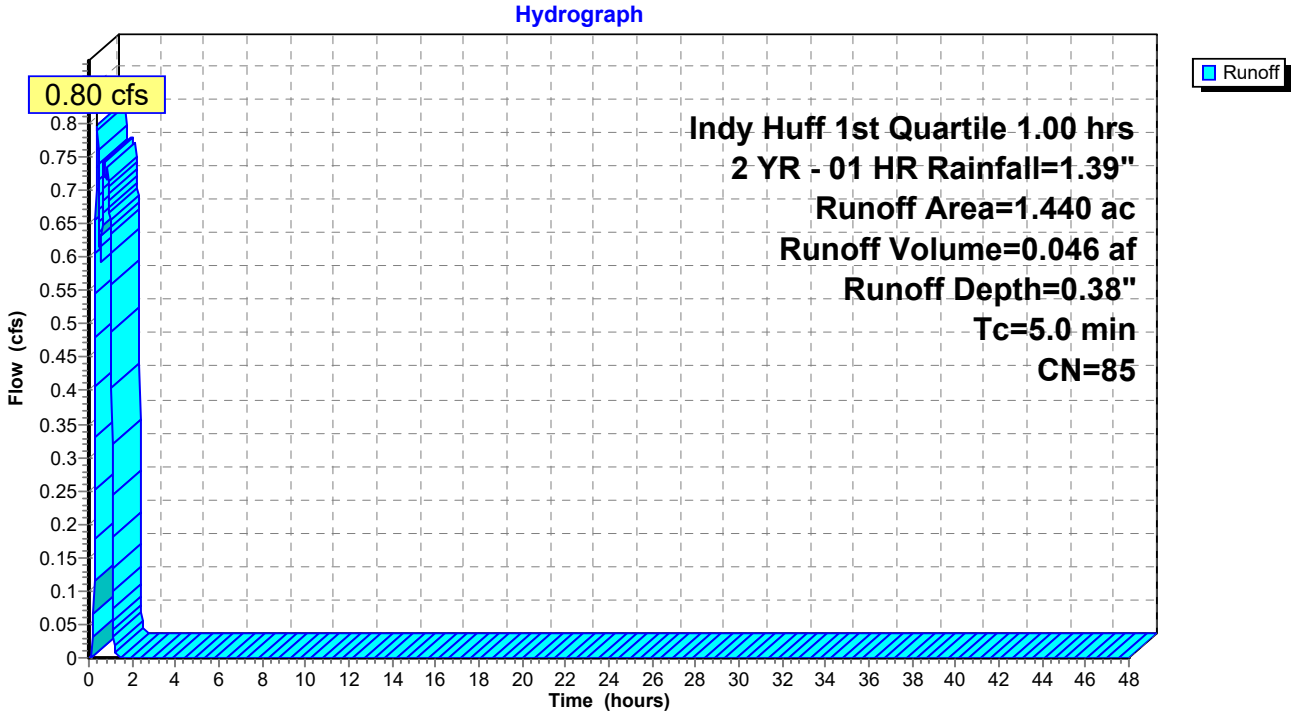
Runoff = 0.80 cfs @ 0.38 hrs, Volume= 0.046 af, Depth= 0.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 2 YR - 01 HR Rainfall=1.39"

	Area (ac)	CN	Description
*	1.440	85	
	1.440		100.00% Pervious Area

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

Subcatchment 5S: Off-Site Area 1



Summary for Subcatchment 6S: Off-Site Area 2

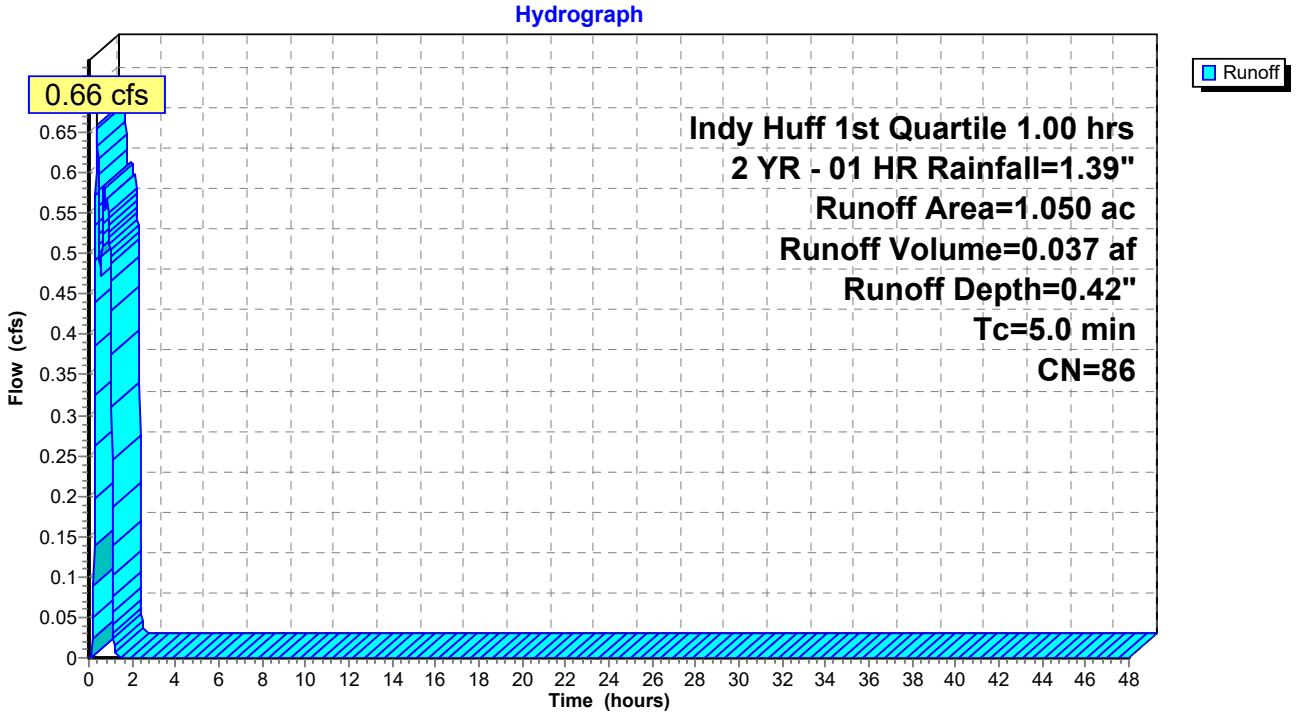
Runoff = 0.66 cfs @ 0.38 hrs, Volume= 0.037 af, Depth= 0.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 2 YR - 01 HR Rainfall=1.39"

	Area (ac)	CN	Description
*	1.050	86	
	1.050		100.00% Pervious Area

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

Subcatchment 6S: Off-Site Area 2



Summary for Subcatchment 7S: Off-Site Area 3

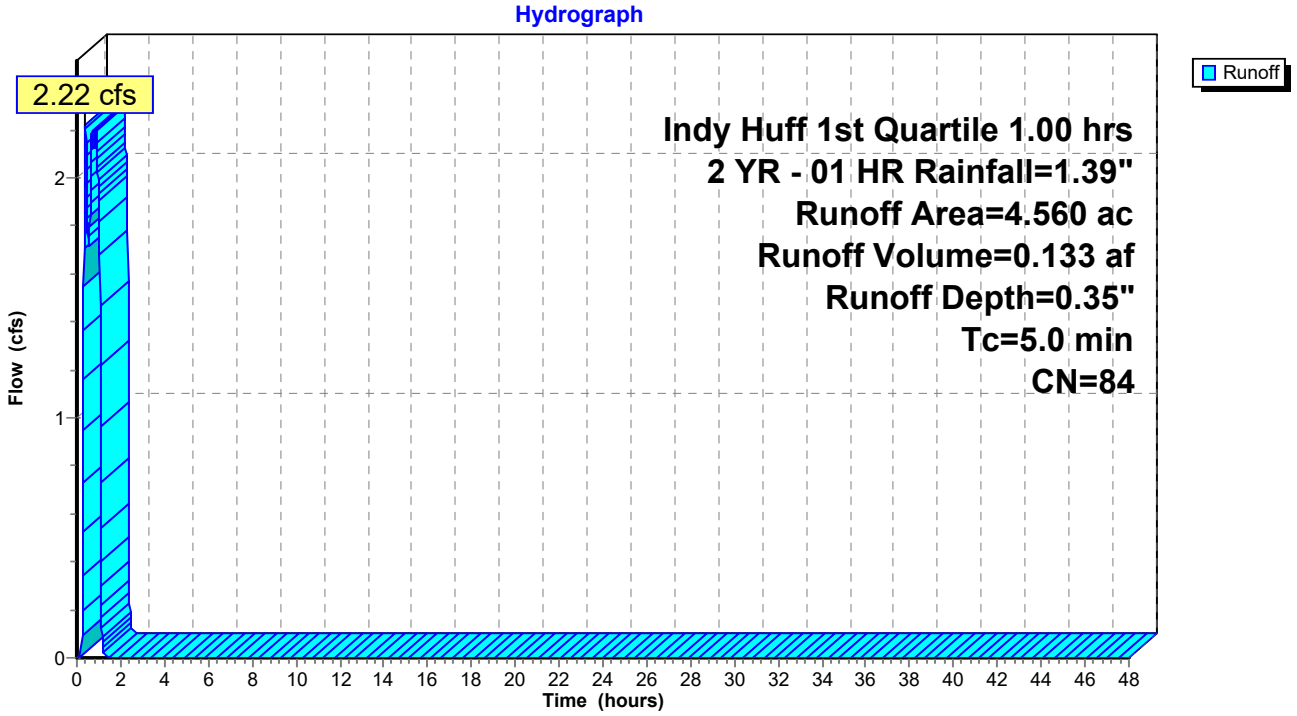
Runoff = 2.22 cfs @ 0.39 hrs, Volume= 0.133 af, Depth= 0.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 2 YR - 01 HR Rainfall=1.39"

	Area (ac)	CN	Description
*	4.560	84	
	4.560		100.00% Pervious Area

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

Subcatchment 7S: Off-Site Area 3



Summary for Subcatchment 8S: Off-Site Area 4

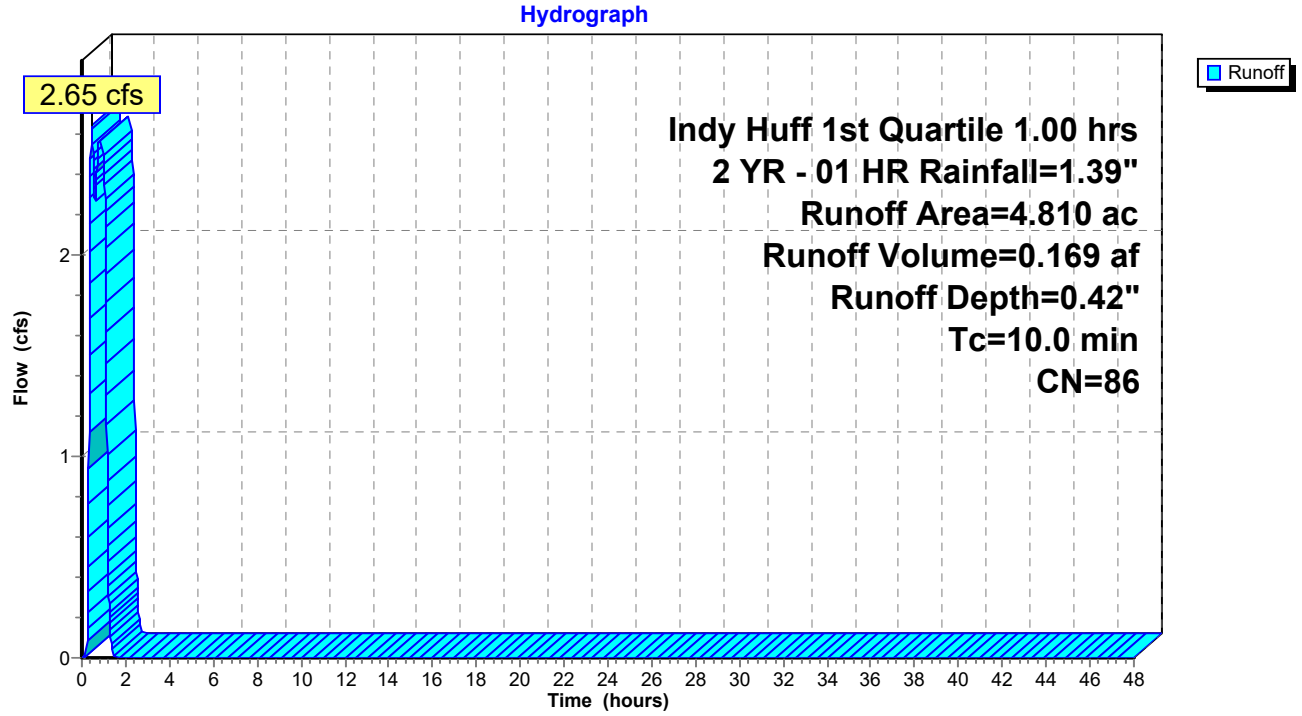
Runoff = 2.65 cfs @ 0.46 hrs, Volume= 0.169 af, Depth= 0.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 2 YR - 01 HR Rainfall=1.39"

	Area (ac)	CN	Description
*	4.810	86	
	4.810		100.00% Pervious Area

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

Subcatchment 8S: Off-Site Area 4



Summary for Subcatchment 9S: Off-Site Area 5

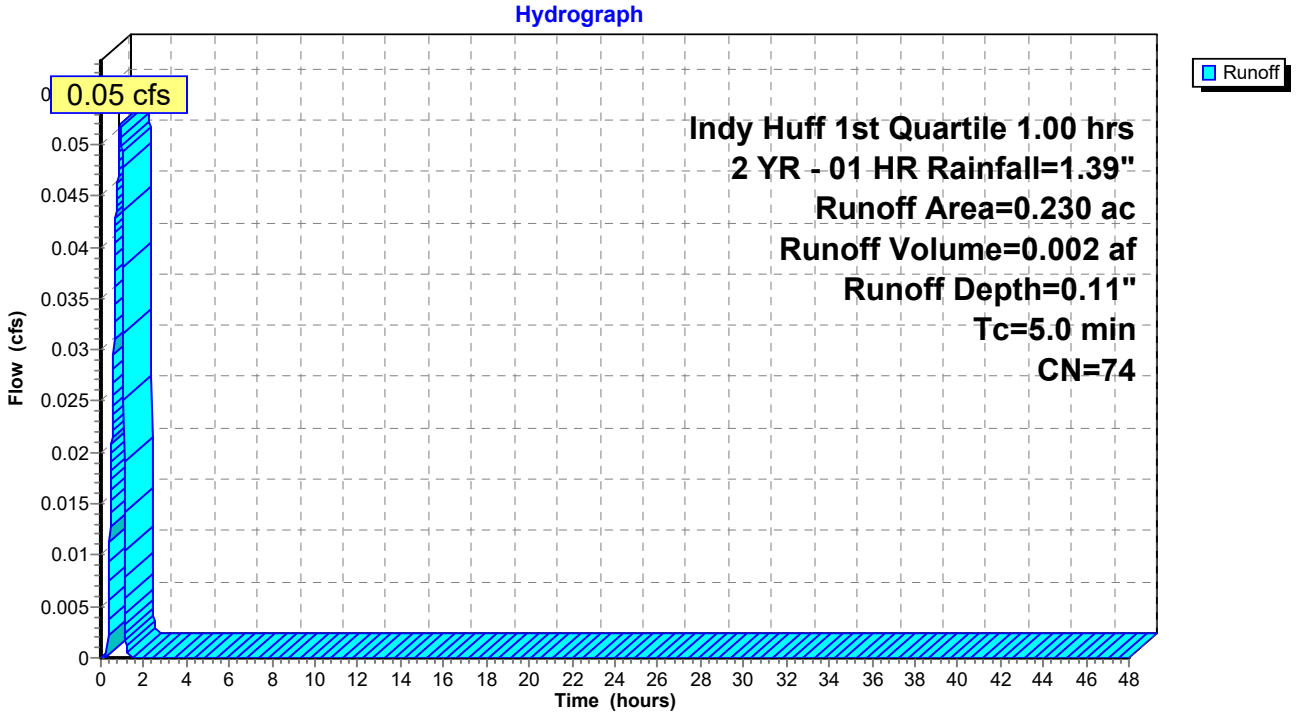
Runoff = 0.05 cfs @ 0.89 hrs, Volume= 0.002 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 2 YR - 01 HR Rainfall=1.39"

	Area (ac)	CN	Description
*	0.230	74	
	0.230		100.00% Pervious Area

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

Subcatchment 9S: Off-Site Area 5



Summary for Subcatchment 10S: Existing detention Pond

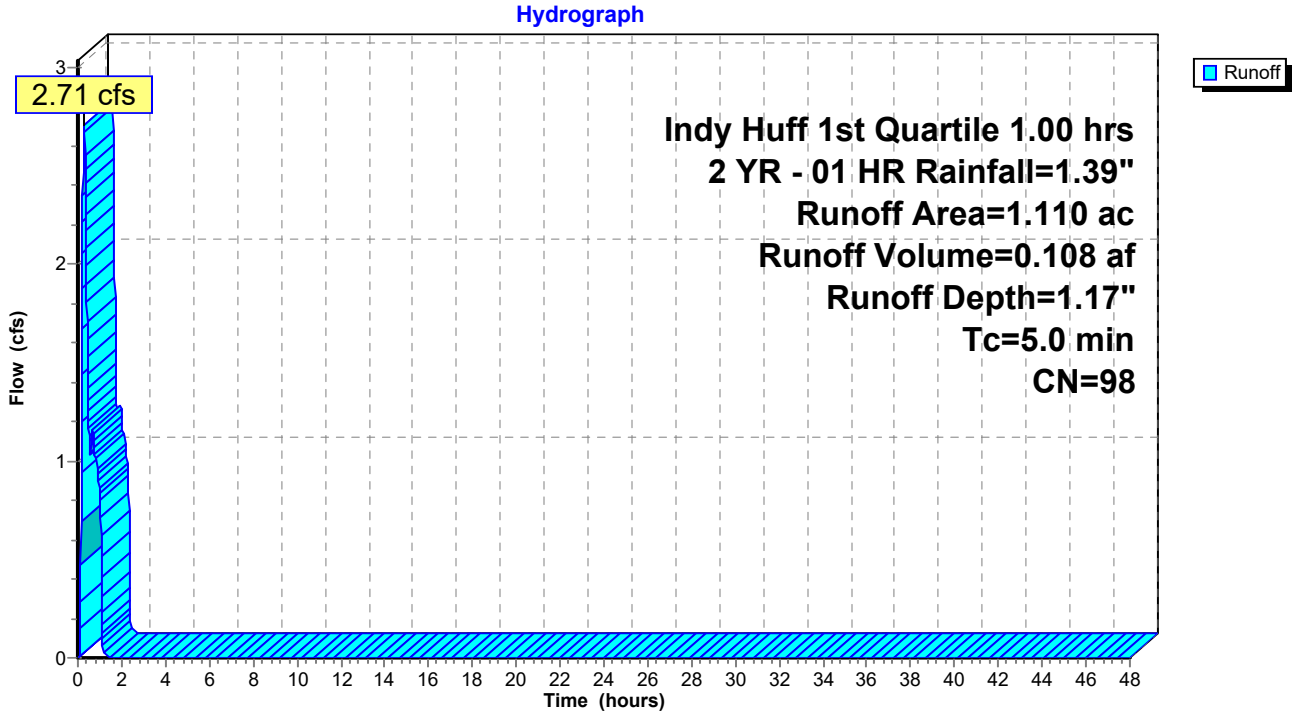
Runoff = 2.71 cfs @ 0.28 hrs, Volume= 0.108 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 2 YR - 01 HR Rainfall=1.39"

	Area (ac)	CN	Description
*	1.110	98	
	1.110		100.00% Impervious Area

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

Subcatchment 10S: Existing detention Pond



Summary for Pond 1P: Existing Wet Pond

Inflow Area = 43.060 ac, 2.58% Impervious, Inflow Depth = 0.23" for 2 YR - 01 HR event
Inflow = 11.65 cfs @ 1.01 hrs, Volume= 0.814 af
Outflow = 8.92 cfs @ 1.07 hrs, Volume= 0.813 af, Atten= 23%, Lag= 3.7 min
Primary = 8.92 cfs @ 1.07 hrs, Volume= 0.813 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 732.43' @ 1.07 hrs Surf.Area= 1.486 ac Storage= 0.340 af

Plug-Flow detention time= 41.2 min calculated for 0.813 af (100% of inflow)
Center-of-Mass det. time= 41.2 min (90.9 - 49.7)

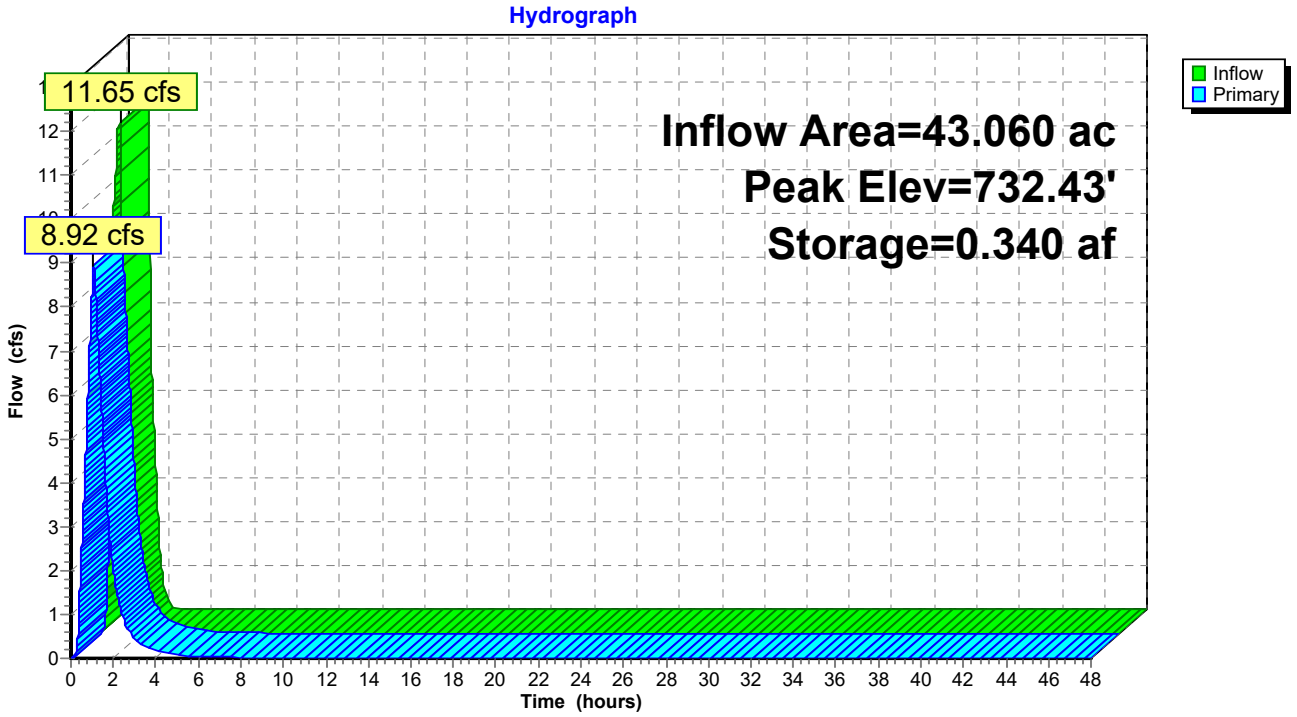
Volume	Invert	Avail.Storage	Storage Description
#1	732.20'	2.896 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
732.20	1.440	0.000	0.000
733.00	1.600	1.216	1.216
734.00	1.760	1.680	2.896

Device	Routing	Invert	Outlet Devices
#1	Primary	732.20'	**30.8' long x 9.9' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	732.20'	**12.0" Round RCP_Round 12"** L= 26.3' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 732.20' / 729.84' S= 0.0897 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=8.92 cfs @ 1.07 hrs HW=732.43' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 8.63 cfs @ 1.21 fps)
2=RCP_Round 12" (Inlet Controls 0.28 cfs @ 2.05 fps)

Pond 1P: Existing Wet Pond



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 2S: On-Site Area 1 Runoff Area=23.050 ac 0.00% Impervious Runoff Depth=0.39"
Tc=30.0 min CN=75 Runoff=11.69 cfs 0.751 af

Subcatchment 3S: On-Site Area 2 Runoff Area=1.690 ac 0.00% Impervious Runoff Depth=0.36"
Tc=5.0 min CN=74 Runoff=0.95 cfs 0.051 af

Subcatchment 4S: On-Site Area 3 Runoff Area=5.120 ac 0.00% Impervious Runoff Depth=0.39"
Tc=5.0 min CN=75 Runoff=3.03 cfs 0.167 af

Subcatchment 5S: Off-Site Area 1 Runoff Area=1.440 ac 0.00% Impervious Runoff Depth=0.81"
Tc=5.0 min CN=85 Runoff=1.91 cfs 0.097 af

Subcatchment 6S: Off-Site Area 2 Runoff Area=1.050 ac 0.00% Impervious Runoff Depth=0.86"
Tc=5.0 min CN=86 Runoff=1.52 cfs 0.076 af

Subcatchment 7S: Off-Site Area 3 Runoff Area=4.560 ac 0.00% Impervious Runoff Depth=0.76"
Tc=5.0 min CN=84 Runoff=5.55 cfs 0.288 af

Subcatchment 8S: Off-Site Area 4 Runoff Area=4.810 ac 0.00% Impervious Runoff Depth=0.86"
Tc=10.0 min CN=86 Runoff=6.14 cfs 0.346 af

Subcatchment 9S: Off-Site Area 5 Runoff Area=0.230 ac 0.00% Impervious Runoff Depth=0.36"
Tc=5.0 min CN=74 Runoff=0.13 cfs 0.007 af

Subcatchment 10S: Existing detention Runoff Area=1.110 ac 100.00% Impervious Runoff Depth=1.79"
Tc=5.0 min CN=98 Runoff=4.20 cfs 0.166 af

Pond 1P: Existing Wet Pond Peak Elev=732.63' Storage=0.633 af Inflow=26.13 cfs 1.948 af
Outflow=23.02 cfs 1.948 af

Total Runoff Area = 43.060 ac Runoff Volume = 1.948 af Average Runoff Depth = 0.54"
97.42% Pervious = 41.950 ac 2.58% Impervious = 1.110 ac

Summary for Subcatchment 2S: On-Site Area 1

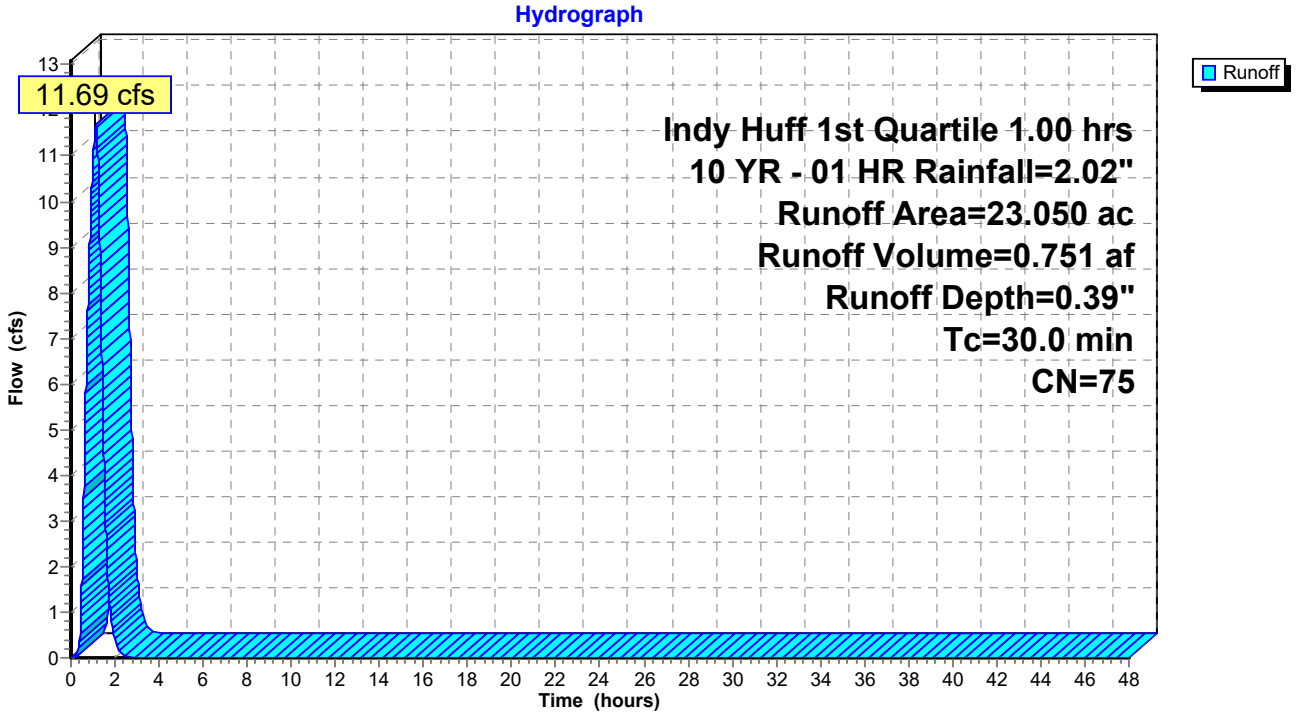
Runoff = 11.69 cfs @ 1.13 hrs, Volume= 0.751 af, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 10 YR - 01 HR Rainfall=2.02"

	Area (ac)	CN	Description
*	23.050	75	
	23.050		100.00% Pervious Area

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

Subcatchment 2S: On-Site Area 1



Summary for Subcatchment 3S: On-Site Area 2

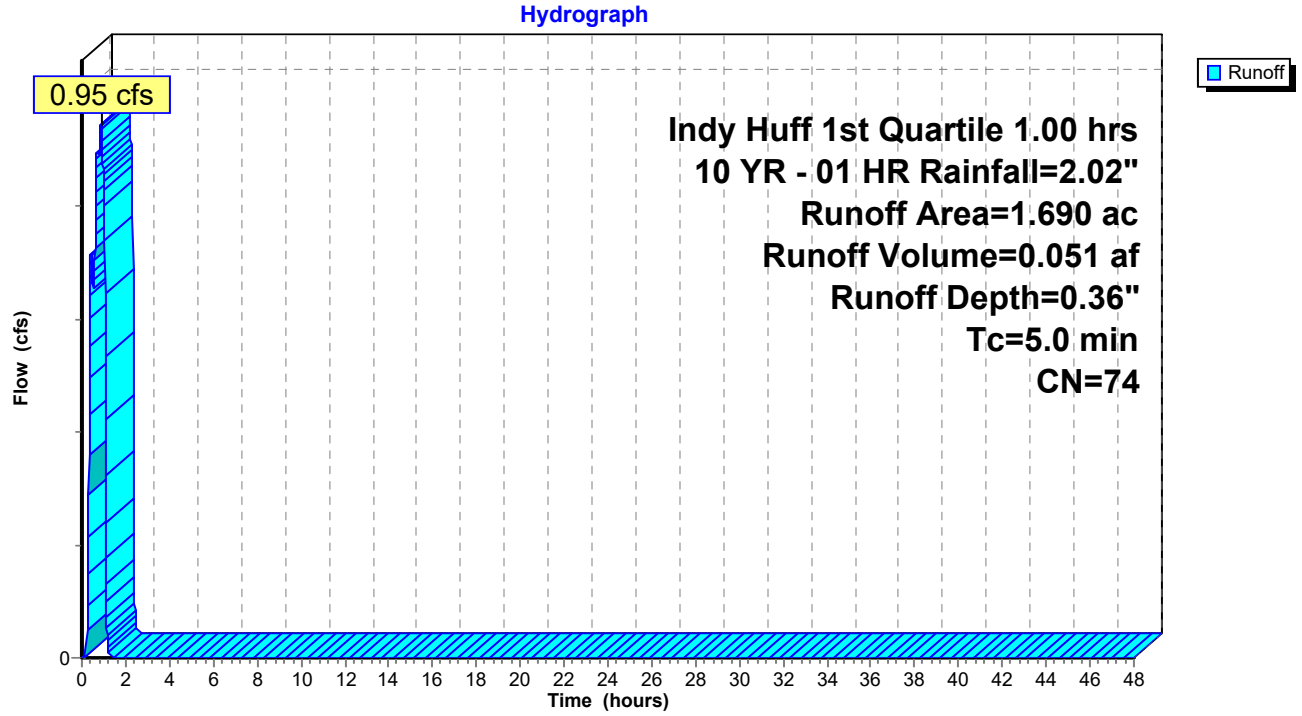
Runoff = 0.95 cfs @ 0.87 hrs, Volume= 0.051 af, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 10 YR - 01 HR Rainfall=2.02"

	Area (ac)	CN	Description
*	1.690	74	
	1.690		100.00% Pervious Area

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

Subcatchment 3S: On-Site Area 2



Summary for Subcatchment 4S: On-Site Area 3

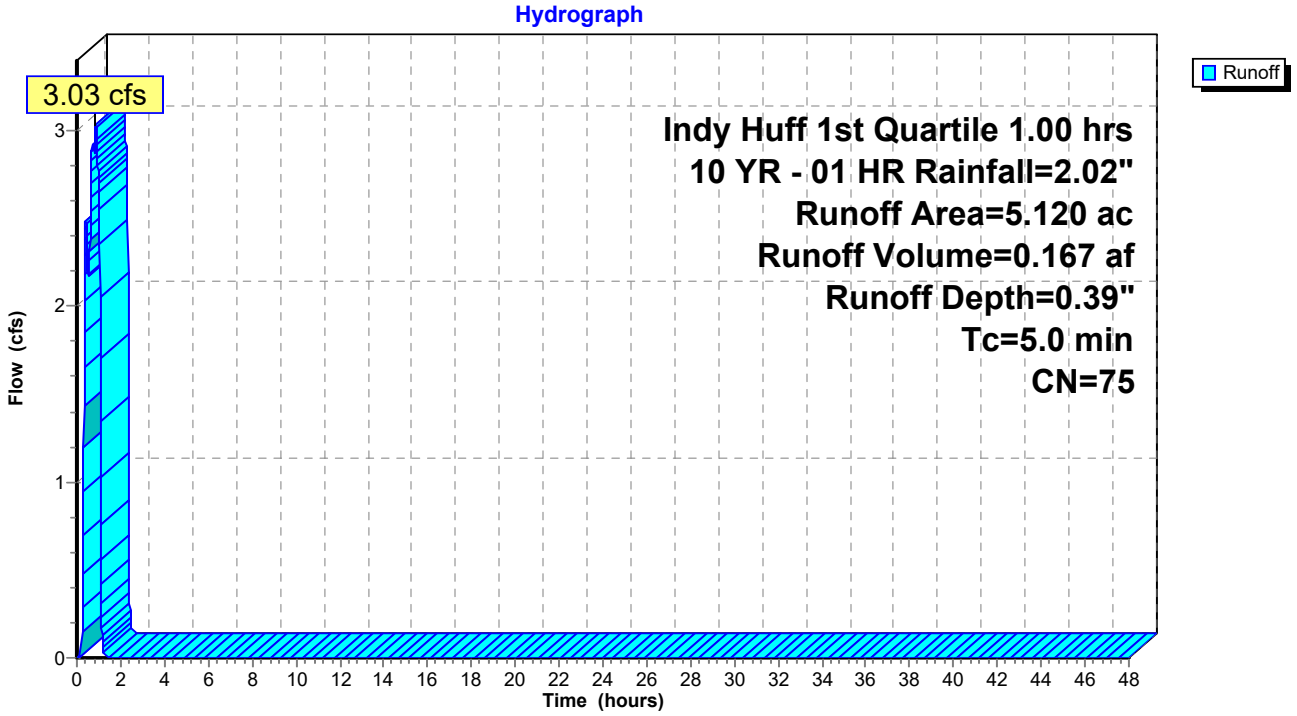
Runoff = 3.03 cfs @ 0.87 hrs, Volume= 0.167 af, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 10 YR - 01 HR Rainfall=2.02"

	Area (ac)	CN	Description
*	5.120	75	
	5.120		100.00% Pervious Area

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

Subcatchment 4S: On-Site Area 3



Summary for Subcatchment 5S: Off-Site Area 1

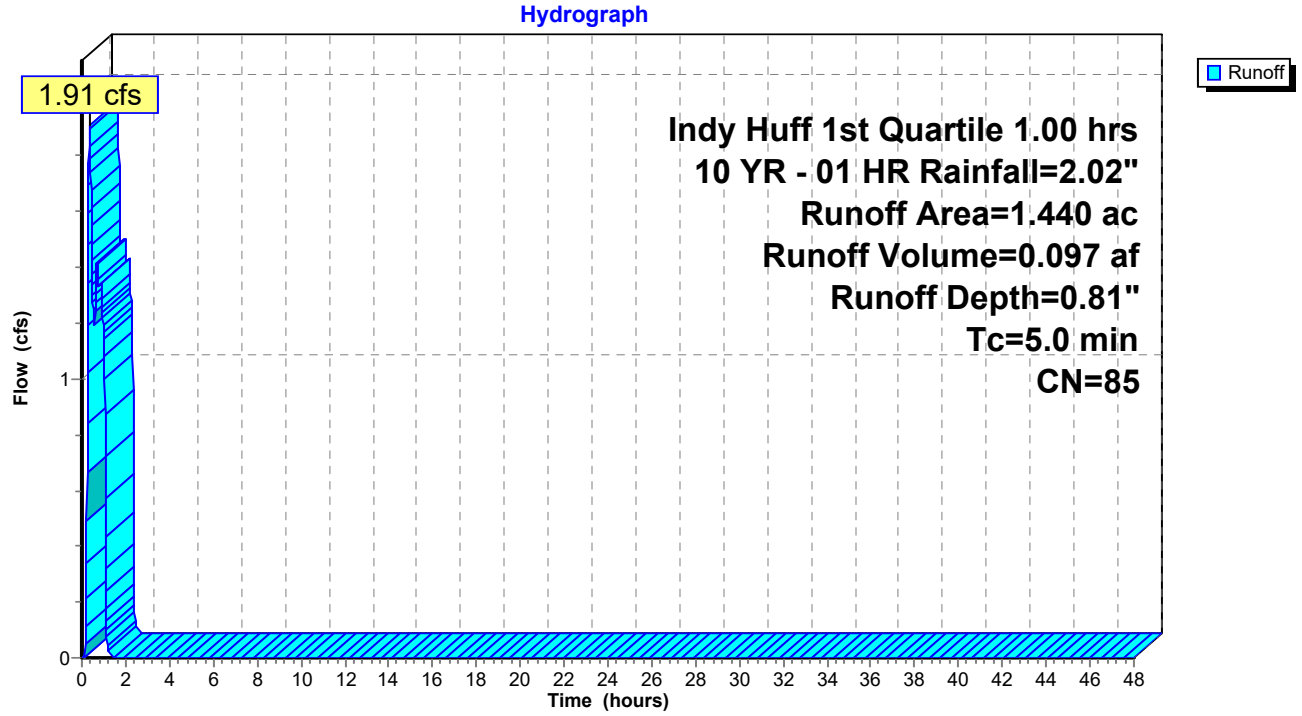
Runoff = 1.91 cfs @ 0.35 hrs, Volume= 0.097 af, Depth= 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 10 YR - 01 HR Rainfall=2.02"

	Area (ac)	CN	Description
*	1.440	85	
	1.440		100.00% Pervious Area

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

Subcatchment 5S: Off-Site Area 1



Summary for Subcatchment 6S: Off-Site Area 2

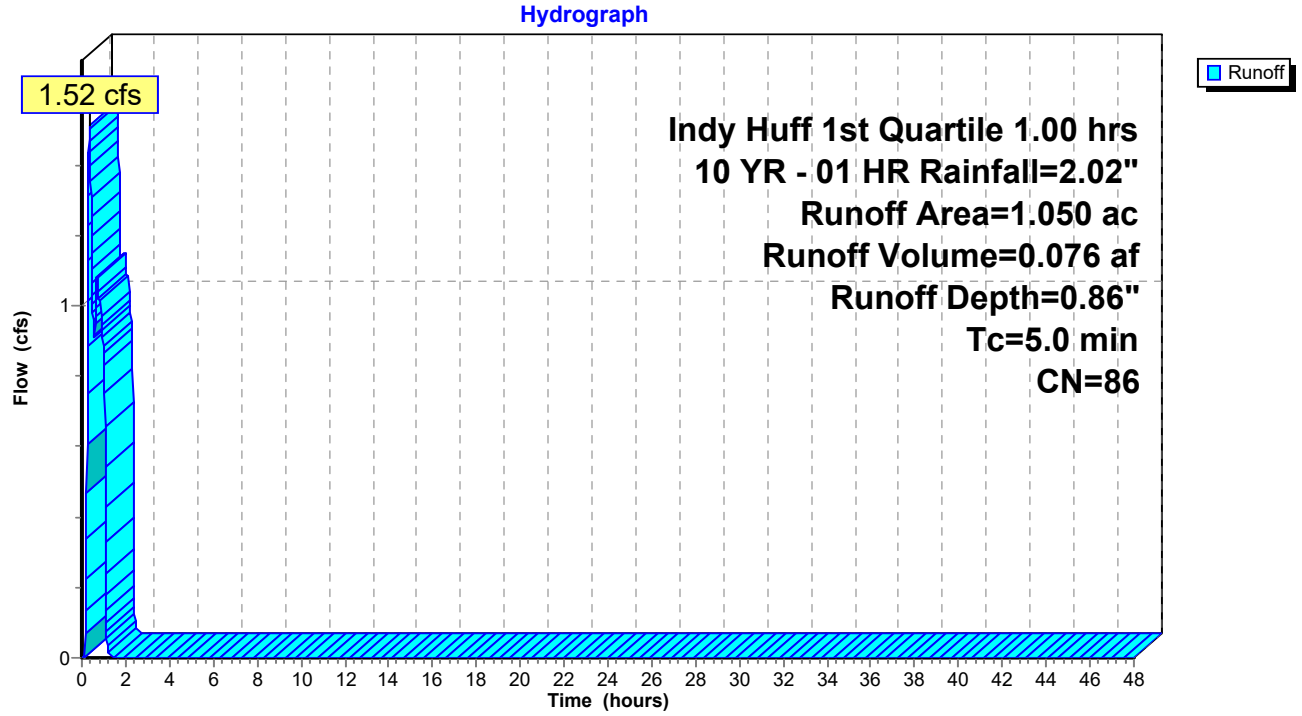
Runoff = 1.52 cfs @ 0.35 hrs, Volume= 0.076 af, Depth= 0.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 10 YR - 01 HR Rainfall=2.02"

	Area (ac)	CN	Description
*	1.050	86	
	1.050		100.00% Pervious Area

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

Subcatchment 6S: Off-Site Area 2



Summary for Subcatchment 7S: Off-Site Area 3

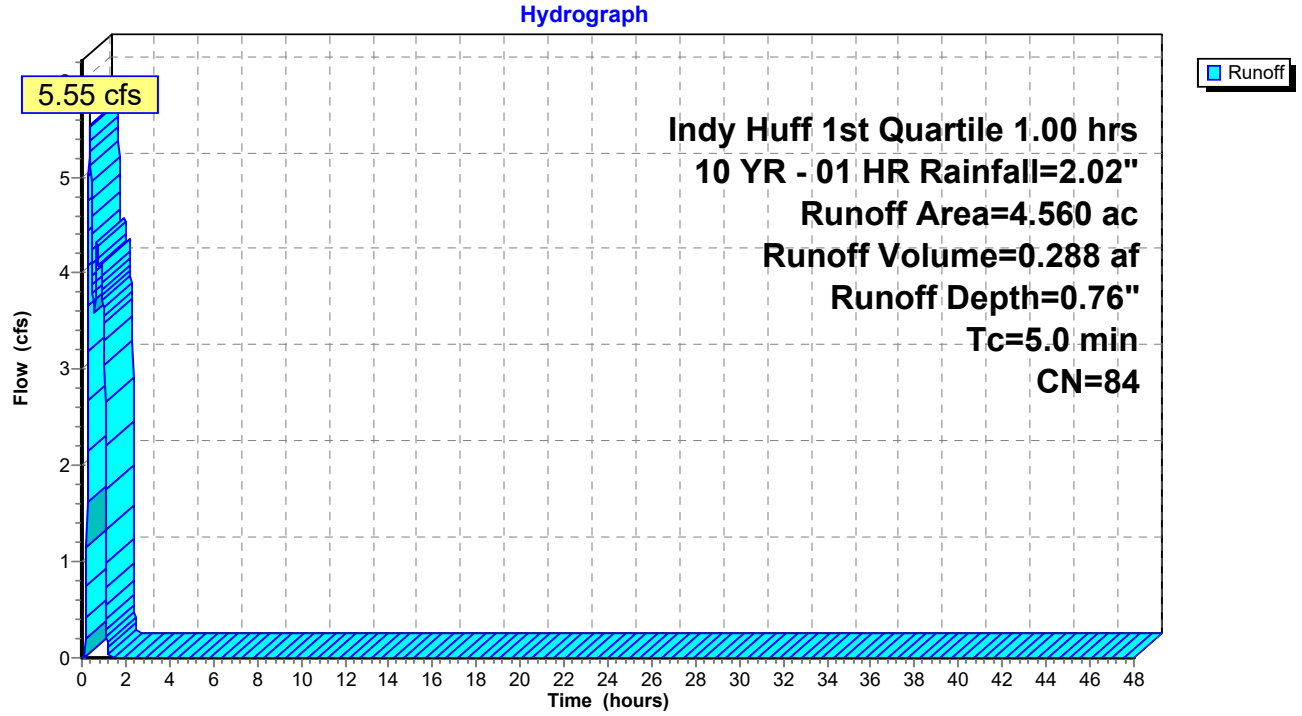
Runoff = 5.55 cfs @ 0.36 hrs, Volume= 0.288 af, Depth= 0.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 10 YR - 01 HR Rainfall=2.02"

	Area (ac)	CN	Description
*	4.560	84	
	4.560		100.00% Pervious Area

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

Subcatchment 7S: Off-Site Area 3



Summary for Subcatchment 8S: Off-Site Area 4

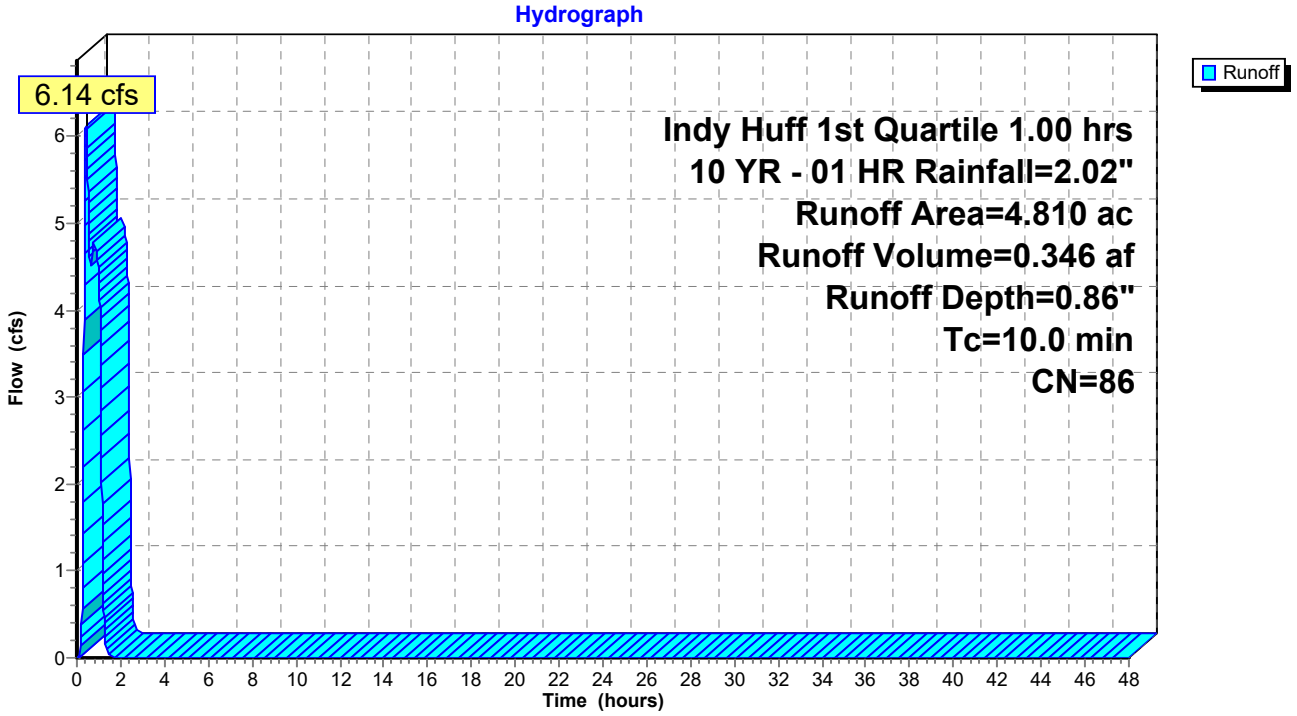
Runoff = 6.14 cfs @ 0.43 hrs, Volume= 0.346 af, Depth= 0.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 10 YR - 01 HR Rainfall=2.02"

	Area (ac)	CN	Description
*	4.810	86	
	4.810		100.00% Pervious Area

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

Subcatchment 8S: Off-Site Area 4



Summary for Subcatchment 9S: Off-Site Area 5

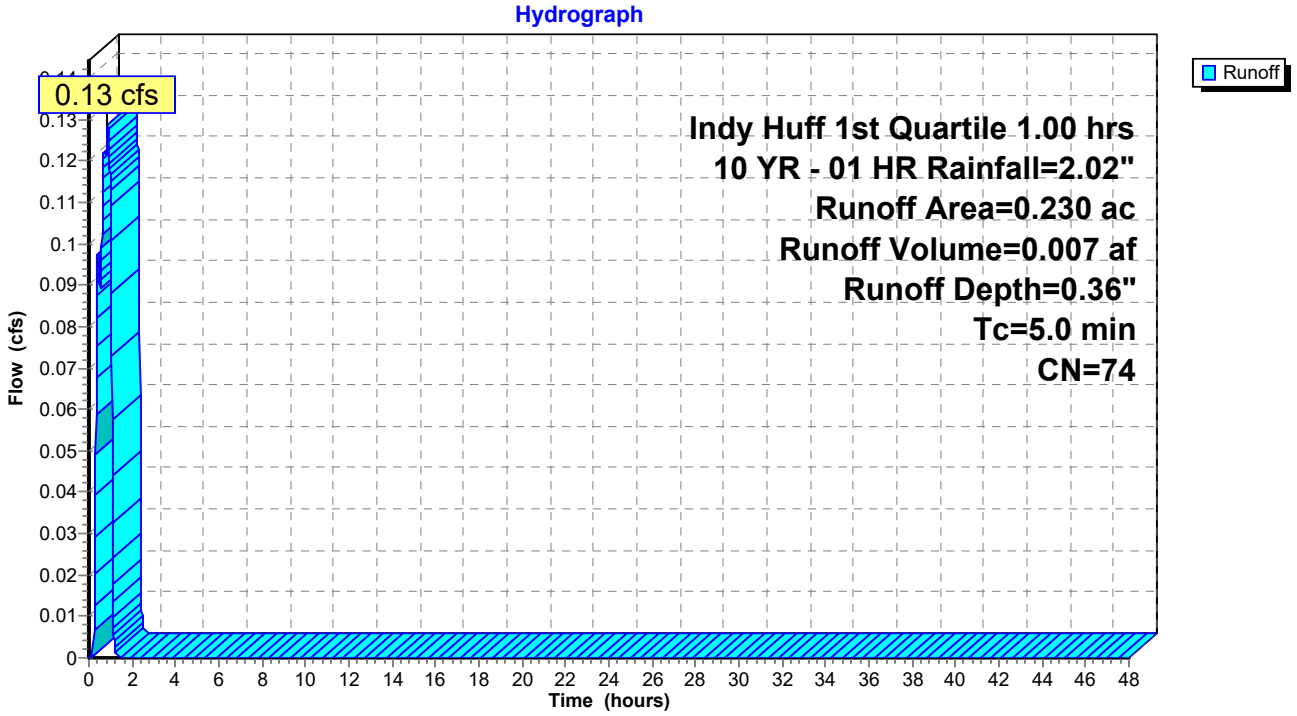
Runoff = 0.13 cfs @ 0.87 hrs, Volume= 0.007 af, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 10 YR - 01 HR Rainfall=2.02"

	Area (ac)	CN	Description
*	0.230	74	
	0.230		100.00% Pervious Area

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

Subcatchment 9S: Off-Site Area 5



Summary for Subcatchment 10S: Existing detention Pond

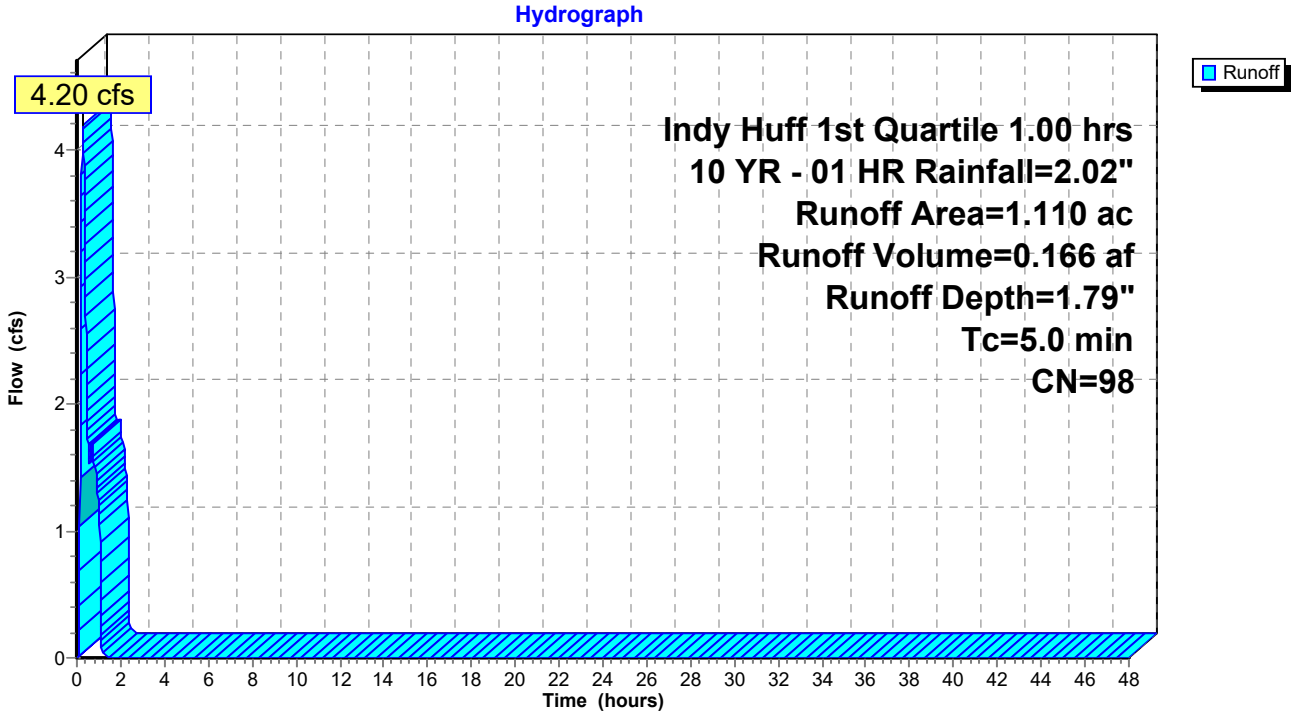
Runoff = 4.20 cfs @ 0.27 hrs, Volume= 0.166 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 10 YR - 01 HR Rainfall=2.02"

	Area (ac)	CN	Description
*	1.110	98	
	1.110		100.00% Impervious Area

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

Subcatchment 10S: Existing detention Pond



Summary for Pond 1P: Existing Wet Pond

Inflow Area = 43.060 ac, 2.58% Impervious, Inflow Depth = 0.54" for 10 YR - 01 HR event
Inflow = 26.13 cfs @ 0.90 hrs, Volume= 1.948 af
Outflow = 23.02 cfs @ 1.05 hrs, Volume= 1.948 af, Atten= 12%, Lag= 9.3 min
Primary = 23.02 cfs @ 1.05 hrs, Volume= 1.948 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 732.63' @ 1.05 hrs Surf.Area= 1.525 ac Storage= 0.633 af

Plug-Flow detention time= 28.2 min calculated for 1.948 af (100% of inflow)
Center-of-Mass det. time= 28.5 min (77.8 - 49.2)

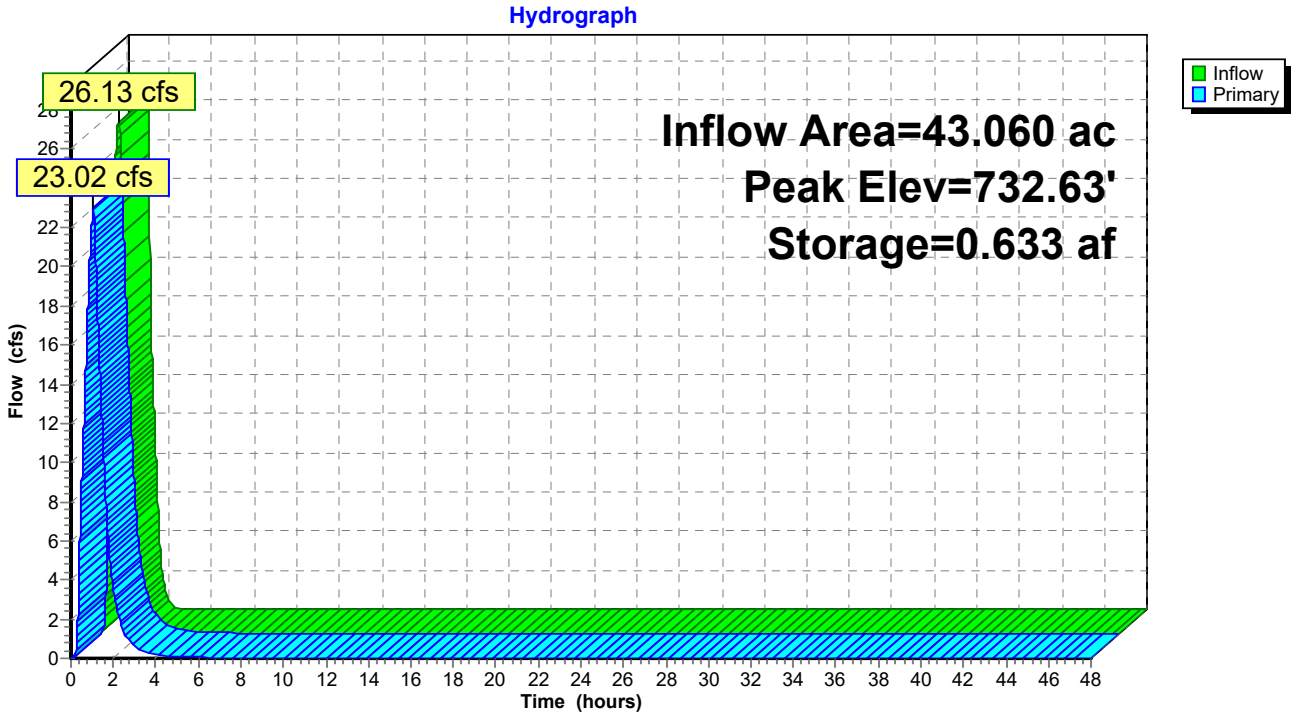
Volume	Invert	Avail.Storage	Storage Description
#1	732.20'	2.896 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
732.20	1.440	0.000	0.000
733.00	1.600	1.216	1.216
734.00	1.760	1.680	2.896

Device	Routing	Invert	Outlet Devices
#1	Primary	732.20'	**30.8' long x 9.9' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	732.20'	**12.0" Round RCP_Round 12"** L= 26.3' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 732.20' / 729.84' S= 0.0897 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=23.01 cfs @ 1.05 hrs HW=732.63' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 22.13 cfs @ 1.68 fps)
2=RCP_Round 12" (Inlet Controls 0.89 cfs @ 2.78 fps)

Pond 1P: Existing Wet Pond



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 2S: On-Site Area 1 Runoff Area=23.050 ac 0.00% Impervious Runoff Depth=0.97"
Tc=30.0 min CN=75 Runoff=26.00 cfs 1.858 af

Subcatchment 3S: On-Site Area 2 Runoff Area=1.690 ac 0.00% Impervious Runoff Depth=0.91"
Tc=5.0 min CN=74 Runoff=2.31 cfs 0.129 af

Subcatchment 4S: On-Site Area 3 Runoff Area=5.120 ac 0.00% Impervious Runoff Depth=0.97"
Tc=5.0 min CN=75 Runoff=7.55 cfs 0.413 af

Subcatchment 5S: Off-Site Area 1 Runoff Area=1.440 ac 0.00% Impervious Runoff Depth=1.60"
Tc=5.0 min CN=85 Runoff=4.12 cfs 0.192 af

Subcatchment 6S: Off-Site Area 2 Runoff Area=1.050 ac 0.00% Impervious Runoff Depth=1.67"
Tc=5.0 min CN=86 Runoff=3.19 cfs 0.146 af

Subcatchment 7S: Off-Site Area 3 Runoff Area=4.560 ac 0.00% Impervious Runoff Depth=1.52"
Tc=5.0 min CN=84 Runoff=12.27 cfs 0.579 af

Subcatchment 8S: Off-Site Area 4 Runoff Area=4.810 ac 0.00% Impervious Runoff Depth=1.67"
Tc=10.0 min CN=86 Runoff=12.92 cfs 0.670 af

Subcatchment 9S: Off-Site Area 5 Runoff Area=0.230 ac 0.00% Impervious Runoff Depth=0.91"
Tc=5.0 min CN=74 Runoff=0.31 cfs 0.018 af

Subcatchment 10S: Existing detention Runoff Area=1.110 ac 100.00% Impervious Runoff Depth=2.78"
Tc=5.0 min CN=98 Runoff=6.54 cfs 0.257 af

Pond 1P: Existing Wet Pond Peak Elev=732.90' Storage=1.054 af Inflow=54.05 cfs 4.261 af
Outflow=50.53 cfs 4.261 af

Total Runoff Area = 43.060 ac Runoff Volume = 4.261 af Average Runoff Depth = 1.19"
97.42% Pervious = 41.950 ac 2.58% Impervious = 1.110 ac

Summary for Subcatchment 2S: On-Site Area 1

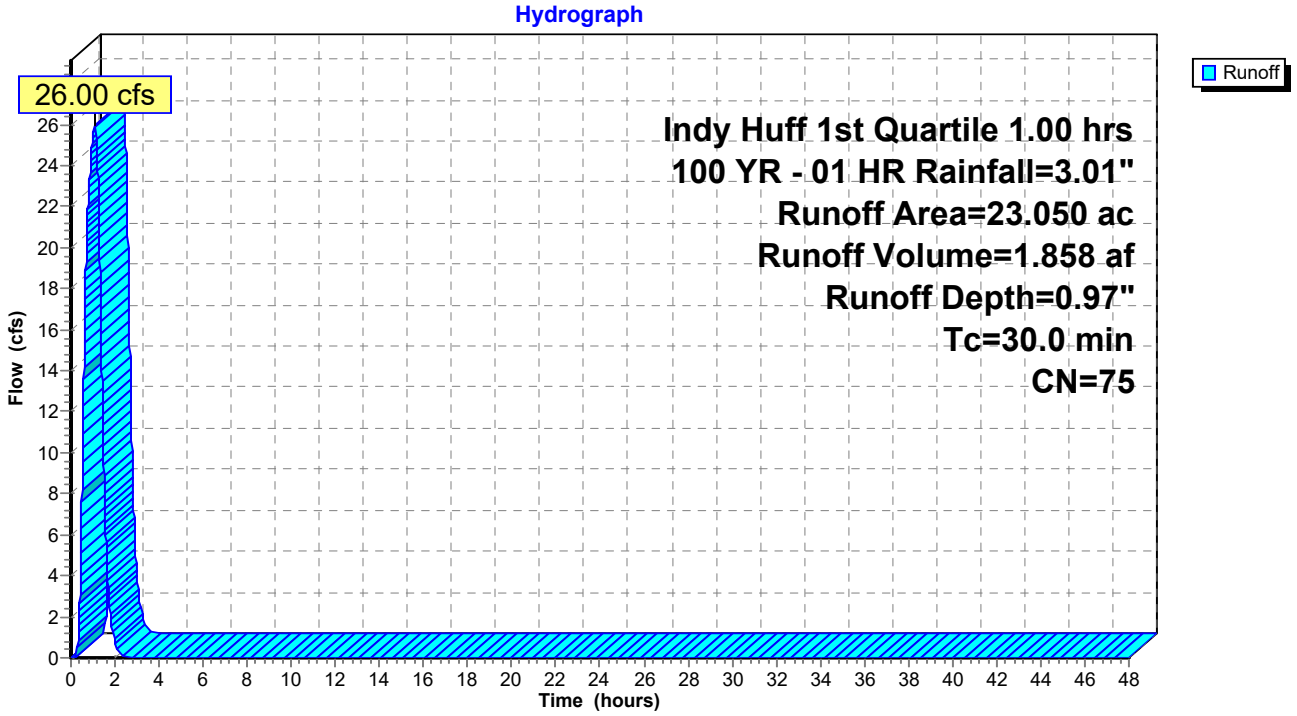
Runoff = 26.00 cfs @ 1.09 hrs, Volume= 1.858 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 100 YR - 01 HR Rainfall=3.01"

	Area (ac)	CN	Description
*	23.050	75	
	23.050		100.00% Pervious Area

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

Subcatchment 2S: On-Site Area 1



Summary for Subcatchment 3S: On-Site Area 2

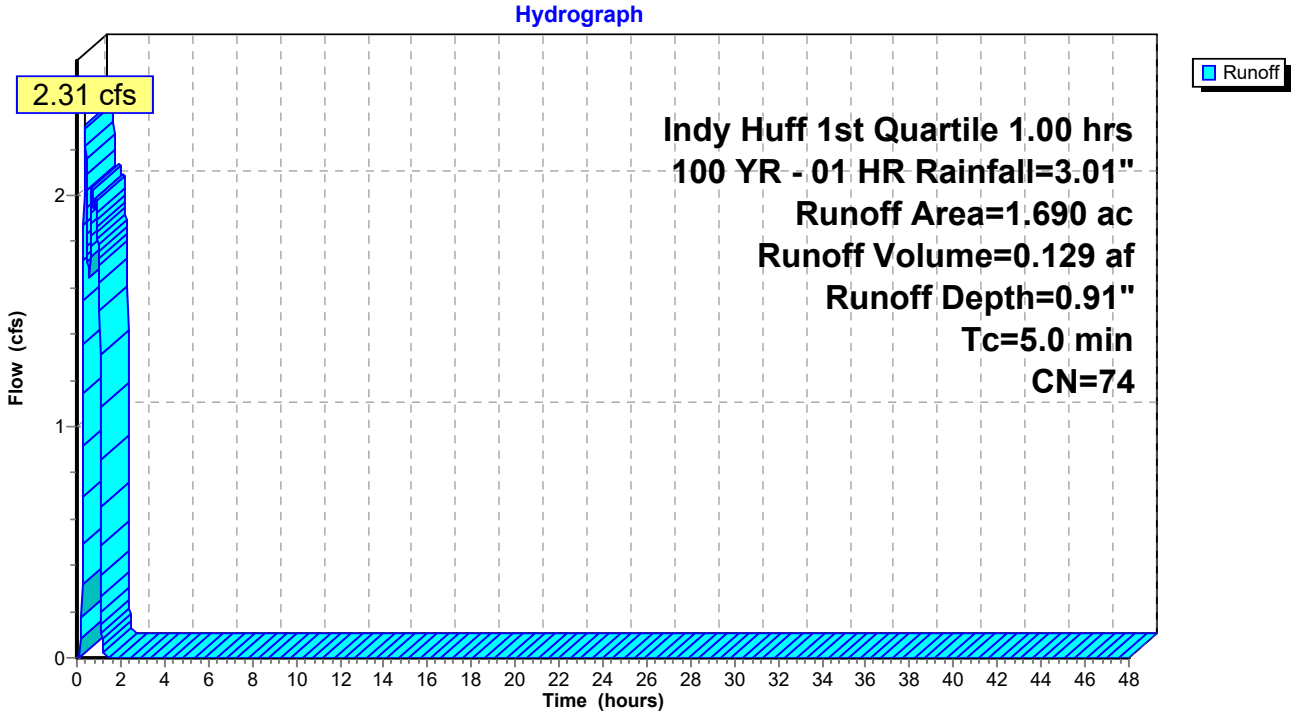
Runoff = 2.31 cfs @ 0.38 hrs, Volume= 0.129 af, Depth= 0.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 100 YR - 01 HR Rainfall=3.01"

	Area (ac)	CN	Description
*	1.690	74	
	1.690		100.00% Pervious Area

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

Subcatchment 3S: On-Site Area 2



Summary for Subcatchment 4S: On-Site Area 3

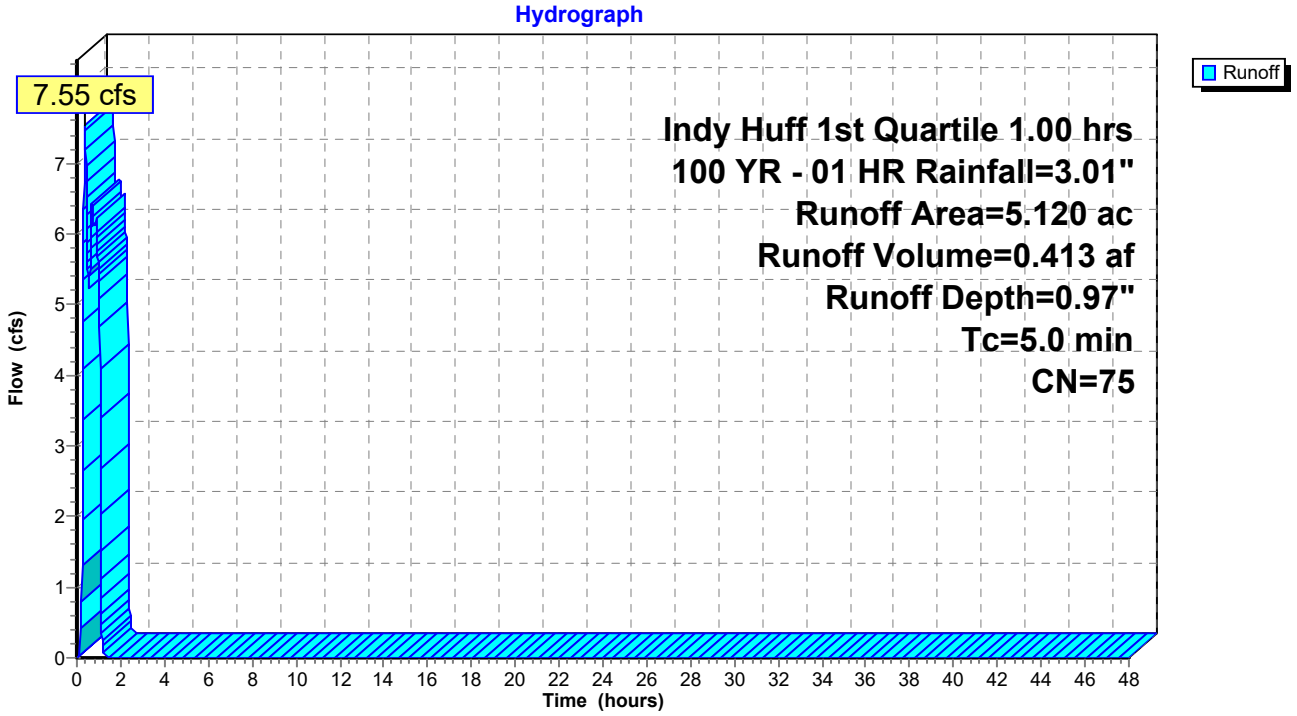
Runoff = 7.55 cfs @ 0.37 hrs, Volume= 0.413 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 100 YR - 01 HR Rainfall=3.01"

	Area (ac)	CN	Description
*	5.120	75	
	5.120		100.00% Pervious Area

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

Subcatchment 4S: On-Site Area 3



Summary for Subcatchment 5S: Off-Site Area 1

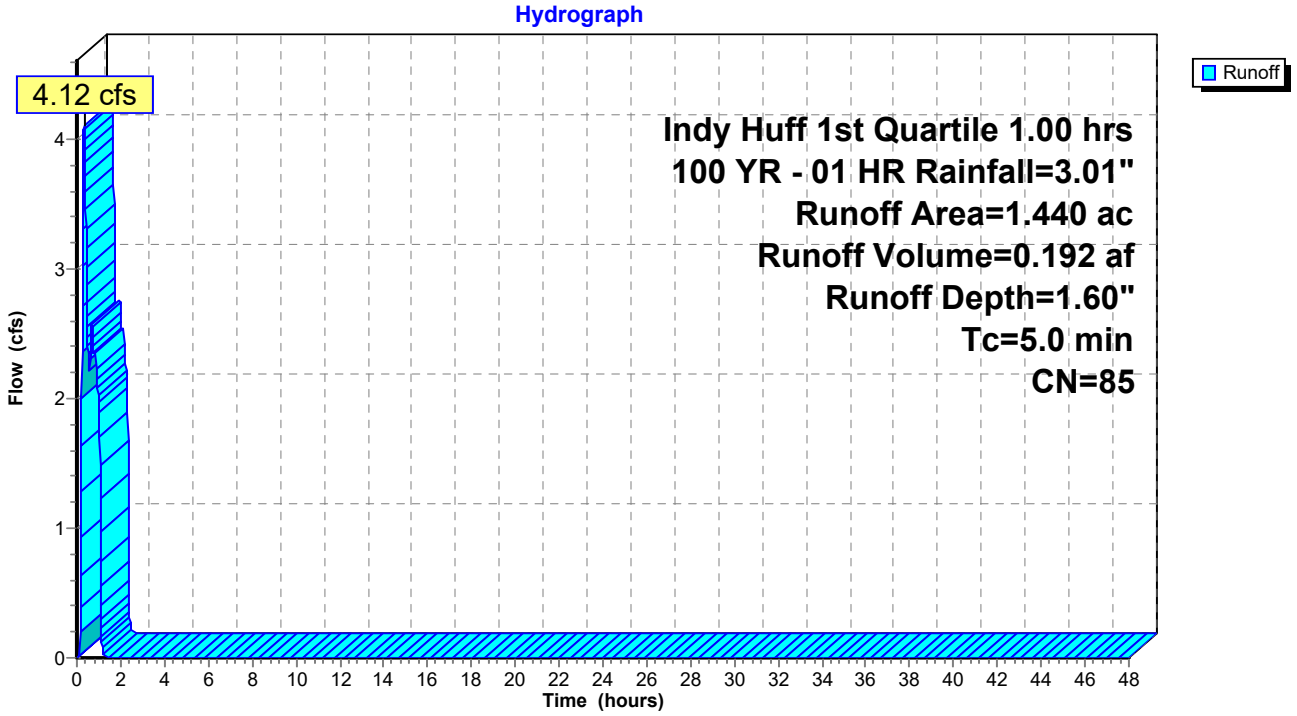
Runoff = 4.12 cfs @ 0.33 hrs, Volume= 0.192 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 100 YR - 01 HR Rainfall=3.01"

	Area (ac)	CN	Description
*	1.440	85	
	1.440		100.00% Pervious Area

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

Subcatchment 5S: Off-Site Area 1



Summary for Subcatchment 6S: Off-Site Area 2

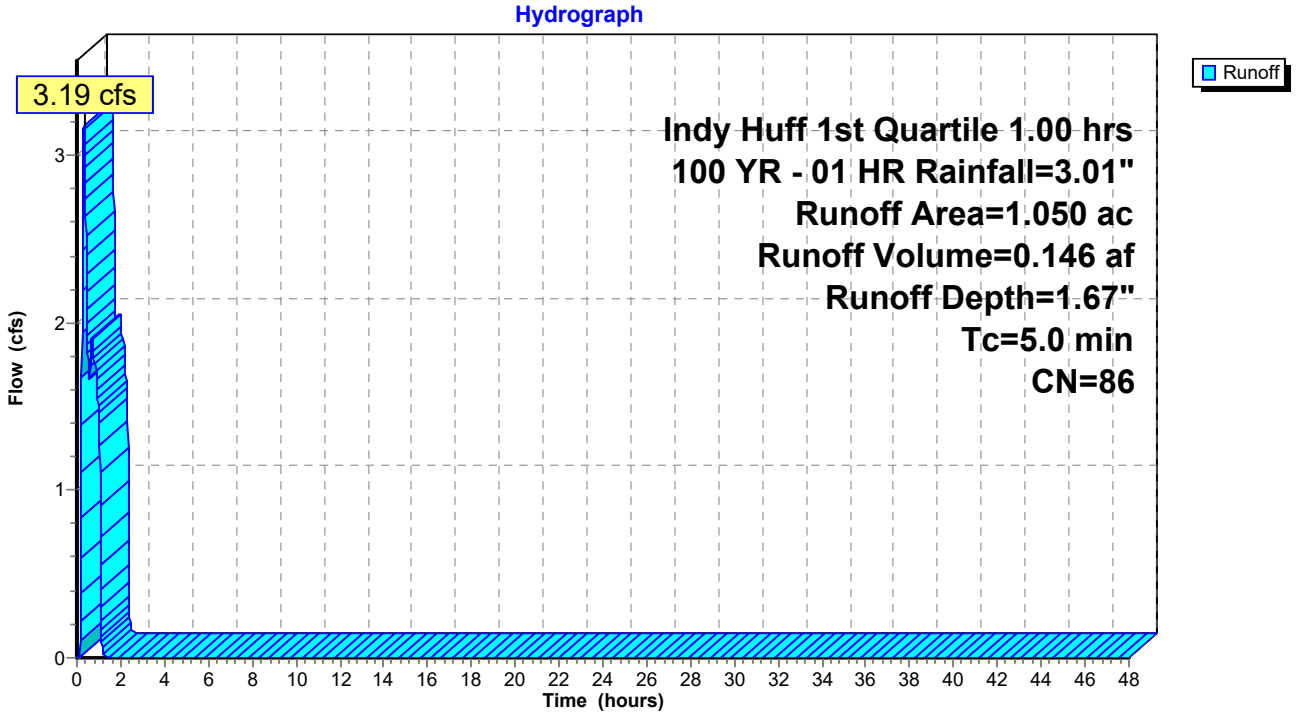
Runoff = 3.19 cfs @ 0.32 hrs, Volume= 0.146 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 100 YR - 01 HR Rainfall=3.01"

	Area (ac)	CN	Description
*	1.050	86	
	1.050		100.00% Pervious Area

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

Subcatchment 6S: Off-Site Area 2



Summary for Subcatchment 7S: Off-Site Area 3

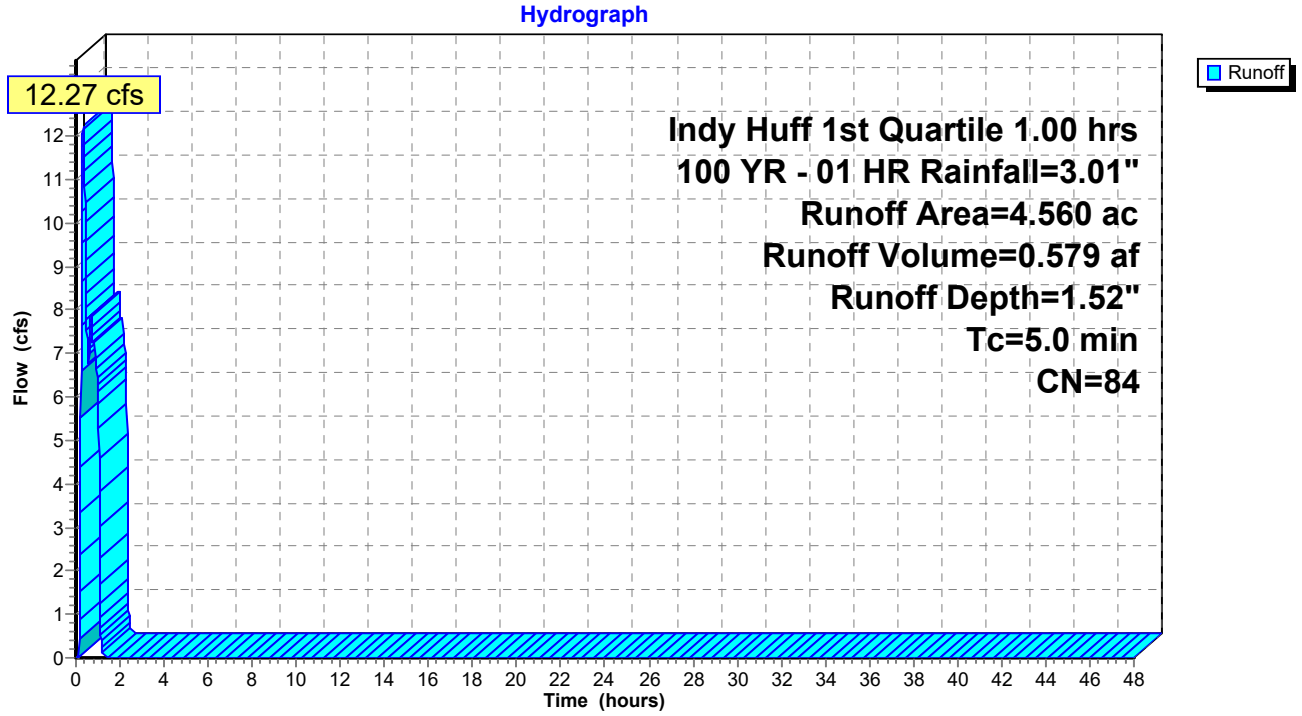
Runoff = 12.27 cfs @ 0.33 hrs, Volume= 0.579 af, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 100 YR - 01 HR Rainfall=3.01"

	Area (ac)	CN	Description
*	4.560	84	
	4.560		100.00% Pervious Area

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

Subcatchment 7S: Off-Site Area 3



Summary for Subcatchment 8S: Off-Site Area 4

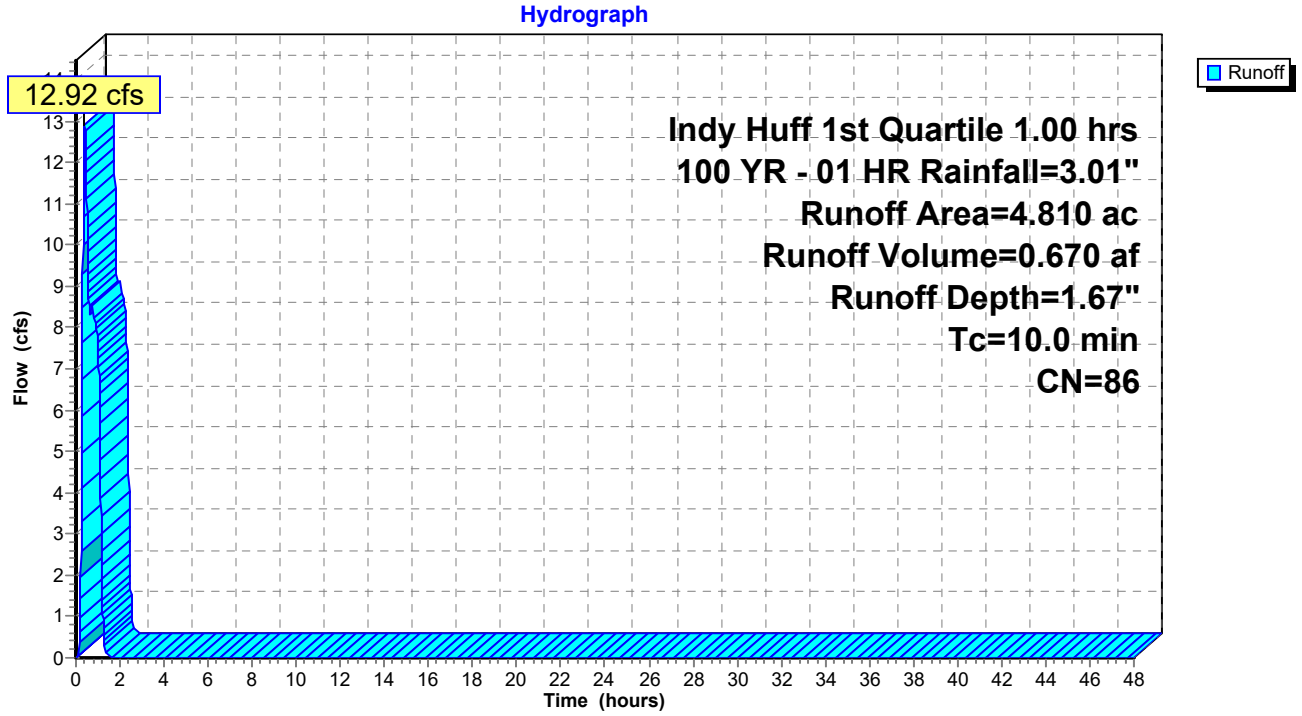
Runoff = 12.92 cfs @ 0.41 hrs, Volume= 0.670 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 100 YR - 01 HR Rainfall=3.01"

	Area (ac)	CN	Description
*	4.810	86	
	4.810		100.00% Pervious Area

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

Subcatchment 8S: Off-Site Area 4



Summary for Subcatchment 9S: Off-Site Area 5

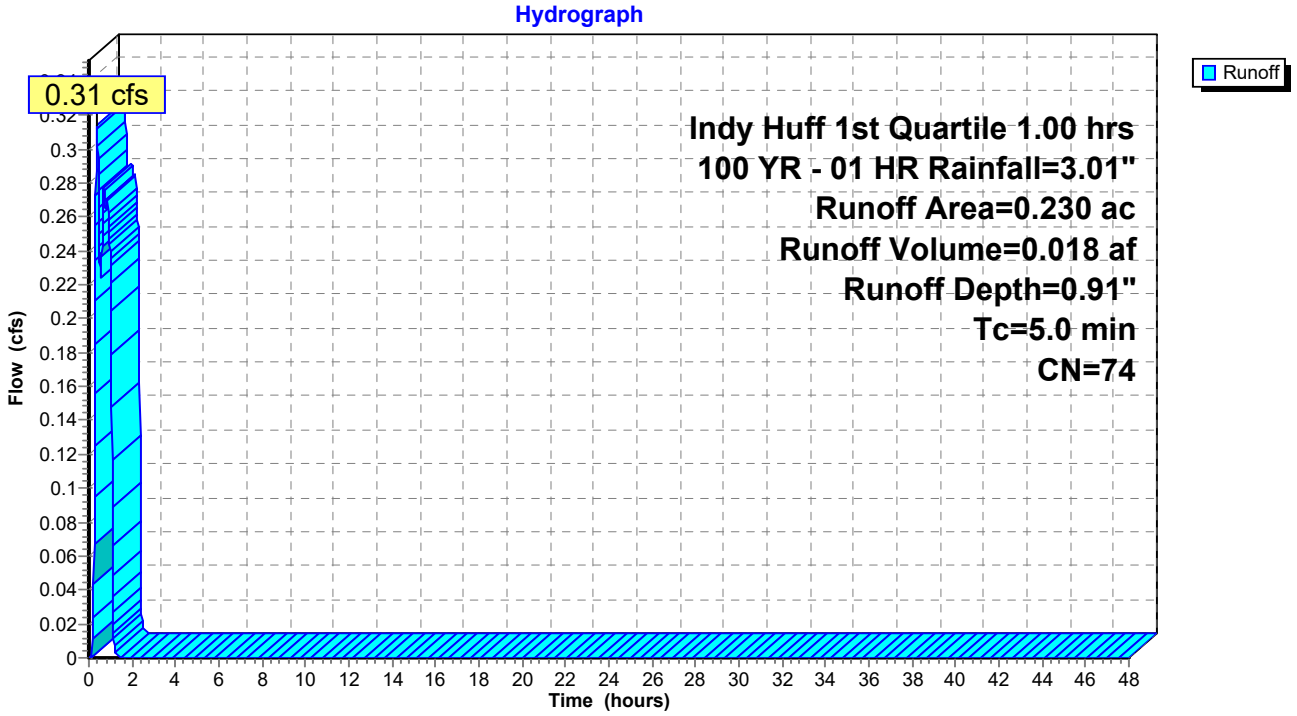
Runoff = 0.31 cfs @ 0.38 hrs, Volume= 0.018 af, Depth= 0.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 100 YR - 01 HR Rainfall=3.01"

	Area (ac)	CN	Description
*	0.230	74	
	0.230		100.00% Pervious Area

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

Subcatchment 9S: Off-Site Area 5



Summary for Subcatchment 10S: Existing detention Pond

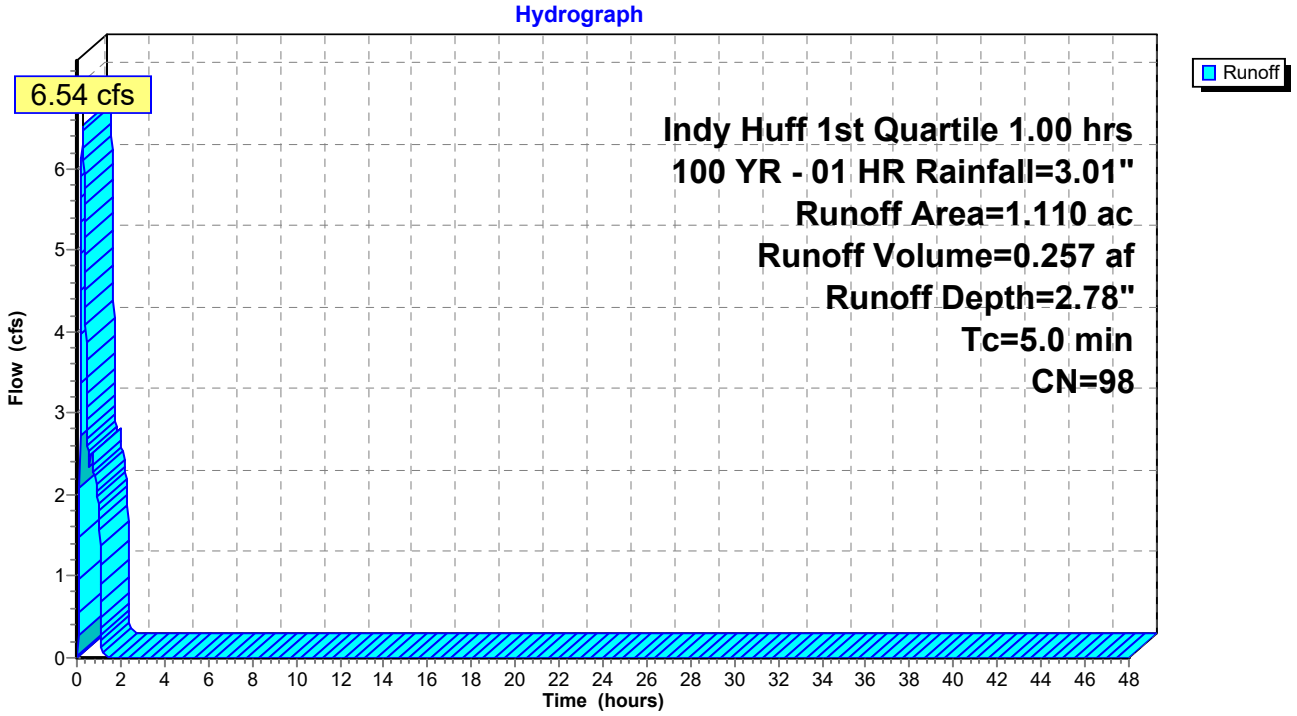
Runoff = 6.54 cfs @ 0.26 hrs, Volume= 0.257 af, Depth= 2.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Indy Huff 1st Quartile 1.00 hrs 100 YR - 01 HR Rainfall=3.01"

	Area (ac)	CN	Description
*	1.110	98	
	1.110		100.00% Impervious Area

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

Subcatchment 10S: Existing detention Pond



Summary for Pond 1P: Existing Wet Pond

Inflow Area = 43.060 ac, 2.58% Impervious, Inflow Depth = 1.19" for 100 YR - 01 HR event
Inflow = 54.05 cfs @ 0.87 hrs, Volume= 4.261 af
Outflow = 50.53 cfs @ 1.03 hrs, Volume= 4.261 af, Atten= 7%, Lag= 9.3 min
Primary = 50.53 cfs @ 1.03 hrs, Volume= 4.261 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 732.90' @ 1.03 hrs Surf.Area= 1.580 ac Storage= 1.054 af

Plug-Flow detention time= 20.7 min calculated for 4.261 af (100% of inflow)
Center-of-Mass det. time= 20.6 min (68.6 - 48.1)

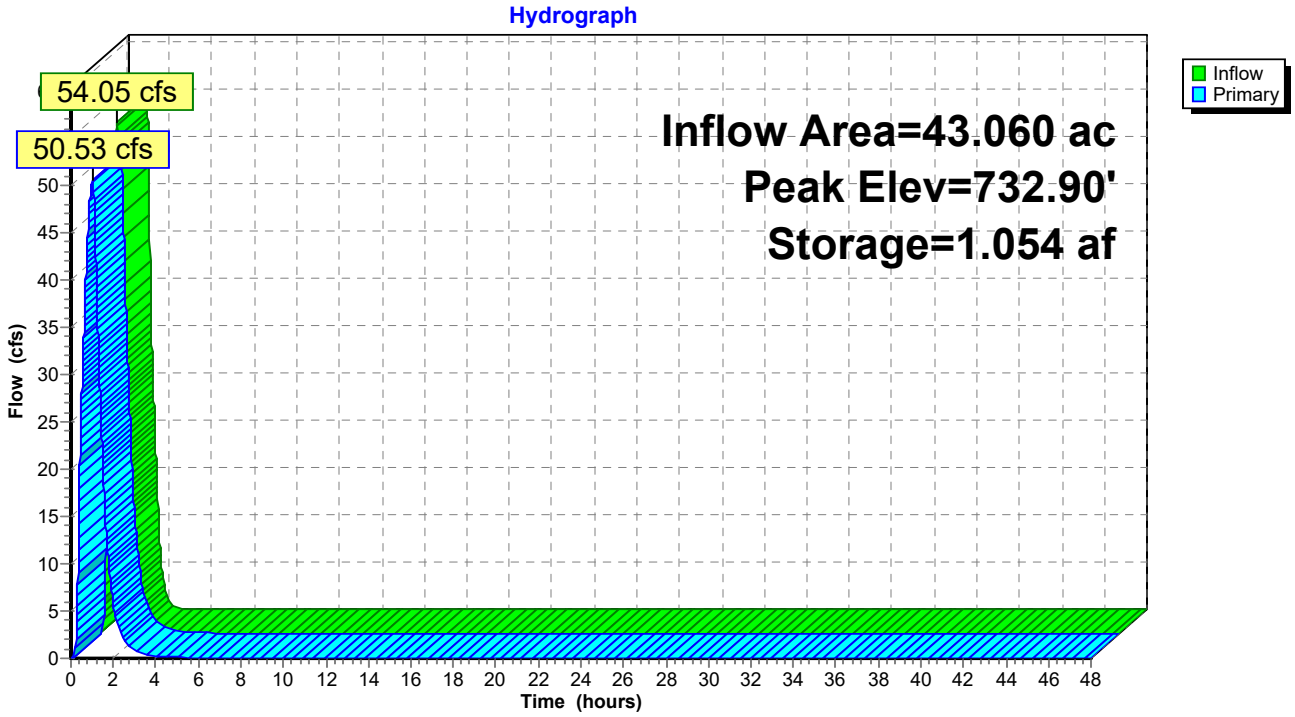
Volume	Invert	Avail.Storage	Storage Description
#1	732.20'	2.896 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
732.20	1.440	0.000	0.000
733.00	1.600	1.216	1.216
734.00	1.760	1.680	2.896

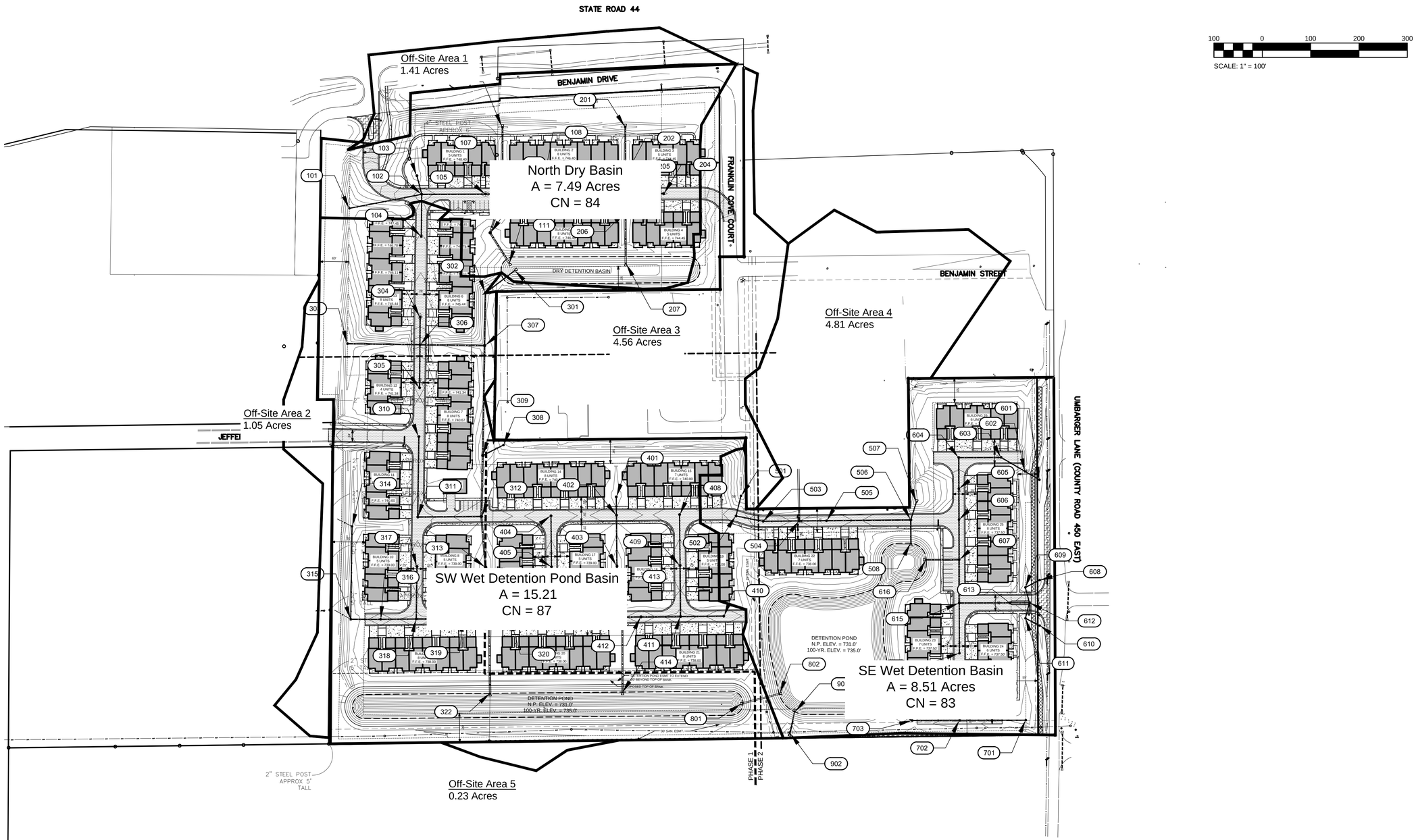
Device	Routing	Invert	Outlet Devices
#1	Primary	732.20'	**30.8' long x 9.9' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	732.20'	**12.0" Round RCP_Round 12"** L= 26.3' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 732.20' / 729.84' S= 0.0897 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=50.52 cfs @ 1.03 hrs HW=732.90' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 48.44 cfs @ 2.25 fps)
└**2=RCP_Round 12"** (Inlet Controls 2.08 cfs @ 3.56 fps)

Pond 1P: Existing Wet Pond



Appendix C
Proposed Drainage Conditions



C-1

TLF, INC.
3901 West 86th Street, Suite 200
Indianapolis, Indiana 46268
Phone: 317-334-1500
Fax: 317-334-1552

Certified By:

REVISIONS

LEVEL	DESCRIPTION	DATE

Project No.: 2020-493
Date: 06/04/2021
Designed By: DBS
Drawn By: DBS
Checked By: BNH

THE LINKS AT FRANKLIN
MULTIPRO, LLC

STATE ROAD 44
FRANKLIN, INDIANA

Title:

PROPOSED CONDITIONS BASIN EXHIBIT

Sheet No.:

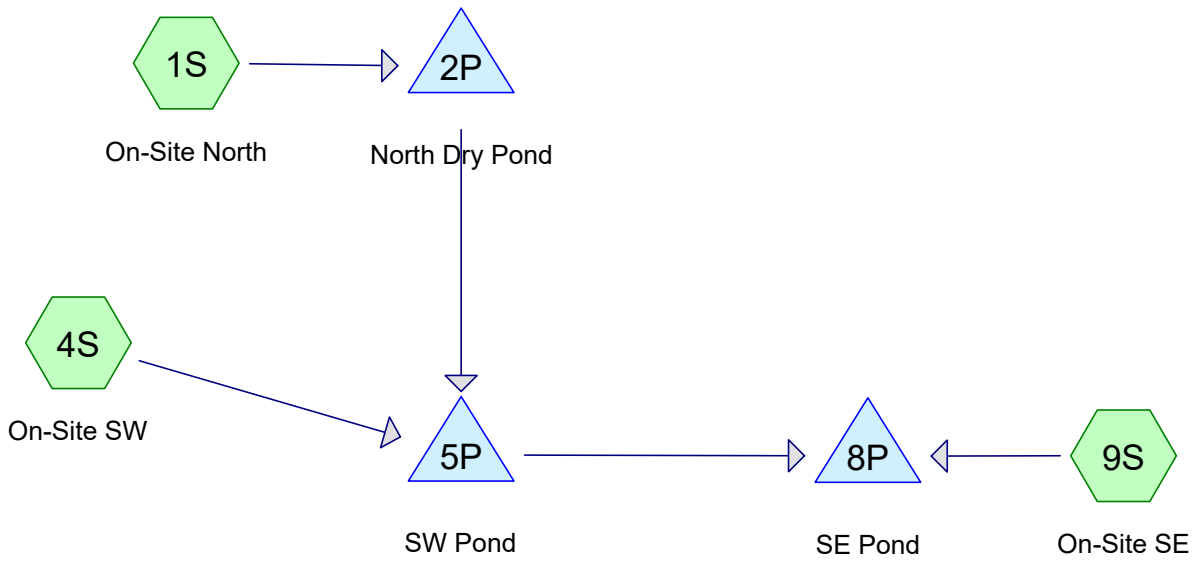
Proposed Conditions

Surface Type	Runoff Coefficien
Roof	**0.9**
Pavement	**0.85**
Grass	**0.3**

*Values listed below are derived from the C&CN Tables in Appendix D

Basin	**Total Area (acres)**	**Comp. C**
100	3.52	0.77
200	3.10	0.82
300	7.55	0.85
400	3.53	0.85
500	1.42	0.68
600	2.64	0.85
700	0.64	0.85

Proposed Condition
Model 1
On-Site Only



C-3

Subcat Reach Pond Link

Routing Diagram for Proposed Conditions HydroCAD model
Prepared by TLF, Inc.

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
7.490	84	(1S)
15.210	87	(4S)
8.510	83	(9S)
31.210	**85**	**TOTAL AREA**

Events for Pond 8P: SE Pond

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
2 YR - 01 HR	4.42	0.41	731.28	0.466
2 YR - 02 HR	4.22	0.77	731.40	0.655
2 YR - 03 HR	4.09	0.97	731.45	0.742
2 YR - 06 HR	3.90	1.70	731.62	1.031
2 YR - 12 HR	3.62	2.38	731.76	1.277
2 YR - 24 HR	4.60	2.87	731.87	1.462
10 YR - 01 HR	9.70	1.64	731.60	1.010
10 YR - 02 HR	9.28	2.59	731.81	1.355
10 YR - 03 HR	8.66	2.98	731.89	1.509
10 YR - 06 HR	7.93	3.88	732.17	2.001
10 YR - 12 HR	7.52	4.09	732.25	2.138
10 YR - 24 HR	7.85	4.41	732.37	2.353
100 YR - 01 HR	**20.47**	3.73	732.12	1.910
100 YR - 02 HR	18.53	4.68	732.48	2.555
100 YR - 03 HR	16.67	5.07	732.65	2.864
100 YR - 06 HR	14.00	5.89	733.05	3.618
100 YR - 12 HR	11.27	5.90	733.06	3.632
100 YR - 24 HR	10.88	**6.11**	**733.17**	**3.842**

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: On-Site North Runoff Area=7.490 ac 0.00% Impervious Runoff Depth=1.43"
Tc=7.4 min CN=84 Runoff=1.31 cfs 0.895 af

Subcatchment4S: On-Site SW Runoff Area=15.210 ac 0.00% Impervious Runoff Depth=1.65"
Tc=10.9 min CN=87 Runoff=2.93 cfs 2.094 af

Subcatchment9S: On-Site SE Runoff Area=8.510 ac 0.00% Impervious Runoff Depth=1.37"
Tc=7.5 min CN=83 Runoff=1.43 cfs 0.969 af

Pond 2P: North Dry Pond Peak Elev=735.93' Storage=357 cf Inflow=1.31 cfs 0.895 af
8.0" Round Culvert n=0.012 L=76.3' S=0.0164 '/' Outflow=1.30 cfs 0.895 af

Pond 5P: SW Pond Peak Elev=732.12' Storage=1.117 af Inflow=4.23 cfs 2.989 af
24.0" Round Culvert n=0.012 L=100.0' S=0.0000 '/' Outflow=3.38 cfs 2.755 af

Pond 8P: SE Pond Peak Elev=731.87' Storage=1.462 af Inflow=4.60 cfs 3.724 af
12.0" Round Culvert n=0.012 L=45.5' S=0.0255 '/' Outflow=2.87 cfs 3.382 af

Total Runoff Area = 31.210 ac Runoff Volume = 3.958 af Average Runoff Depth = 1.52"
100.00% Pervious = 31.210 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: On-Site North

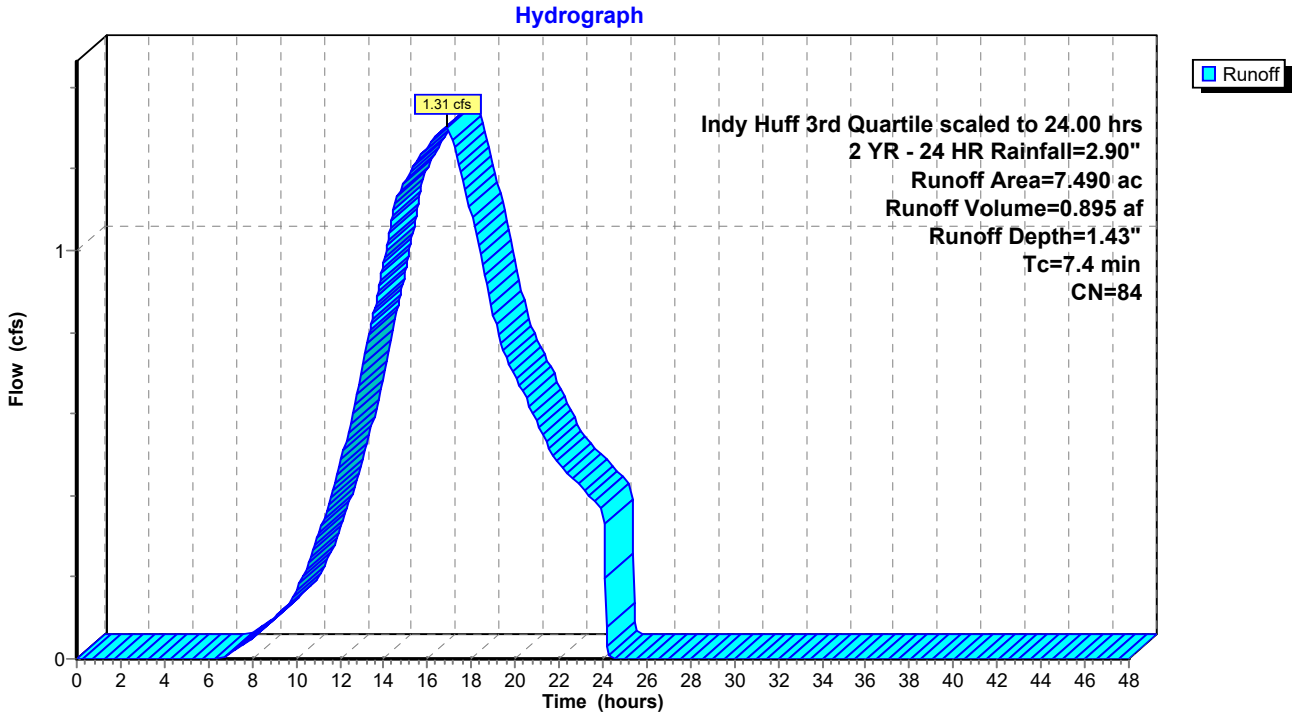
Runoff = 1.31 cfs @ 16.87 hrs, Volume= 0.895 af, Depth= 1.43"
Routed to Pond 2P : North Dry Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 2 YR - 24 HR Rainfall=2.90"

	Area (ac)	CN	Description
*	7.490	84	
	7.490		100.00% Pervious Area

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

Subcatchment 1S: On-Site North



Summary for Subcatchment 4S: On-Site SW

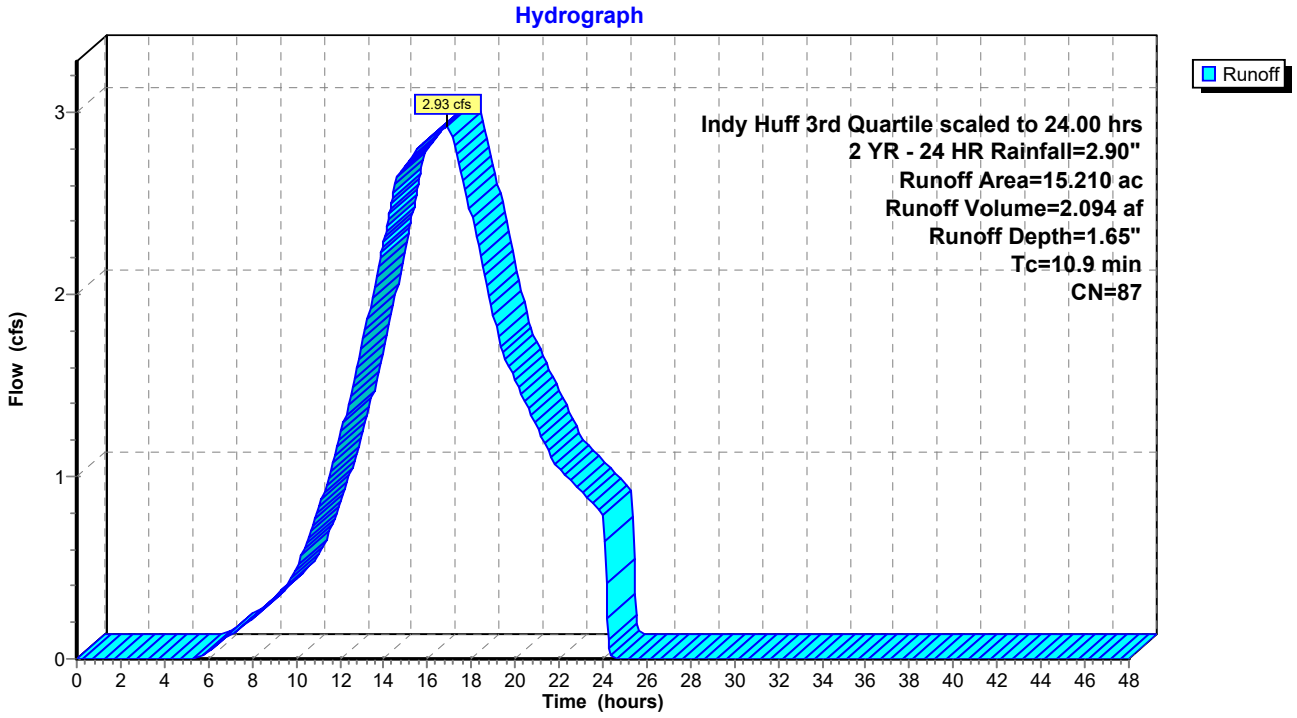
Runoff = 2.93 cfs @ 16.89 hrs, Volume= 2.094 af, Depth= 1.65"
Routed to Pond 5P : SW Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 2 YR - 24 HR Rainfall=2.90"

	Area (ac)	CN	Description
*	15.210	87	
	15.210		100.00% Pervious Area

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

Subcatchment 4S: On-Site SW



Summary for Subcatchment 9S: On-Site SE

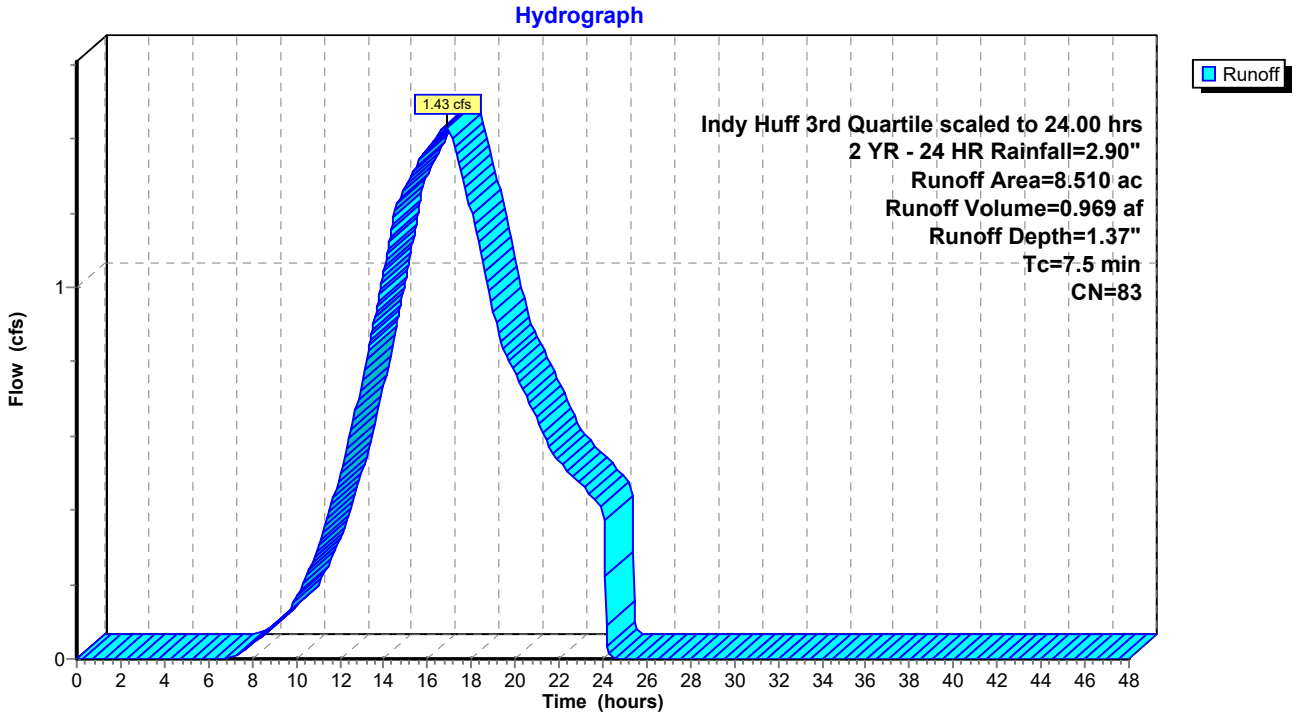
Runoff = 1.43 cfs @ 16.88 hrs, Volume= 0.969 af, Depth= 1.37"
Routed to Pond 8P : SE Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 2 YR - 24 HR Rainfall=2.90"

	Area (ac)	CN	Description
*	8.510	83	
	8.510		100.00% Pervious Area

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

Subcatchment 9S: On-Site SE



Summary for Pond 2P: North Dry Pond

Inflow Area = 7.490 ac, 0.00% Impervious, Inflow Depth = 1.43" for 2 YR - 24 HR event
Inflow = 1.31 cfs @ 16.87 hrs, Volume= 0.895 af
Outflow = 1.30 cfs @ 16.96 hrs, Volume= 0.895 af, Atten= 1%, Lag= 5.5 min
Primary = 1.30 cfs @ 16.96 hrs, Volume= 0.895 af
Routed to Pond 5P : SW Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 735.93' @ 16.96 hrs Surf.Area= 765 sf Storage= 357 cf

Plug-Flow detention time= 3.2 min calculated for 0.894 af (100% of inflow)
Center-of-Mass det. time= 3.2 min (1,010.2 - 1,007.0)

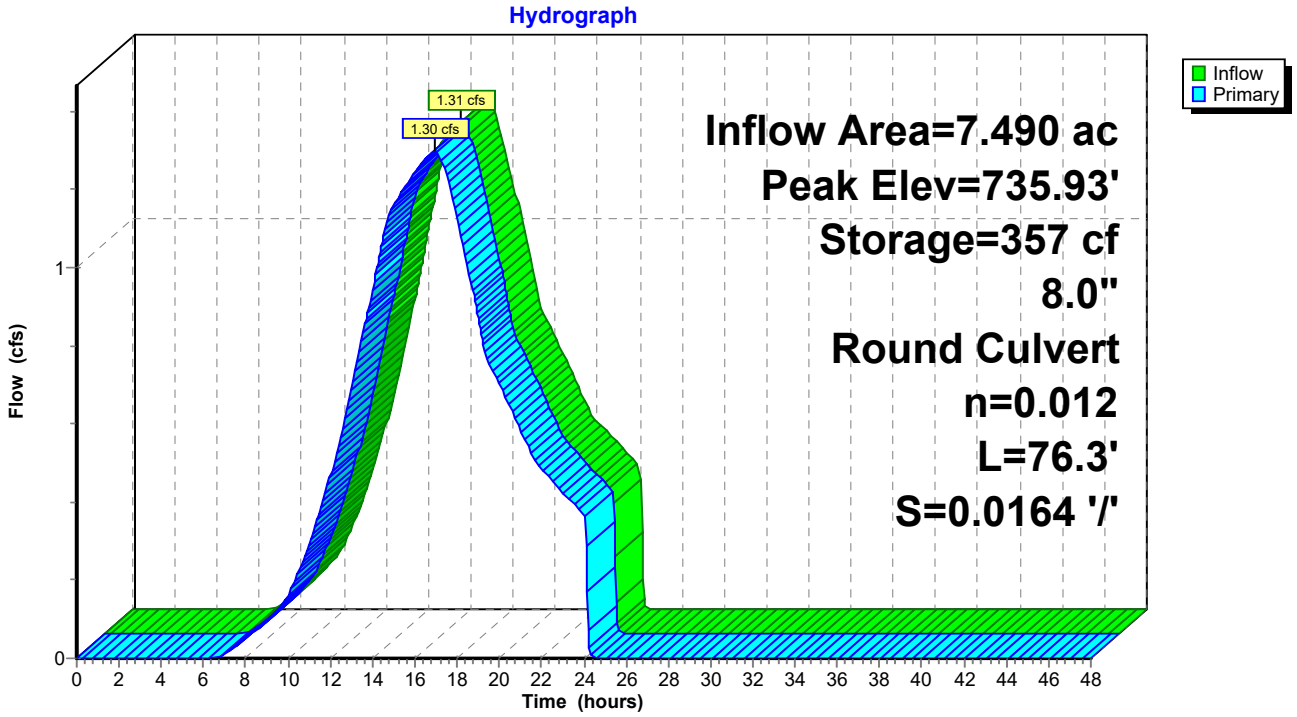
Volume	Invert	Avail.Storage	Storage Description
#1	735.00'	67,960 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
735.00	0	0	0
736.00	821	411	411
737.00	3,224	2,023	2,433
738.00	7,200	5,212	7,645
739.00	11,883	9,542	17,187
740.00	15,188	13,536	30,722
741.00	18,594	16,891	47,613
742.00	22,100	20,347	67,960

Device	Routing	Invert	Outlet Devices
#1	Primary	735.00'	**8.0" Round Culvert** L= 76.3' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 735.00' / 733.75' S= 0.0164 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.35 sf

Primary OutFlow Max=1.30 cfs @ 16.96 hrs HW=735.93' TW=732.06' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.30 cfs @ 3.73 fps)

Pond 2P: North Dry Pond



Summary for Pond 5P: SW Pond

Inflow Area = 22.700 ac, 0.00% Impervious, Inflow Depth = 1.58" for 2 YR - 24 HR event
Inflow = 4.23 cfs @ 16.90 hrs, Volume= 2.989 af
Outflow = 3.38 cfs @ 18.23 hrs, Volume= 2.755 af, Atten= 20%, Lag= 79.8 min
Primary = 3.38 cfs @ 18.23 hrs, Volume= 2.755 af
Routed to Pond 8P : SE Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 732.12' @ 18.23 hrs Surf.Area= 1.089 ac Storage= 1.117 af

Plug-Flow detention time= 340.3 min calculated for 2.755 af (92% of inflow)
Center-of-Mass det. time= 307.6 min (1,304.1 - 996.5)

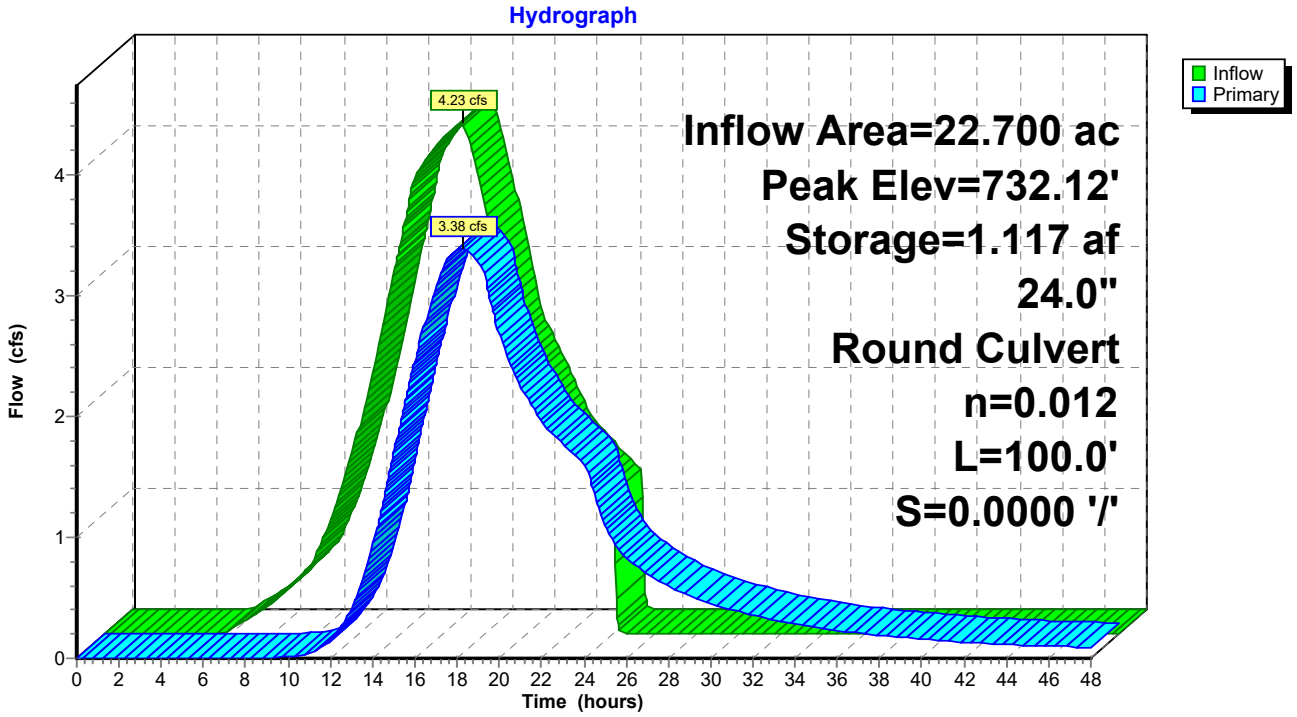
Volume	Invert	Avail.Storage	Storage Description
#1	731.00'	4.920 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
731.00	0.910	0.000	0.000
732.00	1.070	0.990	0.990
733.00	1.230	1.150	2.140
734.00	1.390	1.310	3.450
735.00	1.550	1.470	4.920

Device	Routing	Invert	Outlet Devices
#1	Primary	731.00'	**24.0" Round Culvert** L= 100.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 731.00' / 731.00' S= 0.0000 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=3.38 cfs @ 18.23 hrs HW=732.12' TW=731.72' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 3.38 cfs @ 2.71 fps)

Pond 5P: SW Pond



Summary for Pond 8P: SE Pond

Inflow Area = 31.210 ac, 0.00% Impervious, Inflow Depth > 1.43" for 2 YR - 24 HR event
Inflow = 4.60 cfs @ 17.66 hrs, Volume= 3.724 af
Outflow = 2.87 cfs @ 21.06 hrs, Volume= 3.382 af, Atten= 38%, Lag= 203.8 min
Primary = 2.87 cfs @ 21.06 hrs, Volume= 3.382 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 731.87' @ 21.06 hrs Surf.Area= 1.743 ac Storage= 1.462 af

Plug-Flow detention time= 413.4 min calculated for 3.379 af (91% of inflow)
Center-of-Mass det. time= 321.5 min (1,549.9 - 1,228.4)

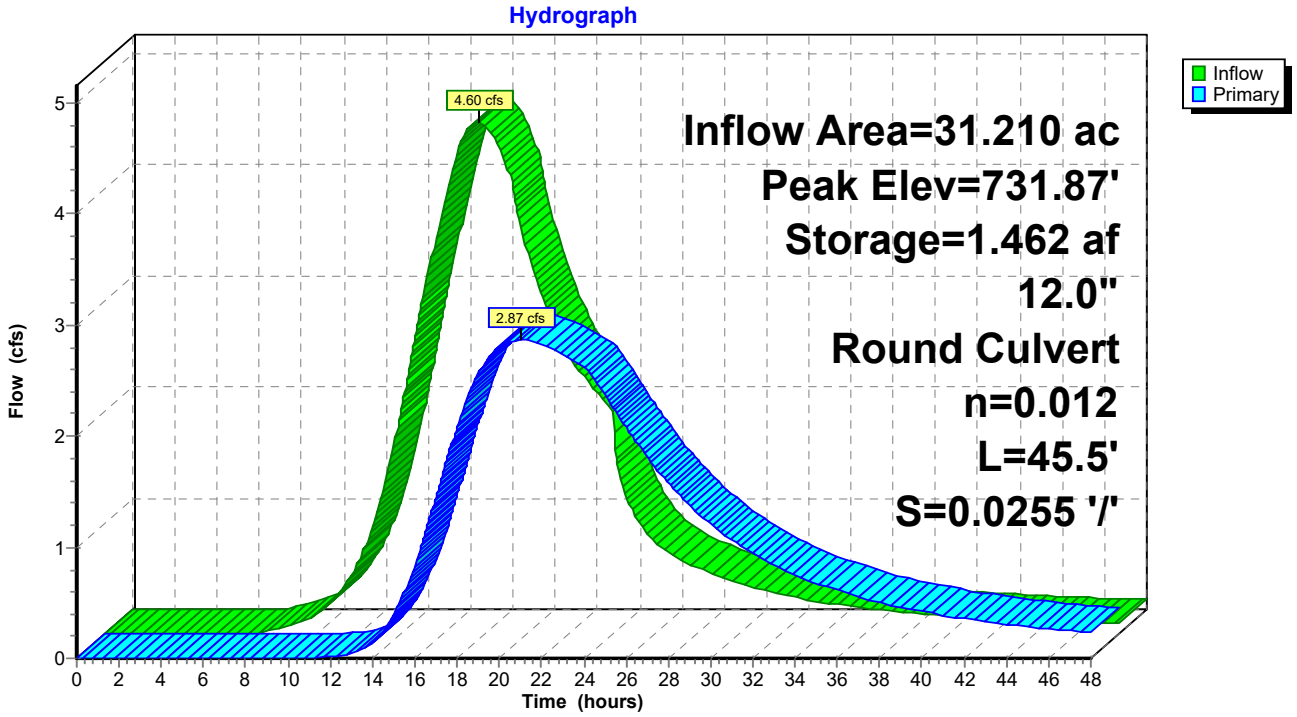
Volume	Invert	Avail.Storage	Storage Description
#1	731.00'	7.560 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
731.00	1.630	0.000	0.000
732.00	1.760	1.695	1.695
733.00	1.890	1.825	3.520
734.00	2.020	1.955	5.475
735.00	2.150	2.085	7.560

Device	Routing	Invert	Outlet Devices
#1	Primary	731.00'	**12.0" Round Culvert** L= 45.5' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 731.00' / 729.84' S= 0.0255 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=2.87 cfs @ 21.06 hrs HW=731.87' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 2.87 cfs @ 3.96 fps)

Pond 8P: SE Pond



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: On-Site North Runoff Area=7.490 ac 0.00% Impervious Runoff Depth=2.44"
Tc=7.4 min CN=84 Runoff=2.10 cfs 1.524 af

Subcatchment4S: On-Site SW Runoff Area=15.210 ac 0.00% Impervious Runoff Depth=2.71"
Tc=10.9 min CN=87 Runoff=4.54 cfs 3.435 af

Subcatchment9S: On-Site SE Runoff Area=8.510 ac 0.00% Impervious Runoff Depth=2.36"
Tc=7.5 min CN=83 Runoff=2.33 cfs 1.671 af

Pond 2P: North Dry Pond Peak Elev=736.93' Storage=2,214 cf Inflow=2.10 cfs 1.524 af
8.0" Round Culvert n=0.012 L=76.3' S=0.0164 '/' Outflow=1.99 cfs 1.524 af

Pond 5P: SW Pond Peak Elev=732.51' Storage=1.554 af Inflow=6.51 cfs 4.959 af
24.0" Round Culvert n=0.012 L=100.0' S=0.0000 '/' Outflow=5.64 cfs 4.688 af

Pond 8P: SE Pond Peak Elev=732.37' Storage=2.353 af Inflow=7.85 cfs 6.359 af
12.0" Round Culvert n=0.012 L=45.5' S=0.0255 '/' Outflow=4.41 cfs 5.957 af

Total Runoff Area = 31.210 ac Runoff Volume = 6.630 af Average Runoff Depth = 2.55"
100.00% Pervious = 31.210 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: On-Site North

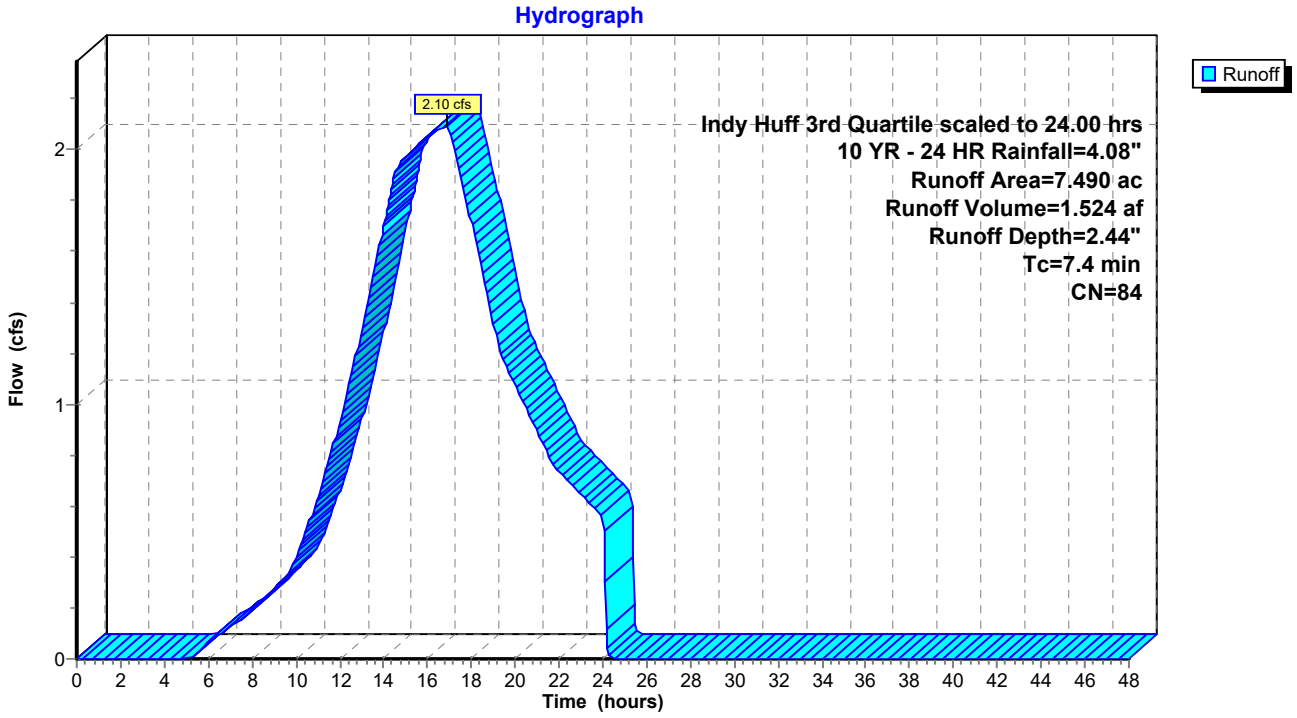
Runoff = 2.10 cfs @ 16.84 hrs, Volume= 1.524 af, Depth= 2.44"
Routed to Pond 2P : North Dry Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 10 YR - 24 HR Rainfall=4.08"

	Area (ac)	CN	Description
*	7.490	84	
	7.490		100.00% Pervious Area

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

Subcatchment 1S: On-Site North



Summary for Subcatchment 4S: On-Site SW

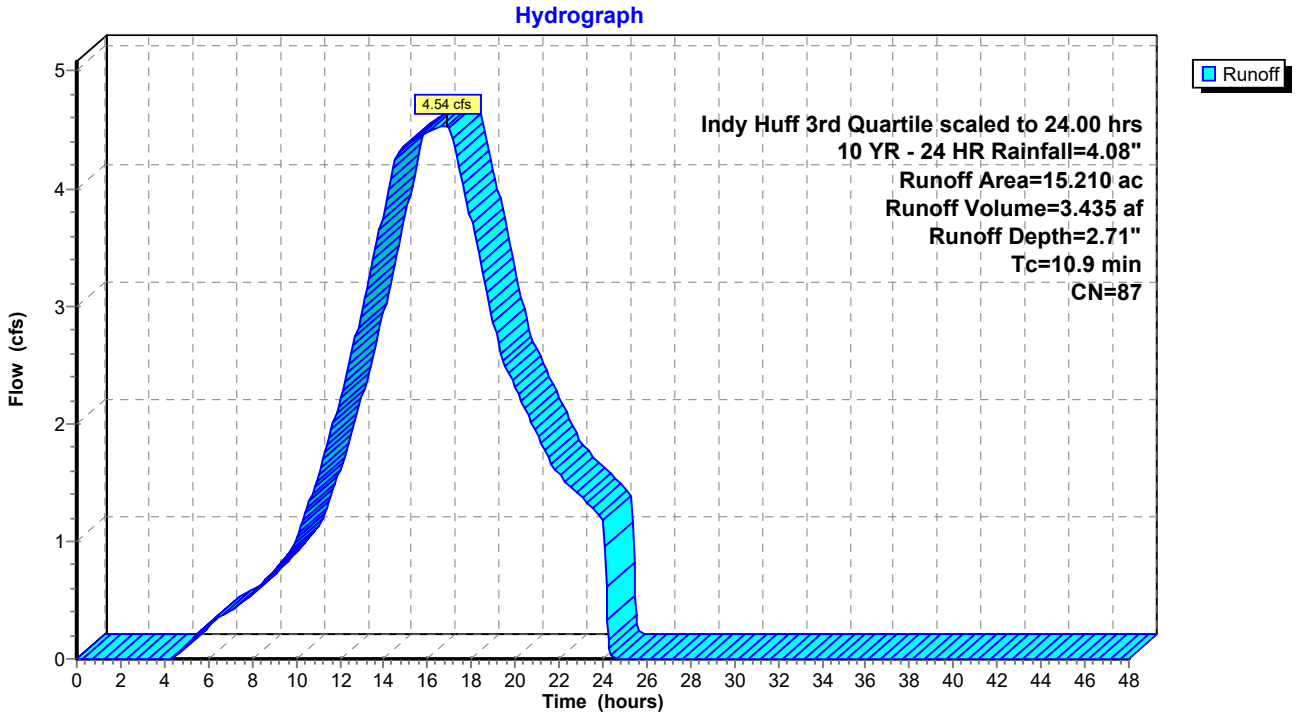
Runoff = 4.54 cfs @ 16.85 hrs, Volume= 3.435 af, Depth= 2.71"
Routed to Pond 5P : SW Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 10 YR - 24 HR Rainfall=4.08"

	Area (ac)	CN	Description
*	15.210	87	
	15.210		100.00% Pervious Area

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

Subcatchment 4S: On-Site SW



Summary for Subcatchment 9S: On-Site SE

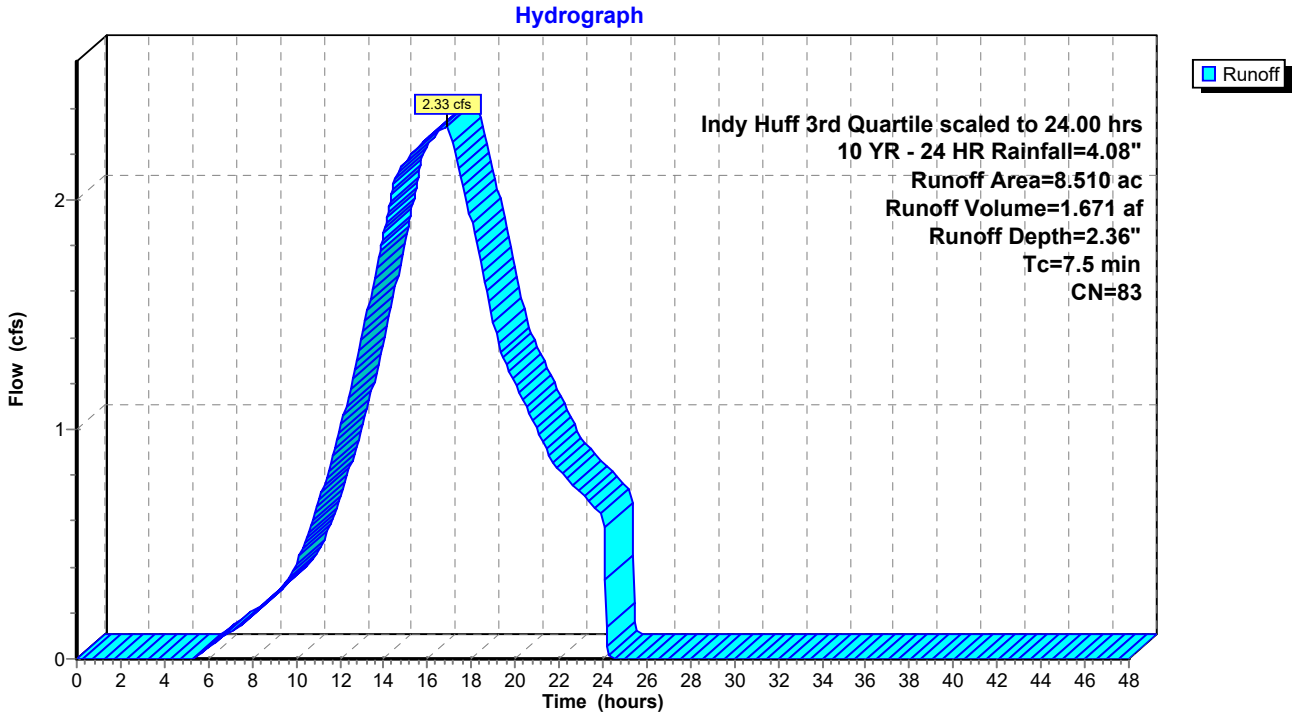
Runoff = 2.33 cfs @ 16.85 hrs, Volume= 1.671 af, Depth= 2.36"
Routed to Pond 8P : SE Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 10 YR - 24 HR Rainfall=4.08"

	Area (ac)	CN	Description
*	8.510	83	
	8.510		100.00% Pervious Area

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

Subcatchment 9S: On-Site SE



Summary for Pond 2P: North Dry Pond

Inflow Area = 7.490 ac, 0.00% Impervious, Inflow Depth = 2.44" for 10 YR - 24 HR event
Inflow = 2.10 cfs @ 16.84 hrs, Volume= 1.524 af
Outflow = 1.99 cfs @ 17.25 hrs, Volume= 1.524 af, Atten= 5%, Lag= 24.6 min
Primary = 1.99 cfs @ 17.25 hrs, Volume= 1.524 af
Routed to Pond 5P : SW Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 736.93' @ 17.25 hrs Surf.Area= 3,056 sf Storage= 2,214 cf

Plug-Flow detention time= 8.8 min calculated for 1.522 af (100% of inflow)
Center-of-Mass det. time= 8.8 min (988.6 - 979.8)

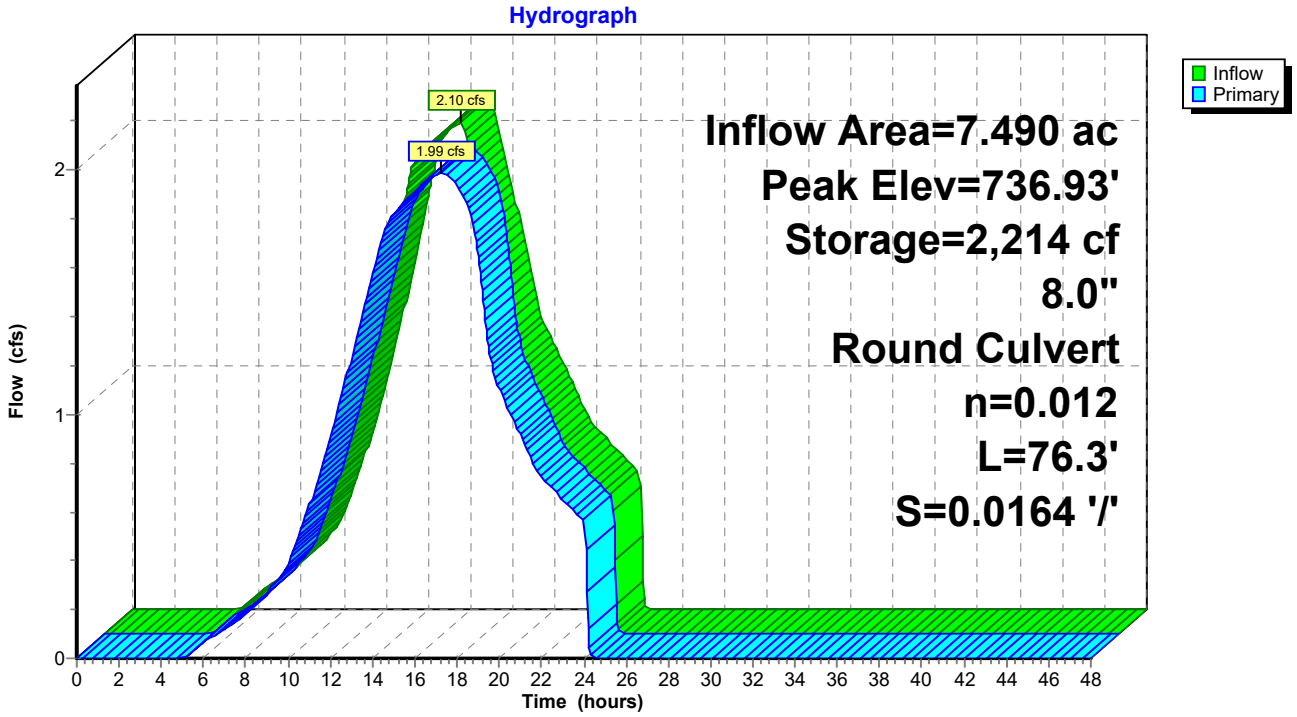
Volume	Invert	Avail.Storage	Storage Description
#1	735.00'	67,960 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
735.00	0	0	0
736.00	821	411	411
737.00	3,224	2,023	2,433
738.00	7,200	5,212	7,645
739.00	11,883	9,542	17,187
740.00	15,188	13,536	30,722
741.00	18,594	16,891	47,613
742.00	22,100	20,347	67,960

Device	Routing	Invert	Outlet Devices
#1	Primary	735.00'	**8.0" Round Culvert** L= 76.3' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 735.00' / 733.75' S= 0.0164 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.35 sf

Primary OutFlow Max=1.99 cfs @ 17.25 hrs HW=736.93' TW=732.44' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 1.99 cfs @ 5.69 fps)

Pond 2P: North Dry Pond



Summary for Pond 5P: SW Pond

Inflow Area = 22.700 ac, 0.00% Impervious, Inflow Depth = 2.62" for 10 YR - 24 HR event
Inflow = 6.51 cfs @ 16.88 hrs, Volume= 4.959 af
Outflow = 5.64 cfs @ 17.26 hrs, Volume= 4.688 af, Atten= 13%, Lag= 22.6 min
Primary = 5.64 cfs @ 17.26 hrs, Volume= 4.688 af
Routed to Pond 8P : SE Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 732.51' @ 19.16 hrs Surf.Area= 1.151 ac Storage= 1.554 af

Plug-Flow detention time= 312.2 min calculated for 4.684 af (94% of inflow)
Center-of-Mass det. time= 289.0 min (1,261.4 - 972.4)

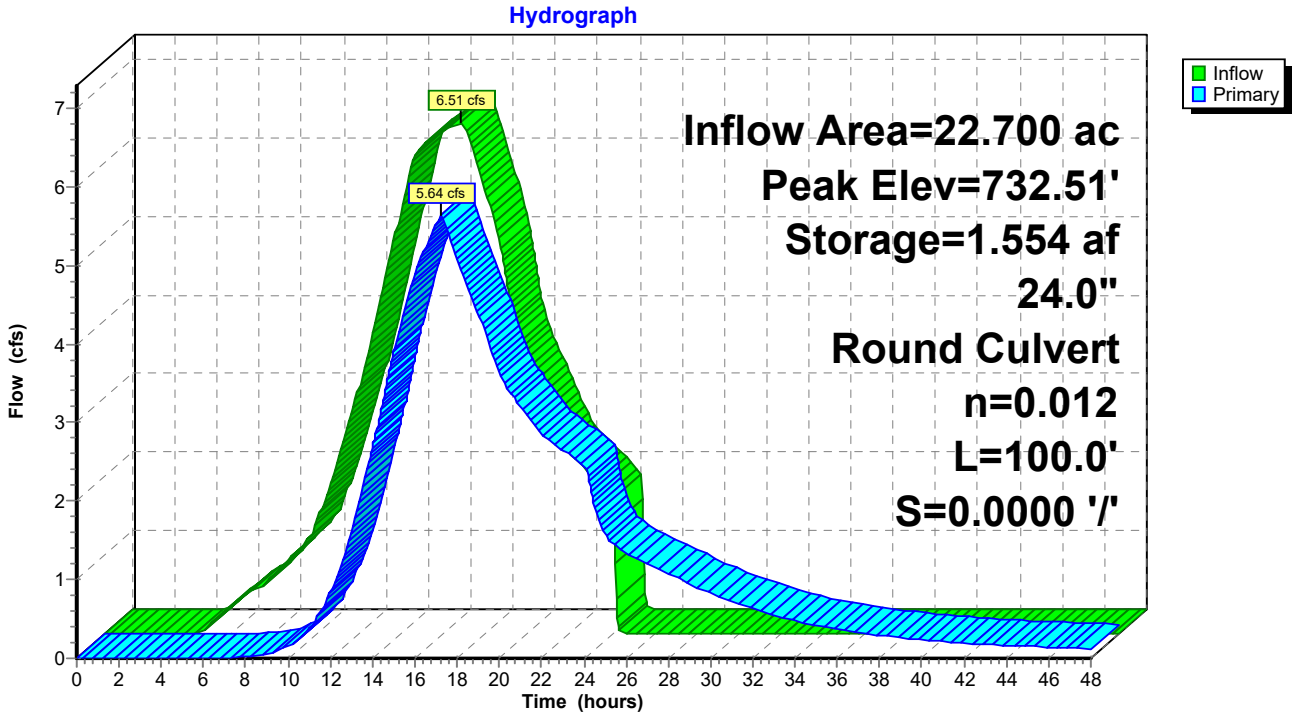
Volume	Invert	Avail.Storage	Storage Description
#1	731.00'	4.920 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
731.00	0.910	0.000	0.000
732.00	1.070	0.990	0.990
733.00	1.230	1.150	2.140
734.00	1.390	1.310	3.450
735.00	1.550	1.470	4.920

Device	Routing	Invert	Outlet Devices
#1	Primary	731.00'	**24.0" Round Culvert** L= 100.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 731.00' / 731.00' S= 0.0000 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=5.59 cfs @ 17.26 hrs HW=732.44' TW=732.09' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 5.59 cfs @ 3.22 fps)

Pond 5P: SW Pond



Summary for Pond 8P: SE Pond

Inflow Area = 31.210 ac, 0.00% Impervious, Inflow Depth > 2.45" for 10 YR - 24 HR event
Inflow = 7.85 cfs @ 17.25 hrs, Volume= 6.359 af
Outflow = 4.41 cfs @ 20.65 hrs, Volume= 5.957 af, Atten= 44%, Lag= 204.1 min
Primary = 4.41 cfs @ 20.65 hrs, Volume= 5.957 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 732.37' @ 20.65 hrs Surf.Area= 1.808 ac Storage= 2.353 af

Plug-Flow detention time= 386.4 min calculated for 5.951 af (94% of inflow)
Center-of-Mass det. time= 316.1 min (1,505.0 - 1,188.9)

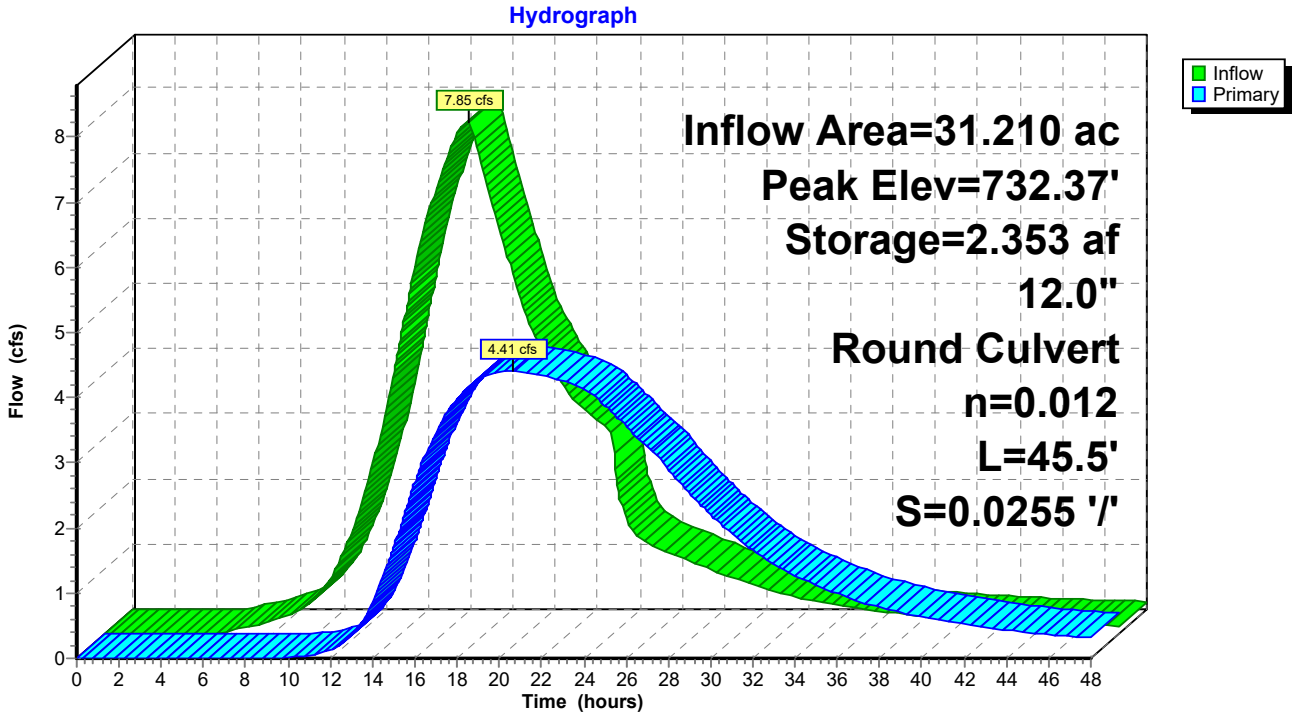
Volume	Invert	Avail.Storage	Storage Description
#1	731.00'	7.560 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
731.00	1.630	0.000	0.000
732.00	1.760	1.695	1.695
733.00	1.890	1.825	3.520
734.00	2.020	1.955	5.475
735.00	2.150	2.085	7.560

Device	Routing	Invert	Outlet Devices
#1	Primary	731.00'	**12.0" Round Culvert** L= 45.5' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 731.00' / 729.84' S= 0.0255 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=4.41 cfs @ 20.65 hrs HW=732.37' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 4.41 cfs @ 5.61 fps)

Pond 8P: SE Pond



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: On-Site North Runoff Area=7.490 ac 0.00% Impervious Runoff Depth=4.08"
Tc=7.4 min CN=84 Runoff=3.30 cfs 2.549 af

Subcatchment4S: On-Site SW Runoff Area=15.210 ac 0.00% Impervious Runoff Depth=4.40"
Tc=10.9 min CN=87 Runoff=6.98 cfs 5.580 af

Subcatchment9S: On-Site SE Runoff Area=8.510 ac 0.00% Impervious Runoff Depth=3.98"
Tc=7.5 min CN=83 Runoff=3.70 cfs 2.823 af

Pond 2P: North Dry Pond Peak Elev=738.71' Storage=13,958 cf Inflow=3.30 cfs 2.549 af
8.0" Round Culvert n=0.012 L=76.3' S=0.0164 '/' Outflow=2.60 cfs 2.549 af

Pond 5P: SW Pond Peak Elev=733.26' Storage=2.468 af Inflow=9.52 cfs 8.129 af
24.0" Round Culvert n=0.012 L=100.0' S=0.0000 '/' Outflow=7.27 cfs 7.784 af

Pond 8P: SE Pond Peak Elev=733.17' Storage=3.842 af Inflow=10.88 cfs 10.606 af
12.0" Round Culvert n=0.012 L=45.5' S=0.0255 '/' Outflow=6.11 cfs 10.080 af

Total Runoff Area = 31.210 ac Runoff Volume = 10.952 af Average Runoff Depth = 4.21"
100.00% Pervious = 31.210 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: On-Site North

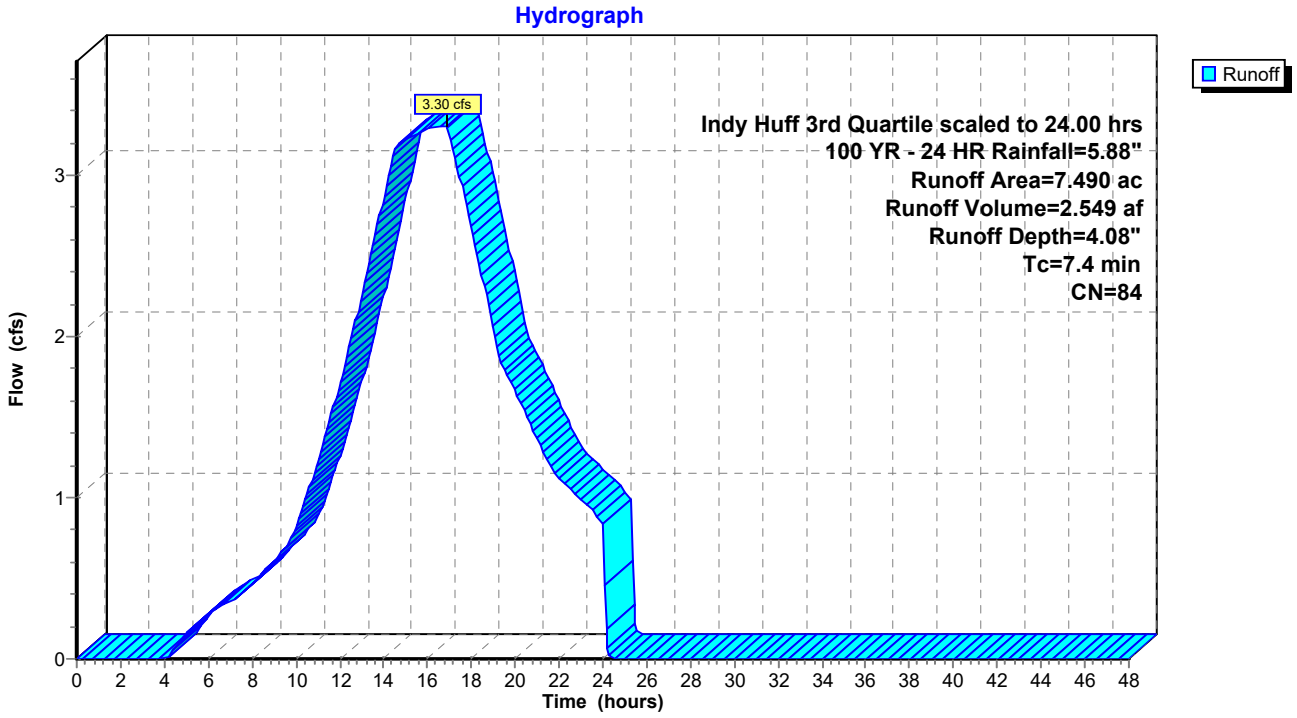
Runoff = 3.30 cfs @ 16.85 hrs, Volume= 2.549 af, Depth= 4.08"
Routed to Pond 2P : North Dry Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 100 YR - 24 HR Rainfall=5.88"

	Area (ac)	CN	Description
*	7.490	84	
	7.490		100.00% Pervious Area

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

Subcatchment 1S: On-Site North



Summary for Subcatchment 4S: On-Site SW

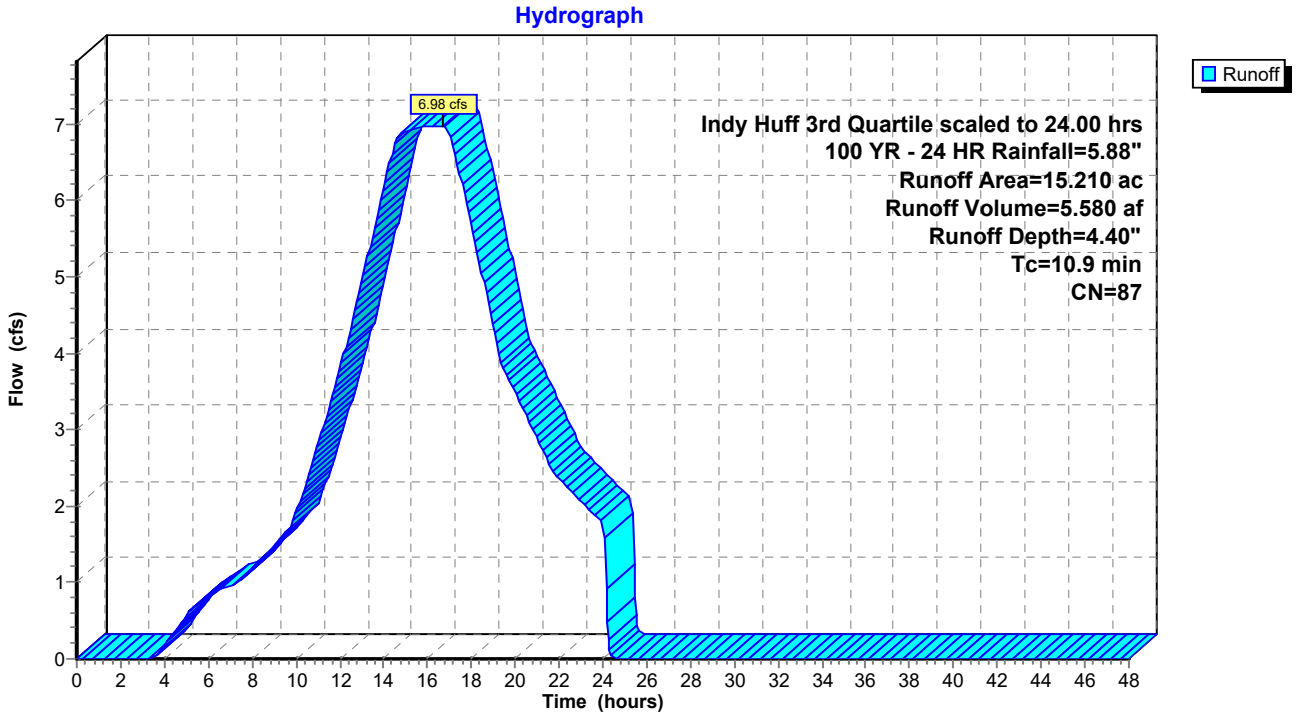
Runoff = 6.98 cfs @ 16.66 hrs, Volume= 5.580 af, Depth= 4.40"
Routed to Pond 5P : SW Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 100 YR - 24 HR Rainfall=5.88"

	Area (ac)	CN	Description
*	15.210	87	
	15.210		100.00% Pervious Area

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

Subcatchment 4S: On-Site SW



Summary for Subcatchment 9S: On-Site SE

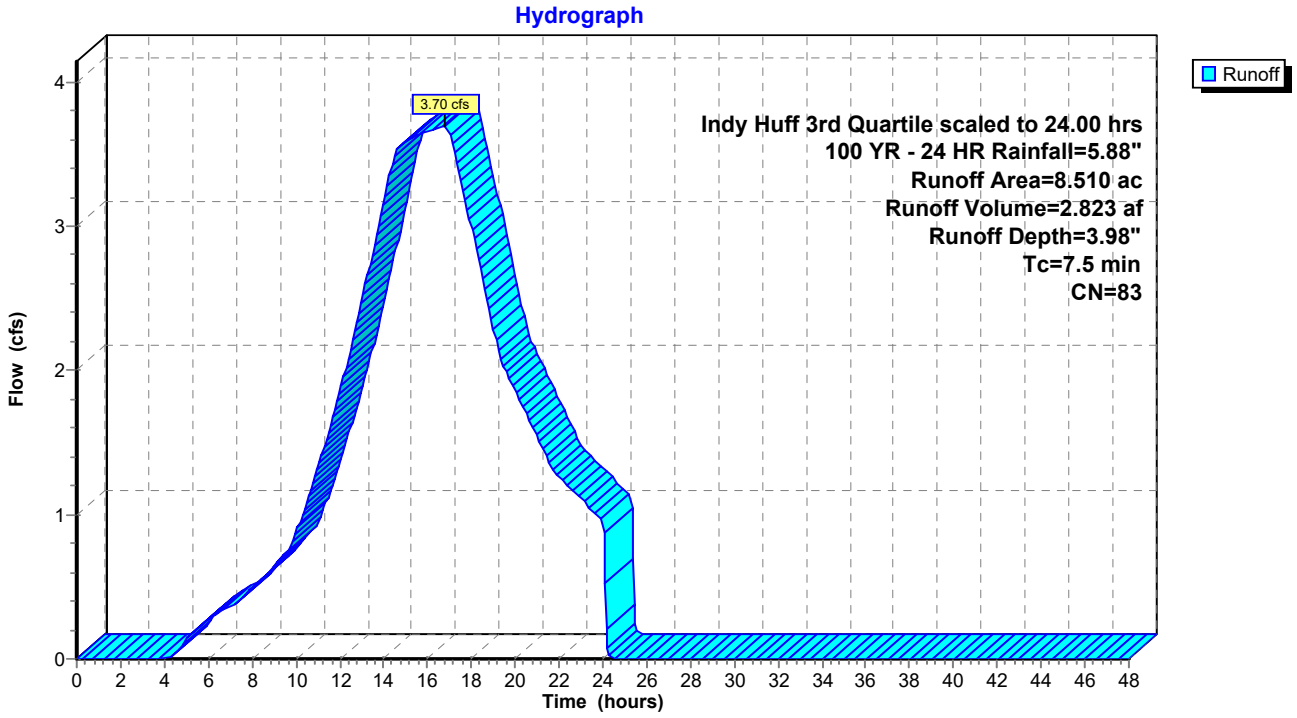
Runoff = 3.70 cfs @ 16.83 hrs, Volume= 2.823 af, Depth= 3.98"
Routed to Pond 8P : SE Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 100 YR - 24 HR Rainfall=5.88"

	Area (ac)	CN	Description
*	8.510	83	
	8.510		100.00% Pervious Area

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

Subcatchment 9S: On-Site SE



Summary for Pond 2P: North Dry Pond

Inflow Area = 7.490 ac, 0.00% Impervious, Inflow Depth = 4.08" for 100 YR - 24 HR event
Inflow = 3.30 cfs @ 16.85 hrs, Volume= 2.549 af
Outflow = 2.60 cfs @ 18.12 hrs, Volume= 2.549 af, Atten= 21%, Lag= 76.3 min
Primary = 2.60 cfs @ 18.12 hrs, Volume= 2.549 af
Routed to Pond 5P : SW Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 738.71' @ 18.12 hrs Surf.Area= 10,534 sf Storage= 13,958 cf

Plug-Flow detention time= 45.5 min calculated for 2.547 af (100% of inflow)
Center-of-Mass det. time= 45.5 min (998.9 - 953.4)

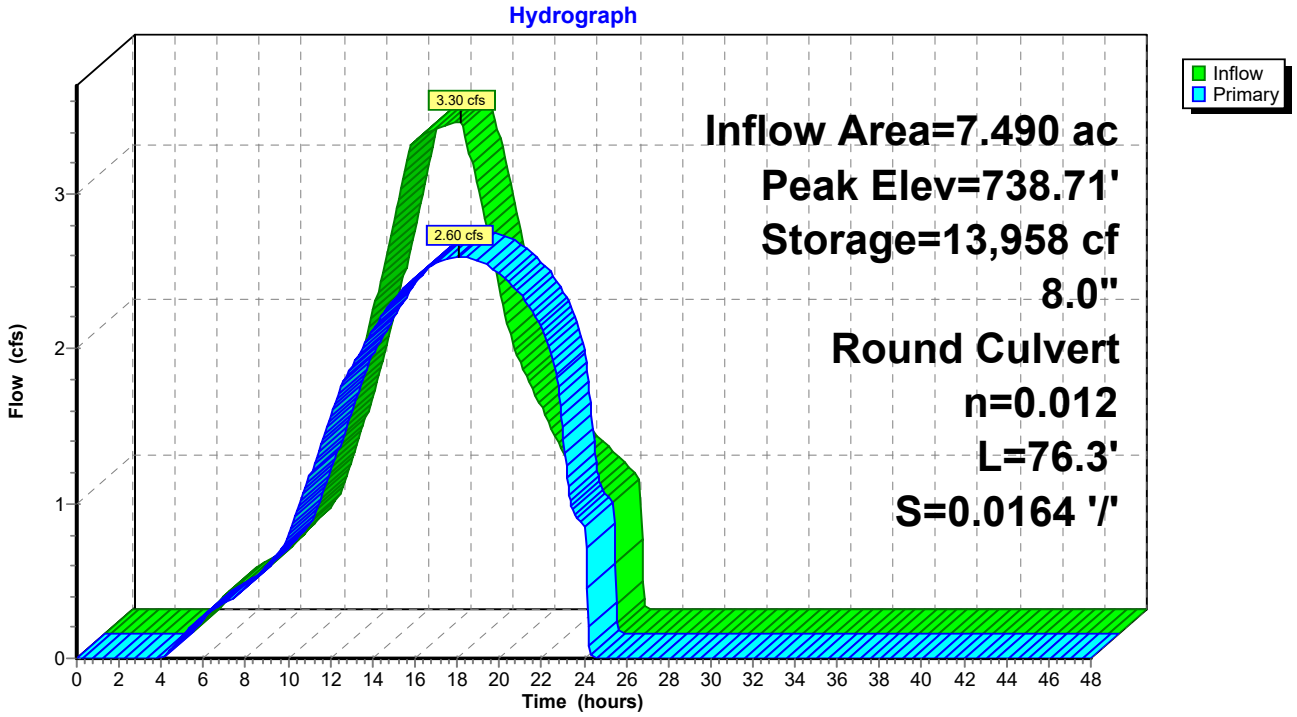
Volume	Invert	Avail.Storage	Storage Description
#1	735.00'	67,960 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
735.00	0	0	0
736.00	821	411	411
737.00	3,224	2,023	2,433
738.00	7,200	5,212	7,645
739.00	11,883	9,542	17,187
740.00	15,188	13,536	30,722
741.00	18,594	16,891	47,613
742.00	22,100	20,347	67,960

Device	Routing	Invert	Outlet Devices
#1	Primary	735.00'	**8.0" Round Culvert** L= 76.3' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 735.00' / 733.75' S= 0.0164 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.35 sf

Primary OutFlow Max=2.60 cfs @ 18.12 hrs HW=738.71' TW=733.11' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 2.60 cfs @ 7.43 fps)

Pond 2P: North Dry Pond



Summary for Pond 5P: SW Pond

Inflow Area = 22.700 ac, 0.00% Impervious, Inflow Depth = 4.30" for 100 YR - 24 HR event
Inflow = 9.52 cfs @ 16.86 hrs, Volume= 8.129 af
Outflow = 7.27 cfs @ 15.30 hrs, Volume= 7.784 af, Atten= 24%, Lag= 0.0 min
Primary = 7.27 cfs @ 15.30 hrs, Volume= 7.784 af
Routed to Pond 8P : SE Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 733.26' @ 21.36 hrs Surf.Area= 1.272 ac Storage= 2.468 af

Plug-Flow detention time= 321.5 min calculated for 7.776 af (96% of inflow)
Center-of-Mass det. time= 302.9 min (1,262.0 - 959.0)

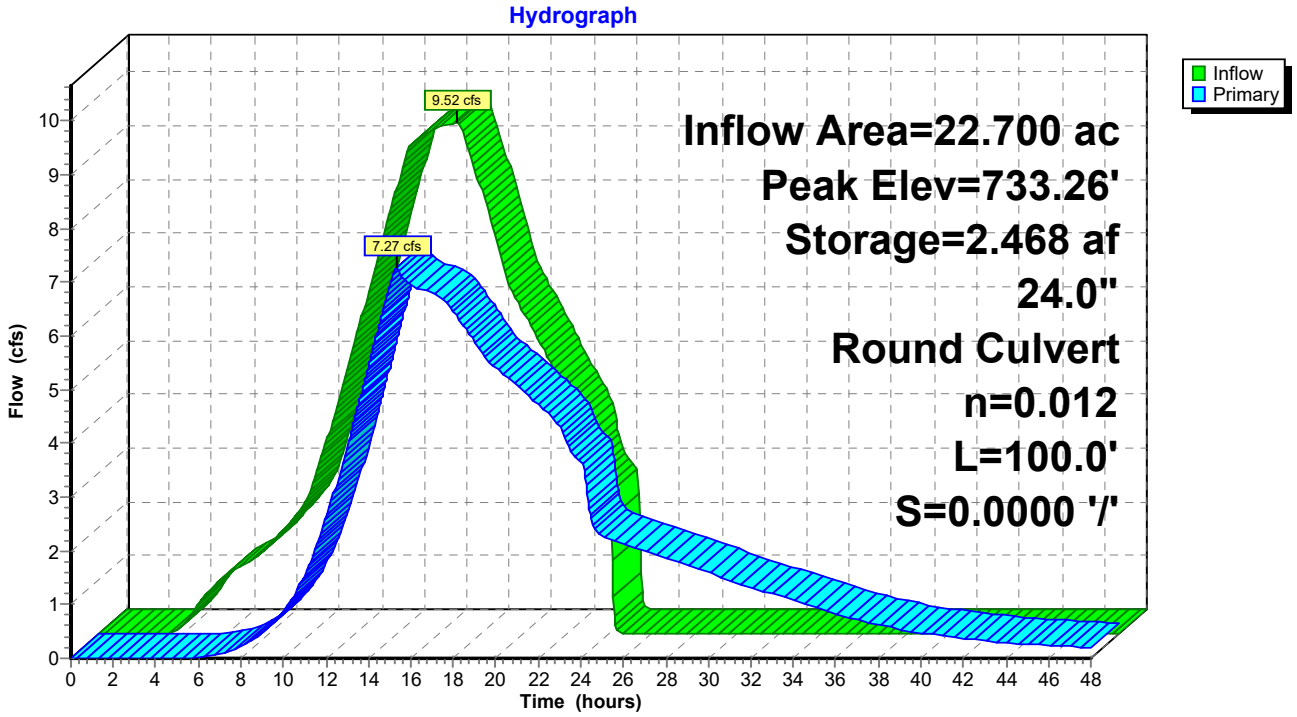
Volume	Invert	Avail.Storage	Storage Description
#1	731.00'	4.920 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
731.00	0.910	0.000	0.000
732.00	1.070	0.990	0.990
733.00	1.230	1.150	2.140
734.00	1.390	1.310	3.450
735.00	1.550	1.470	4.920

Device	Routing	Invert	Outlet Devices
#1	Primary	731.00'	**24.0" Round Culvert** L= 100.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 731.00' / 731.00' S= 0.0000 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=7.12 cfs @ 15.30 hrs HW=732.65' TW=732.26' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 7.12 cfs @ 3.48 fps)

Pond 5P: SW Pond



Summary for Pond 8P: SE Pond

Inflow Area = 31.210 ac, 0.00% Impervious, Inflow Depth > 4.08" for 100 YR - 24 HR event
Inflow = 10.88 cfs @ 15.31 hrs, Volume= 10.606 af
Outflow = 6.11 cfs @ 21.76 hrs, Volume= 10.080 af, Atten= 44%, Lag= 387.4 min
Primary = 6.11 cfs @ 21.76 hrs, Volume= 10.080 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 733.17' @ 21.76 hrs Surf.Area= 1.912 ac Storage= 3.842 af

Plug-Flow detention time= 406.7 min calculated for 10.069 af (95% of inflow)
Center-of-Mass det. time= 345.3 min (1,526.6 - 1,181.2)

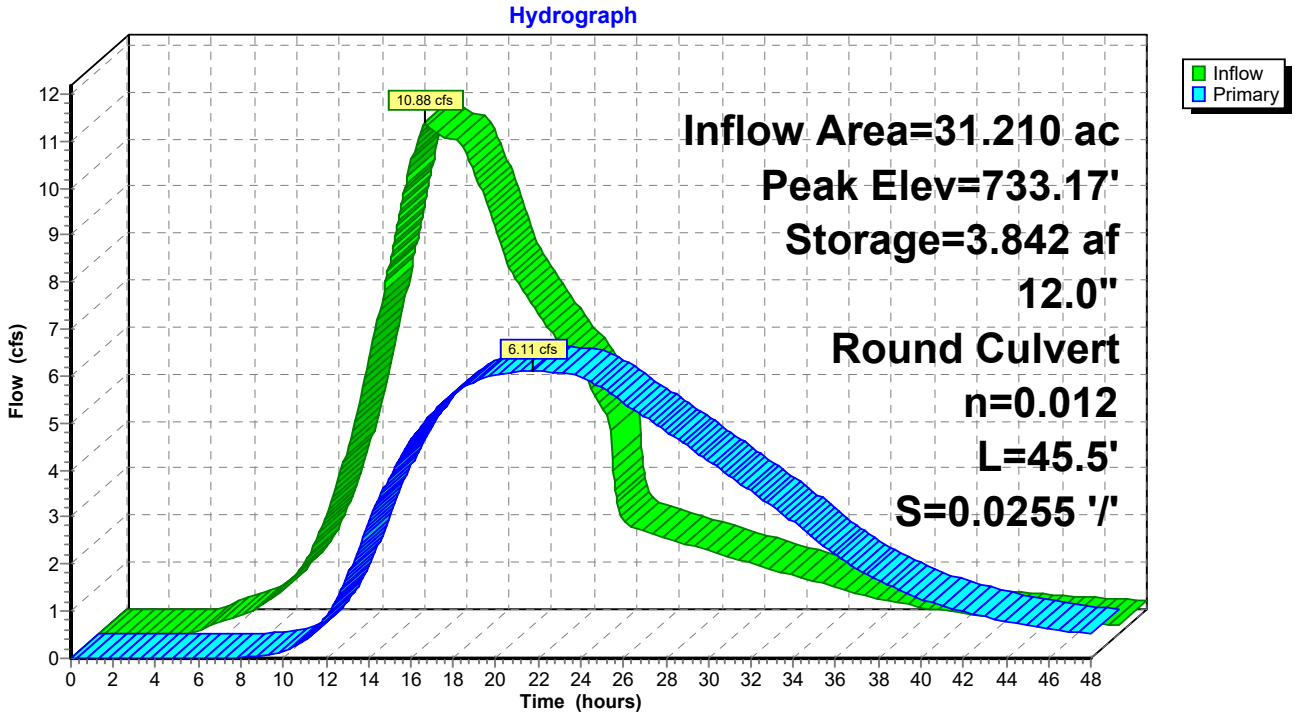
Volume	Invert	Avail.Storage	Storage Description
#1	731.00'	7.560 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
731.00	1.630	0.000	0.000
732.00	1.760	1.695	1.695
733.00	1.890	1.825	3.520
734.00	2.020	1.955	5.475
735.00	2.150	2.085	7.560

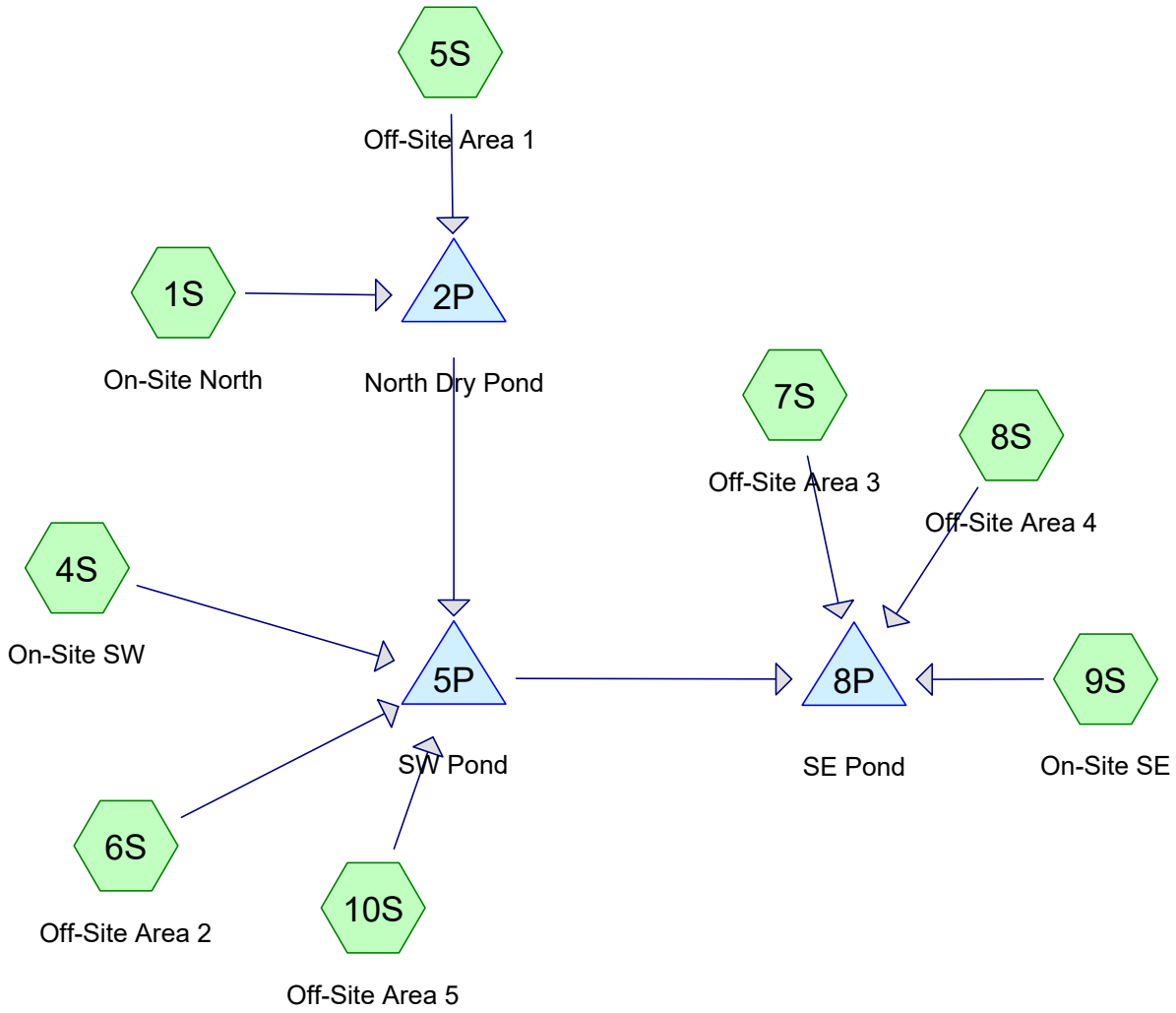
Device	Routing	Invert	Outlet Devices
#1	Primary	731.00'	**12.0" Round Culvert** L= 45.5' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 731.00' / 729.84' S= 0.0255 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=6.11 cfs @ 21.76 hrs HW=733.17' (Free Discharge)
↑**1=Culvert** (Inlet Controls 6.11 cfs @ 7.78 fps)

Pond 8P: SE Pond



Proposed Condition
Model 2
On-Site and Off-Site



C-4

Subcat Reach Pond Link

Routing Diagram for Proposed Conditions HydroCAD model
Prepared by TLF, Inc.
HydroCAD® 10.10-6a s/n 10212 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
12.050	84	(1S, 7S)
15.210	87	(4S)
1.410	85	(5S)
5.860	86	(6S, 8S)
8.510	83	(9S)
0.230	74	(10S)
43.270	**85**	**TOTAL AREA**

Events for Pond 8P: SE Pond

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
2 YR - 01 HR	9.25	0.80	731.40	0.668
2 YR - 02 HR	7.35	1.45	731.56	0.935
2 YR - 03 HR	6.40	1.78	731.63	1.060
2 YR - 06 HR	5.75	2.85	731.86	1.454
2 YR - 12 HR	5.54	3.30	731.98	1.662
2 YR - 24 HR	6.61	3.77	732.14	1.938
10 YR - 01 HR	20.14	2.72	731.83	1.404
10 YR - 02 HR	15.92	3.67	732.10	1.879
10 YR - 03 HR	13.00	4.03	732.23	2.099
10 YR - 06 HR	10.70	4.90	732.58	2.730
10 YR - 12 HR	10.96	5.18	732.70	2.959
10 YR - 24 HR	9.57	5.50	732.85	3.247
100 YR - 01 HR	**44.52**	4.88	732.57	2.714
100 YR - 02 HR	35.25	5.91	733.06	3.636
100 YR - 03 HR	28.14	6.29	733.27	4.041
100 YR - 06 HR	22.14	6.94	733.77	5.014
100 YR - 12 HR	16.67	6.99	733.82	5.107
100 YR - 24 HR	13.55	**7.17**	**733.97**	**5.405**

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: On-Site North Runoff Area=7.490 ac 0.00% Impervious Runoff Depth=1.43"
Tc=7.4 min CN=84 Runoff=1.31 cfs 0.895 af

Subcatchment4S: On-Site SW Runoff Area=15.210 ac 0.00% Impervious Runoff Depth=1.65"
Tc=10.9 min CN=87 Runoff=2.93 cfs 2.094 af

Subcatchment5S: Off-Site Area 1 Runoff Area=1.410 ac 0.00% Impervious Runoff Depth=1.50"
Tc=5.0 min CN=85 Runoff=0.25 cfs 0.177 af

Subcatchment6S: Off-Site Area 2 Runoff Area=1.050 ac 0.00% Impervious Runoff Depth=1.58"
Tc=5.0 min CN=86 Runoff=0.20 cfs 0.138 af

Subcatchment7S: Off-Site Area 3 Runoff Area=4.560 ac 0.00% Impervious Runoff Depth=1.43"
Tc=5.0 min CN=84 Runoff=0.80 cfs 0.545 af

Subcatchment8S: Off-Site Area 4 Runoff Area=4.810 ac 0.00% Impervious Runoff Depth=1.58"
Tc=10.0 min CN=86 Runoff=0.90 cfs 0.632 af

Subcatchment9S: On-Site SE Runoff Area=8.510 ac 0.00% Impervious Runoff Depth=1.37"
Tc=7.5 min CN=83 Runoff=1.43 cfs 0.969 af

Subcatchment10S: Off-Site Area 5 Runoff Area=0.230 ac 0.00% Impervious Runoff Depth=0.85"
Tc=5.0 min CN=74 Runoff=0.03 cfs 0.016 af

Pond 2P: North Dry Pond Peak Elev=736.18' Storage=594 cf Inflow=1.56 cfs 1.072 af
8.0" Round Culvert n=0.012 L=76.3' S=0.0164 '/' Outflow=1.54 cfs 1.072 af

Pond 5P: SW Pond Peak Elev=732.24' Storage=1.253 af Inflow=4.69 cfs 3.320 af
24.0" Round Culvert n=0.012 L=100.0' S=0.0000 '/' Outflow=3.55 cfs 3.067 af

Pond 8P: SE Pond Peak Elev=732.14' Storage=1.938 af Inflow=6.61 cfs 5.213 af
12.0" Round Culvert n=0.012 L=45.5' S=0.0255 '/' Outflow=3.77 cfs 4.839 af

Total Runoff Area = 43.270 ac Runoff Volume = 5.467 af Average Runoff Depth = 1.52"
100.00% Pervious = 43.270 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: On-Site North

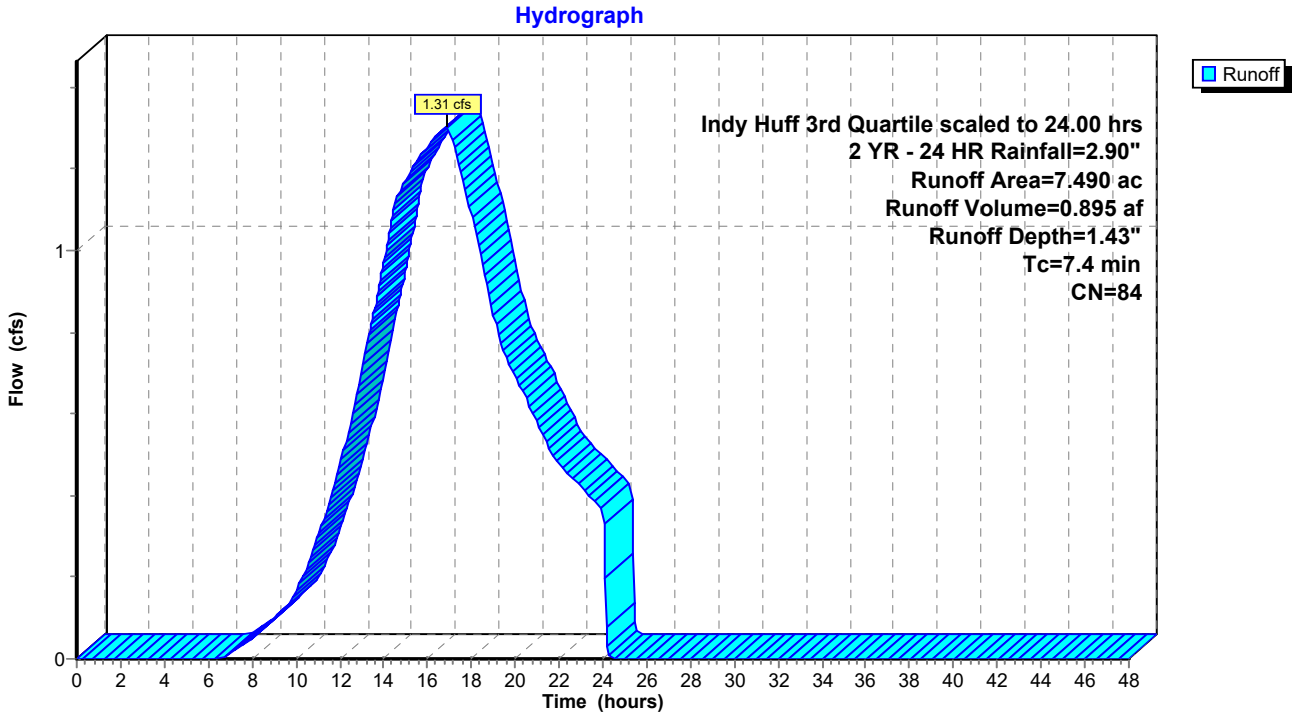
Runoff = 1.31 cfs @ 16.87 hrs, Volume= 0.895 af, Depth= 1.43"
Routed to Pond 2P : North Dry Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 2 YR - 24 HR Rainfall=2.90"

	Area (ac)	CN	Description
*	7.490	84	
	7.490		100.00% Pervious Area

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

Subcatchment 1S: On-Site North



Summary for Subcatchment 4S: On-Site SW

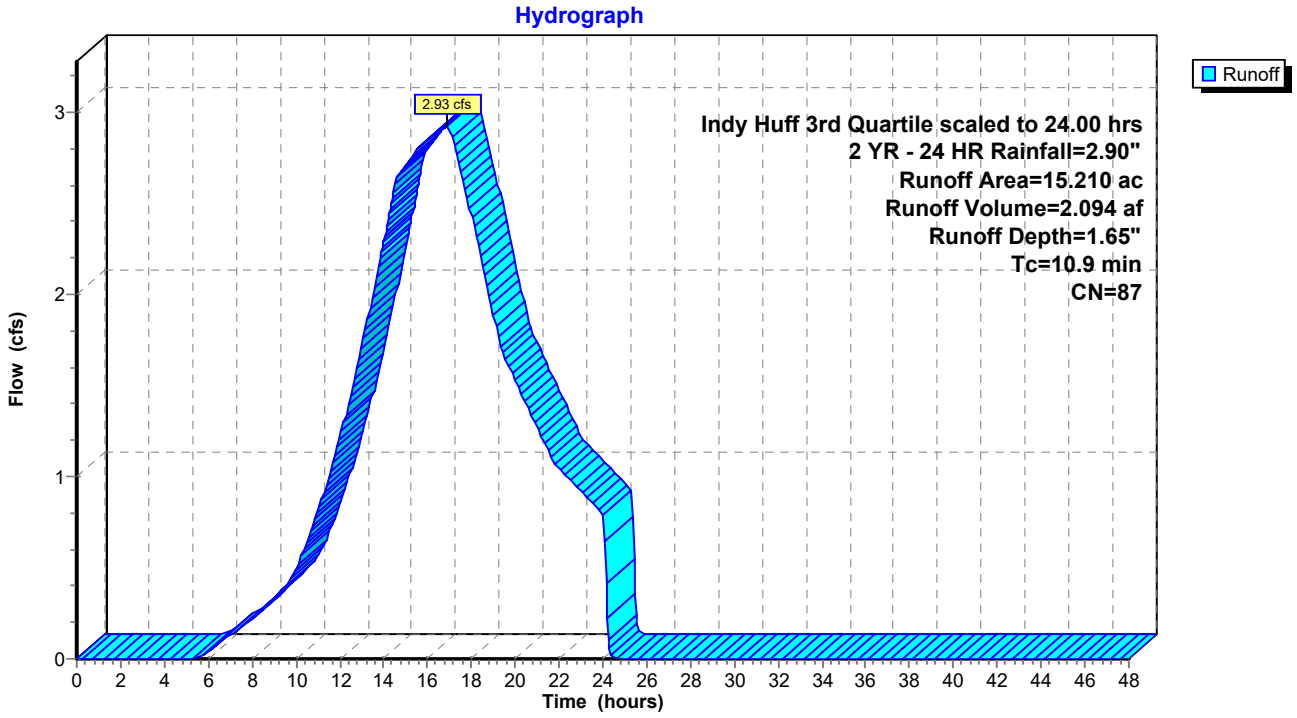
Runoff = 2.93 cfs @ 16.89 hrs, Volume= 2.094 af, Depth= 1.65"
Routed to Pond 5P : SW Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 2 YR - 24 HR Rainfall=2.90"

	Area (ac)	CN	Description
*	15.210	87	
	15.210		100.00% Pervious Area

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

Subcatchment 4S: On-Site SW



Summary for Subcatchment 5S: Off-Site Area 1

[49] Hint: Tc<2dt may require smaller dt

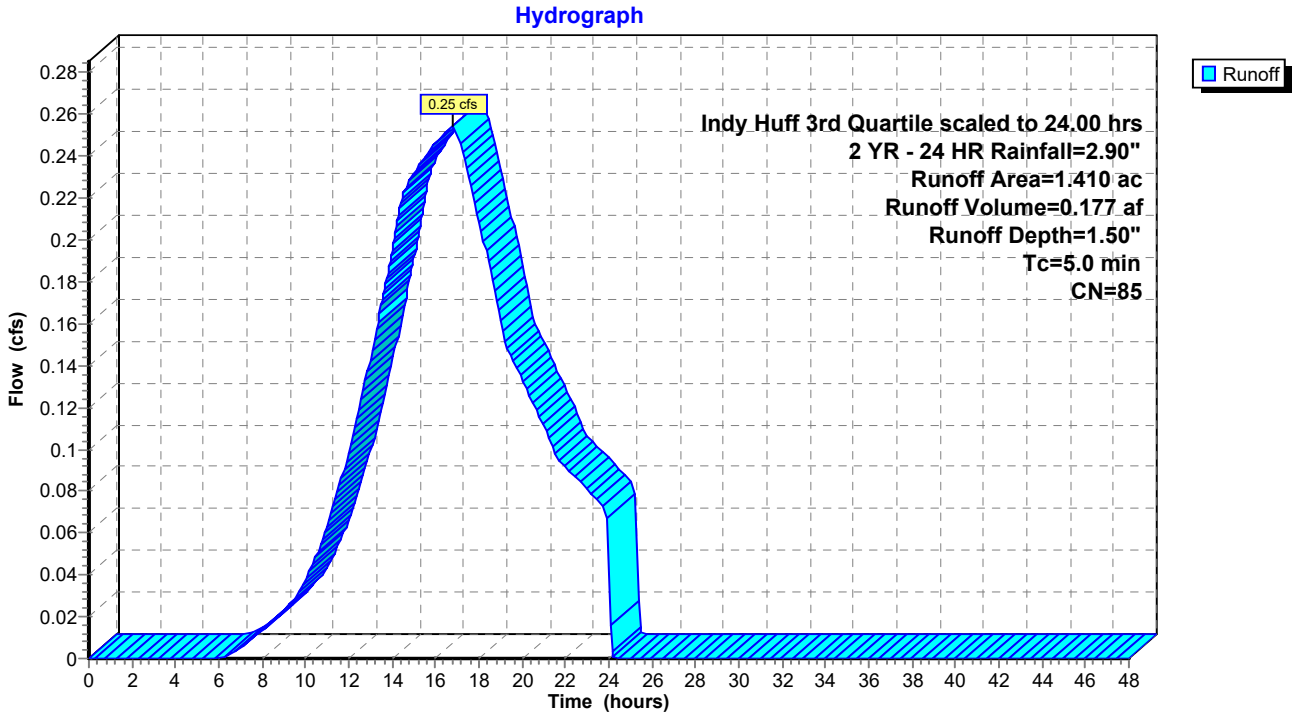
Runoff = 0.25 cfs @ 16.84 hrs, Volume= 0.177 af, Depth= 1.50"
Routed to Pond 2P : North Dry Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 2 YR - 24 HR Rainfall=2.90"

	Area (ac)	CN	Description
*	1.410	85	
	1.410		100.00% Pervious Area

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

Subcatchment 5S: Off-Site Area 1



Summary for Subcatchment 6S: Off-Site Area 2

[49] Hint: Tc<2dt may require smaller dt

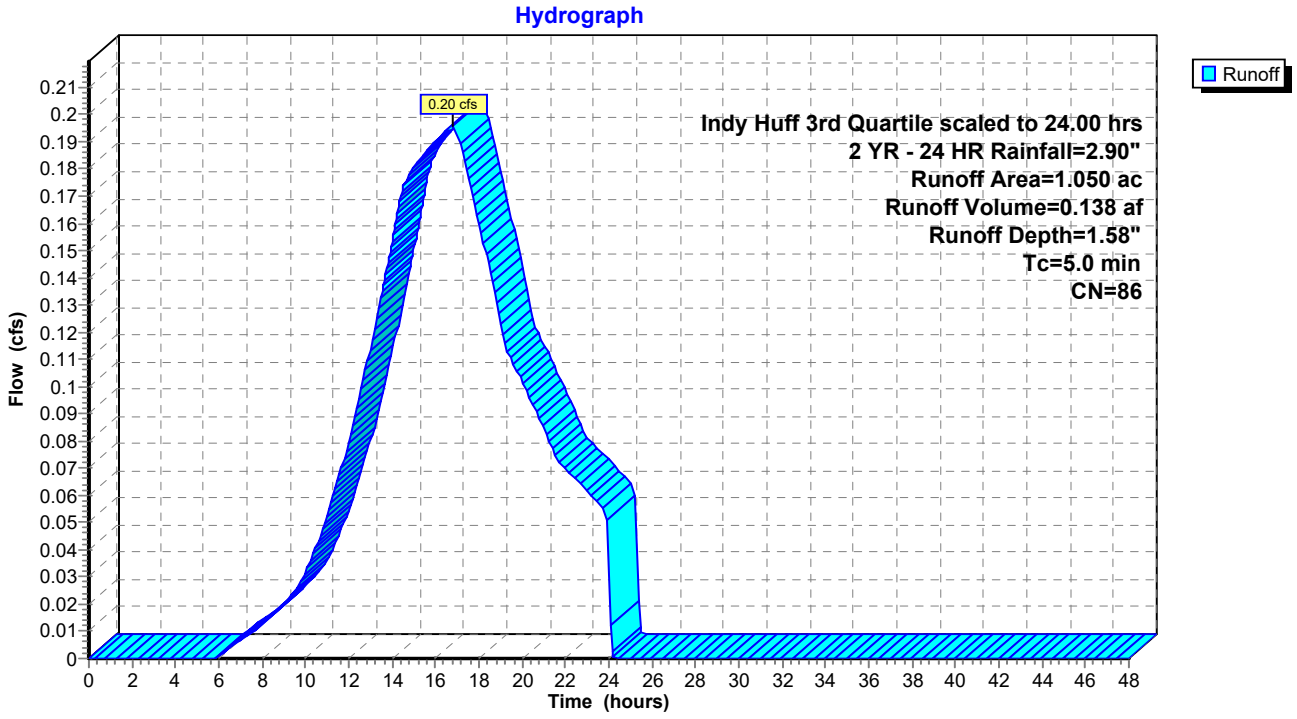
Runoff = 0.20 cfs @ 16.84 hrs, Volume= 0.138 af, Depth= 1.58"
Routed to Pond 5P : SW Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 2 YR - 24 HR Rainfall=2.90"

	Area (ac)	CN	Description
*	1.050	86	
	1.050		100.00% Pervious Area

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

Subcatchment 6S: Off-Site Area 2



Summary for Subcatchment 7S: Off-Site Area 3

[49] Hint: Tc<2dt may require smaller dt

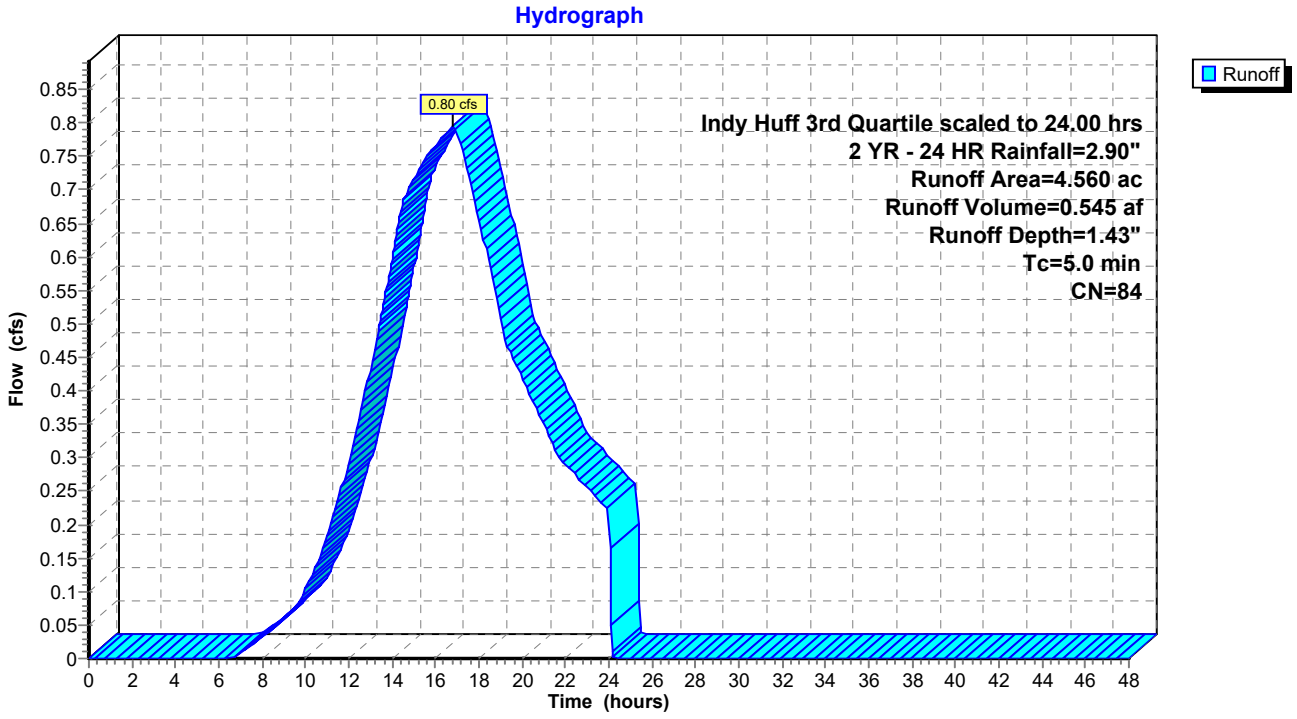
Runoff = 0.80 cfs @ 16.84 hrs, Volume= 0.545 af, Depth= 1.43"
Routed to Pond 8P : SE Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 2 YR - 24 HR Rainfall=2.90"

	Area (ac)	CN	Description
*	4.560	84	
	4.560		100.00% Pervious Area

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

Subcatchment 7S: Off-Site Area 3



Summary for Subcatchment 8S: Off-Site Area 4

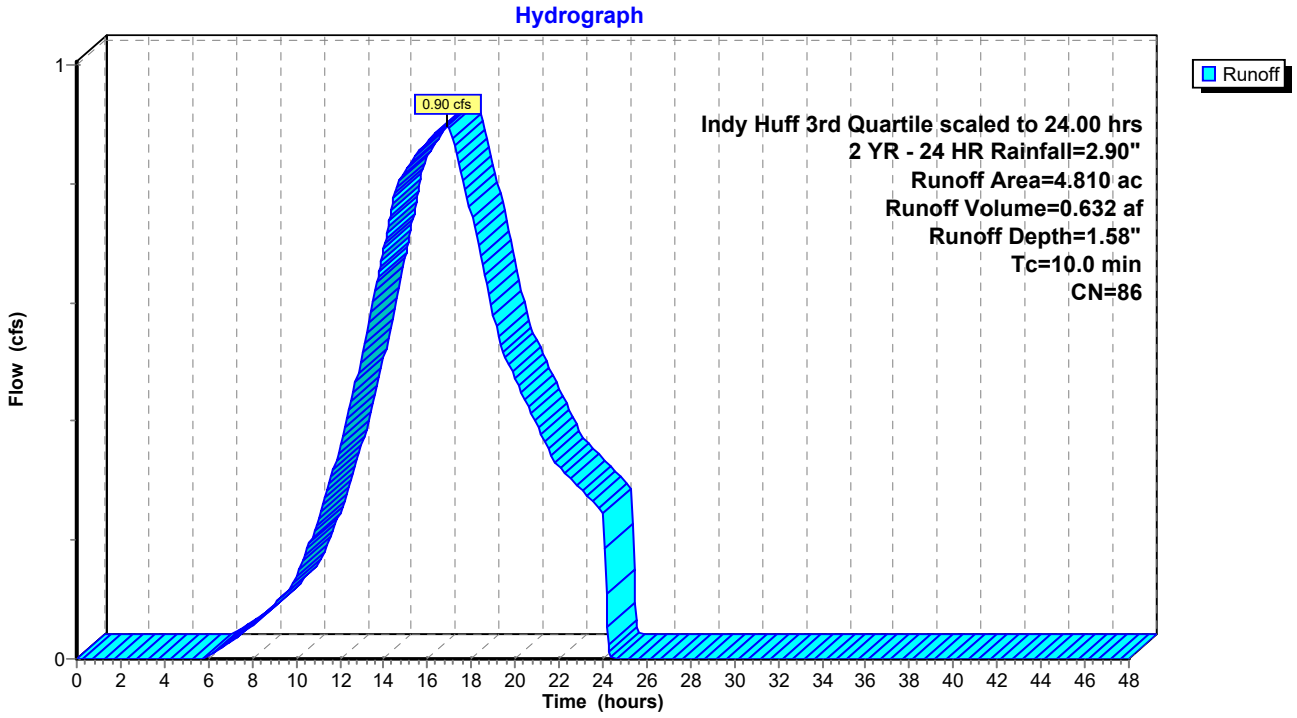
Runoff = 0.90 cfs @ 16.88 hrs, Volume= 0.632 af, Depth= 1.58"
Routed to Pond 8P : SE Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 2 YR - 24 HR Rainfall=2.90"

	Area (ac)	CN	Description
*	4.810	86	
	4.810		100.00% Pervious Area

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

Subcatchment 8S: Off-Site Area 4



Summary for Subcatchment 9S: On-Site SE

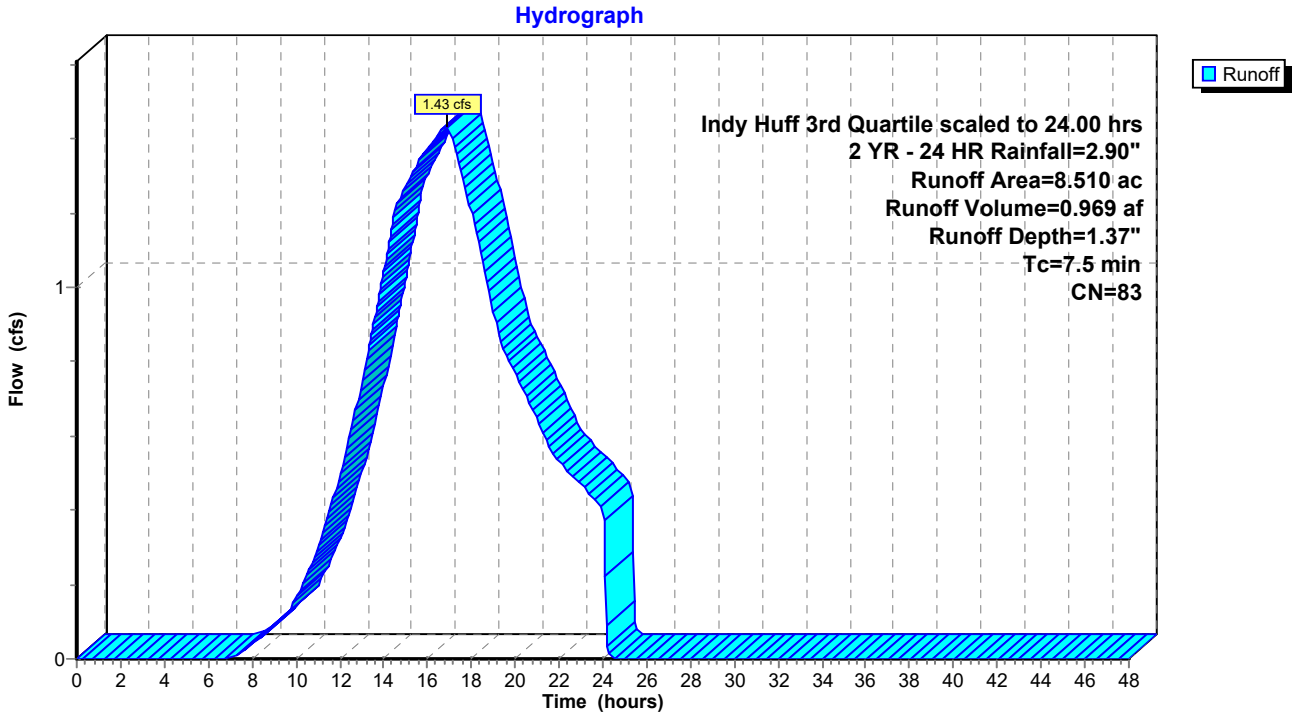
Runoff = 1.43 cfs @ 16.88 hrs, Volume= 0.969 af, Depth= 1.37"
Routed to Pond 8P : SE Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 2 YR - 24 HR Rainfall=2.90"

	Area (ac)	CN	Description
*	8.510	83	
	8.510		100.00% Pervious Area

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

Subcatchment 9S: On-Site SE



Summary for Subcatchment 10S: Off-Site Area 5

[49] Hint: Tc<2dt may require smaller dt

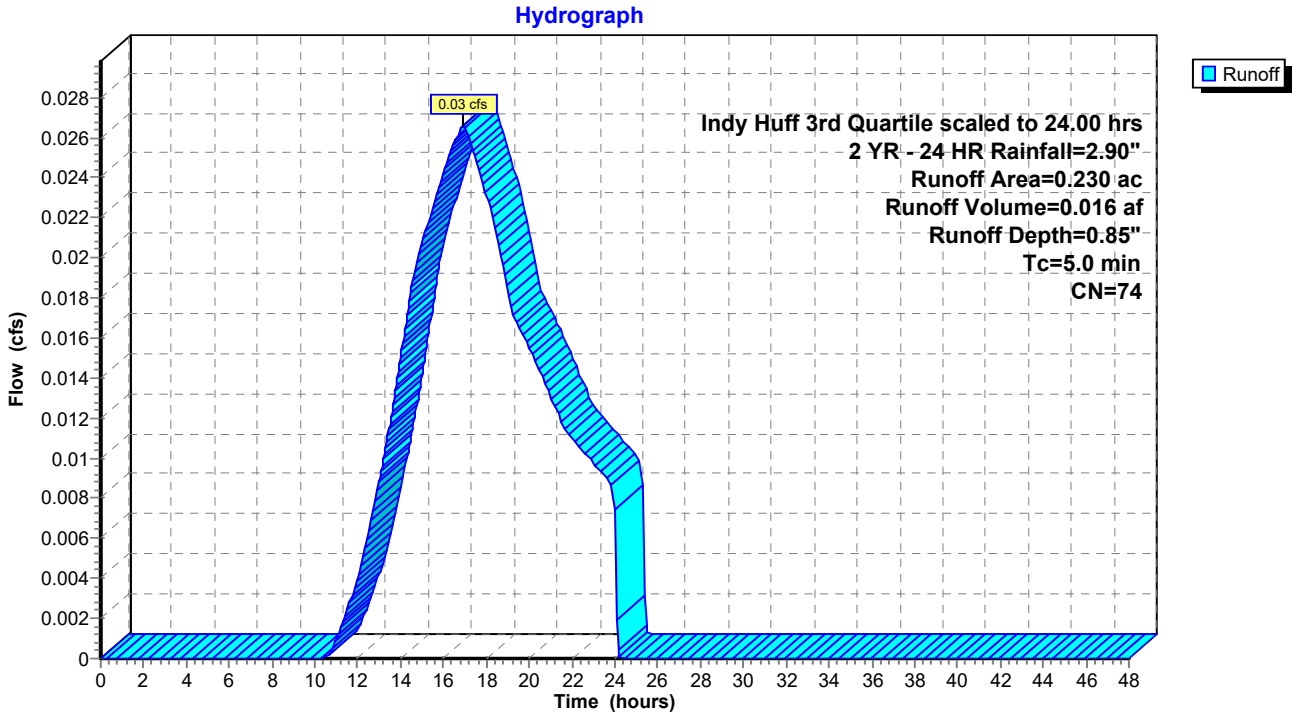
Runoff = 0.03 cfs @ 16.88 hrs, Volume= 0.016 af, Depth= 0.85"
Routed to Pond 5P : SW Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 2 YR - 24 HR Rainfall=2.90"

	Area (ac)	CN	Description
*	0.230	74	
	0.230		100.00% Pervious Area

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

Subcatchment 10S: Off-Site Area 5



Summary for Pond 2P: North Dry Pond

Inflow Area = 8.900 ac, 0.00% Impervious, Inflow Depth = 1.45" for 2 YR - 24 HR event
Inflow = 1.56 cfs @ 16.86 hrs, Volume= 1.072 af
Outflow = 1.54 cfs @ 17.00 hrs, Volume= 1.072 af, Atten= 1%, Lag= 8.6 min
Primary = 1.54 cfs @ 17.00 hrs, Volume= 1.072 af
Routed to Pond 5P : SW Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 736.18' @ 17.00 hrs Surf.Area= 1,248 sf Storage= 594 cf

Plug-Flow detention time= 4.0 min calculated for 1.071 af (100% of inflow)
Center-of-Mass det. time= 4.0 min (1,009.6 - 1,005.6)

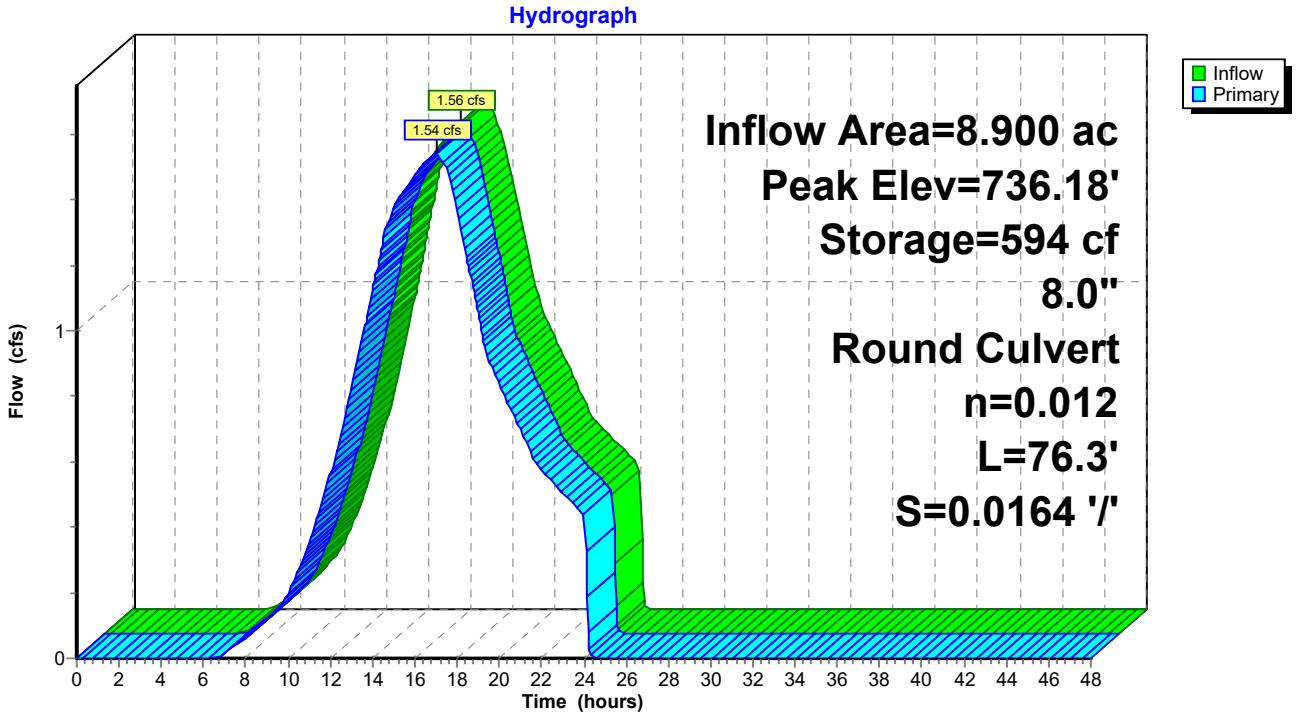
Volume	Invert	Avail.Storage	Storage Description
#1	735.00'	67,960 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
735.00	0	0	0
736.00	821	411	411
737.00	3,224	2,023	2,433
738.00	7,200	5,212	7,645
739.00	11,883	9,542	17,187
740.00	15,188	13,536	30,722
741.00	18,594	16,891	47,613
742.00	22,100	20,347	67,960

Device	Routing	Invert	Outlet Devices
#1	Primary	735.00'	**8.0" Round Culvert** L= 76.3' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 735.00' / 733.75' S= 0.0164 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.35 sf

Primary OutFlow Max=1.54 cfs @ 17.00 hrs HW=736.18' TW=732.14' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.54 cfs @ 4.42 fps)

Pond 2P: North Dry Pond



Summary for Pond 5P: SW Pond

Inflow Area = 25.390 ac, 0.00% Impervious, Inflow Depth = 1.57" for 2 YR - 24 HR event
Inflow = 4.69 cfs @ 16.90 hrs, Volume= 3.320 af
Outflow = 3.55 cfs @ 17.10 hrs, Volume= 3.067 af, Atten= 24%, Lag= 12.3 min
Primary = 3.55 cfs @ 17.10 hrs, Volume= 3.067 af
Routed to Pond 8P : SE Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 732.24' @ 19.55 hrs Surf.Area= 1.109 ac Storage= 1.253 af

Plug-Flow detention time= 364.2 min calculated for 3.067 af (92% of inflow)
Center-of-Mass det. time= 332.4 min (1,329.5 - 997.1)

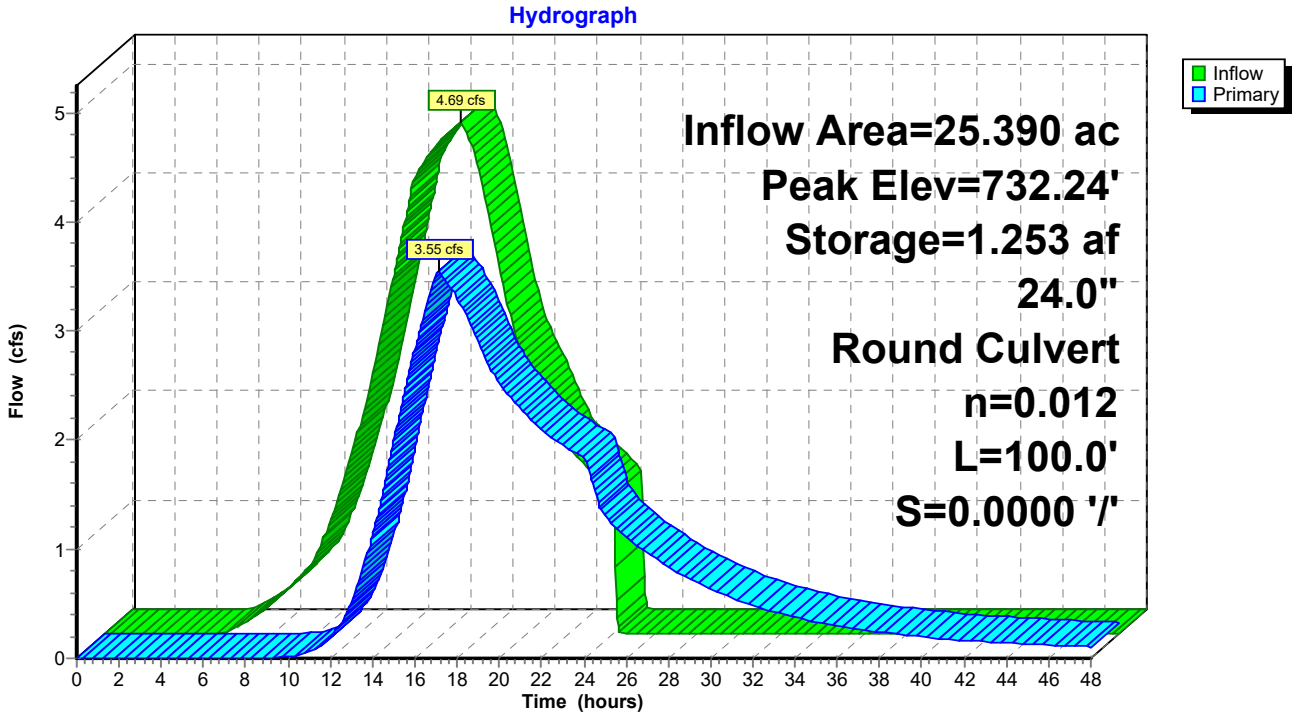
Volume	Invert	Avail.Storage	Storage Description
#1	731.00'	4.920 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
731.00	0.910	0.000	0.000
732.00	1.070	0.990	0.990
733.00	1.230	1.150	2.140
734.00	1.390	1.310	3.450
735.00	1.550	1.470	4.920

Device	Routing	Invert	Outlet Devices
#1	Primary	731.00'	**24.0" Round Culvert** L= 100.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 731.00' / 731.00' S= 0.0000 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=3.49 cfs @ 17.10 hrs HW=732.15' TW=731.87' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 3.49 cfs @ 2.71 fps)

Pond 5P: SW Pond



Summary for Pond 8P: SE Pond

Inflow Area = 43.270 ac, 0.00% Impervious, Inflow Depth > 1.45" for 2 YR - 24 HR event
Inflow = 6.61 cfs @ 17.05 hrs, Volume= 5.213 af
Outflow = 3.77 cfs @ 20.80 hrs, Volume= 4.839 af, Atten= 43%, Lag= 225.1 min
Primary = 3.77 cfs @ 20.80 hrs, Volume= 4.839 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 732.14' @ 20.80 hrs Surf.Area= 1.778 ac Storage= 1.938 af

Plug-Flow detention time= 390.6 min calculated for 4.839 af (93% of inflow)
Center-of-Mass det. time= 313.1 min (1,509.5 - 1,196.4)

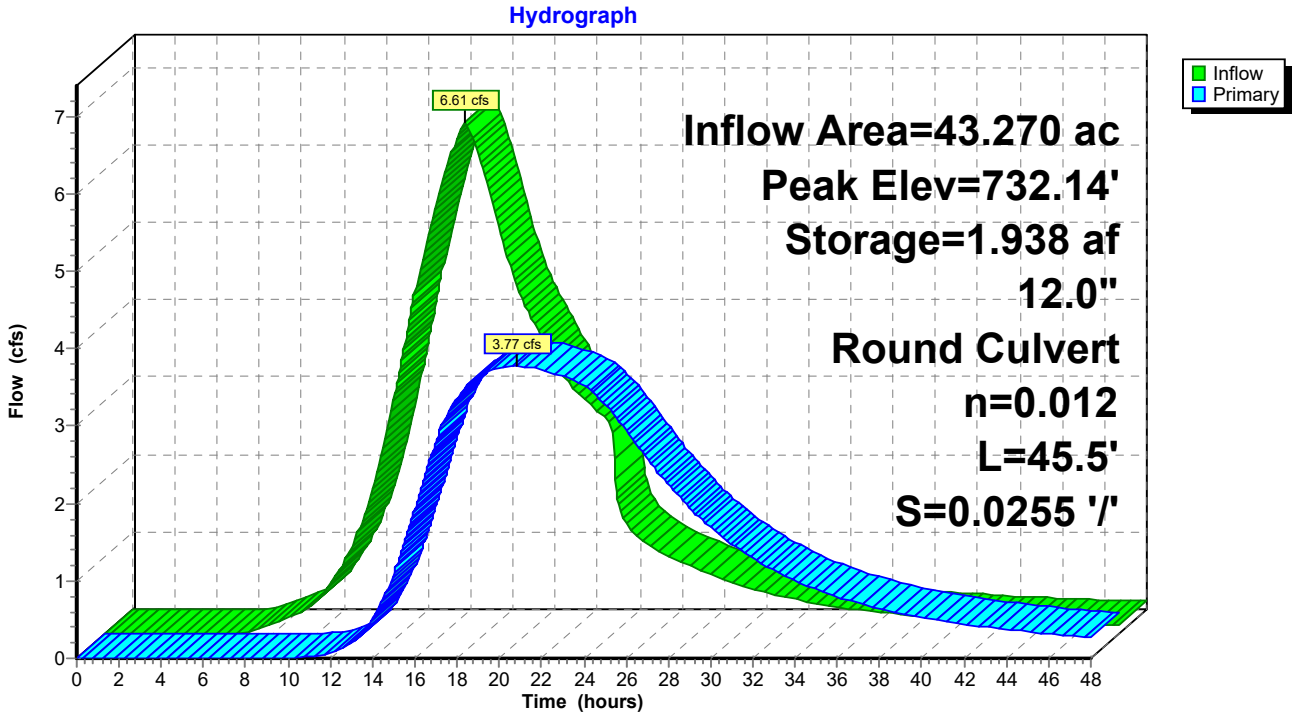
Volume	Invert	Avail.Storage	Storage Description
#1	731.00'	7.560 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
731.00	1.630	0.000	0.000
732.00	1.760	1.695	1.695
733.00	1.890	1.825	3.520
734.00	2.020	1.955	5.475
735.00	2.150	2.085	7.560

Device	Routing	Invert	Outlet Devices
#1	Primary	731.00'	**12.0" Round Culvert** L= 45.5' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 731.00' / 729.84' S= 0.0255 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=3.77 cfs @ 20.80 hrs HW=732.14' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 3.77 cfs @ 4.80 fps)

Pond 8P: SE Pond



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: On-Site North Runoff Area=7.490 ac 0.00% Impervious Runoff Depth=2.44"
Tc=7.4 min CN=84 Runoff=2.10 cfs 1.524 af

Subcatchment4S: On-Site SW Runoff Area=15.210 ac 0.00% Impervious Runoff Depth=2.71"
Tc=10.9 min CN=87 Runoff=4.54 cfs 3.435 af

Subcatchment5S: Off-Site Area 1 Runoff Area=1.410 ac 0.00% Impervious Runoff Depth=2.53"
Tc=5.0 min CN=85 Runoff=0.40 cfs 0.297 af

Subcatchment6S: Off-Site Area 2 Runoff Area=1.050 ac 0.00% Impervious Runoff Depth=2.62"
Tc=5.0 min CN=86 Runoff=0.31 cfs 0.229 af

Subcatchment7S: Off-Site Area 3 Runoff Area=4.560 ac 0.00% Impervious Runoff Depth=2.44"
Tc=5.0 min CN=84 Runoff=1.28 cfs 0.928 af

Subcatchment8S: Off-Site Area 4 Runoff Area=4.810 ac 0.00% Impervious Runoff Depth=2.62"
Tc=10.0 min CN=86 Runoff=1.41 cfs 1.050 af

Subcatchment9S: On-Site SE Runoff Area=8.510 ac 0.00% Impervious Runoff Depth=2.36"
Tc=7.5 min CN=83 Runoff=2.33 cfs 1.671 af

Subcatchment10S: Off-Site Area 5 Runoff Area=0.230 ac 0.00% Impervious Runoff Depth=1.66"
Tc=5.0 min CN=74 Runoff=0.05 cfs 0.032 af

Pond 2P: North Dry Pond Peak Elev=737.57' Storage=4,920 cf Inflow=2.50 cfs 1.821 af
8.0" Round Culvert n=0.012 L=76.3' S=0.0164 '/' Outflow=2.22 cfs 1.821 af

Pond 5P: SW Pond Peak Elev=732.92' Storage=2.043 af Inflow=7.09 cfs 5.517 af
24.0" Round Culvert n=0.012 L=100.0' S=0.0000 '/' Outflow=4.57 cfs 5.206 af

Pond 8P: SE Pond Peak Elev=732.85' Storage=3.247 af Inflow=9.57 cfs 8.854 af
12.0" Round Culvert n=0.012 L=45.5' S=0.0255 '/' Outflow=5.50 cfs 8.384 af

Total Runoff Area = 43.270 ac Runoff Volume = 9.165 af Average Runoff Depth = 2.54"
100.00% Pervious = 43.270 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: On-Site North

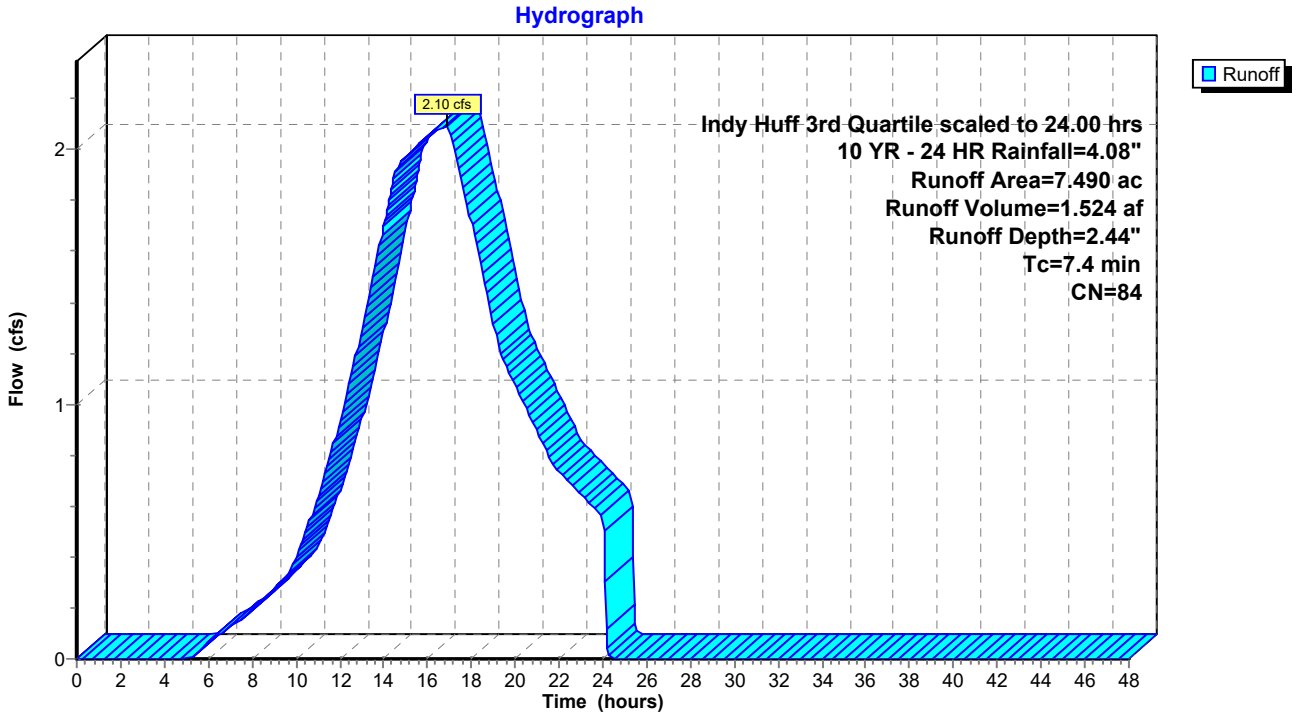
Runoff = 2.10 cfs @ 16.84 hrs, Volume= 1.524 af, Depth= 2.44"
Routed to Pond 2P : North Dry Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 10 YR - 24 HR Rainfall=4.08"

	Area (ac)	CN	Description
*	7.490	84	
	7.490		100.00% Pervious Area

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

Subcatchment 1S: On-Site North



Summary for Subcatchment 4S: On-Site SW

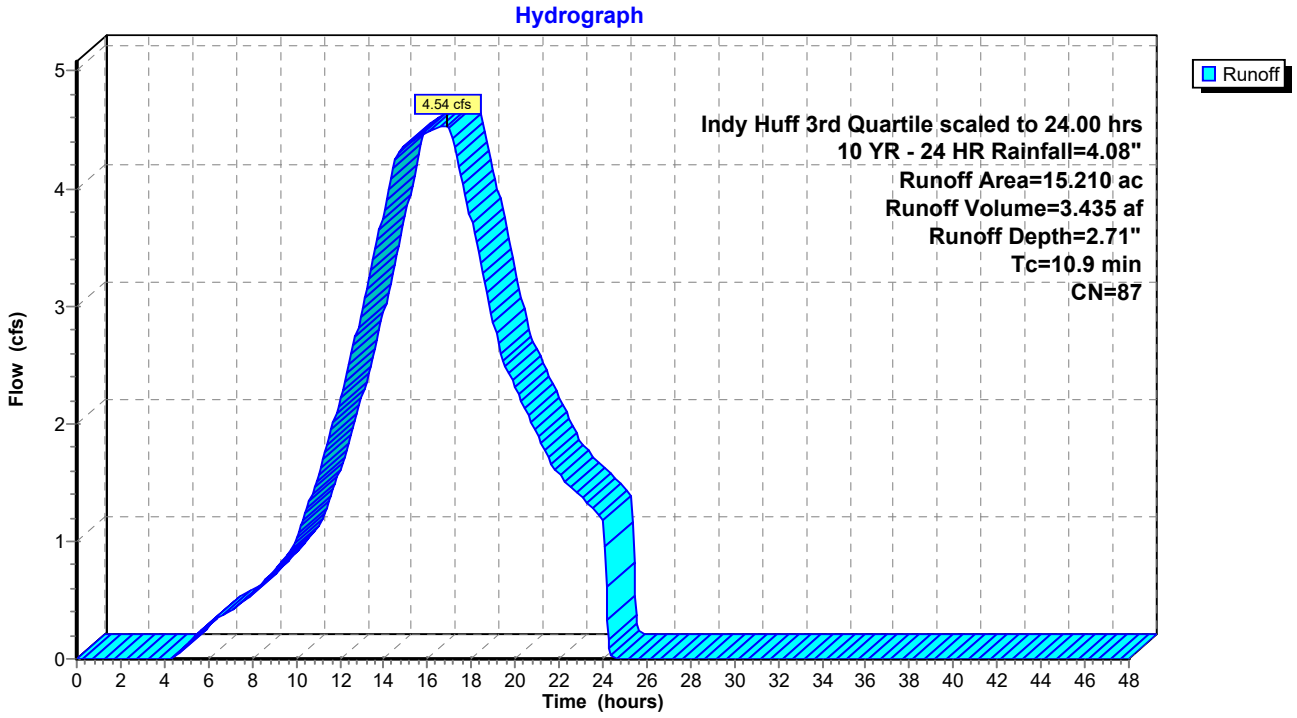
Runoff = 4.54 cfs @ 16.85 hrs, Volume= 3.435 af, Depth= 2.71"
Routed to Pond 5P : SW Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 10 YR - 24 HR Rainfall=4.08"

	Area (ac)	CN	Description
*	15.210	87	
	15.210		100.00% Pervious Area

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

Subcatchment 4S: On-Site SW



Summary for Subcatchment 5S: Off-Site Area 1

[49] Hint: Tc<2dt may require smaller dt

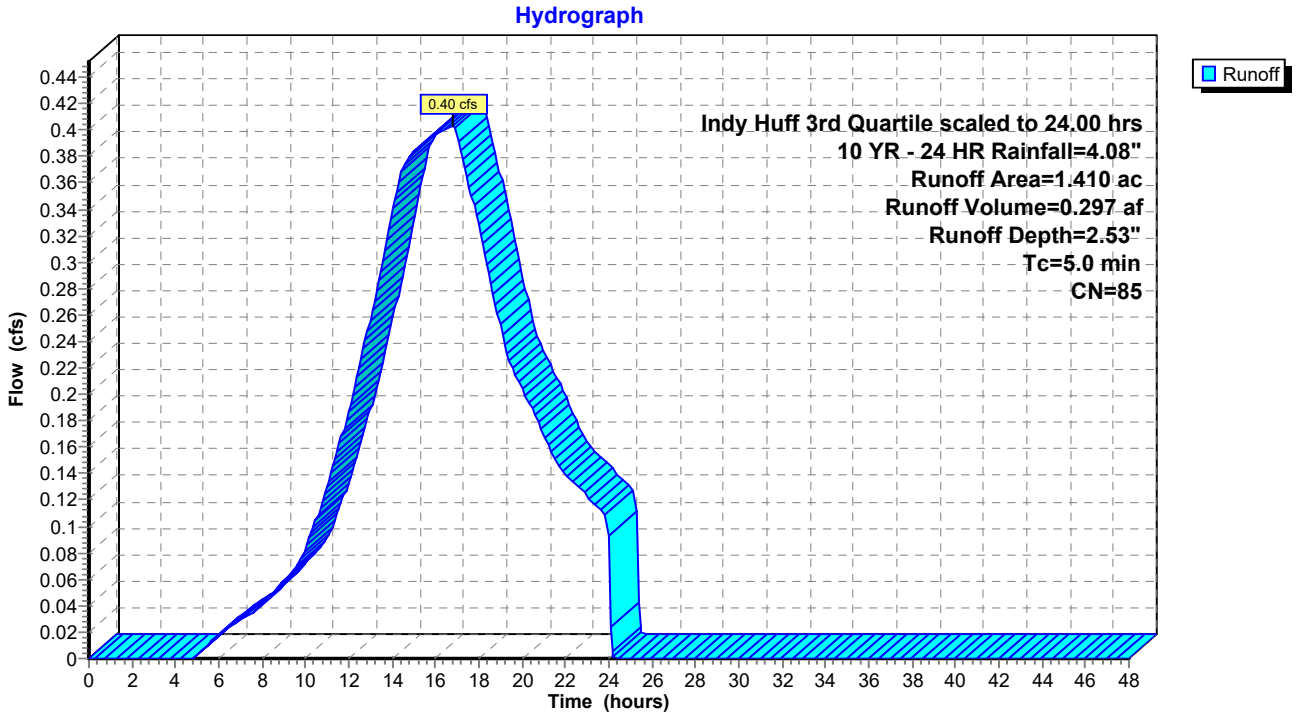
Runoff = 0.40 cfs @ 16.83 hrs, Volume= 0.297 af, Depth= 2.53"
Routed to Pond 2P : North Dry Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 10 YR - 24 HR Rainfall=4.08"

	Area (ac)	CN	Description
*	1.410	85	
	1.410		100.00% Pervious Area

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

Subcatchment 5S: Off-Site Area 1



Summary for Subcatchment 6S: Off-Site Area 2

[49] Hint: Tc<2dt may require smaller dt

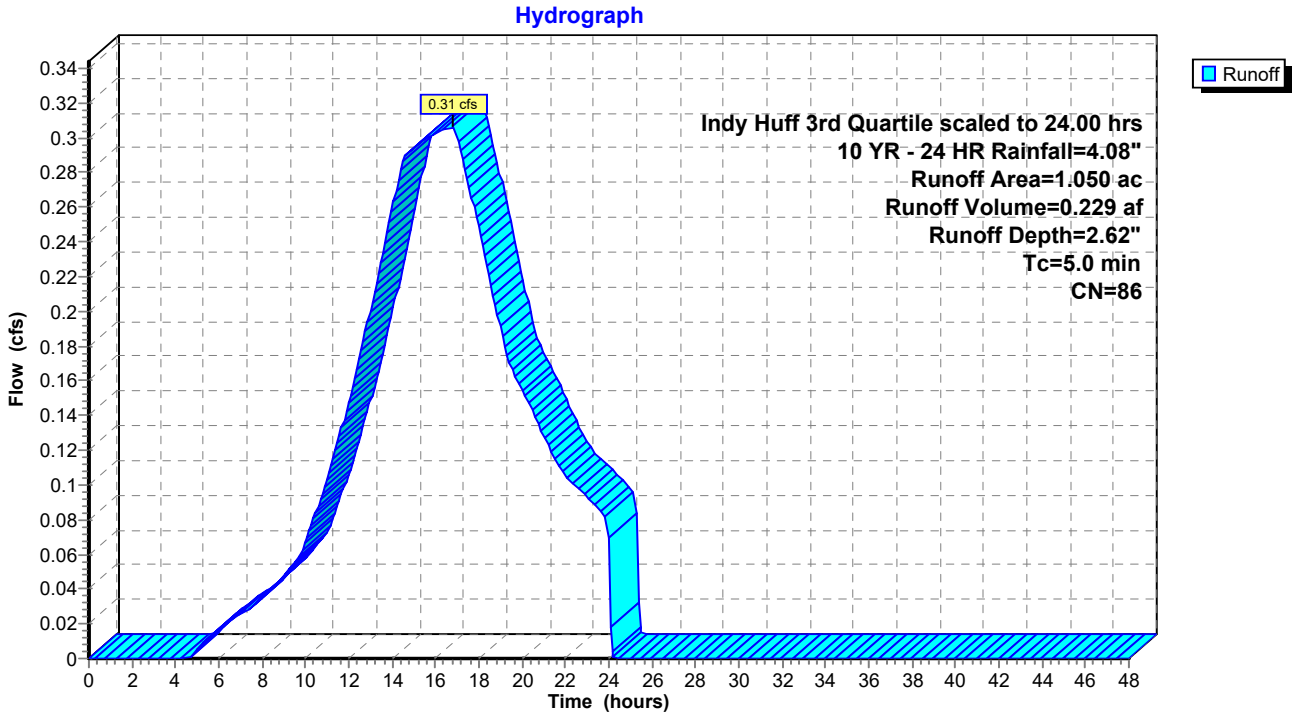
Runoff = 0.31 cfs @ 16.83 hrs, Volume= 0.229 af, Depth= 2.62"
Routed to Pond 5P : SW Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 10 YR - 24 HR Rainfall=4.08"

	Area (ac)	CN	Description
*	1.050	86	
	1.050		100.00% Pervious Area

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

Subcatchment 6S: Off-Site Area 2



Summary for Subcatchment 7S: Off-Site Area 3

[49] Hint: Tc<2dt may require smaller dt

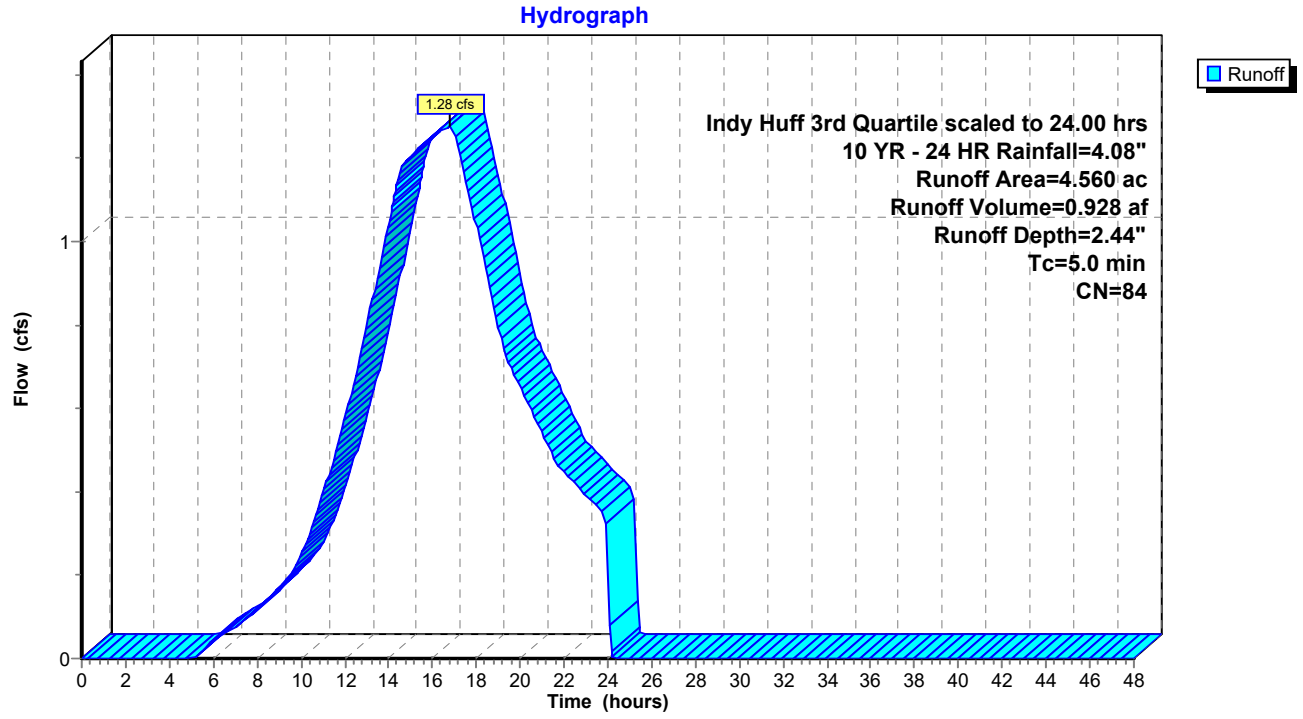
Runoff = 1.28 cfs @ 16.83 hrs, Volume= 0.928 af, Depth= 2.44"
Routed to Pond 8P : SE Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 10 YR - 24 HR Rainfall=4.08"

	Area (ac)	CN	Description
*	4.560	84	
	4.560		100.00% Pervious Area

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

Subcatchment 7S: Off-Site Area 3



Summary for Subcatchment 8S: Off-Site Area 4

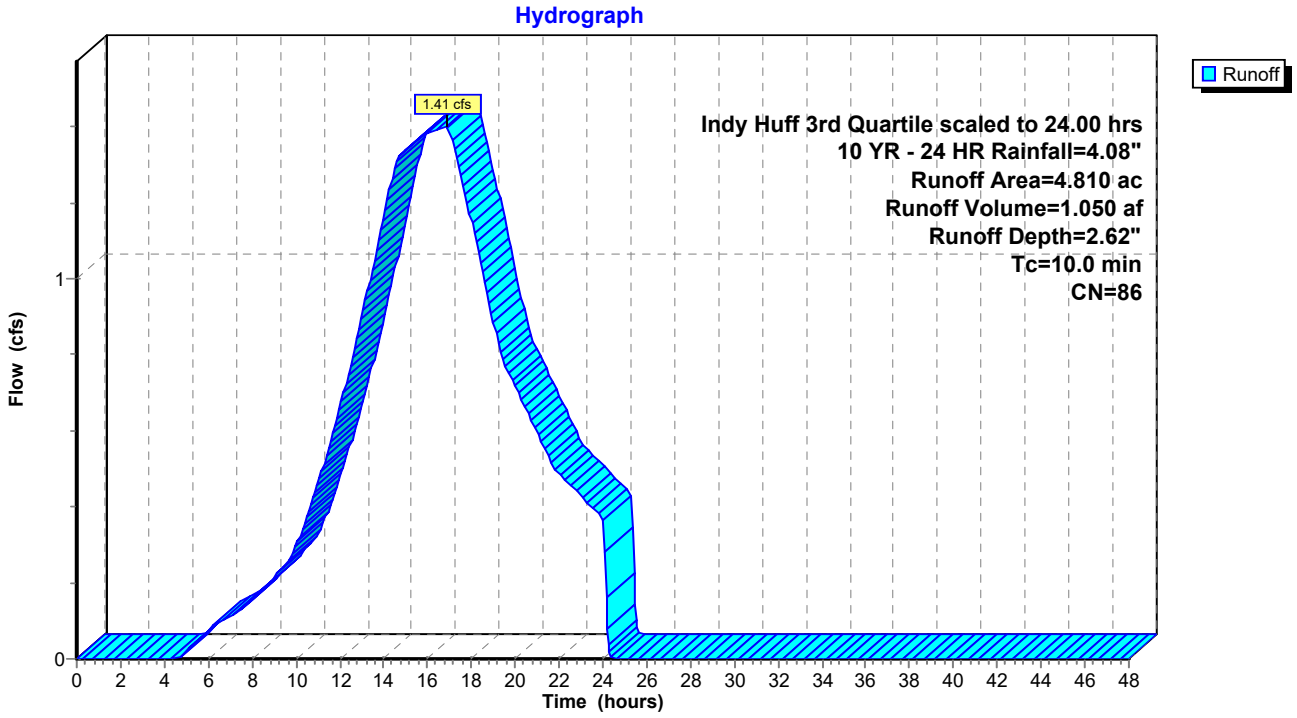
Runoff = 1.41 cfs @ 16.86 hrs, Volume= 1.050 af, Depth= 2.62"
Routed to Pond 8P : SE Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 10 YR - 24 HR Rainfall=4.08"

	Area (ac)	CN	Description
*	4.810	86	
	4.810		100.00% Pervious Area

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

Subcatchment 8S: Off-Site Area 4



Summary for Subcatchment 9S: On-Site SE

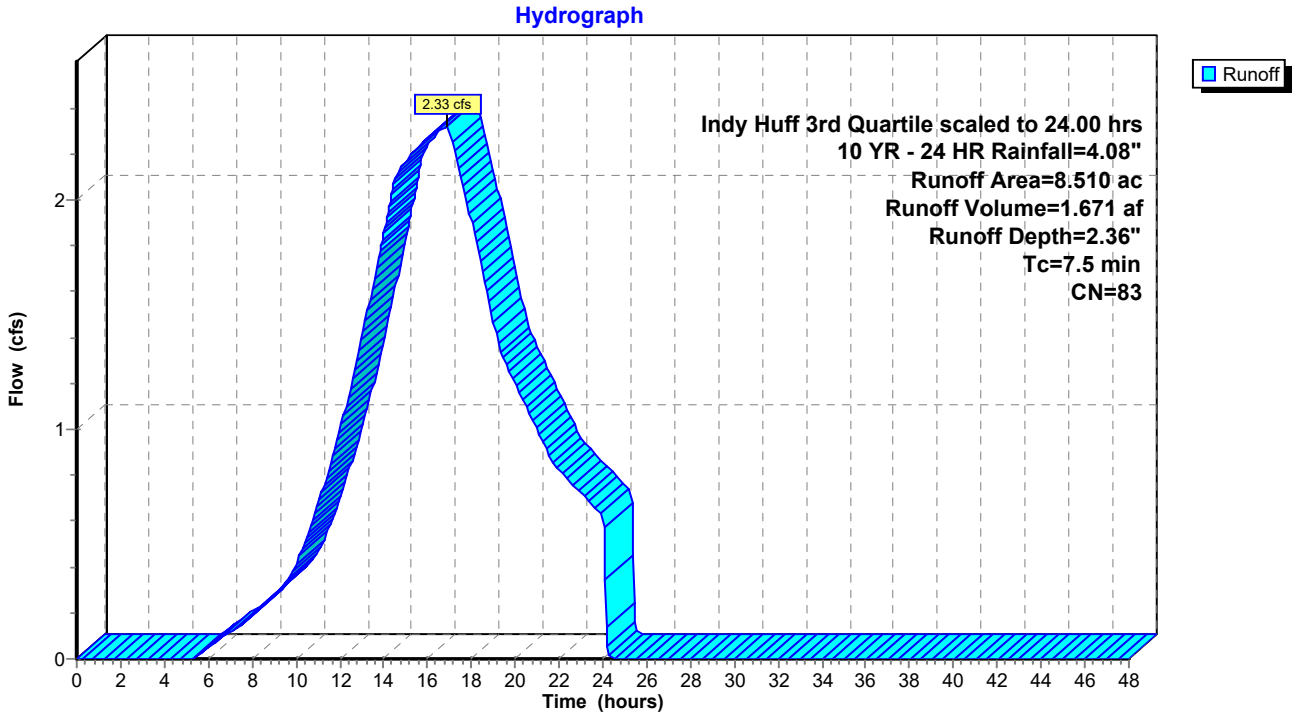
Runoff = 2.33 cfs @ 16.85 hrs, Volume= 1.671 af, Depth= 2.36"
Routed to Pond 8P : SE Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 10 YR - 24 HR Rainfall=4.08"

	Area (ac)	CN	Description
*	8.510	83	
	8.510		100.00% Pervious Area

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

Subcatchment 9S: On-Site SE



Summary for Subcatchment 10S: Off-Site Area 5

[49] Hint: Tc<2dt may require smaller dt

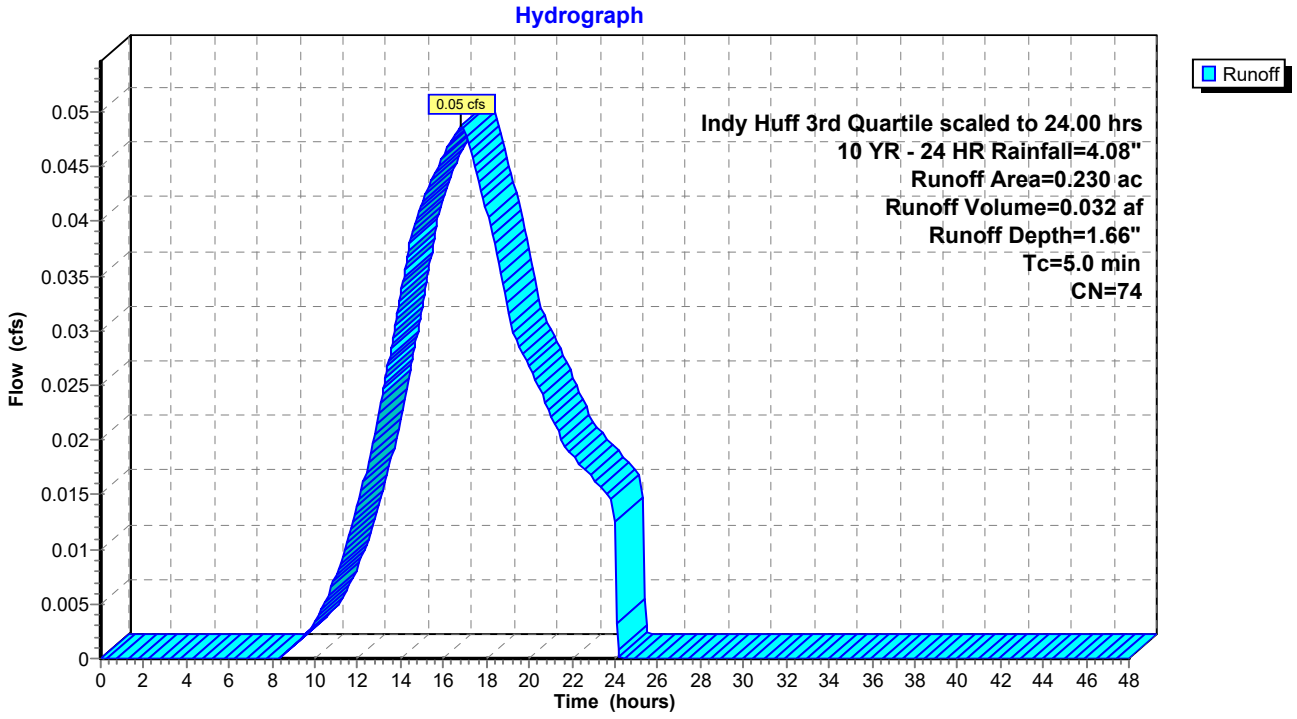
Runoff = 0.05 cfs @ 16.85 hrs, Volume= 0.032 af, Depth= 1.66"
Routed to Pond 5P : SW Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 10 YR - 24 HR Rainfall=4.08"

	Area (ac)	CN	Description
*	0.230	74	
	0.230		100.00% Pervious Area

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

Subcatchment 10S: Off-Site Area 5



Summary for Pond 2P: North Dry Pond

Inflow Area = 8.900 ac, 0.00% Impervious, Inflow Depth = 2.46" for 10 YR - 24 HR event
Inflow = 2.50 cfs @ 16.84 hrs, Volume= 1.821 af
Outflow = 2.22 cfs @ 17.59 hrs, Volume= 1.821 af, Atten= 11%, Lag= 44.9 min
Primary = 2.22 cfs @ 17.59 hrs, Volume= 1.821 af
Routed to Pond 5P : SW Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 737.57' @ 17.59 hrs Surf.Area= 5,493 sf Storage= 4,920 cf

Plug-Flow detention time= 17.2 min calculated for 1.819 af (100% of inflow)
Center-of-Mass det. time= 17.1 min (995.6 - 978.5)

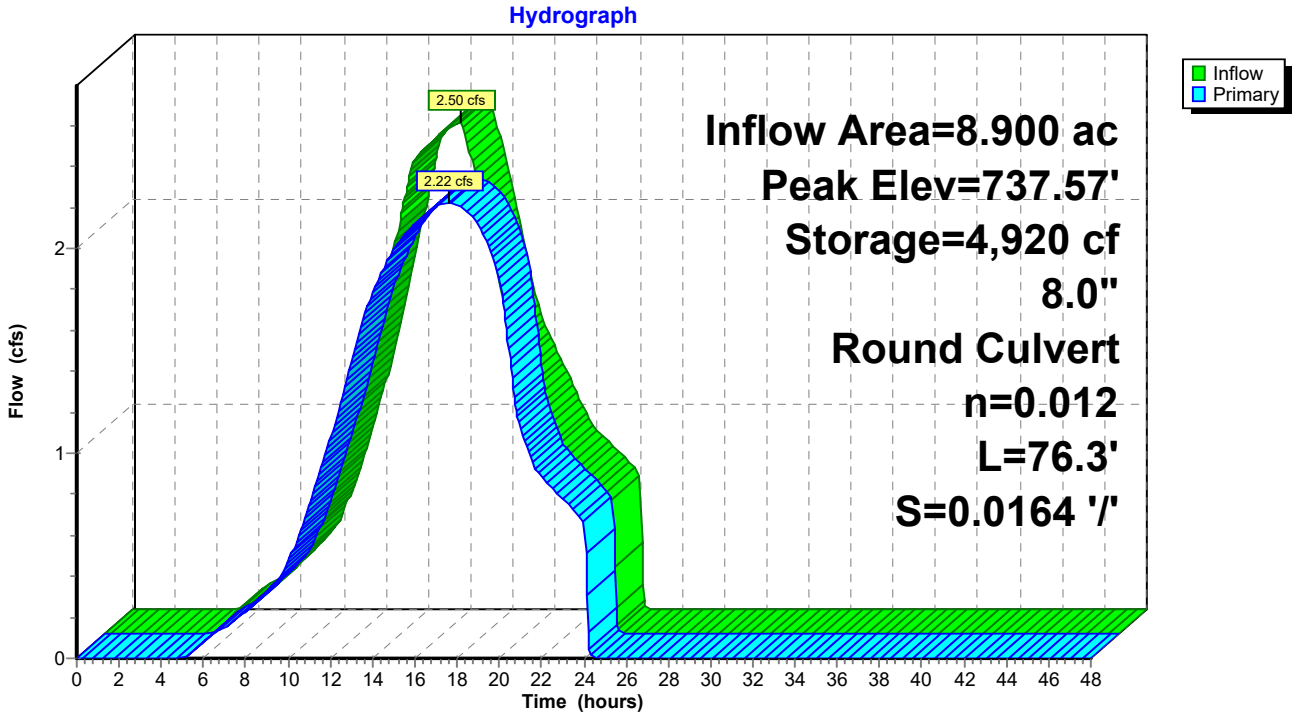
Volume	Invert	Avail.Storage	Storage Description
#1	735.00'	67,960 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
735.00	0	0	0
736.00	821	411	411
737.00	3,224	2,023	2,433
738.00	7,200	5,212	7,645
739.00	11,883	9,542	17,187
740.00	15,188	13,536	30,722
741.00	18,594	16,891	47,613
742.00	22,100	20,347	67,960

Device	Routing	Invert	Outlet Devices
#1	Primary	735.00'	**8.0" Round Culvert** L= 76.3' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 735.00' / 733.75' S= 0.0164 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.35 sf

Primary OutFlow Max=2.22 cfs @ 17.59 hrs HW=737.57' TW=732.71' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 2.22 cfs @ 6.37 fps)

Pond 2P: North Dry Pond



Summary for Pond 5P: SW Pond

Inflow Area = 25.390 ac, 0.00% Impervious, Inflow Depth = 2.61" for 10 YR - 24 HR event
Inflow = 7.09 cfs @ 16.88 hrs, Volume= 5.517 af
Outflow = 4.57 cfs @ 17.03 hrs, Volume= 5.206 af, Atten= 36%, Lag= 8.8 min
Primary = 4.57 cfs @ 17.03 hrs, Volume= 5.206 af
Routed to Pond 8P : SE Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 732.92' @ 20.58 hrs Surf.Area= 1.217 ac Storage= 2.043 af

Plug-Flow detention time= 368.3 min calculated for 5.200 af (94% of inflow)
Center-of-Mass det. time= 344.5 min (1,320.1 - 975.6)

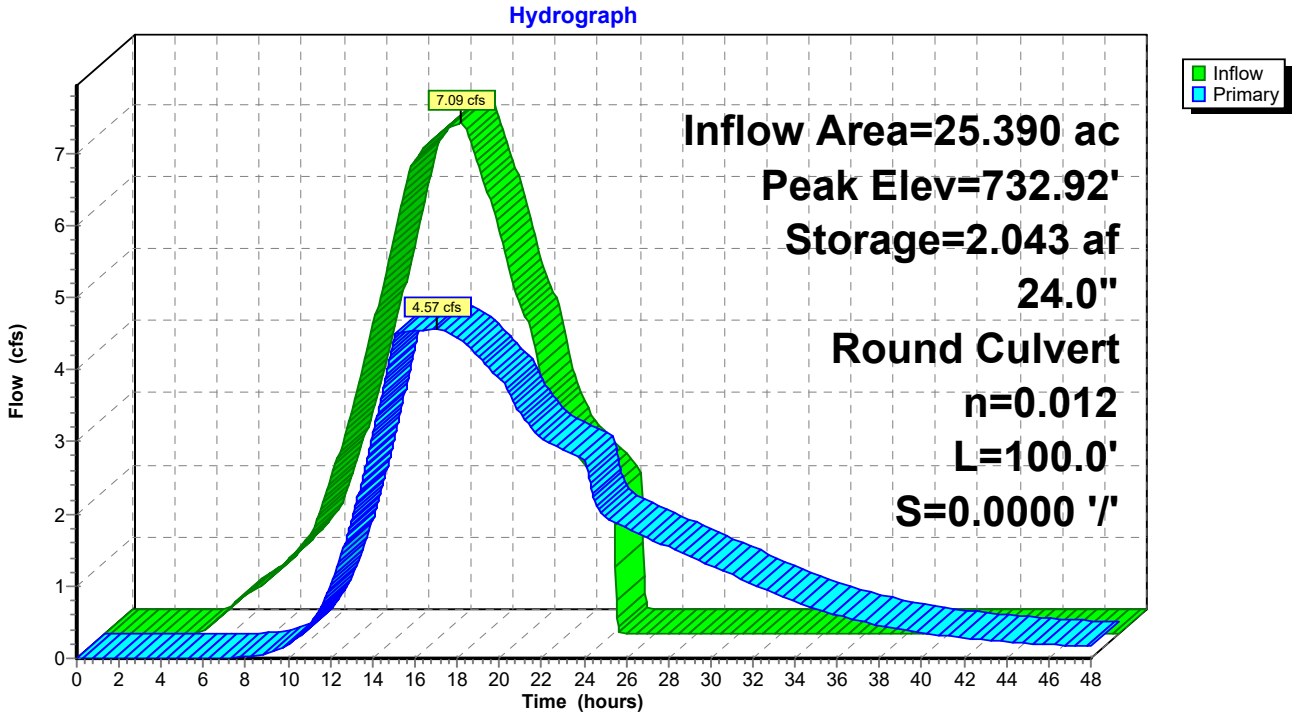
Volume	Invert	Avail.Storage	Storage Description
#1	731.00'	4.920 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
731.00	0.910	0.000	0.000
732.00	1.070	0.990	0.990
733.00	1.230	1.150	2.140
734.00	1.390	1.310	3.450
735.00	1.550	1.470	4.920

Device	Routing	Invert	Outlet Devices
#1	Primary	731.00'	**24.0" Round Culvert** L= 100.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 731.00' / 731.00' S= 0.0000 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=4.42 cfs @ 17.03 hrs HW=732.62' TW=732.46' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 4.42 cfs @ 2.21 fps)

Pond 5P: SW Pond



Summary for Pond 8P: SE Pond

Inflow Area = 43.270 ac, 0.00% Impervious, Inflow Depth > 2.46" for 10 YR - 24 HR event
Inflow = 9.57 cfs @ 16.85 hrs, Volume= 8.854 af
Outflow = 5.50 cfs @ 21.03 hrs, Volume= 8.384 af, Atten= 43%, Lag= 250.7 min
Primary = 5.50 cfs @ 21.03 hrs, Volume= 8.384 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 732.85' @ 21.03 hrs Surf.Area= 1.871 ac Storage= 3.247 af

Plug-Flow detention time= 395.3 min calculated for 8.375 af (95% of inflow)
Center-of-Mass det. time= 332.2 min (1,511.8 - 1,179.6)

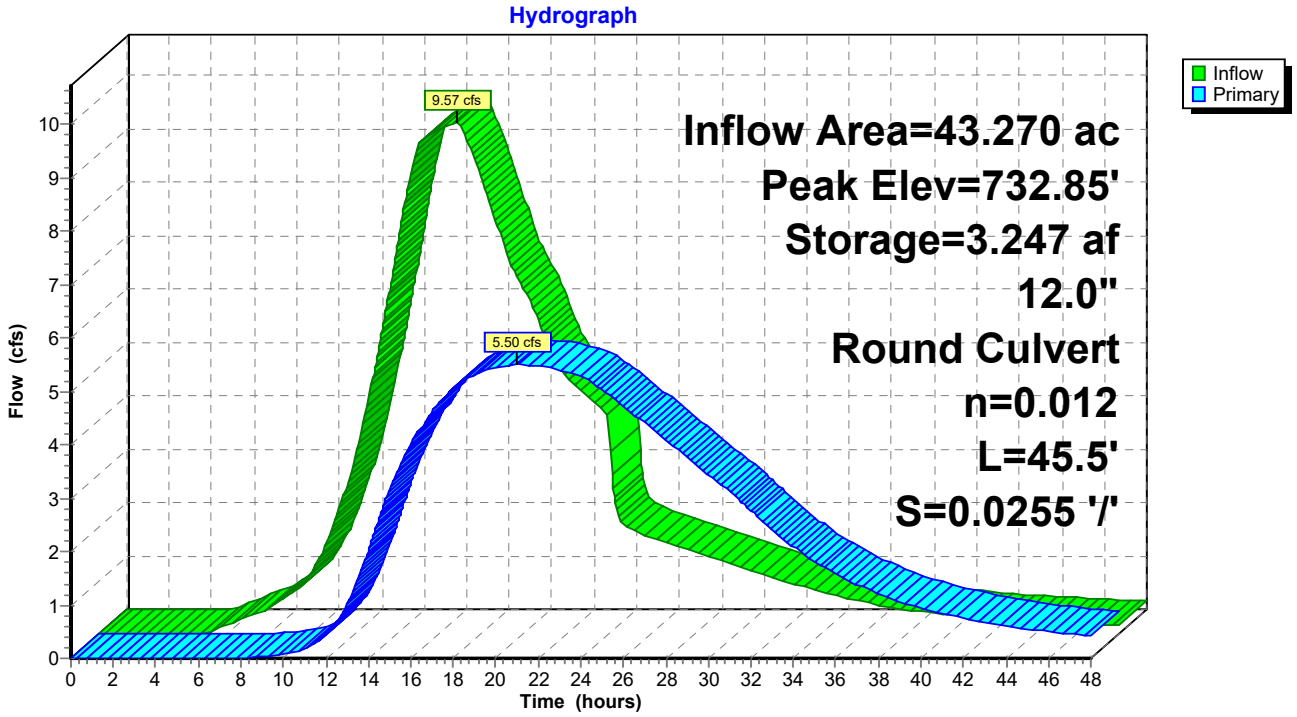
Volume	Invert	Avail.Storage	Storage Description
#1	731.00'	7.560 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
731.00	1.630	0.000	0.000
732.00	1.760	1.695	1.695
733.00	1.890	1.825	3.520
734.00	2.020	1.955	5.475
735.00	2.150	2.085	7.560

Device	Routing	Invert	Outlet Devices
#1	Primary	731.00'	**12.0" Round Culvert** L= 45.5' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 731.00' / 729.84' S= 0.0255 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=5.50 cfs @ 21.03 hrs HW=732.85' (Free Discharge)
1=Culvert (Inlet Controls 5.50 cfs @ 7.01 fps)

Pond 8P: SE Pond



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: On-Site North Runoff Area=7.490 ac 0.00% Impervious Runoff Depth=4.08"
Tc=7.4 min CN=84 Runoff=3.30 cfs 2.549 af

Subcatchment4S: On-Site SW Runoff Area=15.210 ac 0.00% Impervious Runoff Depth=4.40"
Tc=10.9 min CN=87 Runoff=6.98 cfs 5.580 af

Subcatchment5S: Off-Site Area 1 Runoff Area=1.410 ac 0.00% Impervious Runoff Depth=4.19"
Tc=5.0 min CN=85 Runoff=0.63 cfs 0.492 af

Subcatchment6S: Off-Site Area 2 Runoff Area=1.050 ac 0.00% Impervious Runoff Depth=4.30"
Tc=5.0 min CN=86 Runoff=0.48 cfs 0.376 af

Subcatchment7S: Off-Site Area 3 Runoff Area=4.560 ac 0.00% Impervious Runoff Depth=4.08"
Tc=5.0 min CN=84 Runoff=2.01 cfs 1.552 af

Subcatchment8S: Off-Site Area 4 Runoff Area=4.810 ac 0.00% Impervious Runoff Depth=4.30"
Tc=10.0 min CN=86 Runoff=2.18 cfs 1.722 af

Subcatchment9S: On-Site SE Runoff Area=8.510 ac 0.00% Impervious Runoff Depth=3.98"
Tc=7.5 min CN=83 Runoff=3.70 cfs 2.823 af

Subcatchment10S: Off-Site Area 5 Runoff Area=0.230 ac 0.00% Impervious Runoff Depth=3.08"
Tc=5.0 min CN=74 Runoff=0.08 cfs 0.059 af

Pond 2P: North Dry Pond Peak Elev=739.44' Storage=22,776 cf Inflow=3.93 cfs 3.042 af
8.0" Round Culvert n=0.012 L=76.3' S=0.0164 '/' Outflow=2.81 cfs 3.042 af

Pond 5P: SW Pond Peak Elev=734.05' Storage=3.515 af Inflow=10.27 cfs 9.057 af
24.0" Round Culvert n=0.012 L=100.0' S=0.0000 '/' Outflow=5.66 cfs 8.599 af

Pond 8P: SE Pond Peak Elev=733.97' Storage=5.405 af Inflow=13.55 cfs 14.695 af
12.0" Round Culvert n=0.012 L=45.5' S=0.0255 '/' Outflow=7.17 cfs 13.982 af

Total Runoff Area = 43.270 ac Runoff Volume = 15.153 af Average Runoff Depth = 4.20"
100.00% Pervious = 43.270 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: On-Site North

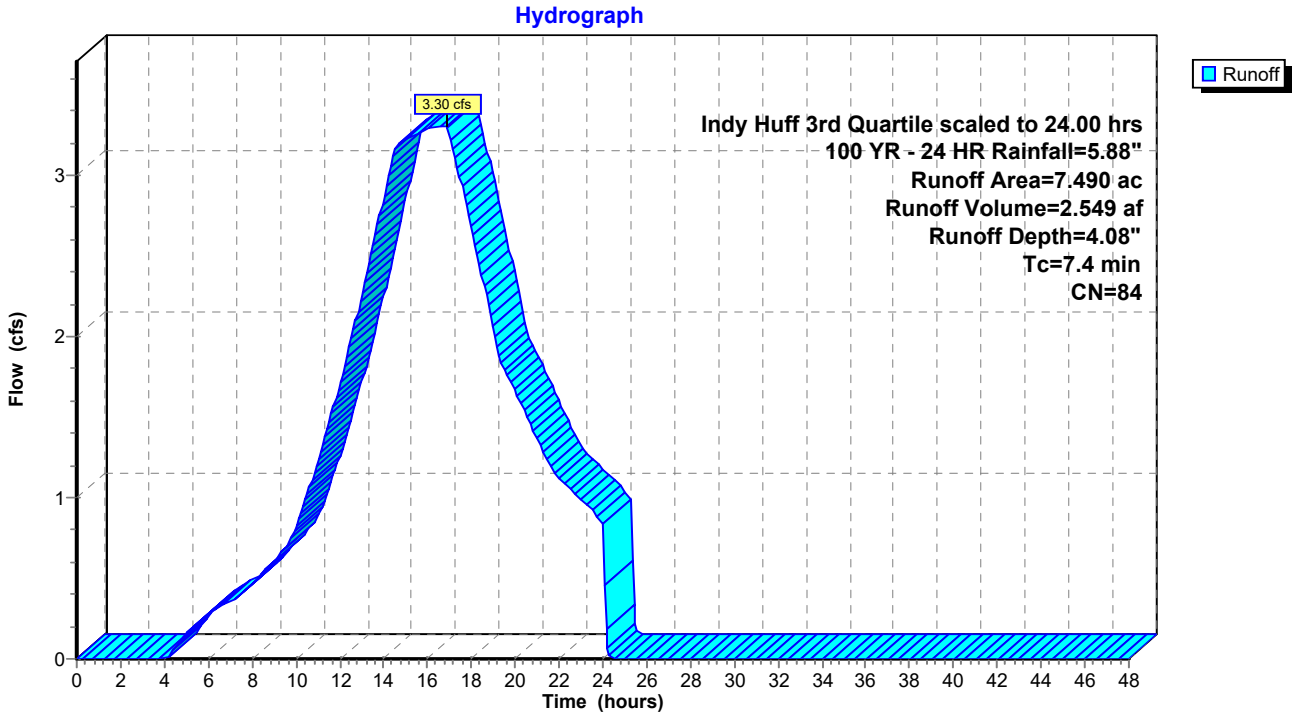
Runoff = 3.30 cfs @ 16.85 hrs, Volume= 2.549 af, Depth= 4.08"
Routed to Pond 2P : North Dry Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 100 YR - 24 HR Rainfall=5.88"

	Area (ac)	CN	Description
*	7.490	84	
	7.490		100.00% Pervious Area

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

Subcatchment 1S: On-Site North



Summary for Subcatchment 4S: On-Site SW

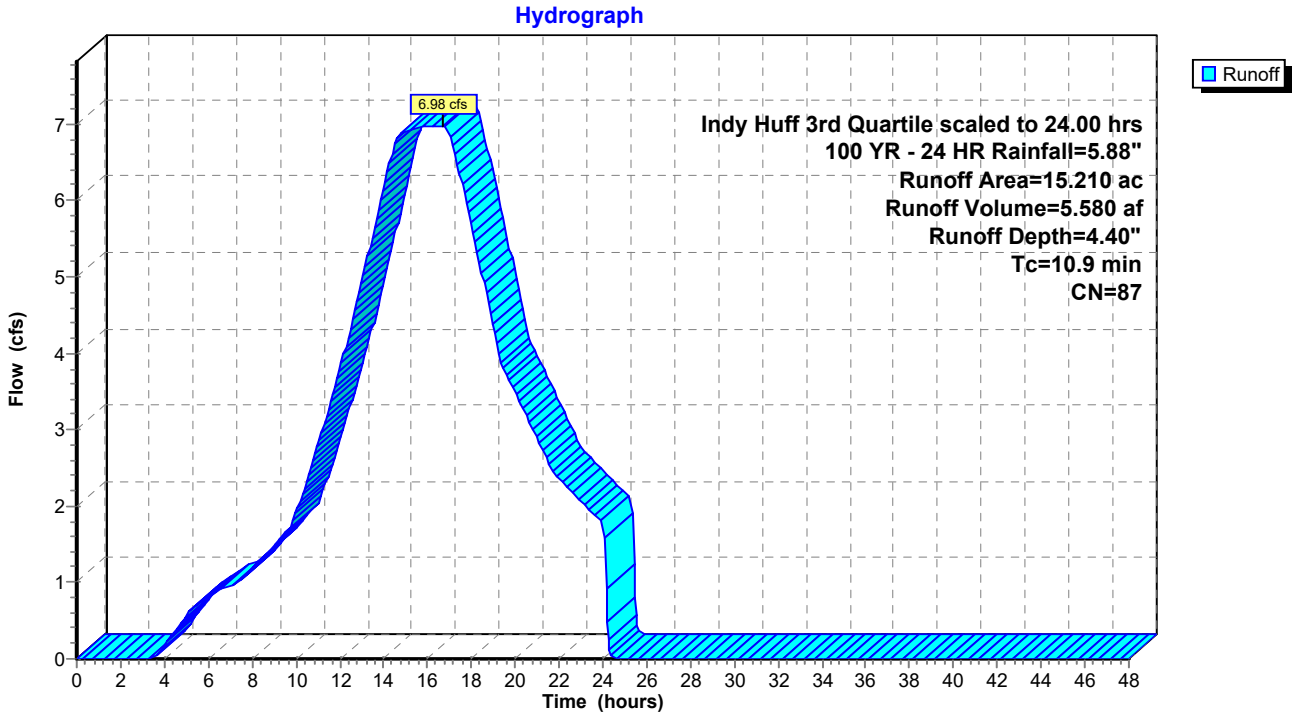
Runoff = 6.98 cfs @ 16.66 hrs, Volume= 5.580 af, Depth= 4.40"
Routed to Pond 5P : SW Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 100 YR - 24 HR Rainfall=5.88"

	Area (ac)	CN	Description
*	15.210	87	
	15.210		100.00% Pervious Area

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

Subcatchment 4S: On-Site SW



Summary for Subcatchment 5S: Off-Site Area 1

[49] Hint: Tc<2dt may require smaller dt

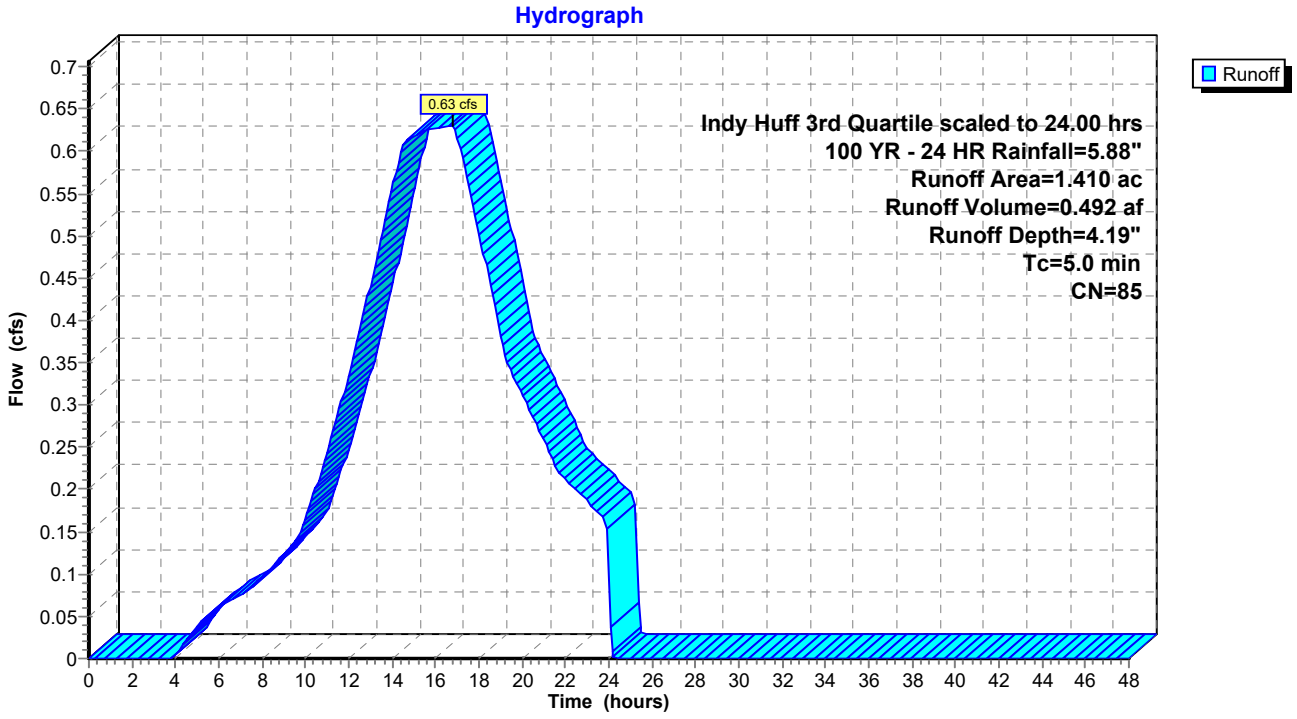
Runoff = 0.63 cfs @ 16.78 hrs, Volume= 0.492 af, Depth= 4.19"
Routed to Pond 2P : North Dry Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 100 YR - 24 HR Rainfall=5.88"

	Area (ac)	CN	Description
*	1.410	85	
	1.410		100.00% Pervious Area

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

Subcatchment 5S: Off-Site Area 1



Summary for Subcatchment 6S: Off-Site Area 2

[49] Hint: Tc<2dt may require smaller dt

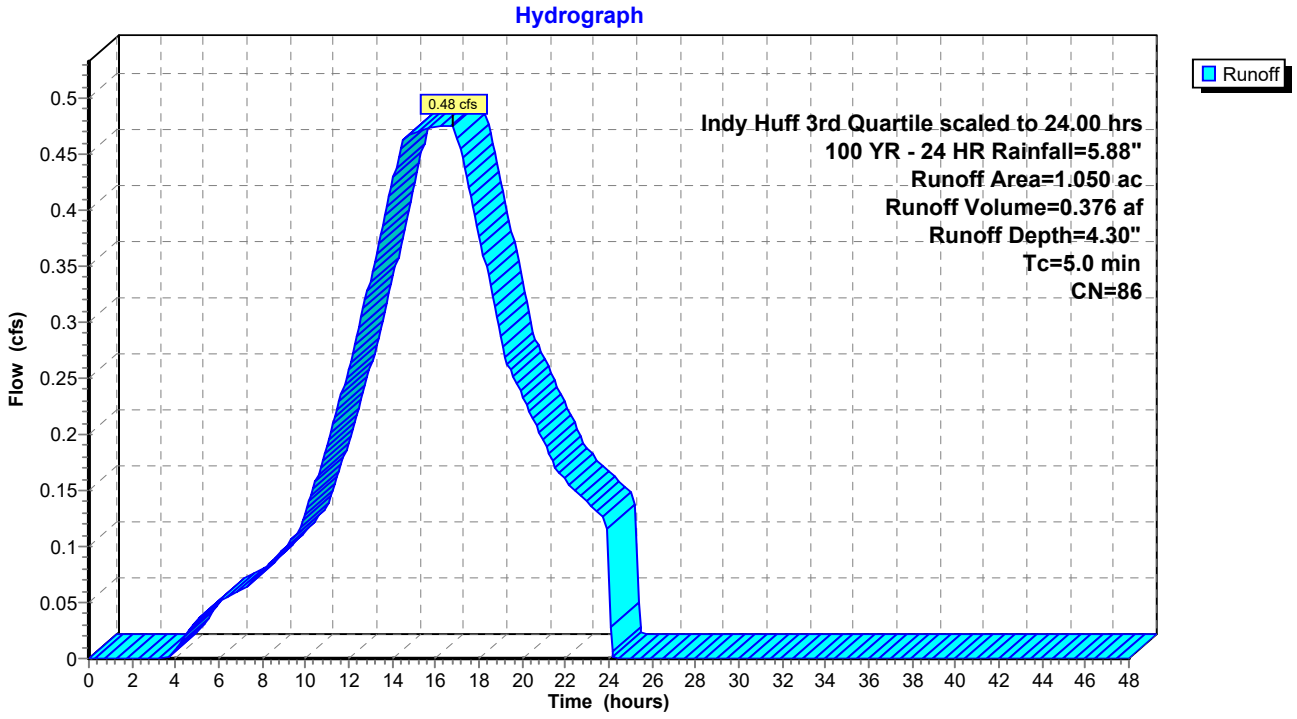
Runoff = 0.48 cfs @ 16.76 hrs, Volume= 0.376 af, Depth= 4.30"
Routed to Pond 5P : SW Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 100 YR - 24 HR Rainfall=5.88"

	Area (ac)	CN	Description
*	1.050	86	
	1.050		100.00% Pervious Area

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

Subcatchment 6S: Off-Site Area 2



Summary for Subcatchment 7S: Off-Site Area 3

[49] Hint: Tc<2dt may require smaller dt

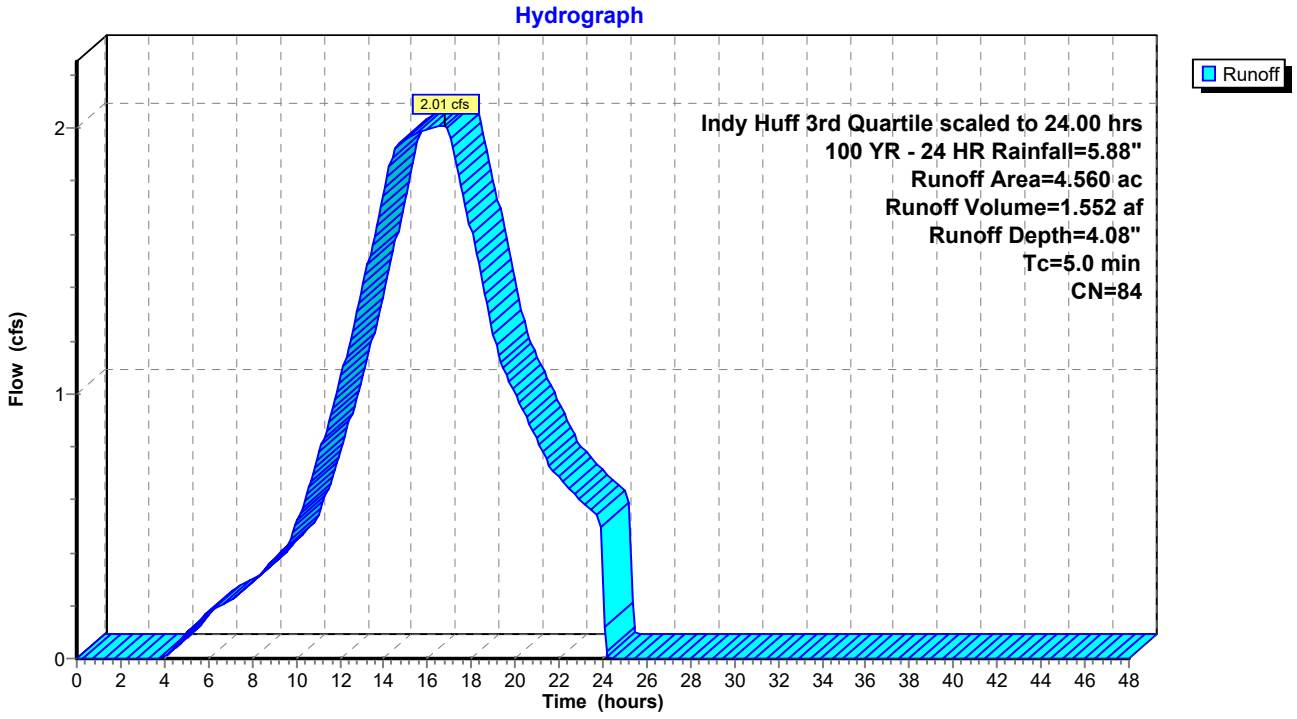
Runoff = 2.01 cfs @ 16.79 hrs, Volume= 1.552 af, Depth= 4.08"
Routed to Pond 8P : SE Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 100 YR - 24 HR Rainfall=5.88"

	Area (ac)	CN	Description
*	4.560	84	
	4.560		100.00% Pervious Area

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

Subcatchment 7S: Off-Site Area 3



Summary for Subcatchment 8S: Off-Site Area 4

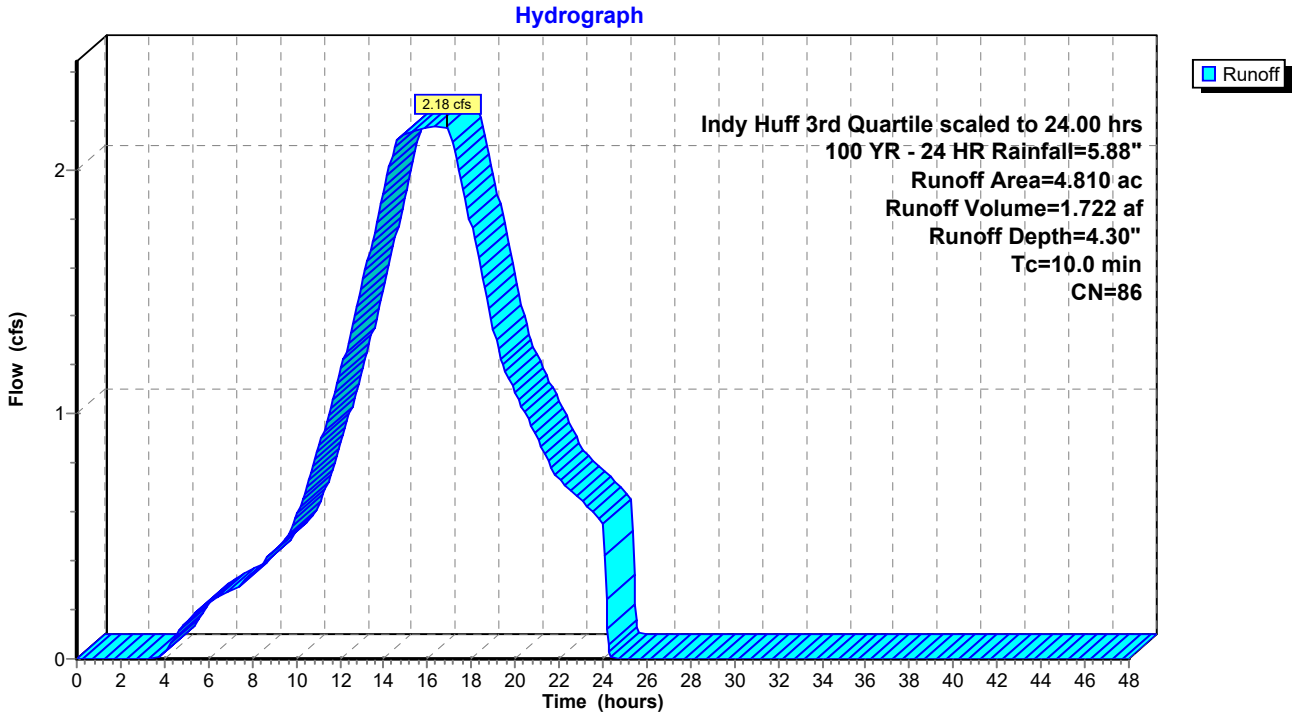
Runoff = 2.18 cfs @ 16.85 hrs, Volume= 1.722 af, Depth= 4.30"
Routed to Pond 8P : SE Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 100 YR - 24 HR Rainfall=5.88"

	Area (ac)	CN	Description
*	4.810	86	
	4.810		100.00% Pervious Area

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

Subcatchment 8S: Off-Site Area 4



Summary for Subcatchment 9S: On-Site SE

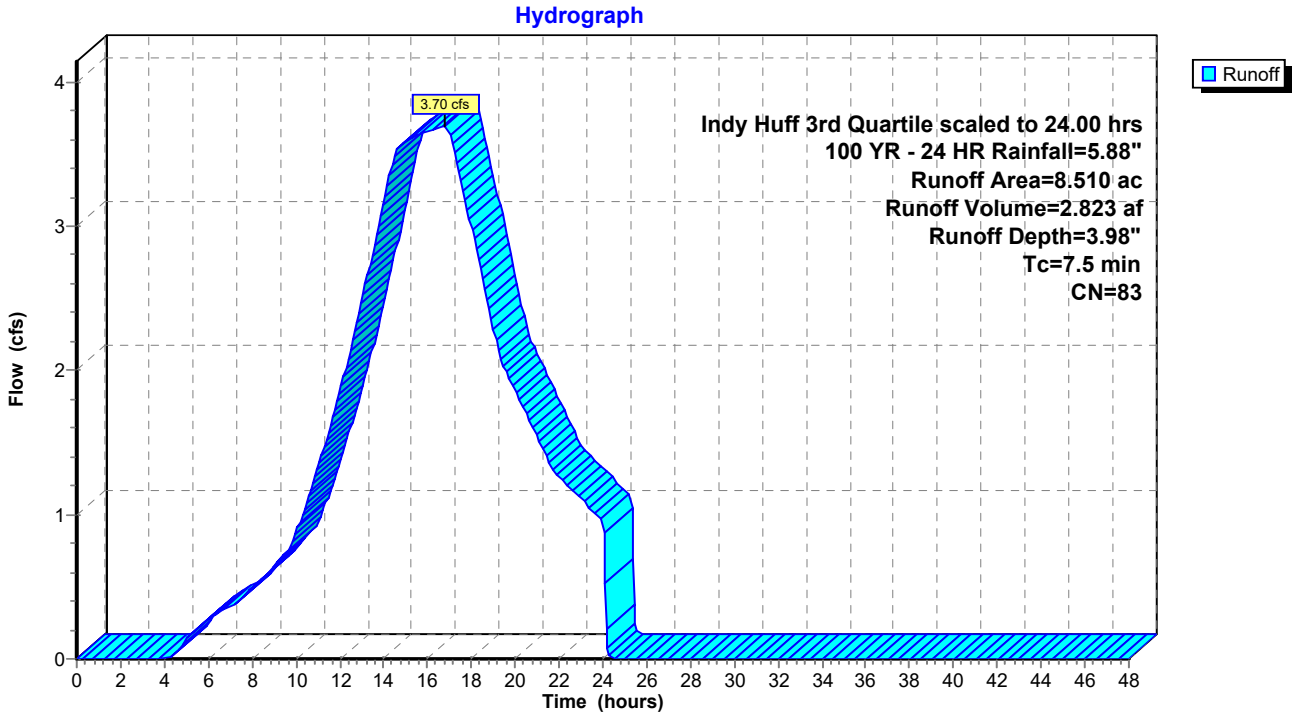
Runoff = 3.70 cfs @ 16.83 hrs, Volume= 2.823 af, Depth= 3.98"
Routed to Pond 8P : SE Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 100 YR - 24 HR Rainfall=5.88"

	Area (ac)	CN	Description
*	8.510	83	
	8.510		100.00% Pervious Area

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

Subcatchment 9S: On-Site SE



Summary for Subcatchment 10S: Off-Site Area 5

[49] Hint: Tc<2dt may require smaller dt

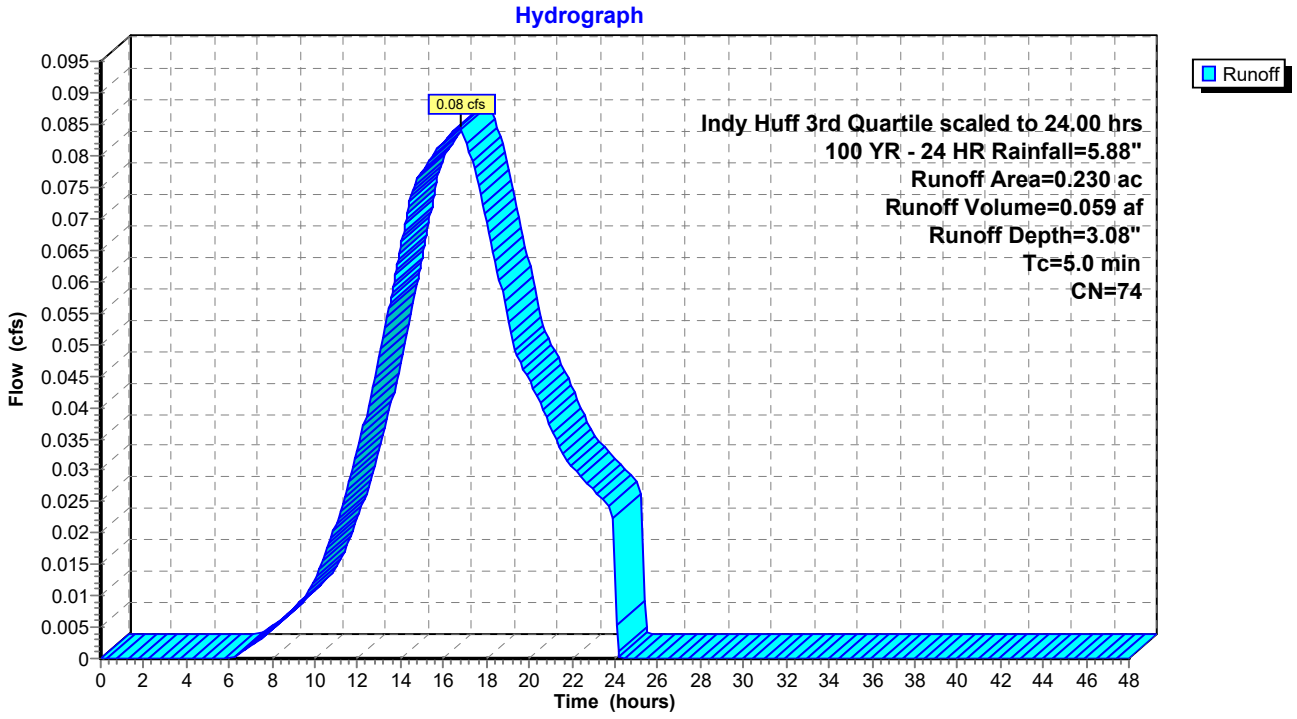
Runoff = 0.08 cfs @ 16.84 hrs, Volume= 0.059 af, Depth= 3.08"
Routed to Pond 5P : SW Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Indy Huff 3rd Quartile scaled to 24.00 hrs 100 YR - 24 HR Rainfall=5.88"

	Area (ac)	CN	Description
*	0.230	74	
	0.230		100.00% Pervious Area

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

Subcatchment 10S: Off-Site Area 5



Summary for Pond 2P: North Dry Pond

Inflow Area = 8.900 ac, 0.00% Impervious, Inflow Depth = 4.10" for 100 YR - 24 HR event
Inflow = 3.93 cfs @ 16.82 hrs, Volume= 3.042 af
Outflow = 2.81 cfs @ 18.50 hrs, Volume= 3.042 af, Atten= 29%, Lag= 100.9 min
Primary = 2.81 cfs @ 18.50 hrs, Volume= 3.042 af
Routed to Pond 5P : SW Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 739.44' @ 18.50 hrs Surf.Area= 13,347 sf Storage= 22,776 cf

Plug-Flow detention time= 73.7 min calculated for 3.038 af (100% of inflow)
Center-of-Mass det. time= 73.7 min (1,025.9 - 952.3)

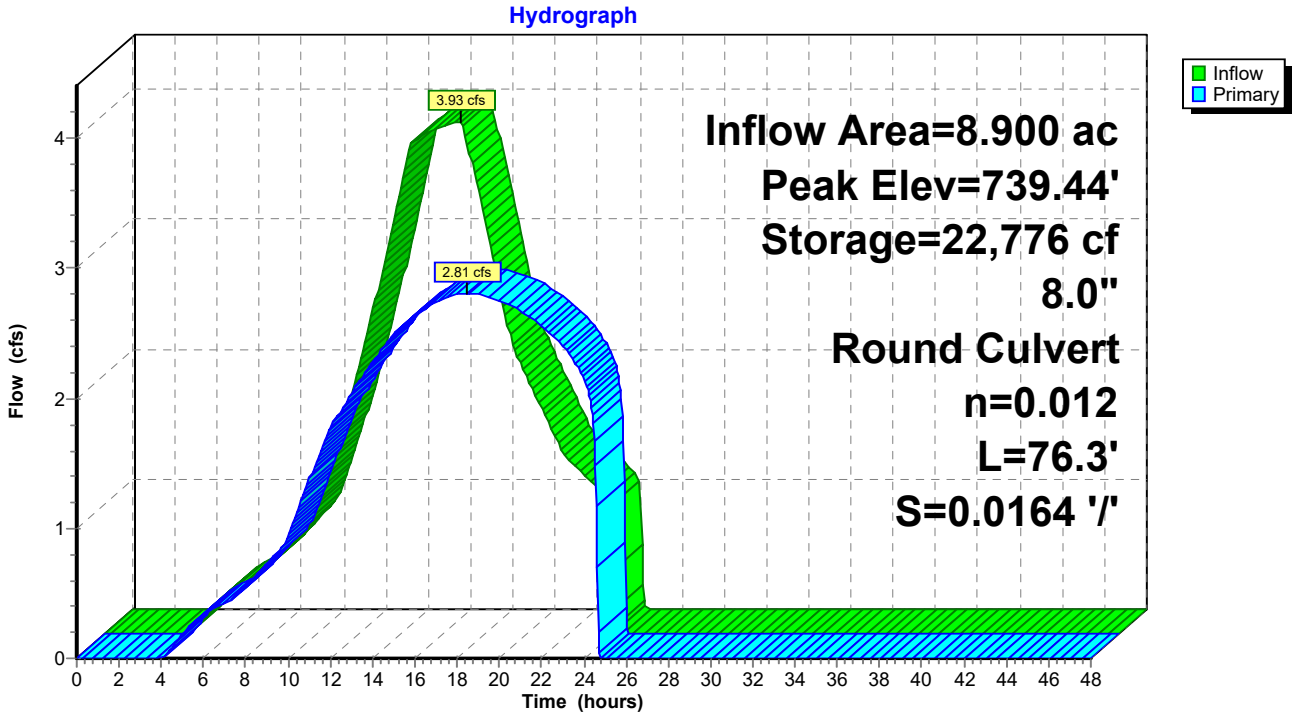
Volume	Invert	Avail.Storage	Storage Description
#1	735.00'	67,960 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
735.00	0	0	0
736.00	821	411	411
737.00	3,224	2,023	2,433
738.00	7,200	5,212	7,645
739.00	11,883	9,542	17,187
740.00	15,188	13,536	30,722
741.00	18,594	16,891	47,613
742.00	22,100	20,347	67,960

Device	Routing	Invert	Outlet Devices
#1	Primary	735.00'	**8.0" Round Culvert** L= 76.3' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 735.00' / 733.75' S= 0.0164 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.35 sf

Primary OutFlow Max=2.81 cfs @ 18.50 hrs HW=739.44' TW=733.77' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 2.81 cfs @ 8.04 fps)

Pond 2P: North Dry Pond



Summary for Pond 5P: SW Pond

Inflow Area = 25.390 ac, 0.00% Impervious, Inflow Depth = 4.28" for 100 YR - 24 HR event
Inflow = 10.27 cfs @ 16.85 hrs, Volume= 9.057 af
Outflow = 5.66 cfs @ 16.96 hrs, Volume= 8.599 af, Atten= 45%, Lag= 6.6 min
Primary = 5.66 cfs @ 16.96 hrs, Volume= 8.599 af
Routed to Pond 8P : SE Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 734.05' @ 22.67 hrs Surf.Area= 1.397 ac Storage= 3.515 af

Plug-Flow detention time= 421.3 min calculated for 8.590 af (95% of inflow)
Center-of-Mass det. time= 398.3 min (1,368.1 - 969.8)

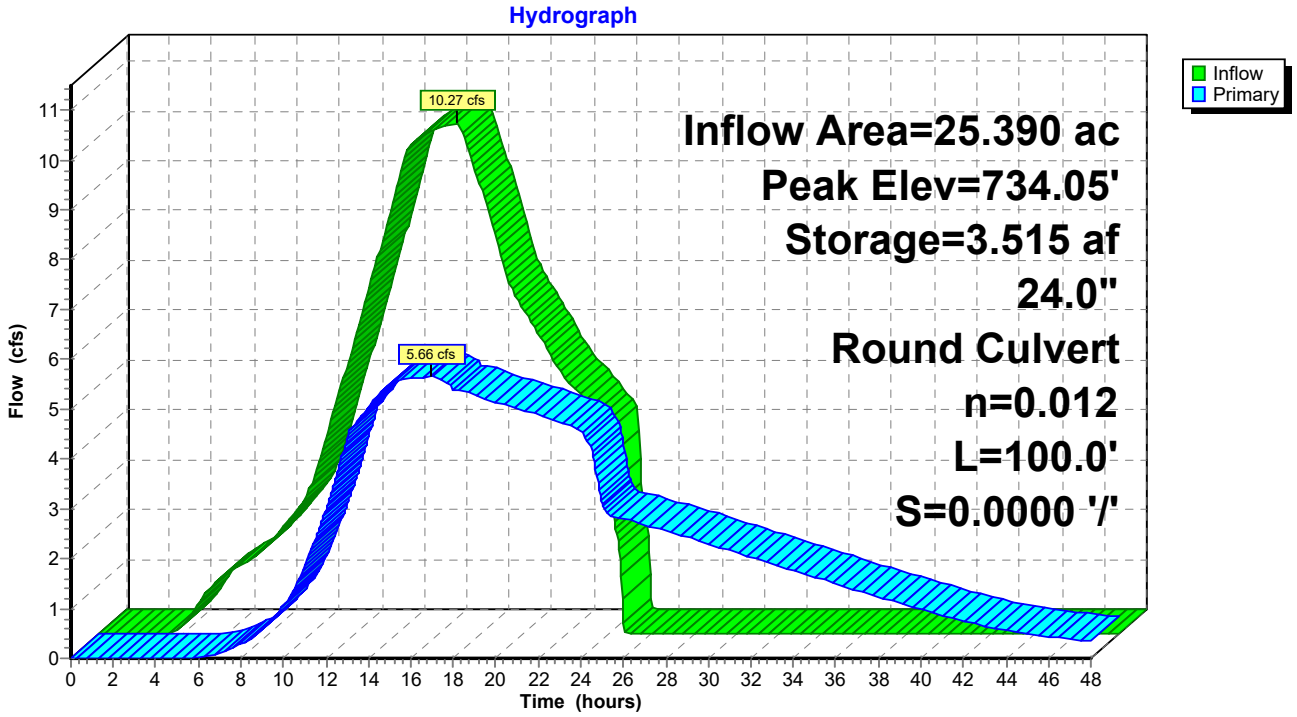
Volume	Invert	Avail.Storage	Storage Description
#1	731.00'	4.920 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
731.00	0.910	0.000	0.000
732.00	1.070	0.990	0.990
733.00	1.230	1.150	2.140
734.00	1.390	1.310	3.450
735.00	1.550	1.470	4.920

Device	Routing	Invert	Outlet Devices
#1	Primary	731.00'	**24.0" Round Culvert** L= 100.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 731.00' / 731.00' S= 0.0000 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=5.26 cfs @ 16.96 hrs HW=733.41' TW=733.31' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 5.26 cfs @ 1.76 fps)

Pond 5P: SW Pond



Summary for Pond 8P: SE Pond

Inflow Area = 43.270 ac, 0.00% Impervious, Inflow Depth > 4.08" for 100 YR - 24 HR event
Inflow = 13.55 cfs @ 16.84 hrs, Volume= 14.695 af
Outflow = 7.17 cfs @ 22.87 hrs, Volume= 13.982 af, Atten= 47%, Lag= 361.8 min
Primary = 7.17 cfs @ 22.87 hrs, Volume= 13.982 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 733.97' @ 22.87 hrs Surf.Area= 2.016 ac Storage= 5.405 af

Plug-Flow detention time= 447.9 min calculated for 13.982 af (95% of inflow)
Center-of-Mass det. time= 383.3 min (1,579.2 - 1,195.9)

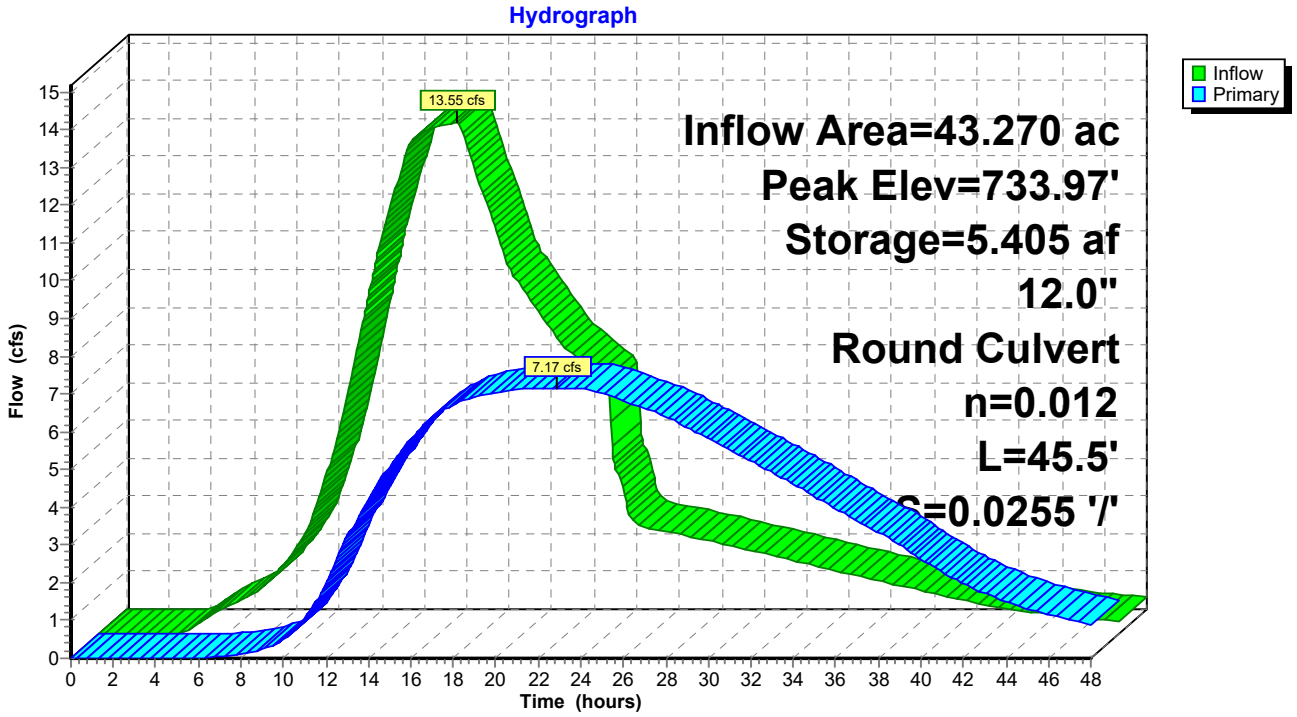
Volume	Invert	Avail.Storage	Storage Description
#1	731.00'	7.560 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
731.00	1.630	0.000	0.000
732.00	1.760	1.695	1.695
733.00	1.890	1.825	3.520
734.00	2.020	1.955	5.475
735.00	2.150	2.085	7.560

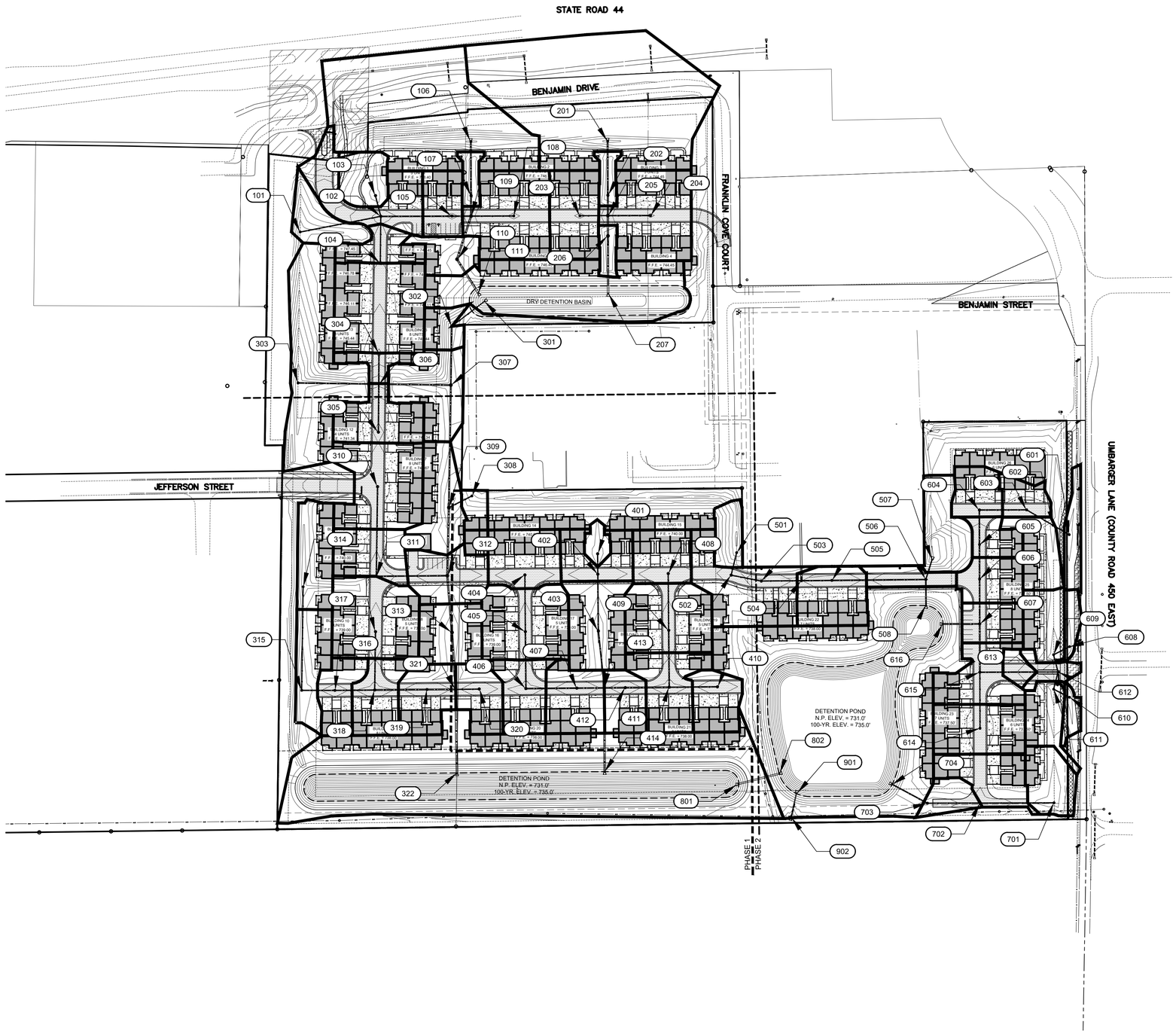
Device	Routing	Invert	Outlet Devices
#1	Primary	731.00'	**12.0" Round Culvert** L= 45.5' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 731.00' / 729.84' S= 0.0255 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=7.17 cfs @ 22.87 hrs HW=733.97' (Free Discharge)
1=Culvert (Barrel Controls 7.17 cfs @ 9.13 fps)

Pond 8P: SE Pond



Appendix D
Proposed Storm Sewer Calculations



N

100 0 100 200 300

SCALE: 1" = 100'

TLF, INC.
3901 West 86th Street, Suite 200
Indianapolis, Indiana 46268
Phone: 317-334-1500
Fax: 317-334-1552

Certified By:

REVISIONS

LEVEL	DESCRIPTION	DATE

Project No.: 2020-493
Date: 05/24/2021
Designed By: DBS
Drawn By: DBS
Checked By: BNH

THE LINKS AT FRANKLIN MULTIPRO, LLC

STATE ROAD 44
FRANKLIN, INDIANA

Title:

PROPOSED STORM SEWER EXHIBIT

Sheet No.:

Drawing Path: P:\2020\400\493\Engr\Calcs_Civil\Exhibits Drawing.dwg Last Edited: 6/3/21 - 5:48pm
Plotted By: mpando Time of Plot: 6/3/21 - 7:02pm

RAINFALL INTENSITIES & DEPTHS

City of Franklin Data

Job Information

Description: MultiPro LLC
Reviewing Entity: City of Franklin
Job #: 2020-493
Date: 06/03/21

Rainfall Intensity (in/hr)							
Duration	Duration	Frequency					
(min)	(hr)	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
5	0.083	5.33	6.38	7.22	8.32	9.17	10.00
10	0.167	4.16	4.96	5.57	6.35	6.95	7.52
30	0.5	2.27	2.78	3.17	3.70	4.10	4.50
60	1	1.39	1.75	2.02	2.40	2.70	3.01
120	2	0.81	1.02	1.19	1.43	1.62	1.82
180	3	0.57	0.72	0.84	1.01	1.16	1.31
360	6	0.34	0.43	0.51	0.61	0.70	0.80
720	12	0.20	0.25	0.29	0.35	0.40	0.45
1440	24	0.12	0.15	0.17	0.20	0.22	0.25

Rainfall Depth (in)							
Duration	Duration	Frequency					
(min)	(hr)	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
5	0.083	0.44	0.53	0.60	0.69	0.76	0.83
10	0.167	0.69	0.83	0.93	1.06	1.16	1.25
30	0.5	1.14	1.39	1.59	1.85	2.05	2.25
60	1	1.39	1.75	2.02	2.40	2.70	3.01
120	2	1.62	2.04	2.38	2.86	3.24	3.64
180	3	1.72	2.17	2.53	3.03	3.48	3.93
360	6	2.05	2.59	3.04	3.67	4.20	4.77
720	12	2.44	3.02	3.52	4.19	4.75	5.34
1440	24	2.90	3.58	4.08	4.78	5.33	5.88

Runoff Coefficient and Runoff Curve Number Calculation

Job Information

Description:	MultiPro LLC
Entity:	City of Franklin
Job #:	2020-493
Date:	6/3/2021

	Runoff Coefficient	Runoff Curve Number
Roof	**0.90**	**98**
Grass	**0.30**	**74**
Pavement	**0.85**	**98**

Reference Cell
-

Basin	Structure	Roof Area	Pervious Area	Pavement Area	Total Area	Weighted Runoff Coefficient	Weighted Curve Number
		(acres)	(acres)	(acres)	(acres)	C	CN
101	101	-	-	-	0.21	0.30	0
103	103	-	-	-	0.20	0.30	0
104	104	-	-	-	0.19	0.85	0
102	102	-	-	-	0.40	0.85	0
105	105	-	-	-	0.21	0.85	0
106	106	-	-	-	1.53	0.85	0
107	107	-	-	-	0.08	0.30	0
108	108	-	-	-	0.53	0.85	0
109	109	-	-	-	-	-	-
110	110	-	-	-	0.17	0.85	0
111	111	-	-	-	-	-	-

Runoff Coefficient and Runoff Curve Number Calculation

Job Information

Description:	MultiPro LLC
Entity:	City of Franklin
Job #:	2020-493
Date:	6/3/2021

	Runoff Coefficient	Runoff Curve Number
Roof	**0.90**	**98**
Grass	**0.30**	**74**
Pavement	**0.85**	**98**

Reference Cell
-

Basin	Structure	Roof Area	Pervious Area	Pavement Area	Total Area	Weighted Runoff Coefficient	Weighted Curve Number
		(acres)	(acres)	(acres)	(acres)	C	CN
201	201	-	-	-	2.04	0.85	0
202	202	-	-	-	0.08	0.30	0
203	203	-	-	-	0.35	0.85	0
204	204	-	-	-	0.56	0.85	0
205	205	-	-	-	-	-	-
206	206	-	-	-	0.07	0.30	0
207	207	-	-	-	-	-	-

Runoff Coefficient and Runoff Curve Number Calculation

Job Information

Description:	MultiPro LLC
Entity:	City of Franklin
Job #:	2020-493
Date:	6/3/2021

	Runoff Coefficient	Runoff Curve Number
Roof	**0.90**	**98**
Grass	**0.30**	**74**
Pavement	**0.85**	**98**

Reference Cell
-

Basin	Structure	Roof Area	Pervious Area	Pavement Area	Total Area	Weighted Runoff Coefficient	Weighted Curve Number
		(acres)	(acres)	(acres)	(acres)	C	CN
301	301	-	-	-	1.07	0.39	0
302	302	-	-	-	0.13	0.85	0
303	303	-	-	-	0.89	0.85	0
304	304	-	-	-	0.64	0.85	0
305	305	-	-	-	0.32	0.85	0
306	306	-	-	-	0.11	0.85	0
307	307	-	-	-	0.39	0.30	0
308	308	-	-	-	0.08	0.85	0
309	309	-	-	-	0.36	0.85	0
310	310	-	-	-	0.55	0.85	0
311	311	-	-	-	0.29	0.85	0
312	312	-	-	-	0.31	0.85	0
313	313	-	-	-	0.30	0.85	0
314	314	-	-	-	0.30	0.85	0
315	315	-	-	-	0.28	0.85	0
316	316	-	-	-	0.21	0.85	0
317	317	-	-	-	0.54	0.85	0
318	318	-	-	-	0.28	0.85	0
319	319	-	-	-	0.28	0.85	0
320	320	-	-	-	0.22	0.85	0
321	321	-	-	-	-	-	-
322	322	-	-	-	-	-	-

Runoff Coefficient and Runoff Curve Number Calculation

Job Information

Description:	MultiPro LLC
Entity:	City of Franklin
Job #:	2020-493
Date:	6/3/2021

	Runoff Coefficient	Runoff Curve Number
Roof	**0.90**	**98**
Grass	**0.30**	**74**
Pavement	**0.85**	**98**

Basin	Structure	Roof Area	Pervious Area	Pavement Area	Total Area	Weighted Runoff Coefficient	Weighted Curve Number
		(acres)	(acres)	(acres)	(acres)	C	CN
401	401	-	-	-	0.09	0.30	0
402	402	-	-	-	0.07	0.85	0
403	403	-	-	-	0.24	0.85	0
404	404	-	-	-	0.41	0.85	0
405	405	-	-	-	0.33	0.85	0
406	406	-	-	-	0.50	0.85	0
407	407	-	-	-	0.28	0.85	0
408	408	-	-	-	0.31	0.85	0
409	409	-	-	-	0.25	0.85	0
410	410	-	-	-	0.46	0.85	0
411	411	-	-	-	0.23	0.85	0
412	412	-	-	-	0.36	0.85	0
413	413	-	-	-	-	-	-
414	414	-	-	-	-	-	-

Runoff Coefficient and Runoff Curve Number Calculation

Job Information

Description:	MultiPro LLC
Entity:	City of Franklin
Job #:	2020-493
Date:	6/3/2021

	Runoff Coefficient	Runoff Curve Number
Roof	**0.90**	**98**
Grass	**0.30**	**74**
Pavement	**0.85**	**98**

Reference Cell
-

Basin	Structure	Roof Area	Pervious Area	Pavement Area	Total Area	Weighted Runoff Coefficient	Weighted Curve Number
		(acres)	(acres)	(acres)	(acres)	C	CN
501	501	-	-	-	0.14	0.30	0
502	502	-	-	-	-	-	-
503	503	-	-	-	0.52	0.85	0
504	504	-	-	-	-	-	-
505	505	-	-	-	0.32	0.85	0
507	507	-	-	-	0.30	0.30	0
506	506	-	-	-	0.14	0.85	0
508	508	-	-	-	-	-	-

Runoff Coefficient and Runoff Curve Number Calculation

Job Information

Description:	MultiPro, LLC
Entity:	City of Franklin
Job #:	2020-493
Date:	6/3/2021

	Runoff Coefficient	Runoff Curve Number
Roof	**0.90**	**98**
Grass	**0.30**	**74**
Pavement	**0.85**	**98**

Basin	Structure	Roof Area	Pervious Area	Pavement Area	Total Area	Weighted Runoff Coefficient	Weighted Curve Number
		(acres)	(acres)	(acres)	(acres)	C	CN
601	601	-	-	-	0.14	0.85	0
602	602	-	-	-	0.23	0.85	0
603	603	-	-	-	0.14	0.85	0
604	604	-	-	-	0.19	0.85	0
605	605	-	-	-	0.15	0.85	0
606	606	-	-	-	0.22	0.85	0
608	608	-	-	-	0.07	0.85	0
609	609	-	-	-	0.22	0.85	0
610	610	-	-	-	0.06	0.85	0
611	611	-	-	-	0.20	0.85	0
612	612	-	-	-	0.09	0.85	0
613	613	-	-	-	0.07	0.85	0
614	614	-	-	-	0.36	0.85	0
615	615	-	-	-	0.31	0.85	0
607	607	-	-	-	0.19	0.85	0
616	616	-	-	-	-	-	-

Runoff Coefficient and Runoff Curve Number Calculation

Job Information

Description:	MultiPro, LLC
Entity:	City of Franklin
Job #:	2020-493
Date:	6/3/2021

	Runoff Coefficient	Runoff Curve Number
Roof	**0.90**	**98**
Grass	**0.30**	**74**
Pavement	**0.85**	**98**

Basin	Structure	Roof Area	Pervious Area	Pavement Area	Total Area	Weighted Runoff Coefficient	Weighted Curve Number
		(acres)	(acres)	(acres)	(acres)	C	CN
701	701	-	-	-	0.25	0.85	0
702	702	-	-	-	0.23	0.85	0
703	703	-	-	-	0.16	0.85	0
704	704	-	-	-	-	-	-

PROPOSED STORM SEWER SYSTEM - SERIES 100

STORM SEWER DESIGN TABLE - RATIONAL METHOD

Job Information

Description: MultiPro LLC
Reviewing Entity: City of Franklin
Job #: 2020-493
Date: 06/03/21

Design Parameters	
Design Storm:	10-yr
Intensity Calculation Method:	Entity Data
Invert Calculation Method:	Match Invert
Drop Amount:	-

				FLOW									CHEN'S METHOD		ENTITY DATA												RIM		INVERT			
STR.	TO STR.	LENGTH	PIPE MATERIAL	DIRECT TO CASTING		DIRECT TO INLET		cA		INLET	CASTING	TO INLET	i		i		CASTING	INLET	PIPE DIAMETER	PIPE SLOPE	MANNING'S N	FULL PIPE CAPACITY	CAPACITY UTILIZATION	FULL FLOW VELOCITY	FLOW DEPTH	FLOW VELOCITY	TRAVEL TIME	ELEV.		ELEV.		COVER	
				c	AREA	c	AREA	INLET	CASTING	CUM. cA	Tc	Tcum	CASTING	INLET	CASTING	INLET	Q	CUM. Q														
		(ft)			(acres)		(acres)				(min)	(min)	(in/hr)		(in/hr)		(CFS)	(CFS)	(inches)	(%)		(cfs)	(%)	(ft/sec)	(ft)	(ft/sec)	(min)	U.S. (ft)	D.S. (ft)	U.S. (ft)	D.S. (ft)	U.S. (ft)	D.S (ft)
101	102	152.54	RCP	0.30	0.21	-	-	0.06	0.06	0.06	5.00	5.00	-	-	7.22	7.22	0.45	0.45	12	0.31	0.013	1.98	23%	2.53	0.33	2.05	1.01	745.20	746.70	741.00	740.53	3.03	5.00
103	102	39.68	RCP	0.30	0.20	-	-	0.06	0.06	0.06	5.00	5.00	-	-	7.22	7.22	0.43	0.43	12	0.31	0.013	1.98	22%	2.53	0.32	2.02	0.26	746.40	746.70	740.65	740.53	4.58	5.00
104	102	87.22	RCP	0.85	0.19	-	-	0.16	0.16	0.16	5.00	5.00	-	-	7.22	7.22	1.17	1.17	12	0.31	0.013	1.98	59%	2.53	0.55	2.63	0.58	745.90	746.70	740.80	740.53	3.93	5.00
102	105	131.98	RCP	0.85	0.40	-	-	0.34	0.34	0.62	5.00	6.01	-	-	7.22	6.89	2.45	4.30	18	0.30	0.013	5.75	75%	3.26	0.97	3.57	0.68	746.70	746.89	740.53	740.14	4.46	5.05
105	109	35.45	RCP	0.85	0.21	-	-	0.18	0.18	0.80	5.00	6.68	-	-	7.22	6.66	1.29	5.35	18	0.35	0.013	6.21	86%	3.52	1.07	3.96	0.17	746.89	746.35	740.14	740.01	5.05	4.63
106	107	100.42	RCP	0.85	1.53	-	-	1.30	1.30	1.30	5.00	5.00	-	-	7.22	7.22	9.39	9.39	24	0.30	0.013	12.39	76%	3.94	1.30	4.34	0.42	-	744.77	740.43	740.13	-	2.39
107	109	37.90	RCP	0.30	0.08	-	-	0.02	0.02	1.32	5.00	5.42	-	-	7.22	7.08	0.17	9.38	24	0.30	0.013	12.39	76%	3.94	1.30	4.34	0.16	744.77	746.35	740.13	740.01	2.39	4.09
108	109	79.22	RCP	0.85	0.53	-	-	0.45	0.45	0.45	5.00	5.00	-	-	7.22	7.22	3.25	3.25	15	0.30	0.013	3.54	92%	2.88	0.94	3.27	0.46	744.89	746.35	740.25	740.01	3.20	4.90
109	110	84.28	RCP	-	-	-	-	-	-	2.58	5.00	6.85	-	-	7.22	6.61	-	17.04	30	0.30	0.013	22.47	76%	4.58	1.63	5.03	0.31	746.35	745.08	740.01	739.76	3.55	2.53
110	111	73.95	RCP	0.85	0.17	-	-	0.14	0.14	2.72	5.00	7.16	-	-	7.22	6.51	1.04	17.72	30	0.35	0.013	24.27	73%	4.94	1.59	5.40	0.25	745.08	-	739.76	739.50	2.53	-
111	Out	-	-	-	-	-	-	-	-	2.72	5.00	7.41	-	-	7.22	6.43	-	17.49	-	-	-	-	-	-	-	-	-	-	-	739.50	739.50	-	-

PROPOSED STORM SEWER SYSTEM - SERIES 200

STORM SEWER DESIGN TABLE - RATIONAL METHOD

Job Information

Description: MultiPro LLC
Reviewing Entity: City of Franklin
Job #: 2020-493
Date: 06/03/21

Design Parameters	
Design Storm:	10-yr
Intensity Calculation Method:	Entity Data
Invert Calculation Method:	Match Invert
Drop Amount:	-

STR.	TO STR.	LENGTH	PIPE MATERIAL	FLOW				cA			CHEN'S METHOD		ENTITY DATA		CASTING	INLET	PIPE DIAMETER	PIPE SLOPE	MANNING'S N	FULL PIPE CAPACITY	CAPACITY UTILIZATION	FULL FLOW VELOCITY	FLOW DEPTH	FLOW VELOCITY	TRAVEL TIME	RIM ELEV.		INVERT ELEV.		COVER	
				DIRECT TO CASTING		DIRECT TO INLET					i		i																	
				c	AREA	c	AREA	INLET	CASTING	CUM. cA	Tc	Tcum	CASTING	INLET	CASTING	INLET	Q	CUM. Q							U.S.	D.S.	U.S.	D.S.	U.S.	D.S
		(ft)			(acres)		(acres)				(min)	(min)	(in/hr)		(in/hr)		(CFS)	(CFS)	(inches)	(%)		(cfs)	(%)	(ft/sec)	(ft)	(ft/sec)	(min)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
201	202	100.41	RCP	0.85	2.04	-	-	1.73	1.73	1.73	5.00	5.00	-	-	7.22	7.22	12.52	12.52	24	0.31	0.013	12.60	99%	4.01	1.63	4.57	0.42	-	743.05	739.29	738.98	-	1.82
202	205	37.91	RCP	0.30	0.08	-	-	0.02	0.02	1.76	5.00	5.42	-	-	7.22	7.08	0.17	12.45	24	0.31	0.013	12.60	99%	4.01	1.62	4.57	0.16	743.05	744.39	738.98	738.86	1.82	3.28
203	205	52.06	RCP	0.85	0.35	-	-	0.30	0.30	0.30	5.00	5.00	-	-	7.22	7.22	2.15	2.15	12	0.37	0.013	2.17	99%	2.76	0.81	3.15	0.31	744.90	744.39	739.05	738.86	4.68	4.36
204	205	79.22	RCP	0.85	0.56	-	-	0.48	0.48	0.48	5.00	5.00	-	-	7.22	7.22	3.44	3.44	15	0.30	0.013	3.54	97%	2.88	0.99	3.29	0.46	742.93	744.39	739.10	738.86	2.39	4.09
205	206	37.70	RCP	-	-	-	-	-	-	2.53	5.00	5.57	-	-	7.22	7.03	-	17.80	30	0.25	0.013	20.51	87%	4.18	1.80	4.70	0.15	744.39	743.38	738.86	738.77	2.74	1.82
206	207	106.62	RCP	0.30	0.07	-	-	0.02	0.02	2.55	5.00	5.73	-	-	7.22	6.98	0.15	17.82	30	0.25	0.013	20.51	87%	4.18	1.80	4.71	0.43	743.38	-	738.77	738.50	1.82	-
207	Out	-	-	-	-	-	-	-	-	2.55	5.00	6.15	-	-	7.22	6.84	-	17.46	-	-	-	-	-	-	-	-	-	-	-	738.50	738.50	-	-

PROPOSED STORM SEWER SYSTEM - SERIES 300

STORM SEWER DESIGN TABLE - RATIONAL METHOD

Job Information

Description: MultiPro LLC
Reviewing Entity: City of Franklin
Job #: 2020-493
Date: 06/03/21

Design Parameters	
Design Storm:	10-yr
Intensity Calculation Method:	Entity Data
Invert Calculation Method:	Match Invert
Drop Amount:	-

STR.	TO STR.	LENGTH	PIPE MATERIAL	FLOW: DIRECT TO CASTING c	FLOW: DIRECT TO CASTING AREA	FLOW: DIRECT TO INLET c	FLOW: DIRECT TO INLET AREA	cA: INLET	cA: CASTING	INLET CUM. cA	CASTING Tc	TO INLET Tcum	CHEN'S METHOD i: CASTING	CHEN'S METHOD i: INLET	ENTITY DATA i: CASTING	ENTITY DATA i: INLET	CASTING Q	INLET CUM. Q	PIPE DIAMETER	PIPE SLOPE	MANNING'S N	FULL PIPE CAPACITY	CAPACITY UTILIZATION	FULL FLOW VELOCITY	FLOW DEPTH	FLOW VELOCITY	TRAVEL TIME	RIM ELEV. U.S.	RIM ELEV. D.S.	INVERT ELEV. U.S.	INVERT ELEV. D.S.	COVER U.S.	COVER D.S
		(ft)			(acres)		(acres)				(min)	(min)	(in/hr)		(in/hr)		(CFS)	(CFS)	(inches)	(%)		(cfs)	(%)	(ft/sec)	(ft)	(ft/sec)	(min)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
301	302	76.28	RCP	0.39	1.07	-	-	0.41	0.41	0.41	7.39	7.39	-	-	6.43	6.43	2.65	2.65	10	1.65	0.013	2.81	94%	5.16	0.64	5.87	0.25	-	738.47	735.01	733.75	-	3.74
302	307	108.98	RCP	0.85	0.13	-	-	0.11	0.11	0.52	5.00	7.64	-	-	7.22	6.35	0.80	3.32	18	0.20	0.013	4.70	71%	2.66	0.93	2.88	0.68	738.47	738.27	733.75	733.53	3.01	3.03
303	306	149.89	RCP	0.85	0.89	-	-	0.76	0.76	0.76	5.00	5.00	-	-	7.22	7.22	5.46	5.46	18	0.31	0.013	5.85	93%	3.31	1.15	3.76	0.75	738.05	742.20	734.39	733.93	1.95	6.56
304	306	57.41	RCP	0.85	0.64	-	-	0.54	0.54	0.54	5.00	5.00	-	-	7.22	7.22	3.93	3.93	15	0.40	0.013	4.09	96%	3.33	0.98	3.79	0.29	743.90	742.20	734.16	733.93	8.30	6.83
305	306	89.27	RCP	0.85	0.32	-	-	0.27	0.27	0.27	5.00	5.00	-	-	7.22	7.22	1.96	1.96	12	0.35	0.013	2.11	93%	2.68	0.76	3.05	0.55	739.80	742.20	734.24	733.93	4.39	7.10
306	307	133.73	RCP	0.85	0.11	-	-	0.09	0.09	1.67	5.00	5.75	-	-	7.22	6.97	0.68	11.61	24	0.30	0.013	12.39	94%	3.94	1.54	4.48	0.57	742.20	738.27	733.93	733.53	6.02	2.49
307	309	227.39	RCP	0.30	0.39	-	-	0.12	0.12	2.31	5.00	8.32	-	-	7.22	6.12	0.84	14.12	24	0.50	0.013	16.00	88%	5.09	1.46	5.75	0.74	738.27	736.81	733.53	732.39	2.49	2.17
308	309	47.77	RCP	0.85	0.08	-	-	0.07	0.07	0.07	5.00	5.00	-	-	7.22	7.22	0.49	0.49	12	0.31	0.013	1.98	25%	2.53	0.34	2.09	0.32	736.05	736.81	732.54	732.39	2.34	3.25
309	312	126.41	RCP	0.85	0.36	-	-	0.31	0.31	2.68	5.00	9.06	-	-	7.22	5.88	2.21	15.75	30	0.25	0.013	20.51	77%	4.18	1.64	4.61	0.50	736.81	738.35	732.39	732.08	1.63	3.48
310	311	166.47	RCP	0.85	0.55	-	-	0.47	0.47	0.47	5.00	5.00	-	-	7.22	7.22	3.38	3.38	15	0.30	0.013	3.54	95%	2.88	0.98	3.28	0.96	739.13	738.53	732.90	732.41	4.79	4.69
311	312	131.71	RCP	0.85	0.29	-	-	0.25	0.25	0.71	5.00	5.96	-	-	7.22	6.90	1.78	4.93	18	0.25	0.013	5.25	94%	2.97	1.15	3.38	0.74	738.53	738.35	732.41	732.08	4.42	4.57
312	313	105.79	RCP	0.85	0.31	-	-	0.26	0.26	3.66	5.00	9.57	-	-	7.22	5.71	1.90	20.89	30	0.30	0.013	22.47	93%	4.58	1.91	5.20	0.39	738.35	736.01	732.08	731.76	3.48	1.46
313	321	105.95	RCP	0.85	0.30	-	-	0.26	0.26	3.91	5.00	9.95	-	-	7.22	5.59	1.84	21.85	30	0.35	0.013	24.27	90%	4.94	1.85	5.59	0.36	736.01	737.10	731.76	731.39	1.46	2.92
314	315	192.24	RCP	0.85	0.30	-	-	0.26	0.26	0.26	5.00	5.00	-	-	7.22	7.22	1.84	1.84	12	0.31	0.013	1.98	93%	2.53	0.76	2.87	1.27	736.42	736.18	732.81	732.22	2.44	2.79
315	316	61.65	RCP	0.85	0.28	-	-	0.24	0.24	0.49	5.00	6.27	-	-	7.22	6.80	1.72	3.35	15	0.30	0.013	3.54	95%	2.88	0.97	3.28	0.36	736.18	736.75	732.22	732.03	2.52	3.28
316	318	73.82	RCP	0.85	0.21	-	-	0.18	0.18	0.67	5.00	6.62	-	-	7.22	6.68	1.29	4.49	18	0.30	0.013	5.75	78%	3.26	1.00	3.60	0.38	736.75	736.65	732.03	731.81	3.01	3.13
317	318	108.33	RCP	0.85	0.54	-	-	0.46	0.46	0.46	5.00	5.00	-	-	7.22	7.22	3.31	3.31	15	0.30	0.013	3.54	94%	2.88	0.96	3.28	0.63	737.45	736.65	732.14	731.81	3.88	3.40
318	319	97.19	RCP	0.85	0.28	-	-	0.24	0.24	1.37	5.00	7.00	-	-	7.22	6.56	1.72	8.98	24	0.30	0.013	12.39	72%	3.94	1.26	4.30	0.41	736.65	736.56	731.81	731.52	2.59	2.79
319	321	53.17	RCP	0.85	0.28	-	-	0.24	0.24	1.61	5.00	7.41	-	-	7.22	6.42	1.72	10.32	24	0.25	0.013	11.31	91%	3.60	1.50	4.08	0.25	736.56	737.10	731.52	731.39	2.79	3.46
320	321	43.66	RCP	0.85	0.22	-	-	0.19	0.19	0.19	5.00	5.00	-	-	7.22	7.22	1.35	1.35	12	0.31	0.013	1.98	68%	2.53	0.61	2.72	0.29	736.65	737.10	731.52	731.39	3.96	4.55
321	322	155.06	RCP	-	-	-	-	-	-	5.71	5.00	10.31	-	-	7.22	5.53	-	31.57	36	0.25	0.013	33.35	95%	4.72	2.33	5.37	0.55	737.10	-	731.39	731.00	2.38	-
322	Out	-	-	-	-	-	-	-	-	5.71	5.00	10.86	-	-	7.22	5.47	-	31.19	-	-	-	-	-	-	-	-	-	-	-	731.00	731.00	-	-

PROPOSED STORM SEWER SYSTEM
STORM SEWER DESIGN TABLE - RATIONAL METHOD

Job Information

Description: MultiPro LLC
Reviewing Entity: City of Franklin
Job #: 2020-493
Date: 06/03/21

Design Parameters	
Design Storm:	10-yr
Intensity Calculation Method:	Entity Data
Invert Calculation Method:	Match Invert
Drop Amount:	-

STR.	TO STR.	LENGTH	PIPE MATERIAL	FLOW: DIRECT TO CASTING c	FLOW: DIRECT TO CASTING AREA	FLOW: DIRECT TO INLET c	FLOW: DIRECT TO INLET AREA	cA: INLET	cA: CASTING	INLET: CUM. cA	CASTING: Tc	TO INLET: Tcum	CHEN'S METHOD i: CASTING	CHEN'S METHOD i: INLET	ENTITY DATA i: CASTING	ENTITY DATA i: INLET	CASTING: Q	INLET: CUM. Q	PIPE DIAMETER	PIPE SLOPE	MANNING'S N	FULL PIPE CAPACITY	CAPACITY UTILIZATION	FULL FLOW VELOCITY	FLOW DEPTH	FLOW VELOCITY	TRAVEL TIME	RIM ELEV. U.S.	RIM ELEV. D.S.	INVERT ELEV. U.S.	INVERT ELEV. D.S.	COVER U.S.	COVER D.S
		(ft)			(acres)		(acres)				(min)	(min)	(in/hr)		(in/hr)		(CFS)	(CFS)	(inches)	(%)		(cfs)	(%)	(ft/sec)	(ft)	(ft/sec)	(min)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
401	402	37.92	RCP	0.30	0.09	-	-	0.03	0.03	0.03	5.00	5.00	-	-	7.22	7.22	0.19	0.19	12	0.31	0.013	1.98	10%	2.53	0.21	1.61	0.25	738.27	738.45	732.22	732.10	4.89	5.18
402	403	105.51	RCP	0.85	0.07	-	-	0.06	0.06	0.09	5.00	5.25	-	-	7.22	7.14	0.43	0.62	15	0.30	0.013	3.54	17%	2.88	0.35	2.17	0.61	738.45	735.77	732.10	731.78	4.91	2.55
403	413	106.00	RCP	0.85	0.24	-	-	0.20	0.20	0.29	5.00	5.86	-	-	7.22	6.94	1.47	2.01	18	0.30	0.013	5.75	35%	3.26	0.61	2.97	0.54	735.77	737.90	731.78	731.47	2.28	4.73
404	405	105.34	RCP	0.85	0.41	-	-	0.35	0.35	0.35	5.00	5.00	-	-	7.22	7.22	2.52	2.52	15	0.30	0.013	3.54	71%	2.88	0.78	3.13	0.61	738.45	737.45	732.54	732.22	4.48	3.79
405	406	105.67	RCP	0.85	0.33	-	-	0.28	0.28	0.63	5.00	5.61	-	-	7.22	7.02	2.03	4.41	18	0.30	0.013	5.75	77%	3.26	0.98	3.59	0.54	737.45	736.66	732.22	731.90	3.52	3.05
406	407	94.34	RCP	0.85	0.50	-	-	0.43	0.43	1.05	5.00	6.15	-	-	7.22	6.84	3.07	7.21	24	0.30	0.013	12.39	58%	3.94	1.10	4.09	0.40	736.66	736.58	731.90	731.62	2.51	2.71
407	413	51.34	RCP	0.85	0.28	-	-	0.24	0.24	1.29	5.00	6.55	-	-	7.22	6.71	1.72	8.67	24	0.30	0.013	12.39	70%	3.94	1.23	4.27	0.22	736.58	737.90	731.62	731.47	2.71	4.18
408	409	105.32	RCP	0.85	0.31	-	-	0.26	0.26	0.26	5.00	5.00	-	-	7.22	7.22	1.90	1.90	12	0.31	0.013	1.98	96%	2.53	0.79	2.88	0.69	738.45	737.45	732.47	732.14	4.81	4.14
409	411	105.68	RCP	0.85	0.25	-	-	0.21	0.21	0.48	5.00	5.69	-	-	7.22	6.99	1.53	3.33	18	0.30	0.013	5.75	58%	3.26	0.82	3.37	0.54	737.45	736.66	732.14	731.83	3.60	3.12
410	411	89.35	RCP	0.85	0.46	-	-	0.39	0.39	0.39	5.00	5.00	-	-	7.22	7.22	2.82	2.82	15	0.30	0.013	3.54	80%	2.88	0.84	3.20	0.52	736.63	736.66	732.10	731.83	3.10	3.40
411	412	81.65	RCP	0.85	0.23	-	-	0.20	0.20	1.06	5.00	6.24	-	-	7.22	6.81	1.41	7.24	24	0.30	0.013	12.39	58%	3.94	1.10	4.10	0.35	736.66	736.70	731.83	731.58	2.58	2.87
412	413	38.66	RCP	0.85	0.36	-	-	0.31	0.31	1.37	5.00	6.58	-	-	7.22	6.70	2.21	9.17	24	0.30	0.013	12.39	74%	3.94	1.28	4.32	0.16	736.70	737.90	731.58	731.47	2.87	4.18
413	414	155.34	RCP	-	-	-	-	-	-	2.95	5.00	6.77	-	-	7.22	6.64	-	19.59	30	0.30	0.013	22.47	87%	4.58	1.81	5.16	0.57	737.90	-	731.47	731.00	3.64	-
414	Out	-	-	-	-	-	-	-	-	2.95	5.00	7.33	-	-	7.22	6.45	-	19.04	-	-	-	-	-	-	-	-	-	-	-	731.00	731.00	-	-

PROPOSED STORM SEWER SYSTEM - SERIES 500

STORM SEWER DESIGN TABLE - RATIONAL METHOD

Job Information

Description: MultiPro LLC
Reviewing Entity: City of Franklin
Job #: 2020-493
Date: 06/03/21

Design Parameters	
Design Storm:	10-yr
Intensity Calculation Method:	Entity Data
Invert Calculation Method:	Match Invert
Drop Amount:	-

STR.	TO STR.	LENGTH	PIPE MATERIAL	FLOW: DIRECT TO CASTING c	FLOW: DIRECT TO CASTING AREA	FLOW: DIRECT TO INLET c	FLOW: DIRECT TO INLET AREA	cA: INLET	cA: CASTING	INLET: CUM. cA	CASTING: Tc	TO INLET: Tcum	CHEN'S METHOD i: CASTING	CHEN'S METHOD i: INLET	ENTITY DATA i: CASTING	ENTITY DATA i: INLET	CASTING: Q	INLET: CUM. Q	PIPE DIAMETER	PIPE SLOPE	MANNING'S N	FULL PIPE CAPACITY	CAPACITY UTILIZATION	FULL FLOW VELOCITY	FLOW DEPTH	FLOW VELOCITY	TRAVEL TIME	RIM ELEV. U.S.	RIM ELEV. D.S.	INVERT ELEV. U.S.	INVERT ELEV. D.S.	COVER U.S.	COVER D.S
		(ft)			(acres)		(acres)				(min)	(min)	(in/hr)		(in/hr)		(CFS)	(CFS)	(inches)	(%)		(cfs)	(%)	(ft/sec)	(ft)	(ft/sec)	(min)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
501	502	42.85	RCP	0.30	0.14	-	-	0.04	0.04	0.04	5.00	5.00	-	-	7.22	7.22	0.30	0.30	12	0.31	0.013	1.98	15%	2.53	0.26	1.83	0.28	734.16	737.50	732.49	732.36	0.50	3.98
502	503	57.09	RCP	-	-	-	-	-	-	0.04	5.00	5.28	-	-	7.22	7.13	-	0.30	12	0.31	0.013	1.98	15%	2.53	0.26	1.82	0.38	737.50	736.43	732.36	732.18	3.98	3.08
503	504	74.65	RCP	0.85	0.48	-	-	0.41	0.41	0.45	5.00	5.66	-	-	7.22	7.00	2.95	3.15	15	0.31	0.013	3.60	88%	2.93	0.91	3.30	0.42	736.43	737.01	732.18	731.95	2.81	3.62
504	505	56.31	RCP	-	-	-	-	-	-	0.45	5.00	6.08	-	-	7.22	6.86	-	3.09	15	0.30	0.013	3.54	87%	2.88	0.90	3.25	0.33	737.01	736.45	731.95	731.78	3.62	3.23
505	506	174.33	RCP	0.85	0.32	-	-	0.27	0.27	0.72	5.00	6.41	-	-	7.22	6.75	1.96	4.88	18	0.35	0.013	6.21	78%	3.52	1.00	3.89	0.83	736.45	735.96	731.78	731.17	2.96	3.08
507	506	38.75	RCP	0.30	0.30	-	-	0.09	0.09	0.09	5.00	5.00	-	-	7.22	7.22	0.65	0.65	12	0.31	0.013	1.98	33%	2.53	0.39	2.26	0.26	-	735.96	731.29	731.17	-	3.62
506	508	48.20	RCP	0.85	0.12	-	-	0.10	0.10	0.91	5.00	7.24	-	-	7.22	6.48	0.74	5.92	18	0.35	0.013	6.21	95%	3.52	1.17	4.00	0.23	735.96	-	731.17	731.00	3.08	-
508	Out	-	-	-	-	-	-	-	-	0.91	5.00	7.46	-	-	7.22	6.41	-	5.86	-	-	-	-	-	-	-	-	-	-	-	731.00	731.00	-	-

PROPOSED STORM SEWER SYSTEM
STORM SEWER DESIGN TABLE - RATIONAL METHOD

Job Information

Description: MultiPro, LLC
Reviewing Entity: City of Franklin
Job #: 2020-493
Date: 06/03/21

Design Parameters	
Design Storm:	10-yr
Intensity Calculation Method:	Entity Data
Invert Calculation Method:	Match Invert
Drop Amount:	-

STR.	TO STR.	LENGTH	PIPE MATERIAL	FLOW				cA		INLET	CASTING	TO INLET	CHEN'S METHOD		ENTITY DATA		CASTING	INLET	PIPE DIAMETER	PIPE SLOPE	MANNING'S N	FULL PIPE CAPACITY	CAPACITY UTILIZATION	FULL FLOW VELOCITY	FLOW DEPTH	FLOW VELOCITY	TRAVEL TIME	RIM		INVERT		COVER	
				DIRECT TO CASTING		DIRECT TO INLET							i		i													ELEV.		ELEV.			
				c	AREA	c	AREA	INLET	CASTING	CUM. cA	Tc	Tcum	CASTING	INLET	CASTING	INLET	Q	CUM. Q									U.S.	D.S.	U.S.	D.S.	U.S.	D.S
		(ft)			(acres)		(acres)				(min)	(min)	(in/hr)		(in/hr)		(CFS)	(CFS)	(inches)	(%)		(cfs)	(%)	(ft/sec)	(ft)	(ft/sec)	(min)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
601	602	34.46	RCP	0.85	0.14	-	-	0.12	0.12	0.12	5.00	5.00	-	-	7.22	7.22	0.86	0.86	12	0.31	0.013	1.98	43%	2.53	0.46	2.44	0.23	734.50	734.50	732.61	732.50	0.73	0.83
602	603	57.04	RCP	0.85	0.23	-	-	0.20	0.20	0.31	5.00	5.23	-	-	7.22	7.14	1.41	2.25	12	0.45	0.013	2.39	94%	3.04	0.77	3.46	0.31	734.50	737.03	732.50	732.24	0.83	3.62
603	604	87.69	RCP	0.85	0.14	-	-	0.12	0.12	0.43	5.00	5.54	-	-	7.22	7.04	0.86	3.05	15	0.30	0.013	3.54	86%	2.88	0.90	3.24	0.51	737.03	737.05	732.24	731.98	3.35	3.63
604	605	64.20	RCP	0.85	0.19	-	-	0.16	0.16	0.60	5.00	6.05	-	-	7.22	6.87	1.17	4.09	18	0.30	0.013	5.75	71%	3.26	0.93	3.53	0.33	737.05	736.32	731.98	731.79	3.36	2.82
605	606	63.93	RCP	0.85	0.15	-	-	0.13	0.13	0.72	5.00	6.38	-	-	7.22	6.77	0.92	4.89	18	0.30	0.013	5.75	85%	3.26	1.06	3.65	0.33	736.32	736.11	731.79	731.60	2.82	2.80
606	607	83.23	RCP	0.85	0.22	-	-	0.19	0.19	0.91	5.00	6.70	-	-	7.22	6.66	1.35	6.06	18	0.35	0.013	6.21	97%	3.52	1.20	4.01	0.39	736.11	736.86	731.60	731.31	2.80	3.85
608	609	33.21	RCP	0.85	0.07	-	-	0.06	0.06	0.06	5.00	5.00	-	-	7.22	7.22	0.43	0.43	12	0.31	0.013	1.98	22%	2.53	0.32	2.02	0.22	734.50	734.50	732.11	732.01	1.22	1.33
609	612	33.07	RCP	0.85	0.22	-	-	0.19	0.19	0.25	5.00	5.22	-	-	7.22	7.15	1.35	1.76	12	0.31	0.013	1.98	89%	2.53	0.73	2.85	0.22	734.50	736.18	732.01	731.90	1.33	3.11
610	611	33.15	RCP	0.85	0.06	-	-	0.05	0.05	0.05	5.00	5.00	-	-	7.22	7.22	0.37	0.37	12	0.31	0.013	1.98	19%	2.53	0.29	1.93	0.22	734.50	734.50	732.11	732.01	1.22	1.33
611	612	33.07	RCP	0.85	0.20	-	-	0.17	0.17	0.22	5.00	5.22	-	-	7.22	7.15	1.23	1.58	12	0.31	0.013	1.98	80%	2.53	0.67	2.80	0.22	734.50	736.18	732.01	731.90	1.33	3.11
612	613	40.19	RCP	0.85	0.09	-	-	0.08	0.08	0.54	5.00	5.44	-	-	7.22	7.08	0.55	3.85	15	0.37	0.013	3.93	98%	3.20	1.00	3.65	0.21	736.18	735.26	731.90	731.76	2.84	2.07
613	615	105.02	RCP	0.85	0.07	-	-	0.06	0.06	0.60	5.00	5.65	-	-	7.22	7.01	0.43	4.23	18	0.30	0.013	5.75	73%	3.26	0.96	3.56	0.54	735.26	736.39	731.76	731.44	1.80	3.24
614	615	104.01	RCP	0.85	0.56	-	-	0.31	0.31	0.31	5.00	5.00	-	-	7.22	7.22	2.21	2.21	12	0.40	0.013	2.25	98%	2.87	0.80	3.27	0.60	736.00	736.39	731.86	731.44	2.98	3.78
615	607	89.72	RCP	0.85	0.31	-	-	0.26	0.26	1.17	5.00	6.18	-	-	7.22	6.83	1.90	8.01	24	0.15	0.013	8.76	91%	2.79	1.50	3.16	0.54	736.39	736.86	731.44	731.31	2.70	3.30
607	616	68.00	RCP	0.85	0.19	-	-	0.16	0.16	2.24	5.00	7.10	-	-	7.22	6.53	1.17	14.65	24	0.45	0.013	15.18	97%	4.83	1.58	5.50	0.23	736.86	-	731.31	731.00	3.30	-
616	Out	-	-	-	-	-	-	-	-	2.24	5.00	7.33	-	-	7.22	6.45	-	14.48	-	-	-	-	-	-	-	-	-	-	-	731.00	731.00	-	-

PROPOSED STORM SEWER SYSTEM

STORM SEWER DESIGN TABLE - RATIONAL METHOD

Job Information

Description: MultiPro, LLC
Reviewing Entity: City of Franklin
Job #: 2020-493
Date: 06/03/21

Design Parameters	
Design Storm:	10-yr
Intensity Calculation Method:	Entity Data
Invert Calculation Method:	Match Invert
Drop Amount:	-

STR.	TO STR.	LENGTH	PIPE MATERIAL	FLOW				cA			INLET	CASTING	TO INLET	CHEN'S METHOD		ENTITY DATA		CASTING	INLET	PIPE DIAMETER	PIPE SLOPE	MANNING'S N	FULL PIPE CAPACITY	CAPACITY UTILIZATION	FULL FLOW VELOCITY	FLOW DEPTH	FLOW VELOCITY	TRAVEL TIME	RIM		INVERT		COVER	
				DIRECT TO CASTING		DIRECT TO INLET								i		i													ELEV.		ELEV.			
				c	AREA	c	AREA	INLET	CASTING	CUM. cA	Tc	Tcum		CASTING	INLET	CASTING	INLET	Q	CUM. Q									U.S.	D.S.	U.S.	D.S.	U.S.	D.S
		(ft)			(acres)		(acres)				(min)	(min)		(in/hr)		(in/hr)		(CFS)	(CFS)	(inches)	(%)		(cfs)	(%)	(ft/sec)	(ft)	(ft/sec)	(min)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
701	702	136.87	RCP	0.85	0.25	-	-	0.21	0.21	0.21	5.00	5.00		-	-	7.22	7.22	1.53	1.53	12	0.31	0.013	1.98	77%	2.53	0.66	2.79	0.90	735.20	735.40	731.98	731.55	2.05	2.68
702	703	98.00	RCP	0.85	0.23	-	-	0.20	0.20	0.41	5.00	5.90		-	-	7.22	6.92	1.41	2.82	15	0.30	0.013	3.54	80%	2.88	0.84	3.20	0.57	735.40	734.32	731.55	731.26	2.41	1.62
703	704	74.32	RCP	0.85	0.16	-	-	0.14	0.14	0.54	5.00	6.47		-	-	7.22	6.74	0.98	3.66	15	0.35	0.013	3.82	96%	3.11	0.98	3.55	0.40	734.32	-	731.26	731.00	1.62	-
704	Out	-	-	-	-	-	-	-	-	0.54	5.00	6.87		-	-	7.22	6.60	-	3.59	-	-	-	-	-	-	-	-	-	-	-	731.00	731.00	-	-

PROPOSED STORM SEWER SYSTEM
STORM SEWER STRUCTURE DATA TABLE

Job Information

Description: MultiPro LLC
Reviewing Entity: City of Franklin
Job #: 2020-493
Date: 6/3/2021

STORM SEWER - STRUCTURE DATA TABLE

STR.	STRUCTURE	CASTING	PIPE				PIPE ELEVATIONS		GRADE	CONNECT TO	REMARKS
NO.	TYPE	TYPE	L.F.	SIZE	TYPE	T.O.R.	UPSTM	DNSTM	(%)	STRUCT.	
101	TYPE "A" INLET	R-4342	153	12	RCP	745.20	741.00	740.53	0.31	102	
103	TYPE "C" MANHOLE	R-4342	40	12	RCP	746.40	740.65	740.53	0.31	102	
104	TYPE "M" INLET	R-3455-C	87	12	RCP	745.90	740.80	740.53	0.31	102	
102	TYPE "C" MANHOLE	R-3472	132	18	RCP	746.70	740.53	740.14	0.30	105	
105	TYPE "C" MANHOLE	R-3472	35	18	RCP	746.89	740.14	740.01	0.35	109	
106	CONCRETE END SECTION	-	100	24	RCP	-	740.43	740.13	0.30	107	
107	TYPE "C" MANHOLE	R-4342	38	24	RCP	744.77	740.13	740.01	0.30	109	
108	TYPE "M" INLET	R-3455-C	79	15	RCP	744.89	740.25	740.01	0.30	109	
109	TYPE "J" MANHOLE	R-1772	84	30	RCP	746.35	740.01	739.76	0.30	110	
110	TYPE "J" MANHOLE	R-4342	74	30	RCP	745.08	739.76	739.50	0.35	111	
111	CONCRETE END SECTION	-	-	-	-	-	739.50	-	-	Out	

PROPOSED STORM SEWER SYSTEM

STORM SEWER STRUCTURE DATA TABLE

Job Information

Description: MultiPro LLC
Reviewing Entity: City of Franklin
Job #: 2020-493
Date: 6/3/2021

STORM SEWER - STRUCTURE DATA TABLE

STR.	STRUCTURE	CASTING	PIPE				PIPE ELEVATIONS		GRADE	CONNECT TO	REMARKS
NO.	TYPE	TYPE	L.F.	SIZE	TYPE	T.O.R.	UPSTM	DNSTM	(%)	STRUCT.	
201	CONCRETE END SECTION	-	100	24	RCP	-	739.29	738.98	0.31	202	
202	TYPE "C" MANHOLE	R-4342	38	24	RCP	743.05	738.98	738.86	0.31	205	
203	TYPE "C" MANHOLE	R-3472	52	12	RCP	744.90	739.05	738.86	0.37	205	
204	TYPE "J" INLET	R-3455-C	79	15	RCP	742.93	739.10	738.86	0.30	205	
205	TYPE "J" MANHOLE	R-1772	38	30	RCP	744.39	738.86	738.77	0.25	206	
206	TYPE "J" MANHOLE	R-4342	107	30	RCP	743.38	738.77	738.50	0.25	207	
207	CONCRETE END SECTION	-	-	-	-	-	738.50	-	-	Out	

PROPOSED STORM SEWER SYSTEM
STORM SEWER STRUCTURE DATA TABLE

Job Information

Description: MultiPro LLC
Reviewing Entity: City of Franklin
Job #: 2020-493
Date: 6/3/2021

STORM SEWER - STRUCTURE DATA TABLE

STR.	STRUCTURE	CASTING	PIPE				PIPE ELEVATIONS		GRADE	CONNECT TO	REMARKS
NO.	TYPE	TYPE	L.F.	SIZE	TYPE	T.O.R.	UPSTM	DNSTM	(%)	STRUCT.	
301	CONCRETE END SECTION	-	76	10	RCP	-	735.01	733.75	1.65	302	
302	TYPE "F" INLET	R-4215-C	109	18	RCP	738.47	733.75	733.53	0.20	307	
303	TYPE "E" INLET	R-4215-C	150	18	RCP	738.05	734.39	733.93	0.31	306	
304	TYPE "C" MANHOLE	R-3472	57	15	RCP	743.90	734.16	733.93	0.40	306	
305	TYPE "C" MANHOLE	R-3472	89	12	RCP	739.80	734.24	733.93	0.35	306	
306	TYPE "C" MANHOLE	R-3472	134	24	RCP	742.20	733.93	733.53	0.30	307	
307	TYPE "C" MANHOLE	R-4342	227	24	RCP	738.27	733.53	732.39	0.50	309	
308	TYPE "A" INLET	R-4342	48	12	RCP	736.05	732.54	732.39	0.31	309	
309	TYPE "J" MANHOLE	R-4342	126	30	RCP	736.81	732.39	732.08	0.25	312	
310	TYPE "C" MANHOLE	R-3472	166	15	RCP	739.13	732.90	732.41	0.30	311	
311	TYPE "C" MANHOLE	R-3472	132	18	RCP	738.53	732.41	732.08	0.25	312	
312	TYPE "J" MANHOLE	R-3472	106	30	RCP	738.35	732.08	731.76	0.30	313	
313	TYPE "J" MANHOLE	R-4342	106	30	RCP	736.01	731.76	731.39	0.35	321	
314	TYPE "A" INLET	R-4342	192	12	RCP	736.42	732.81	732.22	0.31	315	
315	TYPE "F" INLET	R-4215-C	62	15	RCP	736.18	732.22	732.03	0.30	316	
316	TYPE "M" INLET	R-3455-C	74	18	RCP	736.75	732.03	731.81	0.30	318	
317	TYPE "C" MANHOLE	R-3472	108	15	RCP	737.45	732.14	731.81	0.30	318	
318	TYPE "C" MANHOLE	R-3472	97	24	RCP	736.65	731.81	731.52	0.30	319	
319	TYPE "C" MANHOLE	R-3472	53	24	RCP	736.56	731.52	731.39	0.25	321	
320	TYPE "C" MANHOLE	R-3472	44	12	RCP	736.65	731.52	731.39	0.31	321	
321	TYPE "J" MANHOLE	R-1772	155	36	RCP	737.10	731.39	731.00	0.25	322	
322	CONCRETE END SECTION	-	-	-	-	-	731.00	-	-	Out	

PROPOSED STORM SEWER SYSTEM - SERIES 400

STORM SEWER STRUCTURE DATA TABLE

Job Information

Description: MultiPro LLC
Reviewing Entity: City of Franklin
Job #: 2020-493
Date: 6/3/2021

STORM SEWER - STRUCTURE DATA TABLE

STR.	STRUCTURE	CASTING	PIPE				PIPE ELEVATIONS		GRADE	CONNECT TO	REMARKS
NO.	TYPE	TYPE	L.F.	SIZE	TYPE	T.O.R.	UPSTM	DNSTM	(%)	STRUCT.	
401	TYPE "C" MANHOLE	R-4342	38	12	RCP	738.27	732.22	732.10	0.31	402	
402	TYPE "C" MANHOLE	R-3287-10V	106	15	RCP	738.45	732.10	731.78	0.30	403	FLAT TOP REQUIRED
403	TYPE "F" INLET	R-4215-C	106	18	RCP	735.77	731.78	731.47	0.30	413	
404	TYPE "C" MANHOLE	R-3472	105	15	RCP	738.45	732.54	732.22	0.30	405	
405	TYPE "C" MANHOLE	R-3472	106	18	RCP	737.45	732.22	731.90	0.30	406	
406	TYPE "M" INLET	R-3455-C	94	24	RCP	736.66	731.90	731.62	0.30	407	
407	TYPE "M" INLET	R-3455-C	51	24	RCP	736.58	731.62	731.47	0.30	413	
408	TYPE "C" MANHOLE	R-3472	105	12	RCP	738.45	732.47	732.14	0.31	409	
409	TYPE "C" MANHOLE	R-3472	106	18	RCP	737.45	732.14	731.83	0.30	411	
410	TYPE "J" INLET	R-3455-C	89	15	RCP	736.63	732.10	731.83	0.30	411	
411	TYPE "C" MANHOLE	R-3472	82	24	RCP	736.66	731.83	731.58	0.30	412	
412	TYPE "C" MANHOLE	R-3472	39	24	RCP	736.70	731.58	731.47	0.30	413	
413	TYPE "J" MANHOLE	R-1772	155	30	RCP	737.90	731.47	731.00	0.30	414	
414	CONCRETE END SECTION	-	-	-	-	-	731.00	-	-	Out	

PROPOSED STORM SEWER SYSTEM

STORM SEWER STRUCTURE DATA TABLE

Job Information

Description: MultiPro LLC
Reviewing Entity: City of Franklin
Job #: 2020-493
Date: 6/3/2021

STORM SEWER - STRUCTURE DATA TABLE

STR.	STRUCTURE	CASTING	PIPE				PIPE ELEVATIONS		GRADE	CONNECT TO	REMARKS
NO.	TYPE	TYPE	L.F.	SIZE	TYPE	T.O.R.	UPSTM	DNSTM	(%)	STRUCT.	
501	TYPE "A" INLET	R-4342	43	12	RCP	734.16	732.49	732.36	0.31	502	
502	TYPE "C" MANHOLE	R-1772	57	12	RCP	737.50	732.36	732.18	0.31	503	
503	TYPE "M" INLET	R-3455-C	75	15	RCP	736.43	732.18	731.95	0.31	504	
504	TYPE "C" MANHOLE	R-1772	56	15	RCP	737.01	731.95	731.78	0.30	505	
505	TYPE "M" INLET	R-3455-C	174	18	RCP	736.45	731.78	731.17	0.35	506	
507	CONCRETE END SECTION	-	39	12	RCP	-	731.29	731.17	0.31	506	
506	TYPE "C" MANHOLE	R-3472	48	18	RCP	735.96	731.17	731.00	0.35	508	
508	CONCRETE END SECTION	-	-	-	-	-	731.00	-	-	Out	

PROPOSED STORM SEWER SYSTEM

STORM SEWER STRUCTURE DATA TABLE

Job Information

Description: MultiPro, LLC
Reviewing Entity: City of Franklin
Job #: 2020-493
Date: 6/3/2021

STORM SEWER - STRUCTURE DATA TABLE

STR.	STRUCTURE	CASTING	PIPE				PIPE ELEVATIONS		GRADE	CONNECT TO	REMARKS
NO.	TYPE	TYPE	L.F.	SIZE	TYPE	T.O.R.	UPSTM	DNSTM	(%)	STRUCT.	
601	TYPE "A" INLET	R-4342	34	12	RCP	734.50	732.61	732.50	0.31	602	
602	TYPE "A" INLET	R-4342	57	12	RCP	734.50	732.50	732.24	0.45	603	
603	TYPE "M" INLET	R-3455-C	88	15	RCP	737.03	732.24	731.98	0.30	604	
604	TYPE "C" MANHOLE	R-3472	64	18	RCP	737.05	731.98	731.79	0.30	605	
605	TYPE "M" INLET	R-3455-C	64	18	RCP	736.32	731.79	731.60	0.30	606	
606	TYPE "M" INLET	R-3455-C	83	18	RCP	736.11	731.60	731.31	0.35	607	
608	TYPE "A" INLET	R-4342	33	12	RCP	734.50	732.11	732.01	0.31	609	
609	TYPE "A" INLET	R-4342	33	12	RCP	734.50	732.01	731.90	0.31	612	
610	TYPE "A" INLET	R-4342	33	12	RCP	734.50	732.11	732.01	0.31	611	
611	TYPE "A" INLET	R-4342	33	12	RCP	734.50	732.01	731.90	0.31	612	
612	TYPE "C" MANHOLE	R-3287-10V	40	15	RCP	736.18	731.90	731.76	0.37	613	FLAT TOP REQUIRED
613	TYPE "M" INLET	R-3287-10V	105	18	RCP	735.26	731.76	731.44	0.30	615	
614	TYPE "J" INLET	R-3455-C	104	12	RCP	736.00	731.86	731.44	0.40	615	
615	TYPE "C" MANHOLE	R-3472	90	24	RCP	736.39	731.44	731.31	0.15	607	
607	TYPE "C" MANHOLE	R-3472	68	24	RCP	736.86	731.31	731.00	0.45	616	
616	CONCRETE END SECTION	-	-	-	-	-	731.00	-	-	Out	

PROPOSED STORM SEWER SYSTEM
STORM SEWER STRUCTURE DATA TABLE

Job Information

Description: MultiPro, LLC
Reviewing Entity: City of Franklin
Job #: 2020-493
Date: 6/3/2021

STORM SEWER - STRUCTURE DATA TABLE

STR.	STRUCTURE	CASTING	PIPE				PIPE ELEVATIONS		GRADE	CONNECT TO	REMARKS
NO.	TYPE	TYPE	L.F.	SIZE	TYPE	T.O.R.	UPSTM	DNSTM	(%)	STRUCT.	
701	TYPE "A" INLET	R-4342	137	12	RCP	735.20	731.98	731.55	0.31	702	
702	TYPE "M" INLET	R-3455-C	98	15	RCP	735.40	731.55	731.26	0.30	703	
703	TYPE "F" INLET	R-4215-C	74	15	RCP	734.32	731.26	731.00	0.35	704	
704	CONCRETE END SECTION	-	-	-	-	-	731.00	-	-	Out	

PROPOSED STORM SEWER SYSTEM

ORIFICE FLOW CASTING CAPACITY CALCULATIONS

Job Information

Description: MultiPro LLC
Reviewing Entity: City of Franklin
Job #: 2020-493
Date: 06/03/21

Design Parameters	
Design Storm:	10-yr
Clogging (%):	50%
Intensity Calculation Method	Entity Data

STR. NO.	SPECIFIED STRUCTURE TYPE	SPECIFIED CASTING TYPE	PIPE COVER (ft)	STRUCTURE DEPTH (ft)	CASTING c	CASTING A (acres)	CASTING Tc (min)	ENTITY DATA i (in/hr)	CASTING FLOW (cfs)	ORIFICE FLOW DEPTH (ft)	WEIR FLOW DEPTH (ft)	PONDING DEPTH (ft)
101	TYPE "A" INLET	R-4342	3.03	4.20	0.30	0.21	5.00	7.22	0.45	0.01	0.15	0.15
103	TYPE "C" MANHOLE	R-4342	4.58	5.75	0.30	0.20	5.00	7.22	0.43	0.01	0.14	0.14
104	TYPE "M" INLET	R-3455-C	3.93	5.10	0.85	0.19	5.00	7.22	1.17	0.03	0.19	0.19
102	TYPE "C" MANHOLE	R-3472	4.46	6.17	0.85	0.40	5.00	7.22	2.45	0.62	0.37	0.62
105	TYPE "C" MANHOLE	R-3472	5.05	6.75	0.85	0.21	5.00	7.22	1.29	0.17	0.25	0.25
106	CONCRETE END SECTION	-	-	-	0.85	1.53	5.00	7.22	9.39	-	-	0.00
107	TYPE "C" MANHOLE	R-4342	2.39	4.64	0.30	0.08	5.00	7.22	0.17	0.00	0.08	0.08
108	TYPE "M" INLET	R-3455-C	3.20	4.64	0.85	0.53	5.00	7.22	3.25	0.27	0.36	0.36
109	TYPE "J" MANHOLE	R-1772	3.55	6.34	-	-	-	-	-	-	-	0.00
110	TYPE "J" MANHOLE	R-4342	2.53	5.32	0.85	0.17	5.00	7.22	1.04	0.05	0.25	0.25
111	CONCRETE END SECTION	-	-	-	-	-	-	-	-	-	-	0.00

PROPOSED STORM SEWER SYSTEM
ORIFICE FLOW CASTING CAPACITY CALCULATIONS

Job Information

Description: MultiPro LLC
Reviewing Entity: City of Franklin
Job #: 2020-493
Date: 06/03/21

Design Parameters	
Design Storm:	10-yr
Clogging (%):	50%
Intensity Calculation Method	Entity Data

STR. NO.	SPECIFIED STRUCTURE TYPE	SPECIFIED CASTING TYPE	PIPE COVER (ft)	STRUCTURE DEPTH (ft)	CASTING c	CASTING A (acres)	CASTING Tc (min)	ENTITY DATA i (in/hr)	CASTING FLOW (cfs)	ORIFICE FLOW DEPTH (ft)	WEIR FLOW DEPTH (ft)	PONDING DEPTH (ft)
201	CONCRETE END SECTION	-	-	-	0.85	2.04	5.00	7.22	12.52	-	-	0.00
202	TYPE "C" MANHOLE	R-4342	1.82	4.07	0.30	0.08	5.00	7.22	0.17	0.00	0.08	0.08
203	TYPE "C" MANHOLE	R-3472	4.68	5.85	0.85	0.35	5.00	7.22	2.15	0.47	0.34	0.47
204	TYPE "J" INLET	R-3455-C	2.39	3.83	0.85	0.56	5.00	7.22	3.44	0.30	0.38	0.38
205	TYPE "J" MANHOLE	R-1772	2.74	5.53	-	-	-	-	-	-	-	0.00
206	TYPE "J" MANHOLE	R-4342	1.82	4.61	0.30	0.07	5.00	7.22	0.15	0.00	0.07	0.07
207	CONCRETE END SECTION	-	-	-	-	-	-	-	-	-	-	0.00

PROPOSED STORM SEWER SYSTEM
ORIFICE FLOW CASTING CAPACITY CALCULATIONS

Job Information

Description: MultiPro LLC
Reviewing Entity: City of Franklin
Job #: 2020-493
Date: 06/03/21

Design Parameters	
Design Storm:	10-yr
Clogging (%):	50%
Intensity Calculation Method	Entity Data

STR. NO.	SPECIFIED STRUCTURE TYPE	SPECIFIED CASTING TYPE	PIPE COVER (ft)	STRUCTURE DEPTH (ft)	CASTING c	CASTING A (acres)	CASTING Tc (min)	ENTITY DATA i (in/hr)	CASTING FLOW (cfs)	ORIFICE FLOW DEPTH (ft)	WEIR FLOW DEPTH (ft)	PONDING DEPTH (ft)
301	CONCRETE END SECTION	-	-	-	0.39	1.07	7.39	6.43	2.65	-	-	0.00
302	TYPE "F" INLET	R-4215-C	3.01	4.72	0.85	0.13	5.00	7.22	0.80	0.01	0.14	0.14
303	TYPE "E" INLET	R-4215-C	1.95	3.66	0.85	0.89	5.00	7.22	5.46	0.47	0.46	0.47
304	TYPE "C" MANHOLE	R-3472	8.30	9.74	0.85	0.64	5.00	7.22	3.93	1.57	0.50	1.57
305	TYPE "C" MANHOLE	R-3472	4.39	5.56	0.85	0.32	5.00	7.22	1.96	0.39	0.32	0.39
306	TYPE "C" MANHOLE	R-3472	6.02	8.27	0.85	0.11	5.00	7.22	0.68	0.05	0.17	0.17
307	TYPE "C" MANHOLE	R-4342	2.49	4.74	0.30	0.39	5.00	7.22	0.84	0.03	0.21	0.21
308	TYPE "A" INLET	R-4342	2.34	3.51	0.85	0.08	5.00	7.22	0.49	0.01	0.15	0.15
309	TYPE "J" MANHOLE	R-4342	1.63	4.42	0.85	0.36	5.00	7.22	2.21	0.21	0.39	0.39
310	TYPE "C" MANHOLE	R-3472	4.79	6.23	0.85	0.55	5.00	7.22	3.38	1.16	0.45	1.16
311	TYPE "C" MANHOLE	R-3472	4.42	6.12	0.85	0.29	5.00	7.22	1.78	0.32	0.30	0.32
312	TYPE "J" MANHOLE	R-3472	3.48	6.27	0.85	0.31	5.00	7.22	1.90	0.37	0.32	0.37
313	TYPE "J" MANHOLE	R-4342	1.46	4.25	0.85	0.30	5.00	7.22	1.84	0.15	0.35	0.35
314	TYPE "A" INLET	R-4342	2.44	3.61	0.85	0.30	5.00	7.22	1.84	0.15	0.35	0.35
315	TYPE "F" INLET	R-4215-C	2.52	3.96	0.85	0.28	5.00	7.22	1.72	0.05	0.23	0.23
316	TYPE "M" INLET	R-3455-C	3.01	4.72	0.85	0.21	5.00	7.22	1.29	0.04	0.20	0.20
317	TYPE "C" MANHOLE	R-3472	3.88	5.31	0.85	0.54	5.00	7.22	3.31	1.12	0.45	1.12
318	TYPE "C" MANHOLE	R-3472	2.59	4.84	0.85	0.28	5.00	7.22	1.72	0.30	0.30	0.30
319	TYPE "C" MANHOLE	R-3472	2.79	5.04	0.85	0.28	5.00	7.22	1.72	0.30	0.30	0.30
320	TYPE "C" MANHOLE	R-3472	3.96	5.13	0.85	0.22	5.00	7.22	1.35	0.19	0.25	0.25
321	TYPE "J" MANHOLE	R-1772	2.38	5.71	-	-	-	-	-	-	-	0.00
322	CONCRETE END SECTION	-	-	-	-	-	-	-	-	-	-	0.00

PROPOSED STORM SEWER SYSTEM
ORIFICE FLOW CASTING CAPACITY CALCULATIONS

Job Information

Description: MultiPro LLC
Reviewing Entity: City of Franklin
Job #: 2020-493
Date: 06/03/21

Design Parameters	
Design Storm:	10-yr
Clogging (%):	50%
Intensity Calculation Method	Entity Data

STR. NO.	SPECIFIED STRUCTURE TYPE	SPECIFIED CASTING TYPE	PIPE COVER (ft)	STRUCTURE DEPTH (ft)	CASTING c	CASTING A (acres)	CASTING Tc (min)	ENTITY DATA i (in/hr)	CASTING FLOW (cfs)	ORIFICE FLOW DEPTH (ft)	WEIR FLOW DEPTH (ft)	PONDING DEPTH (ft)
401	TYPE "C" MANHOLE	R-4342	4.89	6.05	0.30	0.09	5.00	7.22	0.19	0.00	0.09	0.09
402	TYPE "C" MANHOLE	R-3287-10V	4.91	6.35	0.85	0.07	5.00	7.22	0.43	0.01	0.15	0.15
403	TYPE "F" INLET	R-4215-C	2.28	3.99	0.85	0.24	5.00	7.22	1.47	0.03	0.20	0.20
404	TYPE "C" MANHOLE	R-3472	4.48	5.91	0.85	0.41	5.00	7.22	2.52	0.65	0.38	0.65
405	TYPE "C" MANHOLE	R-3472	3.52	5.23	0.85	0.33	5.00	7.22	2.03	0.42	0.33	0.42
406	TYPE "M" INLET	R-3455-C	2.51	4.76	0.85	0.50	5.00	7.22	3.07	0.24	0.35	0.35
407	TYPE "M" INLET	R-3455-C	2.71	4.96	0.85	0.28	5.00	7.22	1.72	0.08	0.24	0.24
408	TYPE "C" MANHOLE	R-3472	4.81	5.98	0.85	0.31	5.00	7.22	1.90	0.37	0.32	0.37
409	TYPE "C" MANHOLE	R-3472	3.60	5.31	0.85	0.25	5.00	7.22	1.53	0.24	0.28	0.28
410	TYPE "J" INLET	R-3455-C	3.10	4.53	0.85	0.46	5.00	7.22	2.82	0.20	0.33	0.33
411	TYPE "C" MANHOLE	R-3472	2.58	4.83	0.85	0.23	5.00	7.22	1.41	0.20	0.26	0.26
412	TYPE "C" MANHOLE	R-3472	2.87	5.12	0.85	0.36	5.00	7.22	2.21	0.50	0.35	0.50
413	TYPE "J" MANHOLE	R-1772	3.64	6.43	-	-	-	-	-	-	-	0.00
414	CONCRETE END SECTION	-	-	-	-	-	-	-	-	-	-	0.00

PROPOSED STORM SEWER SYSTEM
ORIFICE FLOW CASTING CAPACITY CALCULATIONS

Job Information

Description: MultiPro LLC
Reviewing Entity: City of Franklin
Job #: 2020-493
Date: 06/03/21

Design Parameters	
Design Storm:	10-yr
Clogging (%):	50%
Intensity Calculation Method	Entity Data

STR. NO.	SPECIFIED STRUCTURE TYPE	SPECIFIED CASTING TYPE	PIPE COVER (ft)	STRUCTURE DEPTH (ft)	CASTING c	CASTING A (acres)	CASTING Tc (min)	ENTITY DATA i (in/hr)	CASTING FLOW (cfs)	ORIFICE FLOW DEPTH (ft)	WEIR FLOW DEPTH (ft)	PONDING DEPTH (ft)
501	TYPE "A" INLET	R-4342	0.50	1.67	0.30	0.14	5.00	7.22	0.30	0.00	0.11	0.11
502	TYPE "C" MANHOLE	R-1772	3.98	5.14	-	-	-	-	-	-	-	0.00
503	TYPE "M" INLET	R-3455-C	2.81	4.25	0.85	0.48	5.00	7.22	2.95	0.22	0.34	0.34
504	TYPE "C" MANHOLE	R-1772	3.62	5.06	-	-	-	-	-	-	-	0.00
505	TYPE "M" INLET	R-3455-C	2.96	4.67	0.85	0.32	5.00	7.22	1.96	0.10	0.26	0.26
507	CONCRETE END SECTION	-	-	-	0.30	0.30	5.00	7.22	0.65	-	-	0.00
506	TYPE "C" MANHOLE	R-3472	3.08	4.79	0.85	0.12	5.00	7.22	0.74	0.06	0.17	0.17
508	CONCRETE END SECTION	-	-	-	-	-	-	-	-	-	-	0.00

PROPOSED STORM SEWER SYSTEM
ORIFICE FLOW CASTING CAPACITY CALCULATIONS

Job Information

Description: MultiPro, LLC
Reviewing Entity: City of Franklin
Job #: 2020-493
Date: 06/03/21

Design Parameters	
Design Storm:	10-yr
Clogging (%):	50%
Intensity Calculation Method	Entity Data

STR. NO.	SPECIFIED STRUCTURE TYPE	SPECIFIED CASTING TYPE	PIPE COVER (ft)	STRUCTURE DEPTH (ft)	CASTING c	CASTING A (acres)	CASTING Tc (min)	ENTITY DATA i (in/hr)	CASTING FLOW (cfs)	ORIFICE FLOW DEPTH (ft)	WEIR FLOW DEPTH (ft)	PONDING DEPTH (ft)
601	TYPE "A" INLET	R-4342	0.73	1.89	0.85	0.14	5.00	7.22	0.86	0.03	0.22	0.22
602	TYPE "A" INLET	R-4342	0.83	2.00	0.85	0.23	5.00	7.22	1.41	0.09	0.30	0.30
603	TYPE "M" INLET	R-3455-C	3.35	4.79	0.85	0.14	5.00	7.22	0.86	0.02	0.16	0.16
604	TYPE "C" MANHOLE	R-3472	3.36	5.07	0.85	0.19	5.00	7.22	1.17	0.14	0.23	0.23
605	TYPE "M" INLET	R-3455-C	2.82	4.53	0.85	0.15	5.00	7.22	0.92	0.02	0.16	0.16
606	TYPE "M" INLET	R-3455-C	2.80	4.51	0.85	0.22	5.00	7.22	1.35	0.05	0.21	0.21
608	TYPE "A" INLET	R-4342	1.22	2.39	0.85	0.07	5.00	7.22	0.43	0.01	0.14	0.14
609	TYPE "A" INLET	R-4342	1.33	2.49	0.85	0.22	5.00	7.22	1.35	0.08	0.29	0.29
610	TYPE "A" INLET	R-4342	1.22	2.39	0.85	0.06	5.00	7.22	0.37	0.01	0.13	0.13
611	TYPE "A" INLET	R-4342	1.33	2.49	0.85	0.20	5.00	7.22	1.23	0.06	0.27	0.27
612	TYPE "C" MANHOLE	R-3287-10V	2.84	4.28	0.85	0.09	5.00	7.22	0.55	0.01	0.17	0.17
613	TYPE "M" INLET	R-3287-10V	1.80	3.50	0.85	0.07	5.00	7.22	0.43	0.01	0.15	0.15
614	TYPE "J" INLET	R-3455-C	2.98	4.14	0.85	0.36	5.00	7.22	2.21	0.12	0.28	0.28
615	TYPE "C" MANHOLE	R-3472	2.70	4.95	0.85	0.31	5.00	7.22	1.90	0.37	0.32	0.37
607	TYPE "C" MANHOLE	R-3472	3.30	5.55	0.85	0.19	5.00	7.22	1.17	0.14	0.23	0.23
616	CONCRETE END SECTION	-	-	-	-	-	-	-	-	-	-	0.00

PROPOSED STORM SEWER SYSTEM
ORIFICE FLOW CASTING CAPACITY CALCULATIONS

Job Information

Description: MultiPro, LLC
Reviewing Entity: City of Franklin
Job #: 2020-493
Date: 06/03/21

Design Parameters	
Design Storm:	10-yr
Clogging (%):	50%
Intensity Calculation Method	Entity Data

STR. NO.	SPECIFIED STRUCTURE TYPE	SPECIFIED CASTING TYPE	PIPE COVER (ft)	STRUCTURE DEPTH (ft)	CASTING c	CASTING A (acres)	CASTING Tc (min)	ENTITY DATA i (in/hr)	CASTING FLOW (cfs)	ORIFICE FLOW DEPTH (ft)	WEIR FLOW DEPTH (ft)	PONDING DEPTH (ft)
701	TYPE "A" INLET	R-4342	2.05	3.22	0.85	0.25	5.00	7.22	1.53	0.10	0.31	0.31
702	TYPE "M" INLET	R-3455-C	2.41	3.85	0.85	0.23	5.00	7.22	1.41	0.05	0.22	0.22
703	TYPE "F" INLET	R-4215-C	1.62	3.06	0.85	0.16	5.00	7.22	0.98	0.02	0.16	0.16
704	CONCRETE END SECTION	-	-	-	-	-	-	-	-	-	-	0.00

PROPOSED STORM SEWER SYSTEM
HYDRAULIC GRADE LINE CALCULATIONS

Job Information

Description: MultiPro LLC
Entity: City of Franklin
Job #: 2020-493
Date: 06/03/21

Design Parameters	
Design Storm:	10-yr
Intensity Calculation Method:	Entity Data
Starting Elevation:	(dc+D)/2
Calculation Method:	Structure Coefficient

	10-yr
Pond Discharge	4.39

D.S. STR.	U.S. STR.	D.S. INV. ELEV.	D.S. CROWN ELEV.	(dc+D)/2 ELEV.	STARTING ELEV.	Tc	INTENSITY ENTITY DATA	FLOW	DIAMETER	SLOPE	AREA	WETTED PERIMETER	HYDRAULIC RADIUS	FLOW DEPTH	CRITICAL DEPTH	VELOCITY	LENGTH	MANNING'S N	FRICTION LOSS	UPSTREAM MAXIMUM INFLUENT VELOCITY	"A" LOSS	"B" LOSS	"C" LOSS	"D" LOSS	OUTLET STRUCTURE COEFFICIENT	UPSTREAM STRUCTURE COEFFICIENT	EFFLUENT PIPE VELOCITY	OUTLET STRUCTURE LOSS	UPSTREAM STRUCTURE LOSS	TOTAL LOSS	U.S. HGL ELEV.	U.S. STR. TOR	U.S. STR. CROWN
		(ft)	(ft)	(ft)	(ft)	(min)	(in/hr)	(cfs)	(in.)	%	(sq. ft)	(ft.)	(ft.)	(ft.)	(ft)	(ft/s)	(ft)		(ft)	(ft/s)	(ft.)	(ft.)	(ft.)	(ft.)			(ft/s)	(ft)	(ft)	(ft)	(ft.)	(ft.)	(ft.)
102	101	740.53	741.53	741.17	743.13	5.00	7.22	0.45	12	0.31	0.222	1.215	0.183	0.326	0.279	2.05	153	0.013	0.470	-	0.10	0.10	0.10	0.10	-	1.25	3.57	-	0.081	0.552	743.69	745.20	742.00
102	103	740.53	741.53	741.17	743.13	5.00	7.22	0.43	12	0.31	0.214	1.197	0.179	0.317	0.272	2.02	40	0.013	0.122	-	1.10	1.10	1.10	1.10	-	1.25	3.57	-	0.079	0.202	743.34	746.40	741.65
102	104	740.53	741.53	741.26	743.13	5.00	7.22	1.17	12	0.31	0.444	1.674	0.265	0.551	0.455	2.63	87	0.013	0.269	-	2.10	2.10	2.10	2.10	-	1.25	3.57	-	0.134	0.403	743.54	745.90	741.80
105	102	740.14	741.64	741.28	742.67	6.01	6.89	4.30	18	0.30	1.205	2.797	0.431	0.967	0.795	3.57	132	0.013	0.394	2.05	3.10	3.10	3.10	3.10	-	0.50	3.96	-	0.066	0.460	743.13	746.70	742.03
109	105	740.01	741.51	741.21	742.53	6.68	6.66	5.35	18	0.35	1.353	3.025	0.447	1.073	0.891	3.96	35	0.013	0.123	3.57	4.10	4.10	4.10	4.10	-	0.50	5.03	-	0.022	0.146	742.67	746.89	741.64
107	106	740.13	742.13	741.67	742.64	5.00	7.22	9.39	24	0.30	2.165	3.755	0.577	1.302	1.095	4.34	100	0.013	0.300	-	5.10	5.10	5.10	5.10	-	1.25	4.34	-	0.365	0.665	743.31	-	742.43
109	107	740.01	742.01	741.56	742.53	5.42	7.08	9.38	24	0.30	2.163	3.752	0.576	1.300	1.094	4.34	38	0.013	0.113	4.34	6.10	6.10	6.10	6.10	-	0.50	5.03	-	0.000	0.113	742.64	744.77	742.13
109	108	740.01	741.26	741.00	742.53	5.00	7.22	3.25	15	0.30	0.994	2.634	0.378	0.944	0.727	3.27	79	0.013	0.236	-	7.10	7.10	7.10	7.10	-	1.25	5.03	-	0.208	0.444	742.97	744.89	741.50
110	109	739.76	742.26	741.71	742.20	6.85	6.61	17.04	30	0.30	3.385	4.695	0.721	1.628	1.396	5.03	84	0.013	0.251	3.96	8.10	8.10	8.10	8.10	-	0.50	5.40	-	0.075	0.327	742.53	746.35	742.51
111	110	739.50	742.00	741.46	741.46	7.16	6.51	17.72	30	0.35	3.284	4.607	0.713	1.586	1.425	5.40	74	0.013	0.257	5.03	9.10	9.10	9.10	9.10	1.00	0.50	-	0.452	0.029	0.739	742.20	745.08	742.26

PROPOSED STORM SEWER SYSTEM
HYDRAULIC GRADE LINE CALCULATIONS

Job Information

Description: MultiPro LLC
Entity: City of Franklin
Job #: 2020-493
Date: 06/03/21

Design Parameters	
Design Storm:	10-yr
Intensity Calculation Method:	Entity Data
Starting Elevation:	(dc+D)/2
Calculation Method:	Structure Coefficient

	10-yr
Pond Discharge	4.39

D.S. STR.	U.S. STR.	D.S. INV. ELEV.	D.S. CROWN ELEV.	(dc+D)/2 ELEV.	STARTING ELEV.	Tc	INTENSITY ENTITY DATA	FLOW	DIAMETER	SLOPE	AREA	WETTED PERIMETER	HYDRAULIC RADIUS	FLOW DEPTH	CRITICAL DEPTH	VELOCITY	LENGTH	MANNING'S N	FRICTION LOSS	UPSTREAM MAXIMUM INFLUENT VELOCITY	"A" LOSS	"B" LOSS	"C" LOSS	"D" LOSS	OUTLET STRUCTURE COEFFICIENT	UPSTREAM STRUCTURE COEFFICIENT	EFFLUENT PIPE VELOCITY	OUTLET STRUCTURE LOSS	UPSTREAM STRUCTURE LOSS	TOTAL LOSS	U.S. HGL ELEV.	U.S. STR. TOR	U.S. STR. CROWN
		(ft)	(ft)	(ft)	(ft)	(min)	(in/hr)	(cfs)	(in.)	%	(sq. ft)	(ft.)	(ft.)	(ft.)	(ft)	(ft/s)	(ft)		(ft)	(ft/s)	(ft.)	(ft.)	(ft.)	(ft.)			(ft/s)	(ft)	(ft)	(ft)	(ft.)	(ft.)	(ft.)
202	201	738.98	740.98	740.61	#VALUE!	5.00	7.22	12.52	24	0.31	2.739	4.501	0.609	1.628	1.272	4.57	100	0.013	0.310	-	0.10	0.10	0.10	0.10	-	1.25	4.57	-	0.405	0.715	#VALUE!	-	741.29
205	202	738.86	740.86	740.50	#VALUE!	5.42	7.08	12.45	24	0.31	2.724	4.476	0.609	1.619	1.268	4.57	38	0.013	0.117	4.57	1.10	1.10	1.10	1.10	-	0.50	4.70	-	0.000	0.117	#VALUE!	743.05	740.98
205	203	738.86	739.86	739.67	#VALUE!	5.00	7.22	2.15	12	0.37	0.683	2.244	0.304	0.812	0.626	3.15	52	0.013	0.192	-	2.10	2.10	2.10	2.10	-	1.25	4.70	-	0.192	0.384	#VALUE!	744.90	740.05
205	204	738.86	740.11	739.86	#VALUE!	5.00	7.22	3.44	15	0.30	1.046	2.752	0.380	0.994	0.748	3.29	79	0.013	0.236	-	3.10	3.10	3.10	3.10	-	1.25	4.70	-	0.209	0.446	#VALUE!	742.93	740.35
206	205	738.77	741.27	740.73	#VALUE!	5.57	7.03	17.80	30	0.25	3.783	5.065	0.747	1.800	1.428	4.70	38	0.013	0.094	4.57	4.10	4.10	4.10	4.10	-	0.50	4.71	-	0.010	0.103	#VALUE!	744.39	741.36
207	206	738.50	741.00	740.46	#VALUE!	5.73	6.98	17.82	30	0.25	3.787	5.069	0.747	1.801	1.429	4.71	107	0.013	0.265	4.70	5.10	5.10	5.10	5.10	-	0.50	#VALUE!	-	0.000	0.265	#VALUE!	743.38	741.27

PROPOSED STORM SEWER SYSTEM
HYDRAULIC GRADE LINE CALCULATIONS

Job Information

Description: MultiPro LLC
Entity: City of Franklin
Job #: 2020-493
Date: 06/03/21

Design Parameters	
Design Storm:	10-yr
Intensity Calculation Method:	Entity Data
Starting Elevation:	(dc+D)/2
Calculation Method:	Structure Coefficient

	10-yr
Pond Discharge	4.39

D.S. STR.	U.S. STR.	D.S. INV. ELEV.	D.S. CROWN ELEV.	(dc+D)/2 ELEV.	STARTING ELEV.	Tc	INTENSITY ENTITY DATA	FLOW	DIAMETER	SLOPE	AREA	WETTED PERIMETER	HYDRAULIC RADIUS	FLOW DEPTH	CRITICAL DEPTH	VELOCITY	LENGTH	MANNING'S N	FRICTION LOSS	UPSTREAM MAXIMUM INFLUENT VELOCITY	"A" LOSS	"B" LOSS	"C" LOSS	"D" LOSS	OUTLET STRUCTURE COEFFICIENT	UPSTREAM STRUCTURE COEFFICIENT	EFFLUENT PIPE VELOCITY	OUTLET STRUCTURE LOSS	UPSTREAM STRUCTURE LOSS		TOTAL LOSS	U.S. HGL ELEV.	U.S. STR. TOR	U.S. STR. CROWN
		(ft)	(ft)	(ft)	(ft)	(min)	(in/hr)	(cfs)	(in.)	%	(sq. ft)	(ft.)	(ft.)	(ft.)	(ft)	(ft/s)	(ft)		(ft)	(ft/s)	(ft.)	(ft.)	(ft.)	(ft.)	COEFFICIENT	COEFFICIENT	(ft/s)	(ft)	(ft)		(ft)	(ft.)	(ft.)	(ft.)
302	301	733.75	734.58	734.52	737.17	7.39	6.43	2.65	10	1.65	0.452	1.788	0.253	0.643	0.719	5.87	76	0.013	1.252	-	0.10	0.10	0.10	0.10	-	1.25	2.88	-	0.668	1.920	739.09	-	735.84
307	302	733.53	735.03	734.63	736.75	7.64	6.35	3.32	18	0.20	1.151	2.720	0.423	0.930	0.694	2.88	109	0.013	0.217	5.87	1.10	1.10	1.10	1.10	-	0.50	5.75	-	0.203	0.420	737.17	738.47	735.25
306	303	733.93	735.43	735.13	737.20	5.00	7.22	5.46	18	0.31	1.452	3.197	0.454	1.149	0.901	3.76	150	0.013	0.462	-	2.10	2.10	2.10	2.10	-	1.25	4.48	-	0.275	0.737	737.94	738.05	735.89
306	304	733.93	735.18	734.96	737.20	5.00	7.22	3.93	15	0.40	1.036	2.728	0.380	0.984	0.802	3.79	57	0.013	0.228	-	3.10	3.10	3.10	3.10	-	1.25	4.48	-	0.279	0.507	737.71	743.90	735.41
306	305	733.93	734.93	734.73	737.20	5.00	7.22	1.96	12	0.35	0.644	2.128	0.303	0.764	0.598	3.05	89	0.013	0.311	-	4.10	4.10	4.10	4.10	-	1.25	4.48	-	0.180	0.491	737.69	739.80	735.24
307	306	733.53	735.53	735.14	736.75	5.75	6.97	11.61	24	0.30	2.591	4.275	0.606	1.537	1.223	4.48	134	0.013	0.399	3.76	5.10	5.10	5.10	5.10	-	0.50	5.75	-	0.046	0.445	737.20	742.20	735.93
309	307	732.39	734.39	734.07	735.43	8.32	6.12	14.12	24	0.50	2.457	4.097	0.600	1.460	1.353	5.75	227	0.013	1.131	2.88	6.10	6.10	6.10	6.10	-	0.50	4.61	-	0.192	1.323	736.75	738.27	735.53
309	308	732.39	733.39	733.04	735.43	5.00	7.22	0.49	12	0.31	0.235	1.243	0.189	0.339	0.290	2.09	48	0.013	0.147	-	7.10	7.10	7.10	7.10	-	1.25	4.61	-	0.085	0.232	735.66	736.05	733.54
312	309	732.08	734.58	734.00	735.03	9.06	5.88	15.75	30	0.25	3.420	4.726	0.724	1.643	1.340	4.61	126	0.013	0.314	5.75	8.10	8.10	8.10	8.10	-	0.50	5.20	-	0.092	0.406	735.43	736.81	734.89
311	310	732.41	733.66	733.40	735.36	5.00	7.22	3.38	15	0.30	1.029	2.710	0.380	0.976	0.741	3.28	166	0.013	0.497	-	9.10	9.10	9.10	9.10	-	1.25	3.38	-	0.209	0.706	736.06	739.13	734.15
312	311	732.08	733.58	733.25	735.03	5.96	6.90	4.93	18	0.25	1.459	3.209	0.455	1.154	0.854	3.38	132	0.013	0.327	3.28	10.10	10.10	10.10	10.10	-	0.50	5.20	-	0.005	0.332	735.36	738.53	733.91
313	312	731.76	734.26	733.78	734.67	9.57	5.71	20.89	30	0.30	4.019	5.311	0.757	1.907	1.553	5.20	106	0.013	0.316	4.61	11.10	11.10	11.10	11.10	-	0.50	5.59	-	0.045	0.361	735.03	738.35	734.58
321	313	731.39	733.89	733.43	734.26	9.95	5.59	21.85	30	0.35	3.906	5.190	0.753	1.855	1.589	5.59	106	0.013	0.369	5.20	12.10	12.10	12.10	12.10	-	0.50	5.37	-	0.033	0.402	734.67	736.01	734.26
315	314	732.22	733.22	733.01	735.18	5.00	7.22	1.84	12	0.31	0.642	2.122	0.303	0.762	0.578	2.87	192	0.013	0.593	-	13.10	13.10	13.10	13.10	-	1.25	3.28	-	0.160	0.752	735.94	736.42	733.81
316	315	732.03	733.28	733.03	734.98	6.27	6.80	3.35	15	0.30	1.022	2.695	0.379	0.970	0.738	3.28	62	0.013	0.184	2.87	14.10	14.10	14.10	14.10	-	0.50	3.60	-	0.020	0.204	735.18	736.18	733.47
318	316	731.81	733.31	732.97	734.74	6.62	6.68	4.49	18	0.30	1.247	2.859	0.436	0.997	0.813	3.60	74	0.013	0.220	3.28	15.10	15.10	15.10	15.10	-	0.50	4.30	-	0.017	0.237	734.98	736.75	733.53
318	317	731.81	733.06	732.80	734.74	5.00	7.22	3.31	15	0.30	1.011	2.671	0.379	0.960	0.734	3.28	108	0.013	0.323	-	16.10	16.10	16.10	16.10	-	1.25	4.30	-	0.208	0.532	735.27	737.45	733.39
319	318	731.52	733.52	733.06	734.41	7.00	6.56	8.98	24	0.30	2.088	3.671	0.569	1.262	1.069	4.30	97	0.013	0.290	3.60	17.10	17.10	17.10	17.10	-	0.50	4.08	-	0.043	0.333	734.74	736.65	733.81
321	319	731.39	733.39	732.96	734.26	7.41	6.42	10.32	24	0.25	2.529	4.190	0.603	1.501	1.150	4.08	53	0.013	0.132	4.30	18.10	18.10	18.10	18.10	-	0.50	5.37	-	0.014	0.146	734.41	736.56	733.52
321	320	731.39	732.39	732.13	734.26	5.00	7.22	1.35	12	0.31	0.497	1.783	0.279	0.605	0.491	2.72	44	0.013	0.135	-	19.10	19.10	19.10	19.10	-	1.25	5.37	-	0.143	0.278	734.54	736.65	732.52
322	321	731.00	734.00	733.41	733.41	10.31	5.53	31.57	36	0.25	5.881	6.463	0.910	2.326	1.822	5.37	155	0.013	0.386	5.59	20.10	20.10	20.10	20.10	1.00	0.50	-	0.447	0.019	0.852	734.26	737.10	734.39

PROPOSED STORM SEWER SYSTEM
HYDRAULIC GRADE LINE CALCULATIONS

Job Information

Description: MultiPro LLC
Entity: City of Franklin
Job #: 2020-493
Date: 06/03/21

Design Parameters	
Design Storm:	10-yr
Intensity Calculation Method:	Entity Data
Starting Elevation:	(dc+D)/2
Calculation Method:	Structure Coefficient

	10-yr
Pond Discharge	4.39

D.S. STR.	U.S. STR.	D.S. INV. ELEV.	D.S. CROWN ELEV.	(dc+D)/2 ELEV.	STARTING ELEV.	Tc	INTENSITY ENTITY DATA	FLOW	DIAMETER	SLOPE	AREA	WETTED PERIMETER	HYDRAULIC RADIUS	FLOW DEPTH	CRITICAL DEPTH	VELOCITY	LENGTH	MANNING'S N	FRICTION LOSS	UPSTREAM MAXIMUM INFLUENT VELOCITY	"A" LOSS	"B" LOSS	"C" LOSS	"D" LOSS	OUTLET STRUCTURE COEFFICIENT	UPSTREAM STRUCTURE COEFFICIENT	EFFLUENT PIPE VELOCITY	OUTLET STRUCTURE LOSS	UPSTREAM STRUCTURE LOSS	TOTAL LOSS	U.S. HGL ELEV.	U.S. STR. TOR	U.S. STR. CROWN
		(ft)	(ft)	(ft)	(ft)	(min)	(in/hr)	(cfs)	(in.)	%	(sq. ft)	(ft.)	(ft.)	(ft.)	(ft)	(ft/s)	(ft)		(ft)	(ft/s)	(ft.)	(ft.)	(ft.)	(ft.)			(ft/s)	(ft)	(ft)	(ft)	(ft.)	(ft.)	(ft.)
402	401	732.10	733.10	732.69	734.69	5.00	7.22	0.19	12	0.31	0.121	0.956	0.127	0.212	0.181	1.61	38	0.013	0.117	-	0.10	0.10	0.10	0.10	-	1.25	2.17	-	0.050	0.167	734.86	738.27	733.22
403	402	731.78	733.03	732.56	734.36	5.25	7.14	0.62	15	0.30	0.285	1.402	0.203	0.353	0.307	2.17	106	0.013	0.315	1.61	1.10	1.10	1.10	1.10	-	0.50	2.97	-	0.016	0.331	734.69	738.45	733.35
413	403	731.47	732.97	732.48	734.02	5.86	6.94	2.01	18	0.30	0.679	2.080	0.326	0.613	0.535	2.97	106	0.013	0.316	2.17	2.10	2.10	2.10	2.10	-	0.50	5.16	-	0.032	0.348	734.36	735.77	733.28
405	404	732.22	733.47	733.16	734.83	5.00	7.22	2.52	15	0.30	0.804	2.274	0.353	0.779	0.635	3.13	105	0.013	0.314	-	3.10	3.10	3.10	3.10	-	1.25	3.59	-	0.190	0.504	735.33	738.45	733.79
406	405	731.90	733.40	733.06	734.49	5.61	7.02	4.41	18	0.30	1.230	2.834	0.434	0.985	0.806	3.59	106	0.013	0.315	3.13	4.10	4.10	4.10	4.10	-	0.50	4.09	-	0.024	0.339	734.83	737.45	733.72
407	406	731.62	733.62	733.10	734.18	6.15	6.84	7.21	24	0.30	1.762	3.333	0.529	1.096	0.953	4.09	94	0.013	0.281	3.59	5.10	5.10	5.10	5.10	-	0.50	4.27	-	0.030	0.312	734.49	736.66	733.90
413	407	731.47	733.47	732.99	734.02	6.55	6.71	8.67	24	0.30	2.032	3.611	0.563	1.232	1.050	4.27	51	0.013	0.153	4.09	6.10	6.10	6.10	6.10	-	0.50	5.16	-	0.011	0.164	734.18	736.58	733.62
409	408	732.14	733.14	732.94	734.77	5.00	7.22	1.90	12	0.31	0.661	2.178	0.304	0.785	0.588	2.88	105	0.013	0.325	-	7.10	7.10	7.10	7.10	-	1.25	3.37	-	0.161	0.485	735.26	738.45	733.47
411	409	731.83	733.33	732.92	734.43	5.69	6.99	3.33	18	0.30	0.986	2.494	0.396	0.819	0.695	3.37	106	0.013	0.315	2.88	8.10	8.10	8.10	8.10	-	0.50	4.10	-	0.024	0.339	734.77	737.45	733.64
411	410	731.83	733.08	732.79	734.43	5.00	7.22	2.82	15	0.30	0.882	2.411	0.366	0.844	0.675	3.20	89	0.013	0.267	-	9.10	9.10	9.10	9.10	-	1.25	4.10	-	0.199	0.466	734.90	736.63	733.35
412	411	731.58	733.58	733.06	734.14	6.24	6.81	7.24	24	0.30	1.767	3.338	0.529	1.098	0.955	4.10	82	0.013	0.244	3.37	10.10	10.10	10.10	10.10	-	0.50	4.32	-	0.042	0.286	734.43	736.66	733.83
413	412	731.47	733.47	733.01	734.02	6.58	6.70	9.17	24	0.30	2.124	3.709	0.572	1.280	1.081	4.32	39	0.013	0.115	4.10	11.10	11.10	11.10	11.10	-	0.50	5.16	-	0.014	0.130	734.14	736.70	733.58
414	413	731.00	733.50	733.00	733.00	6.77	6.64	19.59	30	0.30	3.798	5.080	0.748	1.806	1.501	5.16	155	0.013	0.463	2.97	12.10	12.10	12.10	12.10	1.00	0.50	-	0.413	0.138	1.015	734.02	737.90	733.97

PROPOSED STORM SEWER SYSTEM
HYDRAULIC GRADE LINE CALCULATIONS

Job Information

Description: MultiPro LLC
Entity: City of Franklin
Job #: 2020-493
Date: 06/03/21

Design Parameters	
Design Storm:	10-yr
Intensity Calculation Method:	Entity Data
Starting Elevation:	(dc+D)/2
Calculation Method:	Structure Coefficient

	10-yr
Pond Discharge	4.39

D.S. STR.	U.S. STR.	D.S. INV. ELEV.	D.S. CROWN ELEV.	(dc+D)/2 ELEV.	STARTING ELEV.	Tc	INTENSITY ENTITY DATA	FLOW	DIAMETER	SLOPE	AREA	WETTED PERIMETER	HYDRAULIC RADIUS	FLOW DEPTH	CRITICAL DEPTH	VELOCITY	LENGTH	MANNING'S N	FRICTION LOSS	UPSTREAM MAXIMUM INFLUENT VELOCITY	"A" LOSS	"B" LOSS	"C" LOSS	"D" LOSS	OUTLET STRUCTURE COEFFICIENT	UPSTREAM STRUCTURE COEFFICIENT	EFFLUENT PIPE VELOCITY	OUTLET STRUCTURE LOSS	UPSTREAM STRUCTURE LOSS	TOTAL LOSS	U.S. HGL ELEV.	U.S. STR. TOR	U.S. STR. CROWN
		(ft)	(ft)	(ft)	(ft)	(min)	(in/hr)	(cfs)	(in.)	%	(sq. ft)	(ft.)	(ft.)	(ft.)	(ft)	(ft/s)	(ft)		(ft)	(ft/s)	(ft.)	(ft.)	(ft.)	(ft.)			(ft/s)	(ft)			(ft.)	(ft.)	(ft.)
502	501	732.36	733.36	732.97	733.92	5.00	7.22	0.30	12	0.31	0.166	1.080	0.154	0.264	0.227	1.83	43	0.013	0.132	-	0.10	0.10	0.10	0.10	-	1.25	1.82	-	0.065	0.197	734.12	734.16	733.49
503	502	732.18	733.18	732.79	733.75	5.28	7.13	0.30	12	0.31	0.165	1.076	0.153	0.263	0.225	1.82	57	0.013	0.176	1.83	1.10	1.10	1.10	1.10	-	0.50	3.30	-	0.000	0.176	733.92	737.50	733.36
504	503	731.95	733.20	732.93	733.46	5.66	7.00	3.15	15	0.31	0.954	2.548	0.374	0.907	0.715	3.30	75	0.013	0.230	1.82	2.10	2.10	2.10	2.10	-	0.50	3.25	-	0.059	0.289	733.75	736.43	733.43
505	504	731.78	733.03	732.76	733.29	6.08	6.86	3.09	15	0.30	0.950	2.542	0.374	0.904	0.707	3.25	56	0.013	0.168	3.30	3.10	3.10	3.10	3.10	-	0.50	3.89	-	0.003	0.171	733.46	737.01	733.20
506	505	731.17	732.67	732.34	732.64	6.41	6.75	4.88	18	0.35	1.253	2.868	0.437	1.001	0.849	3.89	174	0.013	0.607	3.25	4.10	4.10	4.10	4.10	-	0.50	4.00	-	0.036	0.642	733.29	736.45	733.28
506	507	731.17	732.17	731.84	732.64	5.00	7.22	0.65	12	0.31	0.287	1.357	0.212	0.394	0.336	2.26	39	0.013	0.119	-	5.10	5.10	5.10	5.10	-	1.25	4.00	-	0.099	0.219	732.86	-	732.29
508	506	731.00	732.50	732.22	732.22	7.24	6.48	5.92	18	0.35	1.480	3.250	0.455	1.171	0.940	4.00	48	0.013	0.168	3.89	6.10	6.10	6.10	6.10	1.00	0.50	-	0.249	0.007	0.423	732.64	735.96	732.67

PROPOSED STORM SEWER SYSTEM
HYDRAULIC GRADE LINE CALCULATIONS

Job Information

Description: MultiPro, LLC
Entity: City of Franklin
Job #: 2020-493
Date: 06/03/21

Design Parameters	
Design Storm:	10-yr
Intensity Calculation Method:	Entity Data
Starting Elevation:	(dc+D)/2
Calculation Method:	Structure Coefficient

	10-yr
Pond Discharge	4.39

D.S. STR.	U.S. STR.	D.S. INV. ELEV.	D.S. CROWN ELEV.	(dc+D)/2 ELEV.	STARTING ELEV.	Tc	INTENSITY ENTITY DATA	FLOW	DIAMETER	SLOPE	AREA	WETTED PERIMETER	HYDRAULIC RADIUS	FLOW DEPTH	CRITICAL DEPTH	VELOCITY	LENGTH	MANNING'S N	FRICTION LOSS	UPSTREAM MAXIMUM INFLUENT VELOCITY	"A" LOSS	"B" LOSS	"C" LOSS	"D" LOSS	OUTLET STRUCTURE COEFFICIENT	UPSTREAM STRUCTURE COEFFICIENT	EFFLUENT PIPE VELOCITY	OUTLET STRUCTURE LOSS	UPSTREAM STRUCTURE LOSS	TOTAL LOSS	U.S. HGL ELEV.	U.S. STR. TOR	U.S. STR. CROWN
		(ft)	(ft)	(ft)	(ft)	(min)	(in/hr)	(cfs)	(in.)	%	(sq. ft)	(ft.)	(ft.)	(ft.)	(ft)	(ft/s)	(ft)		(ft)	(ft/s)	(ft.)	(ft.)	(ft.)	(ft.)			(ft/s)	(ft)	(ft)	(ft)	(ft.)	(ft.)	(ft.)
602	601	732.50	733.50	733.20	734.86	5.00	7.22	0.86	12	0.31	0.353	1.491	0.237	0.460	0.388	2.44	34	0.013	0.106	-	0.10	0.10	0.10	0.10	-	1.25	3.46	-	0.115	0.221	735.09	734.50	733.61
603	602	732.24	733.24	733.07	734.56	5.23	7.14	2.25	12	0.45	0.650	2.143	0.303	0.771	0.641	3.46	57	0.013	0.255	2.44	1.10	1.10	1.10	1.10	-	0.50	3.24	-	0.047	0.302	734.86	734.50	733.50
604	603	731.98	733.23	732.96	734.29	5.54	7.04	3.05	15	0.30	0.941	2.524	0.373	0.896	0.703	3.24	88	0.013	0.262	3.46	2.10	2.10	2.10	2.10	-	0.50	3.53	-	0.011	0.273	734.56	737.03	733.49
605	604	731.79	733.29	732.93	734.08	6.05	6.87	4.09	18	0.30	1.157	2.729	0.424	0.934	0.774	3.53	64	0.013	0.192	3.24	3.10	3.10	3.10	3.10	-	0.50	3.65	-	0.015	0.207	734.29	737.05	733.48
606	605	731.60	733.10	732.77	733.89	6.38	6.77	4.89	18	0.30	1.338	3.000	0.446	1.062	0.850	3.65	64	0.013	0.191	3.53	4.10	4.10	4.10	4.10	-	0.50	4.01	-	0.007	0.197	734.08	736.32	733.29
607	606	731.31	732.81	732.53	733.57	6.70	6.66	6.06	18	0.35	1.511	3.312	0.456	1.196	0.951	4.01	83	0.013	0.290	3.65	5.10	5.10	5.10	5.10	-	0.50	5.50	-	0.021	0.311	733.89	736.11	733.10
609	608	732.01	733.01	732.64	734.37	5.00	7.22	0.43	12	0.31	0.213	1.194	0.178	0.316	0.271	2.02	33	0.013	0.102	-	6.10	6.10	6.10	6.10	-	1.25	2.85	-	0.079	0.181	734.55	734.50	733.11
612	609	731.90	732.90	732.69	734.24	5.22	7.15	1.76	12	0.31	0.617	2.057	0.300	0.734	0.565	2.85	33	0.013	0.102	2.02	7.10	7.10	7.10	7.10	-	0.50	3.65	-	0.032	0.134	734.37	734.50	733.01
611	610	732.01	733.01	732.63	734.37	5.00	7.22	0.37	12	0.31	0.191	1.142	0.167	0.292	0.250	1.93	33	0.013	0.102	-	8.10	8.10	8.10	8.10	-	1.25	2.80	-	0.072	0.174	734.54	734.50	733.11
612	611	731.90	732.90	732.67	734.24	5.22	7.15	1.58	12	0.31	0.563	1.927	0.292	0.674	0.533	2.80	33	0.013	0.102	1.93	9.10	9.10	9.10	9.10	-	0.50	3.65	-	0.032	0.134	734.37	734.50	733.01
613	612	731.76	733.01	732.78	734.05	5.44	7.08	3.85	15	0.37	1.055	2.774	0.380	1.002	0.793	3.65	40	0.013	0.148	2.85	10.10	10.10	10.10	10.10	-	0.50	3.56	-	0.040	0.188	734.24	736.18	733.15
615	613	731.44	732.94	732.58	733.73	5.65	7.01	4.23	18	0.30	1.188	2.773	0.429	0.956	0.788	3.56	105	0.013	0.313	3.65	11.10	11.10	11.10	11.10	-	0.50	3.16	-	0.005	0.318	734.05	735.26	733.26
615	614	731.44	732.44	732.26	733.73	5.00	7.22	2.21	12	0.40	0.676	2.221	0.304	0.803	0.635	3.27	104	0.013	0.414	-	12.10	12.10	12.10	12.10	-	1.25	3.16	-	0.208	0.621	734.35	736.00	732.86
607	615	731.31	733.31	732.81	733.57	6.18	6.83	8.01	24	0.15	2.533	4.197	0.604	1.503	1.007	3.16	90	0.013	0.134	3.56	13.10	13.10	13.10	13.10	-	0.50	5.50	-	0.021	0.155	733.73	736.39	733.44
616	607	731.00	733.00	732.69	732.69	7.10	6.53	14.65	24	0.45	2.662	4.379	0.608	1.580	1.379	5.50	68	0.013	0.304	4.01	14.10	14.10	14.10	14.10	1.00	0.50	-	0.470	0.110	0.885	733.57	736.86	733.31

PROPOSED STORM SEWER SYSTEM
HYDRAULIC GRADE LINE CALCULATIONS

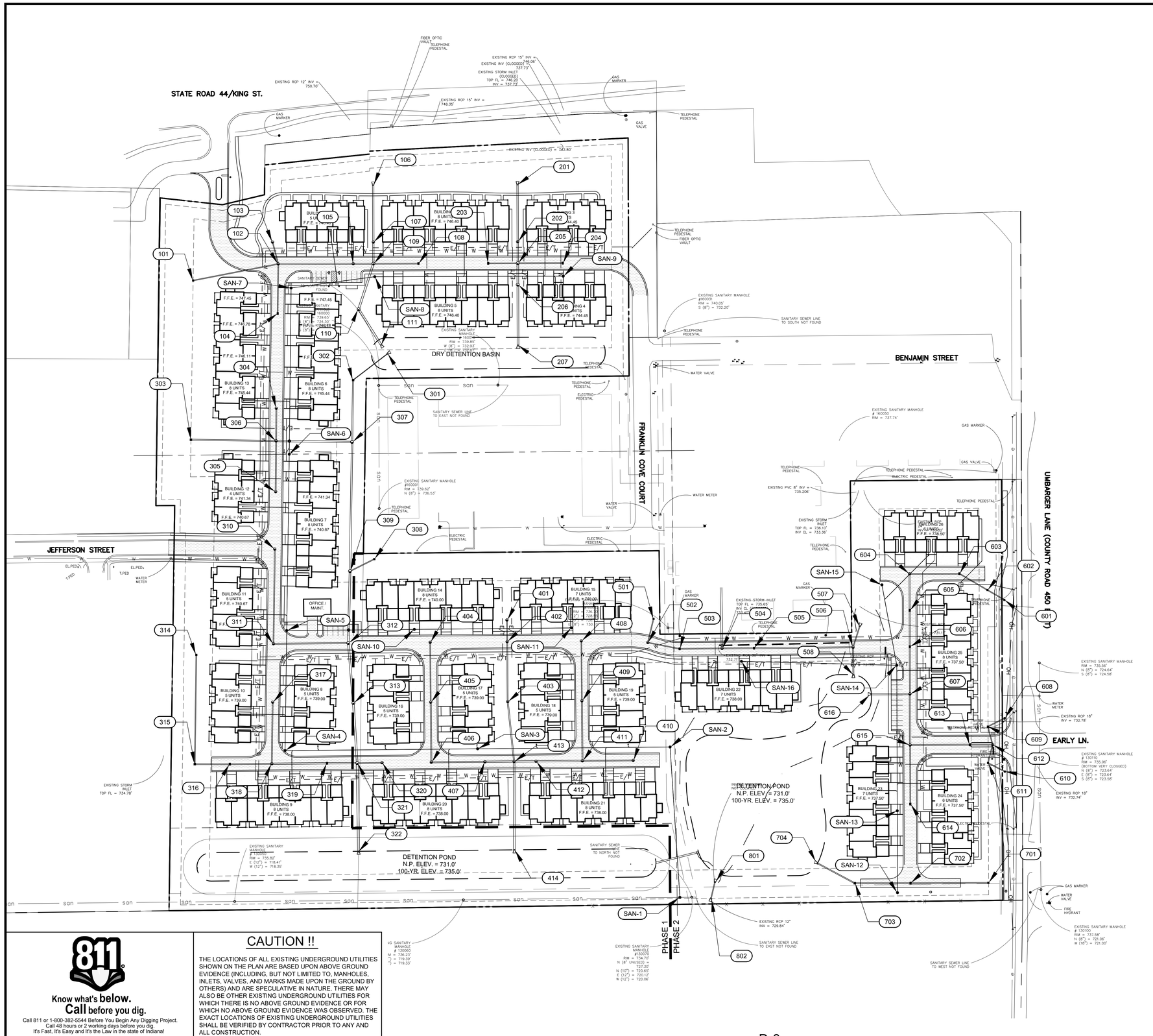
Job Information

Description: MultiPro, LLC
Entity: City of Franklin
Job #: 2020-493
Date: 06/03/21

Design Parameters	
Design Storm:	10-yr
Intensity Calculation Method:	Entity Data
Starting Elevation:	(dc+D)/2
Calculation Method:	Structure Coefficient

	10-yr
Pond Discharge	4.39

D.S. STR.	U.S. STR.	D.S. INV. ELEV.	D.S. CROWN ELEV.	(dc+D)/2 ELEV.	STARTING ELEV.	Tc	INTENSITY ENTITY DATA	FLOW	DIAMETER	SLOPE	AREA	WETTED PERIMETER	HYDRAULIC RADIUS	FLOW DEPTH	CRITICAL DEPTH	VELOCITY	LENGTH	MANNING'S N	FRICTION LOSS	UPSTREAM MAXIMUM INFLUENT VELOCITY	"A" LOSS	"B" LOSS	"C" LOSS	"D" LOSS	OUTLET STRUCTURE COEFFICIENT	UPSTREAM STRUCTURE COEFFICIENT	EFFLUENT PIPE VELOCITY	OUTLET STRUCTURE LOSS	UPSTREAM STRUCTURE LOSS	TOTAL LOSS	U.S. HGL ELEV.	U.S. STR. TOR	U.S. STR. CROWN
		(ft)	(ft)	(ft)	(ft)	(min)	(in/hr)	(cfs)	(in.)	%	(sq. ft)	(ft.)	(ft.)	(ft.)	(ft)	(ft/s)	(ft)		(ft)	(ft/s)	(ft.)	(ft.)	(ft.)	(ft.)			(ft/s)	(ft)	(ft)	(ft)	(ft.)	(ft.)	(ft.)
702	701	731.55	732.55	732.32	732.80	5.00	7.22	1.53	12	0.31	0.550	1.897	0.290	0.660	0.525	2.79	137	0.013	0.422	-	0.10	0.10	0.10	0.10	-	1.25	3.20	-	0.151	0.573	733.37	735.20	732.98
703	702	731.26	732.51	732.22	732.48	5.90	6.92	2.82	15	0.30	0.882	2.412	0.366	0.844	0.675	3.20	98	0.013	0.292	2.79	1.10	1.10	1.10	1.10	-	0.50	3.55	-	0.019	0.312	732.80	735.40	732.80
704	703	731.00	732.25	732.01	732.01	6.47	6.74	3.66	15	0.35	1.033	2.721	0.380	0.981	0.773	3.55	74	0.013	0.259	3.20	2.10	2.10	2.10	2.10	1.00	0.50	-	0.195	0.018	0.472	732.48	734.32	732.51



GENERAL NOTES

1. SEE DRAWING C002 FOR GENERAL NOTES AND ADDITIONAL LEGEND.
2. TOPOGRAPHIC CONDITIONS AND EXISTING UTILITIES SHOWN WERE PROVIDED BY THE SURVEYOR. THE ENGINEER MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED.
3. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS IN THE PROJECT AREA INCLUDING UNDERGROUND UTILITY CONDITIONS, LOCATION AND DEPTH PRIOR TO ANY OTHER SITE CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE ENGINEER.

811 Know what's **below.** **Call** before you dig.
Call 811 or 1-800-382-5544 Before You Begin Any Digging Project.
Call 48 hours or 2 working days before you dig.
It's Fast, It's Easy and It's the Law in the state of Indiana!

CAUTION !!

THE LOCATIONS OF ALL EXISTING UNDERGROUND UTILITIES SHOWN ON THE PLAN ARE BASED UPON ABOVE GROUND EVIDENCE (INCLUDING, BUT NOT LIMITED TO, MANHOLES, INLETS, VALVES, AND MARKS MADE UPON THE GROUND BY OTHERS) AND ARE SPECULATIVE IN NATURE. THERE MAY ALSO BE OTHER EXISTING UNDERGROUND UTILITIES FOR WHICH THERE IS NO ABOVE GROUND EVIDENCE OR FOR WHICH NO ABOVE GROUND EVIDENCE WAS OBSERVED. THE EXACT LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHALL BE VERIFIED BY CONTRACTOR PRIOR TO ANY AND ALL CONSTRUCTION.

TLF, INC.
3901 West 86th Street, Suite 200
Indianapolis, Indiana 46268
Phone: 317-334-1500
Fax: 317-334-1552

Certified By:

REVISIONS

LEVEL	DESCRIPTION	DATE

Project No.: 2020-493
Date: 05/24/2021
Designed By: DBS
Drawn By: DBS
Checked By: BNH

THE LINKS AT FRANKLIN MULTIPRO, LLC

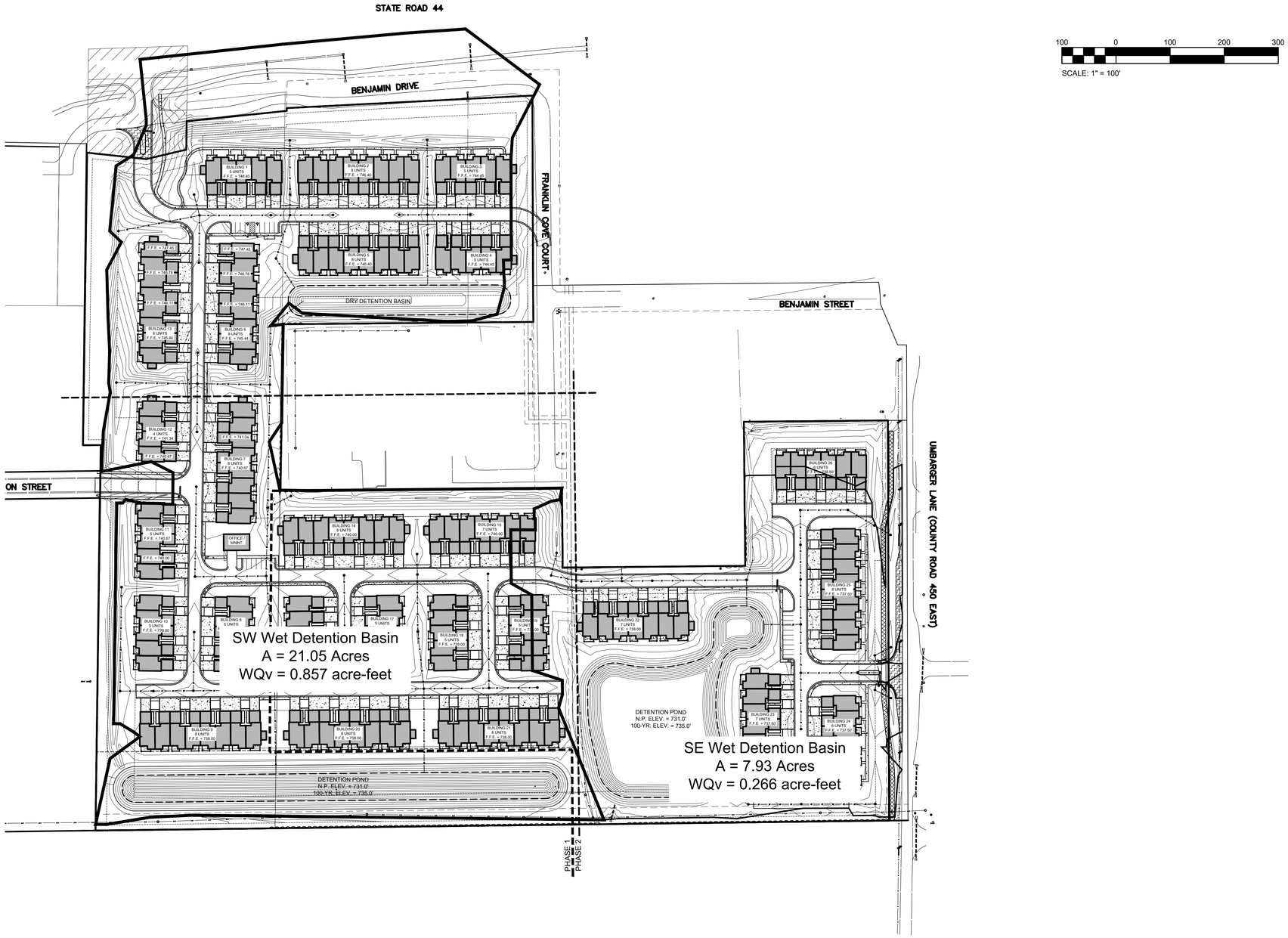
STATE ROAD 44
FRANKLIN, INDIANA

Title: OVERALL UTILITY PLAN

Sheet No.: C400

Drawing Path: P:\2020\493\CAD\Civil\Active\7-2020-493_OVL UTILITY PLAN_C400.dwg
Plotted By: mpando Time of Plot: 5/3/21 - 12:41pm Last Edited: 5/26/21 - 11:03am

Appendix E
Proposed Water Quality Calculations



N

100 0 100 200 300

SCALE: 1" = 100'

TLF, INC.
3901 West 86th Street, Suite 200
Indianapolis, Indiana 46268
Phone: 317-334-1500
Fax: 317-334-1552

Certified By:

REVISIONS

LEVEL	DESCRIPTION	DATE

Project No.: 2020-493
Date: 05/24/2021
Designed By: DBS
Drawn By: DBS
Checked By: BNH

THE LINKS AT FRANKLIN
MULTIPRO, LLC

STATE ROAD 44
FRANKLIN, INDIANA

Title:

WATER QUALITY EXHIBIT

Sheet No.:

PROPOSED STORMWATER SYSTEM
WATER QUALITY VOLUME CALCULATIONS

Job Information

Description: MultiPro, LLC
Reviewing Entity: City of Franklin
Job Number: 2020-493
Date: 06/03/21

SW Wet Detention Pond

$$WQv = \frac{(P) * (Rv) * (A)}{12}$$

P = **1" rainfall**
Rv = **0.05 + 0.009(I) where I is the percent impervious cover**
A = **area in acres**

PARAMETERS

P =	1	(in)
Pervious Area	10.79	
Impervious Area	10.26	
I =	48.7%	(%)
Rv =	0.48866983	
A =	21.05	(acres)

CALCULATED WQv

WQv = **0.857 (ac-ft)**
37345.859 (ft^3)

	SW Wet Detention Pond			
	Stage	**Area**	**Incremental Volume**	**Volume**
	(ft)	**(acre)**	**(acre-ft)**	**(acre-ft)**
Below Normal Pool	723	0.035	0	0
	724	0.140	0.087591827	0.087592
	725	0.247	0.193698347	0.28129
	726	0.355	0.301101928	0.582392
	727	0.464	0.409802571	0.992195
	728	0.575	0.519811754	1.512006
	729	0.687	0.63110652	2.143113
	730	0.800	0.743698347	2.886811
	731	0.914	0.857013315	3.743825
	Total Volume			3.743825 > 2.572029

PROPOSED STORMWATER SYSTEM
WATER QUALITY VOLUME CALCULATIONS

Job Information

Description: MultiPro, LLC
Reviewing Entity: City of Franklin
Job Number: 2020-493
Date: 06/03/21

SE Wet Detention Pond

$$WQv = \frac{(P) * (Rv) * (A)}{12}$$

P = **1" rainfall**
Rv = **0.05 + 0.009(I) where I is the percent impervious cover**
A = **area in acres**

PARAMETERS

P =	1	(in)
Pervious Area	4.82	
Impervious Area	3.11	
I =	39.2%	(%)
Rv =	0.40296343	
A =	7.93	(acres)

CALCULATED WQv

WQv = **0.266 (ac-ft)**
11599.665 (ft^3)

	SE Wet Detention Pond			
	Stage	**Area**	**Incremental Volume**	**Volume**
	(ft)	**(acre)**	**(acre-ft)**	**(acre-ft)**
Below Normal Pool	723	0.86	0	0
	724	0.92	0.890541781	0.890542
	725	0.99	0.955348944	1.845891
	726	1.06	1.023748852	2.86964
	727	1.13	1.095948118	3.965588
	728	1.21	1.172761708	5.138349
	729	1.29	1.251802112	6.390152
	730	1.37	1.331347567	7.721499
	731	1.45	1.412178604	9.133678
	Total Volume			9.133678 > 0.798875