STORMWATER MANAGEMENT SUMMARY

Prepared for:

Old 22 Urban Renewal Associates, LLC

Proposed Mixed-Use Development Block 21, Lots 29, 30.01 & 31-33 49 NJSH Route 173 (Old Highway 22) Town of Clinton Hunterdon County, NJ

Prepared by:



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> August 2020 DEC# 2362-99-007

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I. <u>SITE DESCRIPTION</u>

The subject site consists of Block 21, Lots 29, 30.01 & 31-33 within the Town of Clinton, Hunterdon County, New Jersey. The site is further identified on the USGS map within the Appendix. A majority of the subject parcel is presently developed with an abandoned A&P grocery store, a paved parking lot and other associated site improvements. Additionally, Lot 29 is presently developed with a residential dwelling and the remains of a gravel drive. The proposed development consists of demolishing the existing site improvements and constructing one (1) multi-family residential building with retail spaces, along with, parking areas, associated driveways, courtyard and pool areas, landscaping and other related site improvements.

The existing conditions of the tract have been verified by the ALTA/NSPS Survey, as prepared by Dynamic Survey, LLC, dated 09/27/2019, last revised 07/06/2020.

II. <u>DESIGN OVERVIEW</u>

This report has been prepared to define and analyze the stormwater drainage conditions that would occur as a result of the redevelopment of the above referenced site.

The proposed improvements will result in more than one (1) acre of land disturbance; therefore, this project is classified as a "major development" as defined in N.J.A.C. 7:8, and has been designed to meet the stormwater runoff quantity and quality standards set forth by the Town of Clinton Stormwater Control Ordinance and N.J.A.C. 7:8. Accordingly, the following items are addressed within this report:

- Erosion control and runoff quantity standards (7:8-5.4)
- Stormwater runoff quality standards (7:8-5.5)
- Calculation of stormwater runoff and groundwater recharge (7:8-5.6)
- Standards for structural stormwater management measures (7:8-5.7)

The N.J.A.C. 7:8 regulations allow for multiple methods of addressing stormwater quantity for major developments. This project is addressed by reducing the peak flows for the 2-, 10-, and 100-year design storm events to meet the reduction requirements of N.J.A.C. 7:8 as outlined below. Under existing conditions, stormwater runoff generated by the subject site flows to two (2) existing inlets located within the Route 173 right-of-way. Without confirmation that these two inlets ultimately join downstream, they are each treated as separate points of analysis. For the purpose of this study, the western existing inlet is identified as POA-1 and the eastern inlet is identified as POA-2 as shown on the Drainage Area Maps included within the appendix of this report.

The Town of Clinton and NJDEP flow reduction requirements are as follows:

2-year:	50% reduction
10-year:	25% reduction
100-year:	20% reduction

In addition to the Town and NJDEP flow criteria, the project is subject to the flow reduction requirements as outlined within the NJDOT Roadway Design Manual. As such, the proposed 100-year design storm runoff quantity must be equal to or lesser than the existing peak flow for the 25-year storm event. This requirement applies to both aforementioned points of analysis and the proposed project has been designed to meet same.

A hydrological evaluation is provided for the NJDEP Water Quality, 2-, 10-, and 100-year storm events utilizing the USDA Urban Hydrology for Small Watersheds TR-55 Method. In addition, this project has been designed to the most practicable extent to comply with the guidelines of the NJDEP Stormwater Management Best Management Practices (BMP) Manual.

III. EXISTING DRAINAGE CONDITIONS

The subject parcel is presently developed with an abandoned A&P grocery store, a single-family residential dwelling, paved parking area, and associated site improvements.

HUNTERDON COUNTY SOIL SURVEY INFORMATION						
SOIL TYPE (SYMBOL)	SOIL TYPE (NAME)	HYDROLOGIC SOIL GROUP				
DufC2	Duffield silt loam, 6 to 12 percent slopes, eroded	В				
UdrB	Udorthents, refuse substratum, 0 to 8 percent slopes	В				

Based on the Middlesex County soils survey information, the soil types native to the site include:

The tract has been evaluated with the following drainage areas as depicted on the Existing Drainage Area Map within the Appendix:

<u>EX-DA1</u>: This area includes the existing A&P grocery store and majority of the paved parking area. Stormwater runoff generated by the existing building is collected via roof leaders and conveyed to the existing on-site stormwater conveyance system. Stormwater runoff generated from the paved parking lot flows in a southerly direction overland where it is collected via on-site inlets and conveyed to the existing stormwater conveyance system within the NJSH right-of-way (POA-1). A minimum time of concentration of 10 minutes was utilized for this area.

<u>EX OFFSITE 1</u>: This off-site area includes portions of residential Lots 10 and 11 which are directly to the north of the subject site. Stormwater runoff generated from this area flows in a southerly direction towards the subject site and is collected via existing on-site inlets located within the paved parking area. This runoff is

ultimately conveyed to the existing stormwater conveyance system within the NJSH Route 173 right-of-way (POA-1). A minimum time of concentration of 10 minutes was utilized for this area.

<u>EX-DA2</u>: This area includes wooded areas to the north of the A&P building and portion of the paved parking area. Stormwater runoff generated from this area is collected via on-site inlets and conveyed to the existing above-ground detention basin located along the Route 173 frontage. The runoff is detained and discharged at a reduced rate towards the stormwater conveyance system located within the NJSH Route 173 right-of-way (POA-2). A portion of this area falls outside the limits of disturbance, and is therefore exempt from the reduction criteria set forth by the Town of Clinton and NJAC 7:8. A minimum time of concentration of 10 minutes was utilized for this area.

<u>EX-DA 2 UNDISTURBED</u>: This area includes a northern portion of the wooded area located behind the A&P building. Stormwater runoff generated from this area flows overland in a southwesterly direction towards the NJSH Route 173 right-of-way (POA-2). A minimum time of concentration of 10 minutes was utilized for this area. This area falls outside the limits of disturbance and is therefore exempt from the reduction criteria set forth by the Town of Clinton and NJAC 7:8. A minimum time of concentration of 10 minutes was utilized for this area.

<u>EX OFFSITE 2</u>: This off-site area includes residential Lots 12.01, 12, and 13 which are directly to north of the subject site. Stormwater runoff generated from this area flows in a southerly direction towards the subject site and is collected via on-site inlets, conveyed to the above-ground detention basin, and discharged at a reduced rate towards the stormwater conveyance system located within the NJSH Route 173 right-of-way (POA-2). A time of concentration of 10.8 minutes was calculated for this area.

<u>EX-DA2 UNDETAINED</u>: This area includes a majority of the eastern portion of the site and contains the existing residential dwelling, wooded areas, gravel, and impervious surfaces to the east of the A&P parking area. Stormwater runoff generated from this area flows overland in a southwesterly direction towards the NJSH Route 173 right-of-way (POA-2). A minimum time of concentration of 10 minutes was utilized for this area.

<u>EX-DA2 UNDETAINED UNDISTURBED</u>: This area includes the northeastern corner of the site which consists of wooded areas. Stormwater runoff generated from this area flows overland in a southwesterly direction towards the NJSH Route 173 right-of-way (POA-2). A minimum time of concentration of 10 minutes was utilized for this area. This area falls outside the limits of disturbance and is therefore exempt from the reduction criteria set forth by the Town of Clinton and NJAC 7:8. A minimum time of concentration of 10 minutes was utilized for this area.

EX OFFSITE 2 UNDETAINED: This off-site area includes residential Lots 14, 15, and 16 which are directly to north of the subject site. Stormwater runoff generated from this area flows in a southerly direction towards

the subject site and ultimately to the Route 173 right-of way (POA-2). A time of concentration of 11.2 minutes was calculated for this area.

IV. PROPOSED DRAINAGE CONDITIONS

The tract has been evaluated with the following drainage sub-watershed areas as depicted on the Proposed Drainage Area Map:

<u>PR-DA 1</u>: This area includes the northern paved parking areas, open space areas and the courtyard area. Stormwater runoff generated from this area is collected via proposed inlets and conveyed to the proposed underground detention basin where it is detained and released at a controlled rate into the existing stormwater conveyance system within the NJSH Route 173 right-of-way (POA-1). A time of concentration of 10 minutes was utilized for this area.

<u>ROOF AREA DETAINED</u>: This area includes a portion of the proposed roof area which will be conveyed to the proposed underground detention basin. Runoff will be conveyed to the basin, detained, and released at a controlled rate to the existing stormwater conveyance system within the NJSH Route 173 right-of-way (POA-1). A time of concentration of 10 minutes was utilized for this area.

<u>PR-OFFSITE 1</u>: This off-site area includes the residential Lots 10, 11, 12.01, and 12-16 which are located directly to the north of the subject. Stormwater runoff generated from this area flows in a southerly direction on to the subject property, is collected by proposed on-site inlets and conveyed to the proposed underground detention basin within the western parking area. The runoff is detained and released at a controlled rate into the existing stormwater conveyance system within the NJSH Route 173 right-of-way (POA-1). This area falls outside of the proposed limits of disturbance and is therefore exempt from the runoff quantity reduction requirements. A time of concentration of 10 minutes was utilized for this area.

<u>PR-DA1 UNDISTURBED</u>: This area includes the northern portion of the site consisting of wooded areas and the existing dwelling. Stormwater runoff generated from this area flows in a southerly direction where it is collected by proposed on-site inlets and conveyed to the proposed underground detention basin within the western parking area. The runoff is detained and released at a controlled rate into the existing stormwater conveyance system within the NJSH Route 173 right-of-way (POA-1). This area falls outside of the proposed limits of disturbance and is therefore exempt from the runoff quantity reduction requirements. A time of concentration of 10 minutes was utilized for this area.

<u>PR-DA 1 UNDETAINED</u>: This area includes a portion of the proposed drive aisle, sidewalk, and open space areas located in the southwestern corner of the site. Stormwater runoff generated from this area flows undetained towards the existing stormwater conveyance system within the NJSH Route 173 right-of-way (POA-1).

<u>PR-DA 2</u>: This area includes the proposed driveway, portions of the sidewalk and parking areas within the southeast corner of the subject site. Stormwater runoff generated from this area is collected via on-site inlets and conveyed directly to the existing stormwater conveyance system within the NJSH Route 173 right-of-way (POA-2). A time of concentration of 10 minutes was utilized for this area.

<u>ROOF AREA UNDETAINED</u>: This area includes a portion of the proposed roof area which will be conveyed to the existing stormwater conveyance system within the NJSH Route 173 right-of-way (POA-2). A time of concentration of 10 minutes was utilized for this area.

<u>PR OFFSITE 2</u>: This off-site area includes a portion of Napa property, Lot 30 located to the east of the subject site. This area falls within the project's limits of disturbance and includes open space and a portion of the proposed grass paver emergency access drive. Stormwater runoff generated by this area flows in a westerly direction, is collected by proposed on-site inlets and conveyed to the existing stormwater conveyance system within the NJSH Route 173 right-of-way (POA-2). A minimum time of concentration of 10 minutes was utilized for this area.

V. <u>DESIGN METHODOLOGY</u>

The intention of the proposed stormwater management facilities for this project is to provide measures as required to address applicable aspects of the Town of Clinton Stormwater Control Ordinance and N.J.A.C. 7:8. To prepare the stormwater calculations for the project, extensive initial investigation of the property and topographic survey was performed. On-site review of the tract was performed by Dynamic Engineering Consultants, PC to verify existing site conditions and land cover characteristics. Dynamic Survey, LLC was contracted to prepare a ALTA/NSPS Survey of the existing site. Based on a review of the existing site conditions and the Survey, the Drainage Area Maps for the existing and proposed site conditions as defined within this report were established. The grading plan within the accompanying engineering drawings was developed for the proposed site improvements with consideration to the existing drainage patterns.

The 2-, 10- and 100-year quantity design storms are based upon the New Jersey 24 Hour Rainfall Frequency Data for Morris County as published by the NOAA Atlas 14 Type D rainfall distribution. Curve number calculations have been included within the Appendix and are based upon HSG B. Pervious and impervious areas were modeled separately as suggested in the NJDEP Stormwater Management Best Management Practices (BMP) Manual.

VI. UNDERGROUND DETENTION BASIN DESIGN

The stormwater management design for this project utilizes an underground detention basin to satisfy the stormwater quantity regulations set forth by the Town of Clinton, NJDOT, and N.J.A.C. 7:8. The basin has

been designed with an outlet control structure to accommodate the 100-year design storm, to release stormwater runoff at a controlled rate and reduced peak runoff rates as required by the NJDOT, N.J.A.C. 7:8 and the Town of Clinton. The on-site discharge pipes downstream of the proposed basin have been designed to accommodate the 100-year design storm.

The proposed underground detention basin is located to the west of the proposed building within the paved parking area. The basin consists of a StormTrap concrete SingleTrap chamber, of approximately five feet in depth, with an outlet control structure to attenuate peak runoff rates. The underground detention basin has been designed to accommodate the 100-year design storm. Design calculations for this basin, including the design of the outlet control structure are located within the Appendix.

VII. <u>RUNOFF RATE REDUCTION PERFORMANCE</u>

The below charts provide a summary of the peak runoff rates under existing and proposed conditions. As noted above, this project has been analyzed with two points of analysis.

	NJDEP Flow Reductions - POA 1 (CFS)								
Design Storm	Existing Runoff (Subject to Reductions)	Existing Runoff (Exempt from Reductions)	Allowable	Proposed					
2-Year	5.36 x (0.50) = 2.68	0.40	3.08	2.97					
10-Year	8.00 x (0.75) = 6.00	0.78	6.78	4.53					
100-Year	12.93 x (0.80) = 10.34	1.62	11.96	10.30					

NJDEP Flow Reductions - POA 2 (CFS)								
Design Storm	Existing Runoff (Subject to Reductions)	Existing Runoff (Exempt from Reductions)	Allowable	Proposed				
2-Year	2.65 x (0.50) = 1.37	1.97	3.34	2.23				
10-Year	5.49 x (0.75) = 4.12	4.32	8.44	3.63				
100-Year	12.03 x (0.80) = 9.62	9.73	19.35	6.46				

NJDOT Flow Reductions						
POA	Existing 25-Year	Proposed 100-Year				
POA-1	10.84	10.30				
POA-2	12.63	6.46				

As illustrated in the above tables, the proposed improvements will result in post-development runoff rates that meet or exceed the required reduction criteria when compared to existing conditions for the 2-, 10-, and 100-

year design storms, thus meeting the stormwater quantity standards set forth by N.J.A.C. 7:8. Additionally, the proposed improvements will result in post-development runoff rates that exceed the reduction criteria specified by the NJDOT. Please refer to the Appendix of this report for associated runoff rate and detention basin design calculations.

VIII. WATER QUALITY

As the proposed development will increase the impervious coverage on-site by more than ¹/₄ acre, the project is required to comply with the stormwater quality requirements of the Town of Clinton and N.J.A.C. 7:8. An ADS Bayfilter Manufactured Treatment Devices (MTD) is proposed to treat the runoff from the on-site conveyance system. The MTD is certified by NJDEP as capable of treating the water quality design storm for an 80% TSS removal rate. Storm events larger than the NJDEP Water Quality design storm will bypass the MTD via an internal bypass weir. In accordance with Chapter 4 of the New Jersey Stormwater Best Management Practices Manual, a weighted average calculation was performed to determine adequate post-development TSS removal which are included within the Appendix.

IX. <u>GROUNDWATER RECHARGE</u>

Based upon preliminary findings determined in the Phase I Carbonate Rock Study conducted by Dynamic Earth, LLC, there is an inherent risk of sinkhole formations in the region due to karst subsurface conditions. As such, infiltration stormwater systems should be avoided and the proposed development will not comply with the groundwater recharge requirements set forth by the Town of Clinton and N.J.A.C. 7:8. The Applicant requests a waiver from groundwater recharge requirements due to the impractical design constraints of the subsurface conditions on-site.

X. <u>CONCLUSION</u>

The proposed development has been designed with provisions for the safe and efficient control of stormwater runoff in a manner that will not adversely impact the existing drainage patterns, adjacent roadways, or adjacent parcels.

The stormwater management design reduces peak flow rates for the proposed development area and meets the minimum peak flow reduction for the 2, 10 and 100-year storm frequencies as required by the Town of Clinton and N.J.A.C. 7:8. Additionally, the post-development runoff rates for the 100-year storm event have been reduced to less than the existing 25-year storm peak flow as required for NJDOT.

The water quality TSS removal requirements set forth by the Town of Clinton and N.J.A.C. 7:8 have been satisfied by use of the ADS Manufactured Treatment Device to achieve the 80% TSS required removal rate for the development.

As noted above, due to the karst subsurface conditions, infiltration stormwater systems should be avoided and the proposed development will not comply with the groundwater recharge requirements set forth by the Town of Clinton and N.J.A.C. 7:8. The Applicant requests a waiver from groundwater recharge requirements due to the impractical design constraints of the subsurface conditions on-site. A waiver from providing groundwater recharge BMP's on the developed site is warranted and justified.

APPENDIX

USGS MAP





1904 Main Street, Lake Como, NJ 07719 T. 732-974-0198

100 NE 5th Avenue, Suite B2, Delray Beach, FL 33483 T. 561-291-8570 14521 Old Katy Road, Suite 250, Houston, TX 77079 T. 281-789-6400 1301 Central Expressway S., Suite 210, Allen, TX 75013 T. 972-534-2100

SOIL SURVEY



National Cooperative Soil Survey

Conservation Service

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
DufC2	Duffield silt loam, 6 to 12 percent slopes, eroded	В	1.1	36.0%
UdrB	Udorthents, refuse substratum, 0 to 8 percent slopes	В	1.9	64.0%
Totals for Area of Intere	est		3.0	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition Component Percent Cutoff: None Specified Tie-break Rule: Higher

RUNOFF CURVE NUMBER (CN) CALCULATIONS – EXISTING & PROPOSED

EXISTING DRAINAGE AREA SUMMARY AND AVERAGE CURVE NUMBER(CN) CALCULATIONS

Project:	Ingerman	Computed By:	DRL
Job #:	2362-99-007	Checked By:	ZZ
Location:	Town of Clinton	Date:	7/29/2020

Drainage Area	Impervious Area (acre)	Curve Number (CN) Used	HSG B - Open Space Area (acre)	Curve Number (CN) Used	HSG B - Wooded Area (acre)	Curve Number (CN) Used	Avg. Perv. Curve Number	Total Pervious Area (acres)	Total Area (acres)	TC (Min.)
EX-DA-1	2.05	98	0.03	61	0.00	55	61	0.03	2.08	10
EX-DA-2	0.37	98	0.15	61	0.58	55	56	0.73	1.10	10
EX-DA-2 UNDIST.	0.00	98	0.00	61	0.18	55	55	0.18	0.18	10
EX-DA-2 UD	0.46	98	0.37	61	1.09	55	57	1.46	1.91	10
EX-DA-2 UD UNDIST.	0.02	98	0.00	61	0.36	55	55	0.36	0.38	10
Total	2.89		0.55		2.21			2.75	5.65	

Drainage Area	Impervious Area (acre)	Curve Number (CN) Used	HSG B - Open Space Area (acre)	Curve Number (CN) Used	HSG B - Wooded Area (acre)	Curve Number (CN) Used	Avg. Perv. Curve Number	Total Pervious Area (acres)	Total Area (acres)	TC (Min.)
EX OFF 1	0.12	98	0.27	61	0.00	55	61	0.27	0.39	10
EX OFF 2	0.25	98	0.63	61	0.00	55	61	0.63	0.88	10.8
EX OFF 2 UD	0.28	98	0.90	61	0.00	55	61	0.90	1.18	11.2
EX OFF 2 UD DIS	0.06	98	0.18	61	0.00	55	61	0.18	0.24	11.2
Total	0.71		1.98		0.00			1.98	2.69	

Per County Soil Survey - Hunterdon	DufC2	HSG	Soil	Duffield Silt Loam
Per County Soil Survey - Hunterdon	UdrB	HSG	Soil	Udorthents, refuse substratum

Description	Runoff Curve Number
Impervious Surface	98
Open Space (lawn) (good)	61
Woods (good)	55

PROPOSED DRAINAGE AREA SUMMARY AND AVERAGE CURVE NUMBER(CN) CALCULATIONS

Project:	Ingerman	Computed By:	DRL
Job #:	2362-99-007	Checked By:	ZZ
Location:	Town of Clinton	Date:	7/29/2020

Drainage Area	Impervious Area (acre)	Curve Number (CN) Used	HSG B - Open Space Area (acre)	Curve Number (CN) Used	HSG B - Wooded Area (acre)	Curve Number (CN) Used	Avg. Perv. Curve Number	Total Pervious Area (acres)	Total Area (acres)	TC (Min.)
PR DA-1	1.46	98	1.16	61	0.00	55	61	1.16	2.62	10
PR DA 1 Undist.	0.02	98	0.00	61	0.58	55	55	0.58	0.60	10
PR DA-2	0.55	98	0.43	61	0.00	55	61	0.43	0.98	10
PR DA 1 UD	0.27	98	0.32	61	0.00	55	61	0.32	0.59	10
Roof Areas D	0.43	98	0.00	61	0.00	55	N/A	0.00	0.43	10
Roof Areas UD	0.43	98	0.00	61	0.00	55	N/A	0.00	0.43	10
Total	3.15		1.92		0.58			2.49	5.65	

Drainage Area (Offsite)	Impervious Area (acre)	Curve Number (CN) Used	HSG B - Open Space Area (acre)	Curve Number (CN) Used	HSG B - Wooded Area (acre)	Curve Number (CN) Used	Avg. Perv. Curve Number	Total Pervious Area (acres)	Total Area (acres)	TC (Min.)
PR OFF 1	0.68	98	1.85	61	0.00	55	61	1.85	2.53	10
PR OFF 2	0.03	98	0.14	61	0.00	55	61	0.14	0.17	10
Total	0.68		1.85		0.00			1.98	2.69	

Per County Soil Survey - Hunterdon	DufC2	HSG	Soil	Duffield Silt Loam
Per County Soil Survey - Hunterdon	UdrB	HSG	Soil	Udorthents, refuse substratum

Description	Runoff Curve Number
Impervious Surface	98
Open Space (lawn) (good)	61
Woods (good)	55

TIME OF CONCENTRATION (TC) CALCULATIONS

1904 Main Street, Lake Como, NJ 07719 (732) 974-0198

Date:	3/4/2020
Project:	Ingerman - Clinton
Project No:	2362-99-007

Calculated By: DRL Checked By: ZZ

Worksheet 3: Time of Concentration (T_c) Calculations

Land Condition:	Existing
Drainage Area:	EX-UD 2 OFF

• Sheet Flow :

Sheet Flow :	AB			
1. Surface Description	Short Grass, Prairie			
2. Manning's Roughness Coefficient, <i>n</i>	0.15			
3. Flow Length, $L \{ total \ L \le 100 \ ft \} \dots $	100.0 ft			
4. Two-Year 24-hour Rainfall, p_2 for Hunterdon County	3.38 in	3.38 in	3.38 in	
5. Land Slope, <i>s (ft/ft)</i>	0.020 ft/ft	0.300 ft/ft		
6. Travel Time, $T_t = \frac{0.007 (n L)^{0.8}}{p_2^{0.5} s^{0.4}}$	0.159 hr +	0.000 hr +	0.000 hr =	0.159 hr

• <u>Shallow Concentrated Flow</u>:

7.	Surface Description
8.	Flow Length, L
9.	Watercourse Slope, s
10.	Average velocity, V { see Figure 3.1)
11	Travel Time $T_{L} = $
	3600 V

BC		CD		D	E	
Unpaved	ł	Unpaved	1	Pav	red	
130.0 f	ť	300.0 f	t	150.	.0 ft	
0.370 ft/	/ft	0.100 ft/	′ft	0.080) ft/ft	
9.81 ft/s	s	5.10 ft/s	s	5.75	ft/s	
 0.004 hr	+	0.016 hr	+	0.007 hr	=	0.027 hr

Channel Flow :							
12. Pipe Diameter, <i>D</i>							
13. Cross-Sectional Flow Area, A							
14. Wetted Perimeter, p_w							
15. Hydraulic Radius, <i>r</i> = <i>A</i> / <i>p</i> _w							
16. Channel Slope, <i>s</i>							
17. Pipe Material							
18. Manning's Roughness Coefficient, <i>n</i>							
19. Velocity, V = $\frac{1.49 r^{2/3} s^{1/2}}{n}$							
20. Flow Length, <i>L</i>							
21. Travel Time, $T_t = \frac{L}{3600 V}$	0.000 hr	+	0.000 hr	+	0.000 hr	=	0.000 hr
22. Watershed or subarea Time of Concentration, T_c { add T_t in steps	s 6, 11 and	21	}				0.186 hr

11.2 min

	Date: Project: Project No:				In	3/4/2020 german - Clinton 2362-99-007	
1904 Main Street, Lake Como, NJ 07719 Calculated By: D (732) 974-0198 Checked By: Z				DRL ZZ			
Worksheet 3: Time of Concentration (T) Calculation	<u>s</u>					
Land Condition: Existing							
Drainage Area: <u>EX-OFF-2</u>							
<u>Sheet Flow</u> :							
1. Surface Description	Short Grass Prairie	s,					
 Manning's Roughness Coefficient, n Flow Length, L { total L ≤ 100 ft } 	0.15 100.0 ft						
4. Two-Year 24-hour Rainfall, p ₂ for Hunterdon County 5. Land Slope, s (ft/ft)	3.38 in 0.020 ft/f	ft			3	.38 in	
6. Travel Time, $T_t = \frac{0.007 (n L)^{0.8}}{n e^{0.5} e^{0.4}}$	0.159 hr	+	0.000 hr	+	0.000 hr	=	0.159 hr
P2 5		L			<u> </u>		L
Shallow Concentrated Flow :							
7. Surface Description	Unpaved		Unpaved	1	Ur	paved	
8. Flow Length, <i>L</i>	80.0 ft		60.0 ft		4	0.0 ft	
9. Watercourse Slope, s	0.050 ft/f	it	0.330 ft/	'ft	0.1	10 ft/ft	
10. Average velocity, V { see Figure 3.1)	3.61 ft/s	;	9.27 ft/s	S	5.	35 ft/s	
11. Travel Time, $T_t = \frac{L}{3600 V}$	0.006 hr	+	0.002 hr	+	0.002 hr	=	0.010 hr
<u>Channel Flow</u> :	AB		вс				
12. Pipe Diameter, <i>D</i>	15 in		15 in				
3. Cross-Sectional Flow Area, A	1.227 sf	:	1.227 s	f			
4. Wetted Perimeter, p_w	3.9 ft		3.9 ft				
15. Hydraulic Radius, <i>r</i> = Α / ρ _w	0.3 ft		0.3 ft				
l6. Channel Slope, <i>s</i>	0.040 ft/f	ft	0.025 ft/	'ft			
7. Pipe Material	RCP		RCP				
18. Manning's Roughness Coefficient, $n \dots $	0.013	\rightarrow	0.013				
19. Velocity, $V = \frac{1.49 r^{20} s^{n2}}{n}$	10.56 ft/s	s	8.35 ft/s	5			
20. Flow Length, <i>L</i>	170.0		175.0				
21. Travel Time, $T_t = \frac{L}{3600 V}$	0.004 hr	+	0.006 hr	+	0.000 hr	=	0.010 hr
22. Watershed or subarea Time of Concentration, T_c { add T_t in steps 6, 11	and 21 }			•••			0.179 hr
							10.8 min

HYDROGRAPH SUMMARY REPORTS – EXISTING AND PROPOSED CONDITIONS 2-YR, 10-YR, & 100-YR

Hydrograph Return Period Recap

Hyd	Hydrograph	Inflow				Peak Out	llow (cfs)				Hydrograph
Ö	type (origin)	nya(s)	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	nescription
41	Combine	14, 20, 24,	ł	2.653			5.486	7.704		12.03	Within LOD
42	Combine	16, 28, 32, 36,		1.971		l	4.318	6.154		9.728	Outside of LOD
44	Combine	20, 28, 36, 39,		4.240			9.128	12.63		18.96	EX-POA-2
 46	SCS Runoff			3.809			5.670	6.919		9.138	DA-1 Imp.
47	SCS Runoff			0.402			1.356	2.151		3.730	DA-1 Per.
48	Combine	46, 47	ł	4.182	ł		7.026	9.070	ļ	12.87	DA-1A
50	SCS Runoff	ł	ļ	0.052	ł	ł	0.078	0.095	ļ	0.125	UNDIST. Imp.
51	SCS Runoff			0.074	ļ		0.422	0.763		1.468	UNDIST. Per
 52	Combine	50, 51		0.113			0.500	0.858		1.593	UNDIST.
 54	SCS Runoff	ł	ļ	1.774	ł	ł	2.641	3.223	ļ	4.256	OFF 1 Imp.
55	SCS Runoff		ļ	0.641	ļ		2.162	3.431		5.948	OFF 1 Per.
56	Combine	54, 55	ł	2.370	ł	ł	4.803	6.654	ļ	10.20	OFF 1
58	SCS Runoff		1	1.696		1	2.524	3.080		4.068	Roof Area D
60	Combine	48, 52, 56,		8.346			14.85	19.66		28.73	TOTAL TO BASIN
 61	Reservoir	80 x	l	2.581	l		3.818	4.640		9.366	BASIN
 63	SCS Runoff			0.704			1.049	1.280		1.690	DA-UD 1 Imp.
 64	SCS Runoff		ł	0.111	ļ	1	0.374	0.593		1.029	DA-1 UD Per.
 65	Combine	63, 64	ļ	0.807			1.423	1.873		2.719	DA-1 UD
67	Combine	61, 65,		2.967			4.532	5.567		10.30	POA-1
69	SCS Runoff			0.574			0.854	1.043		1.377	Roof Area UD
 71	SCS Runoff	ł	ļ	1.435	ł	ł	2.136	2.606	ļ	3.443	DA-2 Imp.
72	SCS Runoff		ł	0.114		ł	0.386	0.612	ļ	1.061	DA-2 Per
73	Combine	71, 72	ł	1.541	ł		2.522	3.218	ļ	4.504	DA-2
 75	SCS Runoff	ł	ļ	0.071			0.106	0.130		0.171	OFF 2 IMP
 76	SCS Runoff			0.044			0.150	0.238		0.412	OFF 2 PER
 11	Combine	75, 76	ł	0.113			0.257	0.368		0.584	OFF 2
62	Combine	69, 73, 77,		2.228			3.633	4.629		6.464	POA-2
Pre	 oj. file: 2020-0	18- Exist vs	Prop.gp	Ň					W	dnesday	, 08 / 12 / 2020
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I-yr 2-yr 3-yr I-yr 2-yr 3-yr I-yr 5.348 I-yr I-yr 0.010 I-yr I-yr 5.348 I-yr I-yr 0.313 I-yr I-yr 0.114 I-yr I-yr 0.136 I-yr I-yr 0.136 I-yr I-yr 0.056 I-yr I-yr 0.056 I-yr I-yr 0.1312 I-yr I-yr 0.312 I-yr I-yr 1.020 I-yr I-yr 1.020 I-yr I-yr 1.020 I-yr I-yr 1.020 I-yr	X	Return Period Recap	Peak Outflow (cfs) Hydrograph	1-yr 2-yr 3-yr 5-yr 10-yr 25-yr 50-yr 100-yr	- 5.348 7.962 9.715 12.83 EX-DA-1 lmp.	- 0.010 0.035 0.056 0.096 EX-DA-1 Per	2 5.358 7.997 9.771 12.93 Ex-DA-1	0.313 0.466 0.569 0.751 OFF-1 http.	0.094 0.316 0.501 0.868 OFF-1 Per	6 0.400 0.782 1.069 1.619 OFF-1	7 5.758 8.778 8.778 10.84 14.55 EX-POA-1	0.965 1.437 1.753 2.316 EX-DA-2 Imp.	- 0.114 0.584 1.025 1.931 EX-DA-2 Per.	13 1.046 2.021 2.778 4.247 EX-DA-2	- 0.023 0.131 0.237 0.456 EX-DA-2 Undist.	1200 1.786 2.180 2.879 EX-DA-2 UD Imp.	- 0.271 1.273 2.180 4.030 EX-DA-2 UD Per	19 1.410 3.060 4.360 6.309 EX-DA-2 UD	0.143 0.213 0.259 0.343 EX-OFF 2 UD DIS MP	- 0.056 0.193 0.306 0.530 EX-OFF 2 UD DIS PER	23 0.196 0.406 0.566 0.873 EX-OFF DA 2 UD DIS	0.052 0.078 0.095 0.125 EX-DA-2 UD Undist. Imp.	- 0.046 0.262 0.474 0.911 EX-DA-2 UD Undist. Per.	27 0.087 0.340 0.568 1.036 EX-DA-2 UD Undist.	0.552 0.971 1.185 1.565 OFF-2 Imp.	- 0.218 0.736 1.168 2.026 OFF-2 Per.	31 0.855 1.707 2.353 3.590 OFF-2	- 0.730 1.087 1.327 1.753 EX-OFF-UD-2 Imp.	- 0.312 1.052 1.669 2.894 EX-OFF-UD-2 Per.	35 1.020 2.139 2.396 4.646 EX-OFF-UD-2	, 32, 1.916 3.859 5.368 8.293 Basin	3 1.823 3.653 4.905 7.147 Exist Basin	
Irograph Re tytrograph Inflow type (origin) hyd(s) SCS Runoff SCS Runoff		Hyc	Hyd.	v	-	5	с е	2 C	9	7 0	6	12 5	13 5	14	16 5	18	19	20	22 S	23 S	24 C	26 S	27 S	28	30 5	31 6	32 C	34 5	35 S	36	38	39 F	

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		Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk,
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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
41	Combine	2.653	5	730	12,532	14, 20, 24,			Within LOD
42	Combine	1.971	5	730	9,159	16, 28, 32, 36,			Outside of LOD
44	Combine	4.240	5	730	20,648	20, 28, 36, 39,	ł		EX-POA-2
46	SCS Runoff	3.809	5	730	15,635		ļ		DA-1 Imp.
47	SCS Runoff	0.402	5	735	2,052				DA-1 Per
48	Combine	4.182	5	730	17,687	46, 47			DA-1A
50	SCS Runoff	0.052	Ð	730	214				UNDIST. Imp.
51	SCS Runoff	0.074	S	740	604	1	ł	1	UNDIST. Per.
52	Combine	0.113	ŝ	735	819	50, 51			UNDIST.
54	SCS Runoff	1.774	с,	730	7,282		1		OFF 1 Imp.
55	SCS Runoff	0.641	5	735	3,272		1	ļ	OFF 1 Per.
56	Combine	2.370	5	730	10,555	54, 55		-	OFF 1
58	SCS Runoff	1.696	ŝ	730	6,961				Roof Area D
60	Combine	8.346	ŝ	730	36,022	48, 52, 56,			TOTAL TO BASIN
61	Reservoir	2.581	ъ	750	36,008	90 20	196.21	11,605	BASIN
63	SCS Runoff	0.704	ŝ	730	2,891				DA-UD 1 Imp.
64	SCS Runoff	0.111	5	735	566		1	ļ	DA-1 UD Per
65	Combine	0.807	S	730	3,458	63, 64			DA-1 UD
67	Combine	2.967	5	740	39,465	61, 65,			POA-1
69	SCS Runoff	0.574	5	730	2,356				Roof Area UD
71	SCS Runoff	1.435	5	730	5,890				DA-2 Imp.
72	SCS Runoff	0.114	5	735	584		ļ		DA-2 Per
73	Combine	1.541	5	730	6,474	71, 72			DA-2
75	SCS Runoff	0.071	5	730	321				OFF 2 IMP
76	SCS Runoff	0.044	5	735	248		1	ļ	OFF 2 PER
22	Combine	0.113	ŝ	730	569	75, 76			OFF 2
79	Combine	2.228	ß	730	9,399	69, 73, 77,	ł		POA-2
202	20-08- Exist vs	: Prop.gp	8		Return P	eriod: 2 Ye.	ar	Wednesday	/, 08 / 12 / 2020

Ŧ	drogra	ph Sı	mmr	ary R	teport	Hydrafi	ow Hydrographs	Extension for Au	odesk® Civil 3D® by Autodesk, Inc. v2020
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	5.348	5	730	21,954				EX-DA-1 Imp.
2	SCS Runoff	0.010	5	735	53				EX-DA-1 Per
ŝ	Combine	5.358	£	730	22,007	1, 2			Ex-DA-1
ŝ	SCS Runoff	0.313	5	730	1,285			1	OFF-1 Imp.
9	SCS Runoff	0.094	ŝ	735	478				OFF-1 Per.
7	Combine	0.400	5	730	1,763	5, 6			OFF-1
თ	Combine	5.758	2	730	23,770	3, 7,			EX-POA-1
12	SCS Runoff	0.965	5	730	3,962			1	EX-DA-2 Imp.
13	SCS Runoff	0.114	2	740	840				EX-DA-2 Per
14	Combine	1.046	5	730	4,803	12, 13			EX-DA-2
16	SCS Runoff	0.023	2	740	188		ł		EX-DA-2 Undist.
18	SCS Runoff	1.200	5	730	4,926			1	EX-DA-2 UD Imp.
19	SCS Runoff	0.271	S	735	1,842				EX-DA-2 UD Per
20	Combine	1.410	5	730	6,768	18, 19			EX-DA-2 UD
22	SCS Runoff	0.143	ŝ	730	643	ļ			EX-OFF 2 UD DIS IMP
23	SCS Runoff	0.056	5	735	318			1	EX-OFF 2 UD DIS PER
24	Combine	0.196	5	730	961	22, 23			EX-OFF DA 2 UD DIS
26	SCS Runoff	0.052	5	730	214	ļ	1		EX-DA-2 UD Undist. Imp.
27	SCS Runoff	0.046	5	740	375			1	EX-DA-2 UD Undist. Per
28	Combine	0.087	5	735	589	26, 27		1	EX-DA-2 UD Undist.
30	SCS Runoff	0.652	S	730	2,677	1		1	OFF-2 Imp.
31	SCS Runoff	0.218	£	735	1,114			1	OFF-2 Per.
32	Combine	0.855	5	730	3,792	30, 31			OFF-2
34	SCS Runoff	0.730	ß	730	2,999			-	EX-OFF-UD-2 Imp.
35	SCS Runoff	0.312	5	735	1,592				EX-OFF-UD-2 Per
36	Combine	1.020	5	730	4,591	34, 35			EX-OFF-UD-2
38	Combine	1.916	5	730	8,782	14, 16, 32,			Basin
39	Reservoir	1.823	ى ا	735	8,700	38	196.67	537	Exist. Basin
202	20-08- Exist vs	Prop.gpv	2		Return P	eriod: 2 Ye	ar	Wednesday	, 08 / 12 / 2020

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Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 1			
EX-DA-1 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 5.348 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 21,954 cuft
Drainage area	= 2.050 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Mate	⊛halp\©fenctoral Engine	ering References/Stormwater

Precipitation Report

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lydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 1	

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EX-DA-1 Imp.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	al Engineering References\Stormwat

Hydraflow Hydrographs Extens	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 2			
EX-DA-1 Per			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.010 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 53 cuft
Drainage area	= 0.030 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	at entratis ke0teroteoral Engine	ering & ferences \Stormwater

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Hydraffow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 2	

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EX-DA-1 Per

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	al Engineering References\Stormwat

Hydrograph R	eport		n
Hydraflow Hydrographs Extension	for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 3			
Ex-DA-1			
Hydrograph type	= Combine	Peak discharge	= 5.358 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 22,007 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 2.080 ac

Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 5			
OFF-1 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.313 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,285 cuft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate Strat okeCienceoral Engine	eeriing & beferences \Stormwater

Precipitation Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 5

Wednesday, 08 / 12 / 2020

OFF-1 Imp.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	ral Engineering References/Stormwati

Hydrograph Report

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Hydratiow Hydrographs Extensic	in for Autodesk® Civil 3D® by Autodesk, Inc. v2020		wednesday, U8 / 12 / 2020
Hyd. No. 6			
OFF-1 Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.094 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 478 cuft
Drainage area	= 0.270 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Mage	at ehnal okenterral Engine	ering & ferences \Stormwater

Precipitation Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 08 / 12 / 2020

Hyd. No. 6 OFF-1 Per

torm Frequency	= 2 yrs	Time interval	= 5 min
otal precip.	= 3.3800 in	Distribution	= Custom
torm duration	= P:\Engineering R	eference Materials\Gener	al Engineering References/Stormwat

Hydraflow Hydrographs Extension for Autodeski

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 7	
OFF-1	

Hydrograph type	= Combine	Peak discharge	= 0.400 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,763 cuft
Inflow hyds.	= 5,6	Contrib drain area	= 0.390 ac

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Hydrograph R	eport		<u>e</u>
Hydraflow Hydrographs Extension	for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 9			
EX-POA-1			
Hydrograph type	= Combine	Peak discharge	= 5.758 cfs
Storm trequency	= 2 yrs	I ime to peak	= /30 min
Time interval	= 5 min	Hyd. volume	= 23,770 cuft
Inflow hyds.	= 3, 7	Contrib drain area	= 0.000 ac

Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 12			
EX-DA-2 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.965 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,962 cuft
Drainage area	= 0.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	atestinals/edienceoral Engine	ering & ferences \Stormwater

Precipitation Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No. 12 EX-DA-2 Im

EA-UA-2 IMp.			
Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	al Engineering References/Stormwati

Hydrograph Report

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Wednesday, 08 / 12 / 2020

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Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 13			
EX-DA-2 Per			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.114 cfs
Storm frequency	= 2 yrs	Time to peak	= 740 min
Time interval	= 5 min	Hyd. volume	= 840 cuft
Drainage area	= 0.730 ac	Curve number	= 56
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate8rinalp\e6fenctoral Engine	eering tterences∖Stormwateı

Precipitation Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 08 / 12 / 2020

Hyd. No. 13 EX-DA-2 Per

EX-DA-2 Per			
Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	ral Engineering References\Stormwat

Hydrograph Report

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Hydraffow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 14	

Hyd. No. 14			
EX-DA-2			
Hydrograph type Storm frequency Time interval Inflow hyds.	= Combine = 2 yrs = 5 min = 12, 13	Peak discharge Time to peak Hyd. volume Contrib. drain. area	= 1.046 cfs = 730 min = 4,803 cuft = 1.100 ac

Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 16			
EX-DA-2 Undist.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.023 cfs
Storm frequency	= 2 yrs	Time to peak	= 740 min
Time interval	= 5 min	Hyd. volume	= 188 cuft
Drainage area	= 0.180 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate Sha pkeGenotenal Engine	eering & ferences \ Stormwater

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Hydraffow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 16	

EX-DA-2 Undist.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	al Engineering References\Stormwat

22
Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 18			
EX-DA-2 UD Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 1.200 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,926 cuft
Drainage area	= 0.460 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	 P:\Engineering Reference Mat 	it e3riatp\e0ferot oral Engine	ering References/Stormwater

Precipitation Report

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Jydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020	
Hyd. No. 18		

EX-DA-2 UD Imp.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	al Engineering References\Stormwat





Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 19			
EX-DA-2 UD Per			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.271 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 1,842 cuft
Drainage area	= 1.460 ac	Curve number	= 57
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	tt estratp\eSterot oral Engine	eeriing & the ferences \ Stormwater

Precipitation Report

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sk, Inc. v2020 Wednesday, 08 / 12 / 2020	
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autod	Hyd. No. 19

EX-DA-2 UD Per

Storm Frequency	= 2 Vrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Enaineerina R	eference Materials/Gener	al Engineering References/Stormwat





Hydraflow Hydrographs Extensic	in for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 20			
EX-DA-2 UD			
Hydrograph type	= Combine	Peak discharge	= 1.410 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 6,768 cuft
Inflow hyds.	= 18, 19	Contrib drain area	= 1.920 ac



Hydrograph Report	2
Hydraftow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 22	

Hyd. No. 22			
EX-OFF 2 UD DIS IMP			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.143 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 643 cuft
Drainage area	= 0.060 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydraftow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 **Hyd. No. 23** EX-OFF 2 UD DIS PER

Hydrograph type	= SCS Runoff	Peak discharge	= 0.056 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 318 cuft
Drainage area	= 0.180 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



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Wednesday, 08 / 12 / 2020

Hydrograph Report

Hydraftow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 24

EX-OFF DA 2 UD DIS

Hydrograph type	= Combine	Peak discharge	= 0.196 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 961 cuft
Inflow hyds.	= 22, 23	Contrib drain area	= 0.240 ac



Hydrafiow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No. 26 EX-DA-2 UD Undist. Imp.

	-		
Hydrograph type	= SCS Runoff	Peak discharge	= 0.052 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 214 cuft
Drainage area	= 0.020 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Mi	atentinapedienceoral Engine	eriing & Beferences \ Stormwater

Precipitation Report

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ision for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Wednesday, 08 / 12 / 2020	
Hydraflow Hydrographs Extension for Autodesk®	

Hyd. No. 26

Wednesday, 08 / 12 / 2020

EX-DA-2 UD Undist. Imp.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering F	eference Materials/Gener	ral Engineering References\Stormwat





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 27

= SCS RunoffPeak discharge= 0.046 cfs= 2 yrsTime to peak= 740 min= 5 minHyd. volume= 375 cuft= 0.360 acCurve number= 55= 0.0 %Hydraulic length= 0 ft= UserDistribution= 0.01 min= 3.38 inDistribution= Custom= P:\Engineering Reference Material Regineering References\Stormwater EX-DA-2 UD Undist. Per Hydrograph type Storm frequency Time interval Drainage area Basin Slope Tc method Total precip.

Storm duration



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Wednesday, 08 / 12 / 2020

-Hydraffow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 08 / 12 / 2020

Hyd. No. 27

EX-DA-2 UD Undist. Per.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials/Gener	ral Engineering References\Stormwat





Hydraflow Hydrographs Extension	n for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 28			
EX-DA-2 UD Undist.			
Hydrograph type	= Combine	Peak discharge	= 0.087 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 589 cuft
Inflow hyds.	= 26, 27	Contrib drain area	= 0.380 ac

Hydrograph Report

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Hydraflow Hydrographs Extensi-	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 30			
OFF-2 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.652 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,677 cuft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.80 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate8frate\c6enoteoral Engine	eering tterences∖Stormwateı





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No. 30

OFF-2 Imp.

Hydrograph Report

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Wednesday, 08 / 12 / 2020

Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 31			
OFF-2 Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.218 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 1,114 cuft
Drainage area	= 0.630 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.80 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Mage	lat ehnalp\Genotoral Engine	eering & terences \ Stormwate





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 08 / 12 / 2020

Hyd. No. 31

OFF-2 Per.

= 5 min	= Custom	al Engineering References\Stormwat
Time interval	Distribution	Reference Materials/Genera
= 2 yrs	= 3.3800 in	 P:\Engineering F
Storm Frequency	Total precip.	Storm duration

Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 202
Hyd. No. 32	
OFF-2	

Hydrograph type	= Combine	Peak discharge	= 0.855 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,792 cuft
Inflow hyds.	= 30, 31	Contrib drain area	= 0.880 ac





Hydraflow Hydrographs Extensic	in for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 34			
EX-OFF-UD-2 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.730 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,999 cuft
Drainage area	= 0.280 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.20 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate8nhana)ve0feanoteoral Engine	eering References/Stormwater

Precipitation Report

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EX-OFF-UD-2 Imp.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering R	teference Materials/Gener	al Engineering References\Stormwat





Hydraflow Hydrographs Extension	or Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 35			
EX-OFF-UD-2 Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.312 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 1,592 cuft
Drainage area	= 0.900 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.20 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	at eshalp\cSenot oral Engine	ser i n ឲ48% eferences∖Stormwateı

Precipitation Report

y Autodesk, Inc. v2020 Wednesday, 08 / 12 / 2	
Hydraflow Hydrographs Extension for Autodesk® Civil 3D®	4Vd No 35

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1 yu. 140. 33

EX-OFF-UD-2 Per.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering R	teference Materials/Gener	al Engineering References\Stormwat





Hydrograph F	keport		40
Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 36			
EX-OFF-UD-2			
Hydrograph type	= Combine	Peak discharge	= 1.020 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,591 cuft
Inflow hyds.	= 34, 35	Contrib. drain. area	= 1.180 ac

Hydraflow Hydrographs Extensior	n for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 38			
Basin			
Hydrograph type	= Combine	Peak discharge	= 1.916 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 8,782 cuft
Inflow hyds.	= 14, 16, 32	Contrib drain area	= 0.180 ac





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Hydraflow Hydrographs Extension	for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 39			
Exist. Basin			
Hydrograph type	= Reservoir	Peak discharge	= 1.823 cfs
Storm frequency	= 2 yrs	I ime to peak	= /35 min
Time interval	= 5 min	Hyd. volume	= 8,700 cuft
Inflow hyd. No.	= 38 - Basin	Max. Elevation	= 196.67 ft
Reservoir name	= Exist. Basin	Max. Storage	= 537 cuft
Storage Indication method used.			



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Pond Report

tydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Devid Min. 4 - Frida Devid	

Pond No. 1 - Exist. Basin Pond Data

Contours – User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 196.00 ft

Stage / Stor	rage Table			
Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	196.00	00	0	0

		ē	00.0	00.0	3.33	ł	٩				
		<u>ច</u>	00.00	00.00	3.33	ł	No				
0 803 684 060		[8]	0.00	00.0	3.33	ł	٩			y Contour)	
က်ထိ	res	[¥]	= 0.00	= 0.00	= 3.33		= No			(q) 000.0 =	= 0.00
0 803 2,882 4,376	Weir Structu		Crest Len (ft)	Crest El. (ft)	Weir Coeff.	Weir Type	Multi-Stage			Exfil.(in/hr)	TW Elev. (ft)
		[PrfRsr]	0.00	0.00	0	0.00	0.00	n/a	n/a	0.60	No
00 2,408 3,384 5,450		ច	0.00	00.00	0	0.00	0.00	0.00	.013	0.60	No
	s	[8]	12.00	12.00	-	196.10	28.00	2.00	.013	09.0	No
196.00 197.00 198.00 199.00	ice Structure	[A]	= 15.00	= 15.00	= 1	= 196.30	= 0.10	= 0.00	= .013	= 0.60	= n/a
0.00 2.00 3.00	Culvert / Orif		Rise (in)	Span (in)	No. Barrels	Invert El. (ft)	Length (ft)	Slope (%)	N-Value	Orifice Coeff.	Multi-Stage

Note: Culvert/Orlifee outflows are analyzed under intet (ic) and outlet (oc) control. Weir risers checked for onfice conditions (ic) and submergence (s).



Hydrograph I Hydraflow Hydrographs Extensis Hydr. No. 41 Within LOD Hydrograph type Storm frequency Time interval	Report on for Autodesk® Civil 3D® by Autodesk, Inc. v2020 = Combine = 2 yrs = 5 min = 14.0 0.0 0.0	Peak discharge Time to peak Hyd. volume	43 Wednesday, 08 / 12 / 2020 = 2.653 cfs = 730 min = 12,532 cuft = 0.000 co
			- 0.000 ac

Hydraflow Hydrographs Extension	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 42			
Outside of LOD			
Hydrograph type	= Combine	Peak discharge	= 1.971 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 9,159 cuft
Inflow hyds.	= 16, 28, 32, 36	Contrib drain area	= 0.180 ac





Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 44			
EX-POA-2			
Hydrograph type	= Combine	Peak discharge	= 4.240 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 20,648 cuft
Inflow hyds.	= 20, 28, 36, 39	Contrib drain area	= 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 46			
DA-1 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 3.809 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 15,635 cuft
Drainage area	= 1.460 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	atestinals/edienceoral Engine	eering tterences∖Stormwateı



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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No. 46

DA-1 Imp.

	= 5 min	= Custom	ieral Engineering References\Storm
	Time interval	Distribution	g Reference Materials\Gen
	= 2 yrs	= 3.3800 in	= P:\Engineerin
-	Storm Frequency	Total precip.	Storm duration

Hydrograph Report

Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 47			
DA-1 Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.402 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 2,052 cuft
Drainage area	= 1.160 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference M	late3fratp\e3fenctoral Engine	er ing tteferences∖Stormwateı

Q (cfs)

0.50

0.45

0.40

0.35

0.30

0.25

0.20

0.15

0.10

0.05

Time (min)

00.00

1560

1320 1440

1200

1080



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Wednesday, 08 / 12 / 2020

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 08 / 12 / 2020

Hyd. No. 47

DA-1 Per.

Hydragraph Report

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Hydraftew Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 48	
DA-1A	





Custom Design Storm – P:\Engineering Reference Materials\General Engineering References\Stormwater Managem.

Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 50			
UNDIST. Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.052 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 214 cuft
Drainage area	= 0.020 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	 P:\Engineering Reference Mat 	⊛hatp\tGfenot enal Engine	sering References Stormwater

Precipitation Report

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UNDIST. Imp.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering F	eference Materials/Gener	al Engineering References\Stormwat





Hydraflow Hydrographs Extens	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 51			
UNDIST. Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.074 cfs
Storm frequency	= 2 yrs	Time to peak	= 740 min
Time interval	= 5 min	Hyd. volume	= 604 cuft
Drainage area	= 0.580 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Mate	⊜fratp∖€€enceora l Engine	ering & terences \ Stormwater

Precipitation Report

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tydraffow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 51	

09

UNDIST. Per.

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials/Gener	al Engineering References\Stormwat





Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 52			
UNDIST.			
Hydrograph type	= Combine	Peak discharge	= 0.113 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 819 cuft
Inflow hyds.	= 50, 51	Contrib drain area	= 0.600 ac



Hydrograph Report

Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 54			
OFF 1 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 1.774 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 7,282 cuft
Drainage area	= 0.680 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate8rinalp\e6fenctoral Engine	eriing & ferences \ Stormwater



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No. 54

OFF 1 Imp.

torm Frequency	= 2 yrs	Time interval	= 5 min
otal precip.	= 3.3800 in	Distribution	= Custom

Hydrograph Report

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Wednesday, 08 / 12 / 2020

tydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 55	
DFF 1 Per.	

Hydrograph type	= SCS Runoff	Peak discharge	= 0.641 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 3,272 cuft
Drainage area	= 1.850 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference	MateSharpteStenctoral Engine	eering48346 ferences∖Stormwate





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No. 55

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	al Engineering References/Stormwati

Hydrograph Report

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Wednesday, 08 / 12 / 2020

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 56	
OFF 1	

= 2.370 cfs	= / 30 mm	a = 2.530 ac
Peak discharge	Hyd. volume	Contrib. drain. are
= Combine	= 5 min	= 54, 55
Hydrograph type	Time interval	Inflow hyds.





Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 58			
Roof Area D			
Hydrograph type	= SCS Runoff	Peak discharge	= 1.696 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 6,961 cuft
Drainage area	= 0.650 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate8rinale\e0fencterral Engine	eering References Stormwater

Precipitation Report

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Wednesday, 08 / 12 / 2020	
ydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	łyd. No. 58

Roof Area D

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gene	al Engineering References\Stormwat





Hydraflow Hydrographs Extensio	n for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 60			
TOTAL TO BASIN			
Hydrograph type	= Combine	Peak discharge	= 8.346 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 36,022 cuft
Inflow hyds.	= 48, 52, 56, 58	Contrib. drain. area	= 0.650 ac

Hydrograph Report

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Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 61			
BASIN			
Hydrograph type	= Reservoir	Peak discharge	= 2.581 cfs
Storm frequency	= 2 yrs	Time to peak	= 750 min
Time interval	= 5 min	Hyd. volume	= 36,008 cuft
Inflow hyd. No.	= 60 - TOTAL TO BASIN	Max. Elevation	= 196.21 ft
Reservoir name	= UG STORMTRAP	Max. Storage	= 11,605 cuft
Storage Indication method used			





Pond Report

Wednesday, 08 / 12 / 2020 Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Pond No. 7 - UG STORMTRAP

Pond Data

Contour area (sqft) Pond storage is based on user-defined values. Stage / Storage Table Stage (ft) Elevation (ft) Contou

Incr. Storage (cuft) Total storage (cuft)

0	7,700	15,400	23,100	30,800	38,500	39,809		A] [B] [C] [D]	00.0 00.0 00.00 00	9.50 0.00 0.00 0.00	33 3.33 3.33 3.33	at I I	s No No No			000 (by Wet area)	
0	7,700	7,700	7,700	7,700	7,700	1,309	Weir Structures		Crest Len (ft) = 1.0	Crest El. (ft) = 19	Weir Coeff. = 3.3	Weir Type = Re	Multi-Stage = Ye			Exfil.(in/hr) = 0.0	10 10 10 10 10 10 10 10 10 10 10 10 10 1
								[PrfRsr]	00.00	0.00	0	0.00	0.00	n/a	n/a	09.0	1
n/a		ට	8.00	14.00	-	198.30	0.00	0.00	.013	0.60	Vaa						
							sə	[8]	6.00	14.00	-	194.70	0.00	00.00	.013	09.0	Vas
194.70	195.70	196.70	197.70	198.70	199.70	200.37	fice Structur	[A]	= 24.00	= 24.00	=	= 194.70	= 64.00	= 0.50	= .012	= 0.60	
0.00	1.00	2.00	3.00	4.00	5.00	5.17	Culvert / Orit		Rise (in)	Span (in)	No. Barrels	Invert EI. (ft)	Length (ft)	Slope (%)	N-Value	Orifice Coeff.	Multi Change

nder inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s). utflows are Note: Culvert/Ori



Hydrograph Report

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Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 63			
DA-UD 1 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.704 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,891 cuft
Drainage area	= 0.270 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	atestrats/edienceoral Engine	eering tterences∖Stormwateı



Hydraftow Hydrographs Extension for Autodesk® Ctvll 3D® by Autodesk, Inc. v2020

Hyd. No. 63

UA-UU 1 Imp.			
Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3800 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	al Engineering References/Stormwati

-4

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Wednesday, 08 / 12 / 2020

Hydrograph Report Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No. 64

DA-1 UD Per

Hydrograph type	= SCS Runoff	Peak discharge	= 0.111 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 566 cuft
Drainage area	= 0.320 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference N	/late 8/indp\c0/e nctonal Engine	ering & erences \Stormwater





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Wednesday, 08 / 12 / 2020

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 08 / 12 / 2020

Hyd. No. 64

DA-1 UD Per.

Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 65	

DA-1 UDPeak discharge= 0.807 cfsHydrograph type= CombinePeak discharge= 0.807 cfsStorm frequency= 2 yrsTime to peak= 730 minTime interval= 2 yrsHyd. volume= 3,458 cuftInflow hyds.= 63, 64Contrib. drain. area= 0.590 ac





Hydrograph Re	port		
Hydraflow Hydrographs Extension f	or Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 67			
POA-1			
Hydrograph type Storm frequency Time interval Inflow hyds.	= Combine = 2 yrs = 5 min = 61, 65	Peak discharge Time to peak Hyd. volume Contrib. drain. area	= 2.967 cfs = 740 min = 39,465 cuft = 0.000 ac



Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 69			
Roof Area UD			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.574 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,356 cuft
Drainage area	= 0.220 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	at estralp\eGenot enal Engine	ering References/Stormwater



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 69

Roof Area UD

= 5 min = Custom neral Engineering References/Storr
Time interval Distribution g Reference Materials/Gei
= 2 yrs = 3.3800 in = P:\Engineerin
Storm Frequency Total precip. Storm duration

Hydrograph Report

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Wednesday, 08 / 12 / 2020

Hydraflow Hydrographs Extension	for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 71			
DA-2 lmp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 1.435 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,890 cuft
Drainage area	= 0.550 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Mages and the second	ate Strat o/e0fenoteoral Engine	er ing/®t eferences∖Stormwater





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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No. 71

DA-2 Imp.

= 2 yrs Time interval = 5 min	= 3.3800 in Distribution = Custom	 P:\Engineering Reference Materials\General Engineering References\Stormwat
= 2 yrs	= 3.3800 ir	= P:\Engin
 Storm Frequency	Total precip.	Storm duration

Hydrograph Report

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Wednesday, 08 / 12 / 2020

Hvdraflow Hvdrographs Extensi	ion for Autodesk® Civil 3D® bv Autodesk. Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. /2			
DA-2 Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.114 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 584 cuft
Drainage area	= 0.330 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	at ehinalp\cCience oral Engine	ering & ferences \Stormwater





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 08 / 12 / 2020

Hyd. No. 72

DA-2 Per.

л В В В В В В		= Custom	Engineering References/Stormw
Timo inton/o		Distribution	ference Materials\General
Suit C -	- 2 yis	= 3.3800 in	 P:\Engineering Re
Ctorm Eroditionov	oronni i requericy	Total precip.	Storm duration

Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 73	

Hyd. No. 73				
DA-2				
Hydrograph type Storm frequency Time interval Inflow hyds.	= Combine = 2 yrs = 5 min = 71, 72	Peak discharge Time to peak Hyd. volume Contrib. drain. area	= 1.541 cfs = 730 min = 6,474 cuft = 0.880 ac	





Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 75			
OFF 2 IMP			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.071 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 321 cuft
Drainage area	= 0.030 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.38 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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Peak discharge	= 0.044 cfs
Time to peak	= 735 min
Hyd. volume	= 248 cuft
Curve number	= 61
Hydraulic length	= 0 ft
Time of conc. (Tc)	= 10.00 min
Distribution	= Type III
Shape factor	= 484
Time to post Time to post Hydr volume Curve numbe Hydraulic len Distribution Shape factor	gth (Tc)



Hydrograph F	keport		91
Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 77			
OFF 2			
Hydrograph type	= Combine	Peak discharge	= 0.113 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 569 cuft
Inflow hyds.	= 75, 76	Contrib. drain. area	= 0.170 ac

Hydraflow Hydrographs Extensic	n for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 79			
POA-2			
Hydrograph type Storm frequency Time interval	= Combine = 2 yrs = 5 min = 69 73 77	Peak discharge Time to peak Hyd. volume Contrib, drain, area	= 2.228 cfs = 730 min = 9,399 cuft = 0.220 ac



by Autodes
hs Extension for Autodesk® Civil 3D®
Hydraflow Hydrograp
2

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021	

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
41	Combine	5.486	5	730	23,340	14, 20, 24,			Within LOD
42	Combine	4.318	5	730	17,845	16, 28, 32, 36,	1	1	Outside of LOD
44	Combine	9.128	2	730	39,292	20, 28, 36, 39,	1	1	EX-POA-2
46	SCS Runoff	5.670	5	230	23,666		ļ		DA-1 Imp.
47	SCS Runoff	1.356	2	730	5,405	-			DA-1 Per.
48	Combine	7.026	ŝ	730	29,071	46, 47		1	DA-1A
50	SCS Runoff	0.078	ŝ	730	324	1			UNDIST. Imp.
51	SCS Runoff	0.422	5	730	1,934				UNDIST. Per.
52	Combine	0.500	ŝ	730	2,258	50, 51			UNDIST.
54	SCS Runoff	2.641	2J	730	11,023			1	OFF 1 Imp.
55	SCS Runoff	2.162	ß	730	8,620	-			OFF 1 Per.
56	Combine	4.803	5	730	19,642	54, 55		1	OFF 1
58	SCS Runoff	2.524	2	730	10,536	1		1	Roof Area D
60	Combine	14.85	ى ب	730	61,508	48, 52, 56,			TOTAL TO BASIN
61	Reservoir	3.818	2	755	61,494	90 90	197.39	20,709	BASIN
63	SCS Runoff	1.049	c,	730	4,377				DA-UD 1 Imp.
64	SCS Runoff	0.374	5	730	1,491	-			DA-1 UD Per
65	Combine	1.423	2 L	730	5,868	63, 64			DA-1 UD
67	Combine	4.532	5	735	67,361	61, 65,		1	POA-1
69	SCS Runoff	0.854	5	730	3,566			l	Roof Area UD
71	SCS Runoff	2.136	5	730	8,915		1	1	DA-2 Imp.
72	SCS Runoff	0.386	5	730	1,538	-			DA-2 Per.
73	Combine	2.522	5	730	10,453	71, 72			DA-2
75	SCS Runoff	0.106	5	730	486		1	1	OFF 2 IMP
76	SCS Runoff	0.150	£	730	652			-	OFF 2 PER
22	Combine	0.257	ŝ	730	1,139	75, 76			OFF 2
62	Combine	3.633	2	730	15,158	69, 73, 77,			POA-2
202	0-08- Exist vs	s Prop.gp	≥		Return P	eriod: 10 Y	ear	Wednesday	r, 08 / 12 / 2020

2	urogra			Iary n	(epor	Hydraflo	ow Hydrographs	Extension for Au	odesk® Civil 3D® by Autodesk, Inc. v2020	-
p, o	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	
-	SCS Runoff	7.962	5	730	33,230	1	1		EX-DA-1 Imp.	
2	SCS Runoff	0.035	5	730	140			1	EX-DA-1 Per	
e	Combine	7.997	5	730	33,370	1, 2			Ex-DA-1	
ŝ	SCS Runoff	0.466	5	730	1,945	ļ			OFF-1 Imp.	
9	SCS Runoff	0.316	5	730	1,258		1	-	OFF-1 Per.	
4	Combine	0.782	5	730	3,203	5, 6			OFF-1	
თ	Combine	8.778	5	730	36,573	3, 7,			EX-POA-1	
12	SCS Runoff	1.437	5	730	5,998	-	ł	1	EX-DA-2 Imp.	
13	SCS Runoff	0.584	5	730	2,588		1	-	EX-DA-2 Per.	
4	Combine	2.021	5	730	8,585	12, 13		1	EX-DA-2	
16	SCS Runoff	0.131	5	730	600	ļ		1	EX-DA-2 Undist.	
18	SCS Runoff	1.786	5	730	7,456	-		1	EX-DA-2 UD Imp.	
19	SCS Runoff	1.273	5	730	5,487		1	1	EX-DA-2 UD Per	
20	Combine	3.060	5	730	12,944	18, 19			EX-DA-2 UD	
22	SCS Runoff	0.213	5	730	973	ļ			EX-OFF 2 UD DIS IMP	
23	SCS Runoff	0.193	5	730	839			1	EX-OFF 2 UD DIS PER	
24	Combine	0.406	5	730	1,811	22, 23			EX-OFF DA 2 UD DIS	
26	SCS Runoff	0.078	5	730	324	-		1	EX-DA-2 UD Undist. Imp.	
27	SCS Runoff	0.262	5	730	1,201			1	EX-DA-2 UD Undist. Per	
28	Combine	0.340	5	730	1,525	26, 27			EX-DA-2 UD Undist.	
30	SCS Runoff	0.971	5	730	4,052	ļ			OFF-2 Imp.	
31	SCS Runoff	0.736	5	730	2,935			ļ	OFF-2 Per.	
32	Combine	1.707	5	730	6,988	30, 31			OFF-2	
34	SCS Runoff	1.087	2	730	4,539				EX-OFF-UD-2 Imp.	
35	SCS Runoff	1.052	5	730	4,193			1	EX-OFF-UD-2 Per	
36	Combine	2.139	5	730	8,732	34, 35			EX-OFF-UD-2	
38	Combine	3.859	5	730	16,173	14, 16, 32,	ł	1	Basin	
39	Reservoir	3.653	5	735	16,091	38	196.91	729	Exist, Basin	
202	0-08- Exist v	s Prop.gp	3		Return P	eriod: 10 Y	ear	Wednesday	, 08 / 12 / 2020	

C

Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 1			
EX-DA-1 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 7.962 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 33,230 cuft
Drainage area	= 2.050 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	at e3rina¦s∖e3feace onal Engine	eeriing References\Stormwater



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-Jydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Und No 1	

EX-DA-1 Imp.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering F	eference Materials/Gener	al Engineering References\Stormwat





Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 2			
EX-DA-1 Per			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.035 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 140 cuft
Drainage area	= 0.030 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate8frate\c6enoteoral Engine	eering tterences∖Stormwater

Precipitation Report

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sk, Inc. v2020 Wednesday, 08 / 12 / 2020	
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autode	Hyd. No. 2

EX-DA-1 Per

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Generation	al Engineering References\Stormwat




Hydrograph R	eport		00
Hydraflow Hydrographs Extension	r for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 3			
Ex-DA-1			
Hydrograph type	= Combine	Peak discharge	= 7.997 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 33,370 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 2.080 ac



Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 5			
OFF-1 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.466 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,945 cuft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	 P:\Engineering Reference Ma 	at eshalp\eStence nal Engine	ering & ferences \ Stormwater



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 08 / 12 / 2020

Hyd. No. 5

OFF-1 Imp.

 = 5 min = Custom gineering References/Stormw
Time interval Distribution erence Materials\General En
= 10 yrs = 5.0000 in = P:\Engineering Ref
 Storm Frequency Total precip. Storm duration

Hydrograph Report

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Hydraflow Hydrographs Extension	n for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 6			
OFF-1 Per			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.316 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,258 cuft
Drainage area	= 0.270 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	at ehinap\e0ience nal Engine	ering & ferences \Stormwater





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No. 6 OFF-1 Per.

Time interval = 5 min	= 10 yrs
Distribution = Custom	= 5.0000 in

Hydrograph Report

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Wednesday, 08 / 12 / 2020

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 7	

OFF-1			
Hydrograph type Storm frequency Time interval Inflow hyds.	= Combine = 10 yrs = 5, 6	Peak discharge Time to peak Hyd. volume Contrib. drain. area	 = 0.782 cfs = 730 min = 3,203 cuft = 0.390 ac





Hydrograph R	eport		101
Hydraflow Hydrographs Extension	for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 9			
EX-POA-1			
Hydrograph type	= Combine	Peak discharge	= 8.778 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 36,573 cuft
Inflow hyds.	= 3, 7	Contrib. drain. area	= 0.000 ac



Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 12			
EX-DA-2 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 1.437 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,998 cuft
Drainage area	= 0.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Mage	ate Strat s\eGlenoteoral Engine	eering & beferences \ Stormwater





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No. 12

EX-DA-2 Imp.

	= 5 min	= Custom	eral Engineering References\Stormv
	Time interval	Distribution	Reference Materials/Gene
	= 10 yrs	= 5.0000 in	= P:\Engineering
-	Storm Frequency	Total precip.	Storm duration

Hydrograph Report

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Wednesday, 08 / 12 / 2020

Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 13 EX-DA-2 Per.			
Hvdrograph type	= SCS Runoff	Peak discharge	= 0.584 cfs
Storm frequency	= 10 vrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,588 cuft
Drainage area	= 0.730 ac	Curve number	= 56
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	at eshalp\e0fenctora l Engine	er ingt ®therences∖Stormwater





Hydraffow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 08 / 12 / 2020

Hyd. No. 13 EX-DA-2 Per

Time interval Distribution	= 5 min = Custom
Reference Materials/Gener	iral Engineering References/Stormw
	Time interval Distribution Reference Materials/Gene

Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 14	

EX-DA-2

1-V-U-V-			
Hydrograph type	= Combine	Peak discharge	= 2.021 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 8,585 cuft
Inflow hyds.	= 12, 13	Contrib drain area	= 1.100 ac





Hydraflow Hydrographs Extens	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 16			
EX-DA-2 Undist.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.131 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 600 cuft
Drainage area	= 0.180 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Mage	lat e3riatp∖e3eace nal Engine	eer i ng 4®t eferences∖Stormwateı

Precipitation Report

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Wednesday, 08 / 12 / 2020	
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Hyd. No. 16

EX-DA-2 Undist.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Generation	al Engineering References\Stormwat





Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 18			
EX-DA-2 UD Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 1.786 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 7,456 cuft
Drainage area	= 0.460 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	atestinale/edicencenal Engine	ering References\Stormwater

Precipitation Report

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lydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 18	

EX-DA-2 UD Imp.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering F	eference Materials/Gener	al Engineering References\Stormwat





Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 19			
EX-DA-2 UD Per			
Hydrograph type	= SCS Runoff	Peak discharge	= 1.273 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,487 cuft
Drainage area	= 1.460 ac	Curve number	= 57
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	at estrats/eStence oral Engine	eriing References\Stormwater



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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 19	

EX-DA-2 UD Per

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering F	teference Materials/Gener	al Engineering References\Stormwat





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Hydrograph	Report		2
Hydraflow Hydrographs Extens	sion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 20			
EX-DA-2 UD			
Hydrograph type	= Combine	Peak discharge	= 3.060 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 12,944 cuft
Inflow hyds.	= 18, 19	Contrib drain area	= 1.920 ac



lydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
łyd. No. 22	

	(0				ч		
	= 0.213 cf	= 973 cuft	= 98	= 0 ft	= 10.00 m	= Type III	= 484
	Peak discharge Time to peak	Hyd. volume	Curve number	Hydraulic length	Time of conc. (Tc)	Distribution	Shape factor
۵	 SCS Runoff 10 vrs 	= 5 min	= 0.060 ac	= 0.0 %	= User	= 5.00 in	= 24 hrs
EX-OFF 2 UD DIS IM	Hydrograph type Storm frequency	Time interval	Drainage area	Basin Slope	Tc method	Total precip.	Storm duration



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 EX-OFF 2 UD DIS PER Hyd. No. 23

Hydrograph type	= SCS Runoff	Peak discharge	= 0.193 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 839 cuft
Drainage area	= 0.180 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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Wednesday, 08 / 12 / 2020

Hydraflow Hydrographs Extension	for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 24			
EX-OFF DA 2 UD DIS			
Hvdroaranh tvna	= Combine	Peak discharge	= 0.406 cfs

Hyd. No. 24			
EX-OFF DA 2 UD DIS			
Hydrograph type Storm frequency Time interval Inflow hyds.	= Combine = 10 yrs = 22, 23	Peak discharge Time to peak Hyd. volume Contrib. drain. area	= 0.406 cfs = 730 min = 1,811 cuft = 0.240 ac



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 26

EX-DA-2 UD Undist. Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.078 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 324 cuft
Drainage area	= 0.020 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference M	at entrals) ectemperated and the second	ering & ferences \Stormwater

Precipitation Report

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Wednesday, 08 / 12 / 2020

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No. 26

EX-DA-2 UD Undist. Imp.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	al Engineering References\Stormwat





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Wednesday, 08 / 12 / 2020

Hydraflow Hydrographs Extension for Autodesk® Ctvil 3D® by Autodesk, Inc. v2020

Hyd. No. 27 EX-DA-2 UD Undist. Per.

Iydrograph type	= SCS Runoff	Peak discharge	= 0.262 cfs
storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,201 cuft
Drainage area	= 0.360 ac	Curve number	= 55
asin Slope	= 0.0 %	Hydraulic length	= 0 ft
c method	= User	Time of conc. (Tc)	= 10.00 min
otal precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference	MateStrate/e0fenctonal Engine	ering References Stormwater



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Wednesday, 08 / 12 / 2020

Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020
Hydraflo

Hyd. No. 27

EX-DA-2 UD Undist. Per

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	al Engineering References\Stormwat





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Wednesday, 08 / 12 / 2020

Hydrograph R	eport		į
Hydraflow Hydrographs Extension	for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 28			
EX-DA-2 UD Undist.			
Hydrograph type	= Combine	Peak discharge	= 0.340 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,525 cuft
Inflow hyds.	= 26, 27	Contrib. drain. area	= 0.380 ac

Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 30			
OFF-2 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.971 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,052 cuft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.80 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate8rinale\c6enoteoral Engine	eriing & ferences \ Stormwater





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No. 30

OFF-2 Imp.

 = 10 yrs = 5.0000 in Distribution = P.\Engineering Reference Materials\General Ei
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Wednesday, 08 / 12 / 2020

Hydrograph Report

Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 31			
OFF-2 Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.736 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,935 cuft
Drainage area	= 0.630 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.80 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate 811at p\e01emoteoral Engine	er ing/®t eferences∖Stormwateı





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 31

Wednesday, 08 / 12 / 2020

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OFF-2 Per.

terval = 5 min	ition = Custom	ials\General Engineering References\Storn
= 10 yrs Time int	= 5.0000 in Distribut	= P:\Engineering Reference Materi
Storm Frequency	Total precip.	Storm duration

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 32	
OFF-2	

Hydrograph type Storm frequency	 Combine 10 vrs 	Peak discharge Time to peak	= 1.707 cfs = 730 min	
Time interval	= 5 min	Hyd. volume	= 6,988 cuft	
nflow hyds.	= 30, 31	Contrib drain area	= 0.880 ac	





Hydraflow Hydrographs Extensior	n for Autodesk® Civil 3D® by Autodesk, Inc. v2020		\$
Hyd. No. 34			
EX-OFF-UD-2 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	"

oh type = SCS Runoff Peak discharge = 1.087 cfs	quency = 10 yrs Time to peak = 730 min	val = 5 min Hyd volume = 4,539 cuft	area = 0.280 ac Curve number = 98	be = 0.0 % Hydraulic length = 0.1	Time of conc. (Tc) = 11.20 min	ip. = 5.00 in Distribution = Custom	ation = P:\Engineering Reference MaterinapleSentural Engineering References\Stormwater
Hydrograph type	Storm frequency	Time interval	Drainage area	Basin Slope	Tc method	Total precip.	Storm duration



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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 34	

ednesday, 08 / 12 / 2020

EX-OFF-UD-2 Imp.





Hydraflow Hydrographs Extensio	n for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 35			
EX-OFF-UD-2 Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 1.052 cfs - 730 min

= 1.052 cfs	= 730 min	= 4,193 cuft	= 61	= 0 ft	= 11.20 min	= Custom	ieer in g t®t eferences∖Stormwatei	
Peak discharge	Time to peak	Hyd. volume	Curve number	Hydraulic length	Time of conc. (Tc)	Distribution	ence MateShadayeGenotonal Engin	
= SCS Runoff	= 10 yrs	= 5 min	= 0.900 ac	= 0.0 %	= User	= 5.00 in	 P:\Engineering Refer 	
Hydrograph type	Storm frequency	Time interval	Drainage area	Basin Slope	Tc method	Total precip.	Storm duration	

Precipitation Report

flow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
1 NO 35	

HYG. NO. 33 EX-OFF-UD-2 Per.





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Hydrograph I	Report		
Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 36			
EX-OFF-UD-2			
Hydrograph type	= Combine	Peak discharge	= 2.139 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 8,732 cuft
Inflow hyds.	= 34, 35	Contrib drain area	= 1.180 ac

Hydraflow Hydrographs Extens	sion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 38			
Basin			
Hydrograph type	= Combine	Peak discharge	= 3.859 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 16,173 cuft
Inflow hyds.	= 14, 16, 32	Contrib drain area	= 0.180 ac





Hydraflow Hydrographs Extension	r for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 39			
Exist. Basin			
Hydrograph type	= Reservoir	Peak discharge	= 3.653 cfs
Storm frequency	= 10 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 16,091 cuft
Inflow hyd. No.	= 38 - Basin	Max. Elevation	= 196.91 ft
Reservoir name	= Exist. Basin	Max. Storage	= 729 cuft
Storage Indication method used.			

/draftow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
lyd. No. 41	
/ithin LOD	

Hydrograph R	eport		-34
Hydraflow Hydrographs Extension	for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 41			
Within LOD			
Hydrograph type	= Combine	Peak discharge	= 5.486 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 23,340 cuft
Inflow hyds.	= 14, 20, 24	Contrib drain area	= 0.000 ac





Hydrograph F	Report		
Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 42			
Outside of LOD			
Hydrograph type Storm frequency Time interval Inflow hyds.	= Combine = 10 yrs = 5 min = 16, 28, 32, 36	Peak discharge Time to peak Hyd. volume Contrib. drain. area	= 4.318 cfs = 730 min = 17,845 cuft = 0.180 ac

Hydrograph Report	2
Hydraftow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 44	

Hyd. No. 44			
EX-POA-2			
Hydrograph type Storm frequency Time interval Inflow hyds.	= Combine = 10 yrs = 5 min = 20, 28, 39	Peak discharge Time to peak Hyd. volume Contrib. drain. area	= 9.128 cfs = 730 min = 39,292 cuft = 0.000 ac





Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 46			
DA-1 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 5.670 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 23,666 cuft
Drainage area	= 1.460 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	tt eStratp\eSterotora l Engine	ering References/Stormwater



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Hydraffow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 46	

DA-1 Imp.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering F	teference Materials/Gener	al Engineering References\Stormwat





Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 47			
DA-1 Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 1.356 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,405 cuft
Drainage area	= 1.160 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	atestrats/edicaterral Engine	eeriing tte ferences∖Stormwater



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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 47	

DA-1 Per

ı	(i	
Storm Frequency	= 10 yrs	I Ime Interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering F	eference Materials/Gener	al Engineering References\Stormwat





Hydrograph f	Report		- t
Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 48			
DA-1A			
Hydrograph type	= Combine	Peak discharge	= 7.026 cfs
Storm trequency	= 10 yrs	I ime to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 29,071 cuft
Inflow hyds.	= 46, 47	Contrib. drain. area	= 2.620 ac



Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 50			
UNDIST. Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.078 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 324 cuft
Drainage area	= 0.020 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ateStrats/eCremotoral Engine	eering tterences∖Stormwateı



Hydraftow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No. 50 UNDIST Imp

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Hydrograph Report

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Wednesday, 08 / 12 / 2020

Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 51			
UNDIST. Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.422 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,934 cuft
Drainage area	= 0.580 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate Strat o/eOtenotenal Engine	eering & beferences \ Stormwater





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 51

UNDIST Per

interval = 5 min	ibution = Custom	terials\General Engineering References\Stor
= 10 yrs Time	= 5.0000 in Distri	 P:\Engineering Reference Mat
storm Frequency	otal precip.	storm duration

Hydrograph Report

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Wednesday, 08 / 12 / 2020

Hydraflew Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 52	

UNDIST.

Hydrograph type	= Combine	Peak discharge	= 0.500 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,258 cuft
Inflow hyds.	= 50, 51	Contrib drain area	= 0.600 ac







Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
-	• •		
Hyd. No. 54			
OFF 1 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 2.641 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 11,023 cuft
Drainage area	= 0.680 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate3rinap\e3fenctonal Engine	eeriing/tterences∖Stormwateı

Precipitation Report

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Wednesday, 08 / 12 / 2020	
Hydraffow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Hyd. No. 54

OFF 1 Imp.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering F	eference Materials/Gener	al Engineering References\Stormwat





Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 55			
OFF 1 Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 2.162 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 8,620 cuft
Drainage area	= 1.850 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	at estrats tectencearel Engine	ering References/Stormwater



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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 55	

OFF 1 Per.

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering F	Reference Materials/Gener	al Engineering References\Stormwat





Hydrograph F	Report		161
Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 56			
OFF 1			
Hydrograph type	= Combine	Peak discharge	= 4.803 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 19,642 cuft
Inflow hyds.	= 54, 55	Contrib drain area	= 2.530 ac



Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 58			
Roof Area D			
Hydrograph type	= SCS Runoff	Peak discharge	= 2.524 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 10,536 cuft
Drainage area	= 0.650 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate8rinap\e3fenctereal Engine	eriing & ferences \ Stormwater



Time (min)

----- Hyd No. 56

Hydraflow Hydrographs Extension for Autodest® Civil 3D® by Autodesk. Inc. v2020

Hyd. No. 58 Roof Area D

KOUI AIGA L			
Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Generation	al Engineering References/Stormwati

Hydrograph Report

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Wednesday, 08 / 12 / 2020

Hydraffow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 60	
TOTAL TO BASIN	

= 14.85 cfs = 730 min	= 61,508 cuft	= 0.650 ac	
Peak discharge Time to neak	Hyd. volume	Contrib drain area	
= Combine	= 5 min	= 48, 52, 56, 58	
Hydrograph type	Time interval	nflow hyds.	





Hydraflow Hydrographs Extensio	n for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 61			
BASIN			
Hydrograph type Storm frequency Time interval Inflow hyd. No. Reservoir name	 Reservoir 10 yrs 5 min 60 - TOTAL TO BASIN UG STORMTRAP 	Peak discharge Time to peak Hyd. volume Max. Elevation Max. Storage	= 3.818 cfs = 755 min = 61,494 cuft = 197.39 ft = 20,709 cuft
Storage Indication method used.			



Hydrograph Report

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Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 63			
DA-UD 1 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 1.049 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,377 cuft
Drainage area	= 0.270 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate3rinals) eCremotornal Engine	eering tterences∖Stormwateı



Hydraftow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 **Hyd. No. 63**

Wednesday, 08 / 12 / 2020

DA-UD 1 Imp.			
Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0000 in	Distribution	= Custom
Storm duration	= P:\Engineering F	teference Materials∖Gener	al Engineering References\Stormwat

Hydrograph Report

Hydratlow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 64			
DA-1 UD Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.374 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,491 cuft
Drainage area	= 0.320 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Mage	ate Strat s\eClenctoral Engine	ering & ferences \Stormwater





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 64

Wednesday, 08 / 12 / 2020

DA-1 UD Per

al = 5 min	= Custom	General Engineering References/Storm
s Time interv	00 in Distribution	ıgineering Reference Materials∖
m Frequency = 10 yr	l precip. = 5.000	m duration = P:\En

Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 65 DA-1 UD	

Hydrograph type	= Combine	Peak discharge	= 1.423 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,868 cuft
Inflow hyds.	= 63, 64	Contrib drain area	= 0.590 ac





Custom Design Storm – P:\Engineering Reference Materials\General Engineering References\Stormwater Managem.

Hydrograph R	eport		2
Hydraflow Hydrographs Extension	for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 67			
POA-1			
Hydrograph type Storm frequency Time interval Inflow hyds.	= Combine = 10 yrs = 5 min = 61, 65	Peak discharge Time to peak Hyd. volume Contrib. drain. area	= 4.532 cfs = 735 min = 67,361 cuft = 0.000 ac



Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 69			
Roof Area UD			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.854 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,566 cuft
Drainage area	= 0.220 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference M	latestrate/edienceorel Engine	eriing & ferences \ Stormwater



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 69

Wednesday, 08 / 12 / 2020

Roof Area UD

= 5 min = Custom eneral Engineering References\Storm	
Time interval Distribution Ig Reference Materials/Ge	
= 10 yrs = 5.0000 in = P:\Engineerir	
Storm Frequency Total precip. Storm duration	

Hydrograph Report

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Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 71			
DA-2 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 2.136 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 8,915 cuft
Drainage area	= 0.550 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate8rinalp\e6fenctoral Engine	eriing & ferences \ Stormwater

Q (cfs) 3.00

2.00

1.00

00.00 Time (min)

1560

1440



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No. 71

	Fime interval = 5 min	Distribution = Custom	Materials/General Engineering References/Storm
	= 10 yrs	= 5.0000 in	= P:\Engineering Reference
JA-2 IIIP.	Storm Frequency	Total precip.	Storm duration

165

Wednesday, 08 / 12 / 2020

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Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 72			
DA-2 Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.386 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,538 cuft
Drainage area	= 0.330 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	at e3riadp∖e0fenoteo ral Engine	eeriing & beferences \Stormwater




Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 08 / 12 / 2020

Hyd. No. 72

DA-2 Per.

= 5 min	= Custom	Il Engineering References\Stormwat
Time interval	Distribution	eference Materials\Genera
= 10 vrs	= 5.0000 in	= P:\Engineering Re
Storm Frequency	Total precip.	Storm duration

Hydragraph Report

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Hydraftew Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 73	
DA-2	

1			
Hydrograph type	= Combine	Peak discharge	= 2.522 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 10,453 cuft
Inflow hyds.	= 71, 72	Contrib drain area	= 0.880 ac





Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 75			
OFF 2 IMP			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.106 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 486 cuft
Drainage area	= 0.030 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.00 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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 Hydraftow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020
 Wednesday, 08/12/2020

 Hydr. No. 76
 OFF 2 PER
 Vednesday, 08/12/2020

 OFF 2 PER
 E SCS Runoff
 Peak discharge
 = 0.150 cfs

 Hydrograph type
 = SCS Runoff
 Peak discharge
 = 0.150 cfs

 Time interval
 = 10 yrs
 Time to peak
 = 730 min

 Time interval
 = 5 min
 Hyd. volume
 = 652 cuft

 Drainage area
 = 0.140 ac
 Curve number
 = 61

 Basin Slope
 = User
 Time of conc. (Tc)
 = 10.00 min

 Total precip.
 = 5.00 in
 Distribution
 = 748

 Storm duration
 = 24 hrs
 Shape factor
 = 484



Hydrograph l	Report		-
Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 77			
OFF 2			
Hydrograph type Storm frequency Time interval Inflow hyds.	= Combine = 10 yrs = 5 min = 75, 76	Peak discharge Time to peak Hyd. volume Contrib. drain. area	= 0.257 cfs = 730 min = 1,139 cuft = 0.170 ac

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Wednesday, 08 / 12 / 2020 = 3.633 cfs
= 730 min
= 15,158 cuft
= 0.220 ac Peak discharge Time to peak Hyd. volume Contrib. drain. area Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Combine
Combine
10 yrs
5 min
69, 73, 77 Hydrograph type Storm frequency Time interval Inflow hyds. Hyd. No. 79 POA-2

Q (cfs)

4.00

3.00

2.00

0.00 Time (min)

1560

1440

1200

1320

1.00



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Autodesk,
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Extension for
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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	
41	Combine	7.704	5	730	31,688	14, 20, 24,			Within LOD	
42	Combine	6.154	5	730	24,594	16, 28, 32, 36,			Outside of LOD	
44	Combine	12.63	5	730	53,740	20, 28, 36, 39,	l	I	EX-POA-2	
46	SCS Runoff	6.919	5	730	29,075		l	1	DA-1 Imp.	
47	SCS Runoff	2.151	£	730	8,156				DA-1 Per.	
48	Combine	9.070	5	730	37,230	46, 47			DA-1A	
50	SCS Runoff	0.095	5	730	398			1	UNDIST. Imp.	
51	SCS Runoff	0.763	5	730	3,098				UNDIST. Per	
52	Combine	0.858	2	730	3,497	50, 51		-	UNDIST.	
54	SCS Runoff	3.223	5	730	13,542	ļ		1	OFF 1 Imp.	
55	SCS Runoff	3.431	5	730	13,007			1	OFF 1 Per.	
56	Combine	6.654	5	730	26,549	54, 55	l	I	OFF 1	
58	SCS Runoff	3.080	5	730	12,944			1	Roof Area D	
60	Combine	19.66	5	730	80,220	48, 52, 56,			TOTAL TO BASIN	
61	Reservoir	4.640	5	760	80,206	58, 60	198.34	28,014	BASIN	
63	SCS Runoff	1.280	5	730	5,377				DA-UD 1 Imp.	
64	SCS Runoff	0.593	5	730	2,250	ļ	ł	1	DA-1 UD Per	
65	Combine	1.873	5	730	7,627	63, 64	l	ł	DA-1 UD	
67	Combine	5.567	5	735	87,832	61, 65,	l	I	POA-1	
69	SCS Runoff	1.043	5	730	4,381			ł	Roof Area UD	
71	SCS Runoff	2.606	5	730	10,953				DA-2 Imp.	
72	SCS Runoff	0.612	5	730	2,320				DA-2 Per	
73	Combine	3.218	5	730	13,273	71, 72	ł		DA-2	
75	SCS Runoff	0.130	5	730	597				OFF 2 IMP	
76	SCS Runoff	0.238	5	730	984				OFF 2 PER	
11	Combine	0.368	5	730	1,582	75, 76			OFF 2	
79	Combine	4.629	5	730	19,236	69, 73, 77,			POA-2	
20	120-08- Exist vs	s Prop.gp	×		Return P	eriod: 25 Y	ear	Wednesday	v, 08 / 12 / 2020	_

Ŧ	/drogral	ph St	mmr	ary R	ceport	Hydrafi	ow Hydrographs	Extension for Au	todesk® Civil 3D® by Autodesk, Inc. v2020
Hyd No	Hydrograph type (origin)	Peak filow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
-	SCS Runoff	9.715	5	730	40,824				EX-DA-1 Imp.
2	SCS Runoff	0.056	5	730	211	1	1	1	EX-DA-1 Per
ю	Combine	9.771	5	730	41,035	1, 2	-		Ex-DA-1
ŝ	SCS Runoff	0.569	5	730	2,390			1	OFF-1 Imp.
9	SCS Runoff	0.501	S	730	1,898				OFF-1 Per.
7	Combine	1.069	5	730	4,288	5, 6			OFF-1
6	Combine	10.84	5	730	45,323	3, 7,			EX-POA-1
12	SCS Runoff	1.753	5	730	7,368		1		EX-DA-2 Imp.
13	SCS Runoff	1.025	ŝ	730	4,099		-		EX-DA-2 Per
4	Combine	2.778	2	730	11,467	12, 13		1	EX-DA-2
16	SCS Runoff	0.237	2	730	962			1	EX-DA-2 Undist.
18	SCS Runoff	2.180	5	730	9,161	ļ	1		EX-DA-2 UD Imp.
19	SCS Runoff	2.180	5	730	8,600	1		1	EX-DA-2 UD Per
20	Combine	4.360	5	730	17,761	18, 19			EX-DA-2 UD
22	SCS Runoff	0.259	ŝ	730	1,195			1	EX-OFF 2 UD DIS IMP
23	SCS Runoff	0.306	5	730	1,266			1	EX-OFF 2 UD DIS PER
24	Combine	0.566	5	730	2,460	22, 23			EX-OFF DA 2 UD DIS
26	SCS Runoff	0.095	S	730	398		1	1	EX-DA-2 UD Undist. Imp.
27	SCS Runoff	0.474	5	730	1,923		ł	ļ	EX-DA-2 UD Undist. Per
28	Combine	0.568	5	730	2,321	26, 27	1	1	EX-DA-2 UD Undist.
30	SCS Runoff	1.185	S	730	4,979	ł			OFF-2 Imp.
31	SCS Runoff	1.168	£	730	4,429			1	OFF-2 Per
32	Combine	2.353	S	730	9,408	30, 31	1	1	OFF-2
34	SCS Runoff	1.327	ß	730	5,576				EX-OFF-UD-2 Imp.
35	SCS Runoff	1.669	5	730	6,328	1		1	EX-OFF-UD-2 Per.
36	Combine	2.996	ŝ	730	11,904	34, 35		1	EX-OFF-UD-2
38	Combine	5.368	5	730	21,836	14, 16, 32,	1	1	Basin
39	Reservoir	4.905	ى ا	735	21,754	38	197.06	981	Exist. Basin
20:	20-08- Exist vs	s Prop.gpv	2		Return P	eriod: 25 Υ	ear	Wednesday	, 08 / 12 / 2020

Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 1			
EX-DA-1 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 9.715 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 40,824 cuft
Drainage area	= 2.050 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ateShnalp\eGfenoteoral Engine	eriing References\Stormwater

Precipitation Report

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-Jydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 1	

EX-DA-1 Imp. 5

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	al Engineering References\Stormwat





Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 2			
EX-DA-1 Per			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.056 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 211 cuft
Drainage area	= 0.030 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	atestinale/estencental Engine	eering tte ferences∖Stormwater

Precipitation Report

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EX-DA-1 Per

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering F	teference Materials/Gener	al Engineering References\Stormwat





Hydrograph F	keport		R/1
Hydraflow Hydrographs Extensio	n for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 3			
Ex-DA-1			
Hydrograph type	= Combine	Peak discharge	= 9.771 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 41,035 cuft
Inflow hyds.	= 1, 2	Contrib drain area	= 2.080 ac



Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 5			
OFF-1 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.569 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,390 cuft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate3rinals\e0fenctereal Engine	eriing & ferences \ Stormwater



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 08 / 12 / 2020

Hyd. No. 5

OFF-1 Imp.

quency = 25 yrs Time interval = 5 min in = 6 0900 in Distribution = Custom	ation = P:/Engineering Reference Materials/General Engineering References/Stormwat
Storm Frequency Total precin	Storm duration

Hydrograph Report

Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 6			
OFF-1 Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.501 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min

5		2	
eerind 8% ferences \ Stormwate	ence Matentake General Engine	= P:\Engineering Refere	Storm duration
= Custom	Distribution	= 6.09 in	Total precip.
= 10.00 min	Time of conc. (Tc)	= User	Tc method
= 0 ft	Hydraulic length	= 0.0 %	Basin Slope
= 61	Curve number	= 0.270 ac	Drainage area
= 1,898 cuft	Hyd. volume	= 5 min	Time interval
= 730 min	Time to peak	= 25 yrs	Storm frequency
	Lean uiscilai ye		





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk. Inc. v2020

Wednesday, 08 / 12 / 2020

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Hyd. No. 6 OFF-1 Per

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6 0900 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials/Gener	al Engineering References\Stormwa

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 7	

OFF-1			
Hydrograph type Storm frequency Time interval Inflow hyds.	= Combine = 25 yrs = 5 min = 5, 6	Peak discharge Time to peak Hyd. volume Contrib. drain. area	 = 1.069 cfs = 730 min = 4,288 cuft = 0.390 ac

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Hydrograph R	leport		60
Hydraflow Hydrographs Extensio	r for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 9			
EX-POA-1			
Hydrograph type	= Combine	Peak discharge	= 10.84 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 45,323 cuft
Inflow hyds.	= 3, 7	Contrib drain area	= 0.000 ac



Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 12			
EX-DA-2 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 1.753 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 7,368 cuft
Drainage area	= 0.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate3rinals\e0fenctereal Engine	eriing & ferences \ Stormwater





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 08 / 12 / 2020

Hyd. No. 12

	Time interval = 5	Distribution = (
	= 25 yrs	= 6.0900 in
EX-UA-2 IMp.	Storm Frequency	Total precip.

= P:\Engineering Reference Materials\General Engineering References\Stormwat Custom 5 min Storm duration

Hydrograph Report

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Hydraflow Hydrographs Extensic	in for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 13			
EX-DA-2 Per			
Hydrograph type	= SCS Runoff	Peak discharge	= 1.025 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,099 cuft
Drainage area	= 0.730 ac	Curve number	= 56
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate Strat o/eOtenotenal Engine	er ing/®t eferences∖Stormwateı





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No. 13 EX-DA-2 Per

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials/Gener	al Engineering References/Stormwat

Hydrograph Report

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Wednesday, 08 / 12 / 2020

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 14	

EX-DA-2Hydrograph type= CombinePeak dischargeStorm frequency= 25 yrsTime interval= 5 minInflow hyds.= 12, 13Contrib. drain. area

= 2.778 cfs
= 730 min
= 11,467 cuft
= 1.100 ac





draftow Hydrographs Extension for. Jyd. No. 16 X-DA-2 Undist. ydrograph type torm frequency torm frequency time interval rainage area asin Slope c method	Autodesk® Civil 3D® by Autodesk, Inc. v2020	Peak discharge Time to peak Hyd. volume Curve number Hydraulic length Time of conc. (Tc)	wednesday, 08 / 12 / 2020 = 0.237 cfs = 730 min = 962 cuft = 55 = 0 ft = 10.00 min
otal precip.	 = 6.09 in = P:\Engineering Reference Mat 	Distribution	= Custom
orm duration		t estrats tecterotoral Engine	er i nឲ្ នេ terences\Stormwater



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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 16	

EX-DA-2 Undist.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering R	teference Materials\Gener	al Engineering References\Stormwat





Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 18			
EX-DA-2 UD Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 2.180 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 9,161 cuft
Drainage area	= 0.460 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	at estralp\eGenot enal Engine	ering & ferences \ Stormwater



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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 18	

EX-DA-2 UD Imp.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	al Engineering References\Stormwat





Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 19			
EX-DA-2 UD Per			
Hydrograph type	= SCS Runoff	Peak discharge	= 2.180 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 8,600 cuft
Drainage area	= 1.460 ac	Curve number	= 57
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	at e3riadp\eOfenot eoral Engine	eeriin⊜#References∖Stormwater



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 19	

EX-DA-2 UD Per Storm Frequer Total precip. Storm duratior

ency	= 25 yrs	Time interval	= 5 min
	= 6.0900 in	Distribution	= Custom
on	= P:\Engineering Refer	rence Materials\Genera	al Engineering References\Stormwat





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Hydrograph F	Report		181
Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 20			
EX-DA-2 UD			
Hydrograph type	= Combine	Peak discharge	= 4.360 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 17,761 cuft
Inflow hyds.	= 18, 19	Contrib drain area	= 1.920 ac



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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 22	

	Peak discharge Time to peak Hyd. volume Curve number Hydraulic length Time of conc. (Tc) Distribution Shape factor	
	= SCS Runoff = 25 yrs = 5 min = 0.060 ac = 0.0 % = User = 24 hrs	
EX-OFF 2 UD DIS IMP	Hydrograph type Storm frequency Time interval Drainage area Basin Slope Tc method Total precip. Storm duration	

= 0.259 cfs
 = 730 min
 = 1,195 cuft
 = 98
 = 0 ft
 = 10.00 min
 = 484



Wednesday, 08 / 12 / 2020 306 Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 4 Ċ EX-OFF 2 UD DIS PER Hyd. No. 23

= 0.306 cfs	= 730 min	= 1,266 cuft	= 61	= 0 ft	= 10.00 min	= Type III	= 484	
Peak discharge	Time to peak	Hyd. volume	Curve number	Hydraulic length	Time of conc. (Tc)	Distribution	Shape factor	
= SCS Runoff	= 25 yrs	= 5 min	= 0.180 ac	= 0.0 %	= User	= 6.09 in	= 24 hrs	
Hydrograph type	storm frequency	Time interval	Drainage area	asin Slope	c method	otal precip.	storm duration	



Hydrograph Report

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raflow Hydrographs Extension for Autodesk® Givil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
yd. No. 24	
(-OFF DA 2 UD DIS	

Hydraflow Hydrographs Extension for Autodesk® (© Civil 3D® by Autodesk, Inc. v2020		
Hvd No 24			Wednesday, 08 / 12 / 2020
11 yu: 170: 27			
EX-OFF DA 2 UD DIS			
Hydrograph type = Com	nbine	Peak discharge	= 0.566 cfs
Storm frequency = 25 yr	/rs	Time to peak	= 730 min
Time interval = 5 mir	ii	Hyd. volume	= 2,460 cuft
Inflow hyds. = 22, 2	23	Contrib drain area	= 0.240 ac
	04		



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 26

EX-DA-2 UD Undist. Imp.

	_		
Hydrograph type	= SCS Runoff	Peak discharge	= 0.095 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 398 cuft
Drainage area	= 0.020 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference	e Mateshadakofenoteoral Engin	eering & beferences \ Stormwater



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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No. 26

Wednesday, 08 / 12 / 2020

EX-DA-2 UD Undist. Imp.

L	L	- - -	
Storm Frequency	= 25 yrs	I Ime Interval	
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	al Engineering References\Stormwat





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Wednesday, 08 / 12 / 2020

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 **Hyd. No. 27**

EX-DA-2 UD Undist. Per

Hydrograph type	= SCS Runoff	Peak discharge	= 0.474 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,923 cuft
Drainage area	= 0.360 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference	se Mat eSrinalp\eOfenot eoral Engine	eering References/Stormwater



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Wednesday, 08 / 12 / 2020

aphs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020
Hydraflow Hydrogi

Hyd. No. 27

EX-DA-2 UD Undist. Per.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials/Gener	al Engineering References\Stormwat





Wednesday, 08 / 12 / 2020

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 28	
EX-DA-2 UD Undist.	

Hyd. No. 28			
EX-DA-2 UD Undist.			
Hydrograph type Storm frequency Time interval Inflow hyds.	= Combine = 25 yrs = 5 min = 26, 27	Peak discharge Time to peak Hyd. volume Contrib. drain. area	= 0.568 cfs = 730 min = 2,321 cuft = 0.380 ac



Hydrograph Report

Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 30			
OFF-2 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 1.185 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,979 cuft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.80 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Mage	atestinals/edienceoral Engine	eering tterences∖Stormwateı



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No. 30

OFF-2 Imp.

= 25 yrs hin with a custom - Custom - 6.0900 in Distribution = Custom - Custom - 6.0900 in Distribution - P:\Engineering References\Stormwat Storm Frequency Total precip. Storm duration

Hydrograph Report

Wednesday, 08 / 12 / 2020 = 4,429 cuft = 1.168 cfs = 730 min Time to peak Hyd. volume Curve number Hydraulic length Time of conc. (Tc) Peak discharge Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 = SCS Runoff = 25 yrs = 5 min = 0.630 ac = 0.0 % Storm frequency Time interval Drainage area Hydrograph type Hyd. No. 31 OFF-2 Per

= User = 6:09 in Distribution = Custom = P:\Engineering Reference Mat@ftatpt©tenctoal Engineering &terences\Stormwater

Basin Slope Tc method Total precip. Storm duration

= 0 ft = 61





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Wednesday, 08 / 12 / 2020

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 31

Wednesday, 08 / 12 / 2020

OFF-2 Per.

= 5 min	= Custom	rral Engineering References\Stormwa
Time interval	Distribution	Reference Materials/Gene
= 25 yrs	= 6.0900 in	= P:\Engineering F
Storm Frequency	Total precip.	Storm duration

Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 32	

OFF-2			
Hydrograph type	= Combine	Peak discharge	= 2.353 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 9,408 cuft
Inflow hyds.	= 30, 31	Contrib drain area	= 0.880 ac







low Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	. No. 34	DFF-UD-2 Imp.	
Hydraflow Hy	Hyd. N	EX-OFF	



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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020

Hyd. No. 34

Wednesday, 08 / 12 / 2020

EX-OFF-UD-2 Imp.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	al Engineering References\Stormwat





Hydraffow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 **Hyd. No. 35** EX-OFF-UD-2 Per. Hydrograph type = SCS Runoff Peak discharge = 1.669 cfs Storm frequency = 25 vrs Time to peak = 730 min

= 1.669 cfs = 730 min = 6,328 cuft = 61 = 0 ft = 11.20 min = Custom sering@@ferences\Stormwater	
Peak discharge Time to peak Hyd. volume Curve number Hydraulic length Time of conc. (Tc) Distribution ce Mat@ftatp&@exeratel Engine	
 SCS Runoff 25 yrs 5 min 5 min 0.900 ac 0.0 % User 6.09 in P:\Engineering Referen 	
Hydrograph type Storm frequency Time interval Drainage area Basin Slope Tc method Total precip. Storm duration	



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Hydraffow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020

Hyd. No. 35

EX-OFF-UD-2 Per

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering F	eference Materials/Gener	al Engineering References\Stormwat





Hydrograph I	Report		<u>c</u> 7
Hydraflow Hydrographs Extens	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 36			
EX-OFF-UD-2			
Hydrograph type	= Combine	Peak discharge	= 2.996 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 11,904 cuft
Inflow hyds.	= 34, 35	Contrib. drain. area	= 1.180 ac

ivil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 202
nine Peak dis	scharge	= 5.368 cfs
Time to	peak	= 730 min
Hyd. vol	lume	= 21,836 cuft
3, 32 Contrib.	drain. area	= 0.180 ac
ine 5, 32	Peak di Time to Hyd. vo Contrib	Peak discharge Time to peak Hyd. volume Contrib. drain. area





Hydraflow Hydrographs Extensio	n for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 39			
Exist. Basin			
Hydrograph type	= Reservoir	Peak discharge	= 4.905 cfs
Storm frequency	= 25 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 21,754 cuft
Inflow hyd. No.	= 38 - Basin	Max. Elevation	= 197.06 ft
Reservoir name	= Exist. Basin	Max. Storage	= 981 cuft
Storage Indication method used.			

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Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 41	
Within LOD	

Hyd. No. 41			
Within LOD			
Hydrograph type Storm frequency Time interval Inflow hyds.	= Combine = 25 yrs = 5 min = 14, 20, 24	Peak discharge Time to peak Hyd. volume Contrib. drain. area	= 7.704 cfs = 730 min = 31,688 cuft = 0.000 ac





Hydrograph I	Report		817
Hydraflow Hydrographs Extensi	sion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 42			
Outside of LOD			
Hydrograph type	= Combine	Peak discharge	= 6.154 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 24,594 cuft
Inflow hyds.	= 16, 28, 32, 36	Contrib drain area	= 0.180 ac

Hydraftow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 44	
EX-POA-2	

= 12.63 cfs	= 730 min	= 53,740 cuft	= 0.000 ac	
Peak discharge	Time to peak	Hyd. volume	Contrib. drain. area	
= Combine	= 25 yrs	= 5 min	= 20, 28, 36, 39	
Hydrograph type	Storm frequency	Time interval	Inflow hyds.	





Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 46			
DA-1 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 6.919 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 29,075 cuft
Drainage area	= 1.460 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Mai	ate Shalo\G enotonal Engine	eeriing & beferences\Stormwater

Precipitation Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020	
Hvd. No. 46		

DA-1 Imp

ency = 25 yrs Time interval = 5 min	= 6.0900 in Distribution = Custom	on = P:\Engineering Reference Materials\General Engineering References\Stormwat
Storm Frequency	Total precip.	Storm duration





Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 47			
DA-1 Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 2.151 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 8,156 cuft
Drainage area	= 1.160 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Mate	Shalp\cCleace nal Engine	erim @ References \ Stormwater

Precipitation Report

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Wednesday, 08 / 12 / 2020	
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Hyd. No. 47

DA-1 Per.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	 P:\Engineering R 	eference Materials\Gener	al Engineering References\Stormwat





Hydrograph F	keport (677
Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 48			
DA-1A			
Hydrograph type	= Combine	Peak discharge	= 9.070 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 37,230 cuft
Inflow hyds.	= 46, 47	Contrib. drain. area	= 2.620 ac



Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 50			
UNDIST. Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.095 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 398 cuft
Drainage area	= 0.020 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	at estralp\eGenot enal Engine	ering References/Stormwater



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 08 / 12 / 2020

Hyd. No. 50

UNUISI.IMP.			
Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Genei	ral Engineering References/Stormwati

Hydrograph Report

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Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 51			
UNDIST. Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.763 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,098 cuft
Drainage area	= 0.580 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate8rinalp\e6fenctoral Engine	eering tterences∖Stormwateı





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 51

Storm Froditionov	- 25 VIE	Timo in
ororrir i requericy		

= 25 yrs Time interval = 5 min = 6.0900 in Distribution = Custom = P:\Engineering Reference Materials\General Engineering References\Stormwat Total precip. Storm duration

Hydrograph Report

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Wednesday, 08 / 12 / 2020

aflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Wednesday, 08 / 12 / 2020
--

UNDIST.

ofs in ac uft
= 0.858 (= 730 mi = 3,497 (= 0.600 (
Peak discharge Time to peak Hyd. volume Contrib. drain. area
= Combine = 25 yrs = 5 min = 50, 51
Hydrograph type Storm frequency Time interval Inflow hyds.





Hydraflow Hydrographs Extens	sion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 54			
OFF 1 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 3.223 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 13,542 cuft
Drainage area	= 0.680 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	atestinale/edicencenal Engine	er ii ng #t teferences∖Stormwater

Precipitation Report

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Wednesday, 08 / 12 / 2020	
Hydraffow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Hyd. No. 54

OFF 1 Imp.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering F	eference Materials/Gener	al Engineering References\Stormwat





Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 55			
OFF 1 Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 3.431 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 13,007 cuft
Drainage area	= 1.850 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	itentapke0teroterral Engine	eeriing tte ferences∖Stormwater

Precipitation Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 55	

OFF 1 Per.

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.0900 in	Distribution	= Custom
Storm duration	= P:\Engineering F	teference Materials/Gener	al Engineering References\Stormwat





Hydrograph F	leport		662
Hydraflow Hydrographs Extensio	n for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 56			
OFF 1			
Hydrograph type	= Combine	Peak discharge	= 6.654 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 26,549 cuft
Inflow hyds.	= 54, 55	Contrib. drain. area	= 2.530 ac





Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 58			
Roof Area D			
Hydrograph type	= SCS Runoff	Peak discharge	= 3.080 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 12,944 cuft
Drainage area	= 0.650 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate Shalp\Cfenctora l Engine	eriing & ferences \Stormwater





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No. 58

Roof Area D

requency = 25 yrs Time interval = 5 min	ecip. = 6.0900 in Distribution = Custom	uration = P:\Engineering Reference Materials\General Engineering References\Stormwati
Storm Frequency	Total precip.	Storm duration

Hydrograph Report

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Wednesday, 08 / 12 / 2020

Hydraftow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hydd. No. 60

TOTAL TO BASIN				
Hydrograph type Storm frequency	 Combine 25 vrs 	Peak discharge Time to neak	= 19.66 cfs = 730 min	
Time interval	= 5 min	Hyd. volume	= 80,220 cuft	
Inflow hyds.	= 48, 52, 56, 58	Contrib drain area	= 0.650 ac	




Hydraflow Hydrographs Extension	for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 61			
BASIN			
Hydrograph type Storm frequency Time interval Inflow hyd. No. Reservoir name	 = Reservoir = 25 yrs = 5 min = 60 - TOTAL TO BASIN = UG STORMTRAP 	Peak discharge Time to peak Hyd. volume Max. Elevation Max. Storage	= 4.640 cfs = 760 min = 80,206 cuft = 198.34 ft = 28,014 cuft
Storage Indication method used.			



Hydrograph Report

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Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 63			
DA-UD 1 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 1.280 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,377 cuft
Drainage area	= 0.270 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate8frate\c6enoteoral Engine	eering tterences∖Stormwateı



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 08 / 12 / 2020

Hyd. No. 63

DA-UD 1 Imp.

5 min	Custom	eering References\Stormwa
11	"	eral Engine
Time interval	Distribution	teference Materials\Gen
= 25 yrs	= 6.0900 in	= P:\Engineering F
Storm Frequency	Total precip.	Storm duration

Hydrograph Report

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Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 64			
DA-1 UD Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.593 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,250 cuft
Drainage area	= 0.320 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	at estralp\eGenot enal Engine	ering References/Stormwater





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 **Hyd. No. 64**

DA-1 UD Per.

 Storm Frequency
 = 25 yrs
 Time interval
 = 5 min

 Total precip.
 = 6.0900 in
 Distribution
 = Custom

 Storm duration
 = P:\Engineering Reference Materials\General Engineering References\Stormwat

Hydrograph Report

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Wednesday, 08 / 12 / 2020

Hydraflow Hydrographs Extension for Autodesk® Civit 3D® by Autodesk, Inc. v2020 Hyd. No. 65

DA-1 UD

Hydrograph type	= Combine	Peak discharge	= 1.873 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 7,627 cuft
Inflow hyds.	= 63, 64	Contrib drain area	= 0.590 ac





Hydrograph F	Report		
Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 67			
POA-1			
Hydrograph type Storm frequency Time interval Inflow hyds.	= Combine = 25 yrs = 5 min = 61, 65	Peak discharge Time to peak Hyd. volume Contrib. drain. area	= 5.567 cfs = 735 min = 87,832 cuft = 0.000 ac



Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 69			
Roof Area UD			
Hydrograph type	= SCS Runoff	Peak discharge	= 1.043 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,381 cuft
Drainage area	= 0.220 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	at ehinalp\cCience oral Engine	er ing/®t eferences∖Stormwateı



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 69

Roof Area UD

5 min	Custom	eering References\Stormwa
/al = 5) = -	\General Engine
Time interv	Distributior	ference Materials
= 25 yrs	= 6.0900 in	= P:\Engineering Re
Storm Frequency	Total precip.	Storm duration

Hydrograph Report

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Wednesday, 08 / 12 / 2020

Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 71			
DA-2 lmp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 2.606 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 10,953 cuft
Drainage area	= 0.550 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	 P:\Engineering Reference Mai 	ate Strat s\cCienceoral Engine	ering References/Stormwater

Q (cfs) 3.00

2.00

1.00

00.00 Time (min)

1560



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No. 71

DA-2 Imp.

2: 2: 1: 1:		= Custom	igineering References/Stormwat
Timo intenio		Distribution	erence Materials\General Er
- 36 ///0	- 20 yis	= 6.0900 in	 P:\Engineering Ref
Ctorm Eroditopol	ororini Frequency	Total precip.	Storm duration

Hydrograph Report

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Wednesday, 08 / 12 / 2020

Hydratiow Hydrographs Extensiv	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, U8 / 12 / 2020
Hyd. No. 72			
DA-2 Per			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.612 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,320 cuft
Drainage area	= 0.330 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Mage	ate81malp\e31encement Engine	er i n ∉®t eferences∖Stormwateı





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Wednesday, 08 / 12 / 2020

Hyd. No. 72

DA-2 Per

= 5 min	= Custom	neral Engineering References\Storm
Time interval	Distribution	ing Reference Materials/Gei
= 25 yrs	= 6.0900 in	= P:\Engineer
Storm Frequency	Total precip.	Storm duration

Hydrograph Report

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Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 73		
DA-2		
		- 2,718 of





Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 75			
OFF 2 IMP			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.130 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 597 cuft
Drainage area	= 0.030 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.09 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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Hydraflow Hydrographs Extension	for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 76			
OFF 2 PER			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.238 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Fime interval	= 5 min	Hyd. volume	= 984 cuft
Drainage area	= 0.140 ac	Curve number	= 61
asin Slope	= 0.0 %	Hydraulic length	= 0 ft
Fc method	= User	Time of conc. (Tc)	= 10.00 min
Fotal precip.	= 6.09 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484
Storm duration	= 24 hrs	Shape factor	



Hydrograph F	Report		667
Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 77			
OFF 2			
Hydrograph type	= Combine	Peak discharge	= 0.368 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,582 cuft
Inflow hyds.	= 75, 76	Contrib drain area	= 0.170 ac

Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 79			
POA-2			
Hydrograph type	= Combine	Peak discharge	= 4.629 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 19,236 cuft
nflow hyds.	= 69, 73, 77	Contrib drain area	= 0.220 ac





	Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020
Hvdrograph Summary Report	u dan canadan camma i vapar c

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Hydrograph Description	Within LOD Outside of LOD
Total strge used (cuft)	
Maximum elevation (ft)	1 1
Inflow hyd(s)	14, 20, 24, 16, 28, 32, 36,
Hyd. volume (cuft)	47,980 37,790
Time to Peak (min)	730
Time interval (min)	ى ي
Peak filow (cfs)	12.03 9.728
drograph type rrigin)	nbine nbine

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Hydrograph Description	EX-DA-1 lmp.	EX-DA-1 Per	EX-DA-1	DFF-1 Imp.	DFF-1 Per.	DFF-1	EX-POA-1	EX-DA-2 Imp.	EX-DA-2 Per	EX-DA-2	EX-DA-2 Undist.	EX-DA-2 UD Imp.	EX-DA-2 UD Per	EX-DA-2 UD	EX-OFF 2 UD DIS IMP	EX-OFF 2 UD DIS PER	EX-OFF DA 2 UD DIS	EX-DA-2 UD Undist. Imp.	EX-DA-2 UD Undist. Per	EX-DA-2 UD Undist.	DFF-2 Imp.	DFF-2 Per	DFF-2		EX-OFF-UD-2 rei.	3asin	Exist. Basin
Total strge used (cuft)		ł		1		ļ		l		1	1	1		1	1			1	ļ	ļ	ł	ļ	1	 		ļ	1,827
Maximum elevation (ft)	1	ł						1		1	ł	ł		1	ł								ł			1	197.36
Inflow hyd(s)			1, 2			5, 6	3, 7,			12, 13				18, 19			22, 23			26, 27			30, 31		34, 35	14, 16, 32,	38
Hyd. volume (cuft)	54,347	354	54,701	3,181	3,186	6,367	61,069	9,809	7,239	17,048	1,718	12,195	15,023	27,218	1,591	2,124	3,715	530	3,436	3,966	6,628	7,434	14,062	1,423	10,020 18.044	32,828	32,746
Time to Peak (min)	730	730	730	730	730	730	730	730	730	730	730	730	730	730	730	730	730	730	730	730	730	730	730	130	730 730	730	735
Time interval (min)	5	5	ъ	5	5	5	5	5	ŝ	S	5	5	ŝ	5	S	5	5	5	5	ŝ	5	5	ۍ	n ı	പറ	ç	5
Peak flow (cfs)	12.83	0.096	12.93	0.751	0.868	1.619	14.55	2.316	1.931	4.247	0.456	2.879	4.030	6.909	0.343	0.530	0.873	0.125	0.911	1.036	1.565	2.026	3.590	 567.I	4.646	8.293	7.147
Hydrograph type (origin)	SCS Runoff	SCS Runoff	Combine	SCS Runoff	SCS Runoff	Combine	Combine	SCS Runoff	SCS Runoff	Combine	SCS Runoff	SCS Runoff	SCS Runoff	Combine	SCS Runoff	SCS Runoff	Combine	SCS Runoff	SCS Runoff	Combine	SCS Runoff	SCS Runoff	Combine		Combine	Combine	Reservoir
Hyd. No	-	2	e	5	9	7	6	12	13	4	16	18	19	20	22	23	24	26	27	28	30	31	32	 τς 1.	39	38	39

1 T .	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
Ŧ	Combine	12.03	5	730	47,980	14, 20, 24,			Within LOD
9	Combine	9.728	5	730	37,790	16, 28, 32, 36,			Outside of LOD
4	Combine	18.96	5	730	81,973	20, 28, 36, 39,			EX-POA-2
9	SCS Runoff	9.138	2	730	38,706		1	ł	DA-1 Imp.
11	SCS Runoff	3.730	5	730	13,689			-	DA-1 Per
8	Combine	12.87	5	730	52,394	46, 47			DA-1A
0	SCS Runoff	0.125	5	730	530				UNDIST. Imp.
12	SCS Runoff	1.468	5	730	5,536		1		UNDIST. Per.
52	Combine	1.593	5	730	6,066	50, 51			UNDIST.
4	SCS Runoff	4.256	5	730	18,027				OFF 1 Imp.
22	SCS Runoff	5.948	5	730	21,831		1	ł	OFF 1 Per.
90	Combine	10.20	5	730	39,858	54, 55	-		OFF 1
80	SCS Runoff	4.068	2	730	17,232				Roof Area D
8	Combine	28.73	5	730	115,551	48, 52, 56,			TOTAL TO BASIN
2	Reservoir	9.366	5	750	115,537	60 20	199.73	38,736	BASIN
33	SCS Runoff	1.690	5	730	7,158				DA-UD 1 Imp.
2	SCS Runoff	1.029	5	730	3,776			ļ	DA-1 UD Per
35	Combine	2.719	5	730	10,934	63, 64			DA-1 UD
22	Combine	10.30	5	745	126,471	61, 65,		1	POA-1
60	SCS Runoff	1.377	5	730	5,832				Roof Area UD
Σ	SCS Runoff	3.443	5	730	14,581				DA-2 Imp.
2	SCS Runoff	1.061	5	730	3,894				DA-2 Per
ę	Combine	4.504	5	730	18,475	71, 72			DA-2
22	SCS Runoff	0.171	5	730	795				OFF 2 IMP
9	SCS Runoff	0.412	5	730	1,652				OFF 2 PER
5	Combine	0.584	5	730	2,447	75, 76			OFF 2
6	Combine	6.464	ى ب	730	26,755	69, 73, 77,		ł	POA-2
50	0-08- Exist vs	Prop.gp	3		Return Pe	eriod: 100	Year	Wednesday	r, 08 / 12 / 2020

Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 1			
EX-DA-1 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 12.83 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 54,347 cuft
Drainage area	= 2.050 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	at ehinal pke0ienoteoral Engine	serind tterences∖Stormwater

Precipitation Report

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08 by Autodesk, Inc. v2020 Wednesday, 08 / 12 / 2020	
lydraflow Hydrographs Extension for Autodesk® Civil 3	Hvd. No. 1

EX-DA-1 Imp.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering F	teference Materials\Gener	al Engineering References/Stormwat





Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 2			
EX-DA-1 Per			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.096 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 354 cuft
Drainage area	= 0.030 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	at ehinap\e0ience nal Engine	ering & ferences \ Stormwater

Precipitation Report

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Wednesday, 08 / 12 / 2020	
ydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	łyd. No. 2

EX-DA-1 Per

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering F	teference Materials/Gener	al Engineering References/Stormwat





Hydrograph F	Report		602
Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 3			
Ex-DA-1			
Hydrograph type	= Combine	Peak discharge	= 12.93 cfs
Storm trequency	= 100 yrs	lime to peak	= /30 min
Time interval	= 5 min	Hyd. volume	= 54,701 cuft
Inflow hyds.	= 1, 2	Contrib drain area	= 2.080 ac



Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 5			
OFF-1 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.751 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,181 cuft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate3rinals) eCremotornal Engine	eering48846 ferences∖Stormwateı



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 5

Wednesday, 08 / 12 / 2020

OFF-1 Imp.

= 5 min	= Custom	igineering References\Stormwi
Time interval	Distribution	erence Materials\General Er
= 100 vrs	= 8.0300 in	= P:\Engineering Refe
Storm Frequency	Total precip.	Storm duration

Hydrograph Report

Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 6			
OFF-1 Per.			
Hvdrodranh tvne	= SCS Runoff	Peak discharde	= 0 868 cfc

= SCS Runoff	Peak discharge	= 0.868 cfs
= 100 yrs	Time to peak	= 730 min
= 5 min	Hyd. volume	= 3,186 cuft
= 0.270 ac	Curve number	= 61
= 0.0 %	Hydraulic length	= 0 ft
= User	Time of conc. (Tc)	= 10.00 min
= 8.03 in	Distribution	= Custom
= P:\Engineering Reference	. Mateshanis) eGenoteoral Engine	eering48%terences∖Stormwateı
	= SCS Runoff = 100 yrs = 5 min = 0.270 ac = 0.0% = User = 8.03 in = P:\Engineering Reference	SCS RunoffPeak discharge= 100 yrsTime to peak= 5 minHyd. volume= 0.270 acHyd. volume= 0.270 acHydraulic length= 0.8erDistribution= 10serDistribution= P:\Engineering Reference Mat@ftapleEactoral Engin





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 6

OFF-1 Per.

min	ustom	ering References\Stormwa
ne interval = 5	stribution = C	/laterials\General Engine
100 yrs Tir	8.0300 in Di	P:\Engineering Reference N
torm Frequency =	otal precip.	torm duration =

Hydrograph Report

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Wednesday, 08 / 12 / 2020

aflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 d. No. 7

OFF-1			
Hydrograph type Storm frequency Time interval	= Combine = 100 yrs = 5 min	Peak discharge Time to peak Hyd. volume Contri, drain area	= 1.619 cfs = 730 min = 6,367 cuft = 0.390 ac
	5		0000





Hydrograph R	eport		607
Hydraflow Hydrographs Extension	r for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 9			
EX-POA-1			
Hydrograph type	= Combine	Peak discharge	= 14.55 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 61,069 cuft
Inflow hyds.	= 3, 7	Contrib. drain. area	= 0.000 ac



Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 12			
EX-DA-2 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 2.316 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 9,809 cuft
Drainage area	= 0.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate8rinale\e3feacetoral Engine	eering tterences∖Stormwateı



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No. 12 EX-DA-2 Imp.

Storm Frequency	= 100 yrs	Time interval	= 5 min
otal precip.	= 8.0300 in	Distribution	= Custom
storm duration	= P:\Engineering R	eference Materials\Gener	al Engineering References/Stormwati

Hydrograph Report

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Wednesday, 08 / 12 / 2020

Hydratiow Hydrographs Extensic	In for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, U8 / 12 / 2020
Hyd. No. 13			
EX-DA-2 Per			
Hydrograph type	= SCS Runoff	Peak discharge	= 1.931 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 7,239 cuft
Drainage area	= 0.730 ac	Curve number	= 56
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Mage	ate8ntade)ve0fenctonal Engine	eeriing4 834 beferences∖Stormwateı





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 13

EX-DA-2 Pai

	Time interval	Distribution
	= 100 yrs	= 8 0300 in
EX-DA-Z Per	Storm Frequency	Total precip

 = 100 yrs
 Time interval
 = 5 min

 = 8.0300 in
 Distribution
 = Custom

 = P:\Engineering Reference Materials\General Engineering References\Stormwatu
 Total precip. Storm duration

Hydrograph Report

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Wednesday, 08 / 12 / 2020

Hydraffow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 14	

EX-DA-2			
Hydrograph type Storm frequency Time interval Inflow hyds.	= Combine = 100 yrs = 5 min = 12, 13	Peak discharge Time to peak Hyd. volume Contrib. drain. area	 = 4.247 cfs = 730 min = 17,048 cuft = 1.100 ac





Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 16			
EX-DA-2 Undist.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.456 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,718 cuft
Drainage area	= 0.180 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	 P:\Engineering Reference Mar 	it entratp∖ecterote oral Engine	eer i ng /8% eferences∖Stormwateı

Precipitation Report

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Wednesday, 08 / 12 / 2020	
Hydraffow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Hyd. No. 16

EX-DA-2 Undist.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials/Gener	al Engineering References\Stormwat





Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 18			
EX-DA-2 UD Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 2.879 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 12,195 cuft
Drainage area	= 0.460 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	it ⊛halp\€0fenctoral Engine	ering & ferences \ Stormwater



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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 18	

EX-DA-2 UD Imp.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering F	eference Materials/Gener	al Engineering References\Stormwat





Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 19			
EX-DA-2 UD Per			
Hydrograph type	= SCS Runoff F	^{>} eak discharge	= 4.030 cfs
Storm frequency	= 100 yrs T	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 15,023 cuft
Drainage area	= 1.460 ac	Curve number	= 57
Basin Slope	H = 0.0 %	Hydraulic length	= 0 ft
Tc method	= User T	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Mates	Shhalp\eOfenoteoral Engine	ering & ferences \ Stormwater



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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 19	

EX-DA-2 UD Per

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	al Engineering References\Stormwat





Hydrograph F	Report		1.02
Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 20			
EX-DA-2 UD			
Hydrograph type	= Combine	Peak discharge	= 6.909 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 27,218 cuft
Inflow hyds.	= 18, 19	Contrib drain area	= 1.920 ac





Hydrograph Report	
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 22	

EX-OFF 2 UD DIS IMP

Hydrograph type	= SCS Runoff	Peak discharge	= 0.343 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,591 cuft
Drainage area	= 0.060 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Wednesday, 08 / 12 / 2020 Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 EX-OFF 2 UD DIS PER Hyd. No. 23

= 0.530 cfs	= 730 min	= 2,124 cuft	= 61	= 0 ft	= 10.00 min	= Type III	= 484	
Peak discharge	Time to peak	Hyd. volume	Curve number	Hydraulic length	Time of conc. (Tc)	Distribution	Shape factor	
= SCS Runoff	= 100 yrs	= 5 min	= 0.180 ac	= 0.0 %	= User	= 8.03 in	= 24 hrs	
Hydrograph type	Storm frequency	Time interval	Drainage area	Basin Slope	Tc method	Total precip.	Storm duration	



Hydrograph Report

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Hydraflow Hydrographs Extension fo	or Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 24			
EX-OFF DA 2 UD DIS			
Hydrodranh tyne		Deak discharge	= 0 873 cfs

Hyd. No. 24 EX-OFF DA 2 UD DIS				
Hydrograph type	= Combine	Peak discharge	= 0.873 cfs	
Storm frequency	= 100 yrs	Time to peak	= 730 min	
Time interval	= 5 min	Hyd. volume	= 3,715 cuft	
Inflow hyds.	= 22, 23	Contrib. drain. area	= 0.240 ac	



Hydraftow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 **Hyd. No. 26**

EX-DA-2 UD Undist. Imp.

Hydrograph type	= SCS Runoff	Peak discharge	= 0.125 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 530 cuft
Drainage area	= 0.020 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference N	MateShanapkoGenotenal Engine	eering tte ferences \Stormwater



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Wednesday, 08 / 12 / 2020

ydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020
Hydraflow H

Hyd. No. 26

EX-DA-2 UD Undist. Imp.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	al Engineering References\Stormwat





Wednesday, 08 / 12 / 2020

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 **Hyd. No. 27**

EX-DA-2 UD Undist. Per

Hydrograph type	= SCS Runoff	Peak discharge	= 0.911 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,436 cuft
Drainage area	= 0.360 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference	Mateshalp/edenceral Engine	eering tte ferences∖Stormwater

Precipitation Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No. 27

EX-DA-2 UD Undist. Per

Storm Frequency	= 100 vrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	al Engineering References\Stormwat





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Hydraflow Hydrographs Extension	for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 28			
EX-DA-2 UD Undist.			
Hydrograph type	= Combine	Peak discharge	= 1.036 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,966 cuft
Inflow hyds.	= 26, 27	Contrib drain area	= 0.380 ac

Hydrograph Report

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Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 30			
OFF-2 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 1.565 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 6,628 cuft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.80 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Mi	lat e3riatp\e0fencte nel Engin∈	eriing & ferences \Stormwater





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk. Inc. v2020

Wednesday, 08 / 12 / 2020

Hyd. No. 30

OFF-2 Imp.

	= 5 min	= Custom	ral Engineering References\Stormwati
	Time interval	Distribution	eference Materials\Gener
	= 100 yrs	= 8.0300 in	= P:\Engineering R
•	Storm Frequency	Total precip.	Storm duration

Hydrograph Report

Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 31			
OFF-2 Per			
Hydrograph type	= SCS Runoff	Peak discharge	= 2.026 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 7,434 cuft
Drainage area	= 0.630 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.80 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	at estrat okeoteoral Engine	ering References/Stormwater





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 **Hyd. No. 31**

OFF-2 Per

		- - -	
storm Frequency	= 100 yrs	I Ime Interval	= 0 MIN
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Generation	al Engineering References\Stormwati

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Wednesday, 08 / 12 / 2020

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Hydraftow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 32	
OFF-2	

1			
Hydrograph type	= Combine	Peak discharge	= 3.590 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 14,062 cuft
Inflow hyds.	= 30, 31	Contrib drain area	= 0.880 ac





Hydraftow Hydrographs Extension for Autodesk® Civil 30® by Autodesk, Inc. v2020 **Hydd. No. 34** EX-OFF-UD-2 Imp. Hydrograph type = SCS Runoff Peak discharge = 1.753 cfs Common forontion - 200 min.

= 1.753 cfs = 730 min	= 7,423 cuft	= 98	n = 0ft	c) = 11.20 min	= Custom	ngineering & ferences \Stormwater
ff Peak discharge Time to peak	Hyd. volume	Curve number	Hydraulic length	Time of conc. (T	Distribution	ring Reference Mat entanap∖ecterotora l E
type = SCS Runoi lency = 100 yrs	al = 5 min	ea = 0.280 ac	e 0.0 %	= User	e = 8 03 in	tion = P:\Enginee
Hydrograph Storm frequ	Time interva	Drainage ar	Basin Slope	Tc method	Total precip	Storm durat



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Hydraffow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hvd No 34	

Hyd. No. 34

EX-OFF-UD-2 Imp.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	al Engineering References\Stormwat





Wednesday, 08 / 12 / 2020 Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 EX-OFF-UD-2 Per. Hyd. No. 35



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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 35	

EX-OFF-UD-2 Per

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gene	al Engineering References\Stormwat





Hydrograph R	leport		
Hydraflow Hydrographs Extensio	r for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 36			
EX-OFF-UD-2			
Hydrograph type	= Combine	Peak discharge	= 4.646 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 18,044 cuft
Inflow hyds.	= 34, 35	Contrib drain area	= 1.180 ac

lydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 38			
3asin			
Hydrograph type	= Combine	Peak discharge	= 8.293 cfs
storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 32,828 cuft
nflow hyds.	= 14, 16, 32	Contrib drain area	= 0.180 ac





Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 39			
Exist. Basin			
Hydrograph type	= Reservoir	Peak discharge	= 7.147 cfs
Storm frequency	= 100 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 32,746 cuft
Inflow hyd. No.	= 38 - Basin	Max. Elevation	= 197.36 ft
Reservoir name	= Exist. Basin	Max. Storage	= 1,827 cuft
Storage Indication method used			

Hydrograph Report	200
Hydraftow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 41	
Within LOD	

Hyd. No. 41			
Within LOD			
Hydrograph type Storm frequency Time interval Inflow hyds.	= Combine = 100 yrs = 5 min = 14, 20, 24	Peak discharge Time to peak Hyd. volume Contrib. drain. area	= 12.03 cfs = 730 min = 47,980 cuft = 0.000 ac





Hydrograph Report Hydraftow Hydrographs Extension for Autodeski

Hydraflow Hydrographs Extensior	n for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 42			
Outside of LOD			
Hydrograph type Storm frequency Time interval	= Combine = 100 yrs = 5 min = 16 28 32 36	Peak discharge Time to peak Hyd. volume	= 9.728 cfs = 730 min = 37,790 cuft
	0, 20, 02, 00		0.100 80

Hydrograph Report	
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 44	
EX-POA-2	

EX-POA-2			
Hydrograph type	= Combine	Peak discharge	= 18.96 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 81,973 cuft
Inflow hyds.	= 20, 28, 36, 39	Contrib drain area	= 0.000 ac





Hydratlow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 46			
DA-1 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 9.138 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 38,706 cuft
Drainage area	= 1.460 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	 P:\Engineering Reference Ma 	ate Sha pkeGenotenal Engine	eering & beferences \ Stormwater



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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 46	

DA-1 Imp.

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering F	teference Materials/Gener	al Engineering References\Stormwat





Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 47			
DA-1 Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 3.730 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 13,689 cuft
Drainage area	= 1.160 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate Shalp\cCleactora l Engine	er ing/®t eferences∖Stormwater



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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 47	

DA-1 Per

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gene	al Engineering References\Stormwat





Hydrograph F	leport contract of the second s		
Hydraflow Hydrographs Extensio	n for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 48			
DA-1A			
Hydrograph type	= Combine	Peak discharge	= 12.87 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 52,394 cuft
Inflow hyds.	= 46, 47	Contrib. drain. area	= 2.620 ac



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 = SCS Runoff
 Peak discharge
 = 0.125 cfs

 = 100 yrs
 Time to peak
 = 730 min

 = 5 min
 Hyd. volume
 = 530 cuft

 = 0.020 ac
 Curve number
 = 98

 = 0.0 %
 Hydraulic length
 = 0 ft

 = User
 Time of conc. (Tc)
 = 10.00 min

 = 8.03 in
 Distribution
 = Custom

 = P:\Engineering Reference Maternate Engineering References\Stormwater

 Wednesday, 08 / 12 / 2020 Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hydrograph type Storm frequency Time interval Drainage area Basin Slope Tc method Total precip. Storm duration Hyd. No. 50 UNDIST. Imp.


Hydrathow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 **Hyd. No. 50**

INDIST Imp

dull leinne			
storm Frequency	= 100 yrs	Time interval	= 5 min
otal precip.	= 8.0300 in	Distribution	= Custom
storm duration	= P:\Engineering R	eference Materials\Gener	ral Engineering References/Stormwat

Hydrograph Report

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Wednesday, 08 / 12 / 2020

Hydraflow Hydrographs Extensic	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 51 UNDIST. Per.			
Hvdrograph type	= SCS Runoff	Peak discharge	= 1.468 cfs
Storm frequency	= 100 vrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,536 cuft
Drainage area	= 0.580 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	at estralp\cSenot enal Engine	eriin@&terences\Stormwater





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 51

Wednesday, 08 / 12 / 2020

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UNDIST. Per.			
Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	ral Engineering References\Stormwat

Hydrograph Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 52	

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Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 54			
OFF 1 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 4.256 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 18,027 cuft
Drainage area	= 0.680 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate8frate\c6enoteoral Engine	eeriing/tterences∖Stormwateı



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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 54	

OFF 1 Imp.

_			
Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering F	eference Materials\Gener	al Engineering References\Stormwat





Hydraflow Hydrographs Extens	sion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 55			
OFF 1 Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 5.948 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 21,831 cuft
Drainage area	= 1.850 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	atestrats/ectenceral Engine	eriing References\Stormwater

Precipitation Report

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Wednesday, 08 / 12 / 2020	
ydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	lyd. No. 55

318

OFF 1 Per.

iterval = 5 min	tion = Custom	ials\General Engineering References\Storn
= 100 yrs Time in	= 8.0300 in Distribu	= P:\Engineering Reference Mater
Storm Frequency	Total precip.	Storm duration





Hydrograph F	keport (
Hydraflow Hydrographs Extensio	in for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 56			
OFF 1			
Hydrograph type Storm frequency Time interval Inflow hyds.	= Combine = 100 yrs = 54, 55	Peak discharge Time to peak Hyd. volume Contrib. drain. area	= 10.20 cfs = 730 min = 39,858 cuft = 2.530 ac



Hydrograph Report

Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 58			
Roof Area D			
Hydrograph type	= SCS Runoff	Peak discharge	= 4.068 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 17,232 cuft
Drainage area	= 0.650 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate3rinals) eCremotornal Engine	eering tterences∖Stormwateı



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 58

Wednesday, 08 / 12 / 2020

Roof Area D

5 min	Custom	neering References/Stormwat
erval =	= uo	als\General Engir
Time inte	Distributi	g Reference Materia
= 100 yrs	= 8.0300 in	= P:\Engineerin
Storm Frequency	Total precip.	Storm duration

Hydrograph Report

lydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 60	
OTAL TO BASIN	

Hydrograph type	= Combine	Peak discharge	= 28.73 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 115,551 cuft
nflow hyds.	= 48, 52, 56, 58	Contrib drain area	= 0.650 ac





Hydraflow Hydrographs Extensio	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 61			
BASIN			
Hydrograph type	= Reservoir	Peak discharge	= 9.366 cfs
Storm frequency	= 100 yrs	Time to peak	= 750 min
Time interval	= 5 min	Hyd. volume	= 115,537 cuft
Inflow hyd. No.	= 60 - TOTAL TO BASIN	Max. Elevation	= 199.73 ft
Reservoir name	= UG STORMTRAP	Max. Storage	= 38,736 cuft
Storage Indication method used.			



Hydrograph Report

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Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 63			
DA-UD 1 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 1.690 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 7,158 cuft
Drainage area	= 0.270 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Mage	at ehnapke0ante nal Engine	eriin அகை ferences \ Stormwater



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 63

DA-UD 1 Im

00 yrs Time interval	= 5 min
0300 in Distribution	= Custom
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0300 in :\Engineering Reference Materials\Gene	e le

Hydrograph Report

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Wednesday, 08 / 12 / 2020

Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 64			
DA-1 UD Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 1.029 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,776 cuft
Drainage area	= 0.320 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Mage	atestrats/edienceoral Engine	eering tterences∖Stormwater





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 64

DA-1 UD Per.

= 5 min	= Custom	igineering References/Stormwati
Time interval	Distribution	ference Materials\General Er
= 100 yrs	= 8.0300 in	= P:\Engineering Re
Storm Frequency	Total precip.	Storm duration

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Wednesday, 08 / 12 / 2020

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raflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
id. No. 65	
-1 UD	

Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 202
Hyd. No. 65			
DA-1 UD			
Hydrograph type	= Combine	Peak discharge	= 2.719 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 10,934 cuft
Inflow hyds.	= 63, 64	Contrib drain area	= 0.590 ac





Hydrograph F	Report		329
Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 67			
POA-1			
Hydrograph type Storm frequency Time interval Inflow hyds.	= Combine = 100 yrs = 5 min = 61, 65	Peak discharge Time to peak Hyd. volume Contrib. drain. area	= 10.30 cfs = 745 min = 126,471 cuft = 0.000 ac



Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 69			
Roof Area UD			
Hydrograph type	= SCS Runoff	Peak discharge	= 1.377 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,832 cuft
Drainage area	= 0.220 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate8nhanip)e01eanoteenal Engine	eering ∰terences∖Stormwater



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 69

Roof Area UD			
Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.0300 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	al Engineering References\Stormwat

Hydrograph Report

331

Wednesday, 08 / 12 / 2020

Hydratlow Hydrographs Extens	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 71			
DA-2 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 3.443 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 14,581 cuft
Drainage area	= 0.550 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate3rinals\e3fenctoral Engine	eriing & ferences \ Stormwater





Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 71

DA-2 Imp.

Precip (in)

1.00

06.0

0.70

0.60

0.80

0.50

0.30

0.20

0.40

= 100 yrs 1111.0 = Custom = 8.0300 in Distribution = Custom = P:\Engineering Reference Materials\General Engineering References\Stormwat Storm Frequency Total precip. Storm duration

Hydrograph Report

= User = 8:03 in Distribution = Custom = P:\Engineering Reference Mat@ftatpt©tenctoal Engineering &terences\Stormwater Wednesday, 08 / 12 / 2020 = 3,894 cuft = 61 = 1.061 cfs = 730 min = 0 ft Time to peak Hyd. volume Curve number Hydraulic length Time of conc. (Tc) Peak discharge Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 = SCS Runoff = 100 yrs = 5 min = 0.330 ac = 0.0 % Storm frequency Time interval Drainage area Hydrograph type Basin Slope Tc method Total precip. Storm duration Hyd. No. 72 DA-2 Per.



150

0

0.00

0.10

333

Wednesday, 08 / 12 / 2020

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 72

Wednesday, 08 / 12 / 2020

DA-2 Per.

= 5 min	= Custom	al Engineering References/Stormwati
Time interval	Distribution	eference Materials\Gener
= 100 yrs	= 8.0300 in	= P:\Engineering R
Storm Frequency	Total precip.	Storm duration

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Wednesday, 08 / 12 / 2020
Hyd. No. 73	
DA-2	

Hydrograph type	= Combine	Peak discharge	= 4.504 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Fime interval	= 5 min	Hyd. volume	= 18,475 cuft
nflow hyds.	= 71, 72	Contrib drain area	= 0.880 ac





Hydraflow Hydrographs Extensic	in for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 75			
OFF 2 IMP			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.171 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 795 cuft
Drainage area	= 0.030 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

337

Hydraflow Hydrographs Extensi	ion for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 76			
OFF 2 PER			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.412 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,652 cuft
Drainage area	= 0.140 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.03 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydraftow Hydrographs Extension for Autodesk® Gvl 3D® by Autodesk, Inc. v2020 Wednesday. 08 / 12 / 2020 Hydr. No. 77 OFF 2 OFF 2 Peak discharge Hydrograph type = Combine Time interval = 5 min Time interval = 75, 76 Contrib. drain. area = 0.170 ac	Hydrograph F	Report		6000 0
Hyd. No. 77OFF 2OFF 2Hydrograph type= CombinePeak discharge= 0.584 cfsTime to peak= 100 yrsTime interval= 5 minInflow hyds= 75, 76Contrib. drain. area= 0.170 ac	Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
OFF 2Hydrograph type= CombinePeak discharge= 0.584 cfsStorm frequency= 100 yrsTime to peak= 730 minTime interval= 5 minHyd. volume= 2,447 cuftInflow hyds.= 75, 76Contrib. drain. area= 0.170 ac	Hyd. No. 77			
Hydrograph type= CombinePeak discharge= 0.584 cfsStorm frequency= 100 yrsTime to peak= 730 minTime interval= 5 minHyd. volume= 2,447 cuftInflow hyds.= 75, 76Contrib. drain. area= 0.170 ac	OFF 2			
	Hydrograph type Storm frequency Time interval Inflow hyds.	= Combine = 100 yrs = 5 min = 75, 76	Peak discharge Time to peak Hyd. volume Contrib. drain. area	= 0.584 cfs = 730 min = 2,447 cuft = 0.170 ac

Hydrograph F	Report		540
Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Wednesday, 08 / 12 / 2020
Hyd. No. 79			
POA-2			
Hydrograph type	= Combine	Peak discharge	= 6.464 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 26,755 cuft
Inflow hyds.	= 69, 73, 77	Contrib drain area	= 0.220 ac





Hydraflow Rainfall Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

(N/A) Intensity-Duration-Frequency Equation Coefficients (FHA) 0.8732 0.8896 0.0000 0.8484 0.7892 0.7398 0.7021 0.6516 ш 13.2000 11.1000 10.3000 12.2000 13.2000 11.9000 0.0000 0000.6 ۵ 49.1011 64.7016 60.4476 47.6740 68.3423 57.1992 53.8609 0.0000 æ 100 Return Period (Yrs) 5 10 25 50 -0 V

File name: New Jersey for Storm & San Analysis idf

Intensity = B / (Tc + D)^E

Return					Intens	ity Values	(in/hr)					
(Yrs)	5 min	10	15	20	25	30	35	40	45	50	55	60
-	4.09	3.28	2.74	2.37	2.09	1.87	1.70	1.55	1.43	1.33	1.25	1.17
7	4.90	3.95	3.32	2.87	2.53	2.27	2.06	1.89	1.74	1.62	1.51	1.42
ю	00.00	00.00	00.00	0.00	0.00	0.00	0.00	0.00	00.00	00.00	00.00	00.00
5	5.83	4.74	4.02	3.50	3.11	2.80	2.55	2.35	2.17	2.03	1.90	1.79
10	6.49	5.29	4.50	3.93	3.50	3.17	2.90	2.68	2.49	2.33	2.19	2.07
25	7.32	5.99	5.12	4.50	4.03	3.66	3.36	3.12	2.91	2.73	2.58	2.44
50	7.93	6.51	5.57	4.91	4.41	4.02	3.70	3.44	3.22	3.03	2.86	2.72
100	8.54	7.00	6.01	5.31	4.79	4.38	4.05	3.77	3.54	3.34	3.17	3.02

Tc = time in minutes. Values may exceed 60.

neral Engi	neering References/St.	ormwater N	Aanagemei	nt\- New Je	rsey/Desig	n Storms/F	Iydraflow/F	lunterdon (County.pcp
			Ŷ	aintall P	recipitat	ion Tab	e (II)		
	Storm Distribution	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
	SCS 24-hour	0.00	3.38	0.00	00.0	5.00	6.09	0.00	8.03
	SCS 6-Hr	00.0	0.00	0.00	00.0	0.00	0.00	00.00	0.00
	Huff-1st	00.0	00.0	00.00	00.0	00.0	0.00	00.00	00.0
	Huff-2nd	00.0	0.00	00.0	00.0	0.00	0.00	00.0	0.00
	Huff-3rd	00.0	00.0	00.00	00.0	00.0	00.00	00.00	00.0
	Huff-4th	00.0	0.00	00.0	00.0	00.0	0.00	00.0	00.0
	Huff-Indy	00.0	00.0	00.00	00.00	00.0	0.00	00.00	00.0
	Custom	1.25	3.38	00.00	00.0	5.00	6.09	00.00	8.03

Wednesday, 08 / 12 / 2020

HYDROGRAPH SUMMARY REPORTS – WATER QUALITY STORM

١)				-	Hydrafi	ow Hydrographs	Extension for Aut	odesk® Civil 3D® by Autodesk, Inc. v2020
No 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
-	SCS Runoff	1.330	5	730	5,140		1		DA-1 Imp.
N	SCS Runoff	0.000	5	n/a	0		ł	ļ	DA-1 Per
б	Combine	1.330	5	730	5,140	1, 2	1		DA-1A
5	SCS Runoff	0.018	5	730	70				UNDIST Imp
9	SCS Runoff	0.000	S	n/a	0				UNDIST. Per
7	Combine	0.018	5	730	70	5, 6	1	ļ	UNDIST.
ი	SCS Runoff	0.620	5	730	2,394				OFF 1 Imp.
10	SCS Runoff	0.000	5	n/a	0				OFF 1 Per.
5	Combine	0.620	5	730	2,394	9, 10			OFF 1
13	SCS Runoff	0.392	5	730	1,514	l	I	ł	ROOF
15	Combine	2.360	5	730	9,119	3, 7, 11, 13,		ļ	ΤΟΤΑL ΤΟ WQ

Hydrograph Return Period Recap Hydrograph Description ΤΟΤΑL ΤΟ WQ UNDIST. Imp. UNDIST. Per. Tuesday, 08 / 11 / 2020 OFF 1 Imp. OFF 1 Per. UNDIST. DA-1 Imp. DA-1 Per. DA-1A OFF 1 ROOF l ļ ł 100-yr ļ ł ł | 1 50-yr ļ ļ 25-yr Peak Outflow (cfs) ł | ł 10-yr 5-yr ļ l 3-yr ļ ļ 2-yr 0.000 1.330 0.000 0.018 0.000 0.018 0.620 0.620 0.392 2.360 1.330 ř Proj. file: 2020-08- WQ.gpw 3, 7, 11, 13, 1, 2 5,6 9, 10 ł ł -Inflow hyd(s) Hyd. Hydrograph No. type (origin) SCS Runoff Combine Combine Combine Combine 10 ÷ 13 15 -5 6 2 ო 9 ~

Tuesday, 08 / 11 / 2020

Return Period: 1 Year

2020-08- WQ gpw

Hvdro (John Hydrograph Summary Report

Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Tuesday, 08 / 11 / 2020
Hyd. No. 1			
DA-1 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 1.330 cfs
Storm frequency	= 1 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,140 cuft
Drainage area	= 1.460 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.25 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ate Strat s/eGfenctoral Engine	eeriing References Stormwater



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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Tuesday, 08 / 11 / 2020
Hyd. No. 1	

4

DA-1 Imp.





Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Tuesday, 08 / 11 / 2020
Hyd. No. 2			
DA-1 Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 5 min	Hyd. volume	= 0 cuft
Drainage area	= 1.160 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.25 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	it e3fradp∖e0fence oral Engine	sering References Stormwater

Precipitation Report

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Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Tuesday, 08 / 11 / 2020
Hyd. No. 2	

9

DA-1 Per

Storm Frequency	= 1 yrs	Time interval	= 5 min
Total precip.	= 1.2500 in	Distribution	= Custom
Storm duration	= P:\Engineering F	teference Materials/Gener	al Engineering References/Stormwat





Hydrograph R	eport		
Hydraflow Hydrographs Extension	for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Tuesday, 08 / 11 / 2020
Hyd. No. 3			
DA-1A			
Hydrograph type	= Combine	Peak discharge	= 1.330 cfs
Storm frequency	= 1 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,140 cuft
Inflow hyds.	= 1, 2	Contrib drain area	= 2.620 ac



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Hydraflow Hydrographs Extensio	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Tuesday, 08 / 11 / 2020
Hyd. No. 5			
UNDIST. Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.018 cfs
Storm frequency	= 1 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 70 cuft
Drainage area	= 0.020 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.25 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Mage	atestrate/edienceoral Engin	eer i n ឲ4®t eferences∖Stormw



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low Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	. No. 5
Hydraflow Hydr	Hyd. No.

INDIST Im

dull leinne			
storm Frequency	= 1 yrs	Time interval	= 5 min
otal precip.	= 1.2500 in	Distribution	= Custom
Storm duration	= P:\Engineering R	teference Materials/Gener	al Engineering References\Stormwat

Hydrograph Report

6

Tuesday, 08 / 11 / 2020

Hydraflow Hydrographs Extension	n for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Tuesday, 08 / 11 / 2020
Hyd. No. 6			
UNDIST. Per			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 5 min	Hyd. volume	= 0 cuft
Drainage area	= 0.580 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.25 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	at ehnalo/e0/enot oral Engine	ering & ferences \Stormwater





Hydraftow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 6

Tuesday, 08 / 11 / 2020

7

UNDIST. Per.

Storm Frequency	= 1 yrs	Time interval	= 5 min
Total precip.	= 1.2500 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	al Engineering References/Stormwat

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Tuesday, 08 / 11 / 2020
Hyd. No. 7	
UNDIST.	

Hydrograph type	= Combine	Peak discharge	= 0.018 cfs
Storm frequency	= 1 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 70 cuft
Inflow hyds.	= 5,6	Contrib drain area	= 0.600 ac





Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Tuesday, 08 / 11 / 2020
Hyd. No. 9			
OFF 1 Imp.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.620 cfs
Storm frequency	= 1 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,394 cuft
Drainage area	= 0.680 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.25 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	at enharpetenen aal Engine	eeriing⊌®theferences∖Stormwater

Precipitation Report

13

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Tuesday, 08 / 11 / 2020
Hyd. No. 9	

OFF 1 Imp.

Storm Frequency	= 1 yrs	Time interval	= 5 min
Total precip.	= 1.2500 in	Distribution	= Custom
Storm duration	= P:\Engineering R	eference Materials\Gener	al Engineering References\Stormwat





Hydraflow Hydrographs Extensio	n for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Tuesday, 08 / 11 / 2020
Hyd. No. 10			
OFF 1 Per.			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 5 min	Hyd. volume	= 0 cuft
Drainage area	= 1.850 ac	Curve number	= 61
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.25 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Ma	ateStrate/eGenetoral Engine	eering References \Stormwater

Precipitation Report

15

ydraffow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Tuesday, 08 / 11 / 2020
lyd. No. 10	

16

OFF 1 Per.

Storm Frequency	= 1 yrs	Time interval	= 5 min
Total precip.	= 1.2500 in	Distribution	= Custom
Storm duration	= P:\Engineering F	eference Materials\Generation	al Engineering References\Stormwat





Hydrograph F	Report		2
Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Tuesday, 08 / 11 / 2020
Hyd. No. 11			
OFF 1			
Hydrograph type Storm frequency Time interval Inflow hyds.	= Combine = 1 yrs = 5 min = 9, 10	Peak discharge Time to peak Hyd. volume Contrib. drain. area	= 0.620 cfs = 730 min = 2,394 cuft = 2.530 ac





00.0 Time (min)

0.00

0.10

0.40

0.30

0.20

Hyd No. 9

----- Hyd No. 11

Hydrograph Report

Hydraflow Hydrographs Extensi	on for Autodesk® Civil 3D® by Autodesk, Inc. v2020		Tuesday, 08 / 11 / 2020
Hyd. No. 13			
ROOF			
Hydrograph type	= SCS Runoff	Peak discharge	= 0.392 cfs
Storm frequency	= 1 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,514 cuft
Drainage area	= 0.430 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.25 in	Distribution	= Custom
Storm duration	= P:\Engineering Reference Mage	ate3rinals\e0fenctereal Engine	eering tterences∖Stormwateı



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Hyd. No. 13

ROOF

= 5 min	= Custom	neral Engineering References/Storm
Time interval	Distribution	ring Reference Materials\Ge
= 1 yrs	= 1.2500 in	= P:\Enginee
Storm Frequency	Total precip.	Storm duration

Hydrograph Report

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Tuesday, 08 / 11 / 2020

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020	Tuesday, 08 / 11 / 2020
Hyd. No. 15	
TOTAL TO WQ	

Hydrograph type	= Combine	Peak discharge	= 2.360 cfs	
Storm frequency	= 1 yrs	Time to peak	= 730 min	
Fime interval	= 5 min	Hyd. volume	= 9,119 cuft	
nflow hyds.	= 3, 7, 11, 13	Contrib drain area	= 0.430 ac	





Hydraflow Rainfall Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

(N/A) Intensity-Duration-Frequency Equation Coefficients (FHA) 0.8732 0.8896 0.0000 0.8484 0.7892 0.7398 0.7021 0.6516 ш 13.2000 11.9000 11.1000 10.3000 12.2000 13.2000 0.0000 0000.6 ۵ 49.1011 64.7016 60.4476 47.6740 68.3423 57.1992 53.8609 0.0000 æ 100 Return Period (Yrs) 5 10 25 50 -0 V

File name: New Jersey for Storm & San Analysis idf

Intensity = B / (Tc + D)^E

Return					Intens	ity Values	(in/hr)					
(Yrs)	5 min	10	15	20	25	30	35	40	45	50	55	60
-	4.09	3.28	2.74	2.37	2.09	1.87	1.70	1.55	1.43	1.33	1.25	1.17
7	4.90	3.95	3.32	2.87	2.53	2.27	2.06	1.89	1.74	1.62	1.51	1.42
e	00.00	00.0	00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	00.0	00.00
5	5.83	4.74	4.02	3.50	3.11	2.80	2.55	2.35	2.17	2.03	1.90	1.79
10	6.49	5.29	4.50	3.93	3.50	3.17	2.90	2.68	2.49	2.33	2.19	2.07
25	7.32	5.99	5.12	4.50	4.03	3.66	3.36	3.12	2.91	2.73	2.58	2.44
50	7.93	6.51	5.57	4.91	4.41	4.02	3.70	3.44	3.22	3.03	2.86	2.72
100	8.54	7.00	6.01	5.31	4.79	4.38	4.05	3.77	3.54	3.34	3.17	3.02

Tc = time in minutes. Values may exceed 60.

neral Engiı	neering References/St	ormwater N	Aanagemei	nt\- New Je	rsey/Desig	n Storms/F	Iydraflow/F	lunterdon (County.pcp
			Ŷ	aintall P	recipitat	ion Tab	e (II)		
	Storm Distribution	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
	SCS 24-hour	0.00	3.38	0.00	00.0	5.00	6.09	0.00	8.03
	SCS 6-Hr	0.00	0.00	00.00	00.0	0.00	0.00	0.00	0.00
	Huff-1st	00.0	00.0	00.00	00.0	00.0	0.00	00.00	00.0
	Huff-2nd	00.0	0.00	00.0	00.0	0.00	0.00	00.0	0.00
	Huff-3rd	00.0	00.0	00.00	00.0	0.00	0.00	00.00	00.0
	Huff-4th	00.0	0.00	00.0	00.0	00.0	0.00	00.0	00.0
	Huff-Indy	0.00	0.00	00.00	00.0	0.00	0.00	00.00	0.00
	Custom	1.25	3.38	00.00	00.0	5.00	6.09	00.00	8.03

Tuesday, 08 / 11 / 2020

STORMWATER COLLECTION SYSTEM CALCULATIONS (PIPE SIZING)

Report

Line No.	DnStm Ln No	Inlet ID	Drng Area	Runoff Coeff	Incr CxA	Total CxA	Inlet Time	Тс	i Sys	Line Size	Line Length	Line Slope	Line Type	Capac Full	Flow Rate	Vel Ave	n-val Pipe	
			(ac)	(C)			(min)	(min)	(in/hr)	(in)	(ft)	(%)		(cfs)	(cfs)	(ft/s)		
1	Outfall	44	0.00	0.00	0.00	3.77	0.0	13.5	6.26	30	6	0.54	Cir	32.55	23.61	6.21	0.012	
2	1	43	0.10	0.25	0.03	0.62	10.0	11.9	6.57	18	25	0.47	Cir	7.90	4.04	3.37	0.012	
3	2	117	0.62	0.77	0.48	0.59	10.0	11.5	6.66	15	89	0.50	Cir	4.95	3.93	4.49	0.012	
4	3	118	0.12	0.95	0.11	0.11	10.0	10.0	7.00	15	58	0.50	Cir	4.91	0.80	1.90	0.012	
5	1	48	1.04	0.62	0.64	3.15	10.0	13.1	6.35	30	119	0.50	Cir	31.31	20.03	6.45	0.012	
6	5	108	0.42	0.58	0.24	2.51	10.0	12.9	6.39	30	39	0.51	Cir	31.87	16.03	5.96	0.012	
7	6	106	1.13	0.58	0.66	1.21	10.0	11.8	6.59	24	164	0.30	Cir	13.41	7.99	4.19	0.012	
8	7	104	0.00	0.00	0.00	0.55	0.0	11.2	6.72	18	81	0.31	Cir	6.30	3.72	2.55	0.012	
9	8	103	0.34	0.47	0.16	0.16	10.0	10.0	7.00	15	66	0.29	Cir	3.46	1.12	0.98	0.013	
10	8	105	1.09	0.36	0.39	0.39	10.0	10.0	7.00	15	26	0.99	Cir	6.95	2.75	4.05	0.012	
11	6	110	0.17	0.99	0.17	1.05	10.0	11.0	6.77	18	58	0.53	Cir	8.40	7.12	5.11	0.012	
12	11	109	0.29	0.90	0.26	0.26	10.0	10.0	7.00	15	41	0.61	Cir	5.44	1.83	1.49	0.012	
13	11	40	0.63	0.62	0.39	0.62	10.0	10.5	6.88	15	111	0.49	Cir	4.86	4.29	3.50	0.012	
14	13	41	0.28	0.83	0.23	0.23	10.0	10.0	7.00	15	39	0.62	Cir	5.47	1.63	1.33	0.012	
15	Outfall	100	0.53	0.86	0.46	0.99	10.0	11.6	6.65	18	51	0.49	Cir	7.39	6.55	4.94	0.013	
16	15	101	0.21	0.62	0.13	0.53	10.0	10.4	6.90	18	139	0.50	Cir	7.46	3.63	2.88	0.013	
17	16	102	0.64	0.62	0.40	0.40	10.0	10.0	7.00	15	59	0.49	Cir	4.53	2.78	2.91	0.013	
18	Outfall	46	0.00	0.00	0.00	0.00	0.0	0.0	0.00	30	3	0.58	Cir	33.72	23.61	4.81	0.012	
19	Outfall	120	0.29	0.92	0.27	0.27	10.0	10.4	6.91	24	44	0.50	Cir	15.95	11.08	3.74	0.013	
20	19	27	0.00	0.00	0.00	0.00	10.0	10.0	0.00	24	64	0.48	Cir	17.21	9.23	4.24	0.012	
Projec	t File: 202	20-08-11 Pipe Sizi	ng.stm								1	1	Νι	umber of li	ines: 20	1	ıI	Date: 8/12/2020
NOTE	S: Intensit	y = 47.67 / (Inlet ti	me + 9.(00) ^ 0.65	Returr	n period :	= 100 Yr:	s.; ** C	ritical de	epth			I					1

BAYFILTER DETAIL



DRAINAGE AREA MAPS



Blotted: 08/12/20 - 10:37 AM, By: zzou

EXISTING OFFSITE DRAINAGE AREA MAP



8/12/2020, 9:54:01 AM

Roads

Parcels



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Plotted: 08/12/20 - 1:55 PM, By: zzou File: P:/DECPC PROJECTS/2362 Ingerman/99-007 Clinton - Rt 173/Dwg/DA Maps/D236299007PDAM.dwg. ----> Proposed Drainage Area Map
PROPOSED OFFSITE DRAINAGE AREA MAP



8/12/2020, 9:54:01 AM

Roads

Parcels

0	0.02	1:2,257 0.04	0.08 mi
0	0.03	0.07	0.13 km

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Plotted: 08/12/20 - 10:35 MM, By: zzou Flie: P:/DECPC PR0JECTS/2362 ingerman/99-007 Clinton - Rt 173/Dwg/DA Maps/D236299007IDAM.dwg, ---> inlets Area Map