POST CONSTRUCTION STORMWATER MANAGEMENT NARRATIVE AND CALCULATIONS

FOR

ANTHONY DAMBRO

CHADDS FORD TOWNSHIP

DELAWARE COUNTY, PENNSYLVANIA

JUNE 25, 2019
REVISED: FEBRUARY 10, 2020
REVISED: AUGUST 28, 2020

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Project Narrative

This project consists of subdividing two existing parcels containing a total of 32.797 acres into nine separate lots. The existing single family dwelling and associated appurtenances will remain on Lot 1. Proposed single family dwellings will be constructed on Lot 2 through Lot 9. This site is located on the northwest corner of the intersection of Ring Road and Ridge Road in Chadds Ford Township, Delaware County, Pennsylvania. This site is zoned (R-1) Residential District.

Stormwater runoff from this site will be managed with seven stormwater management infiltration drywells. These stormwater management infiltration drywells were designed using the SCS method so that the proposed runoff from the 2 year storm will not exceed 50% of the existing runoff from the 1 year storm, and the proposed runoff from the 5, 10, 25, 50, and 100 year storms will not exceed 50% of the existing runoff from their corresponding storms. In addition, there will be no increase in the total volume of storm water runoff from a 2-year/24-hour frequency storm over that which was discharged prior to development. Enclosed are the stormwater management and stormwater drainage calculations for this site.

Silt fence, erosion control blankets, and proper phasing of construction activities are proposed as erosion and sediment control measures for the site. All disturbed areas will be stabilized by seeding per the specifications referenced on the plans.

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STORMWATER MANAGEMENT

Drainage Area 1 - Summary Of Runoff Flows

Storm Freq. (year)	Existing Disturbed Flow (cfs)	Existing Undisturbed Flow (cfs)	Allowable Proposed Flow (cfs)*	Proposed Bypass Flow (cfs)	Proposed Routed Flow (cfs)	Total Proposed Flow (cfs)
1	0.225	4.111	4.224	4.220	0.000	4.220
2	1.045	7.717	7.830	7.412	0.000	7.412
5	2.576	12.520	13.808	11.600	0.000	11.600
10	4.550	17.780	20.055	16.200	0.000	16.200
25	7.788	26.070	29.964	23.300	0.613	23.913
50	11.020	33.960	39.470	29.990	5.311	35.301
100	15.280	43.960	51.600	38.430	9.521	47.951

*Allowable Proposed 1 year Flow = 50% of the 1 year Existing Disturbed Flow + the 1 year Existing Undisturbed Flow
*Allowable Proposed 2 year Flow = 50% of the 1 year Existing Disturbed Flow + the 2 year Existing Undisturbed Flow
*Allowable Proposed 5 year Flow = 50% of the the 5 year Existing Disturbed Flow + the 5 year Existing Undisturbed Flow
*Allowable Proposed 10 year Flow = 50% of the 10 year Existing Disturbed Flow + the 10 year Existing Undisturbed Flow
*Allowable Proposed 25 year Flow = 50% of the the 25 year Existing Disturbed Flow + the 25 year Existing Undisturbed Flow
*Allowable Proposed 50 year Flow = 50% of the 50 year Existing Disturbed Flow + the 50 year Existing Undisturbed Flow
*Allowable Proposed 100 year Flow = 50% of the 100 year Existing Disturbed Flow + the 100 year Existing Undisturbed Flow

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STORMWATER MANAGEMENT

Drainage Area 1 - Summary Of Runoff Volume

Existing Volume of Stormwater Runoff from the 2-year/24 hour storm event

Cover Type	Soil Type	Area (sf)	Area (ac)	CN	S	Ia	Q, Runoff (in)	Runoff Volume (cf)
Woods	B	8958	0.21	55	8.18	1.64	0.25	187
Woods	C	45990	1.06	70	4.29	0.86	0.83	3181
Meadow	B	334523	7.68	58	7.24	1.45	0.34	9478
Meadow	C	130553	3.00	71	4.08	0.82	0.88	9574
Impervious*	n/a	49841	1.14	98	0.20	0.04	2.97	12336
Total:		**569865**						**34756**

*Undisturbed/Offsite

Proposed Volume of Stormwater Runoff from the 2-year/24 hour storm event

Cover Type	Soil Type	Area (sf)	Area (ac)	CN	S	Ia	Q, Runoff (in)	Runoff Volume (cf)
Woods	B	8958	0.21	55	8.18	1.64	0.25	187
Woods	C	45990	1.06	70	4.29	0.86	0.83	3181
Meadow	B	142685	3.28	58	7.24	1.45	0.34	4043
Meadow	C	130553	3.00	71	4.08	0.82	0.88	9574
Lawn	B	89880	2.06	61	6.39	1.28	0.44	3296
Lawn	C	75405	1.73	74	3.51	0.70	1.04	6535
Impervious	n/a	76394	1.75	98	0.20	0.04	2.97	18908
Total:		**569865**						**45724**

Proposed 2-year/24 hour Volume of Stormwater Runoff to Drywell-Lot2

Cover Type	Soil Type	Area (sf)	Area (ac)	CN	S	Ia	Q, Runoff (in)	Runoff Volume (cf)
Meadow	C	19595	0.45	71	4.08	0.82	0.88	1437
Lawn	C	18351	0.42	74	3.51	0.70	1.04	1590
Impervious	n/a	16067	0.37	98	0.20	0.04	2.97	3977
Total:		**54013**						**7004**

Proposed 2-year/24 hour Volume of Stormwater Runoff to Drywell-Lot4

Cover Type	Soil Type	Area (sf)	Area (ac)	CN	S	Ia	Q, Runoff (in)	Runoff Volume (cf)
Meadow	B	26469	0.61	58	7.24	1.45	0.34	750
Lawn	B	44402	1.02	61	6.39	1.28	0.44	1628
Lawn	C	1434	0.03	74	3.51	0.70	1.04	124
Impervious	n/a	9120	0.21	98	0.20	0.04	2.97	2257
Total:		**81425**						**4759**

Proposed 2-year/24 hour Volume of Stormwater Runoff to Drywell-Lot5

Cover Type	Soil Type	Area (sf)	Area (ac)	CN	S	Ia	Q, Runoff (in)	Runoff Volume (cf)
Meadow	B	55811	1.28	58	7.24	1.45	0.34	1581
Lawn	B	43983	1.01	61	6.39	1.28	0.44	1613
Impervious	n/a	21537	0.49	98	0.20	0.04	2.97	5330
Total:		**121331**						**8524**

Proposed Bypass 2-year/24 hour Volume of Stormwater Runoff

Cover Type	Soil Type	Area (sf)	Area (ac)	CN	S	Ia	Q, Runoff (in)	Runoff Volume (cf)
Woods	B	8958	0.21	55	8.18	1.64	0.25	187
Woods	C	45990	1.06	70	4.29	0.86	0.83	3181
Meadow	B	60405	1.39	58	7.24	1.45	0.34	1711
Meadow	C	110958	2.55	71	4.08	0.82	0.88	8137
Lawn	B	1495	0.03	61	6.39	1.28	0.44	55
Lawn	C	55620	1.28	74	3.51	0.70	1.04	4820
Impervious	n/a	29670	0.68	98	0.20	0.04	2.97	7343
Total:		**313096**						**25434**

Net change in volume of stormwater runoff from the 2-year/24 hour storm event = 10,968 cf
Proposed 2-year/24 hour volume of stormwater runoff to infiltration drywells = 20,287 cf

Existing volume of stormwater runoff from the 2-year/24 hour storm event = 34,756 cf
Proposed bypass 2-year/24 hour volume of stormwater runoff = 25,434 cf

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Existing Drainage Area 1 Disturbed:

Total Area =	191,838 sq.ft = 4.40 acres
Meadow (B-soil) =	191,838 sq.ft

CN Values:

Meadow (B-soil)	CN = 58

Composite CN = 58

Existing Drainage Area 1 Undisturbed/Offsite:

Total Area =	378,027 sq.ft = 8.68 acres
Woods (B-soil) =	8,958 sq.ft
Woods (C-soil) =	45,990 sq.ft
Meadow (B-soil) =	142,685 sq.ft
Meadow (C-soil) =	130,553 sq.ft
Impervious =	49,841 sq.ft

CN Values:

Woods (B-soil)	CN = 55
Woods (C-soil)	CN = 70
Meadow (B-soil)	CN = 58
Meadow (C-soil)	CN = 71
Impervious	CN = 98

Composite CN = 69

Time of Concentration:
Use 16.22 minute time of concentration.

Existing Drainage Area 1

Travel Time

Summary for Travel Time Calculations with 2 segments:

Segment 1: SCS Segmental (TR55) - Sheet Flow

Length = 100 feet
Slope = 0.05 ft/ft
Roughness Coefficient = 0.4
2 Year - 24 Hour Rainfall = 3.2 inches

Travel Time for Segment = 14.88 minutes

Segment 2: SCS Segmental (TR55) - Concentrated Flow

Unpaved surface
Length = 410 feet
Slope = 0.1 ft/ft

Travel Time for Segment = 1.34 minutes

Composite Travel Time = 16.22 minutes

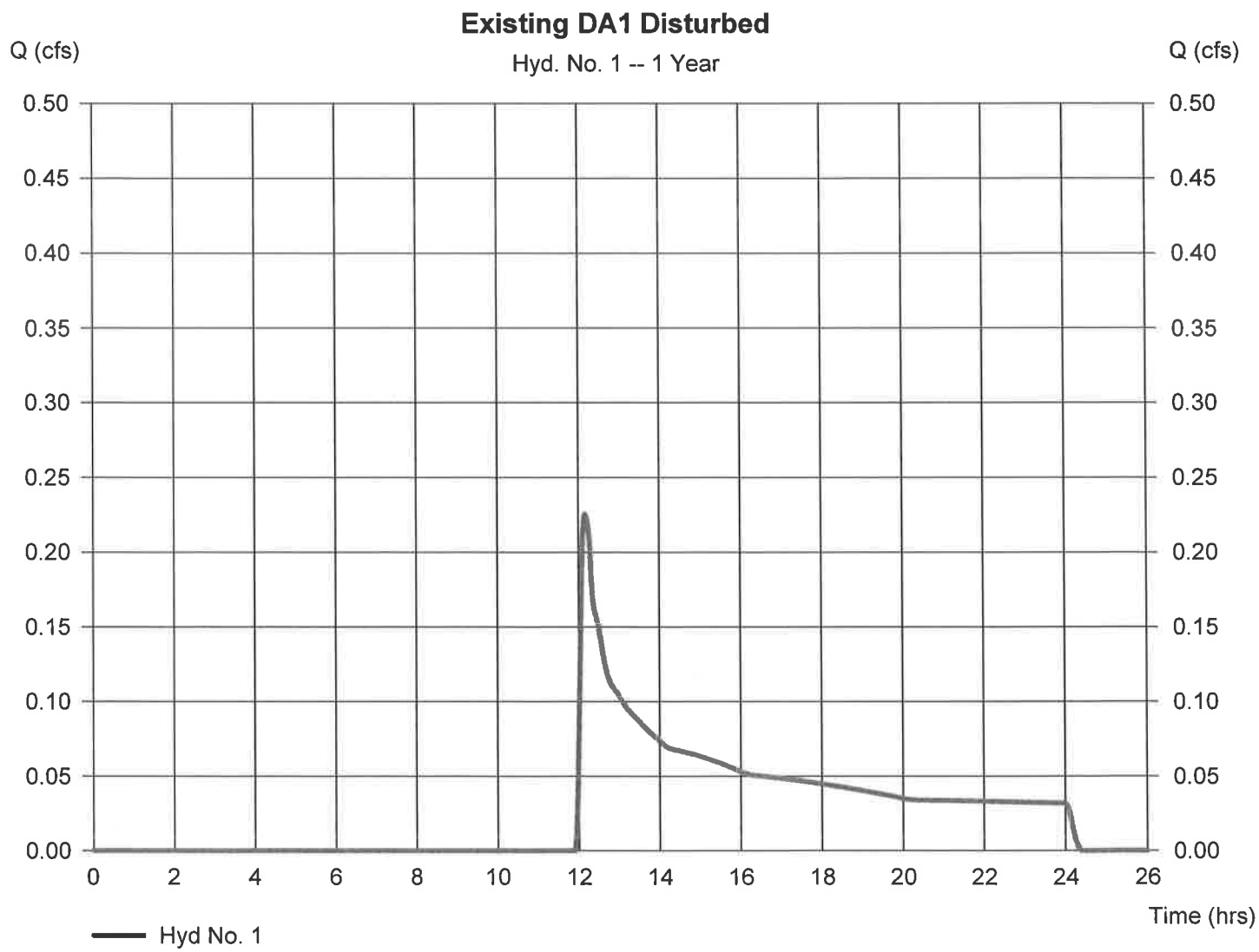
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 1

Existing DA1 Disturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 0.225 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 2,459 cuft
Drainage area	= 4.400 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 16.20 min
Total precip.	= 2.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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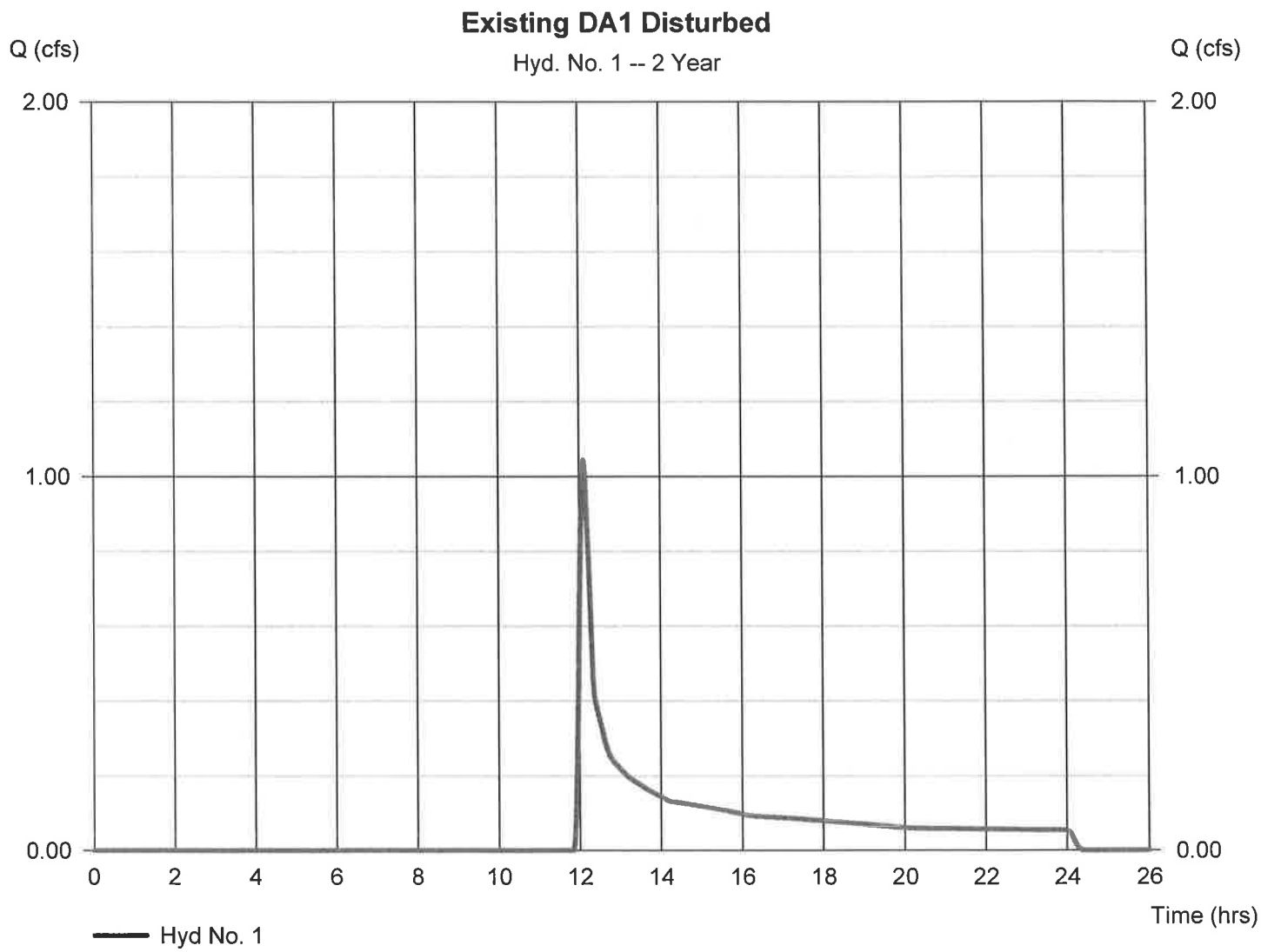
Hyd. No. 1

Existing DA1 Disturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 1.045 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 5,308 cuft
Drainage area	= 4.400 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 16.20 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



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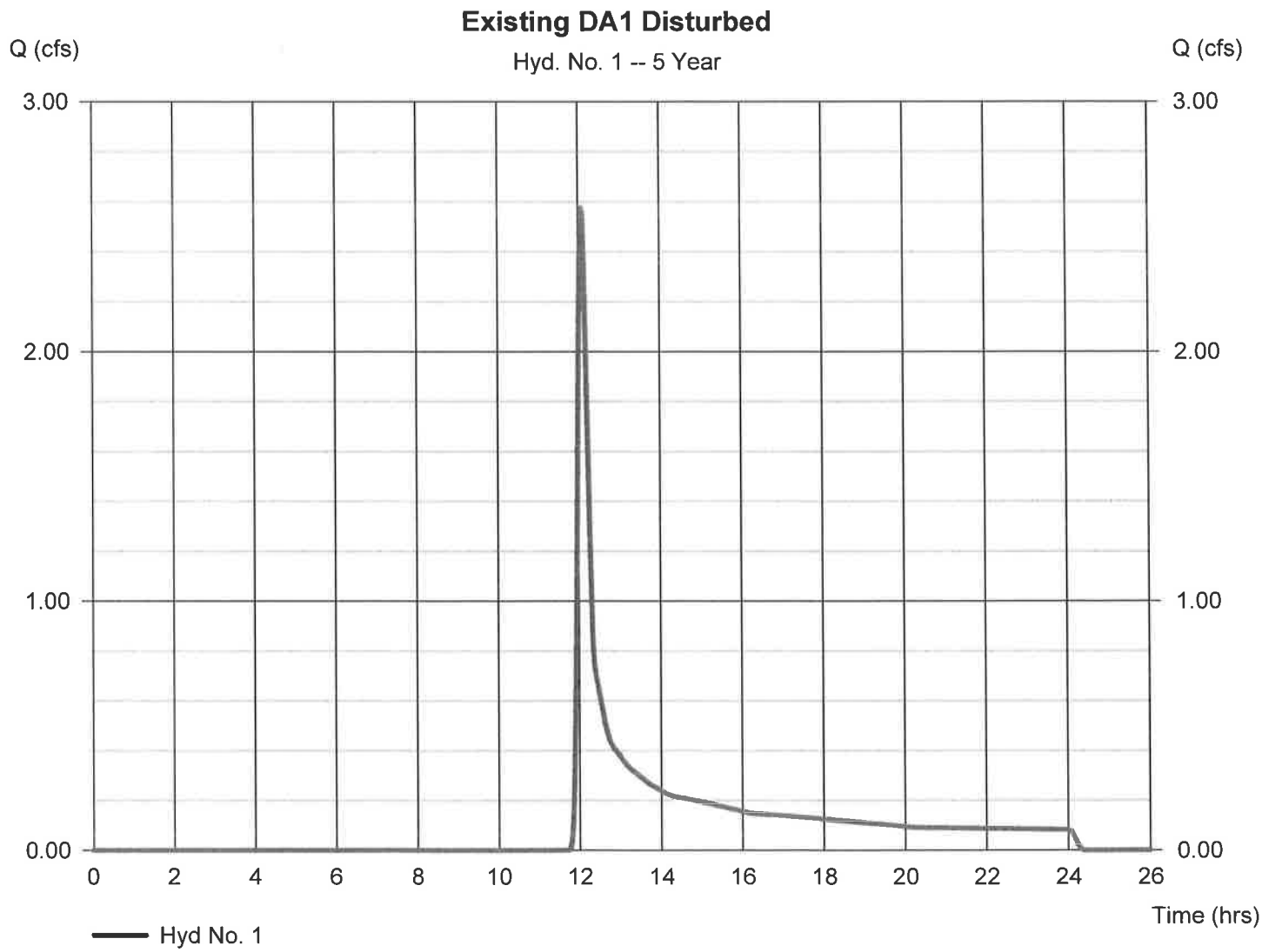
Hyd. No. 1

Existing DA1 Disturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 2.576 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 9,657 cuft
Drainage area	= 4.400 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 16.20 min
Total precip.	= 3.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



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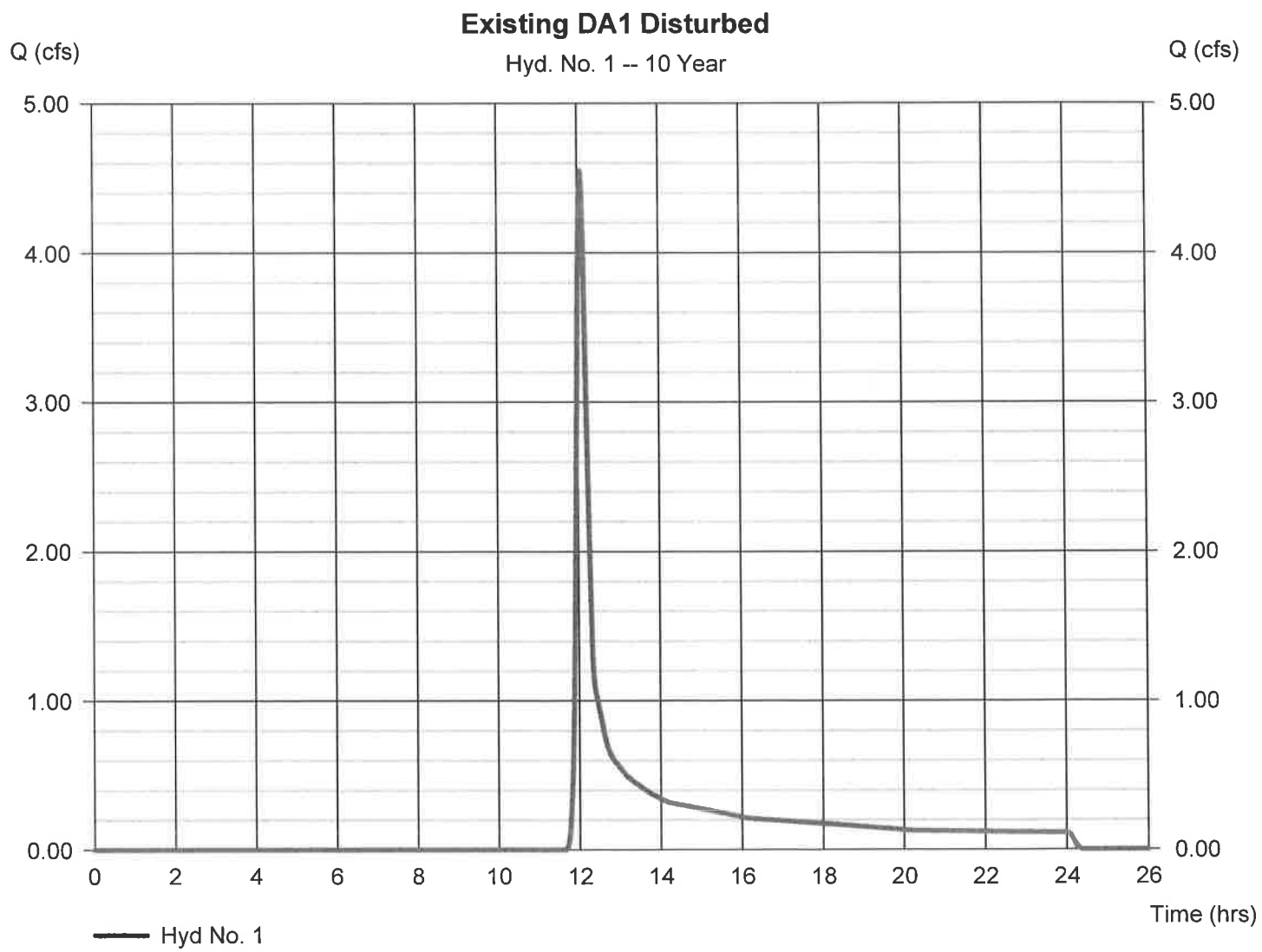
Hyd. No. 1

Existing DA1 Disturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 4.550 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 14,883 cuft
Drainage area	= 4.400 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 16.20 min
Total precip.	= 4.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



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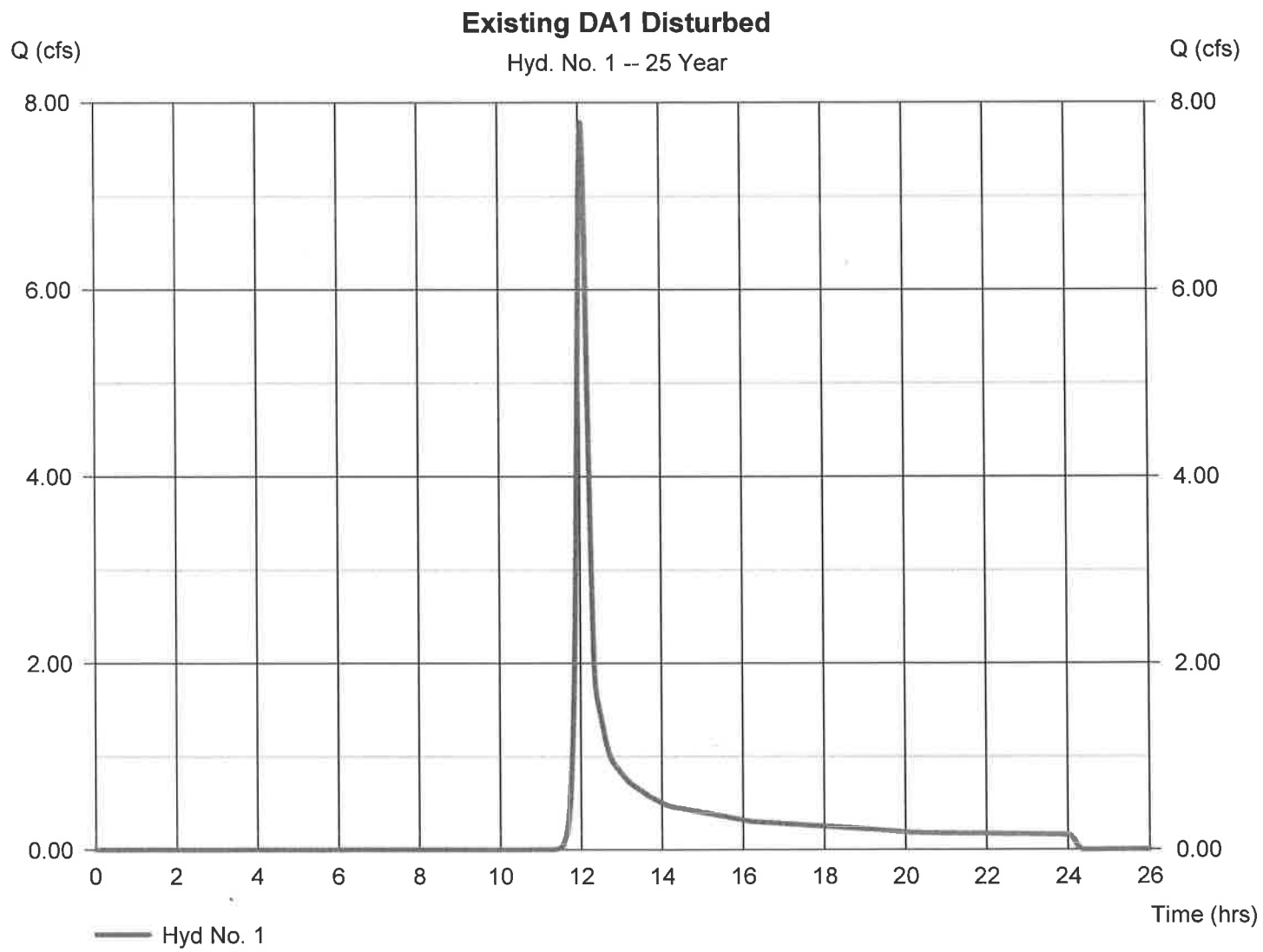
Hyd. No. 1

Existing DA1 Disturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 7.788 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 23,560 cuft
Drainage area	= 4.400 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 16.20 min
Total precip.	= 5.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



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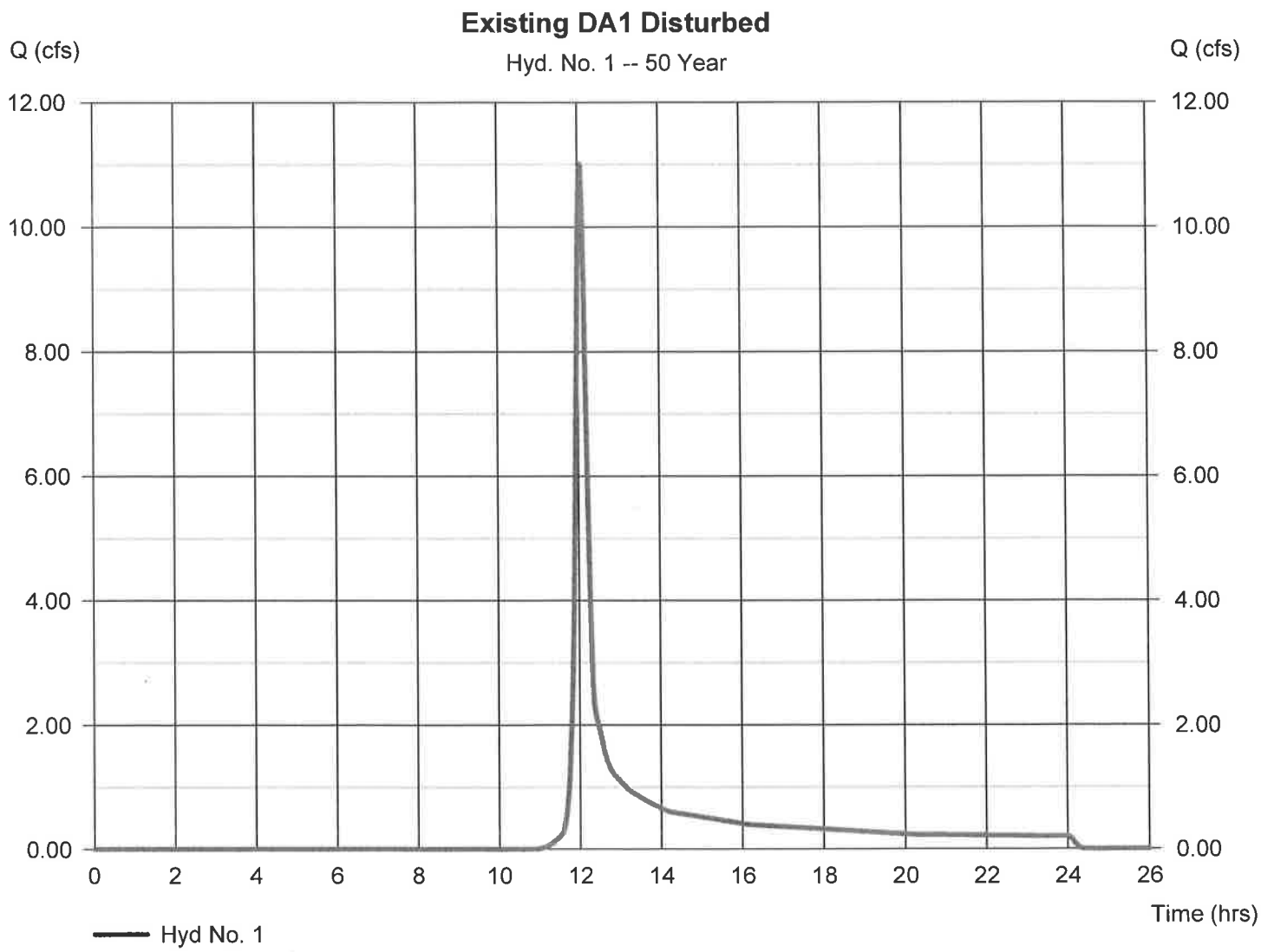
Hyd. No. 1

Existing DA1 Disturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 11.02 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 32,328 cuft
Drainage area	= 4.400 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 16.20 min
Total precip.	= 6.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



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Hydrograph Report

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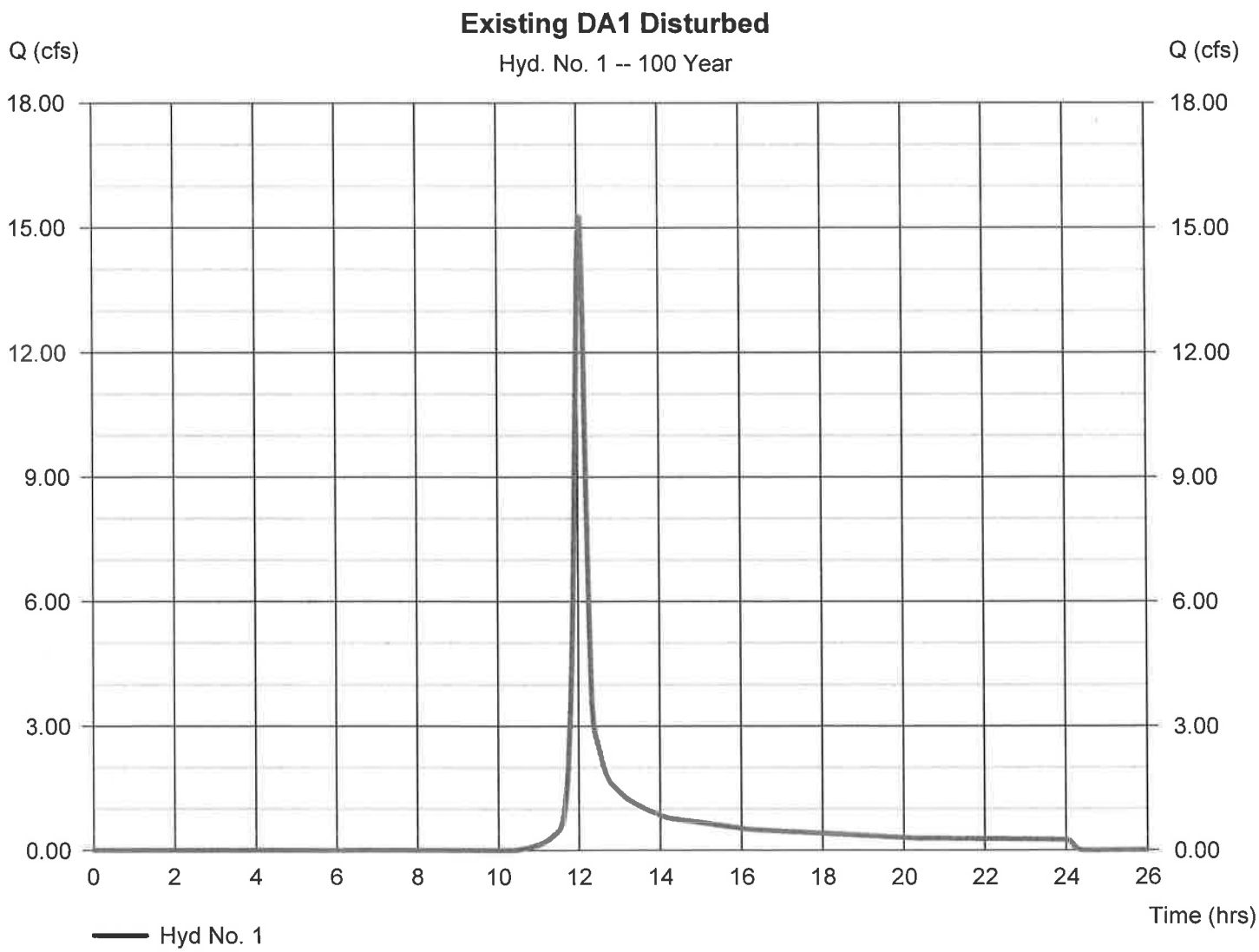
Hyd. No. 1

Existing DA1 Disturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 15.28 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 44,002 cuft
Drainage area	= 4.400 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 16.20 min
Total precip.	= 7.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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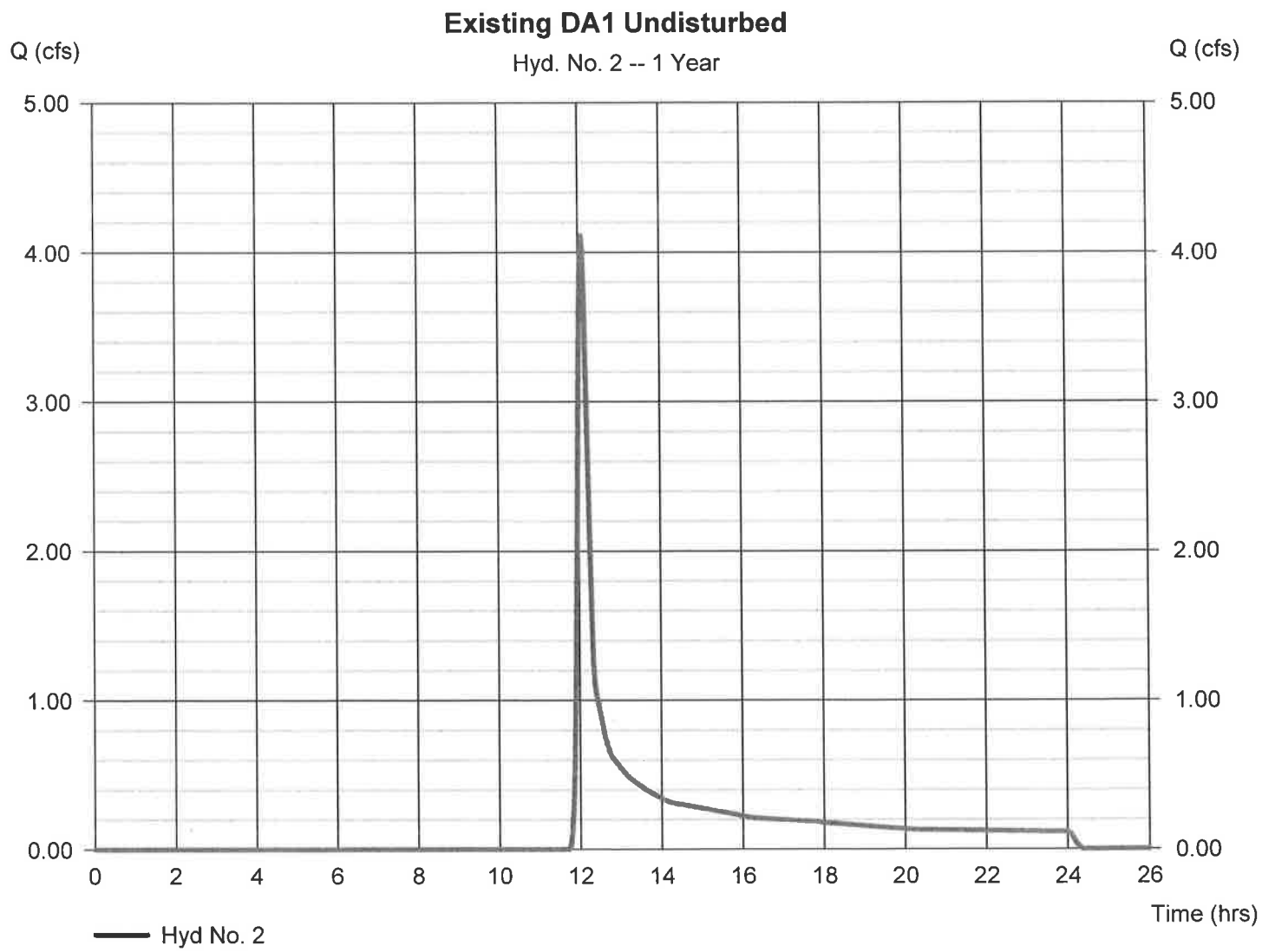
Hyd. No. 2

Existing DA1 Undisturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 4.111 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 14,354 cuft
Drainage area	= 8.680 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 16.20 min
Total precip.	= 2.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



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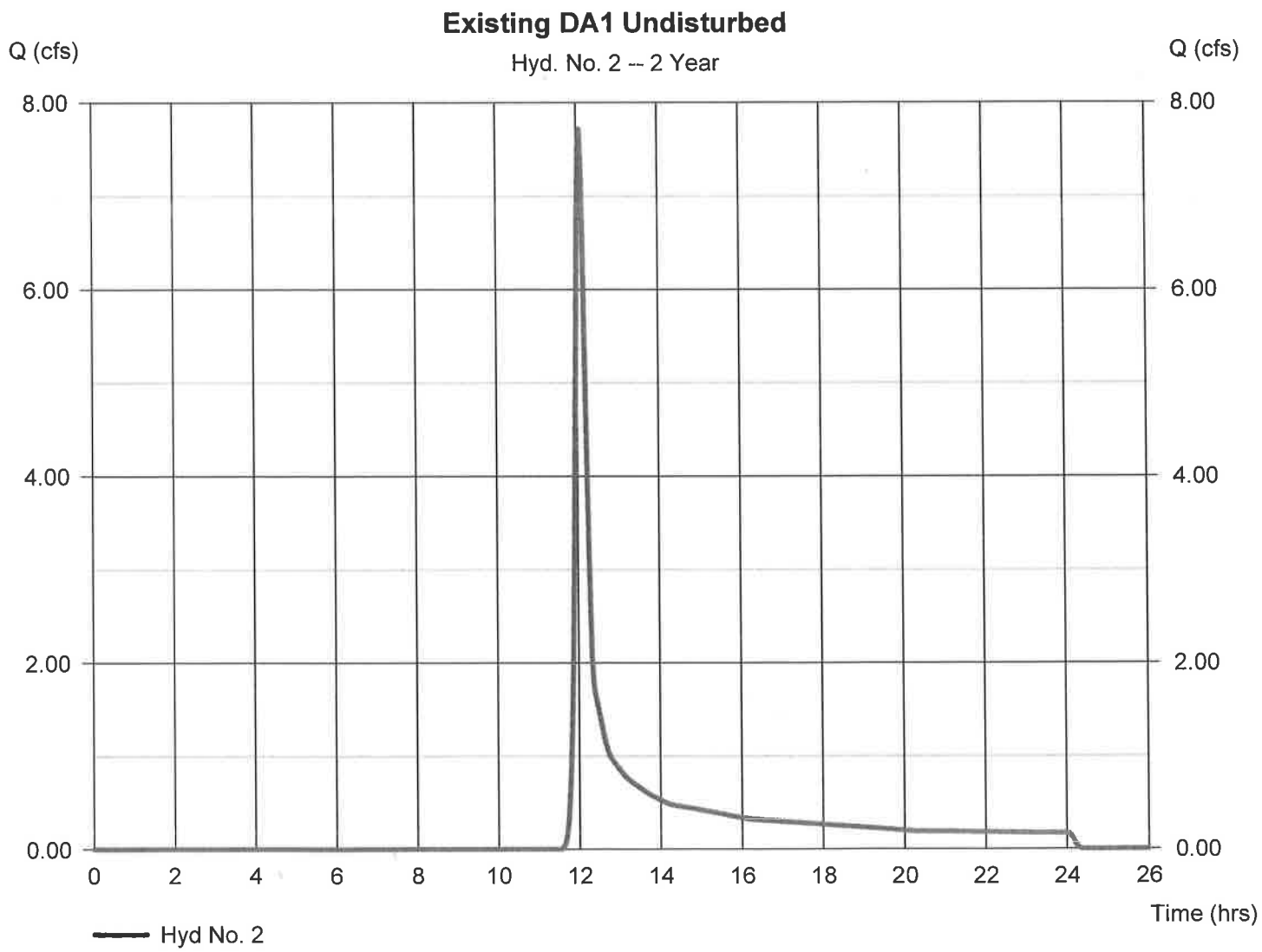
Hyd. No. 2

Existing DA1 Undisturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 7.717 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 23,949 cuft
Drainage area	= 8.680 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 16.20 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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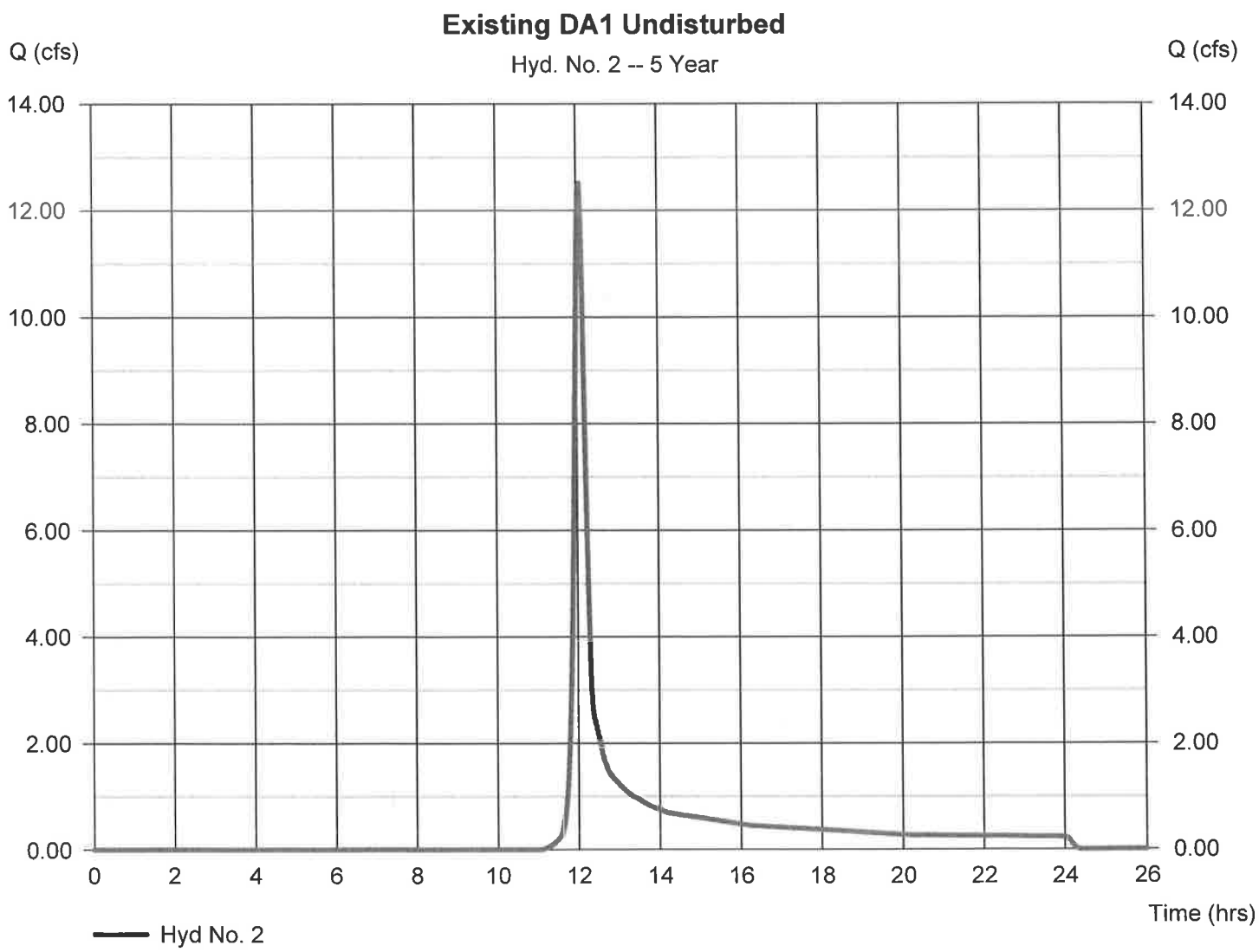
Hyd. No. 2

Existing DA1 Undisturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 12.52 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 36,929 cuft
Drainage area	= 8.680 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 16.20 min
Total precip.	= 3.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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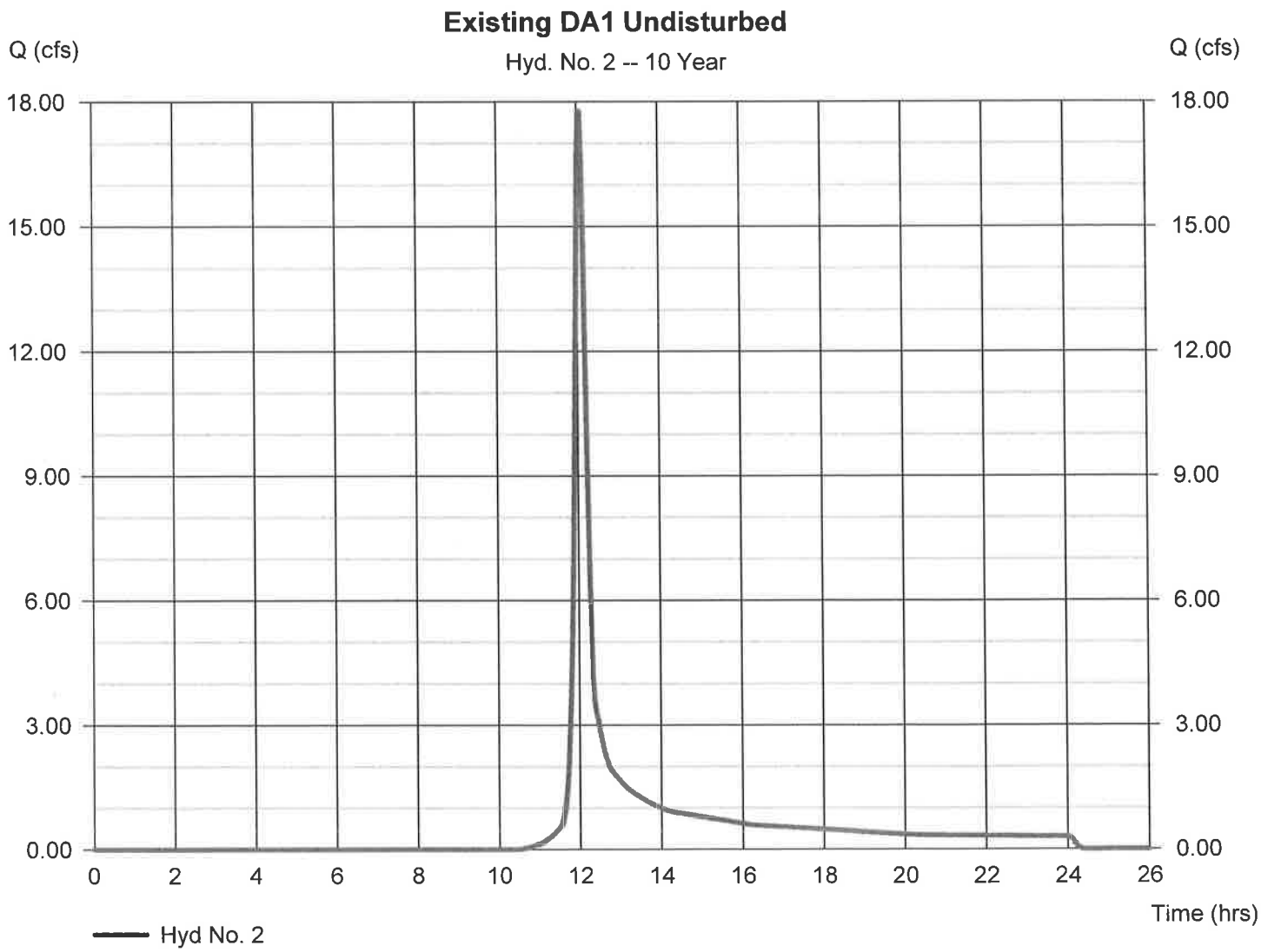
Hyd. No. 2

Existing DA1 Undisturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 17.78 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 51,365 cuft
Drainage area	= 8.680 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 16.20 min
Total precip.	= 4.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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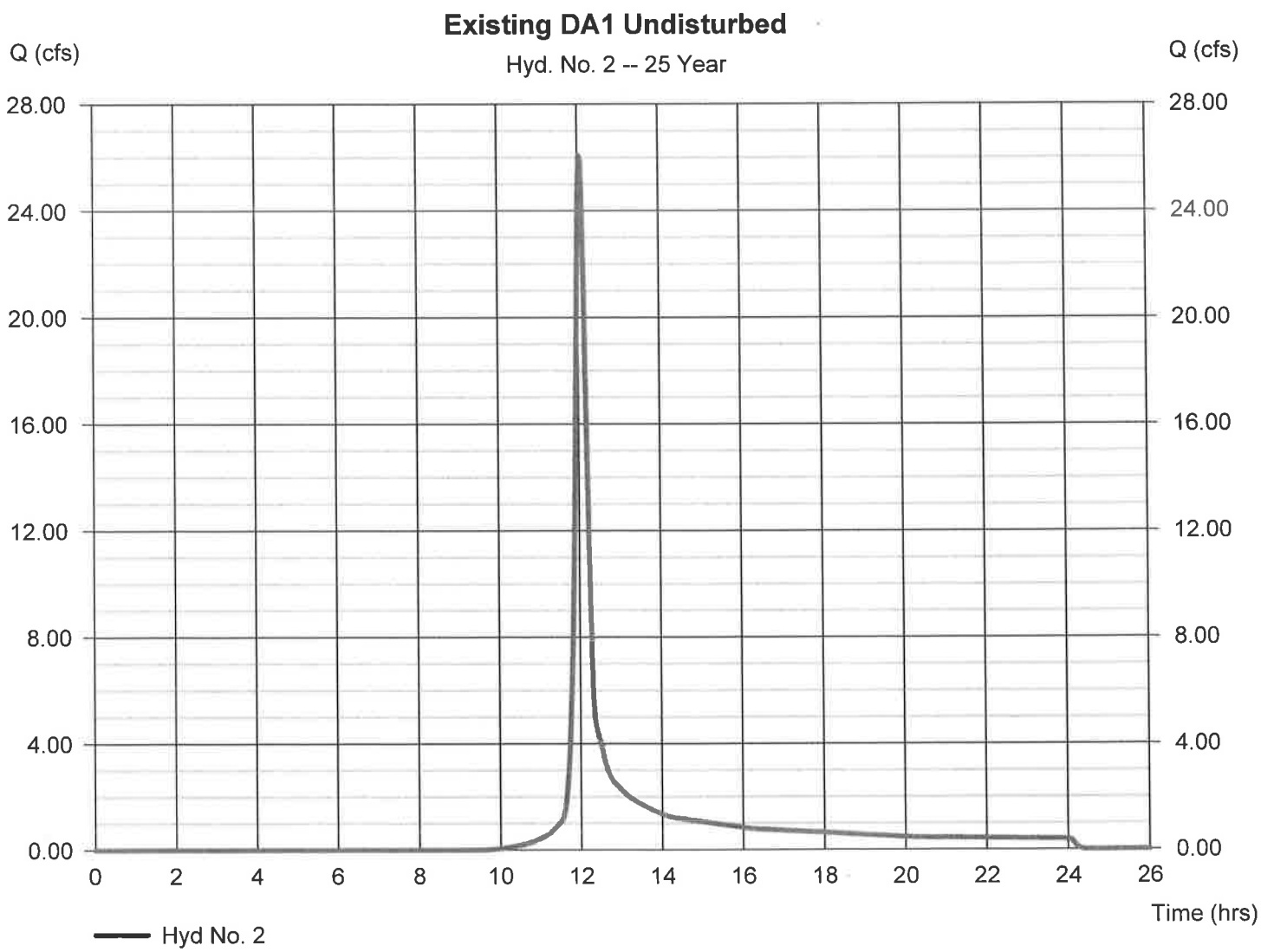
Hyd. No. 2

Existing DA1 Undisturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 26.07 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 73,855 cuft
Drainage area	= 8.680 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 16.20 min
Total precip.	= 5.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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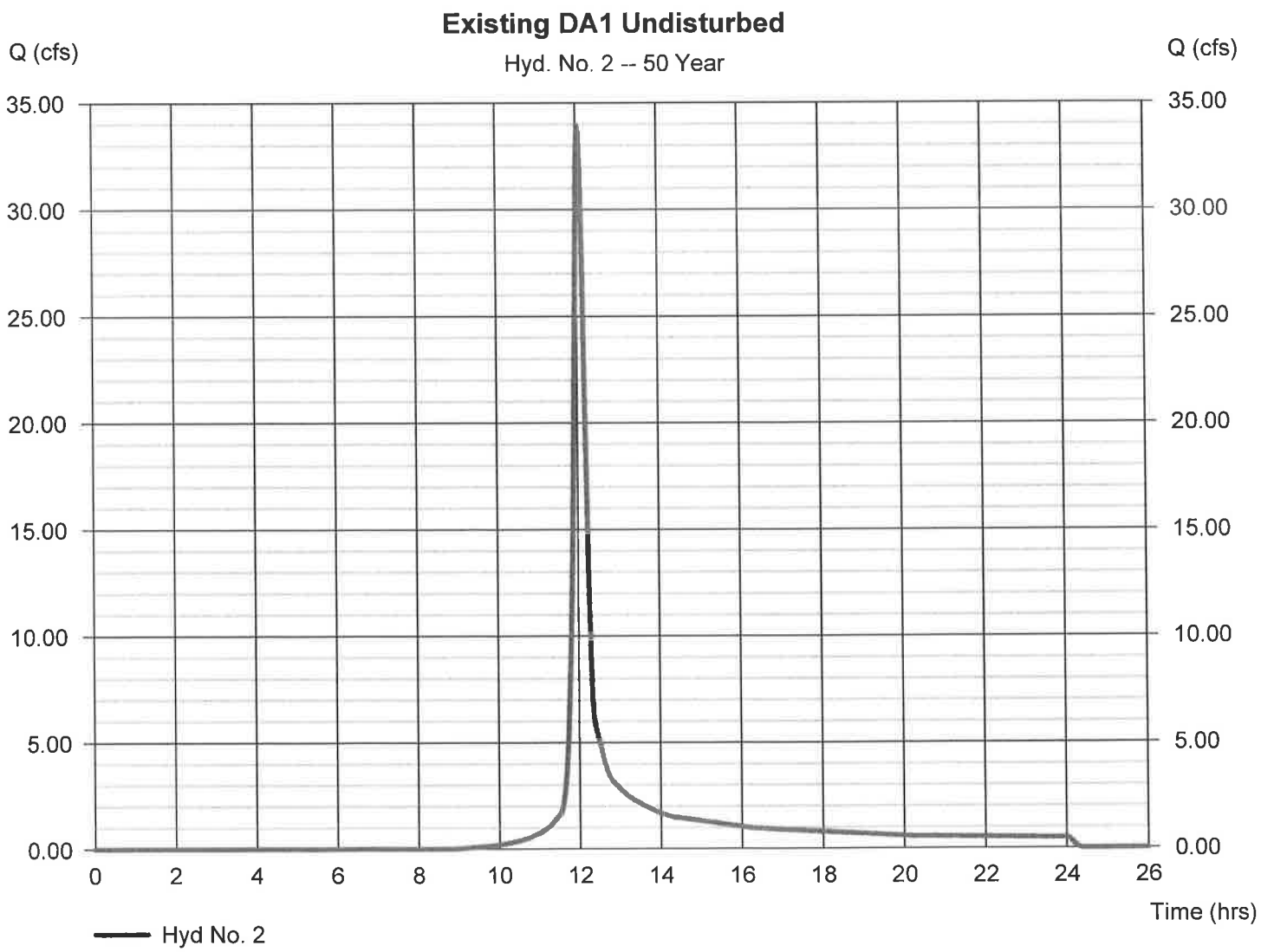
Hyd. No. 2

Existing DA1 Undisturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 33.96 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 95,490 cuft
Drainage area	= 8.680 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 16.20 min
Total precip.	= 6.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



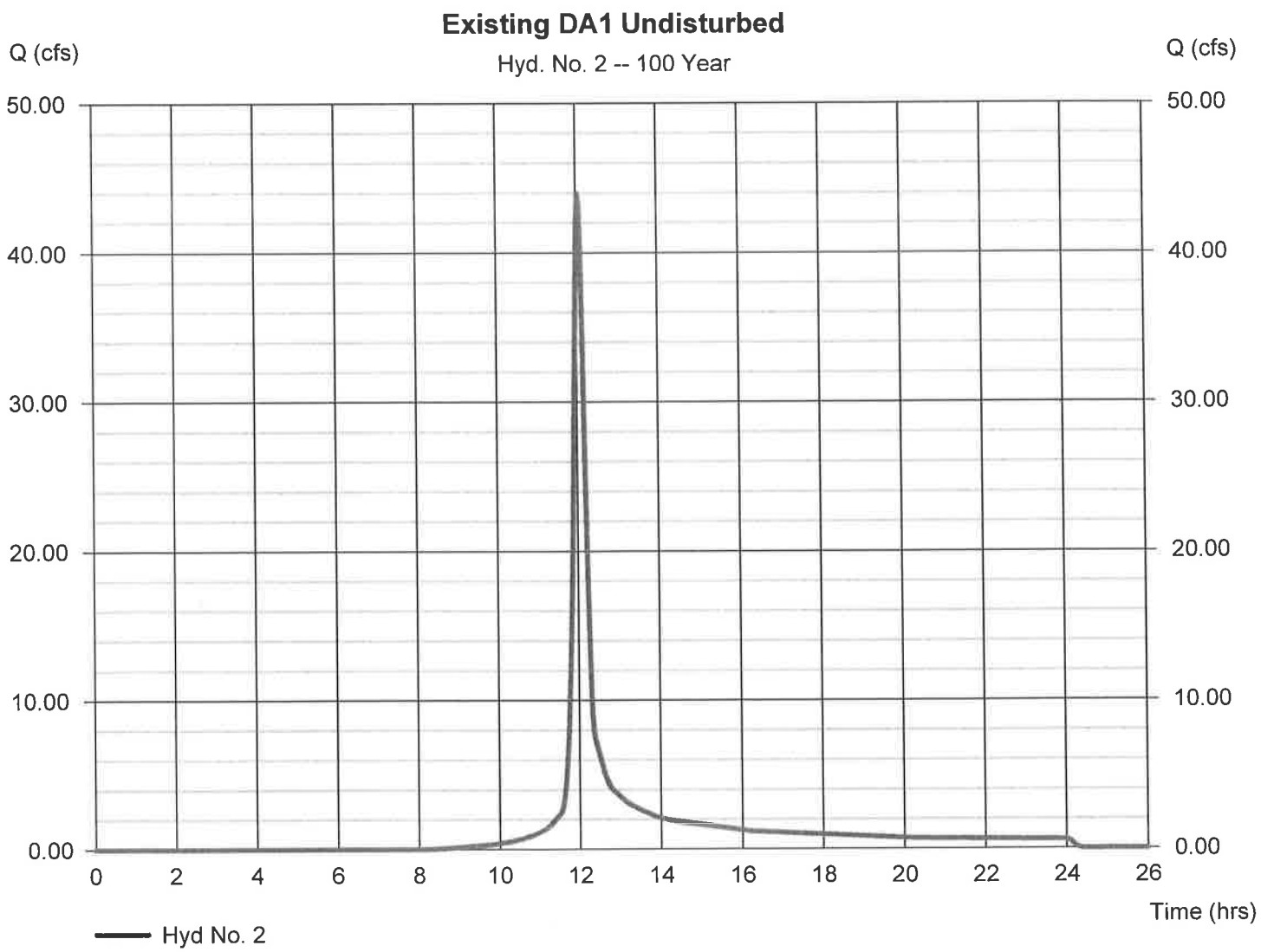
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 — Tuesday, Jan 21, 2020

Hyd. No. 2

Existing DA1 Undisturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 43.96 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 123,247 cuft
Drainage area	= 8.680 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 16.20 min
Total precip.	= 7.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



DAMBRO
STORMWATER MANAGEMENT

Proposed Drainage Area 1 Bypass:

Total Area =	313,096 sq.ft = 7.19 acres
Woods (B-soil) =	8,958 sq.ft
Woods (C-soil) =	45,990 sq.ft
Meadow (B-soil) =	60,405 sq.ft
Meadow (C-soil) =	110,958 sq.ft
Lawn (B-soil) =	1,495 sq.ft
Lawn (C-soil) =	55,620 sq.ft
Impervious =	29,670 sq.ft

CN Values:

Woods (B-soil)	CN = 55
Woods (C-soil)	CN = 70
Meadow (B-soil)	CN = 58
Meadow (C-soil)	CN = 71
Lawn (B-soil)	CN = 61
Lawn (C-soil)	CN = 74
Impervious	CN = 98

Composite CN = 71

Time of Concentration:
Use 16.22 minute time of concentration.

Proposed Drainage Areal Bypass

Travel Time

Summary for Travel Time Calculations with 2 segments:

Segment 1: SCS Segmental (TR55) - Sheet Flow

Length = 100 feet
Slope = 0.05 ft/ft
Roughness Coefficient = 0.4
2 Year - 24 Hour Rainfall = 3.2 inches

Travel Time for Segment = 14.88 minutes

Segment 2: SCS Segmental (TR55) - Concentrated Flow

Unpaved surface
Length = 410 feet
Slope = 0.1 ft/ft

Travel Time for Segment = 1.34 minutes

Composite Travel Time = 16.22 minutes

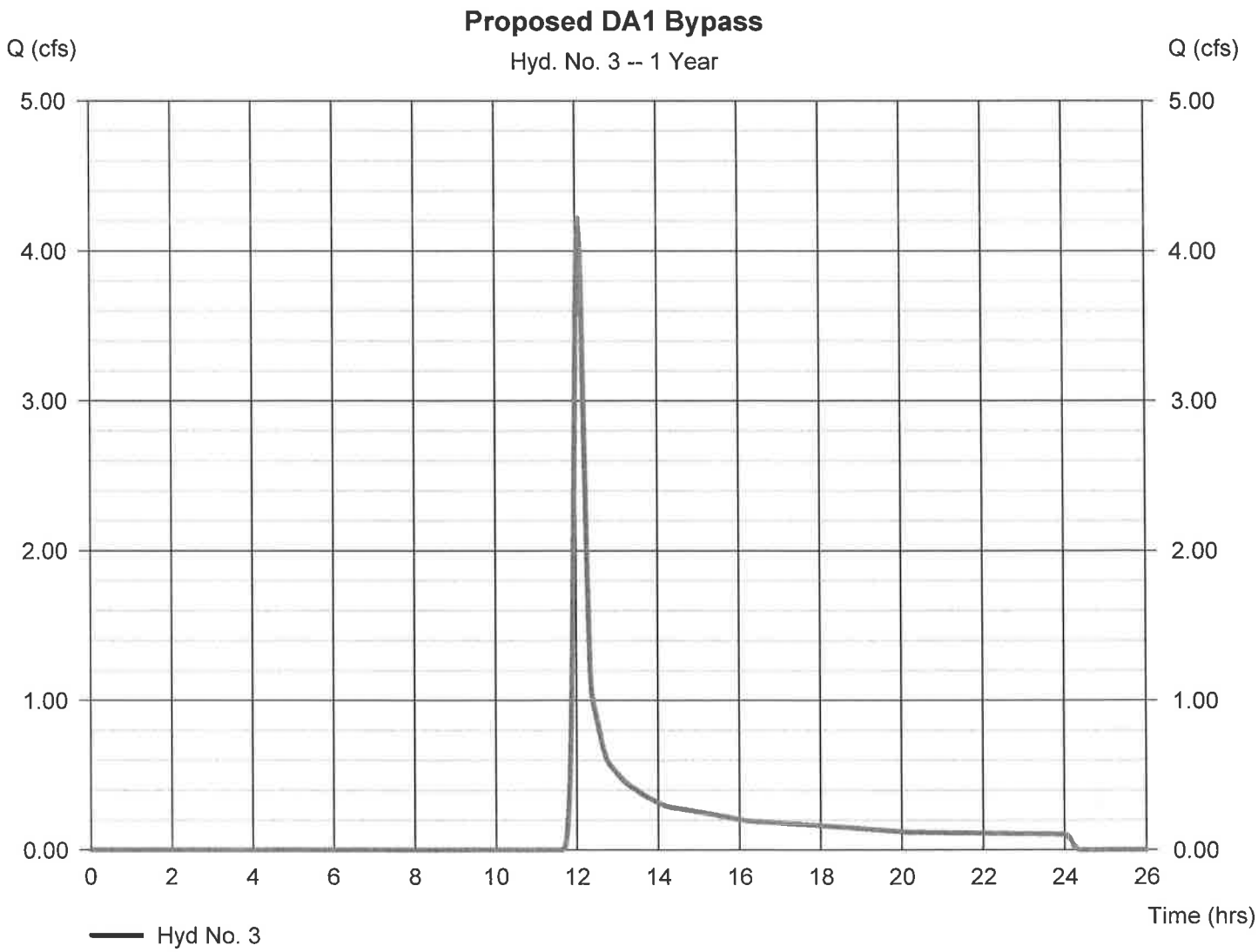
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 3

Proposed DA1 Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 4.220 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 13,787 cuft
Drainage area	= 7.190 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 16.20 min
Total precip.	= 2.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



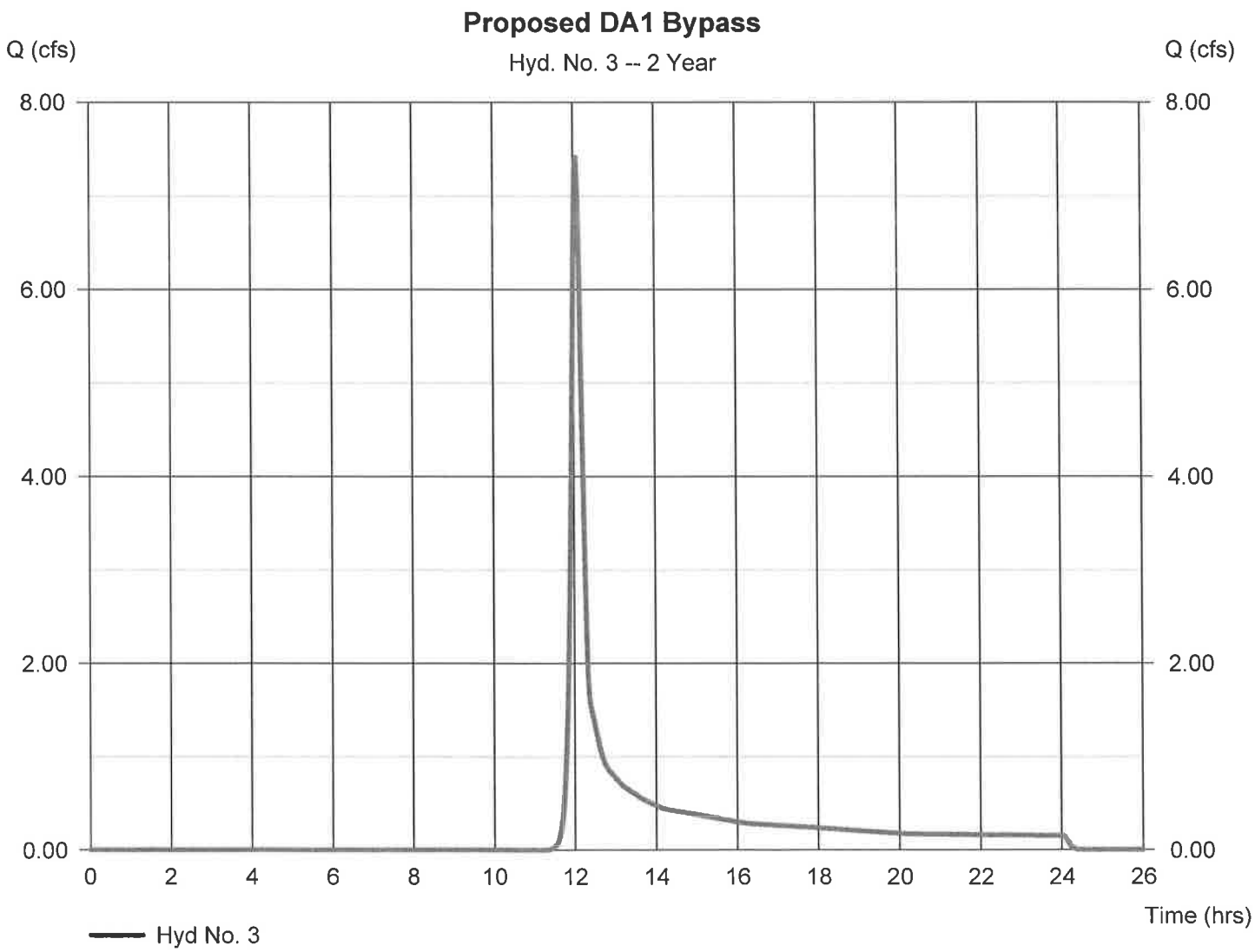
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 3

Proposed DA1 Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 7.412 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 22,345 cuft
Drainage area	= 7.190 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 16.20 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



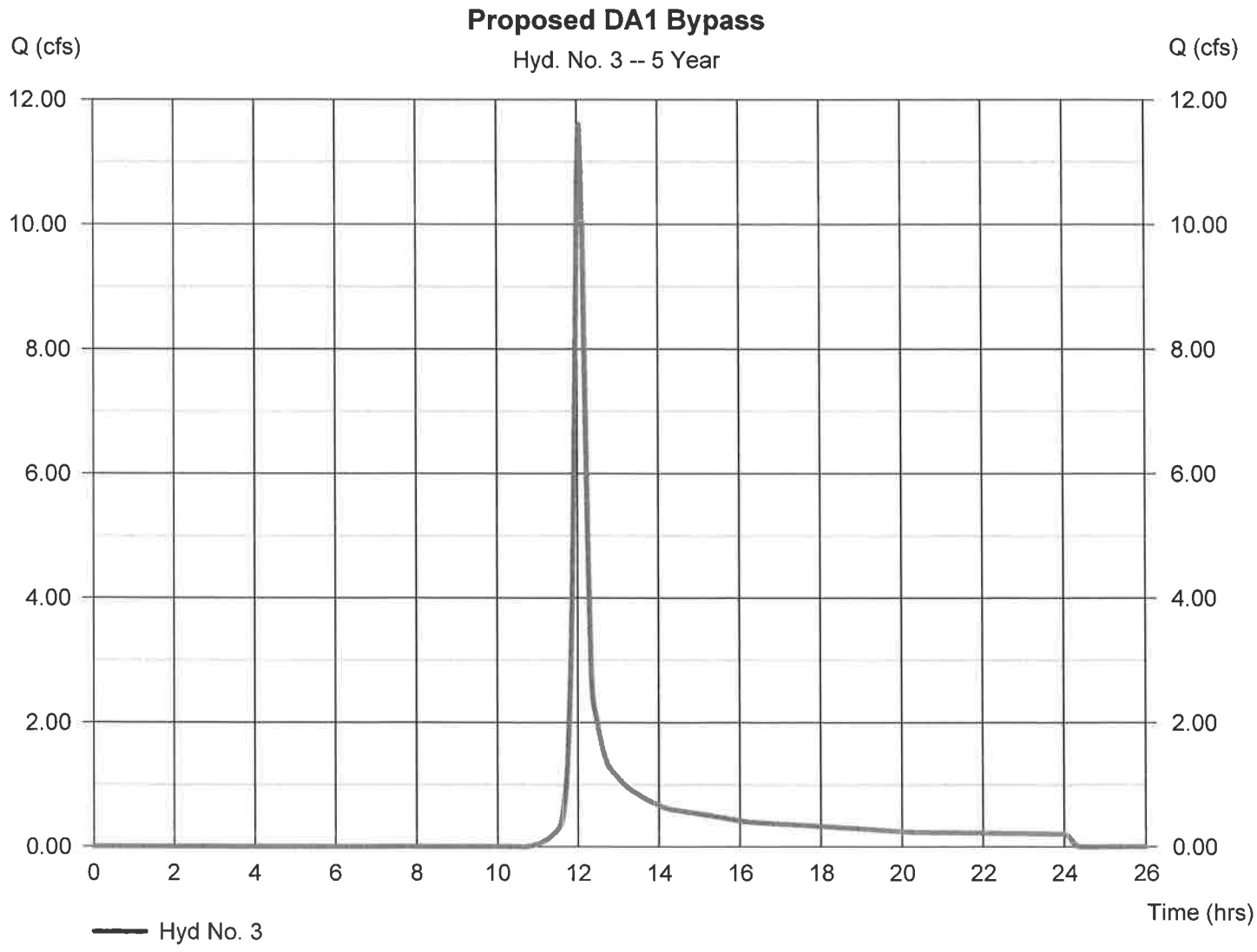
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 3

Proposed DA1 Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 11.60 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 33,747 cuft
Drainage area	= 7.190 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 16.20 min
Total precip.	= 3.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



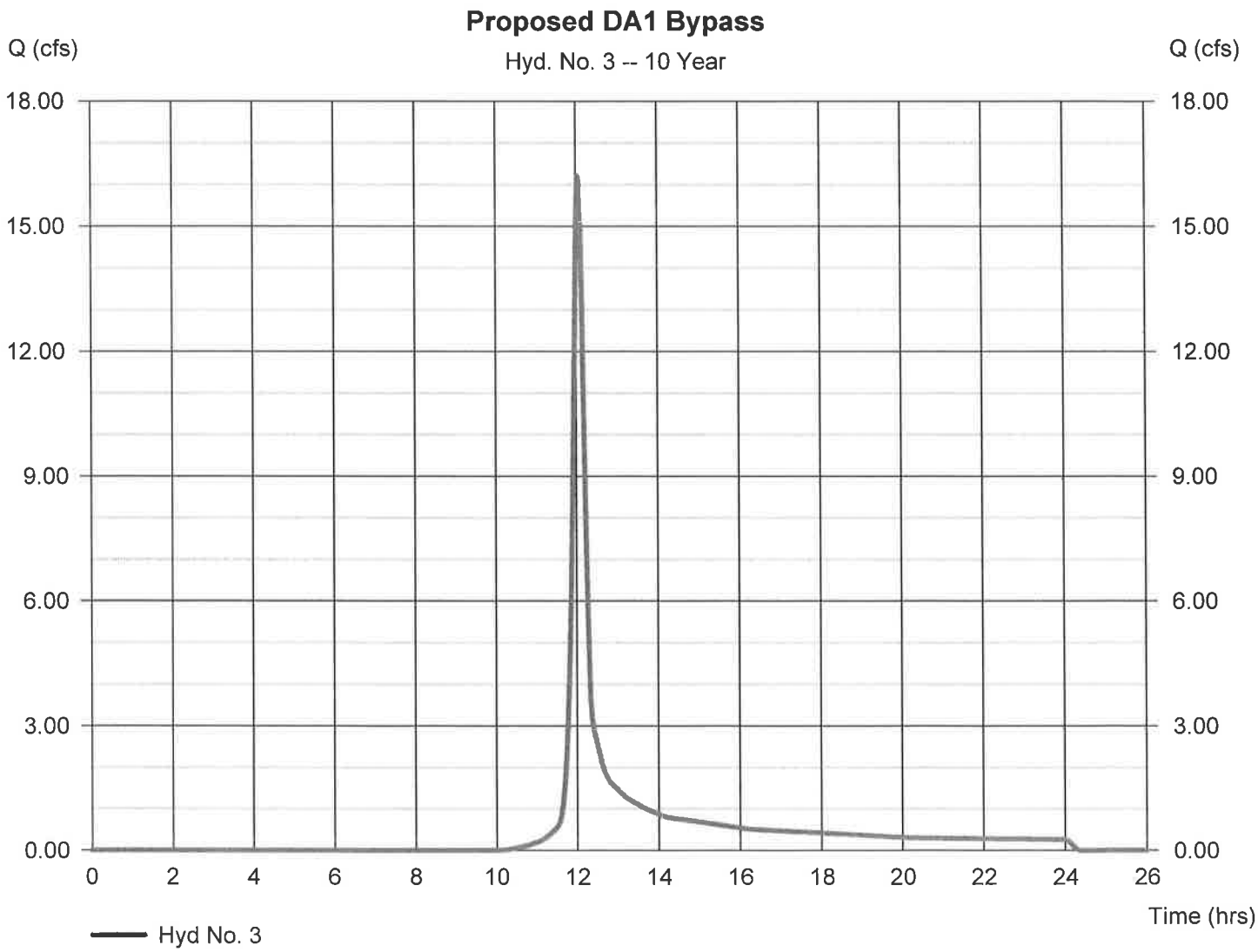
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 3

Proposed DA1 Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 16.20 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 46,291 cuft
Drainage area	= 7.190 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 16.20 min
Total precip.	= 4.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



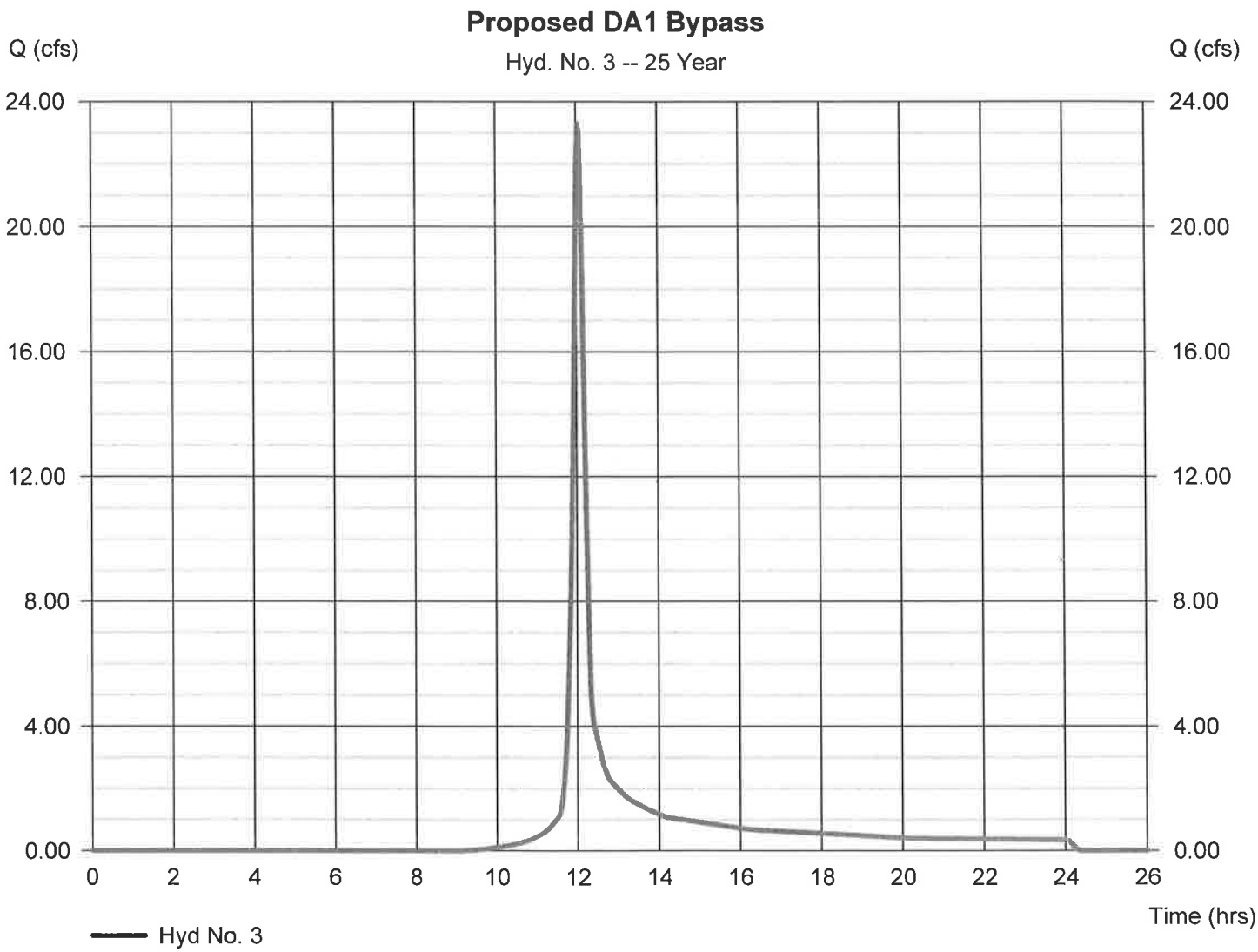
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 3

Proposed DA1 Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 23.30 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 65,653 cuft
Drainage area	= 7.190 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 16.20 min
Total precip.	= 5.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



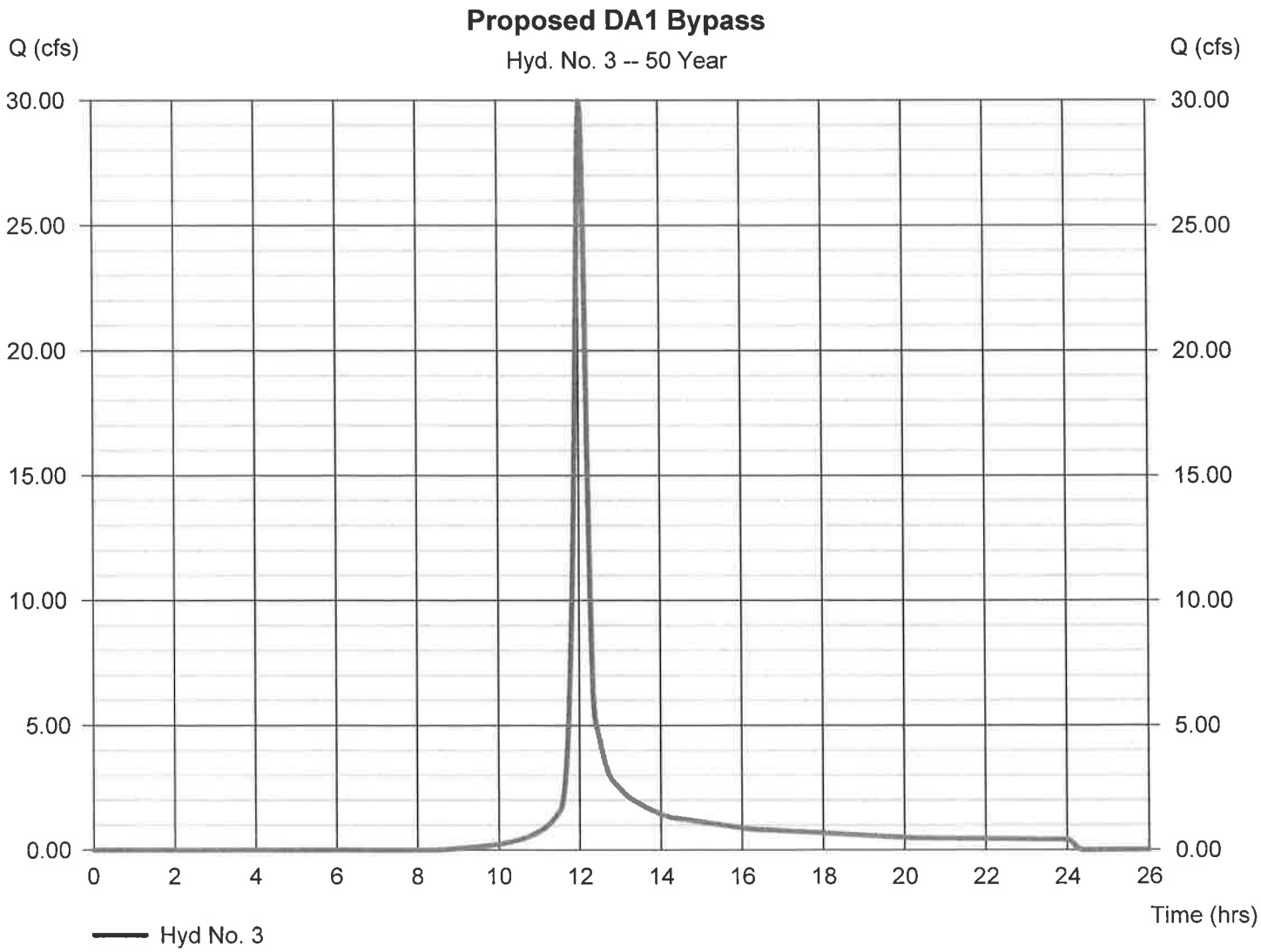
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 · Tuesday, Aug 11, 2020

Hyd. No. 3

Proposed DA1 Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 29.99 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 84,144 cuft
Drainage area	= 7.190 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 16.20 min
Total precip.	= 6.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



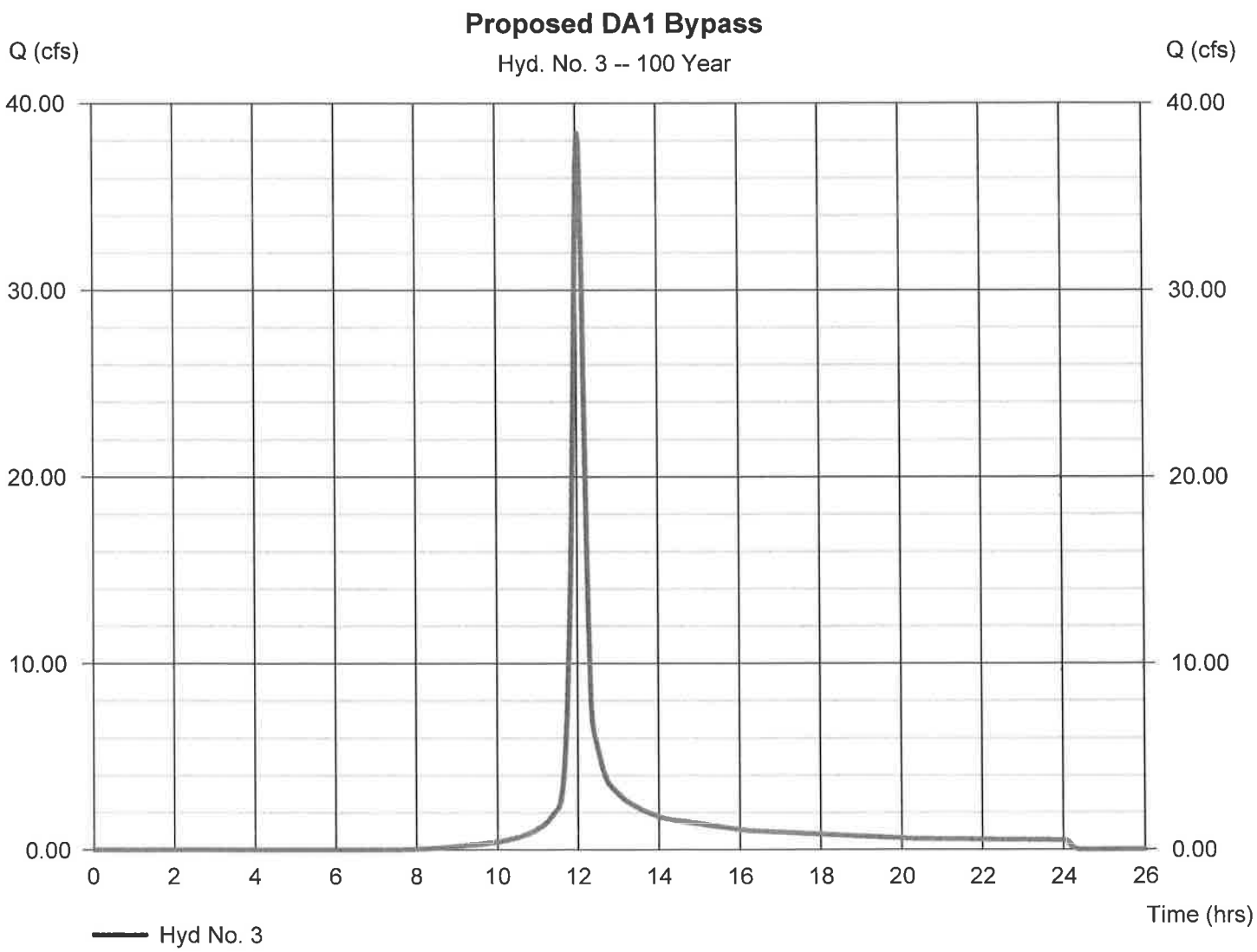
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 3

Proposed DA1 Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 38.43 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 107,736 cuft
Drainage area	= 7.190 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 16.20 min
Total precip.	= 7.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



DAMBRO
STORMWATER MANAGEMENT

Proposed Drainage Area To Drywell-Lot 2:

Total Area =	54,013 sq.ft = 1.24 acres
Meadow (C-soil) =	19,595 sq.ft
Lawn (C-soil) =	18,351 sq.ft
Impervious =	16,067 sq.ft

CN Values:

Meadow (C-soil)	CN = 71
Lawn (C-soil)	CN = 74
Impervious	CN = 98

Composite CN = 80

Time of Concentration:
Use 5.00 minute time of concentration

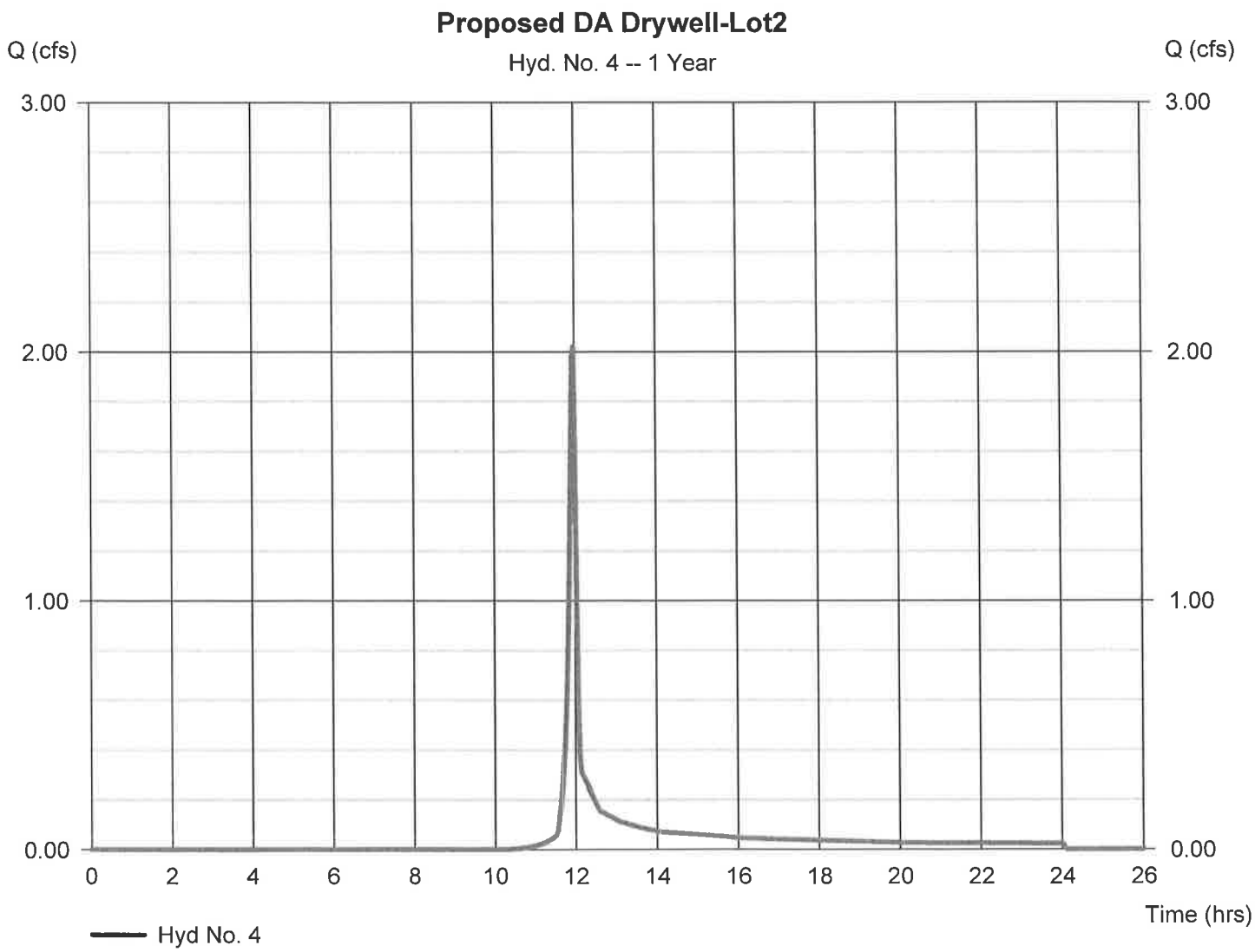
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 4

Proposed DA Drywell-Lot2

Hydrograph type	= SCS Runoff	Peak discharge	= 2.022 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 4,046 cuft
Drainage area	= 1.240 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



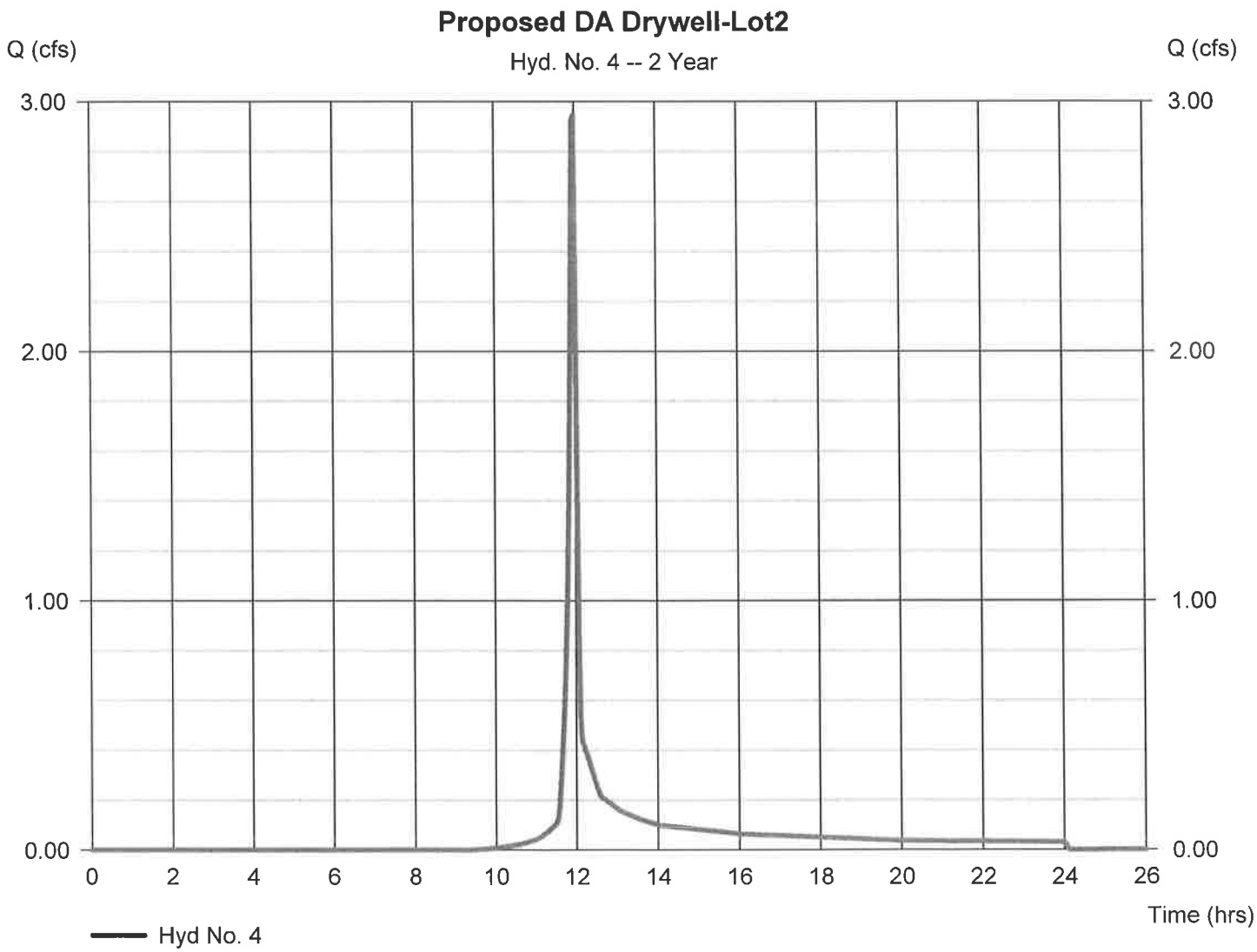
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 4

Proposed DA Drywell-Lot2

Hydrograph type	= SCS Runoff	Peak discharge	= 2.944 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 5,916 cuft
Drainage area	= 1.240 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



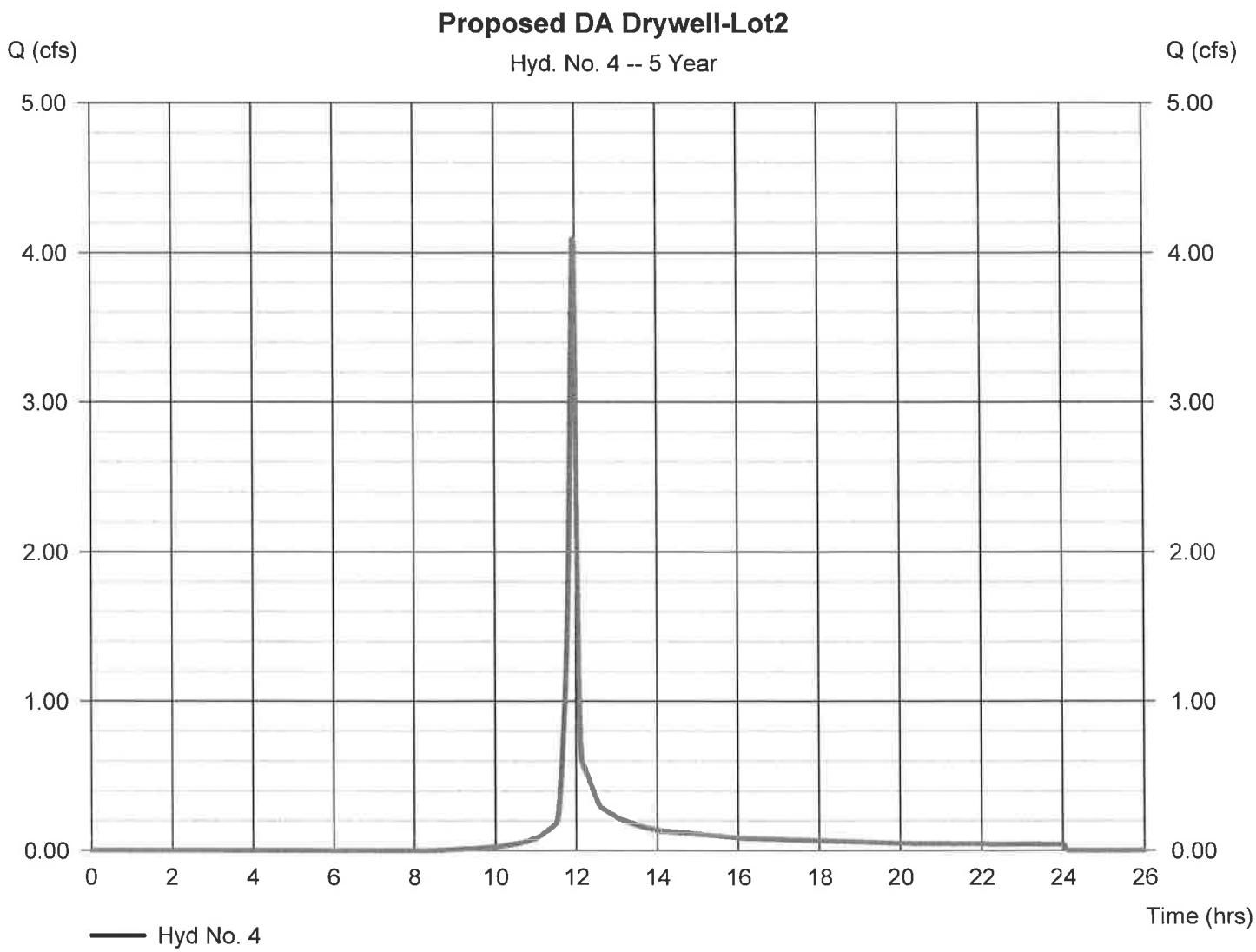
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 4

Proposed DA Drywell-Lot2

Hydrograph type	= SCS Runoff	Peak discharge	= 4.093 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 8,268 cuft
Drainage area	= 1.240 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



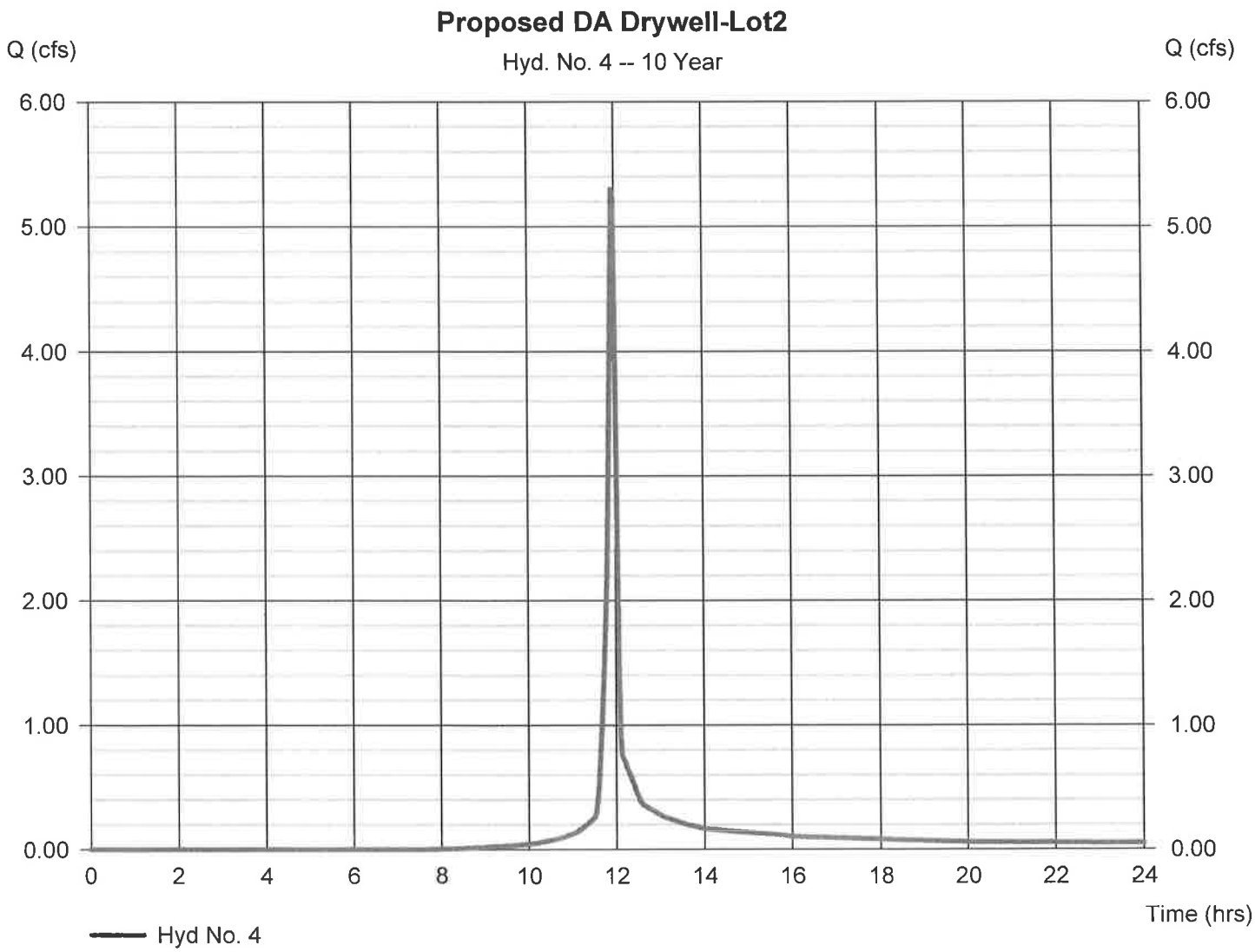
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 4

Proposed DA Drywell-Lot2

Hydrograph type	= SCS Runoff	Peak discharge	= 5.300 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 10,748 cuft
Drainage area	= 1.240 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



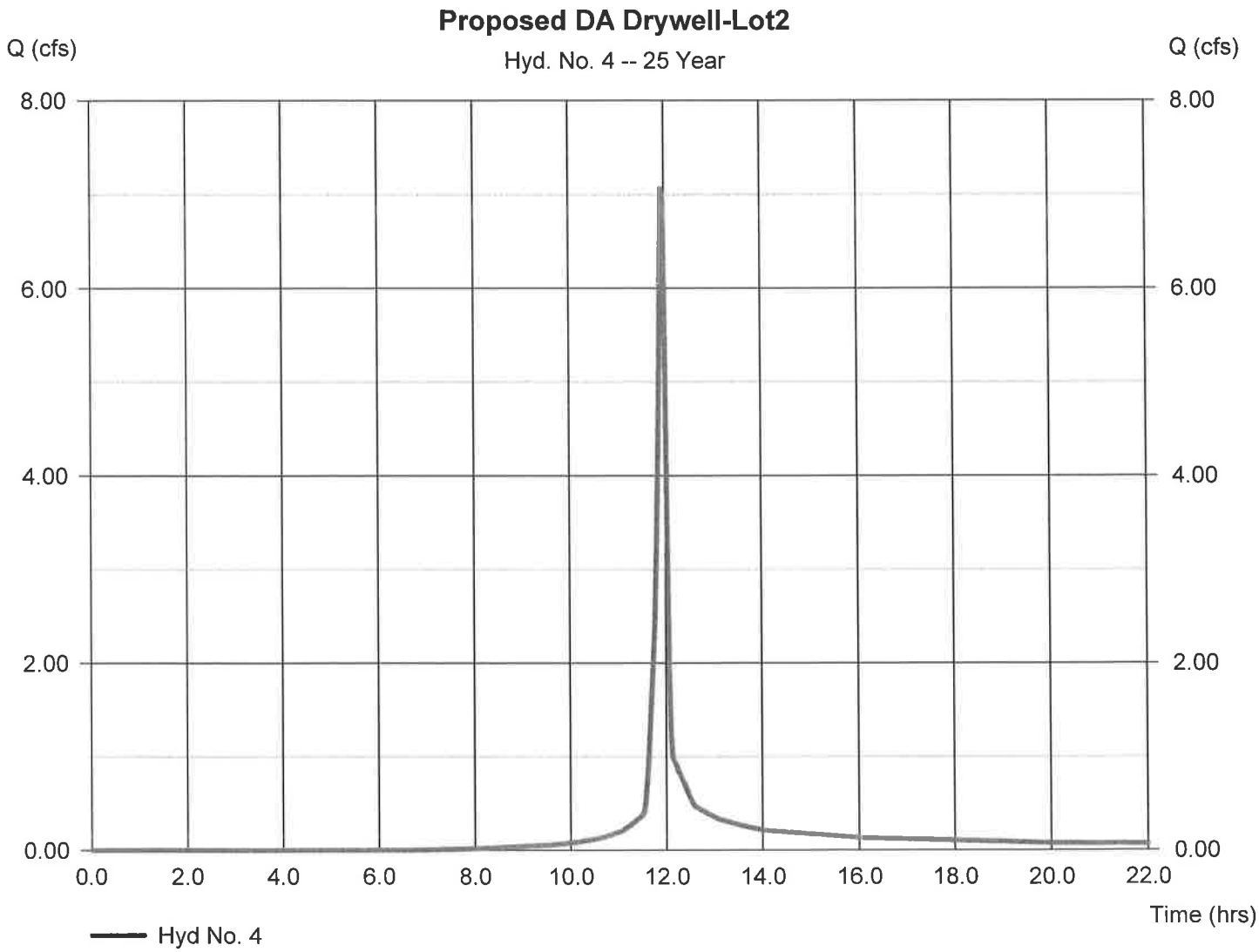
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 4

Proposed DA Drywell-Lot2

Hydrograph type	= SCS Runoff	Peak discharge	= 7.062 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 14,442 cuft
Drainage area	= 1.240 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



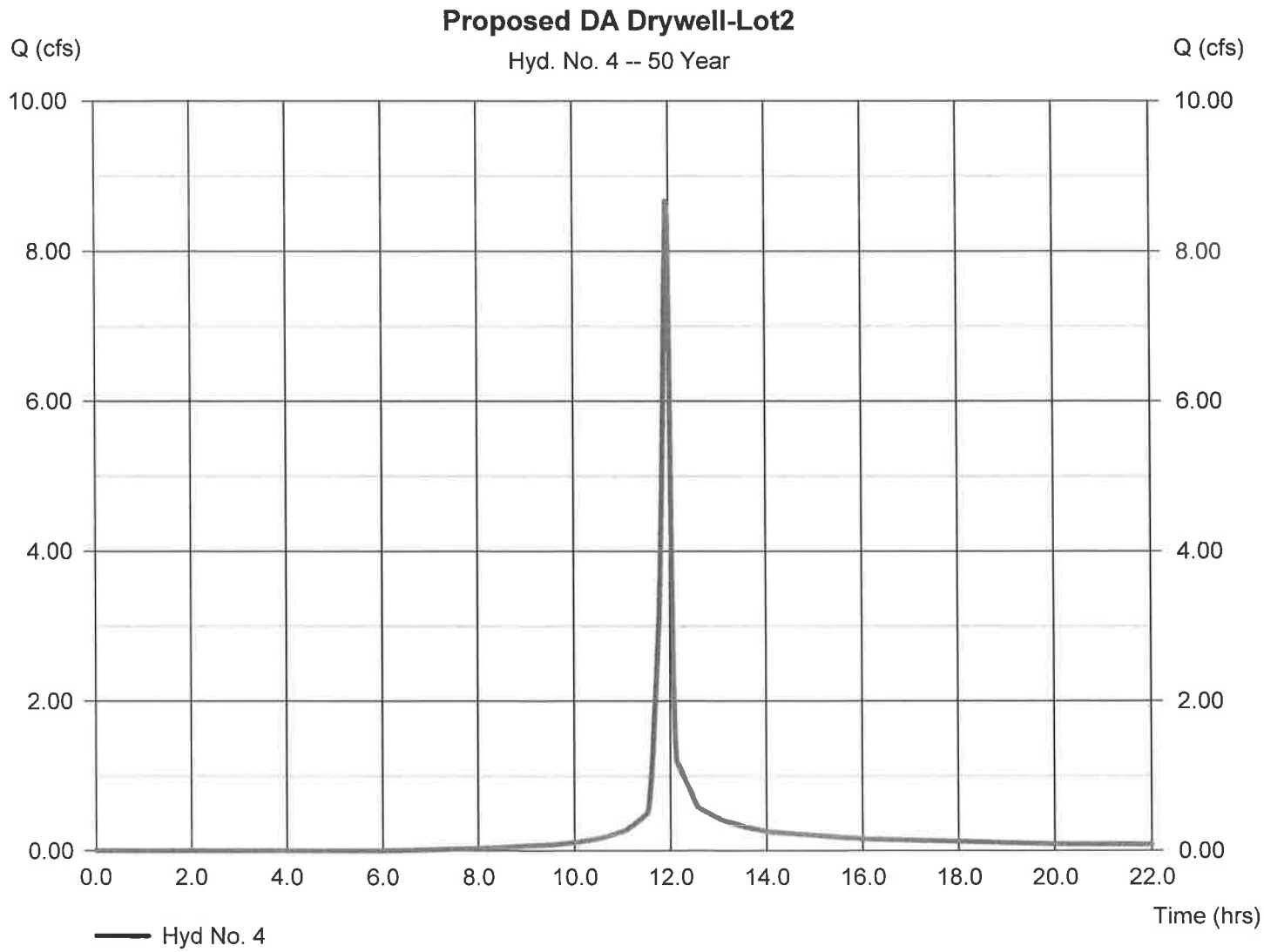
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 4

Proposed DA Drywell-Lot2

Hydrograph type	= SCS Runoff	Peak discharge	= 8.666 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 17,872 cuft
Drainage area	= 1.240 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



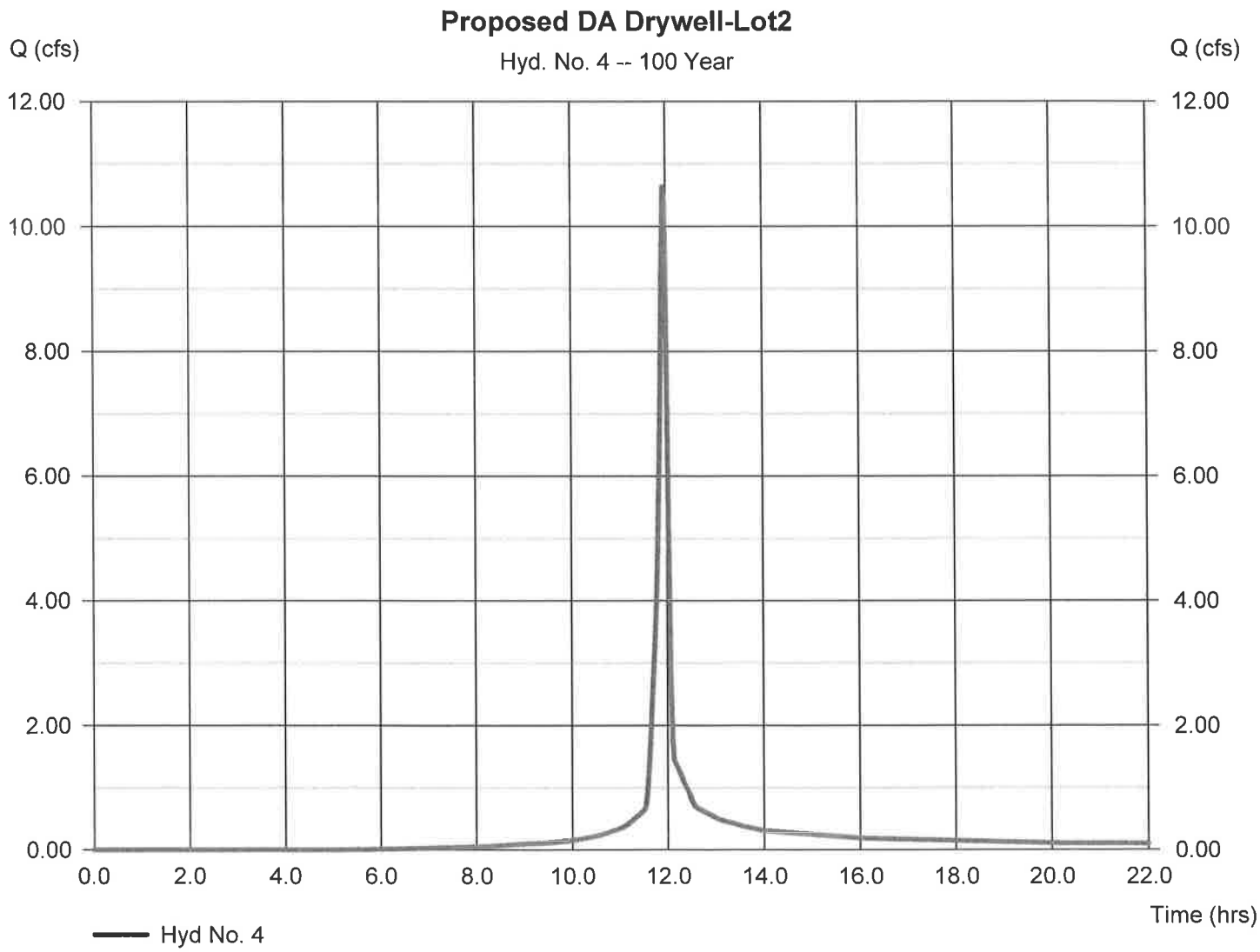
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 4

Proposed DA Drywell-Lot2

Hydrograph type	= SCS Runoff	Peak discharge	= 10.63 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 22,159 cuft
Drainage area	= 1.240 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Pond Report

Hydraflow Hydrographs by Intelisolve v9.23 — Tuesday, Aug 11, 2020

Pond No. 3 - Drywell-Lot2

Pond Data

Pond storage is based on user-defined values.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	349.00	n/a	0	0
0.10	349.10	n/a	173	173
1.00	350.00	n/a	1,555	1,728
2.00	351.00	n/a	1,728	3,456
3.00	352.00	n/a	1,728	5,184
4.00	353.00	n/a	1,728	6,912
5.00	354.00	n/a	4	6,916
5.50	354.50	n/a	172	7,088
6.00	355.00	n/a	171	7,259
6.50	355.50	n/a	172	7,431
7.00	356.00	n/a	171	7,602

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 6.00	0.00	0.00	0.00
Crest El. (ft)	= 354.50	0.00	0.00	0.00
Weir Coeff.	= 3.00	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	349.00	---	---	---	---	0.00	---	---	---	---	---	0.000
0.10	173	349.10	---	---	---	---	0.00	---	---	---	---	0.187	0.187
1.00	1,728	350.00	---	---	---	---	0.00	---	---	---	---	0.187	0.187
2.00	3,456	351.00	---	---	---	---	0.00	---	---	---	---	0.187	0.187
3.00	5,184	352.00	---	---	---	---	0.00	---	---	---	---	0.187	0.187
4.00	6,912	353.00	---	---	---	---	0.00	---	---	---	---	0.187	0.187
5.00	6,916	354.00	---	---	---	---	0.00	---	---	---	---	0.187	0.187
5.50	7,088	354.50	---	---	---	---	0.00	---	---	---	---	0.187	0.187
6.00	7,259	355.00	---	---	---	---	6.36	---	---	---	---	---	6.364
6.50	7,431	355.50	---	---	---	---	18.00	---	---	---	---	---	18.00
7.00	7,602	356.00	---	---	---	---	33.07	---	---	---	---	---	33.07

Hydrograph Report

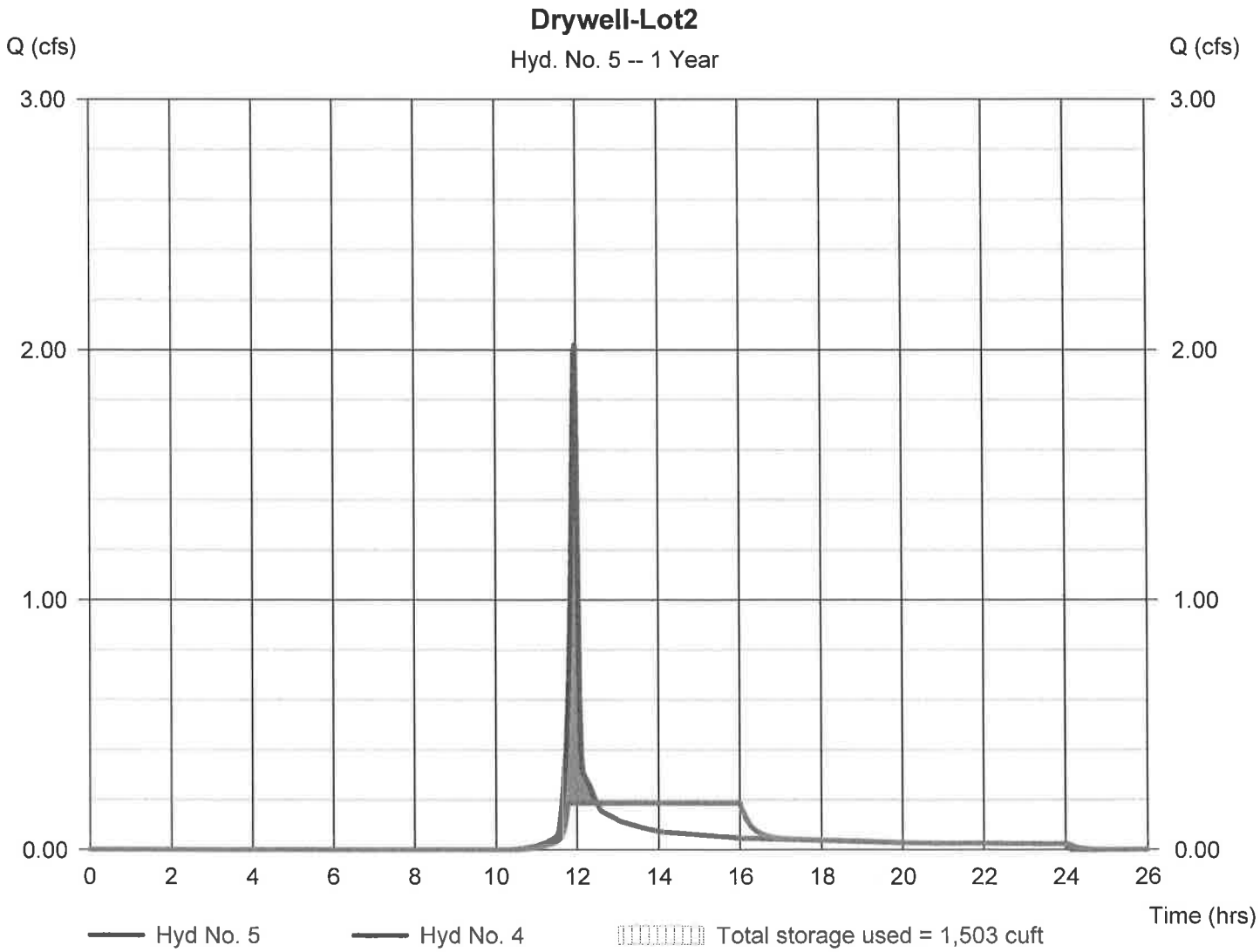
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 5

Drywell-Lot2

Hydrograph type	= Reservoir	Peak discharge	= 0.187 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.80 hrs
Time interval	= 2 min	Hyd. volume	= 4,045 cuft
Inflow hyd. No.	= 4 - Proposed DA Drywell-Lot2	Max. Elevation	= 349.87 ft
Reservoir name	= Drywell-Lot2	Max. Storage	= 1,503 cuft

Storage Indication method used.



Hydrograph Report

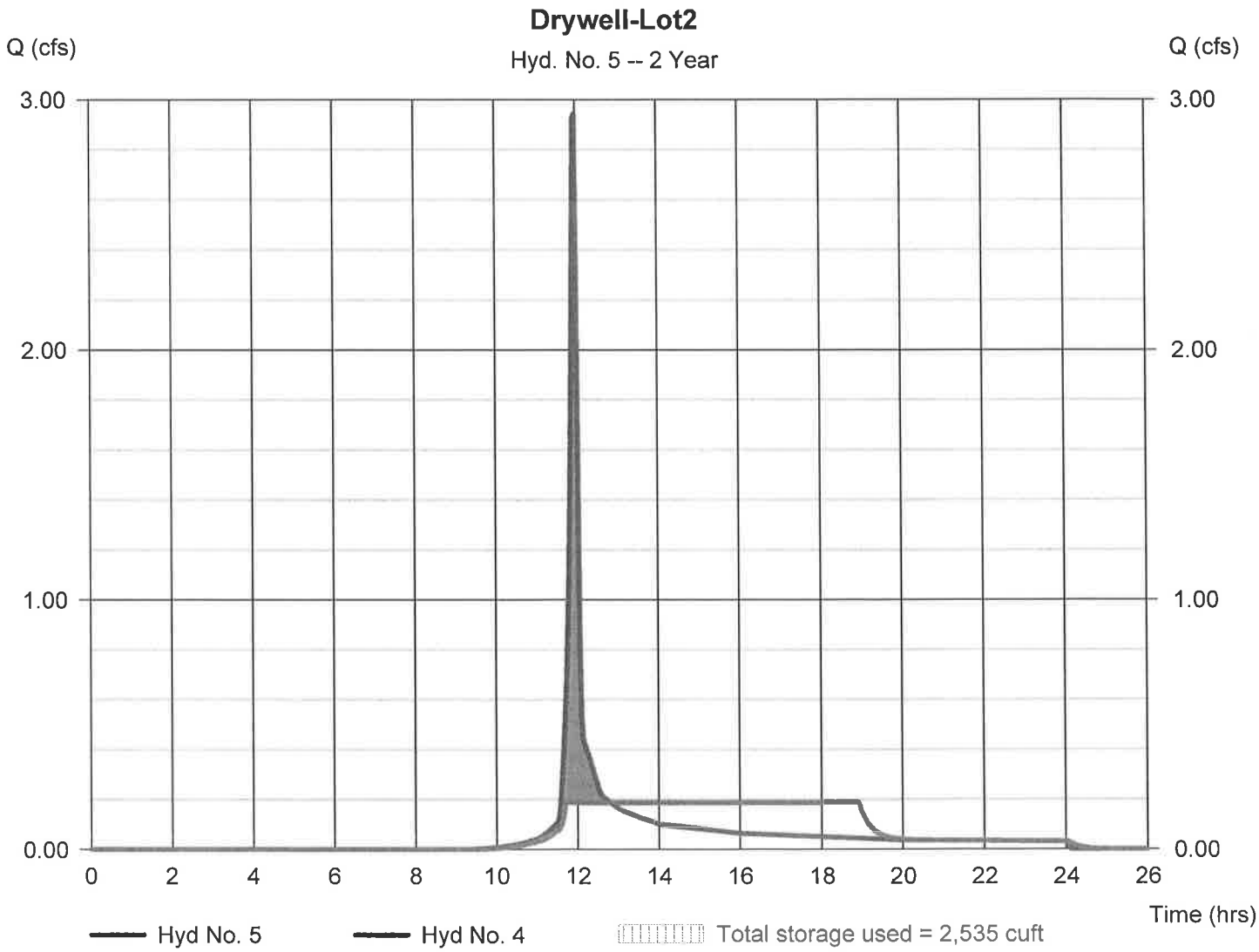
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 5

Drywell-Lot2

Hydrograph type	= Reservoir	Peak discharge	= 0.187 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.70 hrs
Time interval	= 2 min	Hyd. volume	= 5,915 cuft
Inflow hyd. No.	= 4 - Proposed DA Drywell-Lot2	Max. Elevation	= 350.47 ft
Reservoir name	= Drywell-Lot2	Max. Storage	= 2,535 cuft

Storage Indication method used.



Hydrograph Report

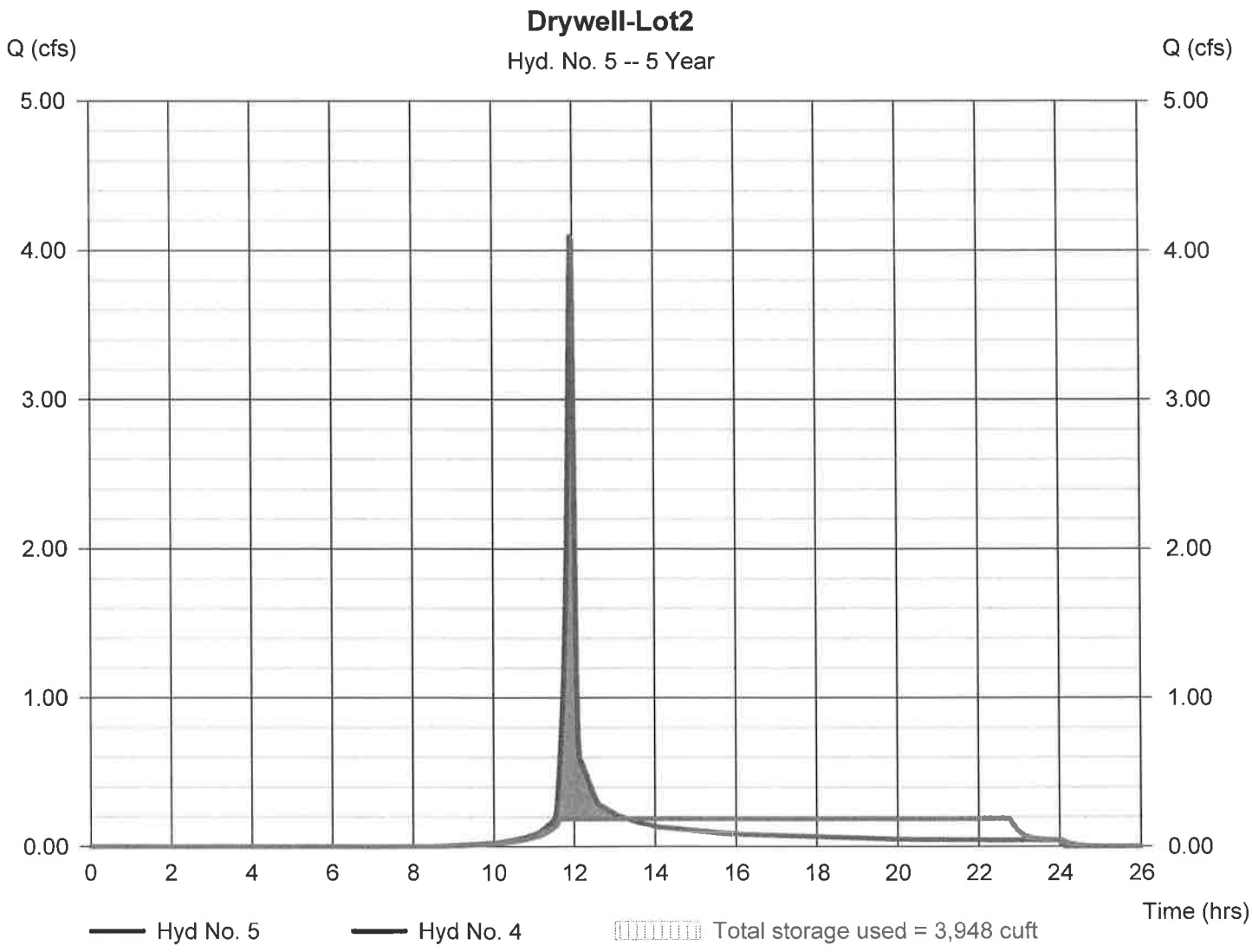
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 5

Drywell-Lot2

Hydrograph type	= Reservoir	Peak discharge	= 0.187 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.63 hrs
Time interval	= 2 min	Hyd. volume	= 8,267 cuft
Inflow hyd. No.	= 4 - Proposed DA Drywell-Lot2	Max. Elevation	= 351.28 ft
Reservoir name	= Drywell-Lot2	Max. Storage	= 3,948 cuft

Storage Indication method used.



Hydrograph Report

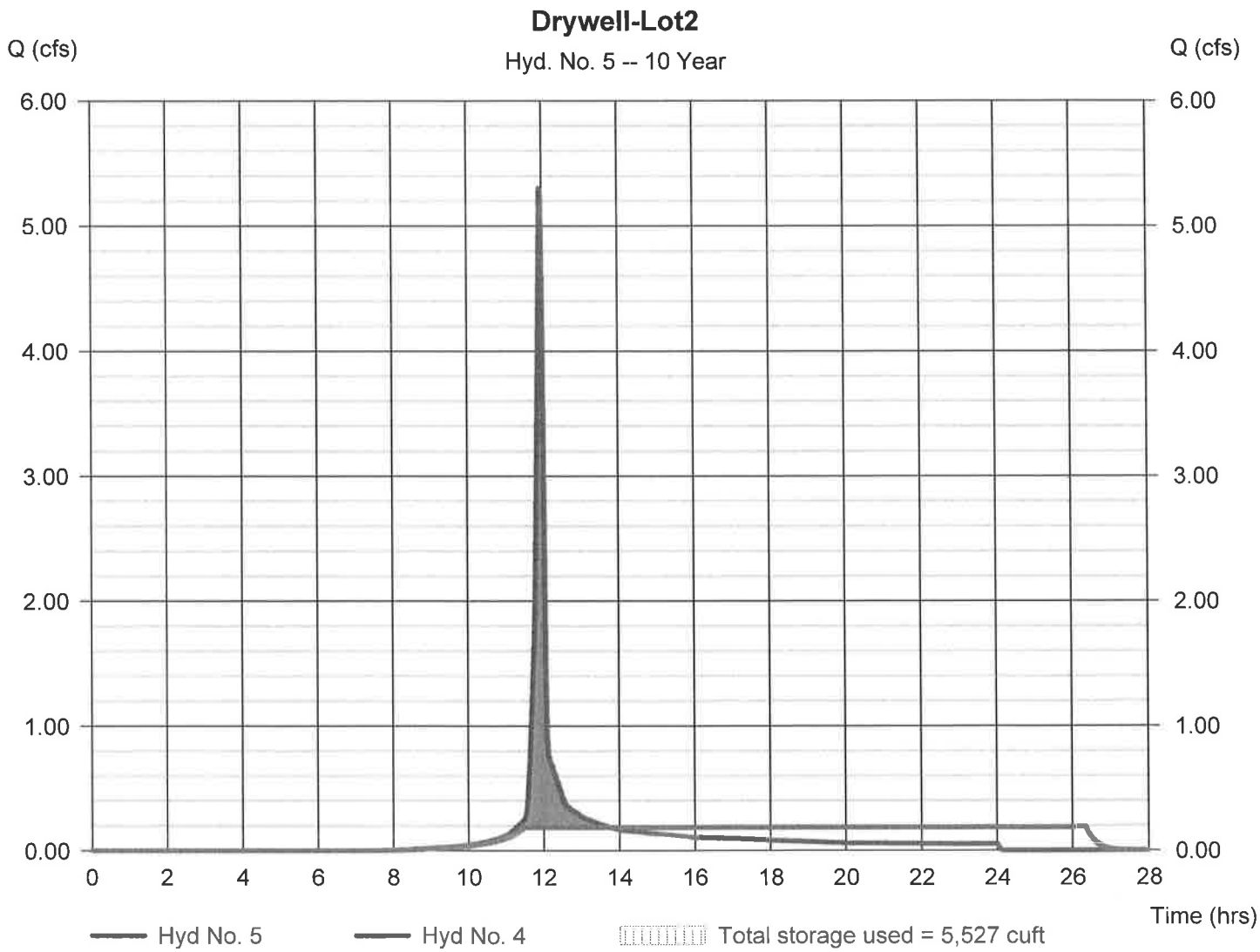
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 5

Drywell-Lot2

Hydrograph type	= Reservoir	Peak discharge	= 0.187 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.50 hrs
Time interval	= 2 min	Hyd. volume	= 10,747 cuft
Inflow hyd. No.	= 4 - Proposed DA Drywell-Lot2	Max. Elevation	= 352.20 ft
Reservoir name	= Drywell-Lot2	Max. Storage	= 5,527 cuft

Storage Indication method used.



Hydrograph Report

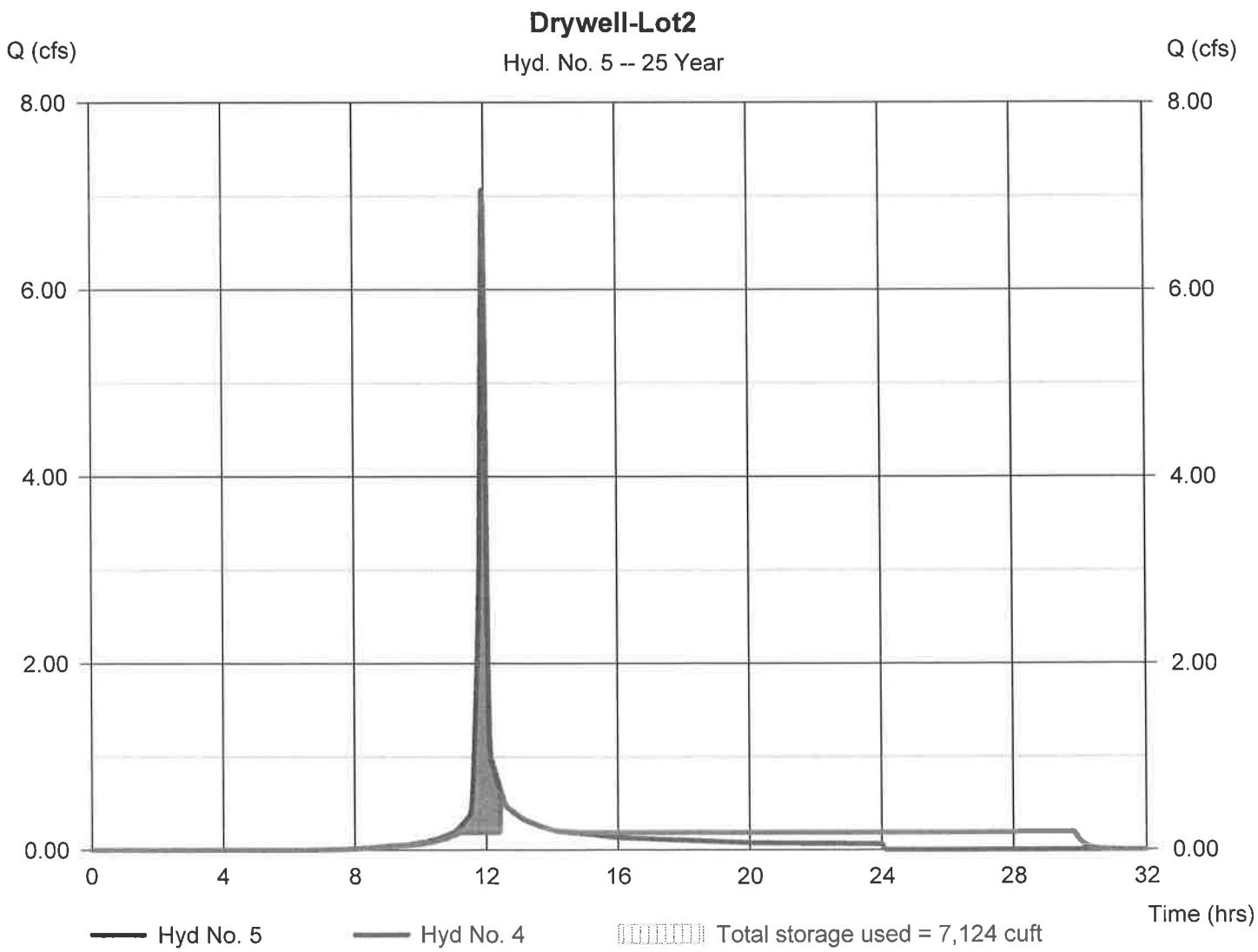
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 5

Drywell-Lot2

Hydrograph type	= Reservoir	Peak discharge	= 0.613 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.43 hrs
Time interval	= 2 min	Hyd. volume	= 14,441 cuft
Inflow hyd. No.	= 4 - Proposed DA Drywell-Lot2	Max. Elevation	= 354.61 ft
Reservoir name	= Drywell-Lot2	Max. Storage	= 7,124 cuft

Storage Indication method used.



Hydrograph Report

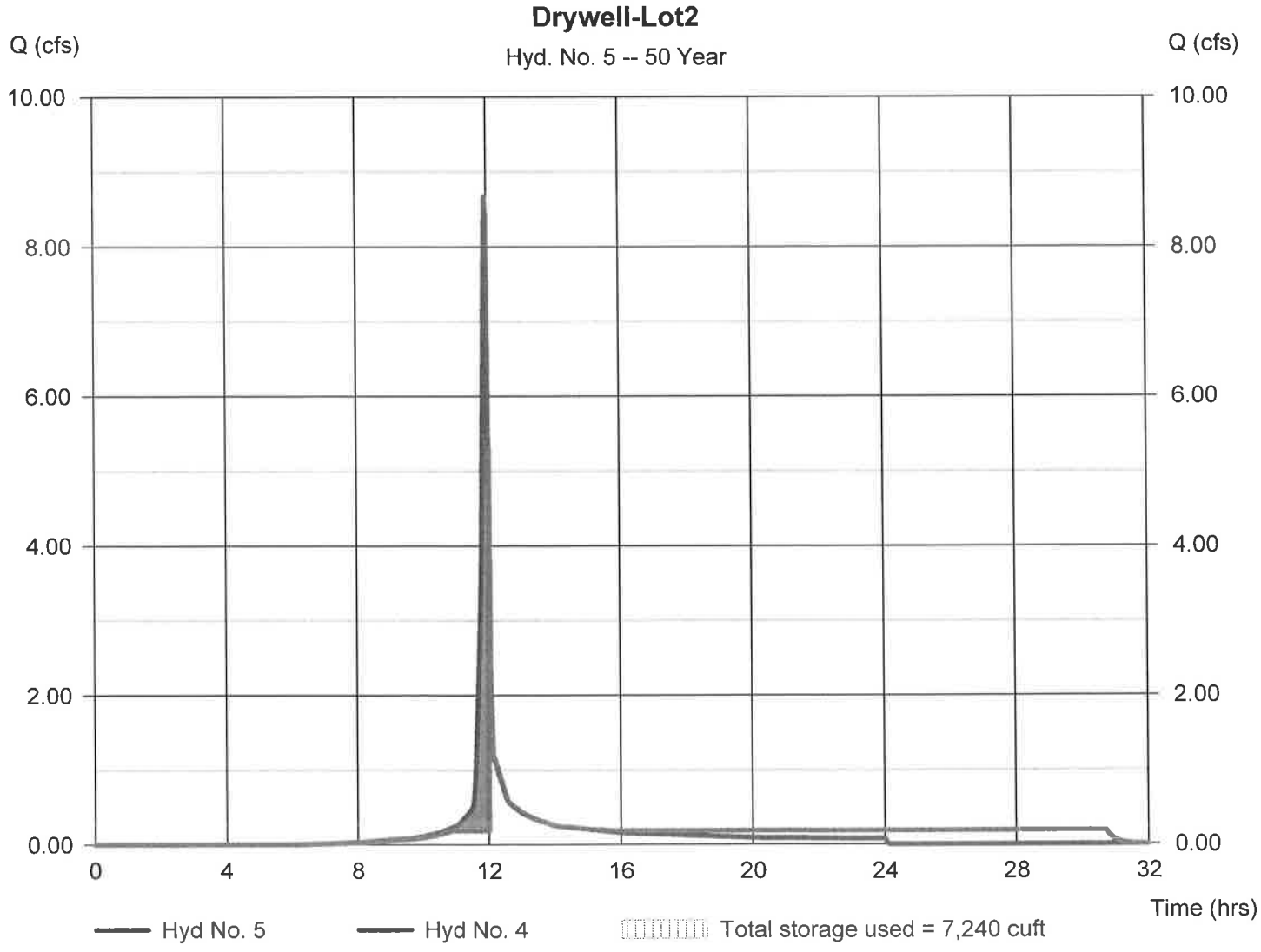
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 5

Drywell-Lot2

Hydrograph type	= Reservoir	Peak discharge	= 5.311 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 17,872 cuft
Inflow hyd. No.	= 4 - Proposed DA Drywell-Lot2	Max. Elevation	= 355.13 ft
Reservoir name	= Drywell-Lot2	Max. Storage	= 7,240 cuft

Storage Indication method used.



Hydrograph Report

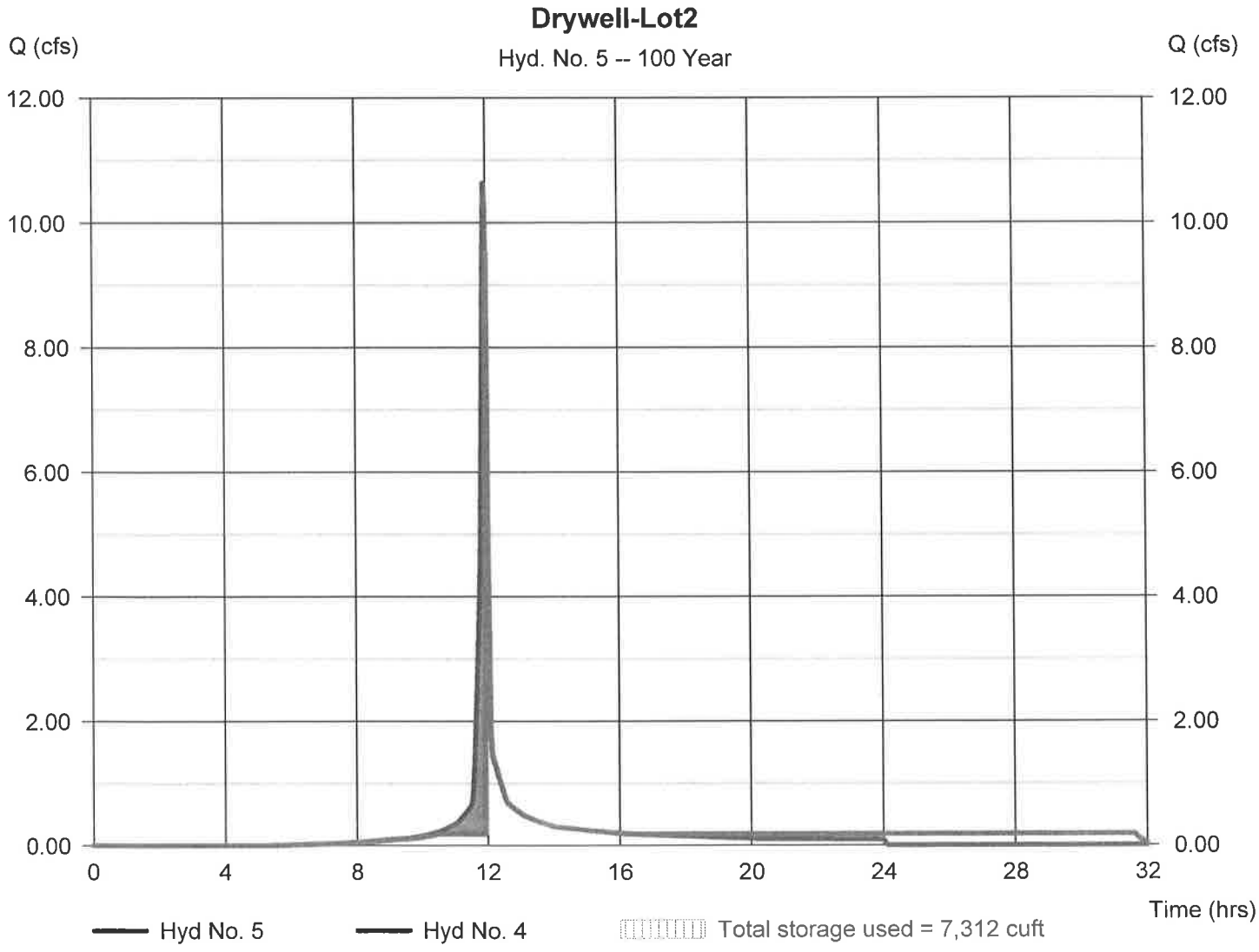
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 5

Drywell-Lot2

Hydrograph type	= Reservoir	Peak discharge	= 9.521 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 22,158 cuft
Inflow hyd. No.	= 4 - Proposed DA Drywell-Lot2	Max. Elevation	= 355.40 ft
Reservoir name	= Drywell-Lot2	Max. Storage	= 7,312 cuft

Storage Indication method used.



DAMBRO
STORMWATER MANAGEMENT

Proposed Drainage Area To Drywell-Lot 4:

Total Area =	81,425 sq.ft = 1.87 acres
Meadow (B-soil) =	26,469 sq.ft
Lawn (B-soil) =	44,402 sq.ft
Lawn (C-soil) =	1,434 sq.ft
Impervious =	9,120 sq.ft

CN Values:

Meadow (B-soil)	CN = 58
Lawn (B-soil)	CN = 61
Lawn (C-soil)	CN = 74
Impervious	CN = 98

Composite CN = 64

Time of Concentration:
Use 5.00 minute time of concentration

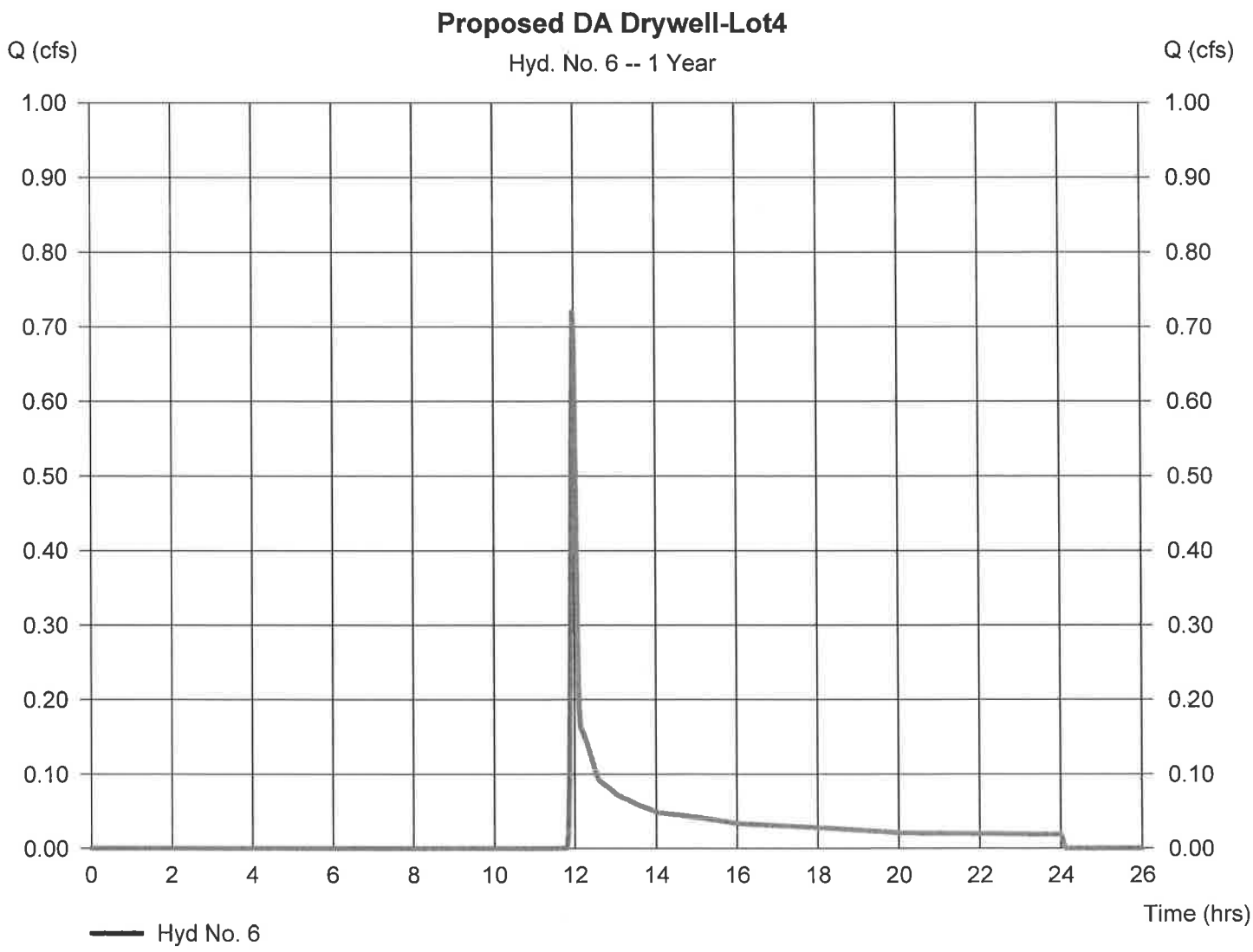
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 6

Proposed DA Drywell-Lot4

Hydrograph type	= SCS Runoff	Peak discharge	= 0.720 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 1,950 cuft
Drainage area	= 1.870 ac	Curve number	= 64
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



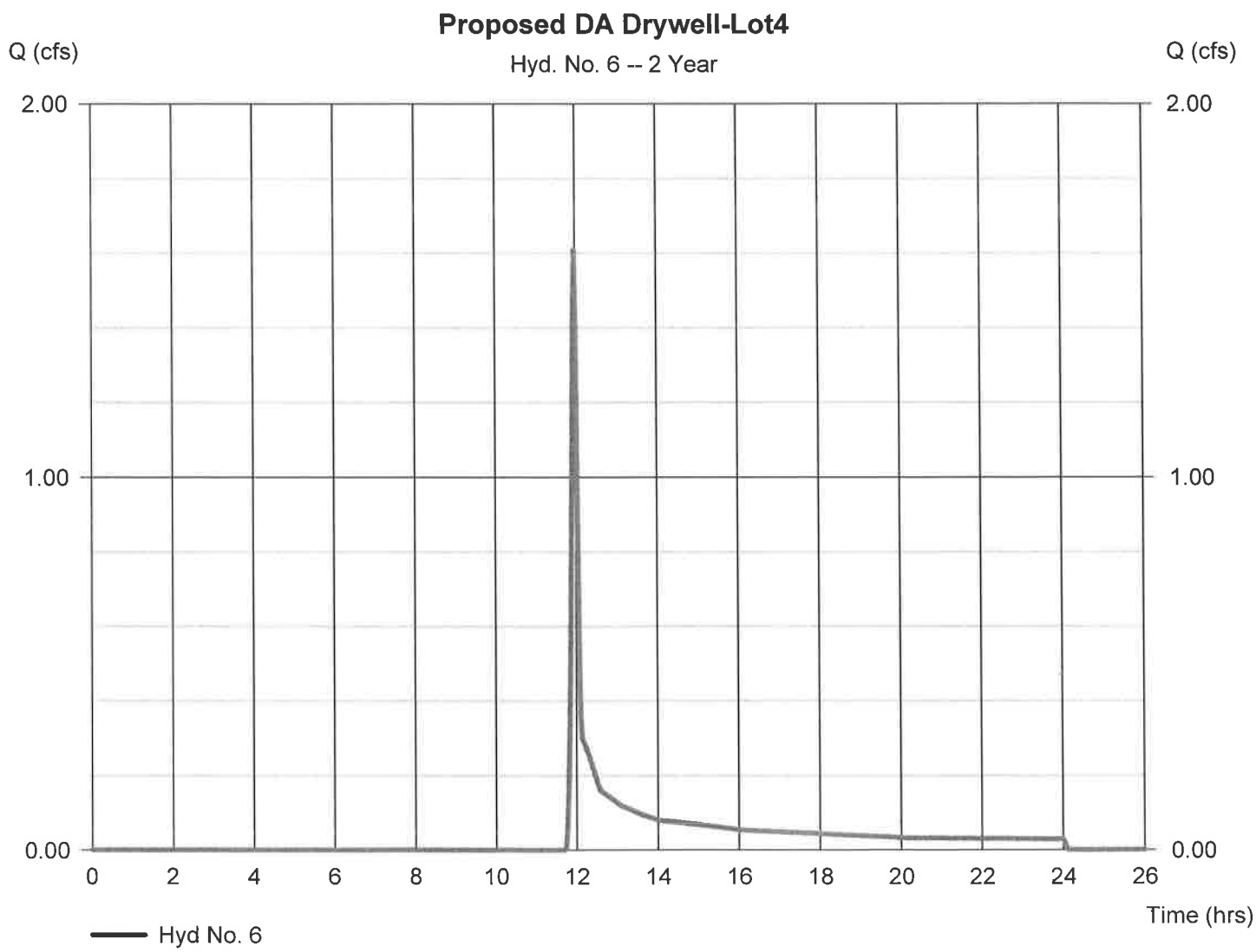
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 6

Proposed DA Drywell-Lot4

Hydrograph type	= SCS Runoff	Peak discharge	= 1.609 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 3,558 cuft
Drainage area	= 1.870 ac	Curve number	= 64
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



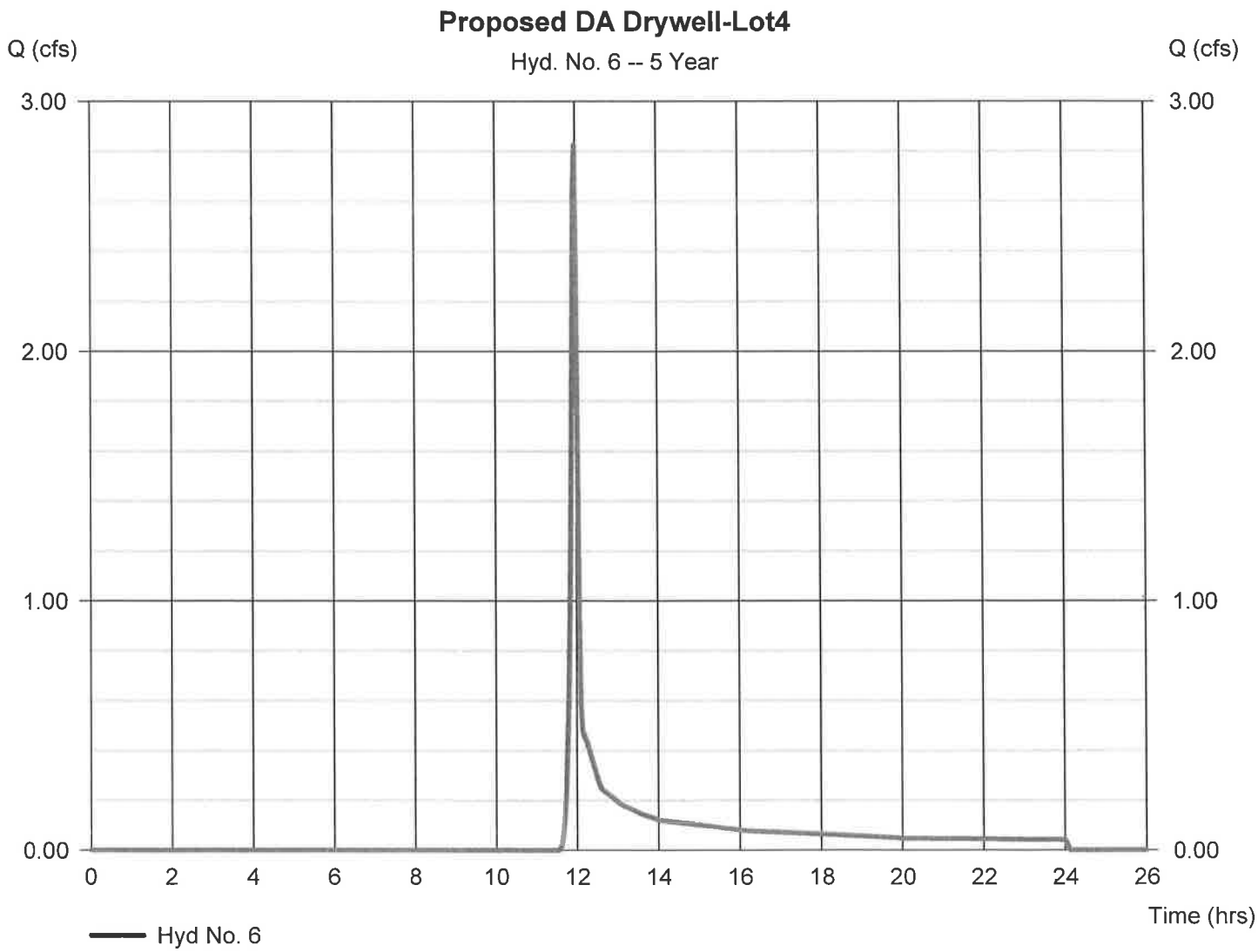
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 6

Proposed DA Drywell-Lot4

Hydrograph type	= SCS Runoff	Peak discharge	= 2.824 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 5,834 cuft
Drainage area	= 1.870 ac	Curve number	= 64
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



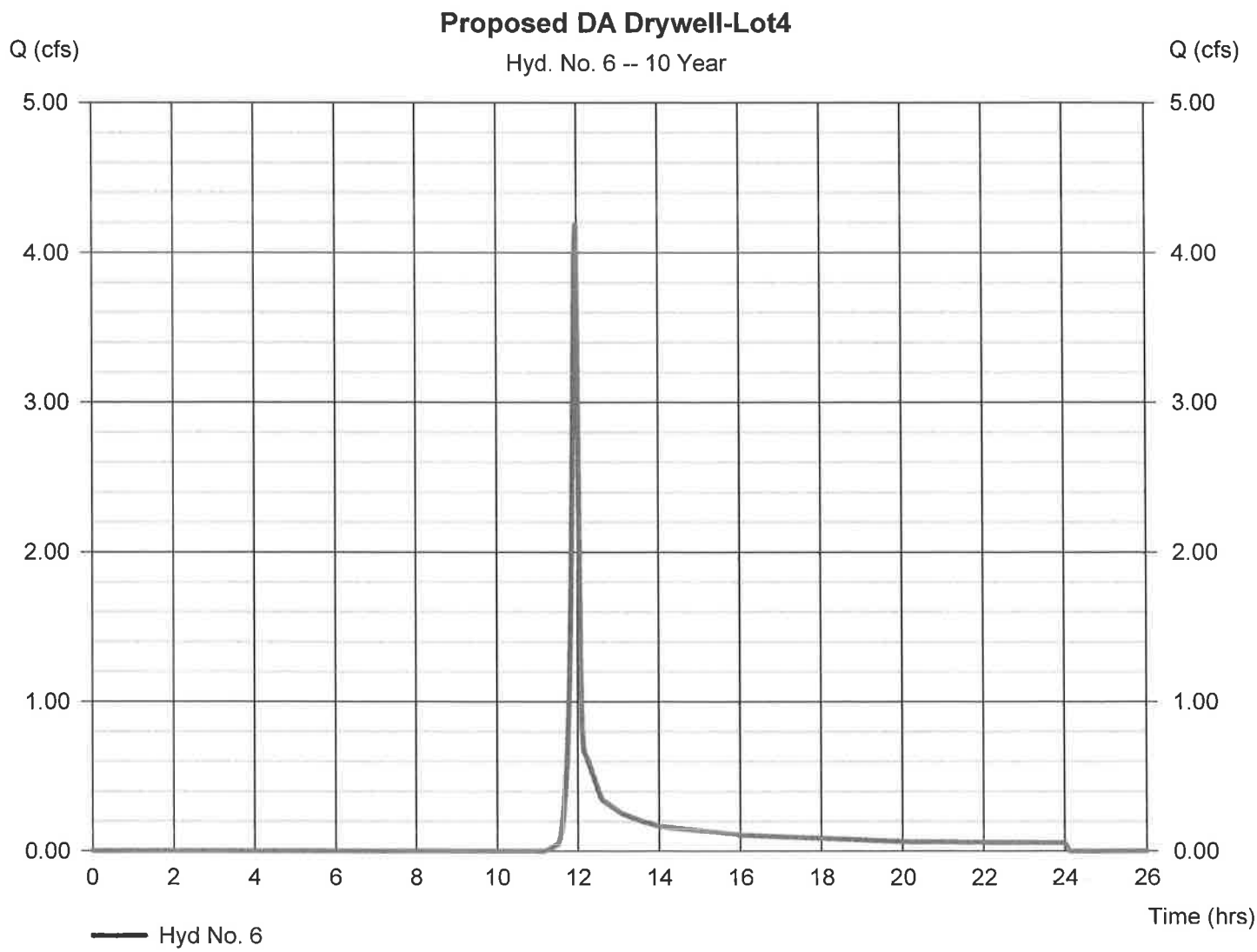
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 6

Proposed DA Drywell-Lot4

Hydrograph type	= SCS Runoff	Peak discharge	= 4.184 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 8,445 cuft
Drainage area	= 1.870 ac	Curve number	= 64
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



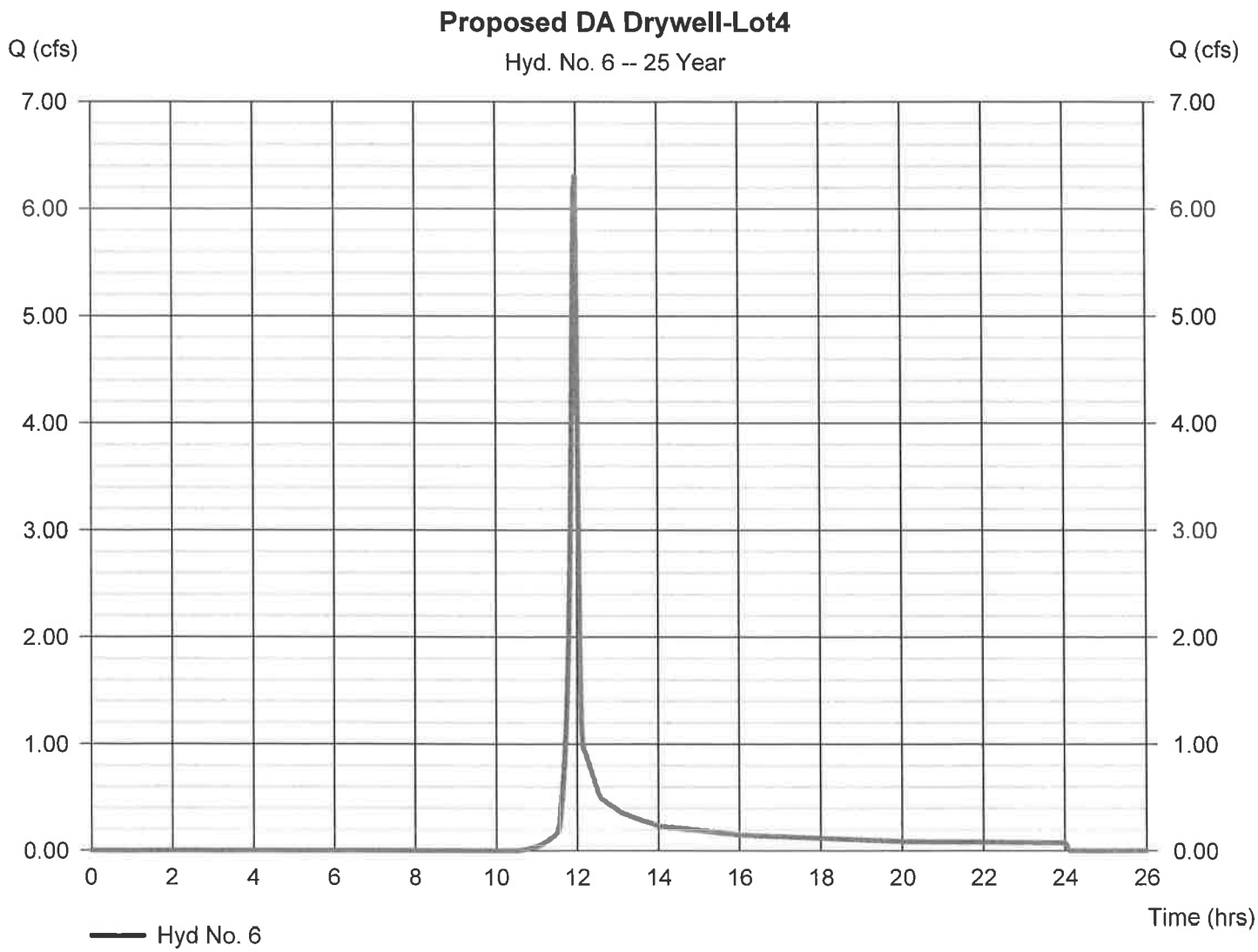
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 6

Proposed DA Drywell-Lot4

Hydrograph type	= SCS Runoff	Peak discharge	= 6.305 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 12,618 cuft
Drainage area	= 1.870 ac	Curve number	= 64
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



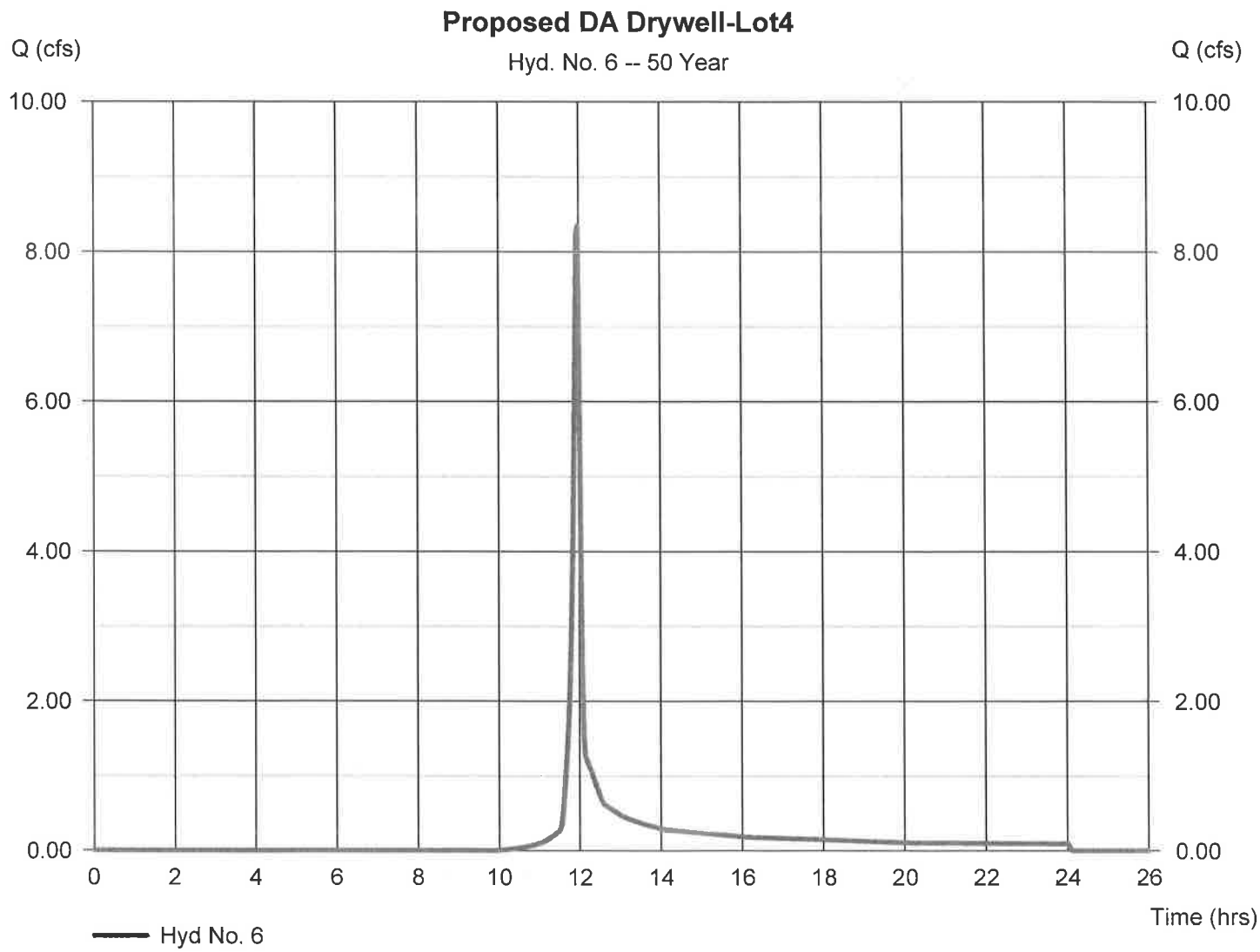
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 6

Proposed DA Drywell-Lot4

Hydrograph type	= SCS Runoff	Peak discharge	= 8.344 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 16,714 cuft
Drainage area	= 1.870 ac	Curve number	= 64
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



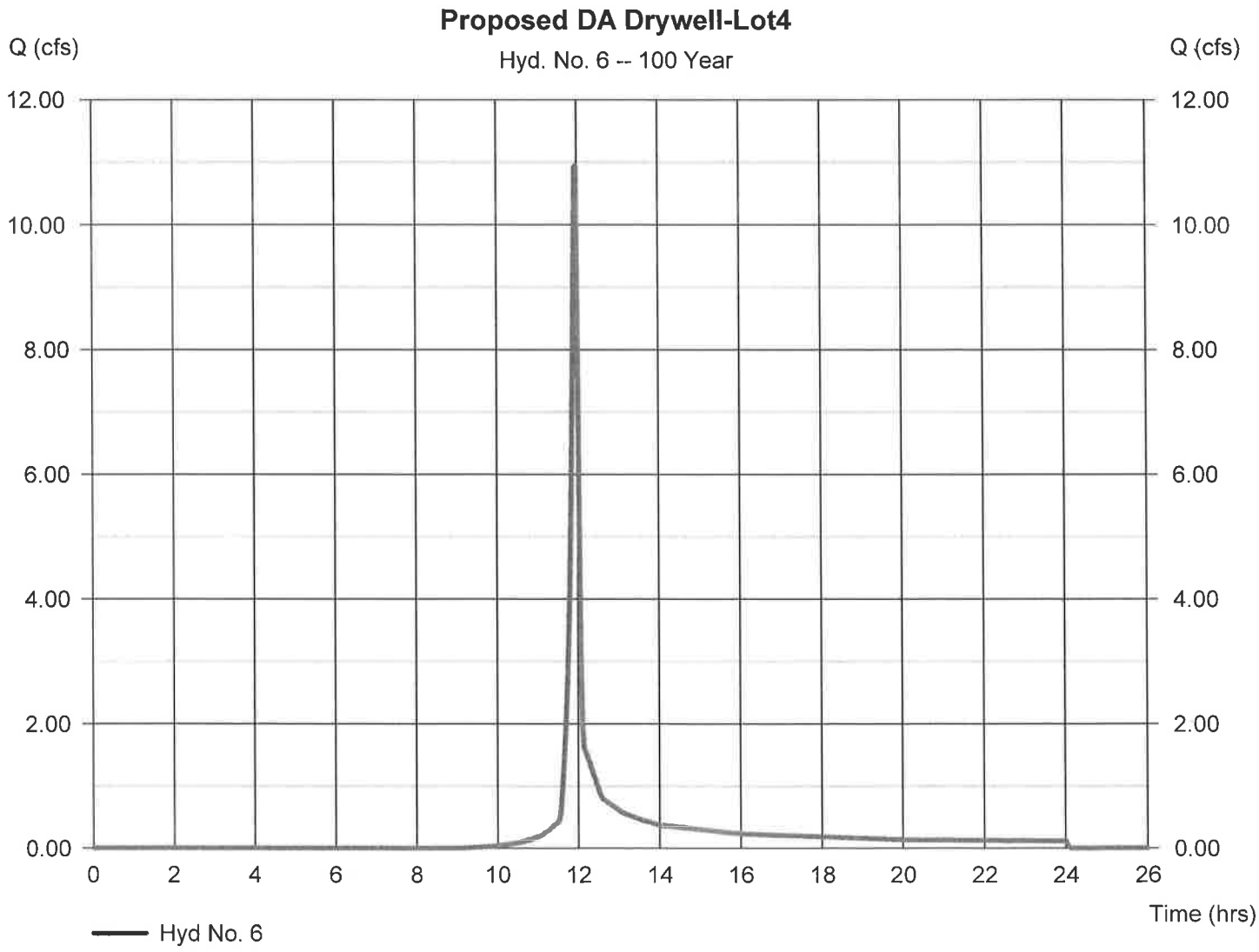
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 6

Proposed DA Drywell-Lot4

Hydrograph type	= SCS Runoff	Peak discharge	= 10.95 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 22,050 cuft
Drainage area	= 1.870 ac	Curve number	= 64
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Pond Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Pond No. 1 - Drywell-Lot4

Pond Data

Pond storage is based on user-defined values.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	371.00	n/a	0	0
0.10	371.10	n/a	264	264
1.00	372.00	n/a	2,376	2,640
2.00	373.00	n/a	2,640	5,280
3.00	374.00	n/a	2,640	7,920
4.00	375.00	n/a	4	7,924
5.00	376.00	n/a	4,046	11,970

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	371.00	---	---	---	---	---	---	---	---	---	---	0.000
0.10	264	371.10	---	---	---	---	---	---	---	---	---	0.324	0.324
1.00	2,640	372.00	---	---	---	---	---	---	---	---	---	0.324	0.324
2.00	5,280	373.00	---	---	---	---	---	---	---	---	---	0.324	0.324
3.00	7,920	374.00	---	---	---	---	---	---	---	---	---	0.324	0.324
4.00	7,924	375.00	---	---	---	---	---	---	---	---	---	0.324	0.324
5.00	11,970	376.00	---	---	---	---	---	---	---	---	---	0.324	0.324

Hydrograph Report

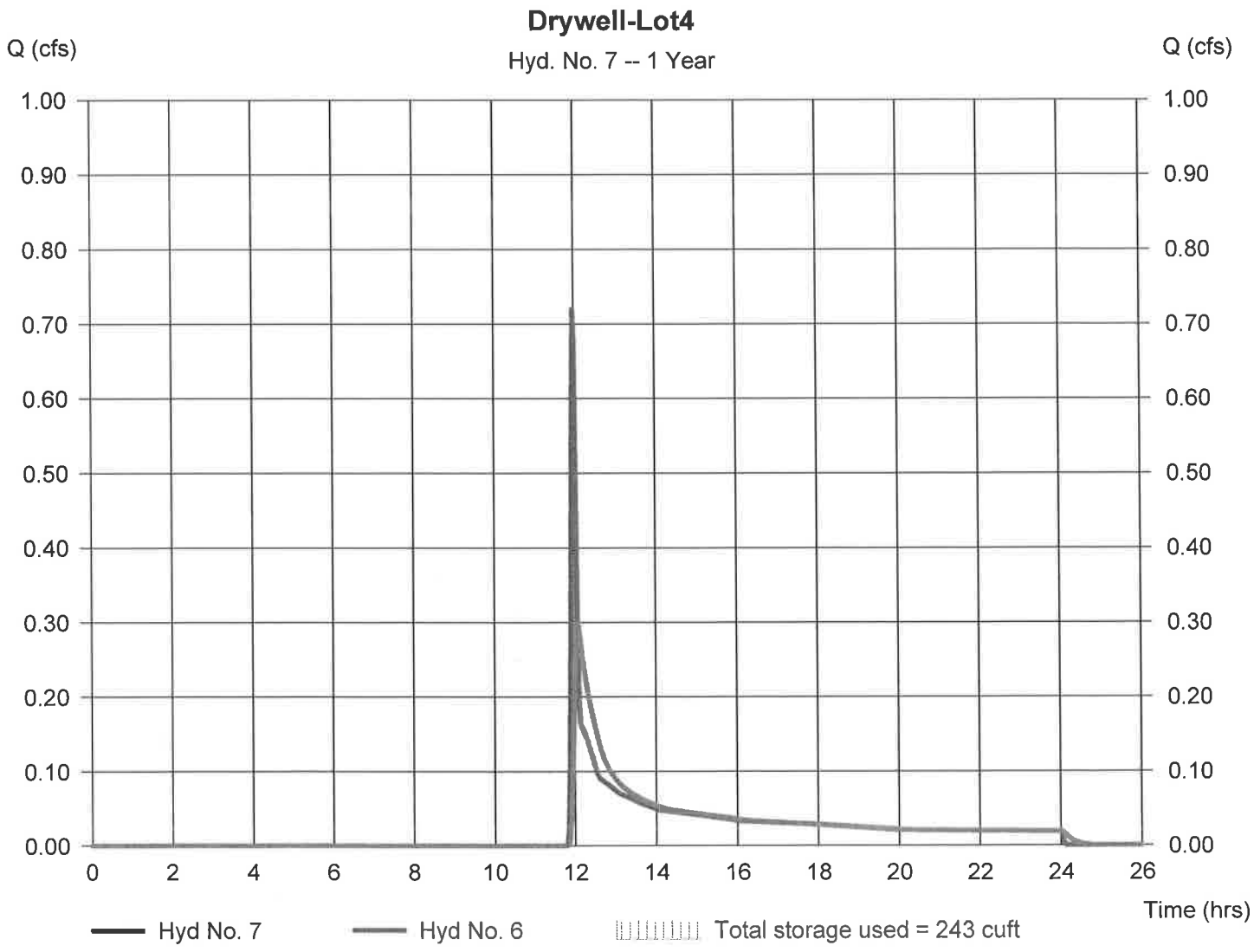
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 7

Drywell-Lot4

Hydrograph type	= Reservoir	Peak discharge	= 0.299 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,949 cuft
Inflow hyd. No.	= 6 - Proposed DA Drywell-Lot4	Max. Elevation	= 371.09 ft
Reservoir name	= Drywell-Lot4	Max. Storage	= 243 cuft

Storage Indication method used.



Hydrograph Report

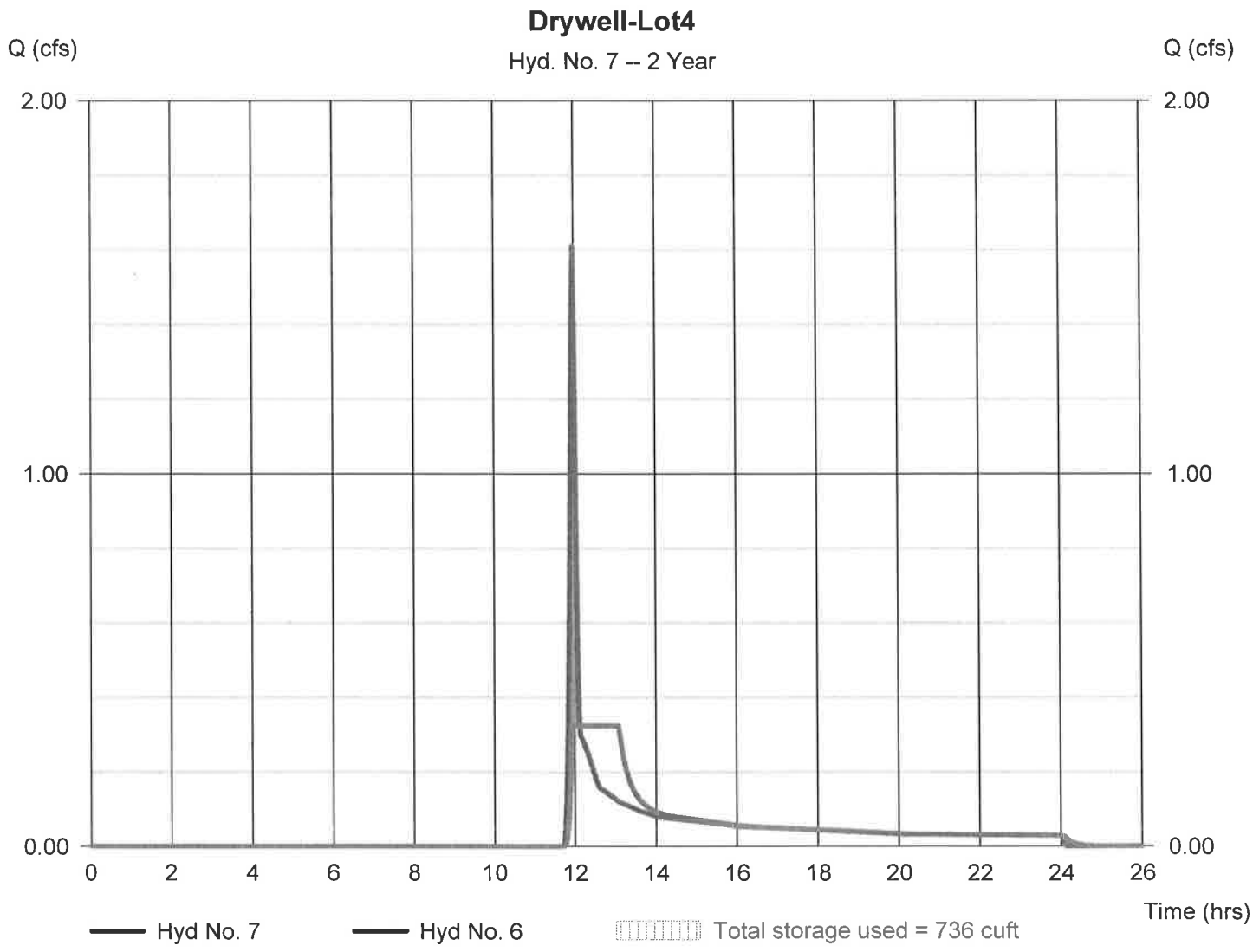
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 7

Drywell-Lot4

Hydrograph type	= Reservoir	Peak discharge	= 0.324 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 3,558 cuft
Inflow hyd. No.	= 6 - Proposed DA Drywell-Lot4	Max. Elevation	= 371.28 ft
Reservoir name	= Drywell-Lot4	Max. Storage	= 736 cuft

Storage Indication method used.



Hydrograph Report

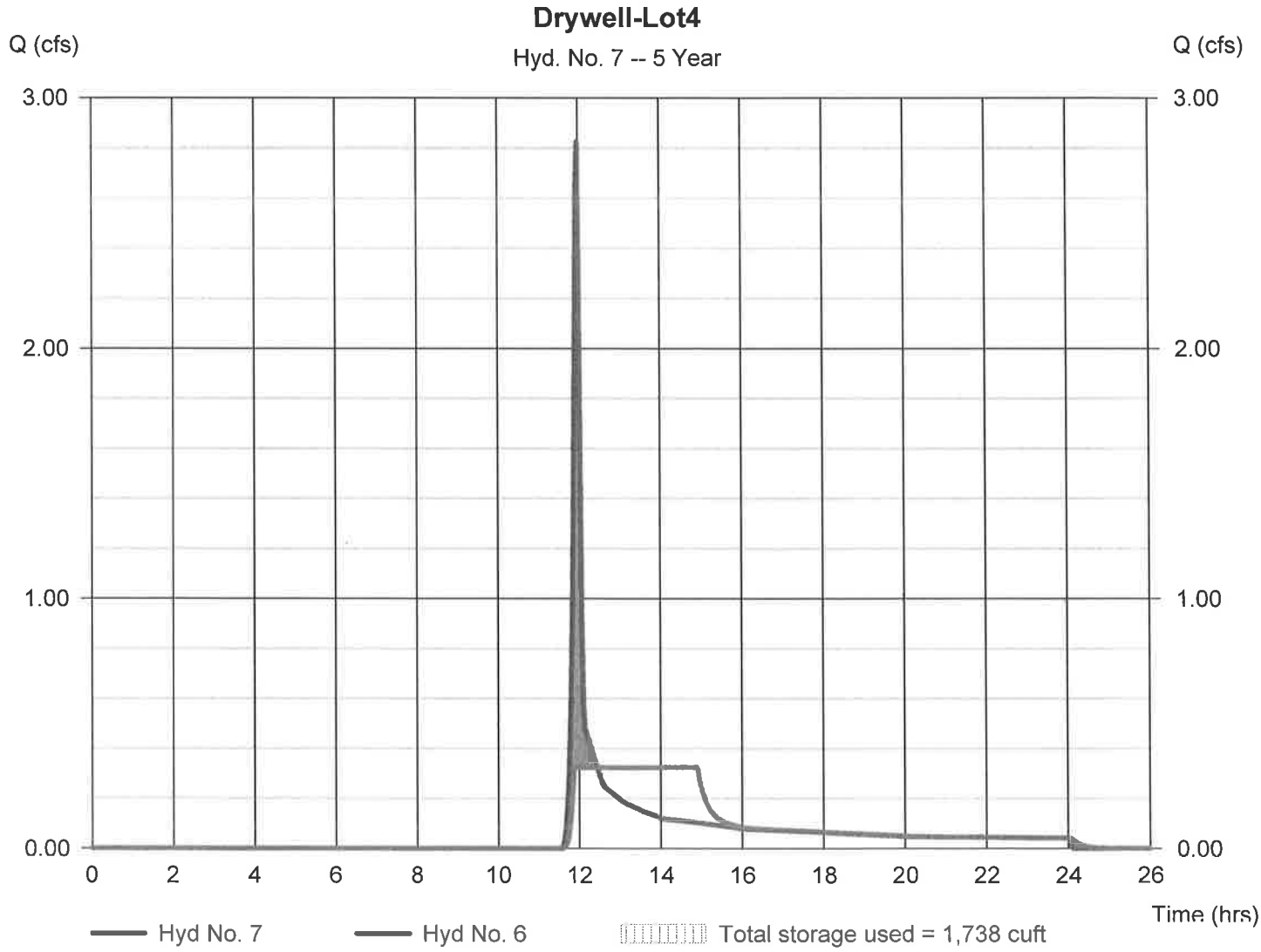
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 7

Drywell-Lot4

Hydrograph type	= Reservoir	Peak discharge	= 0.324 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.87 hrs
Time interval	= 2 min	Hyd. volume	= 5,833 cuft
Inflow hyd. No.	= 6 - Proposed DA Drywell-Lot4	Max. Elevation	= 371.66 ft
Reservoir name	= Drywell-Lot4	Max. Storage	= 1,738 cuft

Storage Indication method used.



Hydrograph Report

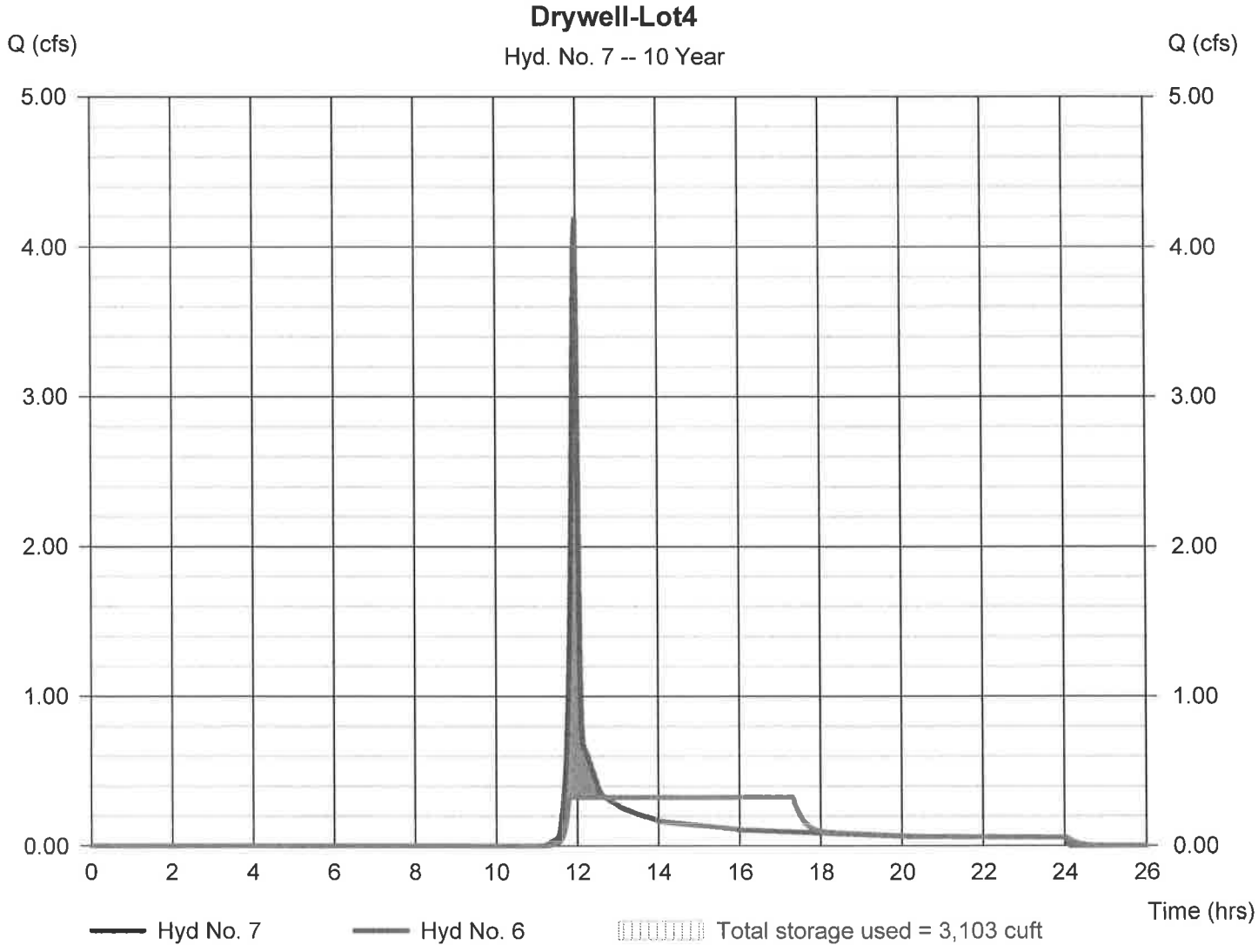
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 7

Drywell-Lot4

Hydrograph type	= Reservoir	Peak discharge	= 0.324 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.80 hrs
Time interval	= 2 min	Hyd. volume	= 8,444 cuft
Inflow hyd. No.	= 6 - Proposed DA Drywell-Lot4	Max. Elevation	= 372.18 ft
Reservoir name	= Drywell-Lot4	Max. Storage	= 3,103 cuft

Storage Indication method used.



Hydrograph Report

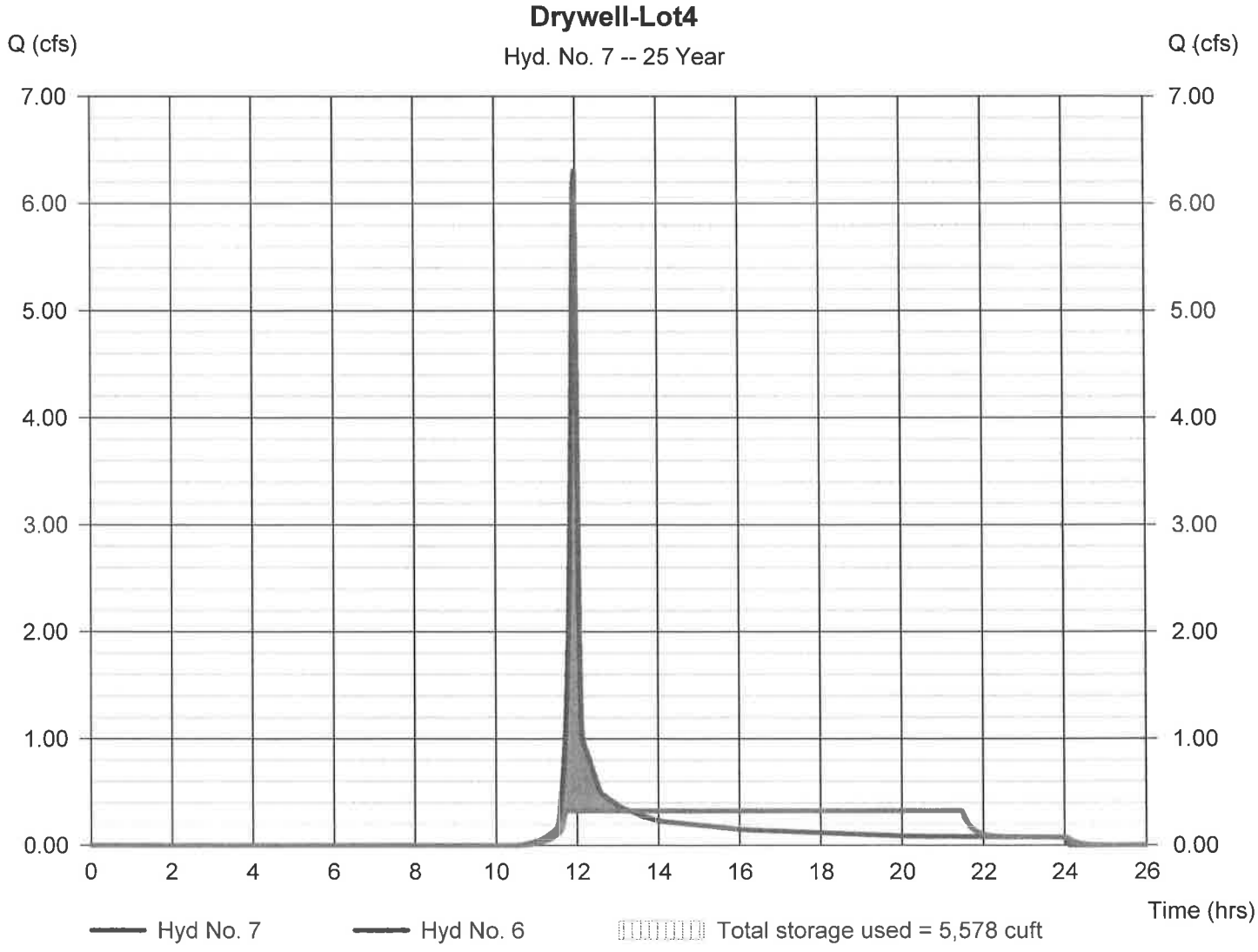
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 7

Drywell-Lot4

Hydrograph type	= Reservoir	Peak discharge	= 0.324 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.73 hrs
Time interval	= 2 min	Hyd. volume	= 12,617 cuft
Inflow hyd. No.	= 6 - Proposed DA Drywell-Lot4	Max. Elevation	= 373.11 ft
Reservoir name	= Drywell-Lot4	Max. Storage	= 5,578 cuft

Storage Indication method used.



Hydrograph Report

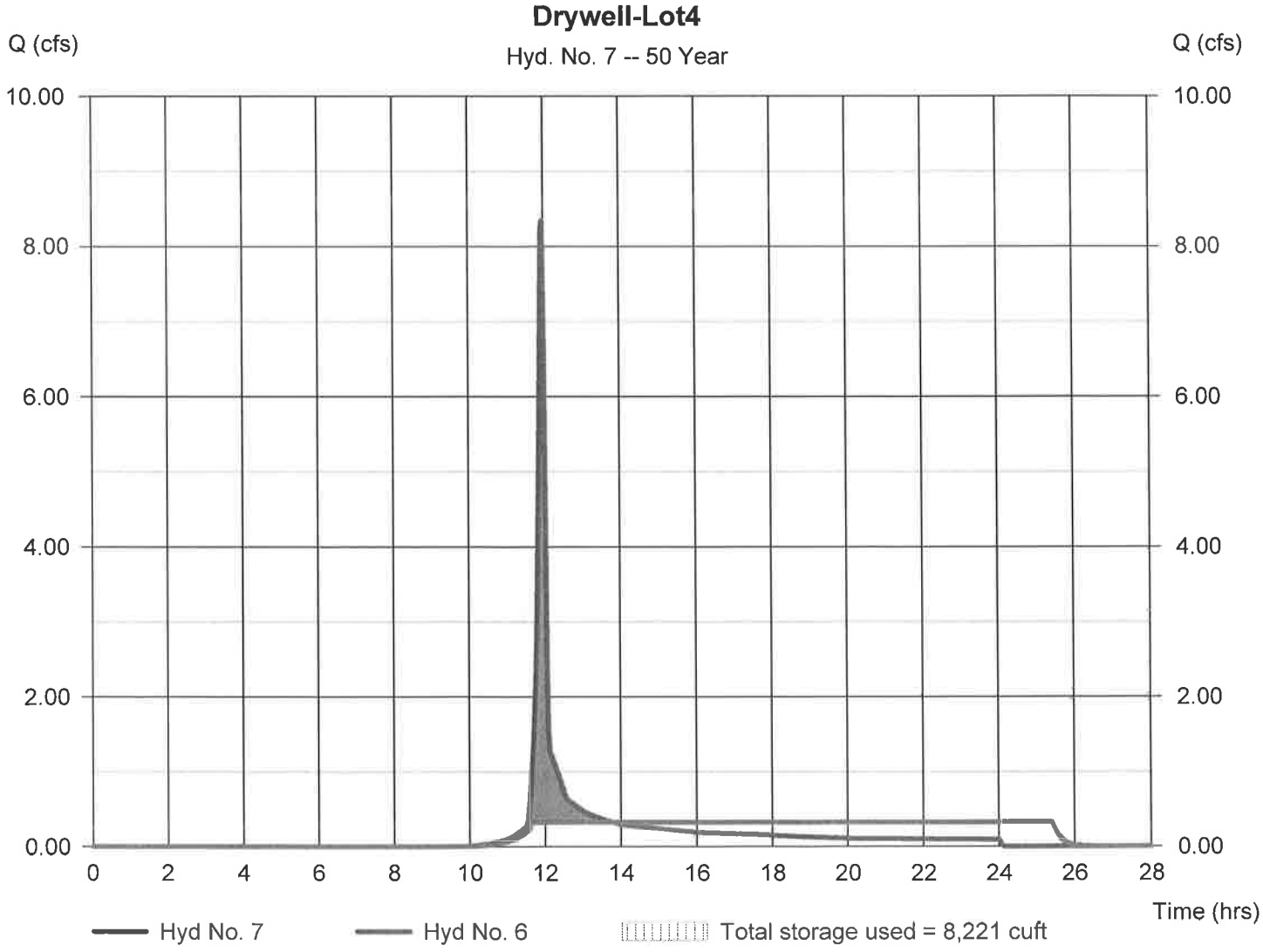
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 7

Drywell-Lot4

Hydrograph type	= Reservoir	Peak discharge	= 0.324 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.67 hrs
Time interval	= 2 min	Hyd. volume	= 16,713 cuft
Inflow hyd. No.	= 6 - Proposed DA Drywell-Lot4	Max. Elevation	= 375.07 ft
Reservoir name	= Drywell-Lot4	Max. Storage	= 8,221 cuft

Storage Indication method used.



Hydrograph Report

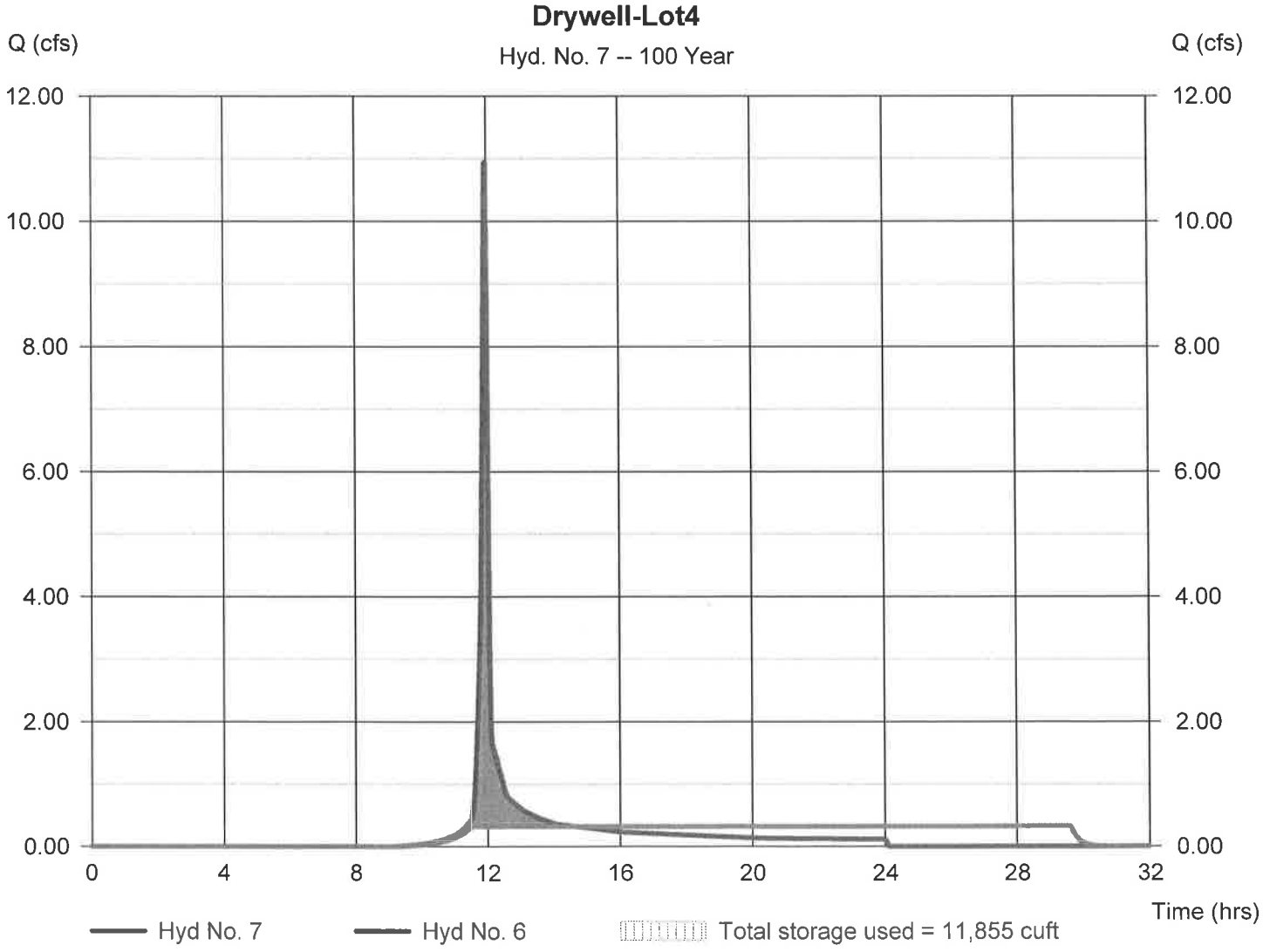
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 7

Drywell-Lot4

Hydrograph type	= Reservoir	Peak discharge	= 0.324 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.53 hrs
Time interval	= 2 min	Hyd. volume	= 22,050 cuft
Inflow hyd. No.	= 6 - Proposed DA Drywell-Lot4	Max. Elevation	= 375.97 ft
Reservoir name	= Drywell-Lot4	Max. Storage	= 11,855 cuft

Storage Indication method used.



DAMBRO
STORMWATER MANAGEMENT

Proposed Drainage Area To Drywell-Lot 5:

Total Area =	121,331 sq.ft = 2.79 acres
Meadow (B-soil) =	55,811 sq.ft
Lawn (B-soil) =	43,983 sq.ft
Impervious =	21,537 sq.ft

CN Values:

Meadow (B-soil)	CN = 58
Lawn (B-soil)	CN = 61
Impervious	CN = 98

Composite CN = 66

Time of Concentration:
Use 5.00 minute time of concentration

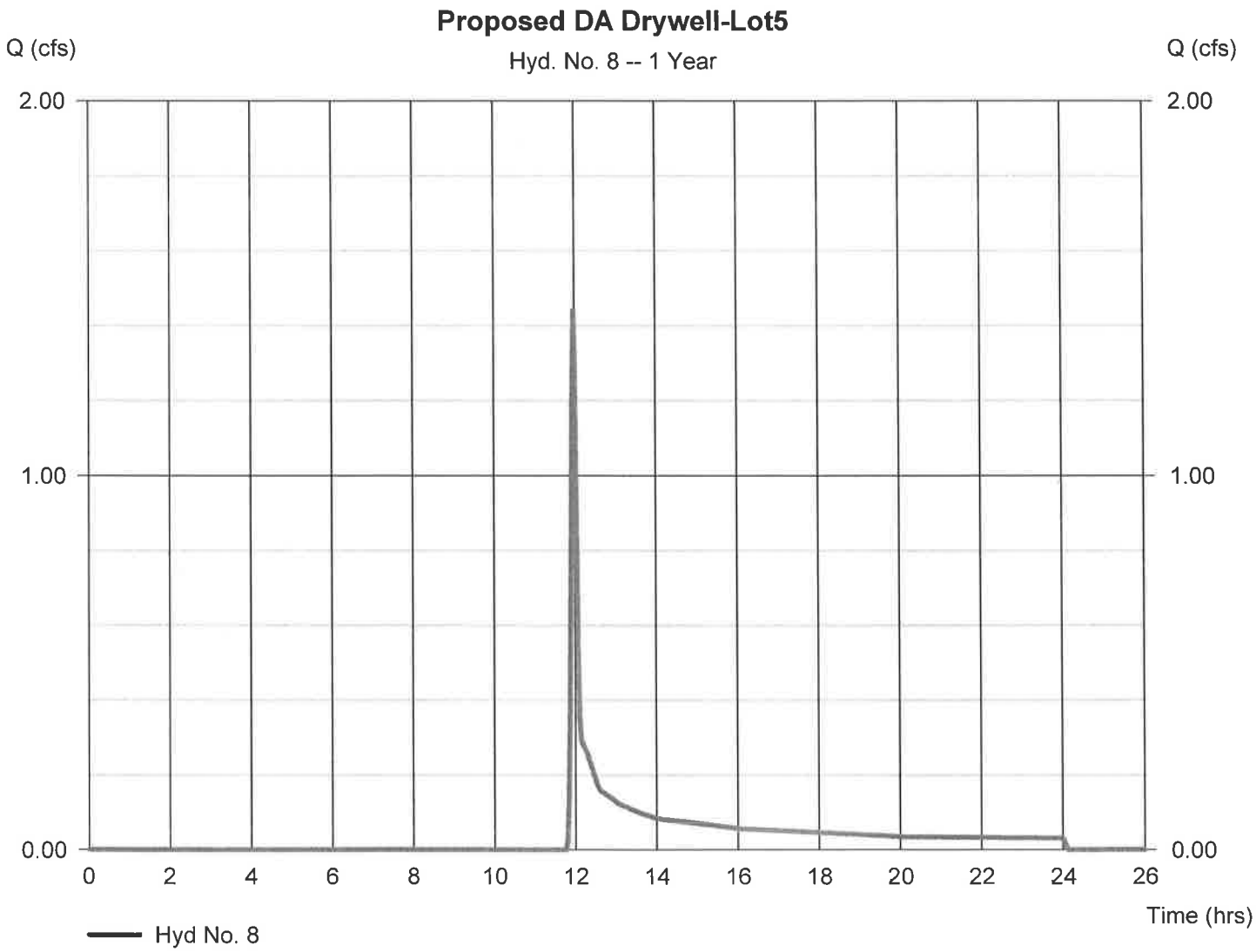
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 8

Proposed DA Drywell-Lot5

Hydrograph type	= SCS Runoff	Peak discharge	= 1.441 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 3,481 cuft
Drainage area	= 2.790 ac	Curve number	= 66
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



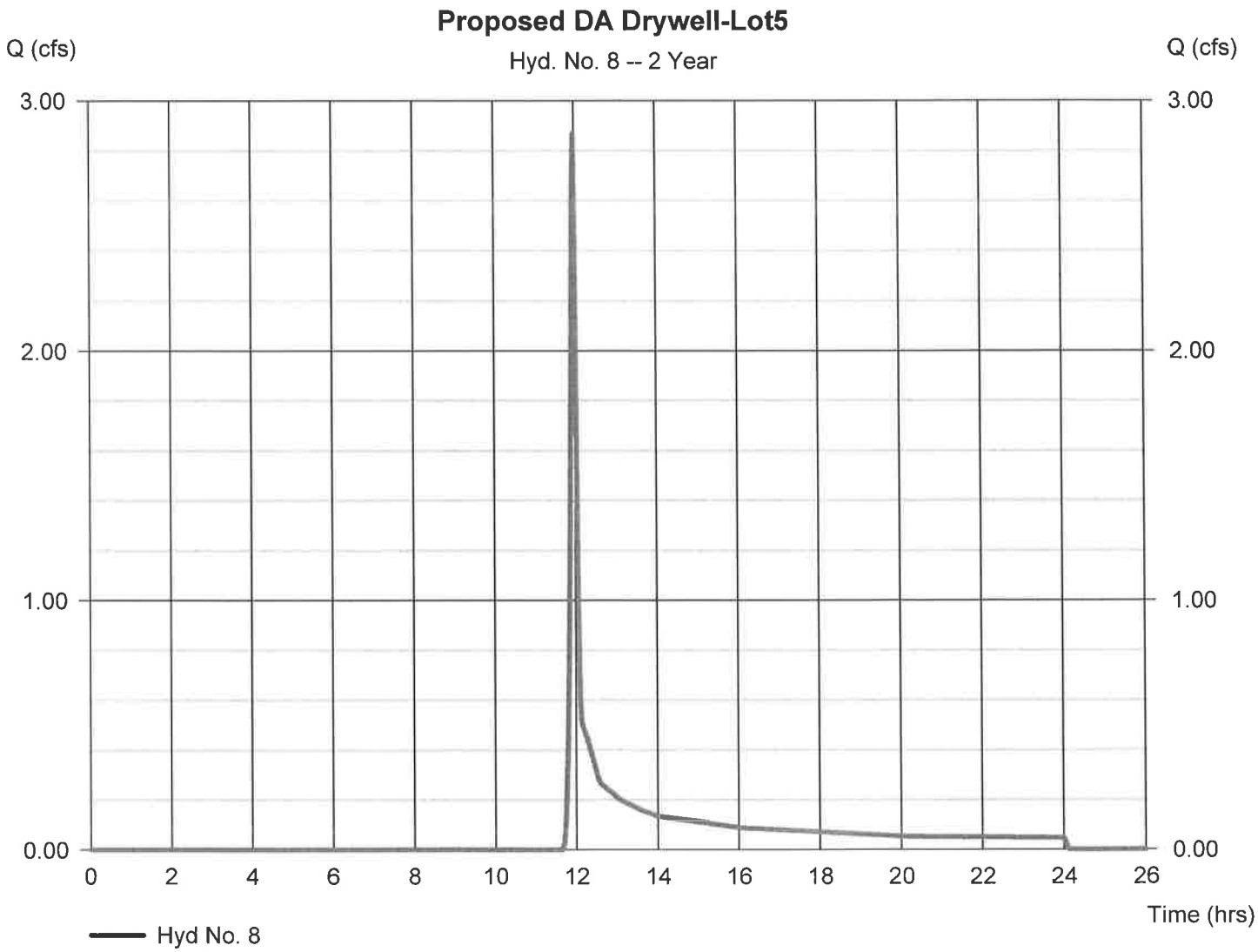
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 8

Proposed DA Drywell-Lot5

Hydrograph type	= SCS Runoff	Peak discharge	= 2.869 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 6,105 cuft
Drainage area	= 2.790 ac	Curve number	= 66
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



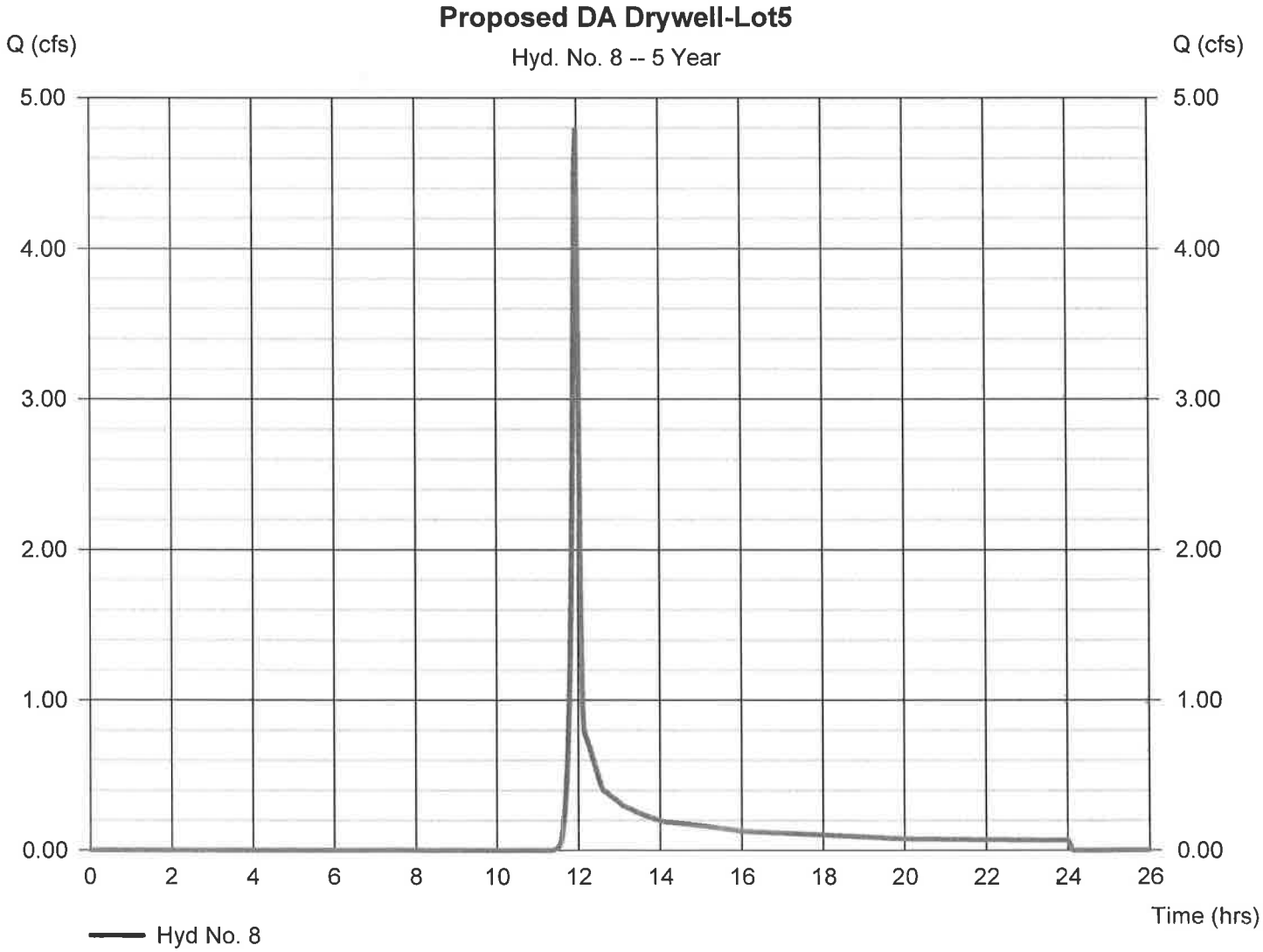
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 8

Proposed DA Drywell-Lot5

Hydrograph type	= SCS Runoff	Peak discharge	= 4.789 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 9,748 cuft
Drainage area	= 2.790 ac	Curve number	= 66
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



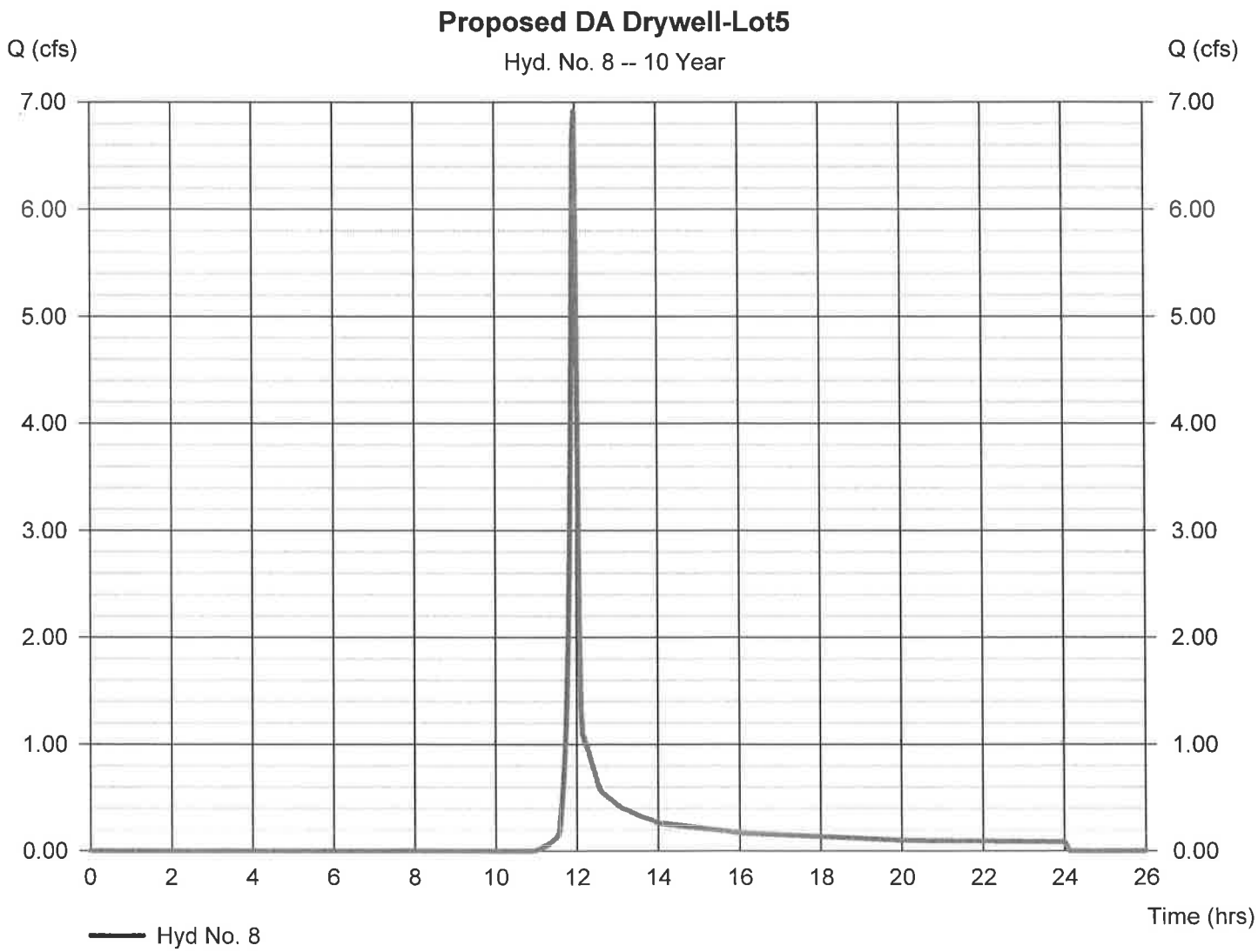
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 8

Proposed DA Drywell-Lot5

Hydrograph type	= SCS Runoff	Peak discharge	= 6.912 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 13,873 cuft
Drainage area	= 2.790 ac	Curve number	= 66
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



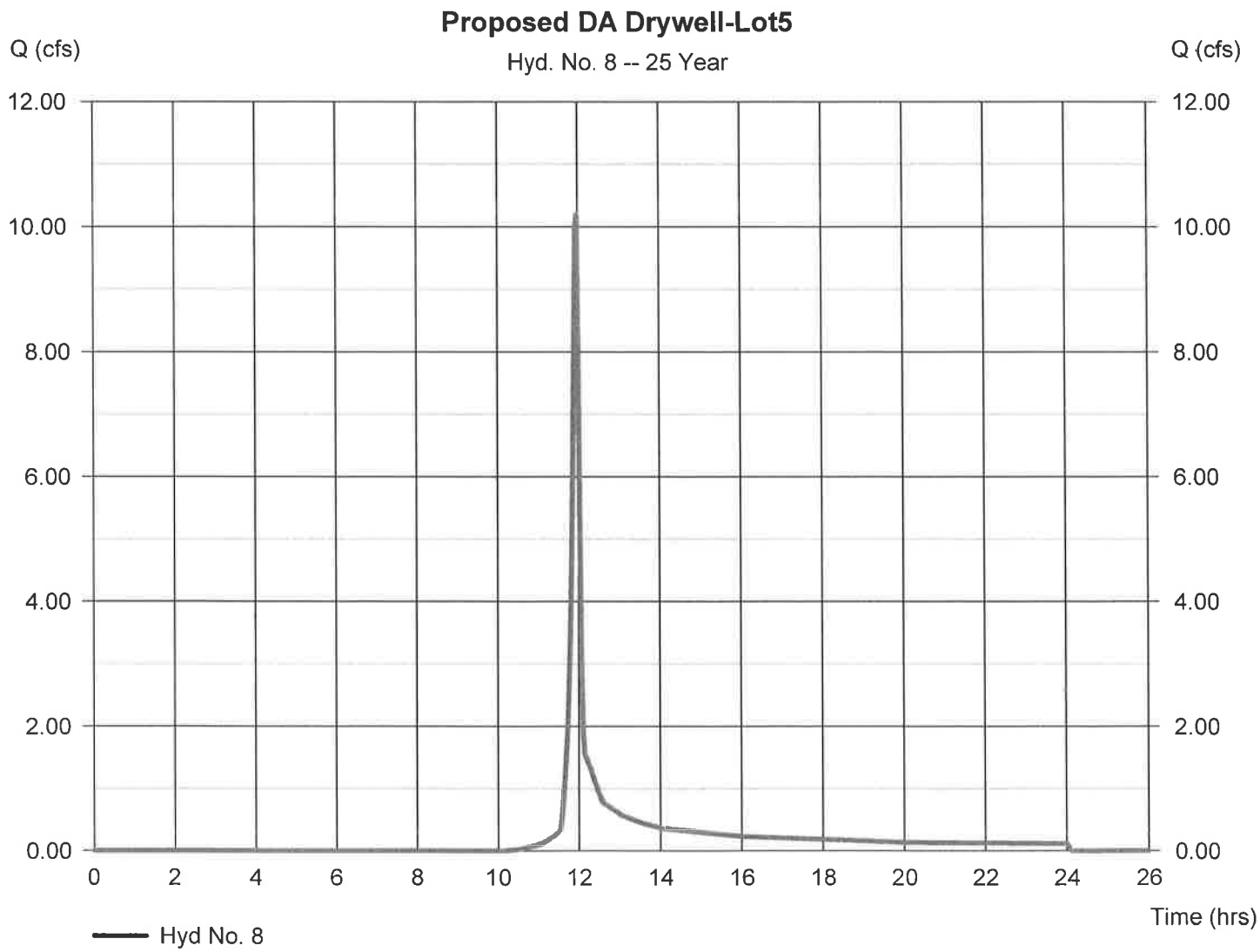
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 8

Proposed DA Drywell-Lot5

Hydrograph type	= SCS Runoff	Peak discharge	= 10.19 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 20,396 cuft
Drainage area	= 2.790 ac	Curve number	= 66
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



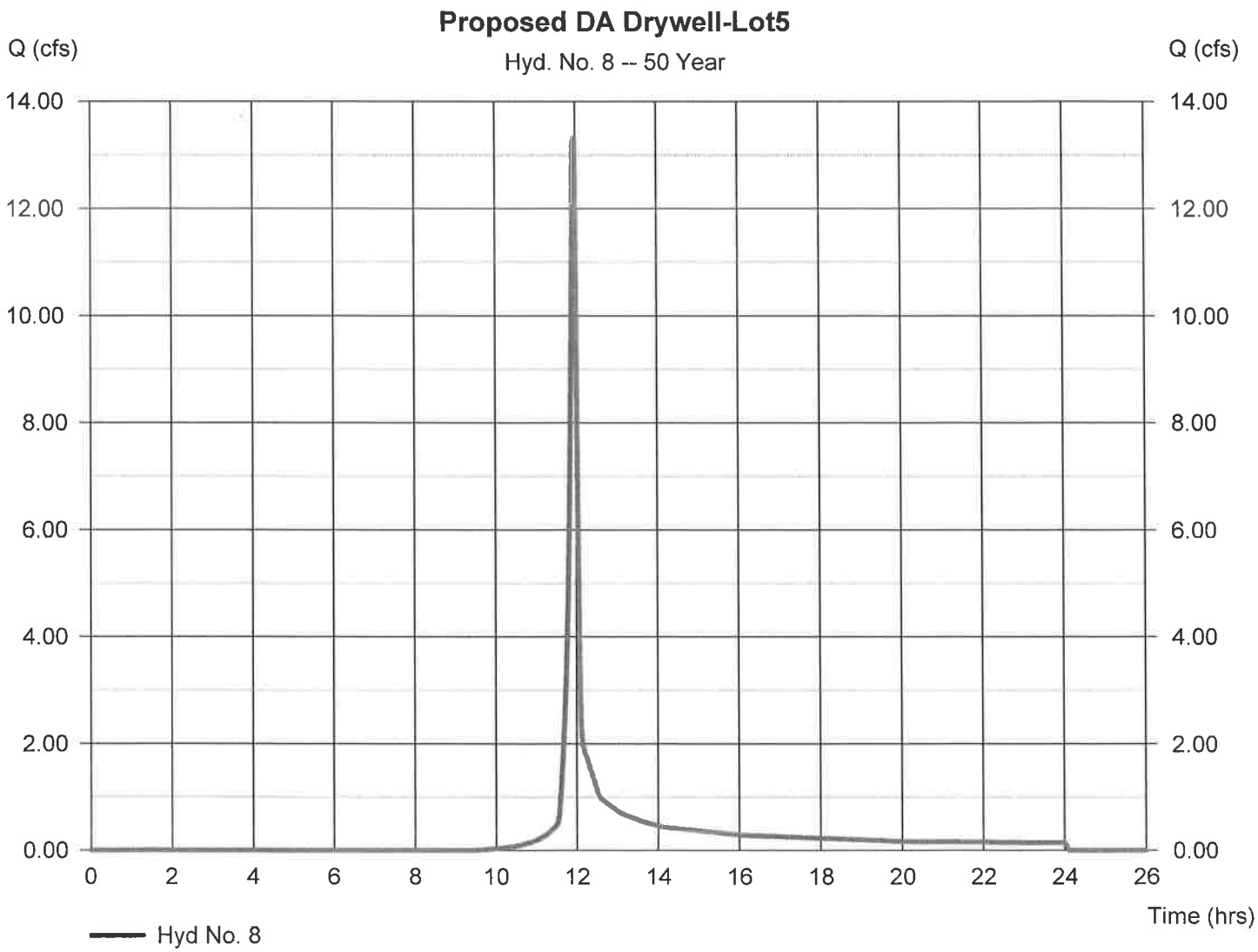
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 8

Proposed DA Drywell-Lot5

Hydrograph type	= SCS Runoff	Peak discharge	= 13.32 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 26,744 cuft
Drainage area	= 2.790 ac	Curve number	= 66
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



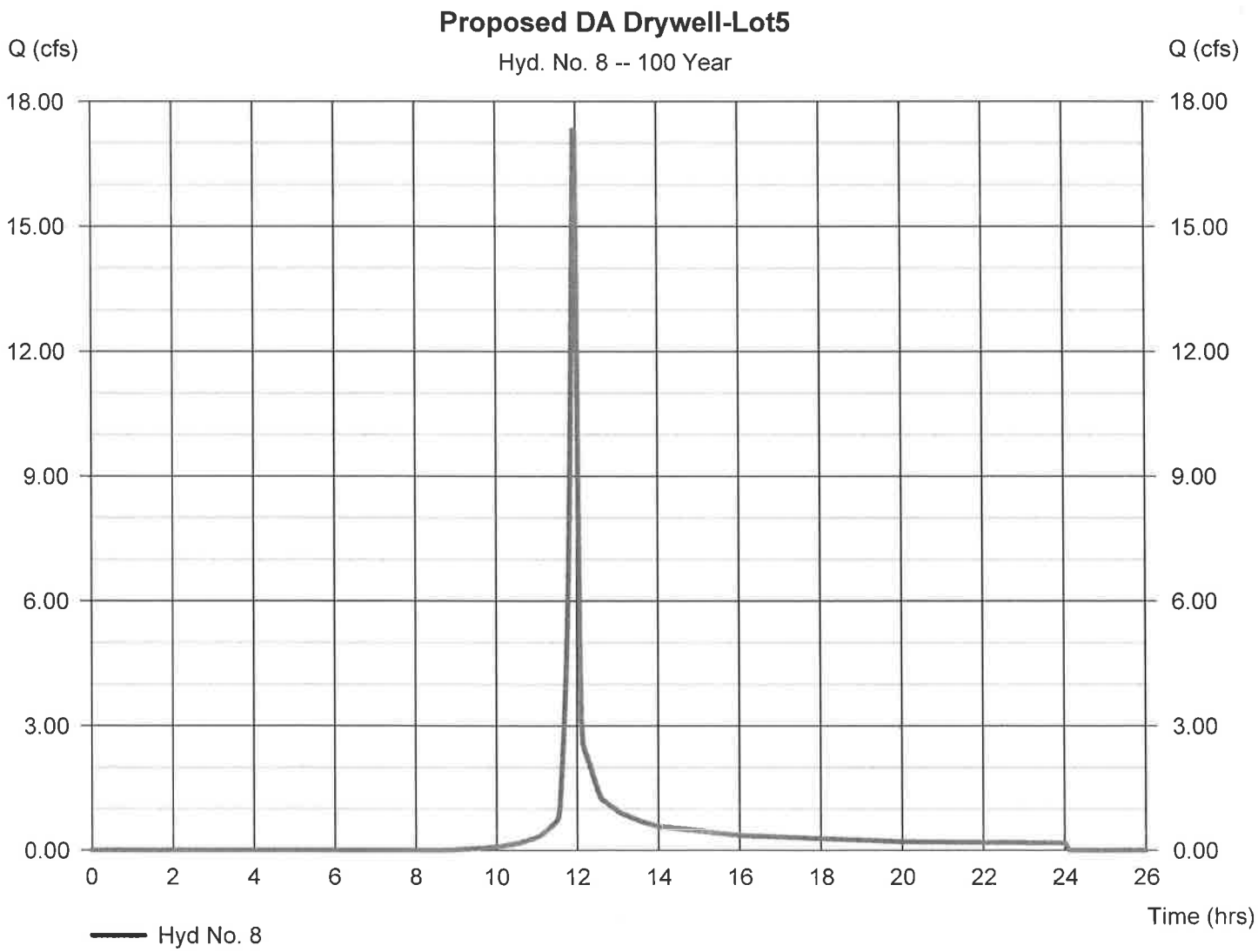
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 8

Proposed DA Drywell-Lot5

Hydrograph type	= SCS Runoff	Peak discharge	= 17.31 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 34,962 cuft
Drainage area	= 2.790 ac	Curve number	= 66
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Pond Report

Hydraflow Hydrographs by Intelisolve v9.23 — Tuesday, Aug 11, 2020

Pond No. 2 - Drywell-Lot5

Pond Data

Pond storage is based on user-defined values.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	378.00	n/a	0	0
0.10	378.10	n/a	317	317
1.00	379.00	n/a	2,851	3,168
2.00	380.00	n/a	3,168	6,336
3.00	381.00	n/a	3,168	9,504
4.00	382.00	n/a	4	9,508
6.00	384.00	n/a	13,519	23,027

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	378.00	---	---	---	---	---	---	---	---	---	---	0.000
0.10	317	378.10	---	---	---	---	---	---	---	---	---	0.275	0.275
1.00	3,168	379.00	---	---	---	---	---	---	---	---	---	0.275	0.275
2.00	6,336	380.00	---	---	---	---	---	---	---	---	---	0.275	0.275
3.00	9,504	381.00	---	---	---	---	---	---	---	---	---	0.275	0.275
4.00	9,508	382.00	---	---	---	---	---	---	---	---	---	0.275	0.275
6.00	23,027	384.00	---	---	---	---	---	---	---	---	---	0.275	0.275

Hydrograph Report

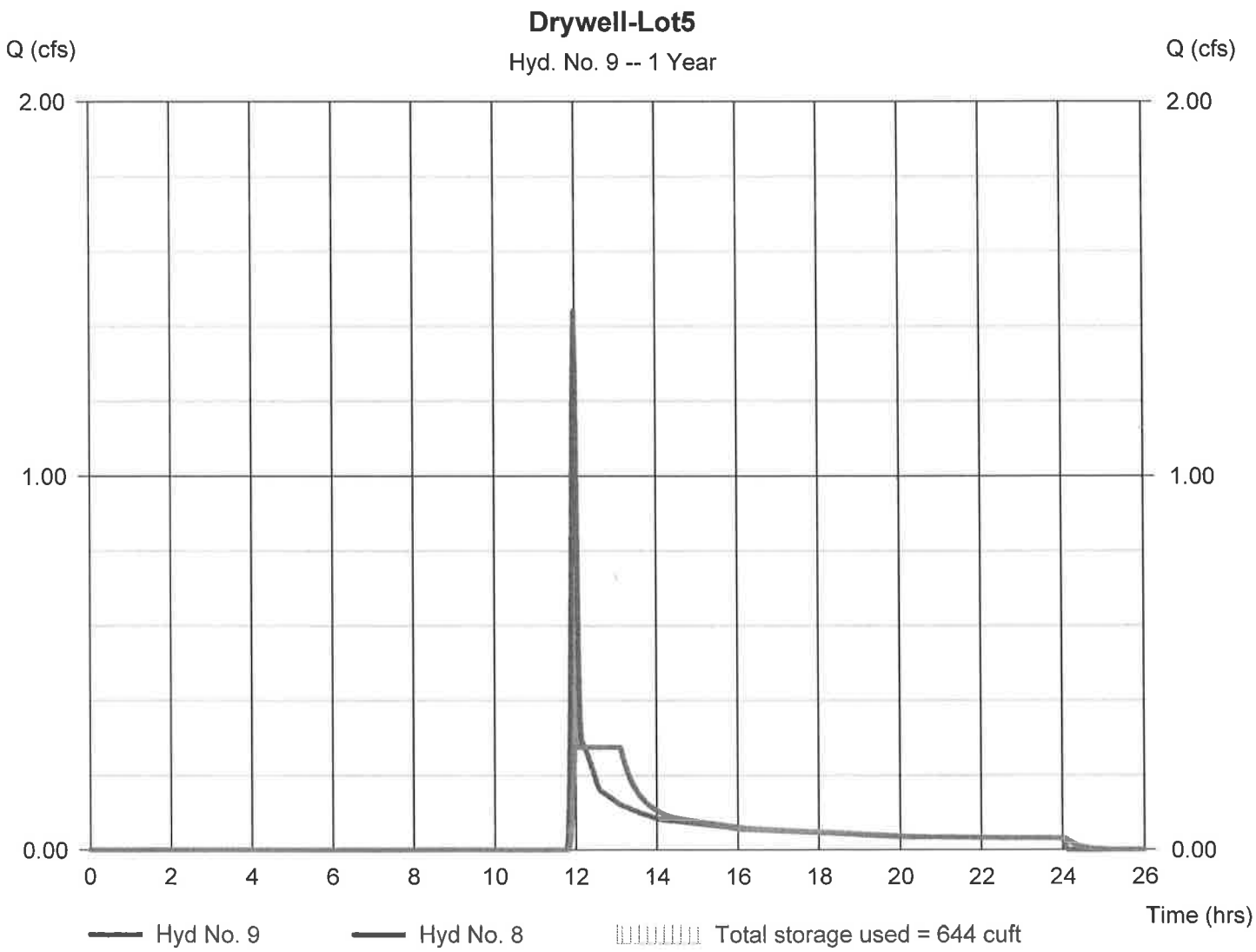
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 9

Drywell-Lot5

Hydrograph type	= Reservoir	Peak discharge	= 0.275 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 3,479 cuft
Inflow hyd. No.	= 8 - Proposed DA Drywell-Lot5	Max. Elevation	= 378.20 ft
Reservoir name	= Drywell-Lot5	Max. Storage	= 644 cuft

Storage Indication method used.



Hydrograph Report

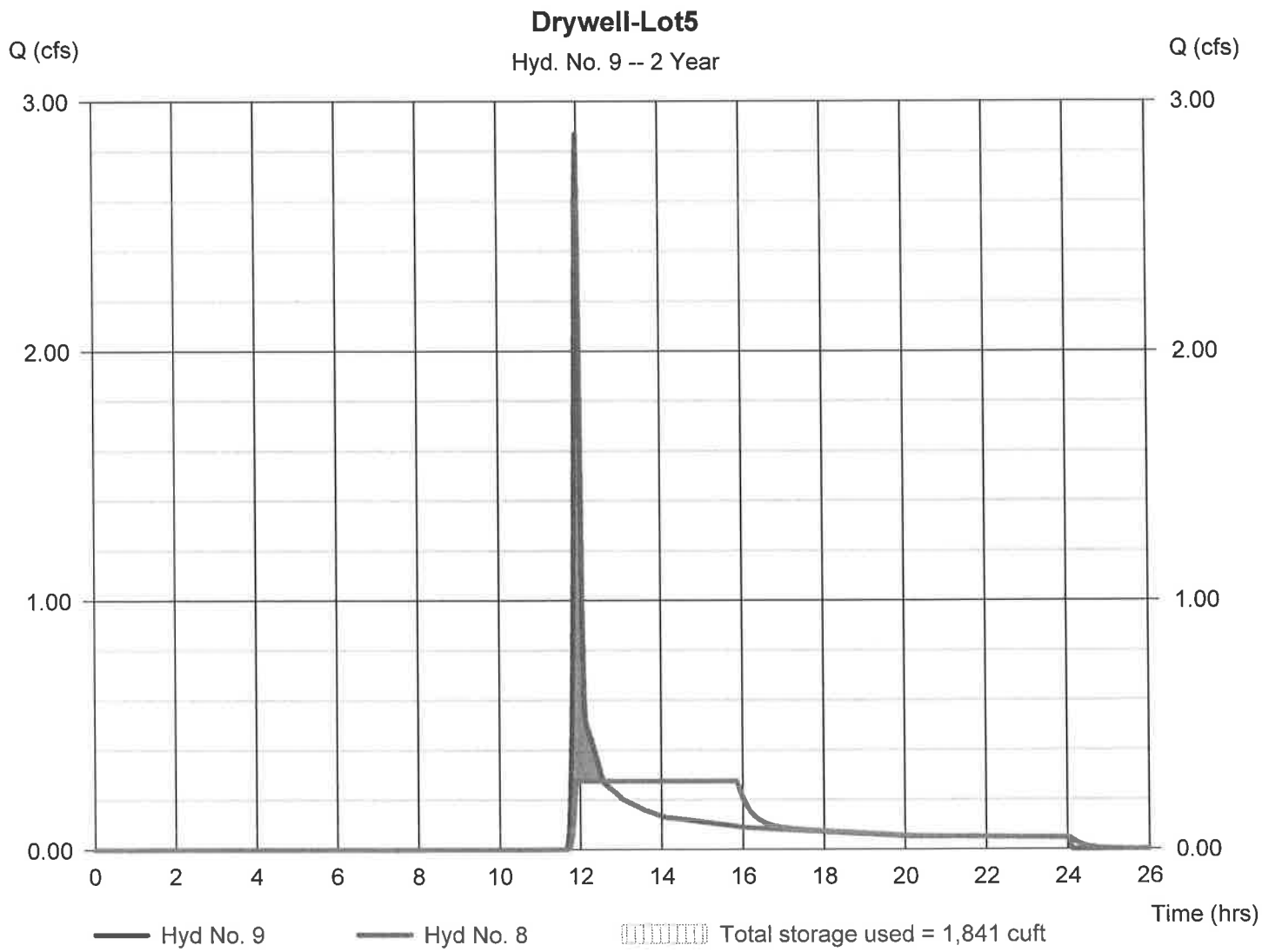
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 9

Drywell-Lot5

Hydrograph type	= Reservoir	Peak discharge	= 0.275 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.90 hrs
Time interval	= 2 min	Hyd. volume	= 6,104 cuft
Inflow hyd. No.	= 8 - Proposed DA Drywell-Lot5	Max. Elevation	= 378.58 ft
Reservoir name	= Drywell-Lot5	Max. Storage	= 1,841 cuft

Storage Indication method used.



Hydrograph Report

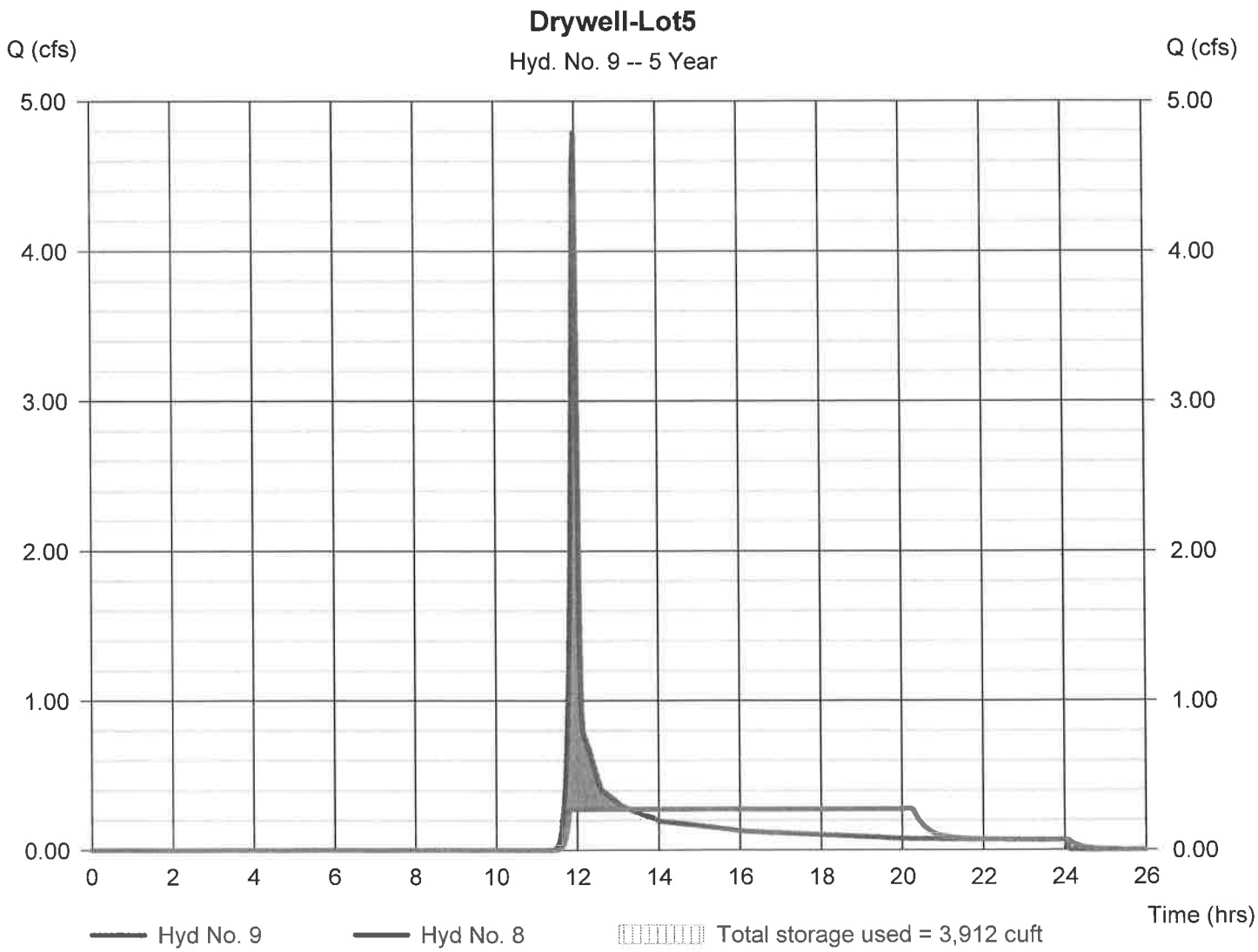
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 9

Drywell-Lot5

Hydrograph type	= Reservoir	Peak discharge	= 0.275 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.83 hrs
Time interval	= 2 min	Hyd. volume	= 9,747 cuft
Inflow hyd. No.	= 8 - Proposed DA Drywell-Lot5	Max. Elevation	= 379.23 ft
Reservoir name	= Drywell-Lot5	Max. Storage	= 3,912 cuft

Storage Indication method used.



Hydrograph Report

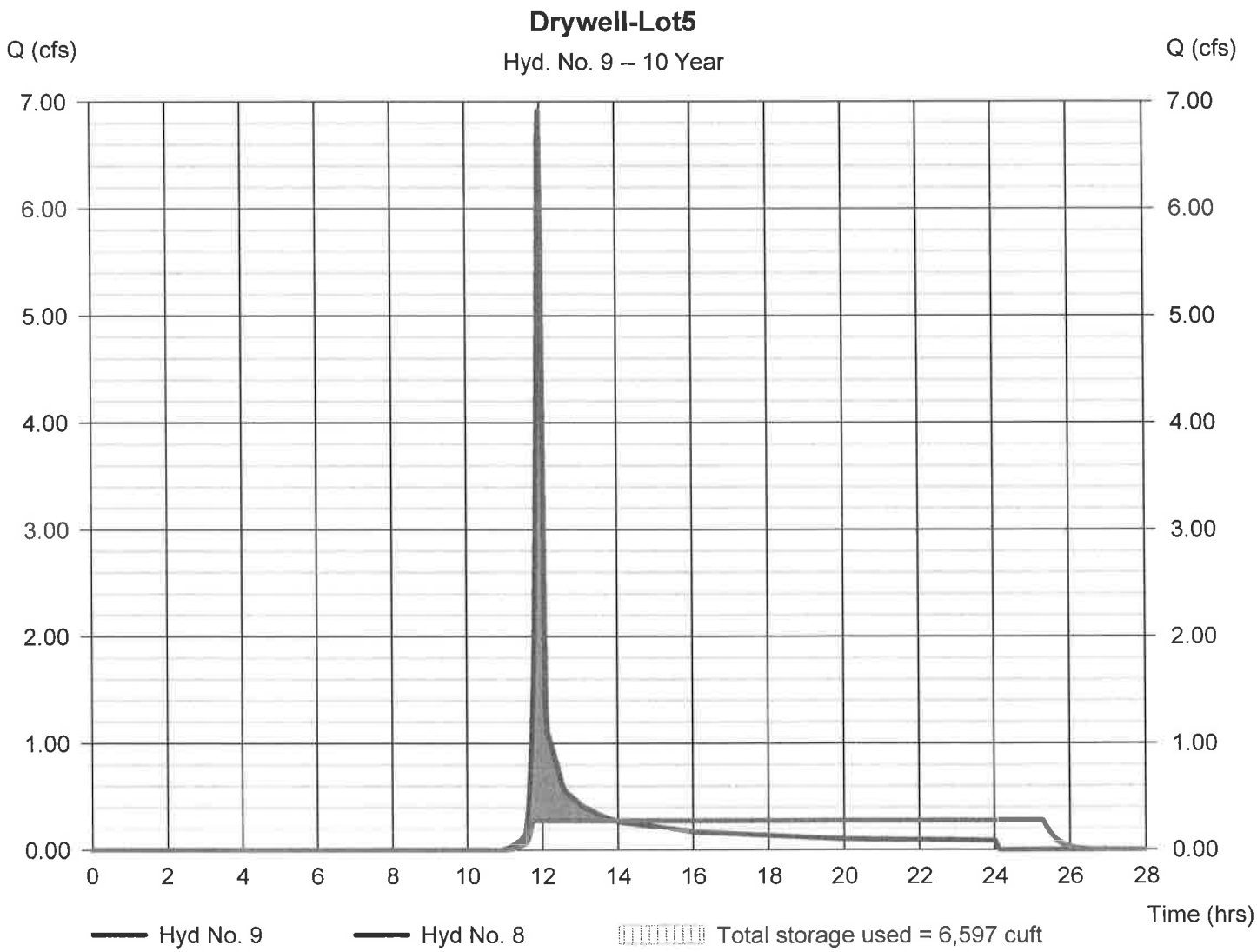
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 9

Drywell-Lot5

Hydrograph type	= Reservoir	Peak discharge	= 0.275 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.73 hrs
Time interval	= 2 min	Hyd. volume	= 13,872 cuft
Inflow hyd. No.	= 8 - Proposed DA Drywell-Lot5	Max. Elevation	= 380.08 ft
Reservoir name	= Drywell-Lot5	Max. Storage	= 6,597 cuft

Storage Indication method used.



Hydrograph Report

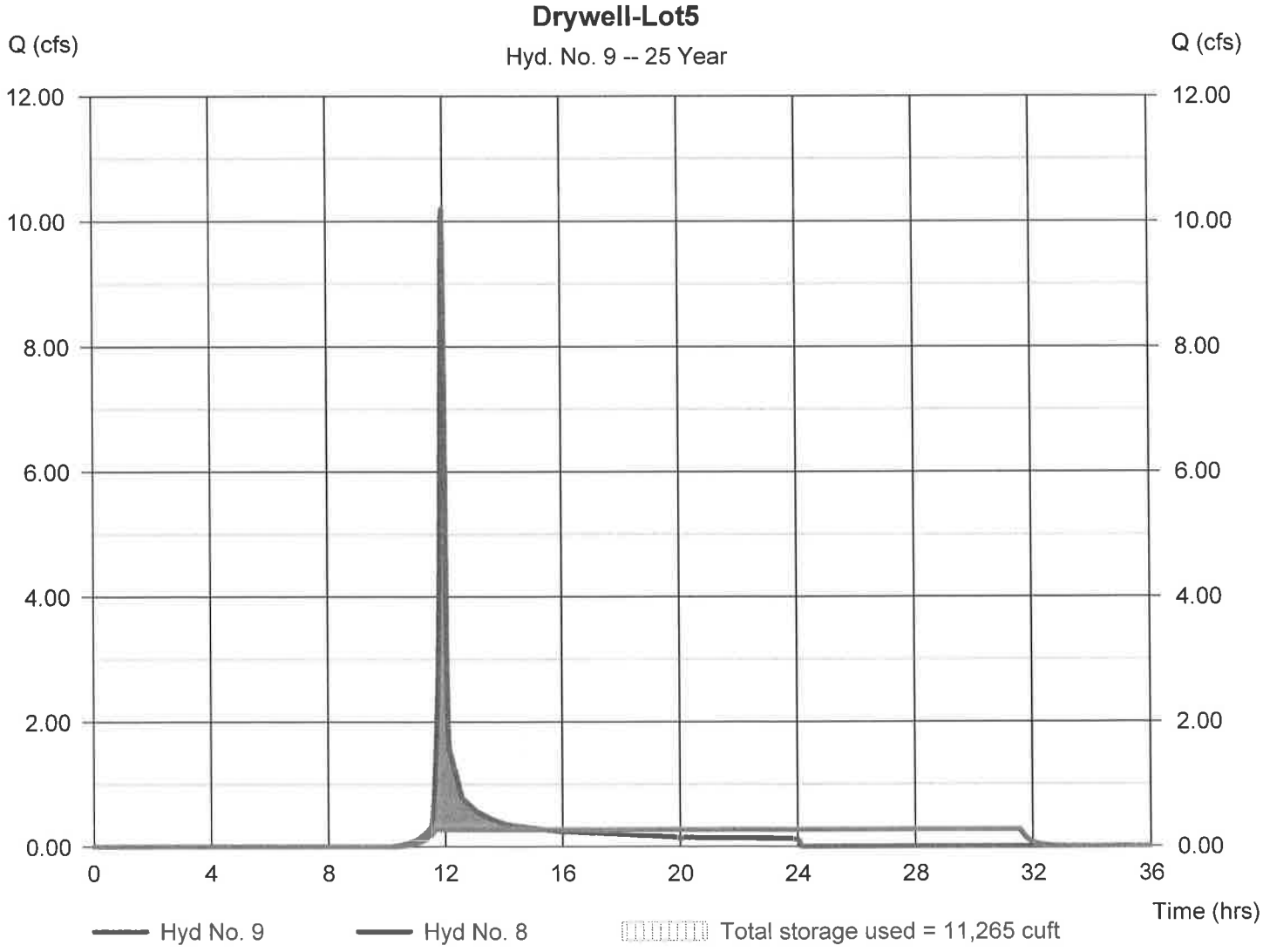
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 9

Drywell-Lot5

Hydrograph type	= Reservoir	Peak discharge	= 0.275 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.63 hrs
Time interval	= 2 min	Hyd. volume	= 20,394 cuft
Inflow hyd. No.	= 8 - Proposed DA Drywell-Lot5	Max. Elevation	= 382.26 ft
Reservoir name	= Drywell-Lot5	Max. Storage	= 11,265 cuft

Storage Indication method used.



Hydrograph Report

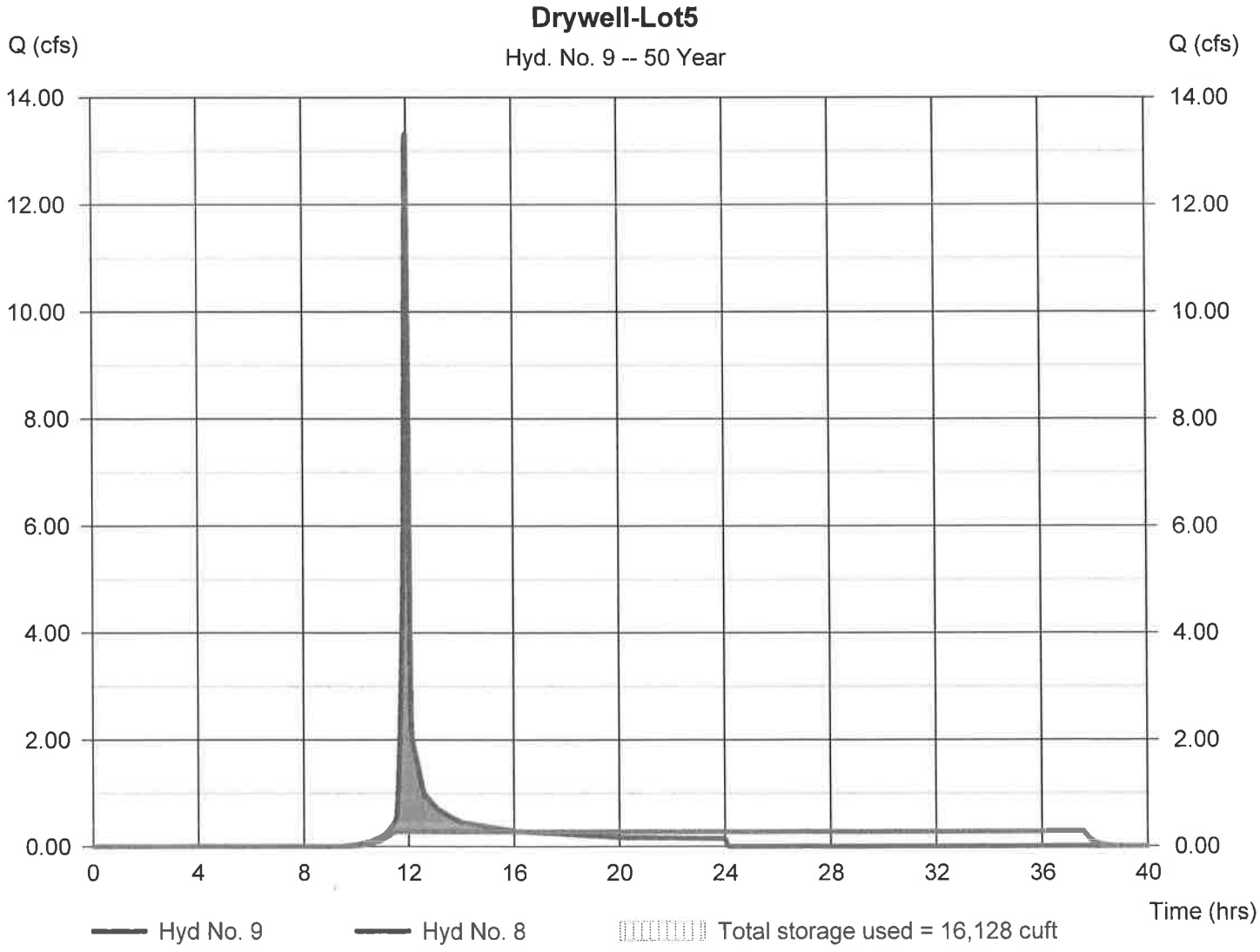
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 9

Drywell-Lot5

Hydrograph type	= Reservoir	Peak discharge	= 0.275 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.47 hrs
Time interval	= 2 min	Hyd. volume	= 26,743 cuft
Inflow hyd. No.	= 8 - Proposed DA Drywell-Lot5	Max. Elevation	= 382.98 ft
Reservoir name	= Drywell-Lot5	Max. Storage	= 16,128 cuft

Storage Indication method used.



Hydrograph Report

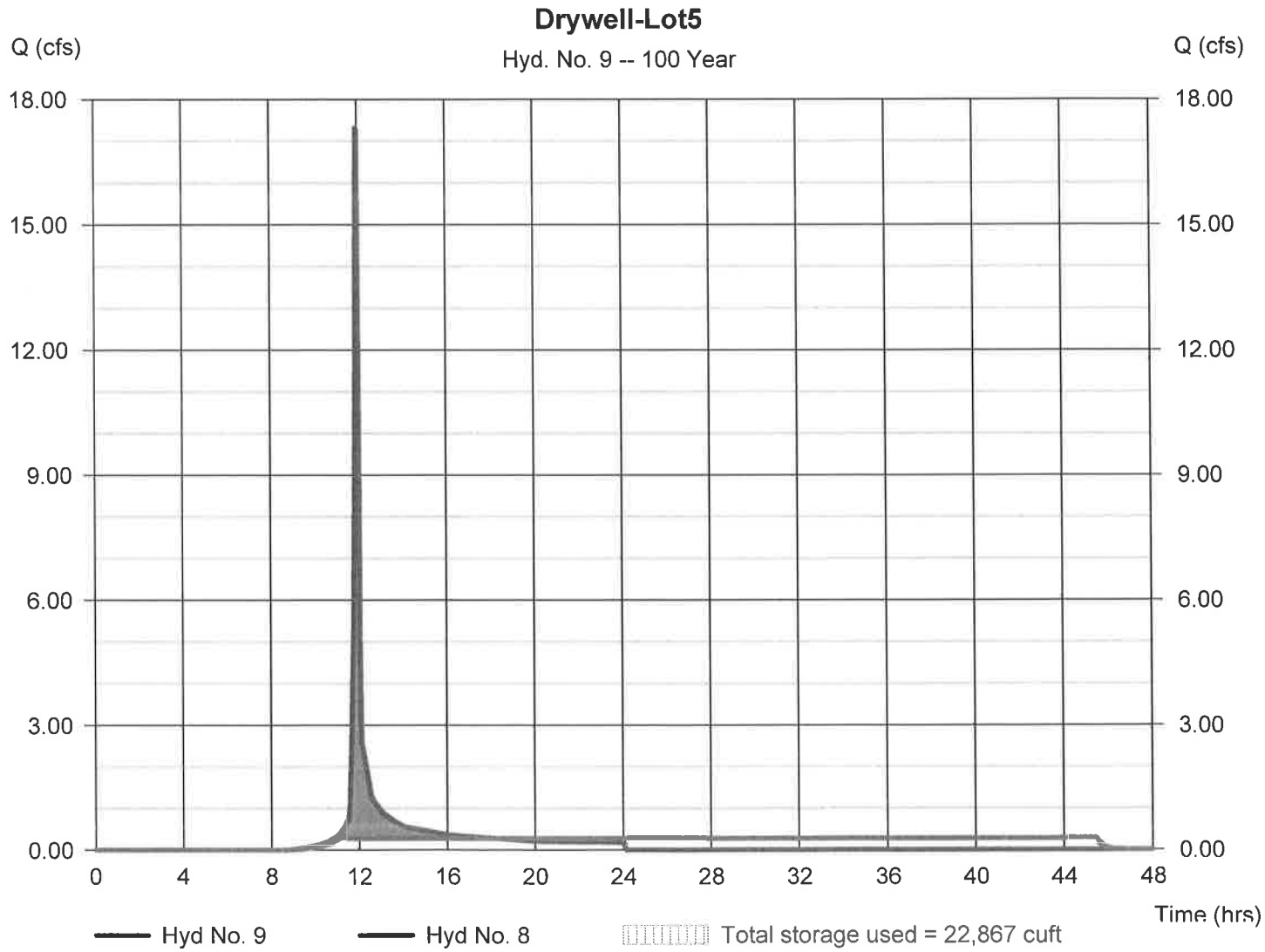
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 9

Drywell-Lot5

Hydrograph type	= Reservoir	Peak discharge	= 0.275 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.17 hrs
Time interval	= 2 min	Hyd. volume	= 34,961 cuft
Inflow hyd. No.	= 8 - Proposed DA Drywell-Lot5	Max. Elevation	= 383.98 ft
Reservoir name	= Drywell-Lot5	Max. Storage	= 22,867 cuft

Storage Indication method used.



DAMBRO
STORMWATER MANAGEMENT

Drainage Area 2 - Summary Of Runoff Flows

Storm Freq. (year)	Existing Disturbed Flow (cfs)	Existing Undisturbed Flow (cfs)	Allowable Proposed Flow (cfs)*	Proposed Bypass Flow (cfs)	Proposed Routed Flow (cfs)	Total Proposed Flow (cfs)
1	0.331	9.660	9.826	9.300	0.000	9.300
2	1.571	17.990	18.156	18.040	0.000	18.040
5	3.862	29.070	31.001	29.740	0.000	29.740
10	6.777	41.210	44.599	42.630	0.078	42.708
25	11.540	59.810	65.580	62.490	0.840	63.330
50	16.280	77.850	85.990	81.690	2.648	84.338
100	22.510	100.730	111.985	106.260	3.605	109.865

*Allowable Proposed 1 year Flow = 50% of the 1 year Existing Disturbed Flow + the 1 year Existing Undisturbed Flow
*Allowable Proposed 2 year Flow = 50% of the 1 year Existing Disturbed Flow + the 2 year Existing Undisturbed Flow
*Allowable Proposed 5 year Flow = 50% of the the 5 year Existing Disturbed Flow + the 5 year Existing Undisturbed Flow
*Allowable Proposed 10 year Flow = 50% of the 10 year Existing Disturbed Flow + the 10 year Existing Undisturbed Flow
*Allowable Proposed 25 year Flow = 50% of the the 25 year Existing Disturbed Flow + the 25 year Existing Undisturbed Flow
*Allowable Proposed 50 year Flow = 50% of the 50 year Existing Disturbed Flow + the 50 year Existing Undisturbed Flow
*Allowable Proposed 100 year Flow = 50% of the 100 year Existing Disturbed Flow + the 100 year Existing Undisturbed Flow

DAMBRO
STORMWATER MANAGEMENT

Drainage Area 2 - Summary Of Runoff Volume

Existing Volume of Stormwater Runoff from the 2-year/24 hour storm event

Cover Type	Soil Type	Area (sf)	Area (ac)	CN	S	Ia	Q, Runoff (in)	Runoff Volume (cf)
Woods	B	36142	0.83	55	8.18	1.64	0.25	753
Woods	C	480675	11.03	70	4.29	0.86	0.83	33247
Meadow	B	339912	7.80	58	7.24	1.45	0.34	9631
Meadow	C	130449	2.99	71	4.08	0.82	0.88	9566
Impervious*	n/a	14697	0.34	98	0.20	0.04	2.97	3638
Total:		**1001875**						**56835**

*Undisturbed/Offsite

Proposed Volume of Stormwater Runoff from the 2-year/24 hour storm event

Cover Type	Soil Type	Area (sf)	Area (ac)	CN	S	Ia	Q, Runoff (in)	Runoff Volume (cf)
Woods	B	31219	0.72	55	8.18	1.64	0.25	650
Woods	C	480675	11.03	70	4.29	0.86	0.83	33247
Meadow	B	100638	2.31	58	7.24	1.45	0.34	2851
Meadow	C	130449	2.99	71	4.08	0.82	0.88	9566
Lawn	B	145208	3.33	61	6.39	1.28	0.44	5324
Lawn	C	69355	1.59	74	3.51	0.70	1.04	6011
Impervious	n/a	44331	1.02	98	0.20	0.04	2.97	10972
Total:		**1001875**						**68621**

Proposed 2-year/24 hour Volume of Stormwater Runoff to Infiltration Drywell-Lot6and7

Cover Type	Soil Type	Area (sf)	Area (ac)	CN	S	Ia	Q, Runoff (in)	Runoff Volume (cf)
Meadow	B	41141	0.94	58	7.24	1.45	0.34	1166
Meadow	C	4061	0.09	71	4.08	0.82	0.88	298
Lawn	B	46905	1.08	61	6.39	1.28	0.44	1720
Lawn	C	38463	0.88	74	3.51	0.70	1.04	3333
Impervious	n/a	16675	0.38	98	0.20	0.04	2.97	4127
Total:		**147245**						**10644**

Proposed 2-year/24 hour Volume of Stormwater Runoff to Infiltration Drywell-Lot8-#1

Cover Type	Soil Type	Area (sf)	Area (ac)	CN	S	Ia	Q, Runoff (in)	Runoff Volume (cf)
Impervious	n/a	4560	0.10	98	0.20	0.04	2.97	1129
Total:		**4560**						**1129**

Proposed 2-year/24 hour Volume of Stormwater Runoff to Infiltration Drywell-Lot8-#2

Cover Type	Soil Type	Area (sf)	Area (ac)	CN	S	Ia	Q, Runoff (in)	Runoff Volume (cf)
Meadow	B	8201	0.19	58	7.24	1.45	0.34	232
Lawn	B	10515	0.24	61	6.39	1.28	0.44	386
Impervious	n/a	5448	0.13	98	0.20	0.04	2.97	1348
Total:		**24164**						**1966**

Proposed 2-year/24 hour Volume of Stormwater Runoff to Infiltration Drywell-Lot9

Cover Type	Soil Type	Area (sf)	Area (ac)	CN	S	Ia	Q, Runoff (in)	Runoff Volume (cf)
Impervious	n/a	3772	0.09	98	0.20	0.04	2.97	934
Total:		**3772**						**934**

Proposed Bypass 2-year/24 hour Volume of Stormwater Runoff

Cover Type	Soil Type	Area (sf)	Area (ac)	CN	S	Ia	Q, Runoff (in)	Runoff Volume (cf)
Woods	B	31219	0.72	55	8.18	1.64	0.25	650
Woods	C	480675	11.03	70	4.29	0.86	0.83	33247
Meadow	B	51296	1.18	58	7.24	1.45	0.34	1453
Meadow	C	126388	2.90	71	4.08	0.82	0.88	9268
Lawn	B	87788	2.02	61	6.39	1.28	0.44	3219
Lawn	C	30892	0.71	74	3.51	0.70	1.04	2677
Impervious	n/a	13876	0.32	98	0.20	0.04	2.97	3434
Total:		**822134**						**53948**

Net change in volume of stormwater runoff from the 2-year/24 hour storm event = 11,786 cf
Proposed 2-year/24 hour volume of stormwater runoff to infiltration drywells = 14,673 cf

Existing volume of stormwater runoff from the 2-year/24 hour storm event = 56,835 cf
Proposed bypass 2-year/24 hour volume of stormwater runoff = 53,948 cf

DAMBRO
STORMWATER MANAGEMENT

Existing Drainage Area 2 Disturbed:

Total Area =	244,197 sq.ft = 5.61 acres
Woods (B-soil) =	4,923 sq.ft
Meadow (B-soil) =	239,274 sq.ft

CN Values:

Woods (B-soil)	CN = 55
Meadow (B-soil)	CN = 58

Composite CN = 58

Existing Drainage Area 2 Undisturbed/Offsite:

Total Area =	757,678 sq.ft = 17.39 acres
Woods (B-soil) =	31,219 sq.ft
Woods (C-soil) =	480,675 sq.ft
Meadow (B-soil) =	100,638 sq.ft
Meadow (C-soil) =	130,449 sq.ft
Impervious =	14,697 sq.ft

CN Values:

Woods (B-soil)	CN = 55
Woods (C-soil)	CN = 70
Meadow (B-soil)	CN = 58
Meadow (C-soil)	CN = 71
Impervious	CN = 98

Composite CN = 69

Time of Concentration:
Use 13.16 minute time of concentration.

Existing Drainage Area 2

Travel Time

Summary for Travel Time Calculations with 2 segments:

Segment 1: SCS Segmental (TR55) - Sheet Flow

Length = 100 feet
Slope = 0.1 ft/ft
Roughness Coefficient = 0.4
2 Year - 24 Hour Rainfall = 3.2 inches

Travel Time for Segment = 11.28 minutes

Segment 2: SCS Segmental (TR55) - Concentrated Flow

Unpaved surface
Length = 630 feet
Slope = 0.12 ft/ft

Travel Time for Segment = 1.88 minutes

Composite Travel Time = 13.16 minutes

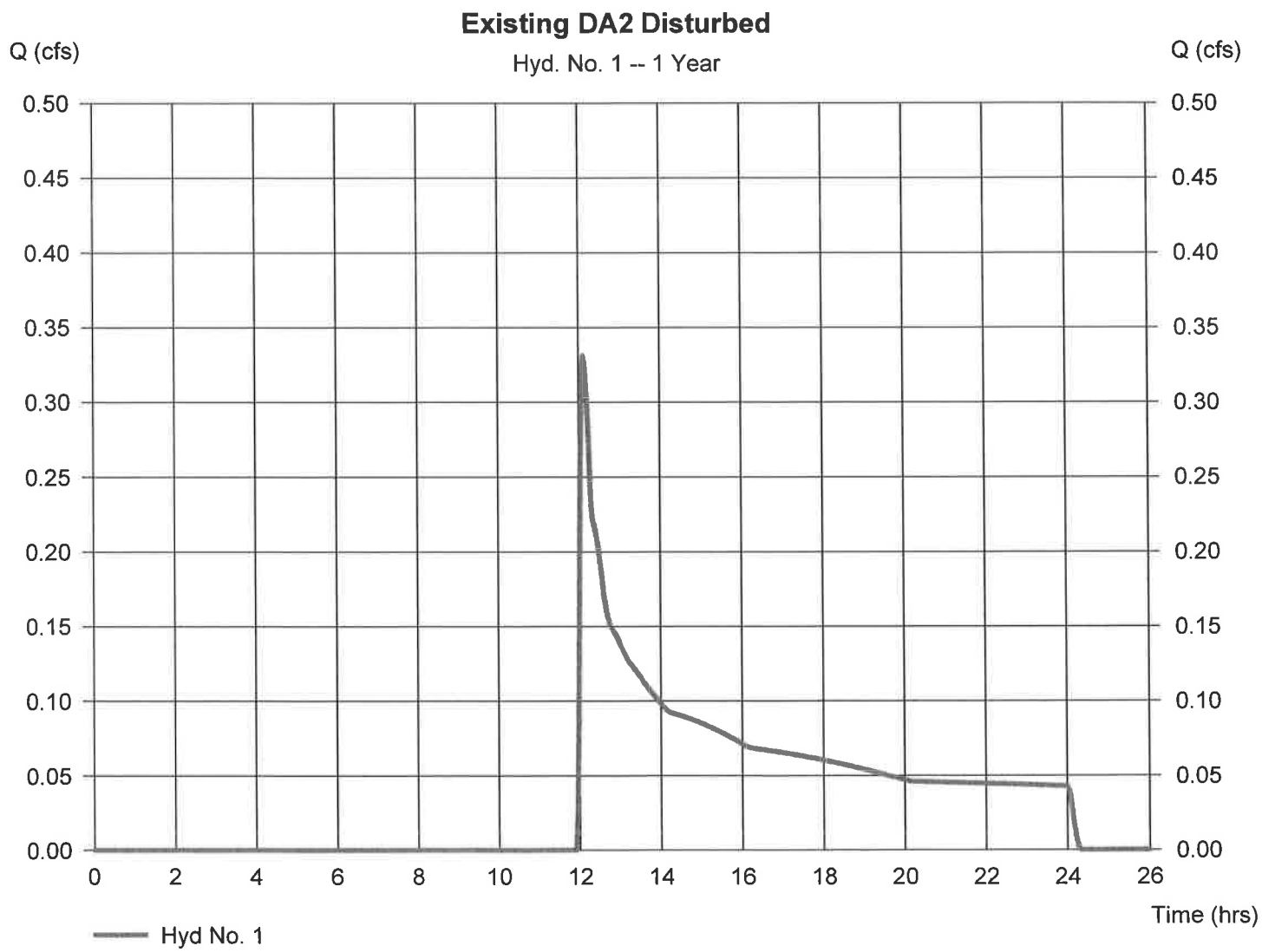
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 1

Existing DA2 Disturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 0.331 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 3,317 cuft
Drainage area	= 5.610 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 13.20 min
Total precip.	= 2.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



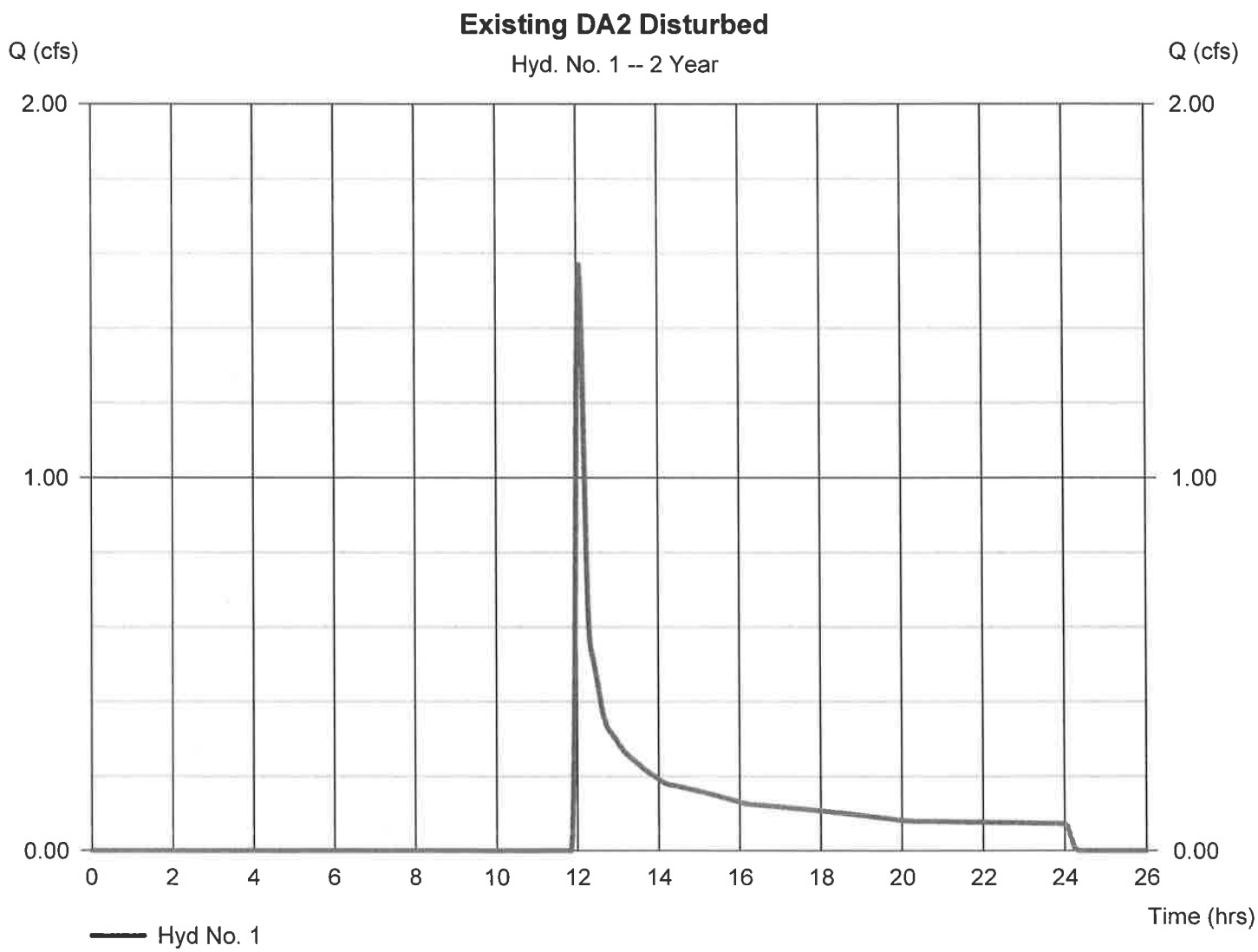
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 1

Existing DA2 Disturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 1.571 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 7,158 cuft
Drainage area	= 5.610 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 13.20 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



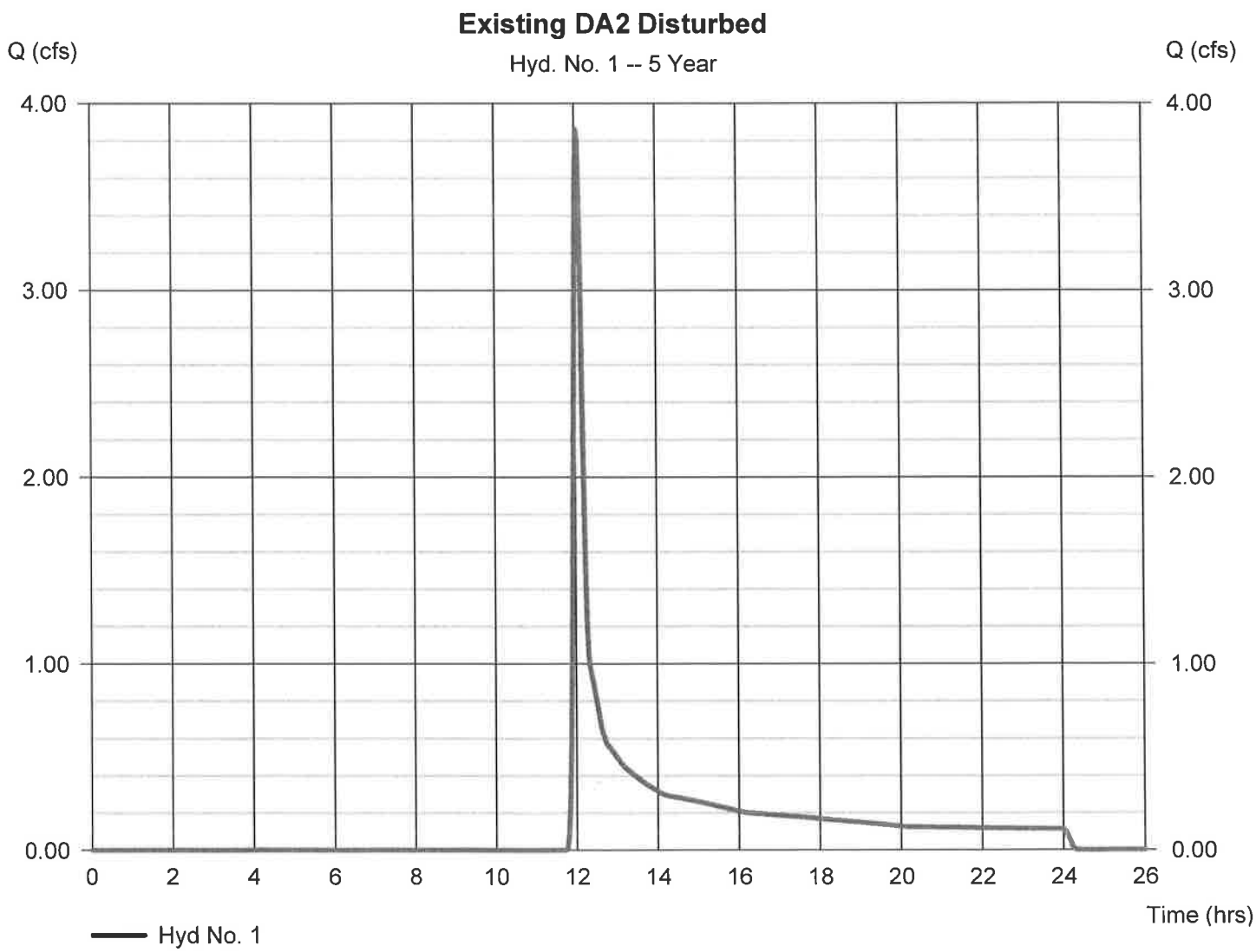
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 1

Existing DA2 Disturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 3.862 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 13,022 cuft
Drainage area	= 5.610 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 13.20 min
Total precip.	= 3.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



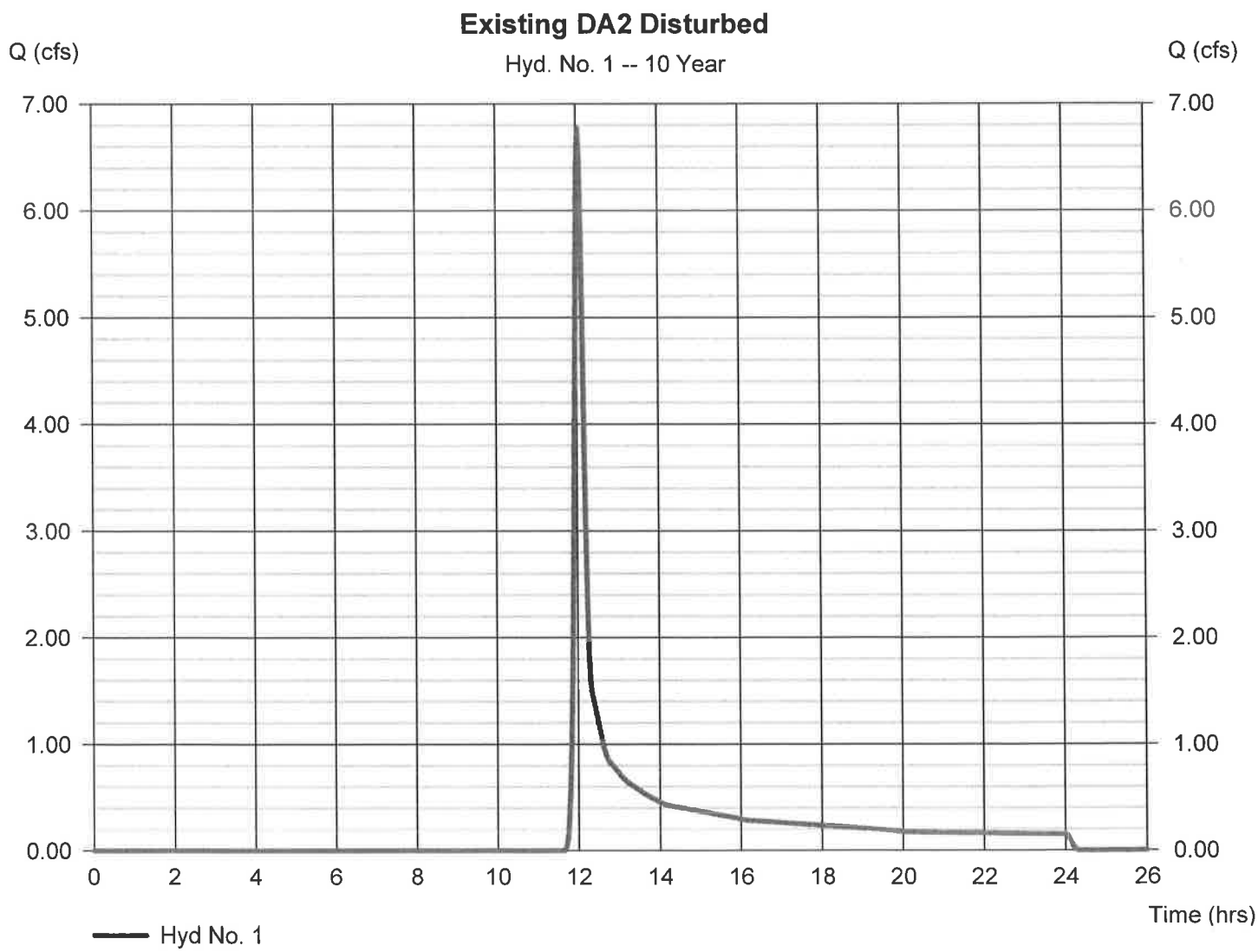
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 1

Existing DA2 Disturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 6.777 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 20,070 cuft
Drainage area	= 5.610 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 13.20 min
Total precip.	= 4.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



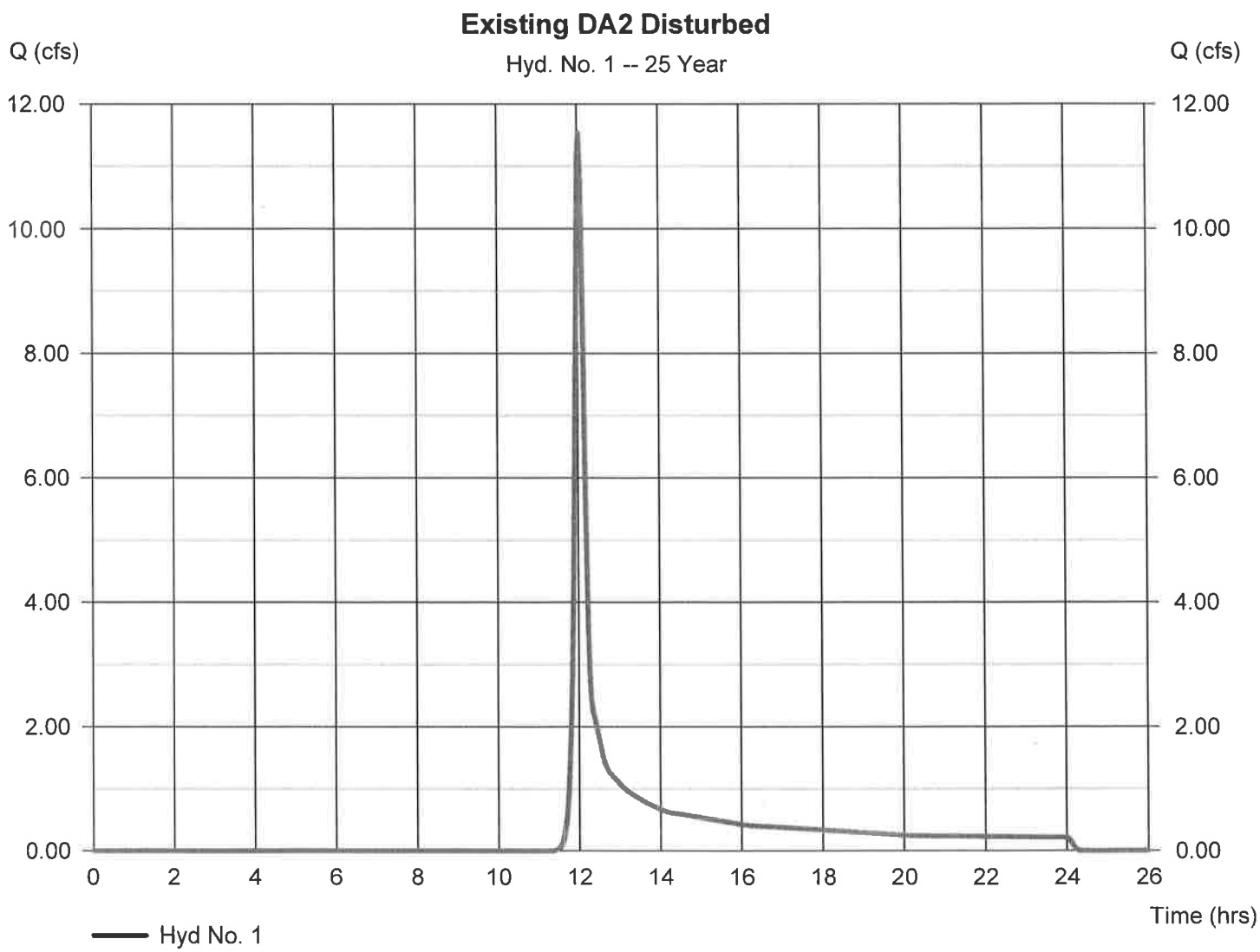
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 1

Existing DA2 Disturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 11.54 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 31,772 cuft
Drainage area	= 5.610 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 13.20 min
Total precip.	= 5.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



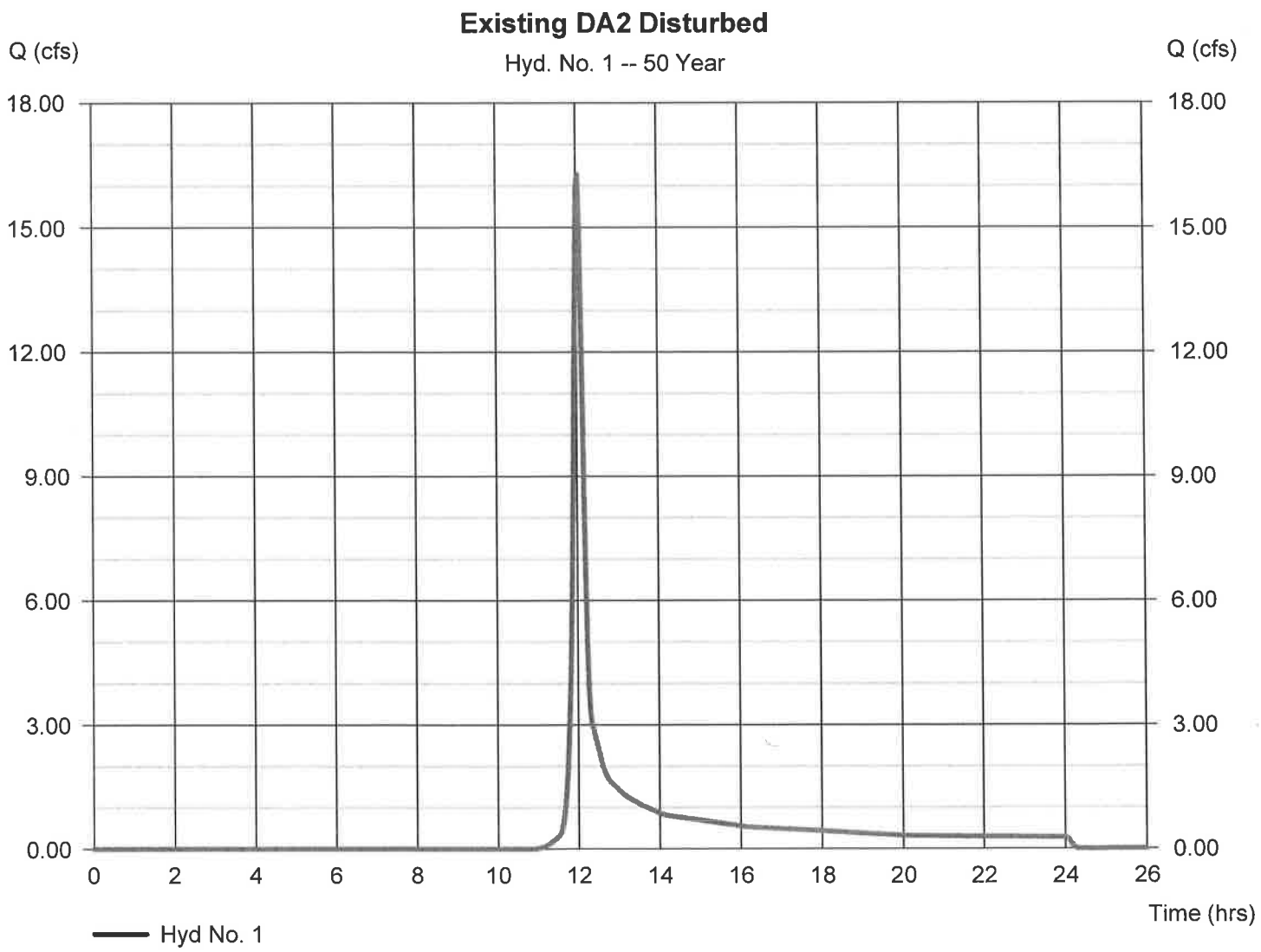
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 1

Existing DA2 Disturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 16.28 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 43,596 cuft
Drainage area	= 5.610 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 13.20 min
Total precip.	= 6.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



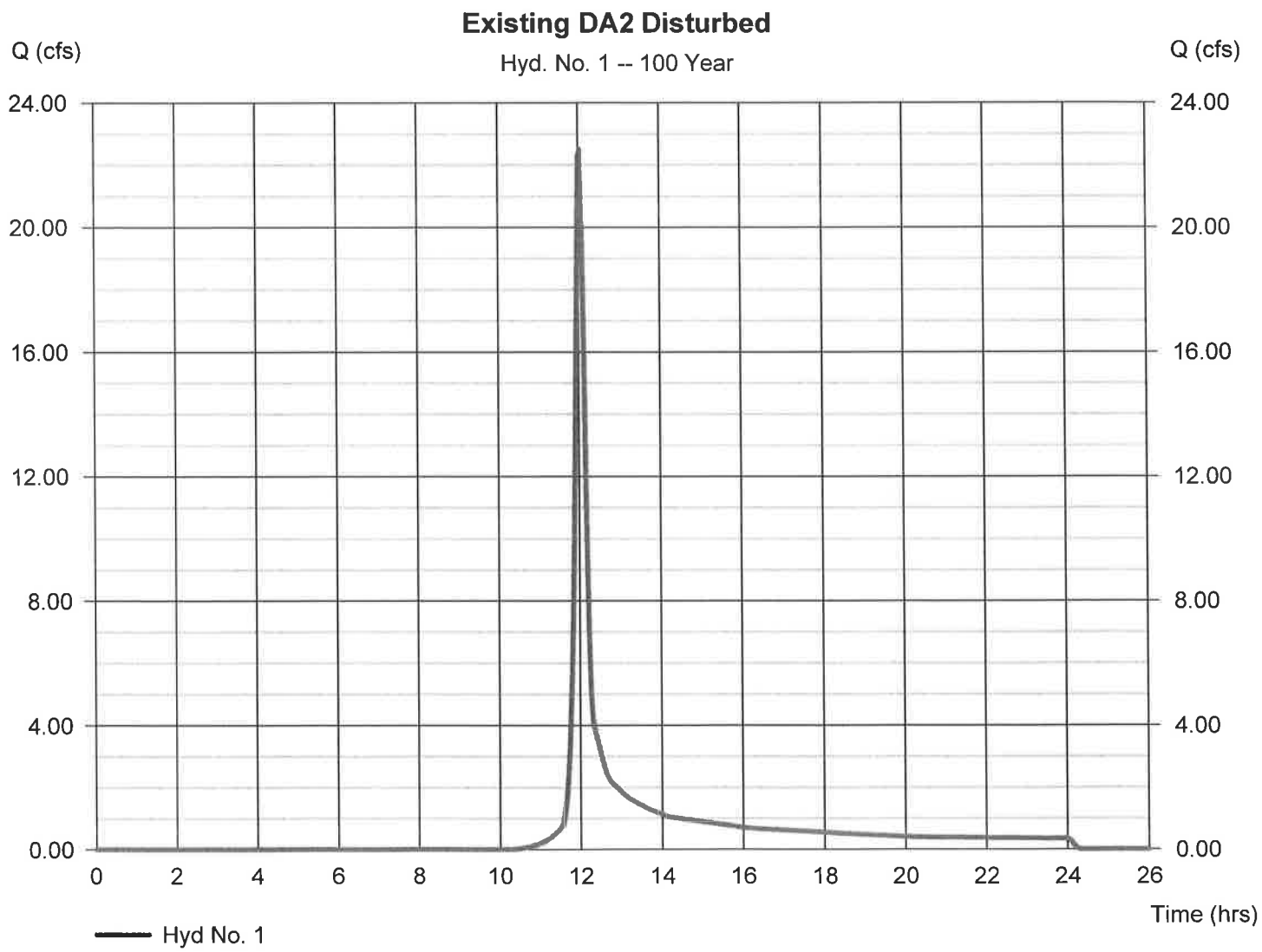
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 1

Existing DA2 Disturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 22.51 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 59,340 cuft
Drainage area	= 5.610 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 13.20 min
Total precip.	= 7.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



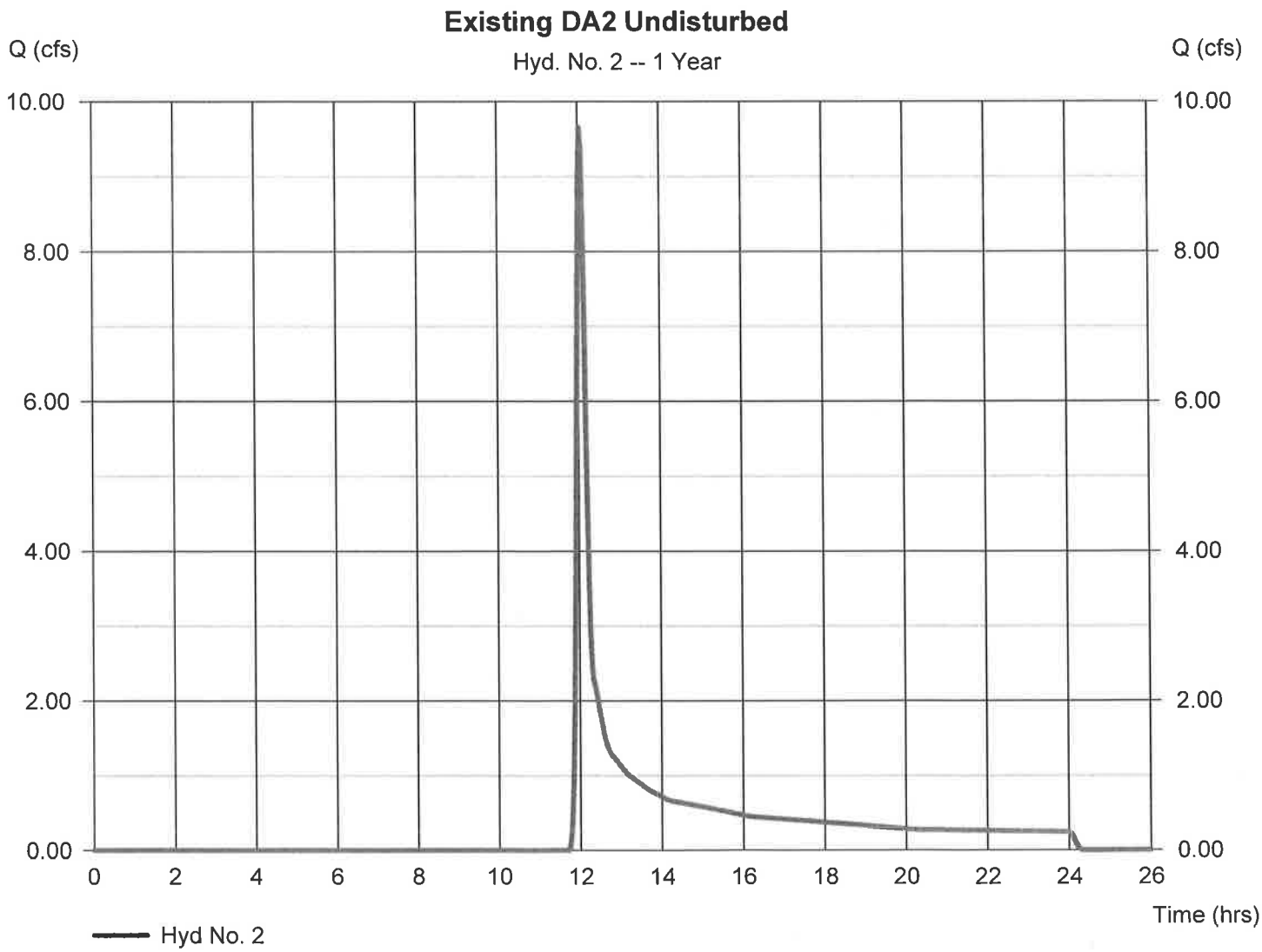
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 2

Existing DA2 Undisturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 9.660 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 30,417 cuft
Drainage area	= 17.390 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 13.20 min
Total precip.	= 2.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



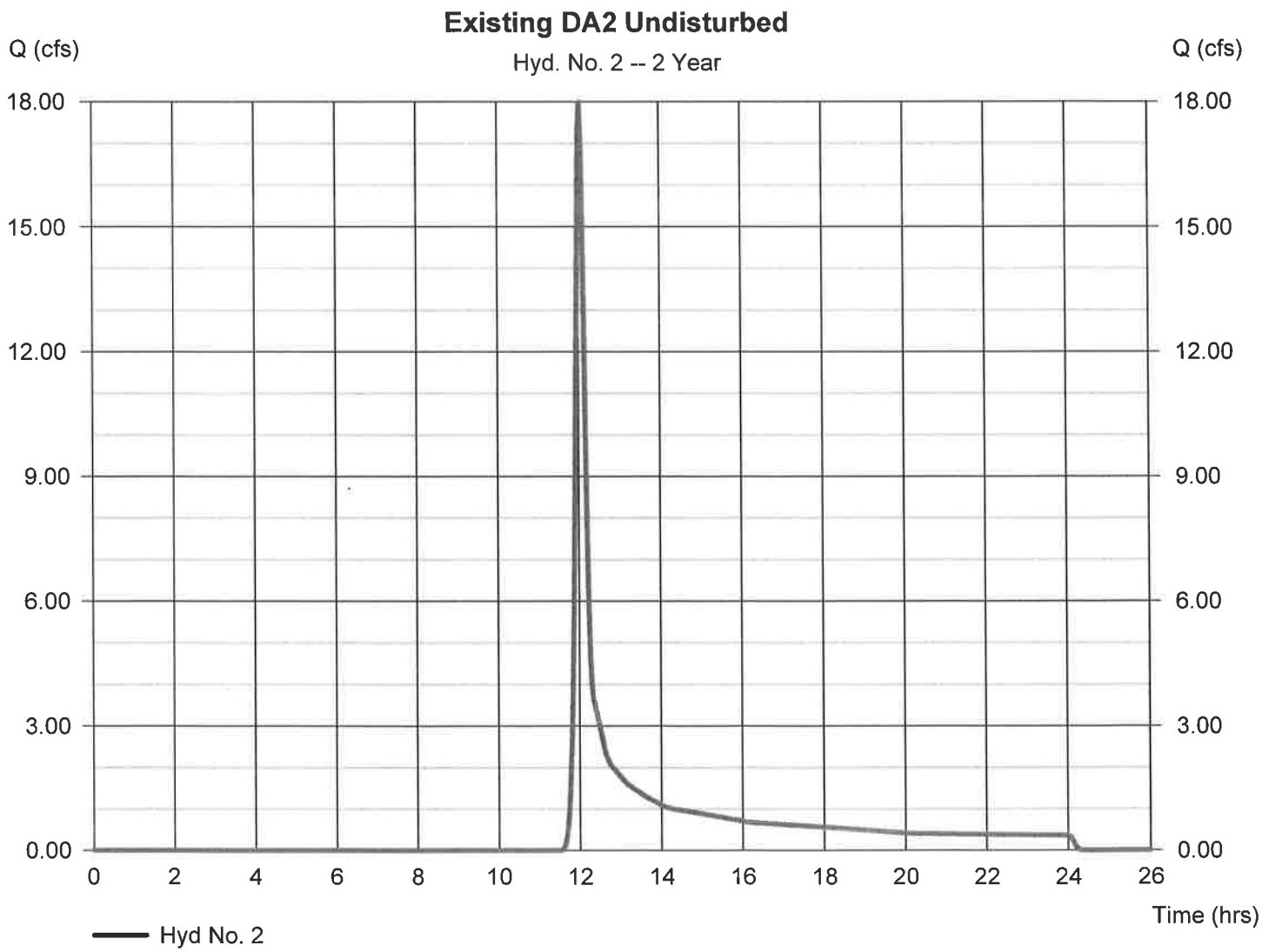
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 2

Existing DA2 Undisturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 17.99 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 50,749 cuft
Drainage area	= 17.390 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 13.20 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



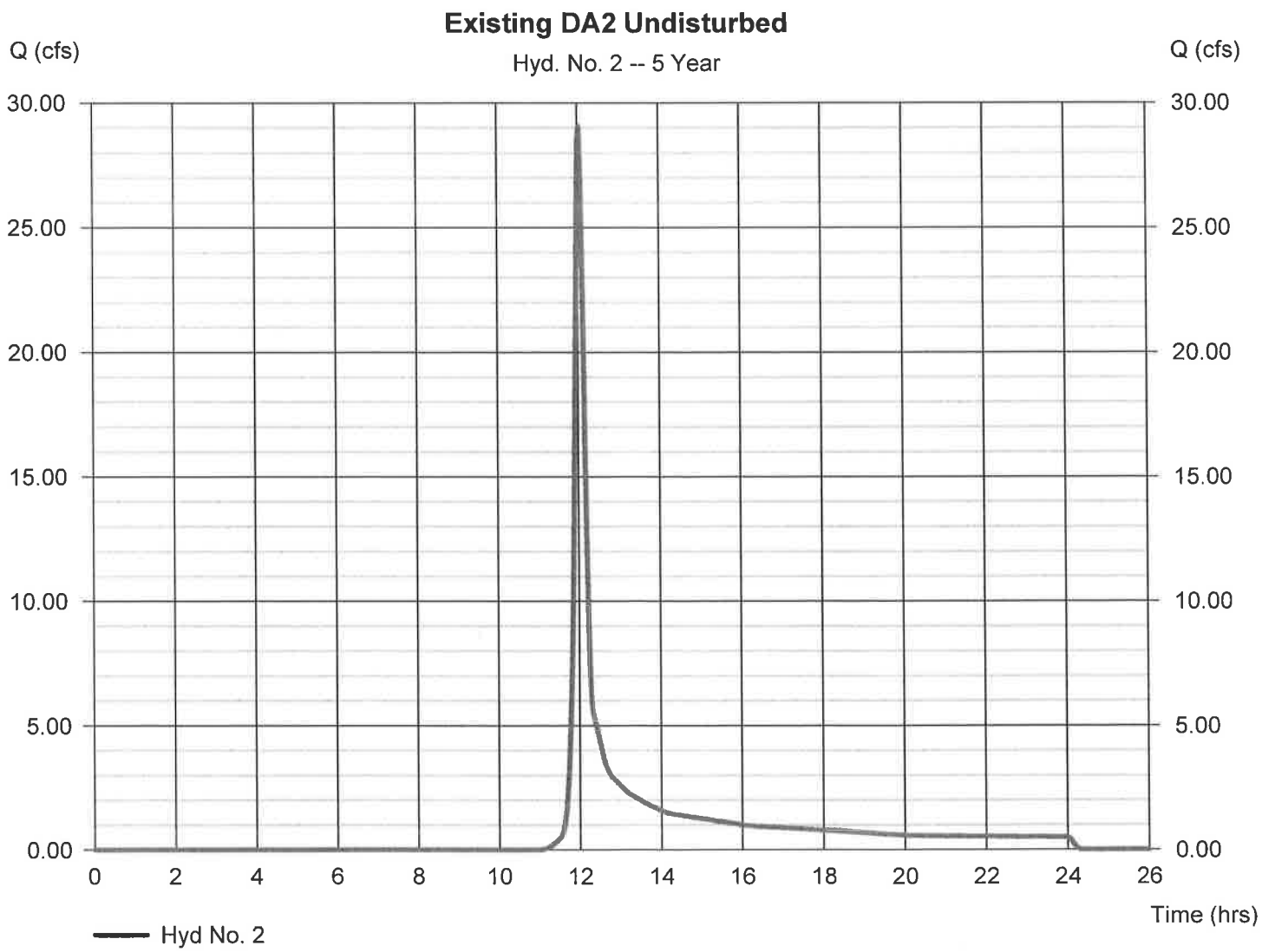
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 2

Existing DA2 Undisturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 29.07 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 78,254 cuft
Drainage area	= 17.390 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 13.20 min
Total precip.	= 3.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



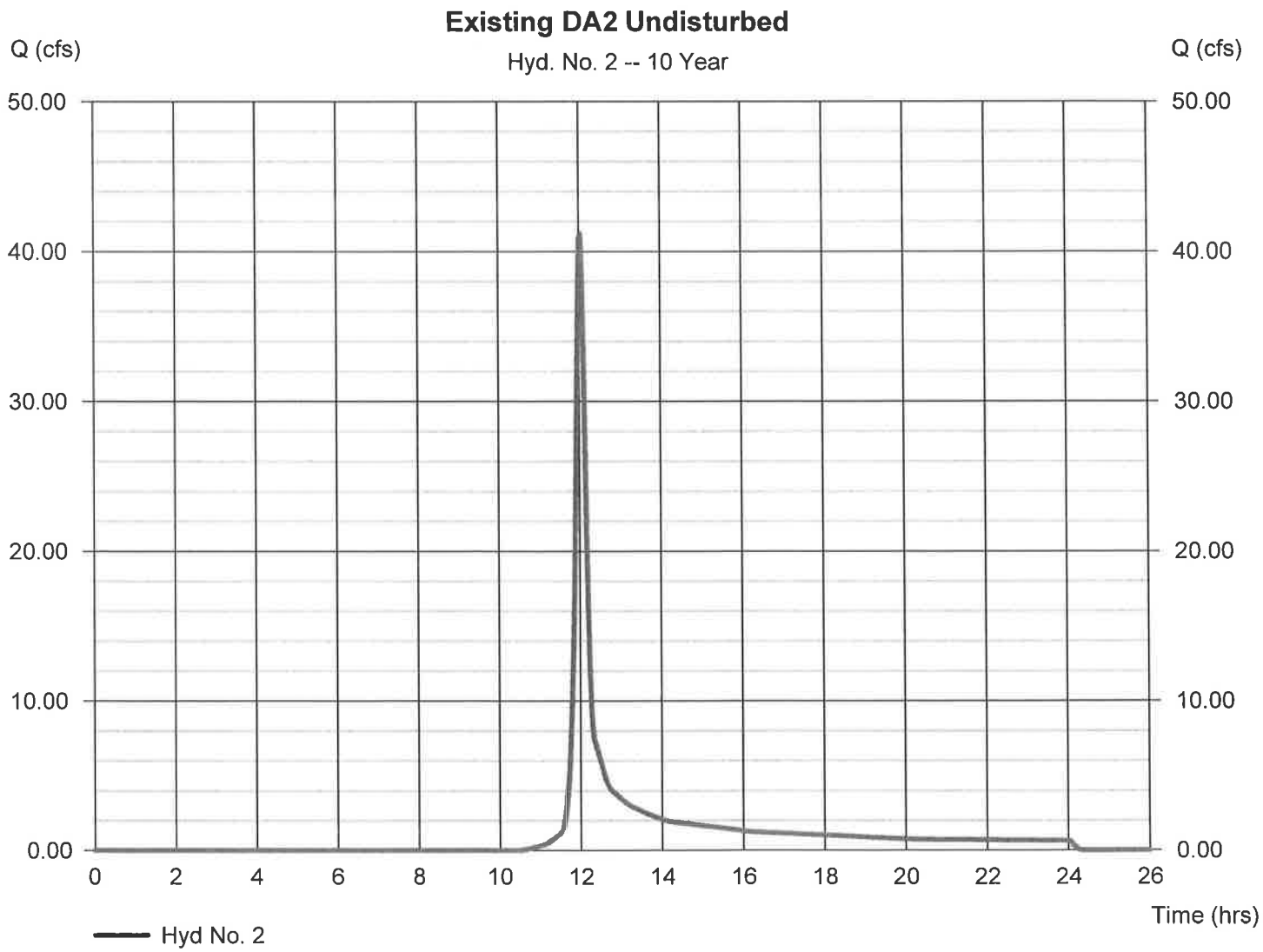
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 2

Existing DA2 Undisturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 41.21 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 108,845 cuft
Drainage area	= 17.390 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 13.20 min
Total precip.	= 4.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



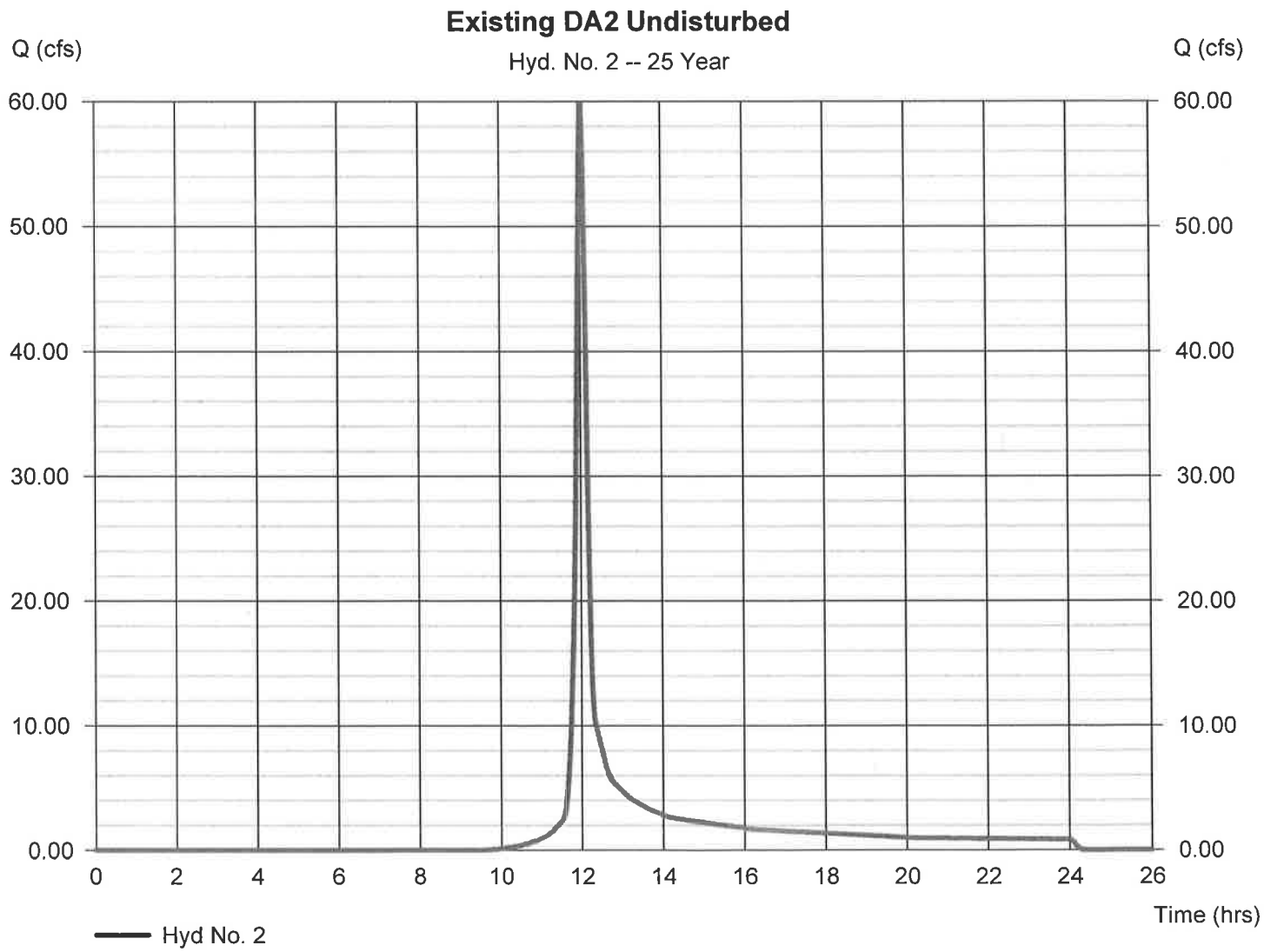
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 2

Existing DA2 Undisturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 59.81 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 156,502 cuft
Drainage area	= 17.390 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 13.20 min
Total precip.	= 5.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



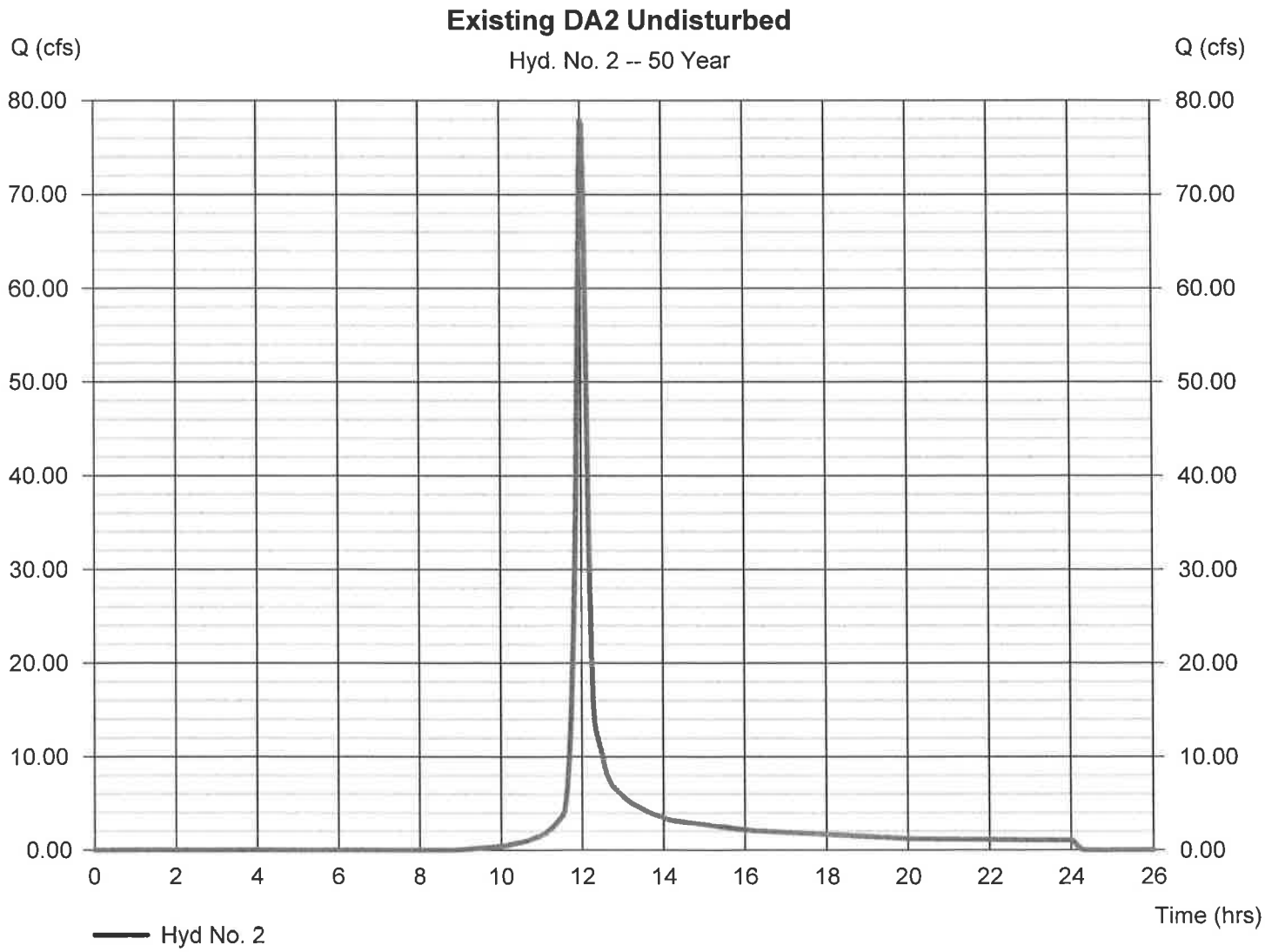
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 2

Existing DA2 Undisturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 77.85 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 202,348 cuft
Drainage area	= 17.390 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 13.20 min
Total precip.	= 6.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



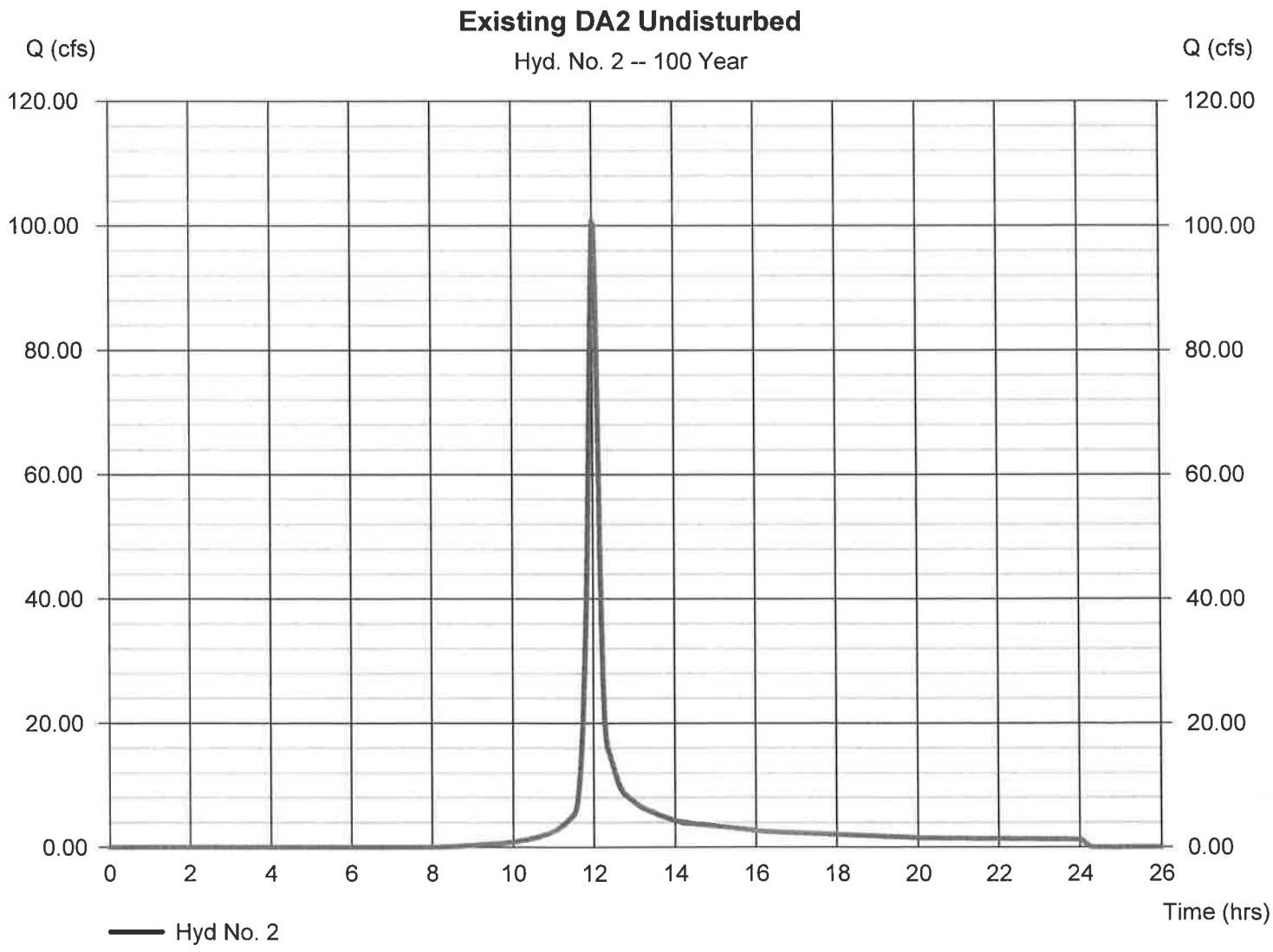
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 2

Existing DA2 Undisturbed

Hydrograph type	= SCS Runoff	Peak discharge	= 100.73 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 261,165 cuft
Drainage area	= 17.390 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 13.20 min
Total precip.	= 7.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



DAMBRO
STORMWATER MANAGEMENT

Proposed Drainage Area 2 Bypass:

Total Area =	822,134 sq.ft = 18.87 acres
Woods (B-soil) =	31,219 sq.ft
Woods (C-soil) =	480,675 sq.ft
Meadow (B-soil) =	51,296 sq.ft
Meadow (C-soil) =	126,388 sq.ft
Lawn (B-soil) =	87,788 sq.ft
Lawn (C-soil) =	30,892 sq.ft
Impervious =	13,876 sq.ft

CN Values:

Woods (B-soil)	CN = 55
Woods (C-soil)	CN = 70
Meadow (B-soil)	CN = 58
Meadow (C-soil)	CN = 71
Lawn (B-soil)	CN = 61
Lawn (C-soil)	CN = 74
Impervious	CN = 98

Composite CN = 68

Time of Concentration:
Use 13.16 minute time of concentration.

Proposed Drainage Area 2 Bypass

Travel Time

Summary for Travel Time Calculations with 2 segments:

Segment 1: SCS Segmental (TR55) - Sheet Flow

Length = 100 feet
Slope = 0.1 ft/ft
Roughness Coefficient = 0.4
2 Year - 24 Hour Rainfall = 3.2 inches

Travel Time for Segment = 11.28 minutes

Segment 2: SCS Segmental (TR55) - Concentrated Flow

Unpaved surface
Length = 630 feet
Slope = 0.12 ft/ft

Travel Time for Segment = 1.88 minutes

Composite Travel Time = 13.16 minutes

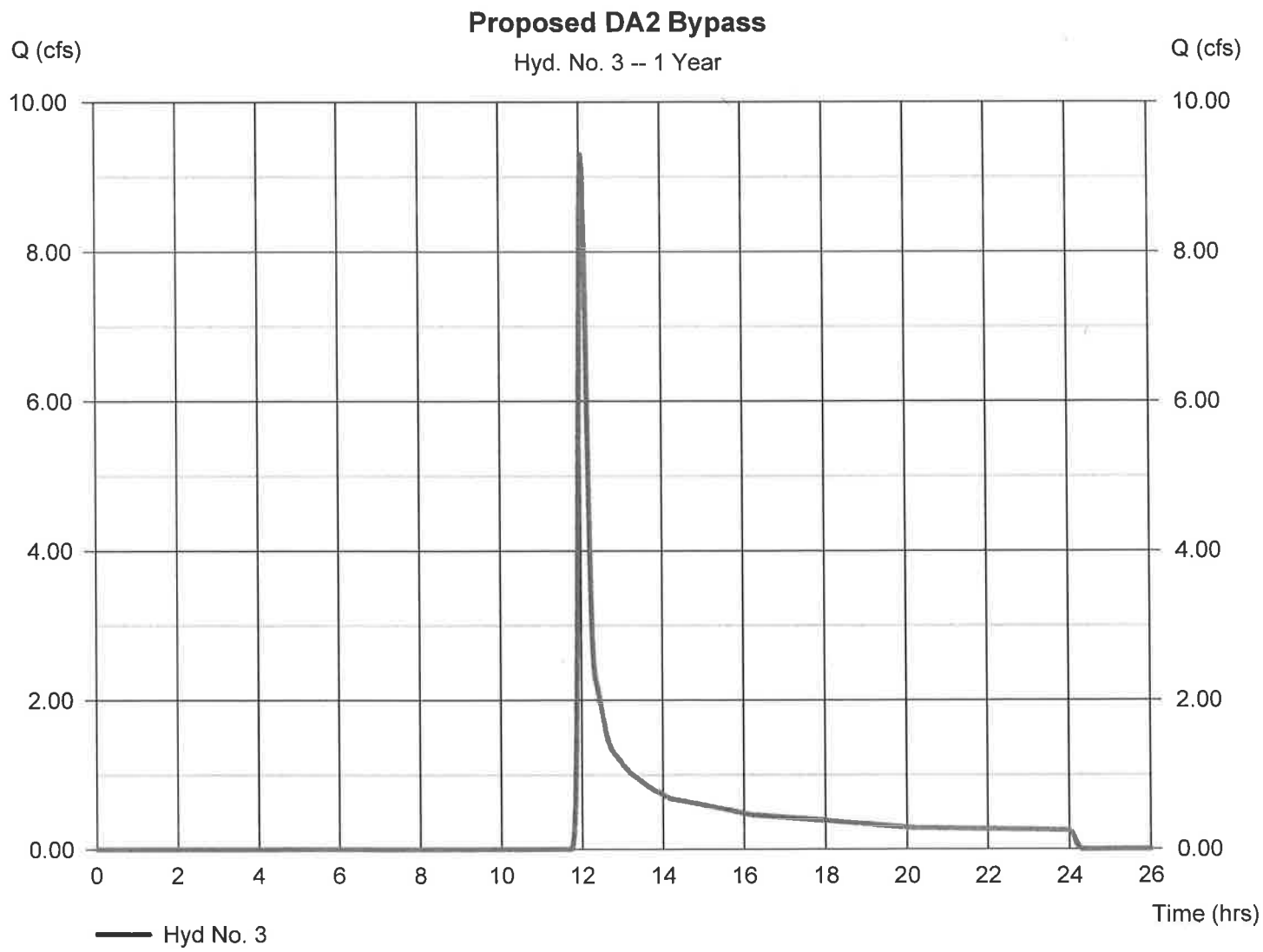
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 3

Proposed DA2 Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 9.300 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 30,534 cuft
Drainage area	= 18.870 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 13.20 min
Total precip.	= 2.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



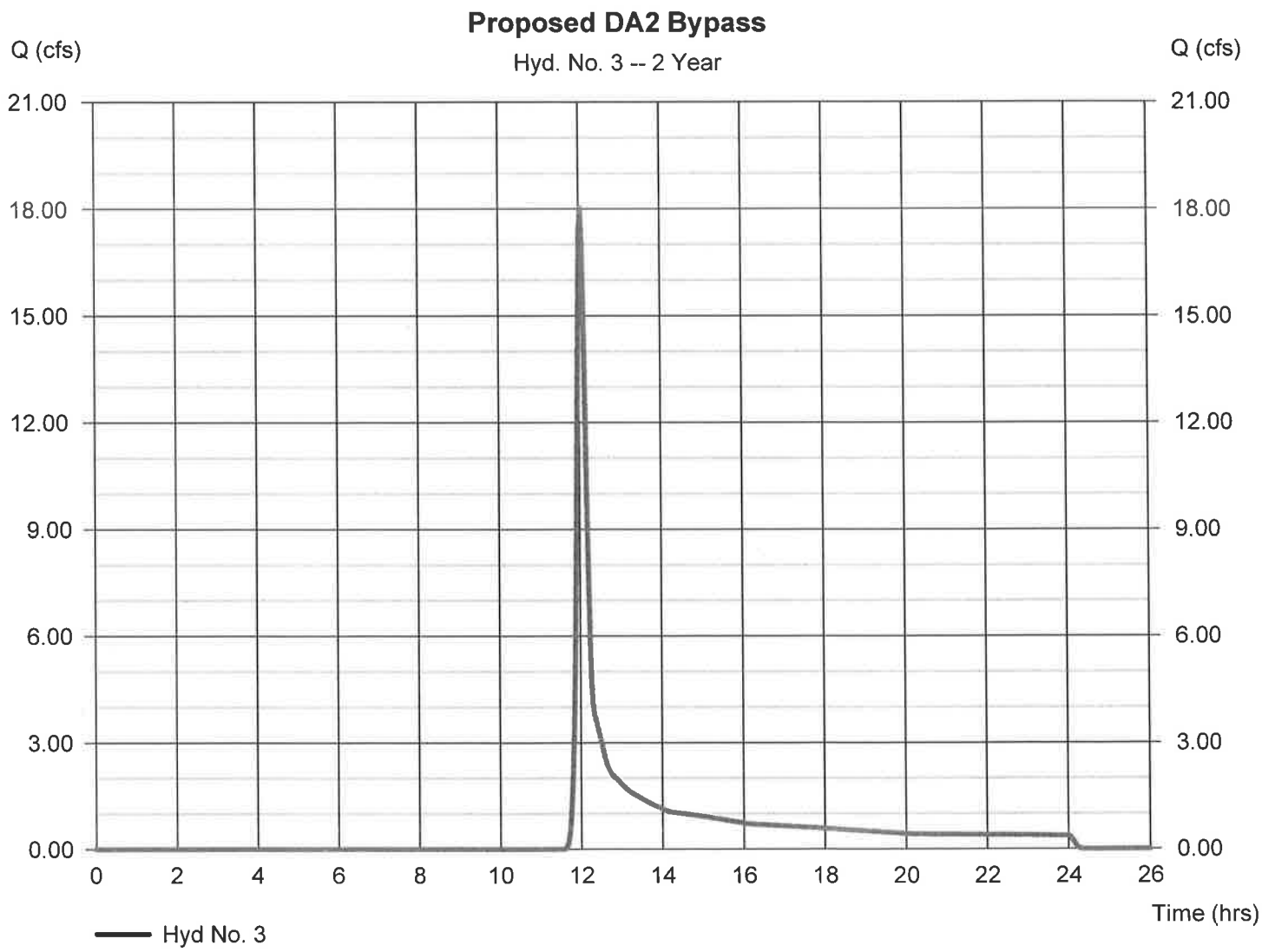
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 3

Proposed DA2 Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 18.04 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 51,749 cuft
Drainage area	= 18.870 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 13.20 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



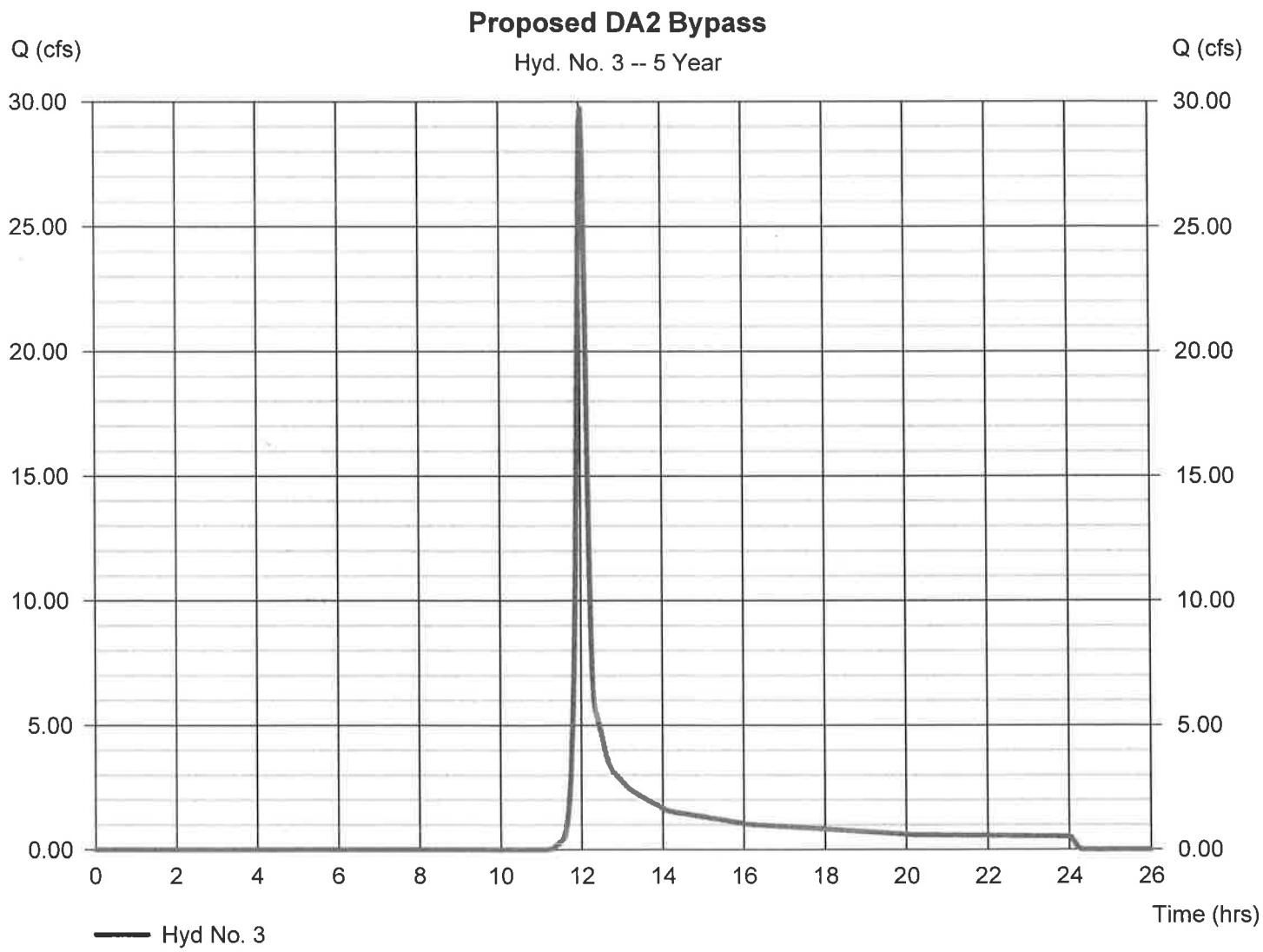
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 3

Proposed DA2 Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 29.74 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 80,683 cuft
Drainage area	= 18.870 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 13.20 min
Total precip.	= 3.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



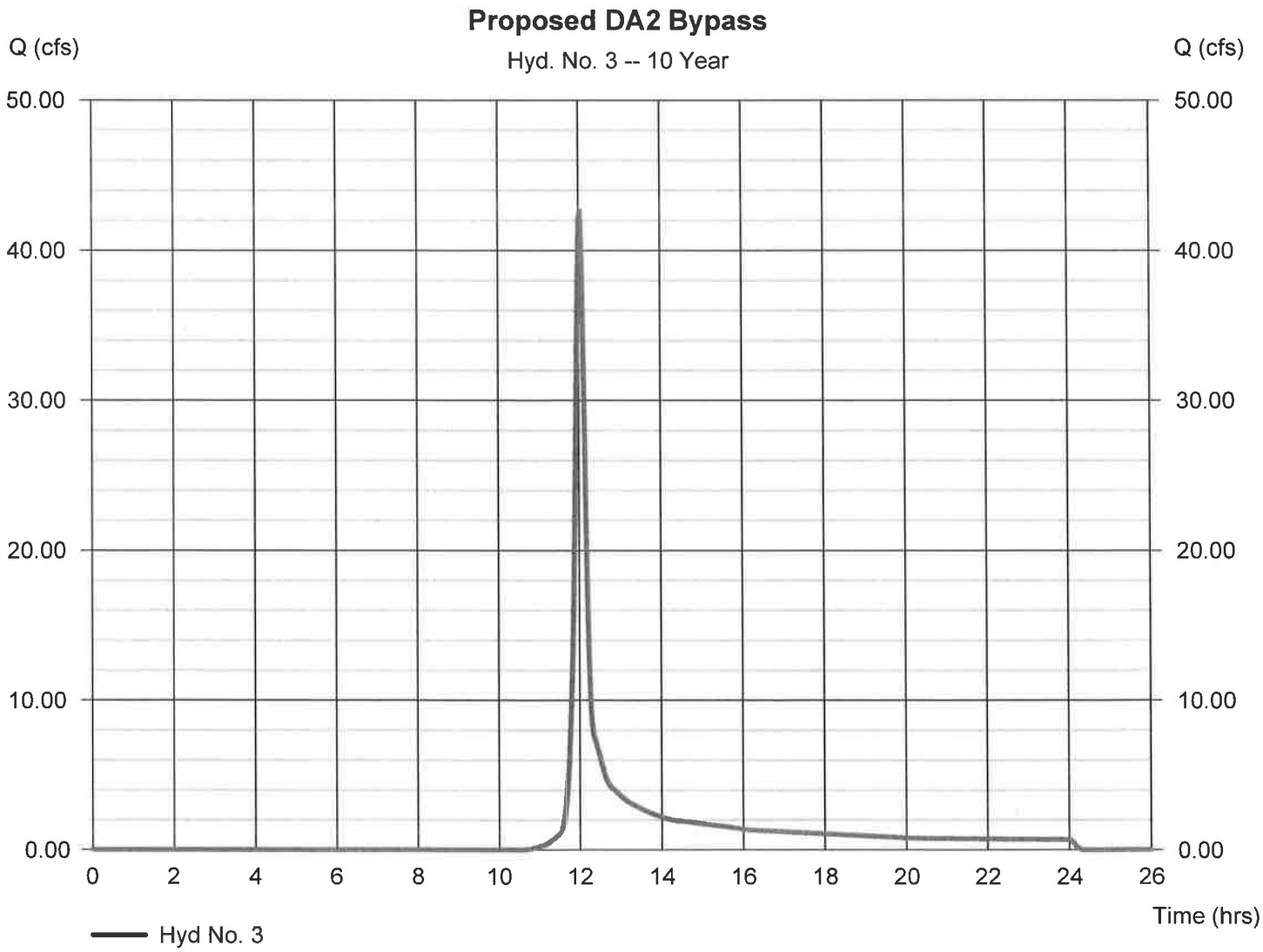
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 3

Proposed DA2 Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 42.63 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 113,051 cuft
Drainage area	= 18.870 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 13.20 min
Total precip.	= 4.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



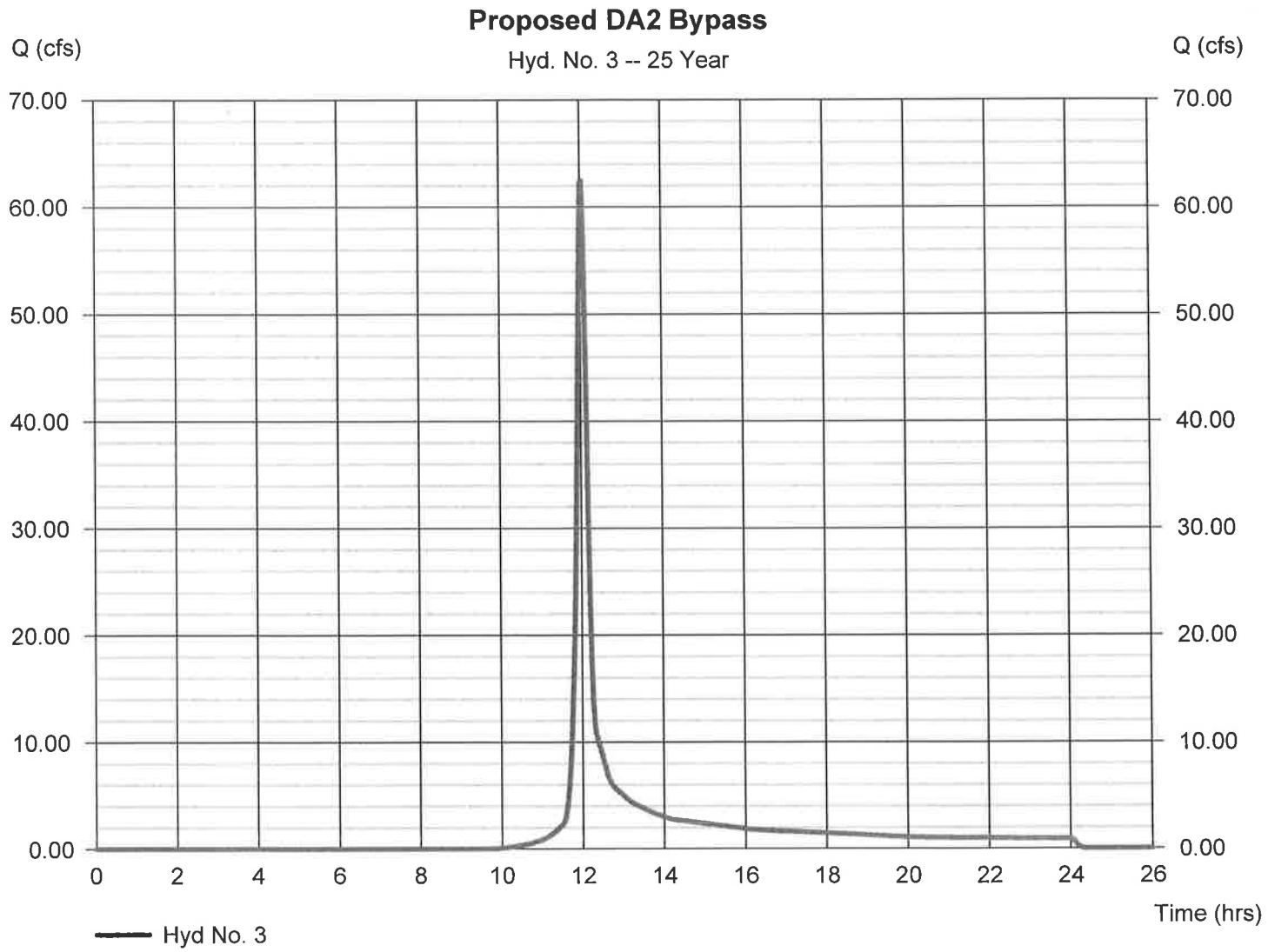
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 3

Proposed DA2 Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 62.49 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 163,720 cuft
Drainage area	= 18.870 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 13.20 min
Total precip.	= 5.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



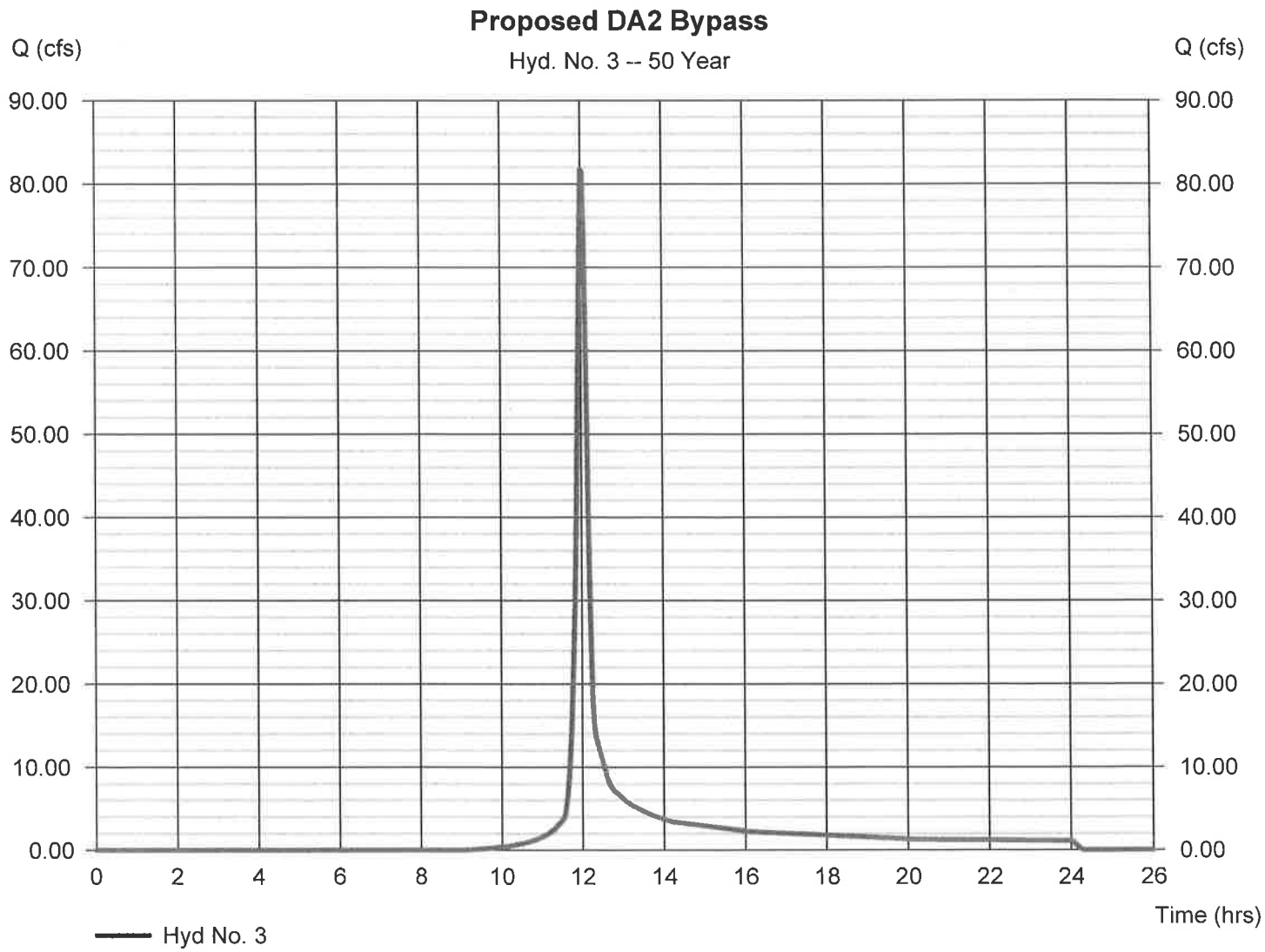
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 3

Proposed DA2 Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 81.69 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 212,648 cuft
Drainage area	= 18.870 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 13.20 min
Total precip.	= 6.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



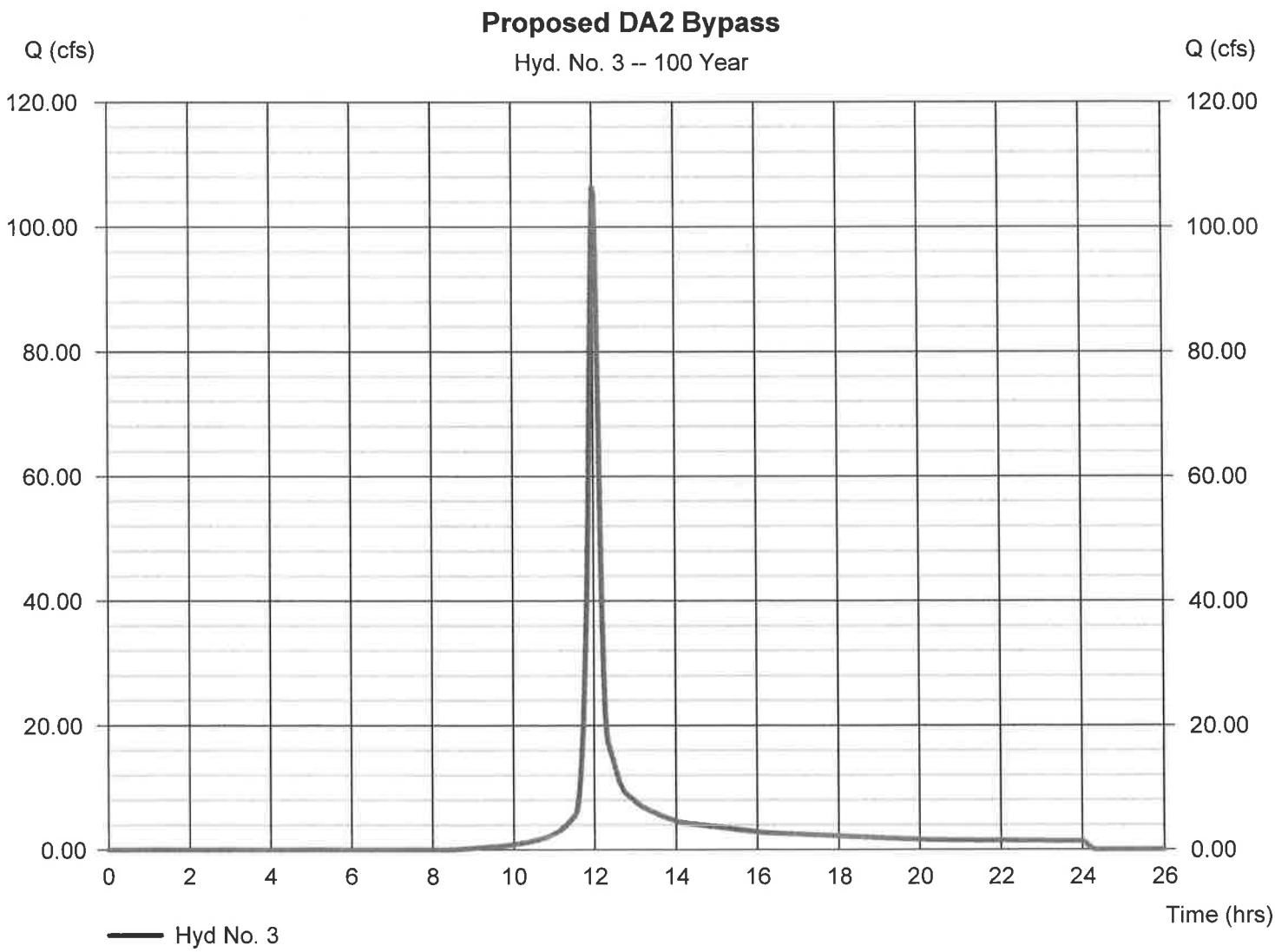
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 3

Proposed DA2 Bypass

Hydrograph type	= SCS Runoff	Peak discharge	= 106.26 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 275,600 cuft
Drainage area	= 18.870 ac	Curve number	= 68
Basln Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 13.20 min
Total precip.	= 7.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



DAMBRO
STORMWATER MANAGEMENT

Proposed Drainage Area To Drywell-Lot 6 and 7:

Total Area =	147,245 sq.ft = 3.38 acres
Meadow (B-soil) =	41,141 sq.ft
Meadow (C-soil) =	4,061 sq.ft
Lawn (B-soil) =	46,905 sq.ft
Lawn (C-soil) =	38,463 sq.ft
Impervious =	16,675 sq.ft

CN Values:

Meadow (B-soil)	CN = 58
Meadow (C-soil)	CN = 71
Lawn (B-soil)	CN = 61
Lawn (C-soil)	CN = 74
Impervious	CN = 98

Composite CN = 68

Time of Concentration:
Use 5.00 minute time of concentration

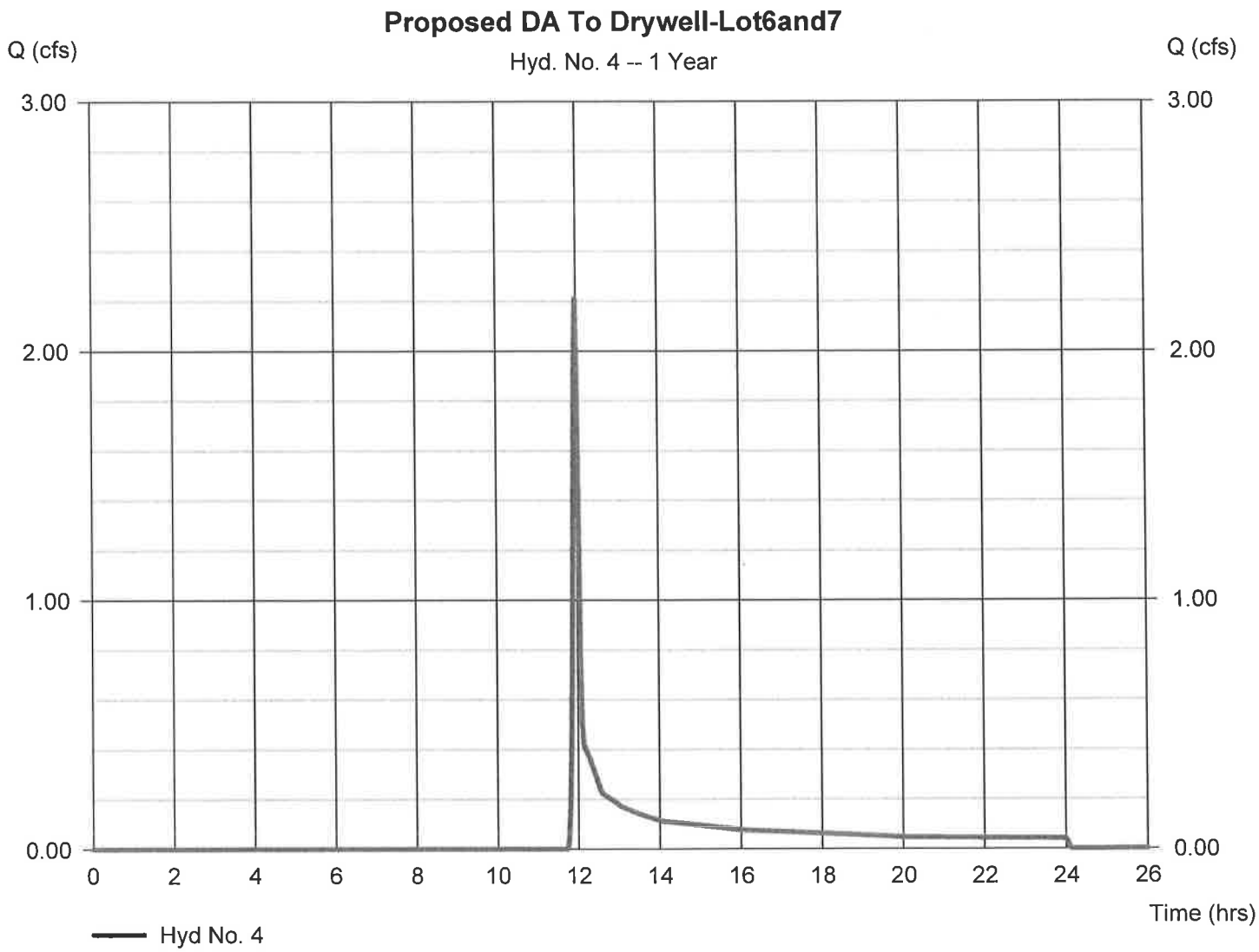
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 4

Proposed DA To Drywell-Lot6and7

Hydrograph type	= SCS Runoff	Peak discharge	= 2.211 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 4,972 cuft
Drainage area	= 3.380 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



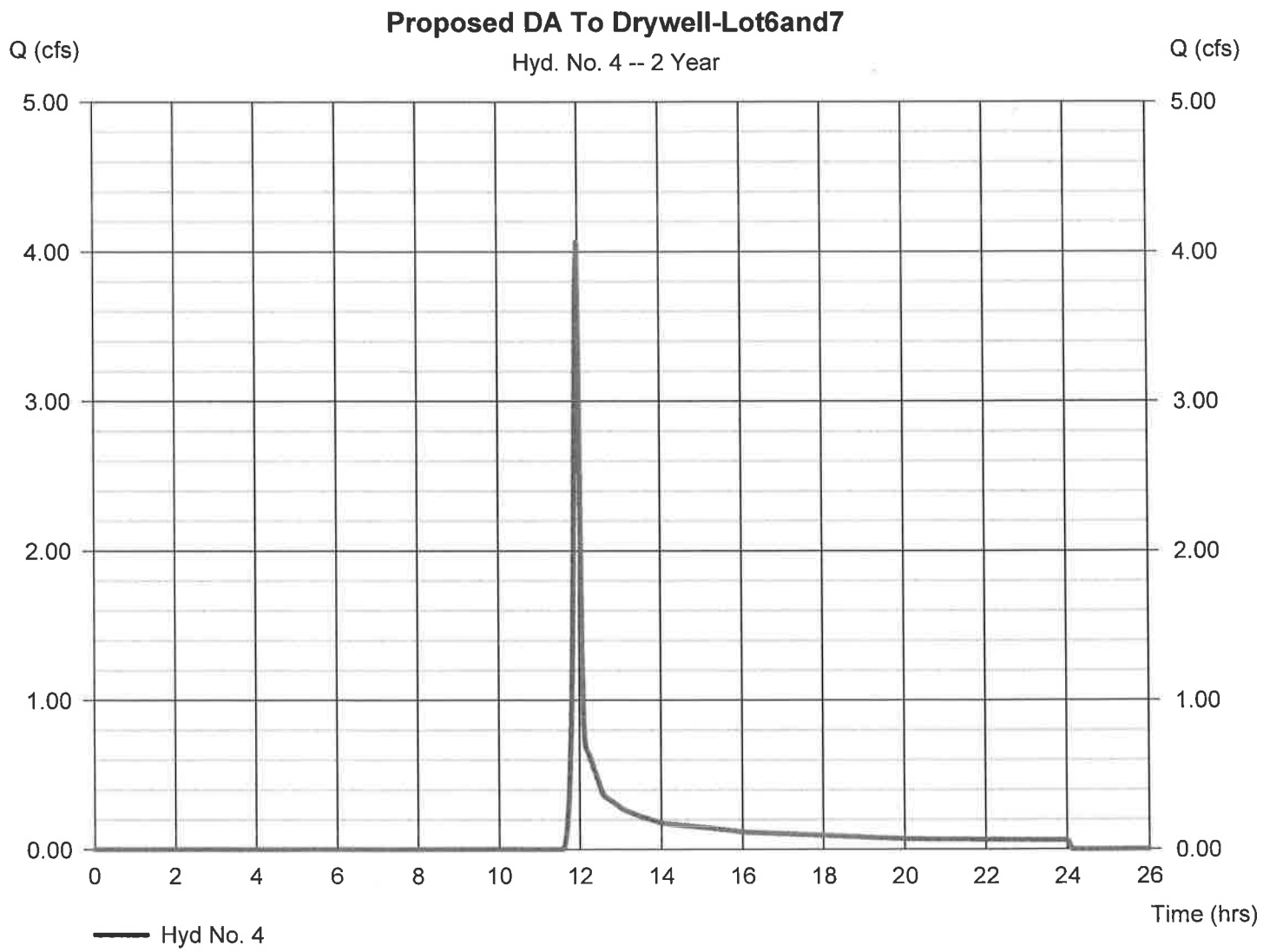
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 4

Proposed DA To Drywell-Lot6and7

Hydrograph type	= SCS Runoff	Peak discharge	= 4.062 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 8,427 cuft
Drainage area	= 3.380 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



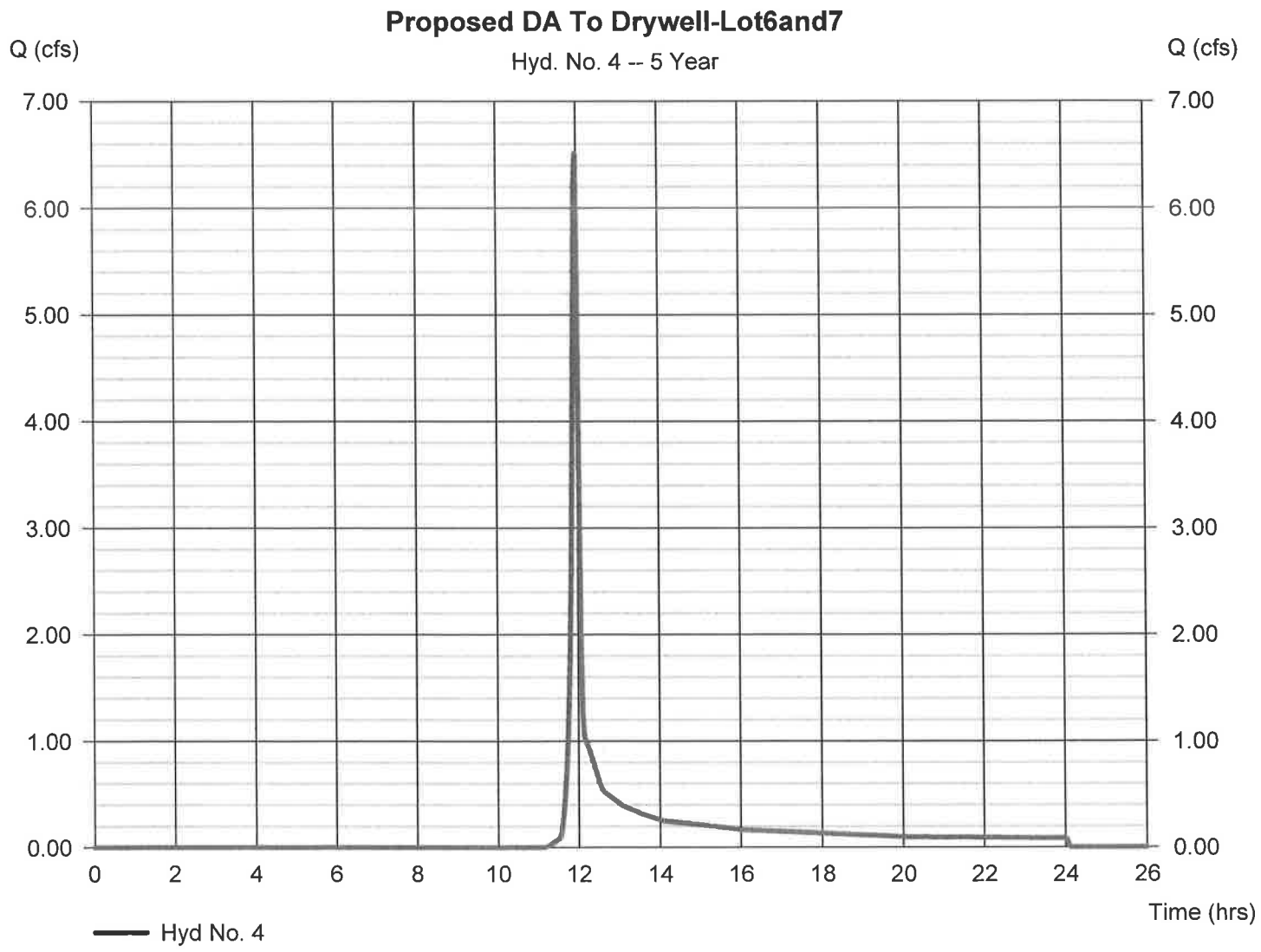
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 4

Proposed DA To Drywell-Lot6and7

Hydrograph type	= SCS Runoff	Peak discharge	= 6.516 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 13,138 cuft
Drainage area	= 3.380 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



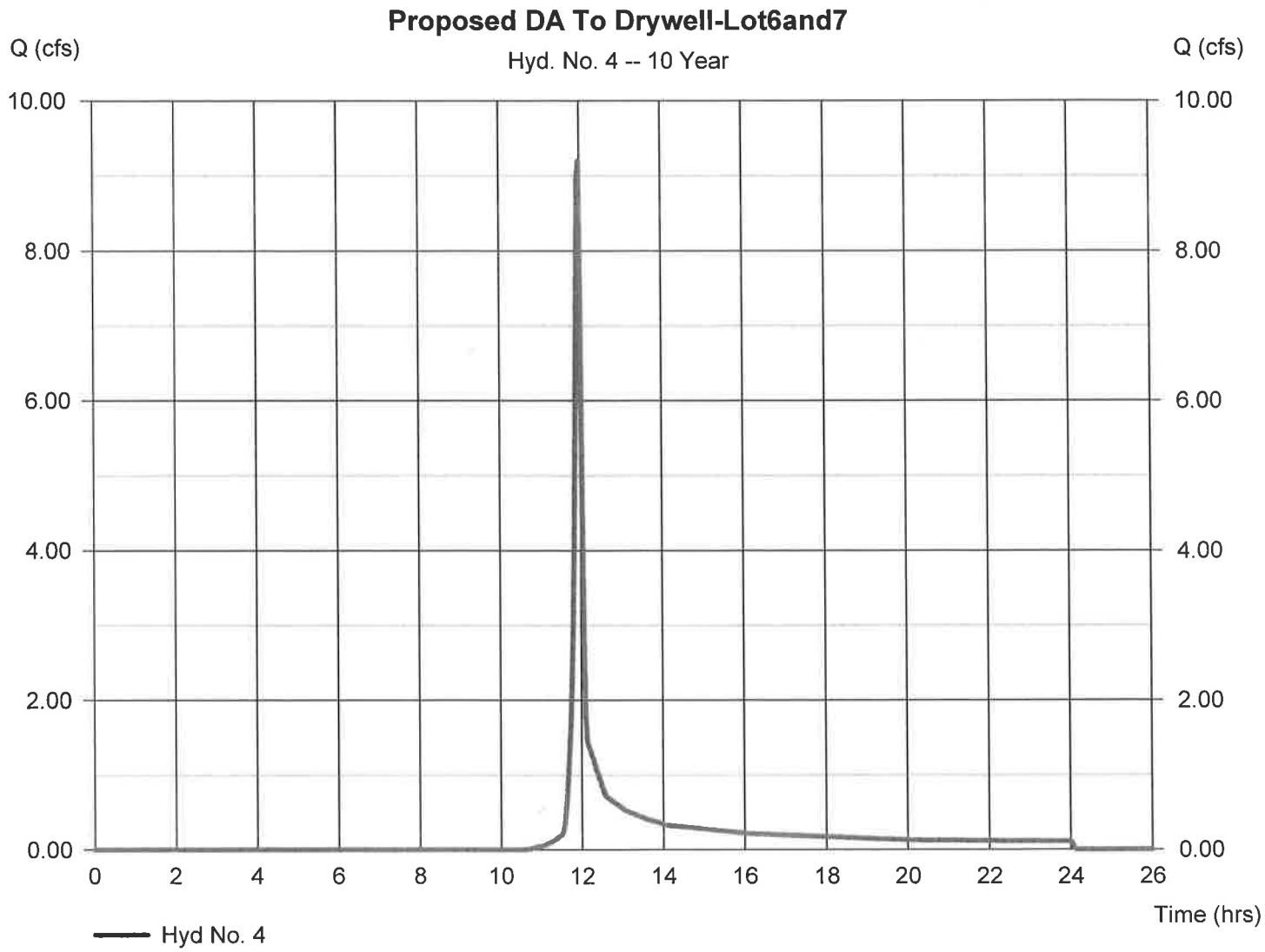
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 4

Proposed DA To Drywell-Lot6and7

Hydrograph type	= SCS Runoff	Peak discharge	= 9.197 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 18,409 cuft
Drainage area	= 3.380 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



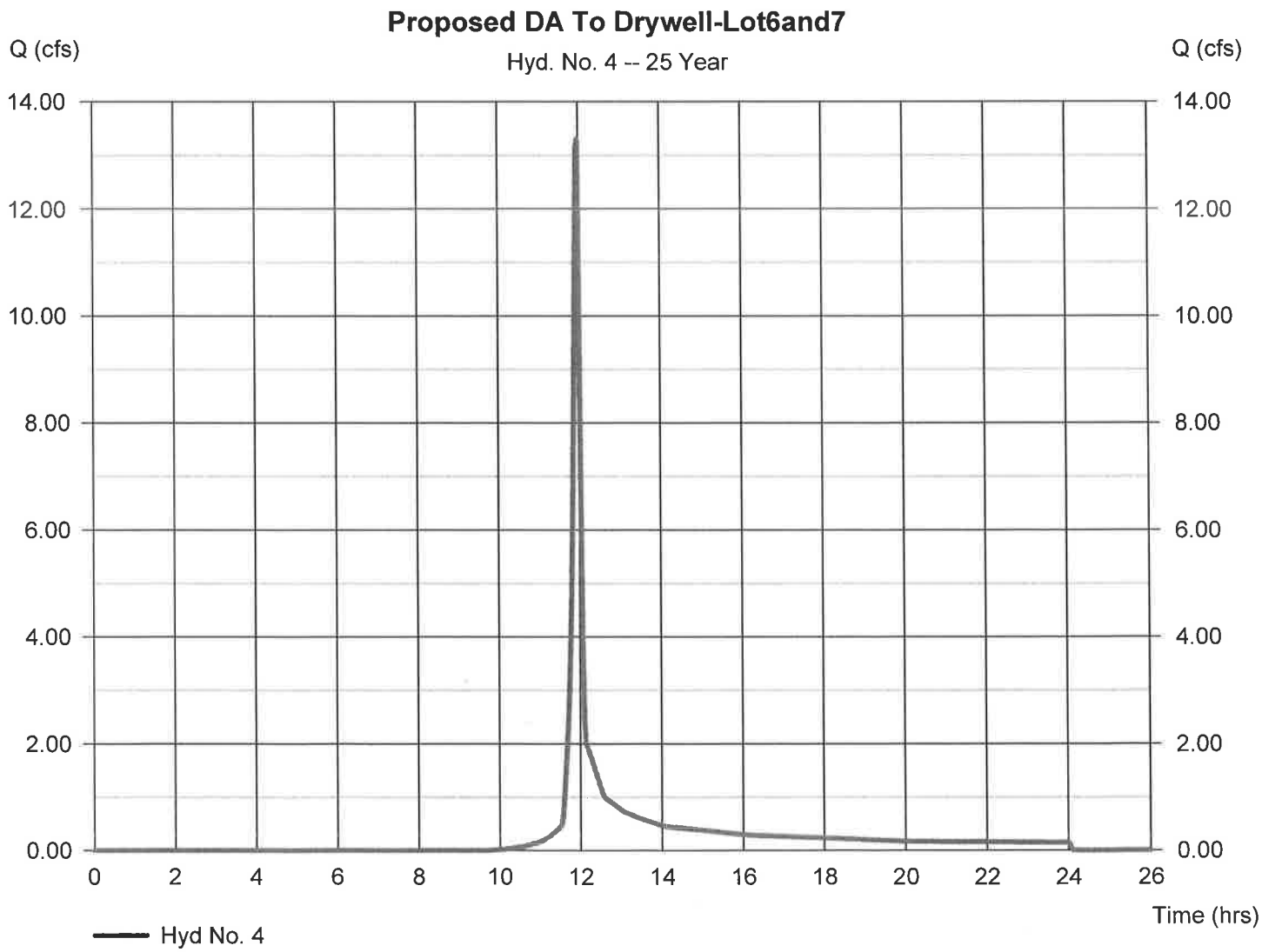
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 4

Proposed DA To Drywell-Lot6and7

Hydrograph type	= SCS Runoff	Peak discharge	= 13.30 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 26,660 cuft
Drainage area	= 3.380 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



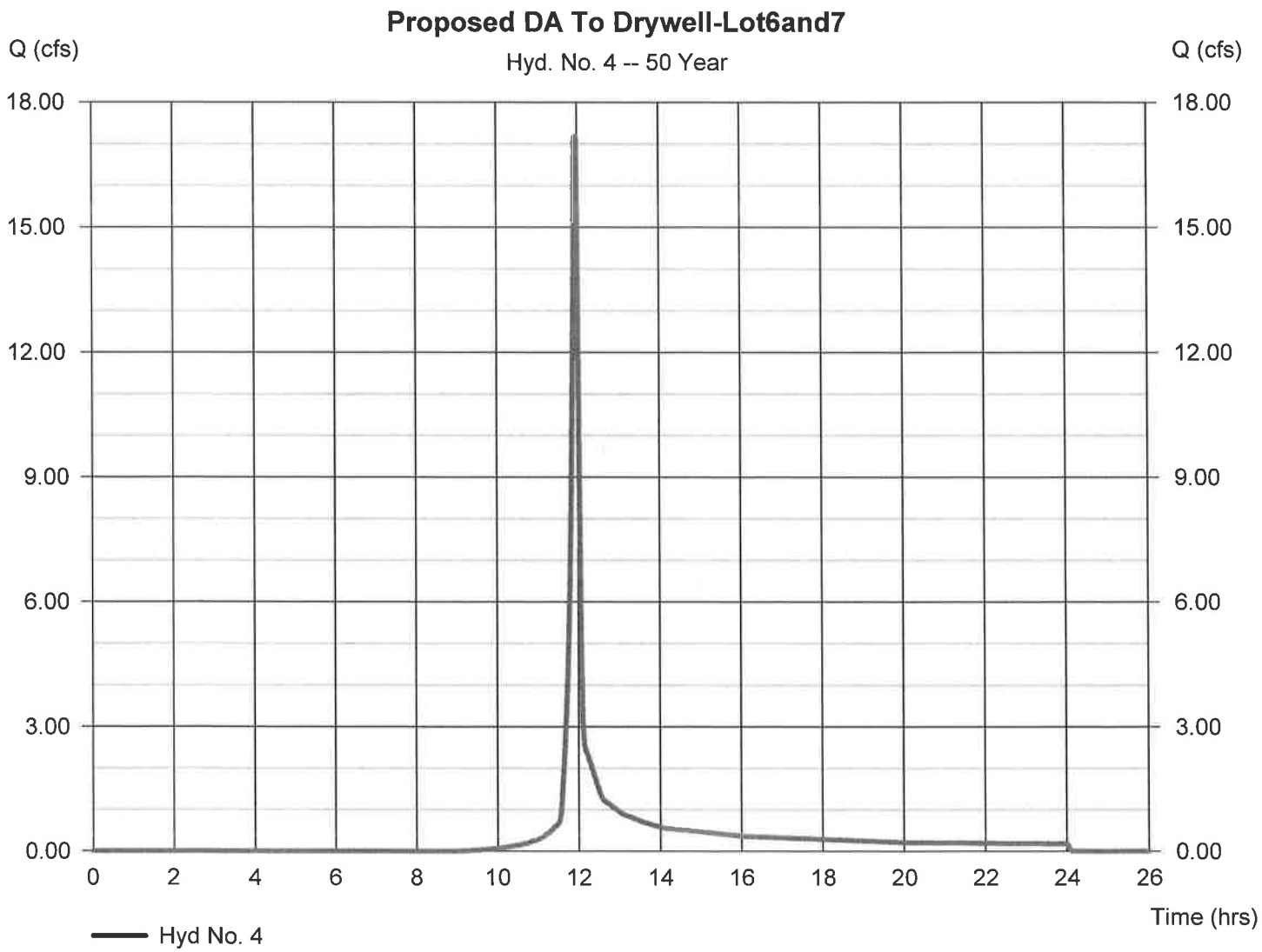
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 4

Proposed DA To Drywell-Lot6and7

Hydrograph type	= SCS Runoff	Peak discharge	= 17.17 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 34,627 cuft
Drainage area	= 3.380 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



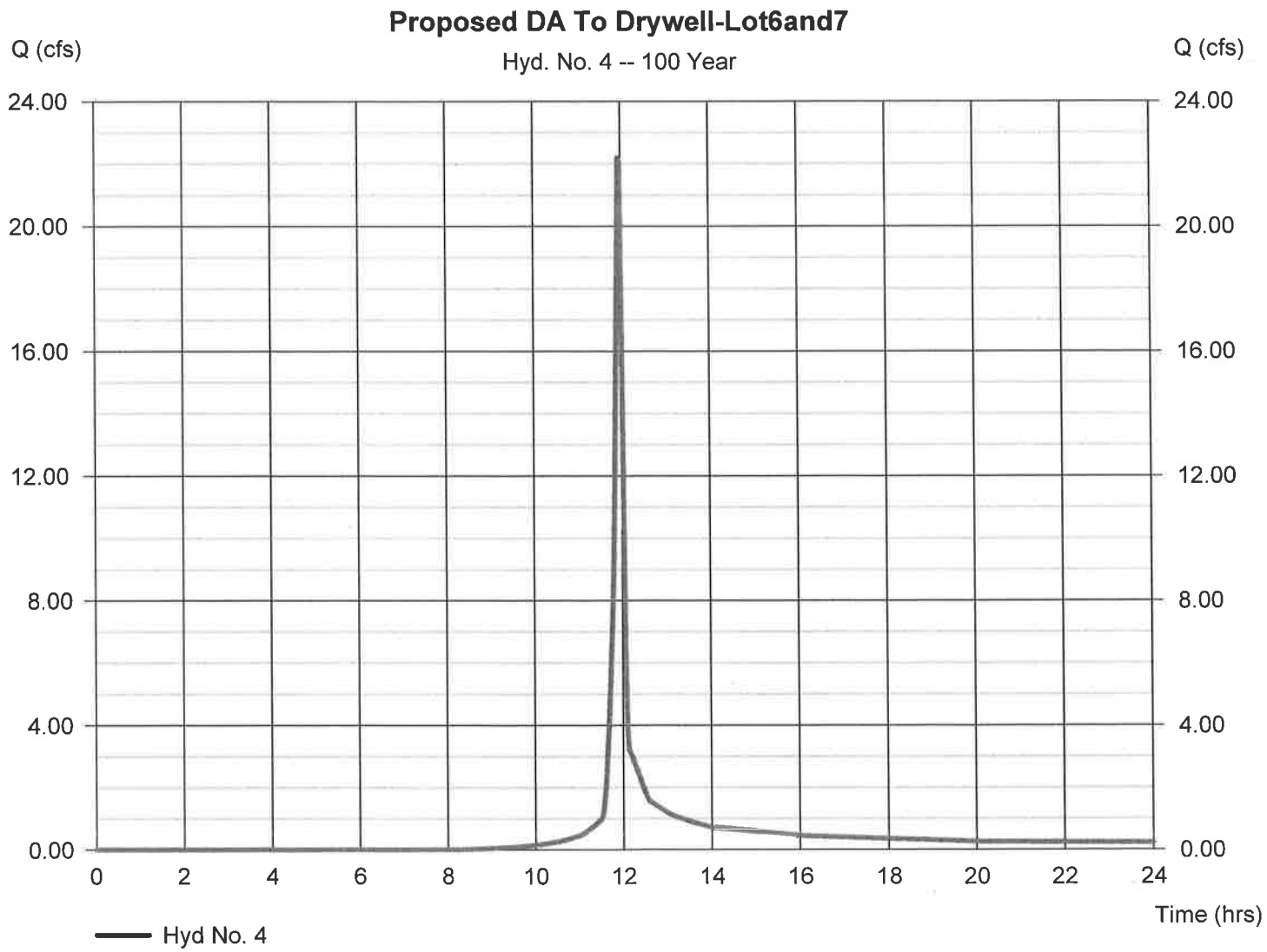
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 | Tuesday, Jan 21, 2020

Hyd. No. 4

Proposed DA To Drywell-Lot6and7

Hydrograph type	= SCS Runoff	Peak discharge	= 22.20 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 44,878 cuft
Drainage area	= 3.380 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Pond Report

Hydraflow Hydrographs by Intelisolve v9.23 — Tuesday, Aug 11, 2020

Pond No. 1 - Drywell-Lot6and7

Pond Data

Pond storage is based on user-defined values.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	368.00	n/a	0	0
0.10	368.10	n/a	534	534
1.00	369.00	n/a	4,810	5,344
2.00	370.00	n/a	5,344	10,688
3.00	371.00	n/a	5,344	16,032
4.00	372.00	n/a	4	16,036
6.00	374.00	n/a	23,998	40,034

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 2.60	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	368.00	---	---	---	---	---	---	---	---	---	---	0.000
0.10	534	368.10	---	---	---	---	---	---	---	---	---	0.334	0.334
1.00	5,344	369.00	---	---	---	---	---	---	---	---	---	0.334	0.334
2.00	10,688	370.00	---	---	---	---	---	---	---	---	---	0.334	0.334
3.00	16,032	371.00	---	---	---	---	---	---	---	---	---	0.334	0.334
4.00	16,036	372.00	---	---	---	---	---	---	---	---	---	0.334	0.334
6.00	40,034	374.00	---	---	---	---	---	---	---	---	---	0.334	0.334

Hydrograph Report

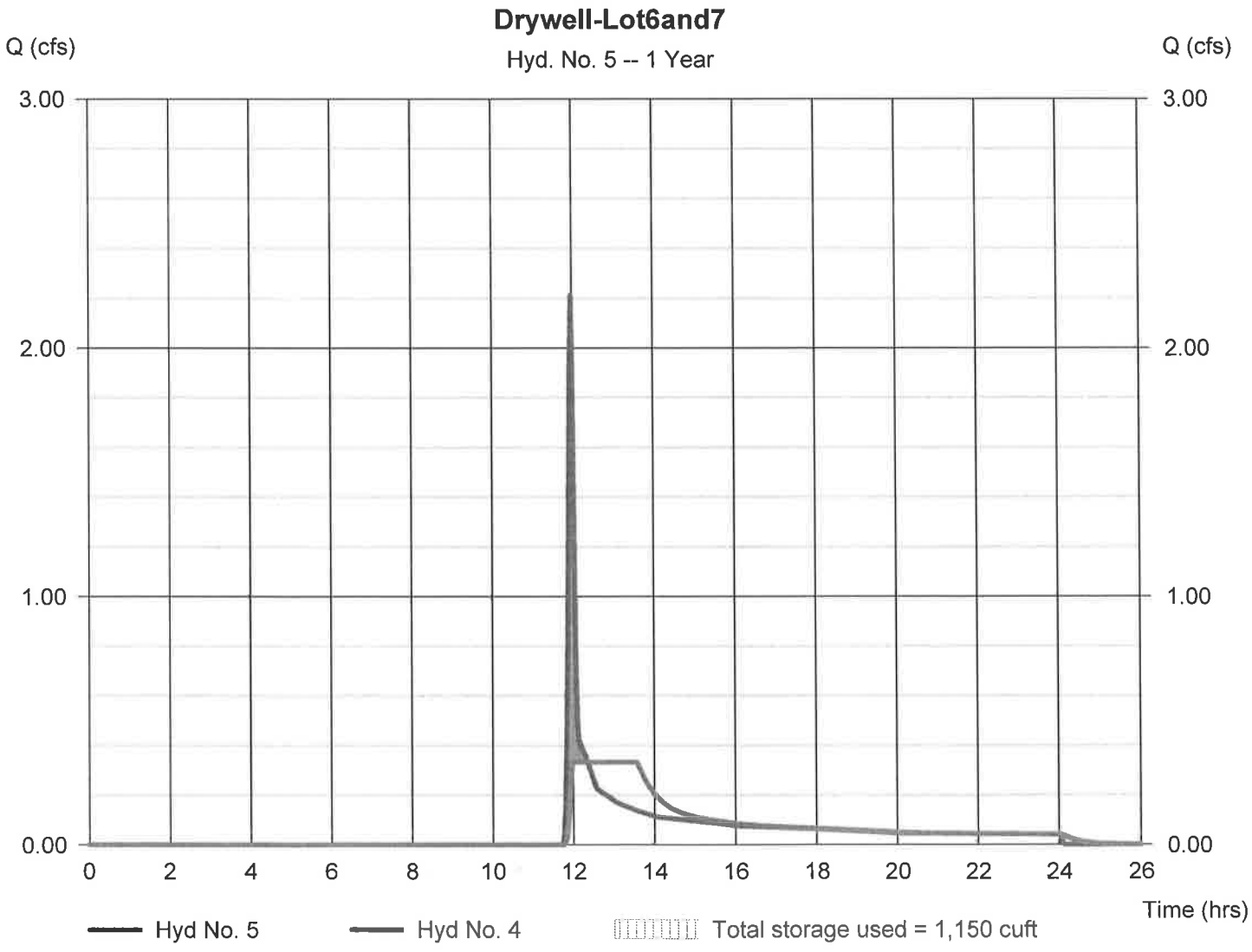
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 5

Drywell-Lot6and7

Hydrograph type	= Reservoir	Peak discharge	= 0.334 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 4,970 cuft
Inflow hyd. No.	= 4 - Proposed DA To Drywell-Lot6and7	Max. Elevation	= 368.22 ft
Reservoir name	= Drywell-Lot6and7	Max. Storage	= 1,150 cuft

Storage Indication method used.



Hydrograph Report

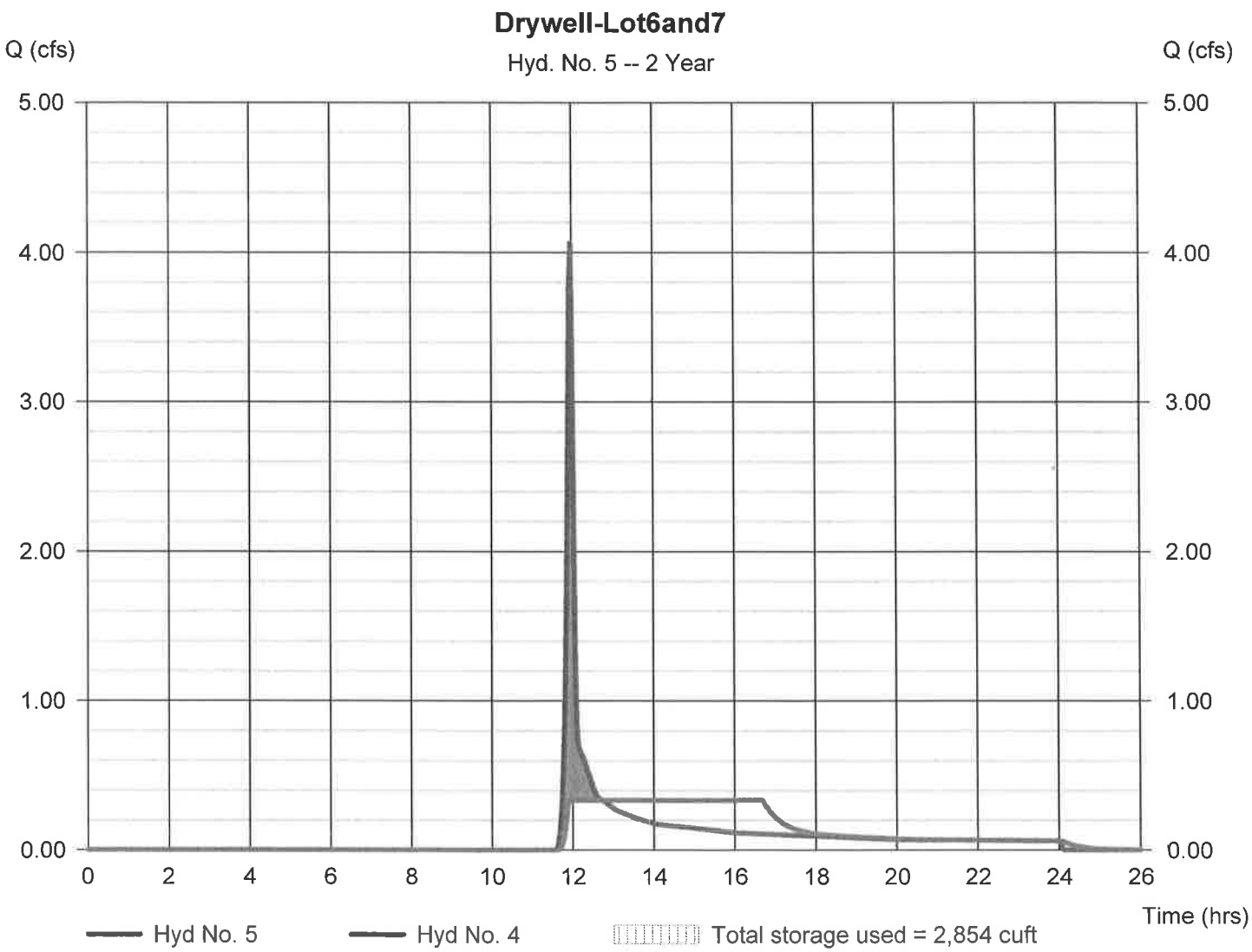
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 5

Drywell-Lot6and7

Hydrograph type	= Reservoir	Peak discharge	= 0.334 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.90 hrs
Time interval	= 2 min	Hyd. volume	= 8,425 cuft
Inflow hyd. No.	= 4 - Proposed DA To Drywell-Lot6and7	Max. Elevation	= 368.53 ft
Reservoir name	= Drywell-Lot6and7	Max. Storage	= 2,854 cuft

Storage Indication method used.



Hydrograph Report

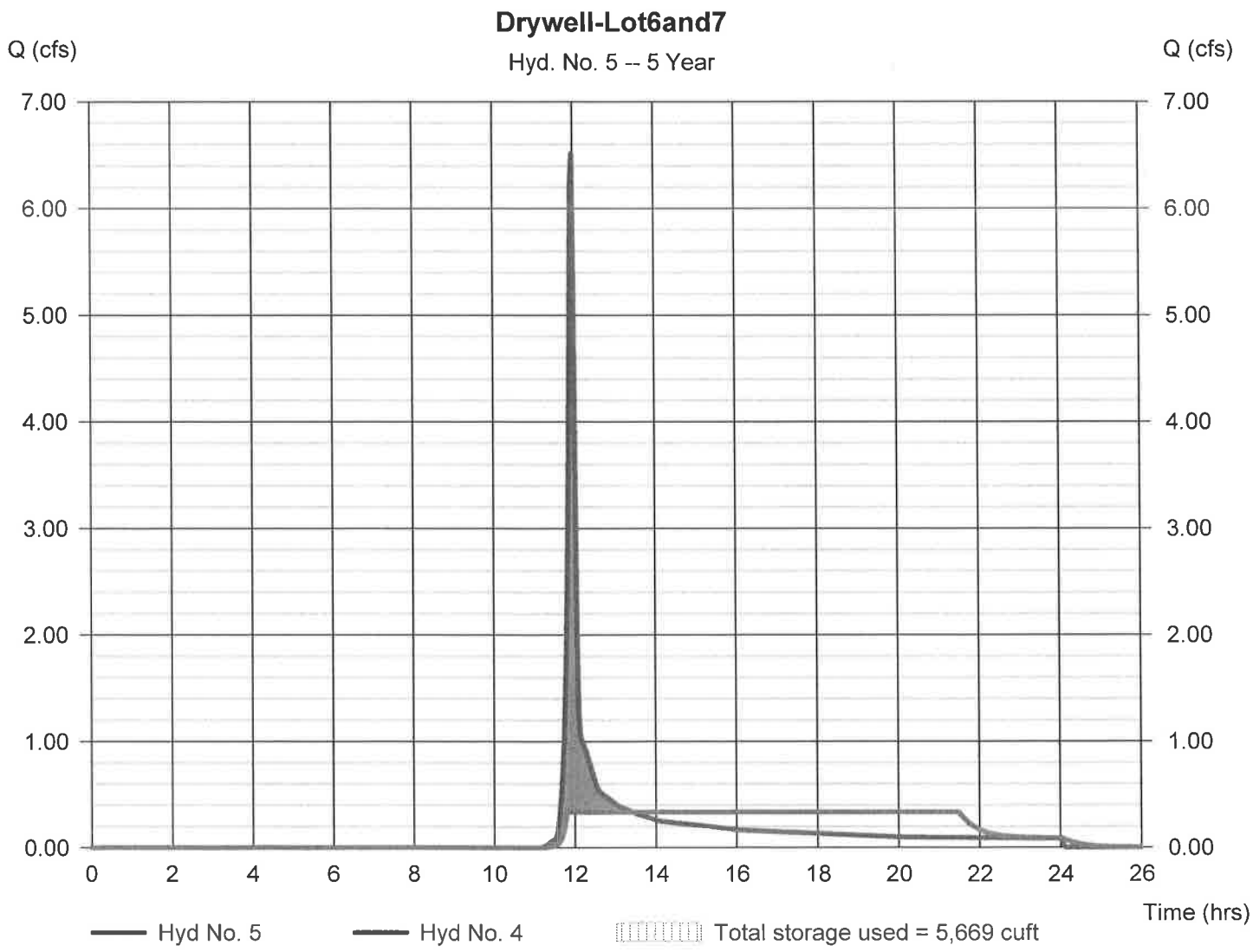
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 5

Drywell-Lot6and7

Hydrograph type	= Reservoir	Peak discharge	= 0.334 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.80 hrs
Time interval	= 2 min	Hyd. volume	= 13,137 cuft
Inflow hyd. No.	= 4 - Proposed DA To Drywell-Lot6and7	Max. Elevation	= 369.06 ft
Reservoir name	= Drywell-Lot6and7	Max. Storage	= 5,669 cuft

Storage Indication method used.



Hydrograph Report

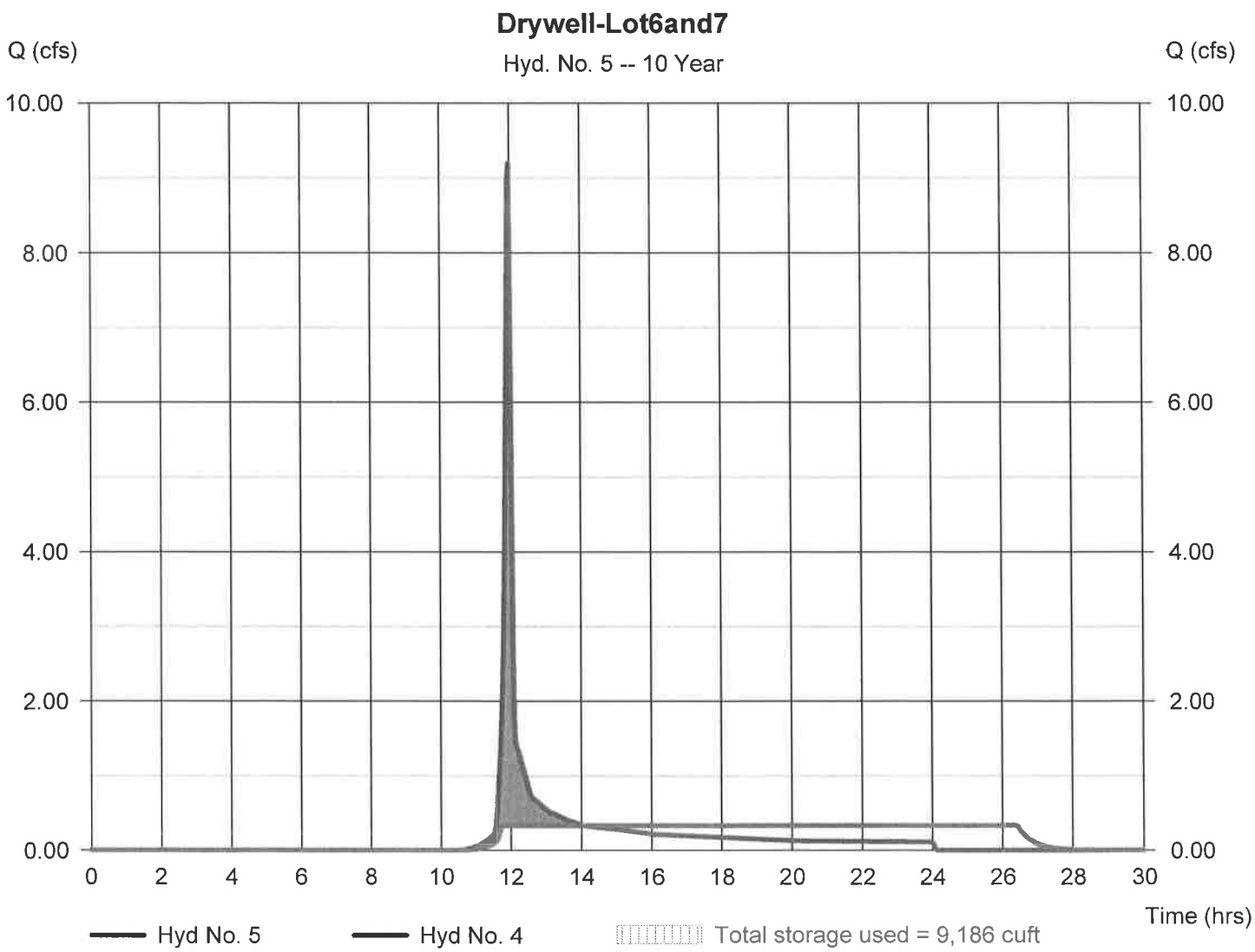
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 5

Drywell-Lot6and7

Hydrograph type	= Reservoir	Peak discharge	= 0.334 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.73 hrs
Time interval	= 2 min	Hyd. volume	= 18,407 cuft
Inflow hyd. No.	= 4 - Proposed DA To Drywell-Lot6and7	Max. Elevation	= 369.72 ft
Reservoir name	= Drywell-Lot6and7	Max. Storage	= 9,186 cuft

Storage Indication method used.



Hydrograph Report

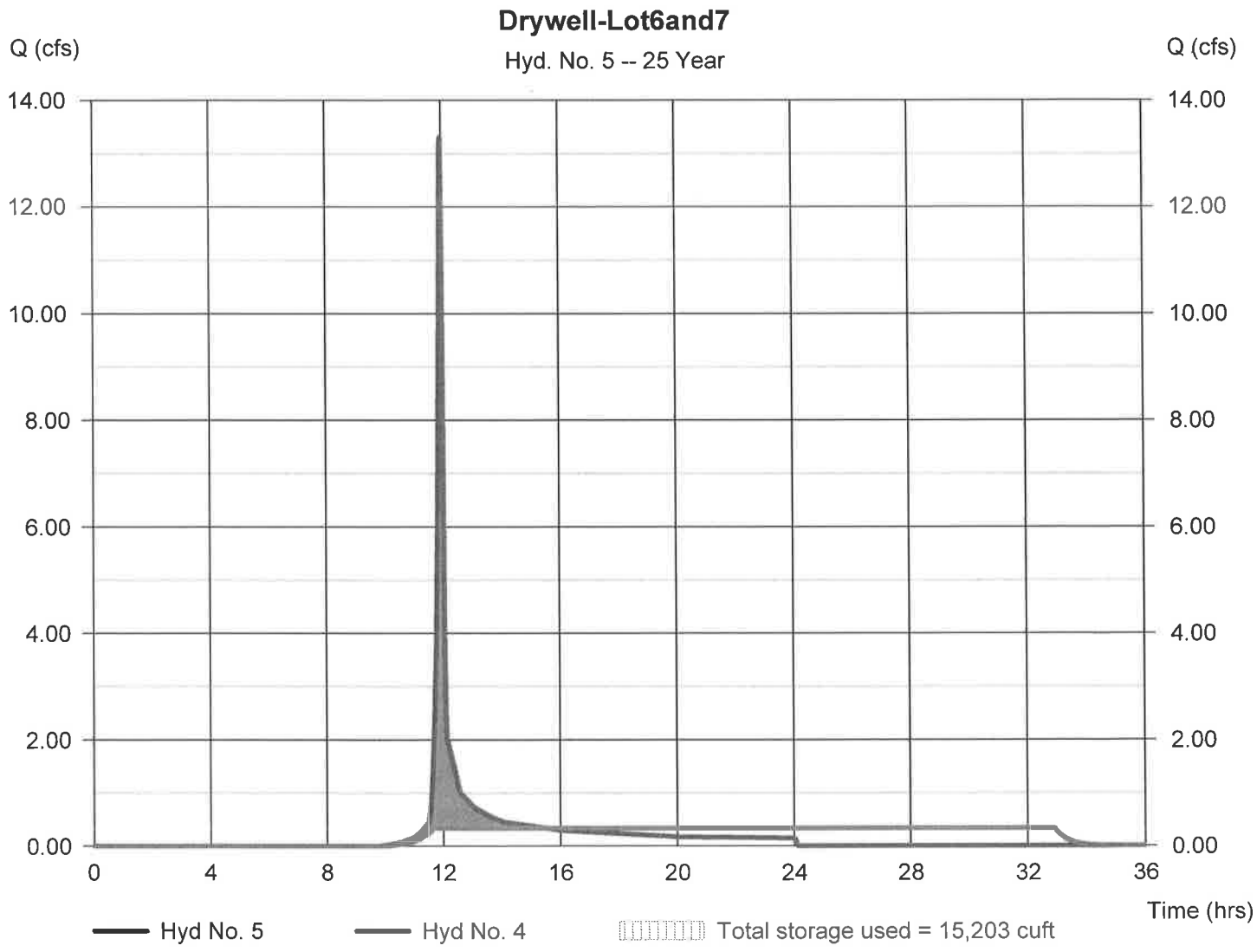
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 5

Drywell-Lot6and7

Hydrograph type	= Reservoir	Peak discharge	= 0.334 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.63 hrs
Time interval	= 2 min	Hyd. volume	= 26,658 cuft
Inflow hyd. No.	= 4 - Proposed DA To Drywell-Lot6and7	Max. Elevation	= 370.84 ft
Reservoir name	= Drywell-Lot6and7	Max. Storage	= 15,203 cuft

Storage Indication method used.



Hydrograph Report

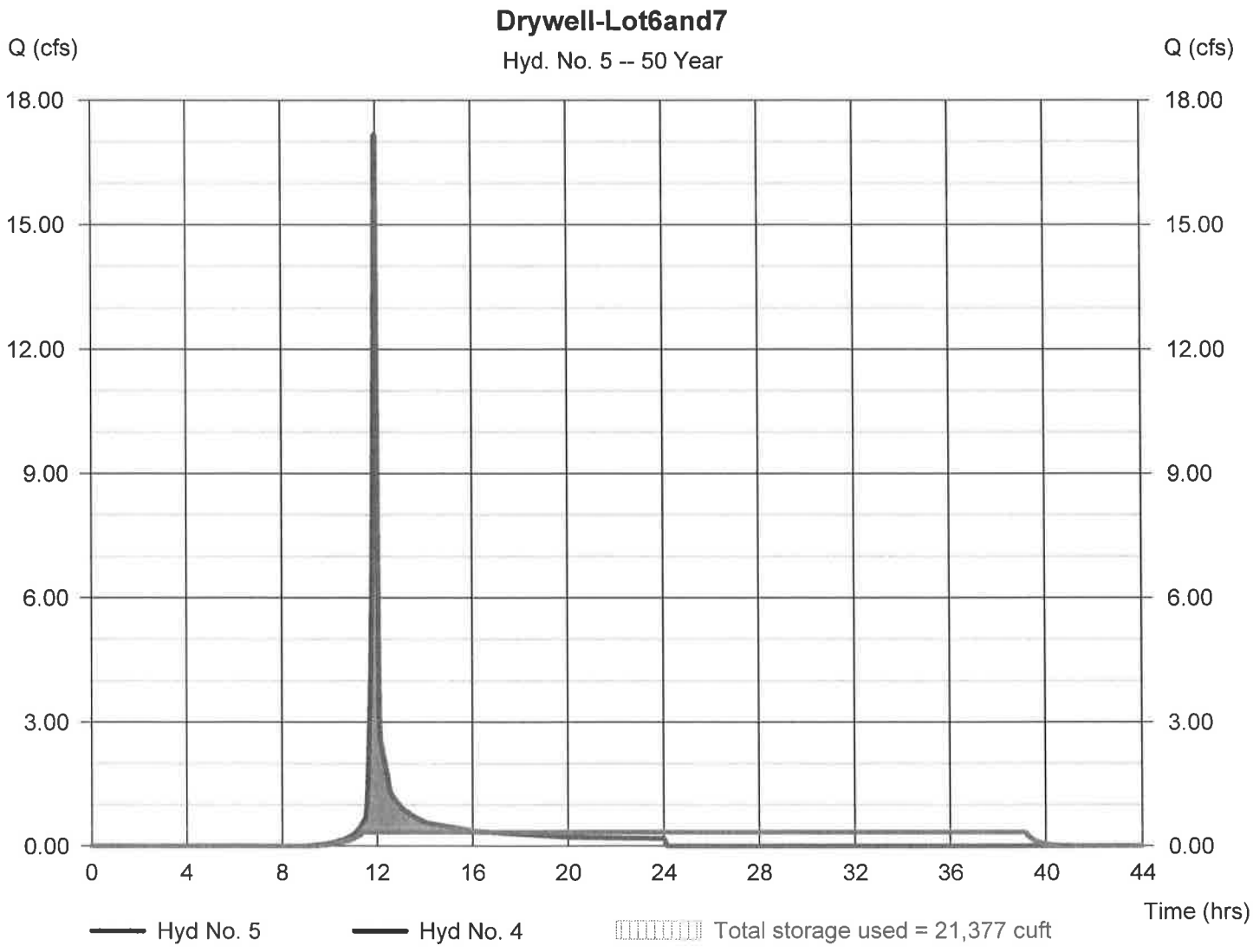
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 5

Drywell-Lot6and7

Hydrograph type	= Reservoir	Peak discharge	= 0.334 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.43 hrs
Time interval	= 2 min	Hyd. volume	= 34,625 cuft
Inflow hyd. No.	= 4 - Proposed DA To Drywell-Lot6and7	Max. Elevation	= 372.45 ft
Reservoir name	= Drywell-Lot6and7	Max. Storage	= 21,377 cuft

Storage Indication method used.



Hydrograph Report

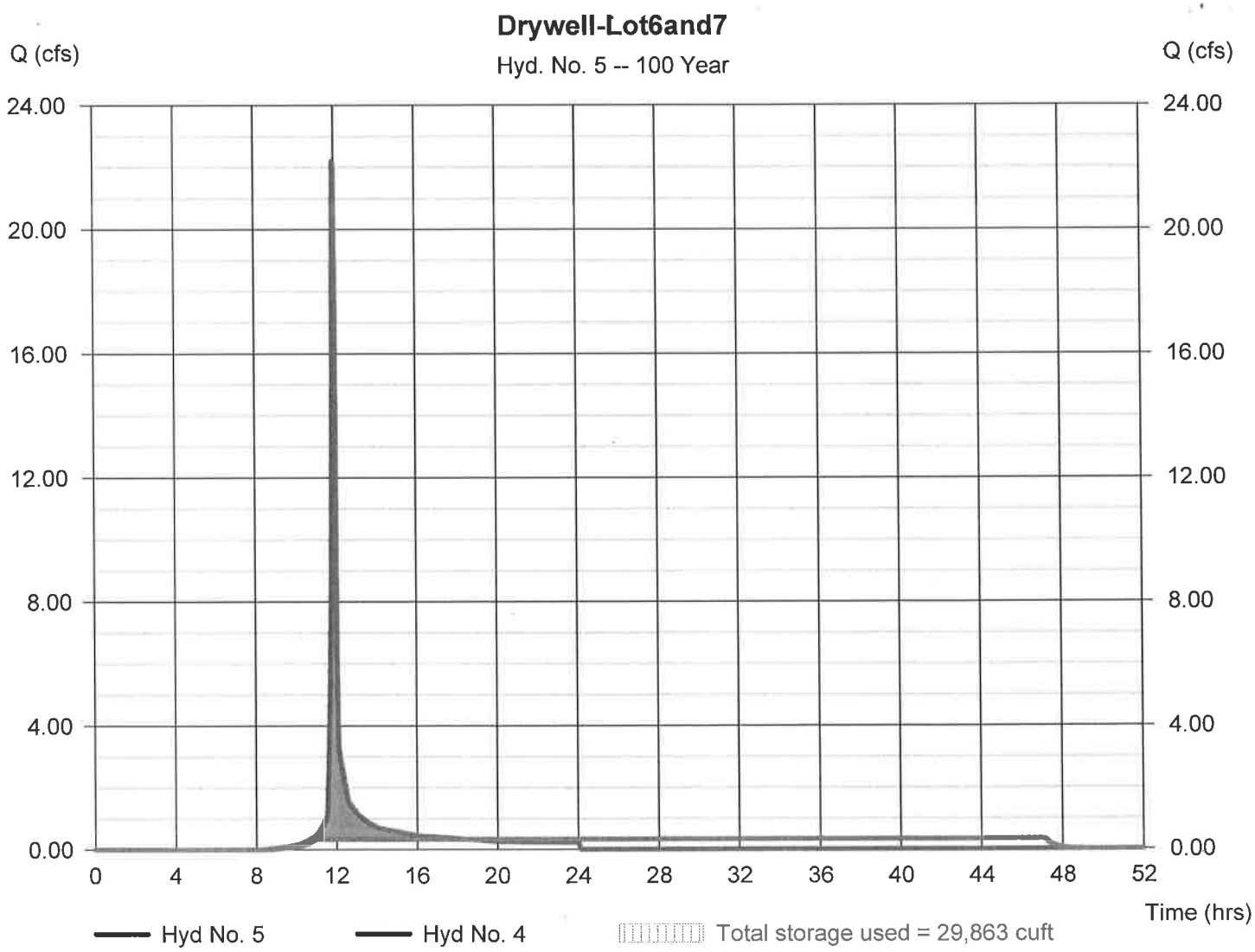
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 5

Drywell-Lot6and7

Hydrograph type	= Reservoir	Peak discharge	= 0.334 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.10 hrs
Time interval	= 2 min	Hyd. volume	= 44,876 cuft
Inflow hyd. No.	= 4 - Proposed DA To Drywell-Lot6and7	Max. Elevation	= 373.15 ft
Reservoir name	= Drywell-Lot6and7	Max. Storage	= 29,863 cuft

Storage Indication method used.



	EMERGENCY SPILLWAY CALCULATIONS				
	Broad crested weir b > 2H				
		3/2			
	Q = C x L x H				
	b =	10	ft.		
	C =	3.0			
	L =	83	ft.		
	H =	0.2	ft.		
	Q =	22.3	AT ELEVATION 373.40		
	TOP OF BERM = 374.40				
	100 YEAR PEAK INFLOW = 22.20 c.f.s.				

DAMBRO
STORMWATER MANAGEMENT

Proposed Drainage Area To Drywell-Lot 8-#1:

Total Area = 4,560 sq.ft = 0.10 acres
Impervious = 4,560 sq.ft

CN Values:
Impervious CN = 98

Composite CN = 98

Time of Concentration:
Use 5.00 minute time of concentration

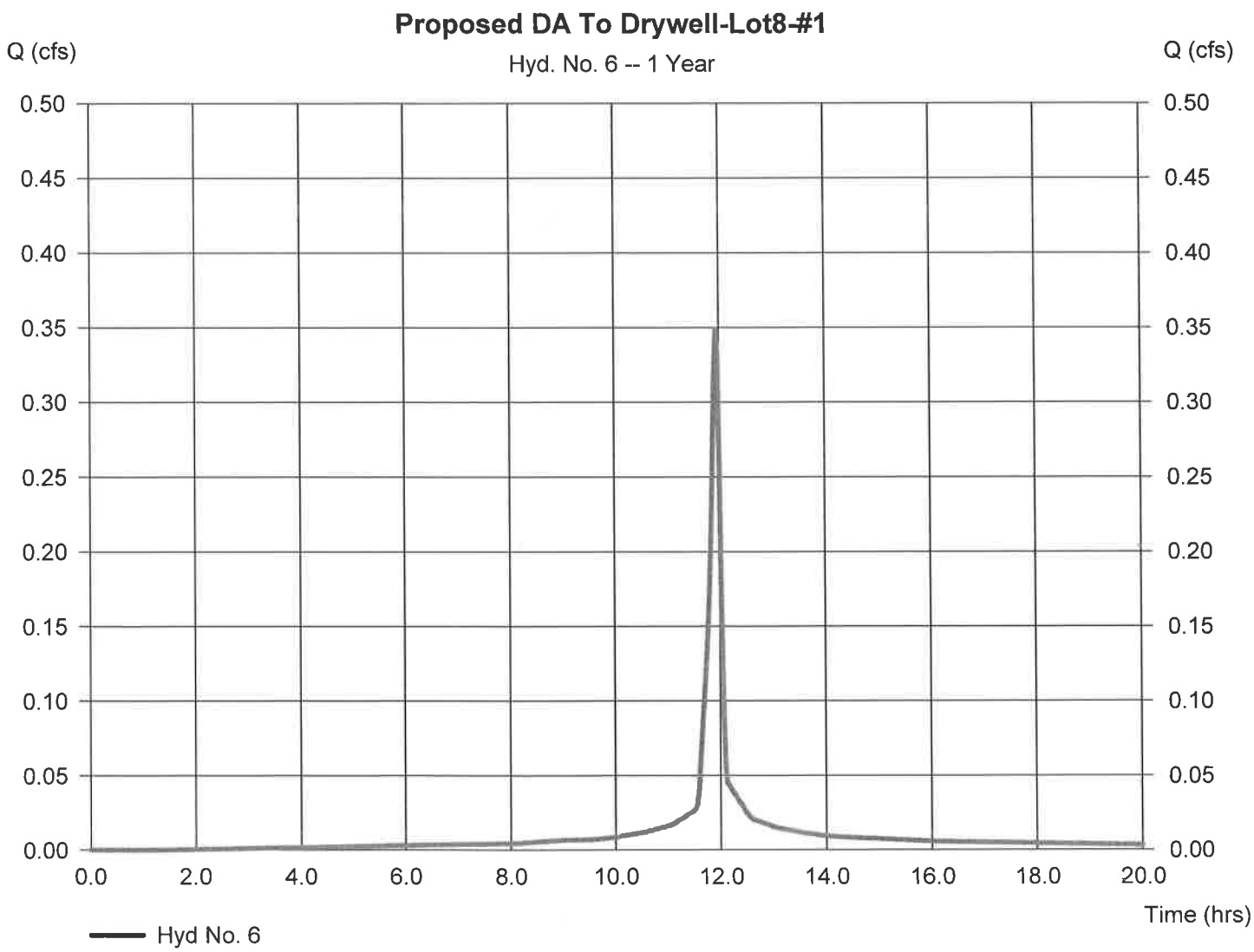
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 6

Proposed DA To Drywell-Lot8-#1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.349 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 807 cuft
Drainage area	= 0.100 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



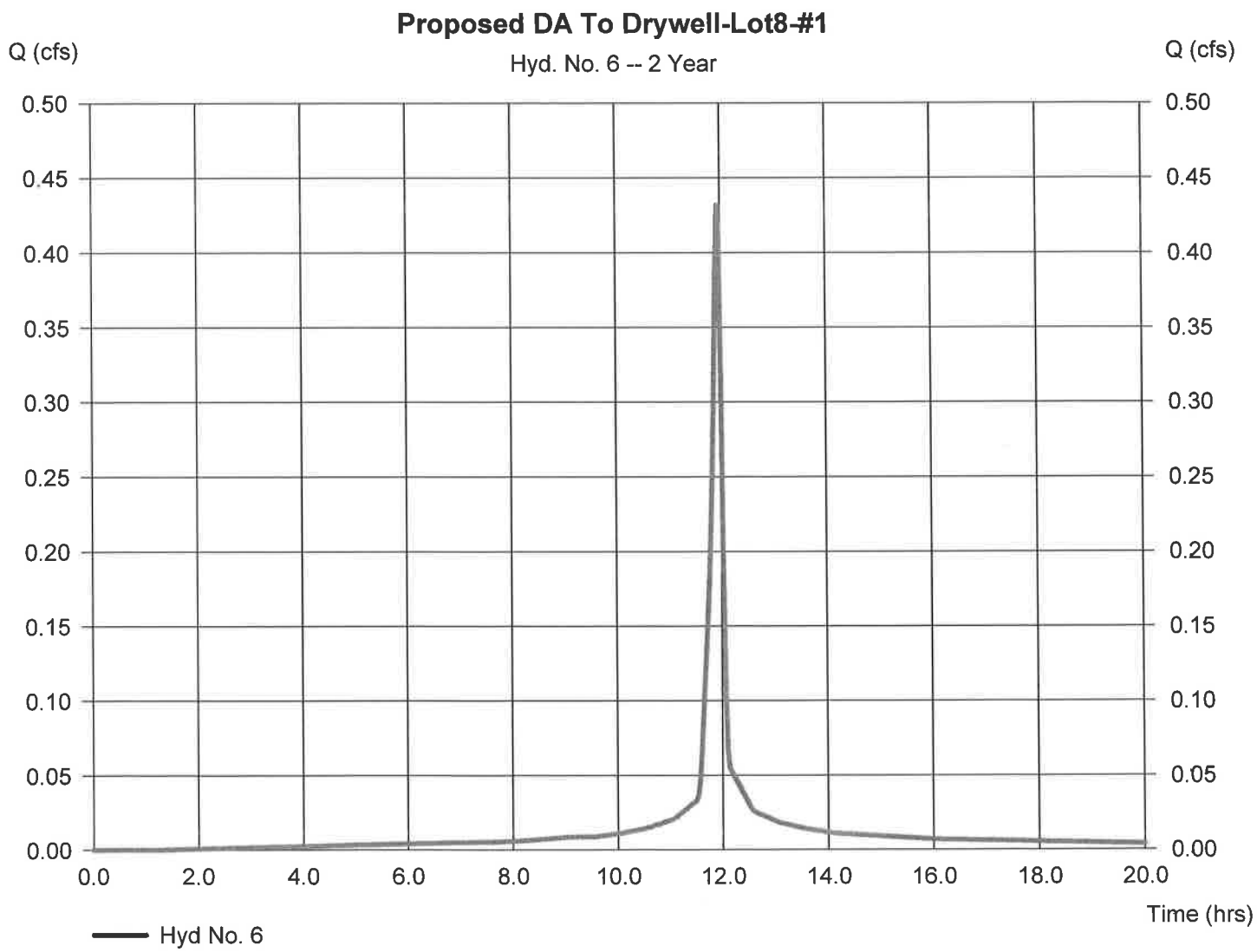
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 6

Proposed DA To Drywell-Lot8-#1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.432 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 1,010 cuft
Drainage area	= 0.100 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



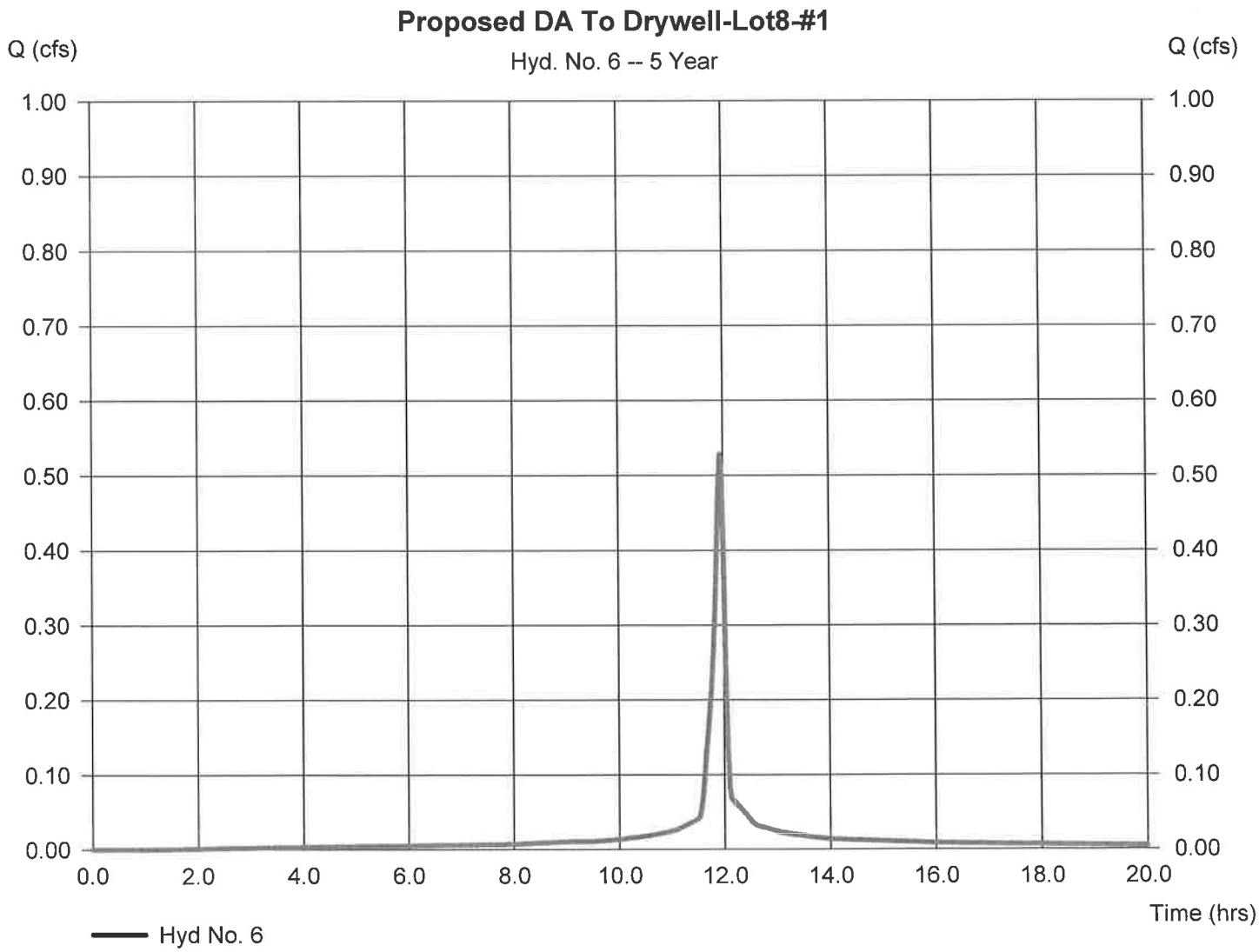
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 6

Proposed DA To Drywell-Lot8-#1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.528 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 1,247 cuft
Drainage area	= 0.100 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



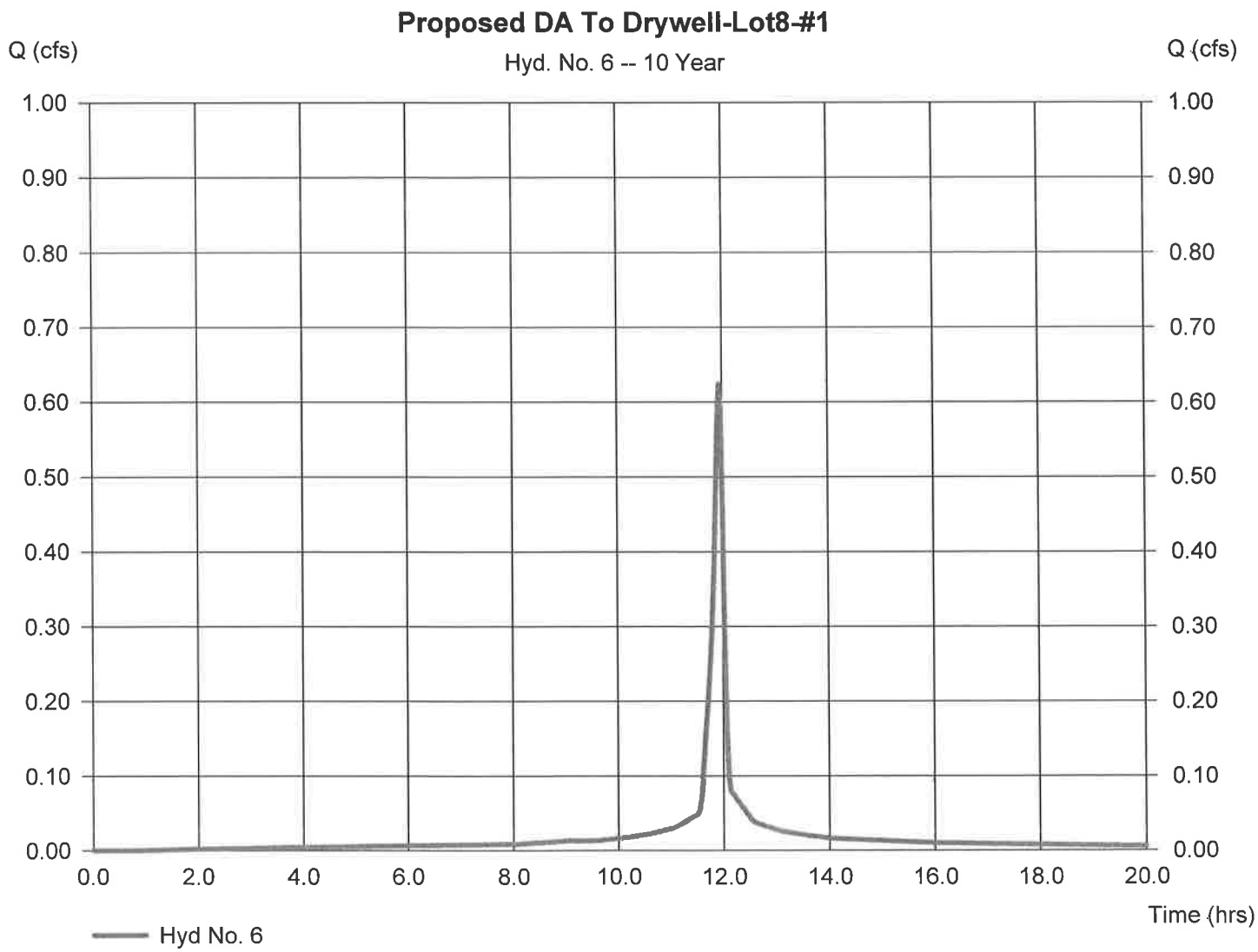
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 6

Proposed DA To Drywell-Lot8-#1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.625 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 1,485 cuft
Drainage area	= 0.100 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



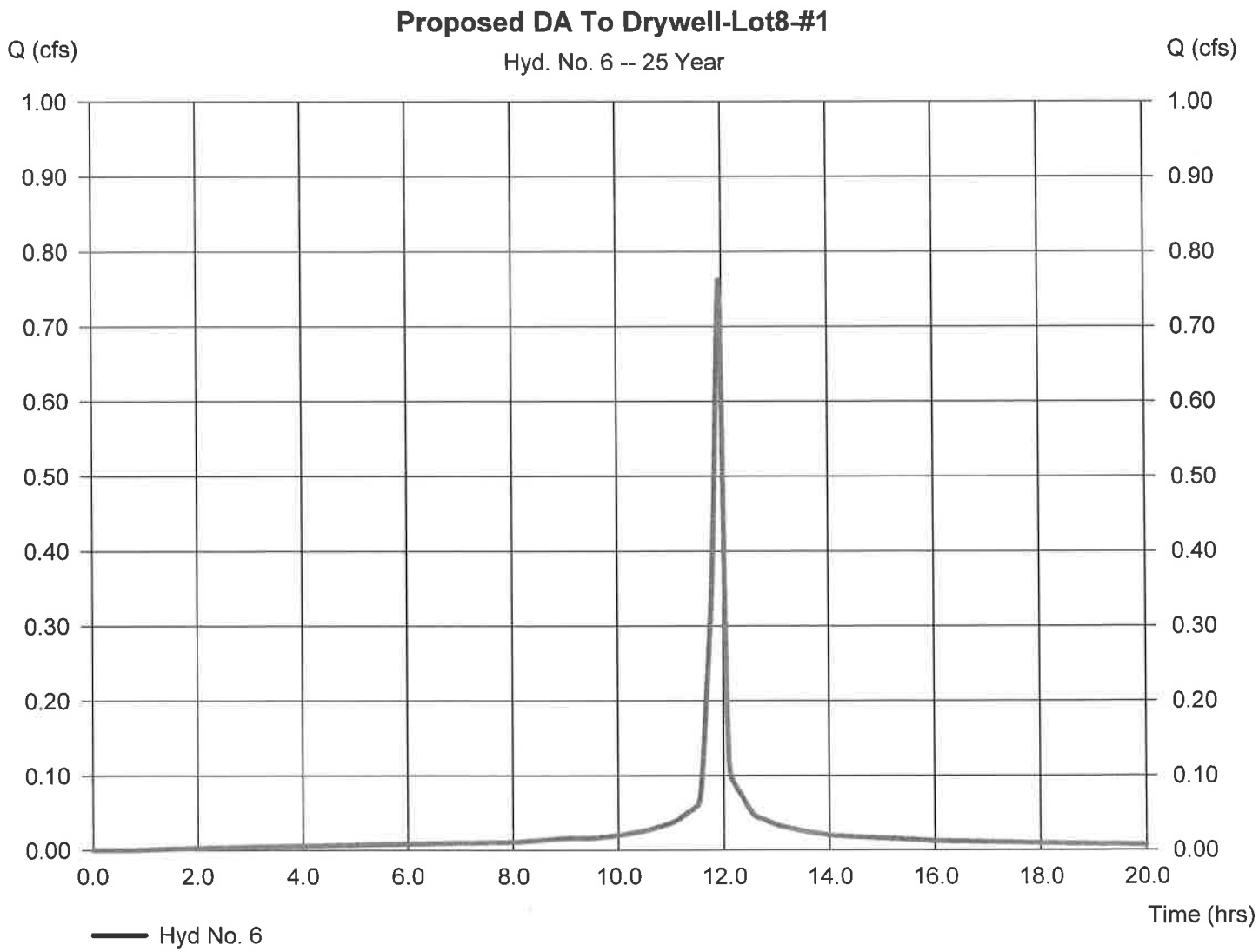
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 6

Proposed DA To Drywell-Lot8-#1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.762 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 1,825 cuft
Drainage area	= 0.100 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



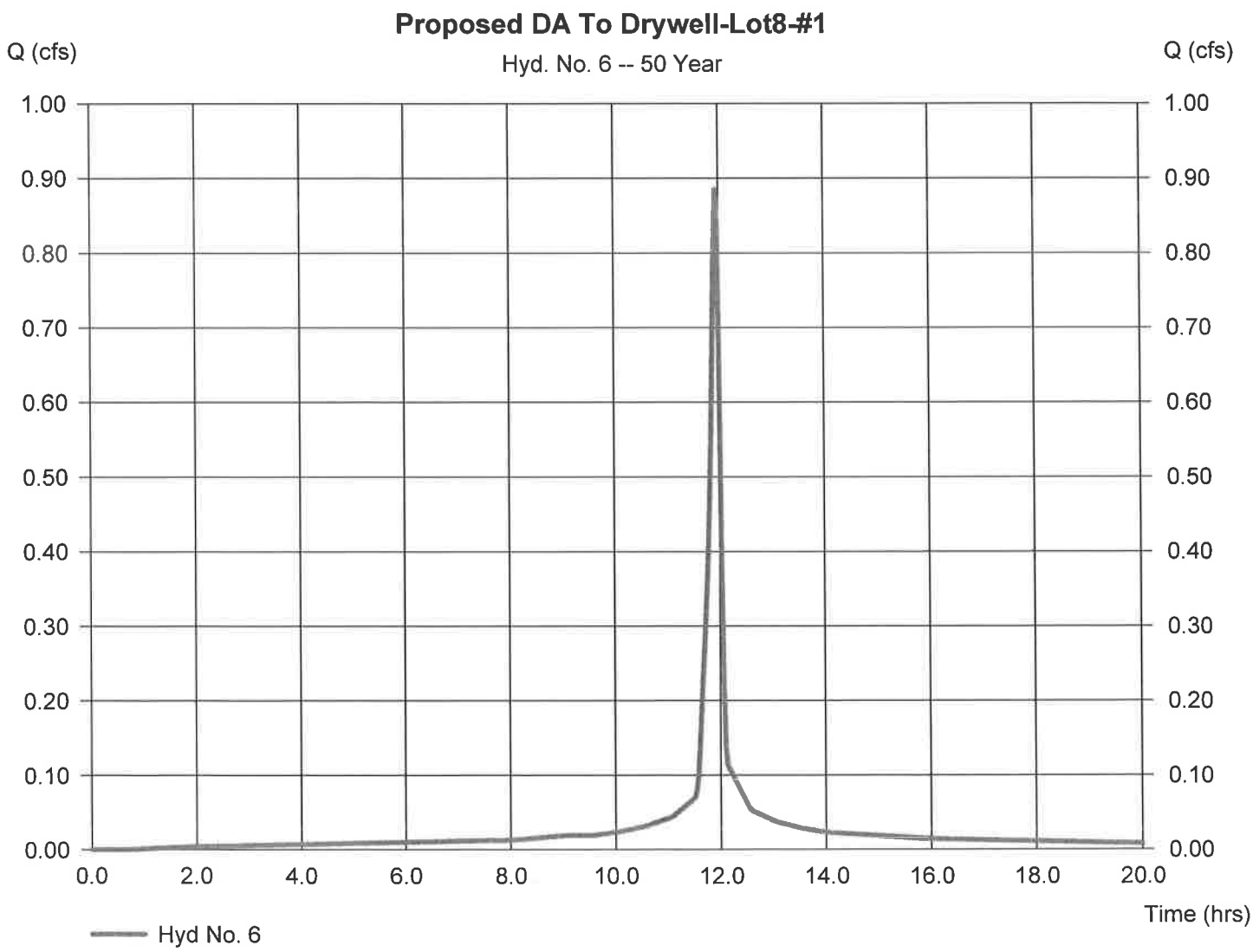
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 6

Proposed DA To Drywell-Lot8-#1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.885 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 2,131 cuft
Drainage area	= 0.100 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



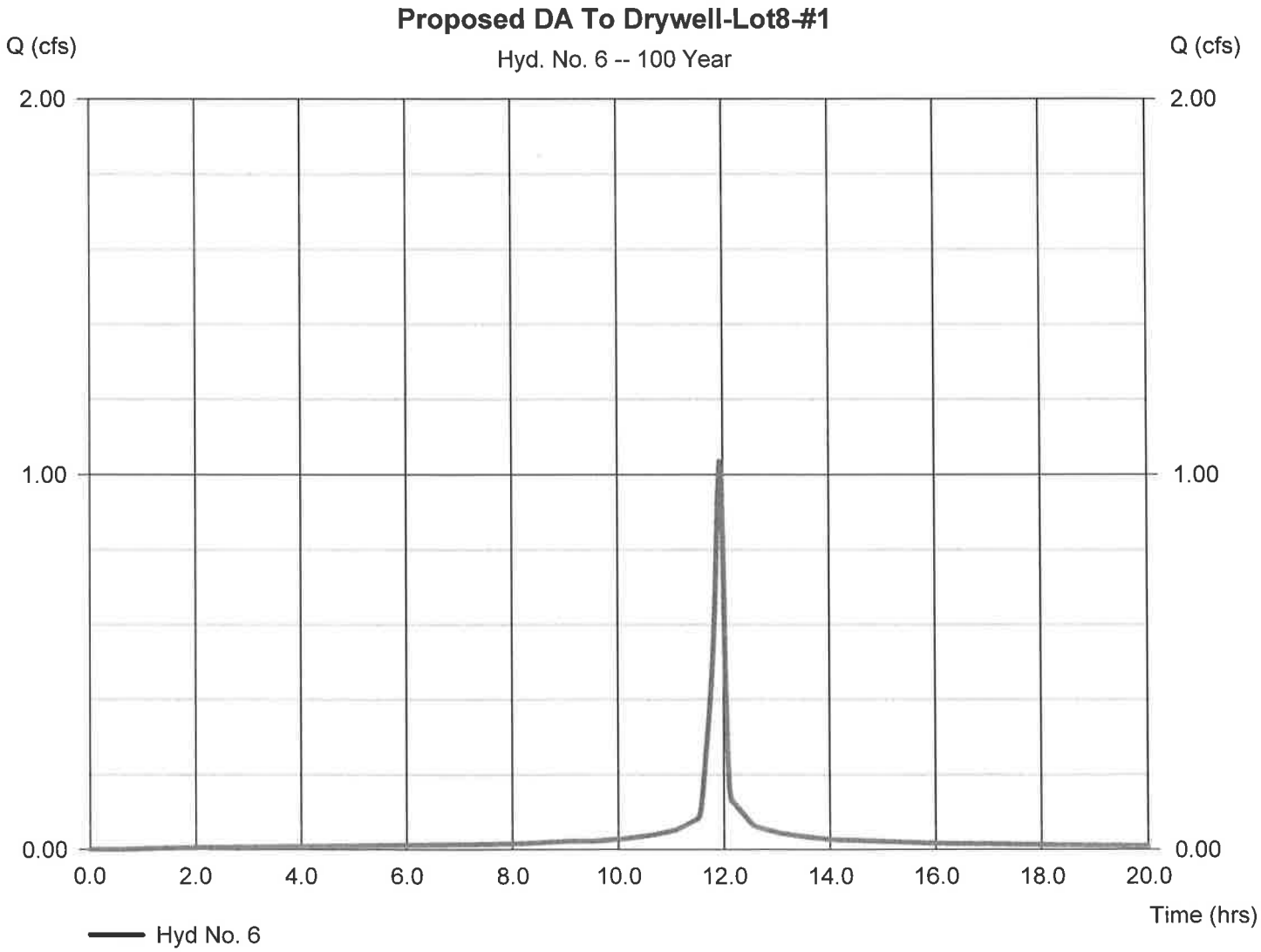
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 6

Proposed DA To Drywell-Lot8-#1

Hydrograph type	= SCS Runoff	Peak discharge	= 1.036 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 2,505 cuft
Drainage area	= 0.100 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Pond Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Pond No. 2 - Drywell-Lot8-#1

Pond Data

Contours - User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 370.00 ft. Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	370.00	924	0	0
0.10	370.10	924	37	37
1.00	371.00	924	333	370
2.00	372.00	924	370	739
3.00	373.00	924	370	1,109

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 2.060 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	370.00	---	---	---	---	---	---	---	---	0.000	---	0.000
0.10	37	370.10	---	---	---	---	---	---	---	---	0.044	---	0.044
1.00	370	371.00	---	---	---	---	---	---	---	---	0.044	---	0.044
2.00	739	372.00	---	---	---	---	---	---	---	---	0.044	---	0.044
3.00	1,109	373.00	---	---	---	---	---	---	---	---	0.044	---	0.044

Hydrograph Report

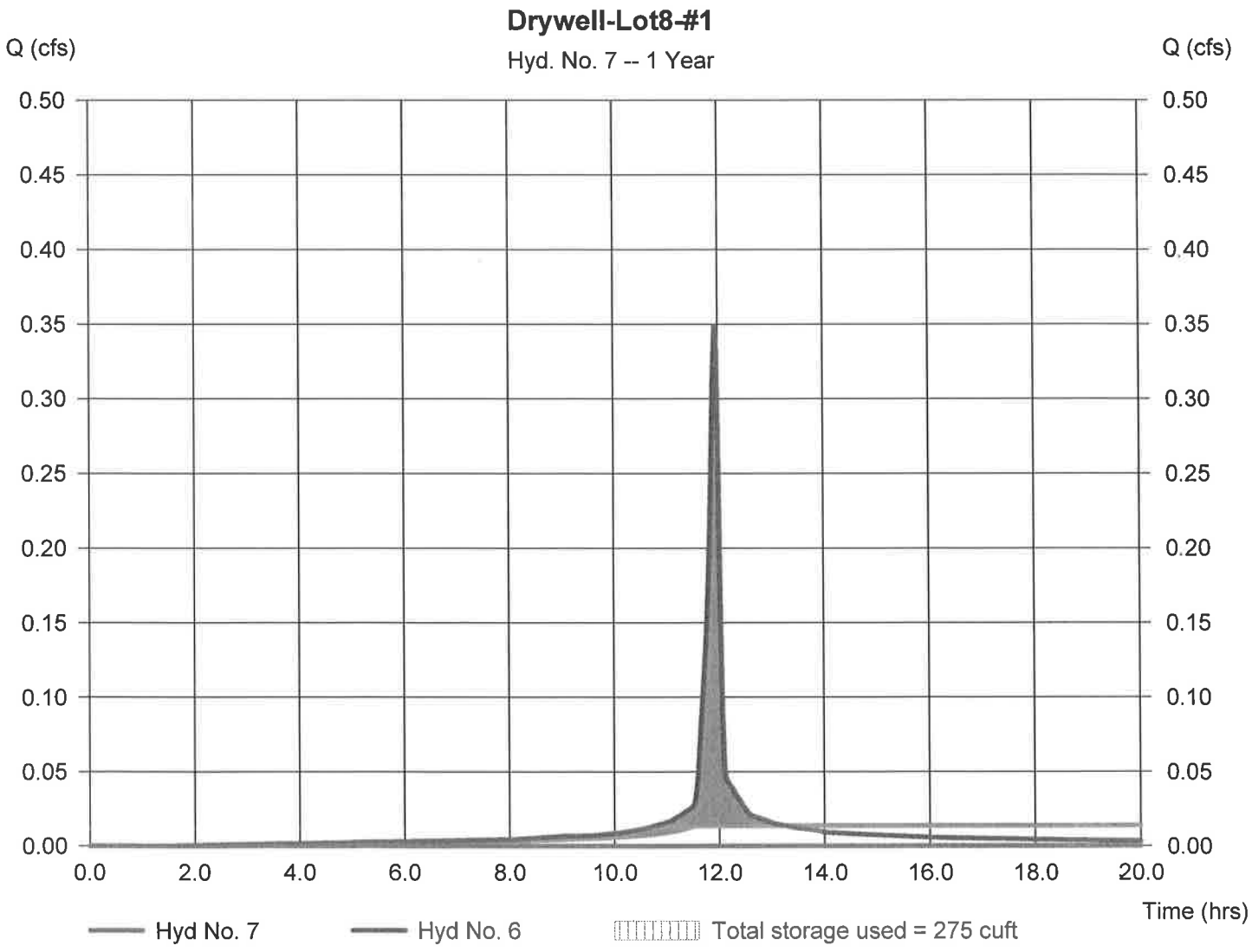
Hydraflow Hydrographs by Intelisolve v9.23 · Tuesday, Aug 11, 2020

Hyd. No. 7

Drywell-Lot8-#1

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.63 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 6 - Proposed DA To Drywell-Lot8-#1	Max. Elevation	= 370.74 ft
Reservoir name	= Drywell-Lot8-#1	Max. Storage	= 275 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

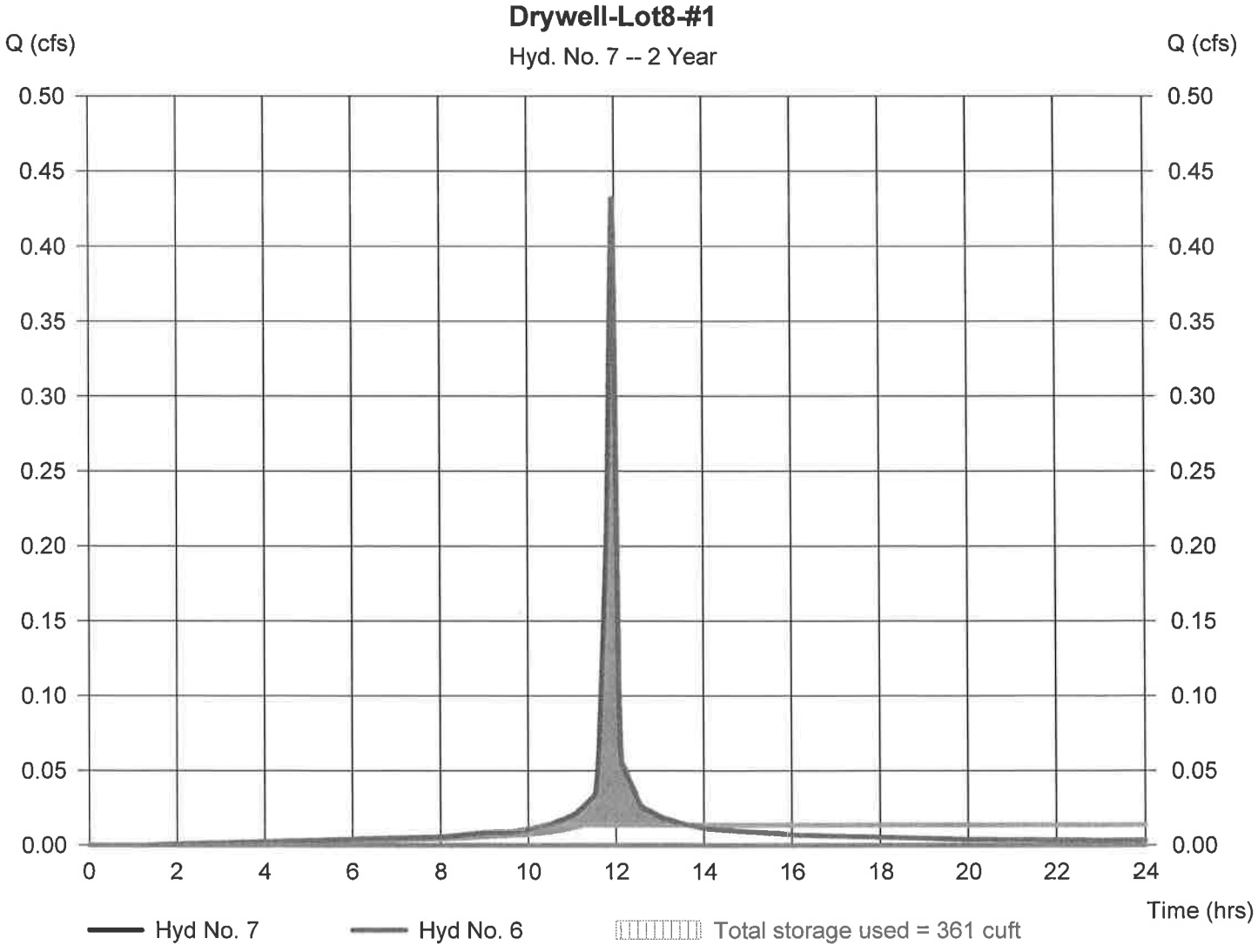
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 7

Drywell-Lot8-#1

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 10.97 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 6 - Proposed DA To Drywell-Lot8-#1	Max. Elevation	= 370.98 ft
Reservoir name	= Drywell-Lot8-#1	Max. Storage	= 361 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

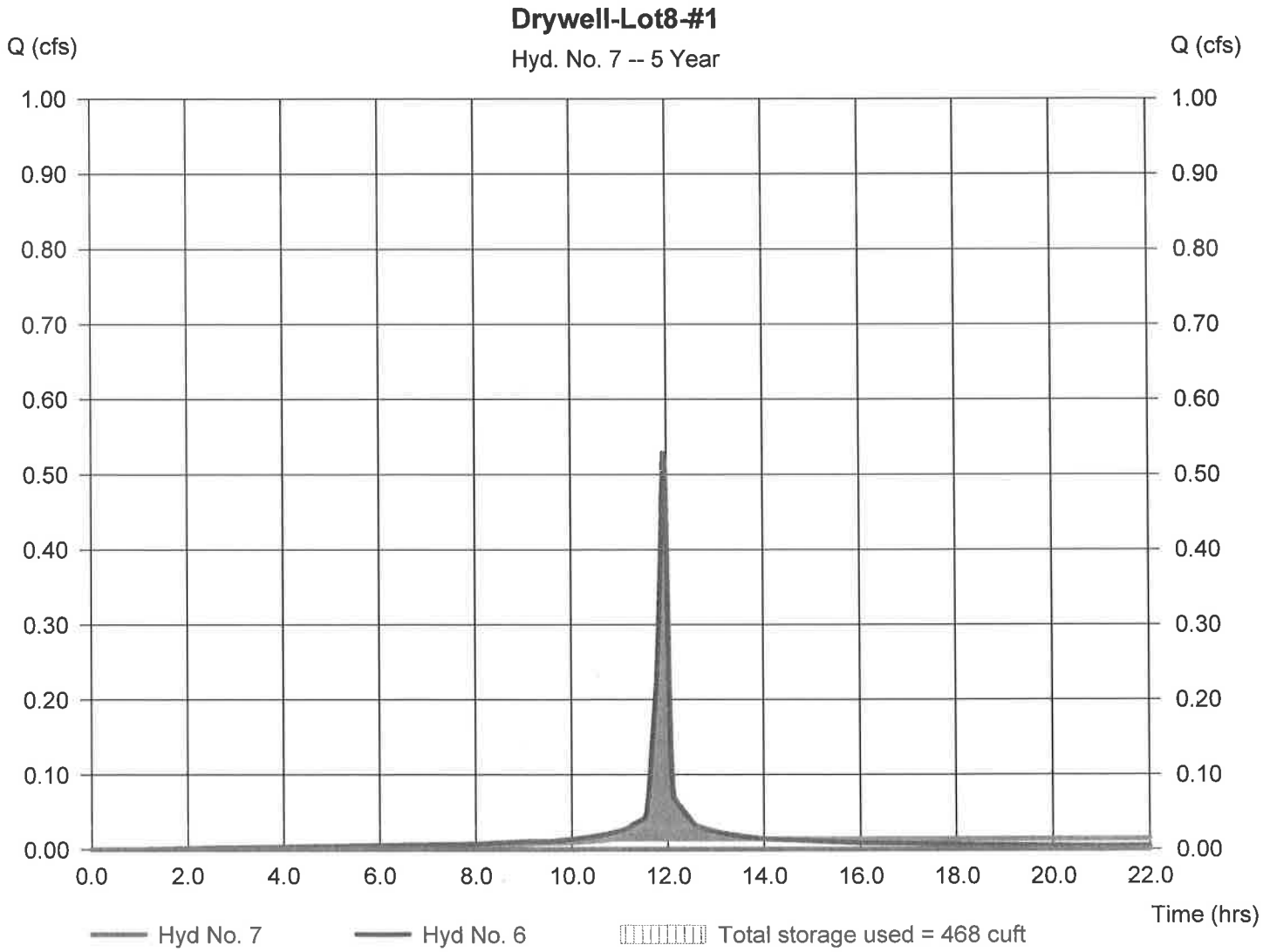
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 7

Drywell-Lot8-#1

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.03 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 6 - Proposed DA To Drywell-Lot8-#1	Max. Elevation	= 371.27 ft
Reservoir name	= Drywell-Lot8-#1	Max. Storage	= 468 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

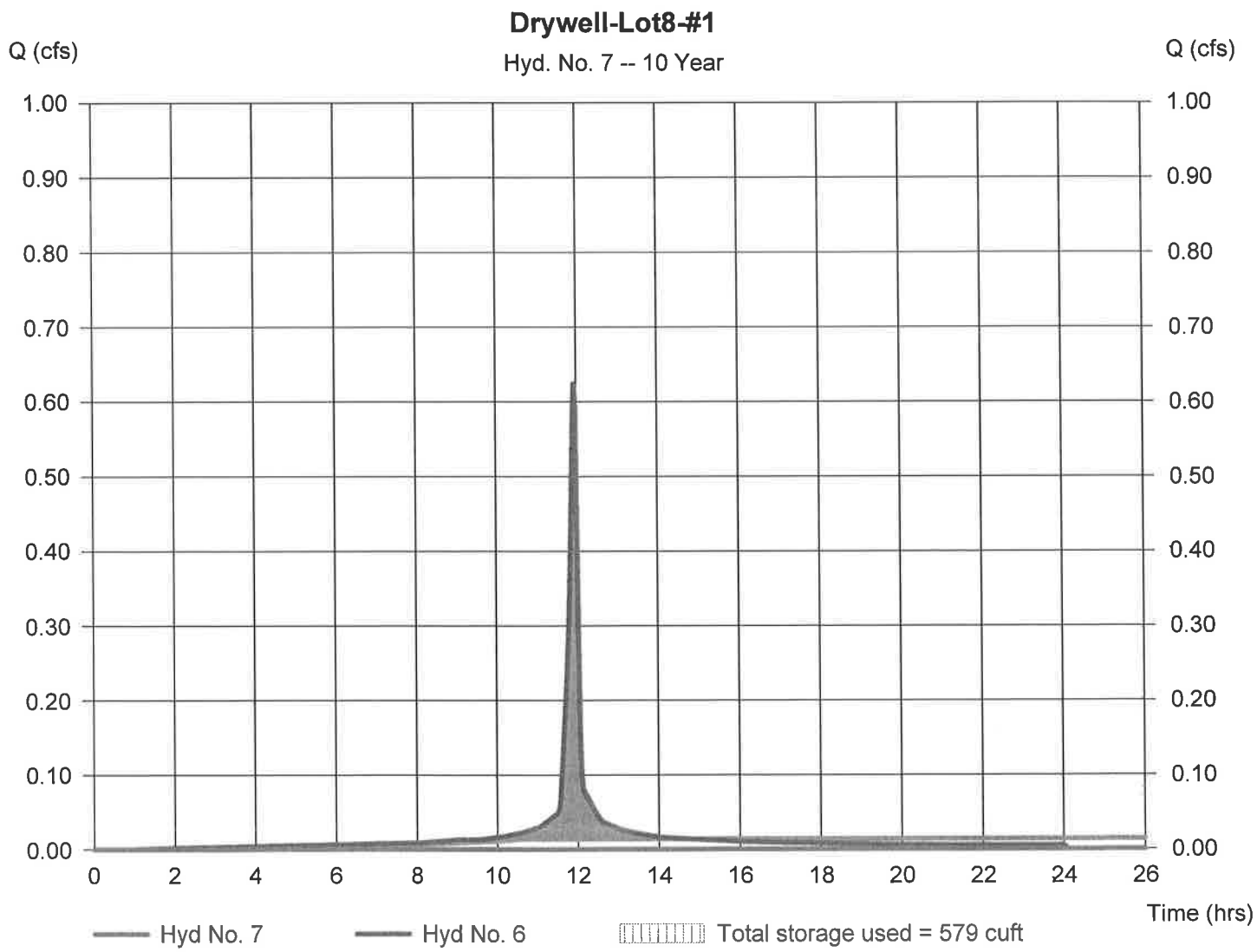
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 7

Drywell-Lot8-#1

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 10.57 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 6 - Proposed DA To Drywell-Lot8-#1	Max. Elevation	= 371.57 ft
Reservoir name	= Drywell-Lot8-#1	Max. Storage	= 579 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

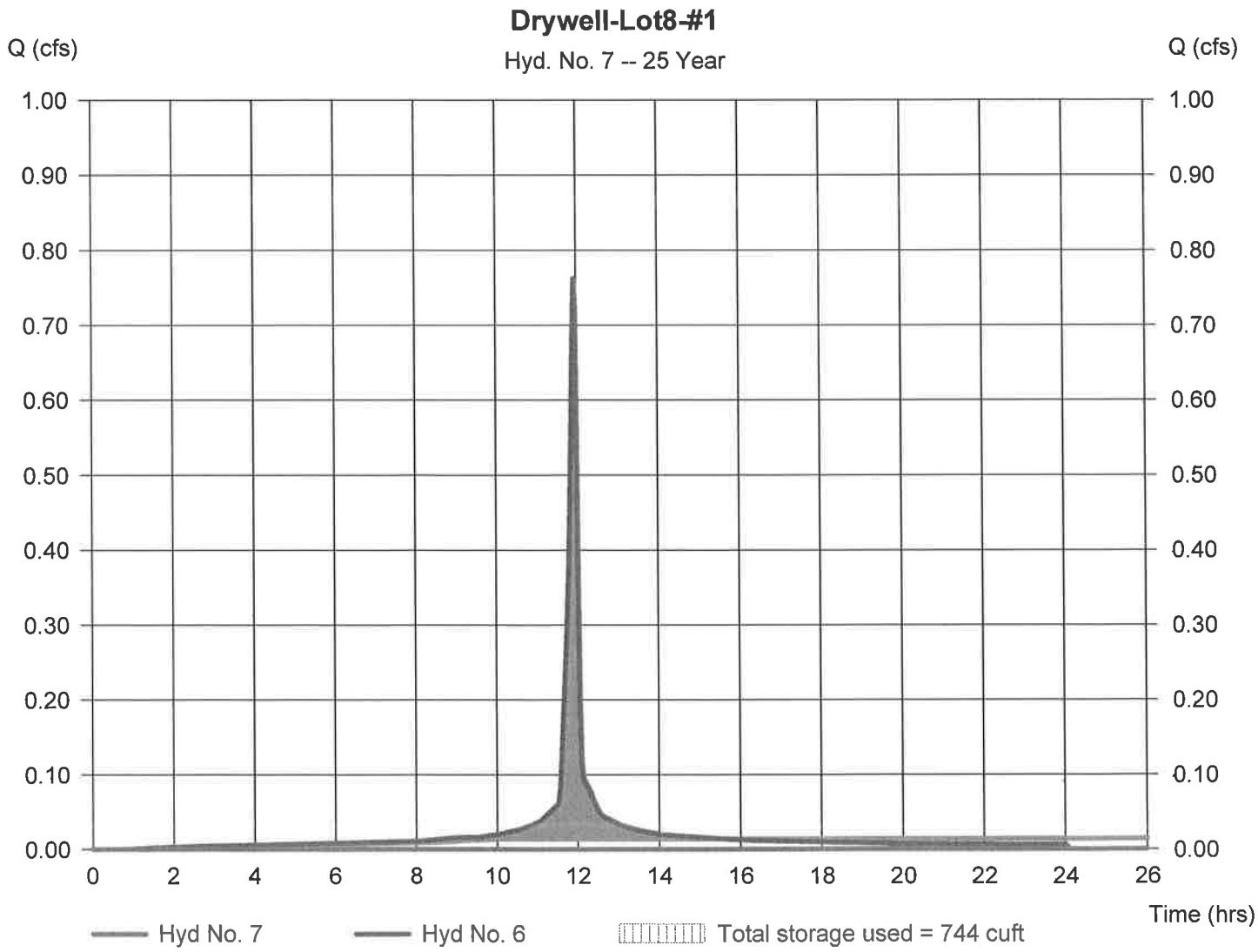
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 7

Drywell-Lot8-#1

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 25 yrs	Time to peak	= 10.87 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 6 - Proposed DA To Drywell-Lot8-#1	Max. Elevation	= 372.01 ft
Reservoir name	= Drywell-Lot8-#1	Max. Storage	= 744 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

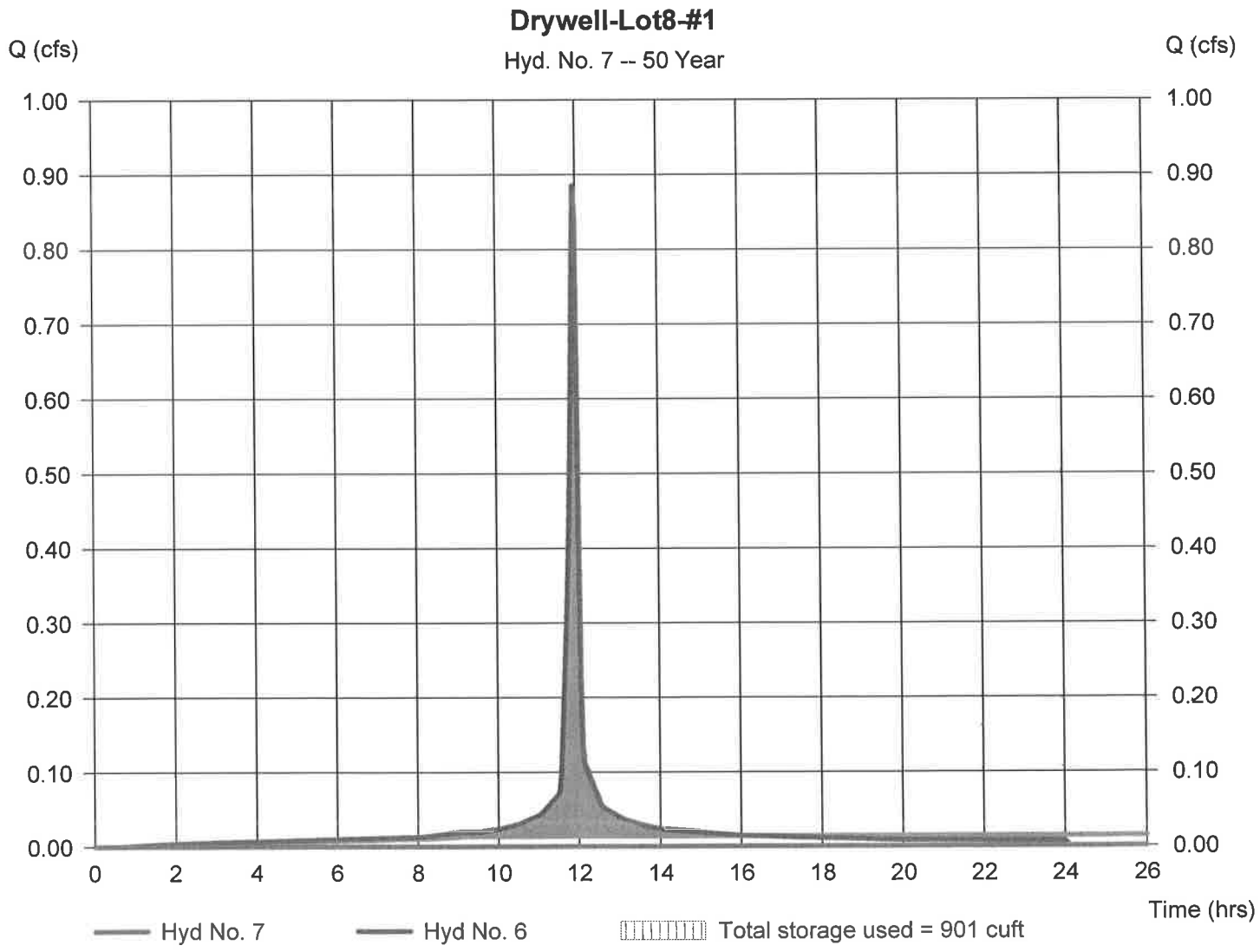
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 7

Drywell-Lot8-#1

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 50 yrs	Time to peak	= 10.63 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 6 - Proposed DA To Drywell-Lot8-#1	Max. Elevation	= 372.44 ft
Reservoir name	= Drywell-Lot8-#1	Max. Storage	= 901 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

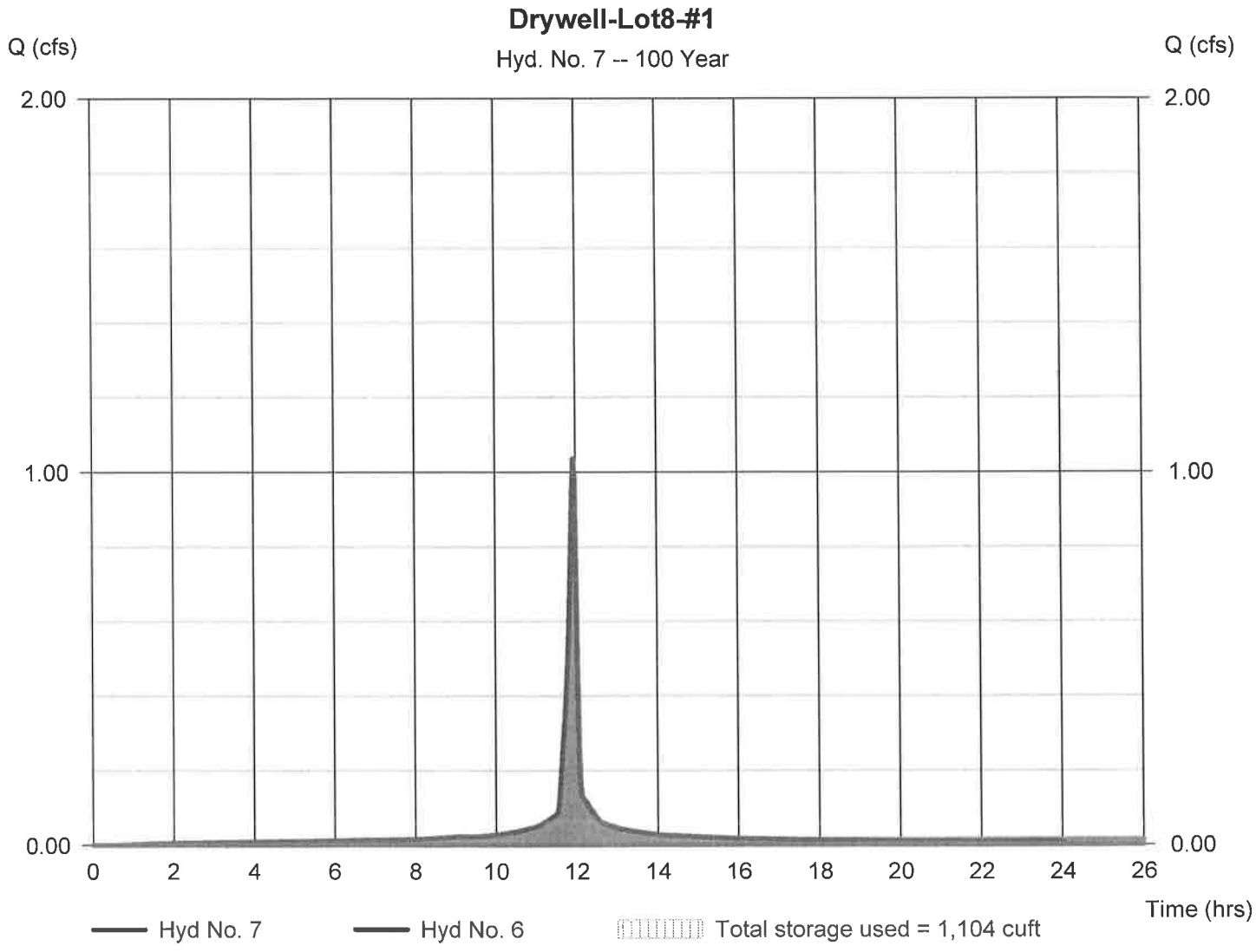
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 7

Drywell-Lot8-#1

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= 8.50 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 6 - Proposed DA To Drywell-Lot8-#1	Max. Elevation	= 372.99 ft
Reservoir name	= Drywell-Lot8-#1	Max. Storage	= 1,104 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



DAMBRO
STORMWATER MANAGEMENT

Proposed Drainage Area To Drywell-Lot 8-#2:

Total Area =	24,164 sq.ft = 0.55 acres
Meadow (B-soil) =	8,201 sq.ft
Lawn (B-soil) =	10,515 sq.ft
Impervious =	5,448 sq.ft

CN Values:

Meadow (B-soil)	CN = 58
Lawn (B-soil)	CN = 61
Impervious	CN = 98

Composite CN = 68

Time of Concentration:
Use 5.00 minute time of concentration

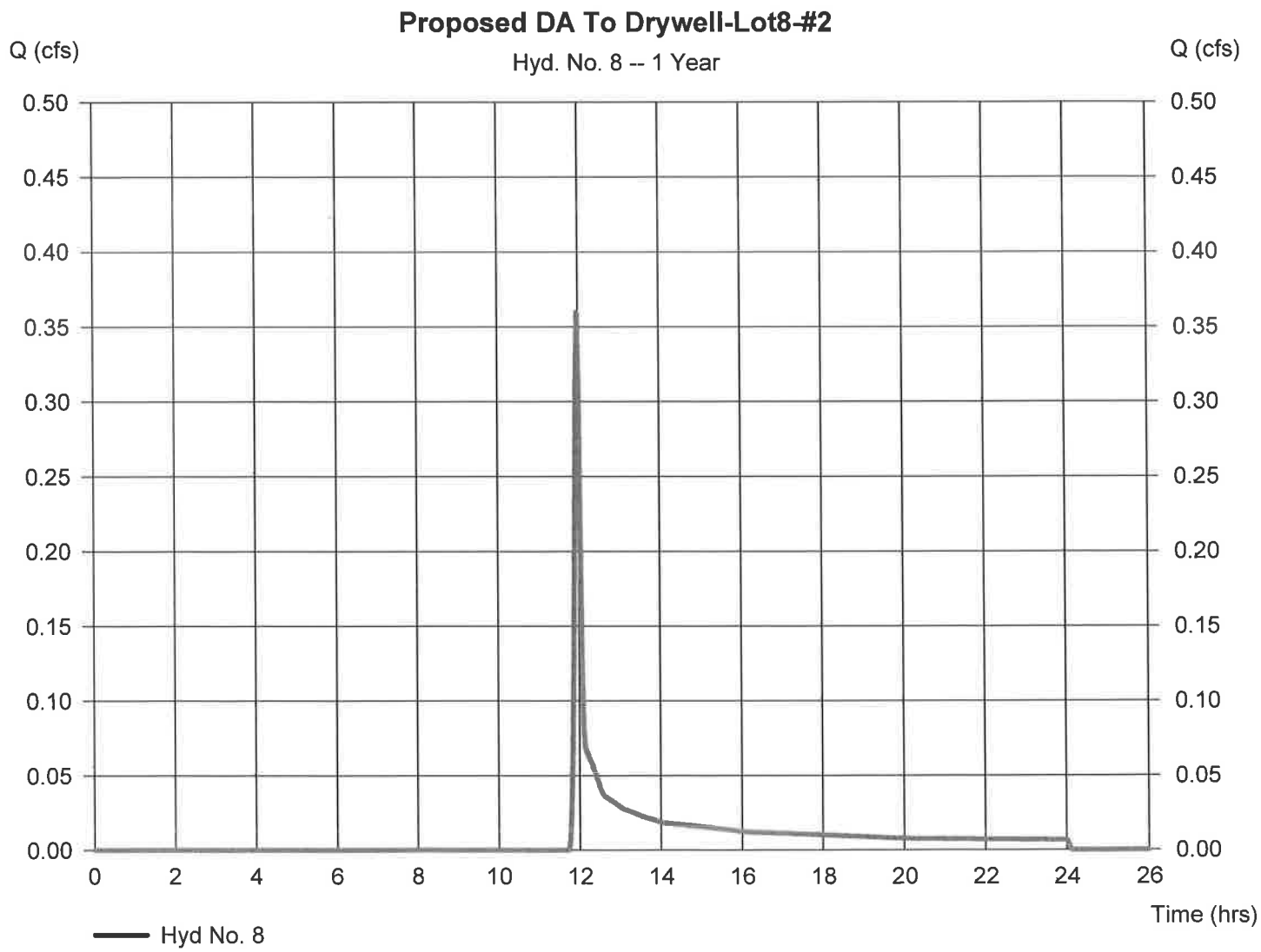
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 8

Proposed DA To Drywell-Lot8-#2

Hydrograph type	= SCS Runoff	Peak discharge	= 0.360 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 809 cuft
Drainage area	= 0.550 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



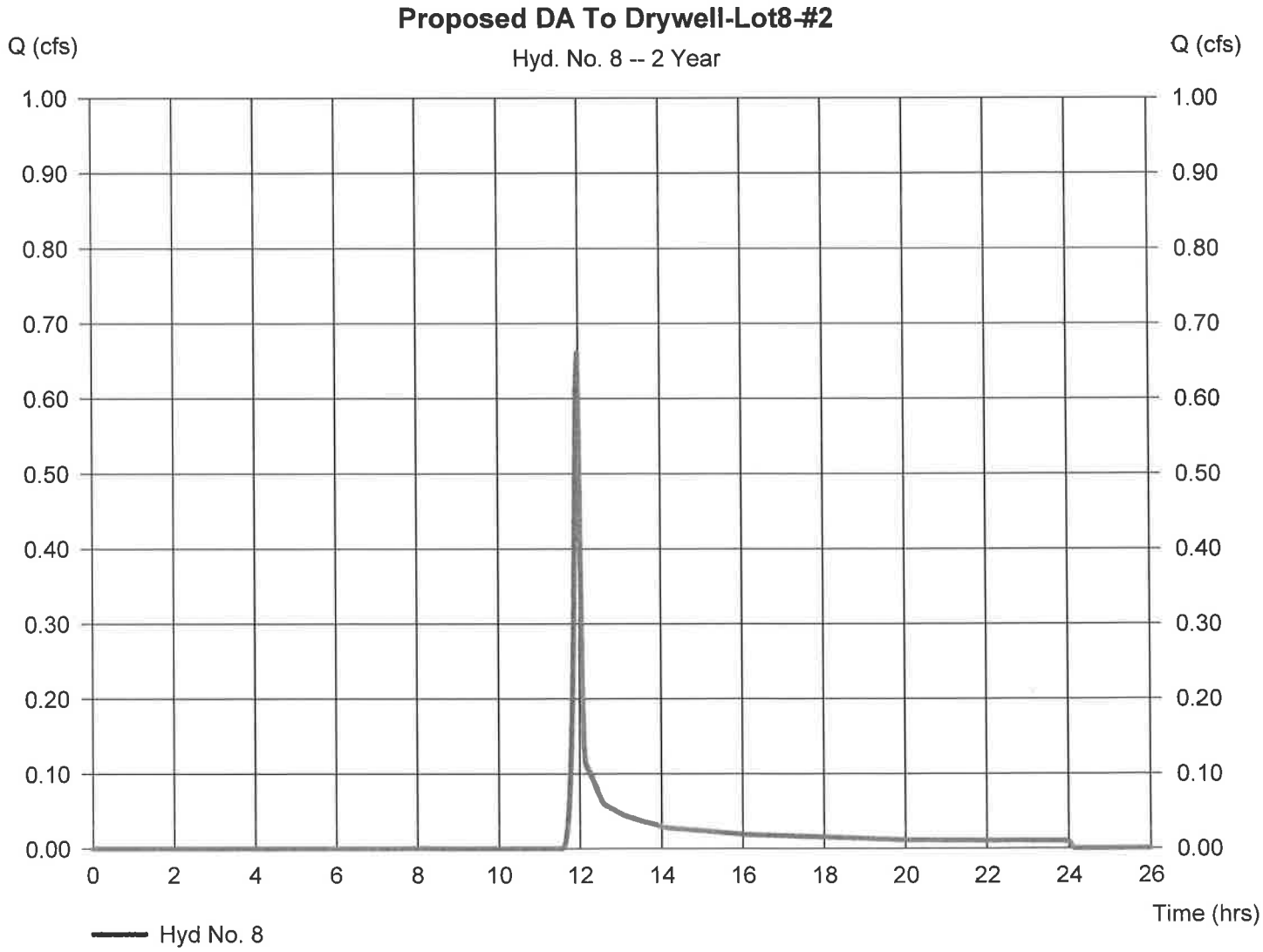
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 8

Proposed DA To Drywell-Lot8-#2

Hydrograph type	= SCS Runoff	Peak discharge	= 0.661 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 1,371 cuft
Drainage area	= 0.550 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



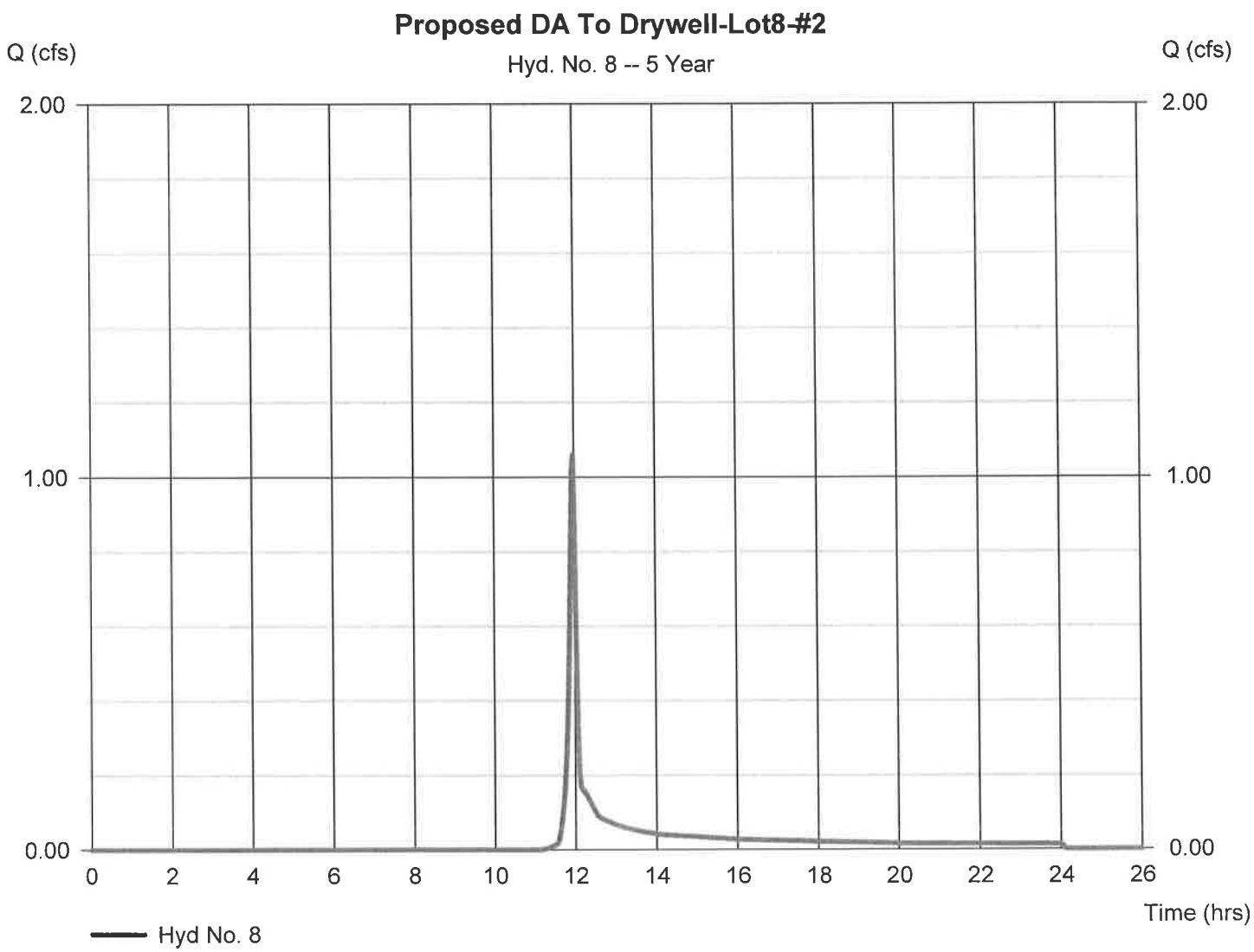
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 8

Proposed DA To Drywell-Lot8-#2

Hydrograph type	= SCS Runoff	Peak discharge	= 1.060 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 2,138 cuft
Drainage area	= 0.550 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



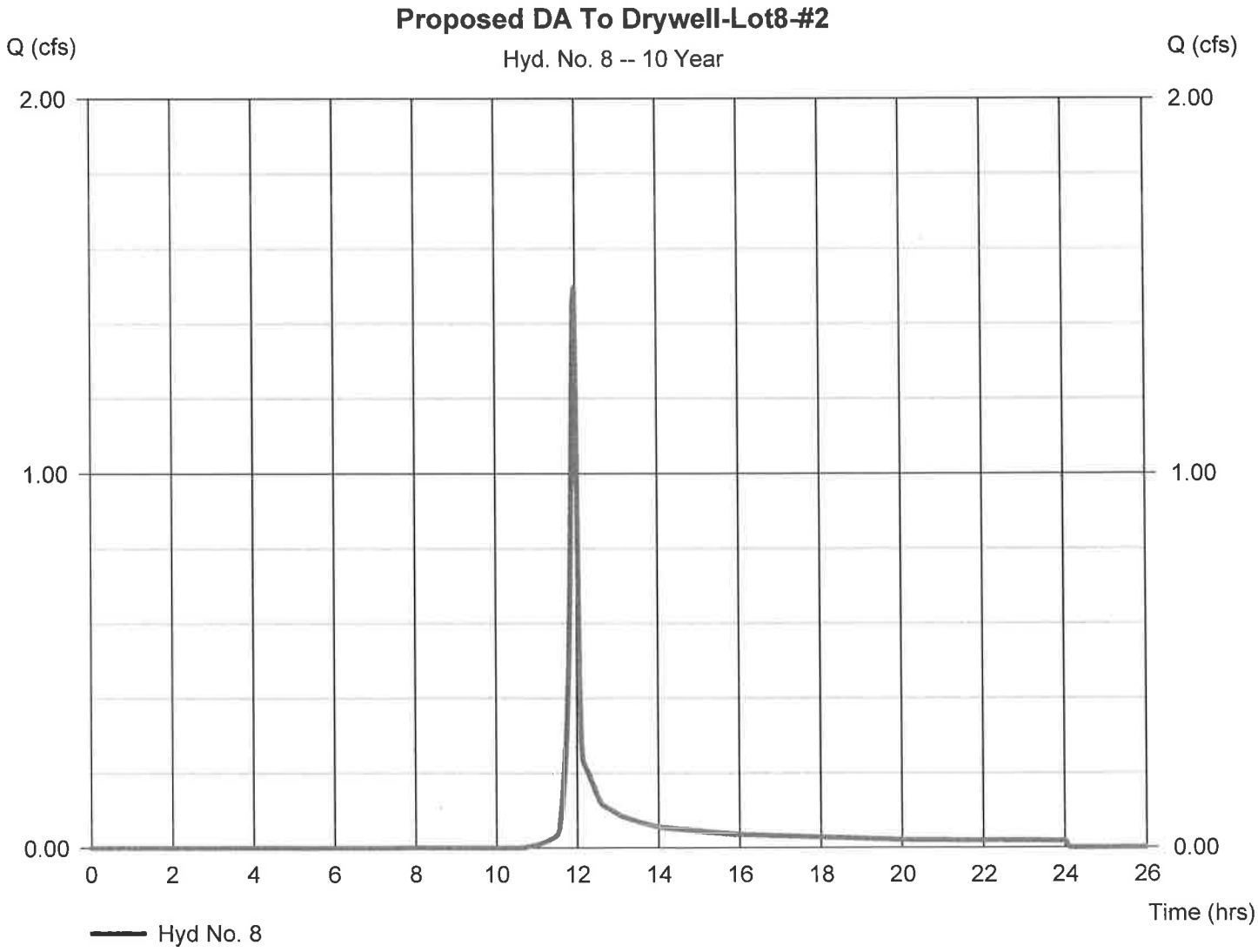
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 8

Proposed DA To Drywell-Lot8-#2

Hydrograph type	= SCS Runoff	Peak discharge	= 1.497 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 2,996 cuft
Drainage area	= 0.550 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



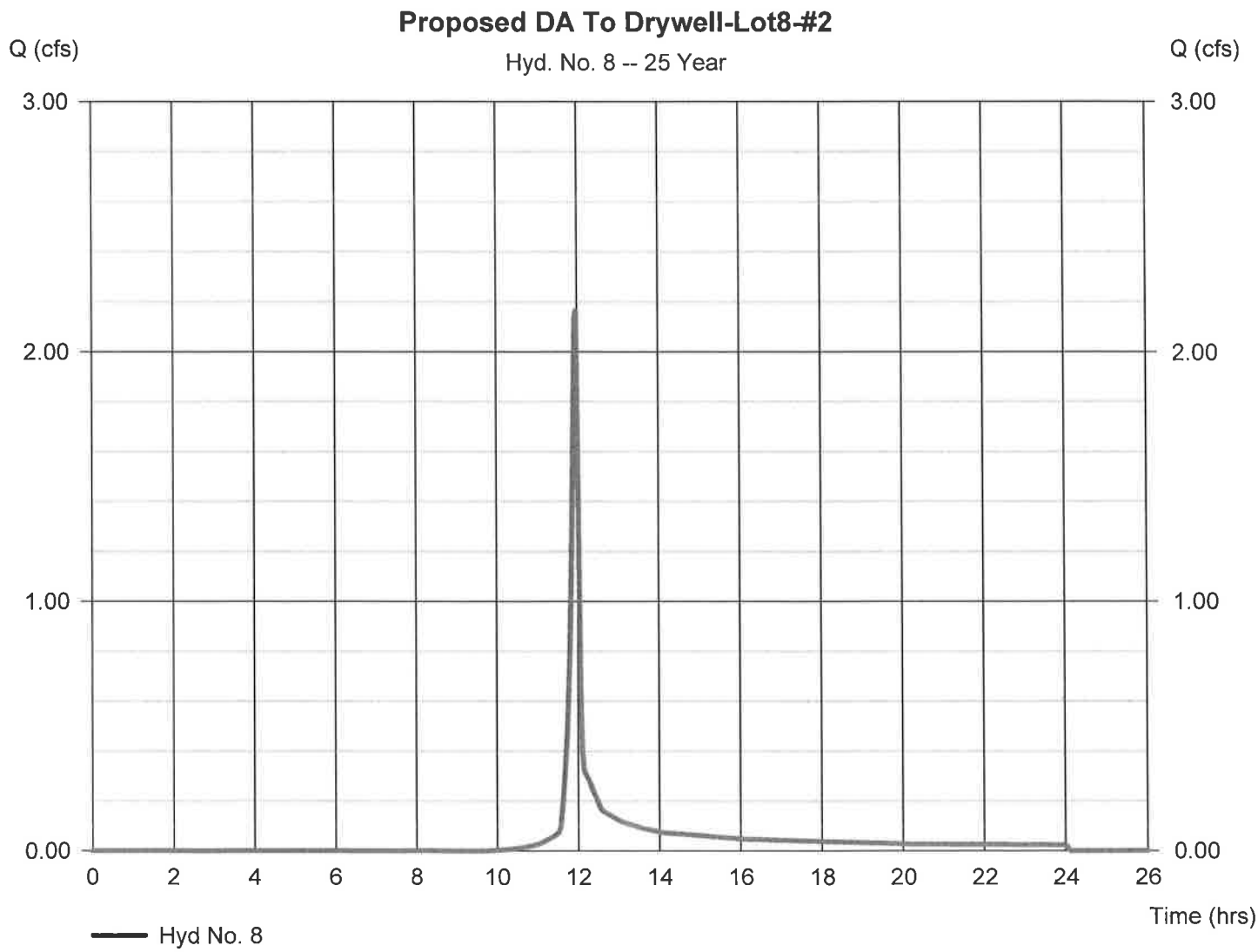
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 8

Proposed DA To Drywell-Lot8-#2

Hydrograph type	= SCS Runoff	Peak discharge	= 2.164 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 4,338 cuft
Drainage area	= 0.550 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



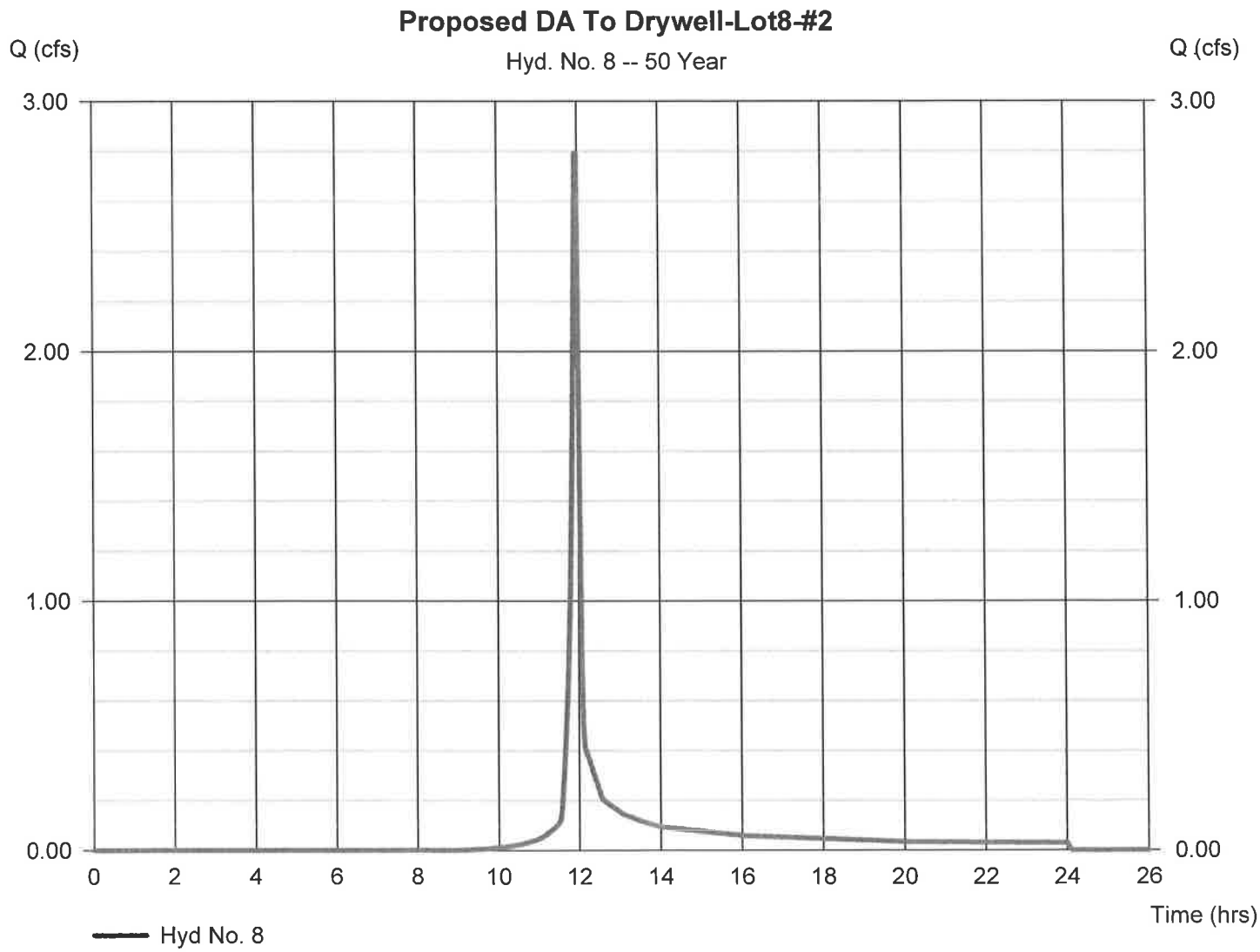
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 8

Proposed DA To Drywell-Lot8-#2

Hydrograph type	= SCS Runoff	Peak discharge	= 2.794 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 5,635 cuft
Drainage area	= 0.550 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



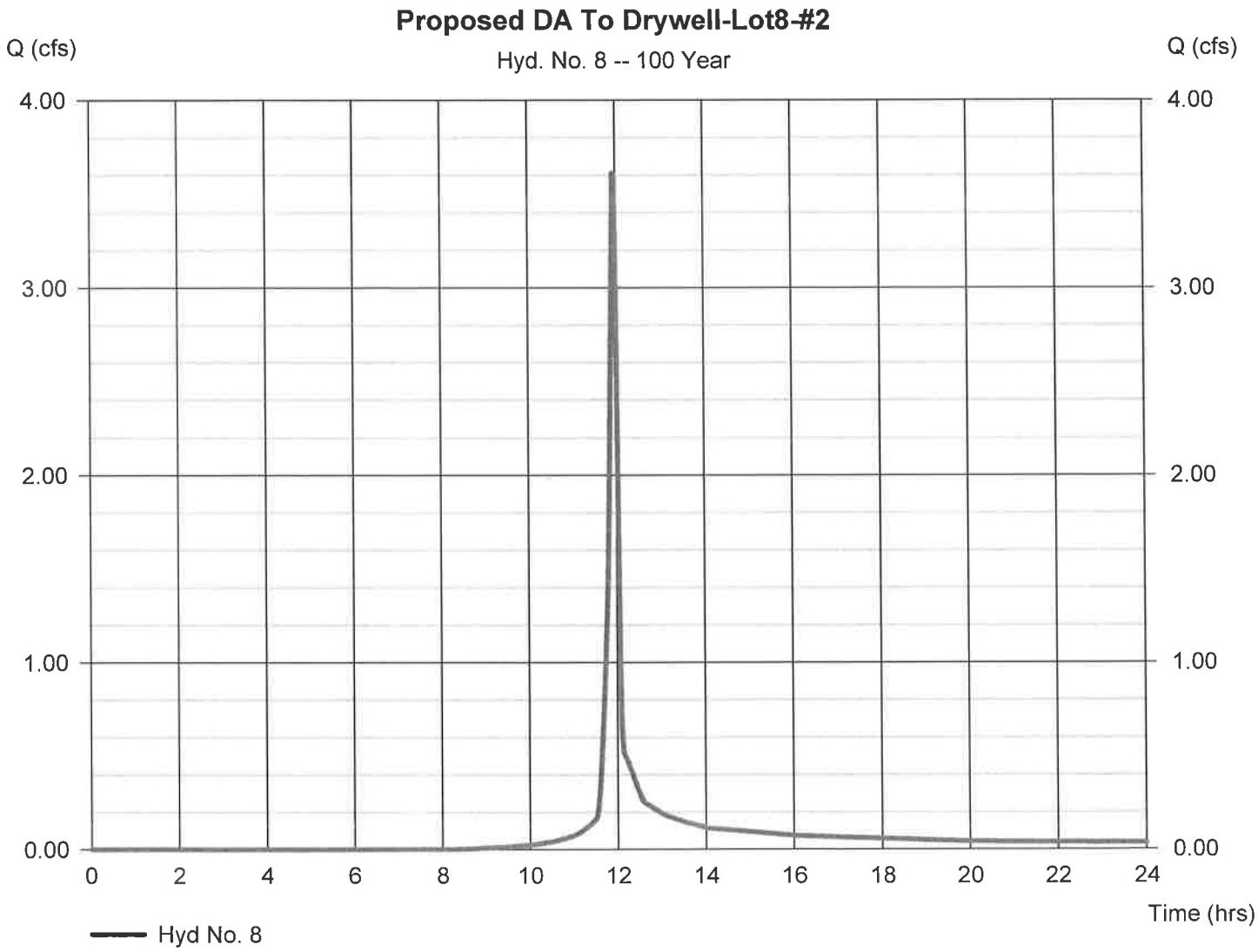
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 8

Proposed DA To Drywell-Lot8-#2

Hydrograph type	= SCS Runoff	Peak discharge	= 3.613 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 7,303 cuft
Drainage area	= 0.550 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Pond Report

Hydraflow Hydrographs by Intelisolve v9.23 — Tuesday, Aug 11, 2020

Pond No. 3 - Drywell-Lot8-#2

Pond Data

Pond storage is based on user-defined values.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	387.00	n/a	0	0
0.10	387.10	n/a	48	48
1.00	388.00	n/a	432	480
2.00	389.00	n/a	480	960
3.00	390.00	n/a	480	1,440
4.00	391.00	n/a	4	1,444
4.50	391.50	n/a	236	1,680
5.00	392.00	n/a	236	1,916

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 4.00	0.00	0.00	0.00
Crest El. (ft)	= 391.50	0.00	0.00	0.00
Weir Coeff.	= 3.00	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	387.00	---	---	---	---	0.00	---	---	---	---	---	0.000
0.10	48	387.10	---	---	---	---	0.00	---	---	---	---	0.011	0.011
1.00	480	388.00	---	---	---	---	0.00	---	---	---	---	0.011	0.011
2.00	960	389.00	---	---	---	---	0.00	---	---	---	---	0.011	0.011
3.00	1,440	390.00	---	---	---	---	0.00	---	---	---	---	0.011	0.011
4.00	1,444	391.00	---	---	---	---	0.00	---	---	---	---	0.011	0.011
4.50	1,680	391.50	---	---	---	---	0.00	---	---	---	---	0.011	0.011
5.00	1,916	392.00	---	---	---	---	4.24	---	---	---	---	---	4.243

Hydrograph Report

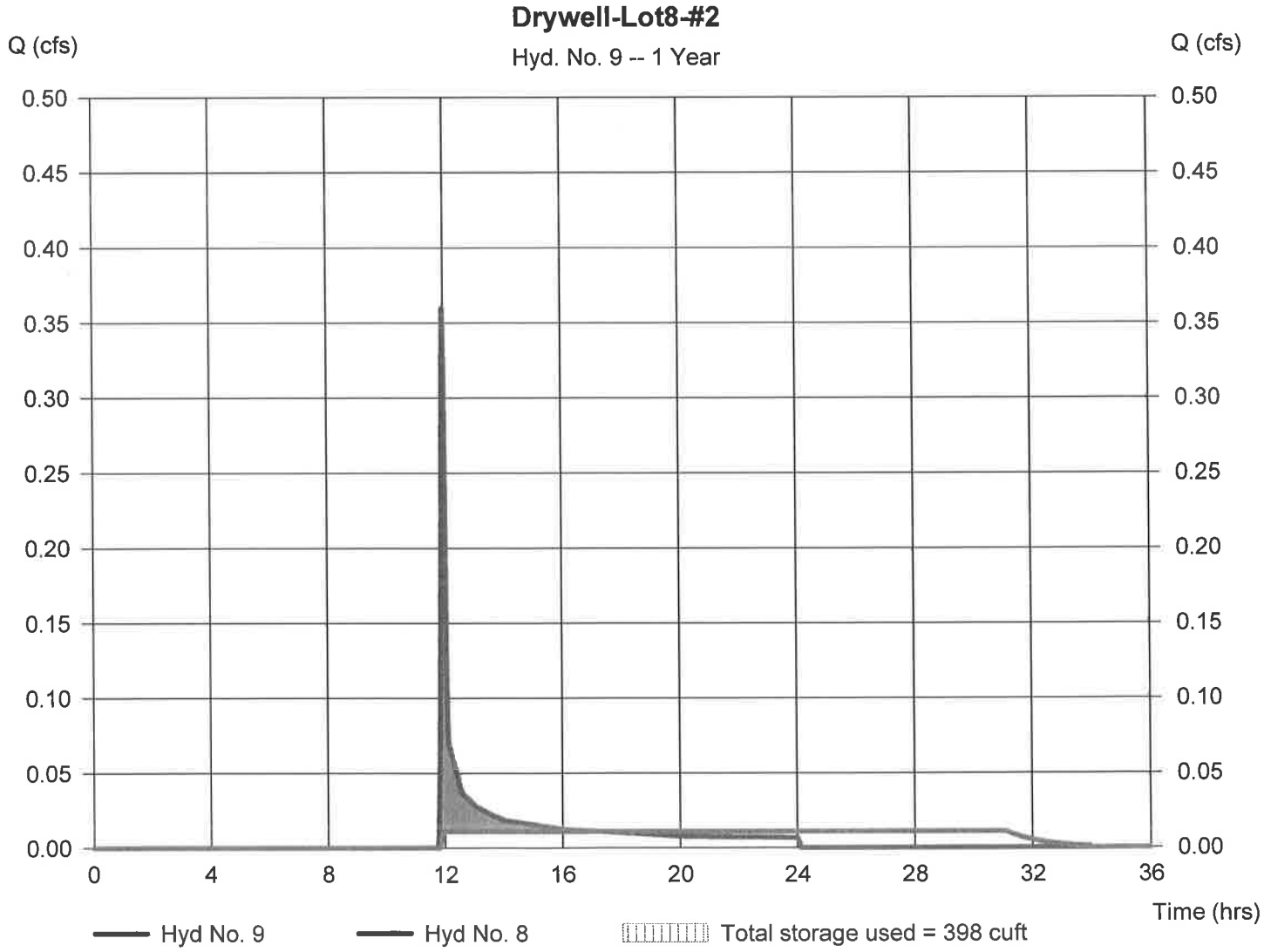
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 9

Drywell-Lot8-#2

Hydrograph type	= Reservoir	Peak discharge	= 0.011 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 805 cuft
Inflow hyd. No.	= 8 - Proposed DA To Drywell-Lot8-#2	Max. Elevation	= 387.83 ft
Reservoir name	= Drywell-Lot8-#2	Max. Storage	= 398 cuft

Storage Indication method used.



Hydrograph Report

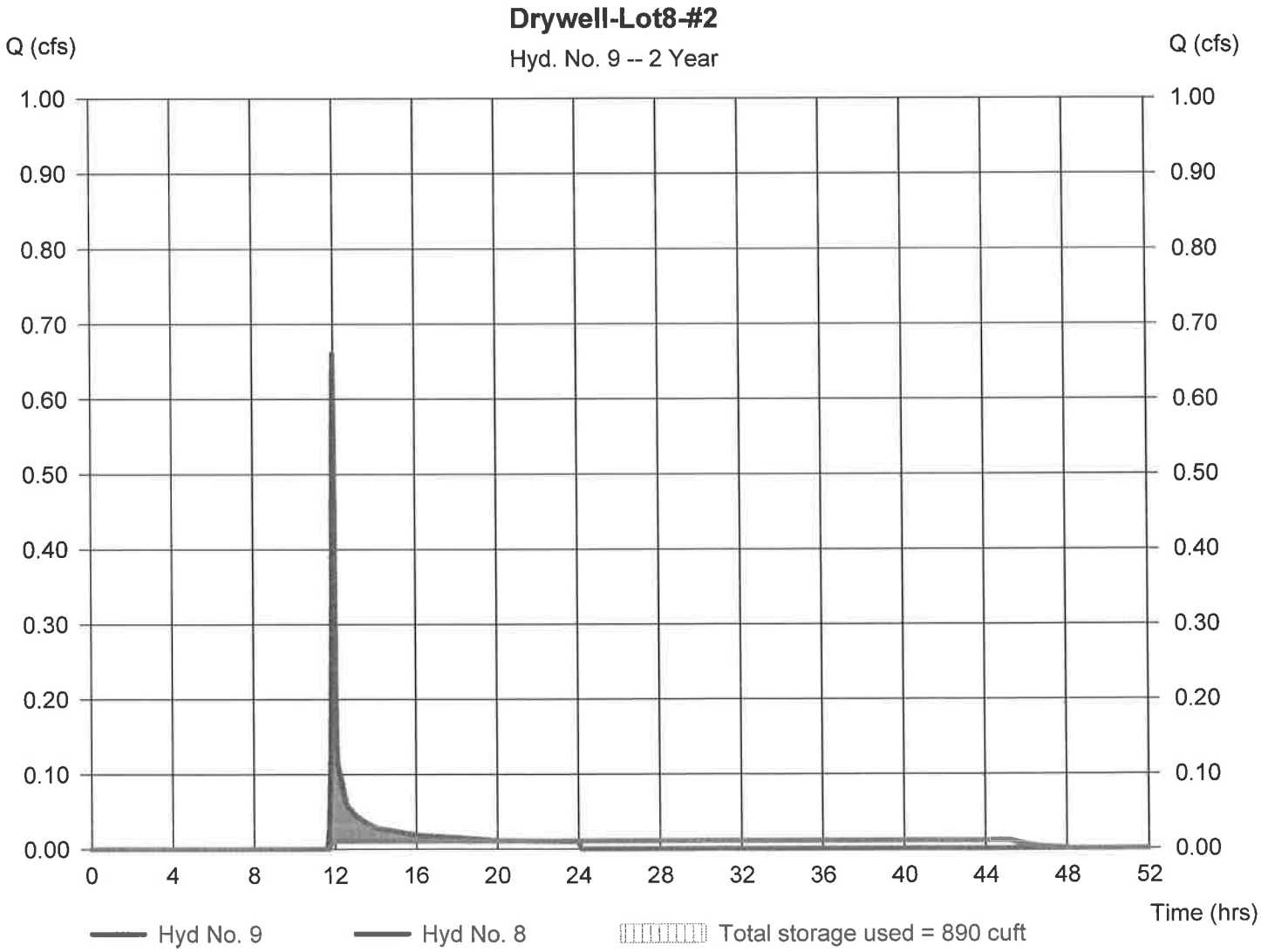
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 9

Drywell-Lot8-#2

Hydrograph type	= Reservoir	Peak discharge	= 0.011 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.83 hrs
Time interval	= 2 min	Hyd. volume	= 1,367 cuft
Inflow hyd. No.	= 8 - Proposed DA To Drywell-Lot8-#2	Max. Elevation	= 388.85 ft
Reservoir name	= Drywell-Lot8-#2	Max. Storage	= 890 cuft

Storage Indication method used.



Hydrograph Report

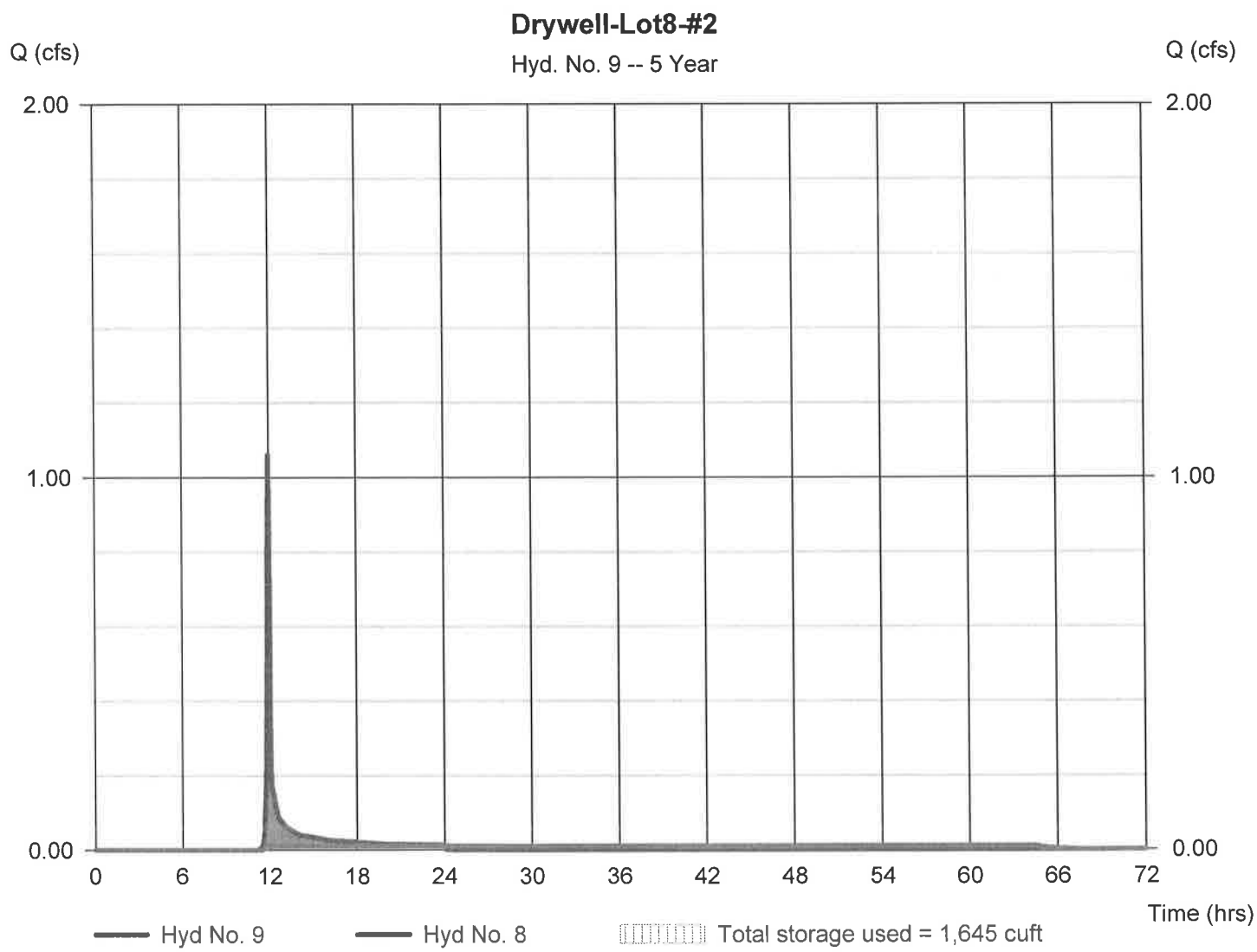
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 9

Drywell-Lot8-#2

Hydrograph type	= Reservoir	Peak discharge	= 0.011 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.73 hrs
Time interval	= 2 min	Hyd. volume	= 2,134 cuft
Inflow hyd. No.	= 8 - Proposed DA To Drywell-Lot8-#2	Max. Elevation	= 391.43 ft
Reservoir name	= Drywell-Lot8-#2	Max. Storage	= 1,645 cuft

Storage Indication method used.



Hydrograph Report

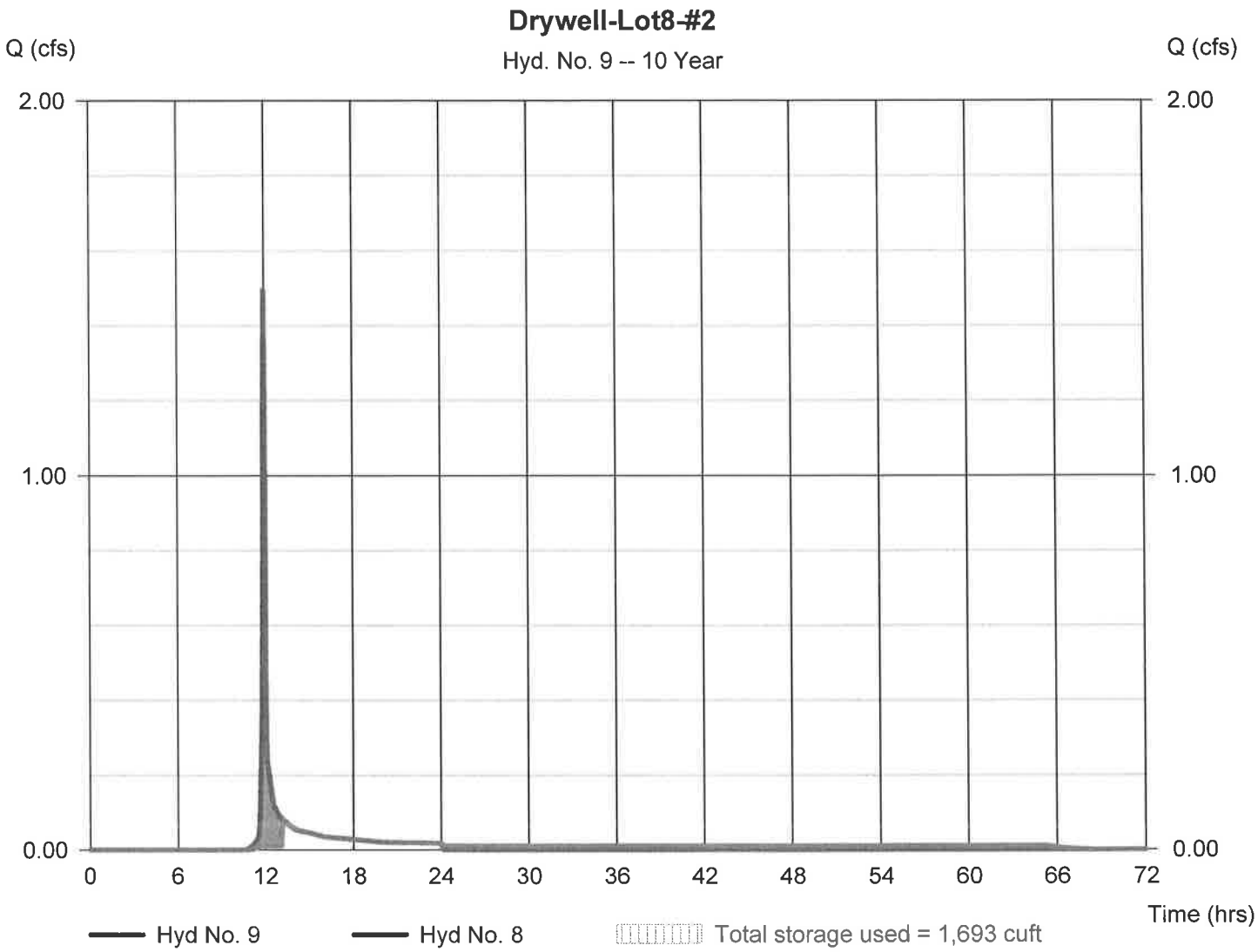
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 9

Drywell-Lot8-#2

Hydrograph type	= Reservoir	Peak discharge	= 0.078 cfs
Storm frequency	= 10 yrs	Time to peak	= 13.27 hrs
Time interval	= 2 min	Hyd. volume	= 2,991 cuft
Inflow hyd. No.	= 8 - Proposed DA To Drywell-Lot8-#2	Max. Elevation	= 391.53 ft
Reservoir name	= Drywell-Lot8-#2	Max. Storage	= 1,693 cuft

Storage Indication method used.



Hydrograph Report

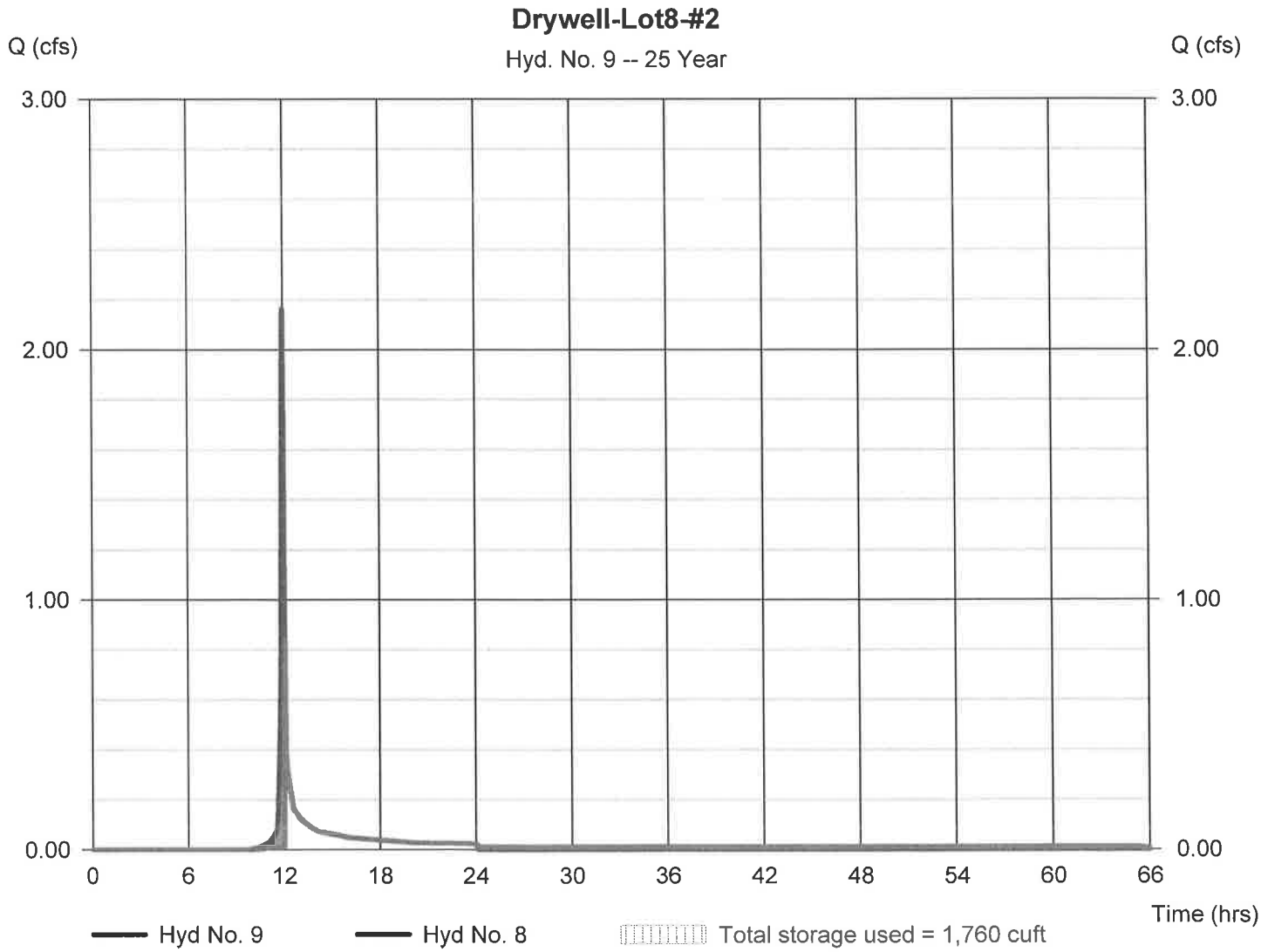
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 9

Drywell-Lot8-#2

Hydrograph type	= Reservoir	Peak discharge	= 0.840 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 4,334 cuft
Inflow hyd. No.	= 8 - Proposed DA To Drywell-Lot8-#2	Max. Elevation	= 391.70 ft
Reservoir name	= Drywell-Lot8-#2	Max. Storage	= 1,760 cuft

Storage Indication method used.



Hydrograph Report

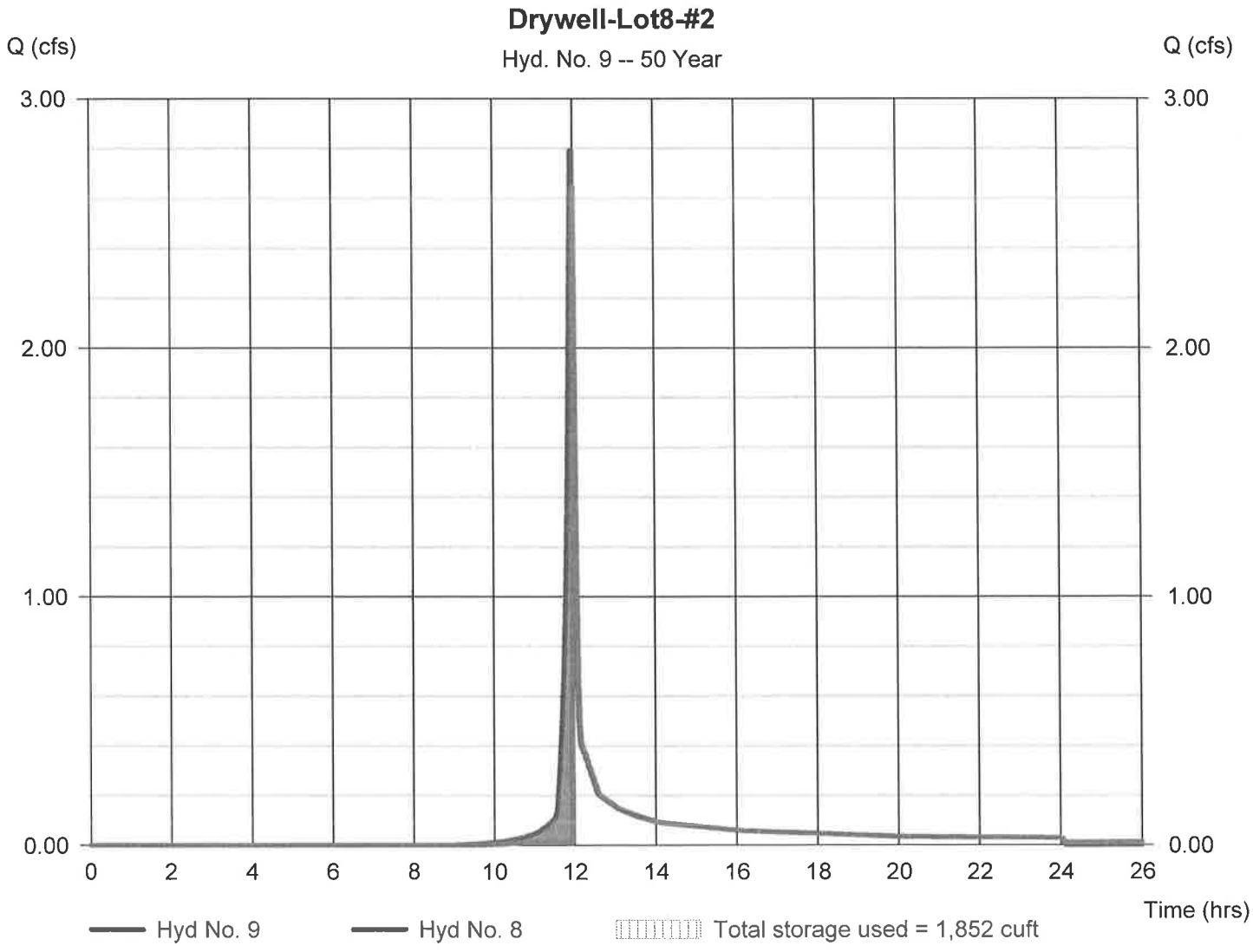
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 9

Drywell-Lot8-#2

Hydrograph type	= Reservoir	Peak discharge	= 2.648 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 5,630 cuft
Inflow hyd. No.	= 8 - Proposed DA To Drywell-Lot8-#2	Max. Elevation	= 391.92 ft
Reservoir name	= Drywell-Lot8-#2	Max. Storage	= 1,852 cuft

Storage Indication method used.



Hydrograph Report

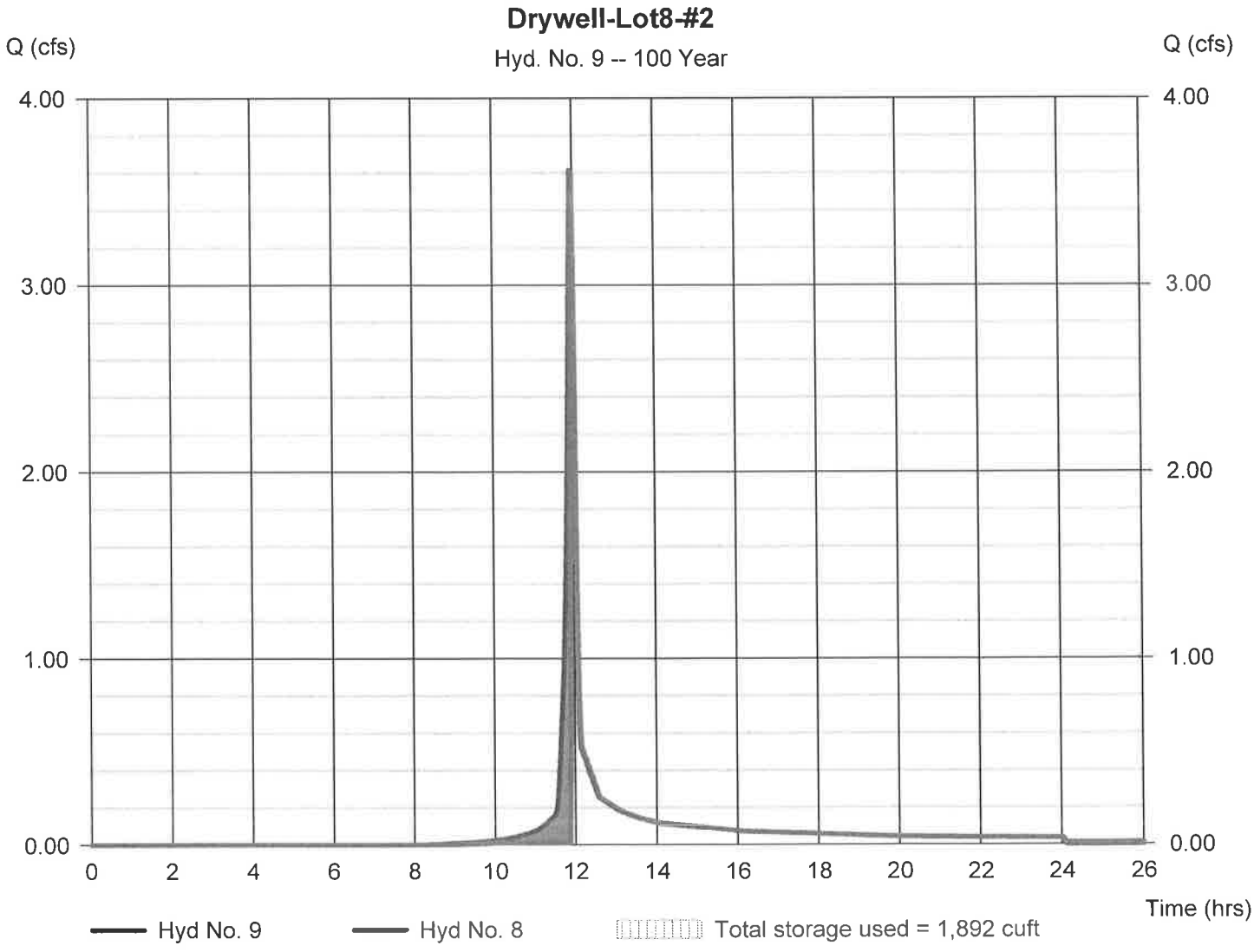
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 9

Drywell-Lot8-#2

Hydrograph type	= Reservoir	Peak discharge	= 3.605 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 7,298 cuft
Inflow hyd. No.	= 8 - Proposed DA To Drywell-Lot8-#2	Max. Elevation	= 391.95 ft
Reservoir name	= Drywell-Lot8-#2	Max. Storage	= 1,892 cuft

Storage Indication method used.



DAMBRO
STORMWATER MANAGEMENT

Proposed Drainage Area To Drywell-Lot 9:

Total Area =	3,772 sq.ft = 0.09 acres
Impervious =	3,772 sq.ft

CN Values:
Impervious CN = 98

Composite CN = 98

Time of Concentration:
Use 5.00 minute time of concentration

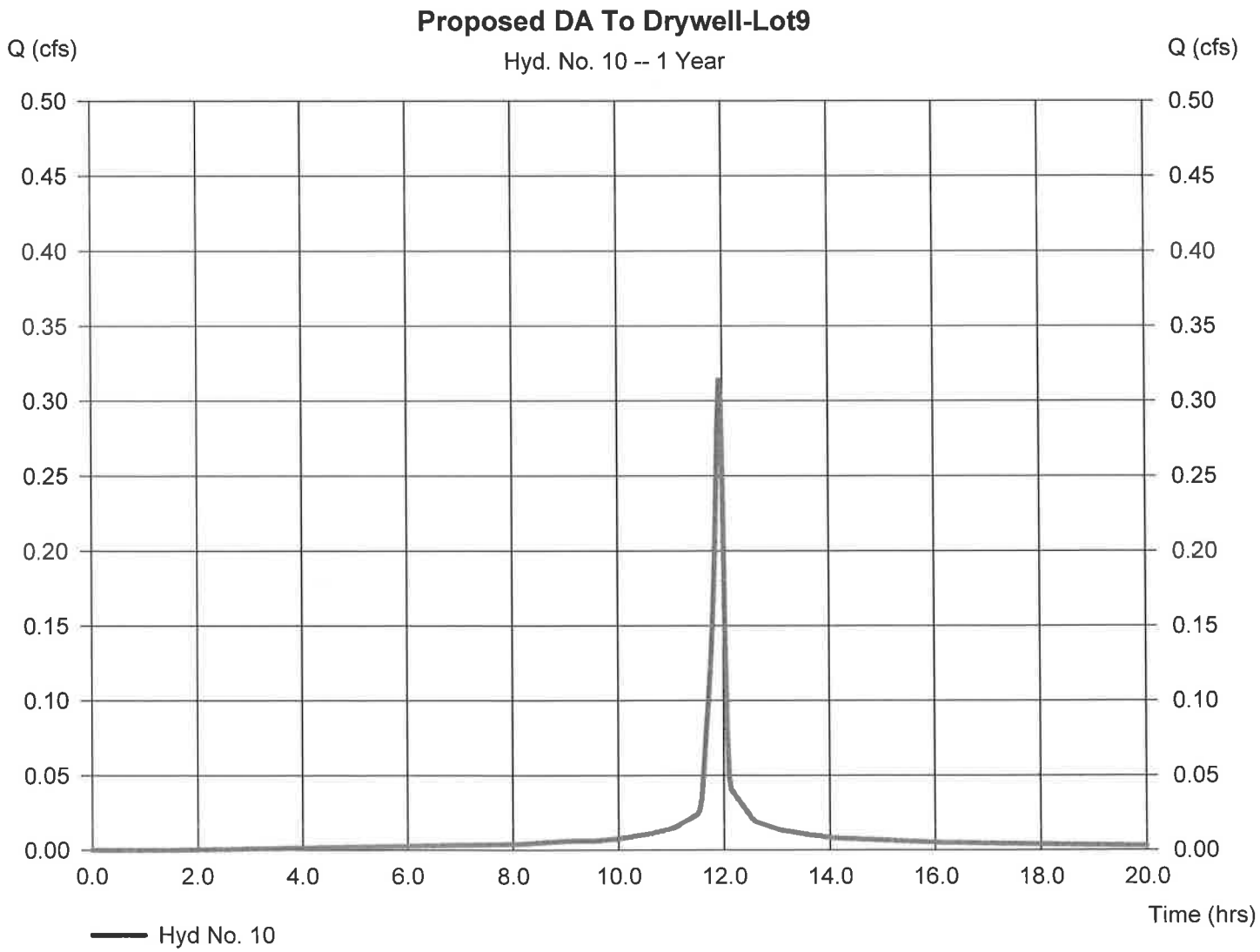
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 10

Proposed DA To Drywell-Lot9

Hydrograph type	= SCS Runoff	Peak discharge	= 0.314 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 726 cuft
Drainage area	= 0.090 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



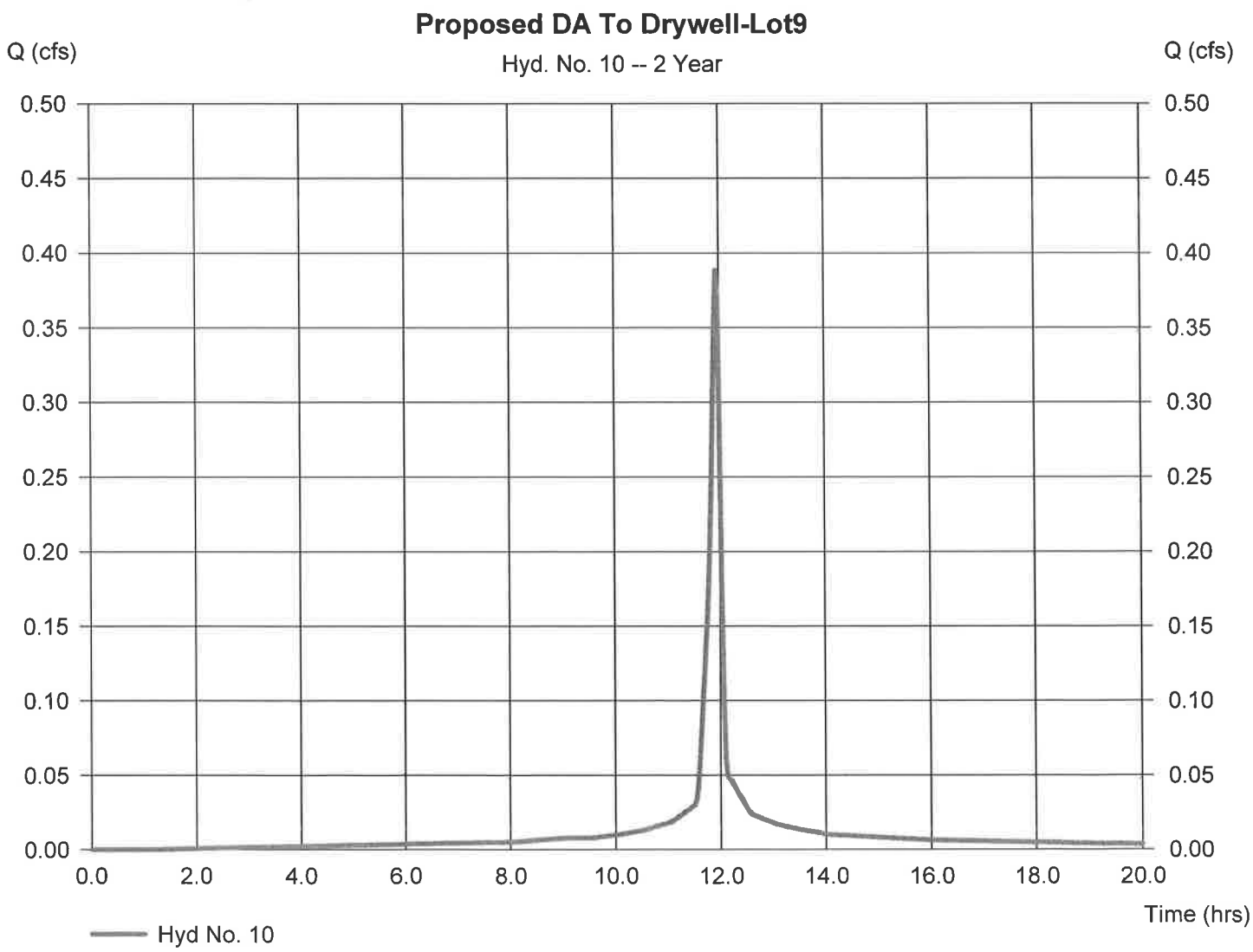
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 10

Proposed DA To Drywell-Lot9

Hydrograph type	= SCS Runoff	Peak discharge	= 0.389 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 909 cuft
Drainage area	= 0.090 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



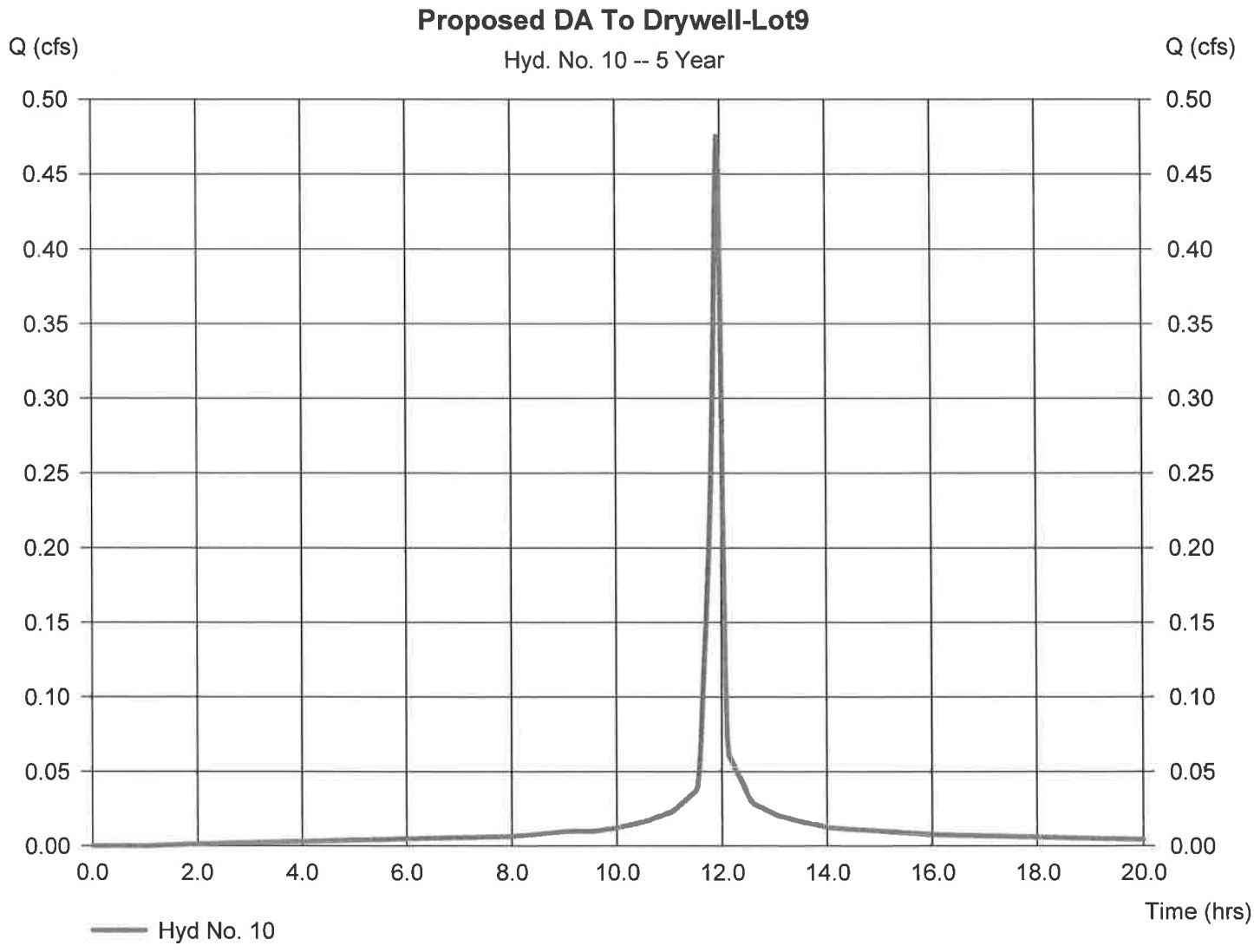
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 10

Proposed DA To Drywell-Lot9

Hydrograph type	= SCS Runoff	Peak discharge	= 0.475 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 1,123 cuft
Drainage area	= 0.090 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



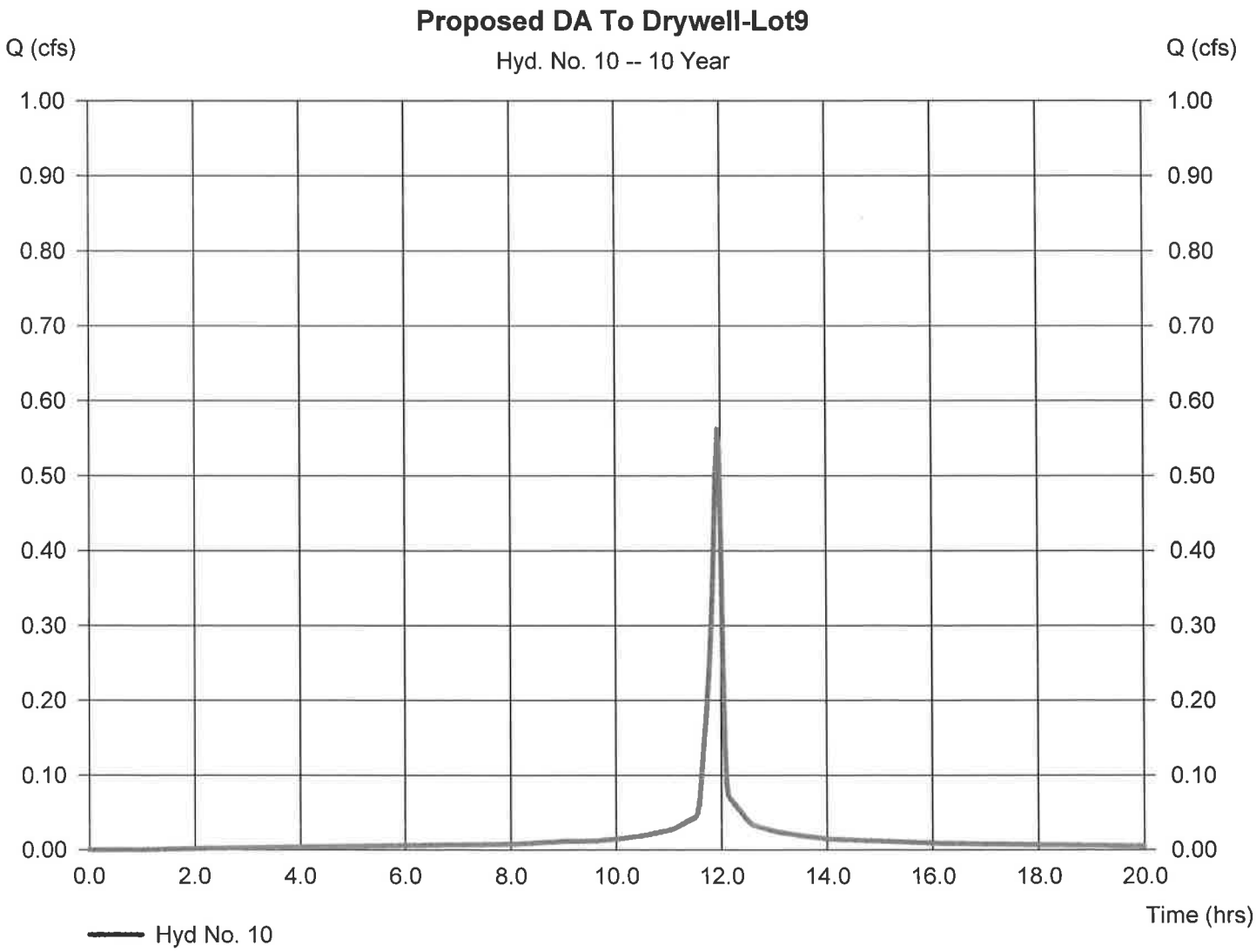
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 10

Proposed DA To Drywell-Lot9

Hydrograph type	= SCS Runoff	Peak discharge	= 0.562 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 1,337 cuft
Drainage area	= 0.090 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



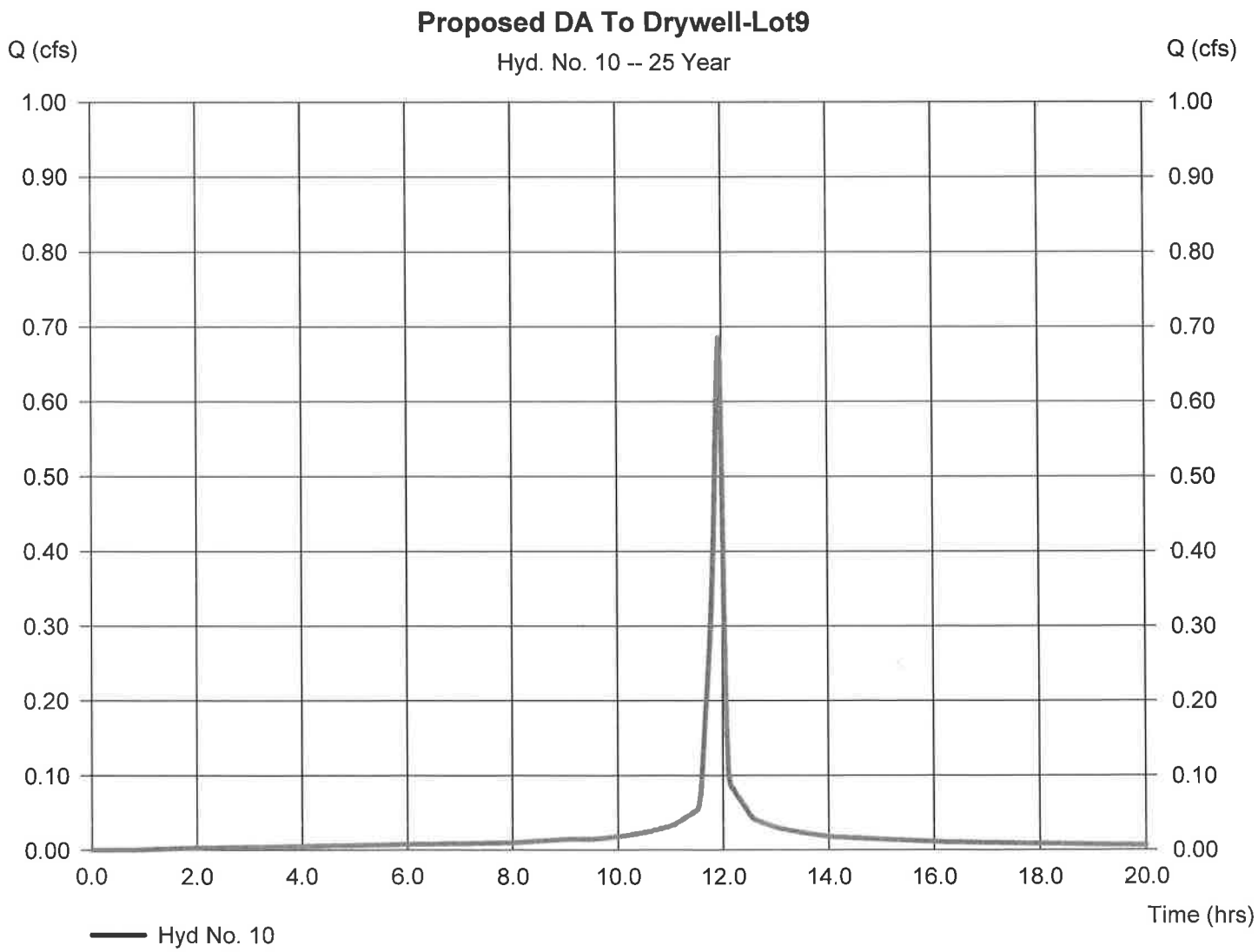
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 10

Proposed DA To Drywell-Lot9

Hydrograph type	= SCS Runoff	Peak discharge	= 0.686 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 1,642 cuft
Drainage area	= 0.090 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



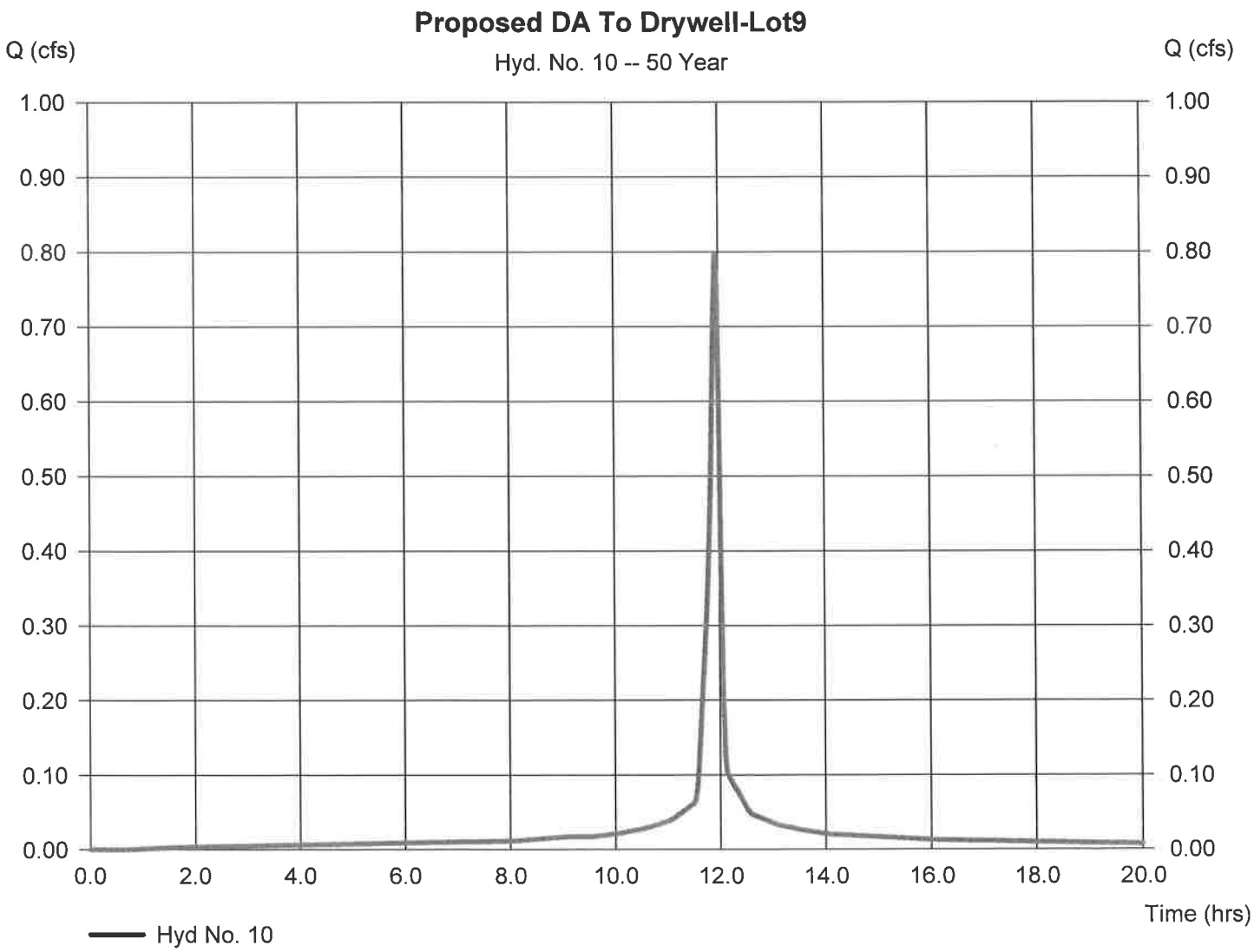
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 10

Proposed DA To Drywell-Lot9

Hydrograph type	= SCS Runoff	Peak discharge	= 0.797 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 1,918 cuft
Drainage area	= 0.090 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



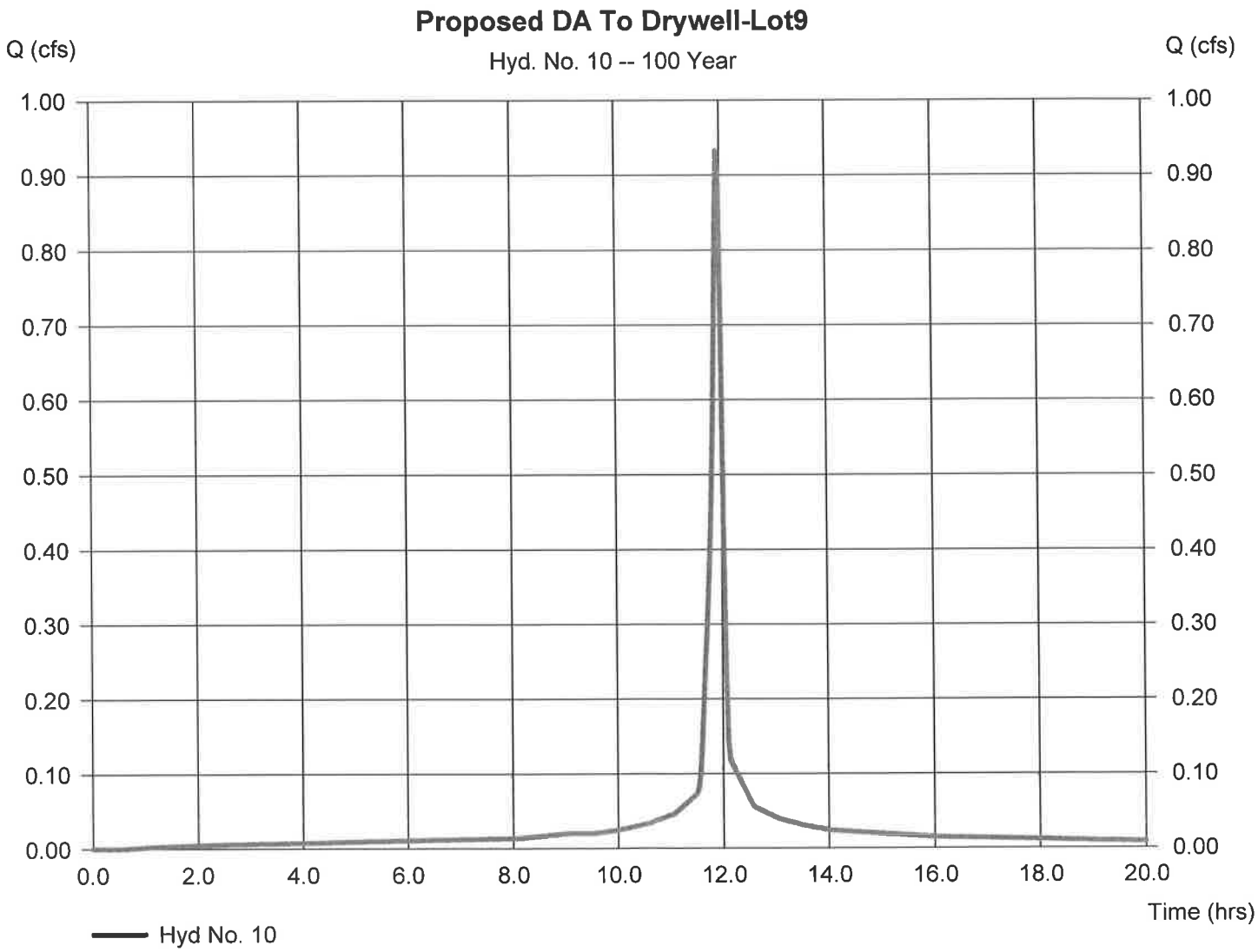
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 10

Proposed DA To Drywell-Lot9

Hydrograph type	= SCS Runoff	Peak discharge	= 0.932 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 2,254 cuft
Drainage area	= 0.090 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Pond Report

Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Pond No. 4 - Drywell-Lot9

Pond Data

Contours - User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 348.00 ft. Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	348.00	1,188	0	0
0.10	348.10	1,188	48	48
1.00	349.00	1,188	428	475
2.00	350.00	1,188	475	950
3.00	351.00	1,188	475	1,426

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.500 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	348.00	---	---	---	---	---	---	---	---	0.000	---	0.000
0.10	48	348.10	---	---	---	---	---	---	---	---	0.014	---	0.014
1.00	475	349.00	---	---	---	---	---	---	---	---	0.014	---	0.014
2.00	950	350.00	---	---	---	---	---	---	---	---	0.014	---	0.014
3.00	1,426	351.00	---	---	---	---	---	---	---	---	0.014	---	0.014

Hydrograph Report

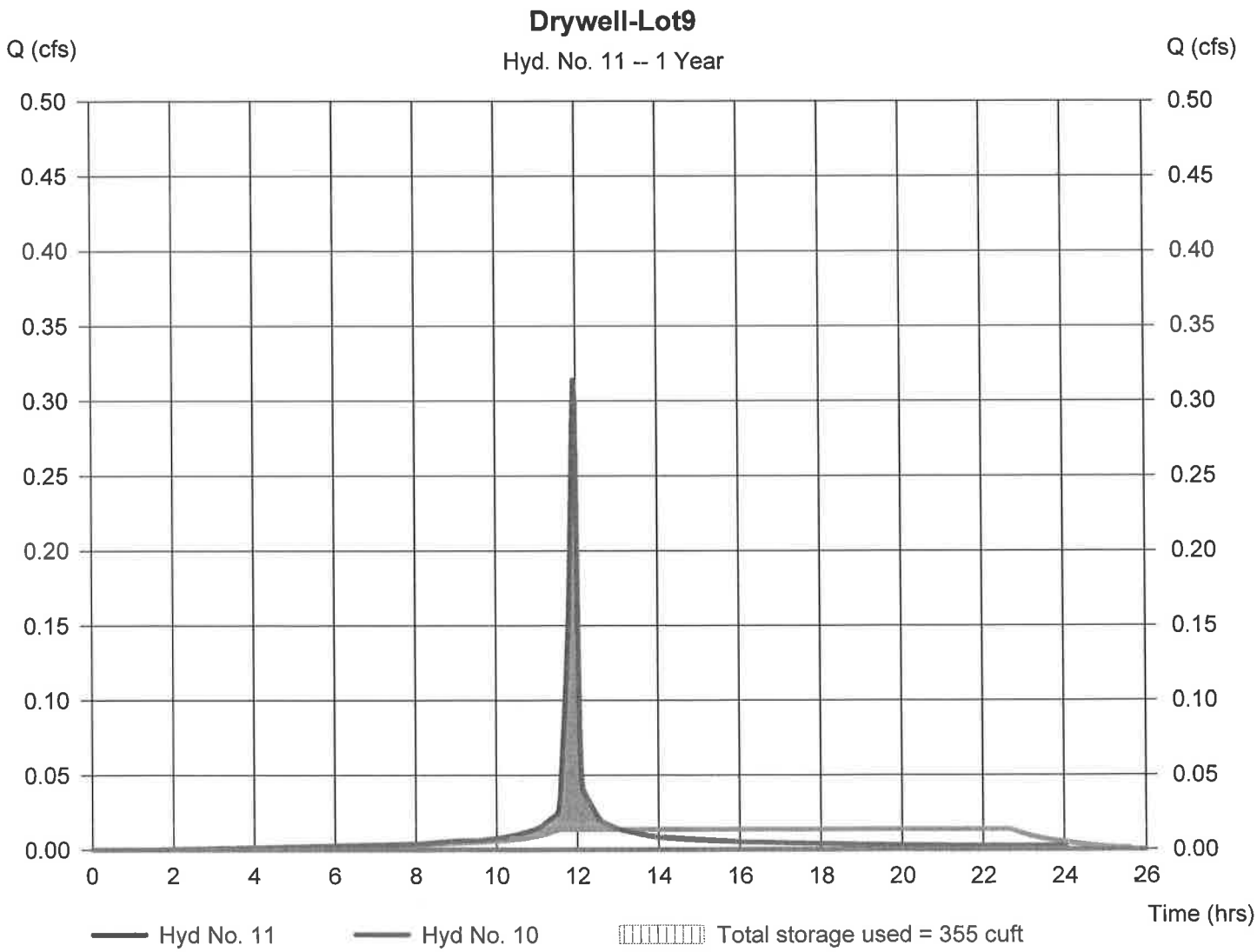
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 11

Drywell-Lot9

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= 22.80 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 10 - Proposed DA To Drywell-Lot9	Max. Elevation	= 348.75 ft
Reservoir name	= Drywell-Lot9	Max. Storage	= 355 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

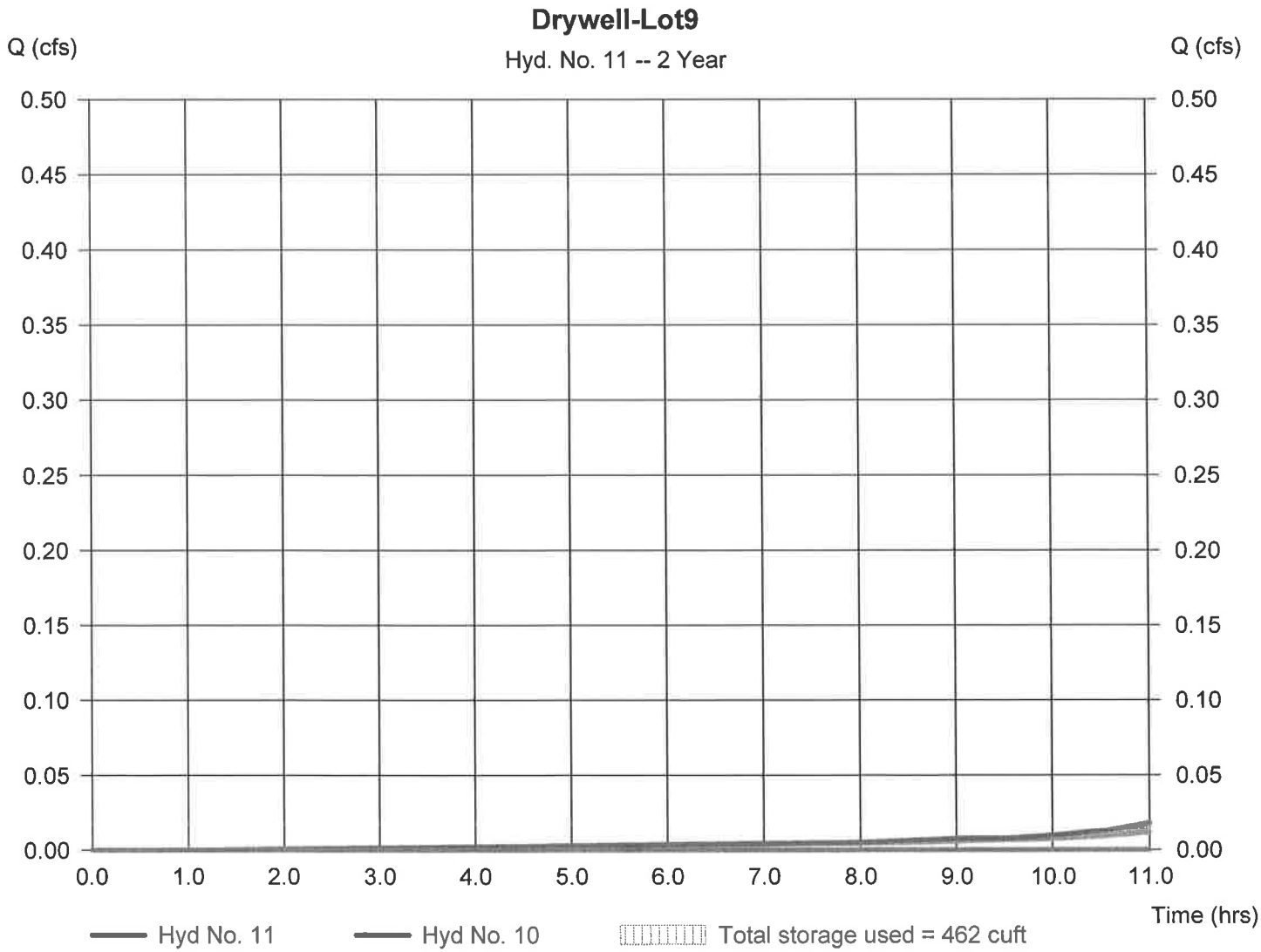
Hydraflow Hydrographs by Intelisolve·v9.23 · · Tuesday, Aug 11, 2020

Hyd. No. 11

Drywell-Lot9

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 10.60 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 10 - Proposed DA To Drywell-Lot9	Max. Elevation	= 348.97 ft
Reservoir name	= Drywell-Lot9	Max. Storage	= 462 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

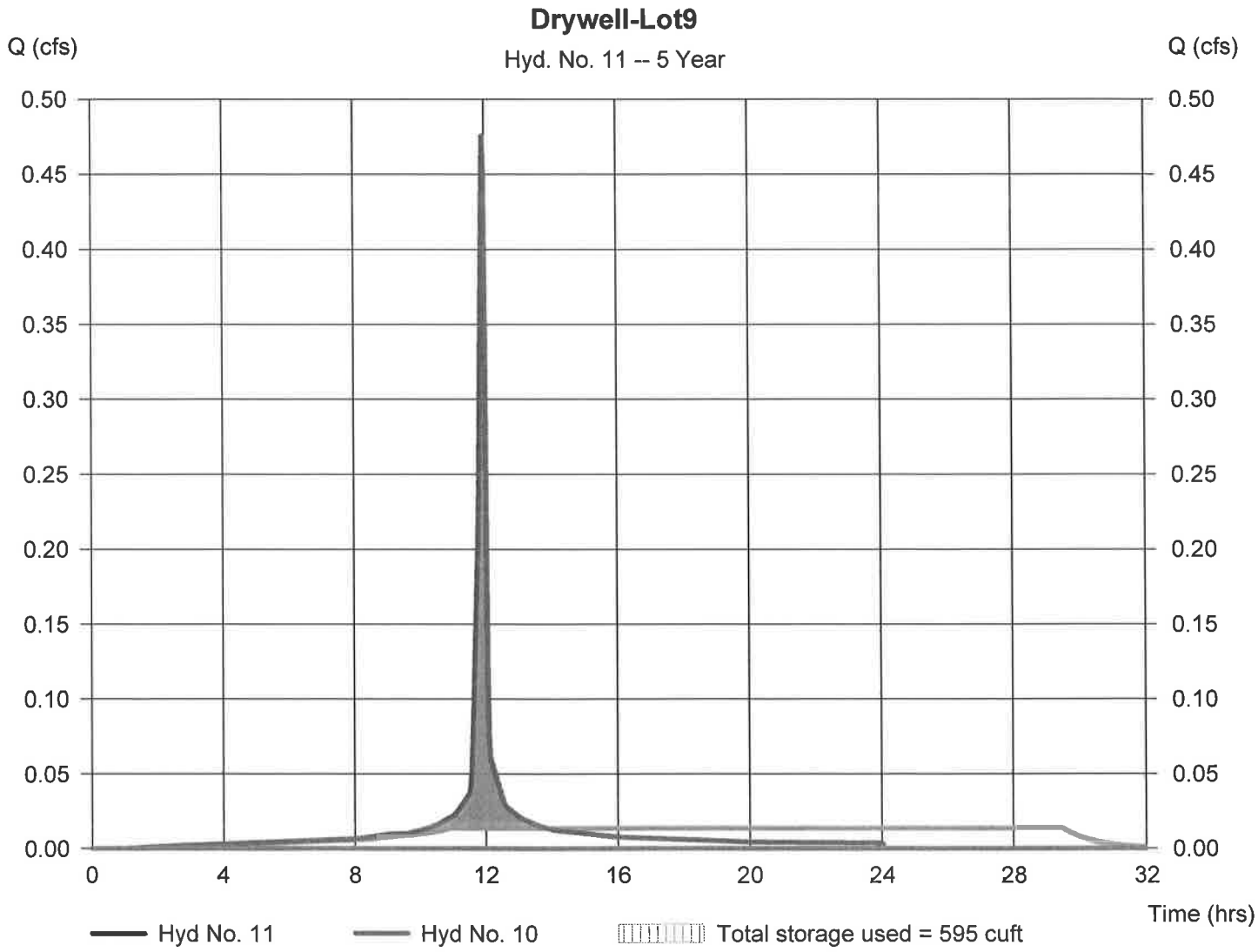
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 11

Drywell-Lot9

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 5 yrs	Time to peak	= 9.93 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 10 - Proposed DA To Drywell-Lot9	Max. Elevation	= 349.25 ft
Reservoir name	= Drywell-Lot9	Max. Storage	= 595 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

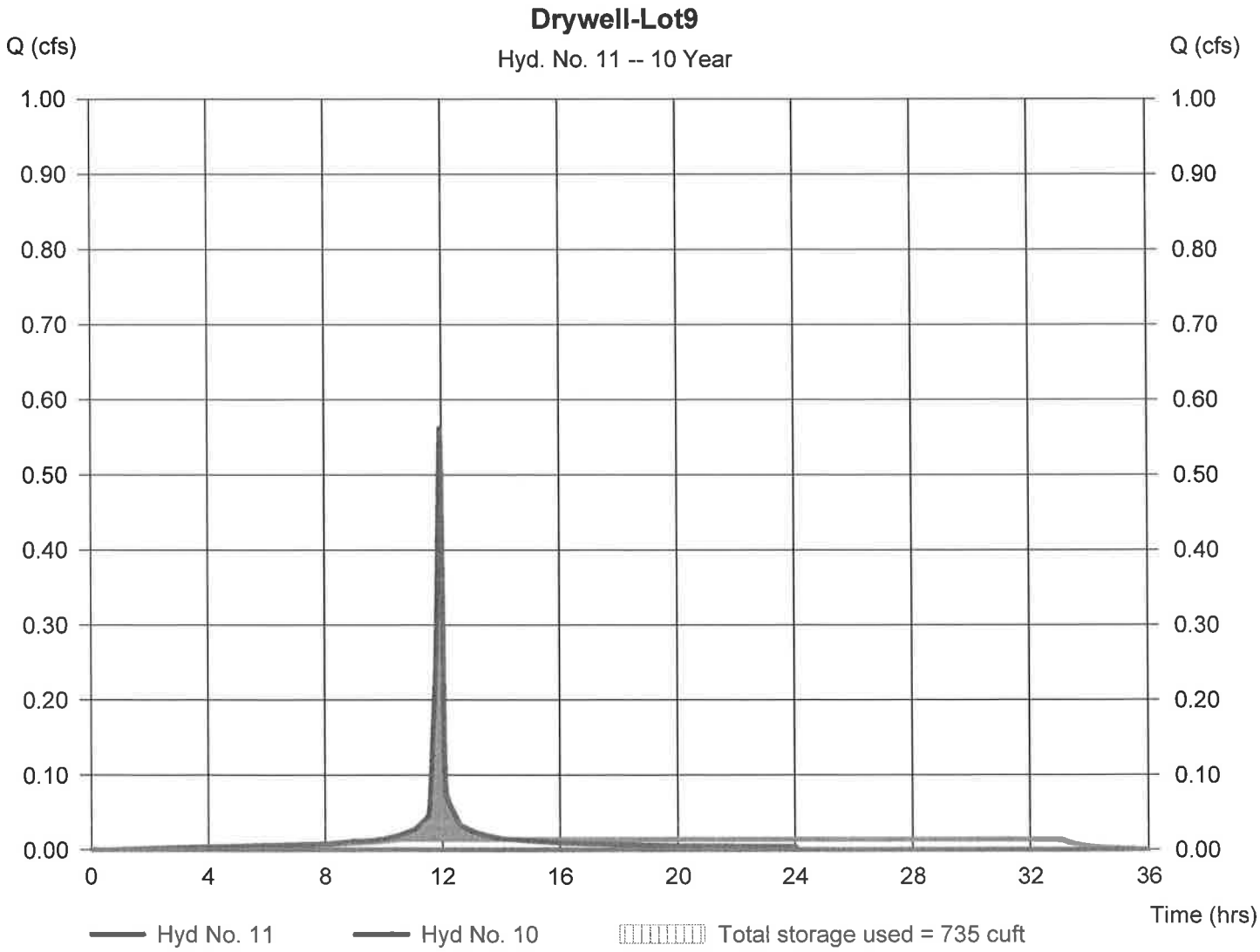
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 11

Drywell-Lot9

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 33.27 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 10 - Proposed DA To Drywell-Lot9	Max. Elevation	= 349.55 ft
Reservoir name	= Drywell-Lot9	Max. Storage	= 735 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



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Hydrograph Report

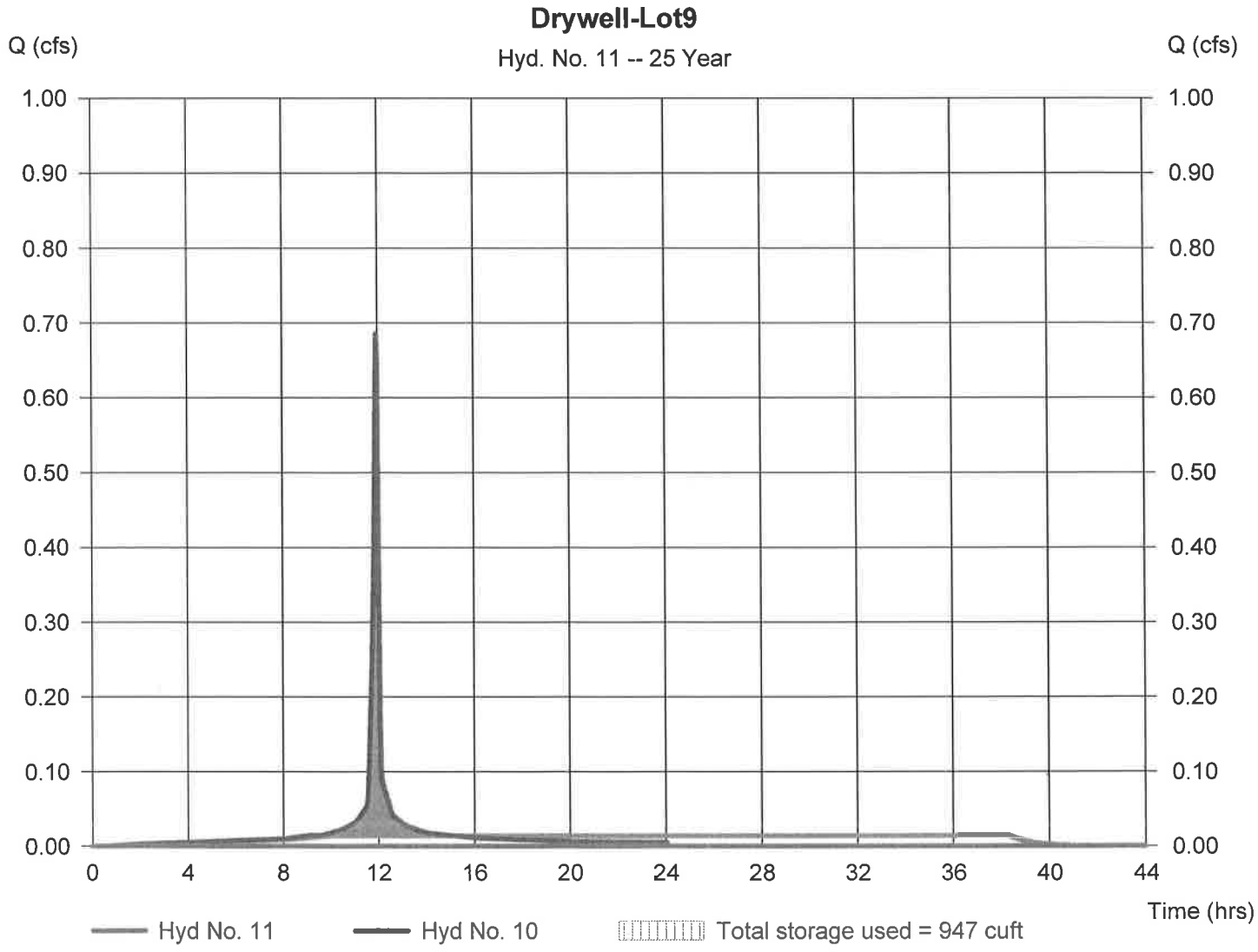
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 11

Drywell-Lot9

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 25 yrs	Time to peak	= 7.97 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 10 - Proposed DA To Drywell-Lot9	Max. Elevation	= 349.99 ft
Reservoir name	= Drywell-Lot9	Max. Storage	= 947 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

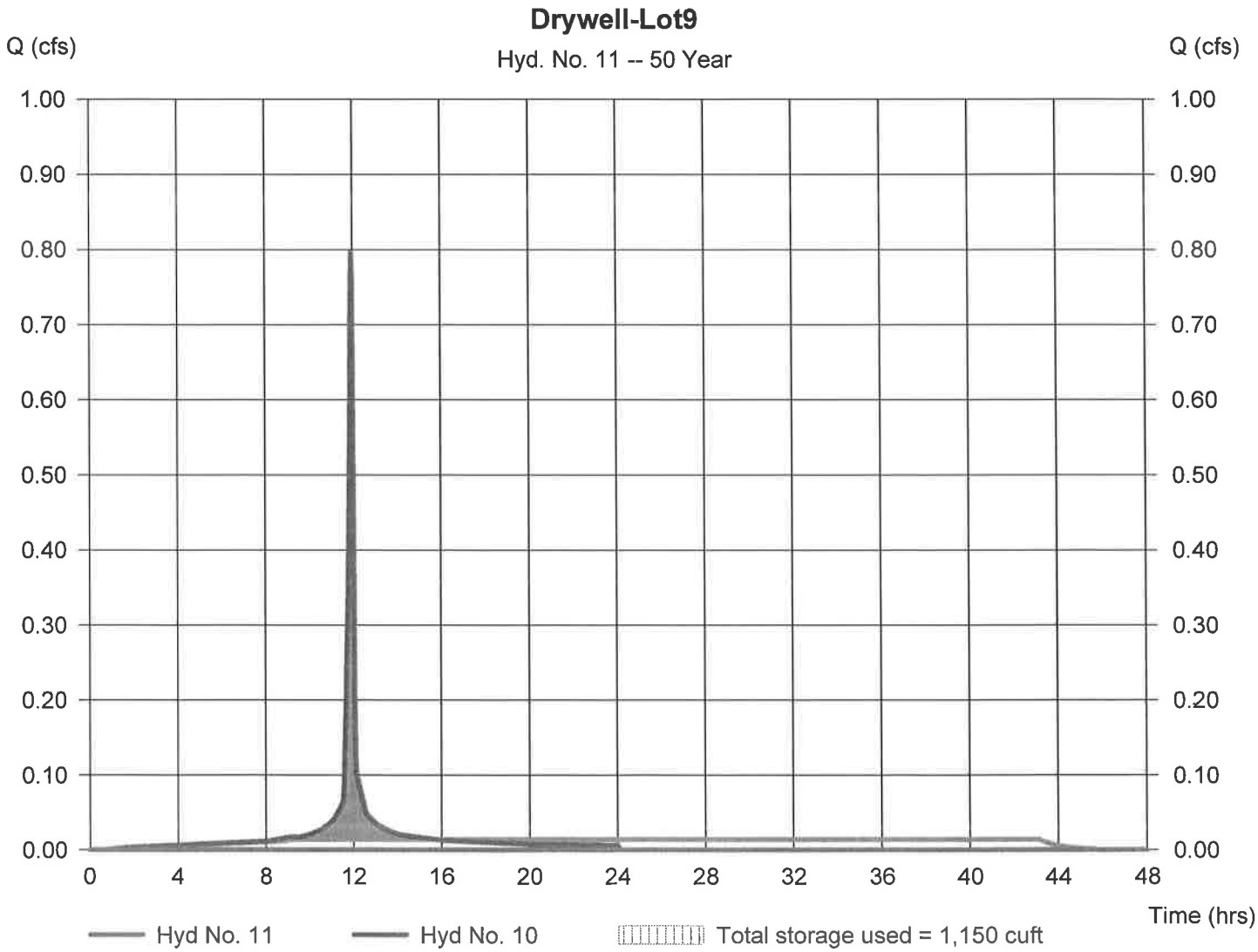
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 11

Drywell-Lot9

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 50 yrs	Time to peak	= 6.93 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 10 - Proposed DA To Drywell-Lot9	Max. Elevation	= 350.42 ft
Reservoir name	= Drywell-Lot9	Max. Storage	= 1,150 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

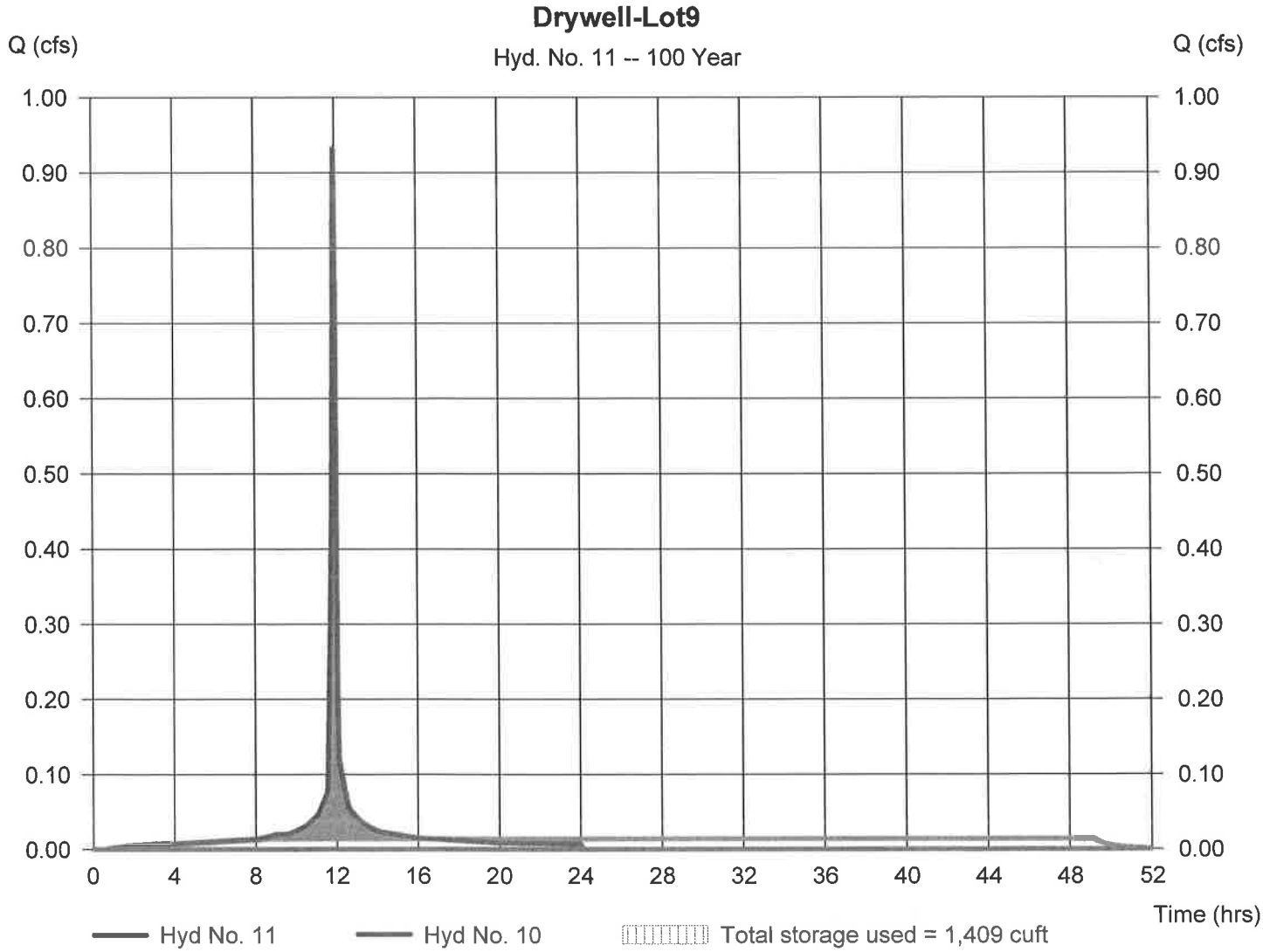
Hydraflow Hydrographs by Intelisolve v9.23 Tuesday, Aug 11, 2020

Hyd. No. 11

Drywell-Lot9

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= 6.60 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 10 - Proposed DA To Drywell-Lot9	Max. Elevation	= 350.96 ft
Reservoir name	= Drywell-Lot9	Max. Storage	= 1,409 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



DAMBRO
STORMWATER MANAGEMENT

Drywell Dewatering Calculations

Drywell	Total Volume to Dewater (cf)	Outflow* (cfs)	Time to Dewater** (hours)
Lot2	7088	0.187	10.53
Lot4	11970	0.324	10.26
Lot5	23027	0.275	23.26
Lot6and7	29863	0.334	24.84
Lot8-#1	1109	0.044	7.00
Lot8-#2	1680	0.011	42.42
Lot9	1426	0.014	28.29

* Outflow based on infiltration rate x surface area of bottom of the bed
** Time to Dewater = Volume / (Outflow x 3600 sec/hr)

DAMBRO
STORMWATER MANAGEMENT

Drywell Loading Ratio Calculations

Drywell	Total Area to Drywell (sf)	Impervious Area to Drywell (sf)	Drywell Surface Area (sf)	Total Area Loading Ratio	Impervious Area Loading Ratio
Lot2	54013	16067	4320	13 to 1	4 to 1
Lot4	81425	9120	6600	12 to 1	1 to 1
Lot5	121331	21537	7920	15 to 1	3 to 1
Lot6and7	147245	16675	13360	11 to 1	1 to 1
Lot8-#1	4560	4560	924	5 to 1	5 to 1
Lot8-#2	24164	5448	1200	20 to 1	5 to 1
Lot9	3772	3772	1188	3 to 1	3 to 1

DAMBRO
STORMWATER MANAGEMENT

Drywell-Lot2 Infiltration Rate Calculations:
TP 1A – Tested Infiltration Rate = 0.75 in/hr
TP 2A – Tested Infiltration Rate = 6.75 in/hr
Average Tested Infiltration Rate = 3.75 in/hr
Factor of Safety = 2.0
Design Infiltration Rate = 1.87 in/hr

Drywell-Lot4 Infiltration Rate Calculations:
TP 7A – Tested Infiltration Rate = 6.75 in/hr
TP 8A – Tested Infiltration Rate = 1.75 in/hr
Average Tested Infiltration Rate = 4.25 in/hr
Factor of Safety = 2.0
Design Infiltration Rate = 2.12 in/hr

Drywell-Lot5 Infiltration Rate Calculations:
TP 9A – Tested Infiltration Rate = 4.50 in/hr
TP 10A – Tested Infiltration Rate = 1.50 in/hr
Average Tested Infiltration Rate = 3.00 in/hr
Factor of Safety = 2.0
Design Infiltration Rate = 1.50 in/hr

Drywell-Lot6and7 Infiltration Rate Calculations:
TP 11A – Tested Infiltration Rate = 0.75 in/hr
TP 12A – Tested Infiltration Rate = 2.00 in/hr
TP 13A – Tested Infiltration Rate = 3.75 in/hr
Average Tested Infiltration Rate = 2.17 in/hr
Factor of Safety = 2.0
Design Infiltration Rate = 1.08 in/hr

Drywell-Lot8-#1 Infiltration Rate Calculations:
TP 14A – Tested Infiltration Rate = 4.50 in/hr
TP 15A – Tested Infiltration Rate = 3.75 in/hr
Average Tested Infiltration Rate = 4.13 in/hr
Factor of Safety = 2.0
Design Infiltration Rate = 2.06 in/hr

Drywell-Lot8-#2 Infiltration Rate Calculations:
TP 17A – Tested Infiltration Rate = 0.75 in/hr
Factor of Safety = 2.0
Design Infiltration Rate = 0.38 in/hr

Drywell-Lot9 Infiltration Rate Calculations:
TP 18A – Tested Infiltration Rate = 0.75 in/hr
TP 19A – Tested Infiltration Rate = 1.25 in/hr
Average Tested Infiltration Rate = 1.00 in/hr
Factor of Safety = 2.0
Design Infiltration Rate = 0.50 in/hr

Willow Run Consulting, Inc.

Soil Infiltration Test Results

280 Ridge Road

Method: Double-Ring Infiltrometer

Equipment: 8" diameter inner ring

Equipment: 12" diameter outer ring

Township: Chadds Ford

County: Delaware

Weather: Partly Sunny, Cool

Completed By: Edward Beideman

Signature:

Test Location	Test Date	Testing Depth (inches)	Presoak 30 min	Presoak 30 min	1	2	3	4	Final Time Interval Min	Infiltration Rate (inch/hour)
Lot 2 - 1	11/8/2018	--	No Testing Completed due to Seasonal High Groundwater Limiting Zone							
Lot 2 - 2	11/8/2018	--	No Testing Completed due to Seasonal High Groundwater Limiting Zone							
Lot 3	11/8/2018	54	3	1 7/8	1 5/8	1 3/8	1 1/2	1 3/8	30	2.75
Lot 4	11/8/2018	54	3/8	1/4	1/4	1/8	1/8	1/8	30	0.25
Lot 5	11/8/2018	54	1 1/8	3/4	3/4	3/4	5/8	5/8	30	1.25
Lot 6	12/6/2018	48	2 3/8	1 7/8	1 3/4	1 7/8	1 3/4	1 3/4	30	3.50
Lot 7	12/19/2018	60	4	4	2 1/8	1 7/8	2	1 7/8	10	11.25
Lot 8	12/19/2018	48	3/8	3/8	1/4	1/4	1/8	1/8	30	0.25
Lot 9 - 1	12/6/2018	12	1/8	0	0	0	0	0	30	0.00
Lot 9 - 2	12/6/2018	45	1/2	3/8	3/8	1/4	1/4	1/4	30	0.50
Lot 9 - 3	12/6/2018	--	No Testing Completed due to Seasonal High Groundwater Limiting Zone							
LB - 1	12/19/2018	60	1/2	3/8	3/8	3/8	1/4	1/4	30	0.50
LB - 2	12/19/2018	60	7/8	3/4	3/4	5/8	5/8	5/8	30	1.25
LB - 3	12/19/2018	48	1 1/4	1	7/8	1	7/8	7/8	30	1.75
LB - 4	12/19/2018	48	1 1/8	1	7/8	7/8	3/4	3/4	30	1.50

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: Lot 2 - 1

Date: 11/8/2018

Weather: Partly Sunny, Cool

Depth (inches)	Color	Texture	Structure Type	Structure Grade	Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features Quantity	Redoximorphic Features Contrast
0 - 15	10 YR 3/4	Lo	Gran	Mod	Fri	Abt Sm			
15 - 40	10 YR 3/4	Si Lo	Sbk	Wk	Fri (moist)	Cl Wavy		Common	Distinct
40 - 50	10 YR 4/4	Si Lo	Sbk	Wk	Fri			Profuse	Distinct
Water Seeps @ 40" and Groundwater @ 50"									

Evaluated By: Gwen Beideman

Signature: G Bei

Limiting Zone (if any): Seasonal High Ground Water @ 15"

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: Lot 2 - 2

Date: 11/8/2018

Weather: Partly Sunny, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 6	10 YR 3/4	Lo	Gran	Mod	Fri	Abt Sm			
6 - 20	10 YR 5/6	Si Cl Lo	Sbk	Wk	Fri	Grad Sm		Few	Faint
20 - 60	10 YR 5/6	Si Lo	Sbk	Wk	Fri			Common	Distinct
Bottom of Pit @ 60"									

Evaluated By: Gwen Beideman

Signature: GBeid

Limiting Zone (if any): Seasonal High Ground Water @ 20"

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: Lot 3

Date: 11/8/2018

Weather: Partly Sunny, Cool

Depth (inches)	Color	Texture	Structure Type	Structure Grade	Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features Quantity	Redoximorphic Features Contrast
0 - 11	10 YR 3/4	Lo	Gran	Mod	Fri	Abt Sm			
11 - 29	10 YR 5/6	Si Cl Lo	Sbk	Mod	Fri	Cl Wavy			
29 - 78	Var Br / Grey	Si Lo	Sbk	Wk	V Fri		20%		
Bottom of Pit @ 78"									

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Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): --

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: Lot 4

Date: 11/8/2018

Weather: Partly Sunny, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 12	10 YR 3/4	Lo	Gran	Mod	Fri	Abt Sm			
12 - 32	10 YR 3/6	Lo	Sbk	Wk	Fri	Cl Wavy			
32 - 44	10 YR 5/6	Si Lo	Sbk	Mod	Fri	Cl Wavy		Few	Distinct
44 - 78	Var Br	Si Lo	Sbk	Wk	V Fri				
Bottom of Pit @ 78"									

Evaluated By: Gwen Beideman

Signature: G Beideman

Limiting Zone (if any): --

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: Lot 5

Date: 11/8/2018

Weather: Partly Sunny, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 9	10 YR 3/4	Lo	Gran	Mod	Fri	Abt Sm			
9 - 24	10 YR 5/6	Si Lo	Sbk	Wk	Fri	Grad Sm			
24 - 78	Var Br / Grey	Lo	Sbk	Wk	Fri		30%		
Bottom of Pit @ 78"									

178

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): --

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: Lot 6

Date: 12/6/2018

Weather: Partly Sunny, Cool

Depth (inches)	Color	Texture	Structure Type	Structure Grade	Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features Quantity	Redoximorphic Features Contrast
0 - 4	10 YR 2/2	Lo	Gran	Mod	Fri	Abt Wavy			
4 - 14	10 YR 4/4	Lo	Sbk	Mod	Fri	Cl Sm			
14 - 31	Var Red Br/Tan	Lo	Sbk	Wk	Fri	Cl Wavy			
31 - 51	Var Grey	Sa Lo	Sbk	Wk	V Fri				
51 - 84	Var Grey	Sa Lo	Sbk	Wk	Fri		40%		
Bottom of Pit @ 84"									

179

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): --

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: Lot 7

Date: 12/19/2018

Weather: Partly Sunny, Cool

Depth (inches)	Color	Texture	Structure Type	Structure Grade	Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features Quantity	Redoximorphic Features Contrast
0 - 10	10 YR 2/2	Lo	Gran	Mod	Fri	Abt Wavy			
10 - 25	10 YR 4/4	Si Lo	Sbk	Wk	Fri	Cl Wavy			
25 - 51	Var Grey / Br	Si Lo	Sbk	Wk	Fri	Cl Wavy	10%		
51 - 84	Var Grey	Si Lo	Sbk	Wk	Fri		10%		
Bottom of Pit @ 84"									

081

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): --

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: Lot 8

Date: 12/19/2018

Weather: Partly Sunny, Cool

Depth (inches)	Color	Texture	Structure Type	Structure Grade	Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features Quantity	Redoximorphic Features Contrast
0 - 9	10 YR 2/2	Lo	Gran	Mod	Fri	Abt Sm			
9 - 40	10 YR 4/4	Si Lo	Sbk	Mod	Fri	Cl Wavy			
40 - 60	Var Grey / Br	Si Lo	Sbk	Wk	Fri	Cl Wavy			
60 - 84	Var Grey	Si Lo	Sbk	Wk	Fri (moist)				
Bottom of Pit @ 84"									

181

Evaluated By: Gwen Beideman

Signature: G Beideman

Limiting Zone (if any): --

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: Lot 9 - 1

Date: 12/6/2018

Weather: Partly Sunny, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 12	10 YR 3/3	Lo	Gran	Mod	Fri	Abt Sm			
12 - 21	10 YR 4/6	Si Lo	Sbk	Mod	Fri	Cl Wavy			
21 - 30	10 YR 4/6	Si Lo	Sbk	Mod	Fri	Abt Wavy		Common	Faint
30 - 50	Var Dk Grey	Si Lo	Sbk	Wk	Fri		40%		
Bottom of Pit @ 50"									

182

Evaluated By: Gwen Beideman

Signature: G Beideman

Limiting Zone (if any): --

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: Lot 9 - 2

Date: 12/6/2018

Weather: Partly Sunny, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 10	10 YR 3/2	Lo	Gran	Mod	Fri	Abt Sm			
10 - 44	10 YR 4/6	Si Cl Lo	Sbk	Wk	Fri	Abt Sm			
44 - 70	Var Dk Grey	Si Lo	Sbk	Wk	Fri		40%		
Bottom of Pit @ 70"									

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Evaluated By: Gwen Beideman

Signature: G Beid

Limiting Zone (if any): --

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: Lot 9 - 3

Date: 12/6/2018

Weather: Partly Sunny, Cool

Depth (inches)	Color	Texture	Structure Type	Structure Grade	Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features Quantity	Redoximorphic Features Contrast
0 - 10	10 YR 3/2	Lo	Gran	Mod	Fri	Abt Sm			
10 - 23	10 YR 4/6	Si Cl Lo	Sbk	Mod	Fri	Cl Wavy			
23 - 39	10 YR 4/6	Si Lo	Sbk	Mod	Fri	Cl Wavy		Common	Distinct
39 - 50	Var Dk Grey	Si Lo	Sbk	Mod	Fri			Common	Distinct
Bottom of Pit @ 50"									

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): Seasonal High Ground Water @ 23"

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

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Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: LB - 1

Date: 12/19/2018

Weather: Partly Sunny, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 9	10 YR 3/4	Lo	Gran	Mod	Fri	Abt Sm			
9 - 29	10 YR 4/6	Si Cl Lo	Sbk	Mod	Fri	Grad Sm			
29 - 48	Var Tan / Br	Si Lo	Sbk	Mod	Fri	Cl Sm			
48 - 84	Var Grey	Si Lo	Sbk	Wk	Fri		20%		
Bottom of Pit @ 84"									

581

Evaluated By: Gwen Beideman

Signature: G Bud

Limiting Zone (if any): --

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: LB - 2

Date: 12/19/2018

Weather: Partly Sunny, Cool

Depth (inches)	Color	Texture	Structure Type	Structure Grade	Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features Quantity	Redoximorphic Features Contrast
0 - 8	10 YR 3/4	Lo	Gran	Mod	Fri	Abt Sm			
8 - 26	10 YR 4/6	Si Cl Lo	Sbk	Mod	Fri	Grad Sm			
26 - 43	Var Tan / Br	Si Lo	Sbk	Mod	Fri	Cl Sm			
43 - 84	Var Grey	Si Lo	Sbk	Wk	Fri		30%		
Bottom of Pit @ 84"									

181

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): --

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: LB - 3

Date: 12/19/2018

Weather: Partly Sunny, Cool

Depth (inches)	Color	Texture	Structure Type	Structure Grade	Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features Quantity	Redoximorphic Features Contrast
0 - 8	10 YR 3/4	Lo	Gran	Mod	Fri	Abt Sm	-		
8 - 27	10 YR 5/6	Lo	Sbk	Mod	Fri	Grad Sm			
27 - 53	Var Grey / Red Br	Si Lo	Sbk	Wk	Fri	Grad Wavy			
53 - 84	Var Grey	Si Lo	Sbk	Wk	Fri		40%		
Bottom of Pit @ 84"									

187

Evaluated By: Gwen Beideman

Signature: G Beid

Limiting Zone (if any): --

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: LB - 4

Date: 12/19/2018

Weather: Partly Sunny, Cool

Depth (inches)	Color	Texture	Structure Type	Structure Grade	Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features Quantity	Redoximorphic Features Contrast
0 - 9	10 YR 3/4	Lo	Gran	Mod	Fri	Abt Sm			
9 - 28	10 YR 5/6	Lo	Sbk	Mod	Fri	Grad Sm			
28 - 46	Var Grey / Red Br	Si Lo	Sbk	Wk	Fri	Grad Wavy			
46 - 84	Var Grey	Si Lo	Sbk	Wk	Fri		40%		
Bottom of Pit @ 84"									

B81

Evaluated By: Gwen Beideman

Signature: G Bei

Limiting Zone (if any): --

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Infiltration Test Results

280 Ridge Road

Method: Double-Ring Infiltrometer

Equipment: 8" diameter inner ring

Equipment: 12" diameter outer ring

Township: Chadds Ford

County: Delaware

Completed By: Edward Beideman

Signature: Edward Beideman

Test Location	Test Date	Testing Depth (inches)	Presoak 30 min	Presoak 30 min	1	2	3	4	Final Time Interval Min	Infiltration Rate (inch/hour)
1	11/4/2019	36	3/4	1/2	3/8	1/4	1/4	1/4	30	0.50
2	11/4/2019	96	5/8	5/8	1/2	1/2	3/8	3/8	30	0.75
3	11/4/2019	29	5/8	1/2	3/8	3/8	1/4	1/4	30	0.50
4	10/30/2019	60	1/8	0	0	0	0	0	30	0.00
5	10/30/2019	99	1 1/8	3/4	5/8	5/8	1/2	3/8	30	0.75
6	10/30/2019	51	5/8	5/8	1/2	1/2	3/8	3/8	30	0.75
7	10/25/2019	102	4	4	1 1/4	1 1/8	1 1/4	1 1/8	10	6.75
8	10/25/2019	88	4	2 1/4	5/8	1/2	1/2	1/2	10	3.00
9	10/25/2019		No Testing Completed due to Seasonal High Groundwater Limiting Zone							
10	10/25/2019	72	1/2	3/8	1/4	1/4	1/4	1/4	30	0.50
11	10/25/2019		No Testing Completed due to Seasonal High Groundwater Limiting Zone							
12	10/25/2019	84	4	4	1 3/8	1 1/4	1 1/4	1 1/8	10	6.75
13	10/25/2019	72	1 3/4	1 1/2	1 1/4	1 1/4	1 1/8	1 1/8	30	2.25
14	10/25/2019	72	1/4	1/8	0	0	0	0	30	0.00
15	10/25/2019	120	1 1/4	1	3/4	5/8	3/4	5/8	30	1.25

16	10/30/2019	39	1/8	1/8	0	0	0	0	30	0.00
17	10/30/2019	84	1 1/4	3/4	3/4	3/4	5/8	5/8	30	1.25
18	10/30/2019	68	7/8	5/8	1/2	3/8	3/8	3/8	30	0.75
19	11/4/2019	60	1 1/2	1 1/8	3/4	3/4	5/8	1/2	30	1.00
20	11/4/2019	102	1 1/4	1 1/8	3/4	5/8	1/2	1/2	30	1.00
21	11/4/2019	55	5/8	1/2	3/8	1/4	1/4	1/4	30	0.50
22	11/4/2019	72	3/4	1/2	3/8	3/8	3/8	3/8	30	0.75
23	11/4/2019	60	5/8	1/2	3/8	1/4	1/4	1/4	30	0.50
24	10/30/2019	53	3/4	1/2	3/8	1/4	1/4	1/4	30	0.50
25	10/30/2019	52	7/8	5/8	1/2	1/2	1/2	3/8	30	0.75
26	10/30/2019	60	3/4	5/8	1/2	1/2	3/8	3/8	30	0.75
27	10/30/2019	24	1/4	1/8	1/8	0	0	0	30	0.00

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 1

Date: 11/4/2019

Weather: Sunny, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 4	10 YR 3/3	Lo	Gran	Mod	Fri	Abt Sm			
4 - 17	10 YR 4/4	Lo	Sbk	Mod	Fri	Cl Sm			
17 - 34	10 YR 4/4	Lo	Sbk	Mod	Fri	Abt Wavy	30%		
34 - 44	Var Tan / Or	Sa Lo	Sbk	Wk	Fri	Abt Irr			
44 - 60	Var Br / Dk Grey	Sa Lo	Sbk	Wk	Fri		50%		
Rock @ 60									

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): Rock @ 60"

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

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Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 2

Date: 11/4/2019

Weather: Sunny, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 6	10 YR 3/3	Lo	Gran	Mod	Fri	Abt Sm			
6 - 22	7.5 YR 4/6	Si Lo	Sbk	Mod	Fri	Cl Sm			
22 - 39	10 YR 5/4	Sa Lo	Sbk	Wk	Fri	Grad Sm			
39 - 120	Var Grey / Rd Br	Sa Lo	Str-less	Mass	V Fri		50%		
Bottom of Pit @ 120									

Evaluated By: Gwen Beideman

Signature: G Beid

Limiting Zone (if any): --

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

192

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 3

Date: 11/4/2019

Weather: Sunny, Cool

Depth (inches)	Color	Texture	Structure Type	Structure Grade	Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features Quantity	Redoximorphic Features Contrast
0 - 4	10 YR 3/3	Lo	Gran	Mod	Fri	Abt Sm			
4 - 13	10 YR 4/4	Lo	Sbk	Mod	Fri	Cl Sm			
13 - 25	10 YR 4/4	Lo	Sbk	Mod	Fri	Abt Wavy	30%		
25 - 35	Var Tan / Or	Sa Lo	Sbk	Wk	Fri	Abt Irr			
35 - 53	Var Br / Dk Grey	Sa Lo	Sbk	Wk	Fri		50%		
Rock @ 53									

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): Rock @ 53"

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

193

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 4

Date: 10/30/2019

Weather: Cloudy, some light rain, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 6	10 YR 3/3	Lo	Gran	Mod	Fri	Abt Sm			
6 - 26	10 YR 4/6	Si Lo	Sbk	Mod	Fri	Cl Sm			
26 - 84	10 YR 4/6	Si Lo	Sbk	Wk	Fri		60%		
Rock @ 84									

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): --

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

194

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 5

Date: 10/30/2019

Weather: Cloudy, some light rain, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 6	10 YR 3/3	Lo	Gran	Mod	Fri	Abt Sm			
6 - 23	7.5 YR 4/6	Lo	Sbk	Mod	Fri	Cl Wavy			
23 - 34	7.5 YR 5/6	Sa Lo	Sbk	Wk	Fri	Cl Wavy			
34 - 75	Var Tan / Grey	Sa Lo	Str-less	Mass	V Fri	Grad Wavy	20%		
75 - 123	Var Tan / Lt Grey	Sa Lo	Str-less	Mass	Fri		40%		
Rock @ 123									

Evaluated By: Gwen Beideman

Signature: G Beideman

Limiting Zone (if any): Rock @ 123"

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

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Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 6

Date: 10/30/2019

Weather: Cloudy, some light rain, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 6	10 YR 3/3	Lo	Gran	Mod	Fri	Abt Sm			
6 - 24	7.5 YR 4/6	Lo	Sbk	Wk	Fri	Cl Wavy			
24 - 35	10 YR 5/4	Si Lo	Sbk	Mod	Fri	Cl Wavy			
35 - 75	Var Grey	Sa Lo	Str-less	Mass	Fri		50%		
Rock @ 75									

196

Evaluated By: Gwen Beideman

Signature: G. Bed

Limiting Zone (if any): Rock @ 75"

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 7

Date: 10/25/2019

Weather: Sunny, Cool

Depth (inches)	Color	Texture	Structure Type	Structure Grade	Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features Quantity	Redoximorphic Features Contrast
0 - 9	10 YR 3/3	Lo	Gran	Mod	Fri	Abt Sm			
9 - 39	10 YR 3/6	Lo	Sbk	Wk	Fri	Grad Wavy		Common	Distinct
39 - 87	10 YR 5/4	Sl Lo	Sbk	Mod	Fri	Abt Wavy		Common	Faint
87 - 126	Var Dk Br / Br	Lo	Str-less	Mass	Fri		40%		
Rock @ 126									

Evaluated By: Gwen Beideman

Signature: G Beid

Limiting Zone (if any): Rock @ 126"

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

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Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 8

Date: 10/25/2019

Weather: Sunny, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 9	10 YR 3/3	Lo	Sbk	Mod	Fri	Abt Sm			
9 - 33	10 YR 4/6	Lo	Sbk	Wk	Fri	Grad Wavy			
33 - 76	10 YR 5/6	Si Lo	Sbk	Mod	Fri	Abt Wavy		Common	Faint
76 - 112	Var Dk Br / Br	Lo	Str-less	Mass	Fri		40%		
Bottom of Pit @ 112									

Evaluated By: Gwen Beideman

Signature: G Beideman

Limiting Zone (if any): --

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 9

Date: 10/25/2019

Weather: Sunny, Cool

Depth (inches)	Color	Texture	Structure Type	Structure Grade	Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features Quantity	Redoximorphic Features Contrast
0 - 6	10 YR 4/4	Lo	Gran	Mod	Fri	Abt Sm			
6 - 22	10 YR 4/4	Lo	Sbk	Mod	Fri	Cl Sm		Common	Distinct
22 - 32	10 YR 4/3	Si Lo	Sbk	Wk	Fri	Abt Sm		Profuse	Distinct
32 - 41	10 YR 5/6	Lo	Sbk	Mod	Fri			Profuse	Distinct
Water Seeps @ 38"									

199

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): Seasonal High Groundwater @ 6"

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 10

Date: 10/25/2019

Weather: Sunny, Cool

Depth (inches)	Color	Texture	Structure Type	Structure Grade	Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features Quantity	Redoximorphic Features Contrast
0 - 6	10 YR 4/4	Lo	Gran	Mod	Fri	Abt Sm			
6 - 18	7.5 YR 4/6	Lo	Sbk	Mod	Fri	Cl Sm			
18 - 40	10 YR 5/6	Si Lo	Sbk	Mod	Fri	Cl Wavy		Common	Distinct
40 - 61	10 YR 4/4	Sa Lo	Sbk	Wk	Fri	Cl Wavy		Few	Faint
61 - 75	Var Rd Br / Grey	Sa Lo	Sbk	Wk	V Fri	Cl Wavy	20%		
75 - 96	Var Dk Br / Br	Sa Lo	Str-less	Mass	Fri		40%		
Bottom of Pit @ 96									

Evaluated By: Gwen Beideman

Signature: G Beideman

Limiting Zone (if any): --

200

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 11

Date: 10/25/2019

Weather: Sunny, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 6	10 YR 4/4	Lo	Gran	Mod	Fri	Abt Sm			
6 - 17	10 YR 4/6	Lo	Sbk	Mod	Fri	Grad Wavy			
17 - 29	10 YR 4/6	Lo	Sbk	Mod	Fri	Abt Wavy		Profuse	Distinct
29 - 38	7.5 YR 5/8	Lo	Sbk	Mod	Fri	Abt Wavy		Common	Distinct
38 - 90	10 YR 6/6	Lo	Sbk	Mod	Fri			Profuse	Distinct
Bottom of Pit @ 90									

102

Evaluated By: Gwen Beideman

Signature: G Beid

Limiting Zone (if any): Seasonal High Groundwater @ 17"

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 12

Date: 10/25/2019

Weather: Sunny, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 7	10 YR 4/4	Lo	Gran	Mod	Fri	Abt Sm			
7 - 22	7.5 YR 4/6	Si Lo	Sbk	Mod	Fri	Cl Wavy			
22 - 63	Var Br / Grey	Fi Sa Lo	Sbk	Wk	V Fri	Abt Sm	20%		
63 - 108	Var Dk Br / Grey	Sa Lo	Str-less	Mass	V Fri		30%		
Rock @ 108"									

202

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): Rock @ 108"

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 13

Date: 10/25/2019

Weather: Sunny, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 10	10 YR 3/3	Lo	Gran	Mod	Fri	Abt Sm			
10 - 28	10 YR 5/4	Lo	Sbk	Mod	Fri	Grad Wavy			
28 - 42	10 YR 5/6	Si Lo	Sbk	Mod	Firm	Abt Wavy		Common	Distinct
42 - 53	Var Tan / Rd Br	Si Lo	Sbk	Mod	Fri	Aby W		Few	Faint
53 - 96	Var Dk Br / Grey	Sa Lo	Str-less	Mass	Fri		20%		
Bottom of Pit @ 96									

Evaluated By: Gwen Beideman

Signature: G Pud

Limiting Zone (if any): --

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

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Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 14

Date: 10/25/2019

Weather: Sunny, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 12	10 YR 3/3	Lo	Gran	Mod	Fri	Abt Sm			
12 - 23	10 YR 5/6	Si Lo	Sbk	Mod	Fri	Cl Wavy			
23 - 44	10 YR 6/4	Si Lo	Sbk	Mod	Fri	Grad Wavy		Profuse	Distinct
44 - 96	10 YR 5/6	Si Lo	Sbk	Mod	Fri				
Bottom of Pit @ 96									

204

Evaluated By: Gwen Beideman

Signature: G Pud

Limiting Zone (if any): --

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 15

Date: 10/25/2019

Weather: Sunny, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 12	10 YR 3/3	Lo	Gran	Mod	Fri	Abt Sm			
12 - 26	10 YR 5/6	Si Lo	Sbk	Mod	Fri	Cl Wavy			
26 - 57	Var Rd Br / Grey	Si Lo	Sbk	Mod	Fri	Grad Wavy			
57 - 144	Var Dk Br / Grey	Sa Lo	Str-less	Mass	Fri		30%		
Bottom of Pit @ 144									

205

Evaluated By: Gwen Beideman

Signature: G Beideman

Limiting Zone (if any): --

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 16

Date: 10/30/2019

Weather: Cloudy, some light rain, Cool

Depth (inches)	Color	Texture	Structure Type	Structure Grade	Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features Quantity	Redoximorphic Features Contrast
0 - 7	10 YR 4/4	Lo	Gran	Mod	Fri	Abt Sm			
7 - 23	10 YR 4/6	Si Lo	Sbk	Mod	Fri	Grad Wavy			
23 - 63	Var Tan/Grey/Or	Sa Lo	Sbk	Mod	Fri		20%		
Rock @ 63"									

106

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): Rock @ 63"

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 17

Date: 10/30/2019

Weather: Cloudy, some light rain, Coo

Depth (inches)	Color	Texture	Structure Type	Structure Grade	Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features Quantity	Redoximorphic Features Contrast
0 - 7	7.5 YR 3/4	Lo	Gran	Mod	Fri	Cl Sm			
7 - 15	7.5 YR 4/4	Lo	Sbk	Mod	Fri	Cl Wavy			
15 - 57	Var Dk Br / Grey	Sa Lo	Sbk	Wk	V Fri	Grad Wavy			
57 - 108	Var Grey / Br	Sa Lo	Sbk	Wk	V Fri		20%		
Bottom of Pit @ 108									

207

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): --

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 18

Date: 10/30/2019

Weather: Cloudy, some light rain, Cool

Depth (inches)	Color	Texture	Structure Type	Structure Grade	Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features Quantity	Redoximorphic Features Contrast
0 - 9	7.5 YR 3/4	Lo	Gran	Mod	Fri	Cl Sm			
9 - 25	7.5 YR 4/4	Lo	Sbk	Mod	Fri	Cl Wavy			
25 - 62	Var Dk Br / Grey	Sa Lo	Sbk	Wk	V Fri	Grad Wavy			
62 - 92	Var Grey / Tan	Sa Lo	Sbk	Wk	V Fri		20%		
Rock @ 92									

208

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): Rock @ 92"

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 19

Date: 11/4/2019

Weather: Sunny, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 8	10 YR 4/4	Lo	Gran	Mod	Fri	Cl Sm			
8 - 22	10 YR 4/6	Si Lo	Sbk	Mod	Fri	Cl Wavy			
22 - 40	Var Dk Br / Lt Br	Si Lo	Sbk	Wk	Fri	Cl Wavy			
40 - 84	Var Lt Br/Tan/Grey	Sa Lo	Sbk	Wk	V Fri		50%		
Rock @ 84									

209

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): Rock @ 84"

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 20

Date: 11/4/2019

Weather: Sunny, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 11	10 YR 4/4	Lo	Gran	Mod	Fri	Cl Sm			
11 - 26	10 YR 4/6	Lo	Sbk	Mod	Fri	Cl Wavy			
26 - 60	Var Br / Grey	Si Lo	Sbk	Wk	Fri	Cl Wavy	40%		
60 - 126	10 YR 5/4	Sa Lo	Sbk	Wk	V Fri		60%		
Rock @ 126									

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): Rock @ 126"

165 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

210

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 21

Date: 11/4/2019

Weather: Sunny, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 10	10 YR 4/4	Lo	Gran	Mod	Fri	Cl Sm			
10 - 22	10 YR 4/6	Si Lo	Sbk	Mod	Fri	Grad Sm			
22 - 51	10 YR 4/6	Si Lo	Sbk	Mod	Fri	Grad Sm			
51 - 79	10 YR 5/6	Si Lo	Sbk	Wk	Fri	Grad Sm			
79 - 110	10 YR 5/6	Si Lo	Sbk	Mod	Fri			Common	Distinct
Bottom of Pit @ 110									

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): Seasonal High Groundwater @ 79"

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

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Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 22

Date: 11/4/2019

Weather: Sunny, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 5	10 YR 3/3	Lo	Gran	Mod	Fri	Abt Sm			
5 - 24	7.5 YR 4/6	Si Lo	Sbk	Mod	Fri	Grad Sm			
24 - 58	Var Tan/Grey	Sa Lo	Str-less	Mass	Fri	Cl Sm	20%		
58 - 96	Var Br / Dk Grey	Sa Lo	Str-less	Mass	Fri		50%		
Rock @ 96"									

212

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): Rock @ 96"

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 23

Date: 11/4/2019

Weather: Sunny, Cool

Depth (inches)	Color	Texture	Structure Type	Structure Grade	Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features Quantity	Redoximorphic Features Contrast
0 - 8	10 YR 3/3	Lo	Gran	Mod	Fri	Abt Sm			
8 - 23	7.5 YR 4/6	Sl Lo	Sbk	Mod	Fri	Grad Sm			
23 - 51	Var Tan/Grey	Sa Lo	Str-less	Mass	Fri	Cl Sm	20%		
51 - 84	Var Br / Dk Grey	Sa Lo	Str-less	Mass	Fri		50%		
Rock @ 84"									

213

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): Rock @ 84"

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 24

Date: 10/30/2019

Weather: Cloudy, some light rain, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 9	10 YR 3/3	Lo	Gran	Mod	Fri	Cl Sm			
9 - 25	7.5 YR 4/4	Lo	Sbk	Mod	Fri	Grad Sm	20%		
25 - 44	10 YR 5/4	Sa Lo	Sbk	Wk	Fri	Abt Wavy	20%		
44 - 77	Var Grey / Br	Sa Lo	Str-less	Mass	V Fri		40%		
Rock @ 77									

214

Evaluated By: Gwen Beideman

Signature: G. Bed

Limiting Zone (if any): Rock @ 77"

166 Hemlock Drive Cochranville, PA 19550 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 25

Date: 10/30/2019

Weather: Cloudy, some light rain, Cocl

Depth (inches)	Color	Texture	Structure Type	Structure Grade	Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features Quantity	Redoximorphic Features Contrast
0 - 8	10 YR 3/3	Lo	Gran	Mod	Fri	Abt Sm			
8 - 25	10 YR 4/6	Lo	Sbk	Mod	Fri	Abt Wavy			
25 - 62	Var Br/Grey/Or	Sl Lo	Sbk	Wk	Fri	Cl Wavy			
62 - 76	Var Grey / Br	Sa Lo	Str-less	Mass	Fri		50%		
Rock @ 76									

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): Rock @ 76"

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 26

Date: 10/30/2019

Weather: Cloudy, some light rain, Cool

Depth (inches)	Color	Texture	Structure Type	Structure Grade	Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features Quantity	Redoximorphic Features Contrast
0 - 9	10 YR 3/3	Lo	Gran	Mod	Fri	Abt Sm			
9 - 16	10 YR 4/6	Lo	Sbk	Mod	Fri	Abt Wavy			
16 - 33	10 YR 5/6	Si Lo	Sbk	Wk	Fri	Cl Wavy		Few	Faint
33 - 84	Var Grey / Br	Sa Lo	Str-less	Mass	Fri		40%		
Bottom of Pit @ 84									

Evaluated By: Gwen Beideman

Signature: G Bei

Limiting Zone (if any): --

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

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Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 27

Date: 10/30/2019

Weather: Cloudy, some light rain, Cool

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 9	10 YR 3/3	Lo	Gran	Mod	Fri	Abt Sm			
9 - 18	10 YR 4/6	Lo	Sbk	Mod	Fri	Abt Wavy			
18 - 48	10 YR 4/6	Lo	Sbk	Wk	Fri		40%		
Rock @ 48"									

2/17

Evaluated By: Gwen Beldeman

Signature: G Beld

Limiting Zone (if any): Rock @ 48"

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Infiltration Test Results

280 Ridge Road

Method: Double-Ring Infiltrometer

Equipment: 8" diameter inner ring

Equipment: 12" diameter outer ring

Township: Chadds Ford

County: Delaware

Completed By: Edward Beideman

Signature:

Test Location	Test Date	Testing Depth (inches)	Presoak 30 min	Presoak 30 min	1	2	3	4	Final Time Interval Min	Infiltration Rate (inch/hour)
1	6/17/2020	60	3/4	1/2	3/8	3/8	1/4	3/8	30	0.75
2	6/17/2020	72	4	3 1/2	1 1/4	1 1/4	1 1/8	1 1/8	10	6.75
3	6/17/2020	79	7/8	5/8	5/8	1/2	1/2	1/2	30	1.00
4	6/17/2020	64	1 1/8	3/4	5/8	3/4	5/8	5/8	30	1.25
5	6/17/2020	96	4	4	1 3/8	1 3/8	1 1/4	1 1/4	10	7.50
6	6/17/2020		No Testing Completed due to Seasonal High Groundwater Limiting Zone							
7	6/25/2020	84	4	4	1 3/8	1 3/8	1 1/4	1 1/8	10	6.75
8	6/25/2020	144	1 1/2	1 1/4	1 1/8	7/8	7/8	7/8	30	1.75
9	6/25/2020	72	2 7/8	2 5/8	3/4	3/4	3/4	3/4	10	4.50
10	6/25/2020	96	1 1/4	1	7/8	3/4	7/8	3/4	30	1.50
11	6/25/2020	144	1	5/8	1/2	3/8	1/2	3/8	30	0.75
12	6/25/2020	60	2	1 3/8	1 1/8	1 1/8	1 1/8	1	30	2.00
13	6/25/2020	72	3	2 1/4	3/4	5/8	5/8	5/8	10	3.75
14	6/25/2020	96	3 3/4	2 7/8	3/4	3/4	3/4	3/4	10	4.50

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15	6/25/2020	48	3 3/8	2 5/8	5/8	5/8	5/8	5/8	10	3.75
16	6/25/2020		No Testing Completed due to Rock Limiting Zone							
17	6/25/2020	60	7/8	5/8	1/2	3/8	3/8	3/8	30	0.75
18	6/25/2020	72	3/4	1/2	1/2	1/2	3/8	3/8	30	0.75
19	6/25/2020	48	1 1/8	7/8	3/4	3/4	5/8	5/8	30	1.25

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 1

Date: 6/17/2020

Weather: Sunny, Warm

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 11	10 YR 4/3	Lo	Gran	Mod	Fri	Cl Sm			
11 - 37	7.5 YR 4/6	Si Lo	Sbk	Mod	Fri	Grad Sm			
37 - 47	10 YR 4/6	Si Lo	Sbk	Mod	Fri	Cl Wavy		Few	Faint
47 - 58	Var Red / Br	Si Lo	Sbk	Mod	Fri	Cl Wavy			
58 - 84	Var Grey / Br	Si Lo	Sbk	Wk	Fri		20%		
Bottom of Pit @ 84"									

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): --

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

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Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 2

Date: 6/17/2020

Weather: Sunny, Warm

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 9	10 YR 4/3	Lo	Gran	Mod	Fri	Cl Sm			
9 - 18	7.5 YR 4/6	Si Lo	Sbk	Mod	Fri	Grad Sm			
18 - 47	Var Grey / Rd Br	Si Lo	Sbk	Mod	Fri	Cl Irr			
47 - 96	Var Grey / Br	Si Lo	Sbk	Wk	V Fri		20%		
Bottom of Pit @ 96"									

221

Evaluated By: Gwen Beideman

Signature: G Bei

Limiting Zone (if any): --

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 3

Date: 6/17/2020

Weather: Sunny, Warm

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 8	10 YR 4/3	Lo	Sbk	Mod	Fri	Cl Sm			
8 - 23	7.5 YR 3/4	Lo	Sbk	Mod	Fri	Grad Sm			
23 - 44	10 YR 4/3	Si Lo	Sbk	Mod	Fri	Cl Irr			
44 - 58	Var Br / Tan	Si Lo	Sbk	Wk	Fri	Cl Wavy			
58 - 103	Var Grey / Br	Sa Lo	Str-less	Mass	Fri		50%		
Bottom of Pit @ 103"									

222

Evaluated By: Gwen Beideman

Signature: G Beid

Limiting Zone (if any): Rock LZ @ 103"

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 4

Date: 6/17/2020

Weather: Sunny, Warm

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 8	10 YR 4/3	Lo	Sbk	Mod	Fri	Cl Sm			
8 - 26	7.5 YR 3/4	Lo	Sbk	Mod	Fri	Cl Sm			
26 - 46	10 YR 4/3	Sa Lo	Sbk	Wk	Fri	Cl Sm			
46 - 73	Var Grey / Br	Si Lo	Str-less	Mass	V Fri	Cl Wavy			
73 - 88	Var Grey / Red	Si Lo	Sbk	Wk	V Fri	Cl Sm			
88 - 105	Var Grey / Br	Sa Lo	Str-less	Mass	V Fri - Wet				
Bottom of Pit @ 105"									

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): Seasonal High Groundwater @ 88"

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

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Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 5

Date: 6/17/2020

Weather: Sunny, Warm

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 8	10 YR 4/3	Lo	Gran	Mod	Fri	Cl Sm			
8 - 35	7.5 YR 4/6	Lo	Sbk	Mod	Fri	Grad Wavy			
35 - 65	10 YR 5/6	Si Lo	Sbk	Mod	Fri	Cl Wavy			
65 - 81	10 YR 4/6	Si Lo	Sbk	Mod	Fri	Cl Wavy			
81 - 120	Var Grey	Sa Lo	Sbk	Wk	V Fri		20%		
Bottom of Pit @ 120"									

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): --

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

224

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 6

Date: 6/17/2020

Weather: Sunny, Warm

Depth (inches)	Color	Texture	Structure Type	Structure Grade	Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features Quantity	Redoximorphic Features Contrast
0 - 6	10 YR 4/3	Lo	Gran	Mod	Fri	Cl Sm			
6 - 18	10 YR 4/4	Lo	Sbk	Mod	V Fri	Cl Sm			
18 - 26	10 YR 4/4	Lo	Sbk	Mod	Fri	Cl Wavy		Common	Faint
26 - 48	10 YR 5/8	Si Lo	Sbk	Mod	Fri - Wet	Cl Wavy		Common	Distinct
48 - 66	10 YR 5/6	Si Lo	Sbk	Mod	Fri			Profuse	Distinct
Bottom of Pit @ 66" - Water Seeps @ 48"									

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Evaluated By: Gwen Beideman

Signature: GB Bed

Limiting Zone (if any): Seasonal High Groundwater @ 26"

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 7

Date: 6/25/2020

Weather: Sunny, Warm

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 8	10 YR 4/4	Lo	Gran	Mod	Fri	Abt Sm			
8 - 24	7.5 YR 4/6	Si Lo	Sbk	Mod	Fri	Cl Wavy			
24 - 62	Var Br / Grey	Fi Sa Lo	Sbk	Wk	V Fri	Abt Sm	10%		
62 - 108	Var Dk Br / Grey	Sa Lo	Str-less	Mass	V Fri		20%		
Bottom of Pit @ 108"									

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): --

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

221

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 8

Date: 6/25/2020

Weather: Sunny, Warm

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 12	10 YR 3/4	Lo	Gran	Mod	Fri	Abt Sm			
12 - 38	10 YR 5/6	Lo	Sbk	Mod	Fri	Grad Wavy			
38 - 53	10 YR 5/6	Si Lo	Sbk	Mod	Fri	Grad Wavy			
53 - 96	Var Grey / Br	Si Lo	Sbk	Wk	Fri	Cl Wavy			
96 - 130	Var Grey	Si Lo	Sbk	Mod	Fri	Cl Wavy	20%		
130 - 168	Var Grey	Si Lo	Sbk	Mod	Fri		40%		
Bottom of Pit @ 168"									

Evaluated By: Gwen Beideman

Signature: G Beid

Limiting Zone (if any): –

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 9

Date: 6/25/2020

Weather: Sunny, Warm

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 12	10 YR 3/4	Lo	Gran	Mod	Fri	Abt Sm			
12 - 37	10 YR 5/6	Lo	Sbk	Mod	Fri	Cl Wavy			
37 - 49	10 YR 5/6	Si Lo	Sbk	Mod	Fri	Grad Wavy			
49 - 96	Var Grey / Rd BR	Si Lo	Sbk	Wk	V Fri		10%		
Bottom of Pit @ 96"									

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Evaluated By: Gwen Beideman

Signature: G Beideman

Limiting Zone (if any): --

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 10

Date: 6/25/2020

Weather: Sunny, Warm

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 11	10 YR 3/4	Lo	Gran	Mod	Fri	Abt Sm			
11 - 20	10 YR 5/6	Lo	Sbk	Mod	Fri	Cl Wavy			
20 - 43	10 YR 5/6	Si Lo	Sbk	Mod	Fri	Cl Wavy		Profuse	Distinct
43 - 74	10 YR 4/4	Si Lo	Sbk	Wk	Fri	Cl Wavy	30%	Few	Faint
74 - 120	10 YR 5/3	Si Lo	Sbk	Wk	V Fri		10%		
Bottom of Pit @ 120"									

Evaluated By: Gwen Beideman

Signature: G Beideman

Limiting Zone (if any): –

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

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Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 11

Date: 6/25/2020

Weather: Sunny, Warm

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 13	10 YR 3/4	Lo	Gran	Mod	Fri	Abt Sm			
13 - 28	10 YR 4/4	Lo	Sbk	Mod	Fri	Cl Sm			
28 - 44	10 YR 5/4	Lo	Sbk	Wk	V Fri	Grad Wavy			
44 - 75	Var Br / Grey	Sa Lo	Sbk	Wk	V Fri	Cl Irr	30%		
75 - 112	Var Br / Grey	Sa Lo	Sbk	Wk	V Fri	Grad Wavy	40%		
112 - 168	Var Br	Si Lo	Sbk	Wk	V Fri		30%		
Bottom of Pit @ 168"									

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): --

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 12

Date: 6/25/2020

Weather: Sunny, Warm

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 7	10 YR 4/3	Lo	Gran	Mod	Fri	Abt Sm			
7 - 40	10 YR 4/4	Lo	Sbk	Mod	V Fri	Cl Sm			
40 - 54	10 YR 3/3	Lo	Sbk	Mod	V Fri	Cl Wavy			
54 - 74	7.5 YR 3/4	Si Lo	Sbk	Wk	Fri	Cl Wavy			
74 - 84	7.5 YR 4/6	Si Cl Lo	Sbk	Mod	Fri				
Bottom of Pit @ 84"									

Evaluated By: Gwen Beideman

Signature: G Beideman

Limiting Zone (if any): –

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

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Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 13

Date: 6/25/2020

Weather: Sunny, Warm

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 8	10 YR 4/3	Lo	Gran	Mod	Fri	Abt Sm			
8 - 24	10 YR 3/4	Si Lo	Sbk	Mod	Fri	Grad Wavy			
24 - 47	10 YR 3/4	Lo	Sbk	Mod	V Fri	Cl Wavy			
47 - 61	10 YR 3/6	Si Lo	Sbk	Mod	Fri	Cl Wavy		Common	Distinct
61 - 96	Var Dk Grey / Br	Sa Lo	Str-less	Mass	Fri		50%		
Bottom of Pit @ 96"									

232

Evaluated By: Gwen Beideman

Signature: G Bei

Limiting Zone (if any): --

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 14

Date: 6/25/2020

Weather: Sunny, Warm

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 9	10 YR 4/3	Lo	Gran	Mod	Fri	Abt Sm			
9 - 23	7.5 YR 4/6	Lo	Sbk	Mod	Fri	Cl Wavy			
23 - 65	Var Br / Dk Grey	Si Lo	Sbk	Wk	V Fri	Abt Sm	30%		
65 - 120	Var Yl Br / Dk Grey	Sa Lo	Str-less	Mass	V Fri		40%		
Bottom of Pit @ 120"									

Evaluated By: Gwen Beideman

Signature: G. Beideman

Limiting Zone (if any): --

166 Hemlock Drive Cochranville, PA 19330 Phone 610-345-1400

Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

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Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 15

Date: 6/25/2020

Weather: Sunny, Warm

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 9	10 YR 4/3	Lo	Gran	Mod	Fri	Abt Sm			
9 - 20	10 YR 4/4	Lo	Sbk	Mod	Fri	Cl Wavy			
20 - 72	Var Br / Dk Grey	Lo	Str-less	Mass	Fri		50%		
Bottom of Pit @ 120"									

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Evaluated By: Gwen Beideman

Signature: G Beideman

Limiting Zone (if any): --

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 16

Date: 6/25/2020

Weather: Sunny, Warm

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 7	10 YR 4/3	Lo	Gran	Mod	Fri	Abt Sm			
7 - 20	10 YR 4/6	Si Lo	Sbk	Mod	Fri	Cl Wavy			
20 - 40	10 YR 4/6	Si Lo	Str-less	Mass	Fri	Cl Wavy	50%		
40 - 59	10 YR 4/6	Si Lo	Str-less	Mass	Fri		80%		
Bottom of Pit @ 59"									

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Evaluated By: Gwen Beideman

Signature: G Beideman

Limiting Zone (if any): Rock LZ @ 59"

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 17

Date: 6/25/2020

Weather: Sunny, Warm

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 9	10 YR 4/3	Lo	Gran	Mod	Fri	Abt Sm			
9 - 27	10 YR 4/6	Si Lo	Sbk	Mod	Fri	Cl Wavy			
27 - 36	10 YR 4/6	Si Lo	Sbk	Mod	Fri	Cl Wavy		Common	Distinct
36 - 77	Var Br / Dk Grey	Sa Lo	Str-less	Mass	Firm	Cl Wavy	50%		
77 - 84	Var Grey	Sa Lo	Sbk	Wk	V Fri		30%		
Bottom of Pit @ 84"									

Evaluated By: Gwen Beideman

Signature: G Bed

Limiting Zone (if any): --

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

134

Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 18

Date: 6/25/2020

Weather: Sunny, Warm

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 9	10 YR 4/3	Lo	Gran	Mod	Fri	Cl Sm			
9 - 37	10 YR 3/6	Lo	Sbk	Mod	Fri	Grad Wavy			
37 - 65	Var Dk Gey / Br	Sa Lo	Sbk	Wk	V Fri	Cl Wavy	30%		
65 - 82	Var Grey / Br	Sa Lo	Str-less	Mass	V Fri	Cl Wavy	20%		
82 - 96	Var Grey / Br	Sa Lo	Str-less	Mass	Firm		60%		
Bottom of Pit @ 96"									

Evaluated By: Gwen Beideman

Signature: G Beideman

Limiting Zone (if any): --

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Residential/Commercial Septic Testing & Designs Stormwater Sewage Planning

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Willow Run Consulting, Inc.

Soil Description for Test Pit Evaluation

280 Ridge Road

Township, County: Chadds Ford Township, Delaware

Test Pit Location: 19

Date: 6/25/2020

Weather: Sunny, Warm

Depth (inches)	Color	Texture	Structure		Consistence	Boundary Distinctness	% Coarse Fragment	Redoximorphic Features	
			Type	Grade				Quantity	Contrast
0 - 8	10 YR 4/3	Lo	Gran	Mod	Fri	Cl Sm			
8 - 18	10 YR 3/6	Lo	Sbk	Mod	Fri	Grad Wavy			
18 - 30	10 YR 3/3	Sa Lo	Sbk	Wk	V Fri	Cl Wavy	40%		
30 - 72	Var Grey / Br	Sa Lo	Sbk	Wk	V Fri		20%		
Bottom of Pit @ 72"									

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Evaluated By: Gwen Beideman

Signature: G Beideman

Limiting Zone (if any): --

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