Stormwater Management Report

For

All Saints Catholic Church

Stormwater Management Improvement Project

2443 Mount Vernon Road

Dunwoody, Georgia 30338

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Introduction

Background

This is a stormwater management report for the stormwater detention pond improvements to the All Saints Catholic Church Campus located at 2443 Mount Vernon Road in Dunwoody, Georgia. The existing church campus is partially developed with existing buildings, parking lots and three observable existing stormwater detention ponds on the property. There is a ridge line that runs north to south and evenly divides the drainage area on the camps to a stream to the west and a drainage channel to the east. This report provides a hydrology study of the proposed stormwater detention improvements to account for the existing impervious area as well as future impervious area associated with the future building projects according to the master plan noted on the post developed drainage map. The proposed stormwater detention ponds will be constructed along with the first phase of building construction. In three of the five basins, new stormwater management features will include new storm pipe system to collect and direct stormwater runoff to an oversized storm pipe for detention and a crystal stream water quality unit for water quality measures. The report also provides the documentation of the analysis for the existing and post developed peak runoff rates at the downstream10% point as required by the City of Dunwoody.

Methodology:

The city of Dunwoody code references the use of the Georgia Stormwater Manual as the reference guide for stormwater management analysis. Rainfall data used for the analysis was based on data for "Roswell" as the closest location to the city of Dunwoody. Copies of this data sheet and the computer model are provided in the appendix of this report. The TR-55 method was used for hydrology analysis of the onsite pre-developed and post-developed conditions as well as the downstream conditions. The travel times of the maximum flow path were determined using TR55 method which were then used to determine the time of concentration for each basin. A copy of these references can be found in the attachments section at the end of this study. The minimum time of concentration of 5 minutes was used for the analysis of all basins with a computed time of concentration less than 5 minutes. Runoff coefficients were based on the Georgia Stormwater Manual Table 4-3, where "CN" values are dependent on soil conditions, site terrain and topography. The design storms for the 1, 2, 5, 10, 25, 50 and 100-year storm events were used to calculate the peak flowrates for both existing and proposed basins. A summary of the peak flow rates can be found at the end of the basin study. The storm sewer pipe analysis used hydrology calculations based on the rational method and calculations modeled through Hydraflow Storm Sewers, version 2015.

Executive Summary:

This is an executive summary of the key pre-developed and post-developed hydrology study metrics for the proposed and future development. The campus is divided into 5 primary basins as shown on the drainage maps with some sub-basins.

Flow Summary: Basin 1

Basin	Return Frequency	Allowable Pre-developed flow (modeled at CN =55)	Routed Outflow Pond 1A	Routed Outflow Pond 1B	By-pass flow	Post – developed flow (routed + bypass)	Change (cfs)
1	1	1.02	0.37	0.25	0.36	0.81	-0.21
	2	4.59	0.67	0.38	1.48	2.22	-2.37
	5	8.08	1.82	0.45	2.58	3.71	-4.37
	10	12.13	3.95	0.65	3.85	7.27	-4.86
	25	18.10	8.08	1.50	5.71	14.05	-4.05
	50	22.91	11.64	2.35	7.20	19.89	-3.02
	100	27.94	15.57	3.26	8.77	26.47	-1.47

Flow Summary: Basin 2

Basin	Return Frequency	Allowable Pre-developed flow (modeled at CN =55)	Post – developed flow (unchanged)	Change (cfs)
2	1	0.004	0.004	0
	2	0.06	0.06	0
	5	0.14	0.14	0
	10	0.22	0.22	0
	25	0.36	0.36	0
	50	0.47	0.47	0
	100	0.59	0.59	0

Flow Summary: Basin 3

Basin	Return Frequency	Allowable Pre-developed flow (modeled at CN =55)	Routed Outflow	By-pass flow	Post – developed flow (routed + bypass)	Change (cfs)
3	1	0.53	0.36	0.14	0.41	-0.12
	2	2.43	0.51	0.66	1.08	-1.35
	5	4.29	1.19	1.19	1.83	-2.46
	10	6.47	2.33	1.82	3.58	-2.89
	25	9.66	4.54	2.73	6.50	-3.16
	50	12.24	6.60	3.47	9.40	-2.84
	100	14.94	8.98	4.25	12.56	-2.38

Flow Summary: Basin 4

Basin	Return Frequency	Allowable Pre-developed flow (modeled at CN =55)	Routed Outflow	By-pass flow	Post – developed flow (routed + bypass)	Change (cfs)
4	1	1.42	0.24	0.07	0.25	-1.17
	2	3.29	0.41	0.27	0.60	-2.69
	5	5.02	0.59	0.46	0.88	-4.14
	10	6.92	1.26	0.68	1.53	-5.39
	25	9.68	2.86	0.99	3.59	-6.09
	50	11.87	4.59	1.25	5.6	-6.27
	100	14.16	8.31	1.51	9.67	-4.49

Flow Summary: Basin 5

Basin	Return Frequency	Allowable Pre-developed flow (modeled at CN =55)	Routed Outflow	Change (cfs)
5	1	2.39	1.61	-0.78
	2	3.60	2.23	-1.37
	5	4.54	2.65	-1.89
	10	5.48	3.04	-2.44
	25	6.74	5.81	-0.93
	50	7.70	7.26	-0.44
	100	8.65	8.05	-0.60

Flow Summary: Downstream

Basin	Return Frequency	10% point pre-developed peak flow rate (cfs)	10% point post-developed peak flow rate (cfs)	Change (cfs)
Downstream	1	115.35	106.82	-8.53
	2	204.86	190.15	-14.71
	5	278.40	259.73	-18.67
	10	355.50	335.55	-19.95
	25	461.87	442.79	-19.08
	50	543.46	526.02	-17.44
	100	626.09	612.58	-13.51

Downstream receiving conveyance velocity summary: There are multiple existing concentrated stormwater discharges from project site into either the west or eastern drainage paths. The stormwater detention significantly reduces the runoff peak flow rates and the associated velocities

Basin 1 Analysis

Existing conditions hydrologic analysis

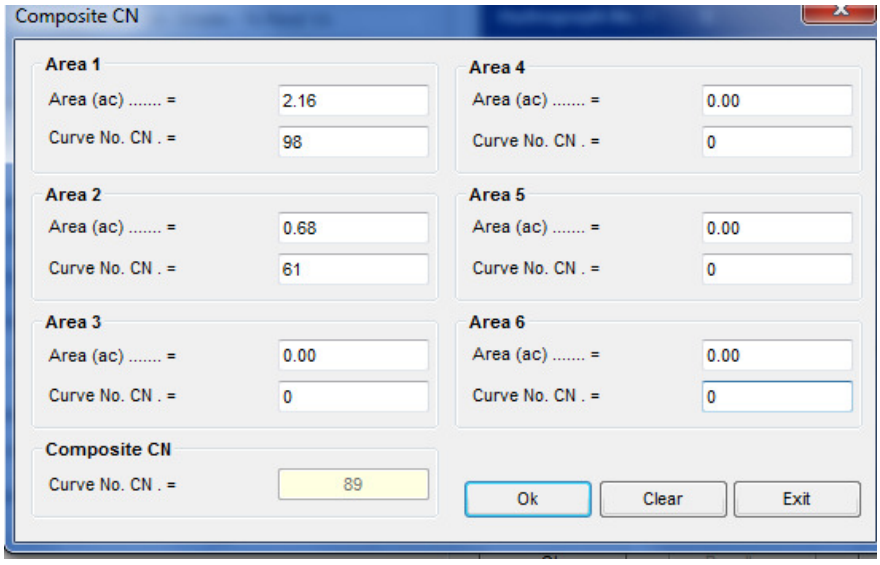
The existing conditions for the Basin 1 drainage basin area as delineated on the existing conditions drainage map (Sheet HY 1) in Appendix D of this study, consists of 5.14 acres of existing buildings, parking lots, landscape areas and wooded areas. There is a small existing detention pond in the SE corner of the property near the existing gym that has a very small storage volume and therefore isn't considered in the calculations. According to the USDA soil maps, the soils on the site include soil groups which have a hydraulic soil group designation of TYPE B. The actual existing "CN" value for this site is 76, but the TR-55 model computed a hydrograph based on a wooded condition with the "CN" value of 55 for the pre-development conditions for this basin. There is a small offsite basin of 0.02 acres from the Mt. Vernon Right of way that drains to the study point and therefore is considered in this basin analysis.

Design Storm (yrs.)	Allowable Pre-developed flow @ property line Onsite + Offsite
1	1.02
2	4.59
5	8.08
10	12.13
25	18.10
50	22.91
100	27.94

Post Developed conditions hydrologic analysis

The developed onsite basin 1 is divided into Basin 1A, Basin 1B and a bypass basin.

Basin 1A to Detention Pond 1A: This basin collects stormwater via inlets and into an underground detention pipe system. The water drains through a crystal stream water quality unit and is then discharged into the bypass basin area and towards the study point. A breakdown of this basin is described below as delineated on sheet HY 2 in Appendix D. According to the USDA soil maps, the soils on the site include soil groups which have a hydraulic soil group designation of Type B, and due to most of this area being piped, a time of concentration was determined to be the minimum of 5 minutes.



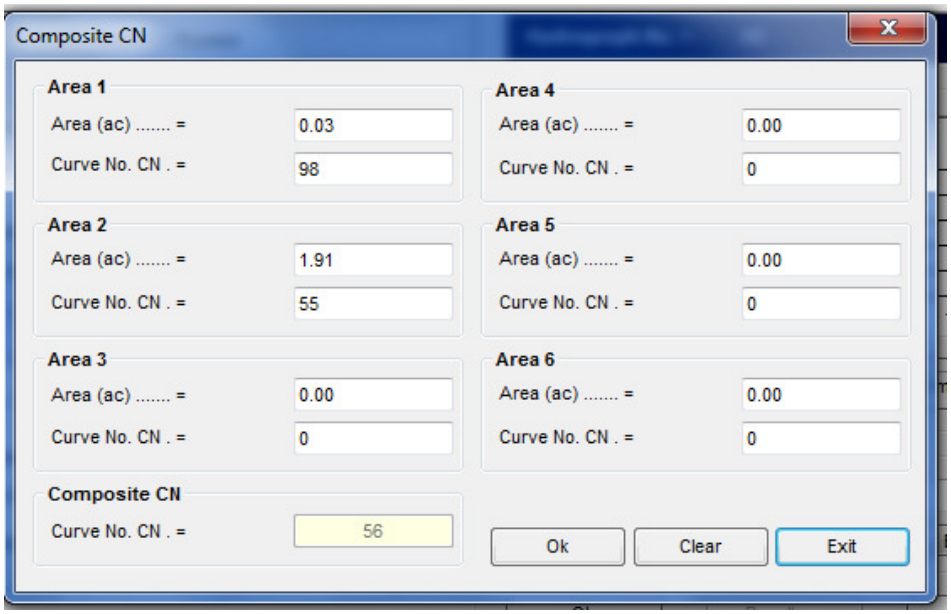
Design Storm (yrs.)	Proposed Peak Flow Rate (cfs)
1	11.44
2	16.13
5	19.65
10	23.16
25	27.80
50	31.27
100	34.73

Basin 1B to Detention Pond 1B: This basin collects stormwater via inlets from the existing gym and gym parking lot area into an underground detention pipe system. The water drains through a crystal stream water quality unit and is then discharged into the bypass basin area and towards the study point. This basin is all impervious and has a CN of 98 as delineated on sheet HY 2 in Appendix D. According to the USDA soil maps, the soils on the site include soil groups which have a hydraulic soil group designation of Type B, and due to most of this area being piped, a time of concentration was determined to be the minimum of 5 minutes.

Design Storm (yrs.)	Proposed Peak Flow Rate (cfs)
1	2.93
2	3.85
5	4.54
10	5.23
25	6.14
50	6.83
100	7.52

Basin 1 Bypass Detention Pond:

The bypass area is largely a wooded area with fairly steep terrain that slopes towards the study point. A time of concentration was determined to be 8.8 minutes.



Design Storm (yrs.)	Proposed Peak Flow Rate (cfs)
1	0.36
2	1.48
5	2.58
10	3.85
25	5.71
50	7.20
100	8.77

Water Quality:

Water quality treatment for the impervious area of the developed site will be provided by a Crystal Stream Water Quality unit. Water quality volume calculations and a brochure of this product is provided in Appendix B of this report.

Channel Protection:

The proposed underground detention pond provides channel protection detention for the 1 year storm (channel protection). Channel protection calculations are provided in Appendix B of this report.

Stormwater Detention:

As discussed earlier, the stormwater detention proposed for the project is to provide detention for the existing impervious area and the future improvements in this basin. An underground storm pipe dry detention pond is proposed for the storage with an outlet control structure and outlet pipe that drains to the study point.

Detention Pond 1A Summary Data:

Design Storm (yrs.)	Peak Inflow rate (cfs)	Peak Outflow rate (cfs)	Peak storage volume (cfs)	Ponding elevation
1	11.44	0.37	14216	1083.68
2	16.13	0.67	20377	1084.63
5	19.65	1.82	22944	1085.03
10	23.16	3.95	26064	1085.51
25	27.80	8.08	30409	1086.21
50	31.27	11.64	33367	1086.72
100	34.73	15.57	35983	1087.21

A plan view of the pond is provided on HY 2 found in appendix D, and outlet control structure model and detail is provided in Appendix G.

Detention Pond 1B Summary Data:

Design Storm (yrs.)	Peak Inflow rate (cfs)	Peak Outflow rate (cfs)	Peak storage volume (cfs)	Ponding elevation
1	2.93	0.25	3112	1072.74
2	3.85	0.38	4121	1073.31
5	4.54	0.45	4943	1073.77
10	5.23	0.65	5694	1074.20
25	6.14	1.50	6514	1074.69
50	6.83	2.35	7047	1075.04
100	7.52	3.26	7519	1075.36

A plan view of the pond is provided on HY 2 found in appendix D, and outlet control structure model and detail is provided in Appendix G.

The following table summarizes the pre and post developed condition with the implementation of the oversized stormwater detention pond pipe system.

Flow Summary:

Basin	Return Frequency	Allowable Pre-developed flow (modeled at CN =55)	Routed Outflow Pond 1A	Routed Outflow Pond 1B	By-pass flow	Post – developed flow (routed + bypass)	Change (cfs)
1	1	1.02	0.37	0.25	0.36	0.81	-0.21
	2	4.59	0.67	0.38	1.48	2.22	-2.37
	5	8.08	1.82	0.45	2.58	3.71	-4.37
	10	12.13	3.95	0.65	3.85	7.27	-4.86
	25	18.10	8.08	1.50	5.71	14.05	-4.05
	50	22.91	11.64	2.35	7.20	19.89	-3.02
	100	27.94	15.57	3.26	8.77	26.47	-1.47

Basin 2 Analysis

Existing conditions hydrologic analysis

The existing conditions for the Basin 2 drainage basin area as delineated on the existing conditions drainage map (Sheet HY 1) in Appendix D of this study, consists of 0.14 acres of wooded area that drains as sheet flow. According to the USDA soil maps, the soils on the site include soil groups which have a hydraulic soil group designation of TYPE B. The actual existing "CN" value for this site is 55.

Proposed conditions hydrologic analysis

Basin 2 does not change in the developed conditions.

Flow Summary:

Basin	Return Frequency	Allowable Pre-developed flow (modeled at CN =55)	Post – developed flow (unchanged)	Change (cfs)
2	1	0.004	0.004	0
	2	0.06	0.06	0
	5	0.14	0.14	0
	10	0.22	0.22	0
	25	0.36	0.36	0
	50	0.47	0.47	0
	100	0.59	0.59	0

Basin 3 Analysis

Existing conditions hydrologic analysis

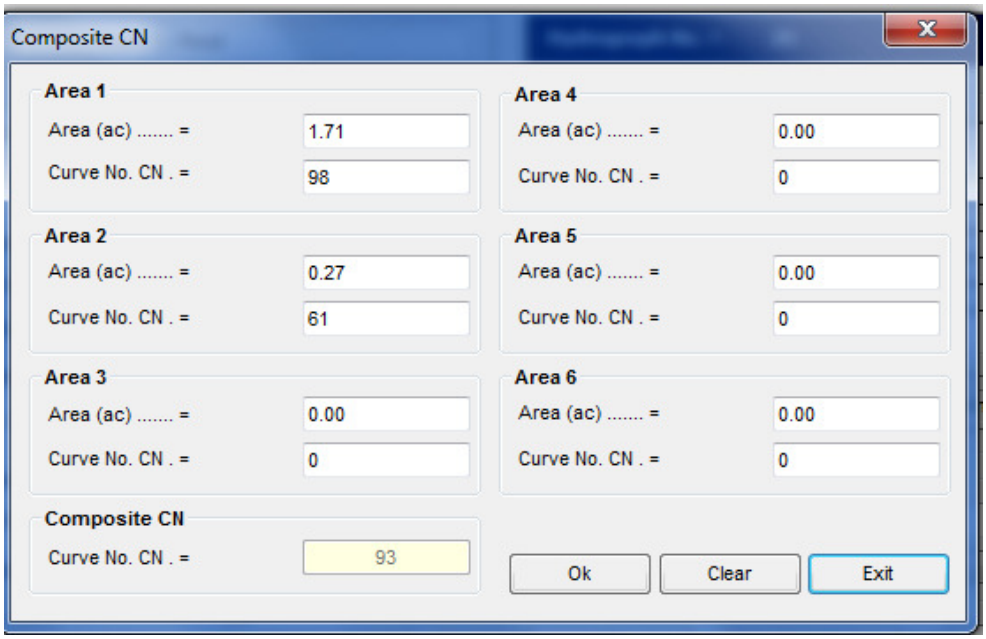
The existing conditions for the Basin 3 drainage basin area as delineated on the existing conditions drainage map (Sheet HY 1) in Appendix D of this study, consists of 2 sub basins 3A (1.46 ac) and 3B (1.49 ac) of existing buildings, parking lots, landscape areas and wooded areas. There is a small existing detention pond in the SW corner of the property near the existing parking lot that has a very small storage volume and therefore isn't considered in the calculations. It will be removed as part of this project. According to the USDA soil maps, the soils on the site include soil groups which have a hydraulic soil group designation of TYPE B. The actual existing "CN" value for this site is 86 & 69 respectively, but the TR-55 model computed a hydrograph based on a wooded condition with the "CN" value of 55 for the pre-development conditions for this basin.

Design Storm (yrs.)	Allowable Pre-developed flow @ property line Basins 3A+3B
1	0.53
2	2.43
5	4.29
10	6.47
25	9.66
50	12.24
100	14.94

Post Developed conditions hydrologic analysis

The developed basin 3 is divided into Basin 3 to detention pond and a Basin 3 bypass basin.

Basin 3 to Detention Pond 3: This basin collects stormwater via inlets and into an underground detention pipe system. The water drains through a crystal stream water quality unit and is then discharged into the bypass basin area and towards the study point. A breakdown of this basin is described below as delineated on sheet HY 2 in Appendix D. According to the USDA soil maps, the soils on the site include soil groups which have a hydraulic soil group designation of Type B, and due to most of this area being piped, a time of concentration was determined to be the minimum of 5 minutes.



Design Storm (yrs.)	Proposed Peak Flow Rate (cfs)
1	8.15
2	11.11
5	13.31
10	15.50
25	18.40
50	20.57
100	22.73

Basin 3 Bypass Detention Pond:

The bypass area is largely a wooded area with fairly steep terrain that slopes towards the west as sheet flow and ultimately, the study point. The CN is 55 for this basin. A time of concentration was determined to be 8.5 minutes.

Design Storm (yrs.)	Proposed Peak Flow Rate (cfs)
1	0.14
2	0.66
5	1.19
10	1.82
25	2.73
50	3.47
100	4.25

Water Quality:

Water quality treatment for the impervious area of the developed site will be provided by a Crystal Stream Water Quality unit. Water quality volume calculations and a brochure of this product is provided in Appendix B of this report.

Channel Protection:

The proposed underground detention pond provides channel protection detention for the 1 year storm (channel protection). Channel protection calculations are provided in Appendix B of this report.

Stormwater Detention:

As discussed earlier, the stormwater detention proposed for the project is to provide detention for the existing impervious area and the future improvements in this basin. An underground storm pipe dry detention pond is proposed for the storage with an outlet control structure and outlet pipe that drains to the study point.

Detention Pond Summary Data:

Design Storm (yrs.)	Peak Inflow rate (cfs)	Peak Outflow rate (cfs)	Peak storage volume (cfs)	Ponding elevation
1	8.15	0.36	9945	1069.60
2	11.11	0.51	13982	1070.54
5	13.31	1.19	16045	1071.03
10	15.50	2.33	18144	1071.53
25	18.40	4.54	21093	1072.26
50	20.57	6.60	23101	1072.83
100	22.73	8.98	24902	1073.42

A plan view of the pond is provided on HY 2 found in appendix D, and outlet control structure model and detail is provided in Appendix G.

The following table summarizes the pre and post developed condition with the implementation of the oversized stormwater detention pond pipe system.

Flow Summary:

Basin	Return Frequency	Allowable Pre-developed flow (modeled at CN =55)	Routed Outflow	By-pass flow	Post – developed flow (routed + bypass)	Change (cfs)
3	1	0.53	0.36	0.14	0.41	-0.12
	2	2.43	0.51	0.66	1.08	-1.35
	5	4.29	1.19	1.19	1.83	-2.46
	10	6.47	2.33	1.82	3.58	-2.89
	25	9.66	4.54	2.73	6.50	-3.16
	50	12.24	6.60	3.47	9.40	-2.84
	100	14.94	8.98	4.25	12.56	-2.38

Basin 4 Analysis

Existing conditions hydrologic analysis

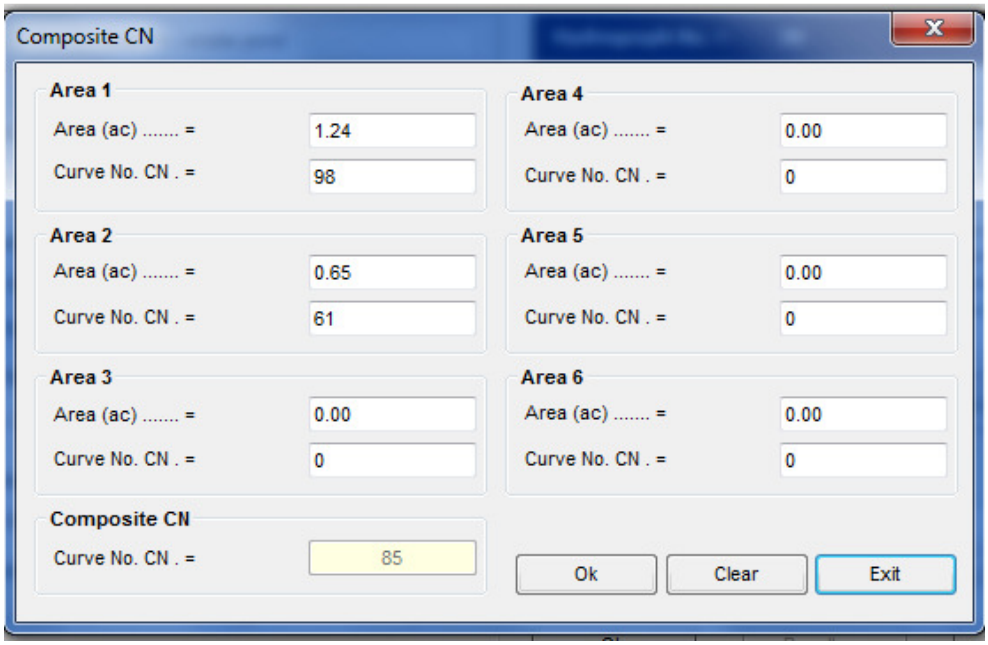
The existing conditions for the Basin 4 drainage basin area as delineated on the existing conditions drainage map (Sheet HY 1) in Appendix D of this study, consists of 2.17 acres of existing buildings, parking lots, landscape areas and wooded areas. There is no apparent detention in this basin. According to the USDA soil maps, the soils on the site include soil groups which have a hydraulic soil group designation of TYPE B. The actual existing "CN" value for this site is 75, but the TR-55 model computed a hydrograph based on a wooded condition with the "CN" value of 55 for the pre-development conditions for this basin. There is a small offsite basin of 0.18 acres from the Mt. Vernon Right of way that drains to the study point and therefore is considered in this basin analysis.

Design Storm (yrs.)	Allowable Pre-developed flow @ property line Onsite + Offsite
1	1.42
2	3.29
5	5.02
10	6.92
25	9.68
50	11.87
100	14.16

Post Developed conditions hydrologic analysis

The developed onsite basin 4 is divided into Basin 4 to detention pond and Basin 4 bypass basin.

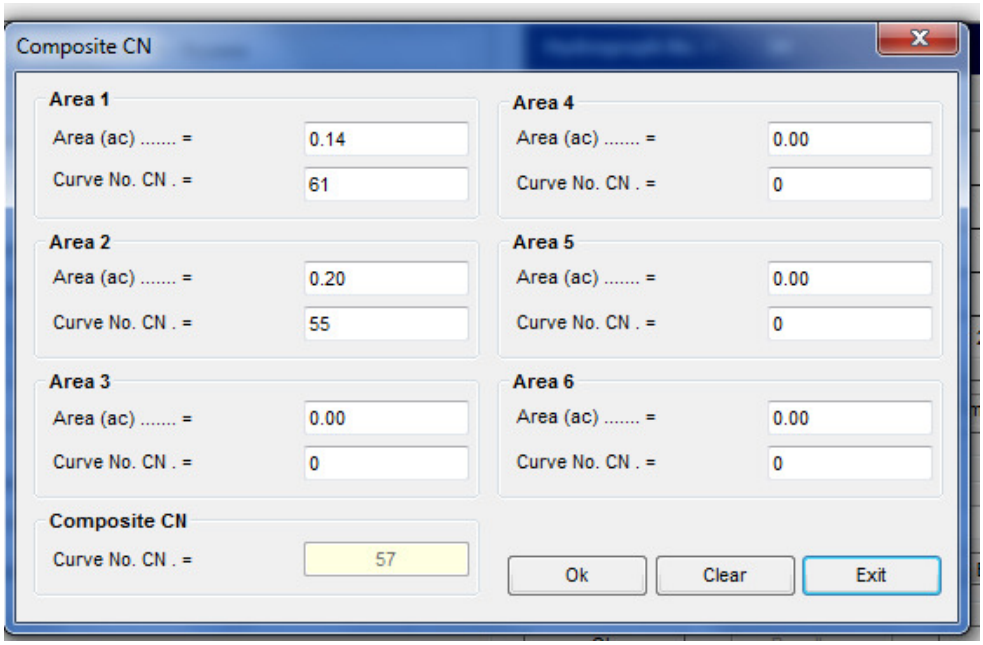
Basin 4 to Detention Pond 4: This basin collects stormwater via inlets and into an underground detention pipe system. The water drains through a crystal stream water quality unit and is then discharged into the bypass basin area and towards the study point. A breakdown of this basin is described below as delineated on sheet HY 2 in Appendix D. According to the USDA soil maps, the soils on the site include soil groups which have a hydraulic soil group designation of Type B, and due to most of this area being piped, a time of concentration was determined to be the minimum of 5 minutes.



Design Storm (yrs.)	Proposed Peak Flow Rate (cfs)
1	5.99
2	8.86
5	11.06
10	13.27
25	16.21
50	18.42
100	20.62

Basin 4 Bypass Detention Pond:

The bypass area is landscaped and a wooded area with fairly steep terrain that slopes towards the study point as sheet flow. A time of concentration was determined to be 10.11 minutes.



Design Storm (yrs.)	Proposed Peak Flow Rate (cfs)
1	0.07
2	0.27
5	0.46
10	0.68
25	0.99
50	1.25
100	1.51

Water Quality:

Water quality treatment for the impervious area of the developed site will be provided by a Crystal Stream Water Quality unit. Water quality volume calculations and a brochure of this product is provided in Appendix B of this report.

Channel Protection:

The proposed underground detention pond provides channel protection detention for the 1 year storm (channel protection). Channel protection calculations are provided in Appendix B of this report.

Stormwater Detention:

As discussed earlier, the stormwater detention proposed for the project is to provide detention for the existing impervious area and the future improvements in this basin. An underground storm pipe dry detention pond is proposed for the storage with an outlet control structure and outlet pipe that drains to the study point.

Detention Pond Summary Data:

Design Storm (yrs.)	Peak Inflow rate (cfs)	Peak Outflow rate (cfs)	Peak storage volume (cfs)	Ponding elevation
1	5.99	0.24	6796	1082.71
2	8.86	0.41	10006	1083.50
5	11.06	0.59	12668	1084.14
10	13.27	1.26	14441	1084.57
25	16.21	2.86	17034	1085.22
50	18.42	4.59	19045	1085.78
100	20.62	8.31	20668	1086.27

A plan view of the pond is provided on HY 2 found in appendix D, and outlet control structure model and detail is provided in Appendix G.

The following table summarizes the pre and post developed condition with the implementation of the oversized stormwater detention pond pipe system.

Flow Summary:

Basin	Return Frequency	Allowable Pre-developed flow (modeled at CN =55)	Routed Outflow	By-pass flow	Post – developed flow (routed + bypass)	Change (cfs)
4	1	1.42	0.24	0.07	0.25	-1.17
	2	3.29	0.41	0.27	0.60	-2.69
	5	5.02	0.59	0.46	0.88	-4.14
	10	6.92	1.26	0.68	1.53	-5.39
	25	9.68	2.86	0.99	3.59	-6.09
	50	11.87	4.59	1.25	5.6	-6.27
	100	14.16	8.31	1.51	9.67	-4.49

Basin 5 Analysis

Existing conditions hydrologic analysis

The existing conditions for the Basin 5 drainage basin area as delineated on the existing conditions drainage map (Sheet HY 1) in Appendix D of this study, consists of 0.48 acres of existing buildings, parking lots, landscape areas and wooded areas. There is an existing underground detention vault that appears to have been installed when the rectory building was constructed. Since this basin will remain unchanged and has an existing detention pond, the pond was modeled for existing conditions. Note the orifice for the outlet control structure of this detention vault is assumed since access wasn't provided to the surveyor. Since there are no changes to the drainage basin, the pre / post will be the same regardless of the actual outlet control structure measurements. According to the USDA soil maps, the soils on the site include soil groups which have a hydraulic soil group designation of TYPE B. The actual existing "CN" value for this site is 82. There is a small offsite basin of 0.36 acres from the adjacent home that drains to the study point and therefore is considered in this basin analysis.

Design Storm (yrs.)	Allowable Pre-developed flow @ property line Onsite + Offsite
1	
2	
5	
10	
25	
50	
100	

Post Developed conditions hydrologic analysis

The developed onsite basin 5 consists of just the basin to the existing detention pond.

Basin 5 to Existing Detention Pond 5: This basin collects stormwater via inlets and into an underground detention vault. A breakdown of this basin is described below as delineated on sheet HY 2 in Appendix D. According to the USDA soil maps, the soils on the site include soil groups which have a hydraulic soil group designation of Type B, and due to most of this area being piped, a time of concentration was determined to be the minimum of 5 minutes. This basin has an onsite and an offsite basin.

Design Storm (yrs.)	Proposed Peak Flow Rate (cfs) (onsite + offsite)
1	2.39
2	3.60
5	4.54
10	5.48
25	6.74
50	7.70
100	8.65

Water Quality:

Since this basin is unchanged, no additional water quality treatment for the existing impervious area is proposed. The underground detention vault provides some water quality filtering and that is noted in the site review spreadsheet as just a minimal filtration effectiveness.

Channel Protection:

Since this basin is unchanged, no channel protection calculations are provided for this basin.

Stormwater Detention:

As discussed earlier, the stormwater detention is existing for this small basin through an existing detention vault. Note the orifice for the outlet control structure of this detention vault is assumed since access wasn't provided to the surveyor. Since there are no changes to the drainage basin, the pre / post will be the same regardless of the actual outlet control structure measurements.

Detention Pond Summary Data:

Design Storm (yrs.)	Peak Inflow rate (cfs)	Peak Outflow rate (cfs)	Peak storage volume (cfs)	Ponding elevation
1	2.39	1.61	999	1083.01
2	3.60	2.23	1506	1084.01
5	4.54	2.65	1941	1084.89
10	5.48	3.04	2414	1085.84
25	6.74	5.81	2699	1086.41
50	7.70	7.26	2781	1086.57
100	8.65	8.05	2880	1086.76

A plan view of the pond is provided on HY 2 found in appendix D, and outlet control structure model and detail is provided in Appendix G.

The following table summarizes the pre and post developed condition with the implementation of the oversized stormwater detention pond pipe system. Note the OCS for this structure is assumed since access wasn't provided to the surveyor.

Flow Summary:

Basin	Return Frequency	Allowable Pre-developed flow (modeled at CN =55)	Routed Outflow	Change (cfs)
5	1	2.39	1.61	-0.78
	2	3.60	2.23	-1.37
	5	4.54	2.65	-1.89
	10	5.48	3.04	-2.44
	25	6.74	5.81	-0.93
	50	7.70	7.26	-0.44
	100	8.65	8.05	-0.60

Downstream Basin Analysis:

As shown on the downstream drainage map, the site currently drains to 2 different study points leaving the church property, but then converge to the downstream creek that eventually drains to Kingsley Lake. The point in the downstream basin where the church property is 10% of the downstream basin is at the culvert under North Peachtree Road as shown on HY 3 in Appendix D. The overall drainage basin at that point was determined by city GIS maps to be 113.82 acres. According to the USDA soil maps, the soils on the site include soil groups which have a hydraulic soil group designation of TYPE B. The CN values were selected accordingly and averaged as shown on the next chart.

Below is a summary comparison to demonstrate a decrease in the 10% point post developed peak flowrates.

Design Storm (yrs.)	10 % Predeveloped Flow Rate (cfs)	10 % Postdeveloped Flow Rate (cfs)	Difference (cfs)
1	115.35	106.82	-8.53
2	204.86	190.15	-14.71
5	278.40	259.73	-18.67
10	355.50	335.55	-19.95
25	461.87	442.79	-19.08
50	543.46	526.02	-17.44
100	626.09	612.58	-13.51

Conclusion

This report provided a stormwater analysis of the existing conditions, post developed conditions, downstream and on-site storm sewer system for the All Saints Catholic Church master plan. Water quality measures for the existing and new impervious roof and parking areas are treated by Crystal Stream Water Quality units. The channel protection storage volume is provided in underground detention pond pipes along with the stormwater detention. There is a reduction in the peak flowrates to the downstream study point. On-site storm sewer pipe systems were designed to provide capacity for the 100 year peak flow runoff rate design storm. Based on the information provided in this report, the proposed stormwater management improvements for the All Saints Catholic Church meet the applicable city of Dunwoody stormwater design regulations.

Appendix A Resources

- Stormwater Management Code
- Rainfall reference table
- Runoff Coefficients
- Open Channel n Values

Sec. 16-111. General.
Sec. 16-112. Stormwater management plans.
Sec. 16-113. Design.
Sec. 16-114. Performance criteria.
Sec. 16-115. Inspections and maintenance.
Secs. 16-116—16-125. Reserved.

Sec. 16-111. General.

(a)

Purpose. The regulations of this division are adopted to protect, maintain and enhance the public health, safety, environment and general welfare by establishing minimum requirements and procedures to control the adverse effects of increased post-development stormwater runoff and nonpoint source pollution associated with new development and redevelopment. It has been determined that proper management of post-development stormwater runoff will minimize damage to public and private property and infrastructure, safeguard the public health, safety, environment and general welfare of the public, and protect water and aquatic resources. These regulations seek to meet that purpose through the following objectives:

(1)

Establish decision-making processes surrounding land development activities that protect the integrity of the watershed and preserve the health of water resources;

(2)

Require that new development and redevelopment maintain the predevelopment hydrologic response in their post-development state as nearly as practicable in order to reduce flooding, streambank erosion, nonpoint source pollution and increases in stream temperature, and maintain the integrity of stream channels and aquatic habitats;

(3)

Establish minimum post-development stormwater management standards and design criteria for the regulation and control of stormwater runoff quantity and quality;

(4)

Establish design and application criteria for the construction and use of structural stormwater control facilities that can be used to meet the minimum post-development stormwater management standards;

(5)

Encourage the use of nonstructural stormwater management and stormwater better site design practices, such as the preservation of greenspace and other conservation areas, to the maximum extent practicable;

(6)

Establish provisions for the long-term responsibility for and maintenance of structural stormwater control facilities and nonstructural stormwater management practices to ensure that they continue to function as designed, are maintained, and pose no threat to public safety; and

(7)

Establish administrative procedures for the submission, review, approval and disapproval of stormwater management plans, and for the inspection of approved active projects, and long-term follow up.

(b)

Stormwater manual. All land development in the city must comply with the criteria, technical specifications, and standards of the Georgia Stormwater Management Manual, as may be hereafter amended. The rainfall intensities used in hydrologic and hydraulic computations must be those published in the Georgia Stormwater Management Manual.

(c)

Applicability. The stormwater management regulations of this division apply to all land development activities that meet one or more of the following criteria:

(1)

Involves the creation, addition or replacement of 5,000 square feet or more of impervious cover or that involves other land development activities of one acre or more;

(2)

Any new development or redevelopment, regardless of size, that meets the definition of a stormwater hotspot, as determined by the community development director; or

(3)

Land development activities that are smaller than the minimum applicability criteria of paragraphs (1) or (2), above, if such activities are part of a larger common plan of development, even though multiple, separate and distinct land development activities may take place at different times on different schedules.

(d)

Exemptions and waivers.

(1)

The following activities are exempt from the stormwater management requirements of this division:

a.

Individual single-family or duplex residential lots that are not part of a subdivision or phased development project;

b.

Additions or modifications to existing single-family or duplex residential structures;

c.

Agricultural or silvicultural land management activities within areas zoned for these activities; and

d.

Repairs to any stormwater management facility or practice deemed necessary by the community development director.

(2)

If 50 percent or less of a site is to be redeveloped, stormwater requirements must be met for the redeveloped area only and the non-disturbed area will be treated as pre-developed prior to the redevelopment. But if more than 50 percent of the site is to be redeveloped, then the entire site must meet all stormwater requirements.

(e)

Information required with land development permit applications. Except as otherwise expressly exempted, land development permit applications must be accompanied by the following information:

(1)

Stormwater management plan in accordance with section 16-112;

(2)

Performance bond, if applicable; and

(3)

Applicable permit application and plan review fees.

(Ord. No. 2013-10-14, 1(Exh. A § 16-7.10), 10-14-2013)

Sec. 16-112. Stormwater management plans.

(a)

General. Stormwater management plans must identify how post-development stormwater runoff will be controlled or managed and how the proposed project will meet all applicable requirements of this division. Plans must be submitted with the stamp and signature of a professional engineer (PE) licensed in the State of Georgia, who must verify that the design of all stormwater management facilities and practices meet the submittal requirements outlined in the stormwater design manual.

(b)

Information required. The stormwater management plan must ensure compliance with the requirements and criteria in this division and that opportunities are being taken to minimize adverse post-development stormwater runoff impacts from the development. The plan must consist of maps, narrative, and supporting design calculations (hydrologic and hydraulic) for the proposed stormwater management system. The plan must include all information required by the stormwater management site plan checklist of the stormwater design manual, including all of the following:

(1)

Common address and legal description of site;

(2)

Vicinity map;

(3)

Existing conditions hydrologic analysis (see subsection (c));

(4)

Post-development hydrologic analysis (see subsection (d));

(5)

Stormwater management system design (see subsection (e));

(6)

Post-development downstream analysis (see subsection (f));

(7)

Construction-phase erosion and sedimentation control plan (see subsection (g));

(8)

Landscaping and open space plan (see subsection (h));

(9)

Operations and maintenance plan (see subsection (i));

(10)

Maintenance access easements (see subsection (j));

(11)

Inspection and maintenance agreements (see subsection (k));

(12)

Evidence of acquisition of applicable local and non-local permits (see subsection (l));

(13)

Any proposed off-site facilities (see subsection (m)).

(c)

Existing conditions hydrologic analysis.

(1)

The existing conditions hydrologic analysis for stormwater runoff rates, volumes, and velocities must include all of the following:

a.

A topographic map of existing site conditions with the drainage basin boundaries indicated;

b.

Acreage, soil types and land cover of areas for each subbasin affected by the project;

c.

All perennial and intermittent streams and other surface water features;

d.

All existing stormwater conveyances and structural control facilities;

e.

Direction of flow and exits from the site;

f.

Analysis of runoff provided by off-site areas upstream of the project site; and

g.

Methodologies, assumptions, site parameters and supporting design calculations used in analyzing the existing conditions site hydrology.

(2)

For redevelopment sites, predevelopment conditions must be modeled using the established guidelines for the portion of the site undergoing land development activities.

(d)

Post-development hydrologic analysis. The post-development hydrologic analysis for stormwater runoff rates, volumes, and velocities must include all of the following:

(1)

A topographic map of developed site conditions with the post-development drainage basin boundaries indicated;

(2)

Total area of post-development impervious surfaces and other land cover areas for each subbasin affected by the project;

(3)

Calculations for determining the runoff volumes that need to be addressed for each subbasin for the development project to meet the post-development stormwater management performance criteria in section 16-114;

(4)

Location and boundaries of proposed natural feature protection and conservation areas;

(5)

Documentation and calculations for any applicable site design credits that are being utilized;

(6)

Methodologies, assumptions, site parameters and supporting design calculations used in analyzing the existing conditions site hydrology.

(e)

Stormwater management system. The description, scaled drawings and design calculations for the proposed post-development stormwater management system must include all of the following:

(1)

A map and/or drawing or sketch of the stormwater management facilities, including the location of nonstructural site design features and the placement of existing and proposed structural stormwater controls, including design water surface elevations, storage volumes available from zero to maximum head, location of inlet and outlets, location of bypass and discharge systems, and all orifice/restrictor sizes;

(2)

A narrative describing how the selected structural stormwater controls will be appropriate and effective;

(3)

Cross-section and profile drawings and design details for each of the structural stormwater controls in the system, including supporting calculations to show that the facility is designed according to the applicable design criteria;

(4)

A hydrologic and hydraulic analysis of the stormwater management system for all applicable design storms (including stage-storage or outlet rating curves, and inflow and outflow hydrographs);

(5)

Documentation and supporting calculations to show that the stormwater management system adequately meets the post-development stormwater management performance criteria in section 16-114;

(6)

Drawings, design calculations, elevations and hydraulic grade lines for all existing and proposed stormwater conveyance elements including stormwater drains, pipes, culverts, catch basins, channels, swales and areas of overland flow; and

(7)

Where applicable, a narrative describing how the stormwater management system corresponds with any watershed protection plans and/or local greenspace protection plan.

(f)

Post-development downstream analysis. A downstream peak flow analysis must include the assumptions, results and supporting calculations to show safe passage of post-development design flows downstream. The analysis of downstream conditions in the report must address each and every point or area along the project site's boundaries at which runoff will exit the property. The analysis must focus on the portion of the drainage channel or watercourse immediately downstream from the project. This area must extend downstream from the project to a point in the drainage basin where the project area is ten percent of the total basin area. In calculating runoff volumes and discharge rates, consideration may need to be given to any planned future upstream land use changes. The analysis must be in accordance with the Georgia Stormwater Management Manual. The capacity of the drainage systems must be analyzed to the ten percent point.

(g)

Construction-phase erosion and sedimentation control plan. An erosion and sedimentation control plan in accordance with the Georgia Erosion and Sedimentation Control Act or NPDES permit for construction activities. The plan must also include information on the sequence/phasing of construction and temporary stabilization measures and temporary structures that will be converted into permanent stormwater controls.

(h)

Landscaping and open space plan. A detailed landscaping and vegetation plan describing the woody and herbaceous vegetation that will be used within and adjacent to stormwater management facilities and practices. The landscaping plan must also include:

(1)

The arrangement of planted areas, natural and greenspace areas and other landscaped features on the site plan;

(2)

Information necessary to construct the landscaping elements shown on the plan drawings;

(3)

Descriptions and standards for the methods, materials and vegetation that are to be used in the construction;

(4)

Density of plantings;

(5)

Descriptions of the stabilization and management techniques used to establish vegetation; and

(6)

A description of who will be responsible for ongoing maintenance of vegetation for the stormwater management facility and what practices will be employed to ensure that adequate vegetative cover is preserved.

(i)

Operations and maintenance plan. This plan must include a detailed description of ongoing operations and maintenance procedures for stormwater management facilities and practices to ensure their continued function as designed and constructed or preserved. They must identify the parts or components of a stormwater management facility or practice that need to be regularly or periodically inspected and maintained, and the equipment and skills or training necessary. The plan

must include an inspection and maintenance schedule, maintenance tasks, responsible parties for maintenance, funding, access and safety issues. Provisions for the periodic review and evaluation of the effectiveness of the maintenance program and the need for revisions or additional maintenance procedures must be included in the plan.

(j)

Maintenance access easements.

(1)

The applicant must ensure access from public right-of-way to stormwater management facilities and practices requiring regular maintenance at the site for the purpose of inspection and repair by securing all the maintenance access easements needed on a permanent basis. Such access must be sufficient for all necessary equipment for maintenance activities. Upon final inspection and approval, a plat or document indicating that such easements exist must be recorded and must remain in effect even with the transfer of title of the property.

(2)

The access easement to the facility may not have a profile slope steeper than 33 percent and a cross slope of no more than ten percent. The elevation of the maintenance easement around the facility must be established at the top of the dam or wall elevation and be constructed with a cross slope of no more than ten percent to the drainage facility. Fencing that complies with the requirement subsection 16-113(g)(2) must be constructed on the outside edge of the maintenance easement. Gates that comply with the requirements of subsection 16-113(g)(2) must be constructed on each maintenance easement.

(k)

Inspection and maintenance agreements.

(1)

Unless an on-site stormwater management facility or practice is dedicated to and accepted by the city, the applicant must execute an inspection and maintenance agreement, and/or a conservation easement, if applicable, that is be binding on all subsequent owners of the site. The inspection and maintenance agreement, if applicable, must be approved by the city prior to plan approval, and recorded in the deed records upon final plat approval.

(2)

The inspection and maintenance agreement must identify by name or official title the persons responsible for carrying out the inspection and maintenance. Responsibility for the operation and maintenance of the stormwater management facility or practice, unless assumed by a governmental agency, will remain with the property owner and will pass to any successor owner. If portions of the land are sold or otherwise transferred, legally binding arrangements must be made to pass the inspection and maintenance responsibility to the appropriate successors in title. These arrangements must designate for each portion of the site, the person to be permanently responsible for its inspection and maintenance.

(3)

As part of the inspection and maintenance agreement, a schedule must be developed for when and how often routine inspection and maintenance will occur to ensure proper function of the stormwater management facility or practice. The agreement must also include plans for annual inspections to ensure proper performance of the facility between scheduled maintenance and include remedies for the default thereof.

(4)

The city, in lieu of an inspection and maintenance agreement, may accept dedication of any existing or future stormwater management facility for maintenance, provided such facility meets all the requirements of this division and includes adequate and perpetual access and sufficient area, by easement or otherwise, for inspection and regular maintenance.

(l)

Evidence of acquisition of applicable local and non-local permits. The applicant must certify and provide documentation to the (local permitting authority) that all other applicable environmental permits have been acquired for the site prior to approval of the stormwater management plan.

(m)

Off-site facilities.

(1)

The stormwater management plan for each land development project must provide for stormwater management measures located on the site of the project, unless provisions are made to manage stormwater by an off-site or regional facility. The off-site or regional facility must be located on property legally dedicated for the purpose, must be designed and adequately sized to provide a level of stormwater quantity and quality control that is equal to or greater than that which would be afforded by on-site practices and there must be a legally-obligated entity responsible for long-term operation and maintenance of the off-site or regional stormwater facility. In addition, on-site measures must be implemented, where necessary, to protect upstream and downstream properties and drainage channels from the site to the off-site facility.

(2)

A stormwater management plan showing the adequacy of the off-site or regional facility must be submitted to the community development director.

(3)

To be eligible for a modification, the applicant must demonstrate to the satisfaction of the city that the use of an off-site or regional facility will not result in any of the following impacts to upstream or downstream areas:

a.

Increased threat of flood damage to public health, life, and property;

b.

Deterioration of existing culverts, bridges, dams, and other structures;

c.

Accelerated streambank or streambed erosion or siltation;

d.

Degradation of in-stream biological functions or habitat; or

e.

Water quality impairment in violation of state water quality standards, and/or violation of any state or federal regulations.

(Ord. No. 2013-10-14, 1(Exh. A § 16-7.20), 10-14-2013)

Sec. 16-113. Design.

(a)

Detention designs. Detention designs may be rejected if they incorporate structures and facilities that will demand considerable maintenance or will be difficult to maintain or will utilize numerous small structures if other alternatives are physically possible.

(b)

Discharge velocities. Discharge velocities from detention facilities must be reduced to provide a nonerosive velocity flow from a structure, channel, or other control measure as set forth in the approved Georgia Stormwater Management Manual.

(c)

Design storm. The drainage system being developed must have adequate capacity to accommodate the flow from all upstream areas for a 100-year storm event.

(d)

Drainage outfalls. The drainage system from a proposed development must discharge into an outfall that has adequate capacity to accommodate the runoff from the development. If the connecting downstream system is not able to accommodate the allowable design flow from the site, then the design engineer must design on-site drainage facilities that result in no exacerbation of existing downstream conditions.

(e)

Detention storage.

(1)

The live detention storage to be provided must be calculated on the basis of the 100-year frequency rainfall as published in the Georgia Stormwater Management Manual. The detention system must be adequate for the runoff of a 100-year rainfall, for any and all durations from the post-development, with a release rate that does not exceed the pre-development release rate during the same duration storm. Detention control structures and other drainage improvements must be located and designed to prevent erosion damage to adjacent property owners.

(2)

Detention and sedimentation control facilities may not be placed in any of the following:

a.

Transitional buffer zones as defined by the city zoning ordinance.

b.

Floodplains.

c.

Wetlands.

d.

Stream buffer zones.

e.

State buffer zones.

(3)

Perforated standpipes or a French drain, in accordance with published design standards available from the community development director, or other methods which will achieve equal performance to prevent standing water and inadequate drainage, must be installed within all the detention and sedimentation control facilities.

(f)

Combined detention. When the applicant requests and the community development director determines that development and construction projects are too small, or that engineering and economic factors make combined detention or other stormwater management facilities more practical, the city may authorize the joint construction of these facilities to serve two or more properties by two or more applicants.

(g)

Fencing.

(1)

Permanent fencing at least four feet in height is required around all stormwater and sedimentation control facilities designed for temporary storage of stormwater if they have a water storage depth of greater than four feet or they are designated by the city or board of health as a public health hazard.

(2)

Required fencing must be designed, installed and maintained to allow the free flow of runoff and sediment into the facility. Fencing must be established on the outside edge of a facility. The fence must include a gate of sufficient size to permit entrance of equipment necessary to allow periodic maintenance activities. The gate must be placed in a manner such that the gate does not obstruct reasonable access or become obstructive. The community development director may waive fencing in nonresidential areas where a pond is more than 500 feet from a residential zoning district and in residential zoning districts when detention is provided in natural areas such as stream channels and fencing in the opinion of the community development director would damage the environment or affect stream flow.

(h)

Special flood hazard area elevation contours. In residential districts, not less than 70 percent of the minimum lot area, as established by applicable zoning district development standards, must be above the special flood hazard area elevation contours with the exception that lots in the R-150 district must conform to requirements of the R-100 district.

(i)

Street centerline elevations. The profile elevation of the centerline of all public streets must be constructed a minimum of one foot above special flood hazard area elevation contours. The community development director may grant exceptions to this provision in cases where construction of the street elevation is within a special flood hazard area and elevation contours would improve drainage or reduce the effects of flooding.

(Ord. No. 2013-10-14, 1(Exh. A § 16-7.30), 10-14-2013)

Sec. 16-114. Performance criteria.

The performance criteria of this section apply to all stormwater management plans, unless otherwise expressly stated.

(1)

Water quality. All stormwater runoff generated from a site must be adequately treated before discharge. It will be presumed that a stormwater management system complies with this requirement if:

a.

It is sized to treat the prescribed water quality treatment volume from the site, as defined in the Georgia Stormwater Management Manual;

b. Appropriate structural stormwater controls or nonstructural practices are selected, designed, constructed or preserved, and maintained according to the specific criteria in the Georgia Stormwater Management Manual; and,

c. Runoff from hotspot land uses and activities identified by the community development department are adequately treated and addressed through the use of appropriate structural stormwater controls, nonstructural practices and pollution prevention practices.

(2) *Stream channel protection.*

a. Protection of stream channels from bank and bed erosion and degradation must be provided by using all of the following three approaches:

1. Preservation, restoration and/or reforestation (with native vegetation) of the applicable stream buffer;

2. Twenty-four-hour extended detention storage of the one-year, 24-hour return frequency storm event; and

3. Erosion prevention measures such as energy dissipation and velocity control.

b. The community development director is authorized to waive the detention storage requirements of subsection (2)a.2. for sites that discharge directly into piped stormwater drainage systems, larger streams, rivers, wetlands, lakes, estuaries, tidal water or other situations where flows will not have a negative impact on stream bank stability or channel integrity.

(3) *Overbank flooding protection.* Downstream overbank flood and property protection must be provided by controlling (attenuating) the post-development peak discharge rate to the predevelopment rate for the 25-year, 24-hour return frequency storm event. If control of the one-year, 24-hour storm is exempted, then peak discharge rate attenuation of the two-year through the 25-year return frequency storm event must be provided.

(4) *Extreme flooding protection.* Extreme flood and public safety protection must be provided by controlling and safely conveying the 100-year, 24-hour return frequency storm event such that flooding is not exacerbated.

(5) *Structural stormwater controls.* All structural stormwater management facilities must be selected and designed using the appropriate criteria from the Georgia Stormwater Management Manual. All structural stormwater controls must be designed appropriately to meet their intended function. For other structural stormwater controls not included in the Georgia Stormwater Management Manual, or for which pollutant removal rates have not been provided, the effectiveness and pollutant removal of the structural control must be documented through prior studies, literature reviews, or other means and receive approval from the community development director before being included in the design of a stormwater management system. In addition, if hydrologic or topographic conditions, or land use activities warrant greater control than that provided by the minimum control requirements, the community development director may impose additional requirements deemed necessary to protect upstream and downstream properties and aquatic resources from damage due to increased volume, frequency, and rate of stormwater runoff or increased nonpoint source pollution loads created on the site in question. Applicants must consult the Georgia Stormwater Management Manual for guidance on the factors that determine site design feasibility when selecting and locating a structural stormwater control.

(6) *Stormwater credits for nonstructural measures.* The use of one or more site design measures by the applicant may allow for a reduction in the water quality treatment volume required under subsection (1). The applicant may, if approved by the community development director, take credit for the use of stormwater better site design practices and reduce the water quality volume requirement. For each potential credit, there is a minimum set of criteria and requirements which identify the conditions or circumstances under which the credit may be applied. The site design practices that qualify for this credit and the criteria and procedures for applying and calculating the credits are identified in the Georgia Stormwater Management Manual.

(7) *Drainage system guidelines.* Stormwater conveyance facilities, which may include culverts, stormwater drainage pipes, catch basins, drop inlets, junction boxes, headwalls, gutter, swales, channels, ditches, and energy dissipaters must be provided when necessary for the protection of public right-of-way and private properties adjoining project sites and/or public right-of-ways. Stormwater conveyance facilities that are designed to carry runoff from more than one parcel, existing or proposed, must meet the following requirements:

a. Methods to calculate stormwater flows must be in accordance with the stormwater design manual;

b. All culverts, pipe systems and open channel flow systems must be sized in accordance with the stormwater management plan using the methods included in the stormwater design manual; and,

c. Design and construction of stormwater conveyance facilities must be in accordance with the criteria and specifications found in the stormwater design manual.

(8) *Dam design guidelines.* Any land-disturbing activity that involves a site that proposes a dam must comply with the Georgia Safe Dams Act and Rules for Dam Safety, as applicable.

(Ord. No. 2013-10-14, 1(Exh. A § 16-7.40), 10-14-2013)

Sec. 16-115. Inspections and maintenance.

(a)

Inspections during construction.

(1)

Periodic inspections of the stormwater management system construction must be conducted by the community development department or conducted and certified by a professional engineer approved by the community development director. Construction inspections must utilize the approved stormwater management plan for establishing compliance. All inspections must be documented with written reports that contain the following information:

a.

The date and location of the inspection;

b.

Whether construction is in compliance with the approved stormwater management plan;

c.

Variations from the approved construction specifications; and

d.

Any other variations or violations of the conditions of the approved stormwater management plan.

(2)

If any violations are found, the applicant must be notified in writing of the nature of the violation and the required corrective actions.

(b)

Final inspections and as-built plans. Upon completion of a project, and before a certificate of occupancy may be granted, the applicant is responsible for certifying that the completed project is in accordance with the approved stormwater management plan. All applicants are required to submit actual "as-built" plans for any stormwater management facilities or practices after final construction is completed. The plan must show the final design specifications for all stormwater management facilities and practices and must be certified by a professional engineer. A final inspection by the city is required before the release of any performance bonds or financial guarantees.

(c)

Long-term maintenance and inspections.

(1)

Stormwater management facilities and practices included in a stormwater management plan which are subject to an inspection and maintenance agreement must undergo ongoing inspections to document maintenance and repair needs and ensure compliance with the requirements of the agreement, the plan and this division.

(2)

A stormwater management facility or practice must be inspected on a periodic basis by the responsible person in accordance with the approved inspection and maintenance agreement. In the event that the stormwater management facility has not been maintained and/or becomes a danger to public safety or public health, the public works director must notify the person responsible for carrying out the maintenance plan by registered or certified mail to the person specified in the inspection and maintenance agreement. The notice must specify the measures needed to comply with the agreement and the plan and must specify the time within which such measures must be completed. If the responsible person fails or refuses to meet the requirements of the inspection and maintenance agreement, the city may pursue all available enforcement actions and penalties.

(3)

Inspection programs by the city may be established on any reasonable basis, including but not limited to: routine inspections; random inspections; inspections based upon complaints or other notice of possible violations; and joint inspections with other agencies inspecting under environmental or safety laws. Inspections may include, but are not limited to: reviewing maintenance and repair records; sampling discharges, surface water, groundwater, and material or water in stormwater management facilities; and evaluating the condition of stormwater management facilities and practices.

(d)

Right-of-entry for inspection. The terms of the inspection and maintenance agreement must provide authority for authorized city or city contracted officials to enter the property at reasonable times and in a reasonable manner for the purpose of inspection. This includes the right to enter a property when the city has a reasonable basis to believe that a violation is occurring or has occurred and to enter when necessary for abatement of a public nuisance or correction of a violation.

(e)

Maintenance responsibilities.

(1)

Except as otherwise provided in this section, commercial and/or multifamily residential property owner is responsible for the maintenance of the stormwater management facilities during grading, construction, and following final approval of the completed project. This maintenance and certification obligation is binding on all future owners, successors and assigns of the property.

(2)

Stormwater management facilities in single-family residential subdivisions constructed under permits issued prior to the adoption of the city ordinance assigning maintenance responsibility will not be accepted for city maintenance unless individually approved by and at the discretion of the zoning board of appeals and suitable access easements are provided.

(f)

Records. Parties responsible for the operation and maintenance of a stormwater management facility must provide records of all maintenance and repairs to the public works director.

(g)

Failure to maintain. If a responsible person fails or refuses to meet the requirements of the inspection and maintenance agreement, the public works director, after 30 days written notice (except, that in the event the violation constitutes an immediate danger to public health or public safety, 24-hour notice is deemed sufficient), may correct a violation of the design standards or maintenance requirements by performing the necessary work to place the facility or practice in proper working condition. The city may assess the owners of the facility for the cost of repair work, which will be a lien on the property, and may be placed on the ad valorem tax bill for such property and collected in the ordinary manner for such taxes.

(h)

Special drainage system maintenance requirements.

(1)

Pursuant to all applicable city and county law, trash, garbage, construction materials, construction by-products or other debris may not be deposited in any part of the drainage system.

(2)

No restriction or barriers, including fences, may be placed in the drainage system or special flood hazard areas without first obtaining a development permit. When on-site or off-site debris has accumulated within a special flood hazard area in such a manner as to interfere with the free flow of water so as to increase the risk of hazardous inundation of upstream properties adjacent to special flood hazard areas, the community development director must require the owner of the property where this debris was generated, if its source can be identified, to clear and remove the debris so as to permit the free flow of water.

(3)

No impoundment of water which retains in excess of 0.5 acre-foot of runoff may be removed without first obtaining a development permit, which may only be issued after competent engineering studies provided by the applicant show that this removal will not adversely affect downstream properties.

(Ord. No. 2013-10-14, 1(Exh. A § 16-7.50), 10-14-2013)

Secs. 16-116—16-125. Reserved.

Table A-12
Roswell

		Return Period						
		1	2	5	10	25	50	100
	n	0.7706	0.8603	0.8003	0.7739	0.771	0.7564	0.7445
	a	36.65	69.23	67.01	68.34	80.18	84.20	88.39
	b	7	13	13	13	14	14	14
Hours	Minutes	Rainfall Intensity						
0.08	5	5.40	5.76	6.63	7.30	8.28	9.08	9.87
	6	5.08	5.50	6.35	7.00	7.96	8.73	9.50
	7	4.80	5.26	6.09	6.73	7.67	8.42	9.16
	8	4.55	5.04	5.86	6.48	7.40	8.13	8.85
	9	4.33	4.85	5.65	6.25	7.15	7.86	8.56
	10	4.13	4.66	5.45	6.04	6.92	7.61	8.29
	11	3.95	4.50	5.27	5.84	6.70	7.38	8.05
	12	3.79	4.34	5.10	5.66	6.50	7.16	7.81
	13	3.64	4.20	4.94	5.49	6.32	6.96	7.60
	14	3.51	4.06	4.79	5.33	6.14	6.77	7.40
0.25	15	3.39	3.94	4.66	5.18	5.98	6.59	7.20
	16	3.27	3.82	4.53	5.04	5.82	6.43	7.03
	17	3.17	3.71	4.41	4.91	5.68	6.27	6.86
	18	3.07	3.61	4.29	4.79	5.54	6.12	6.70
	19	2.98	3.51	4.18	4.67	5.41	5.98	6.54
	20	2.89	3.42	4.08	4.56	5.29	5.85	6.40
	21	2.81	3.33	3.99	4.46	5.17	5.72	6.26
	22	2.74	3.25	3.89	4.36	5.06	5.60	6.13
	23	2.67	3.17	3.81	4.27	4.95	5.48	6.01
	24	2.60	3.10	3.72	4.18	4.85	5.37	5.89
	25	2.54	3.03	3.65	4.09	4.76	5.27	5.78
	26	2.48	2.96	3.57	4.01	4.67	5.17	5.67
	27	2.42	2.90	3.50	3.93	4.58	5.07	5.57
	28	2.37	2.84	3.43	3.86	4.49	4.98	5.47
	29	2.32	2.78	3.37	3.79	4.41	4.89	5.37
0.50	30	2.27	2.72	3.30	3.72	4.33	4.81	5.28
	31	2.22	2.67	3.24	3.65	4.26	4.73	5.19
	32	2.18	2.62	3.18	3.59	4.19	4.65	5.11
	33	2.14	2.57	3.13	3.53	4.12	4.58	5.03
	34	2.10	2.52	3.08	3.47	4.05	4.50	4.95
	35	2.06	2.48	3.02	3.42	3.99	4.43	4.88
	36	2.02	2.43	2.97	3.36	3.93	4.37	4.80
	37	1.98	2.39	2.93	3.31	3.87	4.30	4.73
	38	1.95	2.35	2.88	3.26	3.81	4.24	4.66
	39	1.92	2.31	2.84	3.21	3.76	4.18	4.60
	40	1.89	2.27	2.79	3.16	3.70	4.12	4.54
	41	1.86	2.24	2.75	3.12	3.65	4.06	4.47
	42	1.83	2.20	2.71	3.07	3.60	4.01	4.41
	43	1.80	2.17	2.67	3.03	3.55	3.95	4.36
	44	1.77	2.14	2.64	2.99	3.50	3.90	4.30
0.75	45	1.74	2.10	2.60	2.95	3.46	3.85	4.25
	46	1.72	2.07	2.56	2.91	3.41	3.80	4.19
	47	1.69	2.04	2.53	2.87	3.37	3.76	4.14
	48	1.67	2.02	2.50	2.84	3.33	3.71	4.09
	49	1.65	1.99	2.46	2.80	3.29	3.67	4.04
	50	1.63	1.96	2.43	2.77	3.25	3.62	4.00
	51	1.60	1.93	2.40	2.73	3.21	3.58	3.95
	52	1.58	1.91	2.37	2.70	3.17	3.54	3.91
	53	1.56	1.88	2.34	2.67	3.13	3.50	3.86
	54	1.54	1.86	2.32	2.64	3.10	3.46	3.82
	55	1.52	1.84	2.29	2.61	3.06	3.42	3.78
	56	1.50	1.81	2.26	2.58	3.03	3.39	3.74
	57	1.49	1.79	2.24	2.55	3.00	3.35	3.70
	58	1.47	1.77	2.21	2.52	2.97	3.31	3.66
	59	1.45	1.75	2.19	2.50	2.93	3.28	3.62
1	60	1.44	1.73	2.16	2.47	2.90	3.25	3.59
2	120	0.95	1.13	1.38	1.56	1.81	1.98	2.17
3	180	0.68	0.81	0.99	1.11	1.31	1.45	1.59
6	360	0.38	0.47	0.59	0.68	0.79	0.89	0.96
12	720	0.24	0.28	0.36	0.41	0.47	0.52	0.57
24	1440	0.14	0.16	0.20	0.23	0.27	0.30	0.32

Table 2.1.5-1 Runoff Curve Numbers[1]

Cover description			**Curve numbers for hydrologic soil groups**			
Cover type and hydrologic condition		*Average percent impervious area*[2]	A	B	C	D
Cultivated land:	without conservation treatment		72	81	88	91
	with conservation treatment		62	71	78	81
Pasture or range land:	poor condition		68	79	86	89
	good condition		39	61	74	80
Meadow: good condition			30	58	71	78
Wood or forest land:	thin stand, poor cover		45	66	77	83
	good cover		25	55	70	77
Open space (lawns, parks, golf courses, cemeteries, etc.)[3]						
Poor condition (grass cover <50%)			68	79	86	89
Fair condition (grass cover 50% to 75%)			49	69	79	84
Good condition (grass cover > 75%)			39	61	74	80
Impervious areas:						
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)			98	98	98	98
Streets and roads:						
Paved; curbs and storm drains (excluding right-of-way)			98	98	98	98
Paved; open ditches (including right-of-way)			83	89	92	93
Gravel (including right-of-way)			76	85	89	91
Dirt (including right-of-way)			72	82	87	89
Urban districts:						
Commercial and business		85%	89	92	94	95
Industrial		72%	81	88	91	93
Residential districts by average lot size:						
1/8 acre or less (town houses)		65%	77	85	90	92
1/4 acre		38%	61	75	83	87
1/3 acre		30%	57	72	81	86
1/2 acre		25%	54	70	80	85
1 acre		20%	51	68	79	84
2 acres		12%	46	65	77	82
Developing urban areas and Newly graded areas (pervious areas only, no vegetation)			77	86	91	94

[1] Average runoff condition, and $I_a = 0.2S$

[2] The average percent impervious area shown was used to develop the composite CNs. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. If the impervious area is not connected, the SCS method has an adjustment to reduce the effect.

[3] CNs shown are equivalent to those of pasture. Composite CNs may be computed for other combinations of open space cover type.

Table 4.4-5 Uniform Flow Values of Roughness Coefficient n

Type of Channel and Description	Minimum	Normal	Maximum
EXCAVATED OR DREDGED			
a. Earth, straight and uniform	0.016	0.018	0.020
1. Clean, recently completed	0.018	0.022	0.025
2. Clean, after weathering	0.022	0.025	0.030
3. Gravel, uniform section, clean	0.022	0.027	0.033
b. Earth, winding and sluggish			
1. No vegetation	0.023	0.025	0.030
2. Grass, some weeds	0.025	0.030	0.033
3. Dense weeds/plants in deep channels	0.030	0.035	0.040
4. Earth bottom and rubble sides	0.025	0.030	0.035
5. Stony bottom and weedy sides	0.025	0.035	0.045
6. Cobble bottom and clean sides	0.030	0.040	0.050
c. Dragline-excavated or dredged			
1. No vegetation	0.025	0.028	0.033
2. Light brush on banks	0.035	0.050	0.060
d. Rock cuts			
1. Smooth and uniform	0.025	0.035	0.040
2. Jagged and irregular	0.035	0.040	0.050
e. Channels not maintained, weeds and brush uncut			
1. Dense weeds, high as flow depth	0.050	0.080	0.120
2. Clean bottom, brush on sides	0.040	0.050	0.080
3. Same, highest stage of flow	0.045	0.070	0.110
4. Dense brush, high stage	0.080	0.100	0.140
NATURAL STREAMS			
Minor streams (top width at flood stage < 100 ft)			
a. Streams on Plain			
1. Clean, straight, full stage, no rifts or deep pools	0.025	0.030	0.033
2. Same as above, but more stones and weeds	0.030	0.035	0.040
3. Clean, winding, some pools and shoals	0.033	0.040	0.045
4. Same as above, but some weeds and some stones	0.035	0.045	0.050
5. Same as above, lower stages, more ineffective slopes and sections	0.040	0.048	0.055
6. Same as 4, but more stones	0.045	0.050	0.060
7. Sluggish reaches, weedy, deep pools	0.050	0.070	0.080
8. Very weedy reaches, deep pools, or floodways with heavy stand of timber and underbrush	0.075	0.100	0.150

Table 4.4-5 Uniform Flow Values of Roughness Coefficient n (continued)

Type of Channel and Description	Minimum	Normal	Maximum
b. Mountain streams, no vegetation in channel, banks usually steep, trees and brush along banks submerged at high stages			
1. Bottom: gravels, cobbles, few boulders	0.030	0.040	0.050
2. Bottom: cobbles with large boulders	0.040	0.050	0.070
Floodplains			
a. Pasture, no brush			
1. Short grass	0.025	0.030	0.035
2. High grass	0.030	0.035	0.050
b. Cultivated area			
1. No crop	0.020	0.030	0.040
2. Mature row crops	0.025	0.035	0.045
3. Mature field crops	0.030	0.040	0.050
c. Brush			
1. Scattered brush, heavy weeds	0.035	0.050	0.070
2. Light brush and trees in winter	0.035	0.050	0.060
3. Light brush and trees, in summer	0.040	0.060	0.080
4. Medium to dense brush, in winter	0.045	0.070	0.110
5. Medium to dense brush, in summer	0.070	0.100	0.160
d. Trees			
1. Dense willows, summer, straight	0.110	0.150	0.200
2. Cleared land, tree stumps, no sprouts	0.030	0.040	0.050
3. Same as above, but with heavy growth of spouts	0.050	0.060	0.080
4. Heavy stand of timber, a few down trees, little undergrowth, flood stage below branches	0.080	0.100	0.120
5. Same as above, but with flood stage reaching branches	0.100	0.120	0.160
Major Streams (top width at flood stage > 100 ft). The n value is less than that for minor streams of similar description, because banks offer less effective resistance.			
a. Regular section with no boulders or brush	0.025	.....	0.060
b. Irregular and rough section	0.035	.....	0.100

Source: HEC-15, 1988

Appendix B Data

- Water Quality Design
- Channel Protection Design
- Crystal Stream Information
- Site Review Tool

Basin # 1A			
Water Quality & Channel Protection Sizing Calculation			
Water Quality Volume	**Value**	**Units**	**Notes**
Impervious Area	2.16	acres	Input this volume from your design
Total Drainage Area	2.84	acres	Input this volume from your design
% Impervious	76.056338		
Rv	0.73450704	Inches	
WQv	0.2086	Acre-feet	
Required WQv	9086.616	CF	
Proposed WQv	10051	CF	At elevation 1083.00
Water Quality Release			
Proposed WQv for Release	10051	CF	Volume minus any other treatment volume such as micropool, etc. to be released
Avg. Release Rate	0.11633102	CFS	Based on 24 hour release rate
Upper WQv Elevation	1083	FT	
Lower WQv Elevation	1080	FT	
Avg. Head	1.5	FT	
Orifice Area	0.01972676	SF	Using orifice equation
Orifice Diameter	1.90179703	IN	Use a 2 inch minimum
Channel Protection Volume			
P	3.12		1 year rainfall
CN for site	89		From Hydroflow
Ia	0.25		
Ia / P	0.08		
Tc	0.08	hours	
qu	1000		From Figure 2.1.5-6
qo/qi	0.018		
vs/vr	0.65760449		
Runoff Volume	23838		From Hydroflow - 1 year developed storm volume
vr	2.31	Inches	
Cpv	0.35987089	acre feet	
Required Cpv	15676	CF	
CPv-ED Release Rate	0.18	cfs	Use 3" Diameter orifice as a minimum
Proposed Cpv	*19525*	*CF*	*At elevation 1084.50*

Basin # 1B			
Water Quality & Channel Protection Sizing Calculation			
Water Quality Volume	**Value**	**Units**	**Notes**
Impervious Area	0.64	acres	Input this volume from your design
Total Drainage Area	0.64	acres	Input this volume from your design
% Impervious	100		
Rv	0.95	Inches	
WQv	0.0608	Acre-feet	
Required WQv	2648.448	CF	
Proposed WQv	2700	CF	At Elevation 1072.50
Water Quality Release			
Proposed WQv for Release	2700	CF	Volume minus any other treatment volume such as micropool, etc. to be released
Avg. Release Rate	0.03125	CFS	Based on 24 hour release rate
Upper WQv Elevation	1072.5	FT	
Lower WQv Elevation	1070	FT	
Avg. Head	1.25	FT	
Orifice Area	0.00580498	SF	Using orifice equation
Orifice Diameter	1.03166031	IN	Use 2 inch minimum
Channel Protection Volume			
P	3.12		1 year rainfall
CN for site	98		From Hydroflow
Ia	0.04		
Ia / P	0.01		
Tc	0.08	hours	
qu	1000		From Figure 2.1.5-6
qo/qi	0.018		
vs/vr	0.65760449		
Runoff Volume	6919		From Hydroflow - 1 year developed storm volume
vr	2.98	Inches	
Cpv	0.10445283	acre feet	
Required Cpv	4550	CF	
CPv-ED Release Rate	0.05	cfs	Use 3" Diameter orifice as a minimum
Proposed Cpv	*5358*	*CF*	*At Elevation 1074.00*

Basin # 3			
Water Quality & Channel Protection Sizing Calculation			
Water Quality Volume	**Value**	**Units**	**Notes**
Impervious Area	1.71	acres	Input this volume from your design
Total Drainage Area	1.98	acres	Input this volume from your design
% Impervious	86.3636364		
Rv	0.82727273	Inches	
WQv	0.1638	Acre-feet	
Required WQv	7135.128	CF	
Proposed WQv	7489	CF	At Elevation 1069.00
Water Quality Release			
Proposed WQv for Release	7489	CF	Volume minus any other treatment volume such as micropool, etc. to be released
Avg. Release Rate	0.08667824	CFS	Based on 24 hour release rate
Upper WQv Elevation	1069	FT	
Lower WQv Elevation	1066	FT	
Avg. Head	1.5	FT	
Orifice Area	0.01469841	SF	Using orifice equation
Orifice Diameter	1.64161549	IN	Use 2 inch minimum
Channel Protection Volume			
P	3.12		1 year rainfall
CN for site	93		From Hydroflow
Ia	0.15		
Ia / P	0.05		
Tc	0.08	hours	
qu	1000		From Figure 2.1.5-6
qo/qi	0.018		
vs/vr	0.65760449		
Runoff Volume	17559		From Hydroflow - 1 year developed storm volume
vr	2.44	Inches	
Cpv	0.26507983	acre feet	
Required Cpv	11547	CF	
CPv-ED Release Rate	0.13	cfs	Use 3" Diameter orifice as a minimum
Proposed Cpv	*11633*	*CF*	*At Elevation 1070.00*

Pond #4			
Water Quality & Channel Protection Sizing Calculation			
Water Quality Volume	**Value**	**Units**	**Notes**
Impervious Area	1.24	acres	Input this volume from your design
Total Drainage Area	1.89	acres	Input this volume from your design
% Impervious	65.6084656		
Rv	0.64047619	Inches	
WQv	0.12105	Acre-feet	
Required WQv	5272.938	CF	
Proposed WQv	5962	CF	At Elevation 1082.50
Water Quality Release			
Proposed WQv for Release	5962	CF	Volume minus any other treatment volume such as micropool, etc. to be released
Avg. Release Rate	0.06900463	CFS	Based on 24 hour release rate
Upper WQv Elevation	1082.5	FT	
Lower WQv Elevation	1080	FT	
Avg. Head	1.25	FT	
Orifice Area	0.01281826	SF	Using orifice equation
Orifice Diameter	1.5330306	IN	Use 2 inch minimum
Channel Protection Volume			
P	3.12		1 year rainfall
CN for site	85		From Hydroflow
Ia	0.35		
Ia / P	0.11		
Tc	0.08	hours	
qu	1000		From Figure 2.1.5-6
qo/qi	0.018		
vs/vr	0.65760449		
Runoff Volume	11954		From Hydroflow - 1 year developed storm volume
vr	1.74	Inches	
Cpv	0.18046382	acre feet	
Required Cpv	7861	CF	
CPv-ED Release Rate	0.09	cfs	Use 3" Diameter orifice as a minimum
Proposed Cpv	*7949*	*CF*	*At Elevation 1083.00*

CrystalStream Technologies

Clear Solutions

CrystalStream Technologies has built a reputation for engineering excellence, integrity of design and dedication to the spirit of stormwater pollutant mitigation. Our drive is to achieve the water quality goals of the watershed and to become a long term partner with the stakeholders of every project. This drive has produced a company philosophy that is designed to succeed in a changing environment.

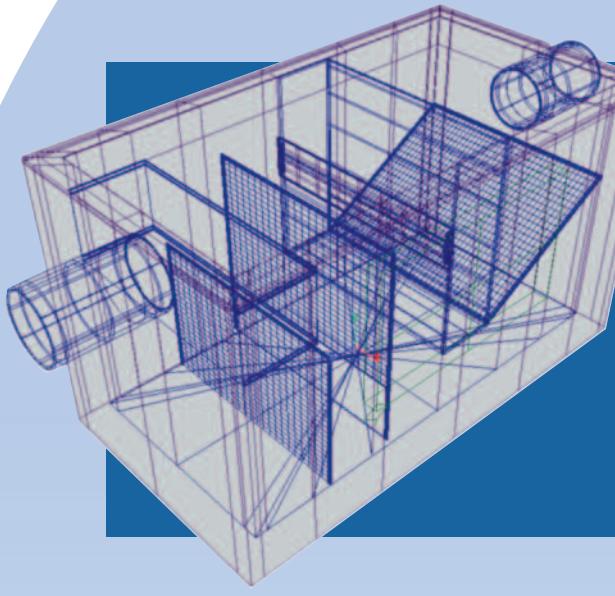
The national acclaim of our innovative products and services does not define our success, but it does reflect our commitment to the hard work of pollutant removal in the real world. We are dedicated to the full life cycle of stormwater "best management practices." We build sustainable solutions through site specific design, integrated installation, periodic cleaning, and preventative maintenance services. This is the clearest path to success measured by the health of our waterways.

CrystalStream Technologies

Site specific Design

CrystalStream advocates the collaborative design of water quality solutions by working in conjunction with the design engineer. Every site is unique and demands the experience, innovation and dedication to proper design provided by our fully staffed engineering department.

- Submit on-line for a quick response @ www.crystalstream.com
- 3 view CAD Drawing
- All Local WQ Calculations
- Value Engineering on Large Projects



Integrated Installation

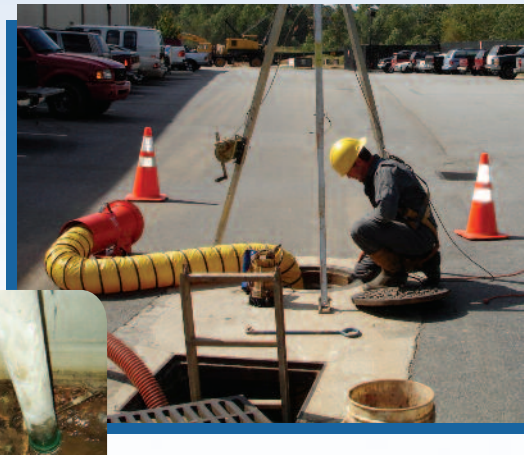
Time is money on a job site and CrystalStream's operations group works with the contractor to coordinate delivery, provide crane services if requested and assure a successful installation. We take the time to attend the installation and protect the installer from unknowns.

- Save time with a "Just in Time" delivery
- Shallow sump requires less excavation (4 feet below invert)
- Unit comes fully assembled
- Freight and crane included in our quote

Cleaning & Maintenance Services

All BMP's will fail if they are not cleaned and maintained on a consistent basis. CrystalStream and its subsidiary, Storm System Services, has been cleaning ALL proprietary BMP's for 8 years. We have the understanding and know how to keep the system in compliance and operating effectively.

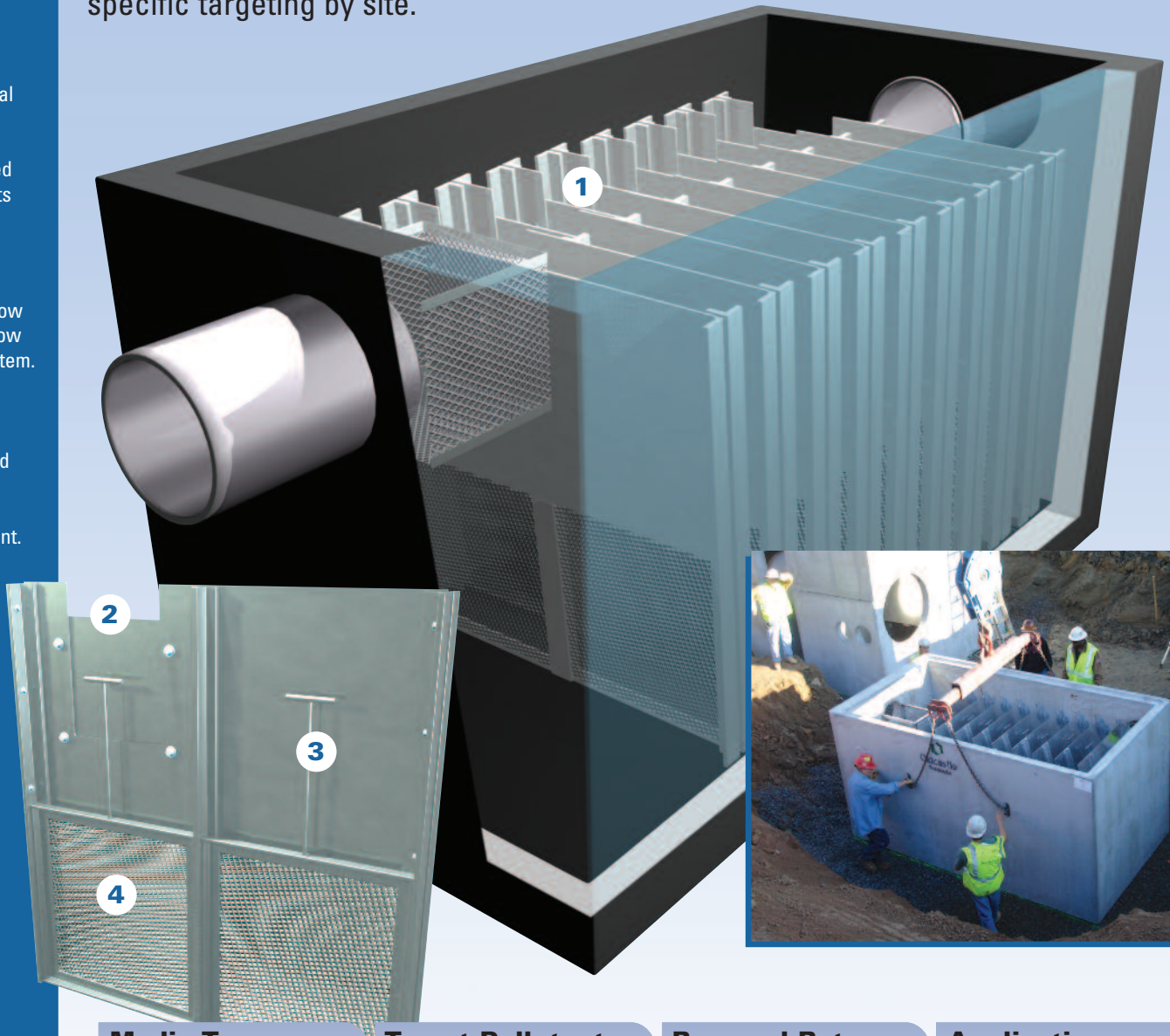
- Only in-house cleaning business in the Industry
- Reliable, affordable and professional service
- Trained crews able to perform confined space entry, if necessary



The CrystalClear Polisher

The CrystalClear Polisher is an innovative fine pollutant filtration system with the ability to target the smaller particles and dissolved fraction of pollutants transported in a low flow environment. The Polisher employs a new treatment design of sequential filtering to allow targeting of multiple pollutants with different filter and reactionary media. Traditional filtration systems only use one media based on simultaneous flow entry to the filter media. Sequential filtration leads us into the future of pollutant specific targeting by site.

1. Eighteen individual panels allow for multiple media introduction based on specific targets on the site.
2. Adjustable overflow weirs allow for flow control in the system.
3. Panels pull up and out for easy and cost effective media replacement.
4. Tensioning rods (not shown) seal panels in place, but can yield as panels reach capacity and resist flow.

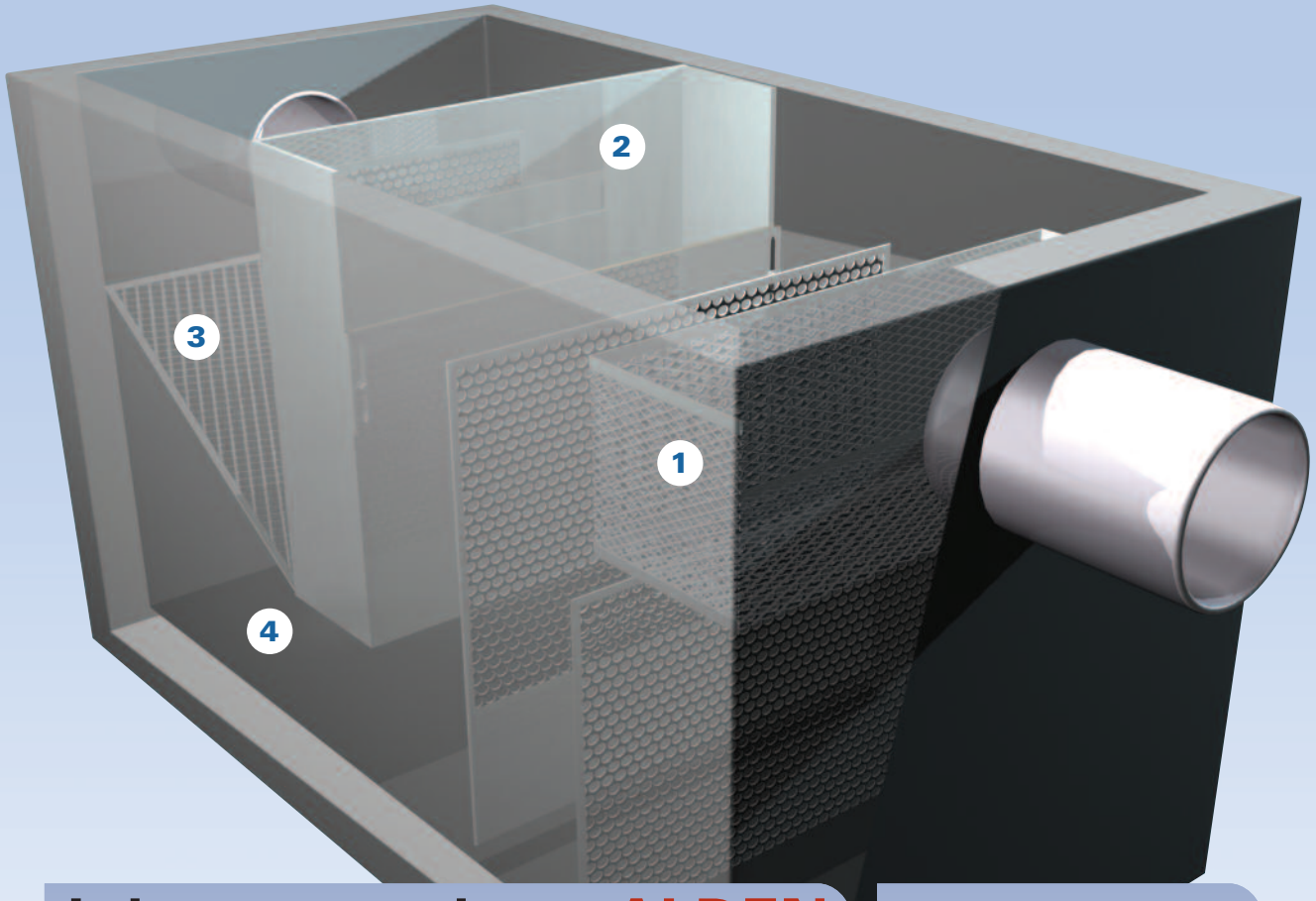


Media Type	Target Pollutants	Removal Rates	Applications
X-Tex (tm)	Oil & hydrocarbons	Greater than 90%	Parking lots, Hot spots
Coconut fiber	Nutrients	Tested at 40%	Landscaped sites
Activated charcoal	Dissolved chemicals	Varies by chemical up to 98%	Industrial or Site specific
Place your media here	Future potential unlimited	To meet future goals	Every site

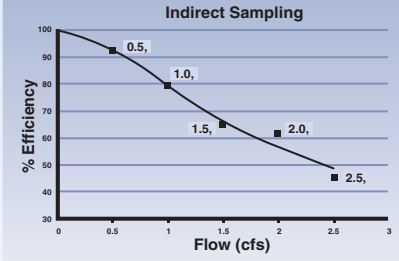
The power of the CrystalClear Polisher design is that it is not restricted to a single filter media, or even to the media available today. It is a system designed to carry the best available media technology to address the specific needs of your site. It is adjustable “on the fly” in that site conditions not anticipated can be addressed after installation. It can change with the seasons, to reflect the dramatic differences between summer and winter in many areas. It is versatile, in that not every filter panel needs to be changed at every service interval. The polisher is designed to be placed in a treatment train downstream of a pre-treatment device, such as the CrystalClean separator.

The CrystalClean Separator

The CrystalClean Separator is an enhanced gross pollutant separation device that targets the most common pollutants in urban stormwater including sediment, oil & other hydrocarbons, trash and debris, and BOD causing nutrients. The baffle system and unit configuration control velocities and organize flow patterns to achieve industry leading sediment removal as well as treating other pollutants with specific media panels.

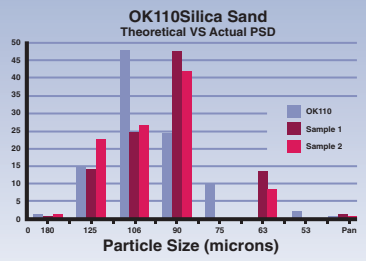


Laboratory testing at ALDEN



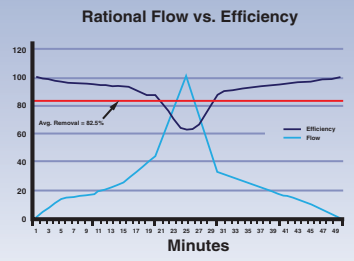
Lab Performance Curves

Verified Laboratory Performance Curves as tested at Alden Laboratories.



Particle Size Definitions

Verified Particle Size Definitions as tested for local comparison.



Local Storm Characteristics

Performance for local storm characteristics calculated for every site.

STORM SYSTEM SERVICES

A DIVISION OF CRYSTALSTREAM TECHNOLOGIES

The CrystalClean-Separator has been the subject of on going monitoring for 8 years due to the recording of sediment captured in over 5,000 cleaning operations stored in our database. These cleaning operations have given unique insight into the nature of captured pollutants and the relative mass of sediment and debris in stormwater runoff.

Third Party Field Testing ETV

The CrystalClean-Separator unit from CrystalStream Technologies has been designed and tested to meet the stringent removal standards set forth by the federal, state and local jurisdictions. The unit was tested in a 3 year field test in Georgia and determined to remove 89% of the sediment load measured by the preferred SSC testing method. All of the results of the ETV test can be found at the EPA's website.

1

Trash, vegetative debris and other large pollutants are screened from the flow using the trash basket. The captured material is held above the water line to prevent the decomposition that will occur in other systems that promote a "floating strategy. The CrystalClear separator effectively captures these pollutants where others do not.

2

Spill protection is provided using the hydrocarbon reservoir to segregate floating hydrocarbons from the flow pattern. From commercial refueling operations to DOT rest areas and bridges, the ability to prevent a downstream incident resulting from an accidental spill is a clear advantage of the CrystalClean Separator.

3

Natural fiber filter material is used to remove neutrally buoyant organic particles that contain nitrogen and phosphorus. Where excess nutrients are the pollutant of concern, this treatment phase sets the CrystalClean—Separator apart from other water quality devices.

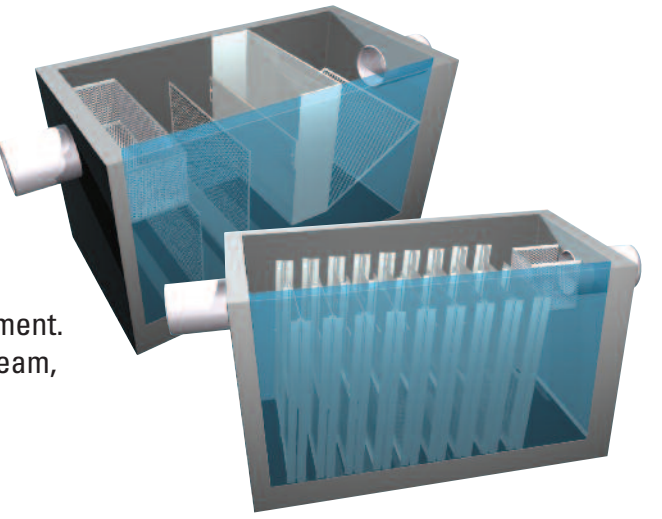
4

Sediment and associated pollutants are retained by establishing the "Optimal Treatment Flow" based on pollutant type, transportation, cleaning frequency, and device size. CrystalStream is dedicated to using site specific data to maximize the removal rates for targeted pollutants.

CrystalClean Separator

Stand Alone Treatment

The CrystalClean Separator has been used in many applications as a stand alone removal BMP. These sites include small and footprint constrained new development, retro-fit applications and re-development. If you need a sole BMP to stand between the parking lot and the stream, the CrystalClean Separator is the right choice.



CrystalClean Separator

Treatment Train

With CrystalClear Polisher
The use of a CrystalClean Separator for pre-treatment at the front end of a treatment train with the Polisher will provide the best results for pollutant removal on many sites.

With Detention/Retention
The use of a CrystalClean Separator for pre-treatment upstream of a detention system will enhance pollutant removal and save cost on cleaning and maintaining the detention structure.

With Low Impact Development
The use of a CrystalClean Separator for pre-treatment upstream will enhance the performance of land based systems and greatly reduce maintenance costs.

Other Applications

Hotspots
DOT • Bridges • Rest Areas
Maintenance Yards

Retro Fit Applications

Spill Protection

GENERAL DESIGN CRITERIA(1)

Model Number	Maximum Design CFS	Water Quality CFS	Spill Protection Gallons	Unit Dimensions
646	6.0	1.2	280	6 x 4 x 6
956	12.5	2.5	550	9 x 5 x 6
1056	17.5	3.0	600	10 x 5 x 6
1266	24.0	4.0	1000	12 x 6 x 6
1246(2)	12.0	2.4	700	12 x 4 x 6
1856(2)	23.0	4.6	1300	18 x 5 x 6
2056(2)	25.0	5.0	1400	20 x 5 x 6
2466(2)	36.0	7.2	2000	24 x 6 x 6

INTERNAL BYPASS UNITS

646-IB	7.8	1.2	280	6 x 4 x 6
956-IB	16.3	2.5	550	9 x 5 x 6
1056-IB	22.8	3.0	600	10 x 5 x 6
1246-IB(3)	18.0	2.4	280	12 x 4 x 6
1266-IB	31.2	4.0	1000	12 x 6 x 6
2056-IB(3)	35.0	5.0	400	20 x 5 x 6
2466-IB(3)	50.0	7.2	600	24 x 6 x 6

1) All units are sized and internal components placed on a site by site basis depending on multiple factors associated within the specific basin. Maximum flow will seldom vary. Water Quality flow is highly dependent on site conditions and target pollutants. The above criteria is for macro level evaluation and comparable analysis. The unit is standard with a 2/10 foot fall across the device but can be reduced in certain applications.

2) Twin vault units. May be inline or side by side

3) Twin vault units. Must be side by side

All units are constructed using 4000 psi pre-cast concrete and all aluminum internal components. Lids and access are available in multiple configurations including traffic loading and non-traffic.

CrystalStream Technologies

2090 Sugarloaf Pkwy. • Suite 135
Lawrenceville, GA 30045

Toll Free: 800-748-6945
Office: 770-979-6516
Facsimile: 770-979-6954

www.crystalstream.com

Georgia Stormwater Management Manual
Stormwater Quality Site Development Review Tool

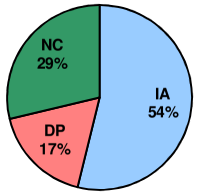
General Information

Name of Developer:	*All Saints Catholic Church*	Date Submitted:	*4/15/2015*
Development Name:	*All Saints Catholic Church*	Permit Number:	
Site Location / Address:	*2443 Mt. Vernon Road*	Developer Contact:	*Carl Trevethan*
	Dunwoody, GA 300	Phone Number:	*404-920-7300*
Development Type:	*Office/Professional*	Name of Engineer(s):	*Cornerstone Site Consultants, LLC*
Area of Development (acres):	11.22	Maintenance Responsibility:	*All Saints Catholic Church*

Summary of Site and Structural Control Information

Number of Drainage Areas:	
Sum of Drainage Areas (ac) :	11.22
Total (IA) Impervious Area (ac) :	6.04
Total (DP) Disturbed Pervious Area (ac) :	1.96
Total (NC) Natural Conservation Area (ac) :	3.22
Percent Imperviousness (%) :	54%

Land Use Distribution Pie

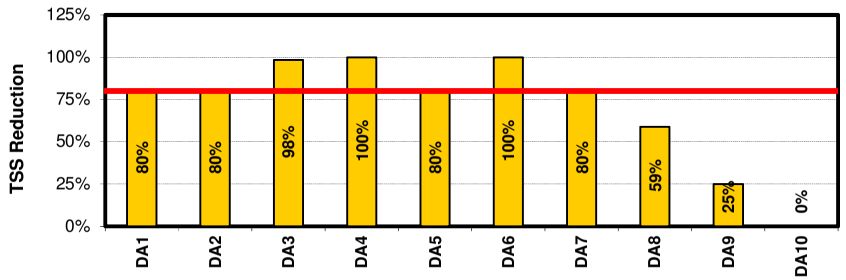


Total # of Structural Controls Used: 5

General Application Structural Stormwater Controls		Limited Application Structural Stormwater Controls	
Stormwater Pond	4	Filter Strip	0
Stormwater Wetland	0	Grass Channel	0
Bioretention Area	0	Organic Filter	0
Sand Filter	0	Underground Sand Filter	0
Infiltration Trench	0	Submerged Gravel Wetland	0
Enhanced Swales	0	Gravity (Oil-Grit) Separator	0
Detention Structural Stormwater Controls		Porous Concrete**	0
Dry Detention / Dry ED Basin	1	Modular Porous Paver System**	0
Multi-Purpose Detention Area	0	Alum Treatment System	0
Underground Detention	0	Proprietary Structural Control***	0

TSS Reduction

Total TSS Reduction (%) : 82%



Official Use Only

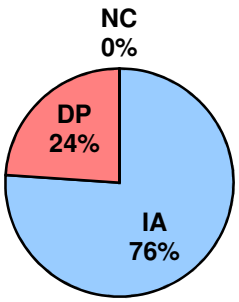
Tracking #:	
Reviewed By:	
Date Approved:	
Conditions of Approval:	

CH2MHILL

Drainage Area 01

Land Use Distribution (acres)

Enter Total Area :	**2.84**
Enter Impervious Area (IA) :	2.16
Enter Disturbed Pervious Area (DP) :	0.68
Enter Natural Conservation Area (NC) :	
Total Area for check :	***2.84***
Percent Imperviousness (%) :	**76%**

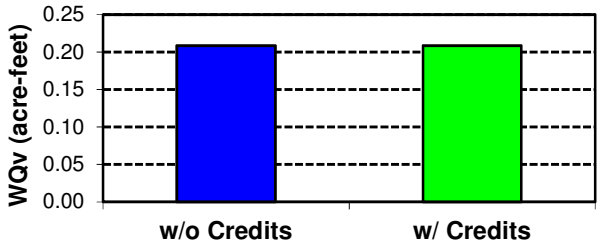


Non-Structural Controls (Site Design Credits)

Natural Conservation Area (acres):	0.00
Enter Area (acres) Treated by (if applicable):	
Undisturbed Stream Buffers :	0.00
Vegetated Channels :	0.00
Overland Flow Filtration / Recharge :	0.00
Total Area receiving Credits (acres):	**0.00**

Water Quality Volume (WQ_V)

WQ_V (ac-ft) w/o Credits =	**0.209**
WQ_V w/ Non-Struc. Credits =	**0.209**

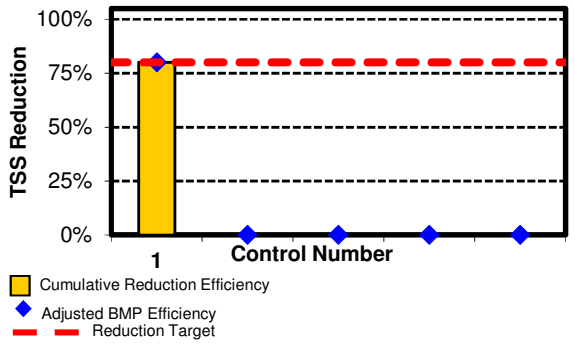


Structural Controls

	Select Structural Control(s)	Control ID
Control 1	Stormwater Pond	STP-01-1
Control 2	NONE	NONE
Control 3	NONE	NONE
Control 4	NONE	NONE
Control 5	NONE	NONE

TSS Reduction Chart

TSS Reduction from Structural Controls: **80%**



Additional Downstream Treatment

If the runoff leaving this drainage area is treated by one or more additional structural controls downstream, please specify the appropriate drainage area(s) below:

☐ DA 2 ☐ DA 3 ☐ DA 4 ☐ DA 5 ☐ DA 6 ☐ DA 7 ☐ DA 8 ☐ DA 9 ☐ DA 10

Total TSS Reduction Using Non-Structural Controls (Site Design Credits), Structural Controls, and Additional Downstream Treatment (if applicable): **80%**

CH2MHILL

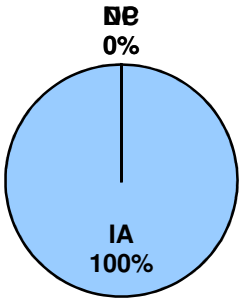
Local Government Specific Information (fill in only if required by Development Review Department)

Watershed Basin:	District/LL/Parcel:	Comm. District:

Drainage Area 02

Land Use Distribution (acres)

Enter Total Area :	**0.64**
Enter Impervious Area (IA) :	0.64
Enter Disturbed Pervious Area (DP) :	0.00
Enter Natural Conservation Area (NC) :	0.00
Total Area for check :	***0.64***
Percent Imperviousness (%) :	**100%**

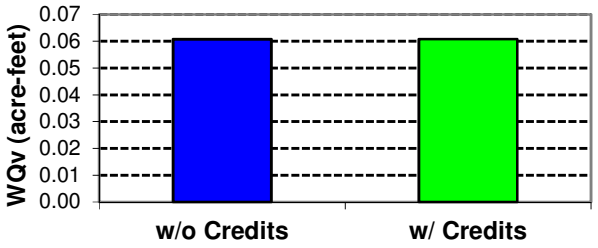


Non-Structural Controls (Site Design Credits)

Natural Conservation Area (acres):	0.00
Enter Area (acres) Treated by (if applicable):	
Undisturbed Stream Buffers :	
Vegetated Channels :	
Overland Flow Filtration / Recharge :	
Total Area receiving Credits (acres):	**0.00**

Water Quality Volume (WQ_V)

WQ_V (ac-ft) w/o Credits =	**0.061**
WQ_V w/ Non-Struc. Credits =	**0.061**

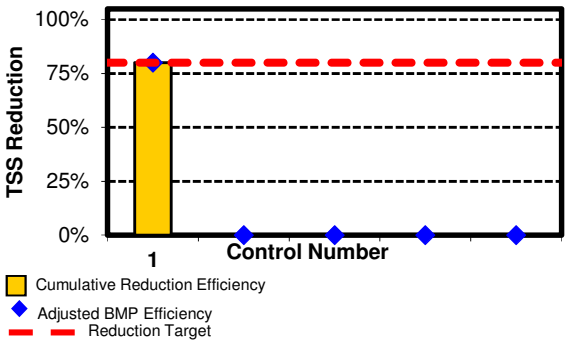


Structural Controls

	Select Structural Control(s)	Control ID
Control 1	Stormwater Pond	STP-02-1
Control 2	NONE	NONE
Control 3	NONE	NONE
Control 4	NONE	NONE
Control 5	NONE	NONE

TSS Reduction Chart

TSS Reduction from Structural Controls: **80%**



Additional Downstream Treatment

If the runoff leaving this drainage area is treated by one or more additional structural controls downstream, please specify the appropriate drainage area(s) below:

☐ DA 1 ☐ DA 3 ☐ DA 4 ☐ DA 5 ☐ DA 6 ☐ DA 7 ☐ DA 8 ☐ DA 9 ☐ DA 10

Total TSS Reduction Using Non-Structural Controls (Site Design Credits), Structural Controls, and Additional Downstream Treatment (if applicable):	**80%**

CH2MHILL

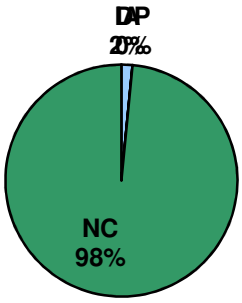
Local Government Specific Information (fill in only if required by Development Review Department)

Watershed Basin:	District/LL/Parcel:	Comm. District:

Drainage Area 03

Land Use Distribution (acres)

Enter Total Area :	**1.93**
Enter Impervious Area (IA) :	0.03
Enter Disturbed Pervious Area (DP) :	0.00
Enter Natural Conservation Area (NC) :	1.90
Total Area for check :	***1.93***
Percent Imperviousness (%) :	**2%**

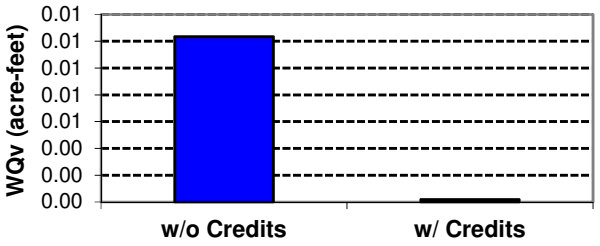


Non-Structural Controls (Site Design Credits)

Natural Conservation Area (acres):	1.90
Enter Area (acres) Treated by (if applicable):	
Undisturbed Stream Buffers :	
Vegetated Channels :	
Overland Flow Filtration / Recharge :	
Total Area receiving Credits (acres):	**1.90**

Water Quality Volume (WQ_V)

WQ_V (ac-ft) w/o Credits =	**0.012**
WQ_V w/ Non-Struc. Credits =	**0.000**

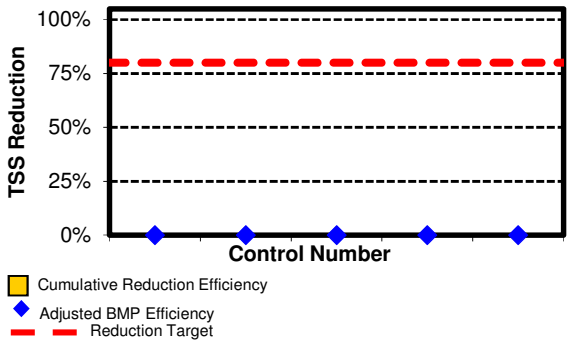


Structural Controls

	Select Structural Control(s)	Control ID
Control 1	NONE	NONE
Control 2	NONE	NONE
Control 3	NONE	NONE
Control 4	NONE	NONE
Control 5	NONE	NONE

TSS Reduction Chart

TSS Reduction from Structural Controls: **0%**



Additional Downstream Treatment

If the runoff leaving this drainage area is treated by one or more additional structural controls downstream, please specify the appropriate drainage area(s) below:

☐ DA 1 ☐ DA 2 ☐ DA 4 ☐ DA 5 ☐ DA 6 ☐ DA 7 ☐ DA 8 ☐ DA 9 ☐ DA 10

Total TSS Reduction Using Non-Structural Controls (Site Design Credits), Structural Controls, and Additional Downstream Treatment (if applicable):	**98%**

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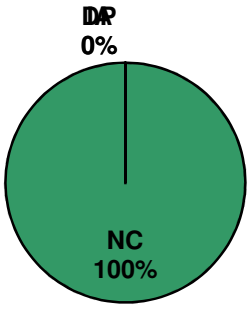
Local Government Specific Information (fill in only if required by Development Review Department)

Watershed Basin:	District/LL/Parcel:	Comm. District:

Drainage Area 04

Land Use Distribution (acres)

Enter Total Area :	**0.14**
Enter Impervious Area (IA) :	
Enter Disturbed Pervious Area (DP) :	
Enter Natural Conservation Area (NC) :	0.14
Total Area for check :	***0.14***
Percent Imperviousness (%) :	**0%**

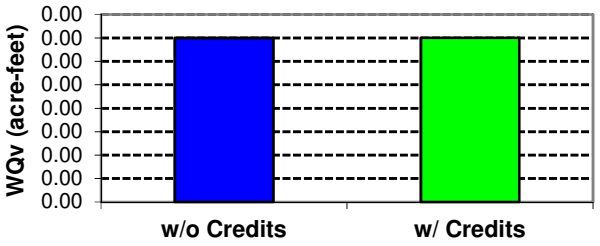


Non-Structural Controls (Site Design Credits)

Natural Conservation Area (acres):	0.14
Enter Area (acres) Treated by (if applicable):	
Undisturbed Stream Buffers :	
Vegetated Channels :	
Overland Flow Filtration / Recharge :	
Total Area receiving Credits (acres):	**0.14**

Water Quality Volume (WQ_V)

WQ_V (ac-ft) w/o Credits =	**0.001**
WQ_V w/ Non-Struc. Credits =	**0.001**

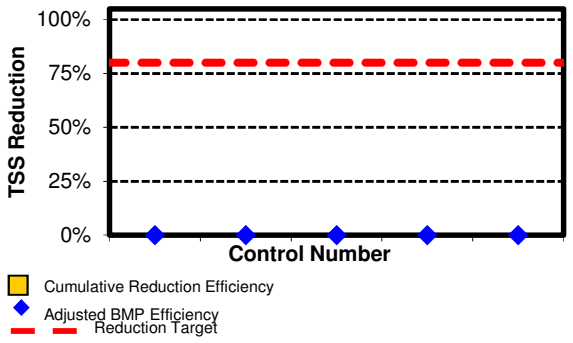


Structural Controls

	Select Structural Control(s)	Control ID
Control 1	NONE	NONE
Control 2	NONE	NONE
Control 3	NONE	NONE
Control 4	NONE	NONE
Control 5	NONE	NONE

TSS Reduction Chart

TSS Reduction from Structural Controls: **0%**



Additional Downstream Treatment

If the runoff leaving this drainage area is treated by one or more additional structural controls downstream, please specify the appropriate drainage area(s) below:

☐ DA 1 ☐ DA 2 ☐ DA 3 ☐ DA 5 ☐ DA 6 ☐ DA 7 ☐ DA 8 ☐ DA 9 ☐ DA 10

Total TSS Reduction Using Non-Structural Controls (Site Design Credits), Structural Controls, and Additional Downstream Treatment (if applicable): **100%**

CH2MHILL

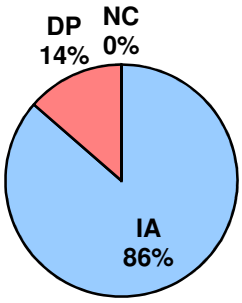
Local Government Specific Information (fill in only if required by Development Review Department)

Watershed Basin:	District/LL/Parcel:	Comm. District:

Drainage Area 05

Land Use Distribution (acres)

Enter Total Area :	**1.98**
Enter Impervious Area (IA) :	1.71
Enter Disturbed Pervious Area (DP) :	0.27
Enter Natural Conservation Area (NC) :	0.00
Total Area for check :	***1.98***
Percent Imperviousness (%) :	**86%**

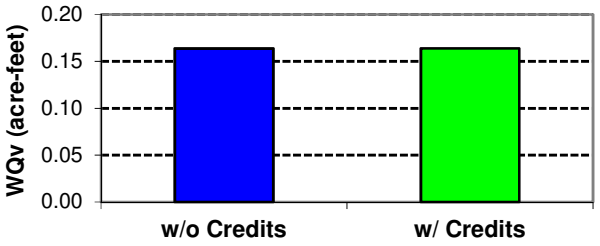


Non-Structural Controls (Site Design Credits)

Natural Conservation Area (acres):	0.00
Enter Area (acres) Treated by (if applicable):	
Undisturbed Stream Buffers :	
Vegetated Channels :	
Overland Flow Filtration / Recharge :	
Total Area receiving Credits (acres):	**0.00**

Water Quality Volume (WQ_V)

WQ_V (ac-ft) w/o Credits =	**0.164**
WQ_V w/ Non-Struc. Credits =	**0.164**

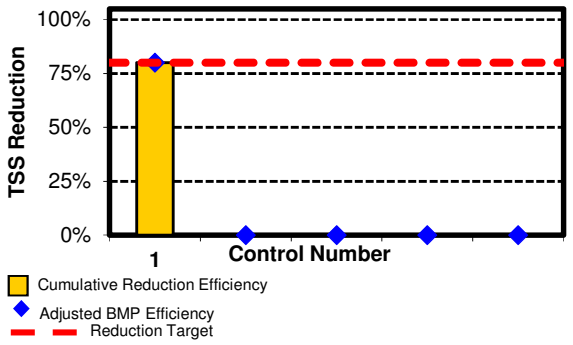


Structural Controls

	Select Structural Control(s)	Control ID
Control 1	Stormwater Pond	STP-05-1
Control 2	NONE	NONE
Control 3	NONE	NONE
Control 4	NONE	NONE
Control 5	NONE	NONE

TSS Reduction Chart

TSS Reduction from Structural Controls: **80%**



Additional Downstream Treatment

If the runoff leaving this drainage area is treated by one or more additional structural controls downstream, please specify the appropriate drainage area(s) below:

☐ DA 1 ☐ DA 2 ☐ DA 3 ☐ DA 4 ☐ DA 6 ☐ DA 7 ☐ DA 8 ☐ DA 9 ☐ DA 10

Total TSS Reduction Using Non-Structural Controls (Site Design Credits), Structural Controls, and Additional Downstream Treatment (if applicable):	**80%**

CH2MHILL

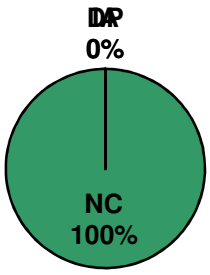
Local Government Specific Information (fill in only if required by Development Review Department)

Watershed Basin:	District/LL/Parcel:	Comm. District:

Drainage Area 06

Land Use Distribution (acres)

Enter Total Area :	**0.98**
Enter Impervious Area (IA) :	
Enter Disturbed Pervious Area (DP) :	
Enter Natural Conservation Area (NC) :	0.98
Total Area for check :	***0.98***
Percent Imperviousness (%) :	**0%**

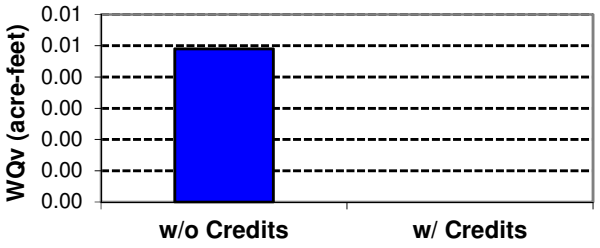


Non-Structural Controls (Site Design Credits)

Natural Conservation Area (acres):	0.98
Enter Area (acres) Treated by (if applicable):	
Undisturbed Stream Buffers :	
Vegetated Channels :	
Overland Flow Filtration / Recharge :	
Total Area receiving Credits (acres):	**0.98**

Water Quality Volume (WQ_V)

WQ_V (ac-ft) w/o Credits =	**0.005**
WQ_V w/ Non-Struc. Credits =	**0.000**

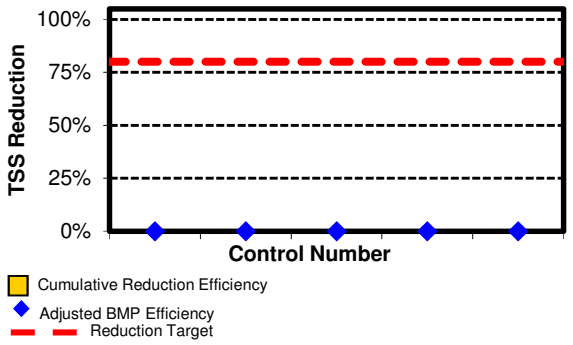


Structural Controls

	Select Structural Control(s)	Control ID
Control 1	NONE	NONE
Control 2	NONE	NONE
Control 3	NONE	NONE
Control 4	NONE	NONE
Control 5	NONE	NONE

TSS Reduction Chart

TSS Reduction from Structural Controls: **0%**



Additional Downstream Treatment

If the runoff leaving this drainage area is treated by one or more additional structural controls downstream, please specify the appropriate drainage area(s) below:

☐ DA 1 ☐ DA 2 ☐ DA 3 ☐ DA 4 ☐ DA 5 ☐ DA 7 ☐ DA 8 ☐ DA 9 ☐ DA 10

Total TSS Reduction Using Non-Structural Controls (Site Design Credits), Structural Controls, and Additional Downstream Treatment (if applicable): **100%**

CH2MHILL

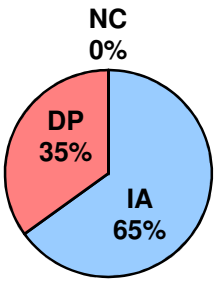
Local Government Specific Information (fill in only if required by Development Review Department)

Watershed Basin:	District/LL/Parcel:	Comm. District:

Drainage Area 07

Land Use Distribution (acres)

Enter Total Area :	**1.89**
Enter Impervious Area (IA) :	1.23
Enter Disturbed Pervious Area (DP) :	0.66
Enter Natural Conservation Area (NC) :	
Total Area for check :	***1.89***
Percent Imperviousness (%) :	**65%**

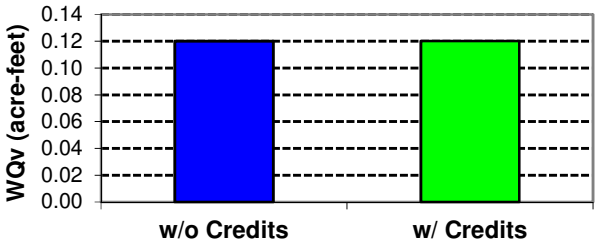


Non-Structural Controls (Site Design Credits)

Natural Conservation Area (acres):	0.00
Enter Area (acres) Treated by (if applicable):	
Undisturbed Stream Buffers :	
Vegetated Channels :	
Overland Flow Filtration / Recharge :	
Total Area receiving Credits (acres):	**0.00**

Water Quality Volume (WQ_V)

WQ_V (ac-ft) w/o Credits =	**0.120**
WQ_V w/ Non-Struc. Credits =	**0.120**

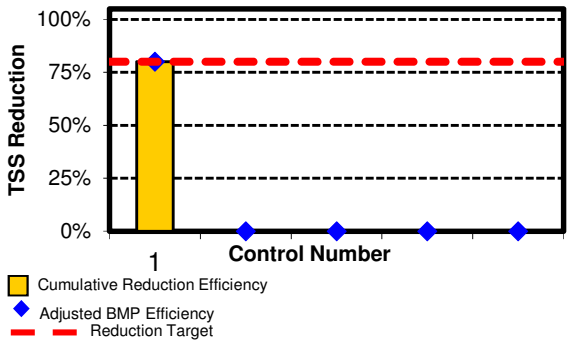


Structural Controls

	Select Structural Control(s)	Control ID
Control 1	Stormwater Pond	STP-07-1
Control 2	NONE	NONE
Control 3	NONE	NONE
Control 4	NONE	NONE
Control 5	NONE	NONE

TSS Reduction Chart

TSS Reduction from Structural Controls: **80%**



Additional Downstream Treatment

If the runoff leaving this drainage area is treated by one or more additional structural controls downstream, please specify the appropriate drainage area(s) below:

☐ DA 1 ☐ DA 2 ☐ DA 3 ☐ DA 4 ☐ DA 5 ☐ DA 6 ☐ DA 8 ☐ DA 9 ☐ DA 10

Total TSS Reduction Using Non-Structural Controls (Site Design Credits), Structural Controls, and Additional Downstream Treatment (if applicable):	**80%**

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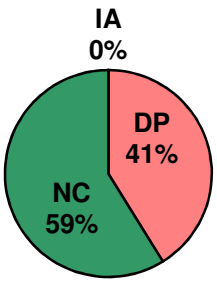
Local Government Specific Information (fill in only if required by Development Review Department)

Watershed Basin:	District/LL/Parcel:	Comm. District:

Drainage Area 08

Land Use Distribution (acres)

Enter Total Area :	**0.34**
Enter Impervious Area (IA) :	
Enter Disturbed Pervious Area (DP) :	0.14
Enter Natural Conservation Area (NC) :	0.20
Total Area for check :	***0.34***
Percent Imperviousness (%) :	**0%**

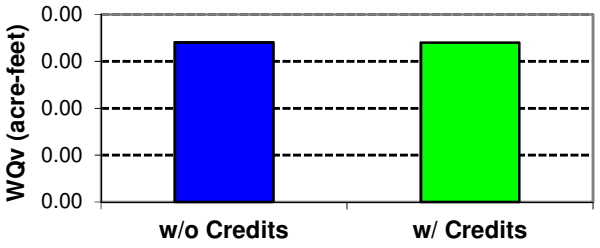


Non-Structural Controls (Site Design Credits)

Natural Conservation Area (acres):	0.20
Enter Area (acres) Treated by (if applicable):	
Undisturbed Stream Buffers :	
Vegetated Channels :	
Overland Flow Filtration / Recharge :	
Total Area receiving Credits (acres):	**0.20**

Water Quality Volume (WQ_V)

WQ_V (ac-ft) w/o Credits =	**0.002**
WQ_V w/ Non-Struc. Credits =	**0.002**

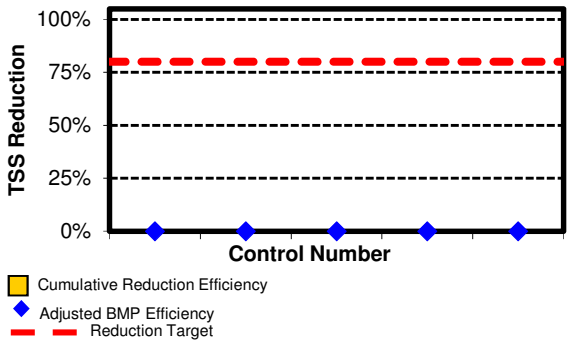


Structural Controls

	Select Structural Control(s)	Control ID
Control 1	NONE	NONE
Control 2	NONE	NONE
Control 3	NONE	NONE
Control 4	NONE	NONE
Control 5	NONE	NONE

TSS Reduction Chart

TSS Reduction from Structural Controls: **0%**



Additional Downstream Treatment

If the runoff leaving this drainage area is treated by one or more additional structural controls downstream, please specify the appropriate drainage area(s) below:

☐ DA 1 ☐ DA 2 ☐ DA 3 ☐ DA 4 ☐ DA 5 ☐ DA 6 ☐ DA 7 ☐ DA 9 ☐ DA 10

Total TSS Reduction Using Non-Structural Controls (Site Design Credits), Structural Controls, and Additional Downstream Treatment (if applicable):	**59%**

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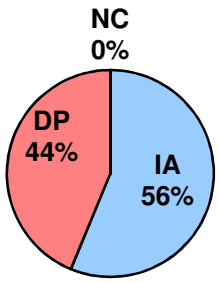
Local Government Specific Information (fill in only if required by Development Review Department)

Watershed Basin:	District/LL/Parcel:	Comm. District:

Drainage Area 09

Land Use Distribution (acres)

Enter Total Area :	**0.48**
Enter Impervious Area (IA) :	0.27
Enter Disturbed Pervious Area (DP) :	0.21
Enter Natural Conservation Area (NC) :	
Total Area for check :	***0.48***
Percent Imperviousness (%) :	**56%**

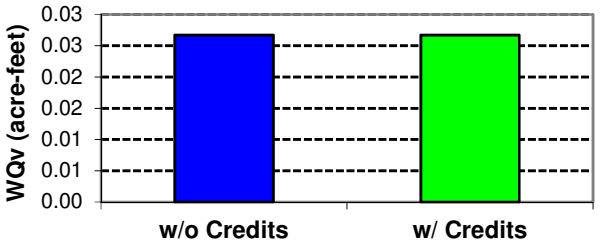


Non-Structural Controls (Site Design Credits)

Natural Conservation Area (acres):	0.00
Enter Area (acres) Treated by (if applicable):	
Undisturbed Stream Buffers :	
Vegetated Channels :	
Overland Flow Filtration / Recharge :	
Total Area receiving Credits (acres):	**0.00**

Water Quality Volume (WQ_V)

WQ_V (ac-ft) w/o Credits =	**0.027**
WQ_V w/ Non-Struc. Credits =	**0.027**

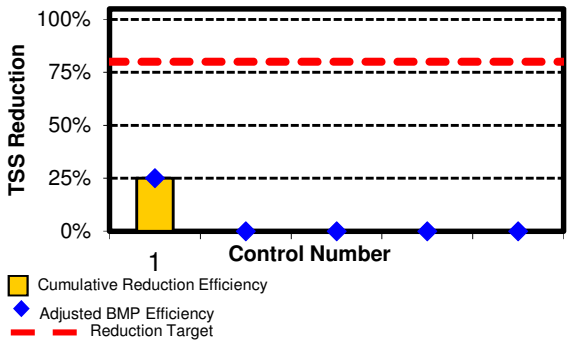


Structural Controls

	Select Structural Control(s)	Control ID
Control 1	Dry Detention / Dry ED Basin	DED-09-1
Control 2	NONE	NONE
Control 3	NONE	NONE
Control 4	NONE	NONE
Control 5	NONE	NONE

TSS Reduction Chart

TSS Reduction from Structural Controls: **25%**



Additional Downstream Treatment

If the runoff leaving this drainage area is treated by one or more additional structural controls downstream, please specify the appropriate drainage area(s) below:

☐ DA 1 ☐ DA 2 ☐ DA 3 ☐ DA 4 ☐ DA 5 ☐ DA 6 ☐ DA 7 ☐ DA 8 ☐ DA 10

Total TSS Reduction Using Non-Structural Controls (Site Design Credits), Structural Controls, and Additional Downstream Treatment (if applicable):	**25%**

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Local Government Specific Information (fill in only if required by Development Review Department)

Watershed Basin:	District/LL/Parcel:	Comm. District:

Structural Stormwater Control Removal Efficiency for Total Suspended Solids (TSS)

Structural Control	TSS Removal (%)	Code
General Application Structural Stormwater Controls		
Stormwater Pond New Underground Detention & Crystal Stream Unit	80	STP
Stormwater Wetland	80	STW
Bioretention Area	80	BRA
Sand Filter	80	SFS
Infiltration Trench	80	ITS
Enhanced Swales	80	ESW
Limited Application Structural Stormwater Controls		
Filter Strip	50	FSP
Grass Channel	50	FCH
Organic Filter	80	OGF
Underground Sand Filter	80	USF
Submerged Gravel Wetland	80	SGW
Gravity (Oil-Grit) Separator	40	OGS
Porous Concrete**	NA	PRC
Modular Porous Paver System**	NA	MPP
Alum Treatment System	90	ATS
Proprietary Structural Control***	NA	PSC
Detention Structural Stormwater Controls		
Dry Detention / Dry ED Basin Ex Underground Detention Vault	25	DED
Multi-Purpose Detention Area	NA	MPD
Underground Detention	NA	UGD

Notes:

** Due to the potential for clogging, porous concrete and modular block paver systems should not be used for the removal of sediment or other coarse particulate pollutants

*** The performance of specific proprietary commercial devices and systems must be provided by the manufacturer and should be verified by independent third-party sources and data

Range for a Dry Detention Basin's TSS Reduction Efficiency is 0%-50%. It will be upto the local governments to decide what the efficiency is best suited for their jurisdiction.

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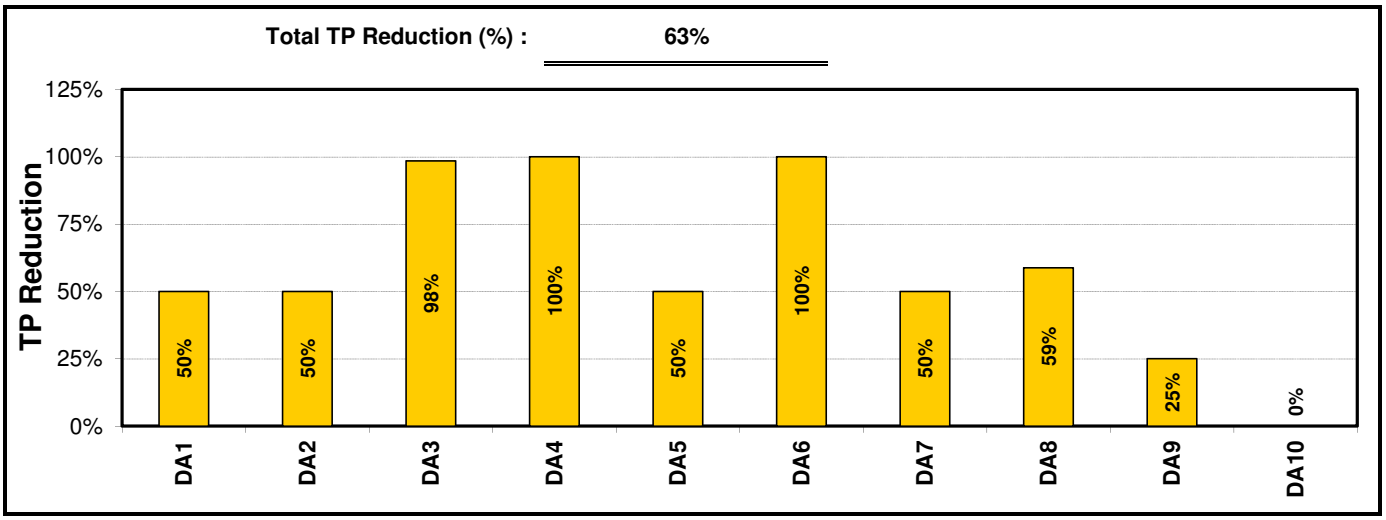
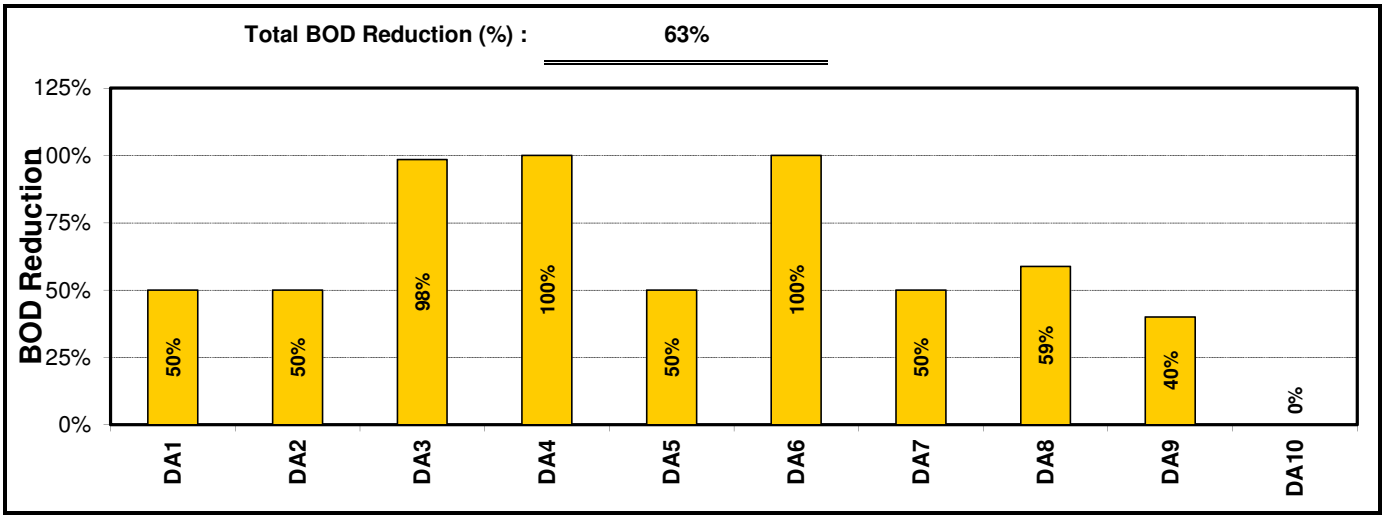
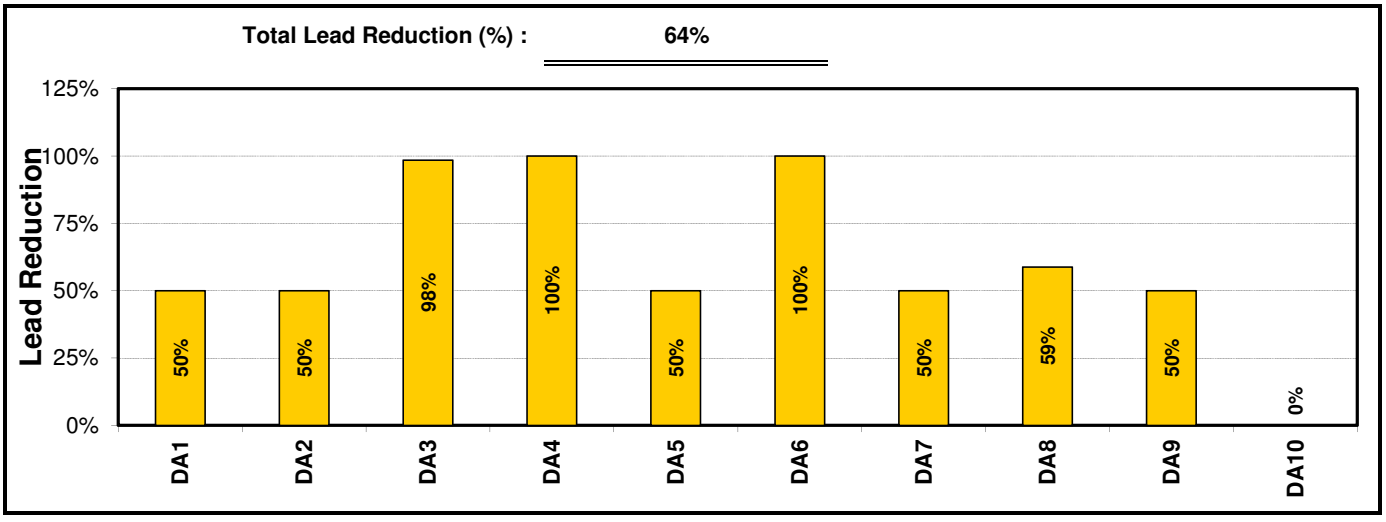
Supplemental Information on Other Pollutants of Concern

These estimated pollutant reductions are provided to assist local governments and other entities in assessing the performance of stormwater controls on other pollutants of concern including total phosphorus (TP), biochemical oxygen demand (BOD) and lead.







Structural Stormwater Control Reduction Efficiencies for Other Pollutants[1]

Structural Control	TP Removal (%)	Lead Removal (%)	BOD Removal (%)

General Application Structural Stormwater Controls			
Stormwater Pond New Underground Detention & Crystal Stream Unit	50	50	50
Stormwater Wetland	40	50	50
Bioretention Area	60	80	50
Sand Filter	50	50	60
Infiltration Trench	60	90	80
Enhanced Swales	50	40	50
Limited Application Structural Stormwater Controls			
Filter Strip	20	40	40
Grass Channel	25	30	40
Organic Filter	60	75	60
Underground Sand Filter	50	50	60
Submerged Gravel Wetland	50	50	50
Gravity (Oil-Grit) Separator	5	NA	NA
Porous Concrete**	50	60	NA
Modular Porous Paver System**	80	90	NA
Alum Treatment System	80	75	60
Proprietary Structural Control***	NA	NA	NA
Detention Structural Stormwater Controls			
Dry Detention / Dry ED Basin Ex Underground Detention Vault	25	50	40
Multi-Purpose Detention Area	25	50	40
Underground Detention	NA	NA	NA

Notes:

**** Due to the potential for clogging, porous concrete and modular block paver systems should not be used for the removal of sediment or other coarse particulate pollutants.**

***** The performance of specific proprietary commercial devices and systems must be provided by the manufacturer and should be verified by independent third-party sources and data.**

[1] Reduction Efficiencies for TP, Lead and BOD are based on the following sources. It is up to the local governments to modify/fill in updated information.

Atlanta Regional Commission, 2001. Georgia Stormwater Management Manual, Volume 2--Technical Handbook.

England, Gordon, 2001. The Use of Ponds for BMPs. Stormwater Magazine, July 2001. Forrester Publications.

Schueler, Thomas R., 1987. Controlling Urban Runoff: A practical manual for planning and designing urban BMPs, Metropolitan Washington Council of Governments, Washington, DC.

Schueler, Thomas R., 1992. Design of Stormwater Wetland Systems: guidelines for creating diverse and effective stormwater wetlands in the mid-Atlantic Region, Metropolitan Washington Council of Governments, Washington, DC.

Schueler, T. R., Kumble, P. A., Heraty, M.A., 1992. A Current Assessment of Urban Best Management Practices, Metropolitan Washington Council of Governments, Washington, DC.

Strecker, Eric, 1995. The Use of Wetlands for Stormwater Pollution Control. Presented at the National Conference on Urban Runoff Management, March 30 to April 2, 1993, Chicago, IL

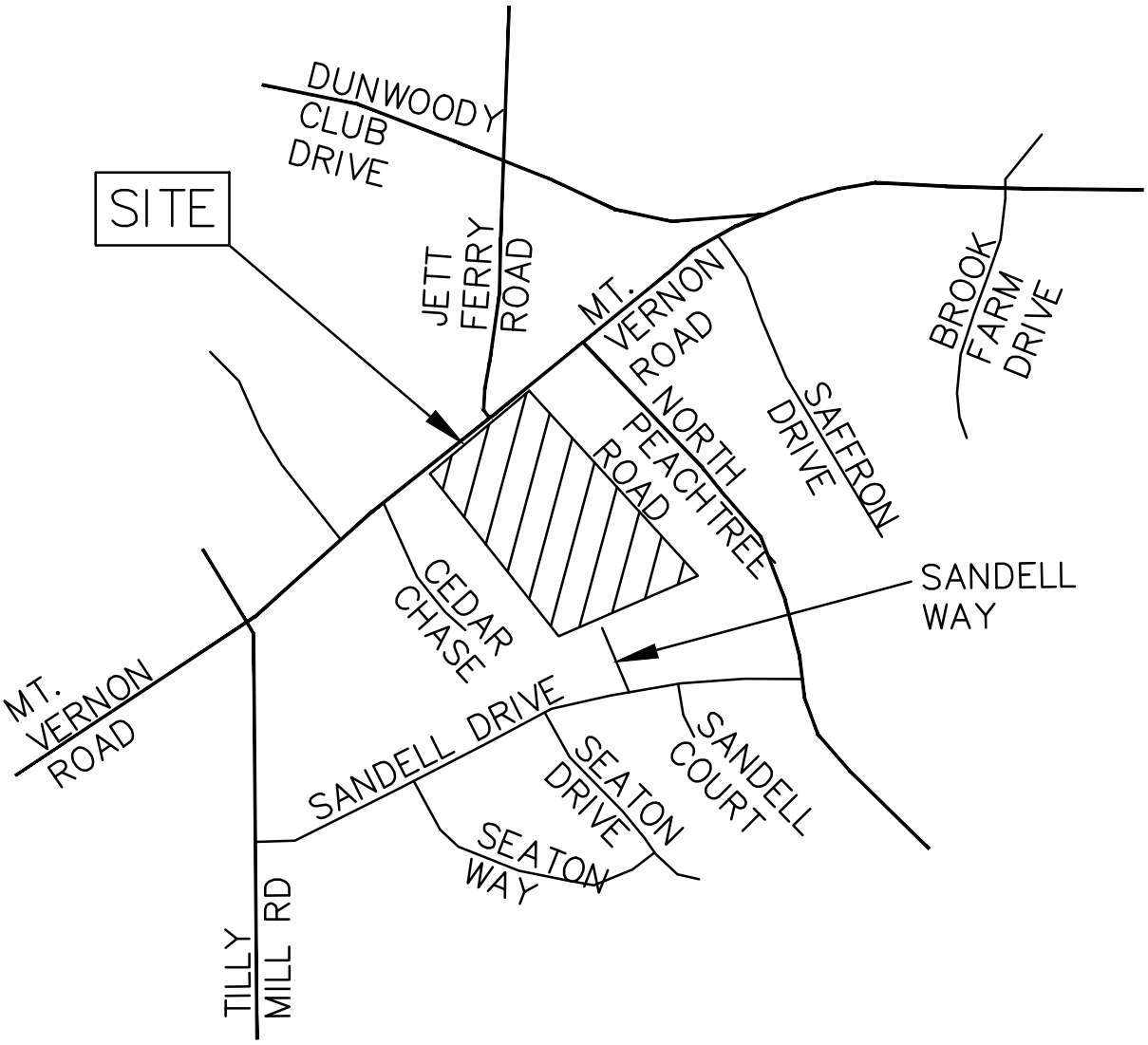
USEPA, 1992. Guidance Specifying Management Measures For Sources of Nonpoint Pollution In Coastal Waters, Office of Water, United States Environmental Protection Agency, EPA 840-B-92-002.

USEPA, 1996. Municipal Wastewater Management Fact Sheets: Storm Water Best Management Practices, Municipal Technology Branch, United States Environmental Protection Agency, Washington, DC, EPA 832-F-96-001

USEPA, 1993. Guidance Specifying Management Measures For Sources of Nonpoint Pollution In Coastal Waters, Office of Water, United States Environmental Protection Agency, EPA 840-B-92-002.

Appendix C Reference Maps

- Location Map
- FEMA flood map
- USGS Quad map
- USDA Soil Survey
- GSWM Soil Series



LOCATION MAP

NOT TO SCALE

tional Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

00 0 1000 2000

FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0010J

FIRM

FLOOD INSURANCE RATE MAP

DEKALB COUNTY, GEORGIA
AND INCORPORATED AREAS

PANEL 10 OF 201

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DUNWOODY, CITY OF	130679	0010	J

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
13089C0010J

MAP REVISED
MAY 16, 2013

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

USGS QUAD MAP

Soil Map—DeKalb County, Georgia

MAP LEGEND

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

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: DeKalb County, Georgia
Survey Area Data: Version 7, Sep 19, 2014

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

Date(s) aerial images were photographed: Dec 28, 2011—Jan 15, 2012

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

Map Unit Legend

DeKalb County, Georgia (GA089)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
CeC	Cecil sandy loam, 6 to 10 percent slopes	0.2	0.2%
CuC	Cecil-Urban land complex, 2 to 10 percent slopes	35.1	27.1%
MdC	Madison sandy loam, 6 to 10 percent slopes	8.3	6.4%
MdE	Madison sandy loam, 15 to 30 percent slopes	3.9	3.0%
MfC2	Madison sandy clay loam, 2 to 10 percent slopes, eroded	6.6	5.1%
MfD2	Madison sandy clay loam, 10 to 15 percent slopes, eroded	3.3	2.5%
PfC	Pacolet sandy loam, 2 to 10 percent slopes	1.0	0.8%
PfD	Pacolet sandy loam, 10 to 15 percent slopes	2.6	2.0%
PfE	Pacolet sandy loam, 15 to 30 percent slopes	2.5	1.9%
PgC2	Pacolet sandy clay loam, 2 to 10 percent slopes, eroded	2.2	1.7%
PgD2	Pacolet sandy clay loam, 10 to 15 percent slopes, eroded	2.7	2.1%
PuE	Pacolet-Urban land complex, 10 to 25 percent slopes	54.2	41.9%
Ud	Urban land	6.8	5.3%
Totals for Area of Interest		**129.4**	**100.0%**

SOIL SERIES INTERPRETATIONS

ESTIMATED SOIL PROPERTIES										LIMITATION OF SOILS FOR URBAN USES					
				CORROSIVITY		DEPTH TO:									
SOIL SERIES	PERMEABILITY (In./Hrs.)	SOIL REACTION (pH)	SHRINK-SWELL POTENTIAL	STEEL	CONCRETE	WATER TABLE (Ft.)	BEDROCK (In.)	FLOOD FRE-QUENCY	HYDRO-GROUP	SEPTIC TANK ABSORPTION FIELDS	SEWAGE LAGOON AREAS	SHALLOW EXCAVATIONS	DWELLINGS *w/basement #w/o basement	SMALL COMMERCIAL BUILDINGS	LOCAL ROADS AND STREETS
BRASSTOWN	0.6-2.0	4.5-6.0	Low	Mod.	High	>6.0	40-60	None	B	2-8%:M;r,pk 8-15%:M;r,pk,s 15+%:S;s	2-7%:M;r,s 7+%:S;s	2-8%:L 8-15%:M;s 15+%:S;s	2-8%:L 8-15%:M;s 15+%:S;s	2-4%:L 4-8%:M;s 8+%:S;s	2-8%:M;b 8-15%:M;b,s 15+%:S;s
BREVARD	0.6-2.0	4.5-6.0	Low	Mod.	Mod.	>6.0	>60	None	B	2-8%:L 8-15%:M;s 15+%:S;s	2-7%:M;p,s 7+%:S;s	2-8%:L 8-15%:M;s 15+%:S;s	2-8%:L 8-15%:M;s 15+%:S;s	2-4%:L 4-8%:M;s 8+%:S;s	2-8%:L 8-15%:M;s 15+%:S;s
BROOKMAN	0.06-0.2	4.5-7.8	Mod.	Mod.	Mod.	0-1.0	>60	None Rare Occ Freq	D	None, Rare:S;w,pk Occ,Freq:S;f,w,pk	L	S;w	None:S;w Rare,Occ,Freq:S; f,w	None:S;w Rare,Occ,Freq:S; f,w	None,Rare:S;b,w Occ,Freq:S;f,w,b
BUNCOMBE	6.0-20	4.5-6.0	Low	Low	Mod.	>6.0	>60	Rare Occ Freq	A	Rare:S;pf Occ,Freq:S;f,pf	S;p,f	S;cc	S;f	S;f	Rare:M;f Occ,Freq:S;f
BURTON	0.6-6.0	3.6-6.0	Low	High	High	>6.0	20-40	None	B	5-%:S;r 15+%:S;r,s	5-7%:S;p,r 7+%:S;p,r,s	5-15%:S;r 15+%:S;r,s	5-15%:M;r# 5-15%:S;r* 15+%:S;s#,r*	5-8%:M;s,r 8+%:S;s	5-8%:M;r 8-15%:M;s,r 15+%:S;s
CAHABA	0.6-2.0	4.5-6.0	Low	Mod.	Mod.	>6.0	>60	None Rare Occ	B	None:L Rare:M;f Occ:S;f	None,Rare:S;P Occ:S;p,f	S;cc	None:L Rare,Occ:S;f	None:L Rare:Occ:S;f	None:L Rare:M;f Occ:S,f
CAINHOY	<0.06	6.6-8.4	High	High	High	+1-1.0	>60	Freq	A	S;pf	0-7%:S;p 7+%:S;p,s	S;cc	0-8%:L 8-10%:M;s	0-4%:L 4-8%:M;s 8+%:S;s	0-8%:L 8-10%:M;s
CAPE FEAR	0.06-0.2	4.5-6.0	Mod.	High	High	0-1.5	>60	None Rare	D	S;w,pk	None:S;p,w Rare:S;p,w,f	S;w	None:S;w Rare:S;w,f	None:S;w Rare:S;w,f	S;b,w
CAPERS	<0.06	6.6-8.4	High	High	High	+1-1.0	>60	Freq	D	S;w,f,pk	S;f,w	S;f,w	S;f,w,ss	S;f,w,ss	S; f,b,w
CAPSHAW	0.06-0.2	5.1-7.8	Mod.	High	Mod.	3.5-5.0	48>60	None	C	S;pk	0-2%:M;r 2-7%:M;s,r 7+%:S;s	M;r,w,cl	0-8%:M;ss# 8-12%:M;ss,s# M;ss,w*r	0-4%:M;ss 4-8%:M;s,ss 8+%:S;s	S;b
CARNEGIE	0.2-0.6	4.5-5.5	Low	Low	Mod.	>6.0	>60	None	C	S;pk	2-7%:M;s 7+%:S;s	2-8%:M;cl,d 8-12%:M;s,cl,d	2-8%:M;s 8-12%:M;s	2-8%:M;s 8-12%:S;s	0-8%:M;b 8-12%:M;s,b
CARTECAY	2.0-6.0	5.1-6.5	Low	Low	Mod.	0.5-1.5	>60	Occ Freq	C	S;w,f	S;w,p,f	S;w,cc	S;f,w	S;f,w	S;f,w
CATASKA	2.0-20	4.5-5.5	Low	Low	Mod.	>6.0	20-40	None	D	10-15%:S;r 15+%:S;r,s	S;p,r,s	10-15%:S;r 15+%:S;r,s	10-15%:M;s,r# 10-15%:S;r* 15+%:S;s#r*	S;s	10-15%:M;r,s 15+%:S;s
CECIL	0.6-0.2	4.5-5.5	Low	Mod.	Mod.	>6.0	>60	None	B	0-8%:M;pk 8-15%:M;pk,s 15+%:S;s	0-2%:M;p 2-7%:M;p,s 7+%:S;s	0.8%:M;cl 8-15%:M;cl,s 15+%:S;s	0-8%:L 8-15%:M;s 15+%:S;s	0-4%:L 4-18%:M;s 8+%:S;s	0-8%:M;b 0-15%:M;b,s 15+%:S;s
CEDARBLUFF	0.06-0.2	5.1-6.0	Mod.	High	Mod.	0.5-1.0	>60	Freq	C	S;f,pk,w	L	S;w	S;f,w	S;f,w	S;f,w,b
CENTENARY	2.0-0.6	4.5-6.0	Low	Mod.	High	3.5-5.0	>60	None	A	S;w,p,f	S;p	S;cc	M;w* L#	L	L
CHANDLER	2.0-0.6	4.5-6.0	Low	Low	High	>6.0	>60	None	B	S;s	S;s	S;s	S;s	S;s	S;s,b

SOIL SERIES INTERPRETATIONS

ESTIMATED SOIL PROPERTIES										LIMITATION OF SOILS FOR URBAN USES					
				CORROSIVITY		DEPTH TO:									
SOIL SERIES	PERMEABILITY (In./Hrs.)	SOIL REACTION (pH)	SHRINK-SWELL POTENTIAL	STEEL	CONCRETE	WATER TABLE (Ft.)	BEDROCK (In.)	FLOOD FRE-QUENCY	HYDRO-GROUP	SEPTIC TANK ABSORPTION FIELDS	SEWAGE LAGOON AREAS	SHALLOW EXCAVATIONS	DWELLINGS *w/basement #w/o basement	SMALL COMMERCIAL BUILDINGS	LOCAL ROADS AND STREETS
LOWNDES	0.6-2.0	4.5-6.0	Low	Mod.	High	>6.0	>60	None	B	5-8%:M;pk 8-15%:M;s,pk 15+%:S;s	5-7%:S;p 7+%:S;s,p	5-15%:S;cc 15+%:S;s,cc	15+%:S;s 5-8%:L 8-15%:M;s 15+%:S;s	5-8%:M;s 8+%:S;s	5-8%:L 8-15%:M;s 15+%:S;s
LUCY	0.6-2.0	4.5-5.5	Low	Low	High	>6.0	>60	None	A	0-8%:L 8-15%:M;s 15+%:S;s	0-7%:S;p 7+%:S;p,s	0-8%:M;cc 8-15%:M;s,cc 15+%:S;s	0-8%:L 8-15%:M;s 15+%:S;s	0-4%:L 4-8%:M;s 8+%:S;s	0-8%:L 8-15%:M;s 15+%:S;s
LUMBEE	0.6-2.0	4.5-5.5	Low	High	High	0-1.5	>60	Rare Occ Freq	B/D	Rare:S;w Occ,Freq:S;w,f	Rare:S;p,w Occ,Freq:S;p,w,f	S;w,cc	S;w,f	S;w,f	Rare:S;w Occ,Freq:S;w,f
LYERLY	<0.06	4.5-7.3	High	High	Mod.	>6.0	20-40	None	D	S;pk,r	1-7%:S;r 7+%:S;s,r	S;r	S;ss S;r,ss	1-8%:S;ss 8+%:S;s,ss	S;ss,b
LYNCHBURG	0.6-2.0	3.6-5.5	Low	High	High	0.5-1.5	>60	None	C	S;w	S;w	S;w	S;w	S;w	S;w
LYNN HAVEN	0.6-6.0	3.6-5.5	Low	High	High	0-1.0	>60	None	B/D	S;w,pf	S;p,w	S;cc,w	S;w	S;w	S;w
MADISON	0.6-2.0	4.5-6.0	Low	High	Mod.	>6.0	>60	None	B	2-8%:M;pk 8-15%:M;pk,s 15+%:S;s	2-7%:M;p 7+%:S;s	2-8%:M;cl 8-15%:M;cl,s 15+%:S;s	2-8%:L 8-15%:M;s 15+%:S;s	2-4%:L 4-8%:M;s 8+%:S;s	0-15%:S;b 15+%:S;s:b
MANDARIN	0.6-2.0	3.6-7.3	Low	Mod.	High	1.5-3.5	>60	None	C	S;w,pf	S;pw	S;cc,w	M;w# S;w*	M;w	M;w
MARLBORO	0.6-2.0	4.5-6.0	Low	High	High	>6.0	>60	None	B	0-8%:M;pk 8-15%:M;pk,s	0-2%:M;p 2-7%:M;s,p 7+%:S;s	0-8%:M;cl 8-15%:M;cl,s	0-8%:L 8-15%:M;s	0-4%:L 4-8%:M;s 8-15%:S;s	0-8%:M;b 8-15%:M;b,s
MASADA	0.6-2.0	4.5-5.5	Mod.	Mod.	High	>6.0	>60	None	C	0-8%:M;pk 8-15%:M;pk,s 15+%:S;s	0-2%:M;p 2-7%:M;p,s 7+%:S;s	0-8%:M;cl 8-15%:M;cl,s 15+%:S;s	0-8%:M;ss 8-15%:M;ss,s 15+%:S;s	0-4%:M;ss 4-8%:M;s,ss 8+%:S;s	0-15%:S;b 15+%:S;b,s
MASCOTTE	0.6-2.0	3.6-5.5	Low	High	High	0-1.0	>60	None	B/D	S;w,pf	S;w,p	S;w,cc	S;w	S;w	S;w
MAXTON	0.6-2.0	4.5-5.5	Low	Mod.	Mod.	>6.0	>60	None Rare	B	L	S;p	S;cc	None:L Rare:S;f	0-4%:None:L 4-8%:None:M;s Rare:S;f	None:L Rare:M;f
MECKLENBURG	0.06-0.2	5.6-7.3	Mod.	High	Mod.	>6.0	>48	None	C	2-15%:S;pk 15+%:S;s,pk	2-7%:M;s,r,p 7+%:S;s	2-8%:M;cl 8-15%:M;cl,s 15+%:S;s	2-8%:S;ss 8-15%:M;ss,s 15+%:S;s	2-4%:M;ss 4-8%:M;ss,s 8+%:S;s	2-15%:S;b 15+%:S;s,b
MEGGETT	0.06-0.2	5.1-8.4	High	High	Mod.	0-1.0	>60	None Rare Occ Freq	D	None,Rare:S;pk,w Occ,Freq:S;pk,w,f	None,Rare:S;w Occ,Freq:S;w,f	S;w	None:S;w,ss Occ,Freq:S;f,w,ss	None:S;w,ss Occ,Freq:S;f,w,ss	None:Rare:S;w,ss Occ,Freq:S;f,w,ss
MINVALE	0.6-2.0	4.5-5.5	Low	Mod.	Low	>6.0	>60	None	B	2-8%:M;pk 8-15%:M;s,pk 15+%:S;s	2-7%:M;s,p 7+%:S;s	2-8%:L 8-15%:S;s 15+%:S;s	2-8%:L 8-15%:M;s 15+%:S;s	2-4%:L 4-8%:M;s 8+%:S;s	2-8%:M;b 8-15%:M;b,s 15+%:S;s
MOLENA	6.0-2.0	4.5-6.0	Low	Low	High	>6.0	>60	None Rare	A	0-15%:S;pf 15+%:S;pf,s	0-7%:S;p 7+%:S;s	0-15%:S;cc 15+%:S;cc,s	0-8%:None:L 8-15%:None:M;s 15+%:None:S;s 0-15%:Rare:S;f 15+%:Rare:S;f,s	0-4%:L 4-8%:M;s 8-15%:S;s Rare:S;f	0-8%:L 8-15%:M;s 15+%:S;s Rare:M;f
MONTEVALLO	0.6-2.0	4.5-6.0	Low	Mod.	Mod.	>6.0	10-20	None	D	2-15%:S;r 15+%:S;s,r	2-7%:S;r 7+%:S;s,r	2-15%:S;r 15+%:S;s,r	2-8%:M;r# 8-15%:S;s,r# 15+%:S;s 2-15%:S;r*	2-4%:M;r 4-8%:M;r,s 8+%:S;s	2-8%:M;r 8-15%:M;s,r 15+%:S;s

SOIL SERIES INTERPRETATIONS

ESTIMATED SOIL PROPERTIES										LIMITATION OF SOILS FOR URBAN USES					
				CORROSIVITY		DEPTH TO:									
SOIL SERIES	PERMEABILITY (In./Hrs.)	SOIL REACTION (pH)	SHRINK-SWELL POTENTIAL	STEEL	CONCRETE	WATER TABLE (Ft.)	BEDROCK (In.)	FLOOD FRE-QUENCY	HYDRO-GROUP	SEPTIC TANK ABSORPTION FIELDS	SEWAGE LAGOON AREAS	SHALLOW EXCAVATIONS	DWELLINGS *w/basement #w/o basement	SMALL COMMERCIAL BUILDINGS	LOCAL ROADS AND STREETS
OSIER	6.0-2.0	3.6-6.0	Low	High	High	0-1.0	>60	None Rare Occ Freq	A/D	None, Rare:S;w,pf Occ, Freq:S;w,f,pf	None,Rare:S;w,p Occ,Freq:S;w,f,p	S;w,cc	None:S;w Rare,Occ,Freq:S;w,f	None:S;w Rare,Occ,Freq:S;w,f	None:Rare:S;w Occ,Freq:S;w,f
OUSLEY	6.0-20	4.5-5.5	Low	Low	High	1.5-3.0	>60	Occ Freq	C	S;f,w,pf	S;f,p,w	S;cc,w	S;f# S;f,w*	S;f	S;f
PACOLET	0.6-2.0	4.5-6.0	Low	High	High	>6.0	>60	None	B	2-8%:M;pk 8-15%:M;s,pk 15+%:S;s	2-7%:M;s,p 7+%:S;s	2-8%:M;cl 8-15%:M;s,cl 15+%:S;s	2-8%:L 8-15%:M;s 15+%:S;s	2-4%:L 4-8%:M;s 8+%:S;s	2-8%:M;b 8-15%:M;s,b 15+%:S;s
PASQUATANK	0.6-2.0	4.5-5.5	Low	High	Mod.	1.0-2.0	>60	None	B/D	S;w	S;w,p	S;w	S;w	S;w	M;w
PELHAM	0.6-2.0	3.6-5.5	Low	High	High	0-1.0	>60	None Rare Occ Freq	B/D	None, Rare:S;w Occ, Freq:S;w,f	None,Rare:S;w,p Occ,Freq:S;w,f,p	S;w,cc	None:S;w Rare,Occ,Freq:S;w,f	None:S;w Rare,Occ,Freq:S;w,f	None:Rare:S;w Occ,Freq:S;f,w
PELION	.06-0.6	3.6-5.5	Low	High	High	1.0-2.5	>60	None	B/D	S;pk,w	0-7%:S;w 7+%:S;s	S;w	S;w	0-8%:S;w 8+%:S;s,w	0-8%:M;w 8-15%:M;w,s
PERSANTI	0.06-0.2	3.6-5.5	Mod.	High	High	2.0-3.5	>60	None	C	S;w,pk	0-2%:L 2-6%:M;s	S;w	M;ss,w# S;w*	0-4%:M;w,ss 4-6%:M;w,ss,s	M;b,ss,w
PICKNEY	6.0-20	3.6-6.0	Low	High	High	+1-1.0	>60	None	A/D	S;w,pf	S;w,p	S;w,cc	S;w	S;w	S;w
PLUMMER	0.6-2.0	3.6-5.5	Low	Mod.	High	0-1.0	>60	None Rare Occ Freq	B/D	None, Rare:S;w,pf Occ, Freq:S;w,f,pf	None,Rare:S;w,p Occ,Freq:S;w,f,p	S;w,cc	None:S;w Rare,Occ,Freq:S;w,f	None:S;w Rare,Occ,Freq:S;w,f	None:Rare:S;w Occ,Freq:S;w,f
POINDEXTER	0.6-2.0	5.1-7.3	Low	Mod.	Mod.	>6.0	20-40	None	B	2-15%:S;r 15+%:S;r,s	2-7%:S;p,r 7+%:S;p,r,s	2-8%:M;r 8-15%:M;r,s 15+%:S;s	2-8%:L#* 8-15%:M;s# 8-15%:M;s,r* 15+%:S;s	2-4%:L 4-8%:M;s 8+%:S;s	2-8%:L 8-15%:M;s 15+%:S;s
PONZER	0.06-2.0	3.6-7.8	Low	High	High	0-1.0	>60	None Rare Occ Freq	D	Rare:S;w,pk Occ, Freq:S;f,w,pk	S;f,w,h	S;h,w	S;f,w,b	S;w,f,b	Rare:S;w,b Occ,Freq:S;f,w,b
POOLER	0.06-0.2	3.6-5.5	Mod.	High	High	0-1.0	>60	None	D	S;pk,w	L	S;w	S;w	S;w	S;w,b
PORTERS	2.0-6.0	4.5-6.0	Low	Low	High	>6.0	40-60	None	B	8-15%:M;r,s 6-8%:M;r 15+%:S;s	S;s,p	6-8%:M;r 8-15%:M;r,s 15+%:S;s	6-8%:L# 8-15%:M;s# 6-15%:M;r,s* 15+%:S;s	6-8%:M;s 8+%:S;s	6-8%:L 8-15%:M;s
PORTSMOUTH	0.6-2.0	3.6-6.0	Low	High	High	0-1.0	>60	None	B/D	S;w,pf	S; w,p	S;w,cc	None:S;w Rare:S;w,f	None:S;w Rare:S;w,f	S;w
POTTSBURG	0.6-2.0	3.6-6.0	Low	High	High	0-1.0	>60	None Rare Occ	B/D	None,Rare:S;w,pf Occ:S;f,w,pf	None,Rare:S;w Occ:S;p,f,w,	S;w,cc	None:S;w Rare,Occ:S;f,w	None:S;w Rare,Occ:S;f,w	None,Rare:S;w Occ:S;w,f
RABUN	0.6-2.0	5.1-6.5	Low	High	Mod.	>6.0	>60	None	B	2-8%:M;pk 8-15%:M;s,pk 15+%:S;s	2-7%:M;s,p 7+%:S;s	2-8%:M;cl 8-15%:M;cl,s 15+%:S;s	2-8%:L 8-15%:M;s 8+%:S;s	2-4%:L 4-8%:M;s 8+%:S;s	2-8%:M;b 8-15%:M;s,b 15+%:S;s
RAINS	0.6-2.0	3.6-5.5	Low	High	High	0-1.0	>60	None Rare Occ Freq	B/D	None,Rare:S;w Occ,Freq:S;f,w	None,Rare:S;w Occ,Freq:S;w,f	S;w	None:S;w Rare,Occ,Freq:S;w,f	None:S;w Rare,Occ,Freq:S;w,f	None,Rare:S;w Occ,Freq:S;w,f

Appendix D Drainage Maps

- Pre Development Drainage Map
- Post Development Drainage Map
- Downstream Analysis Drainage Map

OFFSITE TO BASIN 1
D.A. = 0.02 AC
0.01 AC @ CN 98
0.01 AC @ CN 61

BASIN 4
TIME OF CONCENTRATION
100 LF PAVED SHEET FLOW
(1110.5-1104) / 100 = 6.5%

OFFSITE TO BASIN 4
D.A. = 0.18 AC
0.01 AC @ CN 98
0.17 AC @ CN 61

OFFSITE BASIN 4
TIME OF CONCENTRATION
24 LF LANDSCAPED SHEET FLOW
(1118 - 1114) / 24 =17%

BASIN 4
TIME OF CONCENTRATION
454 LF GUTTER FLOW
(1104-1088) / 454 = 3.5%

BASIN 5
TIME OF CONCENTRATION
55 LF LANDSCAPED SHEET FLOW
(1113 - 1098) / 55 = 27%

OFFSITE TO BASIN 5
D.A. = 0.36 AC
0.22 AC @ CN 98
0.14 AC @ CN 61

OFFSITE BASIN 5
TIME OF CONCENTRATION
245 LF PIPE FLOW
(1101-1082) / 245 = 7.8%

OFFSITE BASIN 5
TIME OF CONCENTRATION
50 LF PAVED SHEET FLOW
(1109.5-1104) / 50 = 11%

TIME OF CONCENTRATION
100 LF PAVED SHEET FLOW
(1109-1101) / 100 = 8.0%

TIME OF CONCENTRATION
238 LF GUTTER FLOW
(1101-1090) / 238 = 4.6%

BASIN 1
D.A. = 5.48 AC
2.51 AC @ CN 98
0.83 AC @ CN 61
2.14 AC @ CN 55

BASIN 3B
TIME OF CONCENTRATION
45 LF LANDSCAPED SHEET FLOW
(1106 - 1100.5) / 45 =12%

BASIN 3A
TIME OF CONCENTRATION
100 LF PAVED SHEET FLOW
(1092.5-1089) / 100 = 3.5%

BASIN 1
TIME OF CONCENTRATION
672 LF SHALLOW CHANNEL
FLOW PATH THROUGH WOODS
(1078-1047) / 672 =4.6%

BASIN 5
TIME OF CONCENTRATION
144 LF GUTTER FLOW
(1098-1088) / 144 = 6.9%

BASIN 5
D.A. = 0.48 AC
0.27 AC @ CN 98
0.21 AC @ CN 61

BASIN 5
STUDY POINT

BASIN 4
TIME OF CONCENTRATION
113 LF SHALLOW CHANNEL
FLOW PATH THROUGH WOODS
(1088-1074) / 113 = 12.4%

BASIN 4
D.A. = 2.17 AC
0.90 AC @ CN 98
0.68 AC @ CN 61
0.59 AC @ CN 55

BASIN 4
STUDY POINT

BASIN 3B
D.A. = 1.49 AC
0.46 AC @ CN 98
0.20 AC @ CN 61
0.83 AC @ CN 55

BASIN 3B
TIME OF CONCENTRATION
300 LF GUTTER FLOW
(1100-1090.5) / 300 = 3.2%

BASIN 3B
TIME OF CONCENTRATION
168 LF SHALLOW CHANNEL
FLOW PATH THROUGH WOODS
(1090.5-1064) / 168 = 15.8%

BASIN 3B
STUDY POINT

BASIN 3A
D.A. = 1.46 AC
1.02 AC @ CN 98
0.25 AC @ CN 61
0.19 AC @ CN 55

BASIN 3A
STUDY POINT

BASIN 3A
TIME OF CONCENTRATION
72 LF POND/PIPE FLOW
(1072-1066) / 72 = 8.3%

BASIN 2
STUDY POINT

BASIN 2
D.A. = 0.14 AC
0.14 AC @ CN 55

BASIN 2
TIME OF CONCENTRATION
SHEET FLOW THROUGH WOODS
62 LF @ 16%

BASIN 3A
TIME OF CONCENTRATION
328 LF GUTTER FLOW
(1089-1072) / 328 = 5.2%

BASIN 1
STUDY POINT

JETT FERRY ROAD

MOUNT VERNON ROAD (RIGHT-OF-WAY VARIES)

CEDAR CHASE (50' R/W)

SANDELL WAY (60' R/W)

APPROXIMATE LAND LOT LINE

TBM= OPERATION NUT ON FIRE HYDRANT ELEV.=1098.62

EX. BUILDING "A"

EX. BUILDING "B"

TRACT 1
N/F
ARCHBISHOP ROMAN CATHOLIC ARCHDIOCESE ATLANTA
DEED BOOK 2623, PAGE 157
ZONING: R-100

1-STORY STONE & STUCCO W/ BASEMENT

1-STORY STONE & FRAME W/ BASEMENT

NORTH

SCALE: 1" = 40'

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Project # 2014-0001

NEW CONSTRUCTION FOR:

ALL SAINTS CATHOLIC CHURCH

2443 MOUNT VERNON ROAD, DUNWOODY, GEORGIA 30338

KEY

DRAWINGS PUBLISHED

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PROJECT 13002
NAME ALL SAINTS CATHOLIC CHURCH
FILE <DRAWING>.DWG

SHEET TITLE
PRE DEVELOPED DRAINAGE MAP

SHEET
HY 1

OFFSITE BASIN 1
D.A. = 0.28 AC
0.24 AC @ CN 98
0.04 AC @ CN 61

OFFSITE BASIN 1
TIME OF CONCENTRATION
133 LF GUTTER FLOW
(1116.8 - 1114.3) /133 = 1.9%

BASIN 4
TIME OF CONCENTRATION
180 LF GUTTER FLOW
(1102-1091) / = 6.1%

OFFSITE BASIN 1
TIME OF CONCENTRATION
24 LF LANDSCAPED SHEET FLOW
(1118 - 1114) / 24 =17%

OFFSITE BASIN 4
D.A. = 0.07 AC
0.02 AC @ CN 98
0.05 AC @ CN 61

OFFSITE BASIN 4
TIME OF CONCENTRATION
24 LF LANDSCAPED SHEET FLOW
(1118 - 1114) / 24 =17%

BASIN 5
TIME OF CONCENTRATION
55 LF LANDSCAPED SHEET FLOW
(1113 - 1098) / 55 = 27%

OFFSITE TO BASIN 5
(NO CHANGE)
D.A. = 0.36 AC
0.22 AC @ CN 98
0.14 AC @ CN 61

OFFSITE BASIN 5
TIME OF CONCENTRATION
245 LF PIPE FLOW
(1101-1082) / 245 = 7.8%

OFFSITE BASIN 5
TIME OF CONCENTRATION
50 LF PAVED SHEET FLOW
(1109.5-1104) / 50 = 11%

BASIN 5
TIME OF CONCENTRATION
144 LF GUTTER FLOW
(1098-1088) / 144 = 6.9%

BASIN 5
(NO CHANGE)
TO EXISTING DETENTION VAULT
D.A. = 0.48 AC
0.27 AC @ CN 98
0.21 AC @ CN 61

BASIN 4 BYPASS
TIME OF CONCENTRATION
113 LF SHALLOW CHANNEL
FLOW PATH THROUGH WOODS
(1088-1074) / 113 = 12.4%

BASIN 4
TIME OF CONCENTRATION
100 LF PAVED SHEET FLOW
(1112 - 1102) / 100 = 10%

BASIN 5
STUDY POINT

BASIN 4 - BYPASS
D.A. = 0.34 AC
0.14 AC @ CN 61
0.20 AC @ CN 55

BASIN 4
STUDY POINT

BASIN 4 - TO DET. POND
D.A. = 1.89 AC
1.24 AC @ CN 98
0.65 AC @ CN 61

BASIN 3 BYPASS
TIME OF CONCENTRATION
100 LF SHEET FLOW THROUGH WOODS
(1080-1065) / 100 = 15%

BASIN 3 - BYPASS
D.A. = 0.98 AC
0.86 AC @ CN 55

BASIN 3
STUDY POINT

BASIN 3 - TO DET. POND 3
D.A. = 1.98 AC
1.71 AC @ CN 98
0.27 AC @ CN 61

BASIN 2
STUDY POINT

BASIN 3 TO DET. POND
TIME OF CONCENTRATION
180 LF PIPE FLOW
(1069.9-1069.0) / 180 = 0.5%

BASIN 2
TIME OF CONCENTRATION
SHEET FLOW THROUGH WOODS
62 LF @ 16%

BASIN 2 (NO CHANGE)
D.A. = 0.14 AC
0.14 AC @ CN 55

BASIN 3 TO DET. POND
TIME OF CONCENTRATION
239 LF GUTTER FLOW
(1089-1078) / 239 = 4.6%

TIME OF CONCENTRATION
100 LF ROOF SHEET FLOW
ASSUMED 1%

TIME OF CONCENTRATION
210 LF GUTTER FLOW
(1081.5-1077.5) / 210 = 1.9%

BASIN 1B - TO DET. POND 1B
D.A. = 0.64 AC
0.64 AC @ CN 98
0.00 AC @ CN 61

BASIN 1
STUDY POINT

TIME OF CONCENTRATION
325 LF GUTTER FLOW
(1105-1089) / 325 = 4.9%

TIME OF CONCENTRATION
100 LF PAVED SHEET FLOW
(1114.5 - 1105) / 100 = 9.5%

BASIN 1A
TIME OF CONCENTRATION
210 LF PIPE FLOW
(1081.55-1080.5) / 210 = 0.5%

BASIN 1A - TO DET. POND 1A
D.A. = 2.84 AC
2.16 AC @ CN 98
0.68 AC @ CN 61

BASIN 1 BYPASS
TIME OF CONCENTRATION
100 LF WOODED SHEET FLOW
(1089-1066) / 100 = 23%

BASIN 3 TO DET. POND
TIME OF CONCENTRATION
100 LF PAVED SHEET FLOW
(1092.5-1089) / 100 = 3.5%

BASIN 1 - BYPASS
D.A. = 1.93 AC
0.03 AC @ CN 98
1.90 AC @ CN 55

BASIN 1 BYPASS
TIME OF CONCENTRATION
368 LF SHALLOW CHANNEL
FLOW PATH THROUGH WOODS
(1066-1047) / 368 = 5.2%

MOUNT VERNON ROAD (RIGHT-OF-WAY VARIES)
JETT FERRY ROAD
CEDAR CHASE (50' R/W)
SANDELL WAY (60' R/W)
APPROXIMATE LAND LOT LINE
6TH LAND DISTRICT
16TH LAND DISTRICT
EXISTING RECTORY
NEW CHURCH WITH BASEMENT
NEW 2 STORY RELIGIOUS EDUCATION BUILDING WITH BASEMENT
NEW CHURCH BUILDING
NEW PARKING DECK
EXISTING GYM
CELL TOWER
N51°26'21"E 509.09'
N51°16'54"E 513.83'
S47°40'15"E 921.26'
951.94' (RDHI)
N48°09'26"E 162.87'
S66°16'13"W 176.85'
N35°48'55"W 636.76'
808.46' (RDHI)
S62°45'55"W 669.75'
40' REAR BSL
40' FRONT BSL
10' SIDE BSL
P&C
SSMH
CO
CB
DI
P

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MARIETTA, GA 30066
Project # 2014-0001

NEW CONSTRUCTION FOR:
ALL SAINTS CATHOLIC CHURCH
2443 MOUNT VERNON ROAD, DUNWOODY, GEORGIA 30338

KEY

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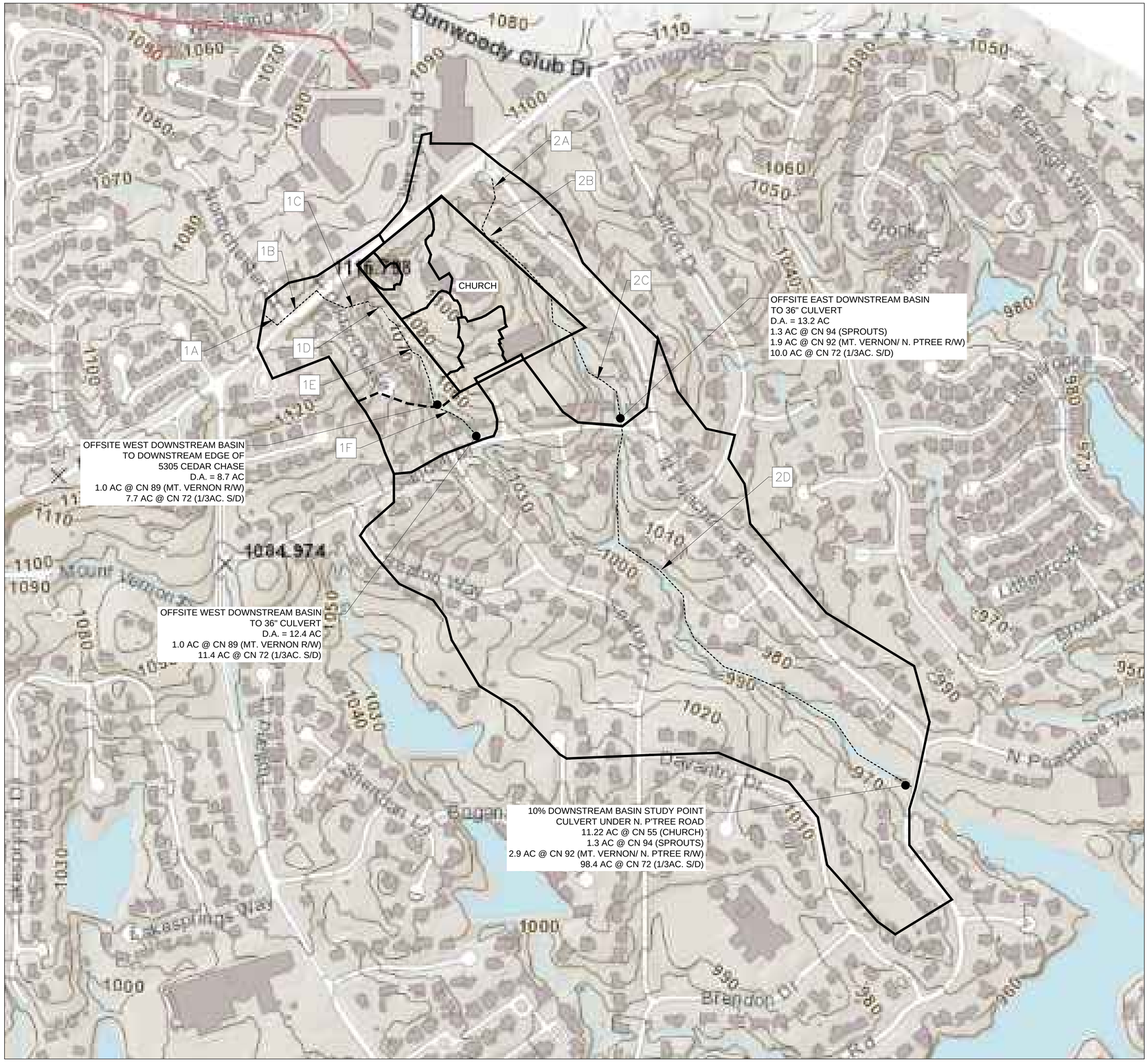
PROJECT 13002
NAME ALL SAINTS CATHOLIC CHURCH
FILE <DRAWING>.DWG

SHEET TITLE
POST DEVELOPED DRAINAGE MAP

SHEET
HY 2

40' 0' 40' 80' 120'
SCALE: 1" = 40'

NORTH



DOWNSTREAM STUDY POINT IS CULVERT AT NORTH PEACHTREE ROAD

11.22 AC CHURCH SITE
113.82 AC. DOWNSTREAM STUDY POINT

AT THIS STUDY POINT CHURCH IS LESS THAN 10% OF THE BASIN

FLOW PATH DESCRIPTION:

1A OVERLAND FLOW
85 LF OVER LANDSCAPE AREA
(1122-1117) / 85 = 5.9%

1B SHALLOW CONCENTRATED FLOW
250 LF GUTTER FLOW
(1117-1114) / 250 = 1.2%

1C CHANNEL FLOW
275 LF 15" PIPE FLOW
(1105.5-1082.0) / 275 = 8.5%

1D SHALLOW CONCENTRATED FLOW
145 LF UNPAVED
(1082-1072) / 145 = 6.9%

1E CHANNEL FLOW
(TO 5305 CEDAR CHASE)
485 LF STREAM CHANNEL
(1072-1043) / 485 = 6%

1F CHANNEL FLOW
TO EXISTING 36" CULVERT
260 LF STREAM CHANNEL
(1043-1033) / 260 = 1.2%

2A OVERLAND FLOW
100 LF OVER LANDSCAPE AREA
(1112-1098) / 100 = 14%

2B SHALLOW CONCENTRATED FLOW
855 LF NATURAL DITCH
(1098-1047) / 250 = 5.7%

2C CHANNEL FLOW
TO EXISTING 36" CULVERT
525 LF STREAM CHANNEL
(1047-1022) / 525 = 4.8%

2D CHANNEL FLOW
TO EX. NORTH P'TREE CULVERT
2440 LF STREAM CHANNEL
(1022-960) / 2440 = 2.5%

200' 0' 200' 400' 600'
SCALE: 1" = 200'

NORTH

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NEW CONSTRUCTION FOR:
ALL SAINTS CATHOLIC CHURCH
2443 MOUNT VERNON ROAD, DUNWOODY, GEORGIA 30338

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PROJECT 13002
NAME ALL SAINTS CATHOLIC CHURCH
FILE <DRAWING>.DWG

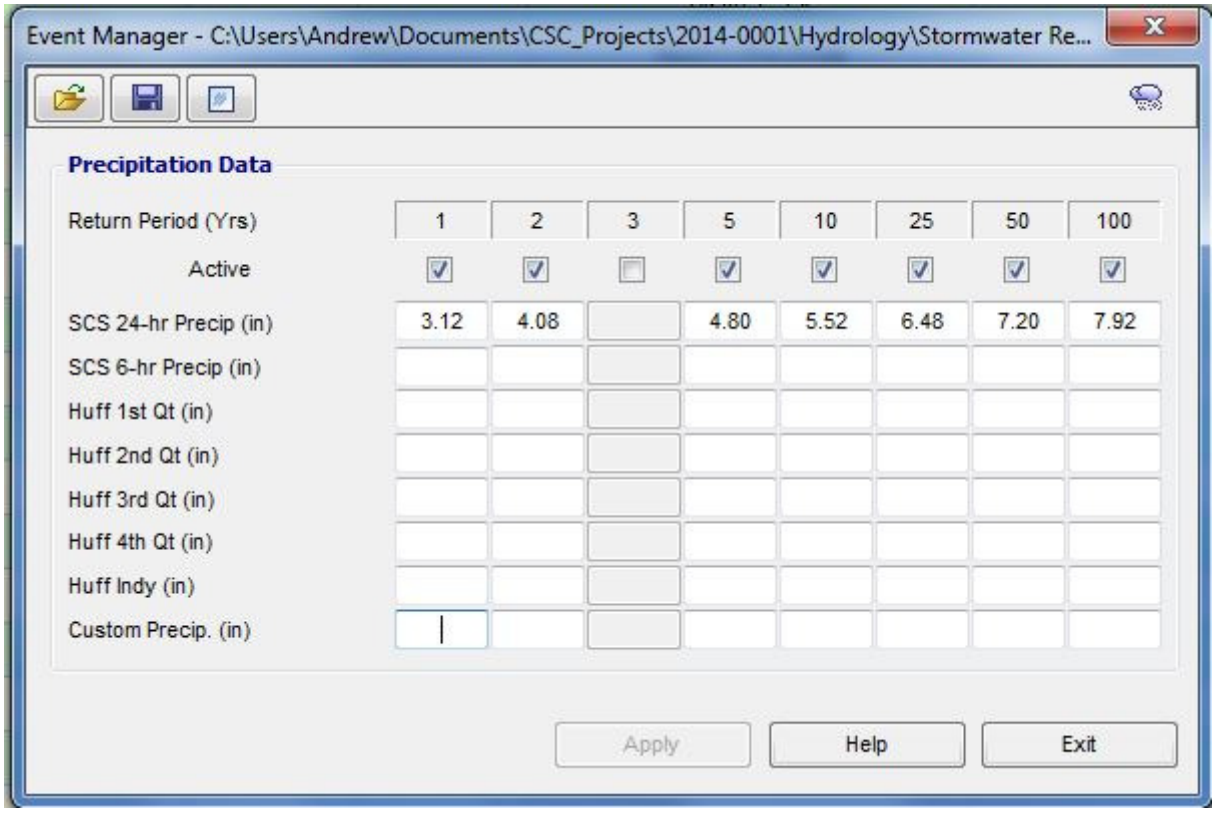
SHEET TITLE
DOWNSTREAM DRAINAGE MAP

SHEET
HY 3

Appendix E Hydraflow Computer Model Data

- Computer model rainfall table
- Hydrograph Summary
- Time of Concentration Calculations
- Hydrographs

Computer model of rainfall data: Source GSM - Roswell



Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	11.16	18.38	-------	24.10	29.99	37.98	44.08	50.25	Basin 1 - Ex
2	SCS Runoff	------	0.984	4.512	-------	7.976	12.01	17.95	22.73	27.75	Basin 1 - Pre Onsite
3	SCS Runoff	------	0.050	0.078	-------	0.100	0.122	0.152	0.174	0.197	Basin 1 - Ex Offsite
4	Combine	2, 3	1.022	4.586	-------	8.076	12.13	18.10	22.91	27.94	Basin 1 - Pre Study Pt
5	SCS Runoff	------	10.28	14.56	-------	17.77	20.96	25.20	28.37	31.52	Basin 1A - Onsite - To Pond 1A
6	SCS Runoff	------	1.153	1.571	-------	1.882	2.192	2.602	2.908	3.214	Basin 1 - Offsite-To Pond 1A
7	Combine	5, 6	11.44	16.13	-------	19.65	23.16	27.80	31.27	34.73	Basin 1A -Total to Pond 1A
8	Reservoir	7	0.371	0.673	-------	1.821	3.950	8.081	11.64	15.57	Basin 1A - Outflow
9	SCS Runoff	------	2.930	3.851	-------	4.539	5.227	6.143	6.830	7.516	Basin 1B - pond
10	Reservoir	9	0.246	0.378	-------	0.449	0.650	1.497	2.354	3.257	Basin 1B - outflow
11	SCS Runoff	------	0.357	1.475	-------	2.581	3.848	5.707	7.202	8.768	Basin 1 - Bypass
12	Combine	8, 10, 11	0.806	2.216	-------	3.709	7.271	14.05	19.89	26.47	Basin 1 - Post
14	SCS Runoff	------	0.004	0.063	-------	0.136	0.224	0.360	0.472	0.590	Basin 2 - Pre
15	SCS Runoff	------	0.004	0.063	-------	0.136	0.224	0.360	0.472	0.590	Basin 2 - Post
17	SCS Runoff	------	4.725	6.895	-------	8.544	10.20	12.39	14.03	15.67	Basin 3A - Ex
18	SCS Runoff	------	1.937	3.630	-------	5.031	6.509	8.561	10.14	11.75	Basin 3B - Ex
19	Combine	17, 18	6.662	10.51	-------	13.54	16.64	20.88	24.12	27.38	Basin 3A & 3B Ex
20	SCS Runoff	------	0.530	2.429	-------	4.294	6.466	9.661	12.24	14.94	Basin 3 - Pre
21	SCS Runoff	------	8.154	11.11	-------	13.31	15.50	18.40	20.57	22.73	Basin 3 - Pond
22	Reservoir	21	0.355	0.514	-------	1.188	2.332	4.543	6.598	8.982	Basin 3 - Outlfow
23	SCS Runoff	------	0.137	0.658	-------	1.193	1.815	2.731	3.472	4.249	Basin 3 - bypass
24	Combine	22, 23	0.413	1.078	-------	1.828	3.582	6.649	9.404	12.56	Basin 3 - Post
26	SCS Runoff	------	4.178	6.986	-------	9.226	11.54	14.68	17.07	19.51	Basin 4 - Ex
27	SCS Runoff	------	0.390	1.787	-------	3.159	4.756	7.107	9.002	10.99	Basin 4 - Pre
28	SCS Runoff	------	1.153	1.571	-------	1.882	2.192	2.602	2.908	3.214	Basin 4 - Offsite Ex
29	Combine	27, 28	1.421	3.294	-------	5.020	6.922	9.676	11.87	14.16	Basin 4 Pre - Study Point
30	SCS Runoff	------	5.880	8.662	-------	10.79	12.93	15.78	17.91	20.03	Basin 4 - onsite pond
31	SCS Runoff	------	0.112	0.198	-------	0.267	0.339	0.438	0.514	0.591	Basin 4 - offsite post
32	Combine	30, 31	5.992	8.856	-------	11.06	13.27	16.21	18.42	20.62	Basin 4 - Total to Pond
33	Reservoir	32	0.236	0.411	-------	0.591	1.260	2.857	4.589	8.312	Basin 4 - outflow
34	SCS Runoff	------	0.072	0.268	-------	0.459	0.676	0.993	1.247	1.514	Basin 4 - Bypass
35	Combine	33, 34	0.248	0.604	-------	0.883	1.532	3.590	5.600	9.670	Basin 4 - Post

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
37	SCS Runoff	------	1.315	2.002	-------	2.531	3.070	3.794	4.337	4.879	Basin 5 - onsite
38	SCS Runoff	------	1.075	1.599	-------	2.004	2.411	2.954	3.360	3.766	Basin 5 - offsite
39	Combine	37, 38	2.390	3.601	-------	4.535	5.481	6.747	7.697	8.645	Basin 5 Total to Ex Pond
40	Reservoir	39	1.609	2.232	-------	2.654	3.043	5.810	7.255	8.045	Basin 5 - Outflow
42	SCS Runoff	------	12.74	21.88	-------	29.28	37.03	47.66	55.77	63.96	5305 West Offsite Sub Basin
43	Combine	19, 26, 40, 42	24.02	39.92	-------	52.61	65.69	85.61	100.76	114.96	5305 - Ex Church and offsite
44	Combine	20, 27, 40, 42,	15.26	28.11	-------	38.92	50.33	68.63	82.48	95.83	5305 - Pre - church and offsite
45	Combine	24, 35, 40, 42,	14.88	25.74	-------	34.47	44.42	62.11	75.60	90.57	5305 - Post - church and offsite
47	SCS Runoff	------	15.67	27.46	-------	37.16	47.27	61.20	71.86	82.64	West Culvert offsite basin
48	Combine	19, 26, 40, 47	26.17	44.32	-------	58.99	74.20	97.11	114.59	131.14	West culvert ex-church and offsite
49	Combine	24, 35, 40, 47,	17.87	31.36	-------	42.38	54.84	75.96	92.11	109.83	West culvert post- church and offsite
51	SCS Runoff	------	20.18	33.32	-------	43.79	54.57	69.22	80.35	91.53	East Culvert Offsite Basin
52	Combine	1, 51	28.80	47.74	-------	62.80	78.43	99.79	116.02	132.34	East Culvert -Ex-church and offsite
53	Combine	12, 51,	20.96	35.53	-------	47.44	61.69	83.14	100.24	118.00	East Culvert - post - church and offsit
55	SCS Runoff	------	115.35	204.86	-------	278.40	355.50	461.87	543.46	626.09	Ex Church and Downstream
56	SCS Runoff	------	103.98	184.67	-------	250.96	320.45	416.34	489.88	564.37	Ex Downstream Basin w/o church
57	Combine	12, 15, 24, 35, 40, 56	106.82	190.15	-------	259.73	335.55	442.79	526.02	612.58	Ex. Downstream with Post-Church

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	11.16	1	718	22,497	------	------	------	Basin 1 - Ex
2	SCS Runoff	0.984	1	721	4,669	------	------	------	Basin 1 - Pre Onsite
3	SCS Runoff	0.050	1	718	100	------	------	------	Basin 1 - Ex Offsite
4	Combine	1.022	1	721	4,770	2, 3	------	------	Basin 1 - Pre Study Pt
5	SCS Runoff	10.28	1	717	21,355	------	------	------	Basin 1A - Onsite - To Pond 1A
6	SCS Runoff	1.153	1	717	2,483	------	------	------	Basin 1 - Offsite-To Pond 1A
7	Combine	11.44	1	717	23,838	5, 6	------	------	Basin 1A -Total to Pond 1A
8	Reservoir	0.371	1	831	23,820	7	1083.68	14,216	Basin 1A - Outflow
9	SCS Runoff	2.930	1	717	6,919	------	------	------	Basin 1B - pond
10	Reservoir	0.246	1	746	6,916	9	1072.74	3,112	Basin 1B - outflow
11	SCS Runoff	0.357	1	723	1,794	------	------	------	Basin 1 - Bypass
12	Combine	0.806	1	725	32,530	8, 10, 11	------	------	Basin 1 - Post
14	SCS Runoff	0.004	1	739	70	------	------	------	Basin 2 - Pre
15	SCS Runoff	0.004	1	739	70	------	------	------	Basin 2 - Post
17	SCS Runoff	4.725	1	718	9,651	------	------	------	Basin 3A - Ex
18	SCS Runoff	1.937	1	718	4,100	------	------	------	Basin 3B - Ex
19	Combine	6.662	1	718	13,750	17, 18	------	------	Basin 3A & 3B Ex
20	SCS Runoff	0.530	1	721	2,514	------	------	------	Basin 3 - Pre
21	SCS Runoff	8.154	1	717	17,559	------	------	------	Basin 3 - Pond
22	Reservoir	0.355	1	789	17,553	21	1069.60	9,945	Basin 3 - Outlfow
23	SCS Runoff	0.137	1	723	810	------	------	------	Basin 3 - bypass
24	Combine	0.413	1	725	18,363	22, 23	------	------	Basin 3 - Post
26	SCS Runoff	4.178	1	718	8,449	------	------	------	Basin 4 - Ex
27	SCS Runoff	0.390	1	721	1,849	------	------	------	Basin 4 - Pre
28	SCS Runoff	1.153	1	717	2,483	------	------	------	Basin 4 - Offsite Ex
29	Combine	1.421	1	718	4,332	27, 28	------	------	Basin 4 Pre - Study Point
30	SCS Runoff	5.880	1	718	11,954	------	------	------	Basin 4 - onsite pond
31	SCS Runoff	0.112	1	718	231	------	------	------	Basin 4 - offsite post
32	Combine	5.992	1	718	12,184	30, 31	------	------	Basin 4 - Total to Pond
33	Reservoir	0.236	1	814	12,178	32	1082.71	6,796	Basin 4 - outflow
34	SCS Runoff	0.072	1	724	356	------	------	------	Basin 4 - Bypass
35	Combine	0.248	1	809	12,534	33, 34	------	------	Basin 4 - Post

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
37	SCS Runoff	1.315	1	718	2,649	------	------	------	Basin 5 - onsite
38	SCS Runoff	1.075	1	718	2,177	------	------	------	Basin 5 - offsite
39	Combine	2.390	1	718	4,826	37, 38	------	------	Basin 5 Total to Ex Pond
40	Reservoir	1.609	1	722	4,574	39	1083.01	999	Basin 5 - Outflow
42	SCS Runoff	12.74	1	721	31,671	------	------	------	5305 West Offsite Sub Basin
43	Combine	24.02	1	719	58,445	19, 26, 40, 42	------	------	5305 - Ex Church and offsite
44	Combine	15.26	1	721	40,608	20, 27, 40, 42,	------	------	5305 - Pre - church and offsite
45	Combine	14.88	1	721	67,143	24, 35, 40, 42,	------	------	5305 - Post - church and offsite
47	SCS Runoff	15.67	1	722	41,297	------	------	------	West Culvert offsite basin
48	Combine	26.17	1	720	68,071	19, 26, 40, 47	------	------	West culvert ex-church and offsite
49	Combine	17.87	1	722	76,769	24, 35, 40, 47,	------	------	West culvert post- church and offsite
51	SCS Runoff	20.18	1	723	55,342	------	------	------	East Culvert Offsite Basin
52	Combine	28.80	1	720	77,840	1, 51	------	------	East Culvert -Ex-church and offsite
53	Combine	20.96	1	723	87,872	12, 51,	------	------	East Culvert - post - church and offsit
55	SCS Runoff	115.35	1	726	385,083	------	------	------	Ex Church and Downstream
56	SCS Runoff	103.98	1	726	347,122	------	------	------	Ex Downstream Basin w/o church
57	Combine	106.82	1	726	415,194	12, 15, 24, 35, 40, 56	------	------	Ex. Downstream with Post-Church

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	18.38	1	718	36,926	------	------	------	Basin 1 - Ex
2	SCS Runoff	4.512	1	719	11,529	------	------	------	Basin 1 - Pre Onsite
3	SCS Runoff	0.078	1	718	158	------	------	------	Basin 1 - Ex Offsite
4	Combine	4.586	1	719	11,686	2, 3	------	------	Basin 1 - Pre Study Pt
5	SCS Runoff	14.56	1	717	30,812	------	------	------	Basin 1A - Onsite - To Pond 1A
6	SCS Runoff	1.571	1	717	3,457	------	------	------	Basin 1 - Offsite-To Pond 1A
7	Combine	16.13	1	717	34,269	5, 6	------	------	Basin 1A -Total to Pond 1A
8	Reservoir	0.673	1	796	34,125	7	1084.63	20,377	Basin 1A - Outflow
9	SCS Runoff	3.851	1	717	9,212	------	------	------	Basin 1B - pond
10	Reservoir	0.378	1	741	9,209	9	1073.31	4,121	Basin 1B - outflow
11	SCS Runoff	1.475	1	721	4,275	------	------	------	Basin 1 - Bypass
12	Combine	2.216	1	722	47,609	8, 10, 11	------	------	Basin 1 - Post
14	SCS Runoff	0.063	1	720	208	------	------	------	Basin 2 - Pre
15	SCS Runoff	0.063	1	720	208	------	------	------	Basin 2 - Post
17	SCS Runoff	6.895	1	717	14,313	------	------	------	Basin 3A - Ex
18	SCS Runoff	3.630	1	718	7,357	------	------	------	Basin 3B - Ex
19	Combine	10.51	1	718	21,670	17, 18	------	------	Basin 3A & 3B Ex
20	SCS Runoff	2.429	1	719	6,206	------	------	------	Basin 3 - Pre
21	SCS Runoff	11.11	1	717	24,443	------	------	------	Basin 3 - Pond
22	Reservoir	0.514	1	781	24,438	21	1070.54	13,982	Basin 3 - Outlfow
23	SCS Runoff	0.658	1	721	1,999	------	------	------	Basin 3 - bypass
24	Combine	1.078	1	722	26,437	22, 23	------	------	Basin 3 - Post
26	SCS Runoff	6.986	1	718	14,028	------	------	------	Basin 4 - Ex
27	SCS Runoff	1.787	1	719	4,565	------	------	------	Basin 4 - Pre
28	SCS Runoff	1.571	1	717	3,457	------	------	------	Basin 4 - Offsite Ex
29	Combine	3.294	1	718	8,022	27, 28	------	------	Basin 4 Pre - Study Point
30	SCS Runoff	8.662	1	717	17,896	------	------	------	Basin 4 - onsite pond
31	SCS Runoff	0.198	1	718	397	------	------	------	Basin 4 - offsite post
32	Combine	8.856	1	717	18,293	30, 31	------	------	Basin 4 - Total to Pond
33	Reservoir	0.411	1	790	18,287	32	1083.50	10,006	Basin 4 - outflow
34	SCS Runoff	0.268	1	722	821	------	------	------	Basin 4 - Bypass
35	Combine	0.604	1	723	19,108	33, 34	------	------	Basin 4 - Post

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
37	SCS Runoff	2.002	1	718	4,082	------	------	------	Basin 5 - onsite
38	SCS Runoff	1.599	1	718	3,291	------	------	------	Basin 5 - offsite
39	Combine	3.601	1	718	7,372	37, 38	------	------	Basin 5 Total to Ex Pond
40	Reservoir	2.232	1	722	7,121	39	1084.01	1,506	Basin 5 - Outflow
42	SCS Runoff	21.88	1	721	53,208	------	------	------	5305 West Offsite Sub Basin
43	Combine	39.92	1	719	96,027	19, 26, 40, 42	------	------	5305 - Ex Church and offsite
44	Combine	28.11	1	720	71,100	20, 27, 40, 42,	------	------	5305 - Pre - church and offsite
45	Combine	25.74	1	721	105,874	24, 35, 40, 42,	------	------	5305 - Post - church and offsite
47	SCS Runoff	27.46	1	721	70,234	------	------	------	West Culvert offsite basin
48	Combine	44.32	1	719	113,053	19, 26, 40, 47	------	------	West culvert ex-church and offsite
49	Combine	31.36	1	722	122,900	24, 35, 40, 47,	------	------	West culvert post- church and offsite
51	SCS Runoff	33.32	1	722	89,827	------	------	------	East Culvert Offsite Basin
52	Combine	47.74	1	720	126,753	1, 51	------	------	East Culvert -Ex-church and offsite
53	Combine	35.53	1	722	137,437	12, 51,	------	------	East Culvert - post - church and offsit
55	SCS Runoff	204.86	1	726	654,914	------	------	------	Ex Church and Downstream
56	SCS Runoff	184.67	1	726	590,355	------	------	------	Ex Downstream Basin w/o church
57	Combine	190.15	1	725	690,838	12, 15, 24, 35, 40, 56	------	------	Ex. Downstream with Post-Church

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	24.10	1	718	48,653	------	------	------	Basin 1 - Ex
2	SCS Runoff	7.976	1	718	18,096	------	------	------	Basin 1 - Pre Onsite
3	SCS Runoff	0.100	1	718	204	------	------	------	Basin 1 - Ex Offsite
4	Combine	8.076	1	718	18,300	2, 3	------	------	Basin 1 - Pre Study Pt
5	SCS Runoff	17.77	1	717	38,068	------	------	------	Basin 1A - Onsite - To Pond 1A
6	SCS Runoff	1.882	1	717	4,194	------	------	------	Basin 1 - Offsite-To Pond 1A
7	Combine	19.65	1	717	42,263	5, 6	------	------	Basin 1A -Total to Pond 1A
8	Reservoir	1.821	1	744	41,996	7	1085.03	22,944	Basin 1A - Outflow
9	SCS Runoff	4.539	1	717	10,933	------	------	------	Basin 1B - pond
10	Reservoir	0.449	1	740	10,931	9	1073.77	4,943	Basin 1B - outflow
11	SCS Runoff	2.581	1	720	6,622	------	------	------	Basin 1 - Bypass
12	Combine	3.709	1	723	59,548	8, 10, 11	------	------	Basin 1 - Post
14	SCS Runoff	0.136	1	719	348	------	------	------	Basin 2 - Pre
15	SCS Runoff	0.136	1	719	348	------	------	------	Basin 2 - Post
17	SCS Runoff	8.544	1	717	17,931	------	------	------	Basin 3A - Ex
18	SCS Runoff	5.031	1	718	10,114	------	------	------	Basin 3B - Ex
19	Combine	13.54	1	718	28,045	17, 18	------	------	Basin 3A & 3B Ex
20	SCS Runoff	4.294	1	718	9,741	------	------	------	Basin 3 - Pre
21	SCS Runoff	13.31	1	717	29,660	------	------	------	Basin 3 - Pond
22	Reservoir	1.188	1	745	29,655	21	1071.03	16,045	Basin 3 - Outlfow
23	SCS Runoff	1.193	1	720	3,138	------	------	------	Basin 3 - bypass
24	Combine	1.828	1	723	32,793	22, 23	------	------	Basin 3 - Post
26	SCS Runoff	9.226	1	718	18,587	------	------	------	Basin 4 - Ex
27	SCS Runoff	3.159	1	718	7,166	------	------	------	Basin 4 - Pre
28	SCS Runoff	1.882	1	717	4,194	------	------	------	Basin 4 - Offsite Ex
29	Combine	5.020	1	718	11,360	27, 28	------	------	Basin 4 Pre - Study Point
30	SCS Runoff	10.79	1	717	22,525	------	------	------	Basin 4 - onsite pond
31	SCS Runoff	0.267	1	718	536	------	------	------	Basin 4 - offsite post
32	Combine	11.06	1	717	23,061	30, 31	------	------	Basin 4 - Total to Pond
33	Reservoir	0.591	1	775	23,055	32	1084.14	12,668	Basin 4 - outflow
34	SCS Runoff	0.459	1	721	1,256	------	------	------	Basin 4 - Bypass
35	Combine	0.883	1	722	24,311	33, 34	------	------	Basin 4 - Post

Hydrograph Summary Report

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Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
37	SCS Runoff	2.531	1	717	5,212	------	------	------	Basin 5 - onsite
38	SCS Runoff	2.004	1	717	4,162	------	------	------	Basin 5 - offsite
39	Combine	4.535	1	717	9,374	37, 38	------	------	Basin 5 Total to Ex Pond
40	Reservoir	2.654	1	722	9,122	39	1084.89	1,941	Basin 5 - Outflow
42	SCS Runoff	29.28	1	720	70,905	------	------	------	5305 West Offsite Sub Basin
43	Combine	52.61	1	719	126,659	19, 26, 40, 42	------	------	5305 - Ex Church and offsite
44	Combine	38.92	1	720	96,935	20, 27, 40, 42,	------	------	5305 - Pre - church and offsite
45	Combine	34.47	1	721	137,131	24, 35, 40, 42,	------	------	5305 - Post - church and offsite
47	SCS Runoff	37.16	1	721	94,145	------	------	------	West Culvert offsite basin
48	Combine	58.99	1	719	149,900	19, 26, 40, 47	------	------	West culvert ex-church and offsite
49	Combine	42.38	1	721	160,371	24, 35, 40, 47,	------	------	West culvert post- church and offsite
51	SCS Runoff	43.79	1	722	117,709	------	------	------	East Culvert Offsite Basin
52	Combine	62.80	1	720	166,362	1, 51	------	------	East Culvert -Ex-church and offsite
53	Combine	47.44	1	722	177,257	12, 51,	------	------	East Culvert - post - church and offsit
55	SCS Runoff	278.40	1	725	877,881	------	------	------	Ex Church and Downstream
56	SCS Runoff	250.96	1	725	791,343	------	------	------	Ex Downstream Basin w/o church
57	Combine	259.73	1	725	917,464	12, 15, 24, 35, 40, 56	------	------	Ex. Downstream with Post-Church

Hydrograph Summary Report

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Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	29.99	1	718	60,924	------	------	------	Basin 1 - Ex
2	SCS Runoff	12.01	1	718	25,644	------	------	------	Basin 1 - Pre Onsite
3	SCS Runoff	0.122	1	717	251	------	------	------	Basin 1 - Ex Offsite
4	Combine	12.13	1	718	25,895	2, 3	------	------	Basin 1 - Pre Study Pt
5	SCS Runoff	20.96	1	717	45,412	------	------	------	Basin 1A - Onsite - To Pond 1A
6	SCS Runoff	2.192	1	717	4,936	------	------	------	Basin 1 - Offsite-To Pond 1A
7	Combine	23.16	1	717	50,349	5, 6	------	------	Basin 1A -Total to Pond 1A
8	Reservoir	3.950	1	727	49,940	7	1085.51	26,064	Basin 1A - Outflow
9	SCS Runoff	5.227	1	717	12,656	------	------	------	Basin 1B - pond
10	Reservoir	0.650	1	731	12,653	9	1074.20	5,694	Basin 1B - outflow
11	SCS Runoff	3.848	1	720	9,300	------	------	------	Basin 1 - Bypass
12	Combine	7.271	1	723	71,894	8, 10, 11	------	------	Basin 1 - Post
14	SCS Runoff	0.224	1	718	514	------	------	------	Basin 2 - Pre
15	SCS Runoff	0.224	1	718	514	------	------	------	Basin 2 - Post
17	SCS Runoff	10.20	1	717	21,615	------	------	------	Basin 3A - Ex
18	SCS Runoff	6.509	1	718	13,071	------	------	------	Basin 3B - Ex
19	Combine	16.64	1	718	34,686	17, 18	------	------	Basin 3A & 3B Ex
20	SCS Runoff	6.466	1	718	13,805	------	------	------	Basin 3 - Pre
21	SCS Runoff	15.50	1	717	34,905	------	------	------	Basin 3 - Pond
22	Reservoir	2.332	1	728	34,900	21	1071.53	18,144	Basin 3 - Outlfow
23	SCS Runoff	1.815	1	720	4,447	------	------	------	Basin 3 - bypass
24	Combine	3.582	1	723	39,347	22, 23	------	------	Basin 3 - Post
26	SCS Runoff	11.54	1	718	23,372	------	------	------	Basin 4 - Ex
27	SCS Runoff	4.756	1	718	10,155	------	------	------	Basin 4 - Pre
28	SCS Runoff	2.192	1	717	4,936	------	------	------	Basin 4 - Offsite Ex
29	Combine	6.922	1	718	15,091	27, 28	------	------	Basin 4 Pre - Study Point
30	SCS Runoff	12.93	1	717	27,251	------	------	------	Basin 4 - onsite pond
31	SCS Runoff	0.339	1	718	683	------	------	------	Basin 4 - offsite post
32	Combine	13.27	1	717	27,933	30, 31	------	------	Basin 4 - Total to Pond
33	Reservoir	1.260	1	744	27,927	32	1084.57	14,441	Basin 4 - outflow
34	SCS Runoff	0.676	1	721	1,749	------	------	------	Basin 4 - Bypass
35	Combine	1.532	1	726	29,676	33, 34	------	------	Basin 4 - Post

Hydrograph Summary Report

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Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
37	SCS Runoff	3.070	1	717	6,375	------	------	------	Basin 5 - onsite
38	SCS Runoff	2.411	1	717	5,053	------	------	------	Basin 5 - offsite
39	Combine	5.481	1	717	11,428	37, 38	------	------	Basin 5 Total to Ex Pond
40	Reservoir	3.043	1	722	11,177	39	1085.84	2,414	Basin 5 - Outflow
42	SCS Runoff	37.03	1	720	89,543	------	------	------	5305 West Offsite Sub Basin
43	Combine	65.69	1	719	158,778	19, 26, 40, 42	------	------	5305 - Ex Church and offsite
44	Combine	50.33	1	720	124,679	20, 27, 40, 42,	------	------	5305 - Pre - church and offsite
45	Combine	44.42	1	721	169,743	24, 35, 40, 42,	------	------	5305 - Post - church and offsite
47	SCS Runoff	47.27	1	721	119,414	------	------	------	West Culvert offsite basin
48	Combine	74.20	1	719	188,649	19, 26, 40, 47	------	------	West culvert ex-church and offsite
49	Combine	54.84	1	722	199,614	24, 35, 40, 47,	------	------	West culvert post- church and offsite
51	SCS Runoff	54.57	1	722	146,796	------	------	------	East Culvert Offsite Basin
52	Combine	78.43	1	719	207,720	1, 51	------	------	East Culvert -Ex-church and offsite
53	Combine	61.69	1	722	218,690	12, 51,	------	------	East Culvert - post - church and offsit
55	SCS Runoff	355.50	1	725	1,113,501	------	------	------	Ex Church and Downstream
56	SCS Runoff	320.45	1	725	1,003,737	------	------	------	Ex Downstream Basin w/o church
57	Combine	335.55	1	725	1,156,346	12, 15, 24, 35, 40, 56	------	------	Ex. Downstream with Post-Church

Hydrograph Summary Report

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Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	37.98	1	718	77,908	------	------	------	Basin 1 - Ex
2	SCS Runoff	17.95	1	718	36,949	------	------	------	Basin 1 - Pre Onsite
3	SCS Runoff	0.152	1	717	316	------	------	------	Basin 1 - Ex Offsite
4	Combine	18.10	1	718	37,265	2, 3	------	------	Basin 1 - Pre Study Pt
5	SCS Runoff	25.20	1	717	55,298	------	------	------	Basin 1A - Onsite - To Pond 1A
6	SCS Runoff	2.602	1	717	5,929	------	------	------	Basin 1 - Offsite-To Pond 1A
7	Combine	27.80	1	717	61,227	5, 6	------	------	Basin 1A -Total to Pond 1A
8	Reservoir	8.081	1	725	60,614	7	1086.21	30,409	Basin 1A - Outflow
9	SCS Runoff	6.143	1	717	14,953	------	------	------	Basin 1B - pond
10	Reservoir	1.497	1	725	14,950	9	1074.69	6,514	Basin 1B - outflow
11	SCS Runoff	5.707	1	720	13,291	------	------	------	Basin 1 - Bypass
12	Combine	14.05	1	723	88,856	8, 10, 11	------	------	Basin 1 - Post
14	SCS Runoff	0.360	1	718	769	------	------	------	Basin 2 - Pre
15	SCS Runoff	0.360	1	718	769	------	------	------	Basin 2 - Post
17	SCS Runoff	12.39	1	717	26,600	------	------	------	Basin 3A - Ex
18	SCS Runoff	8.561	1	718	17,248	------	------	------	Basin 3B - Ex
19	Combine	20.88	1	717	43,848	17, 18	------	------	Basin 3A & 3B Ex
20	SCS Runoff	9.661	1	718	19,890	------	------	------	Basin 3 - Pre
21	SCS Runoff	18.40	1	717	41,928	------	------	------	Basin 3 - Pond
22	Reservoir	4.543	1	725	41,923	21	1072.26	21,093	Basin 3 - Outlfow
23	SCS Runoff	2.731	1	720	6,407	------	------	------	Basin 3 - bypass
24	Combine	6.649	1	723	48,330	22, 23	------	------	Basin 3 - Post
26	SCS Runoff	14.68	1	718	30,014	------	------	------	Basin 4 - Ex
27	SCS Runoff	7.107	1	718	14,631	------	------	------	Basin 4 - Pre
28	SCS Runoff	2.602	1	717	5,929	------	------	------	Basin 4 - Offsite Ex
29	Combine	9.676	1	718	20,560	27, 28	------	------	Basin 4 Pre - Study Point
30	SCS Runoff	15.78	1	717	33,656	------	------	------	Basin 4 - onsite pond
31	SCS Runoff	0.438	1	718	888	------	------	------	Basin 4 - offsite post
32	Combine	16.21	1	717	34,544	30, 31	------	------	Basin 4 - Total to Pond
33	Reservoir	2.857	1	727	34,538	32	1085.22	17,034	Basin 4 - outflow
34	SCS Runoff	0.993	1	721	2,481	------	------	------	Basin 4 - Bypass
35	Combine	3.590	1	725	37,019	33, 34	------	------	Basin 4 - Post

Hydrograph Summary Report

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Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
37	SCS Runoff	3.794	1	717	7,962	------	------	------	Basin 5 - onsite
38	SCS Runoff	2.954	1	717	6,263	------	------	------	Basin 5 - offsite
39	Combine	6.747	1	717	14,225	37, 38	------	------	Basin 5 Total to Ex Pond
40	Reservoir	5.810	1	720	13,974	39	1086.41	2,699	Basin 5 - Outflow
42	SCS Runoff	47.66	1	720	115,480	------	------	------	5305 West Offsite Sub Basin
43	Combine	85.61	1	719	203,316	19, 26, 40, 42	------	------	5305 - Ex Church and offsite
44	Combine	68.63	1	720	163,976	20, 27, 40, 42,	------	------	5305 - Pre - church and offsite
45	Combine	62.11	1	721	214,803	24, 35, 40, 42,	------	------	5305 - Post - church and offsite
47	SCS Runoff	61.20	1	721	154,680	------	------	------	West Culvert offsite basin
48	Combine	97.11	1	719	242,515	19, 26, 40, 47	------	------	West culvert ex-church and offsite
49	Combine	75.96	1	721	254,002	24, 35, 40, 47,	------	------	West culvert post- church and offsite
51	SCS Runoff	69.22	1	722	186,945	------	------	------	East Culvert Offsite Basin
52	Combine	99.79	1	719	264,853	1, 51	------	------	East Culvert -Ex-church and offsite
53	Combine	83.14	1	722	275,801	12, 51,	------	------	East Culvert - post - church and offsit
55	SCS Runoff	461.87	1	725	1,442,344	------	------	------	Ex Church and Downstream
56	SCS Runoff	416.34	1	725	1,300,163	------	------	------	Ex Downstream Basin w/o church
57	Combine	442.79	1	725	1,489,108	12, 15, 24, 35, 40, 56	------	------	Ex. Downstream with Post-Church

Hydrograph Summary Report

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Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	44.08	1	717	90,996	------	------	------	Basin 1 - Ex
2	SCS Runoff	22.73	1	718	46,197	------	------	------	Basin 1 - Pre Onsite
3	SCS Runoff	0.174	1	717	365	------	------	------	Basin 1 - Ex Offsite
4	Combine	22.91	1	718	46,562	2, 3	------	------	Basin 1 - Pre Study Pt
5	SCS Runoff	28.37	1	717	62,761	------	------	------	Basin 1A - Onsite - To Pond 1A
6	SCS Runoff	2.908	1	717	6,676	------	------	------	Basin 1 - Offsite-To Pond 1A
7	Combine	31.27	1	717	69,437	5, 6	------	------	Basin 1A -Total to Pond 1A
8	Reservoir	11.64	1	724	68,668	7	1086.72	33,367	Basin 1A - Outflow
9	SCS Runoff	6.830	1	717	16,677	------	------	------	Basin 1B - pond
10	Reservoir	2.354	1	724	16,674	9	1075.04	7,047	Basin 1B - outflow
11	SCS Runoff	7.202	1	720	16,544	------	------	------	Basin 1 - Bypass
12	Combine	19.89	1	722	101,886	8, 10, 11	------	------	Basin 1 - Post
14	SCS Runoff	0.472	1	718	981	------	------	------	Basin 2 - Pre
15	SCS Runoff	0.472	1	718	981	------	------	------	Basin 2 - Post
17	SCS Runoff	14.03	1	717	30,378	------	------	------	Basin 3A - Ex
18	SCS Runoff	10.14	1	718	20,519	------	------	------	Basin 3B - Ex
19	Combine	24.12	1	717	50,897	17, 18	------	------	Basin 3A & 3B Ex
20	SCS Runoff	12.24	1	718	24,869	------	------	------	Basin 3 - Pre
21	SCS Runoff	20.57	1	717	47,210	------	------	------	Basin 3 - Pond
22	Reservoir	6.598	1	724	47,204	21	1072.83	23,101	Basin 3 - Outlfow
23	SCS Runoff	3.472	1	720	8,011	------	------	------	Basin 3 - bypass
24	Combine	9.404	1	723	55,216	22, 23	------	------	Basin 3 - Post
26	SCS Runoff	17.07	1	717	35,142	------	------	------	Basin 4 - Ex
27	SCS Runoff	9.002	1	718	18,293	------	------	------	Basin 4 - Pre
28	SCS Runoff	2.908	1	717	6,676	------	------	------	Basin 4 - Offsite Ex
29	Combine	11.87	1	718	24,969	27, 28	------	------	Basin 4 Pre - Study Point
30	SCS Runoff	17.91	1	717	38,517	------	------	------	Basin 4 - onsite pond
31	SCS Runoff	0.514	1	718	1,048	------	------	------	Basin 4 - offsite post
32	Combine	18.42	1	717	39,565	30, 31	------	------	Basin 4 - Total to Pond
33	Reservoir	4.589	1	725	39,559	32	1085.78	19,045	Basin 4 - outflow
34	SCS Runoff	1.247	1	721	3,074	------	------	------	Basin 4 - Bypass
35	Combine	5.600	1	724	42,633	33, 34	------	------	Basin 4 - Post

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Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
37	SCS Runoff	4.337	1	717	9,171	------	------	------	Basin 5 - onsite
38	SCS Runoff	3.360	1	717	7,183	------	------	------	Basin 5 - offsite
39	Combine	7.697	1	717	16,354	37, 38	------	------	Basin 5 Total to Ex Pond
40	Reservoir	7.255	1	719	16,103	39	1086.57	2,781	Basin 5 - Outflow
42	SCS Runoff	55.77	1	720	135,553	------	------	------	5305 West Offsite Sub Basin
43	Combine	100.76	1	719	237,695	19, 26, 40, 42	------	------	5305 - Ex Church and offsite
44	Combine	82.48	1	719	194,817	20, 27, 40, 42,	------	------	5305 - Pre - church and offsite
45	Combine	75.60	1	720	249,505	24, 35, 40, 42,	------	------	5305 - Post - church and offsite
47	SCS Runoff	71.86	1	721	182,030	------	------	------	West Culvert offsite basin
48	Combine	114.59	1	719	284,172	19, 26, 40, 47	------	------	West culvert ex-church and offsite
49	Combine	92.11	1	721	295,981	24, 35, 40, 47,	------	------	West culvert post- church and offsite
51	SCS Runoff	80.35	1	722	217,826	------	------	------	East Culvert Offsite Basin
52	Combine	116.02	1	719	308,822	1, 51	------	------	East Culvert -Ex-church and offsite
53	Combine	100.24	1	722	319,712	12, 51,	------	------	East Culvert - post - church and offsit
55	SCS Runoff	543.46	1	725	1,697,385	------	------	------	Ex Church and Downstream
56	SCS Runoff	489.88	1	725	1,530,062	------	------	------	Ex Downstream Basin w/o church
57	Combine	526.02	1	725	1,746,880	12, 15, 24, 35, 40, 56	------	------	Ex. Downstream with Post-Church

Hydrograph Summary Report

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Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	50.25	1	717	104,317	------	------	------	Basin 1 - Ex
2	SCS Runoff	27.75	1	718	55,994	------	------	------	Basin 1 - Pre Onsite
3	SCS Runoff	0.197	1	717	416	------	------	------	Basin 1 - Ex Offsite
4	Combine	27.94	1	718	56,410	2, 3	------	------	Basin 1 - Pre Study Pt
5	SCS Runoff	31.52	1	717	70,256	------	------	------	Basin 1A - Onsite - To Pond 1A
6	SCS Runoff	3.214	1	717	7,424	------	------	------	Basin 1 - Offsite-To Pond 1A
7	Combine	34.73	1	717	77,680	5, 6	------	------	Basin 1A -Total to Pond 1A
8	Reservoir	15.57	1	723	76,769	7	1087.21	35,983	Basin 1A - Outflow
9	SCS Runoff	7.516	1	717	18,400	------	------	------	Basin 1B - pond
10	Reservoir	3.257	1	723	18,398	9	1075.36	7,519	Basin 1B - outflow
11	SCS Runoff	8.768	1	720	19,980	------	------	------	Basin 1 - Bypass
12	Combine	26.47	1	722	115,146	8, 10, 11	------	------	Basin 1 - Post
14	SCS Runoff	0.590	1	718	1,208	------	------	------	Basin 2 - Pre
15	SCS Runoff	0.590	1	718	1,208	------	------	------	Basin 2 - Post
17	SCS Runoff	15.67	1	717	34,180	------	------	------	Basin 3A - Ex
18	SCS Runoff	11.75	1	718	23,882	------	------	------	Basin 3B - Ex
19	Combine	27.38	1	717	58,062	17, 18	------	------	Basin 3A & 3B Ex
20	SCS Runoff	14.94	1	718	30,143	------	------	------	Basin 3 - Pre
21	SCS Runoff	22.73	1	717	52,501	------	------	------	Basin 3 - Pond
22	Reservoir	8.982	1	724	52,496	21	1073.42	24,902	Basin 3 - Outlfow
23	SCS Runoff	4.249	1	720	9,710	------	------	------	Basin 3 - bypass
24	Combine	12.56	1	722	62,206	22, 23	------	------	Basin 3 - Post
26	SCS Runoff	19.51	1	717	40,369	------	------	------	Basin 4 - Ex
27	SCS Runoff	10.99	1	718	22,173	------	------	------	Basin 4 - Pre
28	SCS Runoff	3.214	1	717	7,424	------	------	------	Basin 4 - Offsite Ex
29	Combine	14.16	1	718	29,597	27, 28	------	------	Basin 4 Pre - Study Point
30	SCS Runoff	20.03	1	717	43,413	------	------	------	Basin 4 - onsite pond
31	SCS Runoff	0.591	1	718	1,212	------	------	------	Basin 4 - offsite post
32	Combine	20.62	1	717	44,625	30, 31	------	------	Basin 4 - Total to Pond
33	Reservoir	8.312	1	724	44,619	32	1086.27	20,668	Basin 4 - outflow
34	SCS Runoff	1.514	1	721	3,700	------	------	------	Basin 4 - Bypass
35	Combine	9.670	1	723	48,319	33, 34	------	------	Basin 4 - Post

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
37	SCS Runoff	4.879	1	717	10,393	------	------	------	Basin 5 - onsite
38	SCS Runoff	3.766	1	717	8,111	------	------	------	Basin 5 - offsite
39	Combine	8.645	1	717	18,503	37, 38	------	------	Basin 5 Total to Ex Pond
40	Reservoir	8.045	1	719	18,252	39	1086.76	2,880	Basin 5 - Outflow
42	SCS Runoff	63.96	1	720	156,038	------	------	------	5305 West Offsite Sub Basin
43	Combine	114.96	1	718	272,721	19, 26, 40, 42	------	------	5305 - Ex Church and offsite
44	Combine	95.83	1	719	226,605	20, 27, 40, 42,	------	------	5305 - Pre - church and offsite
45	Combine	90.57	1	721	284,814	24, 35, 40, 42,	------	------	5305 - Post - church and offsite
47	SCS Runoff	82.64	1	721	209,984	------	------	------	West Culvert offsite basin
48	Combine	131.14	1	719	326,668	19, 26, 40, 47	------	------	West culvert ex-church and offsite
49	Combine	109.83	1	721	338,761	24, 35, 40, 47,	------	------	West culvert post- church and offsite
51	SCS Runoff	91.53	1	722	249,212	------	------	------	East Culvert Offsite Basin
52	Combine	132.34	1	719	353,529	1, 51	------	------	East Culvert -Ex-church and offsite
53	Combine	118.00	1	722	364,358	12, 51,	------	------	East Culvert - post - church and offsit
55	SCS Runoff	626.09	1	725	1,958,038	------	------	------	Ex Church and Downstream
56	SCS Runoff	564.37	1	725	1,765,025	------	------	------	Ex Downstream Basin w/o church
57	Combine	612.58	1	724	2,010,158	12, 15, 24, 35, 40, 56	------	------	Ex. Downstream with Post-Church

TR55 Tc Worksheet

Hyd. No. 2

Basin 1 - Pre Onsite

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.011		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.08		0.00		0.00		
Land slope (%)	= 8.00		0.00		0.00		
Travel Time (min)	**= 0.62**	**+**	**0.00**	**+**	**0.00**	**=**	**0.62**
Shallow Concentrated Flow							
Flow length (ft)	= 238.00		0.00		0.00		
Watercourse slope (%)	= 4.60		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	=4.36		0.00		0.00		
Travel Time (min)	**= 0.91**	**+**	**0.00**	**+**	**0.00**	**=**	**0.91**
Channel Flow							
X sectional flow area (sqft)	= 7.40		0.00		0.00		
Wetted perimeter (ft)	= 13.80		0.00		0.00		
Channel slope (%)	= 4.80		0.00		0.00		
Manning's n-value	= 0.045		0.015		0.015		
Velocity (ft/s)	=4.78						
			0.00				
					0.00		
Flow length (ft)	({0})672.0		0.0		0.0		
Travel Time (min)	**= 2.34**	**+**	**0.00**	**+**	**0.00**	**=**	**2.34**

Total Travel Time, Tc ..... 3.87 min

TR55 Tc Worksheet

Hyd. No. 14

Basin 2 - Pre

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 62.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.08		0.00		0.00		
Land slope (%)	= 16.00		0.00		0.00		
Travel Time (min)	**= 5.65**	**+**	**0.00**	**+**	**0.00**	**=**	**5.65**
Shallow Concentrated Flow							
Flow length (ft)	= 0.00		0.00		0.00		
Watercourse slope (%)	= 0.00		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	=0.00		0.00		0.00		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 5.65 min

TR55 Tc Worksheet

Hyd. No. 20

Basin 3 - Pre

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.011		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.08		0.00		0.00		
Land slope (%)	= 3.50		0.00		0.00		
Travel Time (min)	**= 0.86**	**+**	**0.00**	**+**	**0.00**	**=**	**0.86**
Shallow Concentrated Flow							
Flow length (ft)	= 328.00		0.00		0.00		
Watercourse slope (%)	= 5.20		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	=4.64		0.00		0.00		
Travel Time (min)	**= 1.18**	**+**	**0.00**	**+**	**0.00**	**=**	**1.18**
Channel Flow							
X sectional flow area (sqft)	= 1.80		0.00		0.00		
Wetted perimeter (ft)	= 4.70		0.00		0.00		
Channel slope (%)	= 8.30		0.00		0.00		
Manning's n-value	= 0.024		0.015		0.015		
Velocity (ft/s)	=9.40						
			0.00				
					0.00		
Flow length (ft)	({0})72.0		0.0		0.0		
Travel Time (min)	**= 0.13**	**+**	**0.00**	**+**	**0.00**	**=**	**0.13**

Total Travel Time, Tc ..... 2.16 min

TR55 Tc Worksheet

Hyd. No. 26

Basin 4 - Ex

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.011		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.08		0.00		0.00		
Land slope (%)	= 6.50		0.00		0.00		
Travel Time (min)	**= 0.67**	**+**	**0.00**	**+**	**0.00**	**=**	**0.67**
Shallow Concentrated Flow							
Flow length (ft)	= 454.00		113.00		0.00		
Watercourse slope (%)	= 3.50		12.40		0.00		
Surface description	= Paved		Unpaved		Paved		
Average velocity (ft/s)	=3.80		5.68		0.00		
Travel Time (min)	**= 1.99**	**+**	**0.33**	**+**	**0.00**	**=**	**2.32**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 2.99 min

TR55 Tc Worksheet

Hyd. No. 33

Basin 5 - onsite

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 55.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.08		0.00		0.00		
Land slope (%)	= 27.00		0.00		0.00		
Travel Time (min)	**= 4.16**	**+**	**0.00**	**+**	**0.00**	**=**	**4.16**
Shallow Concentrated Flow							
Flow length (ft)	= 144.00		0.00		0.00		
Watercourse slope (%)	= 6.90		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	=5.34		0.00		0.00		
Travel Time (min)	**= 0.45**	**+**	**0.00**	**+**	**0.00**	**=**	**0.45**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 4.61 min

TR55 Tc Worksheet

Hyd. No. 34

Basin 5 - offsite

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.011		0.011		0.011		
Flow length (ft)	= 50.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.08		0.00		0.00		
Land slope (%)	= 11.00		0.00		0.00		
Travel Time (min)	**= 0.31**	**+**	**0.00**	**+**	**0.00**	**=**	**0.31**
Shallow Concentrated Flow							
Flow length (ft)	= 0.00		0.00		0.00		
Watercourse slope (%)	= 0.00		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	=0.00		0.00		0.00		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**
Channel Flow							
X sectional flow area (sqft)	= 1.23		0.00		0.00		
Wetted perimeter (ft)	= 3.90		0.00		0.00		
Channel slope (%)	= 7.80		0.00		0.00		
Manning's n-value	= 0.024		0.015		0.015		
Velocity (ft/s)	=8.00						
			0.00				
					0.00		
Flow length (ft)	({0})245.0		0.0		0.0		
Travel Time (min)	**= 0.51**	**+**	**0.00**	**+**	**0.00**	**=**	**0.51**

Total Travel Time, Tc ..... 0.82 min

TR55 Tc Worksheet

Hyd. No. 5

Basin 1A Onsite - To Pond 1A

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.011		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.08		0.00		0.00		
Land slope (%)	= 9.50		0.00		0.00		
Travel Time (min)	**= 0.58**	**+**	**0.00**	**+**	**0.00**	**=**	**0.58**
Shallow Concentrated Flow							
Flow length (ft)	= 325.00		0.00		0.00		
Watercourse slope (%)	= 4.90		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	=4.50		0.00		0.00		
Travel Time (min)	**= 1.20**	**+**	**0.00**	**+**	**0.00**	**=**	**1.20**
Channel Flow							
X sectional flow area (sqft)	= 6.00		0.00		0.00		
Wetted perimeter (ft)	= 8.00		0.00		0.00		
Channel slope (%)	= 0.50		0.00		0.00		
Manning's n-value	= 0.024		0.015		0.015		
Velocity (ft/s)	=3.62						
			0.00				
					0.00		
Flow length (ft)	({0})210.0		0.0		0.0		
Travel Time (min)	**= 0.97**	**+**	**0.00**	**+**	**0.00**	**=**	**0.97**

Total Travel Time, Tc ..... 2.75 min

TR55 Tc Worksheet

Hyd. No. 9

Basin 1B - pond

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.011		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.08		0.00		0.00		
Land slope (%)	= 1.00		0.00		0.00		
Travel Time (min)	**= 1.42**	**+**	**0.00**	**+**	**0.00**	**=**	**1.42**
Shallow Concentrated Flow							
Flow length (ft)	= 210.00		0.00		0.00		
Watercourse slope (%)	= 1.90		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	=2.80		0.00		0.00		
Travel Time (min)	**= 1.25**	**+**	**0.00**	**+**	**0.00**	**=**	**1.25**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 2.66 min

TR55 Tc Worksheet

Hyd. No. 11

Basin 1 - Bypass

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.08		0.00		0.00		
Land slope (%)	= 23.00		0.00		0.00		
Travel Time (min)	**= 7.16**	**+**	**0.00**	**+**	**0.00**	**=**	**7.16**
Shallow Concentrated Flow							
Flow length (ft)	= 368.00		0.00		0.00		
Watercourse slope (%)	= 5.20		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=3.68		0.00		0.00		
Travel Time (min)	**= 1.67**	**+**	**0.00**	**+**	**0.00**	**=**	**1.67**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 8.83 min

TR55 Tc Worksheet

Hyd. No. 15

Basin 2 - Post

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 62.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.08		0.00		0.00		
Land slope (%)	= 16.00		0.00		0.00		
Travel Time (min)	**= 5.65**	**+**	**0.00**	**+**	**0.00**	**=**	**5.65**
Shallow Concentrated Flow							
Flow length (ft)	= 0.00		0.00		0.00		
Watercourse slope (%)	= 0.00		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	=0.00		0.00		0.00		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 5.60 min

TR55 Tc Worksheet

Hyd. No. 21

Basin 3 - Pond

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.011		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.08		0.00		0.00		
Land slope (%)	= 3.50		0.00		0.00		
Travel Time (min)	**= 0.86**	**+**	**0.00**	**+**	**0.00**	**=**	**0.86**
Shallow Concentrated Flow							
Flow length (ft)	= 239.00		0.00		0.00		
Watercourse slope (%)	= 4.60		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	=4.36		0.00		0.00		
Travel Time (min)	**= 0.91**	**+**	**0.00**	**+**	**0.00**	**=**	**0.91**
Channel Flow							
X sectional flow area (sqft)	= 6.00		0.00		0.00		
Wetted perimeter (ft)	= 8.00		0.00		0.00		
Channel slope (%)	= 0.50		0.00		0.00		
Manning's n-value	= 0.024		0.015		0.015		
Velocity (ft/s)	=3.62						
			0.00				
					0.00		
Flow length (ft)	({0})180.0		0.0		0.0		
Travel Time (min)	**= 0.83**	**+**	**0.00**	**+**	**0.00**	**=**	**0.83**

Total Travel Time, Tc ..... 2.60 min

TR55 Tc Worksheet

Hyd. No. 23

Basin 3 - bypass

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.08		0.00		0.00		
Land slope (%)	= 15.00		0.00		0.00		
Travel Time (min)	**= 8.49**	**+**	**0.00**	**+**	**0.00**	**=**	**8.49**
Shallow Concentrated Flow							
Flow length (ft)	= 0.00		0.00		0.00		
Watercourse slope (%)	= 0.00		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	=0.00		0.00		0.00		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 8.49 min

TR55 Tc Worksheet

Hyd. No. 28

Basin 4 - Pond

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.011		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.08		0.00		0.00		
Land slope (%)	= 10.00		0.00		0.00		
Travel Time (min)	**= 0.56**	**+**	**0.00**	**+**	**0.00**	**=**	**0.56**
Shallow Concentrated Flow							
Flow length (ft)	= 180.00		0.00		0.00		
Watercourse slope (%)	= 6.10		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	=5.02		0.00		0.00		
Travel Time (min)	**= 0.60**	**+**	**0.00**	**+**	**0.00**	**=**	**0.60**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 1.16 min

TR55 Tc Worksheet

Hyd. No. 30

Basin 4 - Bypass

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 113.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.08		0.00		0.00		
Land slope (%)	= 12.40		0.00		0.00		
Travel Time (min)	**= 10.11**	**+**	**0.00**	**+**	**0.00**	**=**	**10.11**
Shallow Concentrated Flow							
Flow length (ft)	= 0.00		0.00		0.00		
Watercourse slope (%)	= 0.00		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	=0.00		0.00		0.00		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 10.11 min

TR55 Tc Worksheet

Hyd. No. 38

5305 West Offsite Sub Basin

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 85.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.08		0.00		0.00		
Land slope (%)	= 5.90		0.00		0.00		
Travel Time (min)	**= 7.20**	**+**	**0.00**	**+**	**0.00**	**=**	**7.20**
Shallow Concentrated Flow							
Flow length (ft)	= 250.00		145.00		0.00		
Watercourse slope (%)	= 1.20		6.90		0.00		
Surface description	= Paved		Unpaved		Paved		
Average velocity (ft/s)	=2.23		4.24		0.00		
Travel Time (min)	**= 1.87**	**+**	**0.57**	**+**	**0.00**	**=**	**2.44**
Channel Flow							
X sectional flow area (sqft)	= 1.20		6.20		0.00		
Wetted perimeter (ft)	= 3.90		9.50		0.00		
Channel slope (%)	= 8.50		6.00		0.00		
Manning's n-value	= 0.024		0.045		0.015		
Velocity (ft/s)	=8.22		6.09		0.00		
Flow length (ft)	({0})275.0		485.0		0.0		
Travel Time (min)	**= 0.56**	**+**	**1.33**	**+**	**0.00**	**=**	**1.88**

Total Travel Time, Tc ..... 11.52 min

TR55 Tc Worksheet

Hyd. No. 43

West Culvert offsite

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 85.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.08		0.00		0.00		
Land slope (%)	= 5.90		0.00		0.00		
Travel Time (min)	**= 7.20**	**+**	**0.00**	**+**	**0.00**	**=**	**7.20**
Shallow Concentrated Flow							
Flow length (ft)	= 250.00		145.00		0.00		
Watercourse slope (%)	= 1.20		6.90		0.00		
Surface description	= Paved		Unpaved		Paved		
Average velocity (ft/s)	=2.23		4.24		0.00		
Travel Time (min)	**= 1.87**	**+**	**0.57**	**+**	**0.00**	**=**	**2.44**
Channel Flow							
X sectional flow area (sqft)	= 1.20		6.20		6.20		
Wetted perimeter (ft)	= 3.90		9.50		9.50		
Channel slope (%)	= 8.50		6.00		6.00		
Manning's n-value	= 0.024		0.045		0.045		
Velocity (ft/s)	=8.22						
			6.09				
					6.09		
Flow length (ft)	({0})275.0		485.0		260.0		
Travel Time (min)	**= 0.56**	**+**	**1.33**	**+**	**0.71**	**=**	**2.60**

Total Travel Time, Tc ..... 12.20 min

TR55 Tc Worksheet

Hyd. No. 47

East Offsite Basin

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.08		0.00		0.00		
Land slope (%)	= 14.00		0.00		0.00		
Travel Time (min)	**= 8.73**	**+**	**0.00**	**+**	**0.00**	**=**	**8.73**
Shallow Concentrated Flow							
Flow length (ft)	= 855.00		0.00		0.00		
Watercourse slope (%)	= 5.70		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=3.85		0.00		0.00		
Travel Time (min)	**= 3.70**	**+**	**0.00**	**+**	**0.00**	**=**	**3.70**
Channel Flow							
X sectional flow area (sqft)	= 7.40		0.00		0.00		
Wetted perimeter (ft)	= 13.80		0.00		0.00		
Channel slope (%)	= 4.80		0.00		0.00		
Manning's n-value	= 0.045		0.015		0.015		
Velocity (ft/s)	=4.78						
			0.00				
					0.00		
Flow length (ft)	({0})525.0		0.0		0.0		
Travel Time (min)	**= 1.83**	**+**	**0.00**	**+**	**0.00**	**=**	**1.83**

Total Travel Time, Tc ..... 14.26 min

TR55 Tc Worksheet

Hyd. No. 51

Ex Church and Downstream

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.08		0.00		0.00		
Land slope (%)	= 14.00		0.00		0.00		
Travel Time (min)	**= 8.73**	**+**	**0.00**	**+**	**0.00**	**=**	**8.73**
Shallow Concentrated Flow							
Flow length (ft)	= 855.00		0.00		0.00		
Watercourse slope (%)	= 5.70		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=3.85		0.00		0.00		
Travel Time (min)	**= 3.70**	**+**	**0.00**	**+**	**0.00**	**=**	**3.70**
Channel Flow							
X sectional flow area (sqft)	= 7.40		26.60		0.00		
Wetted perimeter (ft)	= 13.80		17.70		0.00		
Channel slope (%)	= 4.80		2.50		0.00		
Manning's n-value	= 0.045		0.040		0.015		
Velocity (ft/s)	=4.78						
			7.74				
					0.00		
Flow length (ft)	({0})525.0		2440.0		0.0		
Travel Time (min)	**= 1.83**	**+**	**5.26**	**+**	**0.00**	**=**	**7.09**

Total Travel Time, Tc ..... 19.52 min

Hydrograph Report

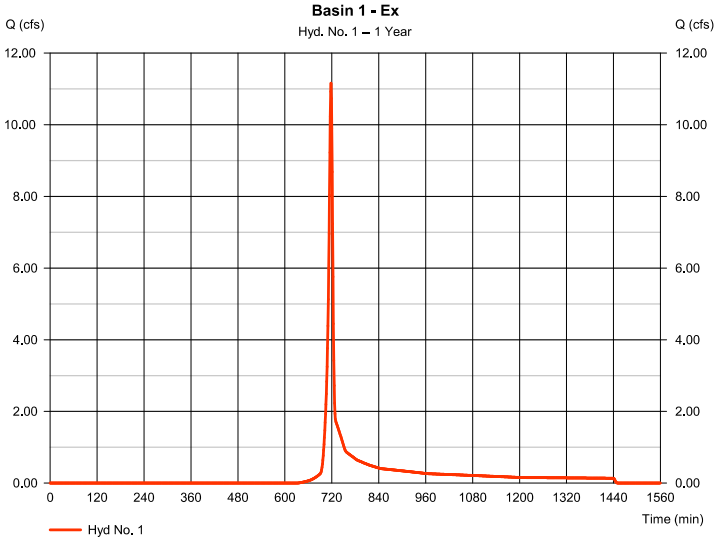
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 1

Basin 1 - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 11.16 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 22,497 cuft
Drainage area	= 5.480 ac	Curve number	= 76*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.510 x 98) + (0.830 x 61) + (2.140 x 55)] / 5.480



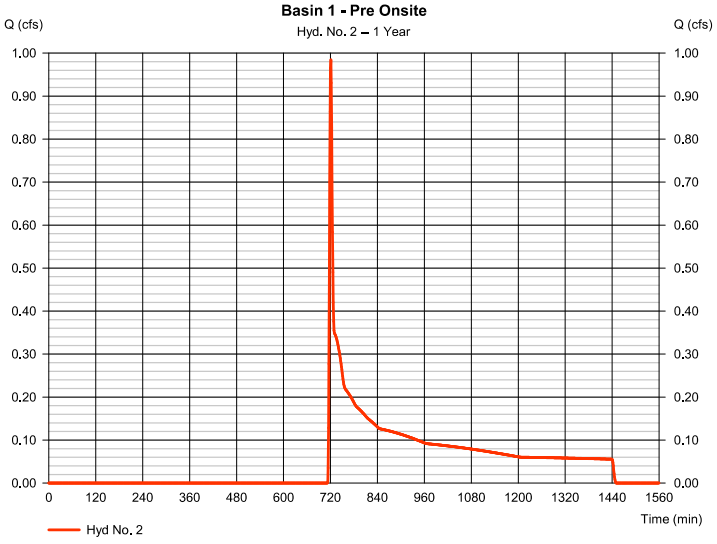
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 2

Basin 1 - Pre Onsite

Hydrograph type	= SCS Runoff	Peak discharge	= 0.984 cfs
Storm frequency	= 1 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 4,669 cuft
Drainage area	= 5.480 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



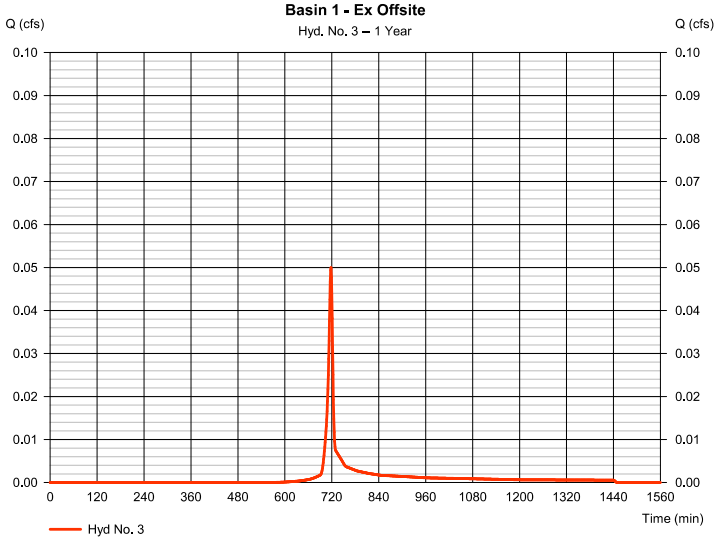
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 3

Basin 1 - Ex Offsite

Hydrograph type	= SCS Runoff	Peak discharge	= 0.050 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 100 cuft
Drainage area	= 0.020 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



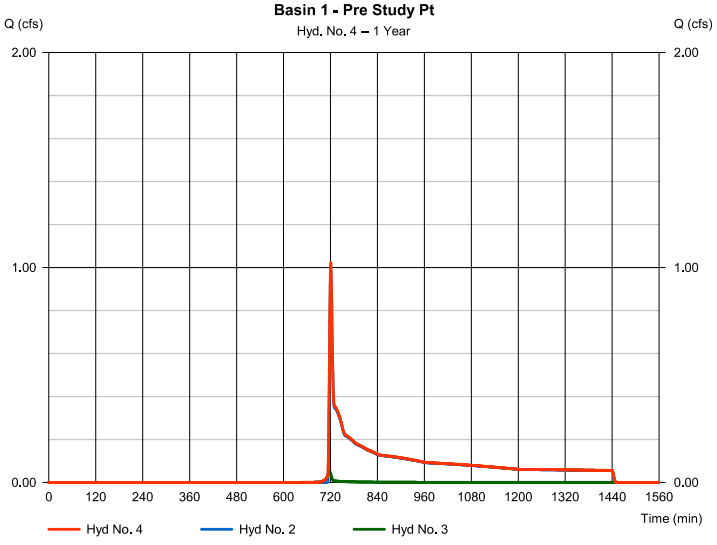
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 4

Basin 1 - Pre Study Pt

Hydrograph type	= Combine	Peak discharge	= 1.022 cfs
Storm frequency	= 1 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 4,770 cuft
Inflow hyds.	= 2, 3	Contrib. drain. area	= 5.500 ac



Hydrograph Report

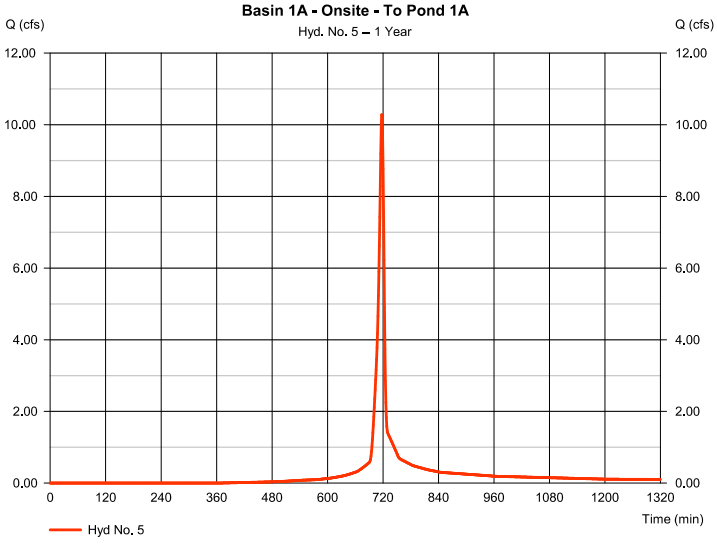
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 5

Basin 1A - Onsite - To Pond 1A

Hydrograph type	= SCS Runoff	Peak discharge	= 10.28 cfs
Storm frequency	= 1 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 21,355 cuft
Drainage area	= 2.840 ac	Curve number	= 89*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.160 x 98) + (0.680 x 61)] / 2.840



Hydrograph Report

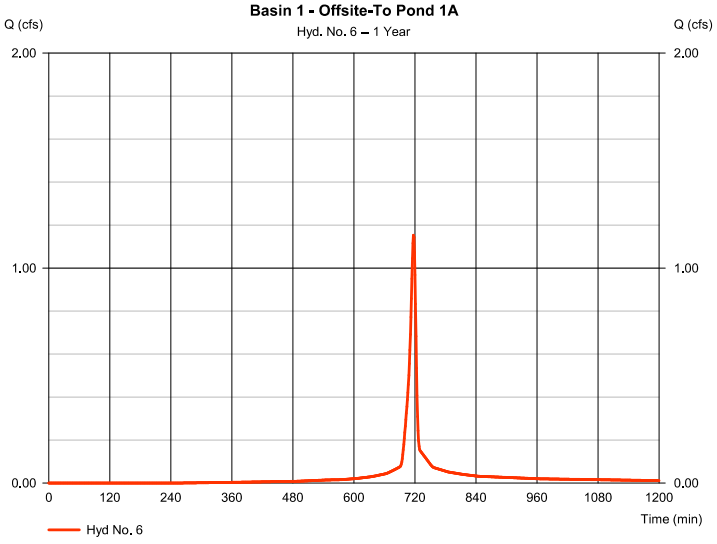
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 6

Basin 1 - Offsite-To Pond 1A

Hydrograph type	= SCS Runoff	Peak discharge	= 1.153 cfs
Storm frequency	= 1 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 2,483 cuft
Drainage area	= 0.280 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.240 x 98) + (0.040 x 61)] / 0.280



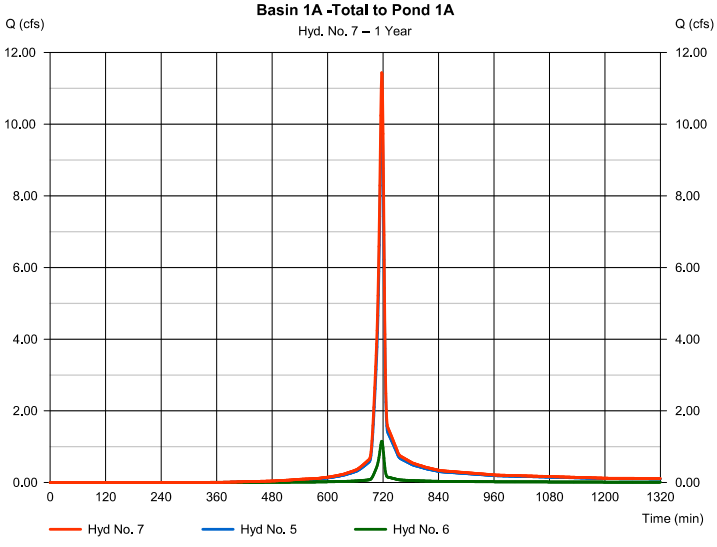
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 7

Basin 1A -Total to Pond 1A

Hydrograph type	= Combine	Peak discharge	= 11.44 cfs
Storm frequency	= 1 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 23,838 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 3.120 ac



Hydrograph Report

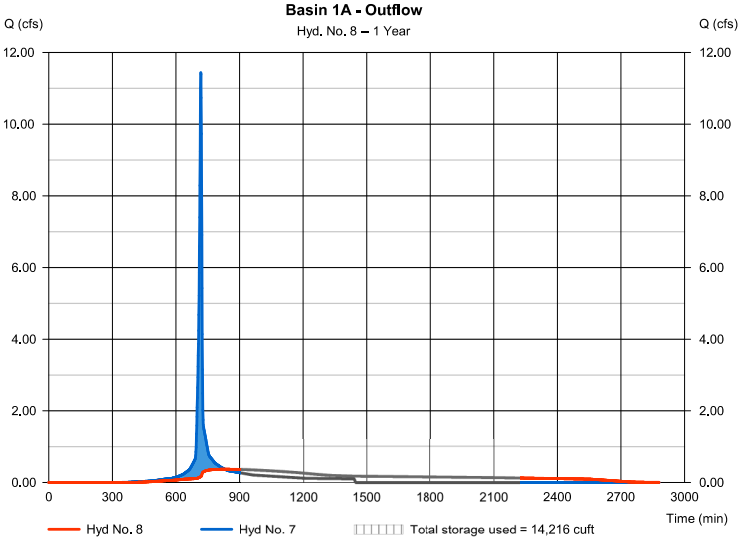
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 8

Basin 1A - Outflow

Hydrograph type	= Reservoir	Peak discharge	= 0.371 cfs
Storm frequency	= 1 yrs	Time to peak	= 831 min
Time interval	= 1 min	Hyd. volume	= 23,820 cuft
Inflow hyd. No.	= 7 - Basin 1A -Total to Pond 1A	Max. Elevation	= 1083.68 ft
Reservoir name	= Pond 1A	Max. Storage	= 14,216 cuft

Storage Indication method used.



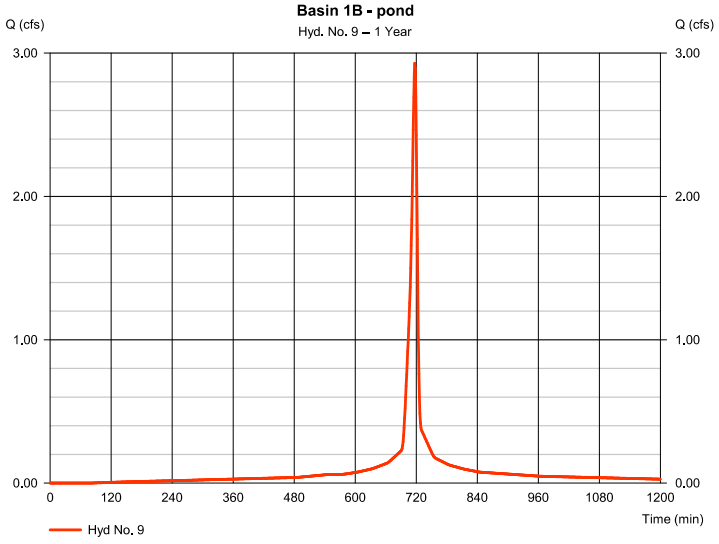
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 9

Basin 1B - pond

Hydrograph type	= SCS Runoff	Peak discharge	= 2.930 cfs
Storm frequency	= 1 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 6,919 cuft
Drainage area	= 0.640 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

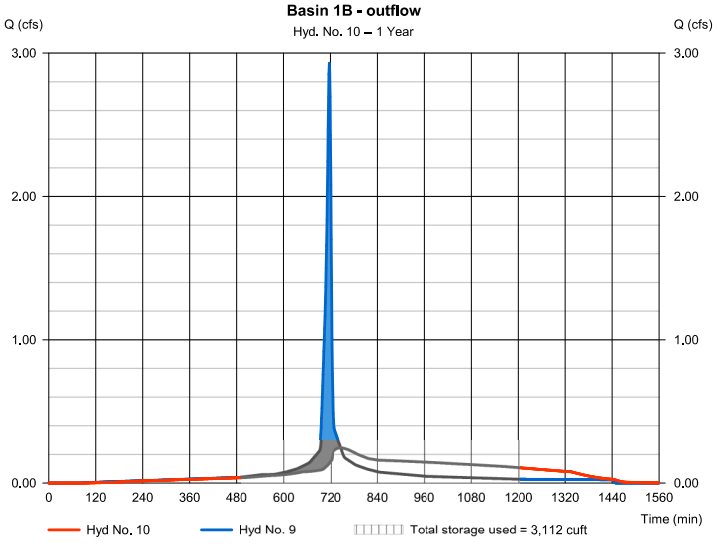
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 10

Basin 1B - outflow

Hydrograph type	= Reservoir	Peak discharge	= 0.246 cfs
Storm frequency	= 1 yrs	Time to peak	= 746 min
Time interval	= 1 min	Hyd. volume	= 6,916 cuft
Inflow hyd. No.	= 9 - Basin 1B - pond	Max. Elevation	= 1072.74 ft
Reservoir name	= Pond 1B	Max. Storage	= 3,112 cuft

Storage Indication method used.



Hydrograph Report

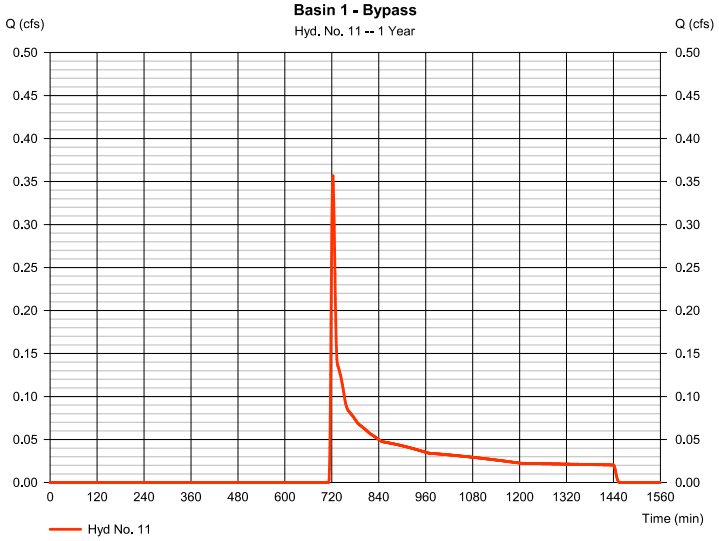
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 11

Basin 1 - Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.357 cfs
Storm frequency	= 1 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 1,794 cuft
Drainage area	= 1.940 ac	Curve number	= 56*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.80 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.030 x 98) + (1.910 x 55)] / 1.940



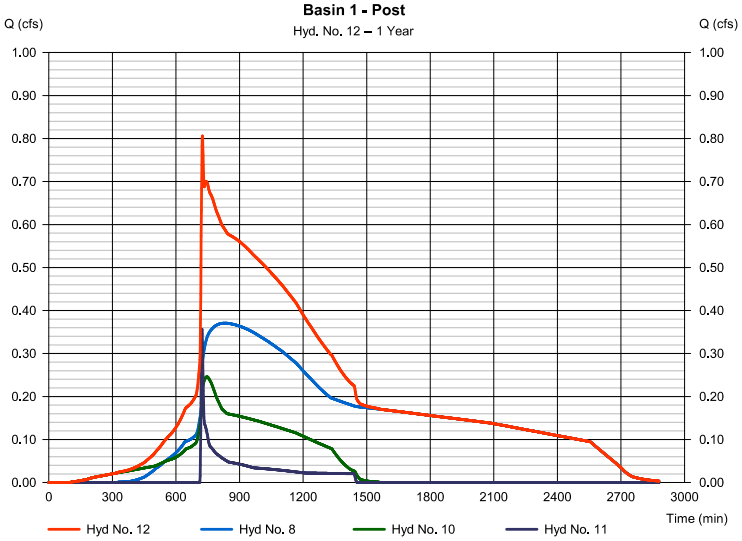
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 12

Basin 1 - Post

Hydrograph type	= Combine	Peak discharge	= 0.806 cfs
Storm frequency	= 1 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 32,530 cuft
Inflow hyds.	= 8, 10, 11	Contrib. drain. area	= 1.940 ac



Hydrograph Report

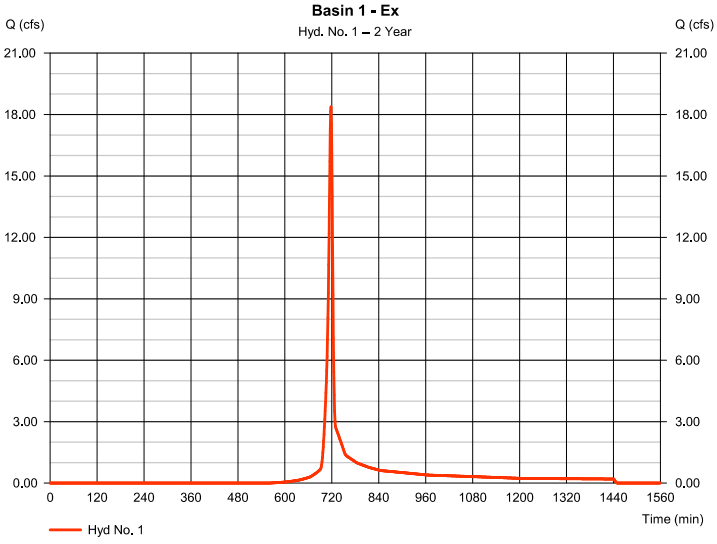
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 1

Basin 1 - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 18.38 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 36,926 cuft
Drainage area	= 5.480 ac	Curve number	= 76*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.510 x 98) + (0.830 x 61) + (2.140 x 55)] / 5.480



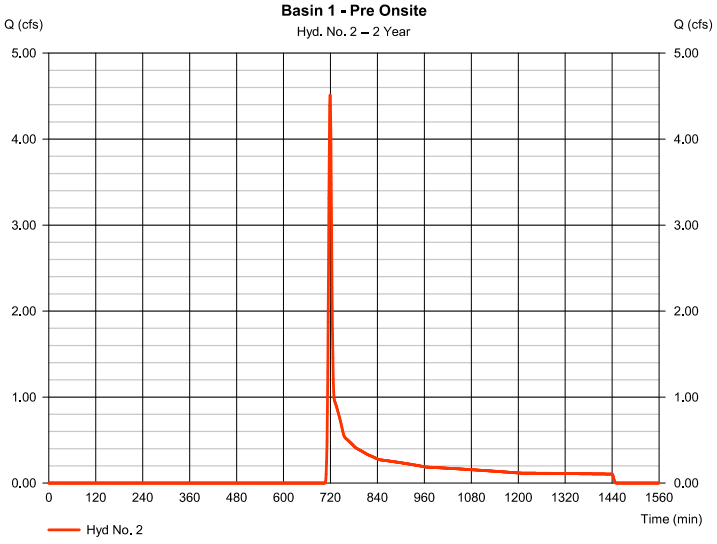
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 2

Basin 1 - Pre Onsite

Hydrograph type	= SCS Runoff	Peak discharge	= 4.512 cfs
Storm frequency	= 2 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 11,529 cuft
Drainage area	= 5.480 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



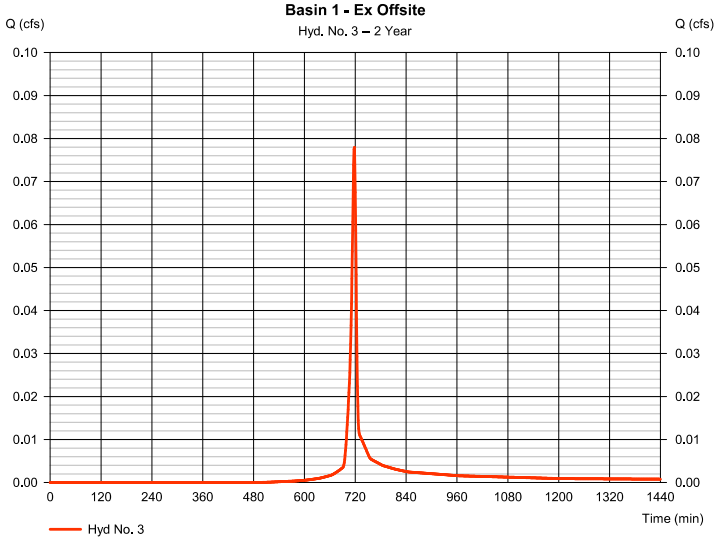
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 3

Basin 1 - Ex Offsite

Hydrograph type	= SCS Runoff	Peak discharge	= 0.078 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 158 cuft
Drainage area	= 0.020 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



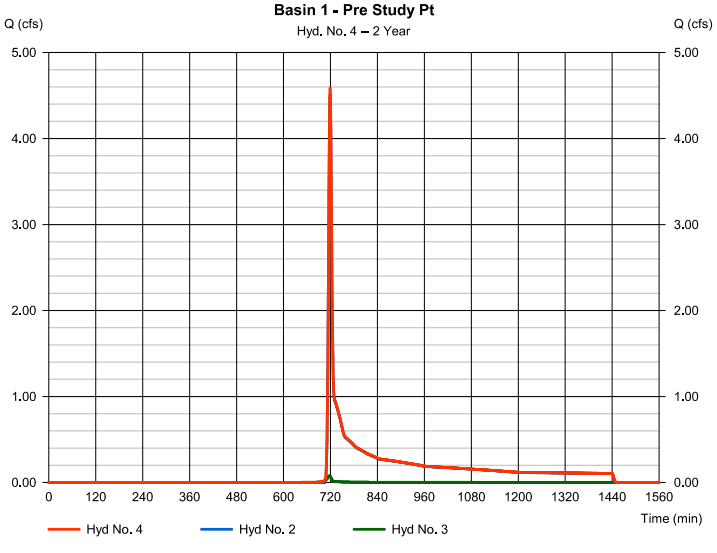
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 4

Basin 1 - Pre Study Pt

Hydrograph type	= Combine	Peak discharge	= 4.586 cfs
Storm frequency	= 2 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 11,686 cuft
Inflow hyds.	= 2, 3	Contrib. drain. area	= 5.500 ac



Hydrograph Report

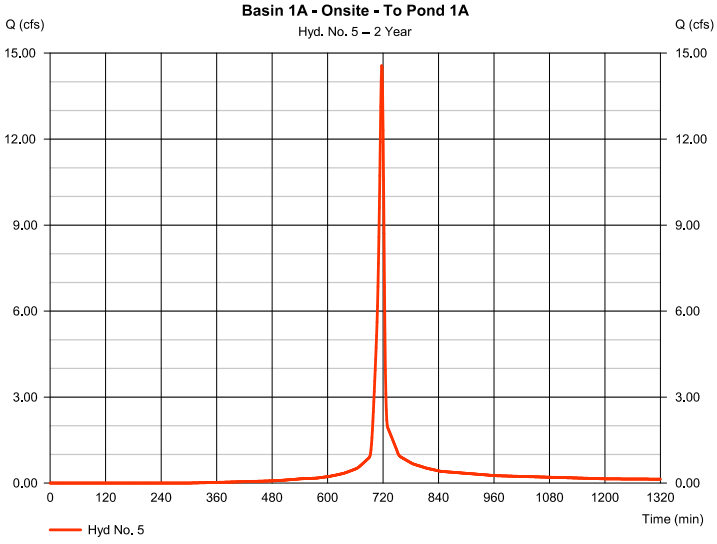
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 5

Basin 1A - Onsite - To Pond 1A

Hydrograph type	= SCS Runoff	Peak discharge	= 14.56 cfs
Storm frequency	= 2 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 30,812 cuft
Drainage area	= 2.840 ac	Curve number	= 89*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.160 x 98) + (0.680 x 61)] / 2.840



Hydrograph Report

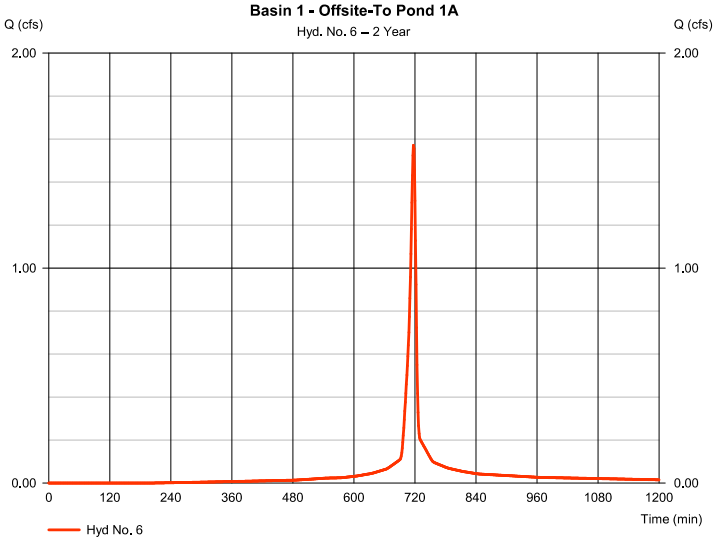
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 6

Basin 1 - Offsite-To Pond 1A

Hydrograph type	= SCS Runoff	Peak discharge	= 1.571 cfs
Storm frequency	= 2 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 3,457 cuft
Drainage area	= 0.280 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.240 x 98) + (0.040 x 61)] / 0.280



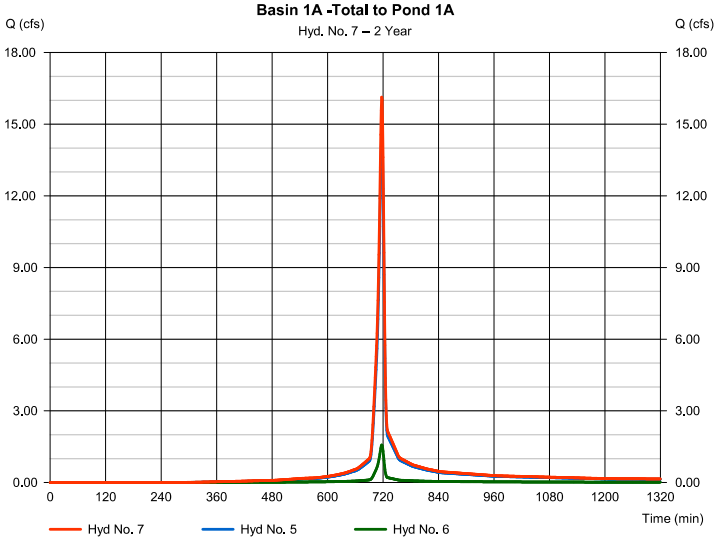
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 7

Basin 1A -Total to Pond 1A

Hydrograph type	= Combine	Peak discharge	= 16.13 cfs
Storm frequency	= 2 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 34,269 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 3.120 ac



Hydrograph Report

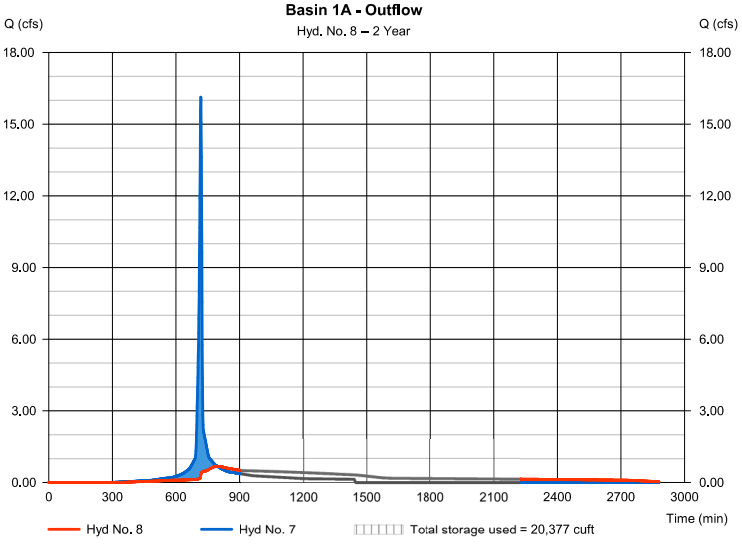
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 8

Basin 1A - Outflow

Hydrograph type	= Reservoir	Peak discharge	= 0.673 cfs
Storm frequency	= 2 yrs	Time to peak	= 796 min
Time interval	= 1 min	Hyd. volume	= 34,125 cuft
Inflow hyd. No.	= 7 - Basin 1A -Total to Pond 1A	Max. Elevation	= 1084.63 ft
Reservoir name	= Pond 1A	Max. Storage	= 20,377 cuft

Storage Indication method used.



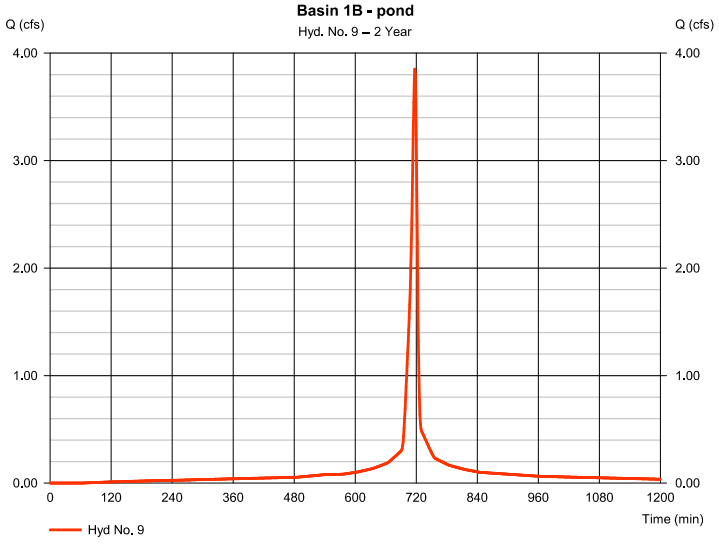
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 9

Basin 1B - pond

Hydrograph type	= SCS Runoff	Peak discharge	= 3.851 cfs
Storm frequency	= 2 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 9,212 cuft
Drainage area	= 0.640 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

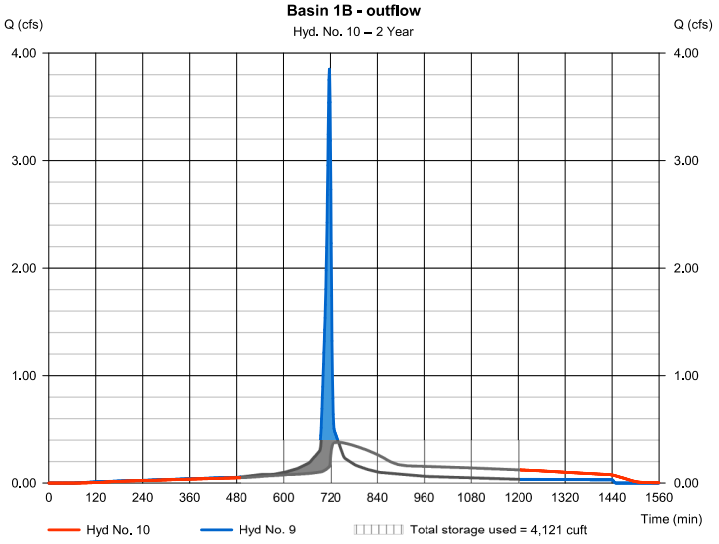
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 10

Basin 1B - outflow

Hydrograph type	= Reservoir	Peak discharge	= 0.378 cfs
Storm frequency	= 2 yrs	Time to peak	= 741 min
Time interval	= 1 min	Hyd. volume	= 9,209 cuft
Inflow hyd. No.	= 9 - Basin 1B - pond	Max. Elevation	= 1073.31 ft
Reservoir name	= Pond 1B	Max. Storage	= 4,121 cuft

Storage Indication method used.



Hydrograph Report

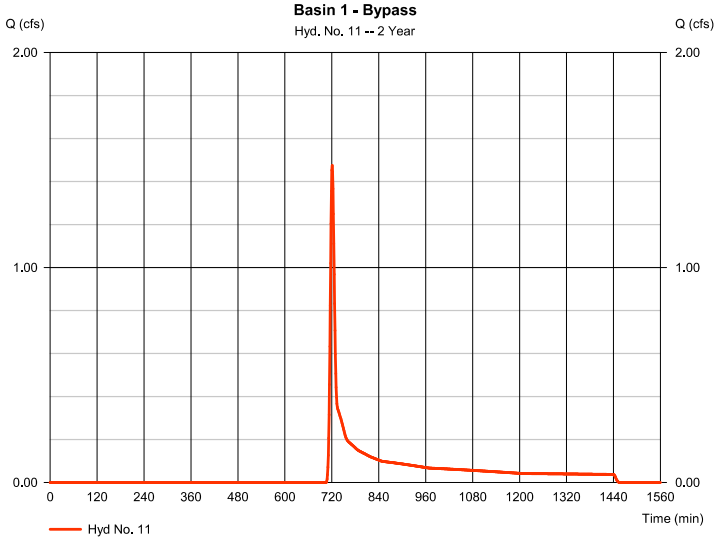
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 11

Basin 1 - Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 1.475 cfs
Storm frequency	= 2 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 4,275 cuft
Drainage area	= 1.940 ac	Curve number	= 56*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.80 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.030 x 98) + (1.910 x 55)] / 1.940



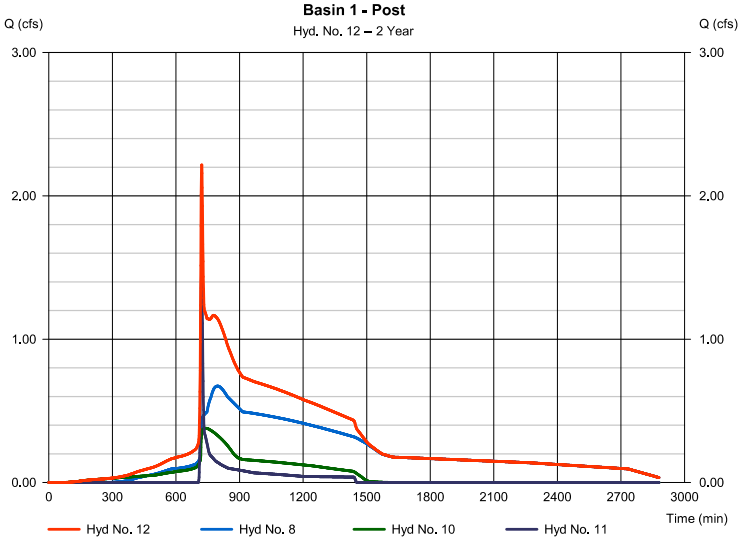
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 12

Basin 1 - Post

Hydrograph type	= Combine	Peak discharge	= 2.216 cfs
Storm frequency	= 2 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 47,609 cuft
Inflow hyds.	= 8, 10, 11	Contrib. drain. area	= 1.940 ac



Hydrograph Report

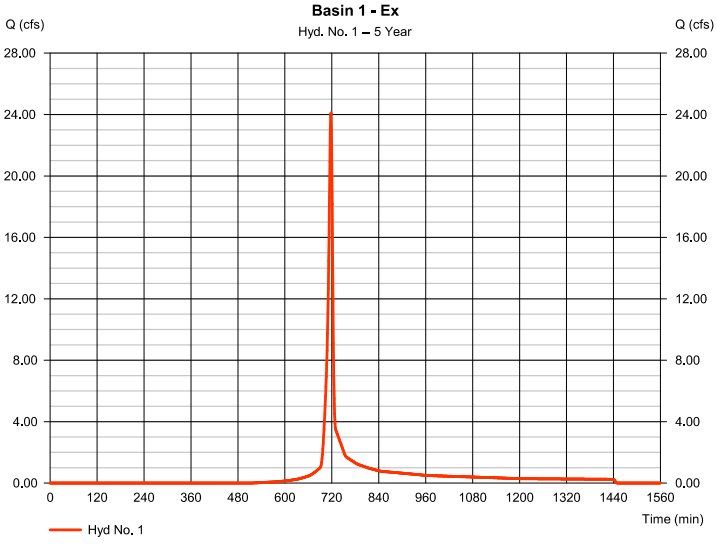
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 1

Basin 1 - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 24.10 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 48,653 cuft
Drainage area	= 5.480 ac	Curve number	= 76*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.510 x 98) + (0.830 x 61) + (2.140 x 55)] / 5.480



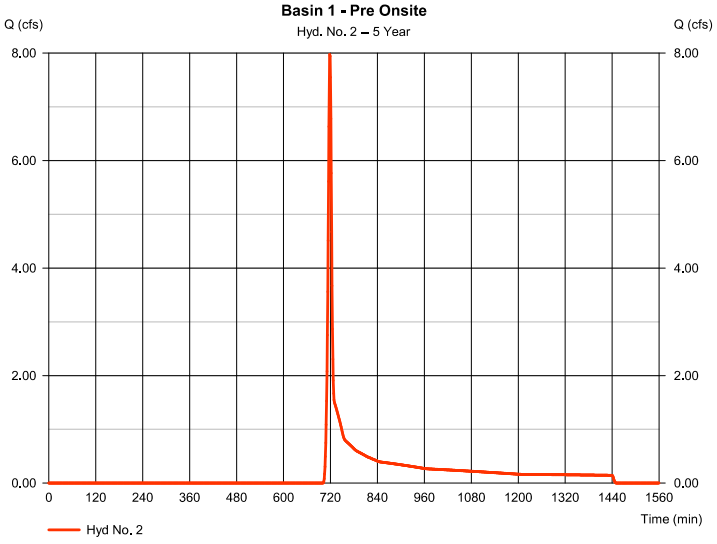
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 2

Basin 1 - Pre Onsite

Hydrograph type	= SCS Runoff	Peak discharge	= 7.976 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 18,096 cuft
Drainage area	= 5.480 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



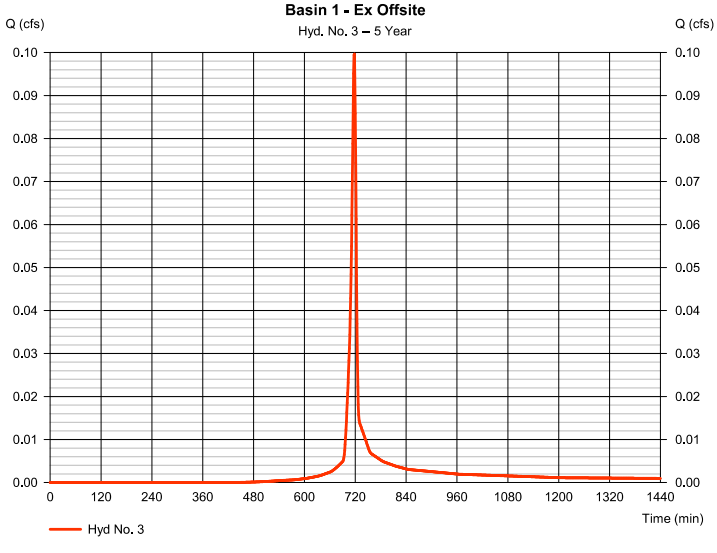
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 3

Basin 1 - Ex Offsite

Hydrograph type	= SCS Runoff	Peak discharge	= 0.100 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 204 cuft
Drainage area	= 0.020 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



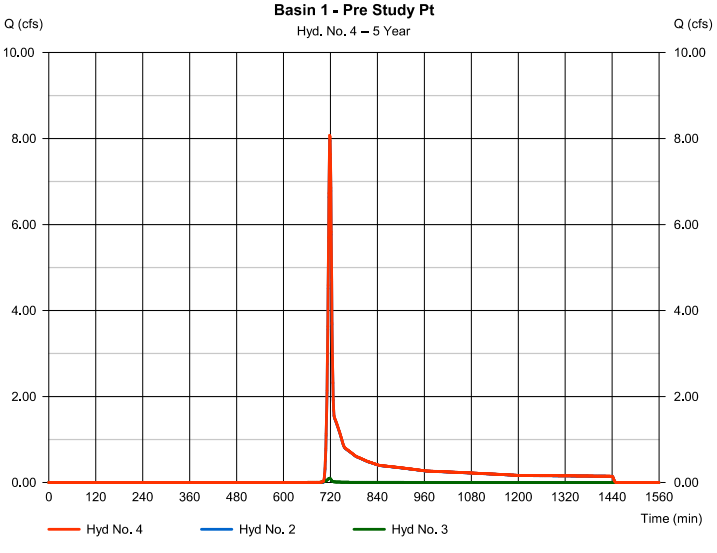
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 4

Basin 1 - Pre Study Pt

Hydrograph type	= Combine	Peak discharge	= 8.076 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 18,300 cuft
Inflow hyds.	= 2, 3	Contrib. drain. area	= 5.500 ac



Hydrograph Report

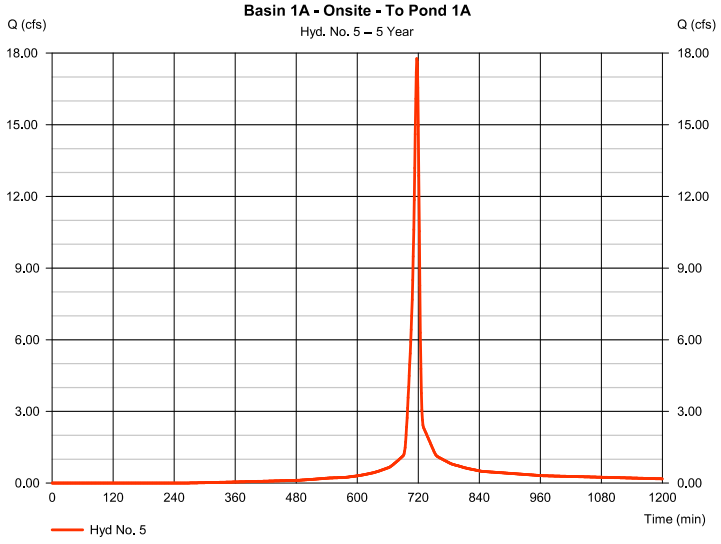
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 5

Basin 1A - Onsite - To Pond 1A

Hydrograph type	= SCS Runoff	Peak discharge	= 17.77 cfs
Storm frequency	= 5 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 38,068 cuft
Drainage area	= 2.840 ac	Curve number	= 89*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.160 x 98) + (0.680 x 61)] / 2.840



Hydrograph Report

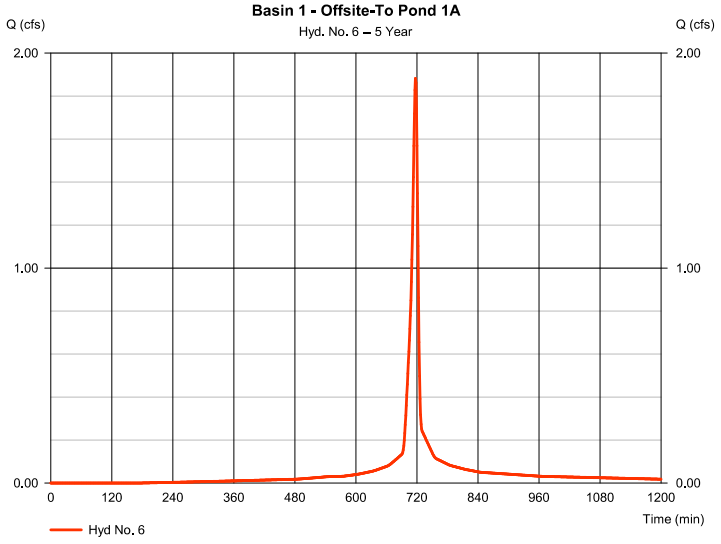
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 6

Basin 1 - Offsite-To Pond 1A

Hydrograph type	= SCS Runoff	Peak discharge	= 1.882 cfs
Storm frequency	= 5 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 4,194 cuft
Drainage area	= 0.280 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.240 x 98) + (0.040 x 61)] / 0.280



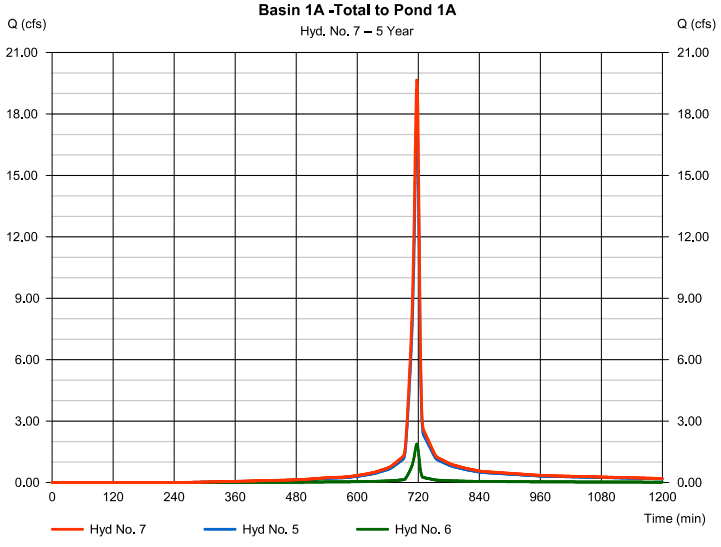
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 7

Basin 1A -Total to Pond 1A

Hydrograph type	= Combine	Peak discharge	= 19.65 cfs
Storm frequency	= 5 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 42,263 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 3.120 ac



Hydrograph Report

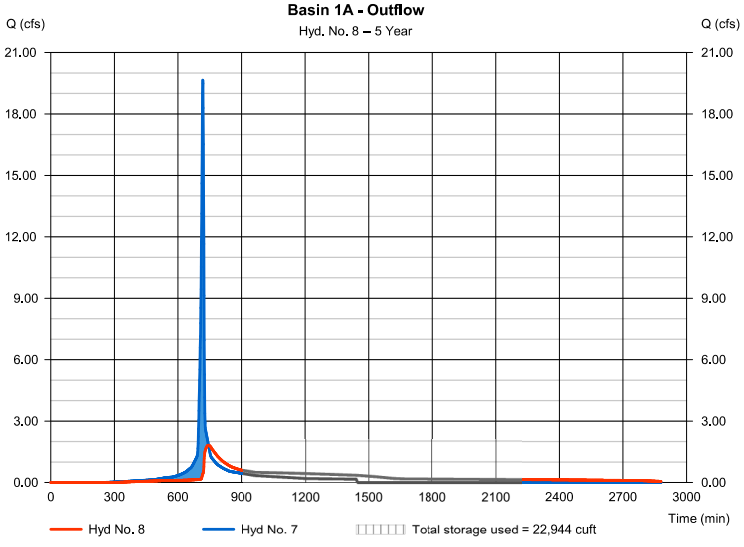
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 8

Basin 1A - Outflow

Hydrograph type	= Reservoir	Peak discharge	= 1.821 cfs
Storm frequency	= 5 yrs	Time to peak	= 744 min
Time interval	= 1 min	Hyd. volume	= 41,996 cuft
Inflow hyd. No.	= 7 - Basin 1A -Total to Pond 1A	Max. Elevation	= 1085.03 ft
Reservoir name	= Pond 1A	Max. Storage	= 22,944 cuft

Storage Indication method used.



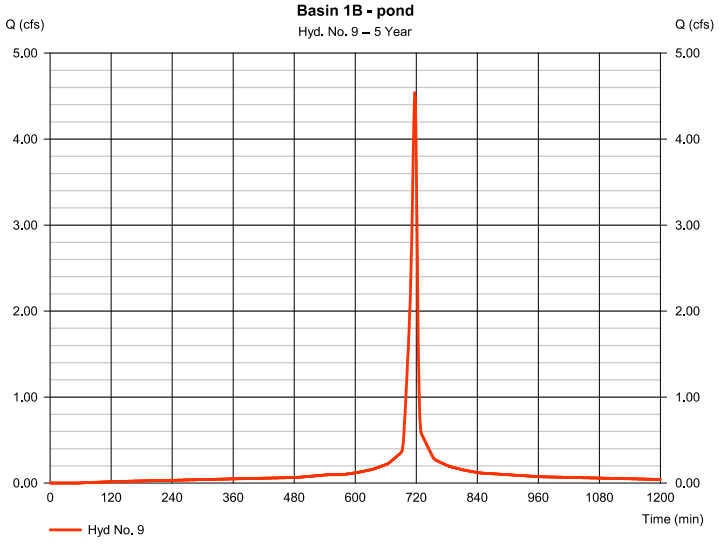
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 9

Basin 1B - pond

Hydrograph type	= SCS Runoff	Peak discharge	= 4.539 cfs
Storm frequency	= 5 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 10,933 cuft
Drainage area	= 0.640 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

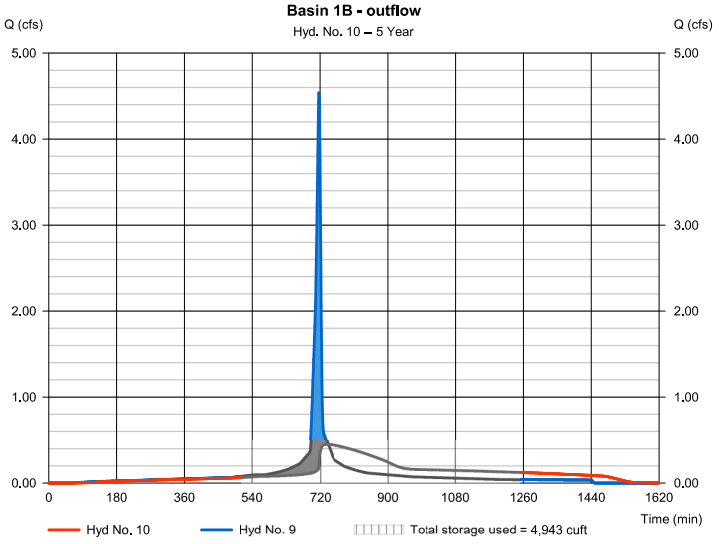
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 10

Basin 1B - outflow

Hydrograph type	= Reservoir	Peak discharge	= 0.449 cfs
Storm frequency	= 5 yrs	Time to peak	= 740 min
Time interval	= 1 min	Hyd. volume	= 10,931 cuft
Inflow hyd. No.	= 9 - Basin 1B - pond	Max. Elevation	= 1073.77 ft
Reservoir name	= Pond 1B	Max. Storage	= 4,943 cuft

Storage Indication method used.



Hydrograph Report

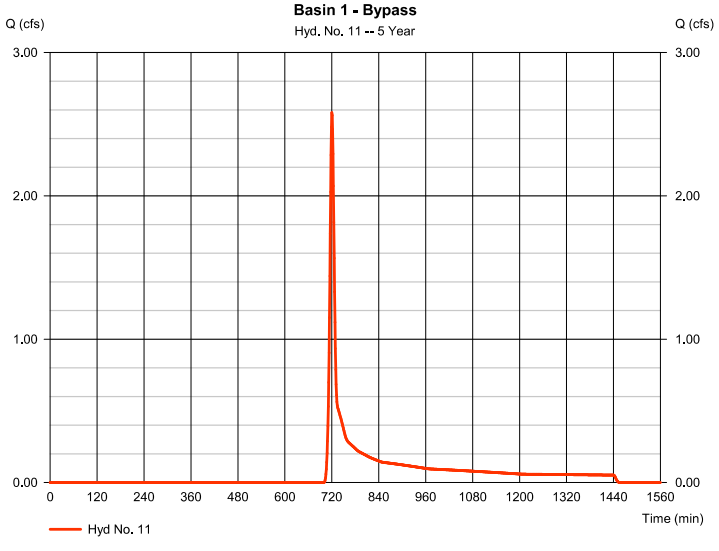
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 11

Basin 1 - Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 2.581 cfs
Storm frequency	= 5 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 6,622 cuft
Drainage area	= 1.940 ac	Curve number	= 56*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.80 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.030 x 98) + (1.910 x 55)] / 1.940



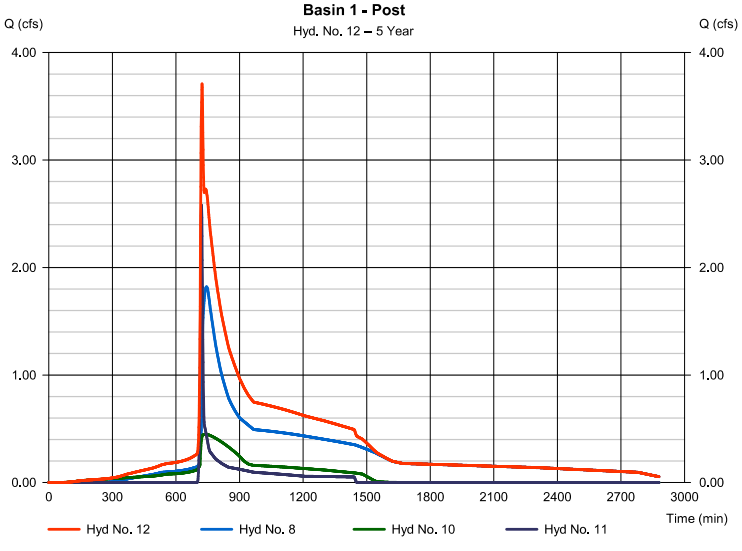
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 12

Basin 1 - Post

Hydrograph type	= Combine	Peak discharge	= 3.709 cfs
Storm frequency	= 5 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 59,548 cuft
Inflow hyds.	= 8, 10, 11	Contrib. drain. area	= 1.940 ac



Hydrograph Report

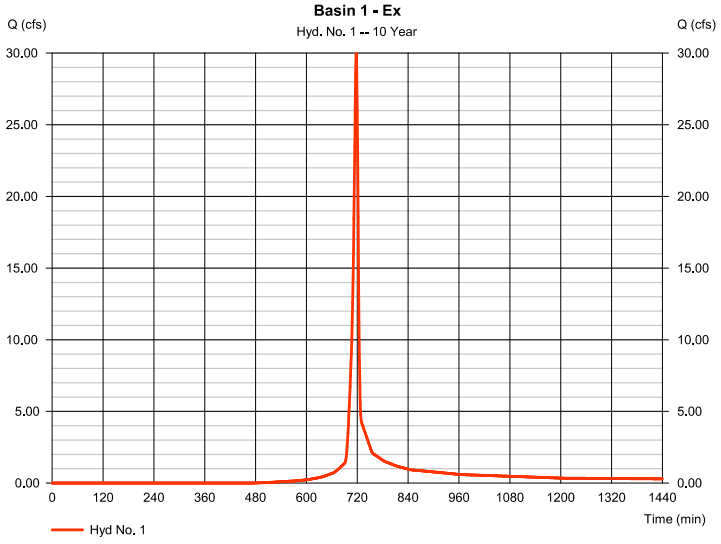
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 1

Basin 1 - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 29.99 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 60,924 cuft
Drainage area	= 5.480 ac	Curve number	= 76*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.510 x 98) + (0.830 x 61) + (2.140 x 55)] / 5.480



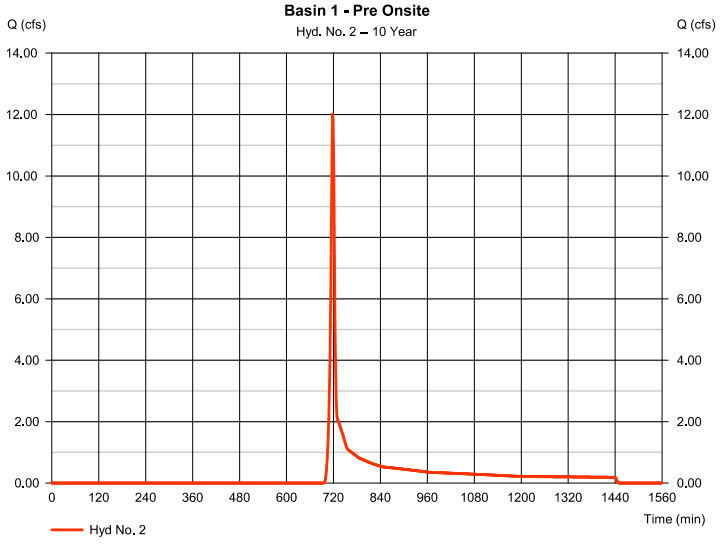
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 2

Basin 1 - Pre Onsite

Hydrograph type	= SCS Runoff	Peak discharge	= 12.01 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 25,644 cuft
Drainage area	= 5.480 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



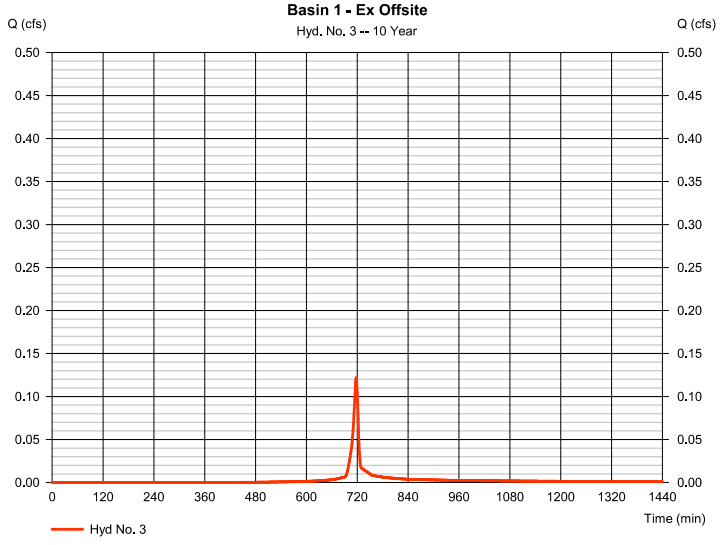
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 3

Basin 1 - Ex Offsite

Hydrograph type	= SCS Runoff	Peak discharge	= 0.122 cfs
Storm frequency	= 10 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 251 cuft
Drainage area	= 0.020 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



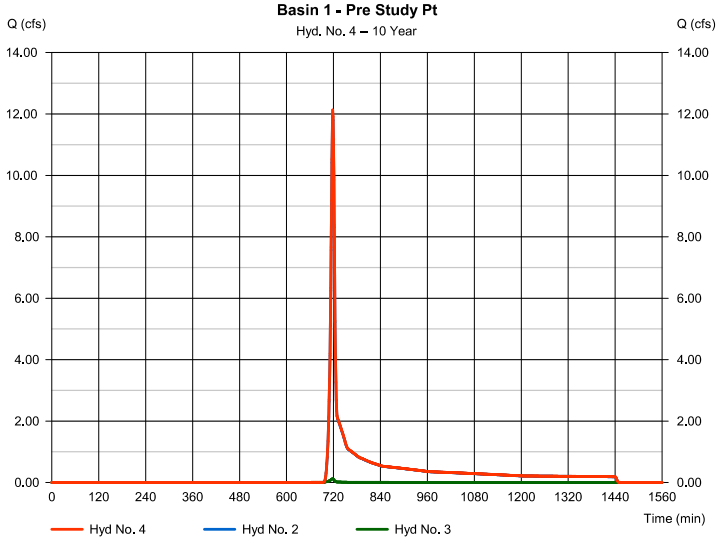
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 4

Basin 1 - Pre Study Pt

Hydrograph type	= Combine	Peak discharge	= 12.13 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 25,895 cuft
Inflow hyds.	= 2, 3	Contrib. drain. area	= 5.500 ac



Hydrograph Report

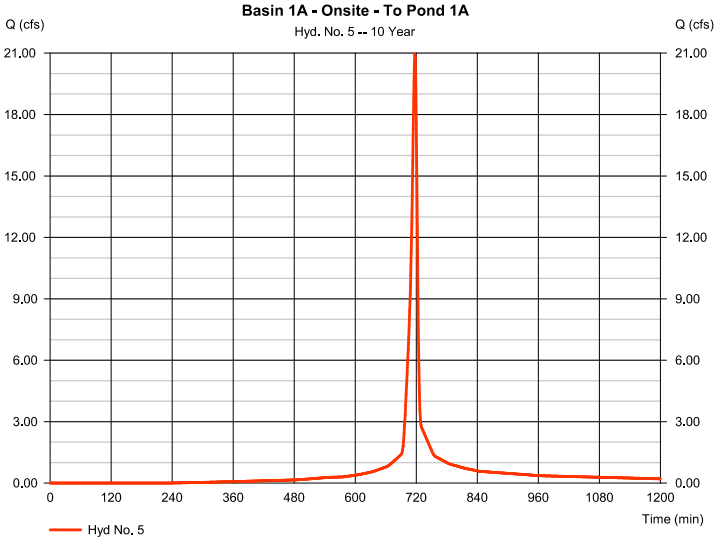
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 5

Basin 1A - Onsite - To Pond 1A

Hydrograph type	= SCS Runoff	Peak discharge	= 20.96 cfs
Storm frequency	= 10 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 45,412 cuft
Drainage area	= 2.840 ac	Curve number	= 89*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.160 x 98) + (0.680 x 61)] / 2.840



Hydrograph Report

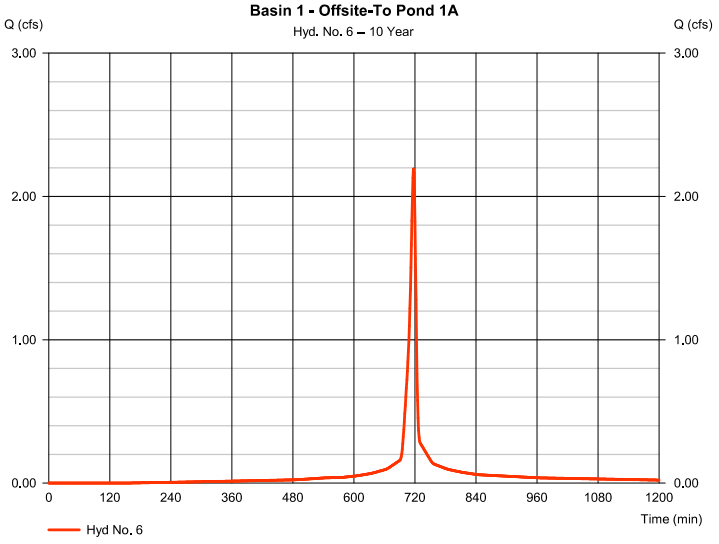
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 6

Basin 1 - Offsite-To Pond 1A

Hydrograph type	= SCS Runoff	Peak discharge	= 2.192 cfs
Storm frequency	= 10 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 4,936 cuft
Drainage area	= 0.280 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.240 x 98) + (0.040 x 61)] / 0.280



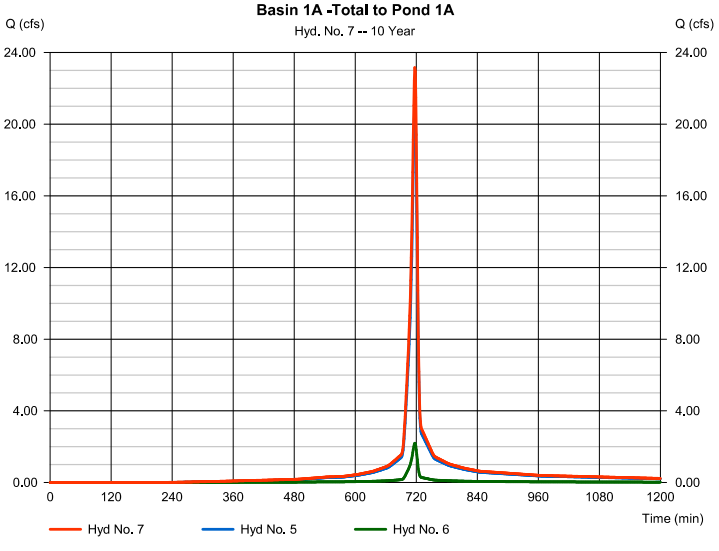
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 7

Basin 1A -Total to Pond 1A

Hydrograph type	= Combine	Peak discharge	= 23.16 cfs
Storm frequency	= 10 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 50,349 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 3.120 ac



Hydrograph Report

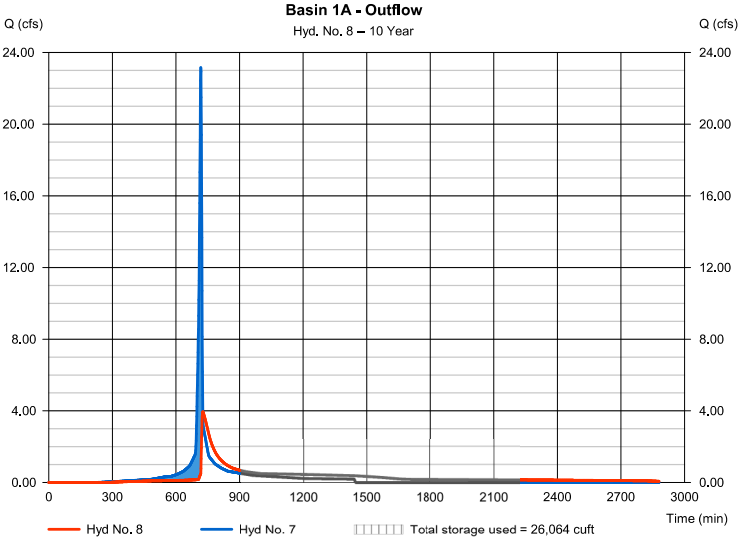
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 8

Basin 1A - Outflow

Hydrograph type	= Reservoir	Peak discharge	= 3.950 cfs
Storm frequency	= 10 yrs	Time to peak	= 727 min
Time interval	= 1 min	Hyd. volume	= 49,940 cuft
Inflow hyd. No.	= 7 - Basin 1A -Total to Pond 1A	Max. Elevation	= 1085.51 ft
Reservoir name	= Pond 1A	Max. Storage	= 26,064 cuft

Storage Indication method used.



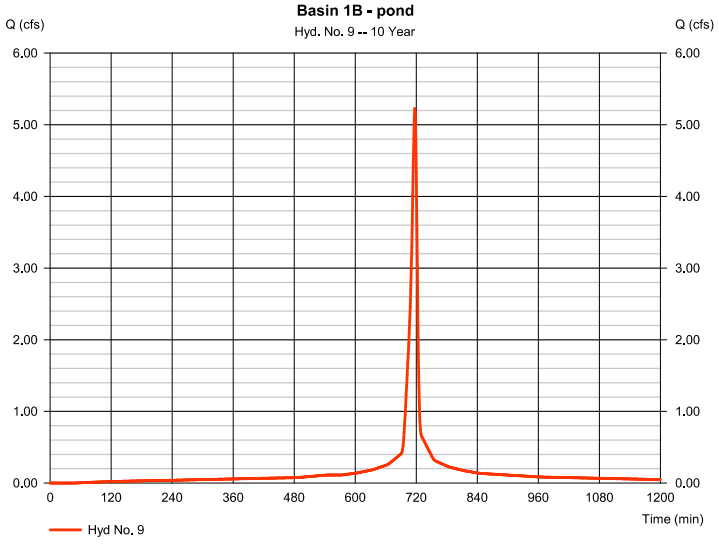
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 9

Basin 1B - pond

Hydrograph type	= SCS Runoff	Peak discharge	= 5.227 cfs
Storm frequency	= 10 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 12,656 cuft
Drainage area	= 0.640 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

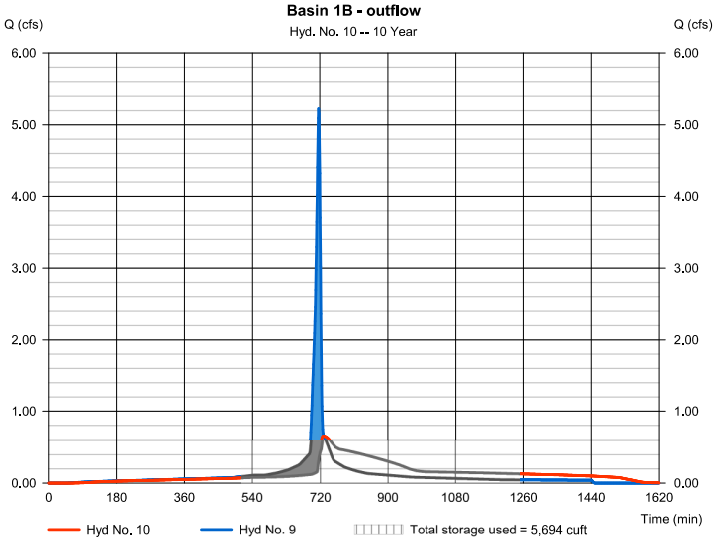
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 10

Basin 1B - outflow

Hydrograph type	= Reservoir	Peak discharge	= 0.650 cfs
Storm frequency	= 10 yrs	Time to peak	= 731 min
Time interval	= 1 min	Hyd. volume	= 12,653 cuft
Inflow hyd. No.	= 9 - Basin 1B - pond	Max. Elevation	= 1074.20 ft
Reservoir name	= Pond 1B	Max. Storage	= 5,694 cuft

Storage Indication method used.



Hydrograph Report

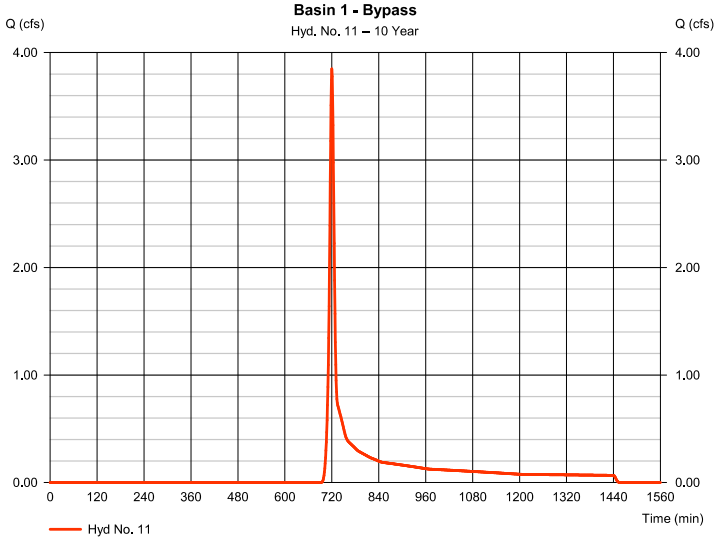
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 11

Basin 1 - Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 3.848 cfs
Storm frequency	= 10 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 9,300 cuft
Drainage area	= 1.940 ac	Curve number	= 56*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.80 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.030 x 98) + (1.910 x 55)] / 1.940



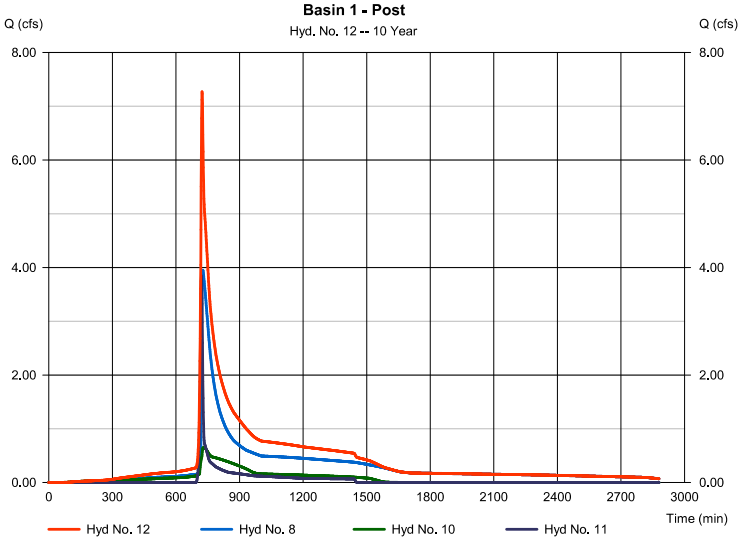
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 12

Basin 1 - Post

Hydrograph type	= Combine	Peak discharge	= 7.271 cfs
Storm frequency	= 10 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 71,894 cuft
Inflow hyds.	= 8, 10, 11	Contrib. drain. area	= 1.940 ac



Hydrograph Report

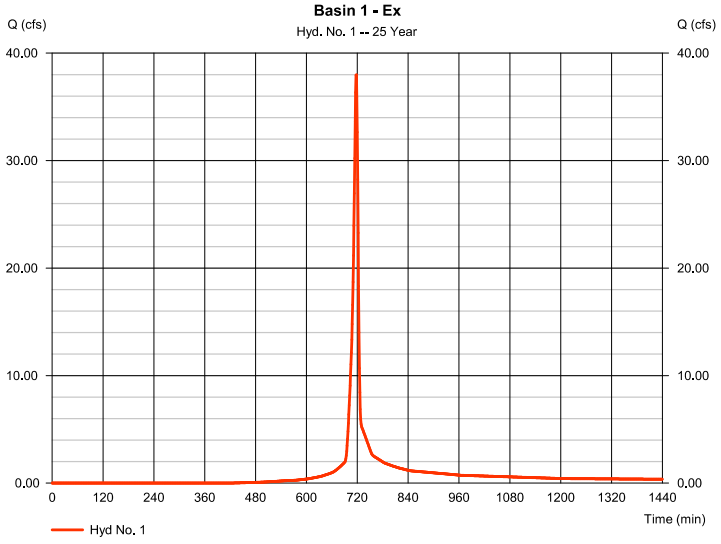
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 1

Basin 1 - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 37.98 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 77,908 cuft
Drainage area	= 5.480 ac	Curve number	= 76*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.510 x 98) + (0.830 x 61) + (2.140 x 55)] / 5.480



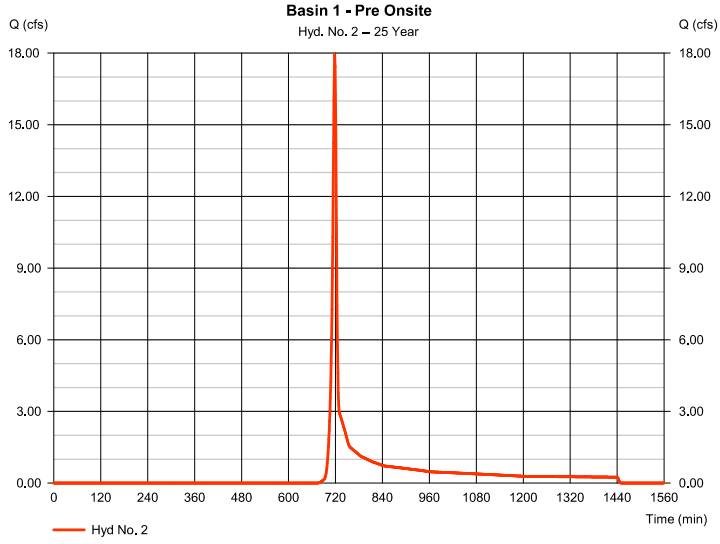
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 2

Basin 1 - Pre Onsite

Hydrograph type	= SCS Runoff	Peak discharge	= 17.95 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 36,949 cuft
Drainage area	= 5.480 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



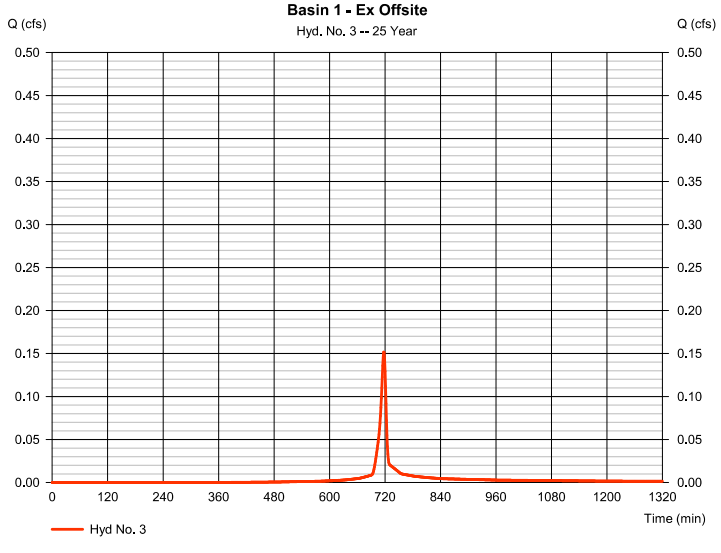
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 3

Basin 1 - Ex Offsite

Hydrograph type	= SCS Runoff	Peak discharge	= 0.152 cfs
Storm frequency	= 25 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 316 cuft
Drainage area	= 0.020 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



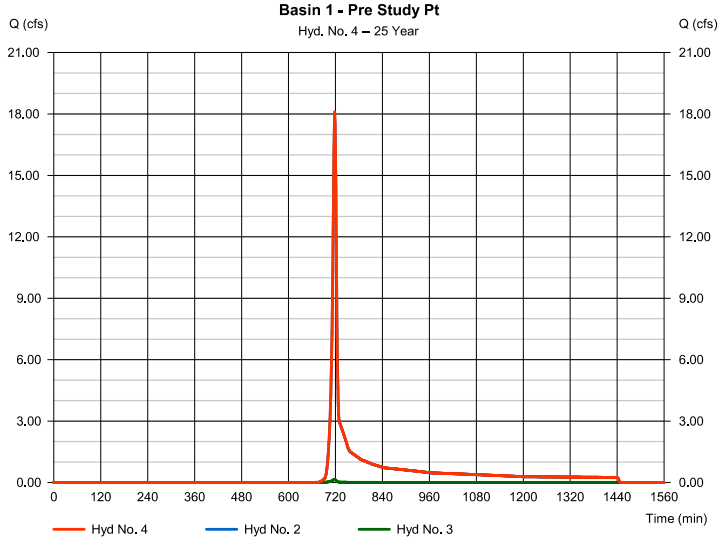
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 4

Basin 1 - Pre Study Pt

Hydrograph type	= Combine	Peak discharge	= 18.10 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 37,265 cuft
Inflow hyds.	= 2, 3	Contrib. drain. area	= 5.500 ac



Hydrograph Report

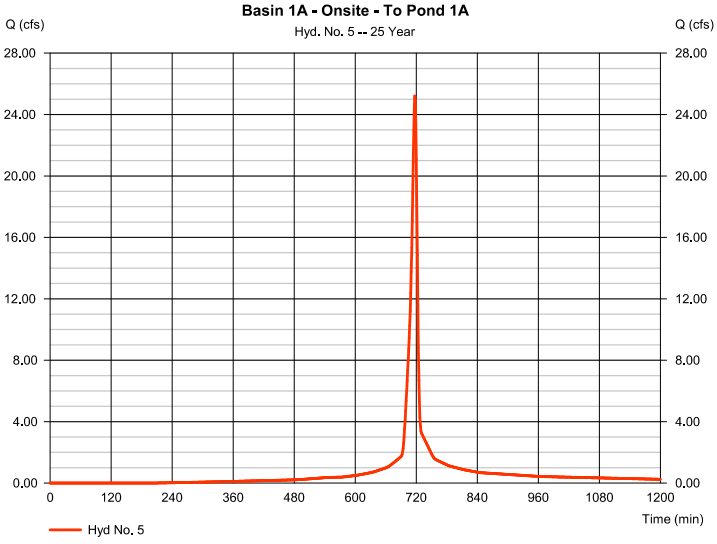
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 5

Basin 1A - Onsite - To Pond 1A

Hydrograph type	= SCS Runoff	Peak discharge	= 25.20 cfs
Storm frequency	= 25 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 55,298 cuft
Drainage area	= 2.840 ac	Curve number	= 89*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.160 x 98) + (0.680 x 61)] / 2.840



Hydrograph Report

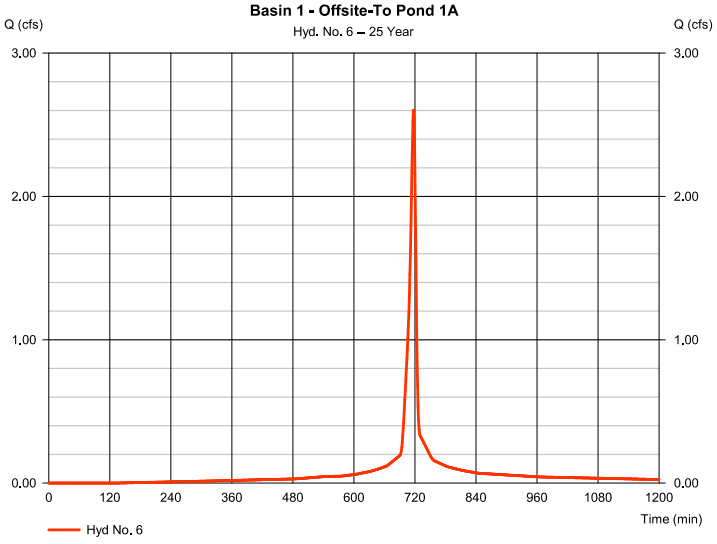
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 6

Basin 1 - Offsite-To Pond 1A

Hydrograph type	= SCS Runoff	Peak discharge	= 2.602 cfs
Storm frequency	= 25 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 5,929 cuft
Drainage area	= 0.280 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.240 x 98) + (0.040 x 61)] / 0.280



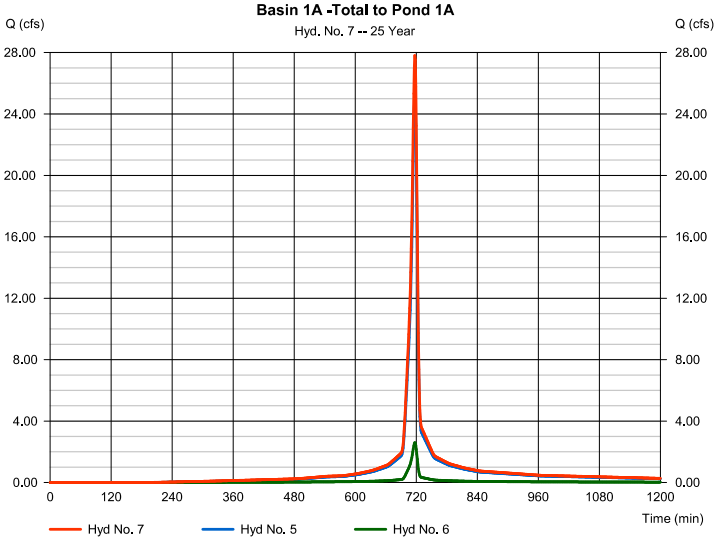
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 7

Basin 1A -Total to Pond 1A

Hydrograph type	= Combine	Peak discharge	= 27.80 cfs
Storm frequency	= 25 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 61,227 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 3.120 ac



Hydrograph Report

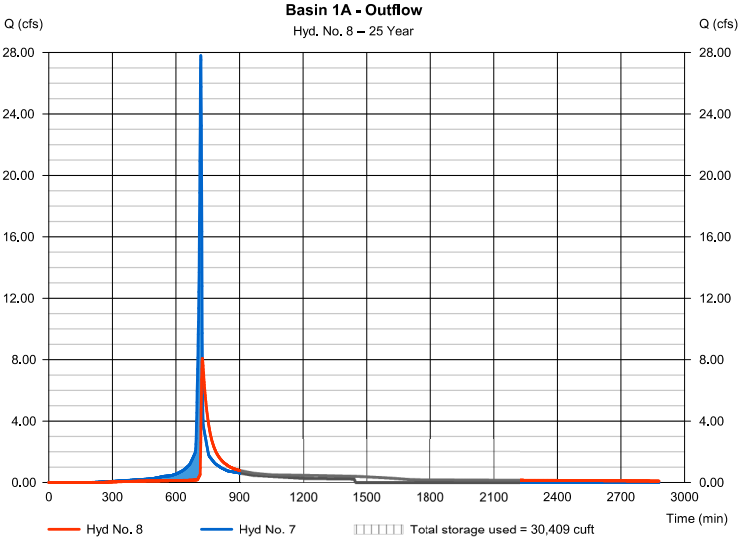
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 8

Basin 1A - Outflow

Hydrograph type	= Reservoir	Peak discharge	= 8.081 cfs
Storm frequency	= 25 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 60,614 cuft
Inflow hyd. No.	= 7 - Basin 1A -Total to Pond 1A	Max. Elevation	= 1086.21 ft
Reservoir name	= Pond 1A	Max. Storage	= 30,409 cuft

Storage Indication method used.



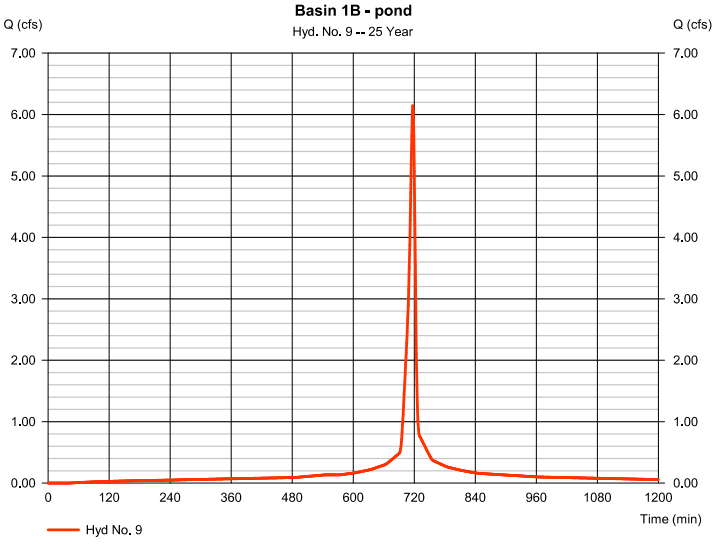
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 9

Basin 1B - pond

Hydrograph type	= SCS Runoff	Peak discharge	= 6.143 cfs
Storm frequency	= 25 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 14,953 cuft
Drainage area	= 0.640 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

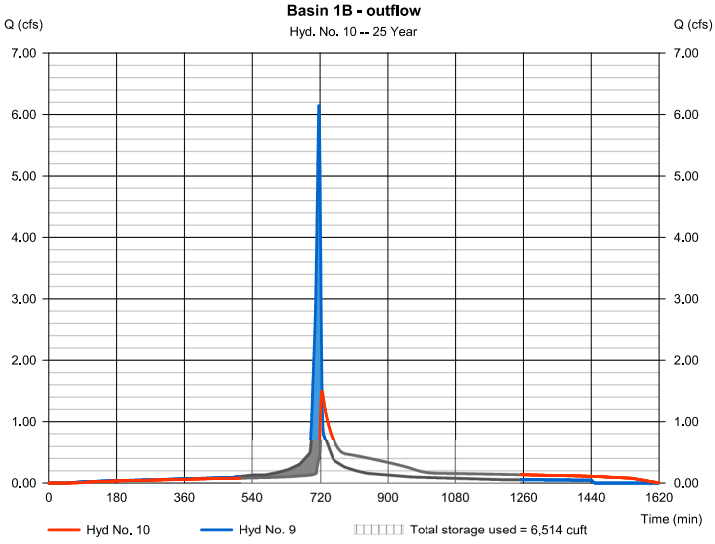
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 10

Basin 1B - outflow

Hydrograph type	= Reservoir	Peak discharge	= 1.497 cfs
Storm frequency	= 25 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 14,950 cuft
Inflow hyd. No.	= 9 - Basin 1B - pond	Max. Elevation	= 1074.69 ft
Reservoir name	= Pond 1B	Max. Storage	= 6,514 cuft

Storage Indication method used.



Hydrograph Report

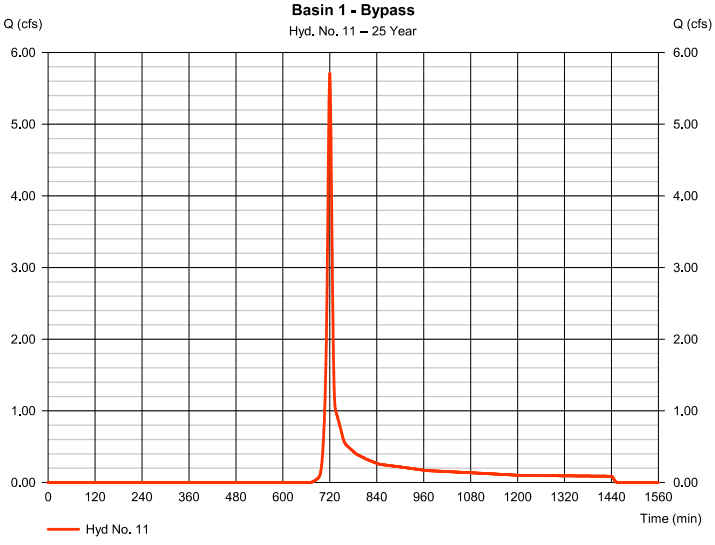
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 11

Basin 1 - Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 5.707 cfs
Storm frequency	= 25 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 13,291 cuft
Drainage area	= 1.940 ac	Curve number	= 56*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.80 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.030 x 98) + (1.910 x 55)] / 1.940



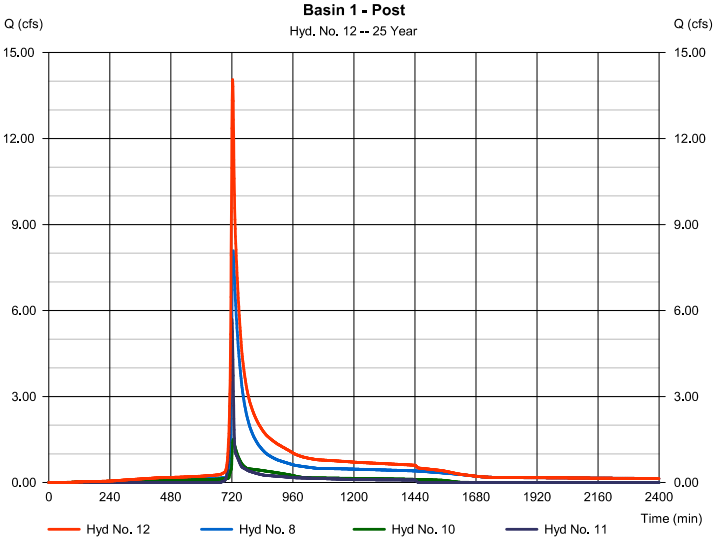
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 12

Basin 1 - Post

Hydrograph type	= Combine	Peak discharge	= 14.05 cfs
Storm frequency	= 25 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 88,856 cuft
Inflow hyds.	= 8, 10, 11	Contrib. drain. area	= 1.940 ac



Hydrograph Report

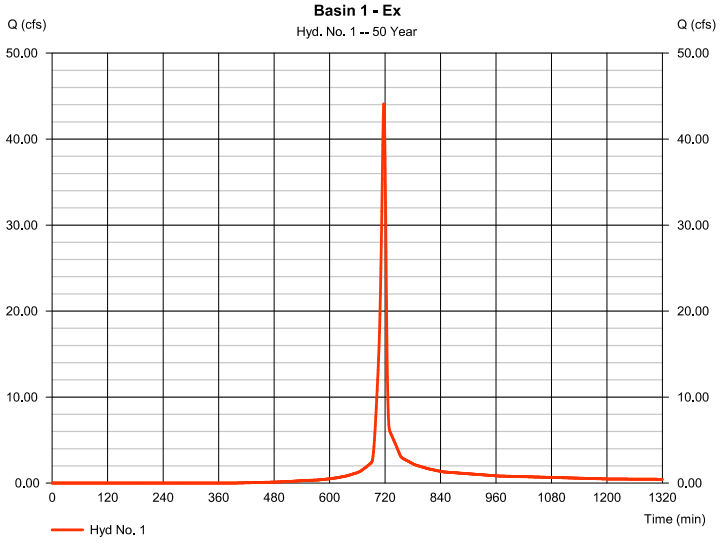
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 1

Basin 1 - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 44.08 cfs
Storm frequency	= 50 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 90,996 cuft
Drainage area	= 5.480 ac	Curve number	= 76*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.510 x 98) + (0.830 x 61) + (2.140 x 55)] / 5.480



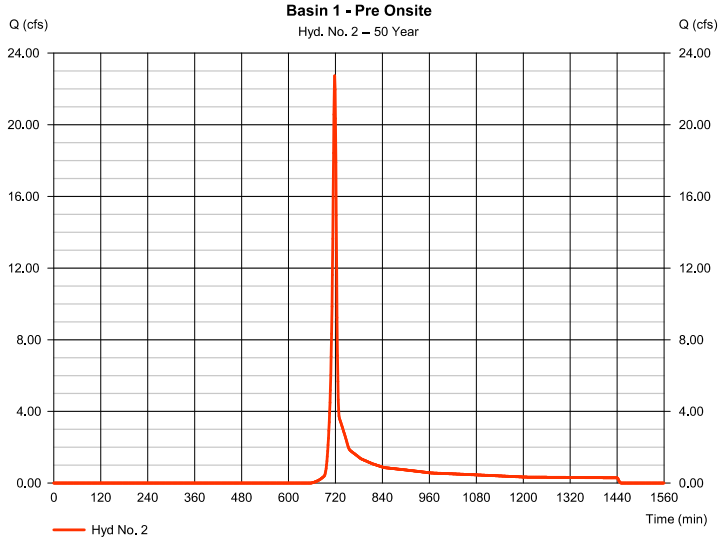
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 2

Basin 1 - Pre Onsite

Hydrograph type	= SCS Runoff	Peak discharge	= 22.73 cfs
Storm frequency	= 50 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 46,197 cuft
Drainage area	= 5.480 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



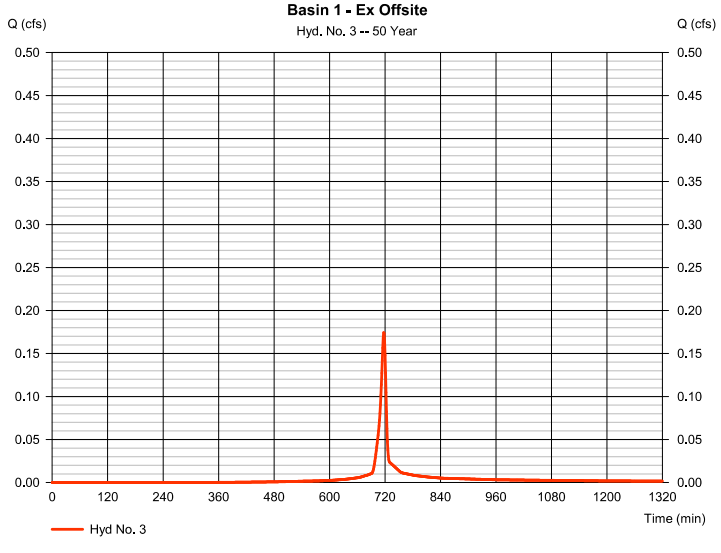
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 3

Basin 1 - Ex Offsite

Hydrograph type	= SCS Runoff	Peak discharge	= 0.174 cfs
Storm frequency	= 50 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 365 cuft
Drainage area	= 0.020 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



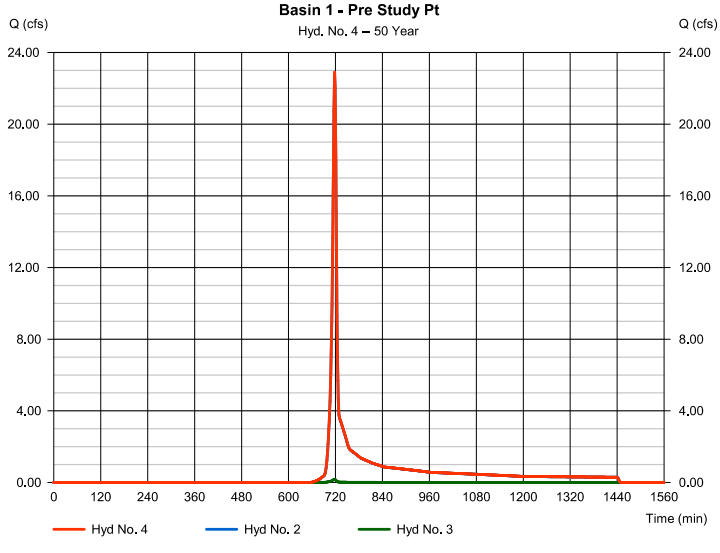
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 4

Basin 1 - Pre Study Pt

Hydrograph type	= Combine	Peak discharge	= 22.91 cfs
Storm frequency	= 50 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 46,562 cuft
Inflow hyds.	= 2, 3	Contrib. drain. area	= 5.500 ac



Hydrograph Report

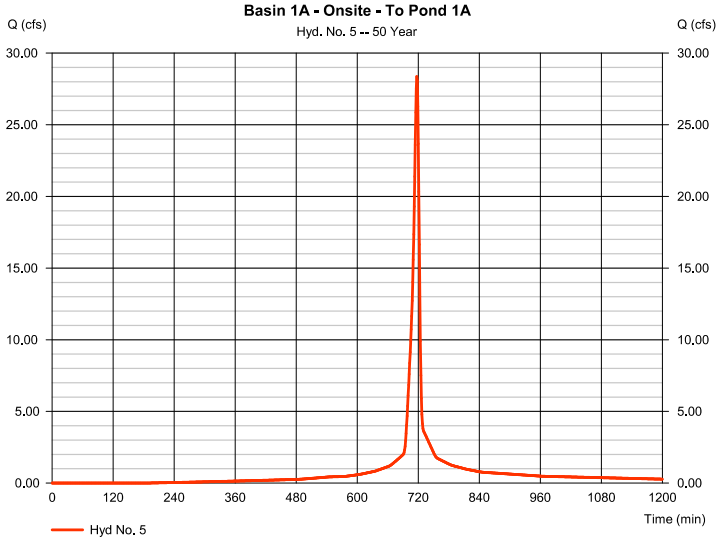
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 5

Basin 1A - Onsite - To Pond 1A

Hydrograph type	= SCS Runoff	Peak discharge	= 28.37 cfs
Storm frequency	= 50 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 62,761 cuft
Drainage area	= 2.840 ac	Curve number	= 89*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.160 x 98) + (0.680 x 61)] / 2.840



Hydrograph Report

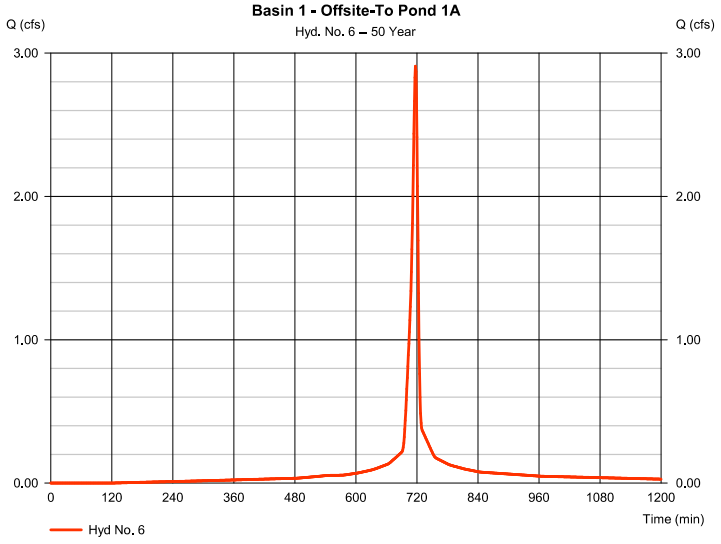
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 6

Basin 1 - Offsite-To Pond 1A

Hydrograph type	= SCS Runoff	Peak discharge	= 2.908 cfs
Storm frequency	= 50 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 6,676 cuft
Drainage area	= 0.280 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.240 x 98) + (0.040 x 61)] / 0.280



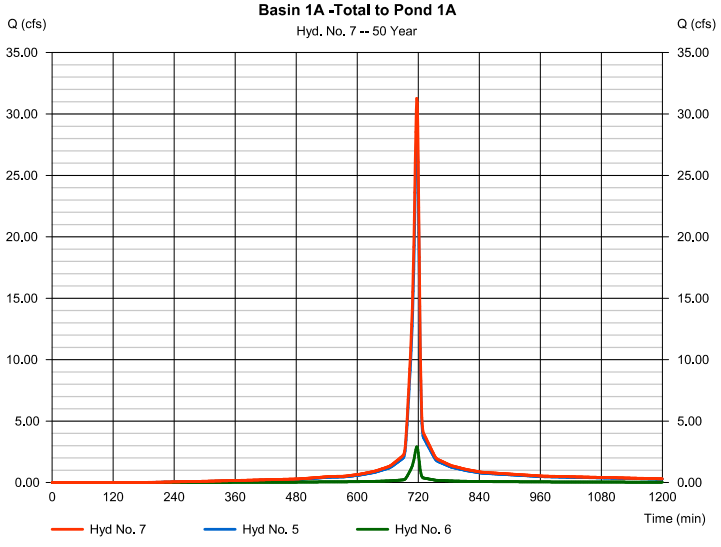
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 7

Basin 1A -Total to Pond 1A

Hydrograph type	= Combine	Peak discharge	= 31.27 cfs
Storm frequency	= 50 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 69,437 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 3.120 ac



Hydrograph Report

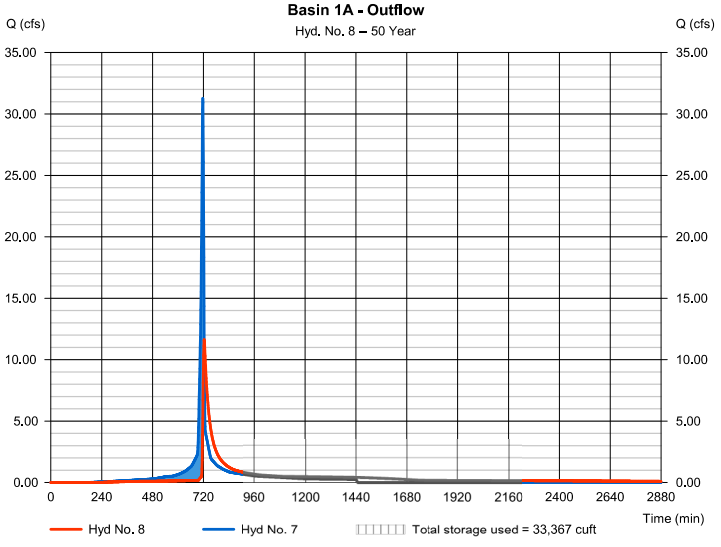
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 8

Basin 1A - Outflow

Hydrograph type	= Reservoir	Peak discharge	= 11.64 cfs
Storm frequency	= 50 yrs	Time to peak	= 724 min
Time interval	= 1 min	Hyd. volume	= 68,668 cuft
Inflow hyd. No.	= 7 - Basin 1A -Total to Pond 1A	Max. Elevation	= 1086.72 ft
Reservoir name	= Pond 1A	Max. Storage	= 33,367 cuft

Storage Indication method used.



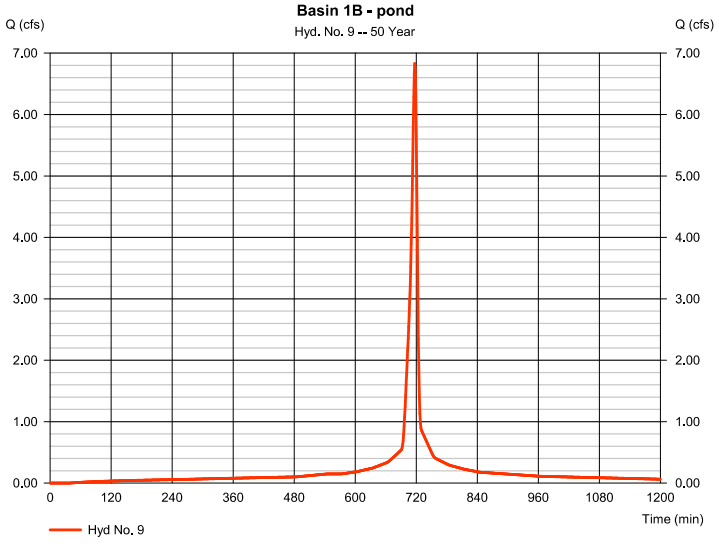
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 9

Basin 1B - pond

Hydrograph type	= SCS Runoff	Peak discharge	= 6.830 cfs
Storm frequency	= 50 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 16,677 cuft
Drainage area	= 0.640 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

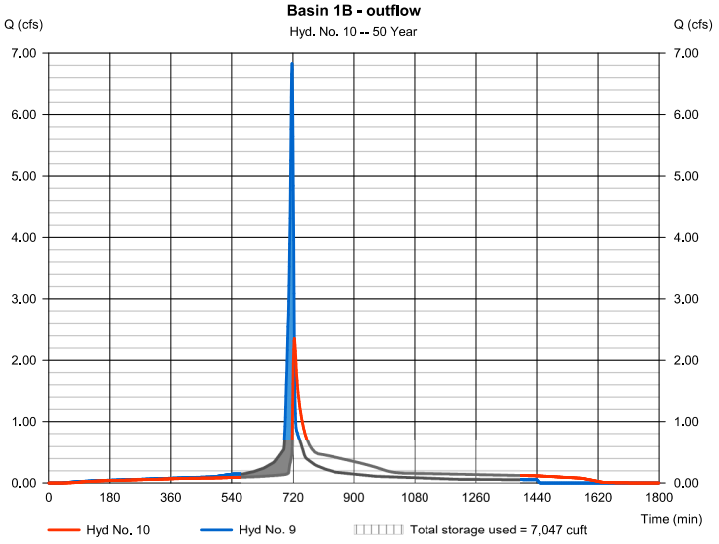
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 10

Basin 1B - outflow

Hydrograph type	= Reservoir	Peak discharge	= 2.354 cfs
Storm frequency	= 50 yrs	Time to peak	= 724 min
Time interval	= 1 min	Hyd. volume	= 16,674 cuft
Inflow hyd. No.	= 9 - Basin 1B - pond	Max. Elevation	= 1075.04 ft
Reservoir name	= Pond 1B	Max. Storage	= 7,047 cuft

Storage Indication method used.



Hydrograph Report

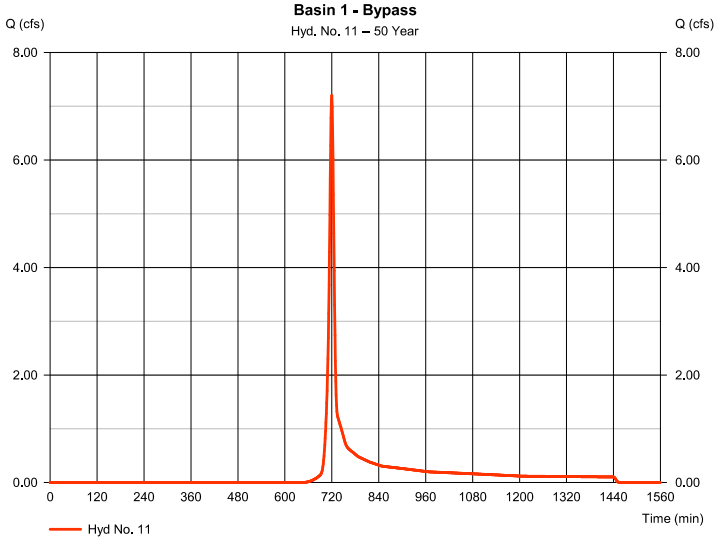
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 11

Basin 1 - Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 7.202 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 16,544 cuft
Drainage area	= 1.940 ac	Curve number	= 56*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.80 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.030 x 98) + (1.910 x 55)] / 1.940



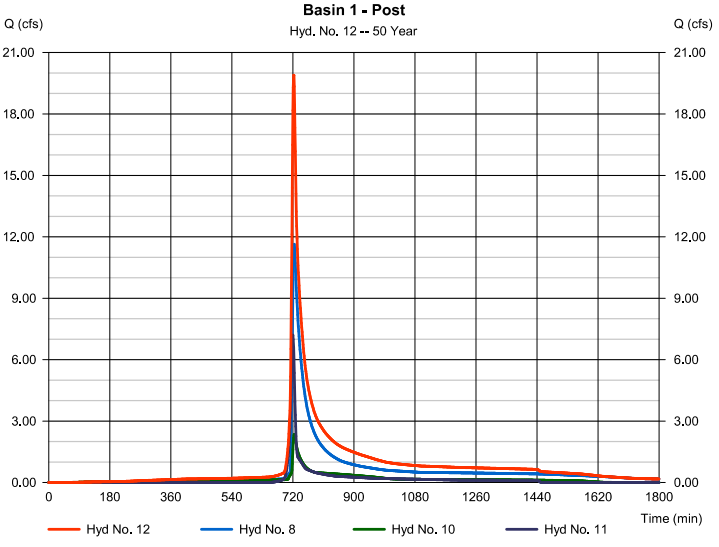
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 12

Basin 1 - Post

Hydrograph type	= Combine	Peak discharge	= 19.89 cfs
Storm frequency	= 50 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 101,886 cuft
Inflow hyds.	= 8, 10, 11	Contrib. drain. area	= 1.940 ac



Hydrograph Report

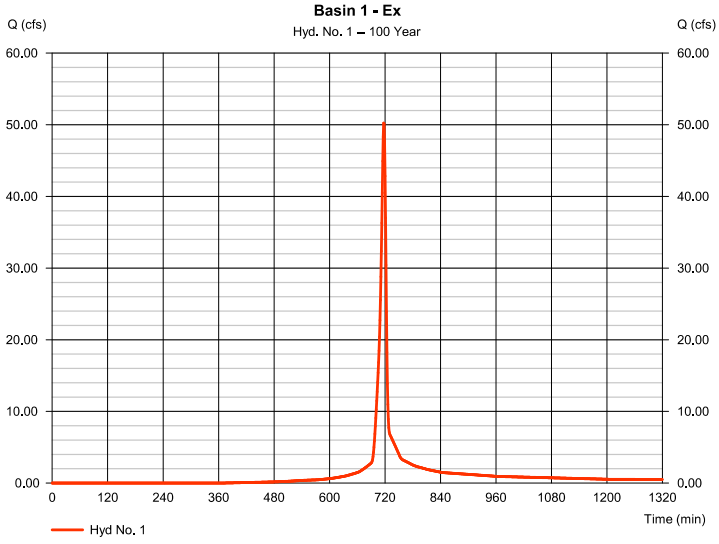
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 1

Basin 1 - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 50.25 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 104,317 cuft
Drainage area	= 5.480 ac	Curve number	= 76*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.510 x 98) + (0.830 x 61) + (2.140 x 55)] / 5.480



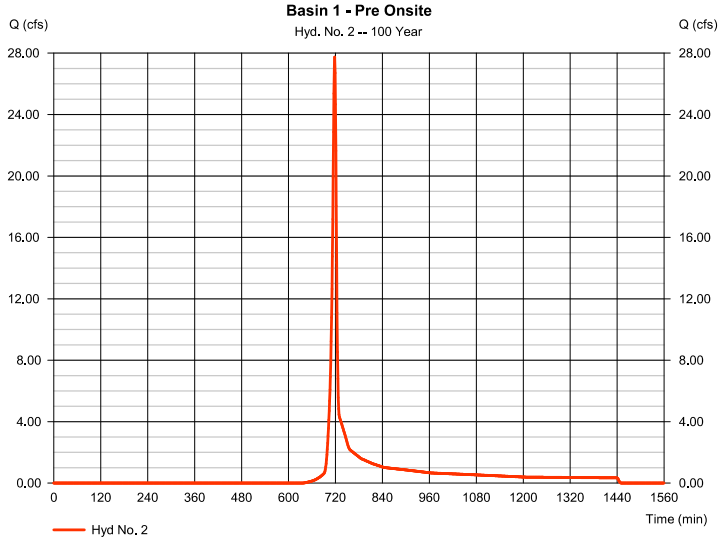
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 2

Basin 1 - Pre Onsite

Hydrograph type	= SCS Runoff	Peak discharge	= 27.75 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 55,994 cuft
Drainage area	= 5.480 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



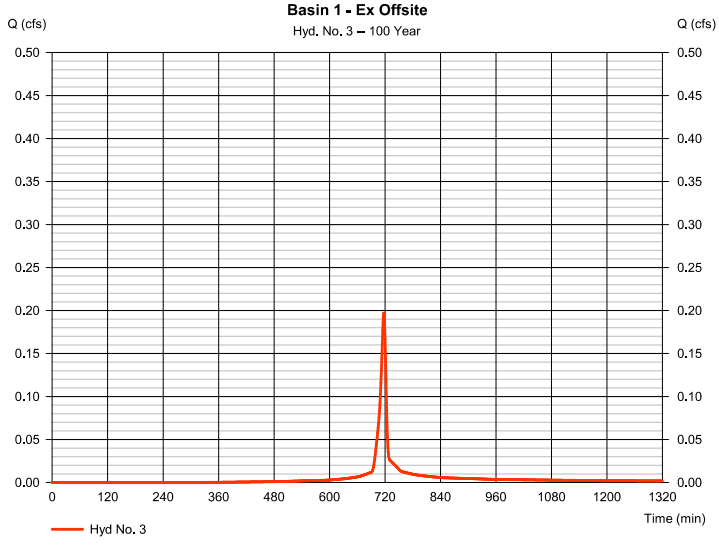
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 3

Basin 1 - Ex Offsite

Hydrograph type	= SCS Runoff	Peak discharge	= 0.197 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 416 cuft
Drainage area	= 0.020 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



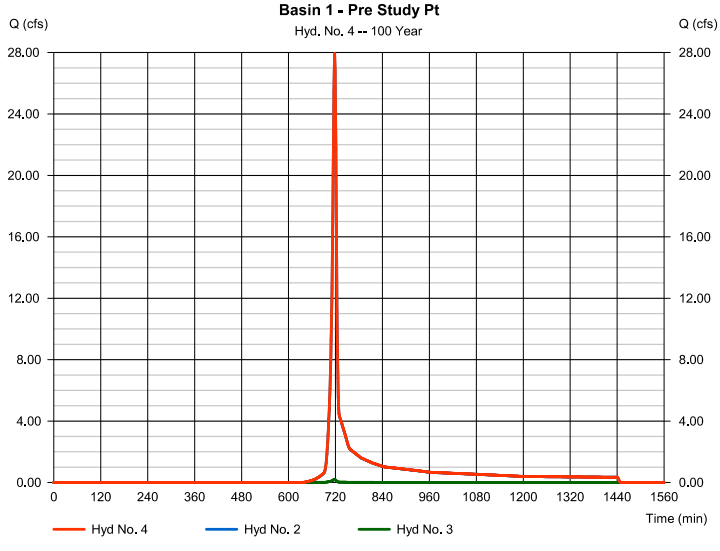
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 4

Basin 1 - Pre Study Pt

Hydrograph type	= Combine	Peak discharge	= 27.94 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 56,410 cuft
Inflow hyds.	= 2, 3	Contrib. drain. area	= 5.500 ac



Hydrograph Report

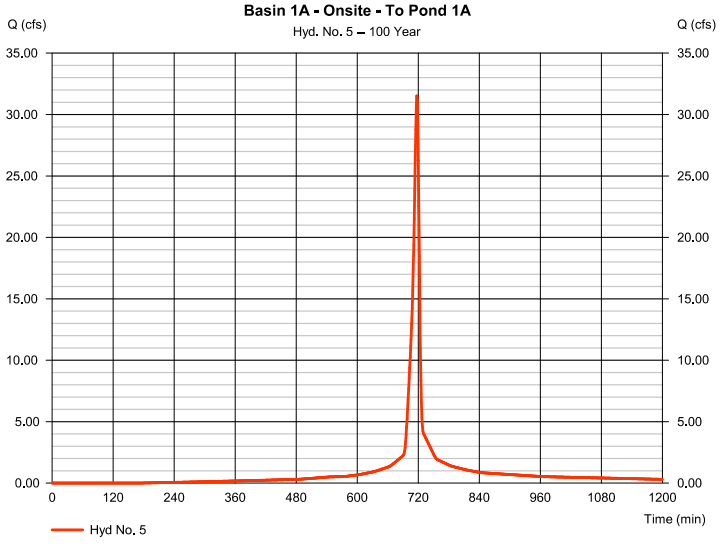
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 5

Basin 1A - Onsite - To Pond 1A

Hydrograph type	= SCS Runoff	Peak discharge	= 31.52 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 70,256 cuft
Drainage area	= 2.840 ac	Curve number	= 89*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.160 x 98) + (0.680 x 61)] / 2.840



Hydrograph Report

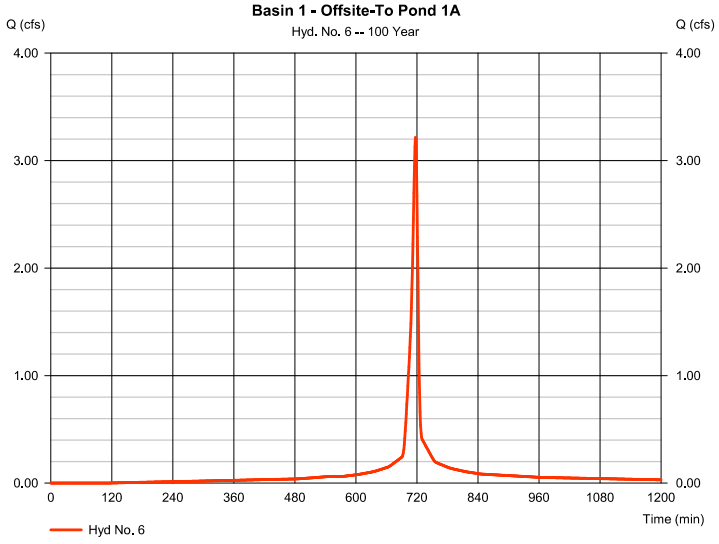
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 6

Basin 1 - Offsite-To Pond 1A

Hydrograph type	= SCS Runoff	Peak discharge	= 3.214 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 7,424 cuft
Drainage area	= 0.280 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.240 x 98) + (0.040 x 61)] / 0.280



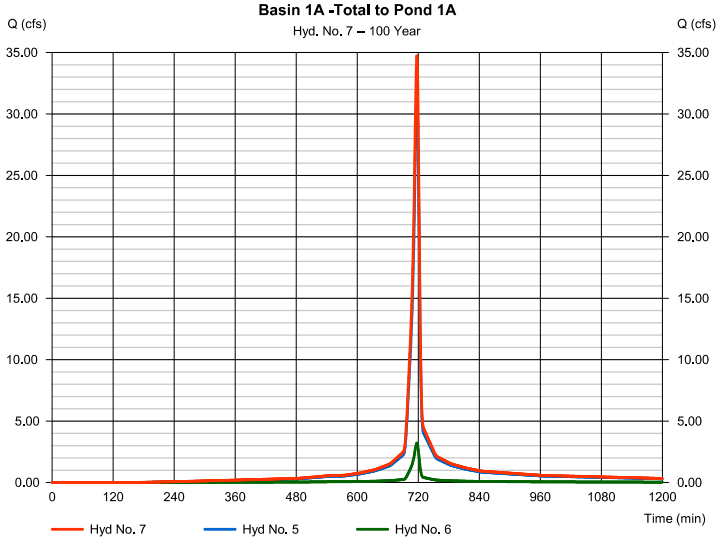
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 7

Basin 1A -Total to Pond 1A

Hydrograph type	= Combine	Peak discharge	= 34.73 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 77,680 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 3.120 ac



Hydrograph Report

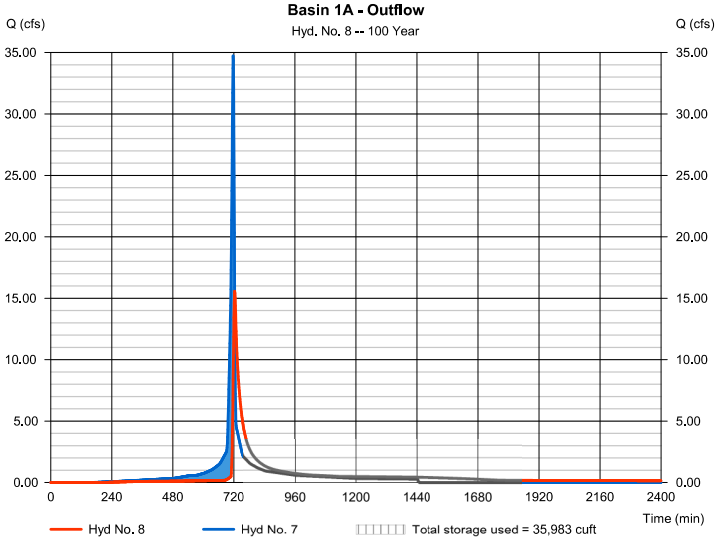
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 8

Basin 1A - Outflow

Hydrograph type	= Reservoir	Peak discharge	= 15.57 cfs
Storm frequency	= 100 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 76,769 cuft
Inflow hyd. No.	= 7 - Basin 1A -Total to Pond 1A	Max. Elevation	= 1087.21 ft
Reservoir name	= Pond 1A	Max. Storage	= 35,983 cuft

Storage Indication method used.



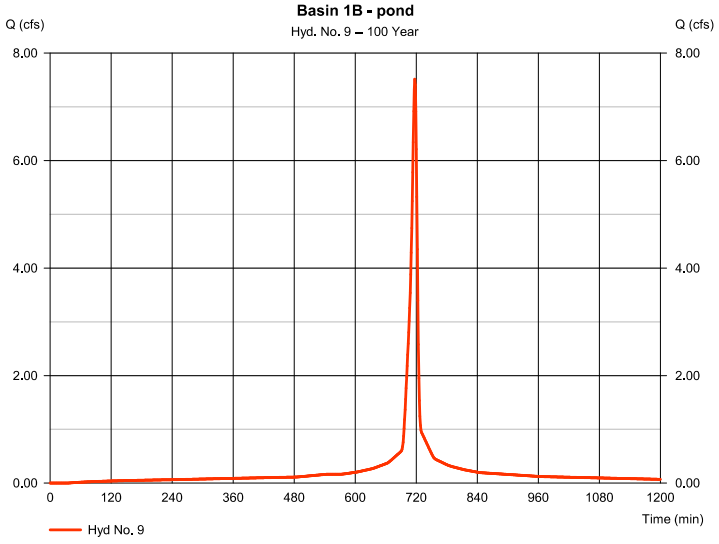
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 9

Basin 1B - pond

Hydrograph type	= SCS Runoff	Peak discharge	= 7.516 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 18,400 cuft
Drainage area	= 0.640 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

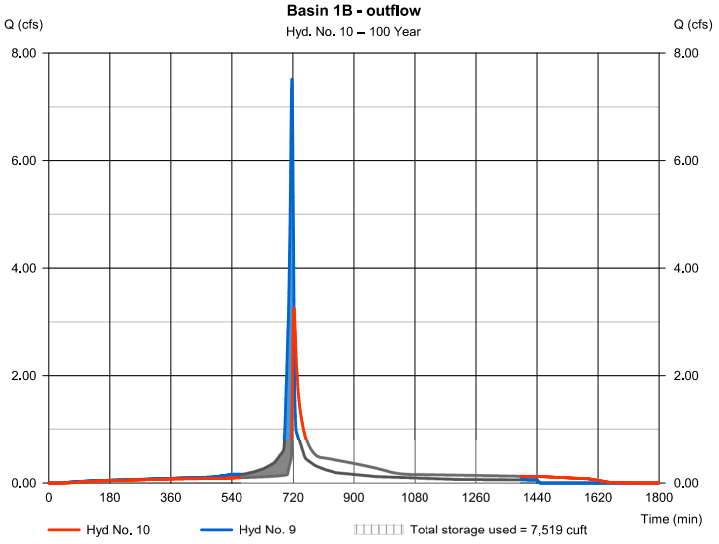
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 10

Basin 1B - outflow

Hydrograph type	= Reservoir	Peak discharge	= 3.257 cfs
Storm frequency	= 100 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 18,398 cuft
Inflow hyd. No.	= 9 - Basin 1B - pond	Max. Elevation	= 1075.36 ft
Reservoir name	= Pond 1B	Max. Storage	= 7,519 cuft

Storage Indication method used.



Hydrograph Report

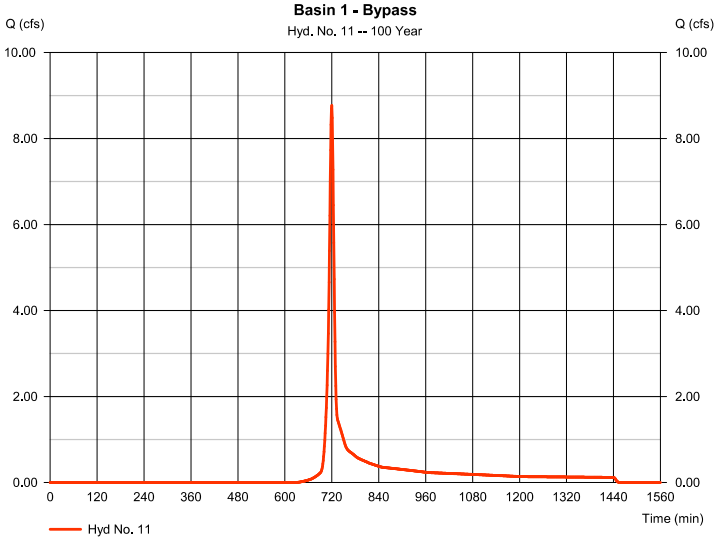
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 11

Basin 1 - Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 8.768 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 19,980 cuft
Drainage area	= 1.940 ac	Curve number	= 56*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.80 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.030 x 98) + (1.910 x 55)] / 1.940



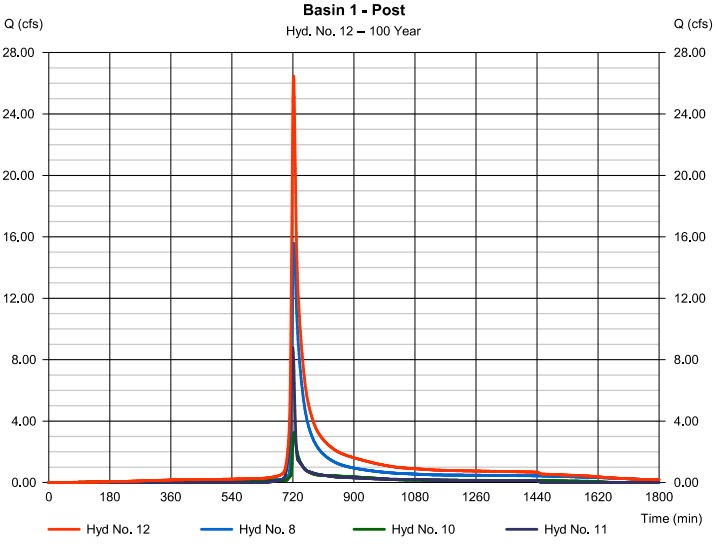
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 12

Basin 1 - Post

Hydrograph type	= Combine	Peak discharge	= 26.47 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 115,146 cuft
Inflow hyds.	= 8, 10, 11	Contrib. drain. area	= 1.940 ac



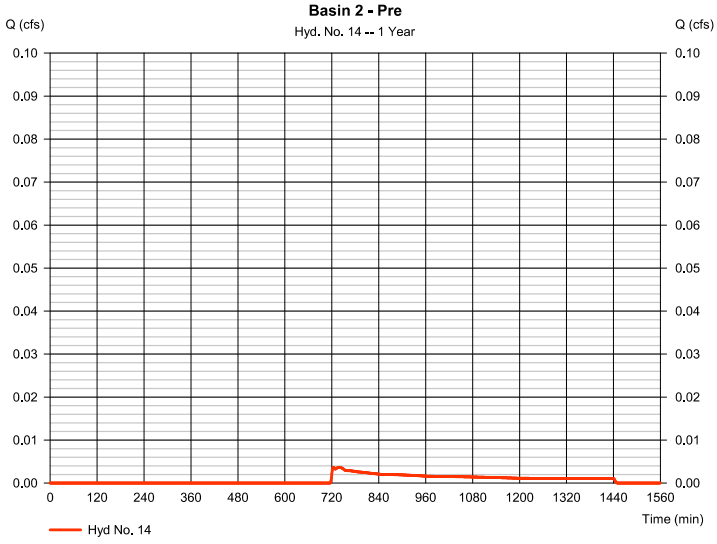
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 14

Basin 2 - Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 0.004 cfs
Storm frequency	= 1 yrs	Time to peak	= 739 min
Time interval	= 1 min	Hyd. volume	= 70 cuft
Drainage area	= 0.140 ac	Curve number	= 51
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.60 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



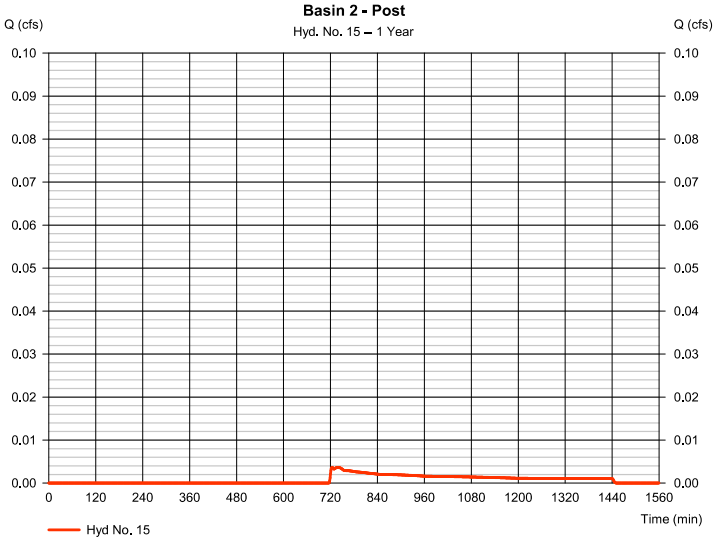
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 15

Basin 2 - Post

Hydrograph type	= SCS Runoff	Peak discharge	= 0.004 cfs
Storm frequency	= 1 yrs	Time to peak	= 739 min
Time interval	= 1 min	Hyd. volume	= 70 cuft
Drainage area	= 0.140 ac	Curve number	= 51
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.60 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



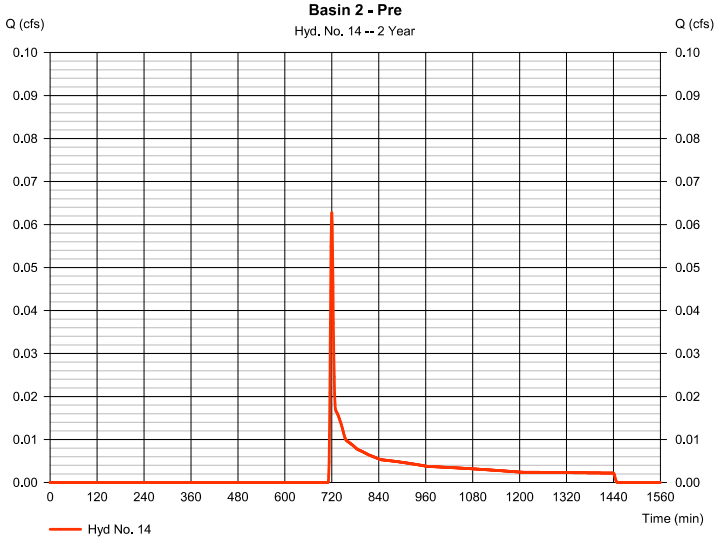
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 14

Basin 2 - Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 0.063 cfs
Storm frequency	= 2 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 208 cuft
Drainage area	= 0.140 ac	Curve number	= 51
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.60 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



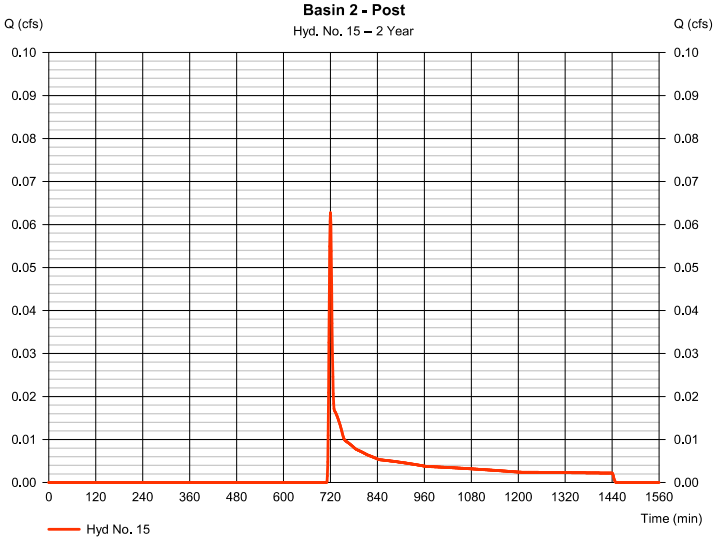
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 15

Basin 2 - Post

Hydrograph type	= SCS Runoff	Peak discharge	= 0.063 cfs
Storm frequency	= 2 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 208 cuft
Drainage area	= 0.140 ac	Curve number	= 51
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.60 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



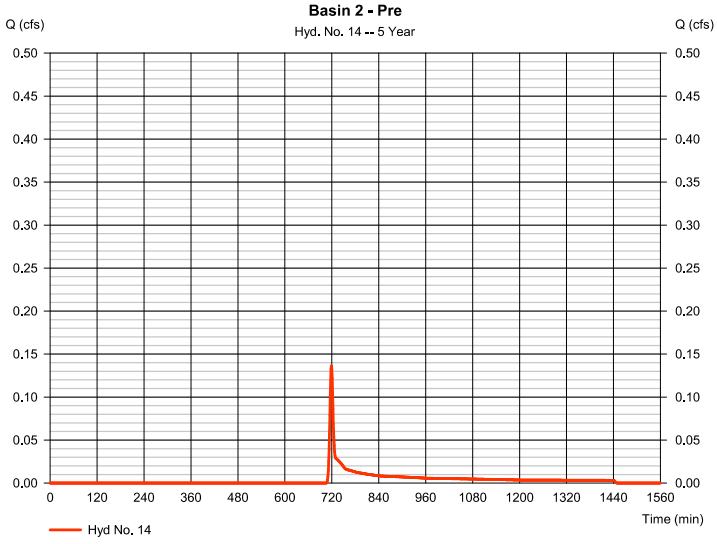
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 14

Basin 2 - Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 0.136 cfs
Storm frequency	= 5 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 348 cuft
Drainage area	= 0.140 ac	Curve number	= 51
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.60 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



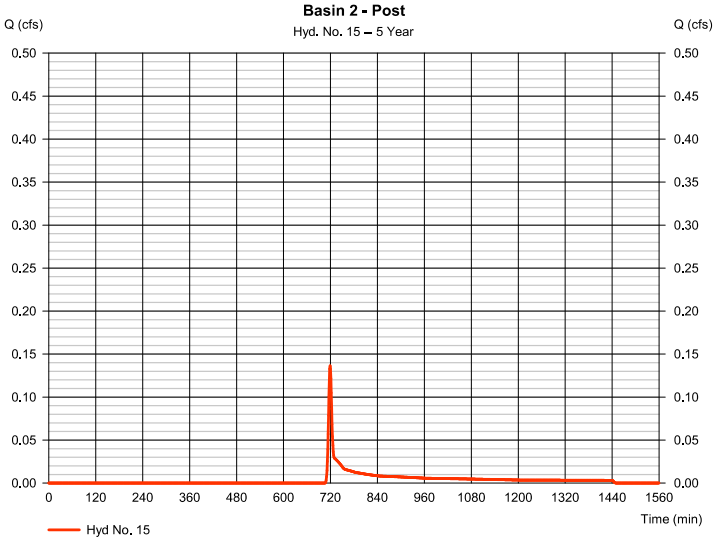
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 15

Basin 2 - Post

Hydrograph type	= SCS Runoff	Peak discharge	= 0.136 cfs
Storm frequency	= 5 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 348 cuft
Drainage area	= 0.140 ac	Curve number	= 51
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.60 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



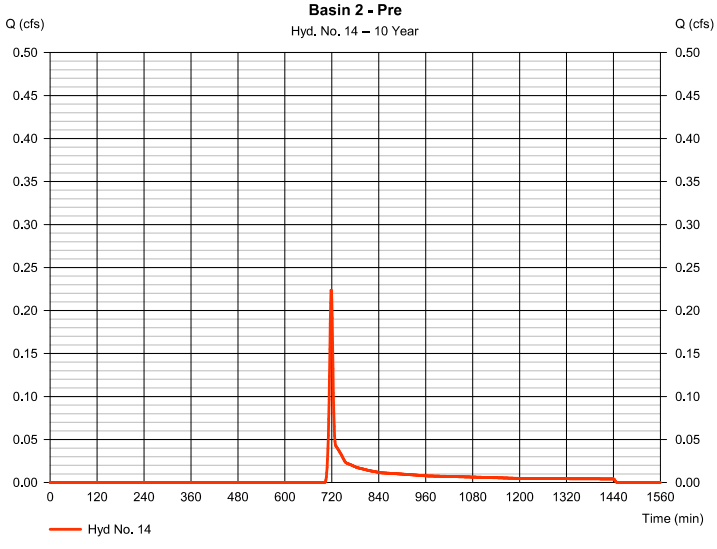
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 14

Basin 2 - Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 0.224 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 514 cuft
Drainage area	= 0.140 ac	Curve number	= 51
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.60 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



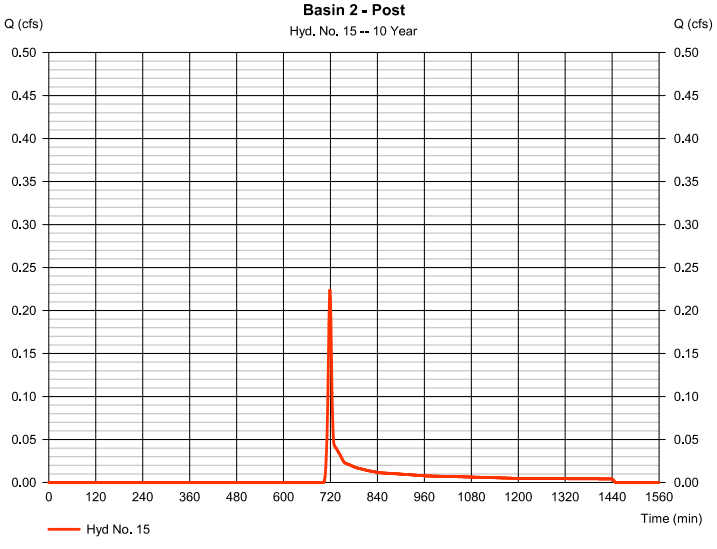
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 15

Basin 2 - Post

Hydrograph type	= SCS Runoff	Peak discharge	= 0.224 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 514 cuft
Drainage area	= 0.140 ac	Curve number	= 51
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.60 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



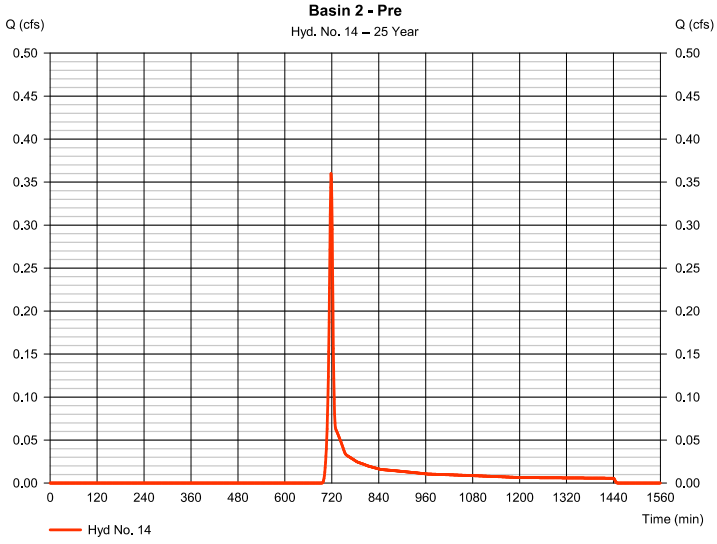
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 14

Basin 2 - Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 0.360 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 769 cuft
Drainage area	= 0.140 ac	Curve number	= 51
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.60 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



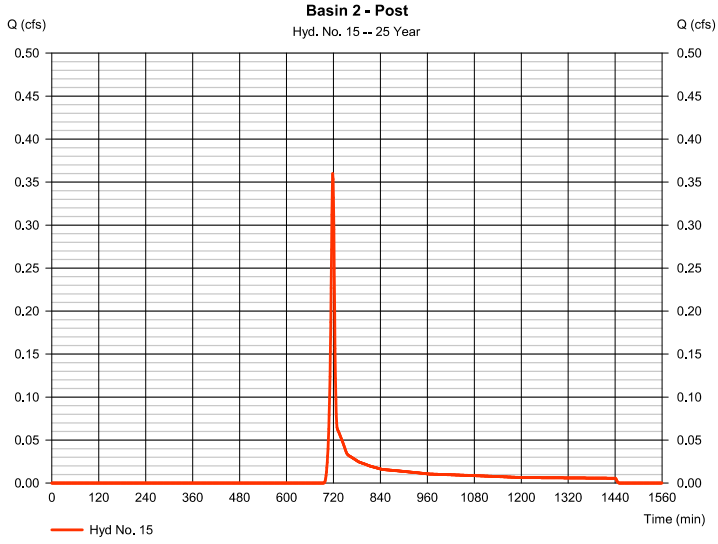
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 15

Basin 2 - Post

Hydrograph type	= SCS Runoff	Peak discharge	= 0.360 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 769 cuft
Drainage area	= 0.140 ac	Curve number	= 51
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.60 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



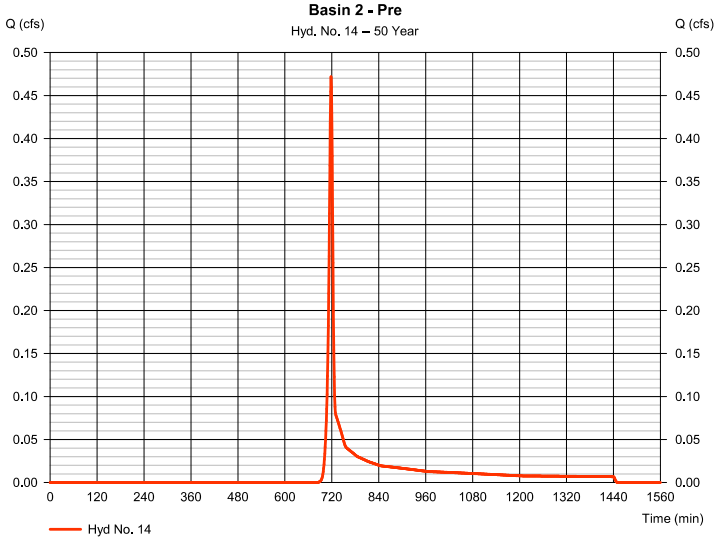
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 14

Basin 2 - Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 0.472 cfs
Storm frequency	= 50 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 981 cuft
Drainage area	= 0.140 ac	Curve number	= 51
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.60 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



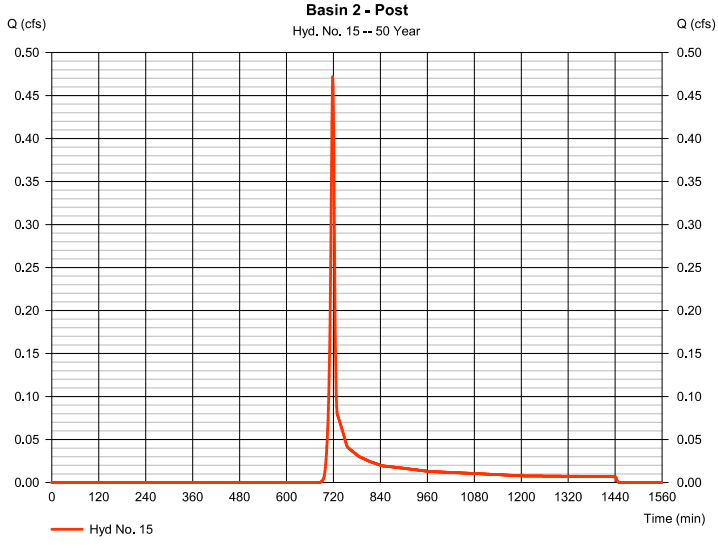
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 15

Basin 2 - Post

Hydrograph type	= SCS Runoff	Peak discharge	= 0.472 cfs
Storm frequency	= 50 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 981 cuft
Drainage area	= 0.140 ac	Curve number	= 51
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.60 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

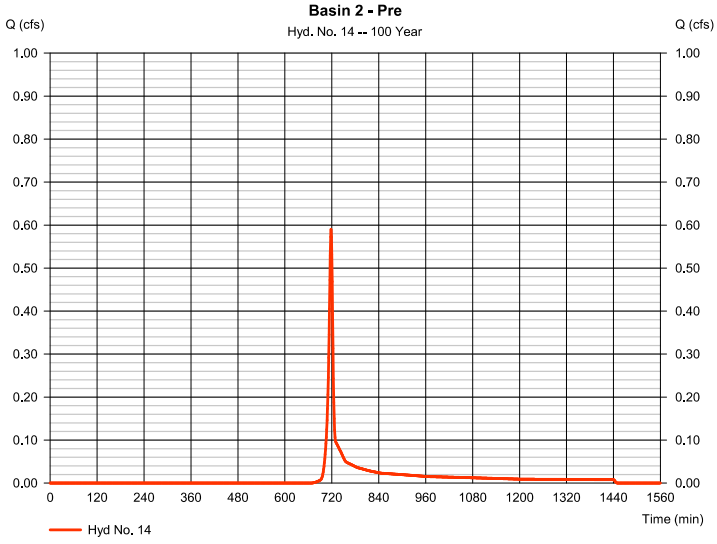


Hydrograph Report

Hyd. No. 14

Basin 2 - Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 0.590 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 1,208 cuft
Drainage area	= 0.140 ac	Curve number	= 51
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.60 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

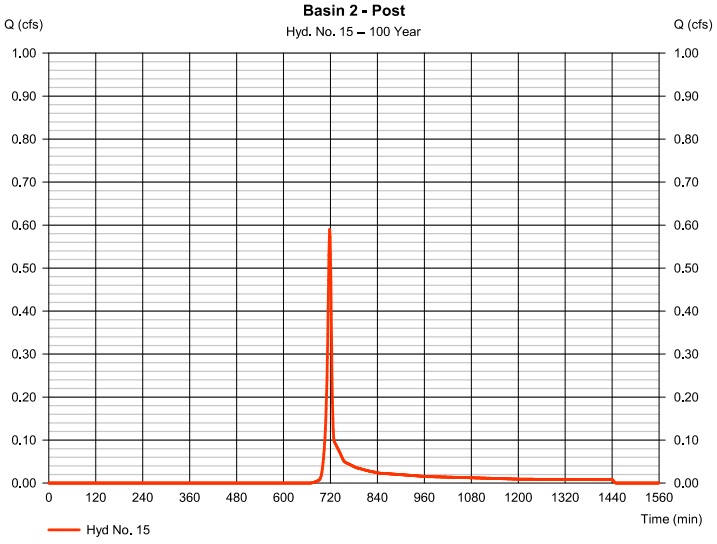


Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 Wednesday, 04 / 15 / 2015

Hyd. No. 15

Basin 2 - Post

Hydrograph type	= SCS Runoff	Peak discharge	= 0.590 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 1,208 cuft
Drainage area	= 0.140 ac	Curve number	= 51
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.60 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

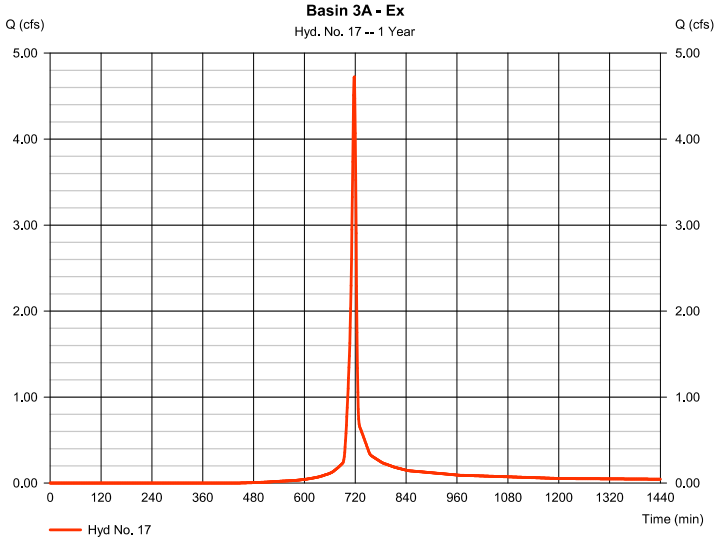
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 17

Basin 3A - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 4.725 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 9,651 cuft
Drainage area	= 1.460 ac	Curve number	= 86*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.020 x 98) + (0.250 x 61) + (0.190 x 55)] / 1.460



Hydrograph Report

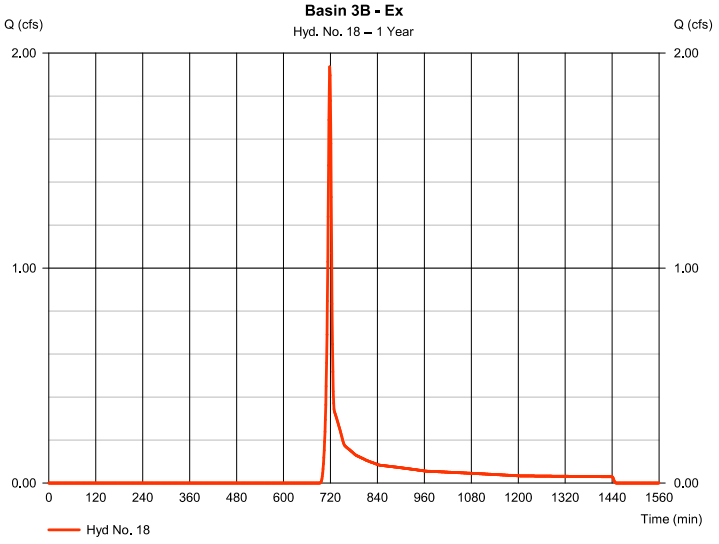
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 18

Basin 3B - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 1.937 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 4,100 cuft
Drainage area	= 1.490 ac	Curve number	= 69*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.460 x 98) + (0.210 x 61) + (0.820 x 55)] / 1.490



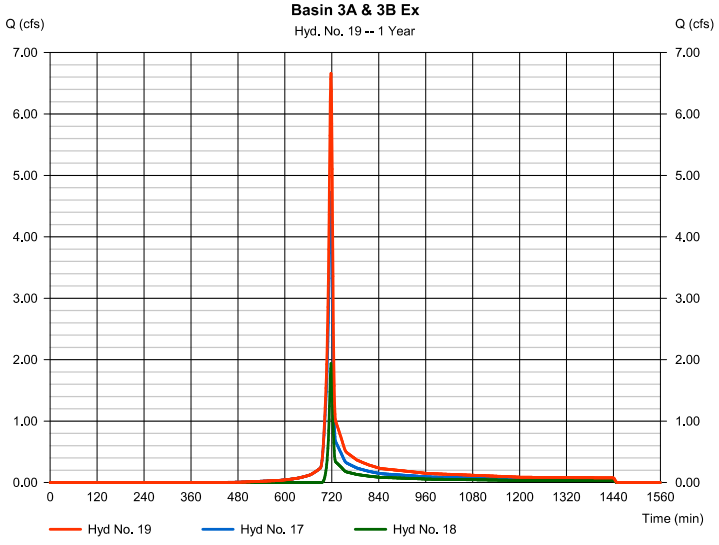
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 19

Basin 3A & 3B Ex

Hydrograph type	= Combine	Peak discharge	= 6.662 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 13,750 cuft
Inflow hyds.	= 17, 18	Contrib. drain. area	= 2.950 ac



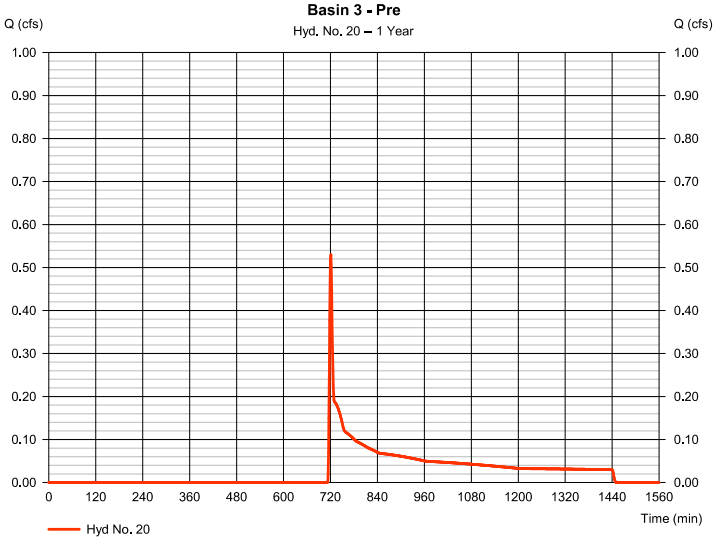
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 20

Basin 3 - Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 0.530 cfs
Storm frequency	= 1 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 2,514 cuft
Drainage area	= 2.950 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

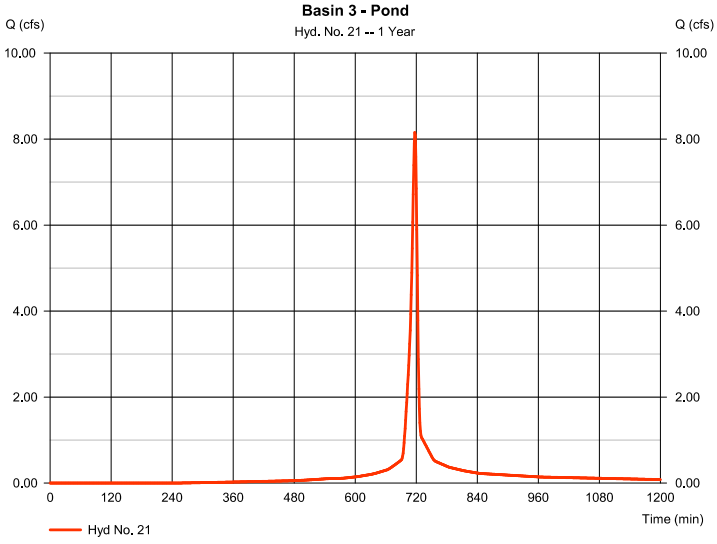
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 21

Basin 3 - Pond

Hydrograph type	= SCS Runoff	Peak discharge	= 8.154 cfs
Storm frequency	= 1 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 17,559 cuft
Drainage area	= 1.980 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.710 x 98) + (0.270 x 61)] / 1.980



Hydrograph Report

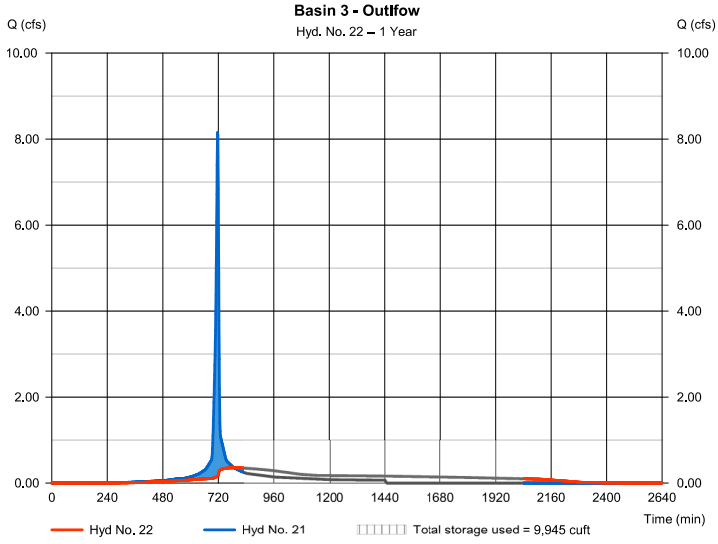
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 22

Basin 3 - Outlfow

Hydrograph type	= Reservoir	Peak discharge	= 0.355 cfs
Storm frequency	= 1 yrs	Time to peak	= 789 min
Time interval	= 1 min	Hyd. volume	= 17,553 cuft
Inflow hyd. No.	= 21 - Basin 3 - Pond	Max. Elevation	= 1069.60 ft
Reservoir name	= Pond 3	Max. Storage	= 9,945 cuft

Storage Indication method used.



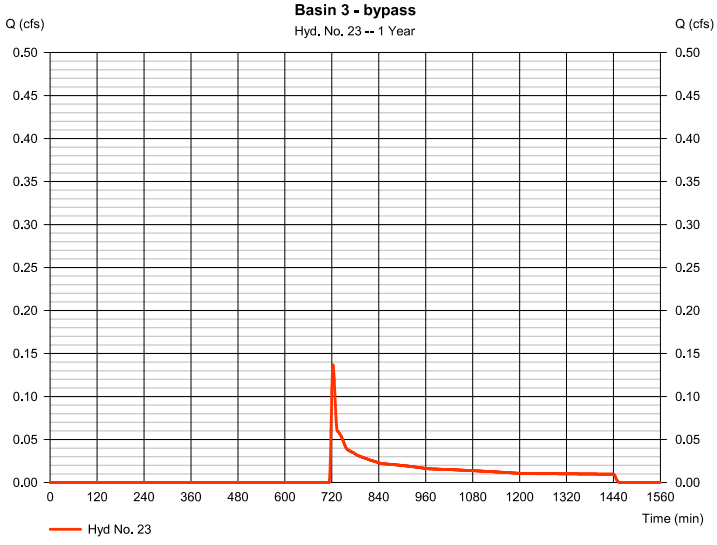
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 23

Basin 3 - bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.137 cfs
Storm frequency	= 1 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 810 cuft
Drainage area	= 0.980 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.50 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 24

Basin 3 - Post

Hydrograph type	= Combine	Peak discharge	= 0.413 cfs
Storm frequency	= 1 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 18,363 cuft
Inflow hyds.	= 22, 23	Contrib. drain. area	= 0.980 ac

Hydrograph Report

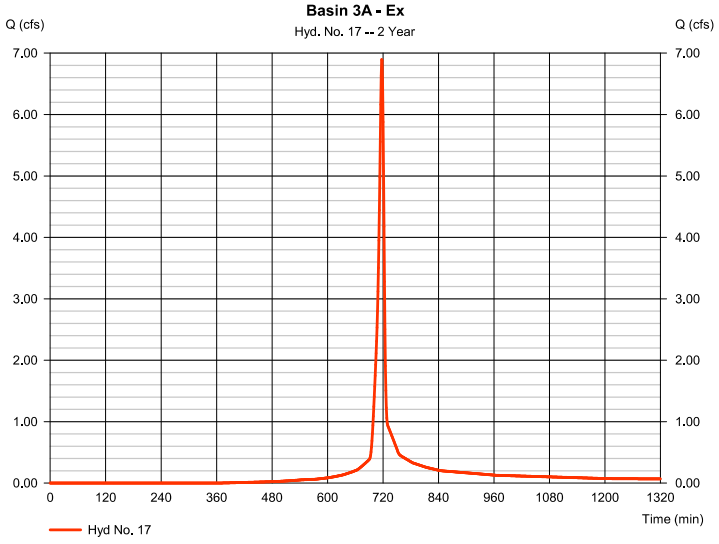
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 17

Basin 3A - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 6.895 cfs
Storm frequency	= 2 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 14,313 cuft
Drainage area	= 1.460 ac	Curve number	= 86*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.020 x 98) + (0.250 x 61) + (0.190 x 55)] / 1.460



Hydrograph Report

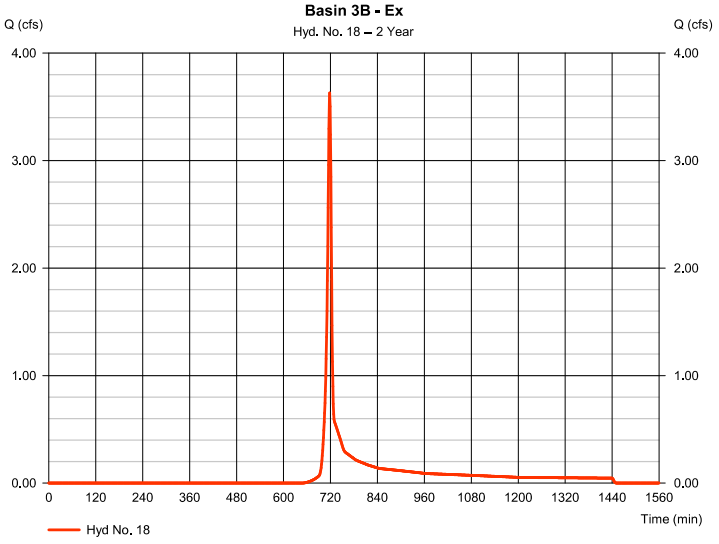
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 18

Basin 3B - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 3.630 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 7,357 cuft
Drainage area	= 1.490 ac	Curve number	= 69*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.460 x 98) + (0.210 x 61) + (0.820 x 55)] / 1.490



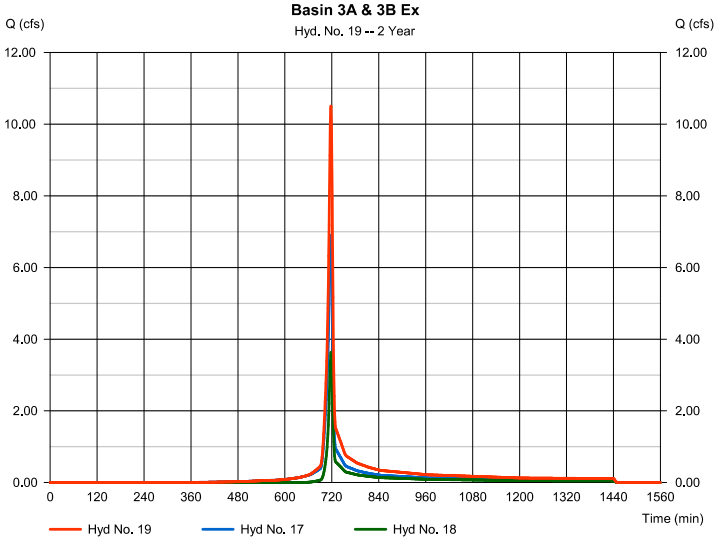
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 19

Basin 3A & 3B Ex

Hydrograph type	= Combine	Peak discharge	= 10.51 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 21,670 cuft
Inflow hyds.	= 17, 18	Contrib. drain. area	= 2.950 ac



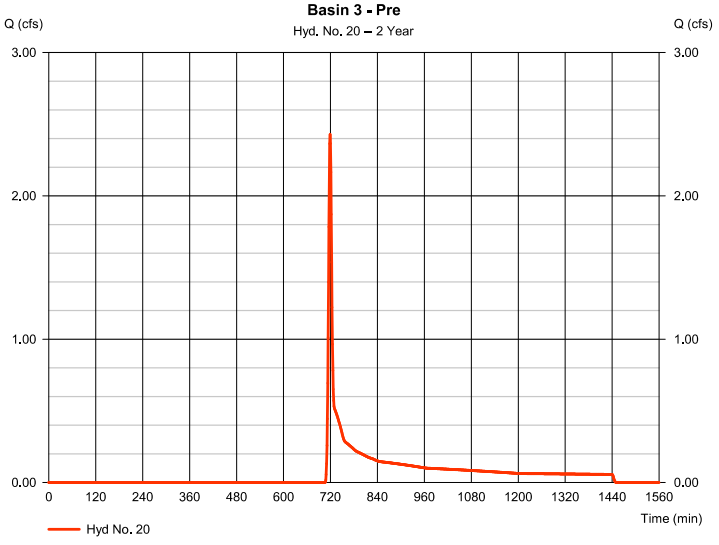
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 20

Basin 3 - Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 2.429 cfs
Storm frequency	= 2 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 6,206 cuft
Drainage area	= 2.950 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

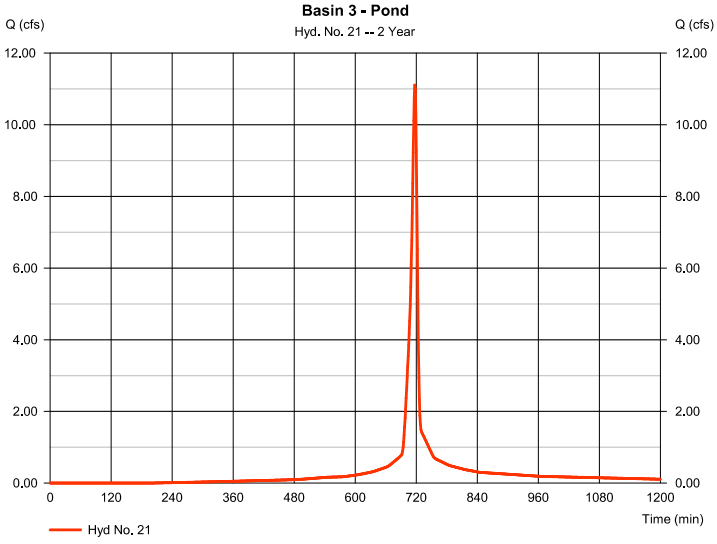
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 21

Basin 3 - Pond

Hydrograph type	= SCS Runoff	Peak discharge	= 11.11 cfs
Storm frequency	= 2 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 24,443 cuft
Drainage area	= 1.980 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.710 x 98) + (0.270 x 61)] / 1.980



Hydrograph Report

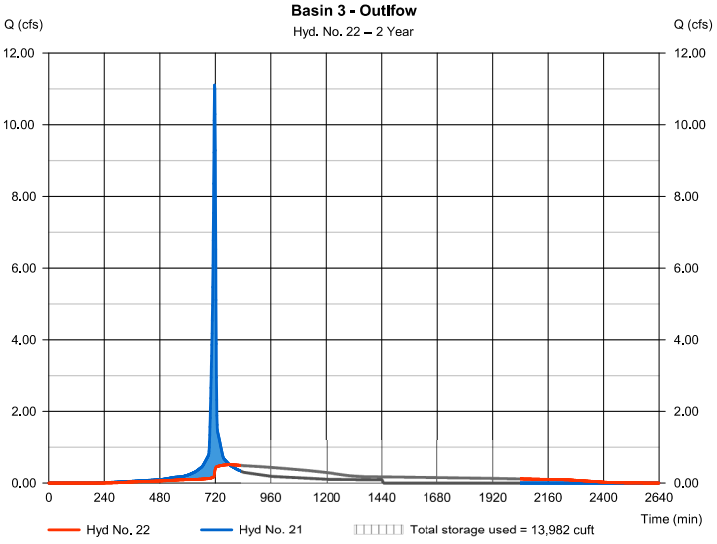
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 22

Basin 3 - Outflow

Hydrograph type	= Reservoir	Peak discharge	= 0.514 cfs
Storm frequency	= 2 yrs	Time to peak	= 781 min
Time interval	= 1 min	Hyd. volume	= 24,438 cuft
Inflow hyd. No.	= 21 - Basin 3 - Pond	Max. Elevation	= 1070.54 ft
Reservoir name	= Pond 3	Max. Storage	= 13,982 cuft

Storage Indication method used.



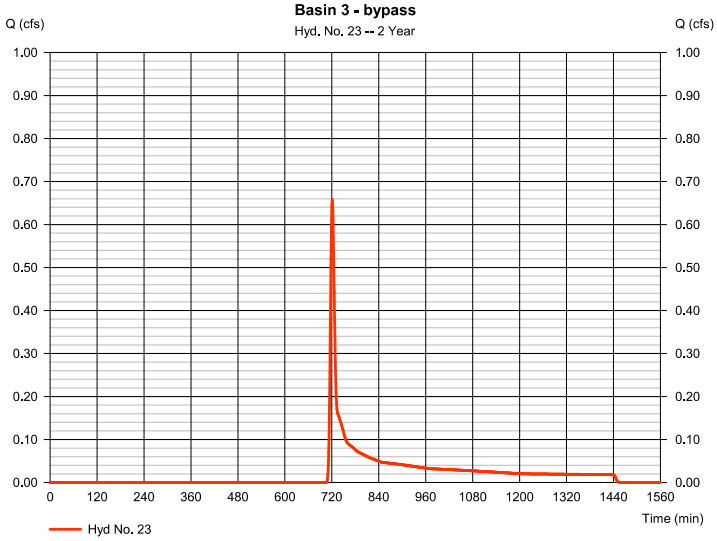
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 23

Basin 3 - bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.658 cfs
Storm frequency	= 2 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 1,999 cuft
Drainage area	= 0.980 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.50 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



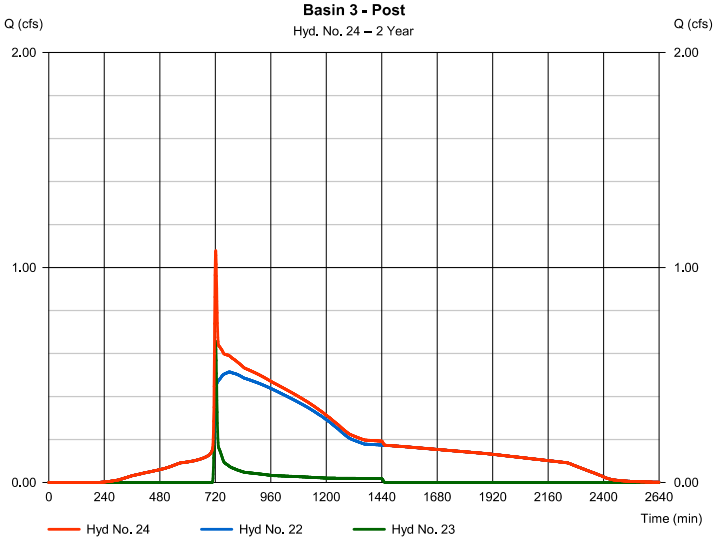
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 24

Basin 3 - Post

Hydrograph type	= Combine	Peak discharge	= 1.078 cfs
Storm frequency	= 2 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 26,437 cuft
Inflow hyds.	= 22, 23	Contrib. drain. area	= 0.980 ac



Hydrograph Report

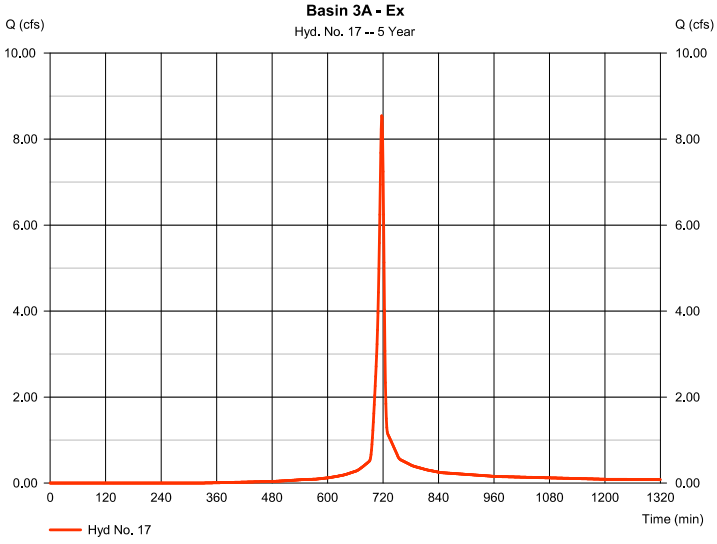
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 17

Basin 3A - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 8.544 cfs
Storm frequency	= 5 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 17,931 cuft
Drainage area	= 1.460 ac	Curve number	= 86*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.020 x 98) + (0.250 x 61) + (0.190 x 55)] / 1.460



Hydrograph Report

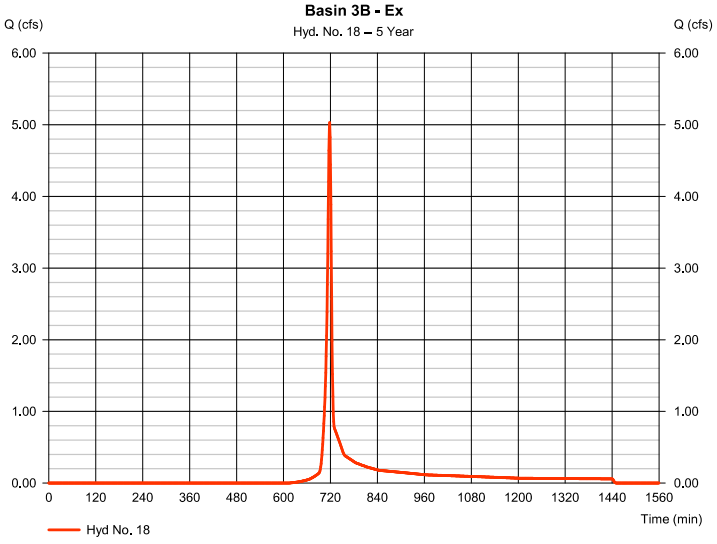
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 18

Basin 3B - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 5.031 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 10,114 cuft
Drainage area	= 1.490 ac	Curve number	= 69*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.460 x 98) + (0.210 x 61) + (0.820 x 55)] / 1.490



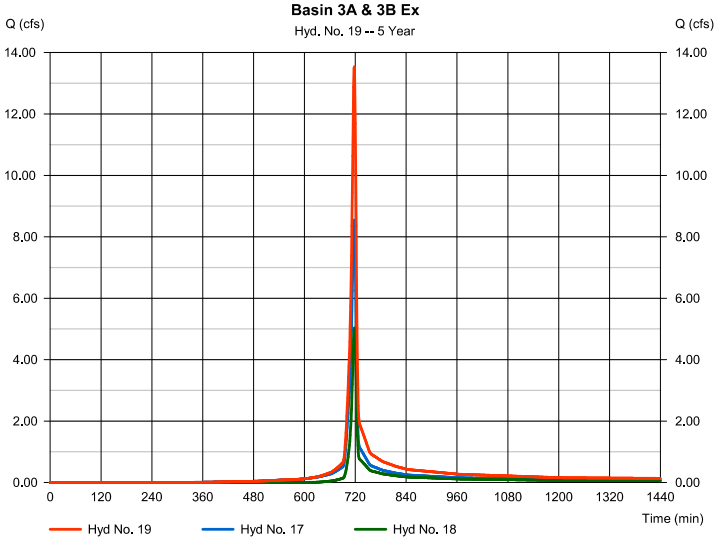
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 19

Basin 3A & 3B Ex

Hydrograph type	= Combine	Peak discharge	= 13.54 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 28,045 cuft
Inflow hyds.	= 17, 18	Contrib. drain. area	= 2.950 ac



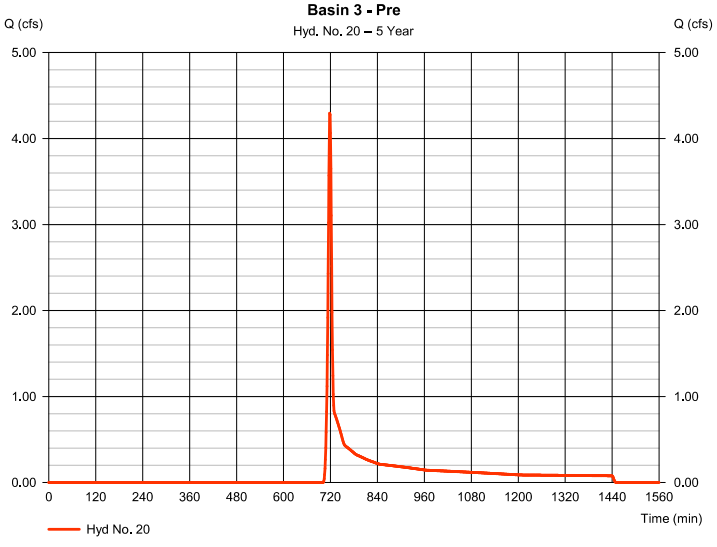
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 20

Basin 3 - Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 4.294 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 9,741 cuft
Drainage area	= 2.950 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

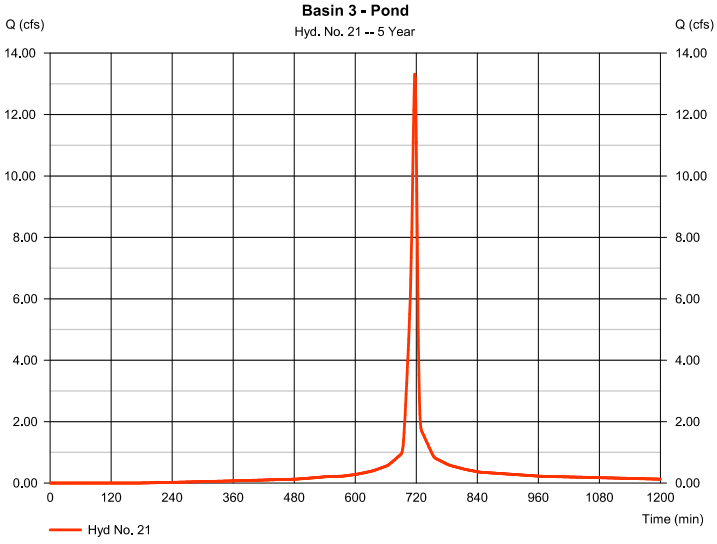
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 21

Basin 3 - Pond

Hydrograph type	= SCS Runoff	Peak discharge	= 13.31 cfs
Storm frequency	= 5 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 29,660 cuft
Drainage area	= 1.980 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.710 x 98) + (0.270 x 61)] / 1.980



Hydrograph Report

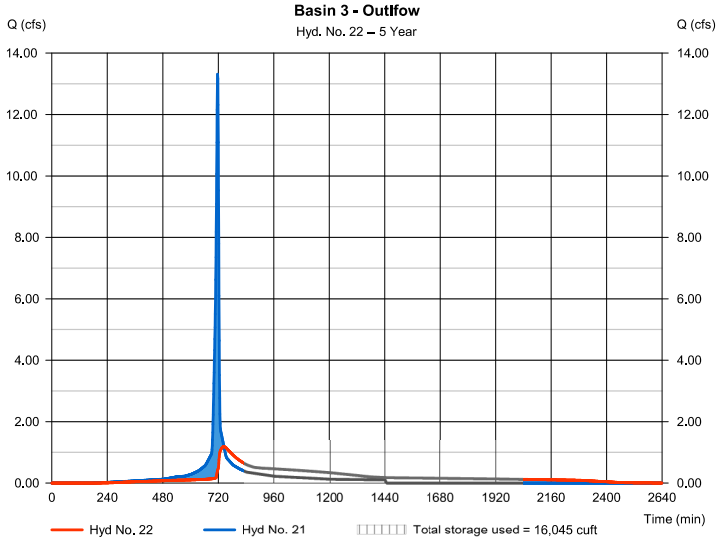
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 22

Basin 3 - Outlfow

Hydrograph type	= Reservoir	Peak discharge	= 1.188 cfs
Storm frequency	= 5 yrs	Time to peak	= 745 min
Time interval	= 1 min	Hyd. volume	= 29,655 cuft
Inflow hyd. No.	= 21 - Basin 3 - Pond	Max. Elevation	= 1071.03 ft
Reservoir name	= Pond 3	Max. Storage	= 16,045 cuft

Storage Indication method used.



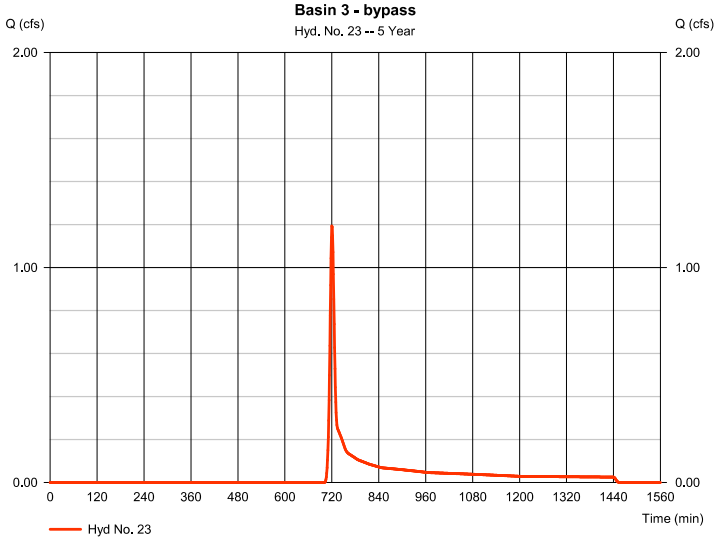
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 23

Basin 3 - bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 1.193 cfs
Storm frequency	= 5 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 3,138 cuft
Drainage area	= 0.980 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.50 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



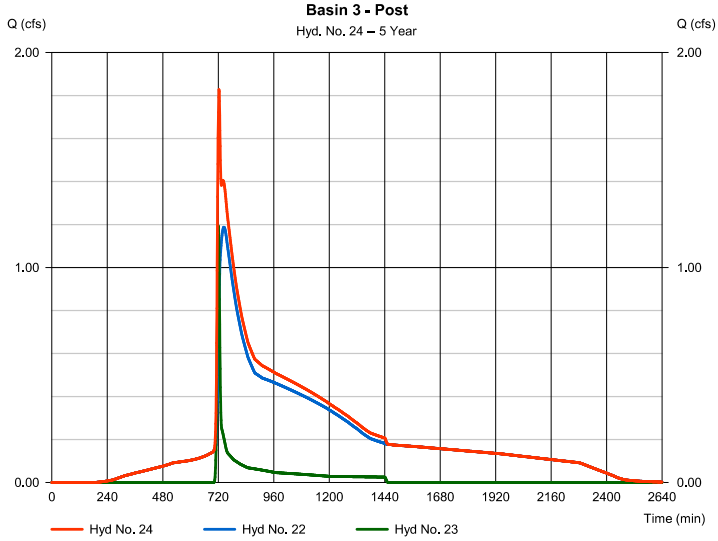
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 24

Basin 3 - Post

Hydrograph type	= Combine	Peak discharge	= 1.828 cfs
Storm frequency	= 5 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 32,793 cuft
Inflow hyds.	= 22, 23	Contrib. drain. area	= 0.980 ac



Hydrograph Report

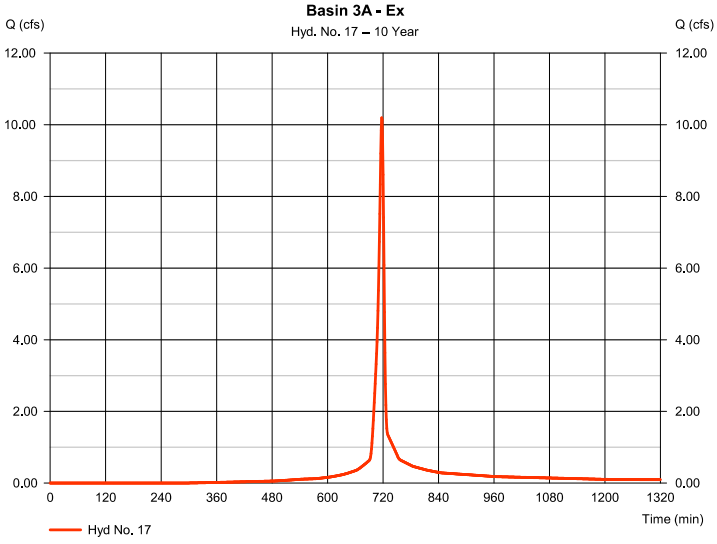
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 17

Basin 3A - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 10.20 cfs
Storm frequency	= 10 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 21,615 cuft
Drainage area	= 1.460 ac	Curve number	= 86*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.020 x 98) + (0.250 x 61) + (0.190 x 55)] / 1.460



Hydrograph Report

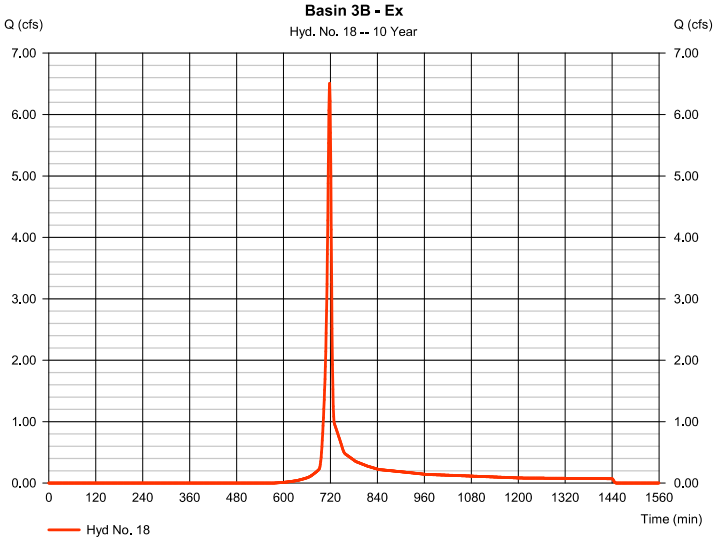
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 18

Basin 3B - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 6.509 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 13,071 cuft
Drainage area	= 1.490 ac	Curve number	= 69*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.460 x 98) + (0.210 x 61) + (0.820 x 55)] / 1.490



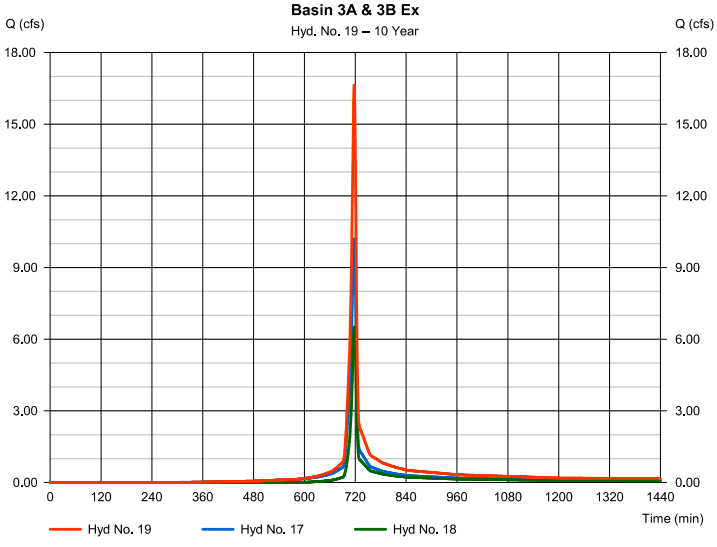
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 19

Basin 3A & 3B Ex

Hydrograph type	= Combine	Peak discharge	= 16.64 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 34,686 cuft
Inflow hyds.	= 17, 18	Contrib. drain. area	= 2.950 ac



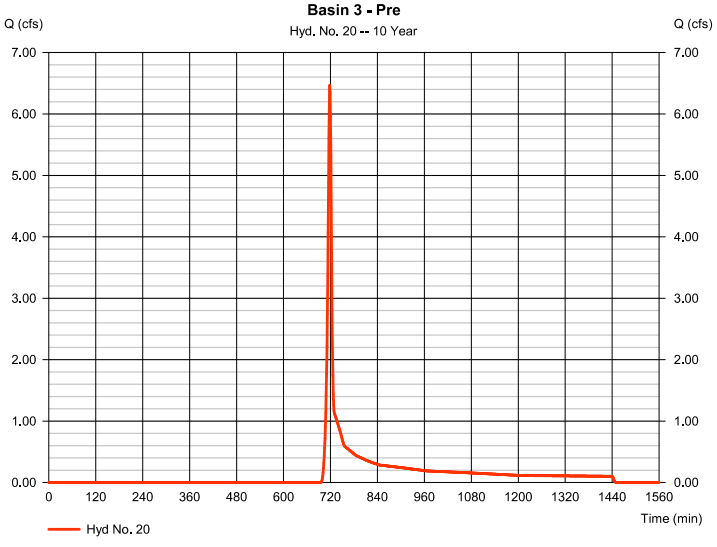
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 20

Basin 3 - Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 6.466 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 13,805 cuft
Drainage area	= 2.950 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

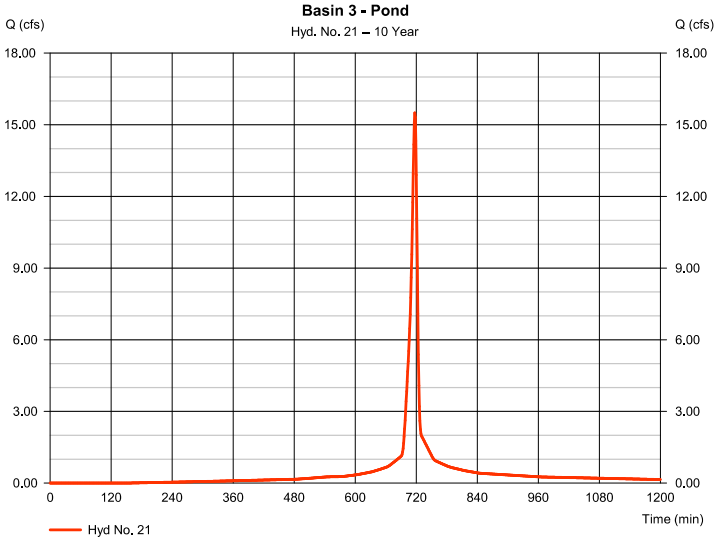
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 21

Basin 3 - Pond

Hydrograph type	= SCS Runoff	Peak discharge	= 15.50 cfs
Storm frequency	= 10 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 34,905 cuft
Drainage area	= 1.980 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.710 x 98) + (0.270 x 61)] / 1.980



Hydrograph Report

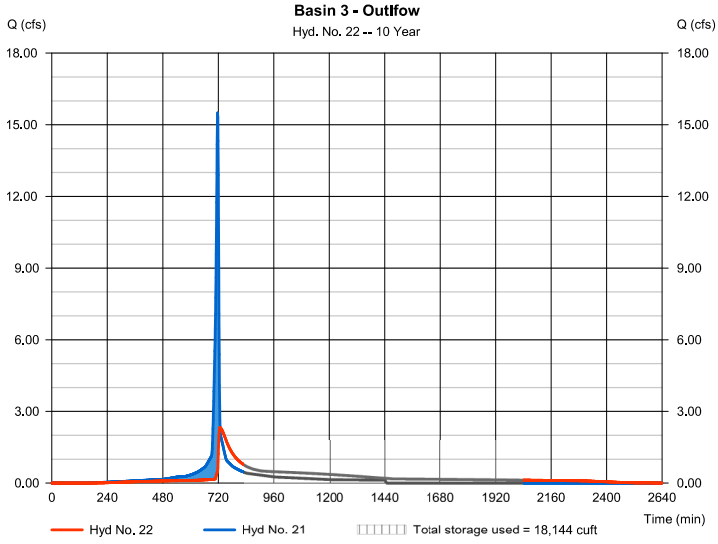
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 22

Basin 3 - Outflow

Hydrograph type	= Reservoir	Peak discharge	= 2.332 cfs
Storm frequency	= 10 yrs	Time to peak	= 728 min
Time interval	= 1 min	Hyd. volume	= 34,900 cuft
Inflow hyd. No.	= 21 - Basin 3 - Pond	Max. Elevation	= 1071.53 ft
Reservoir name	= Pond 3	Max. Storage	= 18,144 cuft

Storage Indication method used.



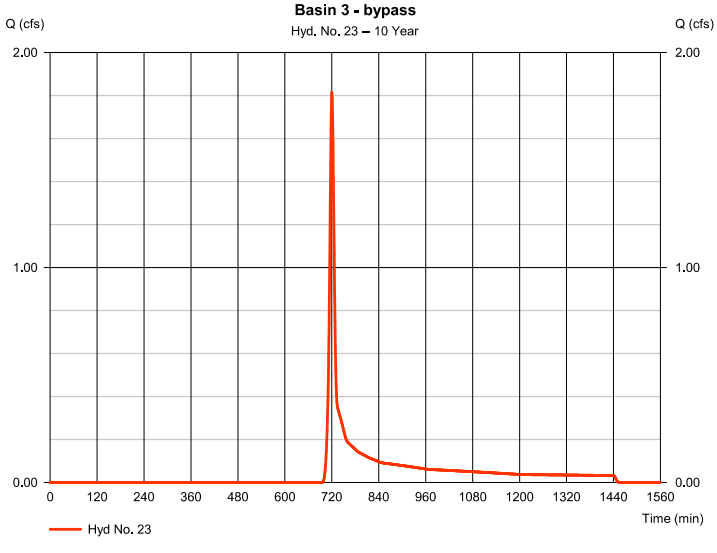
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 23

Basin 3 - bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 1.815 cfs
Storm frequency	= 10 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 4,447 cuft
Drainage area	= 0.980 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.50 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



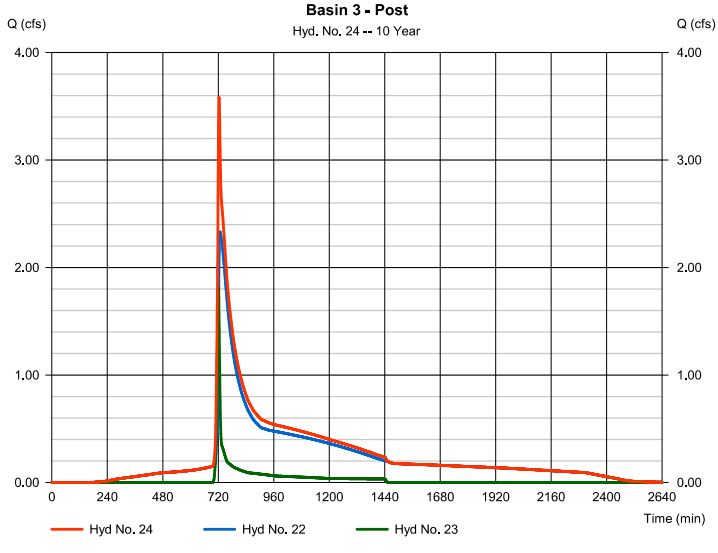
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 24

Basin 3 - Post

Hydrograph type	= Combine	Peak discharge	= 3.582 cfs
Storm frequency	= 10 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 39,347 cuft
Inflow hyds.	= 22, 23	Contrib. drain. area	= 0.980 ac



Hydrograph Report

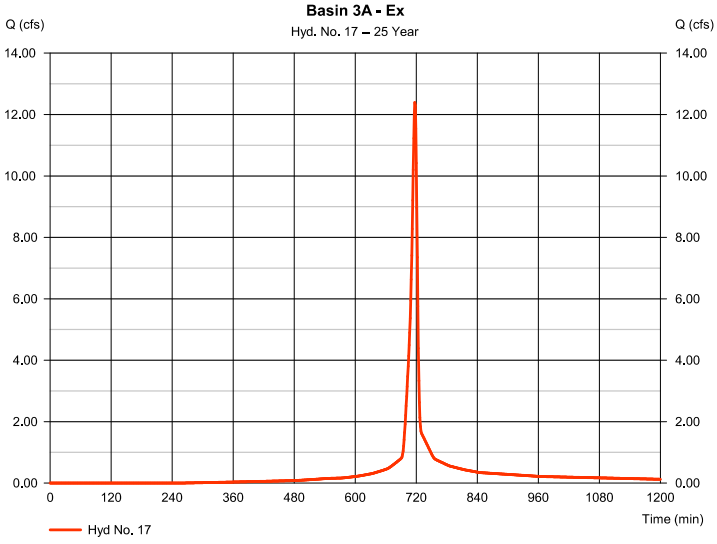
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 17

Basin 3A - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 12.39 cfs
Storm frequency	= 25 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 26,600 cuft
Drainage area	= 1.460 ac	Curve number	= 86*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.020 x 98) + (0.250 x 61) + (0.190 x 55)] / 1.460



Hydrograph Report

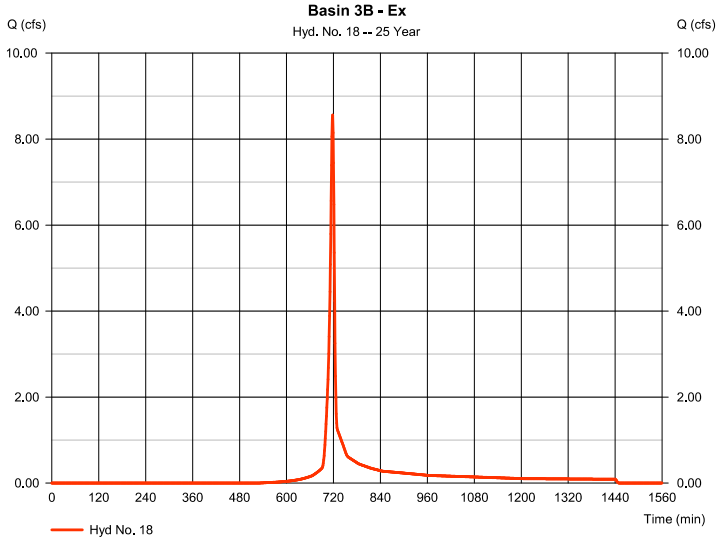
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 18

Basin 3B - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 8.561 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 17,248 cuft
Drainage area	= 1.490 ac	Curve number	= 69*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.460 x 98) + (0.210 x 61) + (0.820 x 55)] / 1.490



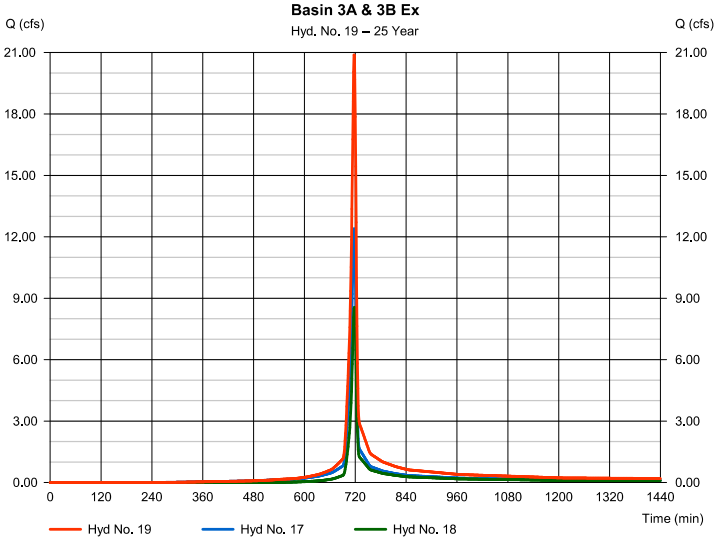
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 19

Basin 3A & 3B Ex

Hydrograph type	= Combine	Peak discharge	= 20.88 cfs
Storm frequency	= 25 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 43,848 cuft
Inflow hyds.	= 17, 18	Contrib. drain. area	= 2.950 ac



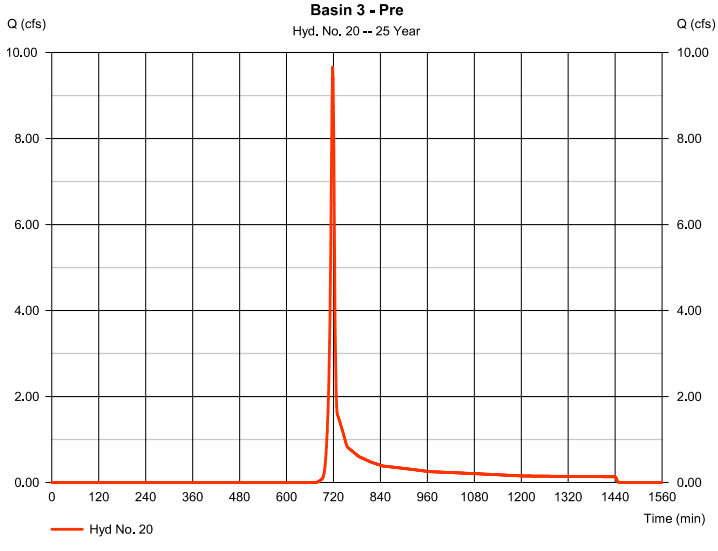
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 20

Basin 3 - Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 9.661 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 19,890 cuft
Drainage area	= 2.950 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



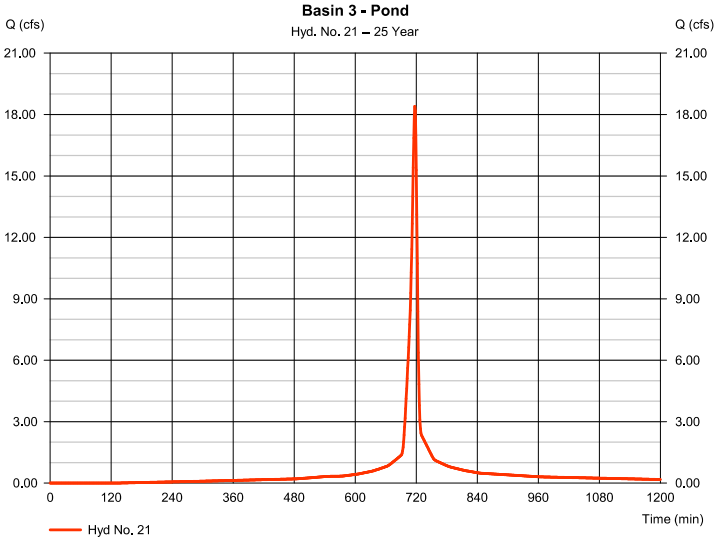
Hydrograph Report

Hyd. No. 21

Basin 3 - Pond

Hydrograph type	= SCS Runoff	Peak discharge	= 18.40 cfs
Storm frequency	= 25 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 41,928 cuft
Drainage area	= 1.980 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.710 x 98) + (0.270 x 61)] / 1.980



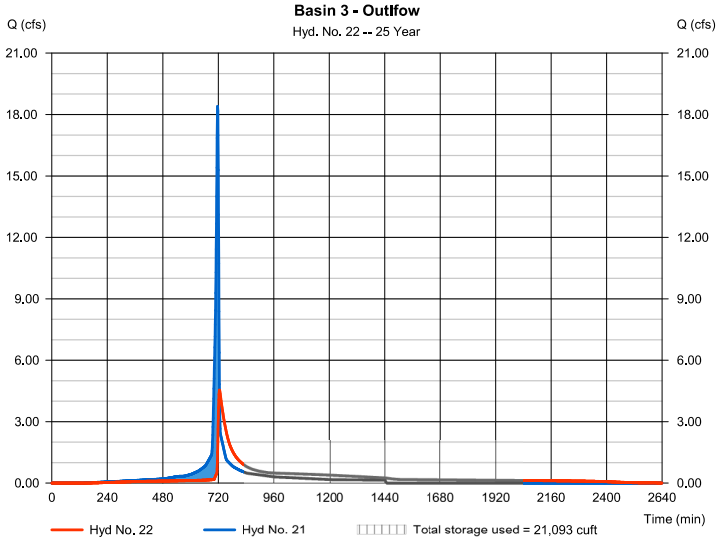
Hydrograph Report

Hyd. No. 22

Basin 3 - Outlfow

Hydrograph type	= Reservoir	Peak discharge	= 4.543 cfs
Storm frequency	= 25 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 41,923 cuft
Inflow hyd. No.	= 21 - Basin 3 - Pond	Max. Elevation	= 1072.26 ft
Reservoir name	= Pond 3	Max. Storage	= 21,093 cuft

Storage Indication method used.

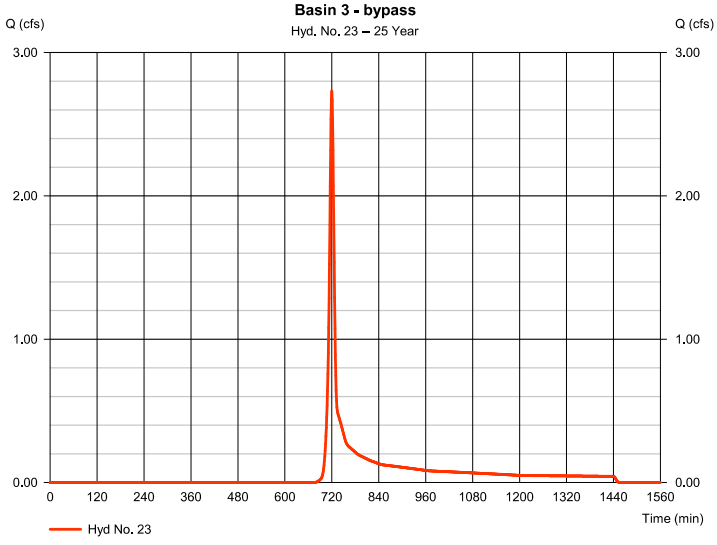


Hydrograph Report

Hyd. No. 23

Basin 3 - bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 2.731 cfs
Storm frequency	= 25 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 6,407 cuft
Drainage area	= 0.980 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.50 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

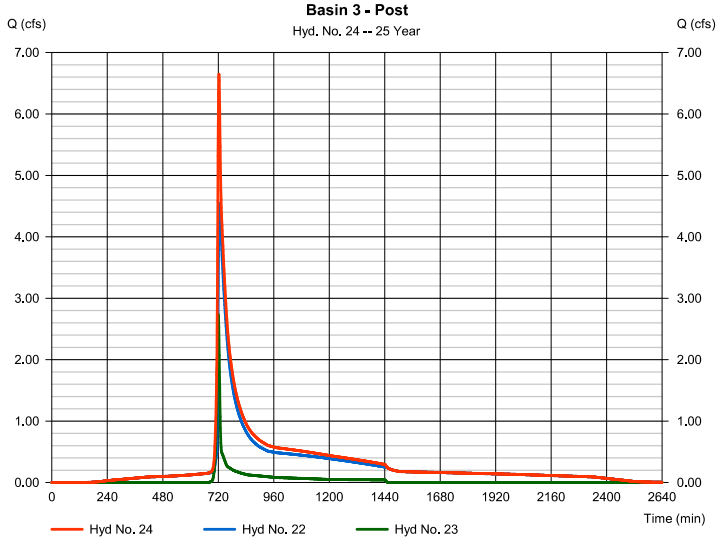


Hydrograph Report

Hyd. No. 24

Basin 3 - Post

Hydrograph type	= Combine	Peak discharge	= 6.649 cfs
Storm frequency	= 25 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 48,330 cuft
Inflow hyds.	= 22, 23	Contrib. drain. area	= 0.980 ac



Hydrograph Report

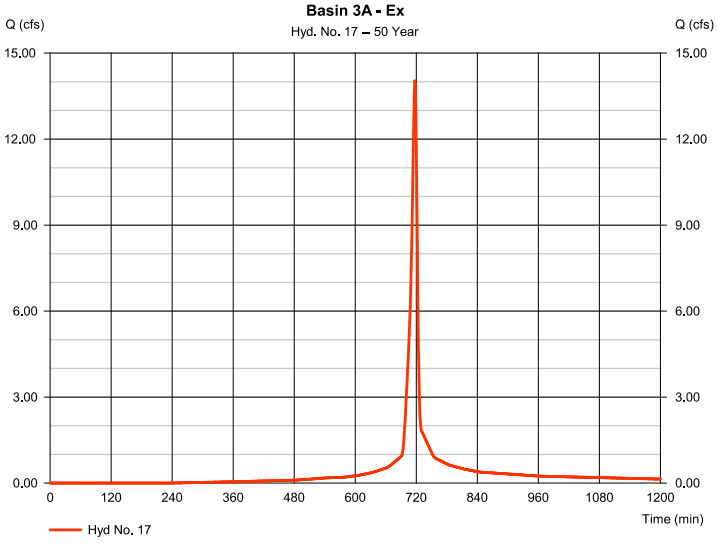
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 17

Basin 3A - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 14.03 cfs
Storm frequency	= 50 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 30,378 cuft
Drainage area	= 1.460 ac	Curve number	= 86*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.020 x 98) + (0.250 x 61) + (0.190 x 55)] / 1.460



Hydrograph Report

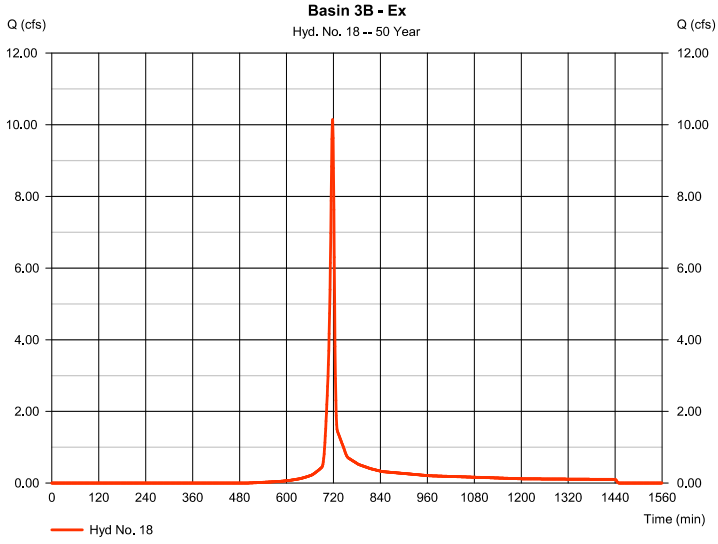
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 18

Basin 3B - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 10.14 cfs
Storm frequency	= 50 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 20,519 cuft
Drainage area	= 1.490 ac	Curve number	= 69*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.460 x 98) + (0.210 x 61) + (0.820 x 55)] / 1.490



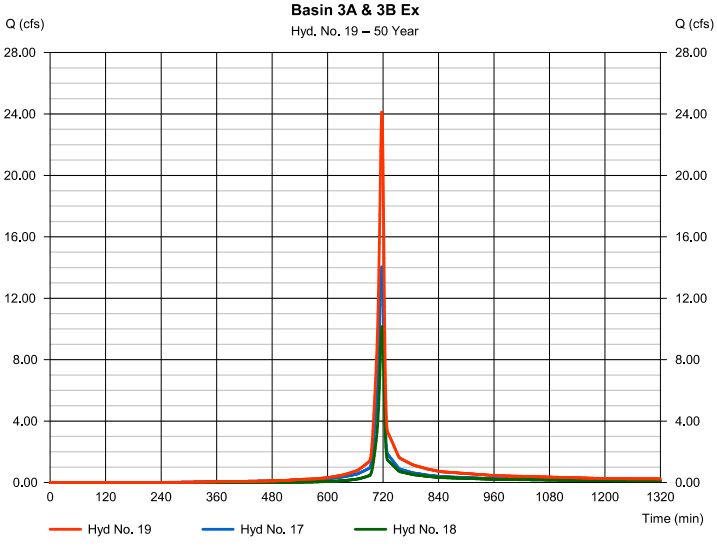
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 19

Basin 3A & 3B Ex

Hydrograph type	= Combine	Peak discharge	= 24.12 cfs
Storm frequency	= 50 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 50,897 cuft
Inflow hyds.	= 17, 18	Contrib. drain. area	= 2.950 ac



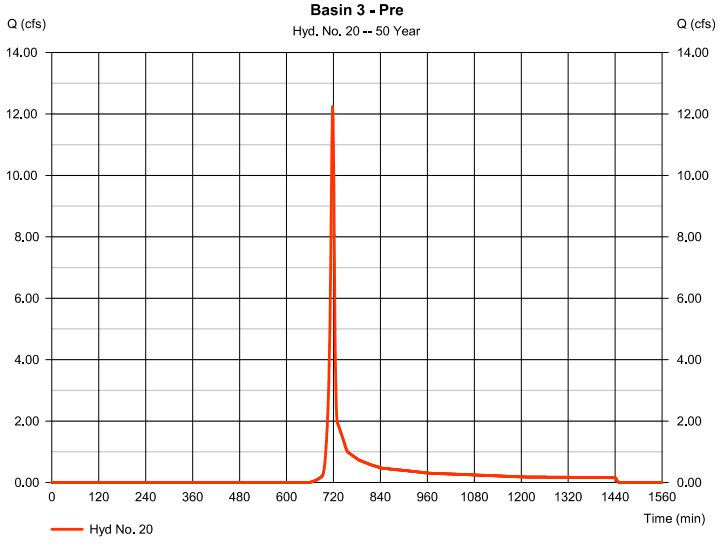
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 20

Basin 3 - Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 12.24 cfs
Storm frequency	= 50 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 24,869 cuft
Drainage area	= 2.950 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

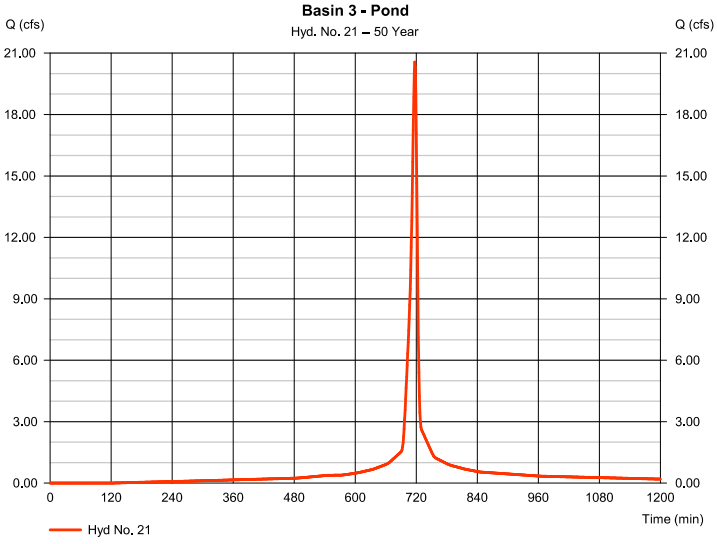
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 21

Basin 3 - Pond

Hydrograph type	= SCS Runoff	Peak discharge	= 20.57 cfs
Storm frequency	= 50 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 47,210 cuft
Drainage area	= 1.980 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.710 x 98) + (0.270 x 61)] / 1.980



Hydrograph Report

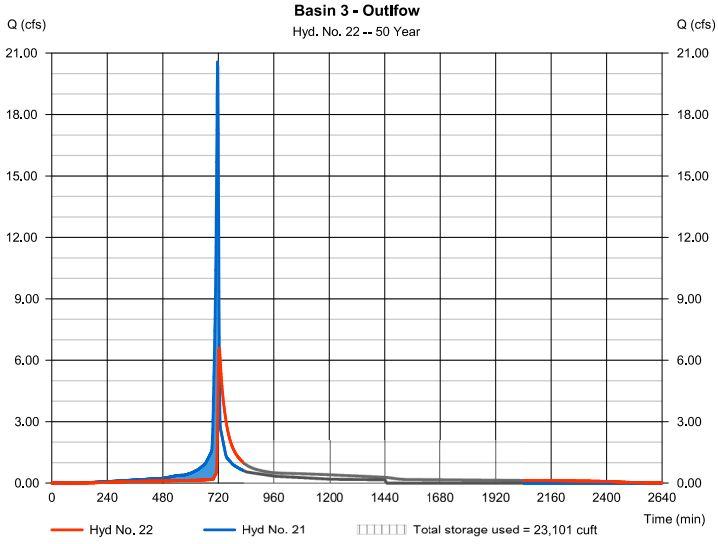
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 22

Basin 3 - Outlfow

Hydrograph type	= Reservoir	Peak discharge	= 6.598 cfs
Storm frequency	= 50 yrs	Time to peak	= 724 min
Time interval	= 1 min	Hyd. volume	= 47,204 cuft
Inflow hyd. No.	= 21 - Basin 3 - Pond	Max. Elevation	= 1072.83 ft
Reservoir name	= Pond 3	Max. Storage	= 23,101 cuft

Storage Indication method used.



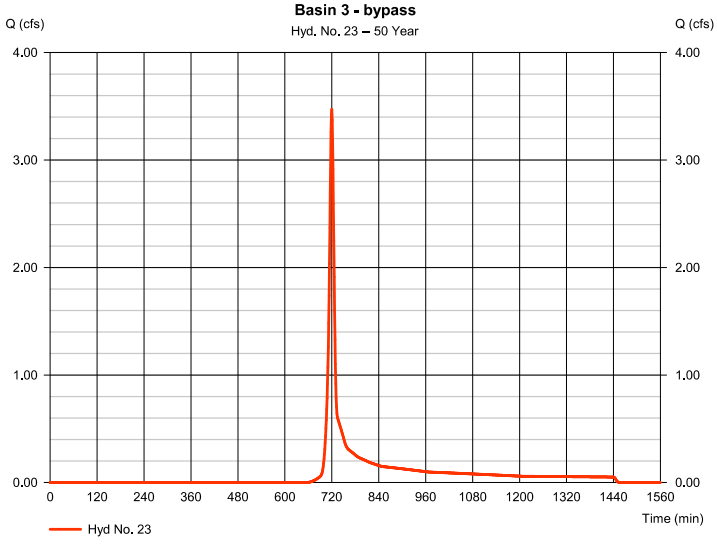
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 23

Basin 3 - bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 3.472 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 8,011 cuft
Drainage area	= 0.980 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.50 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



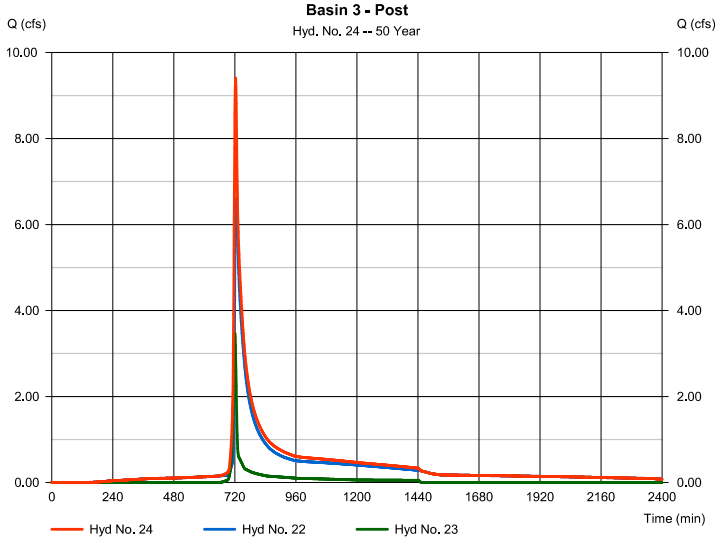
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 24

Basin 3 - Post

Hydrograph type	= Combine	Peak discharge	= 9.404 cfs
Storm frequency	= 50 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 55,216 cuft
Inflow hyds.	= 22, 23	Contrib. drain. area	= 0.980 ac



Hydrograph Report

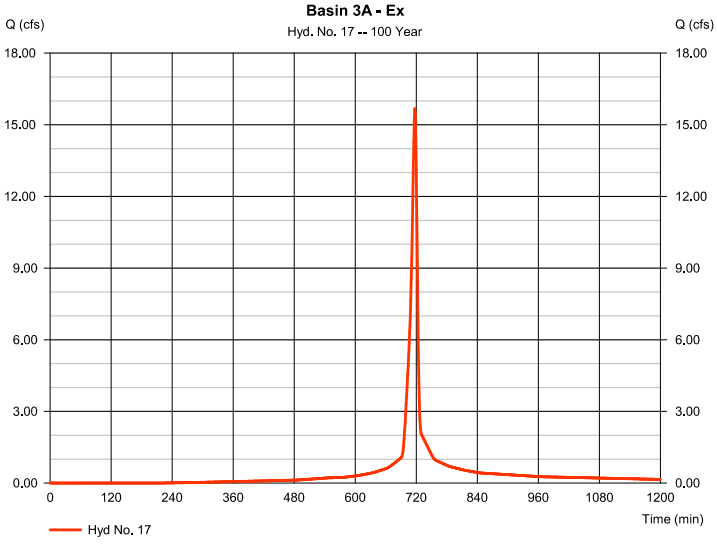
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 17

Basin 3A - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 15.67 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 34,180 cuft
Drainage area	= 1.460 ac	Curve number	= 86*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.020 x 98) + (0.250 x 61) + (0.190 x 55)] / 1.460



Hydrograph Report

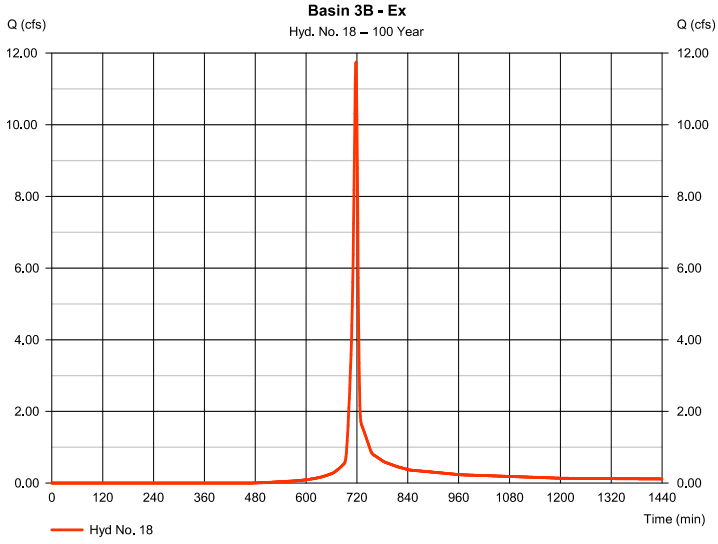
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 18

Basin 3B - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 11.75 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 23,882 cuft
Drainage area	= 1.490 ac	Curve number	= 69*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.460 x 98) + (0.210 x 61) + (0.820 x 55)] / 1.490



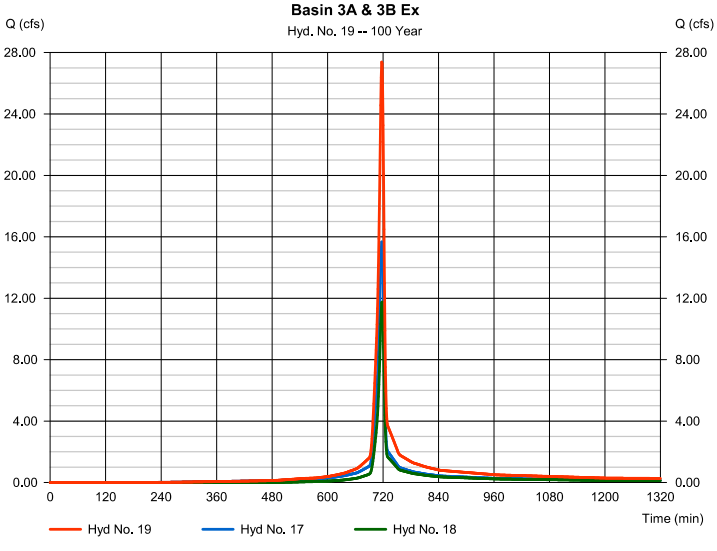
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 19

Basin 3A & 3B Ex

Hydrograph type	= Combine	Peak discharge	= 27.38 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 58,062 cuft
Inflow hyds.	= 17, 18	Contrib. drain. area	= 2.950 ac



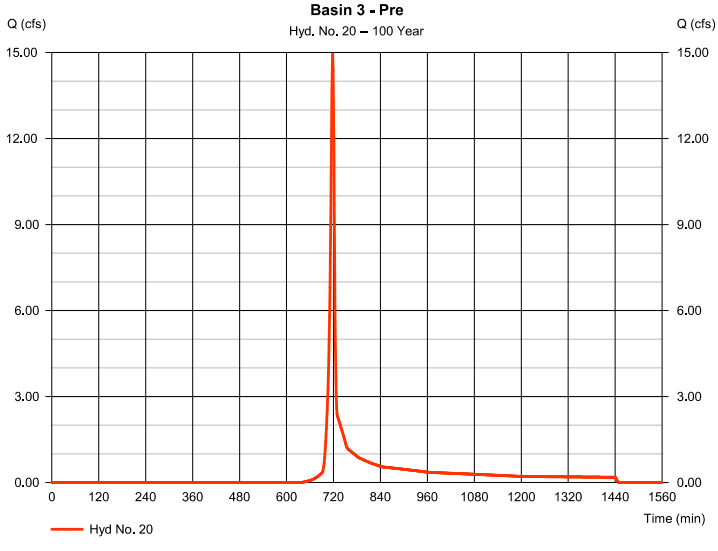
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 20

Basin 3 - Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 14.94 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 30,143 cuft
Drainage area	= 2.950 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

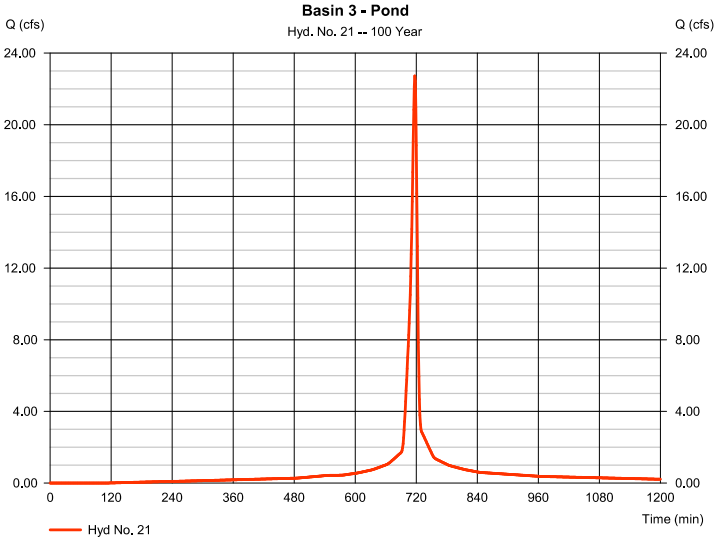
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 21

Basin 3 - Pond

Hydrograph type	= SCS Runoff	Peak discharge	= 22.73 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 52,501 cuft
Drainage area	= 1.980 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.710 x 98) + (0.270 x 61)] / 1.980



Hydrograph Report

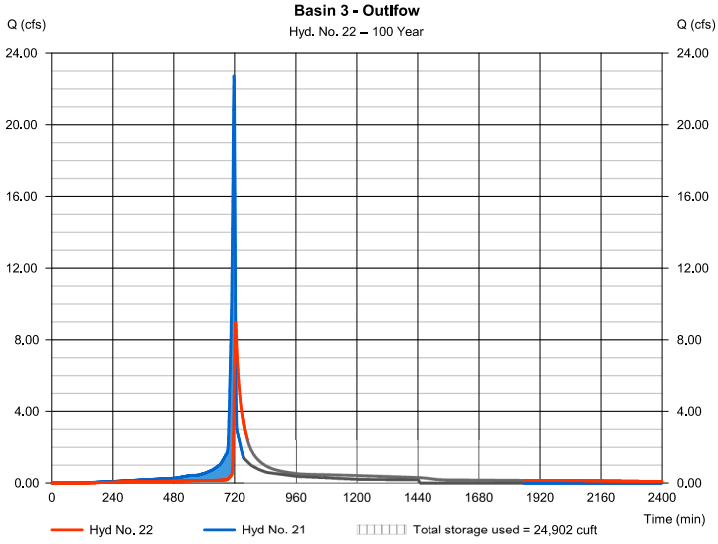
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 22

Basin 3 - Outflow

Hydrograph type	= Reservoir	Peak discharge	= 8.982 cfs
Storm frequency	= 100 yrs	Time to peak	= 724 min
Time interval	= 1 min	Hyd. volume	= 52,496 cuft
Inflow hyd. No.	= 21 - Basin 3 - Pond	Max. Elevation	= 1073.42 ft
Reservoir name	= Pond 3	Max. Storage	= 24,902 cuft

Storage Indication method used.



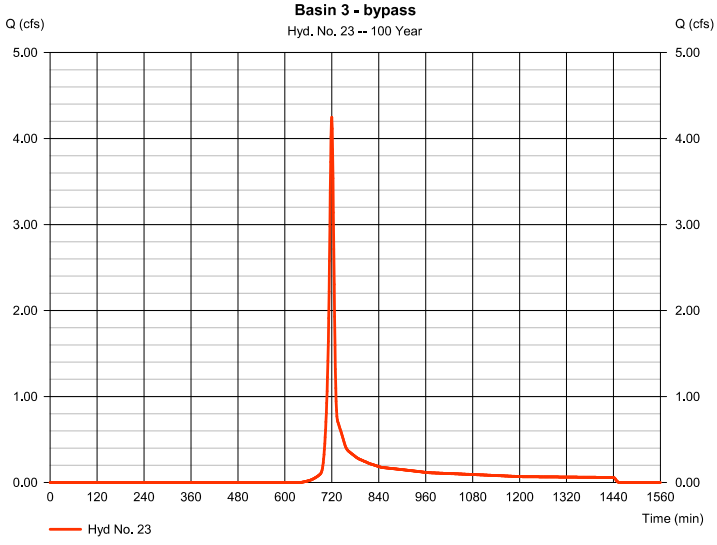
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 23

Basin 3 - bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 4.249 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 9,710 cuft
Drainage area	= 0.980 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 8.50 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



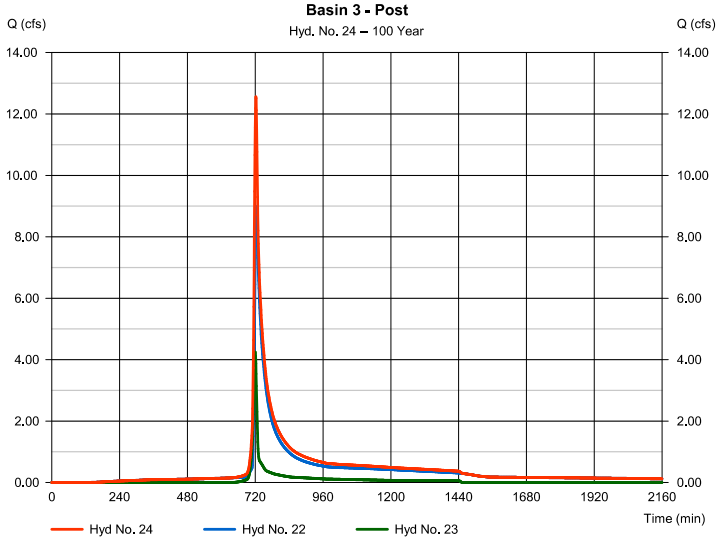
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 24

Basin 3 - Post

Hydrograph type	= Combine	Peak discharge	= 12.56 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 62,206 cuft
Inflow hyds.	= 22, 23	Contrib. drain. area	= 0.980 ac



Hydrograph Report

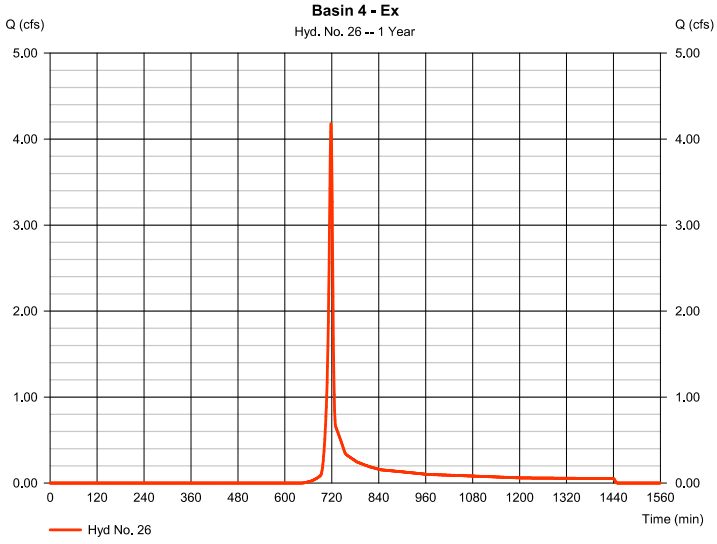
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 26

Basin 4 - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 4.178 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 8,449 cuft
Drainage area	= 2.170 ac	Curve number	= 75*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.900 x 98) + (0.680 x 61) + (0.590 x 55)] / 2.170



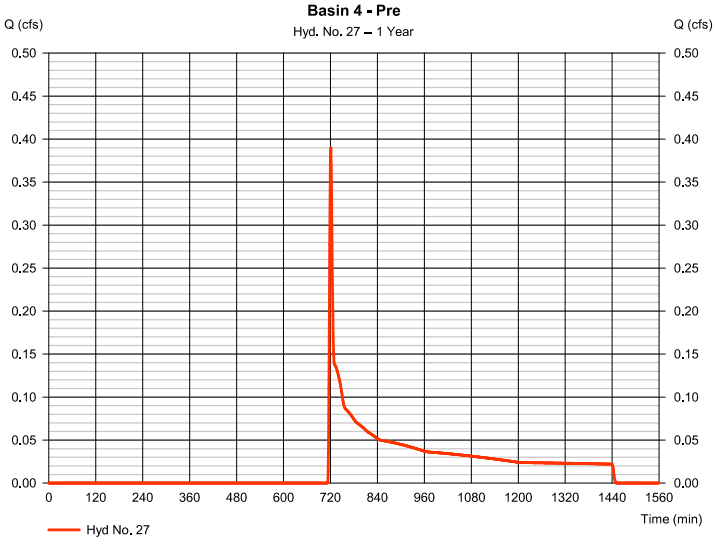
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 27

Basin 4 - Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 0.390 cfs
Storm frequency	= 1 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 1,849 cuft
Drainage area	= 2.170 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

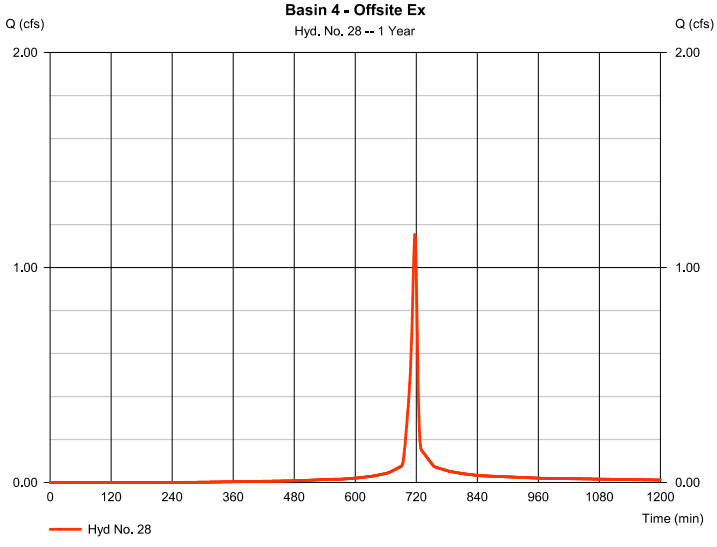
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 28

Basin 4 - Offsite Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 1.153 cfs
Storm frequency	= 1 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 2,483 cuft
Drainage area	= 0.280 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.240 x 98) + (0.040 x 61)] / 0.280



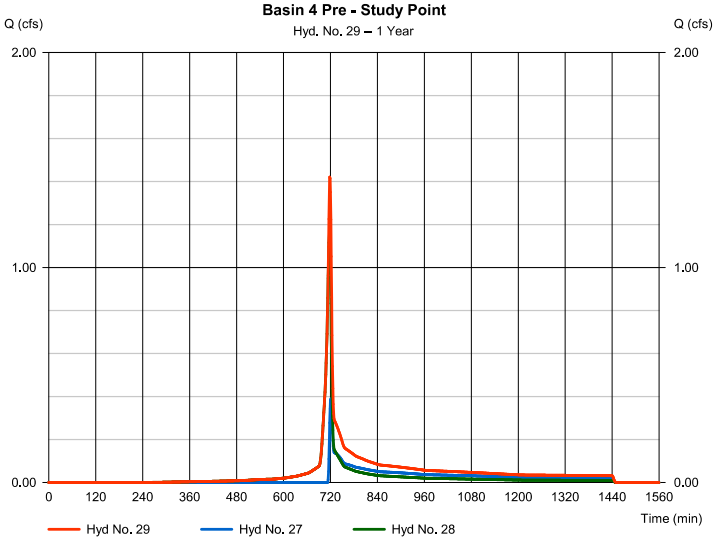
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 29

Basin 4 Pre - Study Point

Hydrograph type	= Combine	Peak discharge	= 1.421 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 4,332 cuft
Inflow hyds.	= 27, 28	Contrib. drain. area	= 2.450 ac



Hydrograph Report

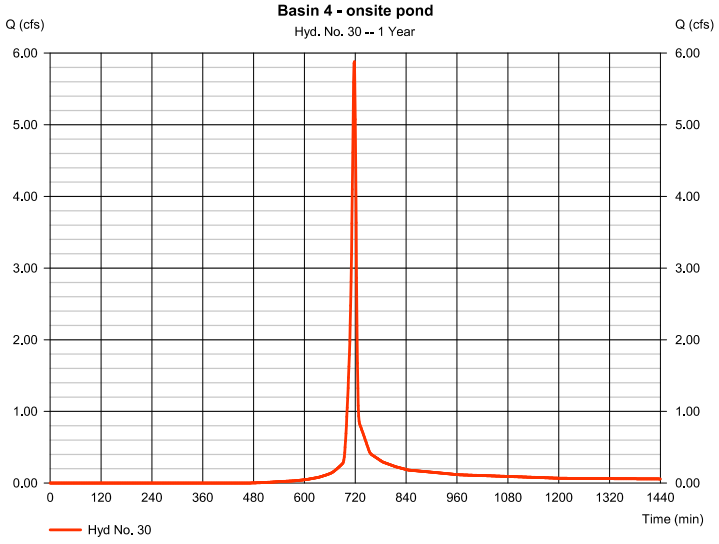
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 30

Basin 4 - onsite pond

Hydrograph type	= SCS Runoff	Peak discharge	= 5.880 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 11,954 cuft
Drainage area	= 1.890 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.240 x 98) + (0.650 x 61)] / 1.890



Hydrograph Report

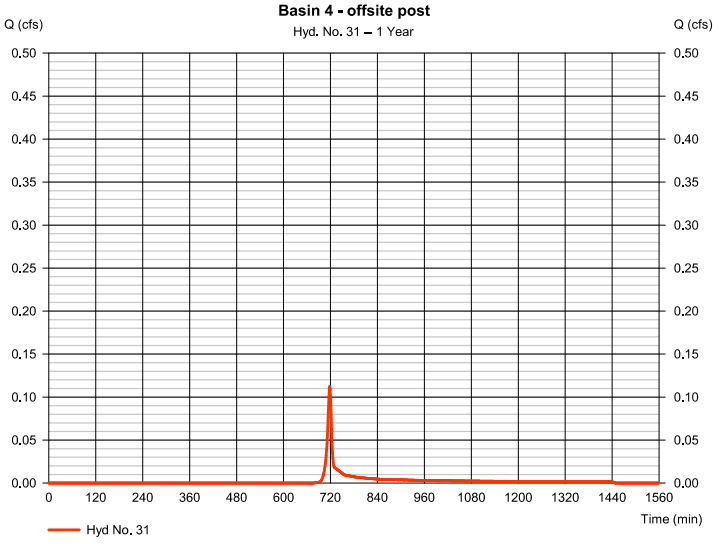
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 31

Basin 4 - offsite post

Hydrograph type	= SCS Runoff	Peak discharge	= 0.112 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 231 cuft
Drainage area	= 0.070 ac	Curve number	= 72*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.020 x 98) + (0.050 x 61)] / 0.070



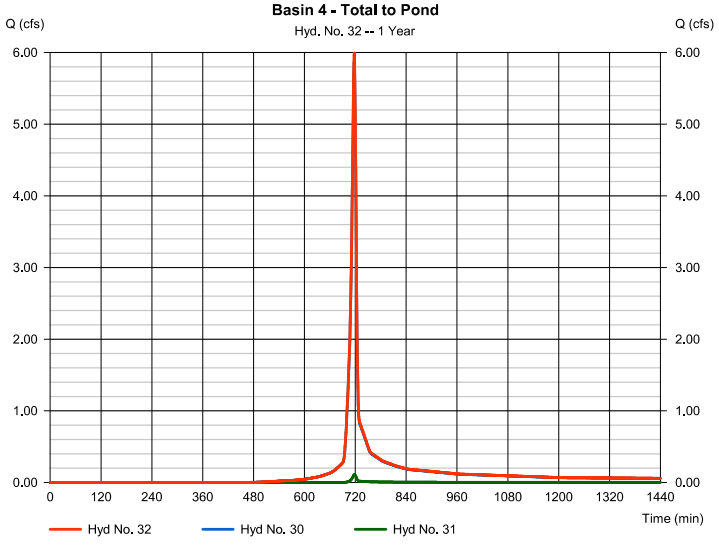
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 32

Basin 4 - Total to Pond

Hydrograph type	= Combine	Peak discharge	= 5.992 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 12,184 cuft
Inflow hyds.	= 30, 31	Contrib. drain. area	= 1.960 ac



Hydrograph Report

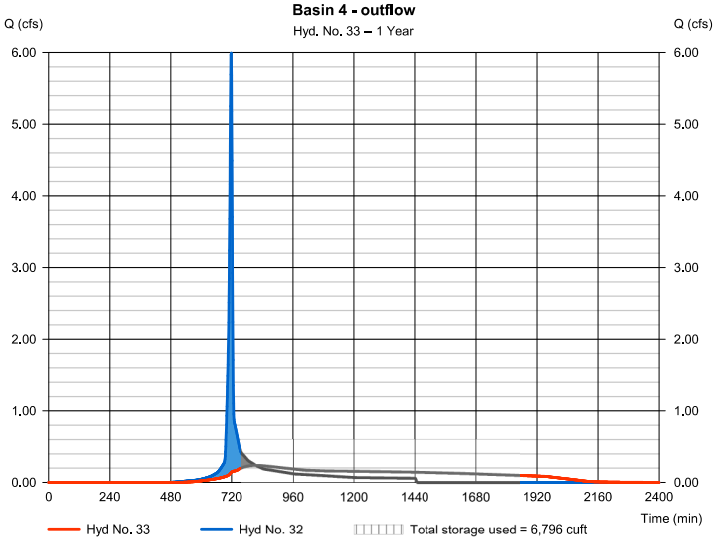
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 33

Basin 4 - outflow

Hydrograph type	= Reservoir	Peak discharge	= 0.236 cfs
Storm frequency	= 1 yrs	Time to peak	= 814 min
Time interval	= 1 min	Hyd. volume	= 12,178 cuft
Inflow hyd. No.	= 32 - Basin 4 - Total to Pond	Max. Elevation	= 1082.71 ft
Reservoir name	= Pond 4	Max. Storage	= 6,796 cuft

Storage Indication method used.



Hydrograph Report

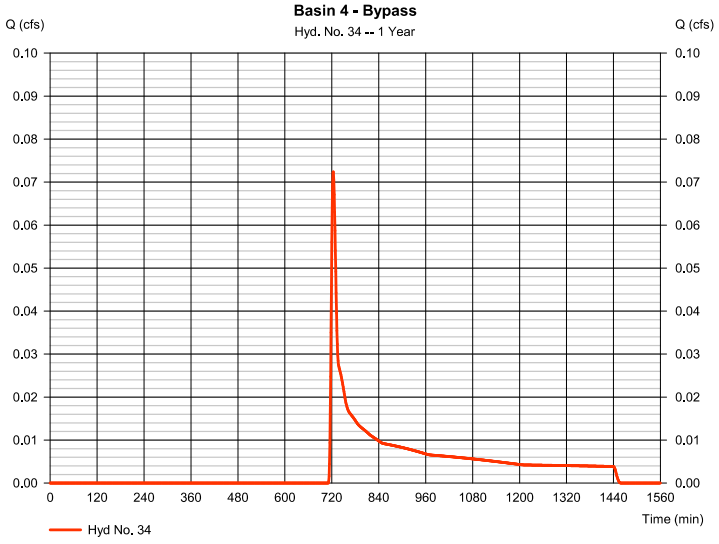
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 34

Basin 4 - Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.072 cfs
Storm frequency	= 1 yrs	Time to peak	= 724 min
Time interval	= 1 min	Hyd. volume	= 356 cuft
Drainage area	= 0.340 ac	Curve number	= 57*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.11 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.140 x 61) + (0.200 x 55)] / 0.340



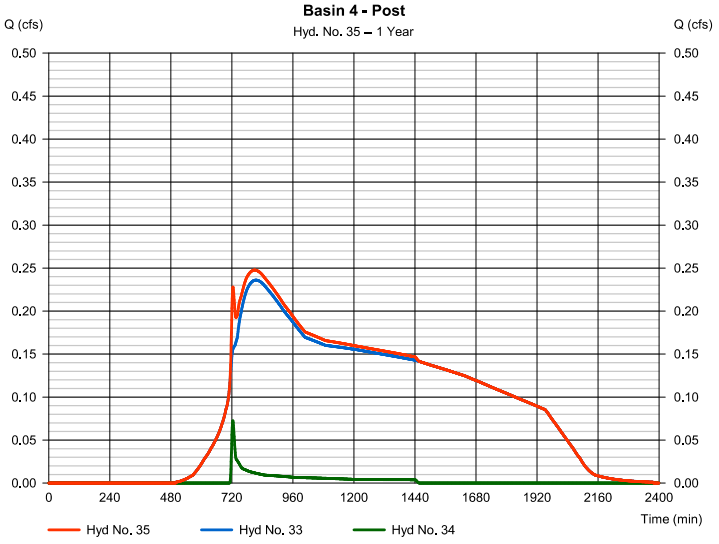
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 35

Basin 4 - Post

Hydrograph type	= Combine	Peak discharge	= 0.248 cfs
Storm frequency	= 1 yrs	Time to peak	= 809 min
Time interval	= 1 min	Hyd. volume	= 12,534 cuft
Inflow hyds.	= 33, 34	Contrib. drain. area	= 0.340 ac



Hydrograph Report

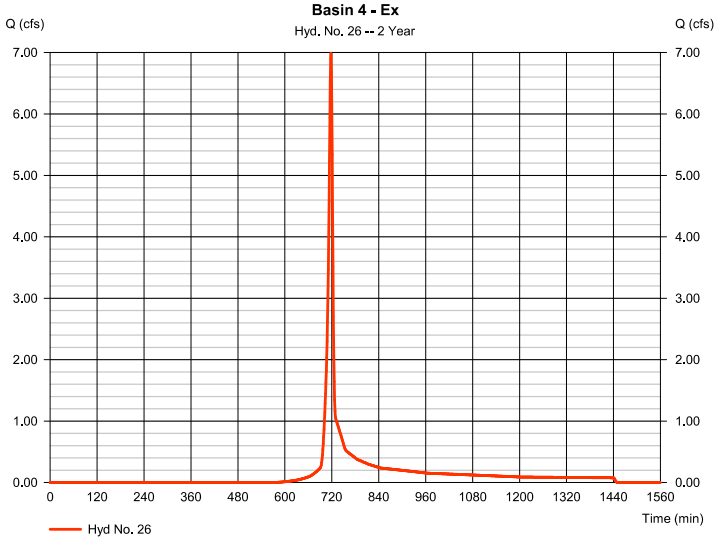
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 26

Basin 4 - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 6.986 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 14,028 cuft
Drainage area	= 2.170 ac	Curve number	= 75*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.900 x 98) + (0.680 x 61) + (0.590 x 55)] / 2.170



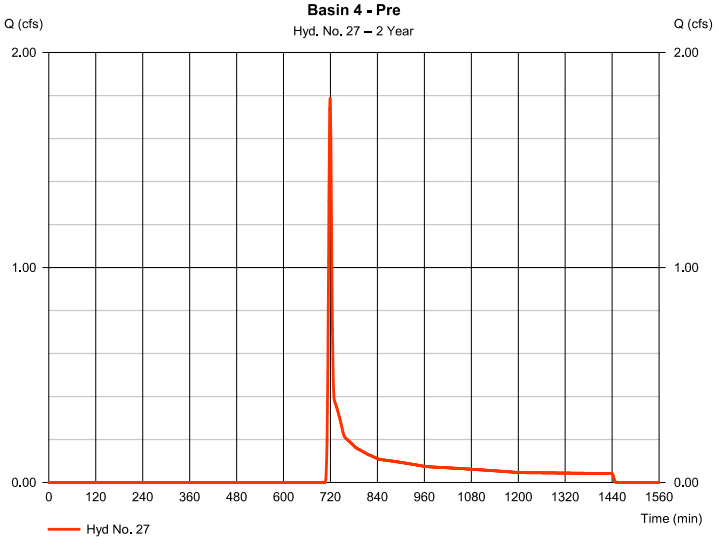
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 27

Basin 4 - Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 1.787 cfs
Storm frequency	= 2 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 4,565 cuft
Drainage area	= 2.170 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

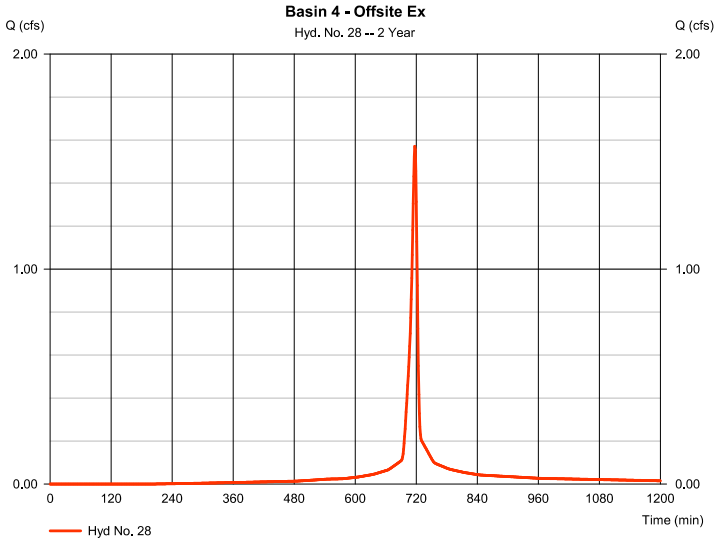
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 28

Basin 4 - Offsite Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 1.571 cfs
Storm frequency	= 2 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 3,457 cuft
Drainage area	= 0.280 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.240 x 98) + (0.040 x 61)] / 0.280



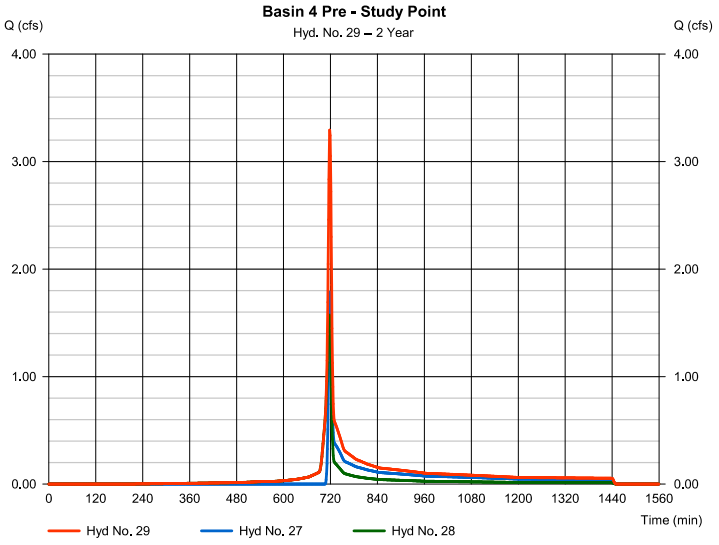
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 29

Basin 4 Pre - Study Point

Hydrograph type	= Combine	Peak discharge	= 3.294 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 8,022 cuft
Inflow hyds.	= 27, 28	Contrib. drain. area	= 2.450 ac



Hydrograph Report

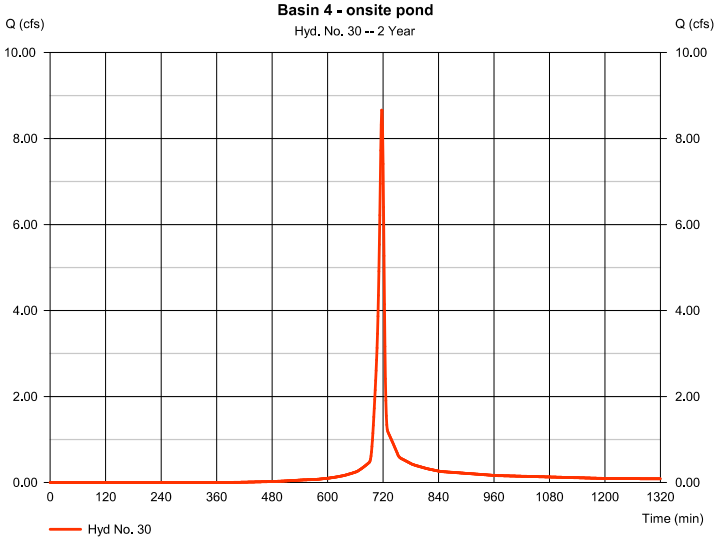
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 30

Basin 4 - onsite pond

Hydrograph type	= SCS Runoff	Peak discharge	= 8.662 cfs
Storm frequency	= 2 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 17,896 cuft
Drainage area	= 1.890 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.240 x 98) + (0.650 x 61)] / 1.890



Hydrograph Report

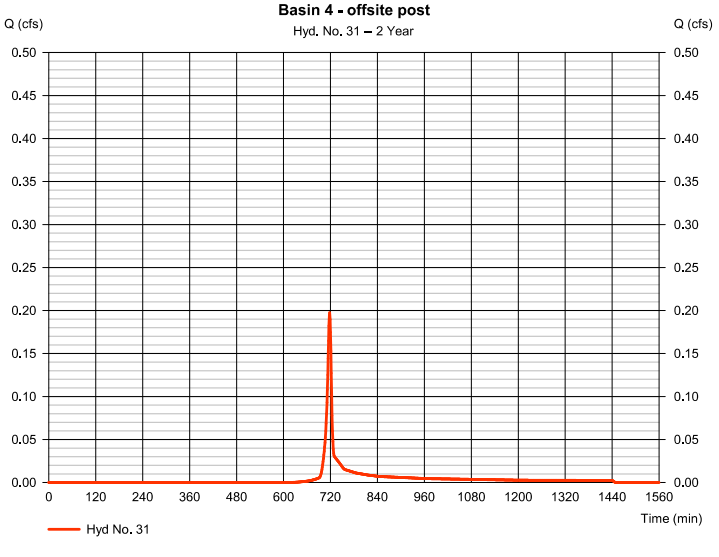
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 31

Basin 4 - offsite post

Hydrograph type	= SCS Runoff	Peak discharge	= 0.198 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 397 cuft
Drainage area	= 0.070 ac	Curve number	= 72*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.020 x 98) + (0.050 x 61)] / 0.070



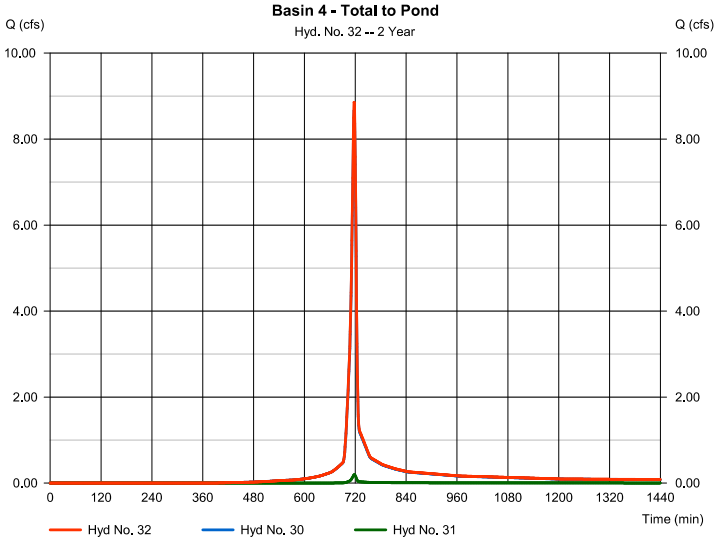
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 32

Basin 4 - Total to Pond

Hydrograph type	= Combine	Peak discharge	= 8.856 cfs
Storm frequency	= 2 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 18,293 cuft
Inflow hyds.	= 30, 31	Contrib. drain. area	= 1.960 ac



Hydrograph Report

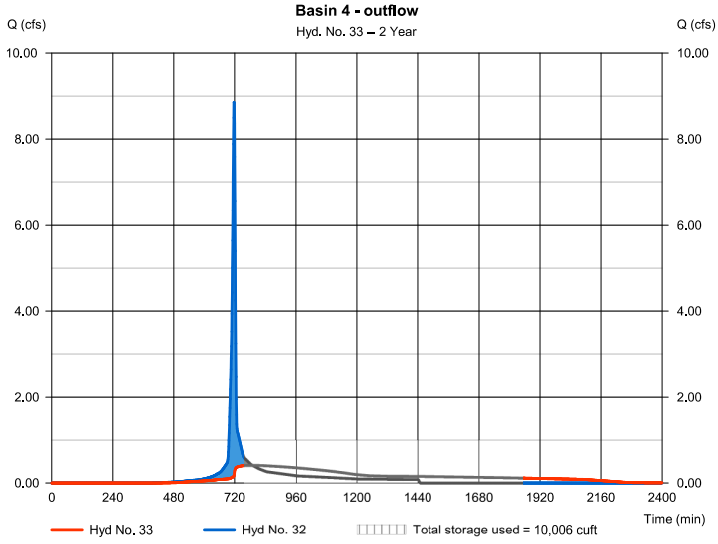
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 33

Basin 4 - outflow

Hydrograph type	= Reservoir	Peak discharge	= 0.411 cfs
Storm frequency	= 2 yrs	Time to peak	= 790 min
Time interval	= 1 min	Hyd. volume	= 18,287 cuft
Inflow hyd. No.	= 32 - Basin 4 - Total to Pond	Max. Elevation	= 1083.50 ft
Reservoir name	= Pond 4	Max. Storage	= 10,006 cuft

Storage Indication method used.



Hydrograph Report

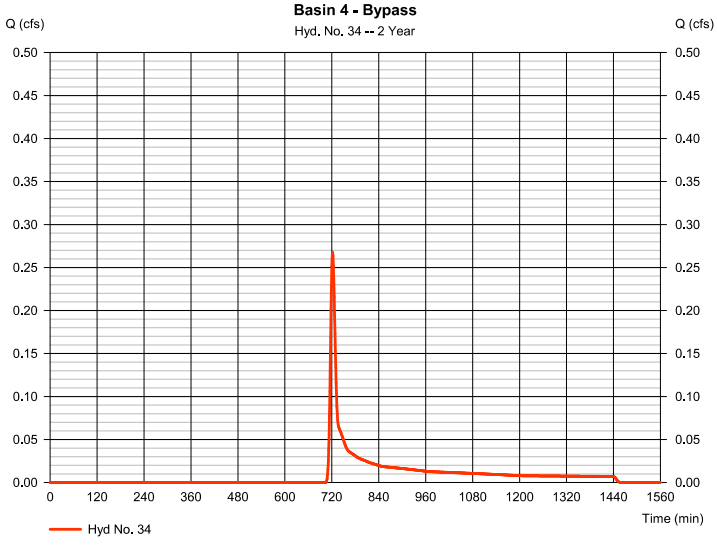
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 34

Basin 4 - Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.268 cfs
Storm frequency	= 2 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 821 cuft
Drainage area	= 0.340 ac	Curve number	= 57*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.11 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.140 x 61) + (0.200 x 55)] / 0.340



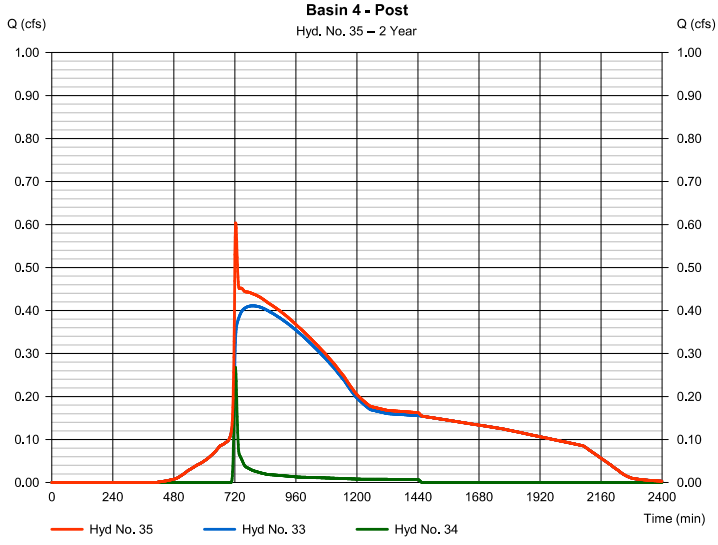
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 35

Basin 4 - Post

Hydrograph type	= Combine	Peak discharge	= 0.604 cfs
Storm frequency	= 2 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 19,108 cuft
Inflow hyds.	= 33, 34	Contrib. drain. area	= 0.340 ac



Hydrograph Report

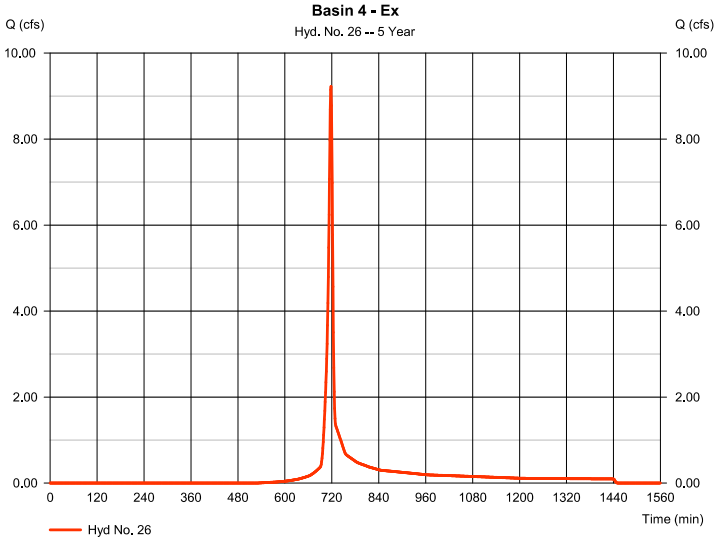
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 26

Basin 4 - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 9.226 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 18,587 cuft
Drainage area	= 2.170 ac	Curve number	= 75*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.900 x 98) + (0.680 x 61) + (0.590 x 55)] / 2.170



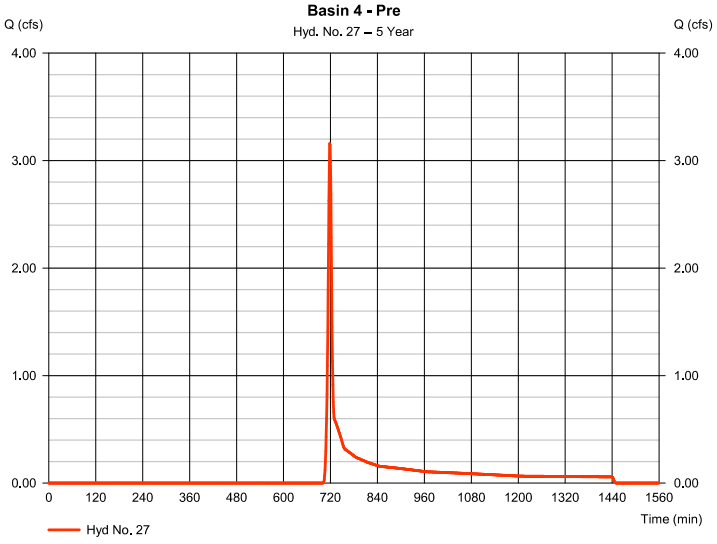
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 27

Basin 4 - Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 3.159 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 7,166 cuft
Drainage area	= 2.170 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

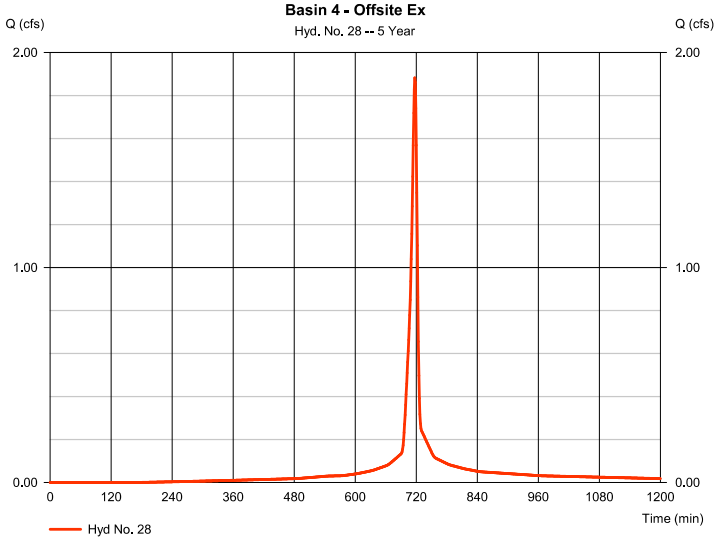
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 28

Basin 4 - Offsite Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 1.882 cfs
Storm frequency	= 5 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 4,194 cuft
Drainage area	= 0.280 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.240 x 98) + (0.040 x 61)] / 0.280



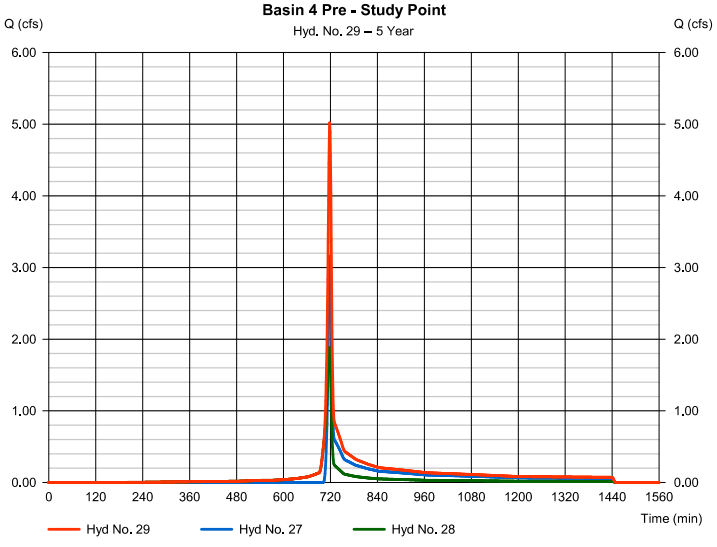
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 29

Basin 4 Pre - Study Point

Hydrograph type	= Combine	Peak discharge	= 5.020 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 11,360 cuft
Inflow hyds.	= 27, 28	Contrib. drain. area	= 2.450 ac



Hydrograph Report

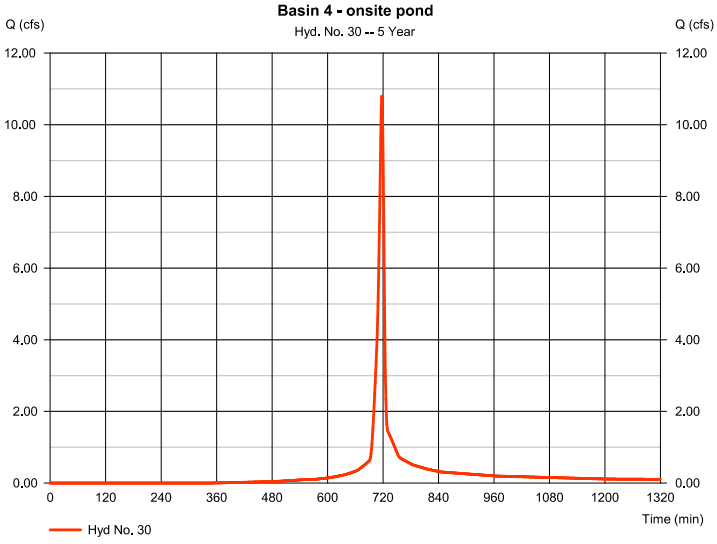
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 30

Basin 4 - onsite pond

Hydrograph type	= SCS Runoff	Peak discharge	= 10.79 cfs
Storm frequency	= 5 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 22,525 cuft
Drainage area	= 1.890 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.240 x 98) + (0.650 x 61)] / 1.890



Hydrograph Report

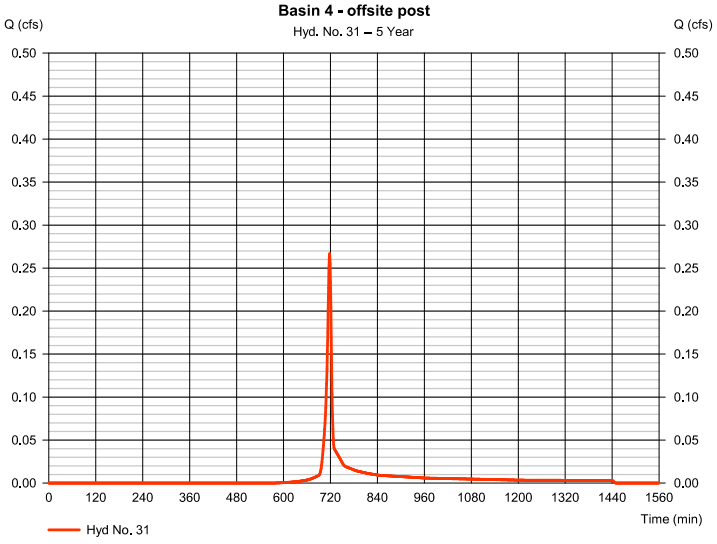
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 31

Basin 4 - offsite post

Hydrograph type	= SCS Runoff	Peak discharge	= 0.267 cfs
Storm frequency	= 5 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 536 cuft
Drainage area	= 0.070 ac	Curve number	= 72*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.020 x 98) + (0.050 x 61)] / 0.070



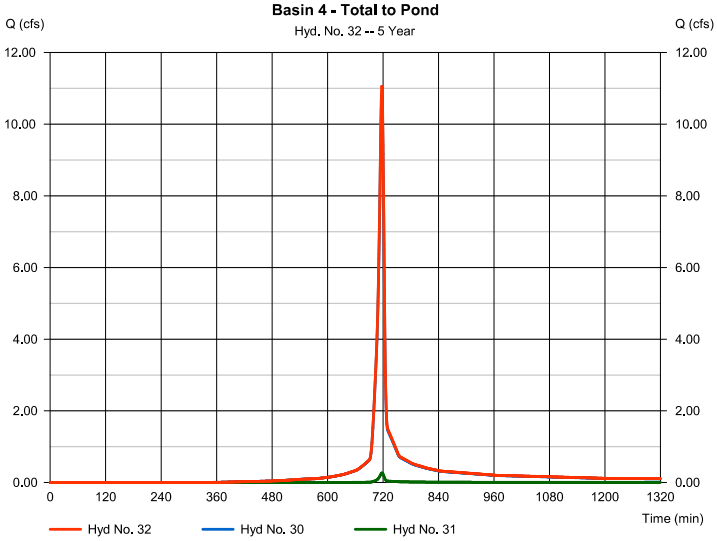
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 32

Basin 4 - Total to Pond

Hydrograph type	= Combine	Peak discharge	= 11.06 cfs
Storm frequency	= 5 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 23,061 cuft
Inflow hyds.	= 30, 31	Contrib. drain. area	= 1.960 ac



Hydrograph Report

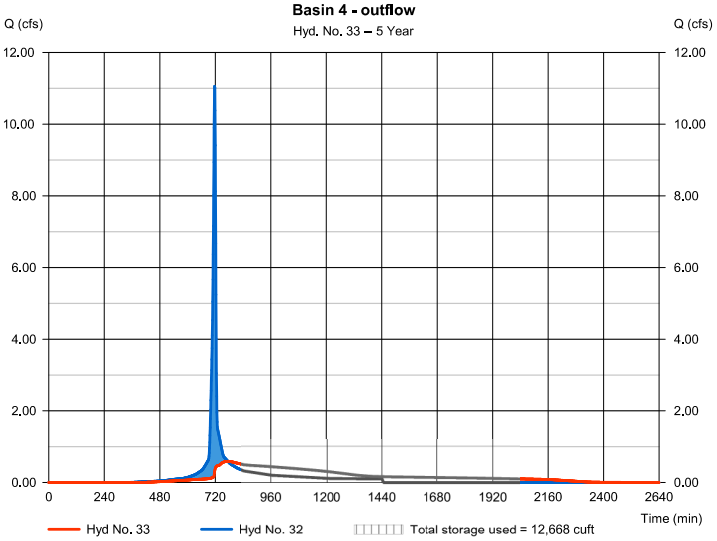
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 33

Basin 4 - outflow

Hydrograph type	= Reservoir	Peak discharge	= 0.591 cfs
Storm frequency	= 5 yrs	Time to peak	= 775 min
Time interval	= 1 min	Hyd. volume	= 23,055 cuft
Inflow hyd. No.	= 32 - Basin 4 - Total to Pond	Max. Elevation	= 1084.14 ft
Reservoir name	= Pond 4	Max. Storage	= 12,668 cuft

Storage Indication method used.



Hydrograph Report

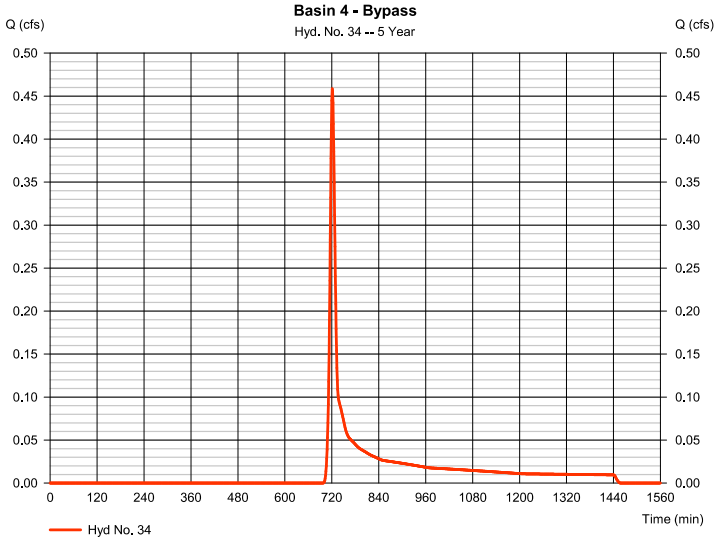
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 34

Basin 4 - Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.459 cfs
Storm frequency	= 5 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 1,256 cuft
Drainage area	= 0.340 ac	Curve number	= 57*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.11 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.140 x 61) + (0.200 x 55)] / 0.340



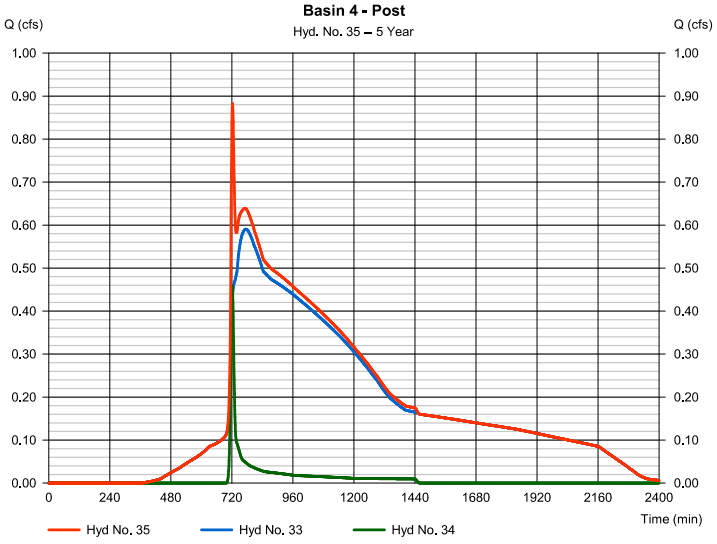
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 35

Basin 4 - Post

Hydrograph type	= Combine	Peak discharge	= 0.883 cfs
Storm frequency	= 5 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 24,311 cuft
Inflow hyds.	= 33, 34	Contrib. drain. area	= 0.340 ac



Hydrograph Report

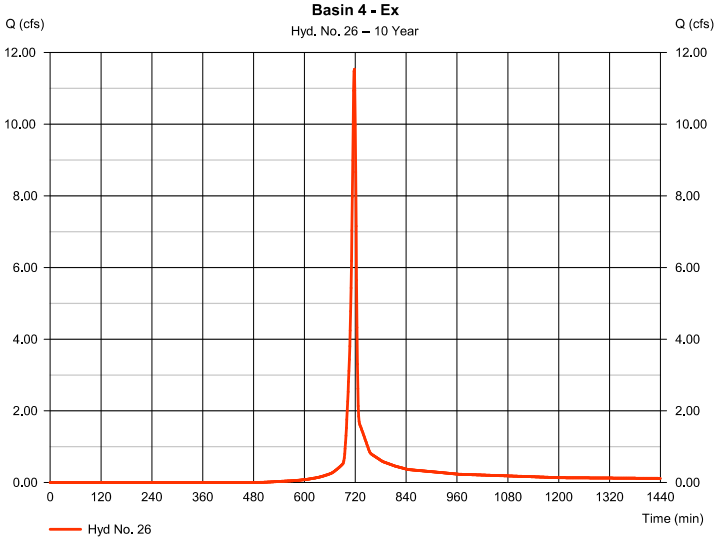
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 26

Basin 4 - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 11.54 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 23,372 cuft
Drainage area	= 2.170 ac	Curve number	= 75*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.900 x 98) + (0.680 x 61) + (0.590 x 55)] / 2.170



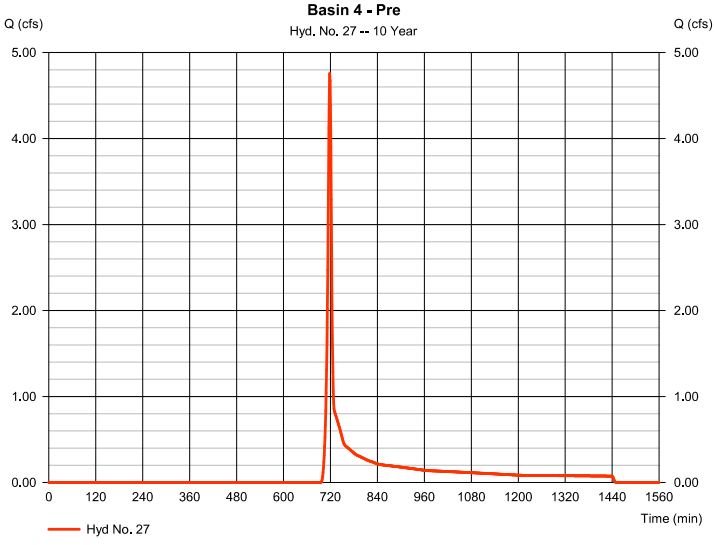
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 27

Basin 4 - Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 4.756 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 10,155 cuft
Drainage area	= 2.170 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

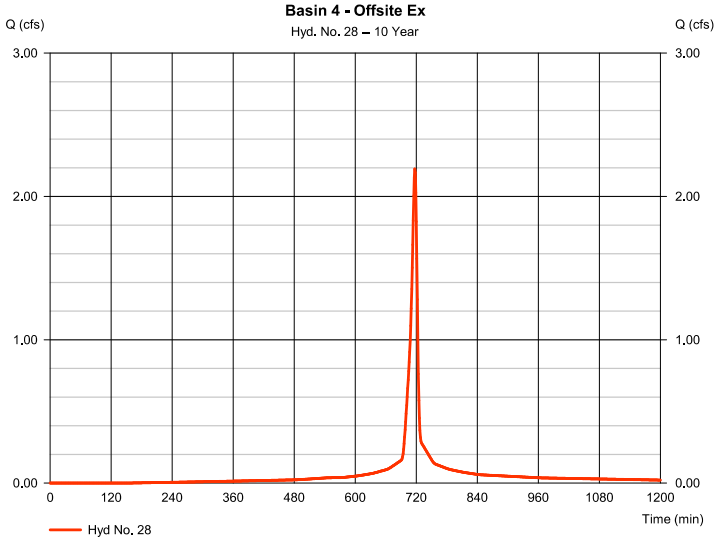
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 28

Basin 4 - Offsite Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 2.192 cfs
Storm frequency	= 10 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 4,936 cuft
Drainage area	= 0.280 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.240 x 98) + (0.040 x 61)] / 0.280



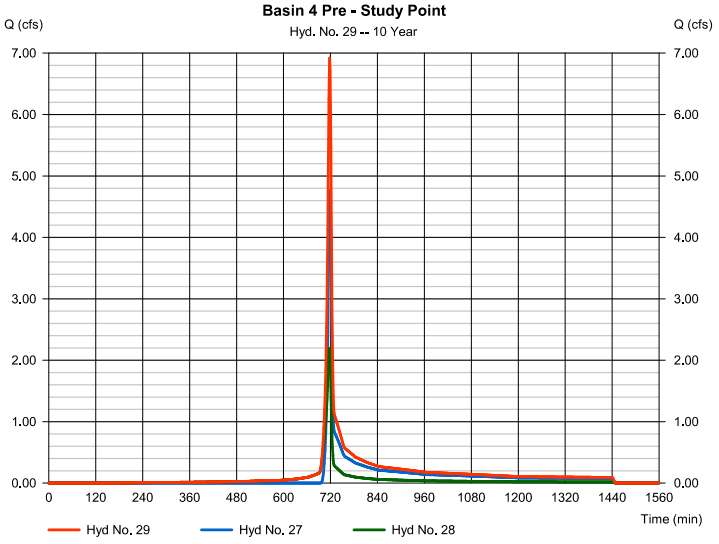
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 29

Basin 4 Pre - Study Point

Hydrograph type	= Combine	Peak discharge	= 6.922 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 15,091 cuft
Inflow hyds.	= 27, 28	Contrib. drain. area	= 2.450 ac



Hydrograph Report

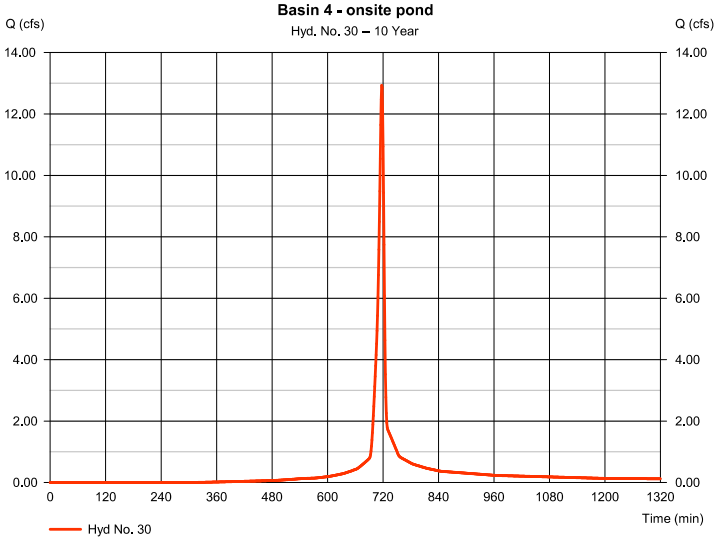
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 30

Basin 4 - onsite pond

Hydrograph type	= SCS Runoff	Peak discharge	= 12.93 cfs
Storm frequency	= 10 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 27,251 cuft
Drainage area	= 1.890 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.240 x 98) + (0.650 x 61)] / 1.890



Hydrograph Report

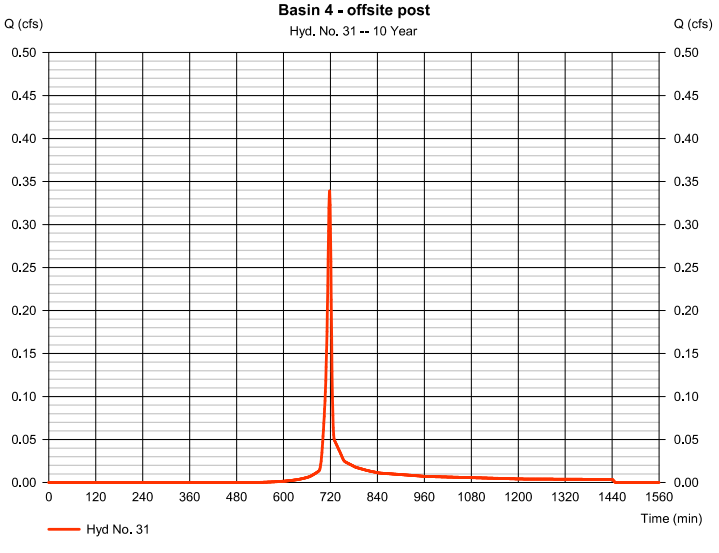
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 31

Basin 4 - offsite post

Hydrograph type	= SCS Runoff	Peak discharge	= 0.339 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 683 cuft
Drainage area	= 0.070 ac	Curve number	= 72*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.020 x 98) + (0.050 x 61)] / 0.070



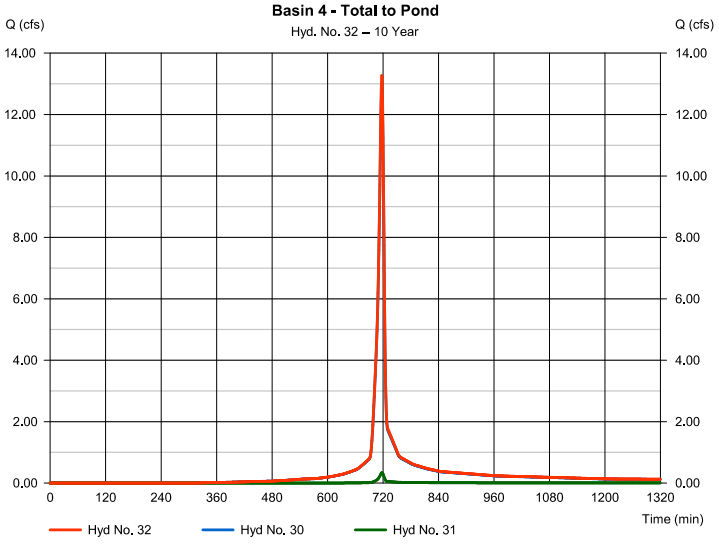
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 32

Basin 4 - Total to Pond

Hydrograph type	= Combine	Peak discharge	= 13.27 cfs
Storm frequency	= 10 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 27,933 cuft
Inflow hyds.	= 30, 31	Contrib. drain. area	= 1.960 ac



Hydrograph Report

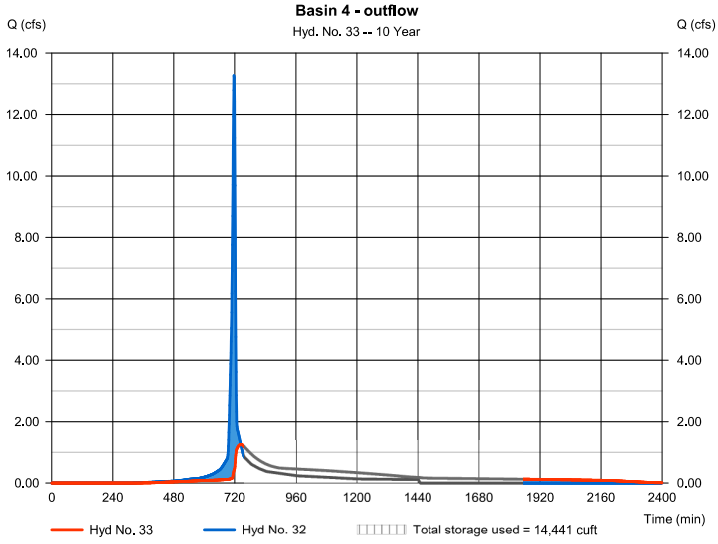
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 33

Basin 4 - outflow

Hydrograph type	= Reservoir	Peak discharge	= 1.260 cfs
Storm frequency	= 10 yrs	Time to peak	= 744 min
Time interval	= 1 min	Hyd. volume	= 27,927 cuft
Inflow hyd. No.	= 32 - Basin 4 - Total to Pond	Max. Elevation	= 1084.57 ft
Reservoir name	= Pond 4	Max. Storage	= 14,441 cuft

Storage Indication method used.



Hydrograph Report

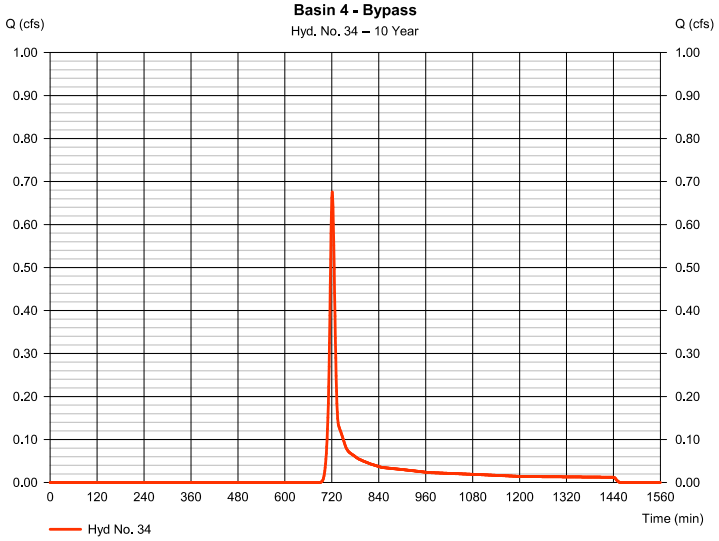
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 34

Basin 4 - Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.676 cfs
Storm frequency	= 10 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 1,749 cuft
Drainage area	= 0.340 ac	Curve number	= 57*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.11 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.140 x 61) + (0.200 x 55)] / 0.340



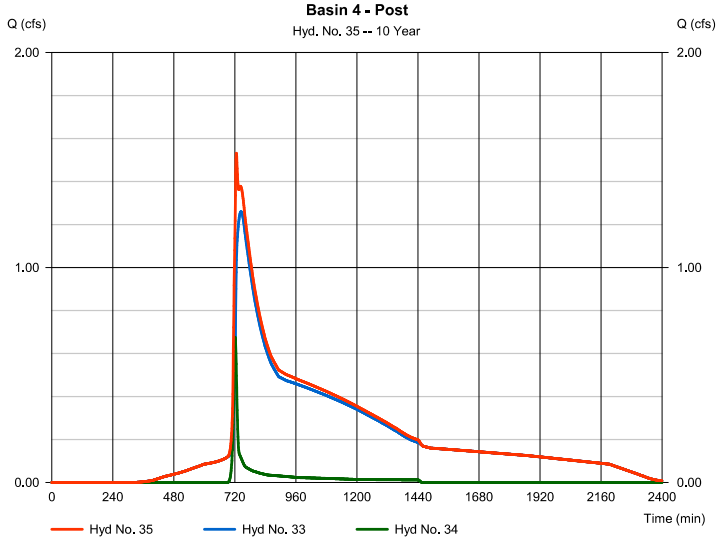
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 35

Basin 4 - Post

Hydrograph type	= Combine	Peak discharge	= 1.532 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 1 min	Hyd. volume	= 29,676 cuft
Inflow hyds.	= 33, 34	Contrib. drain. area	= 0.340 ac



Hydrograph Report

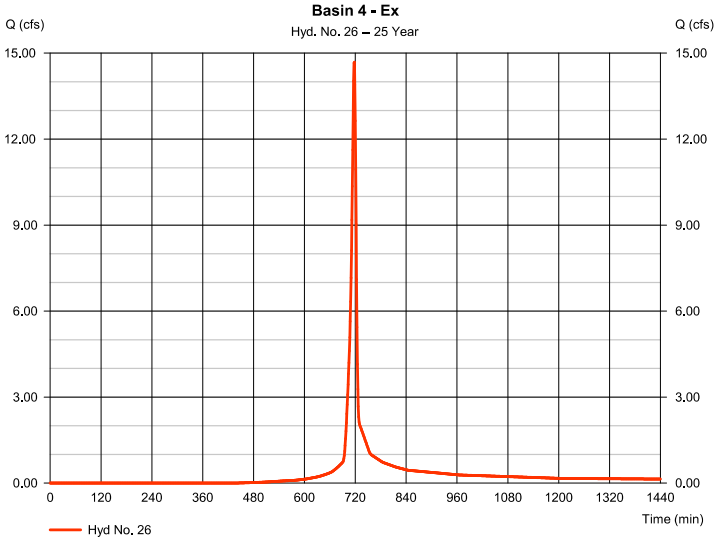
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 26

Basin 4 - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 14.68 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 30,014 cuft
Drainage area	= 2.170 ac	Curve number	= 75*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.900 x 98) + (0.680 x 61) + (0.590 x 55)] / 2.170



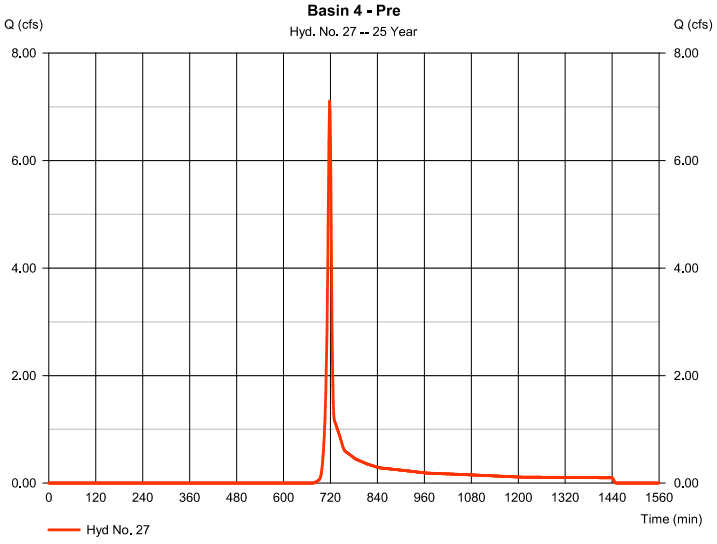
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 27

Basin 4 - Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 7.107 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 14,631 cuft
Drainage area	= 2.170 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

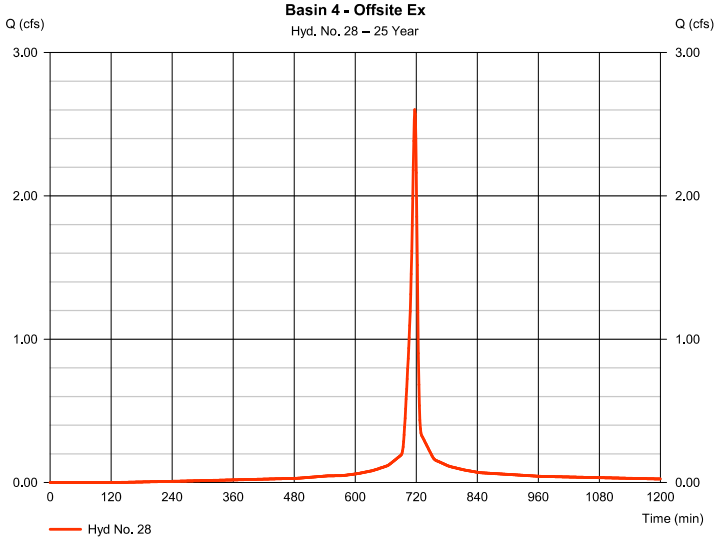
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 28

Basin 4 - Offsite Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 2.602 cfs
Storm frequency	= 25 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 5,929 cuft
Drainage area	= 0.280 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.240 x 98) + (0.040 x 61)] / 0.280



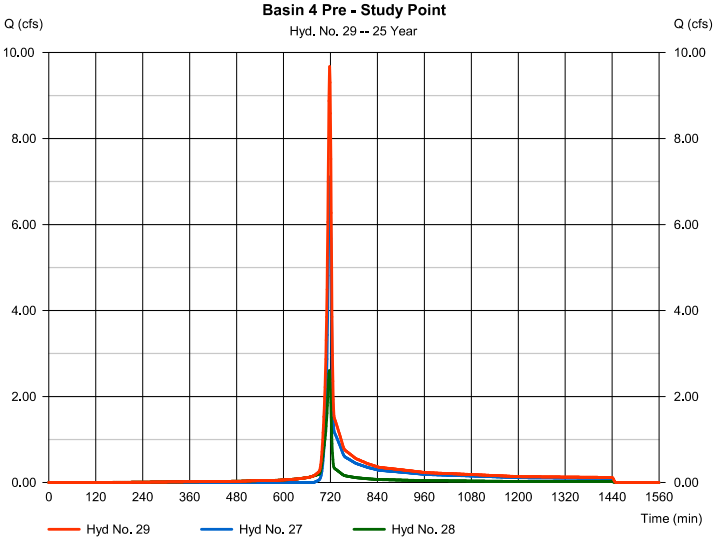
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 29

Basin 4 Pre - Study Point

Hydrograph type	= Combine	Peak discharge	= 9.676 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 20,560 cuft
Inflow hyds.	= 27, 28	Contrib. drain. area	= 2.450 ac



Hydrograph Report

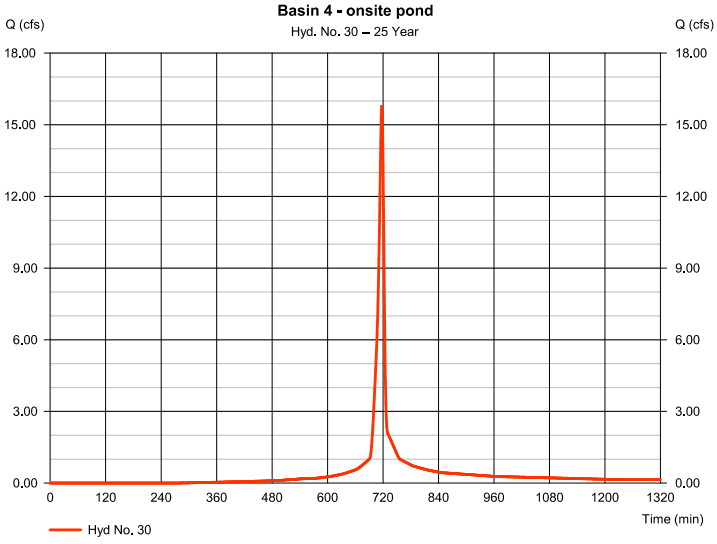
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 30

Basin 4 - onsite pond

Hydrograph type	= SCS Runoff	Peak discharge	= 15.78 cfs
Storm frequency	= 25 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 33,656 cuft
Drainage area	= 1.890 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.240 x 98) + (0.650 x 61)] / 1.890



Hydrograph Report

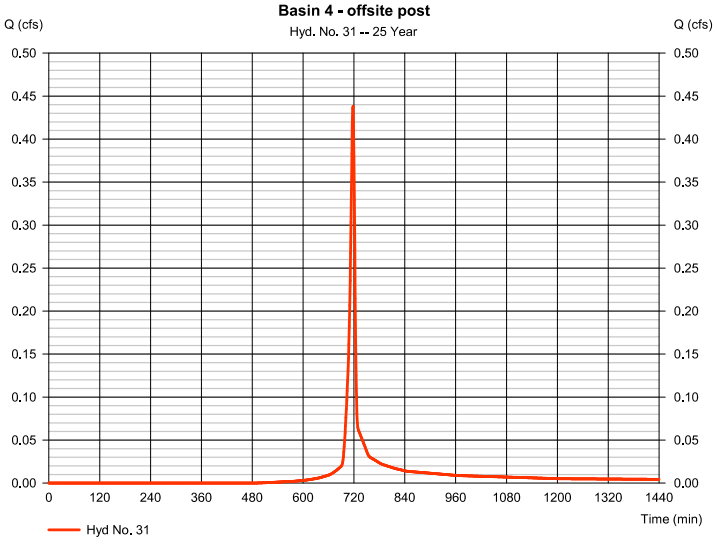
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 31

Basin 4 - offsite post

Hydrograph type	= SCS Runoff	Peak discharge	= 0.438 cfs
Storm frequency	= 25 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 888 cuft
Drainage area	= 0.070 ac	Curve number	= 72*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.020 x 98) + (0.050 x 61)] / 0.070



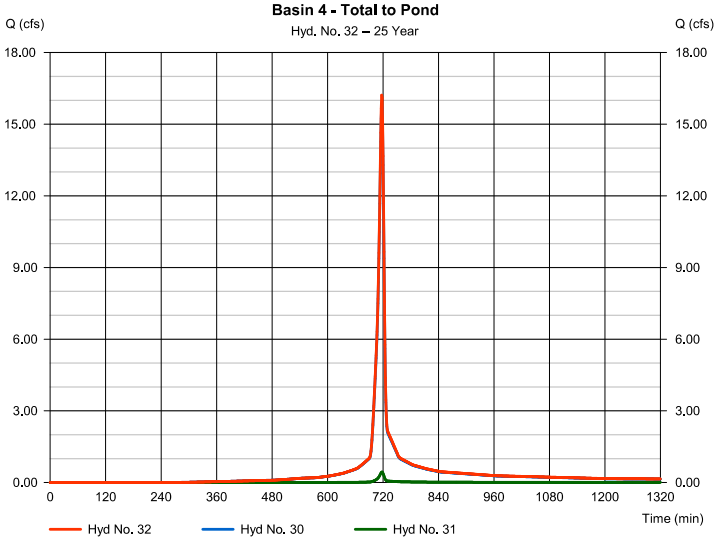
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 32

Basin 4 - Total to Pond

Hydrograph type	= Combine	Peak discharge	= 16.21 cfs
Storm frequency	= 25 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 34,544 cuft
Inflow hyds.	= 30, 31	Contrib. drain. area	= 1.960 ac



Hydrograph Report

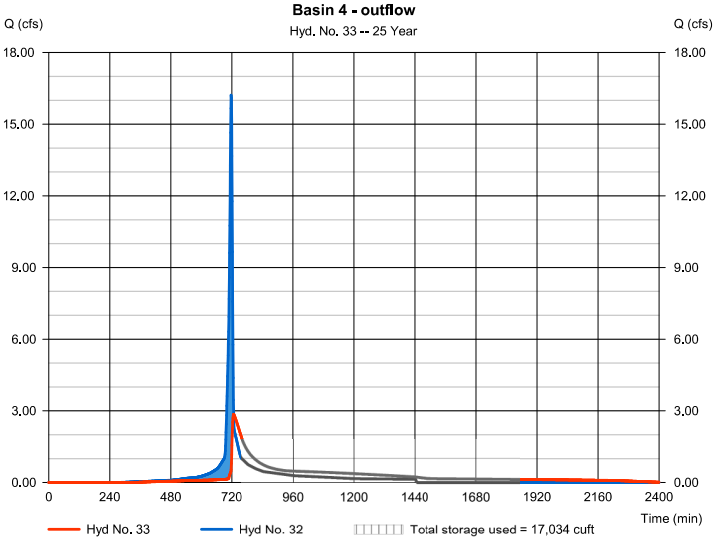
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 33

Basin 4 - outflow

Hydrograph type	= Reservoir	Peak discharge	= 2.857 cfs
Storm frequency	= 25 yrs	Time to peak	= 727 min
Time interval	= 1 min	Hyd. volume	= 34,538 cuft
Inflow hyd. No.	= 32 - Basin 4 - Total to Pond	Max. Elevation	= 1085.22 ft
Reservoir name	= Pond 4	Max. Storage	= 17,034 cuft

Storage Indication method used.



Hydrograph Report

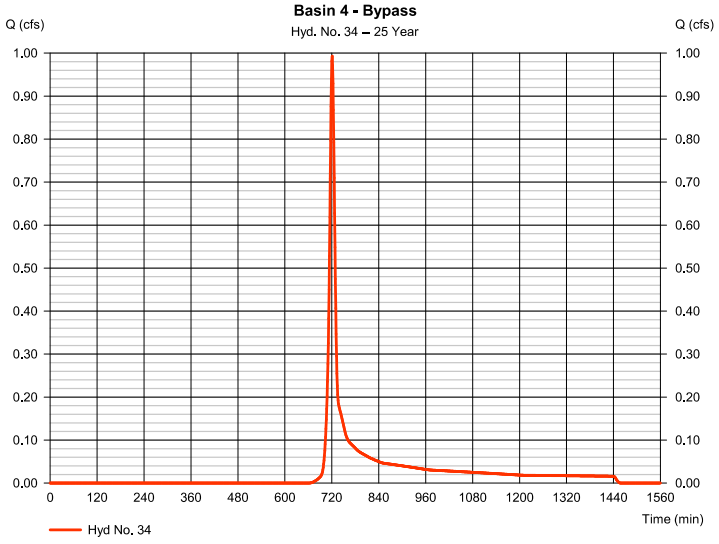
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 34

Basin 4 - Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 0.993 cfs
Storm frequency	= 25 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 2,481 cuft
Drainage area	= 0.340 ac	Curve number	= 57*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.11 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.140 x 61) + (0.200 x 55)] / 0.340



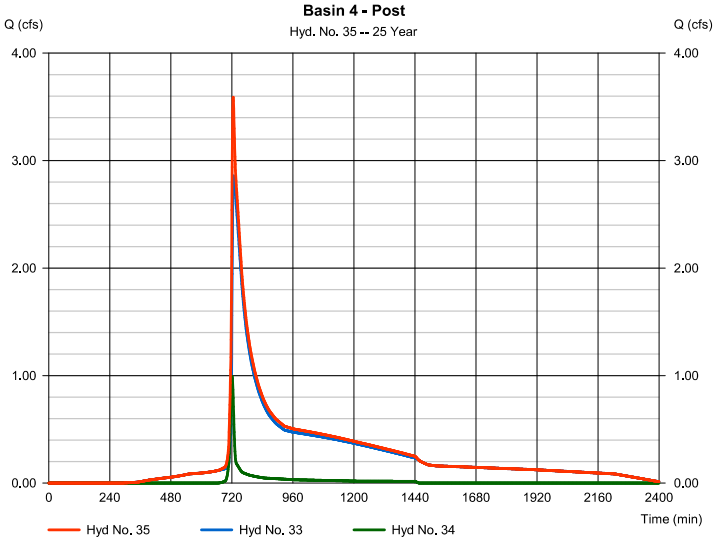
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 35

Basin 4 - Post

Hydrograph type	= Combine	Peak discharge	= 3.590 cfs
Storm frequency	= 25 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 37,019 cuft
Inflow hyds.	= 33, 34	Contrib. drain. area	= 0.340 ac



Hydrograph Report

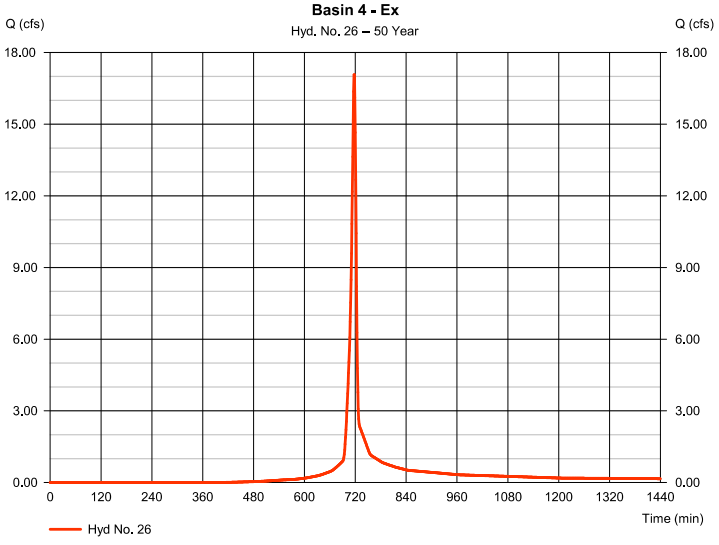
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 26

Basin 4 - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 17.07 cfs
Storm frequency	= 50 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 35,142 cuft
Drainage area	= 2.170 ac	Curve number	= 75*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.900 x 98) + (0.680 x 61) + (0.590 x 55)] / 2.170



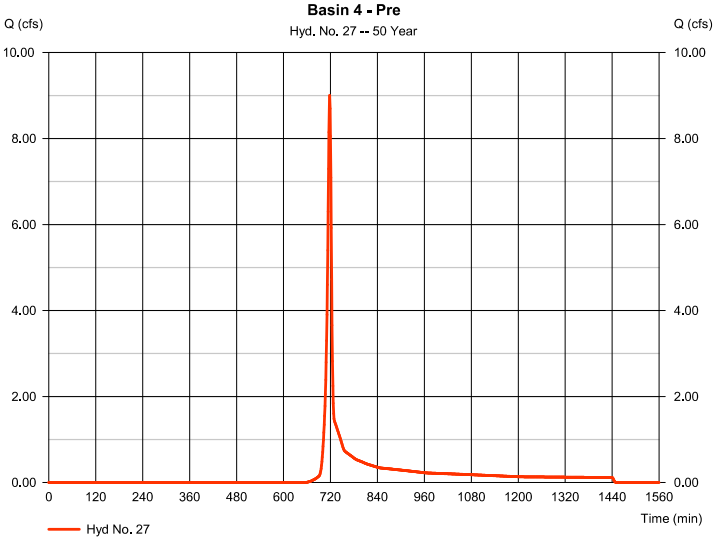
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 27

Basin 4 - Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 9.002 cfs
Storm frequency	= 50 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 18,293 cuft
Drainage area	= 2.170 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

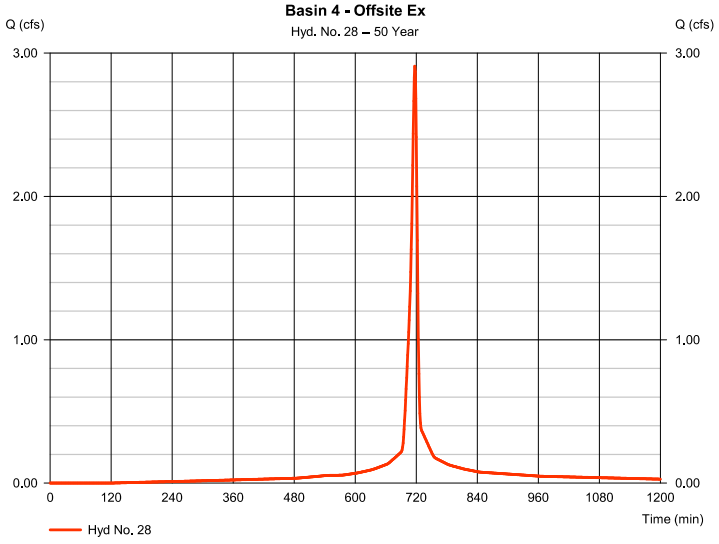
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 28

Basin 4 - Offsite Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 2.908 cfs
Storm frequency	= 50 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 6,676 cuft
Drainage area	= 0.280 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.240 x 98) + (0.040 x 61)] / 0.280



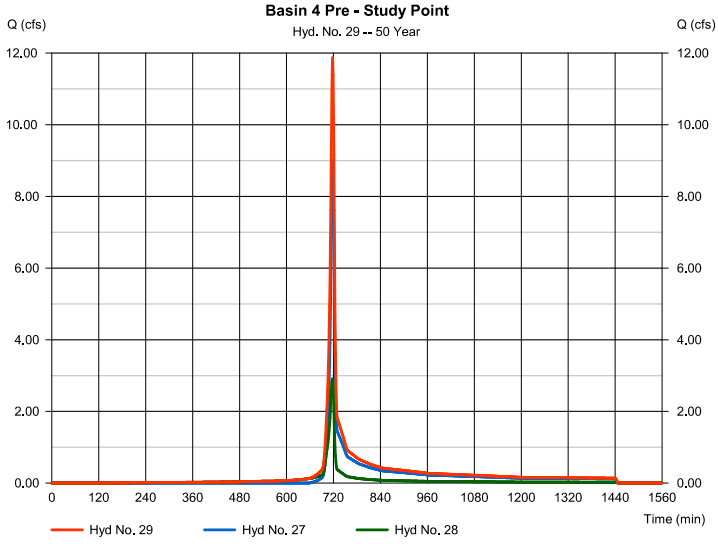
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 29

Basin 4 Pre - Study Point

Hydrograph type	= Combine	Peak discharge	= 11.87 cfs
Storm frequency	= 50 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 24,969 cuft
Inflow hyds.	= 27, 28	Contrib. drain. area	= 2.450 ac



Hydrograph Report

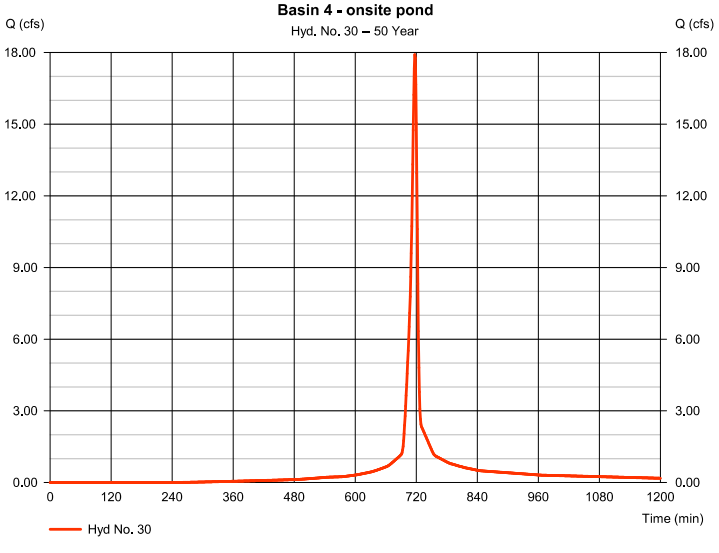
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 30

Basin 4 - onsite pond

Hydrograph type	= SCS Runoff	Peak discharge	= 17.91 cfs
Storm frequency	= 50 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 38,517 cuft
Drainage area	= 1.890 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.240 x 98) + (0.650 x 61)] / 1.890



Hydrograph Report

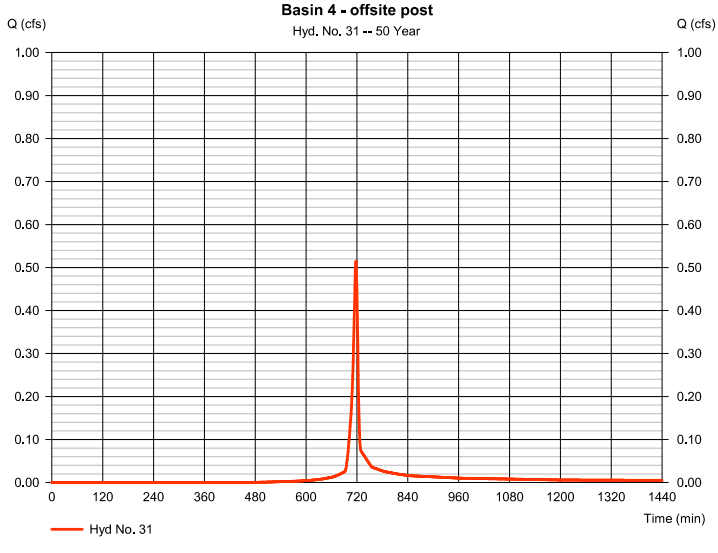
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 31

Basin 4 - offsite post

Hydrograph type	= SCS Runoff	Peak discharge	= 0.514 cfs
Storm frequency	= 50 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 1,048 cuft
Drainage area	= 0.070 ac	Curve number	= 72*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.020 x 98) + (0.050 x 61)] / 0.070



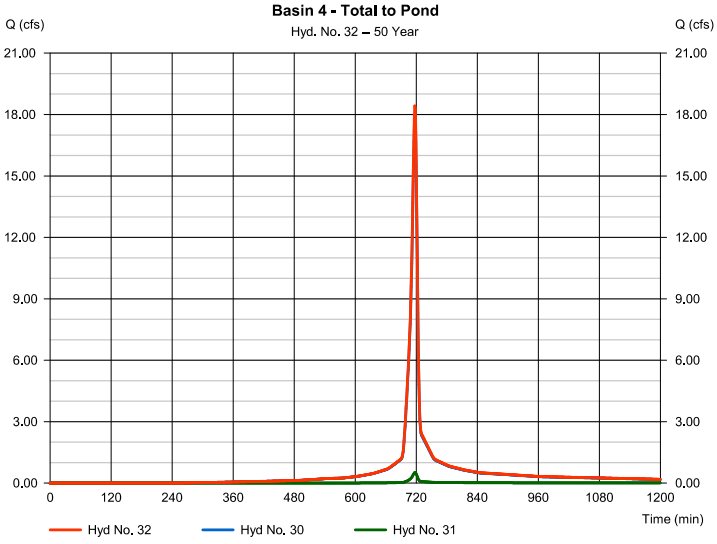
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 32

Basin 4 - Total to Pond

Hydrograph type	= Combine	Peak discharge	= 18.42 cfs
Storm frequency	= 50 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 39,565 cuft
Inflow hyds.	= 30, 31	Contrib. drain. area	= 1.960 ac



Hydrograph Report

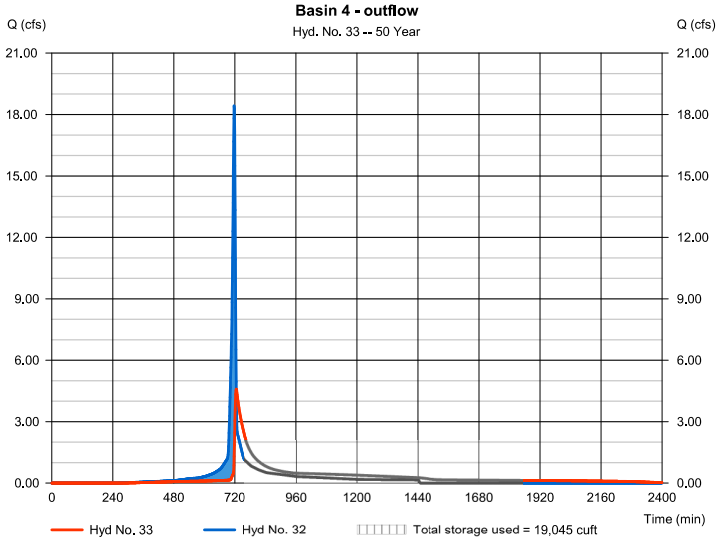
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 33

Basin 4 - outflow

Hydrograph type	= Reservoir	Peak discharge	= 4.589 cfs
Storm frequency	= 50 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 39,559 cuft
Inflow hyd. No.	= 32 - Basin 4 - Total to Pond	Max. Elevation	= 1085.78 ft
Reservoir name	= Pond 4	Max. Storage	= 19,045 cuft

Storage Indication method used.



Hydrograph Report

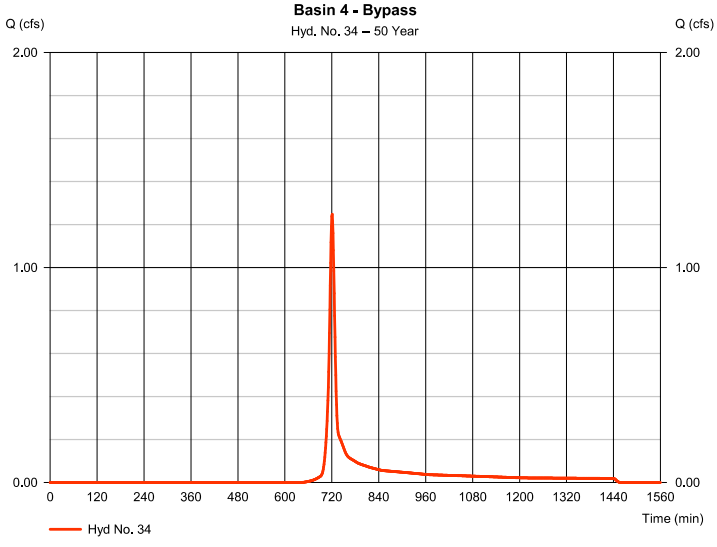
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 34

Basin 4 - Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 1.247 cfs
Storm frequency	= 50 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 3,074 cuft
Drainage area	= 0.340 ac	Curve number	= 57*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.11 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.140 x 61) + (0.200 x 55)] / 0.340



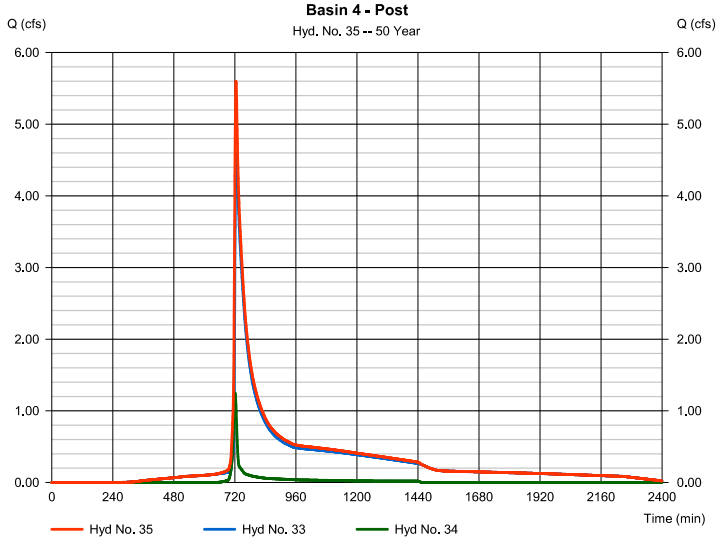
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 35

Basin 4 - Post

Hydrograph type	= Combine	Peak discharge	= 5.600 cfs
Storm frequency	= 50 yrs	Time to peak	= 724 min
Time interval	= 1 min	Hyd. volume	= 42,633 cuft
Inflow hyds.	= 33, 34	Contrib. drain. area	= 0.340 ac



Hydrograph Report

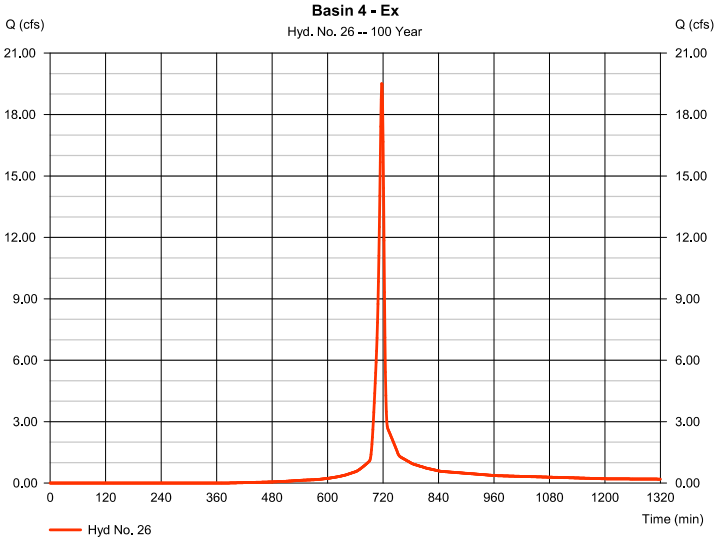
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 26

Basin 4 - Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 19.51 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 40,369 cuft
Drainage area	= 2.170 ac	Curve number	= 75*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.900 x 98) + (0.680 x 61) + (0.590 x 55)] / 2.170



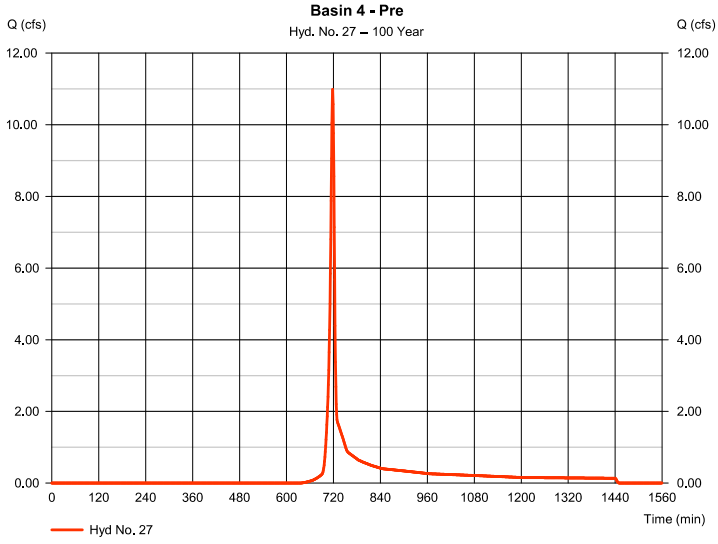
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 27

Basin 4 - Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 10.99 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 22,173 cuft
Drainage area	= 2.170 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

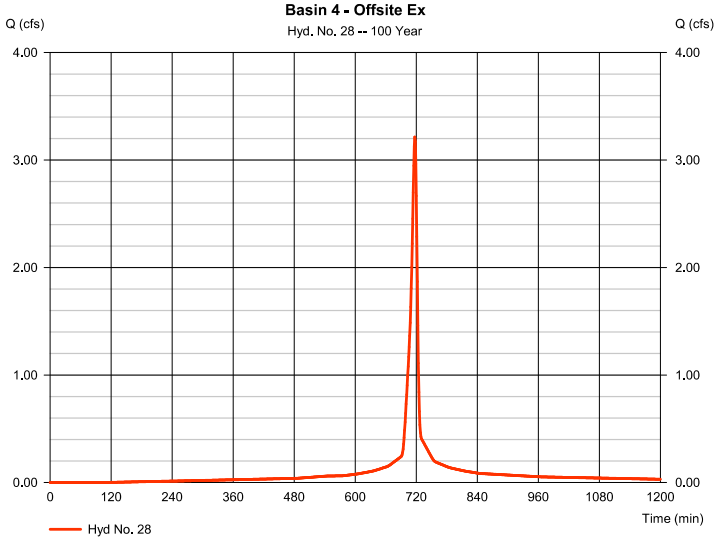
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 28

Basin 4 - Offsite Ex

Hydrograph type	= SCS Runoff	Peak discharge	= 3.214 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 7,424 cuft
Drainage area	= 0.280 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.240 x 98) + (0.040 x 61)] / 0.280



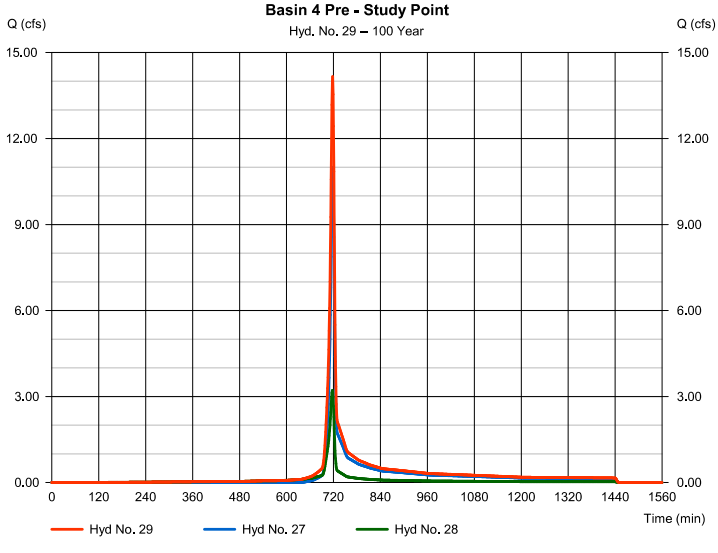
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 29

Basin 4 Pre - Study Point

Hydrograph type	= Combine	Peak discharge	= 14.16 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 29,597 cuft
Inflow hyds.	= 27, 28	Contrib. drain. area	= 2.450 ac



Hydrograph Report

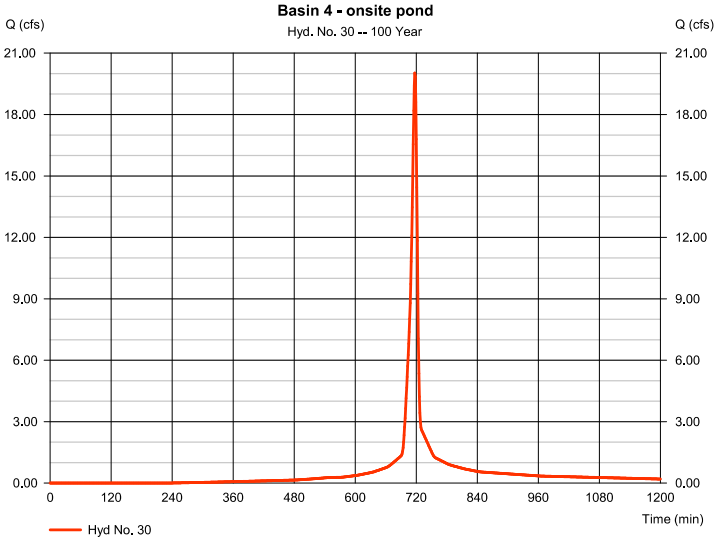
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 30

Basin 4 - onsite pond

Hydrograph type	= SCS Runoff	Peak discharge	= 20.03 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 43,413 cuft
Drainage area	= 1.890 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.240 x 98) + (0.650 x 61)] / 1.890



Hydrograph Report

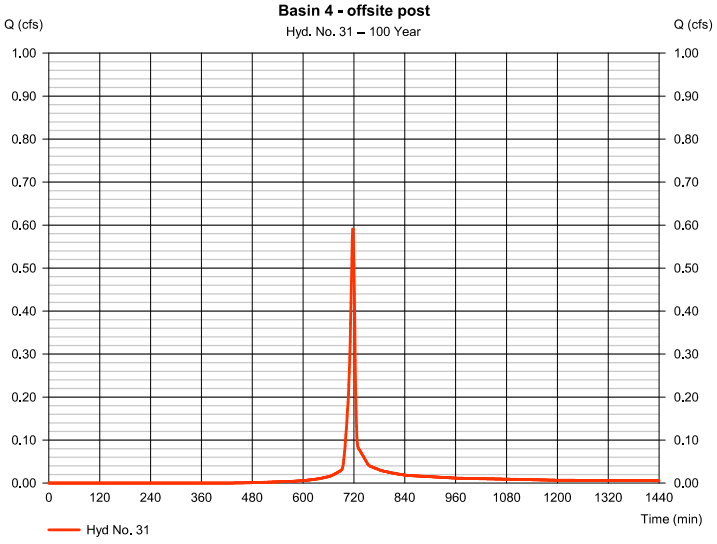
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 31

Basin 4 - offsite post

Hydrograph type	= SCS Runoff	Peak discharge	= 0.591 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 1,212 cuft
Drainage area	= 0.070 ac	Curve number	= 72*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.020 x 98) + (0.050 x 61)] / 0.070



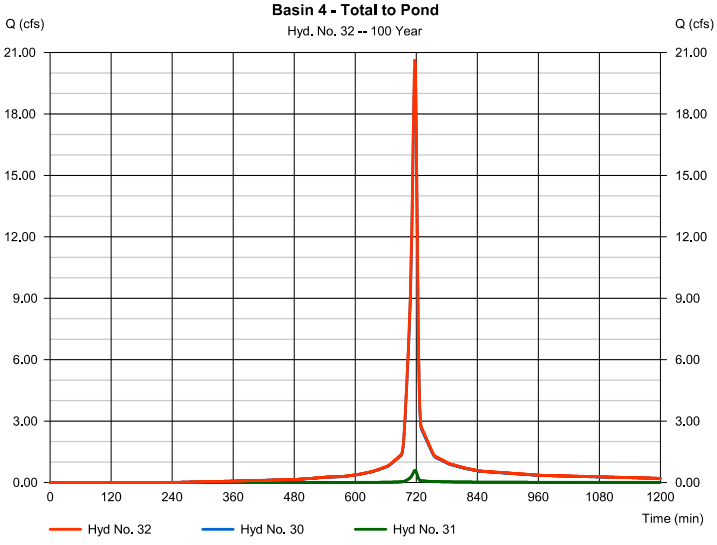
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 32

Basin 4 - Total to Pond

Hydrograph type	= Combine	Peak discharge	= 20.62 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 44,625 cuft
Inflow hyds.	= 30, 31	Contrib. drain. area	= 1.960 ac



Hydrograph Report

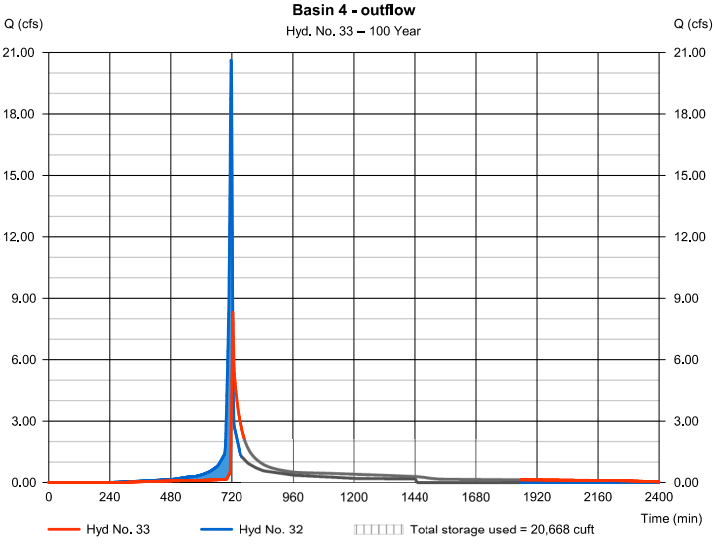
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 33

Basin 4 - outflow

Hydrograph type	= Reservoir	Peak discharge	= 8.312 cfs
Storm frequency	= 100 yrs	Time to peak	= 724 min
Time interval	= 1 min	Hyd. volume	= 44,619 cuft
Inflow hyd. No.	= 32 - Basin 4 - Total to Pond	Max. Elevation	= 1086.27 ft
Reservoir name	= Pond 4	Max. Storage	= 20,668 cuft

Storage Indication method used.



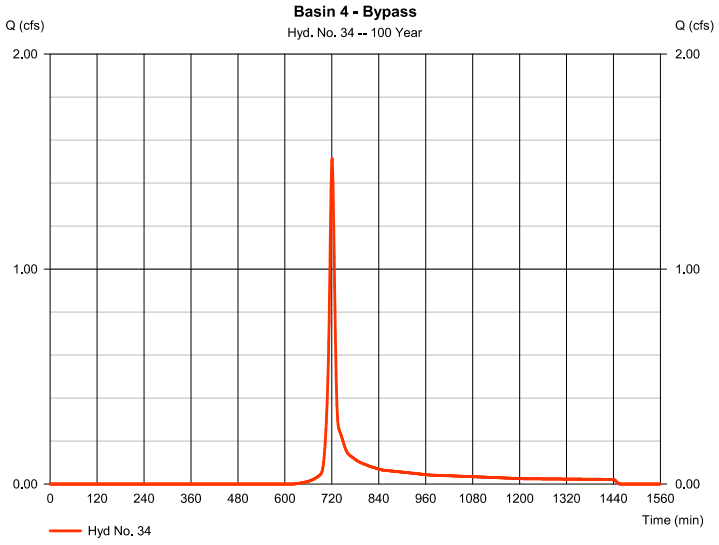
Hydrograph Report

Hyd. No. 34

Basin 4 - Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 1.514 cfs
Storm frequency	= 100 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 3,700 cuft
Drainage area	= 0.340 ac	Curve number	= 57*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.11 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.140 x 61) + (0.200 x 55)] / 0.340

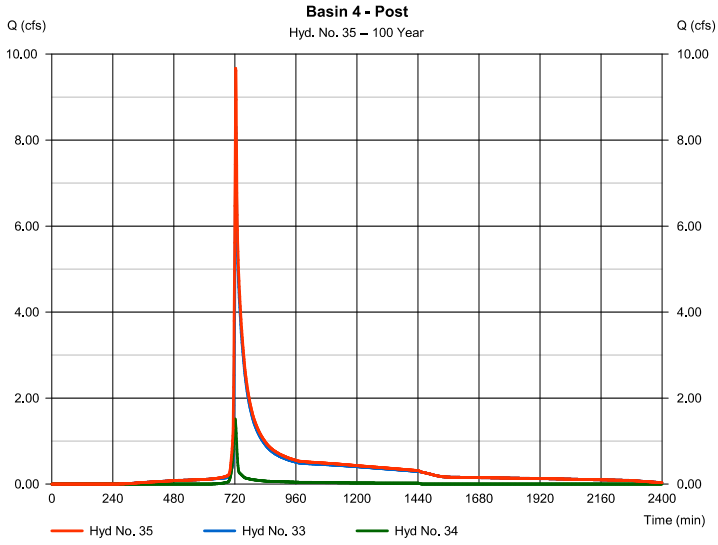


Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 Wednesday, 04 / 15 / 2015

Hyd. No. 35

Basin 4 - Post

Hydrograph type	= Combine	Peak discharge	= 9.670 cfs
Storm frequency	= 100 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 48,319 cuft
Inflow hyds.	= 33, 34	Contrib. drain. area	= 0.340 ac



Hydrograph Report

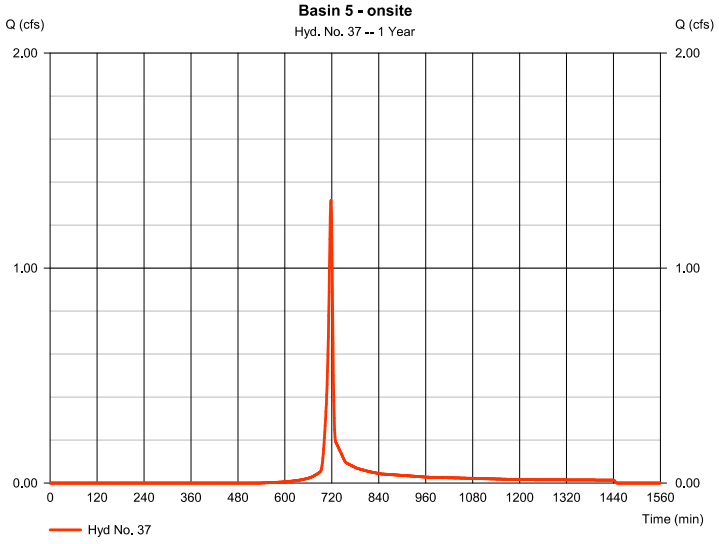
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 37

Basin 5 - onsite

Hydrograph type	= SCS Runoff	Peak discharge	= 1.315 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 2,649 cuft
Drainage area	= 0.480 ac	Curve number	= 82*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.270 x 98) + (0.210 x 61)] / 0.480



Hydrograph Report

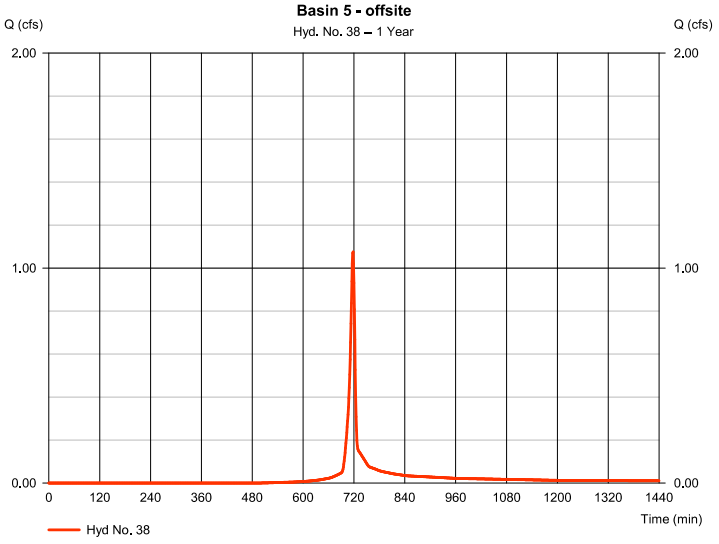
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 38

Basin 5 - offsite

Hydrograph type	= SCS Runoff	Peak discharge	= 1.075 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 2,177 cuft
Drainage area	= 0.360 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.220 x 98) + (0.140 x 61)] / 0.360



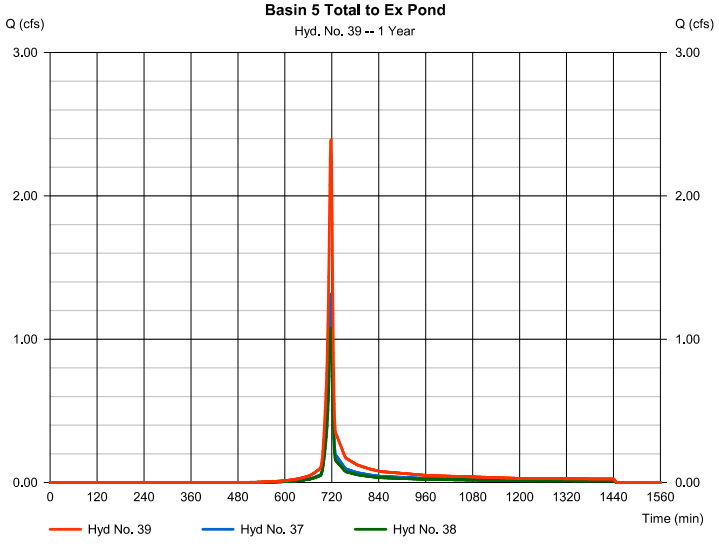
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 39

Basin 5 Total to Ex Pond

Hydrograph type	= Combine	Peak discharge	= 2.390 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 4,826 cuft
Inflow hyds.	= 37, 38	Contrib. drain. area	= 0.840 ac



Hydrograph Report

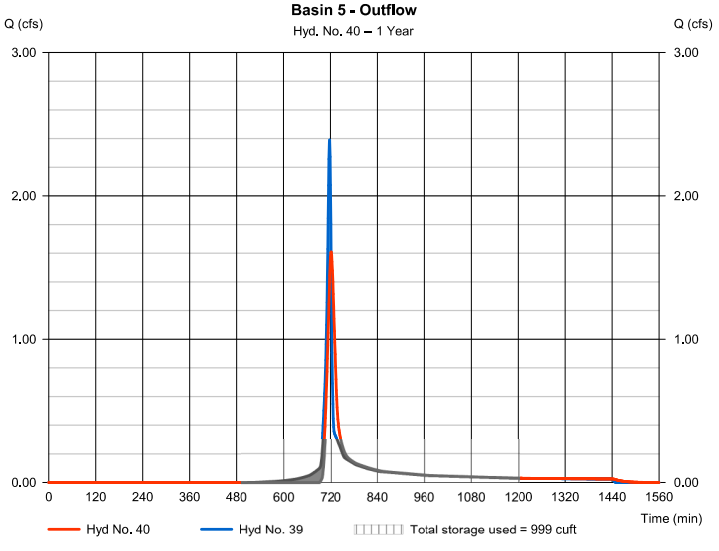
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 40

Basin 5 - Outflow

Hydrograph type	= Reservoir	Peak discharge	= 1.609 cfs
Storm frequency	= 1 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 4,574 cuft
Inflow hyd. No.	= 39 - Basin 5 Total to Ex Pond	Max. Elevation	= 1083.01 ft
Reservoir name	= Basin 5 Pond	Max. Storage	= 999 cuft

Storage Indication method used.



Hydrograph Report

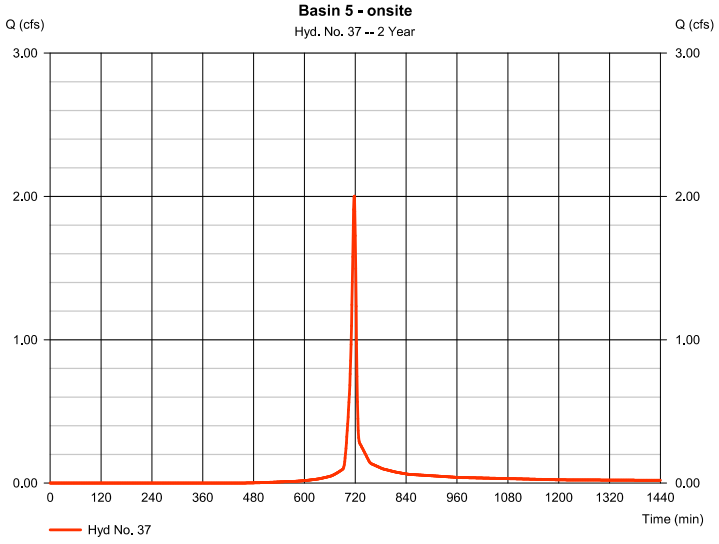
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 37

Basin 5 - onsite

Hydrograph type	= SCS Runoff	Peak discharge	= 2.002 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 4,082 cuft
Drainage area	= 0.480 ac	Curve number	= 82*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.270 x 98) + (0.210 x 61)] / 0.480



Hydrograph Report

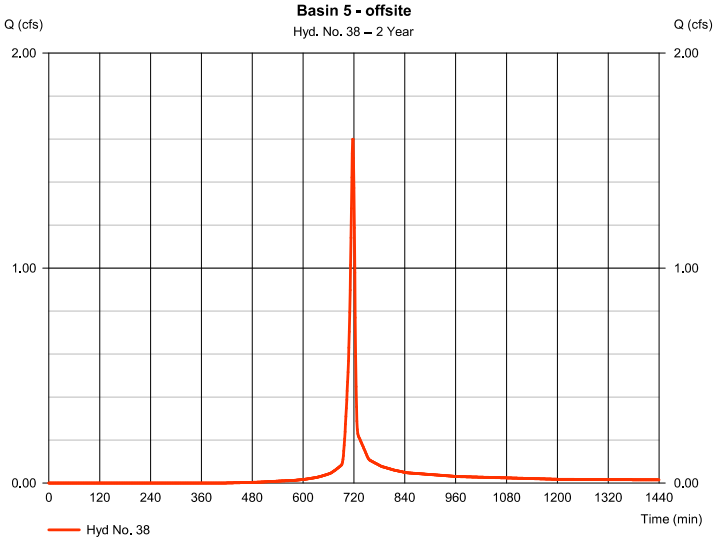
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 38

Basin 5 - offsite

Hydrograph type	= SCS Runoff	Peak discharge	= 1.599 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 3,291 cuft
Drainage area	= 0.360 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.220 x 98) + (0.140 x 61)] / 0.360



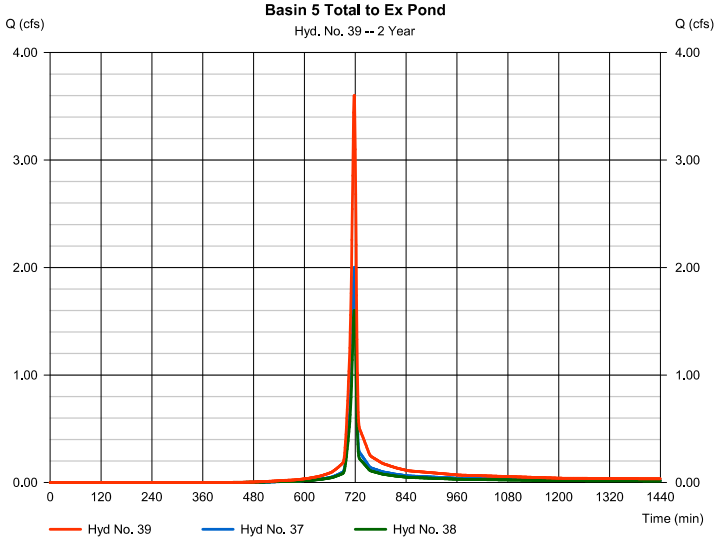
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 39

Basin 5 Total to Ex Pond

Hydrograph type	= Combine	Peak discharge	= 3.601 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 7,372 cuft
Inflow hyds.	= 37, 38	Contrib. drain. area	= 0.840 ac



Hydrograph Report

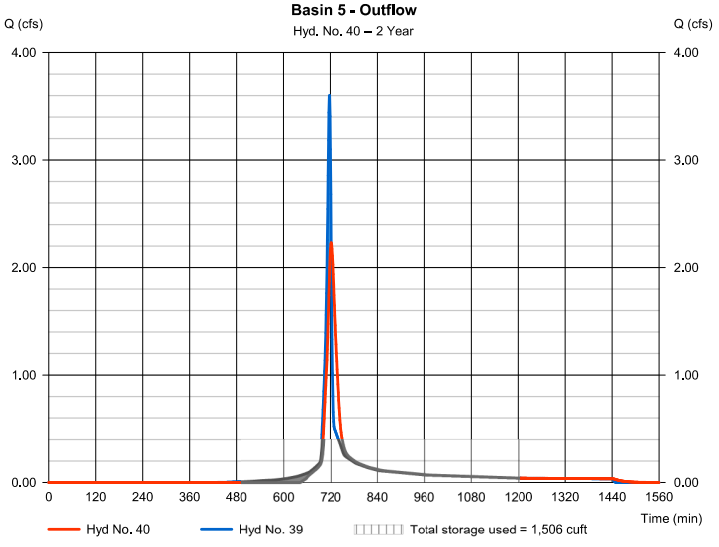
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 40

Basin 5 - Outflow

Hydrograph type	= Reservoir	Peak discharge	= 2.232 cfs
Storm frequency	= 2 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 7,121 cuft
Inflow hyd. No.	= 39 - Basin 5 Total to Ex Pond	Max. Elevation	= 1084.01 ft
Reservoir name	= Basin 5 Pond	Max. Storage	= 1,506 cuft

Storage Indication method used.



Hydrograph Report

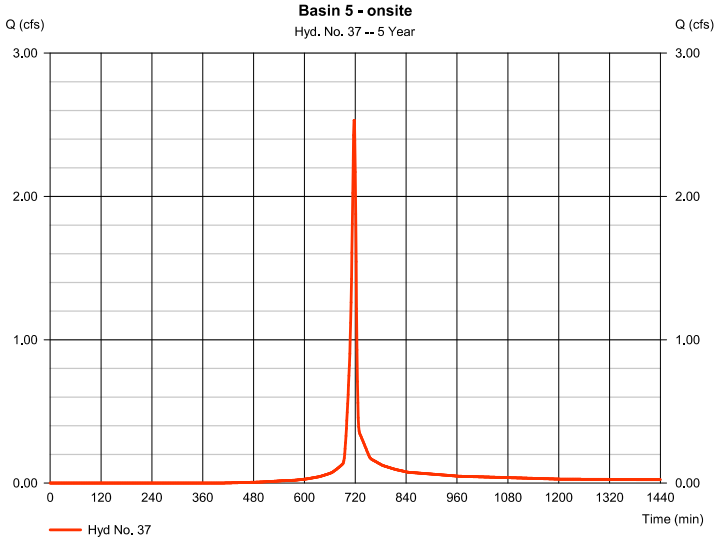
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 37

Basin 5 - onsite

Hydrograph type	= SCS Runoff	Peak discharge	= 2.531 cfs
Storm frequency	= 5 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 5,212 cuft
Drainage area	= 0.480 ac	Curve number	= 82*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.270 x 98) + (0.210 x 61)] / 0.480



Hydrograph Report

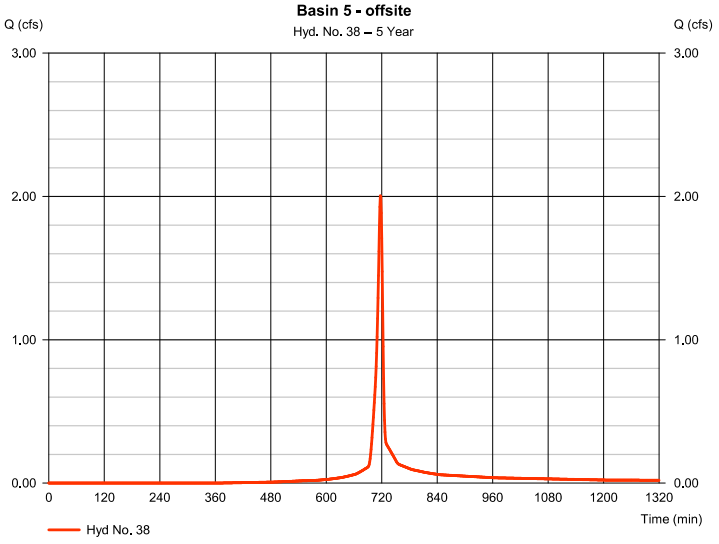
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 38

Basin 5 - offsite

Hydrograph type	= SCS Runoff	Peak discharge	= 2.004 cfs
Storm frequency	= 5 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 4,162 cuft
Drainage area	= 0.360 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.220 x 98) + (0.140 x 61)] / 0.360



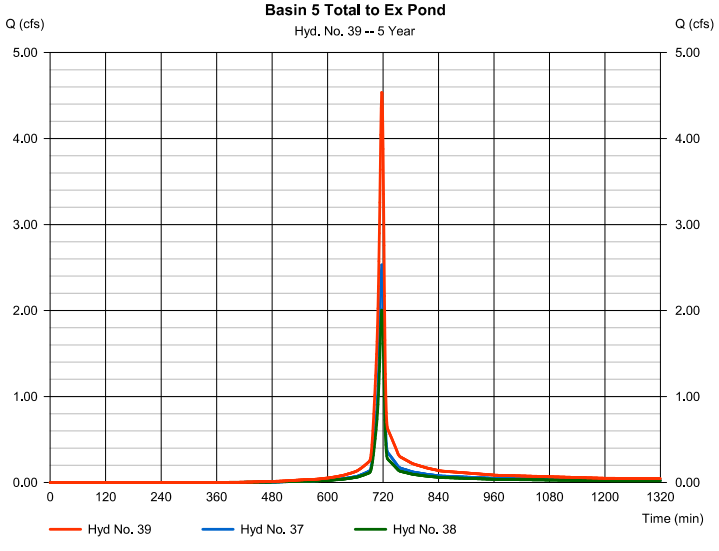
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 39

Basin 5 Total to Ex Pond

Hydrograph type	= Combine	Peak discharge	= 4.535 cfs
Storm frequency	= 5 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 9,374 cuft
Inflow hyds.	= 37, 38	Contrib. drain. area	= 0.840 ac



Hydrograph Report

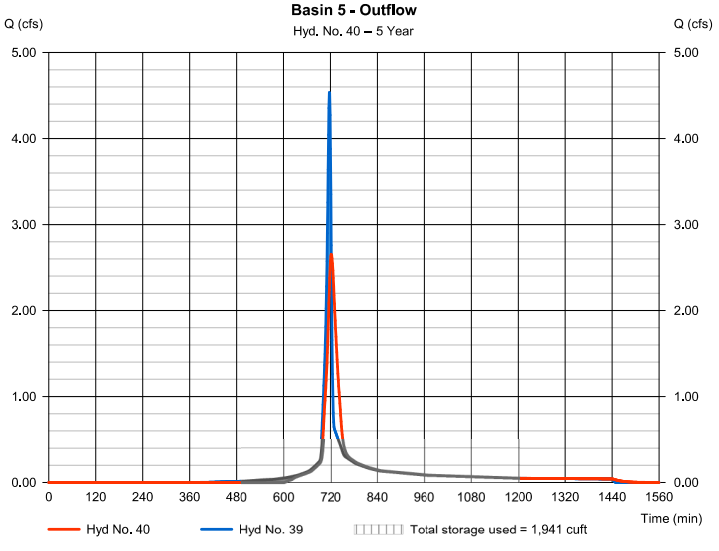
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 40

Basin 5 - Outflow

Hydrograph type	= Reservoir	Peak discharge	= 2.654 cfs
Storm frequency	= 5 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 9,122 cuft
Inflow hyd. No.	= 39 - Basin 5 Total to Ex Pond	Max. Elevation	= 1084.89 ft
Reservoir name	= Basin 5 Pond	Max. Storage	= 1,941 cuft

Storage Indication method used.



Hydrograph Report

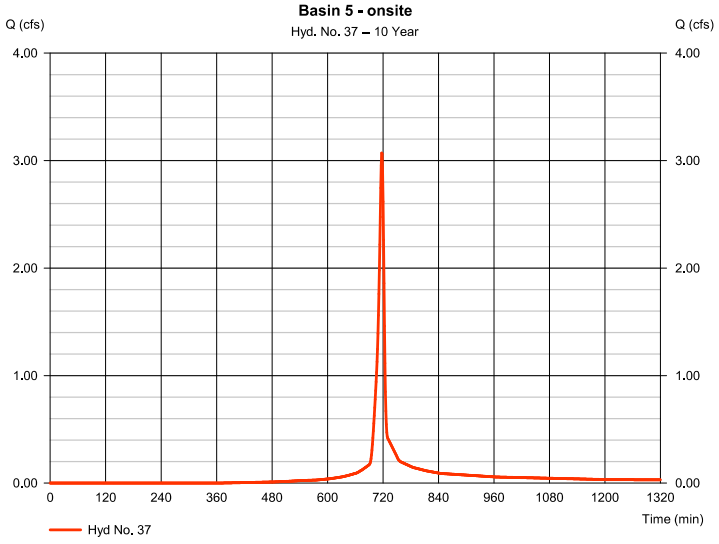
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 37

Basin 5 - onsite

Hydrograph type	= SCS Runoff	Peak discharge	= 3.070 cfs
Storm frequency	= 10 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 6,375 cuft
Drainage area	= 0.480 ac	Curve number	= 82*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.270 x 98) + (0.210 x 61)] / 0.480



Hydrograph Report

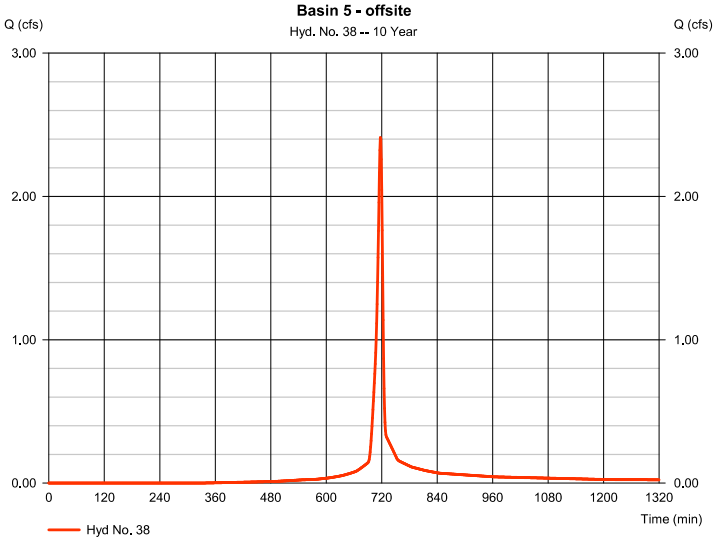
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 38

Basin 5 - offsite

Hydrograph type	= SCS Runoff	Peak discharge	= 2.411 cfs
Storm frequency	= 10 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 5,053 cuft
Drainage area	= 0.360 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.220 x 98) + (0.140 x 61)] / 0.360



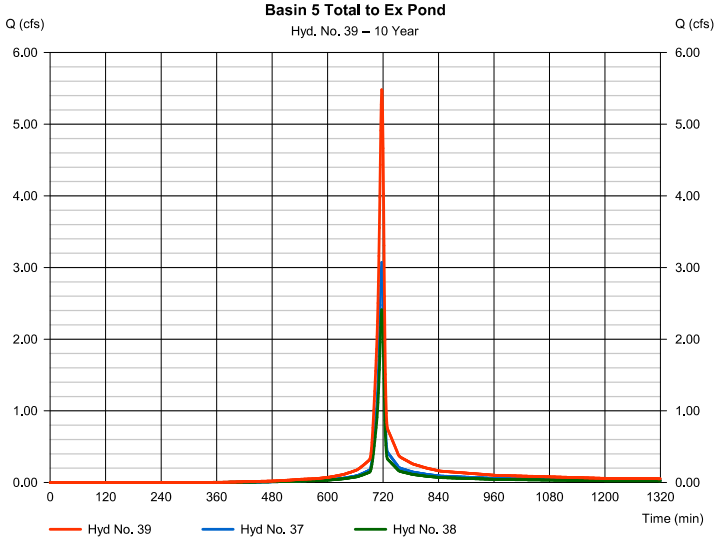
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 39

Basin 5 Total to Ex Pond

Hydrograph type	= Combine	Peak discharge	= 5.481 cfs
Storm frequency	= 10 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 11,428 cuft
Inflow hyds.	= 37, 38	Contrib. drain. area	= 0.840 ac



Hydrograph Report

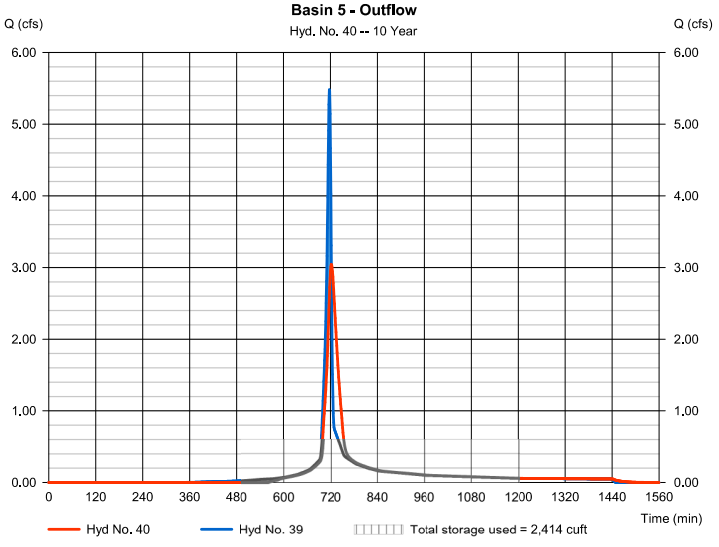
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 40

Basin 5 - Outflow

Hydrograph type	= Reservoir	Peak discharge	= 3.043 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 11,177 cuft
Inflow hyd. No.	= 39 - Basin 5 Total to Ex Pond	Max. Elevation	= 1085.84 ft
Reservoir name	= Basin 5 Pond	Max. Storage	= 2,414 cuft

Storage Indication method used.



Hydrograph Report

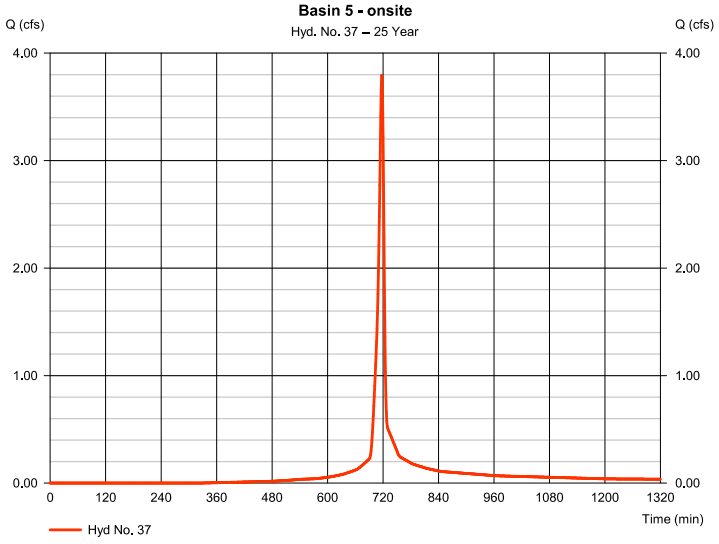
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 37

Basin 5 - onsite

Hydrograph type	= SCS Runoff	Peak discharge	= 3.794 cfs
Storm frequency	= 25 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 7,962 cuft
Drainage area	= 0.480 ac	Curve number	= 82*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.270 x 98) + (0.210 x 61)] / 0.480



Hydrograph Report

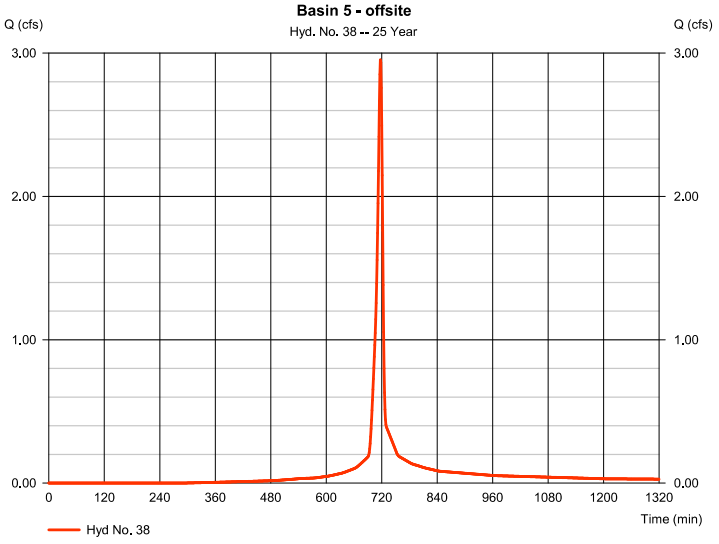
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 38

Basin 5 - offsite

Hydrograph type	= SCS Runoff	Peak discharge	= 2.954 cfs
Storm frequency	= 25 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 6,263 cuft
Drainage area	= 0.360 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.220 x 98) + (0.140 x 61)] / 0.360



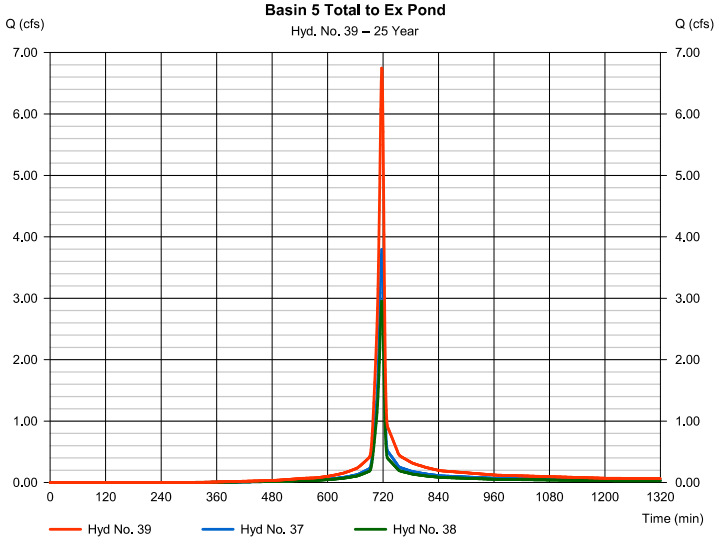
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 39

Basin 5 Total to Ex Pond

Hydrograph type	= Combine	Peak discharge	= 6.747 cfs
Storm frequency	= 25 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 14,225 cuft
Inflow hyds.	= 37, 38	Contrib. drain. area	= 0.840 ac



Hydrograph Report

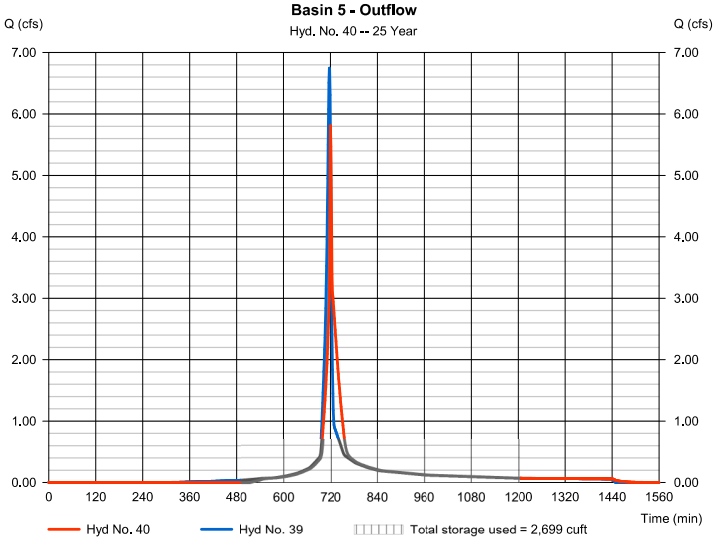
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 40

Basin 5 - Outflow

Hydrograph type	= Reservoir	Peak discharge	= 5.810 cfs
Storm frequency	= 25 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 13,974 cuft
Inflow hyd. No.	= 39 - Basin 5 Total to Ex Pond	Max. Elevation	= 1086.41 ft
Reservoir name	= Basin 5 Pond	Max. Storage	= 2,699 cuft

Storage Indication method used.



Hydrograph Report

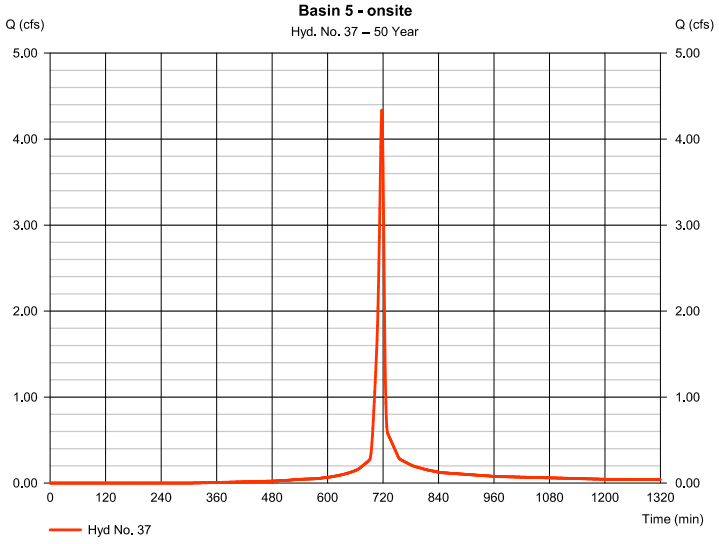
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 37

Basin 5 - onsite

Hydrograph type	= SCS Runoff	Peak discharge	= 4.337 cfs
Storm frequency	= 50 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 9,171 cuft
Drainage area	= 0.480 ac	Curve number	= 82*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.270 x 98) + (0.210 x 61)] / 0.480



Hydrograph Report

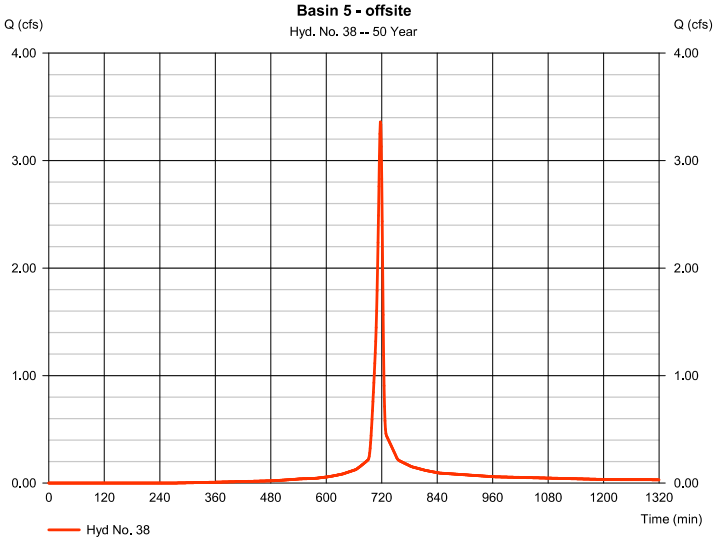
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 38

Basin 5 - offsite

Hydrograph type	= SCS Runoff	Peak discharge	= 3.360 cfs
Storm frequency	= 50 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 7,183 cuft
Drainage area	= 0.360 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.220 x 98) + (0.140 x 61)] / 0.360



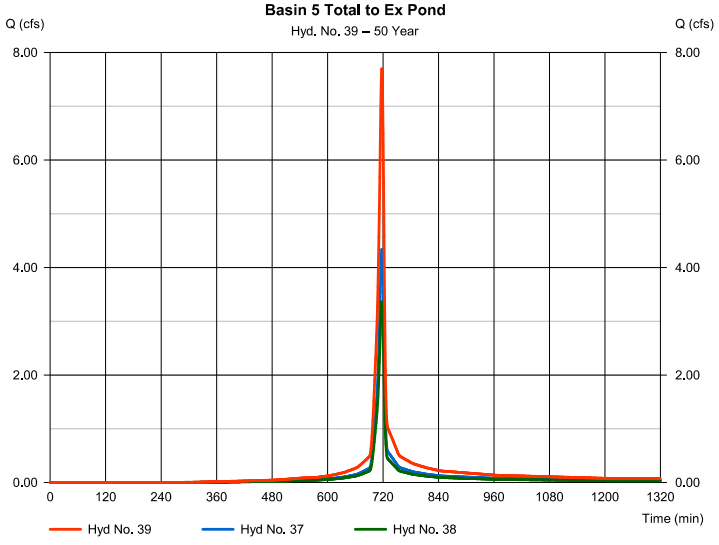
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 39

Basin 5 Total to Ex Pond

Hydrograph type	= Combine	Peak discharge	= 7.697 cfs
Storm frequency	= 50 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 16,354 cuft
Inflow hyds.	= 37, 38	Contrib. drain. area	= 0.840 ac



Hydrograph Report

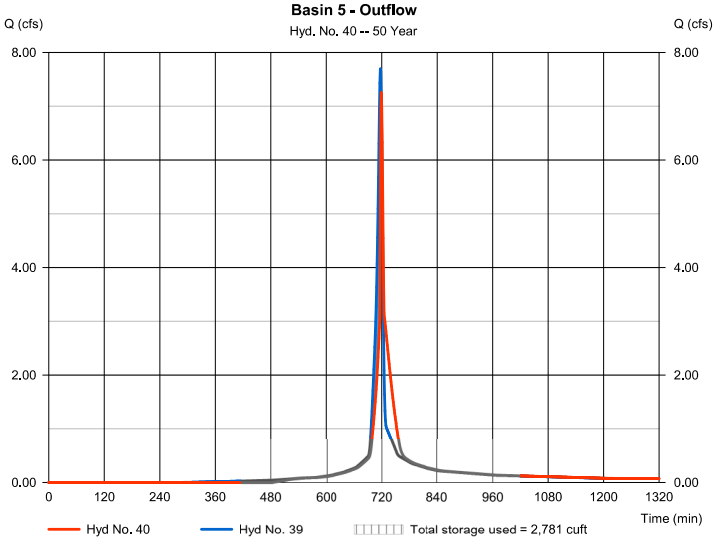
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 40

Basin 5 - Outflow

Hydrograph type	= Reservoir	Peak discharge	= 7.255 cfs
Storm frequency	= 50 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 16,103 cuft
Inflow hyd. No.	= 39 - Basin 5 Total to Ex Pond	Max. Elevation	= 1086.57 ft
Reservoir name	= Basin 5 Pond	Max. Storage	= 2,781 cuft

Storage Indication method used.



Hydrograph Report

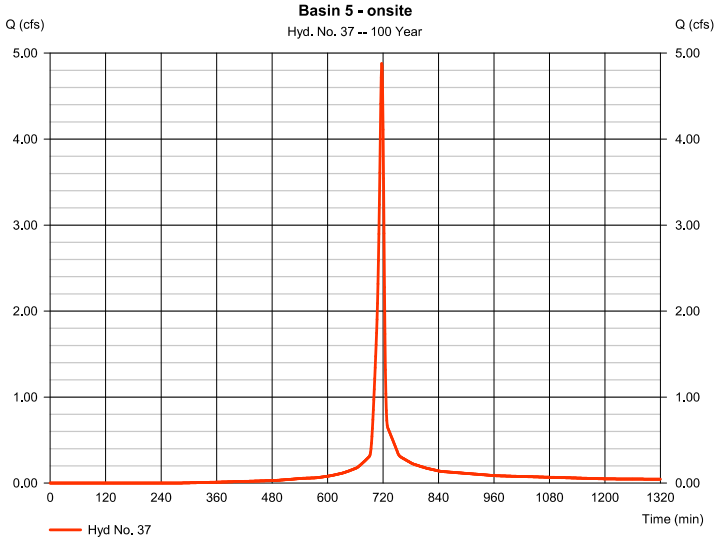
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 37

Basin 5 - onsite

Hydrograph type	= SCS Runoff	Peak discharge	= 4.879 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 10,393 cuft
Drainage area	= 0.480 ac	Curve number	= 82*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.270 x 98) + (0.210 x 61)] / 0.480



Hydrograph Report

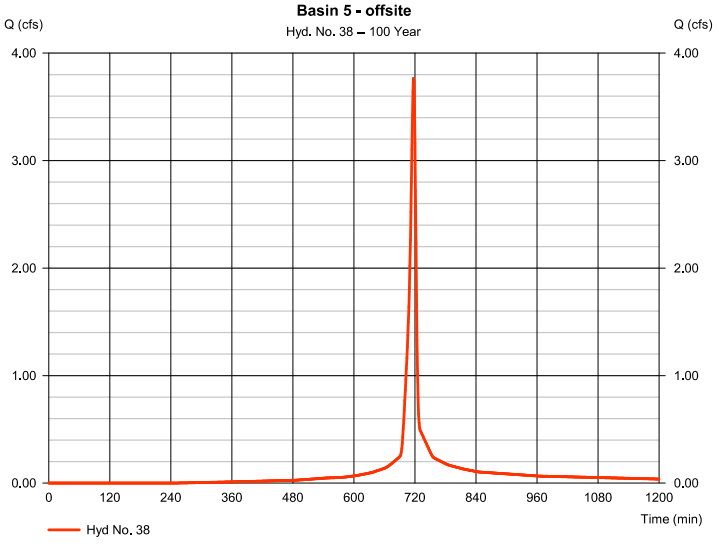
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 38

Basin 5 - offsite

Hydrograph type	= SCS Runoff	Peak discharge	= 3.766 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 8,111 cuft
Drainage area	= 0.360 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.220 x 98) + (0.140 x 61)] / 0.360



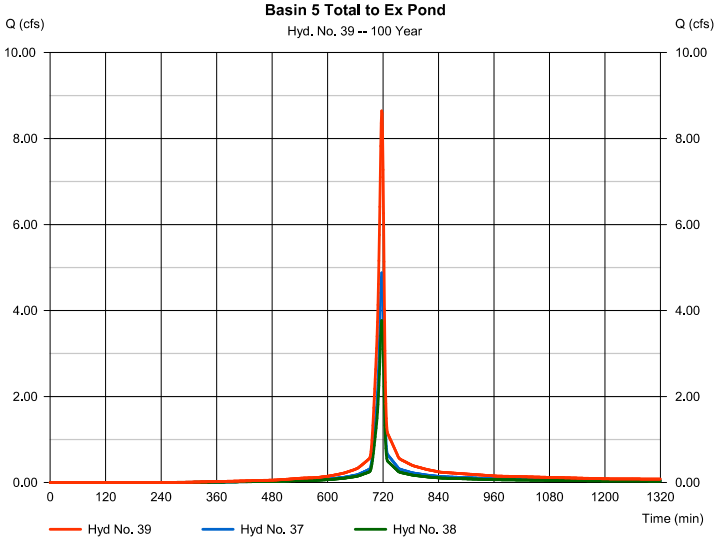
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 39

Basin 5 Total to Ex Pond

Hydrograph type	= Combine	Peak discharge	= 8.645 cfs
Storm frequency	= 100 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 18,503 cuft
Inflow hyds.	= 37, 38	Contrib. drain. area	= 0.840 ac



Hydrograph Report

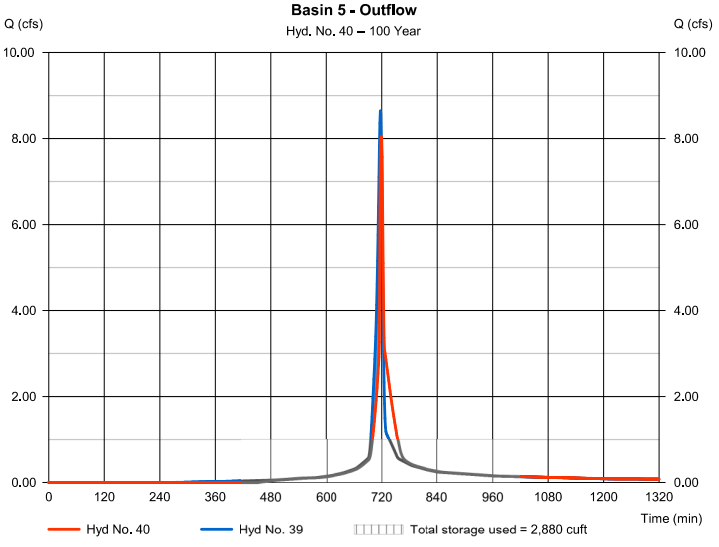
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 40

Basin 5 - Outflow

Hydrograph type	= Reservoir	Peak discharge	= 8.045 cfs
Storm frequency	= 100 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 18,252 cuft
Inflow hyd. No.	= 39 - Basin 5 Total to Ex Pond	Max. Elevation	= 1086.76 ft
Reservoir name	= Basin 5 Pond	Max. Storage	= 2,880 cuft

Storage Indication method used.



Hydrograph Report

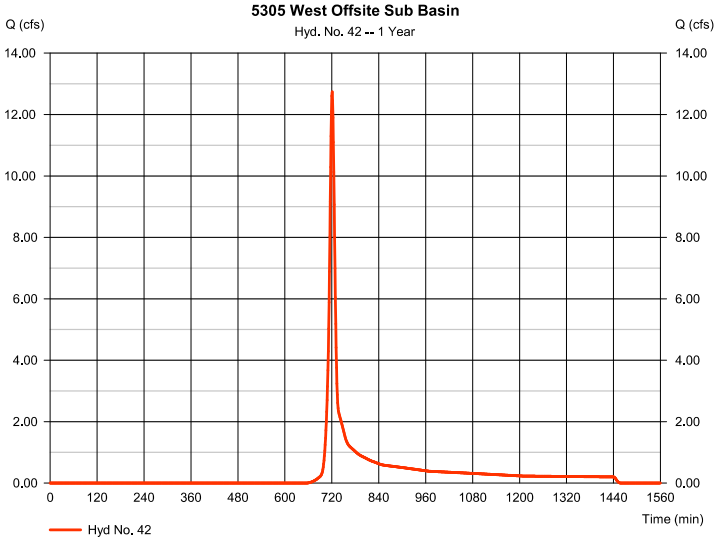
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 42

5305 West Offsite Sub Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 12.74 cfs
Storm frequency	= 1 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 31,671 cuft
Drainage area	= 8.700 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.52 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 89) + (7.700 x 72)] / 8.700



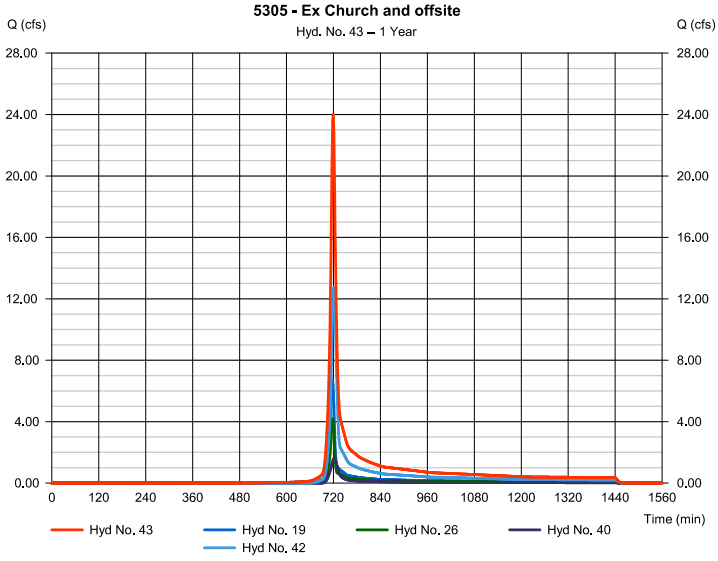
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 43

5305 - Ex Church and offsite

Hydrograph type	= Combine	Peak discharge	= 24.02 cfs
Storm frequency	= 1 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 58,445 cuft
Inflow hyds.	= 19, 26, 40, 42	Contrib. drain. area	= 10.870 ac



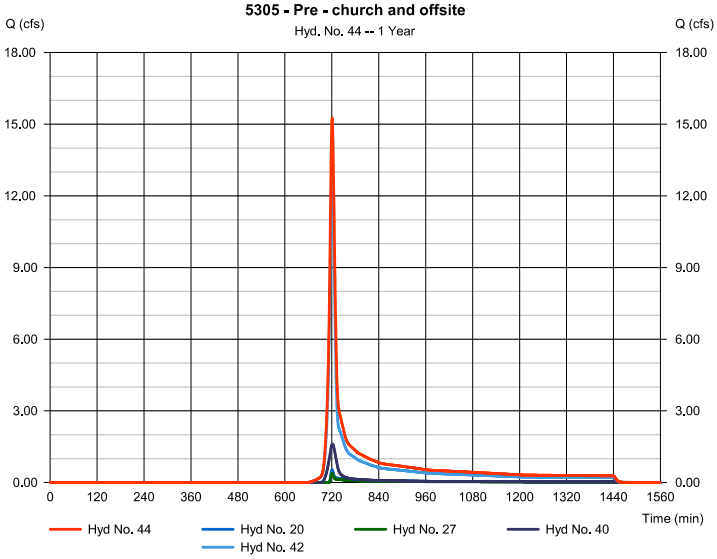
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 44

5305 - Pre - church and offsite

Hydrograph type	= Combine	Peak discharge	= 15.26 cfs
Storm frequency	= 1 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 40,608 cuft
Inflow hyds.	= 20, 27, 40, 42	Contrib. drain. area	= 13.820 ac



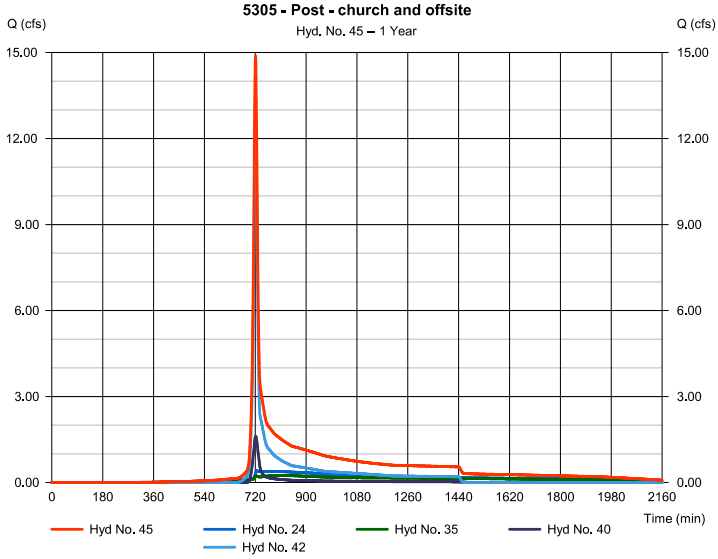
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 45

5305 - Post - church and offsite

Hydrograph type	= Combine	Peak discharge	= 14.88 cfs
Storm frequency	= 1 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 67,143 cuft
Inflow hyds.	= 24, 35, 40, 42	Contrib. drain. area	= 8.700 ac



Hydrograph Report

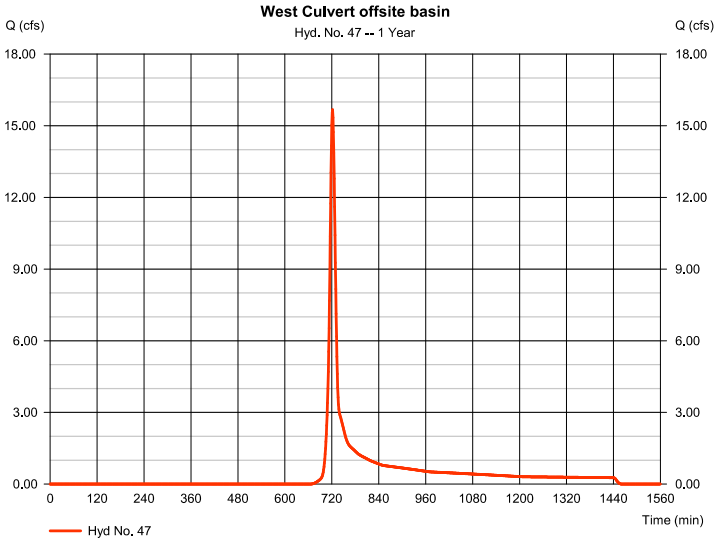
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 47

West Culvert offsite basin

Hydrograph type	= SCS Runoff	Peak discharge	= 15.67 cfs
Storm frequency	= 1 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 41,297 cuft
Drainage area	= 12.400 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.20 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 89) + (11.400 x 72)] / 12.400



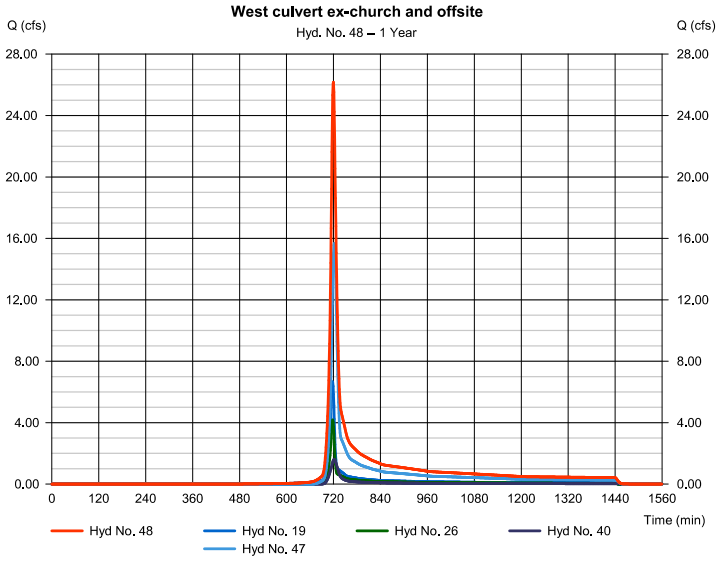
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 48

West culvert ex-church and offsite

Hydrograph type	= Combine	Peak discharge	= 26.17 cfs
Storm frequency	= 1 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 68,071 cuft
Inflow hyds.	= 19, 26, 40, 47	Contrib. drain. area	= 14.570 ac



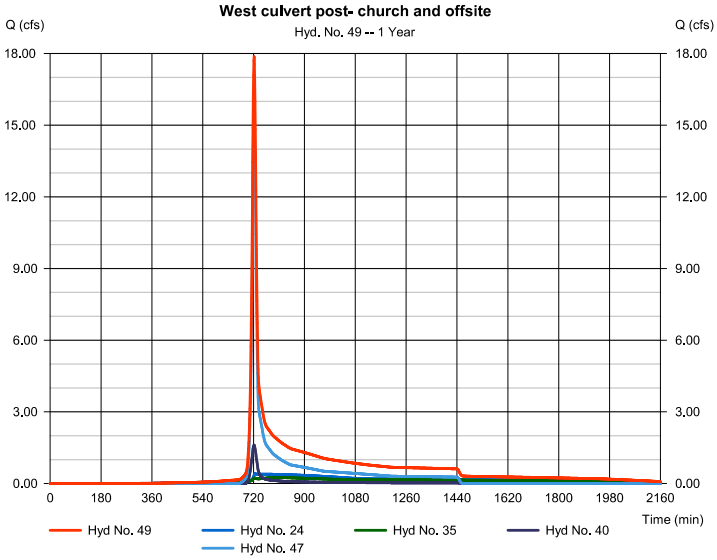
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 49

West culvert post- church and offsite

Hydrograph type	= Combine	Peak discharge	= 17.87 cfs
Storm frequency	= 1 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 76,769 cuft
Inflow hyds.	= 24, 35, 40, 47	Contrib. drain. area	= 12.400 ac



Hydrograph Report

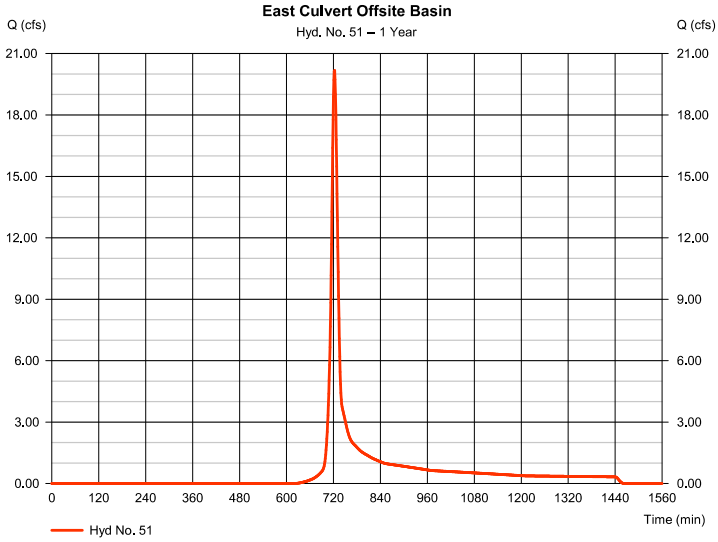
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 51

East Culvert Offsite Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 20.18 cfs
Storm frequency	= 1 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 55,342 cuft
Drainage area	= 13.200 ac	Curve number	= 77*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 14.30 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 94) + (1.900 x 89) + (10.000 x 72)] / 13.200



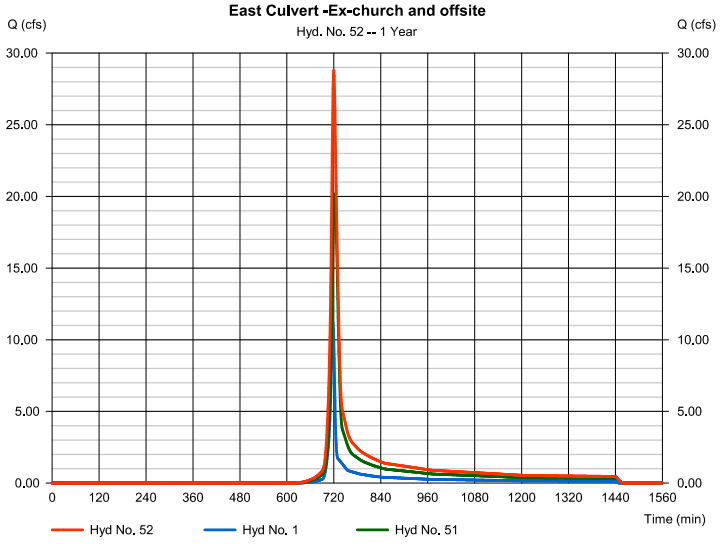
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 52

East Culvert -Ex-church and offsite

Hydrograph type	= Combine	Peak discharge	= 28.80 cfs
Storm frequency	= 1 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 77,840 cuft
Inflow hyds.	= 1, 51	Contrib. drain. area	= 18.680 ac



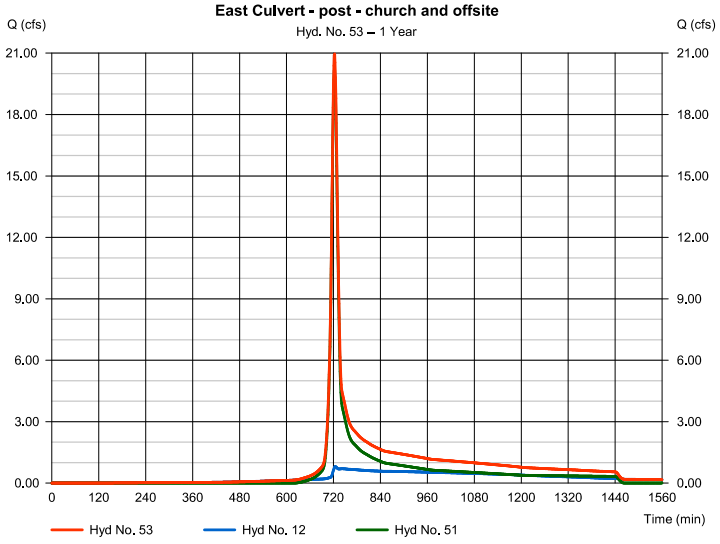
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 53

East Culvert - post - church and offsite

Hydrograph type	= Combine	Peak discharge	= 20.96 cfs
Storm frequency	= 1 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 87,872 cuft
Inflow hyds.	= 12, 51	Contrib. drain. area	= 13.200 ac



Hydrograph Report

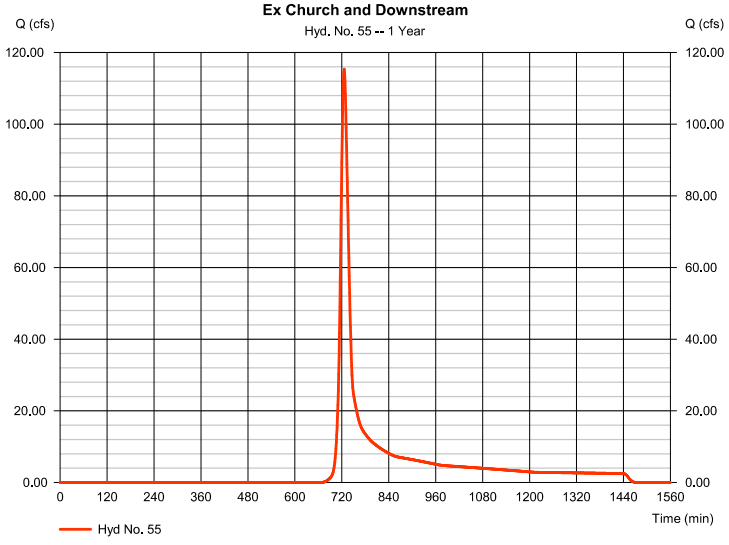
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 55

Ex Church and Downstream

Hydrograph type	= SCS Runoff	Peak discharge	= 115.35 cfs
Storm frequency	= 1 yrs	Time to peak	= 726 min
Time interval	= 1 min	Hyd. volume	= 385,083 cuft
Drainage area	= 113.820 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.52 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 94) + (2.900 x 92) + (98.400 x 72) + (5.160 x 98) + (2.170 x 61) + (3.890 x 55)] / 113.820



Hydrograph Report

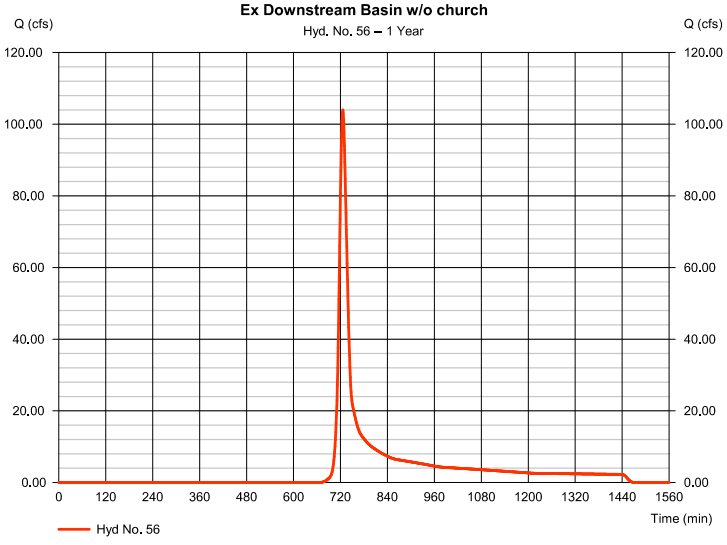
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 56

Ex Downstream Basin w/o church

Hydrograph type	= SCS Runoff	Peak discharge	= 103.98 cfs
Storm frequency	= 1 yrs	Time to peak	= 726 min
Time interval	= 1 min	Hyd. volume	= 347,122 cuft
Drainage area	= 102.600 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.50 min
Total precip.	= 3.12 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 94) + (2.900 x 92) + (98.400 x 72)] / 102.600



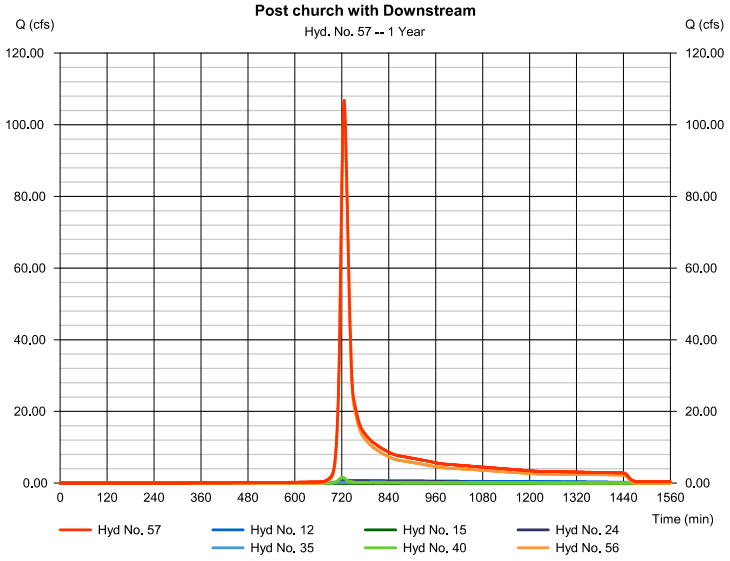
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 57

Post church with Downstream

Hydrograph type	= Combine	Peak discharge	= 106.82 cfs
Storm frequency	= 1 yrs	Time to peak	= 726 min
Time interval	= 1 min	Hyd. volume	= 415,194 cuft
Inflow hyds.	= 12, 15, 24, 35, 40, 56	Contrib. drain. area	= 102.740 ac



Hydrograph Report

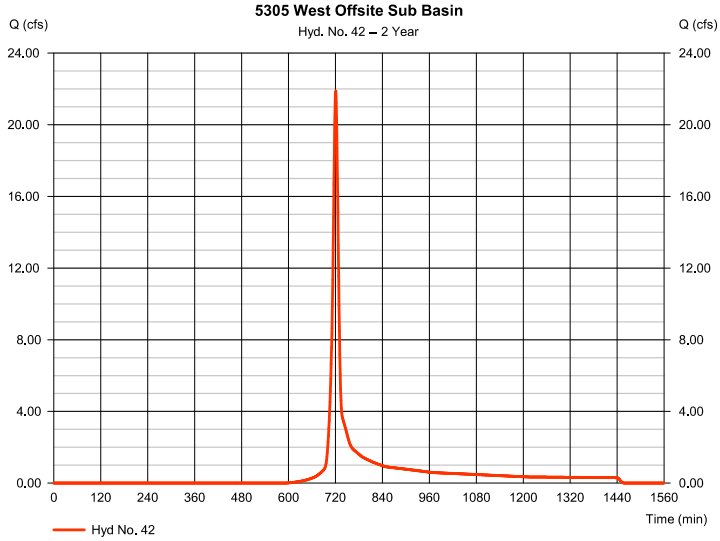
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 42

5305 West Offsite Sub Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 21.88 cfs
Storm frequency	= 2 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 53,208 cuft
Drainage area	= 8.700 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.52 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 89) + (7.700 x 72)] / 8.700



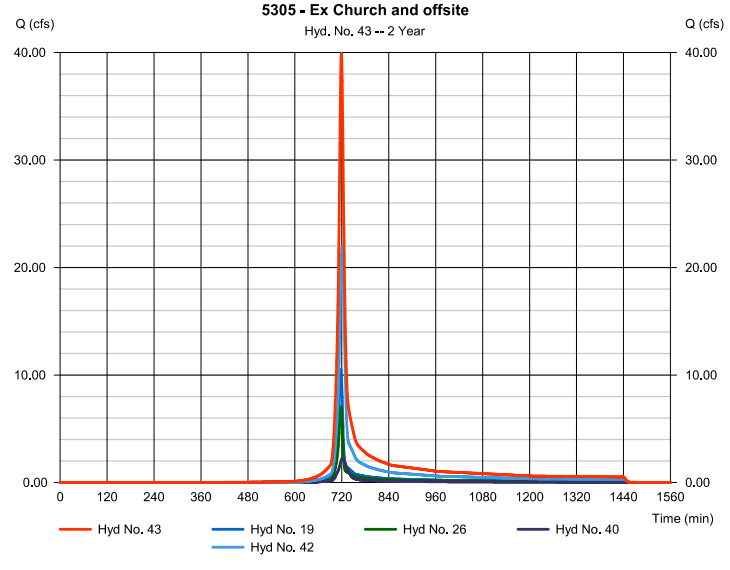
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 43

5305 - Ex Church and offsite

Hydrograph type	= Combine	Peak discharge	= 39.92 cfs
Storm frequency	= 2 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 96,027 cuft
Inflow hyds.	= 19, 26, 40, 42	Contrib. drain. area	= 10.870 ac



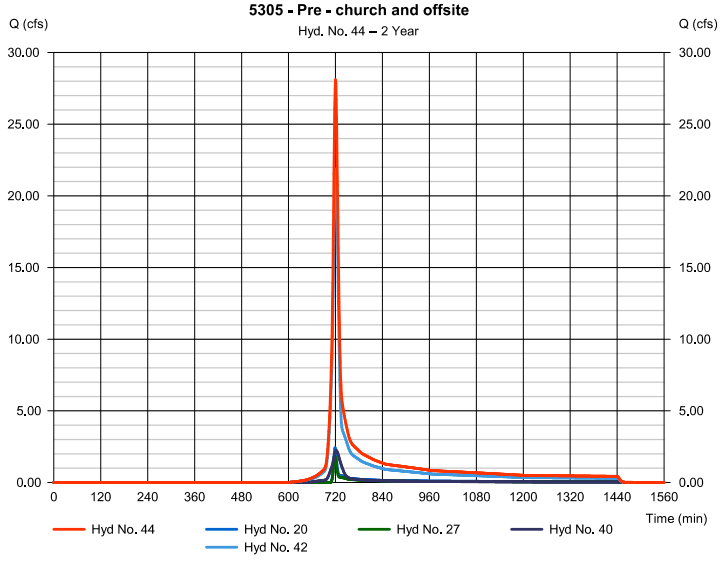
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 44

5305 - Pre - church and offsite

Hydrograph type	= Combine	Peak discharge	= 28.11 cfs
Storm frequency	= 2 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 71,100 cuft
Inflow hyds.	= 20, 27, 40, 42	Contrib. drain. area	= 13.820 ac

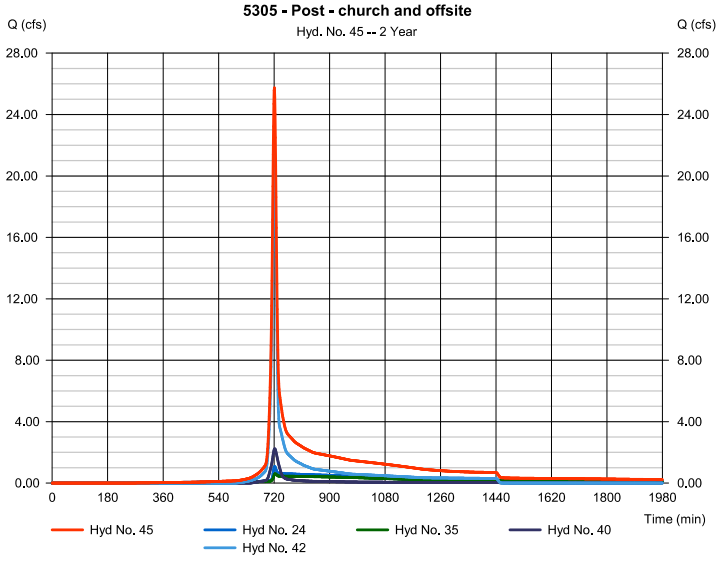


Hydrograph Report

Hyd. No. 45

5305 - Post - church and offsite

Hydrograph type	= Combine	Peak discharge	= 25.74 cfs
Storm frequency	= 2 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 105,874 cuft
Inflow hyds.	= 24, 35, 40, 42	Contrib. drain. area	= 8.700 ac



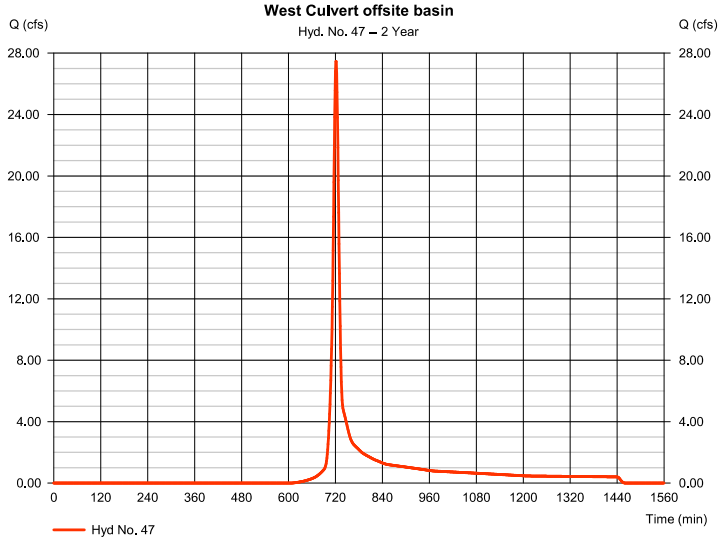
Hydrograph Report

Hyd. No. 47

West Culvert offsite basin

Hydrograph type	= SCS Runoff	Peak discharge	= 27.46 cfs
Storm frequency	= 2 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 70,234 cuft
Drainage area	= 12.400 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.20 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 89) + (11.400 x 72)] / 12.400

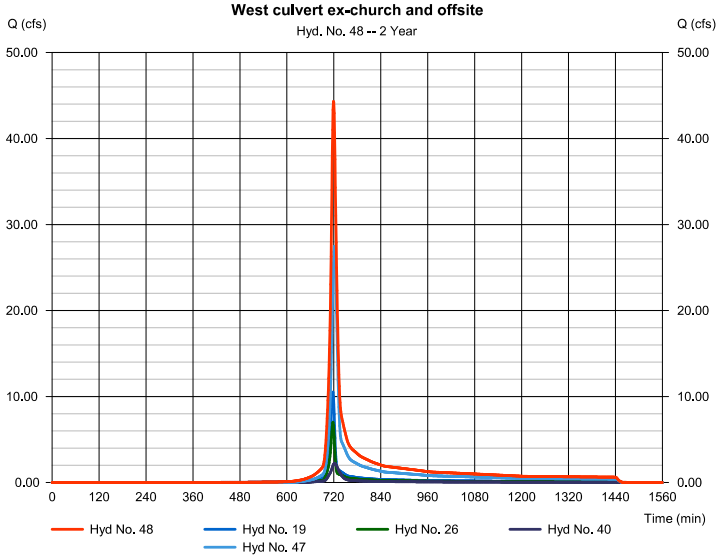


Hydrograph Report

Hyd. No. 48

West culvert ex-church and offsite

Hydrograph type	= Combine	Peak discharge	= 44.32 cfs
Storm frequency	= 2 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 113,053 cuft
Inflow hyds.	= 19, 26, 40, 47	Contrib. drain. area	= 14.570 ac

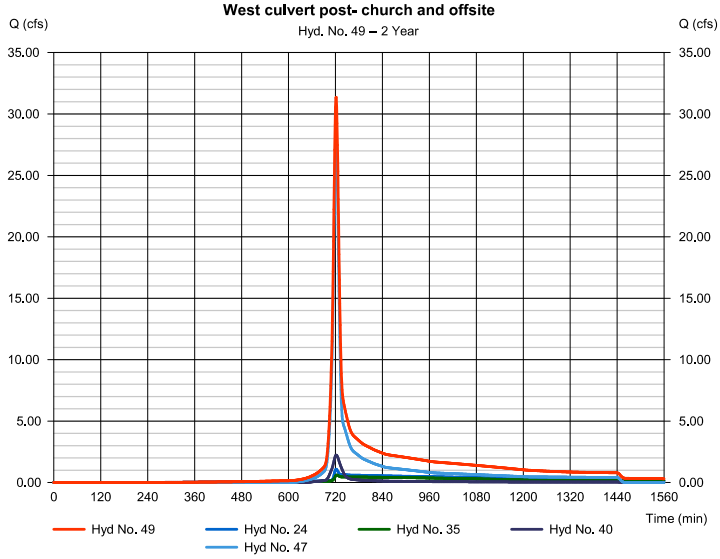


Hydrograph Report

Hyd. No. 49

West culvert post- church and offsite

Hydrograph type	= Combine	Peak discharge	= 31.36 cfs
Storm frequency	= 2 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 122,900 cuft
Inflow hyds.	= 24, 35, 40, 47	Contrib. drain. area	= 12.400 ac



Hydrograph Report

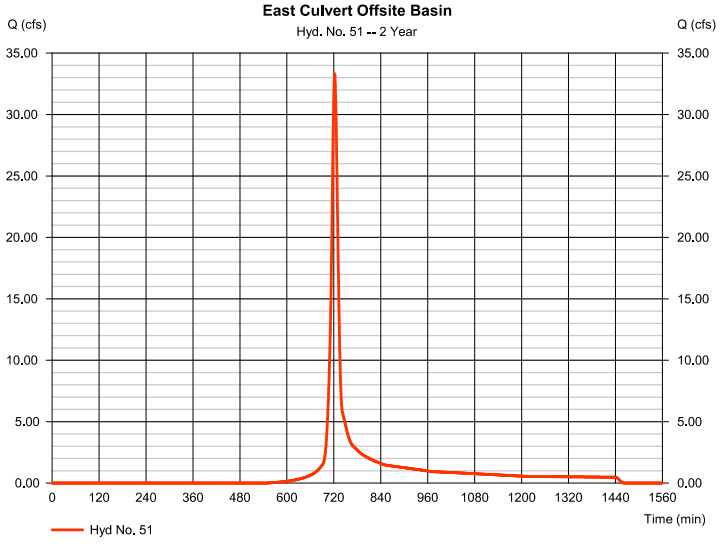
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 51

East Culvert Offsite Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 33.32 cfs
Storm frequency	= 2 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 89,827 cuft
Drainage area	= 13.200 ac	Curve number	= 77*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 14.30 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 94) + (1.900 x 89) + (10.000 x 72)] / 13.200



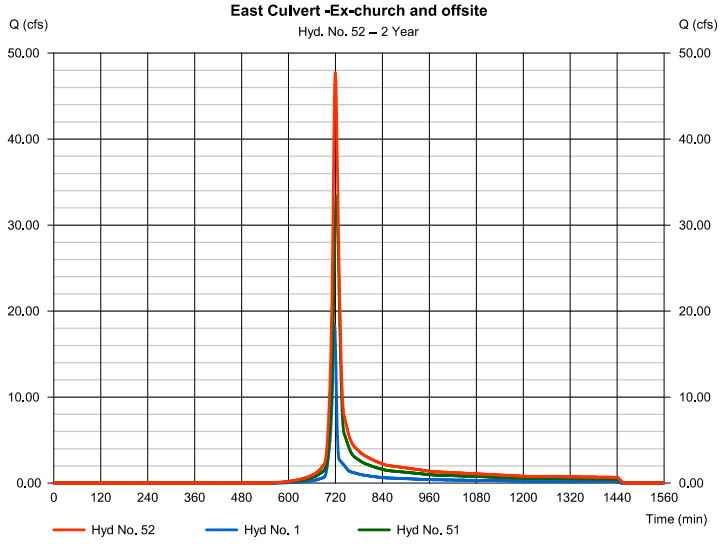
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 52

East Culvert -Ex-church and offsite

Hydrograph type	= Combine	Peak discharge	= 47.74 cfs
Storm frequency	= 2 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 126,753 cuft
Inflow hyds.	= 1, 51	Contrib. drain. area	= 18.680 ac



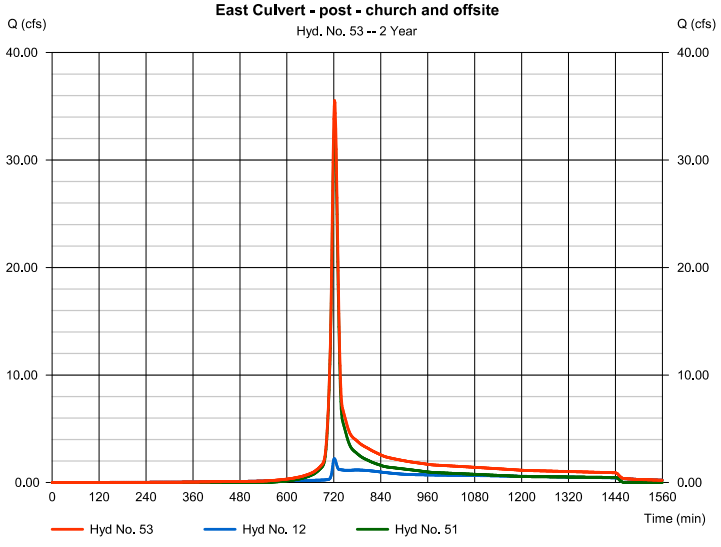
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 53

East Culvert - post - church and offsite

Hydrograph type	= Combine	Peak discharge	= 35.53 cfs
Storm frequency	= 2 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 137,437 cuft
Inflow hyds.	= 12, 51	Contrib. drain. area	= 13.200 ac



Hydrograph Report

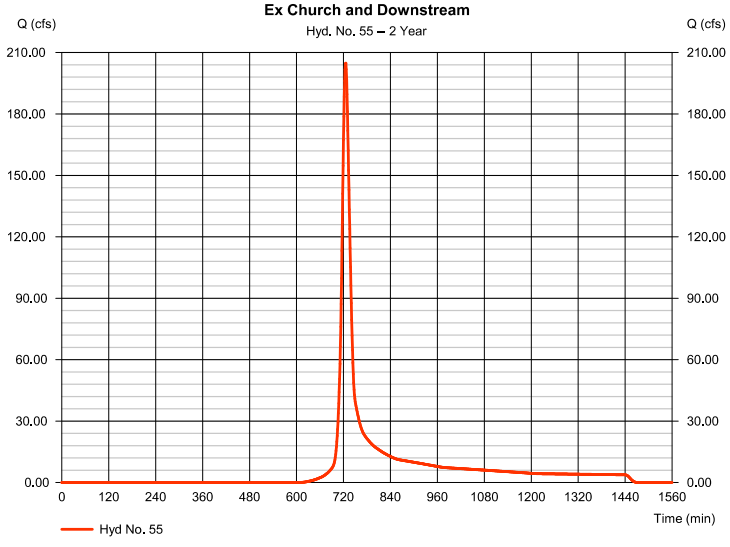
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 55

Ex Church and Downstream

Hydrograph type	= SCS Runoff	Peak discharge	= 204.86 cfs
Storm frequency	= 2 yrs	Time to peak	= 726 min
Time interval	= 1 min	Hyd. volume	= 654,914 cuft
Drainage area	= 113.820 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.52 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 94) + (2.900 x 92) + (98.400 x 72) + (5.160 x 98) + (2.170 x 61) + (3.890 x 55)] / 113.820



Hydrograph Report

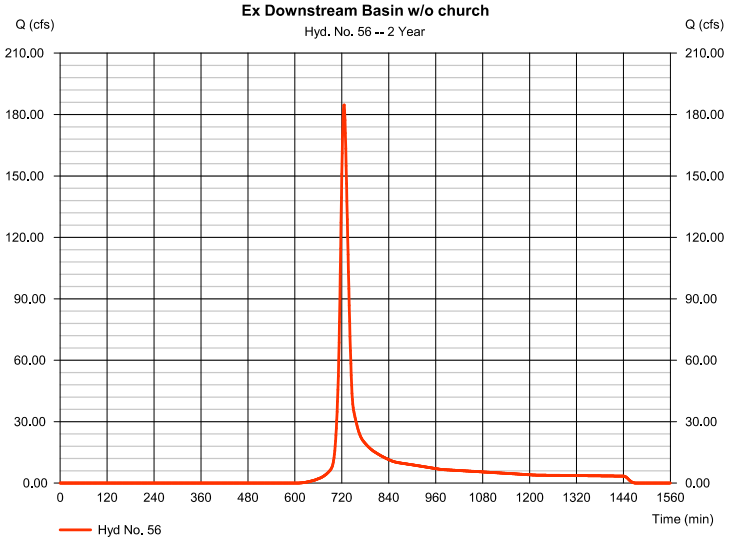
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 56

Ex Downstream Basin w/o church

Hydrograph type	= SCS Runoff	Peak discharge	= 184.67 cfs
Storm frequency	= 2 yrs	Time to peak	= 726 min
Time interval	= 1 min	Hyd. volume	= 590,355 cuft
Drainage area	= 102.600 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.50 min
Total precip.	= 4.08 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 94) + (2.900 x 92) + (98.400 x 72)] / 102.600



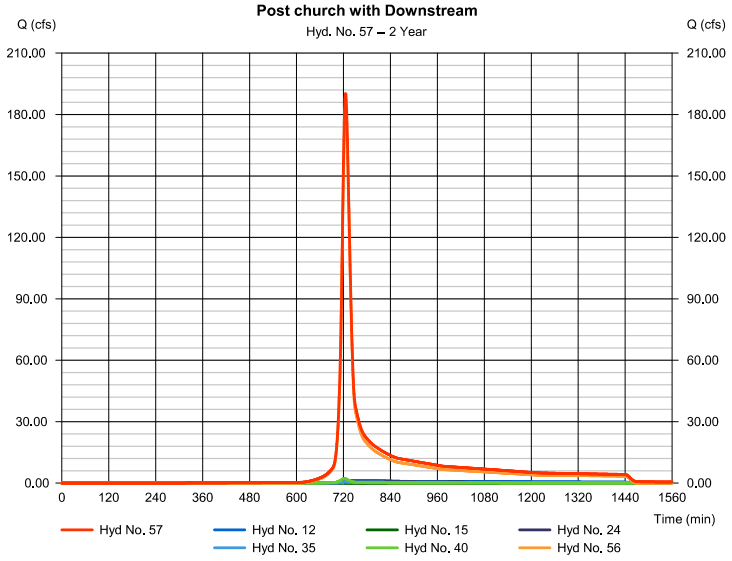
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 57

Post church with Downstream

Hydrograph type	= Combine	Peak discharge	= 190.15 cfs
Storm frequency	= 2 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 690,838 cuft
Inflow hyds.	= 12, 15, 24, 35, 40, 56	Contrib. drain. area	= 102.740 ac



Hydrograph Report

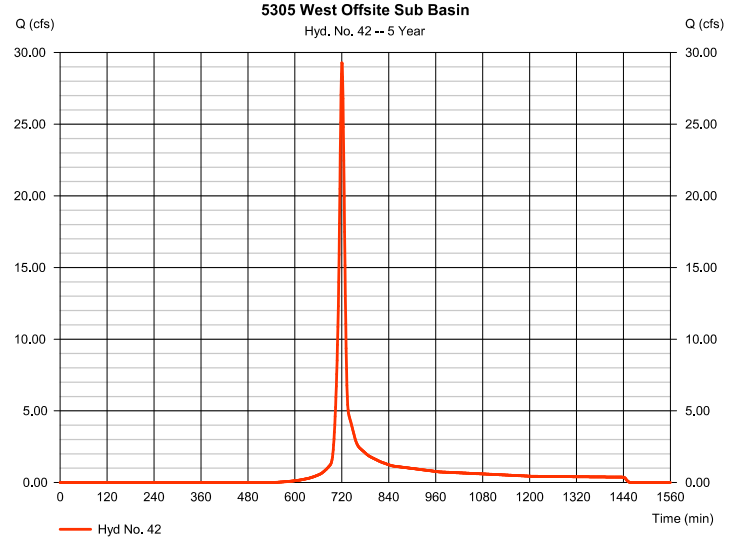
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 42

5305 West Offsite Sub Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 29.28 cfs
Storm frequency	= 5 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 70,905 cuft
Drainage area	= 8.700 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.52 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 89) + (7.700 x 72)] / 8.700



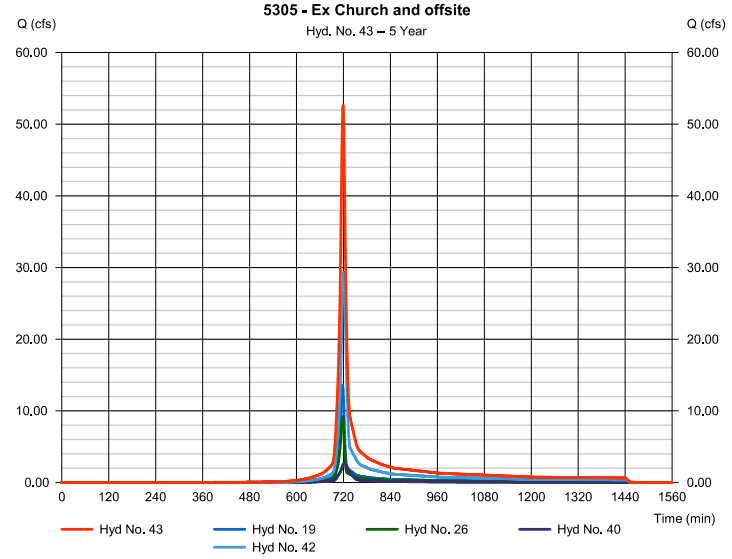
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 43

5305 - Ex Church and offsite

Hydrograph type	= Combine	Peak discharge	= 52.61 cfs
Storm frequency	= 5 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 126,659 cuft
Inflow hyds.	= 19, 26, 40, 42	Contrib. drain. area	= 10.870 ac



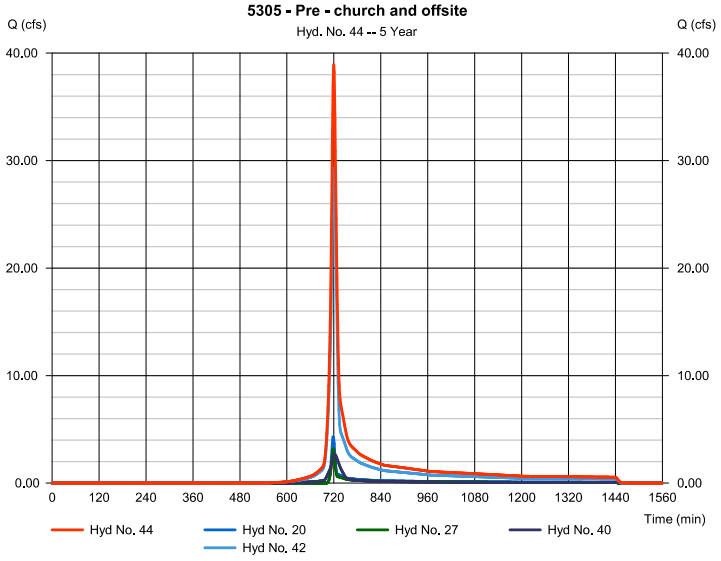
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 44

5305 - Pre - church and offsite

Hydrograph type	= Combine	Peak discharge	= 38.92 cfs
Storm frequency	= 5 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 96,935 cuft
Inflow hyds.	= 20, 27, 40, 42	Contrib. drain. area	= 13.820 ac



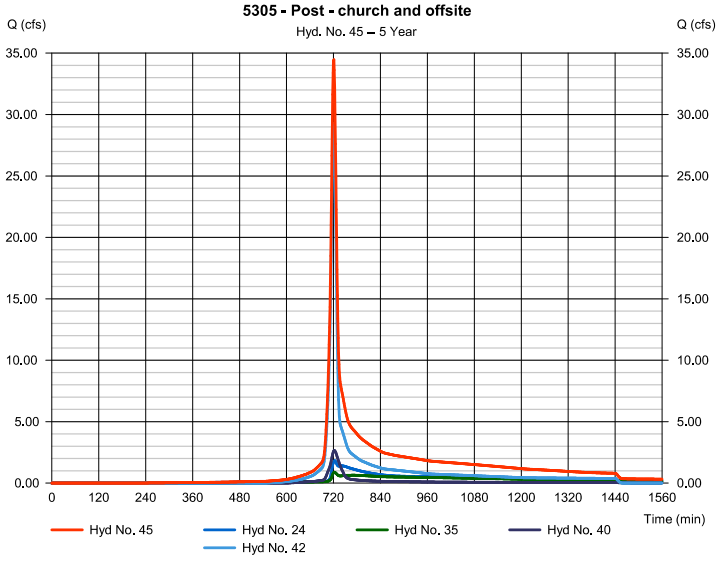
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 45

5305 - Post - church and offsite

Hydrograph type	= Combine	Peak discharge	= 34.47 cfs
Storm frequency	= 5 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 137,131 cuft
Inflow hyds.	= 24, 35, 40, 42	Contrib. drain. area	= 8.700 ac



Hydrograph Report

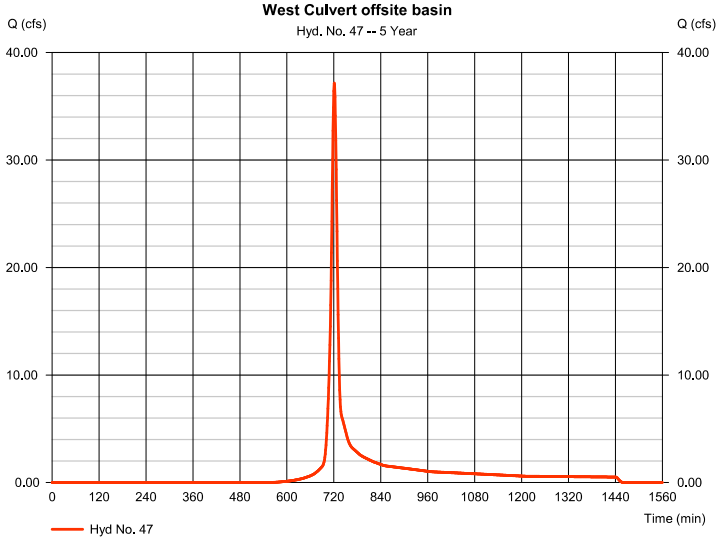
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 47

West Culvert offsite basin

Hydrograph type	= SCS Runoff	Peak discharge	= 37.16 cfs
Storm frequency	= 5 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 94,145 cuft
Drainage area	= 12.400 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.20 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 89) + (11.400 x 72)] / 12.400



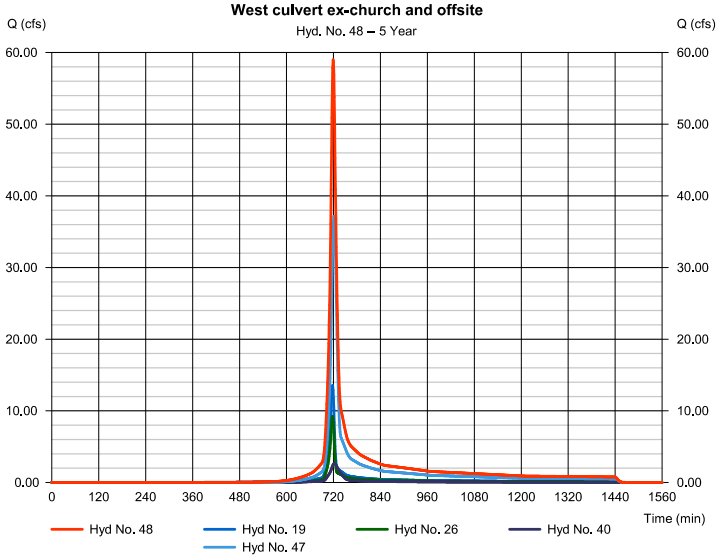
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 48

West culvert ex-church and offsite

Hydrograph type	= Combine	Peak discharge	= 58.99 cfs
Storm frequency	= 5 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 149,900 cuft
Inflow hyds.	= 19, 26, 40, 47	Contrib. drain. area	= 14.570 ac



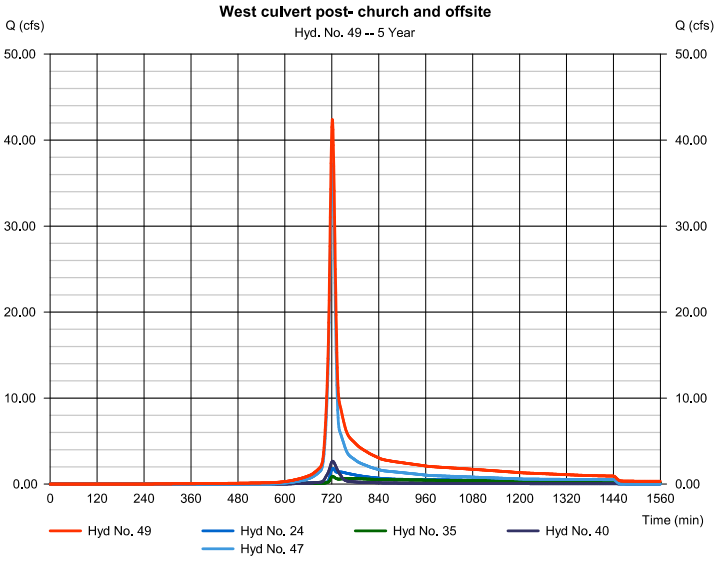
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 49

West culvert post- church and offsite

Hydrograph type	= Combine	Peak discharge	= 42.38 cfs
Storm frequency	= 5 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 160,371 cuft
Inflow hyds.	= 24, 35, 40, 47	Contrib. drain. area	= 12.400 ac



Hydrograph Report

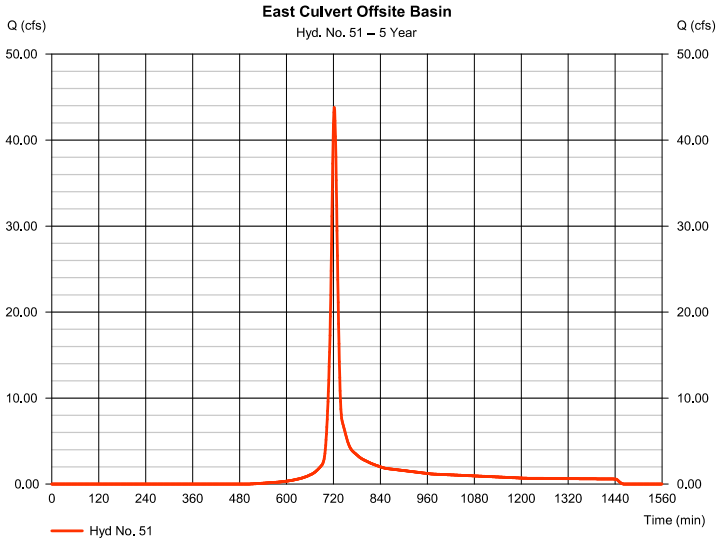
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 51

East Culvert Offsite Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 43.79 cfs
Storm frequency	= 5 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 117,709 cuft
Drainage area	= 13.200 ac	Curve number	= 77*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 14.30 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 94) + (1.900 x 89) + (10.000 x 72)] / 13.200



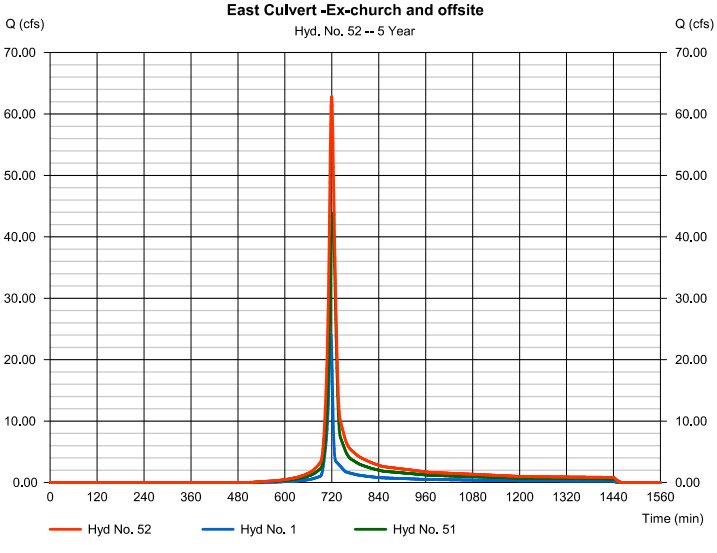
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 52

East Culvert -Ex-church and offsite

Hydrograph type	= Combine	Peak discharge	= 62.80 cfs
Storm frequency	= 5 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 166,362 cuft
Inflow hyds.	= 1, 51	Contrib. drain. area	= 18.680 ac



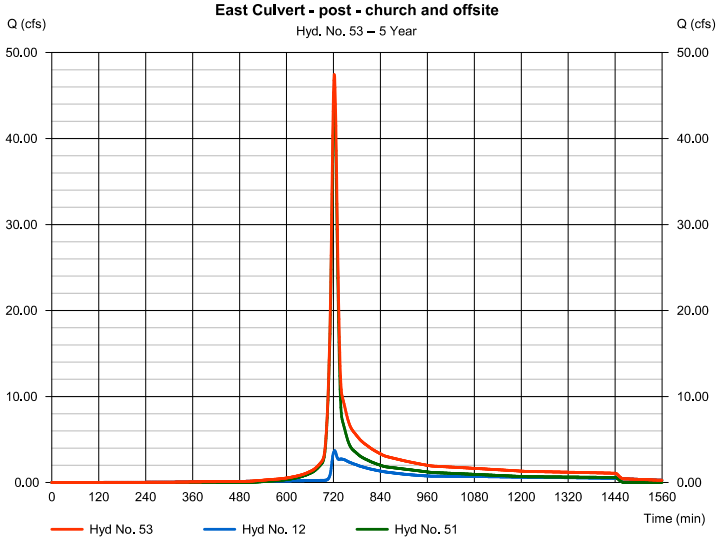
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 53

East Culvert - post - church and offsite

Hydrograph type	= Combine	Peak discharge	= 47.44 cfs
Storm frequency	= 5 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 177,257 cuft
Inflow hyds.	= 12, 51	Contrib. drain. area	= 13.200 ac



Hydrograph Report

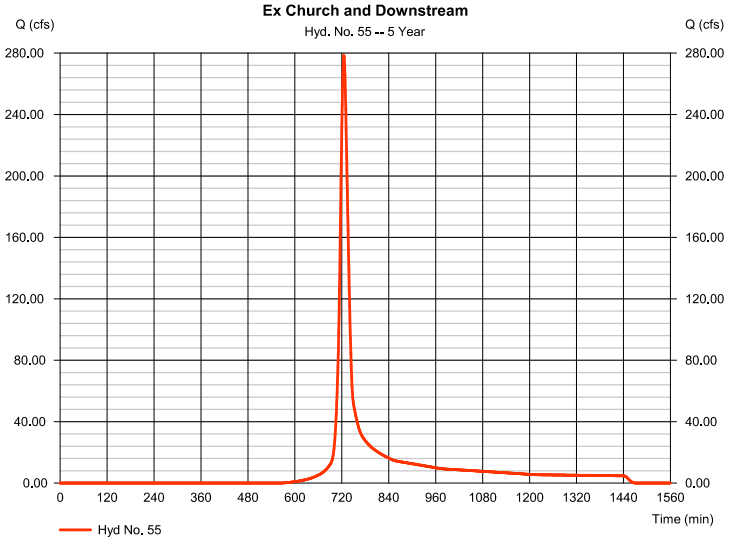
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 55

Ex Church and Downstream

Hydrograph type	= SCS Runoff	Peak discharge	= 278.40 cfs
Storm frequency	= 5 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 877,881 cuft
Drainage area	= 113.820 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.52 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 94) + (2.900 x 92) + (98.400 x 72) + (5.160 x 98) + (2.170 x 61) + (3.890 x 55)] / 113.820



Hydrograph Report

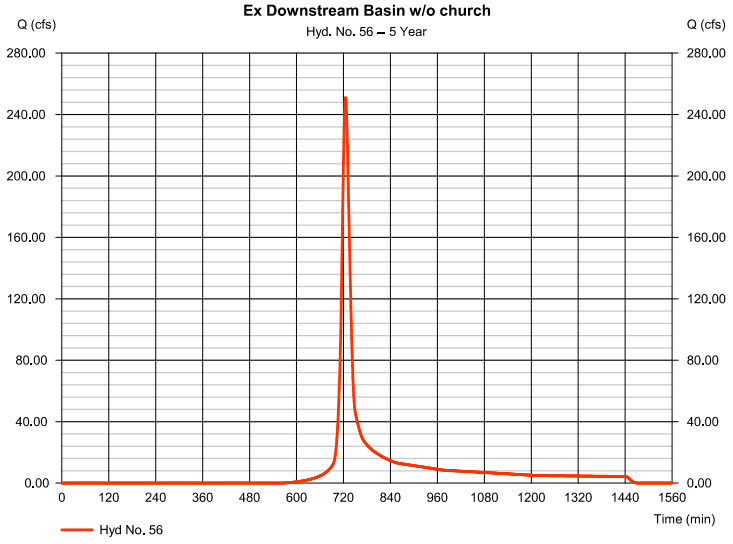
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 56

Ex Downstream Basin w/o church

Hydrograph type	= SCS Runoff	Peak discharge	= 250.96 cfs
Storm frequency	= 5 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 791,343 cuft
Drainage area	= 102.600 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.50 min
Total precip.	= 4.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 94) + (2.900 x 92) + (98.400 x 72)] / 102.600



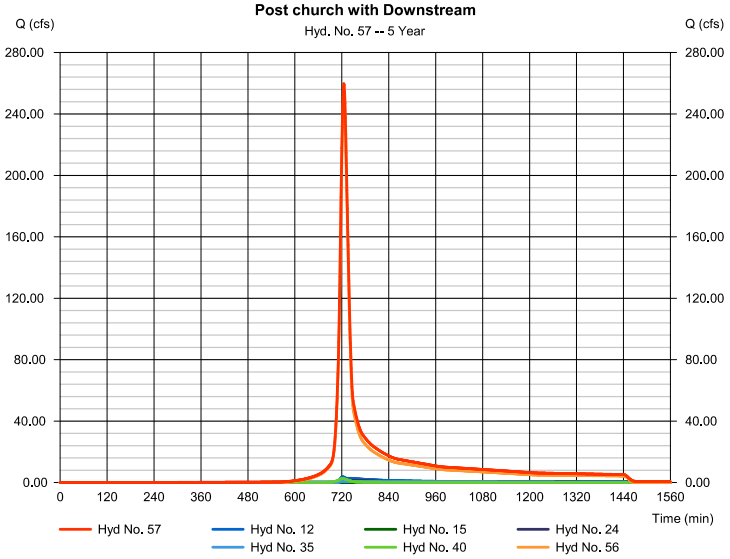
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 57

Post church with Downstream

Hydrograph type	= Combine	Peak discharge	= 259.73 cfs
Storm frequency	= 5 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 917,464 cuft
Inflow hyds.	= 12, 15, 24, 35, 40, 56	Contrib. drain. area	= 102.740 ac



Hydrograph Report

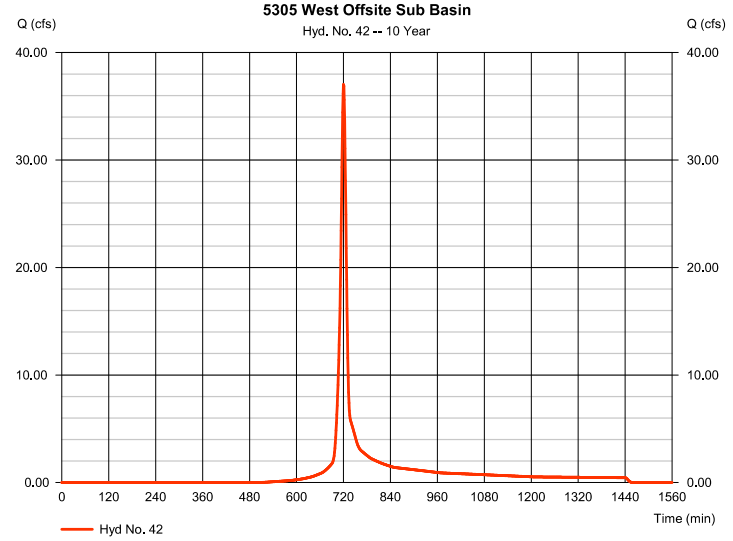
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 42

5305 West Offsite Sub Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 37.03 cfs
Storm frequency	= 10 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 89,543 cuft
Drainage area	= 8.700 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.52 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 89) + (7.700 x 72)] / 8.700



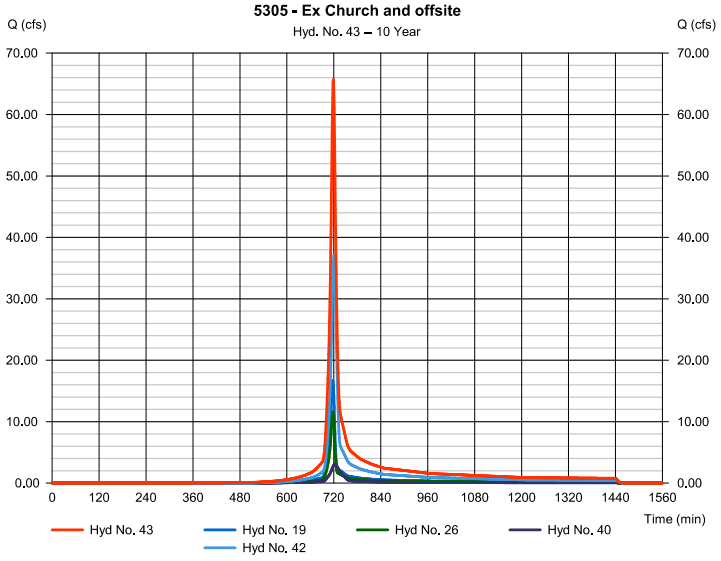
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 43

5305 - Ex Church and offsite

Hydrograph type	= Combine	Peak discharge	= 65.69 cfs
Storm frequency	= 10 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 158,778 cuft
Inflow hyds.	= 19, 26, 40, 42	Contrib. drain. area	= 10.870 ac



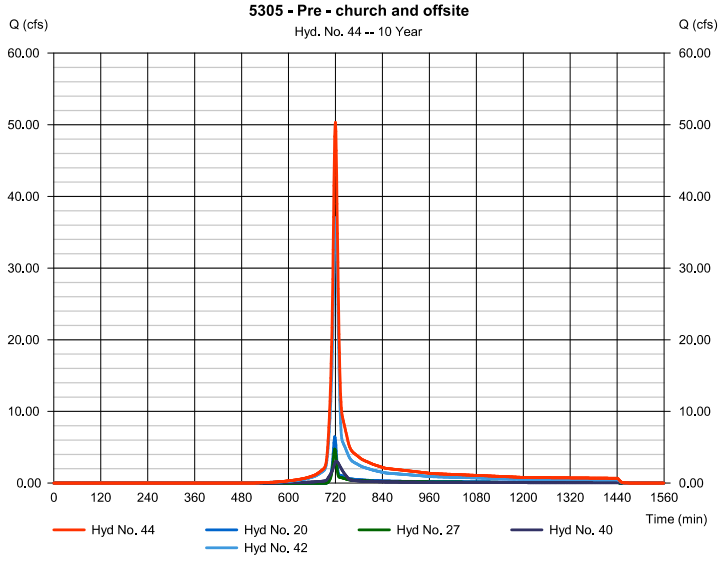
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 44

5305 - Pre - church and offsite

Hydrograph type	= Combine	Peak discharge	= 50.33 cfs
Storm frequency	= 10 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 124,679 cuft
Inflow hyds.	= 20, 27, 40, 42	Contrib. drain. area	= 13.820 ac



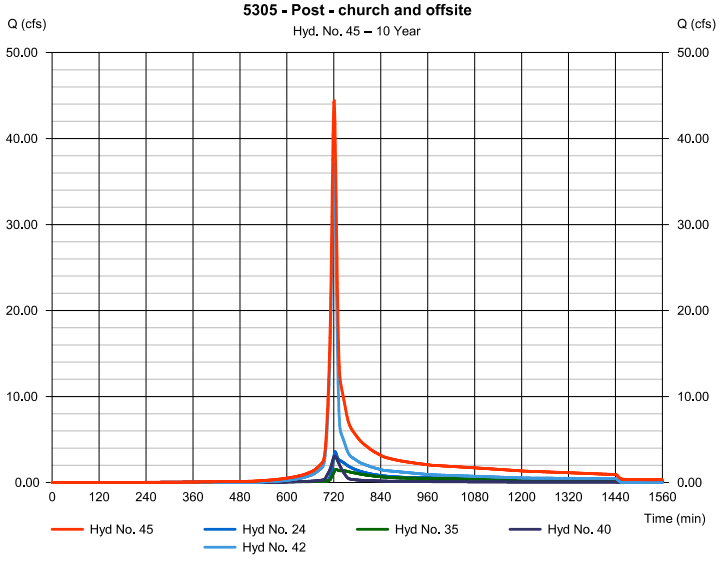
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 45

5305 - Post - church and offsite

Hydrograph type	= Combine	Peak discharge	= 44.42 cfs
Storm frequency	= 10 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 169,743 cuft
Inflow hyds.	= 24, 35, 40, 42	Contrib. drain. area	= 8.700 ac



Hydrograph Report

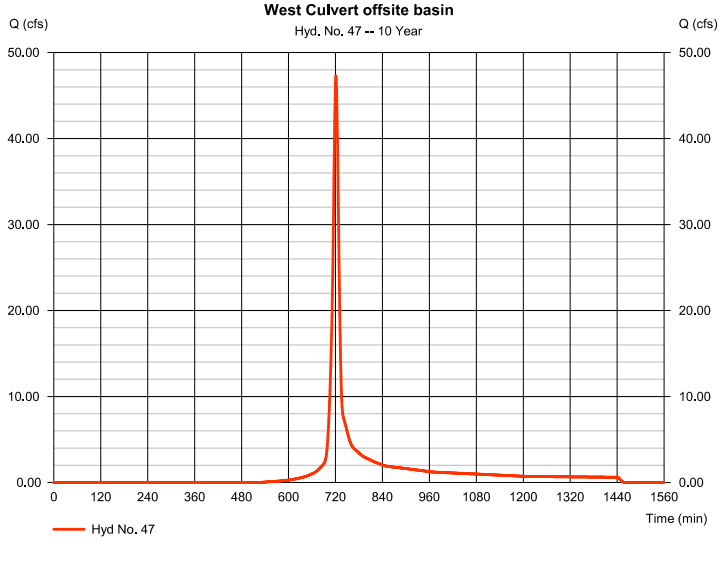
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 47

West Culvert offsite basin

Hydrograph type	= SCS Runoff	Peak discharge	= 47.27 cfs
Storm frequency	= 10 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 119,414 cuft
Drainage area	= 12.400 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.20 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 89) + (11.400 x 72)] / 12.400



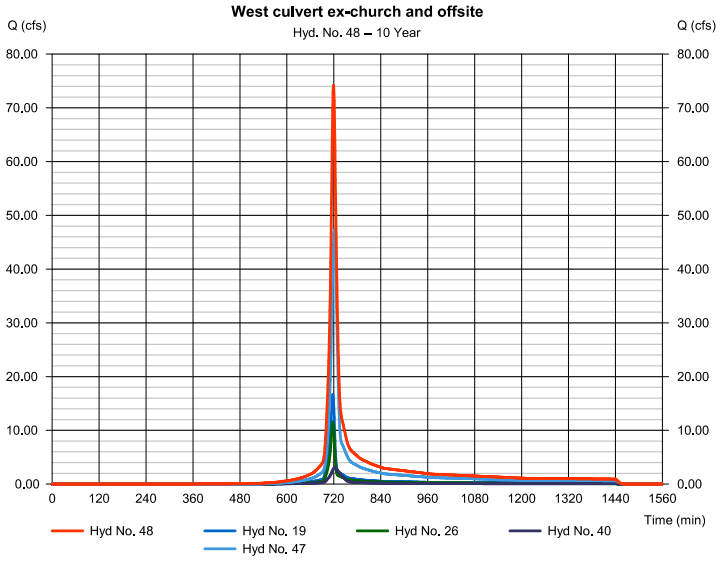
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 48

West culvert ex-church and offsite

Hydrograph type	= Combine	Peak discharge	= 74.20 cfs
Storm frequency	= 10 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 188,649 cuft
Inflow hyds.	= 19, 26, 40, 47	Contrib. drain. area	= 14.570 ac



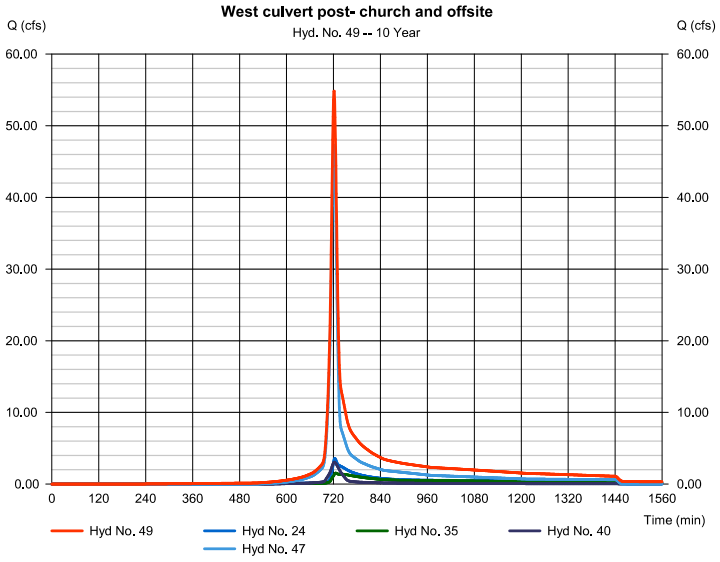
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 49

West culvert post- church and offsite

Hydrograph type	= Combine	Peak discharge	= 54.84 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 199,614 cuft
Inflow hyds.	= 24, 35, 40, 47	Contrib. drain. area	= 12.400 ac



Hydrograph Report

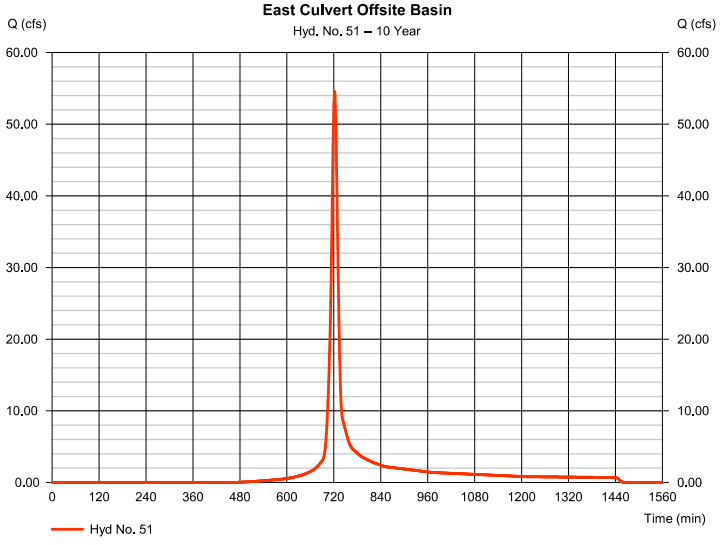
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 51

East Culvert Offsite Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 54.57 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 146,796 cuft
Drainage area	= 13.200 ac	Curve number	= 77*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 14.30 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 94) + (1.900 x 89) + (10.000 x 72)] / 13.200



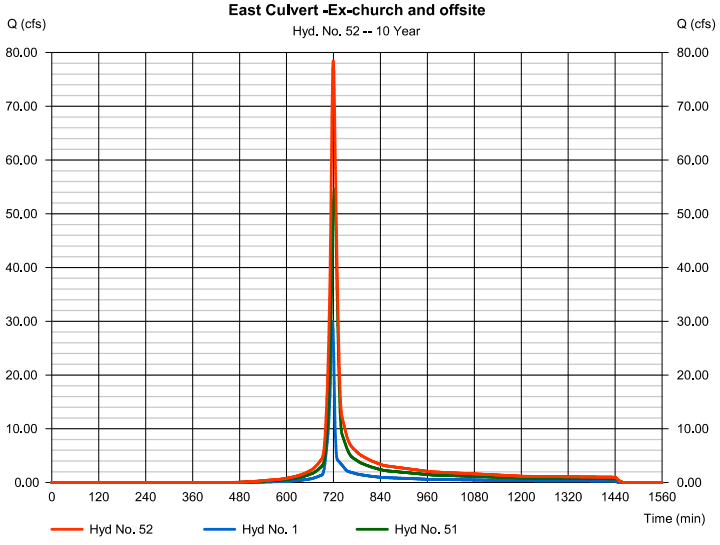
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 52

East Culvert -Ex-church and offsite

Hydrograph type	= Combine	Peak discharge	= 78.43 cfs
Storm frequency	= 10 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 207,720 cuft
Inflow hyds.	= 1, 51	Contrib. drain. area	= 18.680 ac



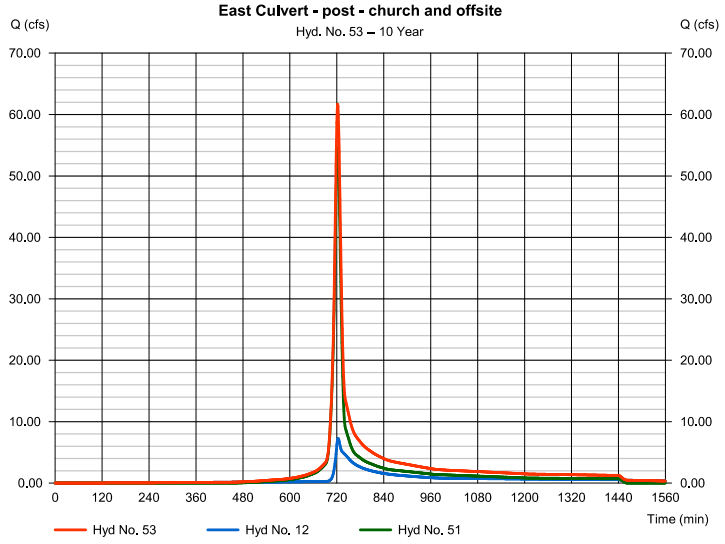
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 53

East Culvert - post - church and offsite

Hydrograph type	= Combine	Peak discharge	= 61.69 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 218,690 cuft
Inflow hyds.	= 12, 51	Contrib. drain. area	= 13.200 ac



Hydrograph Report

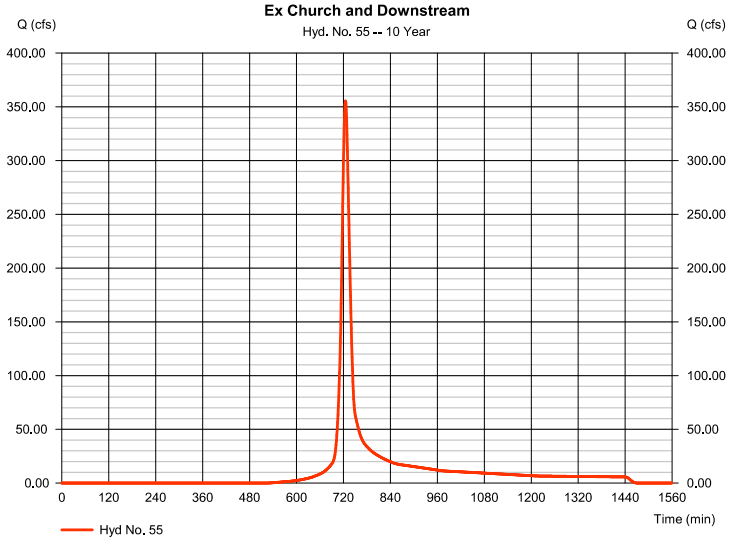
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 55

Ex Church and Downstream

Hydrograph type	= SCS Runoff	Peak discharge	= 355.50 cfs
Storm frequency	= 10 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 1,113,501 cuft
Drainage area	= 113.820 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.52 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 94) + (2.900 x 92) + (98.400 x 72) + (5.160 x 98) + (2.170 x 61) + (3.890 x 55)] / 113.820



Hydrograph Report

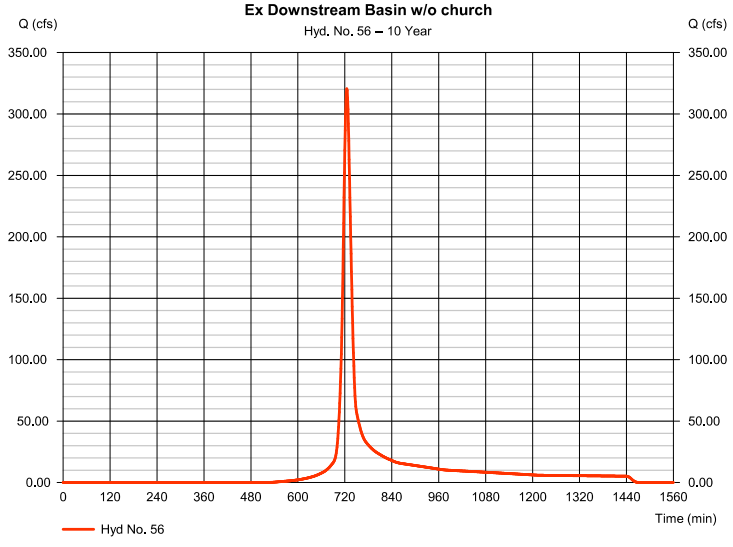
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 56

Ex Downstream Basin w/o church

Hydrograph type	= SCS Runoff	Peak discharge	= 320.45 cfs
Storm frequency	= 10 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 1,003,737 cuft
Drainage area	= 102.600 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.50 min
Total precip.	= 5.52 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 94) + (2.900 x 92) + (98.400 x 72)] / 102.600



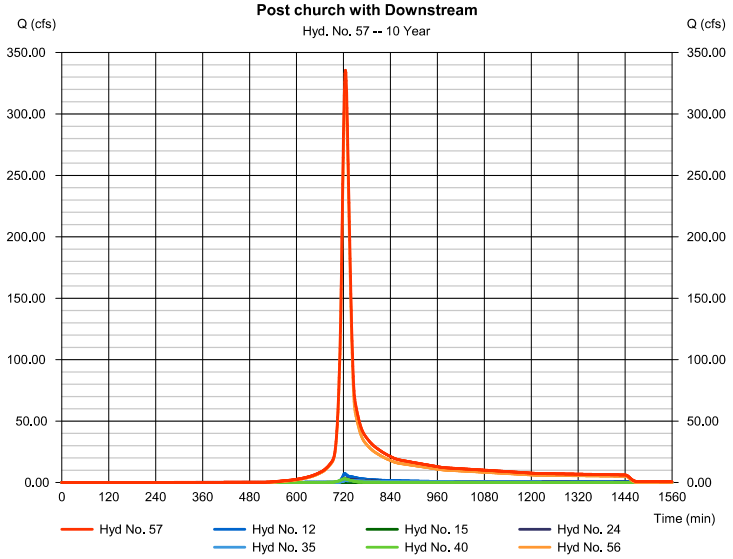
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 57

Post church with Downstream

Hydrograph type	= Combine	Peak discharge	= 335.55 cfs
Storm frequency	= 10 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 1,156,346 cuft
Inflow hyds.	= 12, 15, 24, 35, 40, 56	Contrib. drain. area	= 102.740 ac



Hydrograph Report

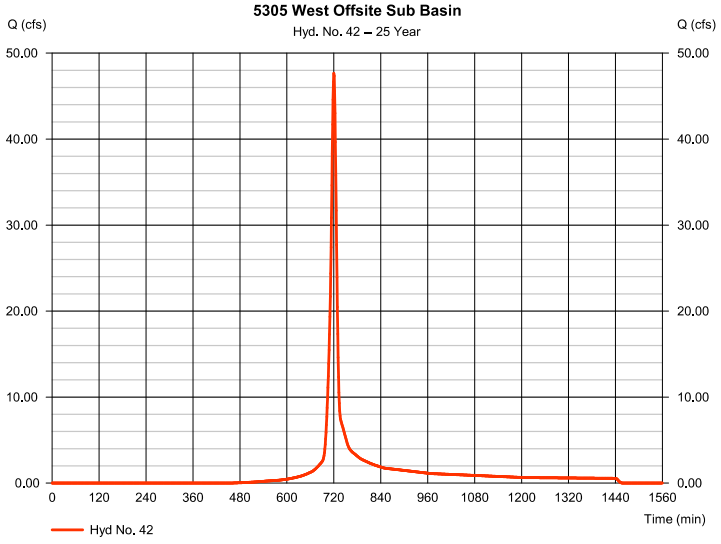
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 42

5305 West Offsite Sub Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 47.66 cfs
Storm frequency	= 25 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 115,480 cuft
Drainage area	= 8.700 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.52 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 89) + (7.700 x 72)] / 8.700



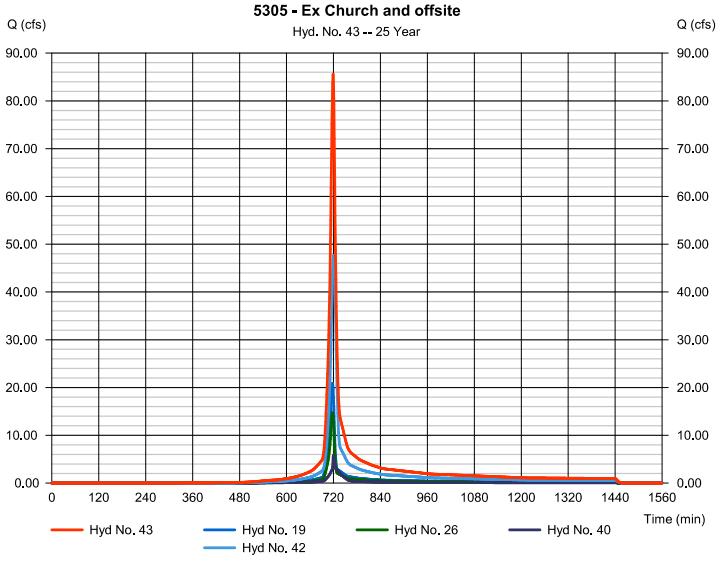
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 43

5305 - Ex Church and offsite

Hydrograph type	= Combine	Peak discharge	= 85.61 cfs
Storm frequency	= 25 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 203,316 cuft
Inflow hyds.	= 19, 26, 40, 42	Contrib. drain. area	= 10.870 ac



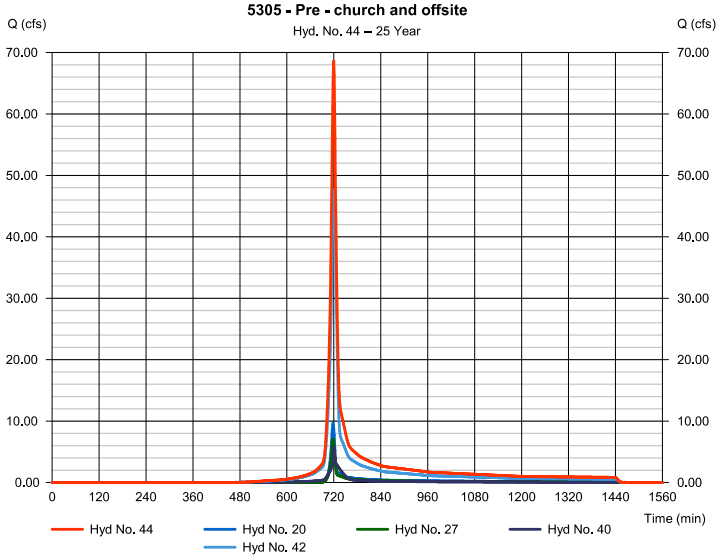
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 44

5305 - Pre - church and offsite

Hydrograph type	= Combine	Peak discharge	= 68.63 cfs
Storm frequency	= 25 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 163,976 cuft
Inflow hyds.	= 20, 27, 40, 42	Contrib. drain. area	= 13.820 ac



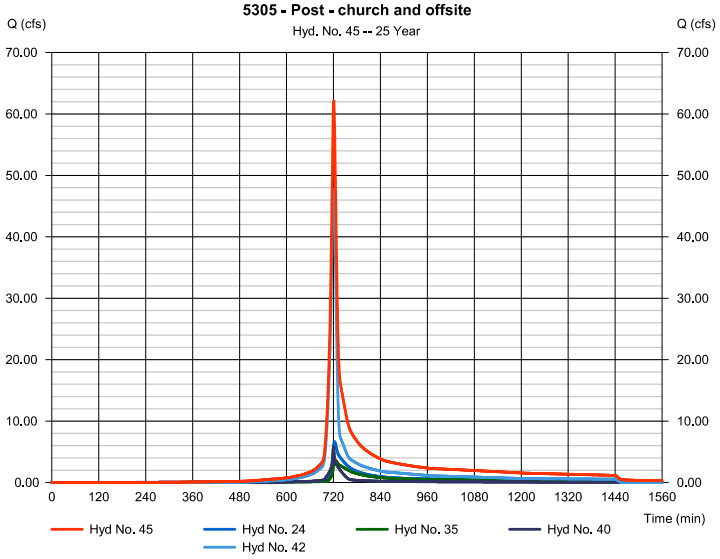
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 45

5305 - Post - church and offsite

Hydrograph type	= Combine	Peak discharge	= 62.11 cfs
Storm frequency	= 25 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 214,803 cuft
Inflow hyds.	= 24, 35, 40, 42	Contrib. drain. area	= 8.700 ac



Hydrograph Report

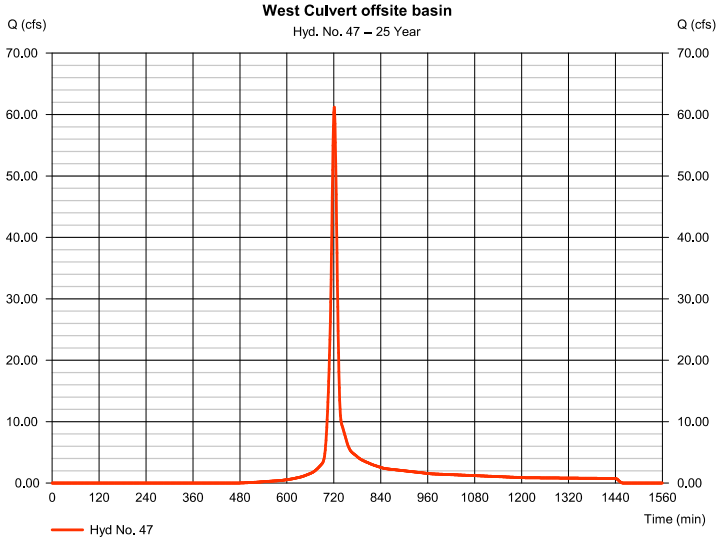
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 47

West Culvert offsite basin

Hydrograph type	= SCS Runoff	Peak discharge	= 61.20 cfs
Storm frequency	= 25 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 154,679 cuft
Drainage area	= 12.400 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.20 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 89) + (11.400 x 72)] / 12.400



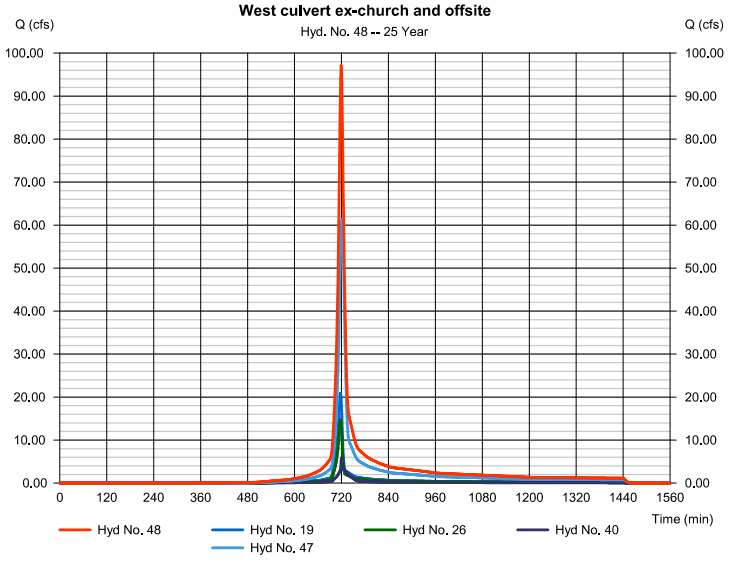
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 48

West culvert ex-church and offsite

Hydrograph type	= Combine	Peak discharge	= 97.11 cfs
Storm frequency	= 25 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 242,515 cuft
Inflow hyds.	= 19, 26, 40, 47	Contrib. drain. area	= 14.570 ac



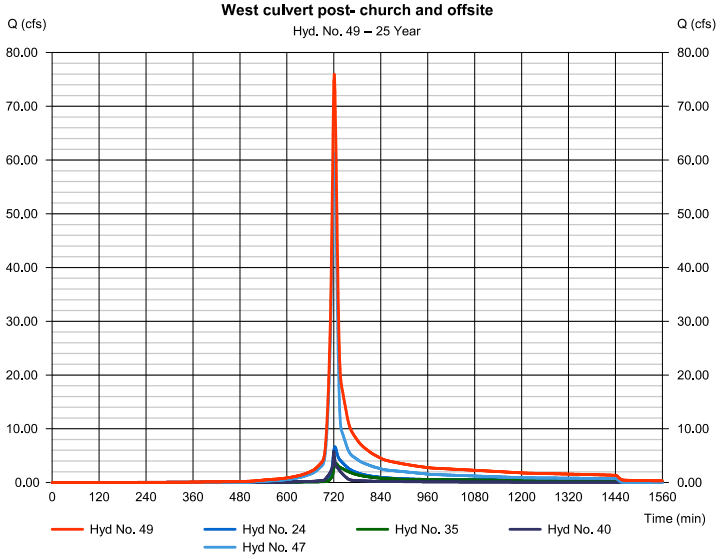
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 49

West culvert post- church and offsite

Hydrograph type	= Combine	Peak discharge	= 75.96 cfs
Storm frequency	= 25 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 254,002 cuft
Inflow hyds.	= 24, 35, 40, 47	Contrib. drain. area	= 12.400 ac



Hydrograph Report

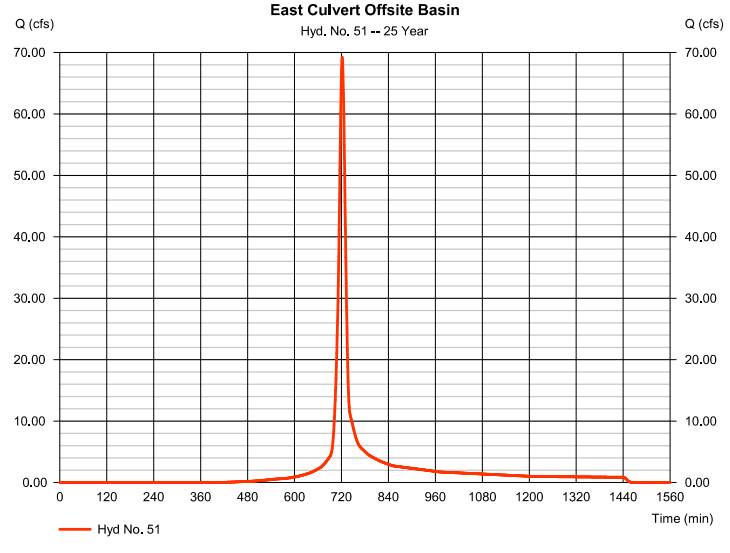
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 51

East Culvert Offsite Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 69.22 cfs
Storm frequency	= 25 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 186,945 cuft
Drainage area	= 13.200 ac	Curve number	= 77*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 14.30 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 94) + (1.900 x 89) + (10.000 x 72)] / 13.200



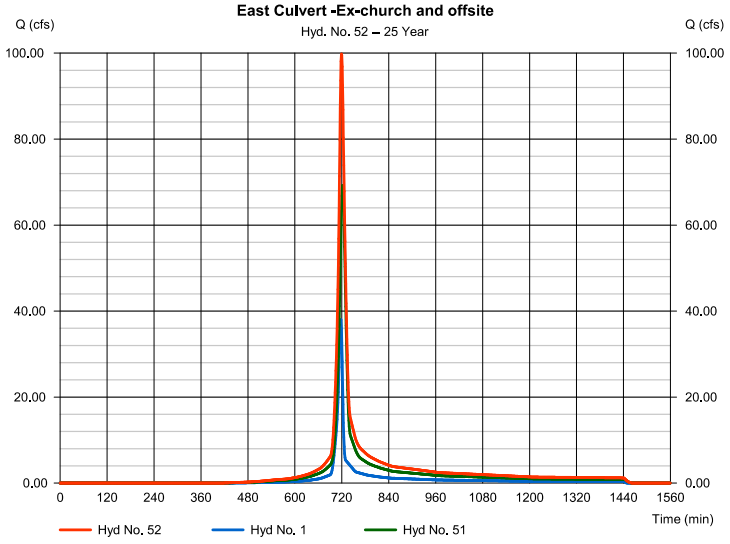
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 52

East Culvert -Ex-church and offsite

Hydrograph type	= Combine	Peak discharge	= 99.79 cfs
Storm frequency	= 25 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 264,853 cuft
Inflow hyds.	= 1, 51	Contrib. drain. area	= 18.680 ac



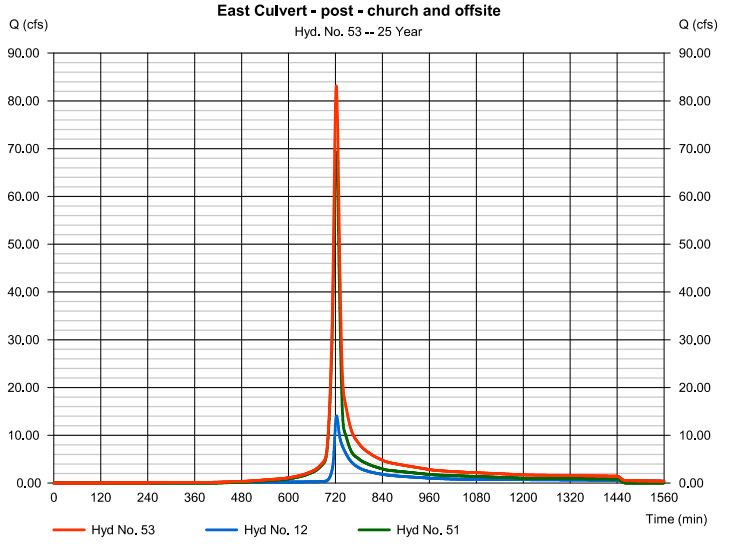
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 53

East Culvert - post - church and offsite

Hydrograph type	= Combine	Peak discharge	= 83.14 cfs
Storm frequency	= 25 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 275,801 cuft
Inflow hyds.	= 12, 51	Contrib. drain. area	= 13.200 ac



Hydrograph Report

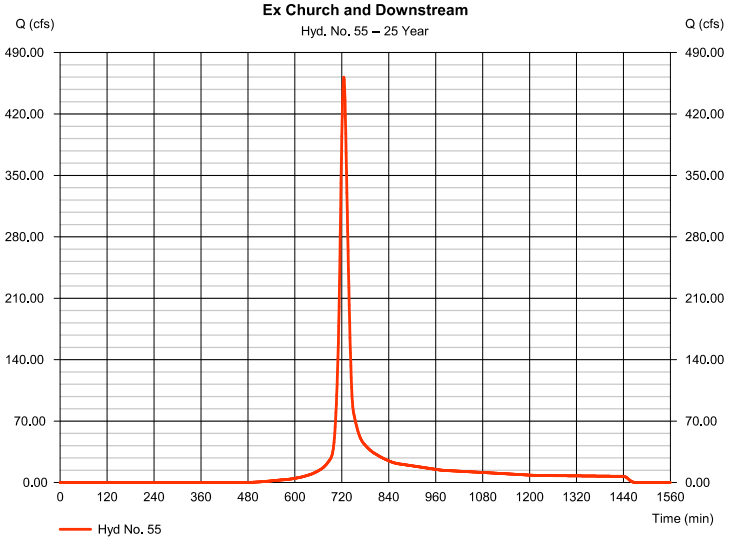
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 55

Ex Church and Downstream

Hydrograph type	= SCS Runoff	Peak discharge	= 461.87 cfs
Storm frequency	= 25 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 1,442,344 cuft
Drainage area	= 113.820 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.52 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 94) + (2.900 x 92) + (98.400 x 72) + (5.160 x 98) + (2.170 x 61) + (3.890 x 55)] / 113.820



Hydrograph Report

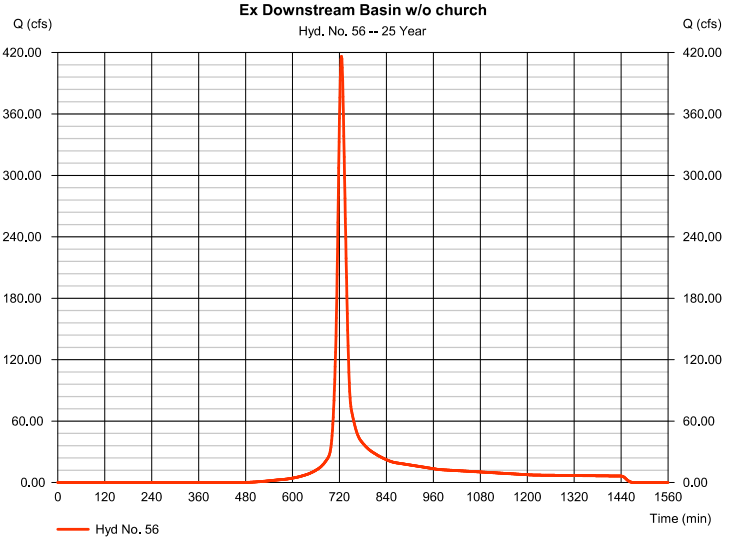
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 56

Ex Downstream Basin w/o church

Hydrograph type	= SCS Runoff	Peak discharge	= 416.34 cfs
Storm frequency	= 25 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 1,300,163 cuft
Drainage area	= 102.600 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.50 min
Total precip.	= 6.48 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 94) + (2.900 x 92) + (98.400 x 72)] / 102.600



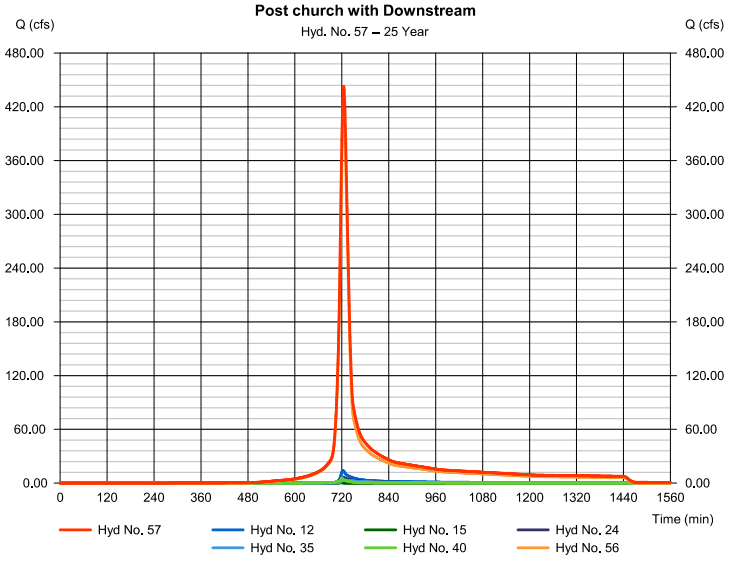
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 57

Post church with Downstream

Hydrograph type	= Combine	Peak discharge	= 442.79 cfs
Storm frequency	= 25 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 1,489,108 cuft
Inflow hyds.	= 12, 15, 24, 35, 40, 56	Contrib. drain. area	= 102.740 ac



Hydrograph Report

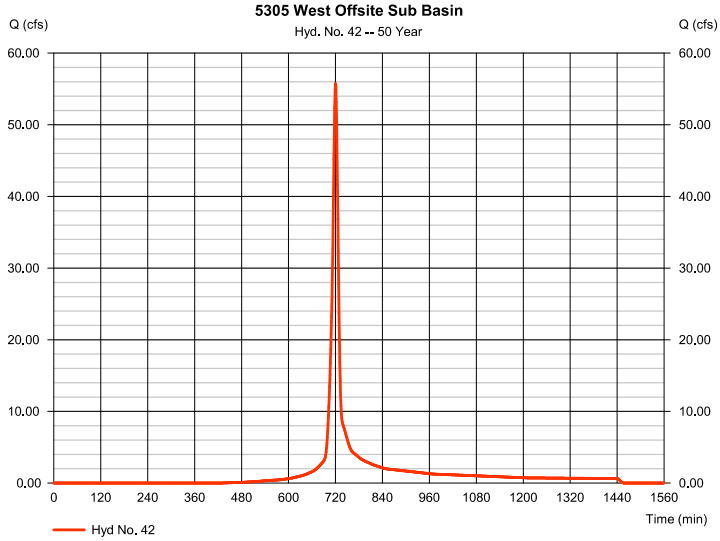
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 42

5305 West Offsite Sub Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 55.77 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 135,553 cuft
Drainage area	= 8.700 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.52 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 89) + (7.700 x 72)] / 8.700



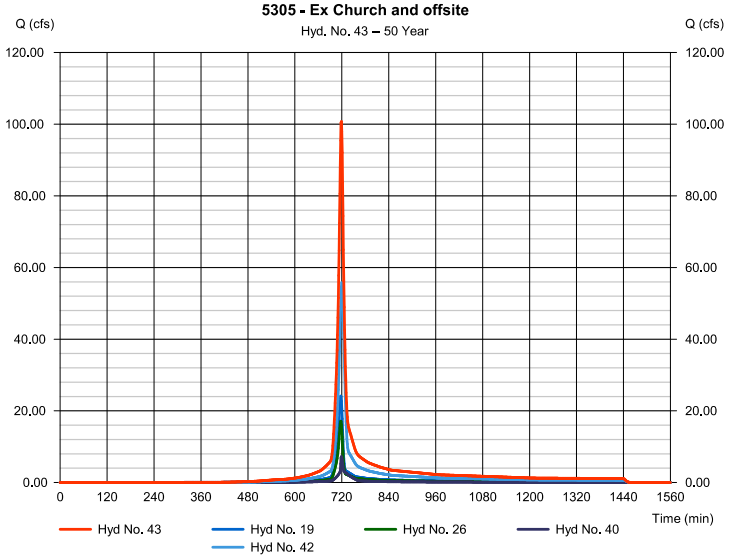
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 43

5305 - Ex Church and offsite

Hydrograph type	= Combine	Peak discharge	= 100.76 cfs
Storm frequency	= 50 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 237,695 cuft
Inflow hyds.	= 19, 26, 40, 42	Contrib. drain. area	= 10.870 ac



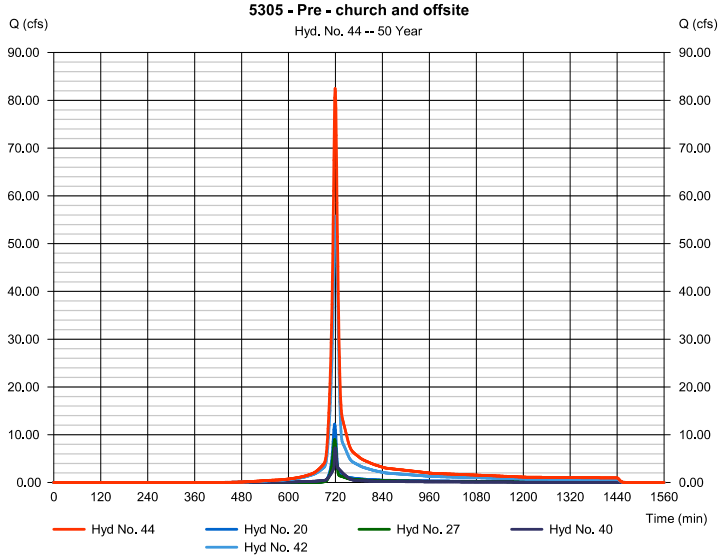
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 44

5305 - Pre - church and offsite

Hydrograph type	= Combine	Peak discharge	= 82.48 cfs
Storm frequency	= 50 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 194,817 cuft
Inflow hyds.	= 20, 27, 40, 42	Contrib. drain. area	= 13.820 ac



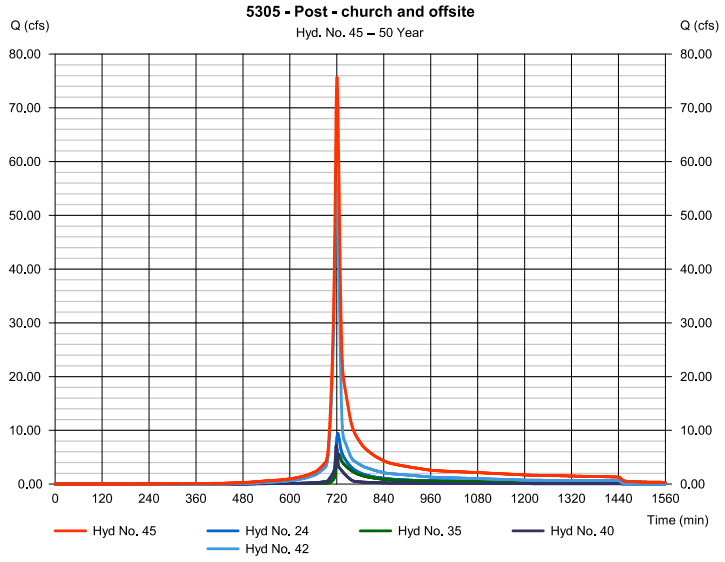
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 45

5305 - Post - church and offsite

Hydrograph type	= Combine	Peak discharge	= 75.60 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 249,504 cuft
Inflow hyds.	= 24, 35, 40, 42	Contrib. drain. area	= 8.700 ac



Hydrograph Report

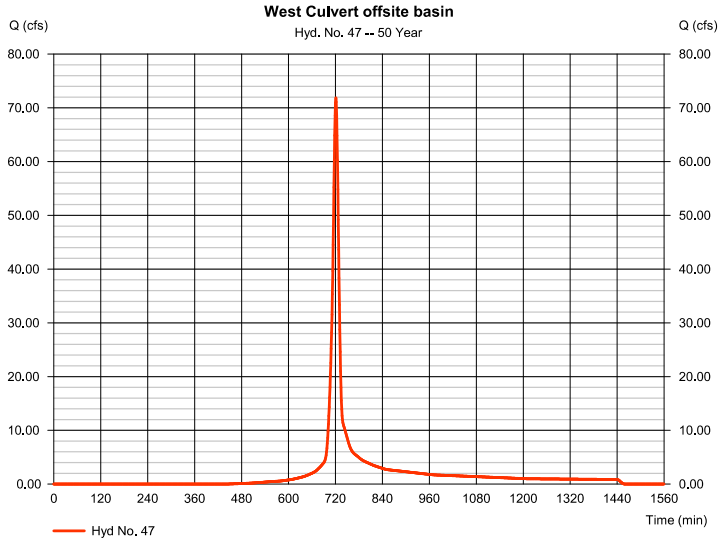
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 47

West Culvert offsite basin

Hydrograph type	= SCS Runoff	Peak discharge	= 71.86 cfs
Storm frequency	= 50 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 182,030 cuft
Drainage area	= 12.400 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.20 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 89) + (11.400 x 72)] / 12.400



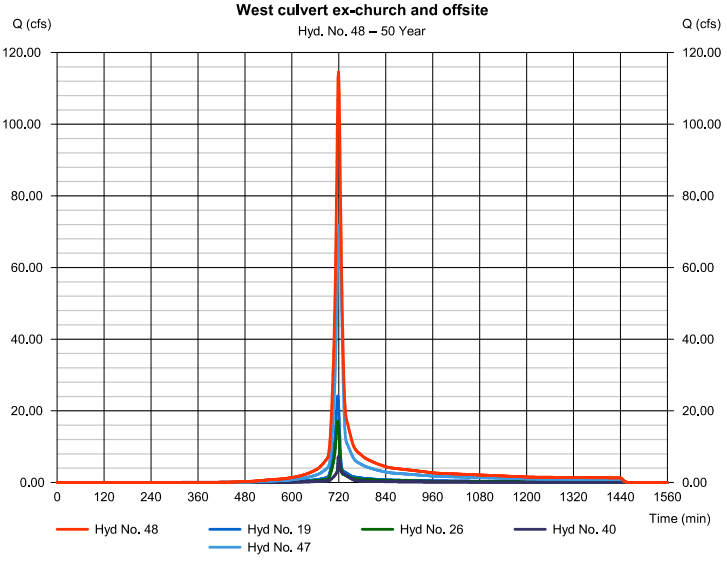
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 48

West culvert ex-church and offsite

Hydrograph type	= Combine	Peak discharge	= 114.59 cfs
Storm frequency	= 50 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 284,172 cuft
Inflow hyds.	= 19, 26, 40, 47	Contrib. drain. area	= 14.570 ac



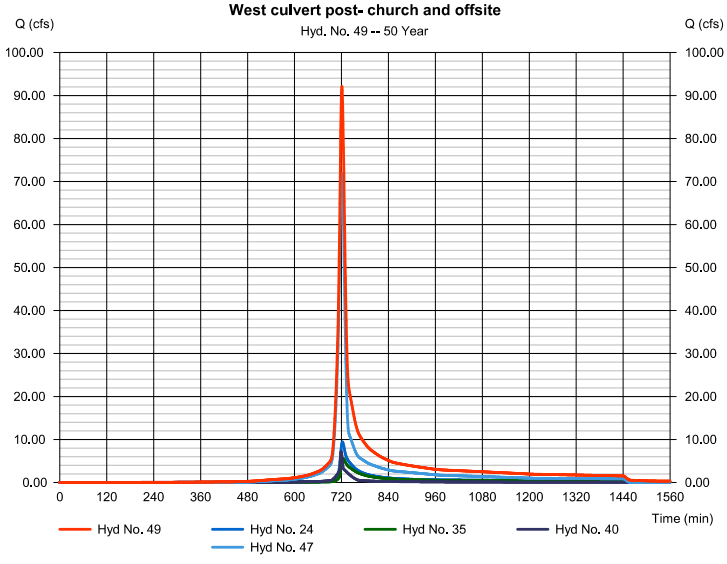
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 49

West culvert post- church and offsite

Hydrograph type	= Combine	Peak discharge	= 92.11 cfs
Storm frequency	= 50 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 295,981 cuft
Inflow hyds.	= 24, 35, 40, 47	Contrib. drain. area	= 12.400 ac



Hydrograph Report

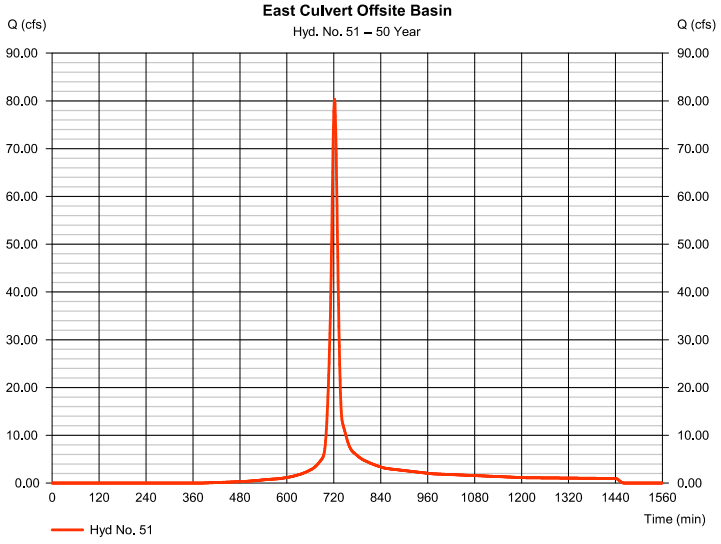
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 51

East Culvert Offsite Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 80.35 cfs
Storm frequency	= 50 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 217,826 cuft
Drainage area	= 13.200 ac	Curve number	= 77*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 14.30 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 94) + (1.900 x 89) + (10.000 x 72)] / 13.200



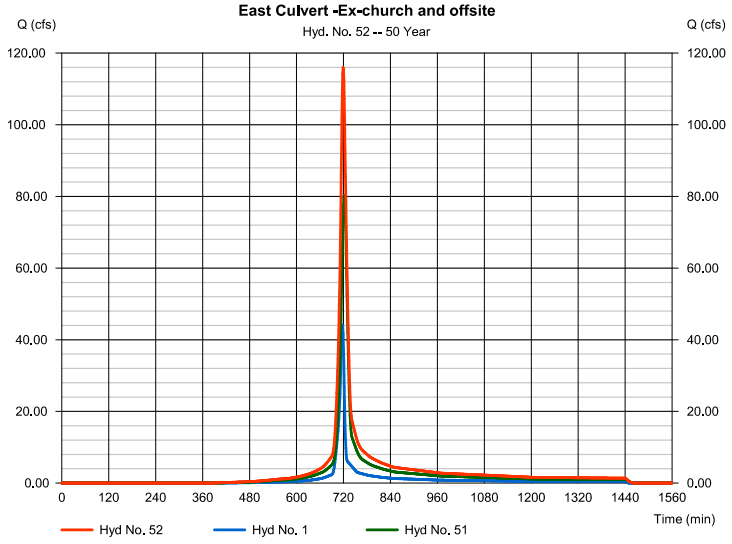
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 52

East Culvert -Ex-church and offsite

Hydrograph type	= Combine	Peak discharge	= 116.02 cfs
Storm frequency	= 50 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 308,822 cuft
Inflow hyds.	= 1, 51	Contrib. drain. area	= 18.680 ac



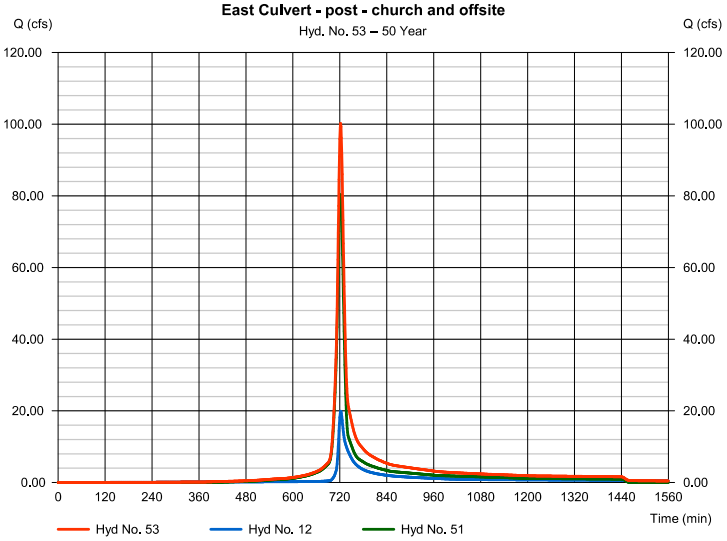
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 53

East Culvert - post - church and offsite

Hydrograph type	= Combine	Peak discharge	= 100.24 cfs
Storm frequency	= 50 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 319,712 cuft
Inflow hyds.	= 12, 51	Contrib. drain. area	= 13.200 ac



Hydrograph Report

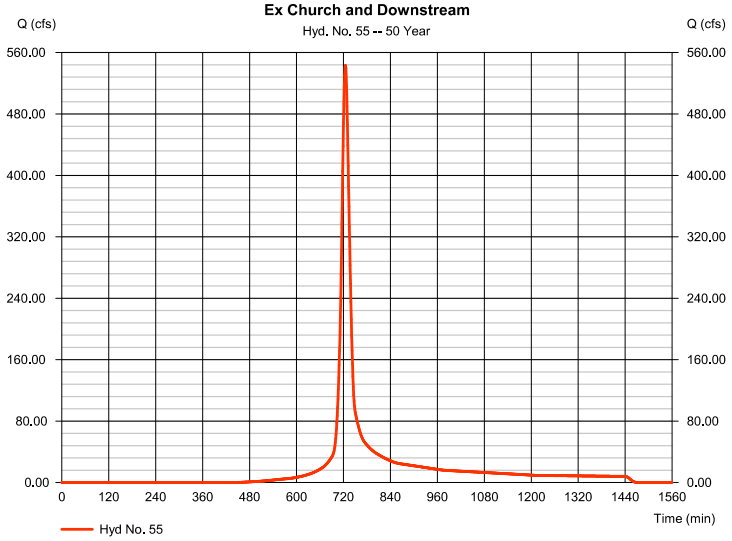
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 55

Ex Church and Downstream

Hydrograph type	= SCS Runoff	Peak discharge	= 543.46 cfs
Storm frequency	= 50 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 1,697,385 cuft
Drainage area	= 113.820 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.52 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 94) + (2.900 x 92) + (98.400 x 72) + (5.160 x 98) + (2.170 x 61) + (3.890 x 55)] / 113.820



Hydrograph Report

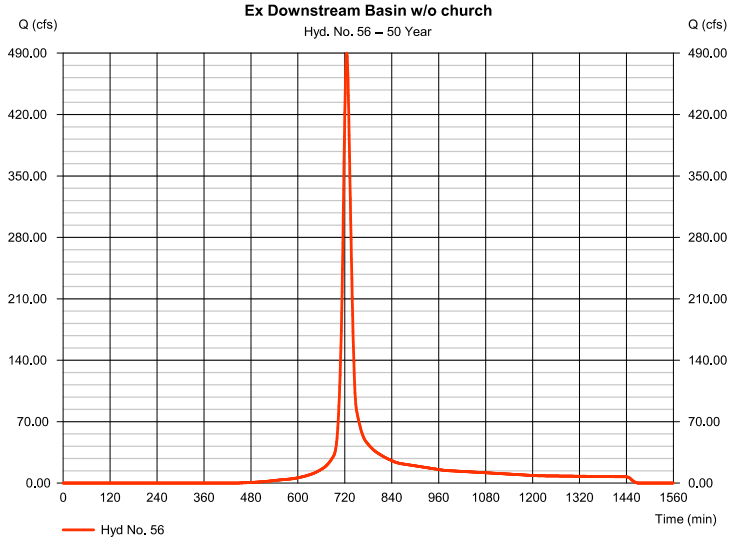
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 56

Ex Downstream Basin w/o church

Hydrograph type	= SCS Runoff	Peak discharge	= 489.88 cfs
Storm frequency	= 50 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 1,530,062 cuft
Drainage area	= 102.600 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.50 min
Total precip.	= 7.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 94) + (2.900 x 92) + (98.400 x 72)] / 102.600



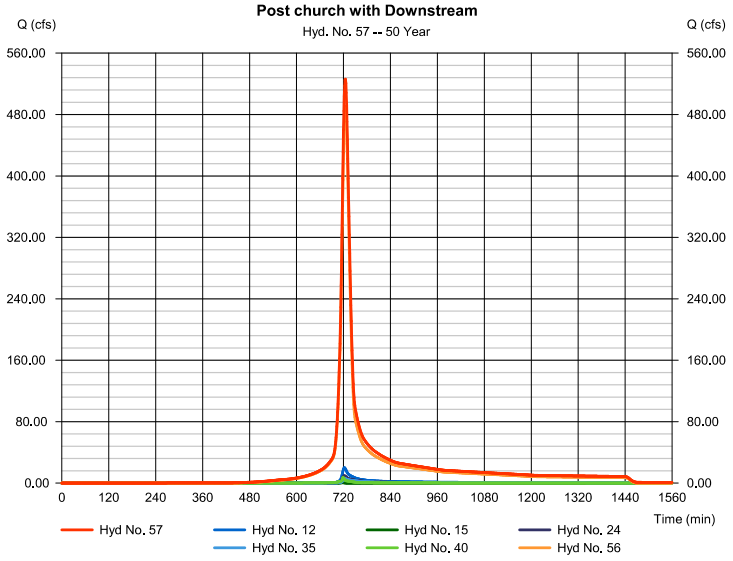
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 57

Post church with Downstream

Hydrograph type	= Combine	Peak discharge	= 526.02 cfs
Storm frequency	= 50 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 1,746,881 cuft
Inflow hyds.	= 12, 15, 24, 35, 40, 56	Contrib. drain. area	= 102.740 ac



Hydrograph Report

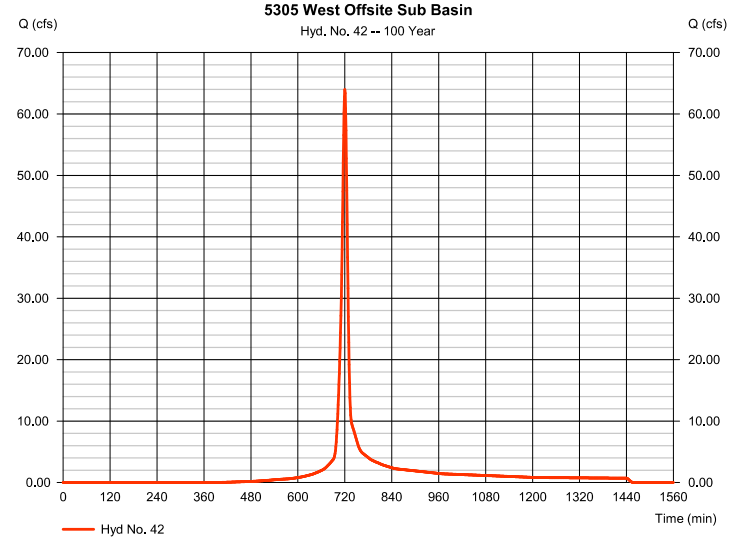
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 42

5305 West Offsite Sub Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 63.96 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 156,038 cuft
Drainage area	= 8.700 ac	Curve number	= 74*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.52 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 89) + (7.700 x 72)] / 8.700



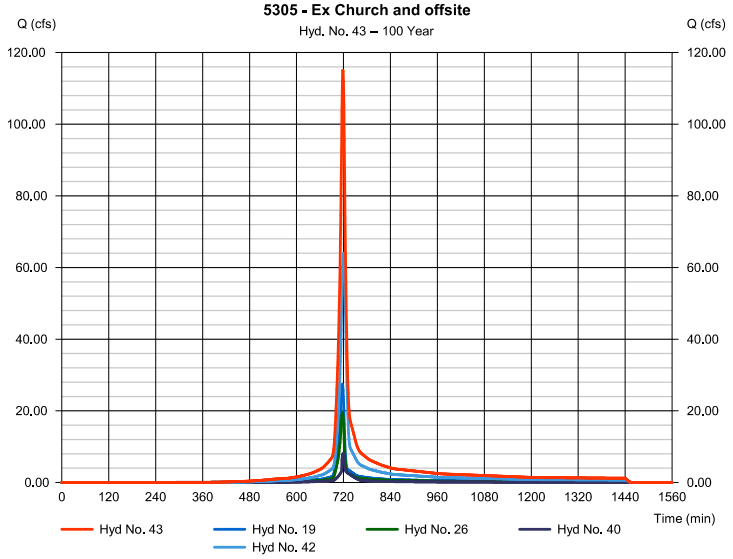
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 43

5305 - Ex Church and offsite

Hydrograph type	= Combine	Peak discharge	= 114.96 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 1 min	Hyd. volume	= 272,721 cuft
Inflow hyds.	= 19, 26, 40, 42	Contrib. drain. area	= 10.870 ac



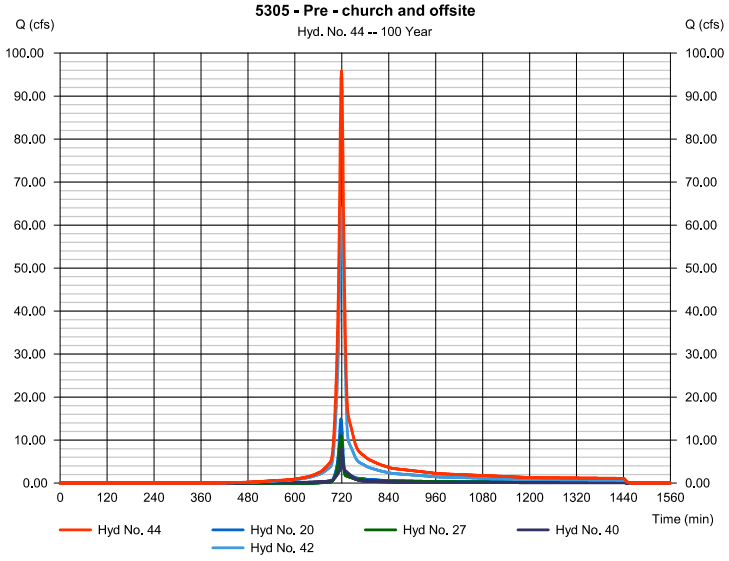
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 44

5305 - Pre - church and offsite

Hydrograph type	= Combine	Peak discharge	= 95.83 cfs
Storm frequency	= 100 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 226,605 cuft
Inflow hyds.	= 20, 27, 40, 42	Contrib. drain. area	= 13.820 ac



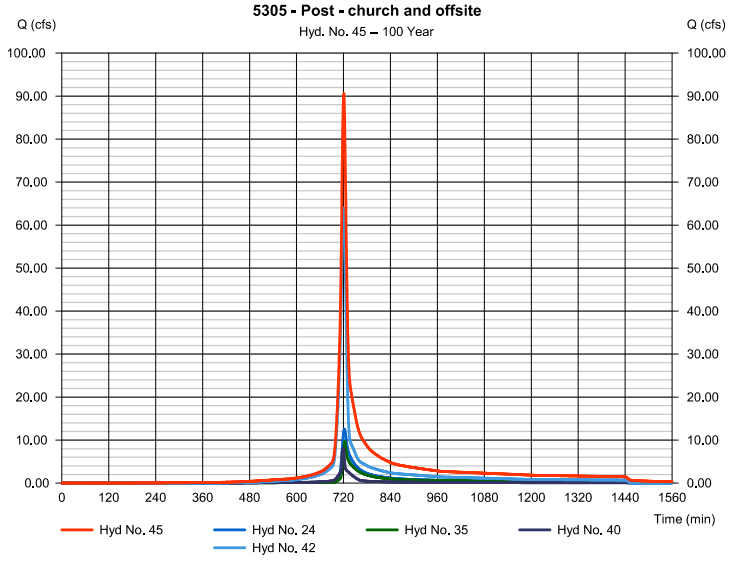
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 45

5305 - Post - church and offsite

Hydrograph type	= Combine	Peak discharge	= 90.57 cfs
Storm frequency	= 100 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 284,814 cuft
Inflow hyds.	= 24, 35, 40, 42	Contrib. drain. area	= 8.700 ac



Hydrograph Report

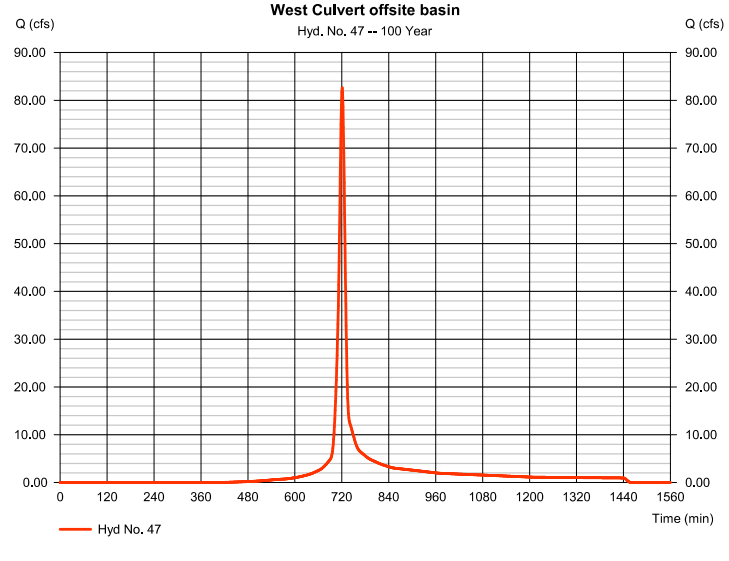
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 47

West Culvert offsite basin

Hydrograph type	= SCS Runoff	Peak discharge	= 82.64 cfs
Storm frequency	= 100 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 209,984 cuft
Drainage area	= 12.400 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.20 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.000 x 89) + (11.400 x 72)] / 12.400



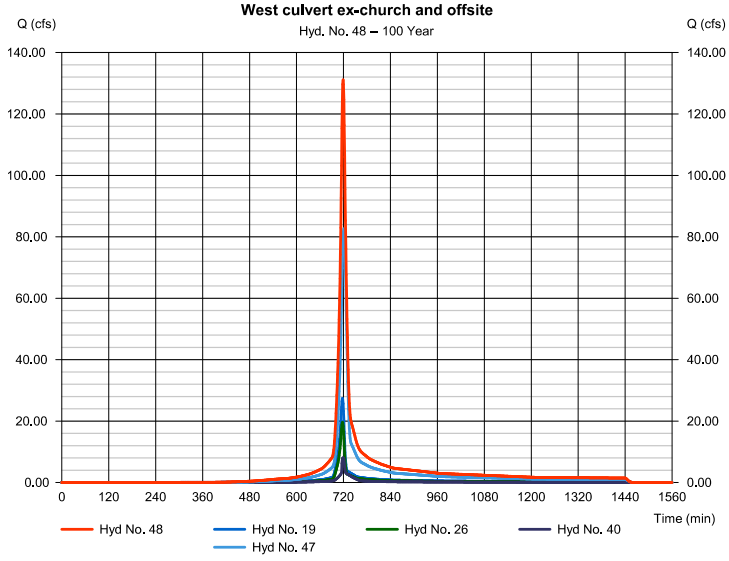
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 48

West culvert ex-church and offsite

Hydrograph type	= Combine	Peak discharge	= 131.14 cfs
Storm frequency	= 100 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 326,667 cuft
Inflow hyds.	= 19, 26, 40, 47	Contrib. drain. area	= 14.570 ac



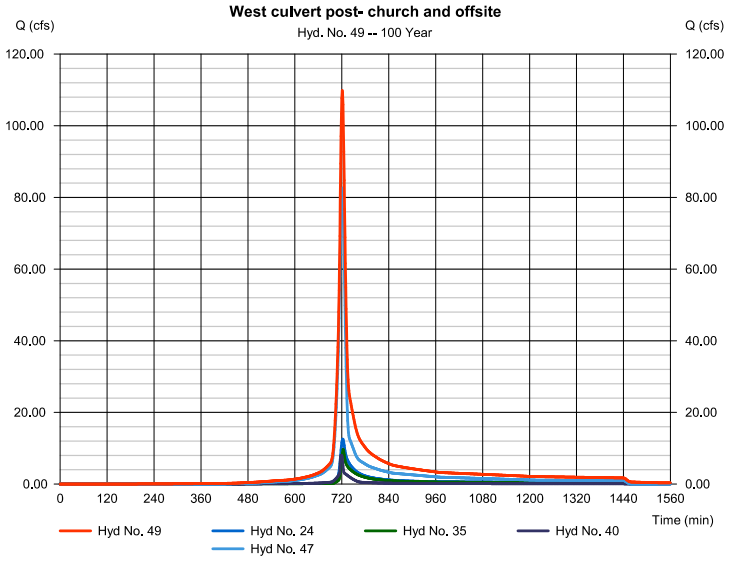
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 49

West culvert post- church and offsite

Hydrograph type	= Combine	Peak discharge	= 109.83 cfs
Storm frequency	= 100 yrs	Time to peak	= 721 min
Time interval	= 1 min	Hyd. volume	= 338,761 cuft
Inflow hyds.	= 24, 35, 40, 47	Contrib. drain. area	= 12.400 ac



Hydrograph Report

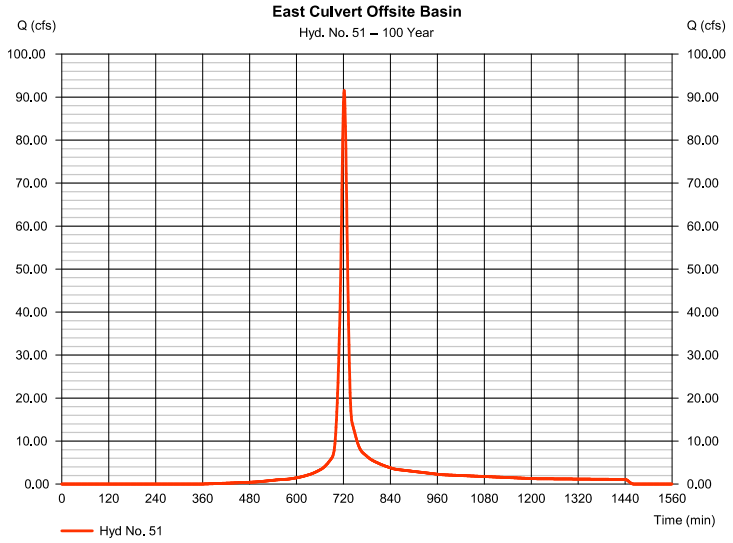
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 51

East Culvert Offsite Basin

Hydrograph type	= SCS Runoff	Peak discharge	= 91.53 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 249,212 cuft
Drainage area	= 13.200 ac	Curve number	= 77*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 14.30 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 94) + (1.900 x 89) + (10.000 x 72)] / 13.200



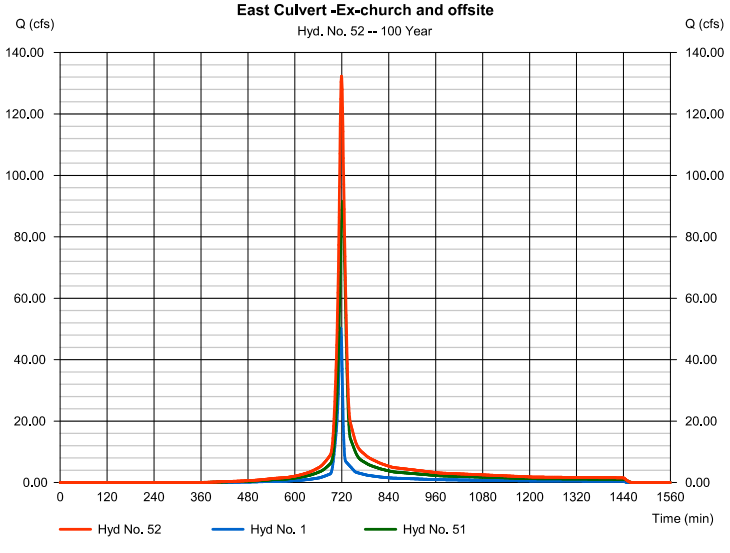
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 52

East Culvert -Ex-church and offsite

Hydrograph type	= Combine	Peak discharge	= 132.34 cfs
Storm frequency	= 100 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 353,529 cuft
Inflow hyds.	= 1, 51	Contrib. drain. area	= 18.680 ac



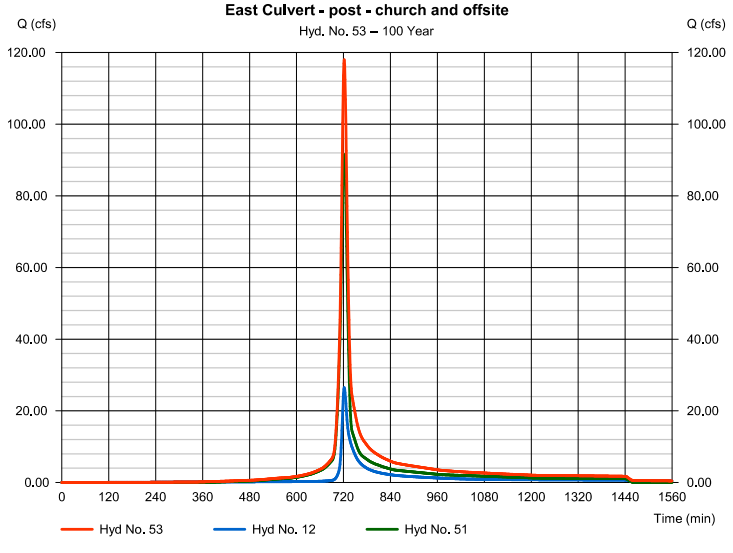
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 53

East Culvert - post - church and offsite

Hydrograph type	= Combine	Peak discharge	= 118.00 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 1 min	Hyd. volume	= 364,358 cuft
Inflow hyds.	= 12, 51	Contrib. drain. area	= 13.200 ac



Hydrograph Report

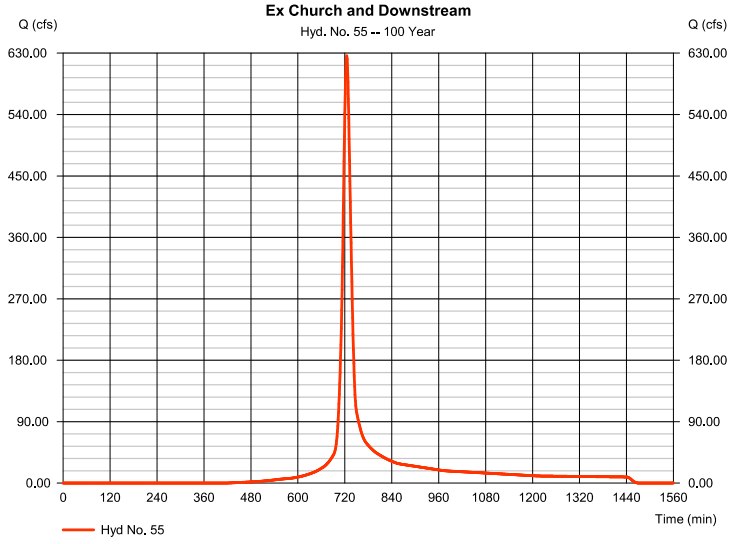
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 55

Ex Church and Downstream

Hydrograph type	= SCS Runoff	Peak discharge	= 626.09 cfs
Storm frequency	= 100 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 1,958,038 cuft
Drainage area	= 113.820 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.52 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 94) + (2.900 x 92) + (98.400 x 72) + (5.160 x 98) + (2.170 x 61) + (3.890 x 55)] / 113.820



Hydrograph Report

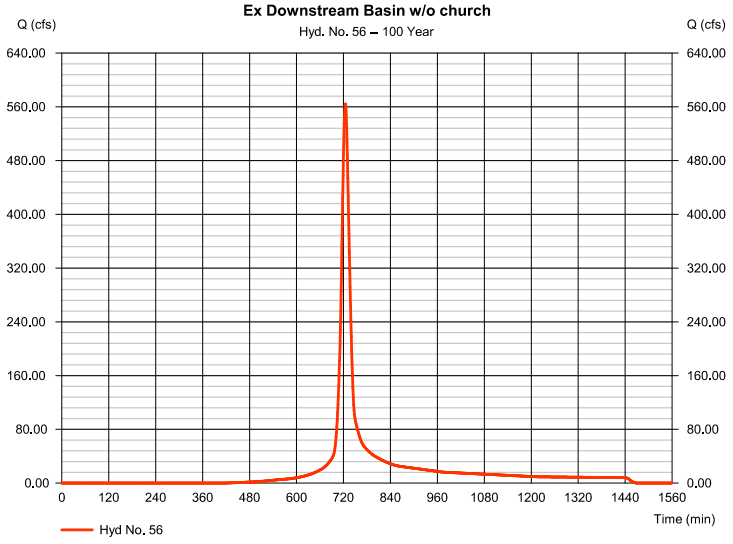
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 56

Ex Downstream Basin w/o church

Hydrograph type	= SCS Runoff	Peak discharge	= 564.37 cfs
Storm frequency	= 100 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 1,765,025 cuft
Drainage area	= 102.600 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.50 min
Total precip.	= 7.92 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 94) + (2.900 x 92) + (98.400 x 72)] / 102.600



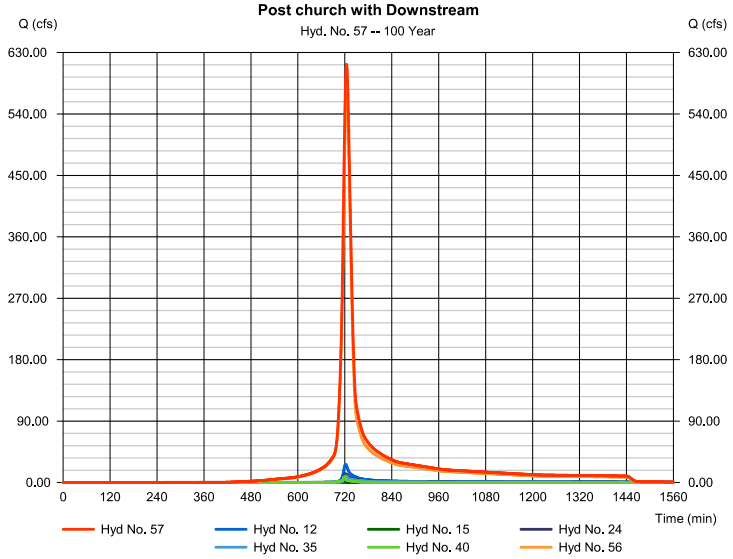
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 04 / 15 / 2015

Hyd. No. 57

Post church with Downstream

Hydrograph type	= Combine	Peak discharge	= 612.58 cfs
Storm frequency	= 100 yrs	Time to peak	= 724 min
Time interval	= 1 min	Hyd. volume	= 2,010,158 cuft
Inflow hyds.	= 12, 15, 24, 35, 40, 56	Contrib. drain. area	= 102.740 ac



Appendix F Storm Sewer Computer Model Data

- Sandell Drive Culvert Plan
- Sandell Drive Culvert Pre 100 yr
- Sandell Drive Culvert Post 100 yr

Discussion:

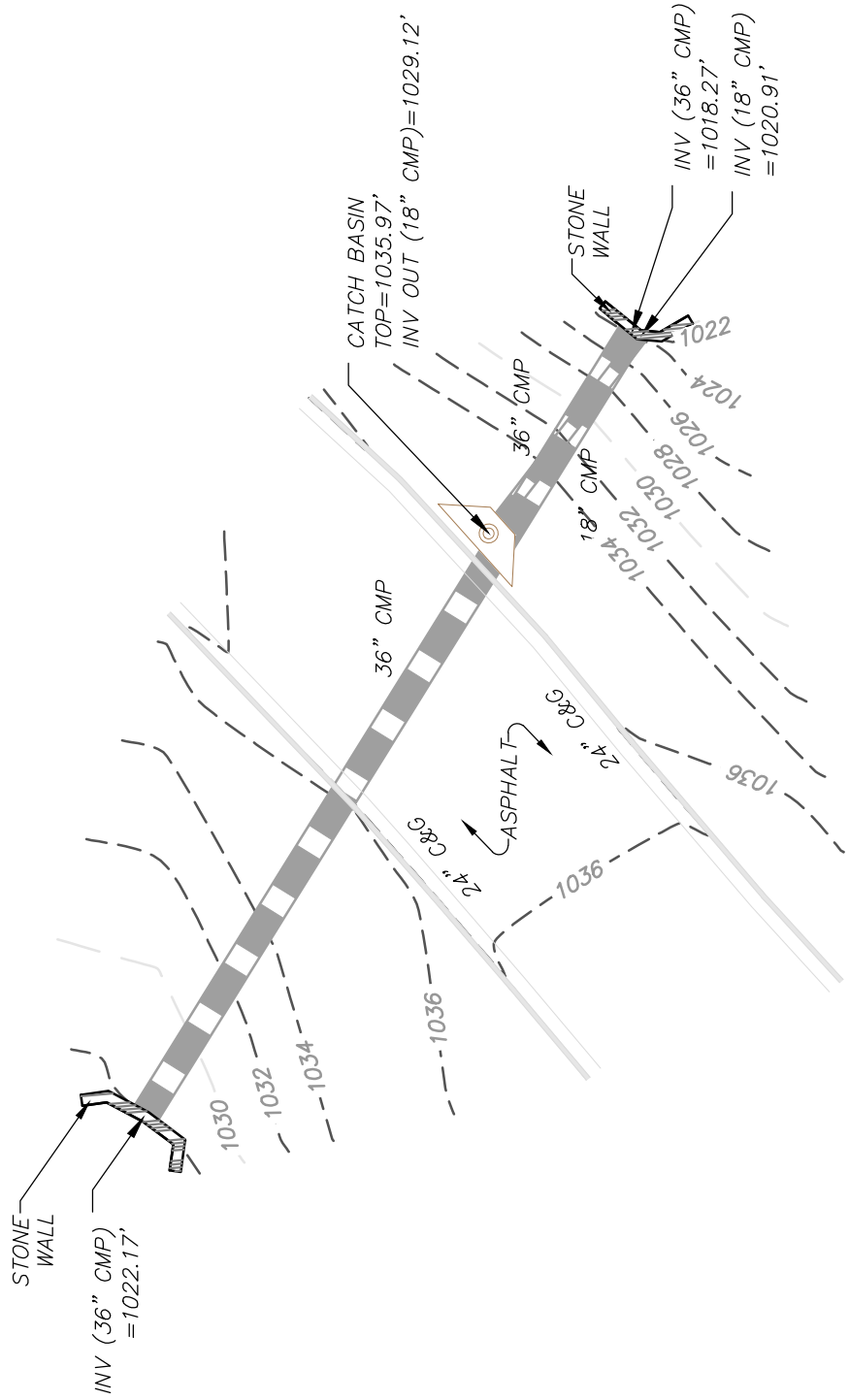
Eastern Culvert

The initial results of a computer model analysis indicates that for the East Culvert, the existing 100 Year peak storm runoff overflows the existing culvert. However, with the system is modeled using the proposed stormwater detention ponds, the runoff rate is reduced such that the 100 year storm no longer tops over the culvert.

Western Culvert

The initial results of a computer model analysis indicates that for the West Culvert, the existing 100 Year peak storm runoff overflows the existing culvert. When the improved stormwater detention systems on the church are added to the computer model, the runoff rate is significantly reduced, but the culvert still is projected to overtop during a 100 year storm event.

Eastern Culvert
Sandell Drive



Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Apr 15 2015

eastern culvert

Invert Elev Dn (ft)	=	1018.27
Pipe Length (ft)	=	101.00
Slope (%)	=	3.96
Invert Elev Up (ft)	=	1022.27
Rise (in)	=	36.0
Shape	=	Circular
Span (in)	=	36.0
No. Barrels	=	1
n-Value	=	0.024
Culvert Type	=	Circular Corrugate Metal Pipe
Culvert Entrance	=	Headwall
Coeff. K,M,c,Y,k	=	0.0078, 2, 0.0379, 0.69, 0.5

Embankment

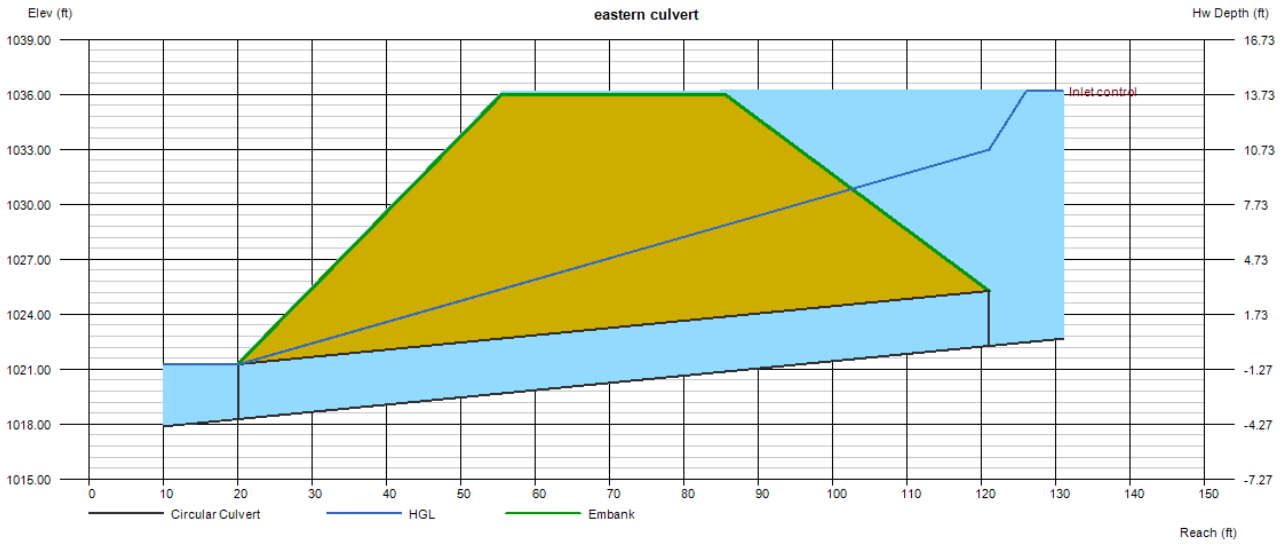
Top Elevation (ft)	=	1036.00
Top Width (ft)	=	30.00
Crest Width (ft)	=	30.00

Calculations

Qmin (cfs)	=	132.00
Qmax (cfs)	=	132.00
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	132.00
Qpipe (cfs)	=	125.25
Qovertop (cfs)	=	6.75
Veloc Dn (ft/s)	=	17.74
Veloc Up (ft/s)	=	17.72
HGL Dn (ft)	=	1021.25
HGL Up (ft)	=	1032.98
Hw Elev (ft)	=	1036.18
Hw/D (ft)	=	4.64
Flow Regime	=	Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Apr 15 2015

eastern culvert

Invert Elev Dn (ft)	=	1018.27
Pipe Length (ft)	=	101.00
Slope (%)	=	3.96
Invert Elev Up (ft)	=	1022.27
Rise (in)	=	36.0
Shape	=	Circular
Span (in)	=	36.0
No. Barrels	=	1
n-Value	=	0.024
Culvert Type	=	Circular Corrugate Metal Pipe
Culvert Entrance	=	Headwall
Coeff. K,M,c,Y,k	=	0.0078, 2, 0.0379, 0.69, 0.5

Embankment

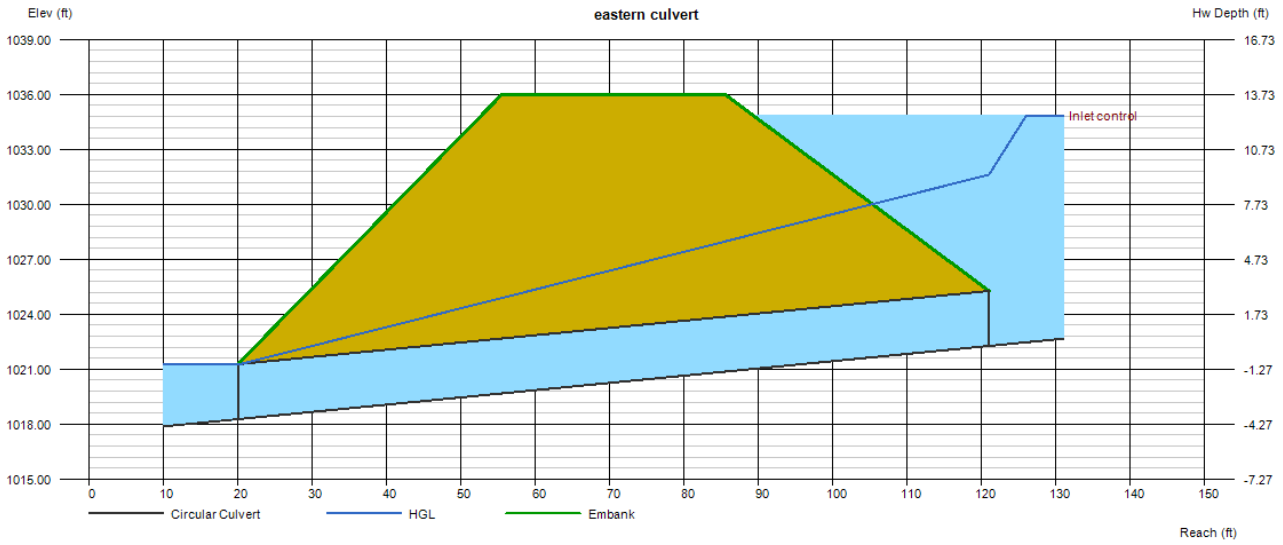
Top Elevation (ft)	=	1036.00
Top Width (ft)	=	30.00
Crest Width (ft)	=	30.00

Calculations

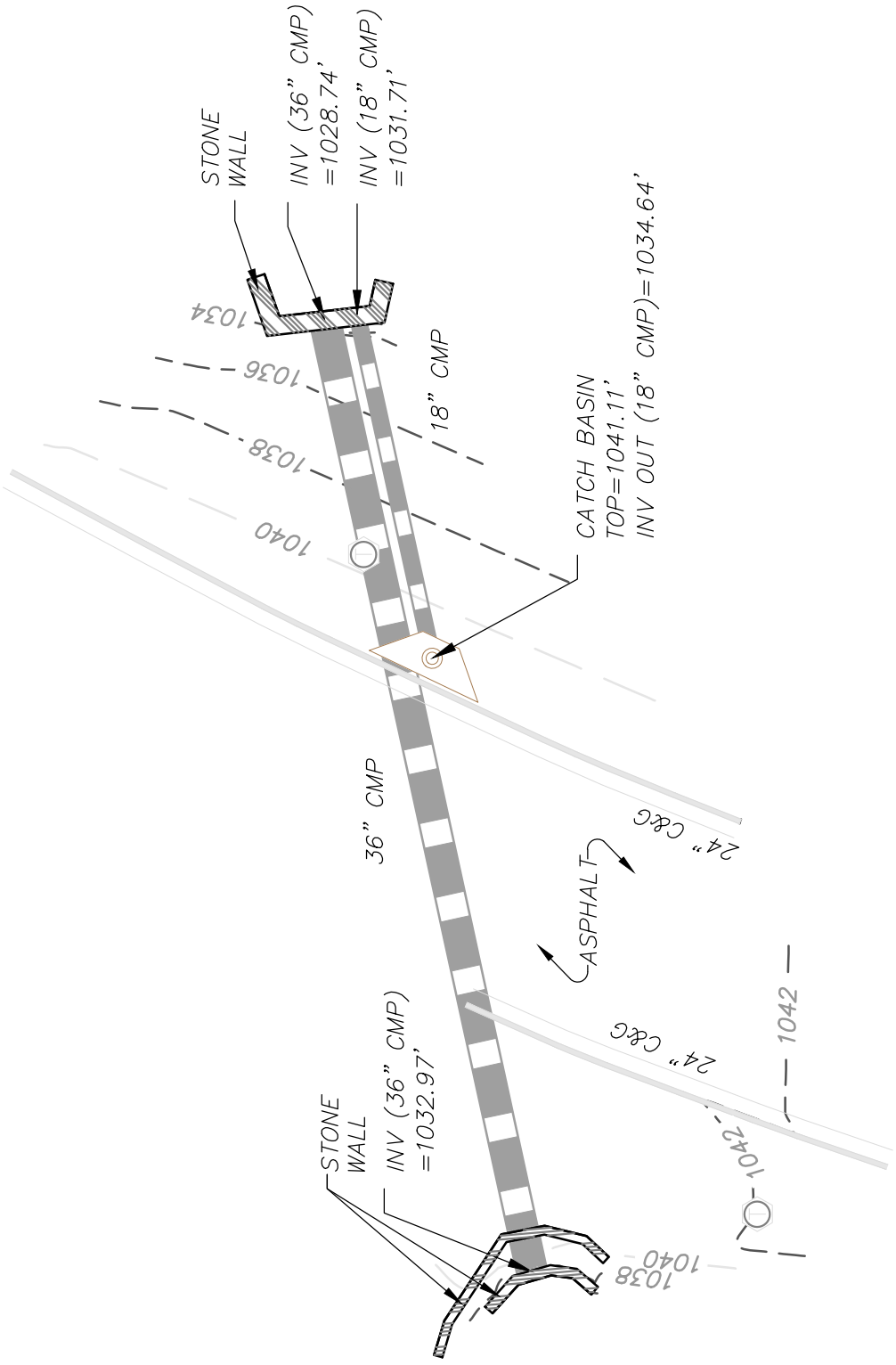
Qmin (cfs)	=	118.00
Qmax (cfs)	=	118.00
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	118.00
Qpipe (cfs)	=	118.00
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	16.72
Veloc Up (ft/s)	=	16.69
HGL Dn (ft)	=	1021.24
HGL Up (ft)	=	1031.62
Hw Elev (ft)	=	1034.84
Hw/D (ft)	=	4.19
Flow Regime	=	Inlet Control



Western Culvert
Sandell Drive



Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Apr 15 2015

western culvert

Invert Elev Dn (ft)	=	1028.74
Pipe Length (ft)	=	98.00
Slope (%)	=	4.32
Invert Elev Up (ft)	=	1032.97
Rise (in)	=	36.0
Shape	=	Circular
Span (in)	=	36.0
No. Barrels	=	1
n-Value	=	0.024
Culvert Type	=	Circular Corrugate Metal Pipe
Culvert Entrance	=	Headwall
Coeff. K,M,c,Y,k	=	0.0078, 2, 0.0379, 0.69, 0.5

Embankment

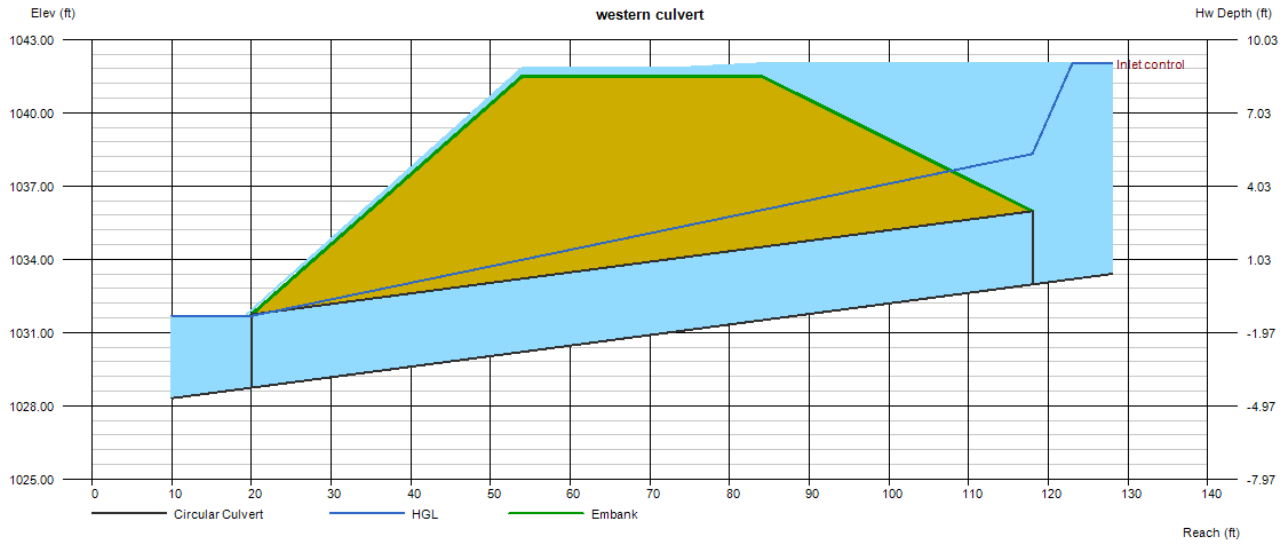
Top Elevation (ft)	=	1041.50
Top Width (ft)	=	30.00
Crest Width (ft)	=	30.00

Calculations

Qmin (cfs)	=	131.00
Qmax (cfs)	=	131.00
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	131.00
Qpipe (cfs)	=	96.36
Qovertop (cfs)	=	34.64
Veloc Dn (ft/s)	=	13.70
Veloc Up (ft/s)	=	13.63
HGL Dn (ft)	=	1031.68
HGL Up (ft)	=	1038.32
Hw Elev (ft)	=	1042.02
Hw/D (ft)	=	3.02
Flow Regime	=	Inlet Control



Culvert Report

western culvert

Invert Elev Dn (ft)	=	1028.74
Pipe Length (ft)	=	98.00
Slope (%)	=	4.32
Invert Elev Up (ft)	=	1032.97
Rise (in)	=	36.0
Shape	=	Circular
Span (in)	=	36.0
No. Barrels	=	1
n-Value	=	0.024
Culvert Type	=	Circular Corrugate Metal Pipe
Culvert Entrance	=	Headwall
Coeff. K,M,c,Y,k	=	0.0078, 2, 0.0379, 0.69, 0.5

Embankment

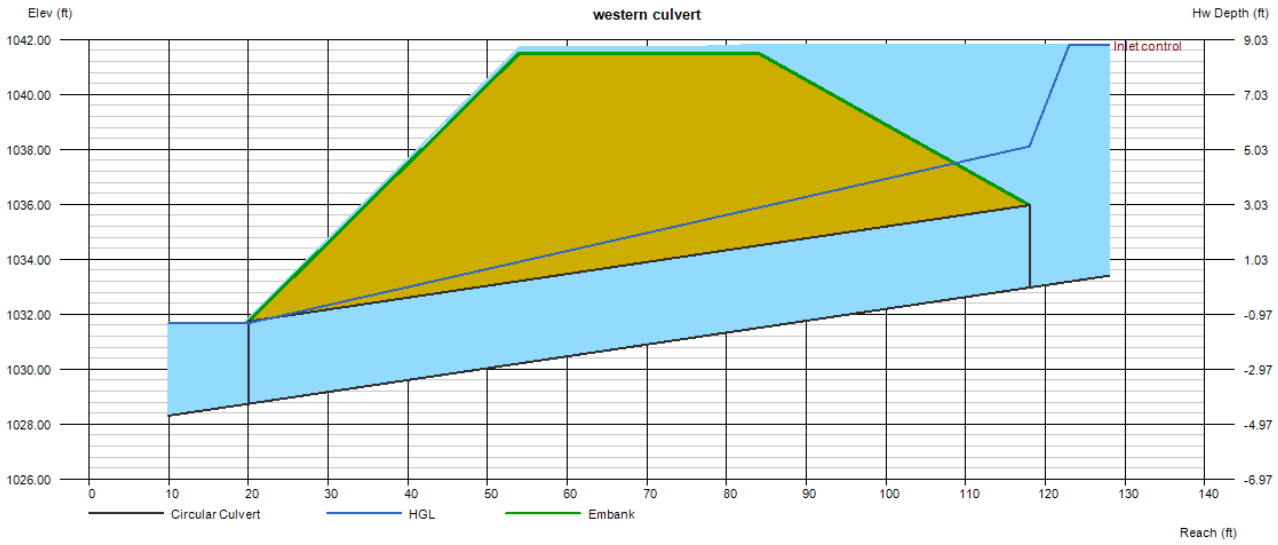
Top Elevation (ft)	=	1041.50
Top Width (ft)	=	30.00
Crest Width (ft)	=	30.00

Calculations

Qmin (cfs)	=	110.00
Qmax (cfs)	=	110.00
Tailwater Elev (ft)	=	(dc+D)/2

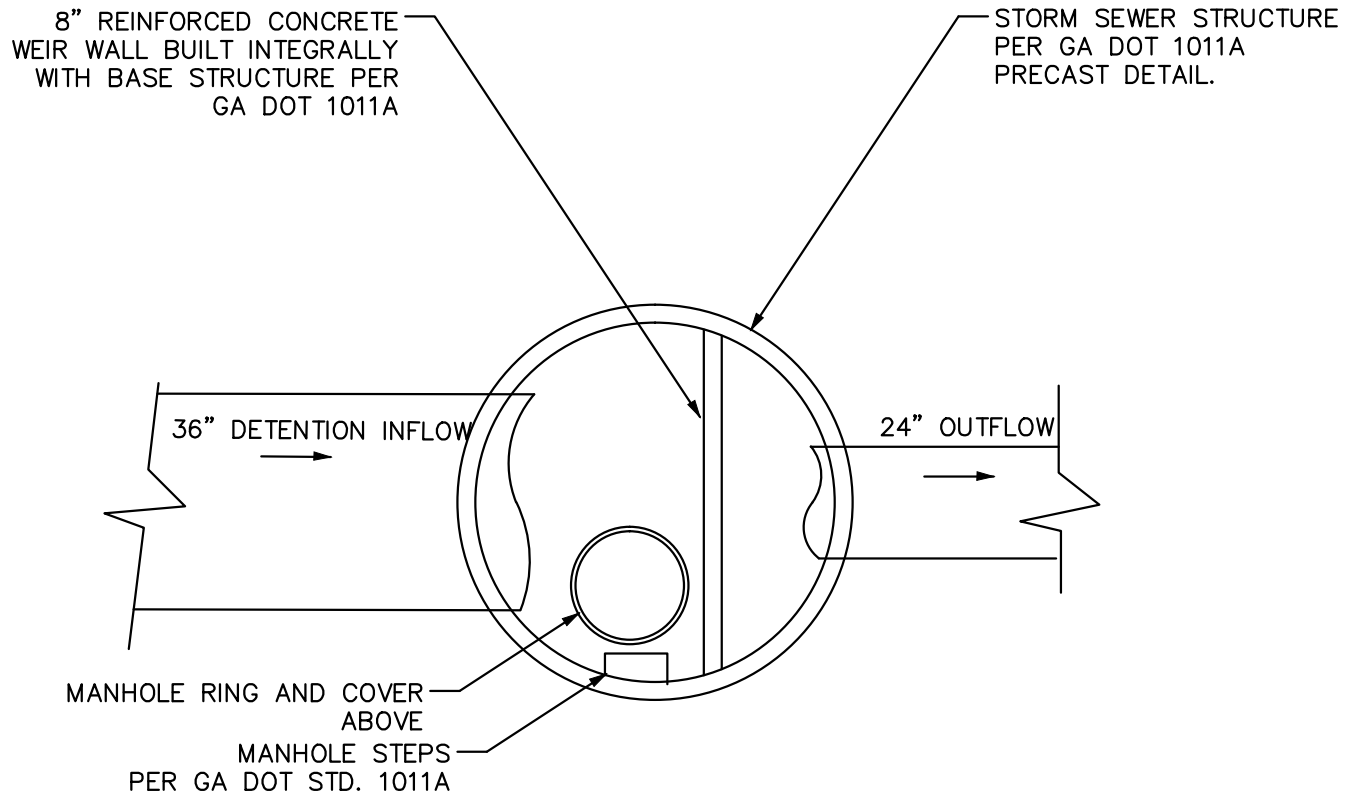
Highlighted

Qtotal (cfs)	=	110.00
Qpipe (cfs)	=	94.90
Qovertop (cfs)	=	15.10
Veloc Dn (ft/s)	=	13.50
Veloc Up (ft/s)	=	13.43
HGL Dn (ft)	=	1031.68
HGL Up (ft)	=	1038.11
Hw Elev (ft)	=	1041.81
Hw/D (ft)	=	2.95
Flow Regime	=	Inlet Control

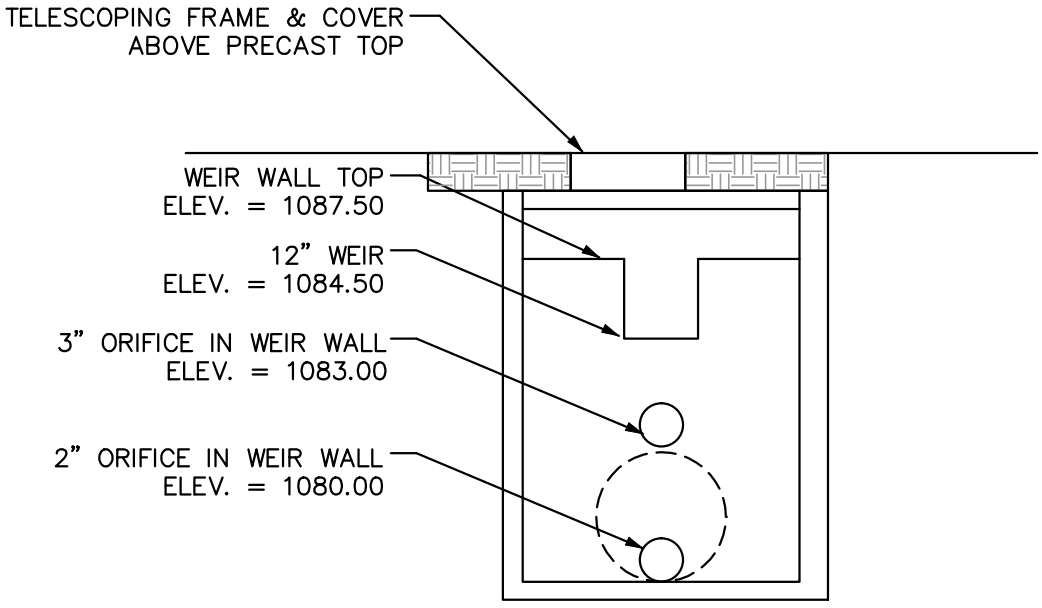


Appendix G Outlet Control Structure Information

- O.C.S. Construction Detail
- Detention Pond Model
- 100 year overflow analysis



PLAN VIEW

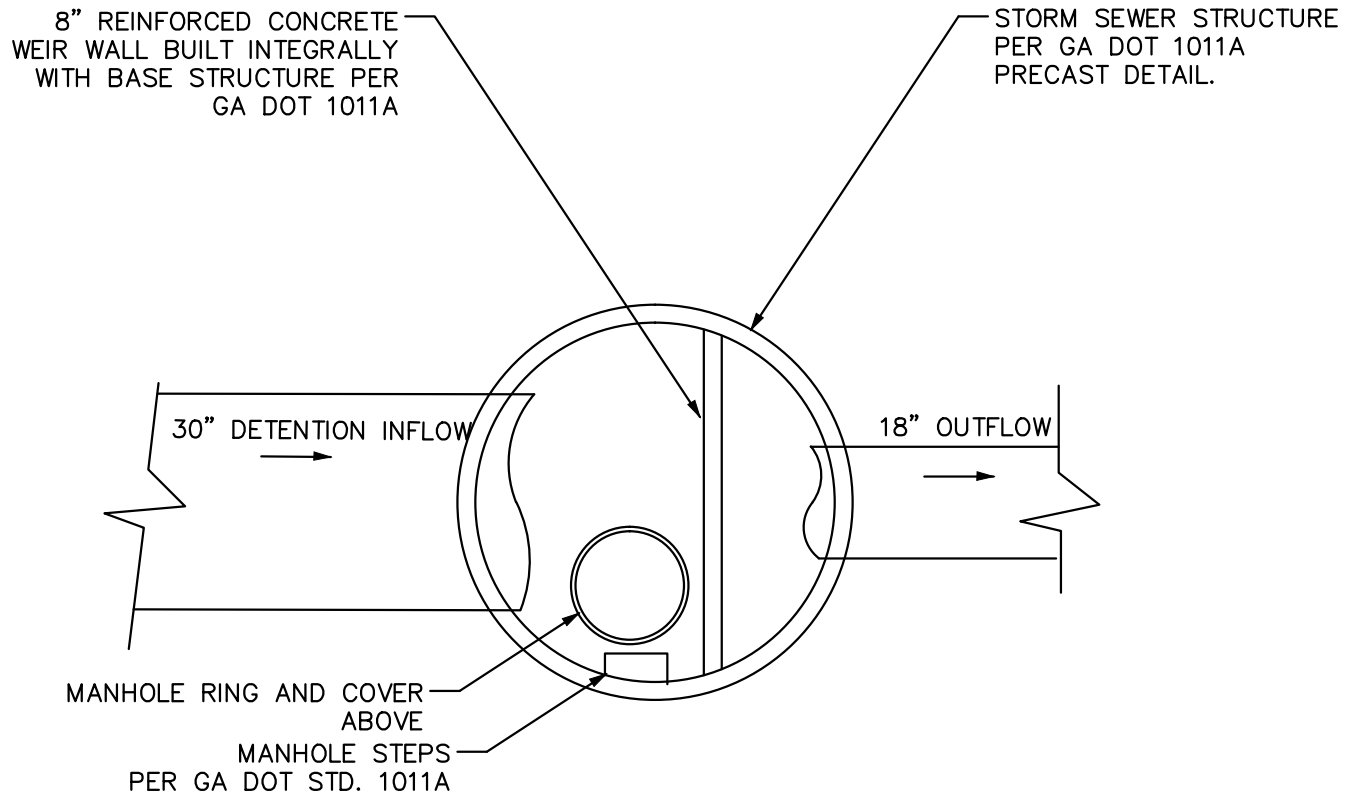


NOTE: SUBMIT A SHOP DRAWING OF STRUCTURE TO ENGINEER PRIOR TO CASTING.

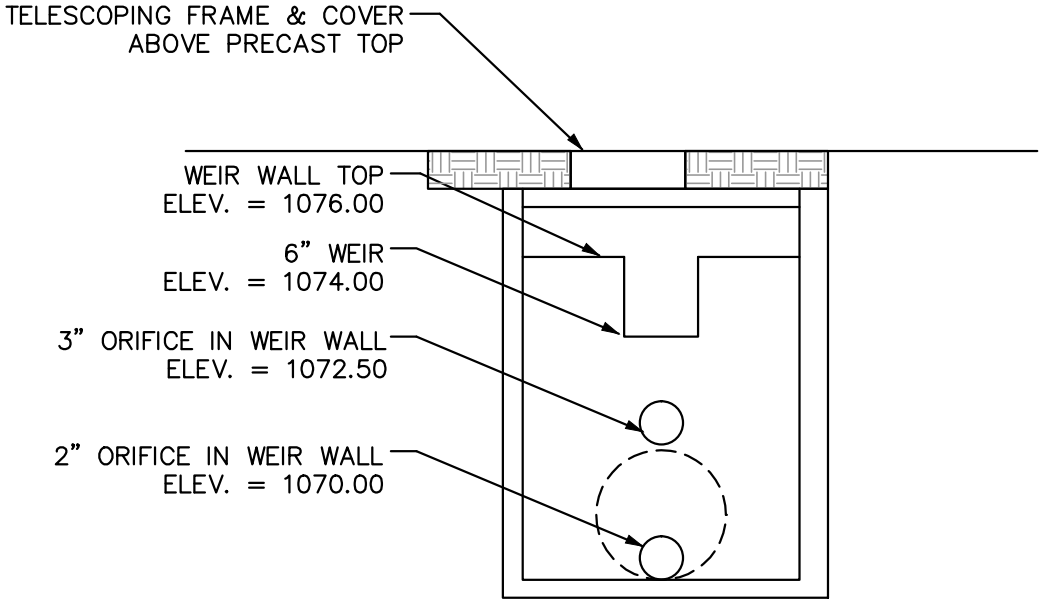
ELEVATION VIEW

OUTLET CONTROL STRUCTURE DETAIL POND 1A

NOT TO SCALE



PLAN VIEW

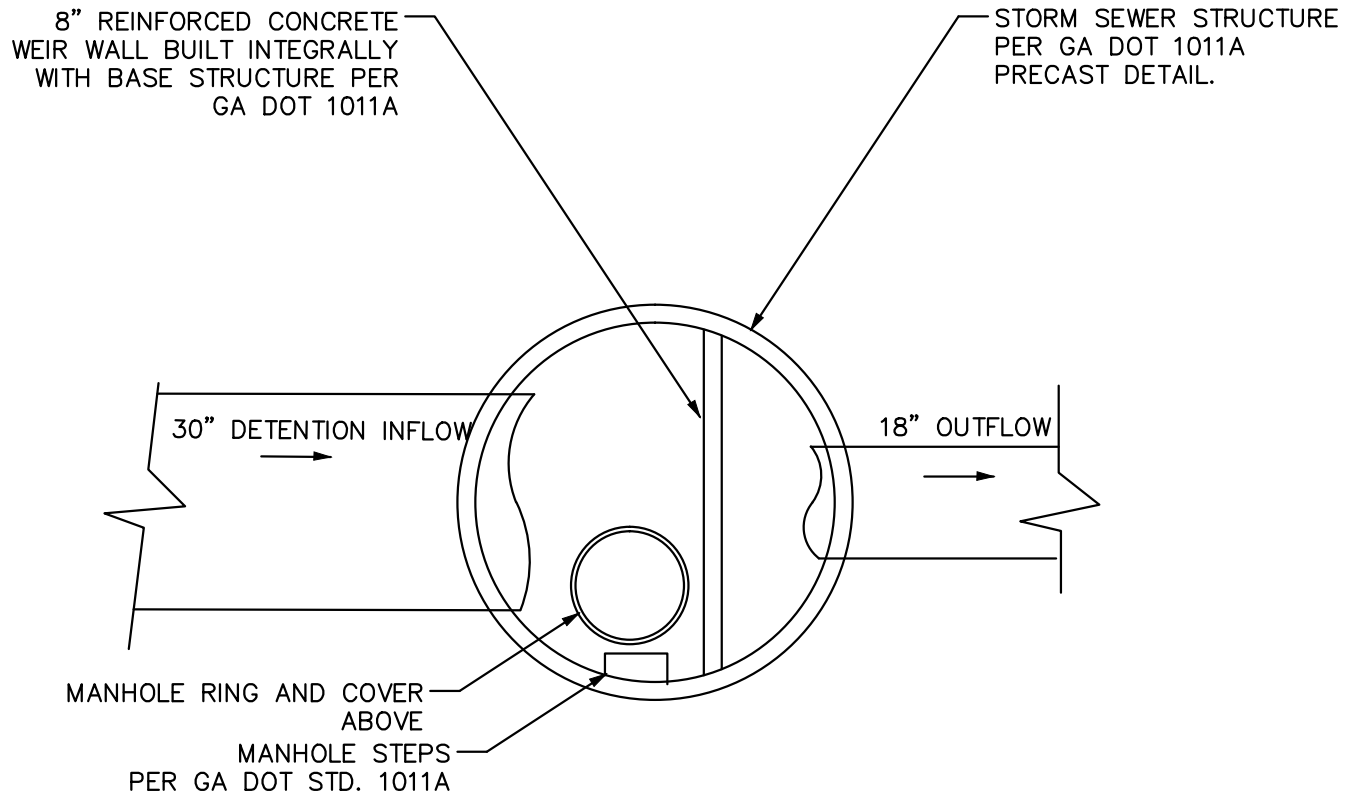


NOTE: SUBMIT A SHOP DRAWING OF STRUCTURE TO ENGINEER PRIOR TO CASTING.

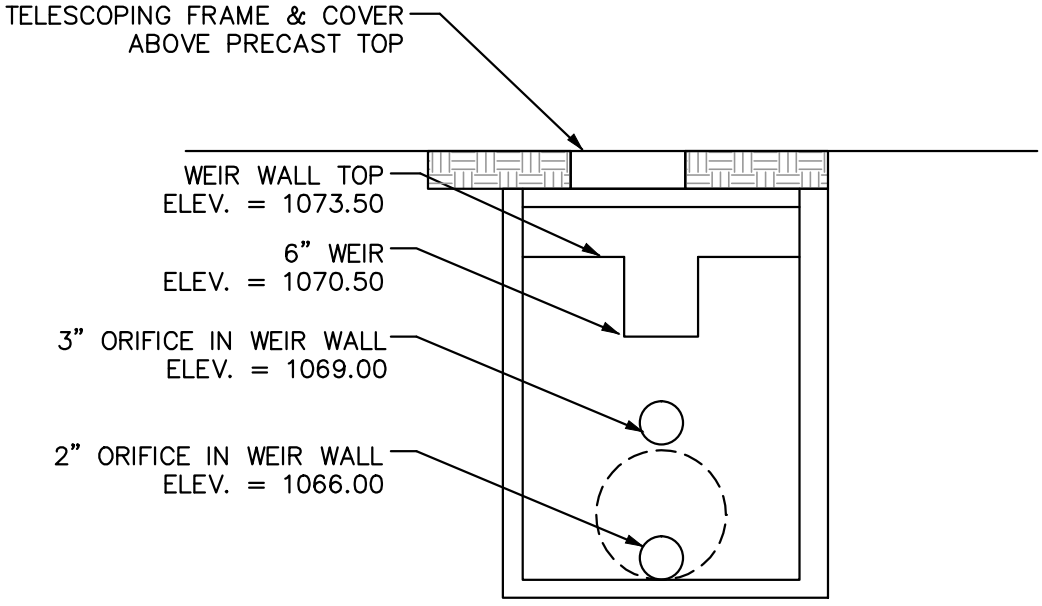
ELEVATION VIEW

OUTLET CONTROL STRUCTURE DETAIL POND 1B

NOT TO SCALE



PLAN VIEW

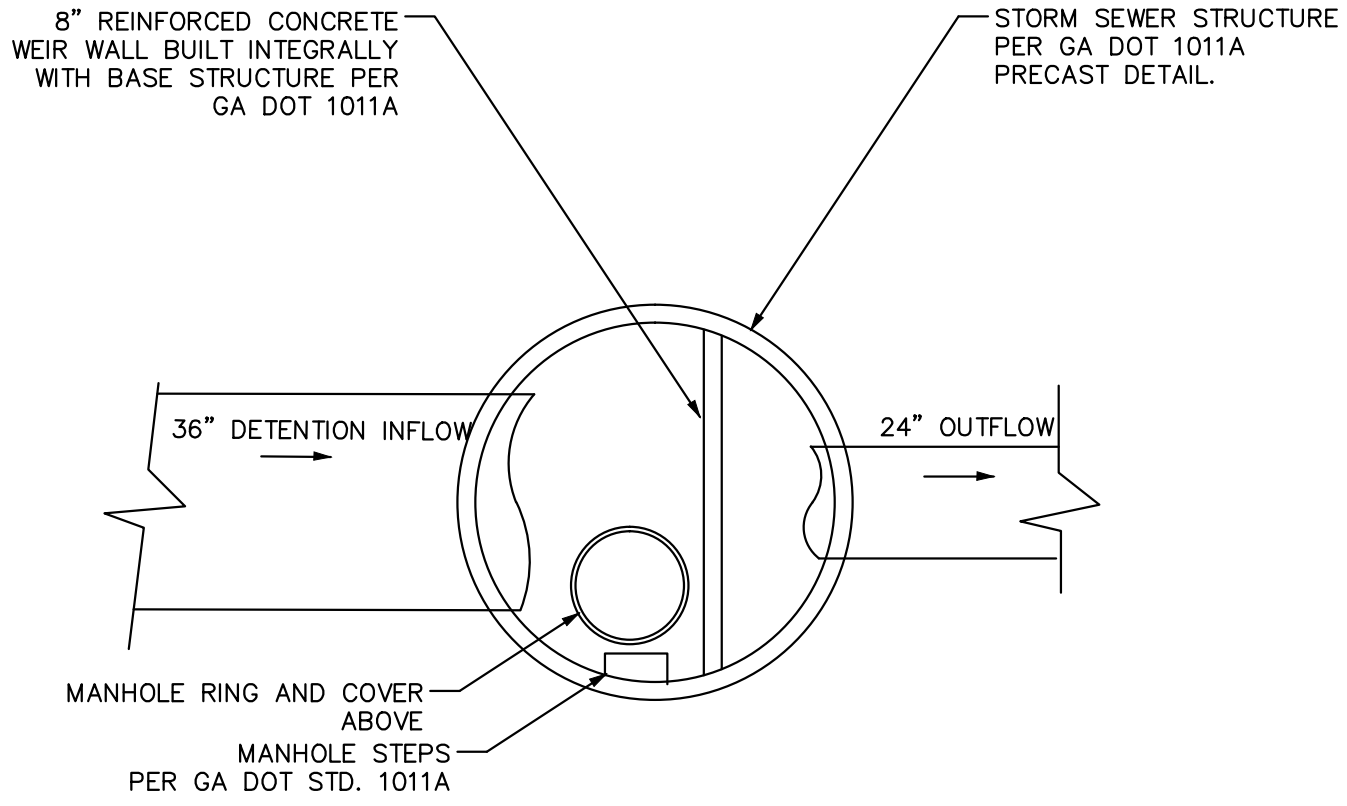


NOTE: SUBMIT A SHOP DRAWING OF STRUCTURE TO ENGINEER PRIOR TO CASTING.

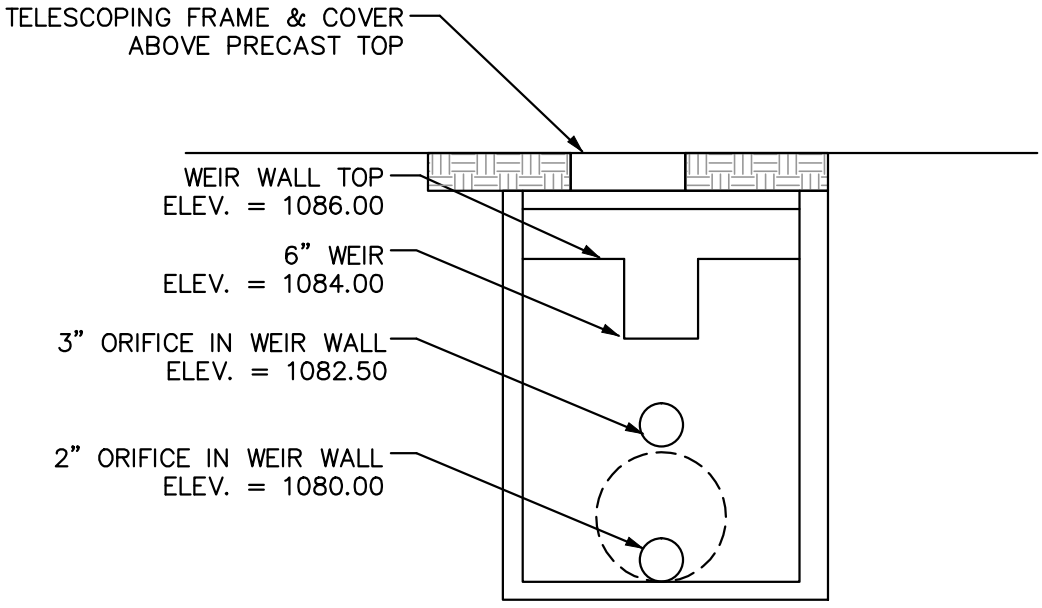
ELEVATION VIEW

OUTLET CONTROL STRUCTURE DETAIL POND 3

NOT TO SCALE



PLAN VIEW



NOTE: SUBMIT A SHOP DRAWING OF STRUCTURE TO ENGINEER PRIOR TO CASTING.

ELEVATION VIEW

OUTLET CONTROL STRUCTURE DETAIL POND 4

NOT TO SCALE

Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 Wednesday, 04 / 15 / 2015

Pond No. 1 - Pond 1A

Pond Data

UG Chambers -Invert elev. = 1080.00 ft, Rise x Span = 8.00 x 8.00 ft, Barrel Len = 275.00 ft, No. Barrels = 3, Slope = 0.50%, Headers = No

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	1080.00	n/a	0	0
0.94	1080.94	n/a	711	711
1.88	1081.88	n/a	3,269	3,981
2.81	1082.81	n/a	4,922	8,902
3.75	1083.75	n/a	5,742	14,644
4.69	1084.69	n/a	6,101	20,746
5.63	1085.63	n/a	6,096	26,842
6.56	1086.56	n/a	5,740	32,582
7.50	1087.50	n/a	4,923	37,505
8.44	1088.44	n/a	3,262	40,767
9.38	1089.38	n/a	710	41,477

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	2.00	3.00	0.00
Span (in)	= 24.00	2.00	3.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 1080.00	1080.00	1083.00	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 1.00	4.00	0.00	0.00
Crest El. (ft)	= 1084.50	1087.50	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	Rect	---	---
Multi-Stage	= Yes	Yes	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	1080.00	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.94	711	1080.94	0.09 ic	0.09 ic	0.00	---	0.00	0.00	---	---	---	---	0.095
1.88	3,981	1081.88	0.15 ic	0.14 ic	0.00	---	0.00	0.00	---	---	---	---	0.138
2.81	8,902	1082.81	0.18 ic	0.17 ic	0.00	---	0.00	0.00	---	---	---	---	0.171
3.75	14,644	1083.75	0.38 ic	0.20 ic	0.19 ic	---	0.00	0.00	---	---	---	---	0.383
4.69	20,746	1084.69	0.78 ic	0.22 ic	0.30 ic	---	0.27	0.00	---	---	---	---	0.784
5.63	26,842	1085.63	4.58 ic	0.23 ic	0.37 ic	---	3.97	0.00	---	---	---	---	4.575
6.56	32,582	1086.56	10.54 oc	0.24 ic	0.44 ic	---	9.86	0.00	---	---	---	---	10.54
7.50	37,505	1087.50	18.03 oc	0.23 ic	0.49 ic	---	17.30	0.00	---	---	---	---	18.03
8.44	40,767	1088.44	34.99 ic	0.15 ic	0.34 ic	---	22.40 s	12.09	---	---	---	---	34.98
9.38	41,477	1089.38	42.31 ic	0.08 ic	0.18 ic	---	17.88 s	24.17 s	---	---	---	---	42.31

Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 Wednesday, 04 / 15 / 2015

Pond No. 2 - Pond 1B

Pond Data

UG Chambers -Invert elev. = 1070.00 ft, Rise x Span = 6.00 x 6.00 ft, Barrel Len = 150.00 ft, No. Barrels = 2, Slope = 0.50%, Headers = No

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	1070.00	n/a	0	0
0.68	1070.68	n/a	194	194
1.35	1071.35	n/a	716	910
2.03	1072.03	n/a	996	1,905
2.70	1072.70	n/a	1,136	3,041
3.38	1073.38	n/a	1,202	4,243
4.05	1074.05	n/a	1,202	5,444
4.72	1074.72	n/a	1,137	6,582
5.40	1075.40	n/a	994	7,575
6.08	1076.07	n/a	716	8,291
6.75	1076.75	n/a	193	8,484

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	2.00	3.00	0.00
Span (in)	= 18.00	2.00	3.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 1070.00	1070.00	1072.50	0.00
Length (ft)	= 20.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.50	3.50	0.00	0.00
Crest El. (ft)	= 1074.00	1076.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	Rect	---	---
Multi-Stage	= Yes	Yes	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	1070.00	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.68	194	1070.68	0.08 ic	0.08 ic	0.00	---	0.00	0.00	---	---	---	---	0.078
1.35	910	1071.35	0.12 ic	0.12 ic	0.00	---	0.00	0.00	---	---	---	---	0.115
2.03	1,905	1072.03	0.14 ic	0.14 ic	0.00	---	0.00	0.00	---	---	---	---	0.143
2.70	3,041	1072.70	0.23 ic	0.17 ic	0.06 ic	---	0.00	0.00	---	---	---	---	0.230
3.38	4,243	1073.38	0.41 ic	0.19 ic	0.20 ic	---	0.00	0.00	---	---	---	---	0.390
4.05	5,444	1074.05	0.52 ic	0.20 ic	0.28 ic	---	0.02	0.00	---	---	---	---	0.504
4.72	6,582	1074.72	1.59 ic	0.21 ic	0.34 ic	---	1.03	0.00	---	---	---	---	1.585
5.40	7,575	1075.40	3.41 oc	0.22 ic	0.39 ic	---	2.76	0.00	---	---	---	---	3.372
6.08	8,291	1076.07	5.88 oc	0.22 ic	0.44 ic	---	4.98	0.24	---	---	---	---	5.876
6.75	8,484	1076.75	15.68 ic	0.17 ic	0.38 ic	---	7.56 s	7.57	---	---	---	---	15.68

Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 Wednesday, 04 / 15 / 2015

Pond No. 3 - Pond 3

Pond Data

UG Chambers -Invert elev. = 1066.00 ft, Rise x Span = 8.00 x 8.00 ft, Barrel Len = 180.00 ft, No. Barrels = 3, Slope = 0.50%, Headers = No

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	1066.00	n/a	0	0
0.89	1066.89	n/a	666	666
1.78	1067.78	n/a	2,332	2,997
2.67	1068.67	n/a	3,170	6,168
3.56	1069.56	n/a	3,604	9,772
4.45	1070.45	n/a	3,807	13,579
5.34	1071.34	n/a	3,805	17,384
6.23	1072.23	n/a	3,607	20,991
7.12	1073.12	n/a	3,164	24,155
8.01	1074.01	n/a	2,330	26,485
8.90	1074.90	n/a	664	27,149

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	2.00	3.00	0.00
Span (in)	= 18.00	2.00	3.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 1066.00	1066.00	1069.00	0.00
Length (ft)	= 100.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.50	6.50	0.00	0.00
Crest El. (ft)	= 1070.50	1073.50	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	Rect	---	---
Multi-Stage	= Yes	Yes	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	1066.00	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.89	666	1066.89	0.10 ic	0.09 ic	0.00	---	0.00	0.00	---	---	---	---	0.092
1.78	2,997	1067.78	0.14 ic	0.13 ic	0.00	---	0.00	0.00	---	---	---	---	0.134
2.67	6,168	1068.67	0.17 ic	0.17 ic	0.00	---	0.00	0.00	---	---	---	---	0.166
3.56	9,772	1069.56	0.36 ic	0.19 ic	0.16 ic	---	0.00	0.00	---	---	---	---	0.347
4.45	13,579	1070.45	0.49 ic	0.21 ic	0.27 ic	---	0.00	0.00	---	---	---	---	0.486
5.34	17,384	1071.34	1.90 ic	0.23 ic	0.35 ic	---	1.28	0.00	---	---	---	---	1.862
6.23	20,991	1072.23	4.50 ic	0.24 ic	0.42 ic	---	3.79	0.00	---	---	---	---	4.445
7.12	24,155	1073.12	7.78 ic	0.25 ic	0.47 ic	---	7.06	0.00	---	---	---	---	7.780
8.01	26,485	1074.01	18.15 oc	0.15 ic	0.34 ic	---	9.77 s	7.88	---	---	---	---	18.15
8.90	27,149	1074.90	22.40 oc	0.04 ic	0.09 ic	---	4.84 s	17.43 s	---	---	---	---	22.40

Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 Wednesday, 04 / 15 / 2015

Pond No. 4 - Pond 4

Pond Data

UG Chambers -Invert elev. = 1080.00 ft, Rise x Span = 7.00 x 7.00 ft, Barrel Len = 150.00 ft, No. Barrels = 4, Slope = 0.50%, Headers = No

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	1080.00	n/a	0	0
0.77	1080.78	n/a	585	585
1.55	1081.55	n/a	1,998	2,583
2.33	1082.32	n/a	2,691	5,274
3.10	1083.10	n/a	3,057	8,331
3.88	1083.88	n/a	3,219	11,550
4.65	1084.65	n/a	3,225	14,775
5.43	1085.43	n/a	3,055	17,829
6.20	1086.20	n/a	2,685	20,515
6.97	1086.97	n/a	1,996	22,511
7.75	1087.75	n/a	584	23,095

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	2.00	3.00	0.00
Span (in)	= 24.00	2.00	3.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 1080.00	1080.00	1082.50	0.00
Length (ft)	= 20.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.50	4.50	0.00	0.00
Crest El. (ft)	= 1084.00	1086.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	Rect	---	---
Multi-Stage	= Yes	Yes	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	1080.00	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.77	585	1080.78	0.09 ic	0.09 ic	0.00	---	0.00	0.00	---	---	---	---	0.085
1.55	2,583	1081.55	0.13 ic	0.12 ic	0.00	---	0.00	0.00	---	---	---	---	0.125
2.33	5,274	1082.32	0.16 ic	0.15 ic	0.00	---	0.00	0.00	---	---	---	---	0.155
3.10	8,331	1083.10	0.35 ic	0.18 ic	0.16 ic	---	0.00	0.00	---	---	---	---	0.341
3.88	11,550	1083.88	0.48 ic	0.20 ic	0.26 ic	---	0.00	0.00	---	---	---	---	0.464
4.65	14,775	1084.65	1.42 ic	0.21 ic	0.34 ic	---	0.87	0.00	---	---	---	---	1.423
5.43	17,829	1085.43	3.47 oc	0.22 ic	0.40 ic	---	2.83	0.00	---	---	---	---	3.453
6.20	20,515	1086.20	7.50 oc	0.23 ic	0.45 ic	---	5.43	1.34	---	---	---	---	7.445
6.97	22,511	1086.97	23.61 ic	0.20 ic	0.44 ic	---	8.54	14.43	---	---	---	---	23.61
7.75	23,095	1087.75	36.81 ic	0.10 ic	0.21 ic	---	7.71 s	28.79 s	---	---	---	---	36.81

Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 Wednesday, 04 / 15 / 2015

Pond No. 5 - Basin 5 Pond

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 1081.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	1081.00	500	0	0
1.00	1082.00	500	500	500
2.00	1083.00	500	500	1,000
3.00	1084.00	500	500	1,500
4.00	1085.00	500	500	2,000
5.00	1086.00	500	500	2,500
6.00	1087.00	500	500	3,000

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	8.00	0.00	0.00
Span (in)	= 12.00	8.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 1081.40	1081.50	0.00	0.00
Length (ft)	= 25.00	0.00	0.00	0.00
Slope (%)	= 2.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 4.00	0.00	0.00	0.00
Crest El. (ft)	= 1086.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	1081.00	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
1.00	500	1082.00	0.62 ic	0.62 ic	---	---	0.00	---	---	---	---	---	0.622
2.00	1,000	1083.00	1.61 ic	1.61 ic	---	---	0.00	---	---	---	---	---	1.610
3.00	1,500	1084.00	2.23 ic	2.22 ic	---	---	0.00	---	---	---	---	---	2.225
4.00	2,000	1085.00	2.70 ic	2.70 ic	---	---	0.00	---	---	---	---	---	2.704
5.00	2,500	1086.00	3.11 ic	3.11 ic	---	---	0.00	---	---	---	---	---	3.110
6.00	3,000	1087.00	8.40 ic	0.69 ic	---	---	7.71 s	---	---	---	---	---	8.396

100 year overflow analysis: Pond 1A

1. The pond was modeled with all the orifice and lower weirs clogged
2. The hydrograph indicates that the overflow ponds up to elevation 1087.98, which is still within the storage area of the outlet control structure and below the top of pipe elevation 1089.38 and within the overflow weir opening.
3. The outlet pipe is size to a capacity of 31.99 CFS and the overflow rate is 25.79 CFS, so the proposed pipe has capacity.

Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 Thursday, 04 / 16 / 2015

Pond No. 7 - Pond 1A overflow

Pond Data

UG Chambers -Invert elev. = 1080.00 ft, Rise x Span = 8.00 x 8.00 ft, Barrel Len = 275.00 ft, No. Barrels = 3, Slope = 0.50%, Headers = No

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	1080.00	n/a	0	0
0.94	1080.94	n/a	711	711
1.88	1081.88	n/a	3,269	3,981
2.81	1082.81	n/a	4,922	8,902
3.75	1083.75	n/a	5,742	14,644
4.69	1084.69	n/a	6,101	20,746
5.63	1085.63	n/a	6,096	26,842
6.56	1086.56	n/a	5,740	32,582
7.50	1087.50	n/a	4,923	37,505
8.44	1088.44	n/a	3,262	40,767
9.38	1089.38	n/a	710	41,477

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	Inactive	Inactive	0.00
Span (in)	= 24.00	2.00	3.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 1080.00	1080.00	1083.00	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 1.00	4.00	0.00	0.00
Crest El. (ft)	= 1084.50	1087.50	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	Rect	---	---
Multi-Stage	= Yes	Yes	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	1080.00	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.94	711	1080.94	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
1.88	3,981	1081.88	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
2.81	8,902	1082.81	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
3.75	14,644	1083.75	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
4.69	20,746	1084.69	0.27 ic	0.00	0.00	---	0.27	0.00	---	---	---	---	0.270
5.63	26,842	1085.63	4.03 ic	0.00	0.00	---	3.97	0.00	---	---	---	---	3.973
6.56	32,582	1086.56	9.96 oc	0.00	0.00	---	9.86	0.00	---	---	---	---	9.864
7.50	37,505	1087.50	17.30 oc	0.00	0.00	---	17.30	0.00	---	---	---	---	17.30
8.44	40,767	1088.44	34.74 ic	0.00	0.00	---	22.65 s	12.09	---	---	---	---	34.74
9.38	41,477	1089.38	42.29 ic	0.00	0.00	---	17.99 s	24.30 s	---	---	---	---	42.28

Hydrograph Report

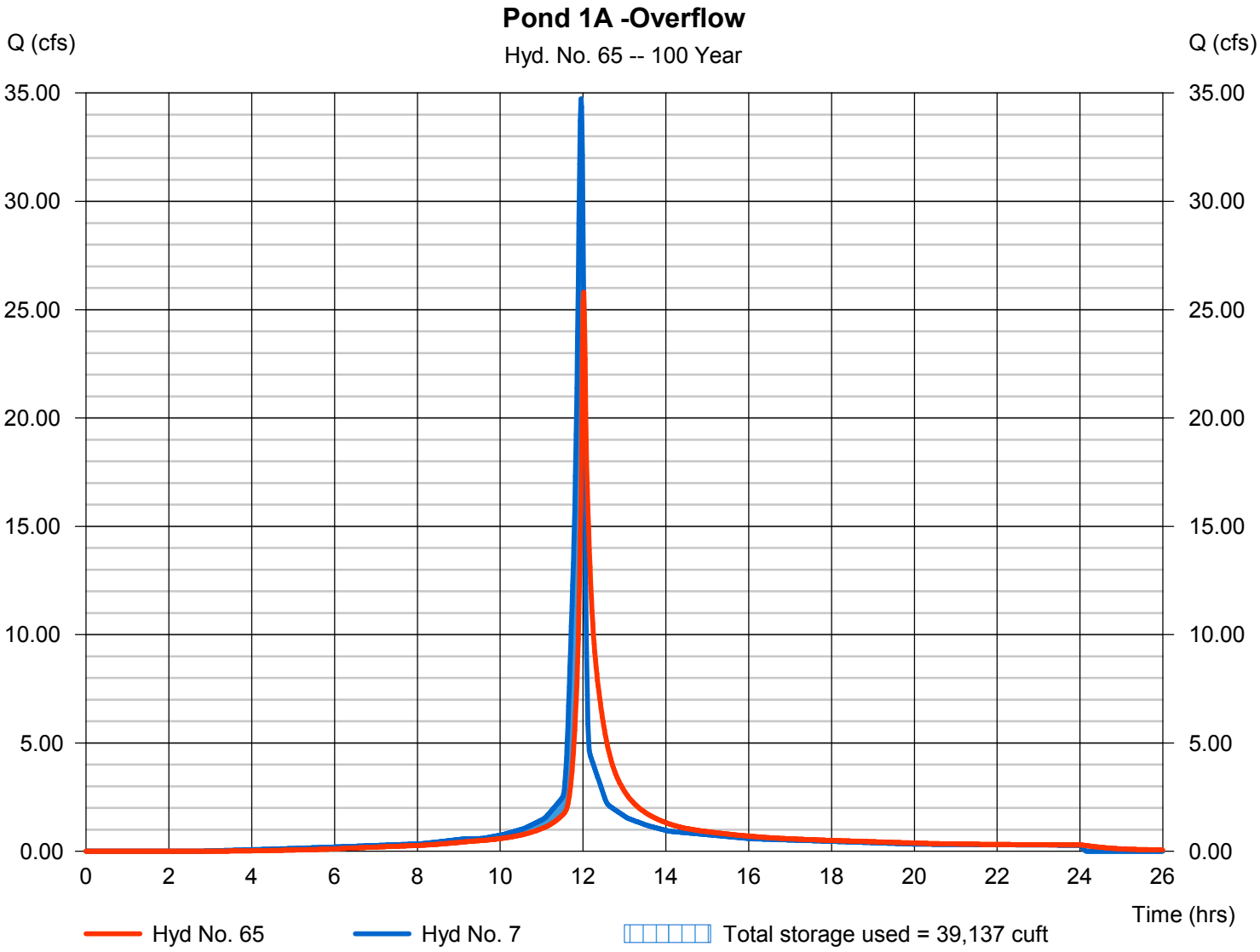
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 Thursday, 04 / 16 / 2015

Hyd. No. 65

Pond 1A -Overflow

Hydrograph type	=	Reservoir	Peak discharge	=	25.79 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.02 hrs
Time interval	=	1 min	Hyd. volume	=	77,674 cuft
Inflow hyd. No.	=	7 - Basin 1A -Total to Pond 1A	Max. Elevation	=	1087.98 ft
Reservoir name	=	Pond 1A overflow	Max. Storage	=	39,137 cuft

Storage Indication method used. Wet pond routing start elevation = 1084.50 ft.



Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	15.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	31.99	31.99	10.62	24	2.00	1078.00	1078.30	1079.78	1080.19	0.00	0.00	Pond 1A

Project File: Pond 1A.stm | Number of lines: 1 | Run Date: 4/16/2015

NOTES:Intensity = 86.37 / (Inlet time + 13.80) ^ 0.74 ; Return period =Yrs. 100 ; Total flows limited to full flow capacities. ; c = cir e = ellip b = box

100 year overflow analysis: Pond 1B

1. The pond was modeled with all the orifice and lower weirs clogged
2. The hydrograph indicates that the overflow ponds up to elevation 1076.31, which is still within the storage area of the outlet control structure and below the top of pipe elevation 1076.75 and within the overflow weir opening.
3. The outlet pipe is size to a capacity of 14.85 CFS and the overflow rate is 7.3 CFS, so the proposed pipe has capacity.

Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 Thursday, 04 / 16 / 2015

Pond No. 8 - Pond 1B overflow

Pond Data

UG Chambers -Invert elev. = 1070.00 ft, Rise x Span = 6.00 x 6.00 ft, Barrel Len = 150.00 ft, No. Barrels = 2, Slope = 0.50%, Headers = No

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	1070.00	n/a	0	0
0.68	1070.68	n/a	194	194
1.35	1071.35	n/a	716	910
2.03	1072.03	n/a	996	1,905
2.70	1072.70	n/a	1,136	3,041
3.38	1073.38	n/a	1,202	4,243
4.05	1074.05	n/a	1,202	5,444
4.73	1074.72	n/a	1,137	6,582
5.40	1075.40	n/a	994	7,575
6.08	1076.07	n/a	716	8,291
6.75	1076.75	n/a	193	8,484

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	Inactive	Inactive	0.00
Span (in)	= 18.00	2.00	3.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 1070.00	1070.00	1072.50	0.00
Length (ft)	= 20.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.50	3.50	0.00	0.00
Crest El. (ft)	= 1074.00	1076.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	Rect	---	---
Multi-Stage	= Yes	Yes	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	1070.00	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.68	194	1070.68	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
1.35	910	1071.35	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
2.03	1,905	1072.03	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
2.70	3,041	1072.70	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
3.38	4,243	1073.38	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
4.05	5,444	1074.05	0.02 ic	0.00	0.00	---	0.02	0.00	---	---	---	---	0.019
4.73	6,582	1074.72	1.06 ic	0.00	0.00	---	1.03	0.00	---	---	---	---	1.028
5.40	7,575	1075.40	2.77 oc	0.00	0.00	---	2.76	0.00	---	---	---	---	2.758
6.08	8,291	1076.07	5.22 oc	0.00	0.00	---	4.98	0.24	---	---	---	---	5.216
6.75	8,484	1076.75	15.16 ic	0.00	0.00	---	7.59	7.57	---	---	---	---	15.16

Hydrograph Report

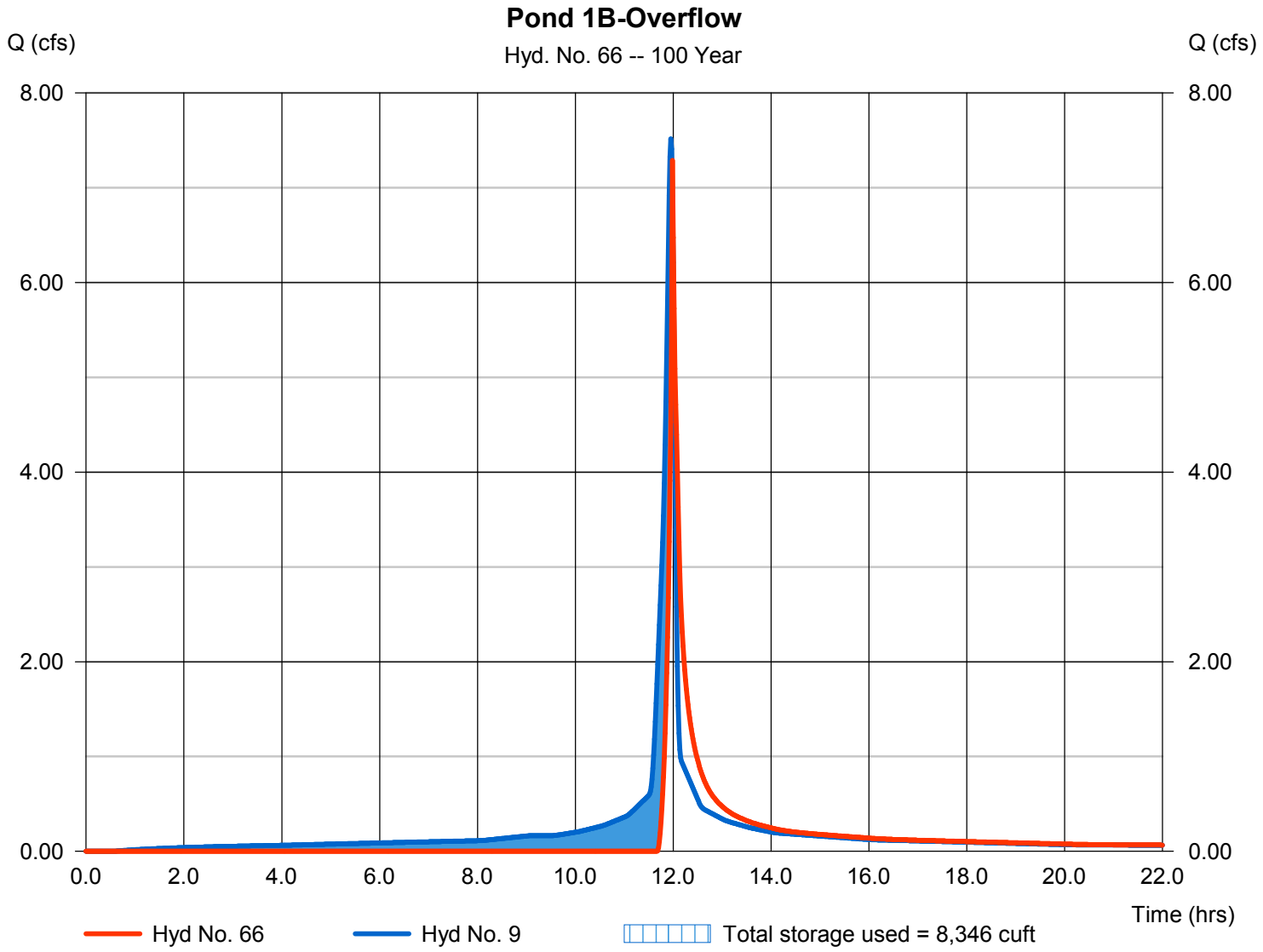
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 Thursday, 04 / 16 / 2015

Hyd. No. 66

Pond 1B-Overflow

Hydrograph type	= Reservoir	Peak discharge	= 7.289 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.98 hrs
Time interval	= 1 min	Hyd. volume	= 13,070 cuft
Inflow hyd. No.	= 9 - Basin 1B - pond	Max. Elevation	= 1076.31 ft
Reservoir name	= Pond 1B overflow	Max. Storage	= 8,346 cuft

Storage Indication method used.



Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	20.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	14.85	14.85	8.40	18	2.00	1066.00	1066.40	1079.78	1080.18	0.00	0.00	Pond 1B

Project File: Pond 1B.stm | Number of lines: 1 | Run Date: 4/16/2015

NOTES:Intensity = 86.37 / (Inlet time + 13.80) ^ 0.74 ; Return period =Yrs. 100 ; Total flows limited to full flow capacities. ; c = cir e = ellip b = box

100 year overflow analysis: Pond 3

1. The pond was modeled with all the orifice and lower weirs clogged
2. The hydrograph indicates that the overflow ponds up to elevation 1074.21, which is still within the storage area of the outlet control structure and below the top of pipe elevation 1074.90 and within the overflow weir opening.
3. The outlet pipe is size to a capacity of 31.99 CFS and the overflow rate is 20.21 CFS, so the proposed pipe has capacity.

Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 Thursday, 04 / 16 / 2015

Pond No. 9 - Pond 3 Overflow

Pond Data

UG Chambers -Invert elev. = 1066.00 ft, Rise x Span = 8.00 x 8.00 ft, Barrel Len = 180.00 ft, No. Barrels = 3, Slope = 0.50%, Headers = No

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	1066.00	n/a	0	0
0.89	1066.89	n/a	666	666
1.78	1067.78	n/a	2,332	2,997
2.67	1068.67	n/a	3,170	6,168
3.56	1069.56	n/a	3,604	9,772
4.45	1070.45	n/a	3,807	13,579
5.34	1071.34	n/a	3,805	17,384
6.23	1072.23	n/a	3,607	20,991
7.12	1073.12	n/a	3,164	24,155
8.01	1074.01	n/a	2,330	26,485
8.90	1074.90	n/a	664	27,149

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	Inactive	Inactive	0.00
Span (in)	= 18.00	2.00	3.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 1066.00	1066.00	1069.00	0.00
Length (ft)	= 100.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.50	6.50	0.00	0.00
Crest El. (ft)	= 1070.50	1073.50	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	Rect	---	---
Multi-Stage	= Yes	Yes	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	1066.00	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.89	666	1066.89	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
1.78	2,997	1067.78	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
2.67	6,168	1068.67	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
3.56	9,772	1069.56	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
4.45	13,579	1070.45	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
5.34	17,384	1071.34	1.31 ic	0.00	0.00	---	1.28	0.00	---	---	---	---	1.282
6.23	20,991	1072.23	3.80 ic	0.00	0.00	---	3.79	0.00	---	---	---	---	3.789
7.12	24,155	1073.12	7.06 ic	0.00	0.00	---	7.06	0.00	---	---	---	---	7.061
8.01	26,485	1074.01	17.87 oc	0.00	0.00	---	9.99 s	7.88	---	---	---	---	17.87
8.90	27,149	1074.90	22.40 oc	0.00	0.00	---	4.87 s	17.52 s	---	---	---	---	22.39

Hydrograph Report

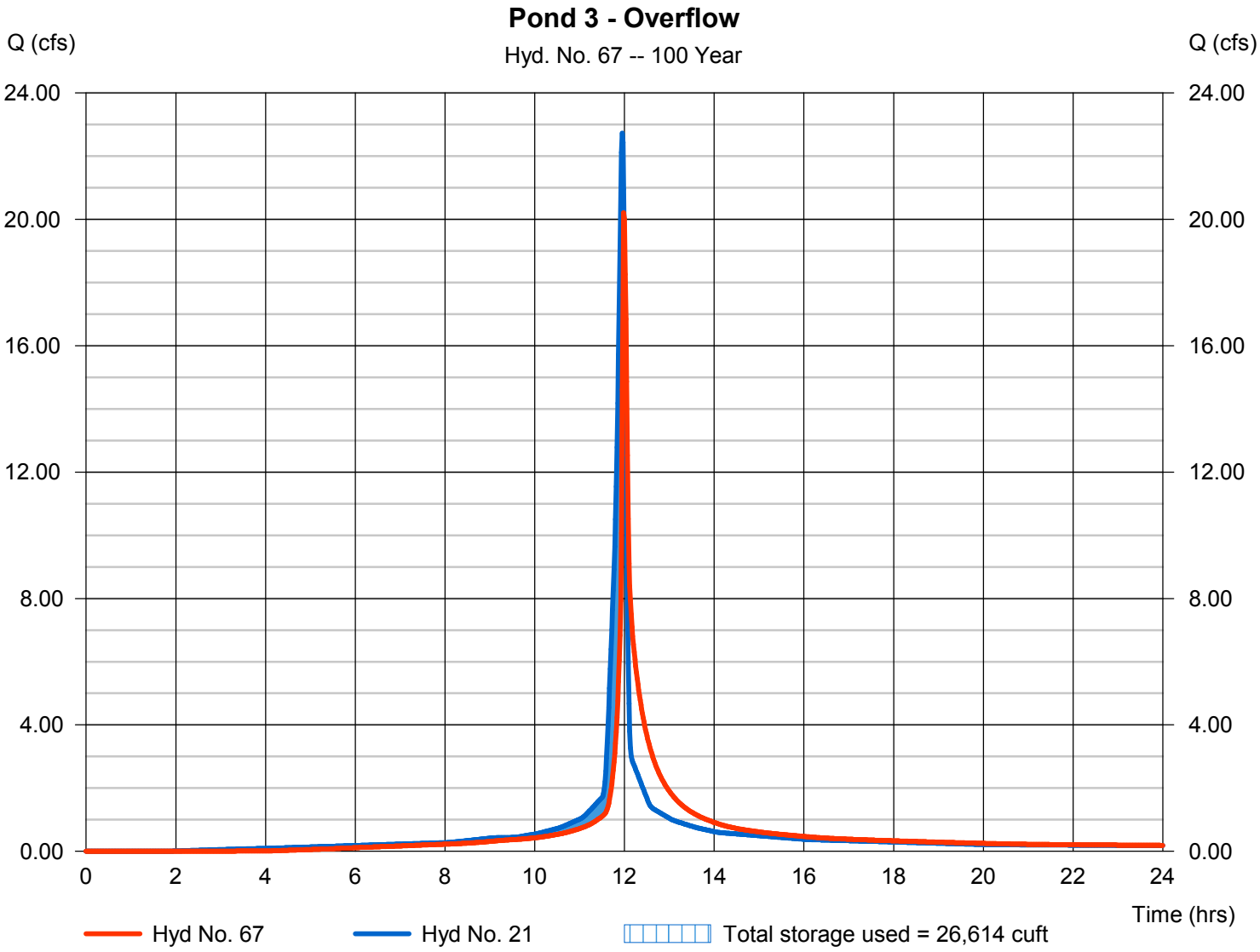
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 Thursday, 04 / 16 / 2015

Hyd. No. 67

Pond 3 - Overflow

Hydrograph type	=	Reservoir	Peak discharge	=	20.21 cfs
Storm frequency	=	100 yrs	Time to peak	=	11.98 hrs
Time interval	=	1 min	Hyd. volume	=	52,467 cuft
Inflow hyd. No.	=	21 - Basin 3 - Pond	Max. Elevation	=	1074.21 ft
Reservoir name	=	Pond 3 Overflow	Max. Storage	=	26,614 cuft

Storage Indication method used. Wet pond routing start elevation = 1070.45 ft.



Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	50.000	0.00	0.10	0.00	0.00	0.10	5.0	5.0	9.9	31.99	31.99	10.97	24	2.00	1065.00	1066.00	1066.65	1067.89	0.00	0.00	Pond 3

Project File: Pond 3.stm | Number of lines: 1 | Run Date: 4/16/2015

NOTES:Intensity = 86.37 / (Inlet time + 13.80) ^ 0.74 ; Return period =Yrs. 100 ; Total flows limited to full flow capacities. ; c = cir e = ellip b = box

100 year overflow analysis: Pond 4

1. The pond was modeled with all the orifice and lower weirs clogged
2. The hydrograph indicates that the overflow ponds up to elevation 1086.82, which is still within the storage area of the outlet control structure and below the top of pipe elevation 1087.00 and within the overflow weir opening.
3. The outlet pipe is size to a capacity of 22.62 CFS and the overflow rate is 19.03 CFS, so the proposed pipe has capacity.

Pond Report

Pond No. 10 - Pond 4 Overflow

Pond Data

UG Chambers -Invert elev. = 1080.00 ft, Rise x Span = 7.00 x 7.00 ft, Barrel Len = 150.00 ft, No. Barrels = 4, Slope = 0.50%, Headers = No

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	1080.00	n/a	0	0
0.77	1080.78	n/a	585	585
1.55	1081.55	n/a	1,998	2,583
2.33	1082.32	n/a	2,691	5,274
3.10	1083.10	n/a	3,057	8,331
3.88	1083.88	n/a	3,219	11,550
4.65	1084.65	n/a	3,225	14,775
5.43	1085.43	n/a	3,055	17,829
6.20	1086.20	n/a	2,685	20,515
6.98	1086.97	n/a	1,996	22,511
7.75	1087.75	n/a	584	23,095

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	Inactive	Inactive	0.00
Span (in)	= 24.00	2.00	3.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 1080.00	1080.00	1082.50	0.00
Length (ft)	= 20.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.50	4.50	0.00	0.00
Crest El. (ft)	= 1084.00	1086.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	Rect	---	---
Multi-Stage	= Yes	Yes	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	1080.00	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.77	585	1080.78	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
1.55	2,583	1081.55	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
2.33	5,274	1082.32	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
3.10	8,331	1083.10	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
3.88	11,550	1083.88	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
4.65	14,775	1084.65	0.89 ic	0.00	0.00	---	0.87	0.00	---	---	---	---	0.873
5.43	17,829	1085.43	2.87 oc	0.00	0.00	---	2.83	0.00	---	---	---	---	2.832
6.20	20,515	1086.20	6.82 oc	0.00	0.00	---	5.43	1.34	---	---	---	---	6.773
6.98	22,511	1086.97	22.97 ic	0.00	0.00	---	8.54	14.43	---	---	---	---	22.97
7.75	23,095	1087.75	36.76 ic	0.00	0.00	---	7.77 s	28.98 s	---	---	---	---	36.76

Hydrograph Report

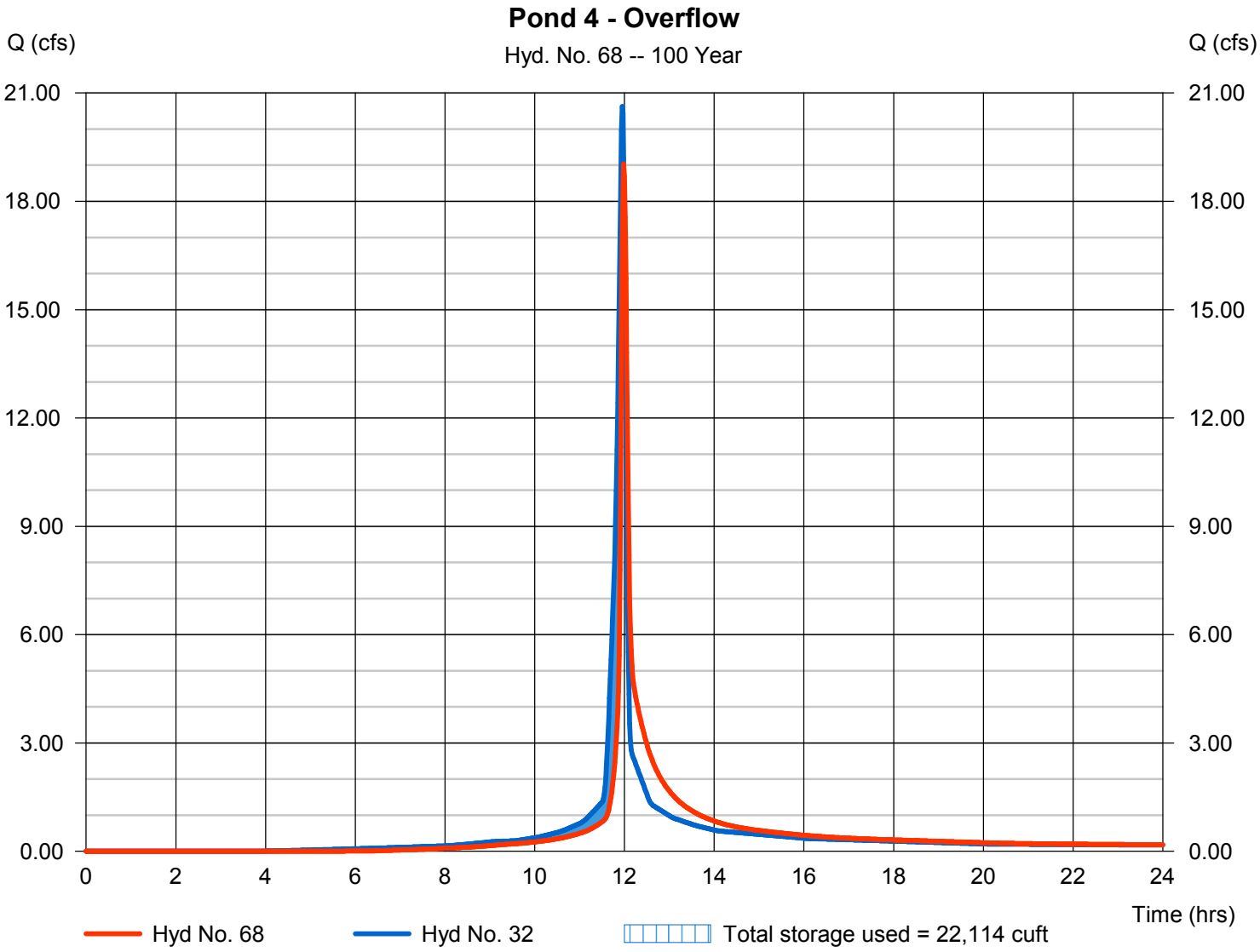
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 Thursday, 04 / 16 / 2015

Hyd. No. 68

Pond 4 - Overflow

Hydrograph type	= Reservoir	Peak discharge	= 19.03 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.98 hrs
Time interval	= 1 min	Hyd. volume	= 44,575 cuft
Inflow hyd. No.	= 32 - Basin 4 - Total to Pond	Max. Elevation	= 1086.82 ft
Reservoir name	= Pond 4 Overflow	Max. Storage	= 22,114 cuft

Storage Indication method used. Wet pond routing start elevation = 1083.95 ft.



Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	10.000	0.00	0.10	0.00	0.00	0.10	5.0	5.0	9.9	22.62	22.62	7.98	24	1.00	1079.90	1080.00	1081.59	1081.69	0.00	0.00	Pond 4

Project File: Pond 4.stm

Number of lines: 1

Run Date: 4/16/2015

NOTES:Intensity = 86.37 / (Inlet time + 13.80) ^ 0.74 ; Return period =Yrs. 100 ; Total flows limited to full flow capacities. ; c = cir e = ellip b = box