

Pond Report

Hydraflow Hydrographs by Intelisolve

Friday, Jul 24 2020, 6:10 PM

Pond No. 2 - BASIN #2 (C-1)

Pond Data

Pond storage is based on known contour areas. Conic method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	489.60	578	0	0
0.40	490.00	1,302	366	366
2.40	492.00	2,544	3,777	4,143
4.40	494.00	4,621	7,062	11,205
5.00	494.60	4,905	2,857	14,062
5.40	495.00	5,188	2,018	16,080

Culvert / Orifice Structures

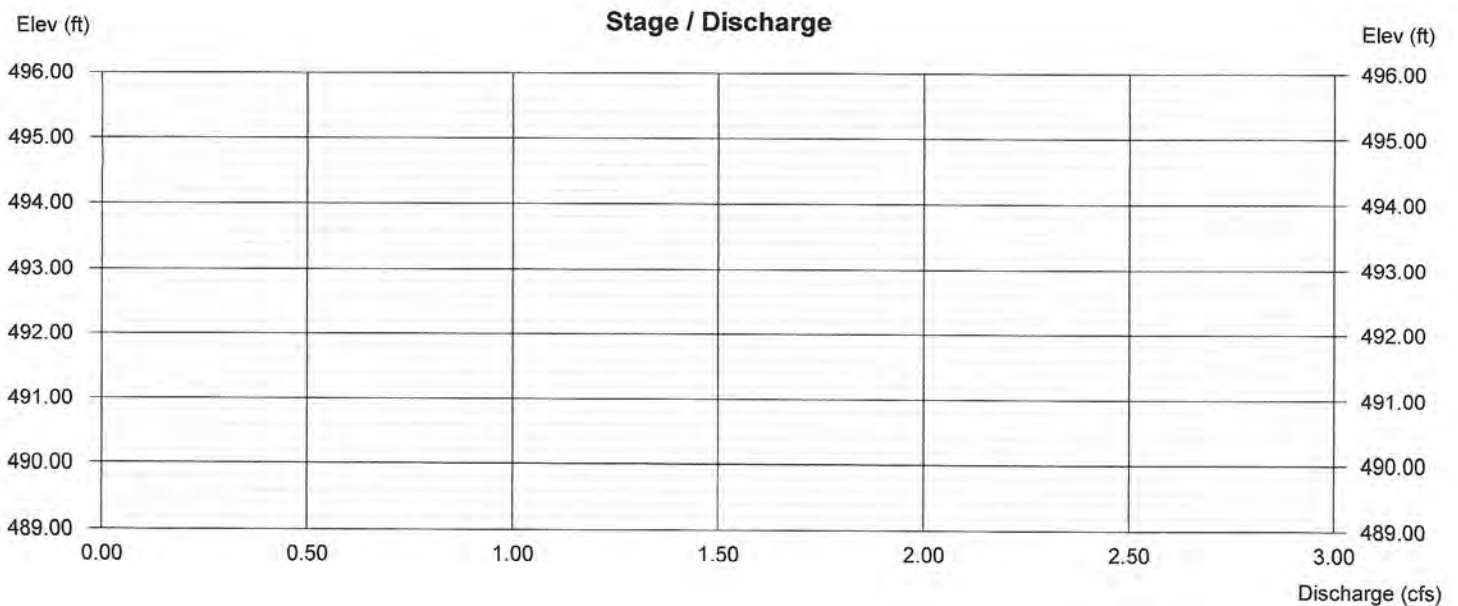
	[A]	[B]	[C]	[D]
Rise (in)	= 12.00	0.00	0.00	0.00
Span (in)	= 12.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 494.00	0.00	0.00	0.00
Length (ft)	= 145.00	0.00	0.00	0.00
Slope (%)	= 0.40	0.00	0.00	0.00
N-Value	= .010	.000	.000	.000
Orif. Coeff.	= 0.60	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

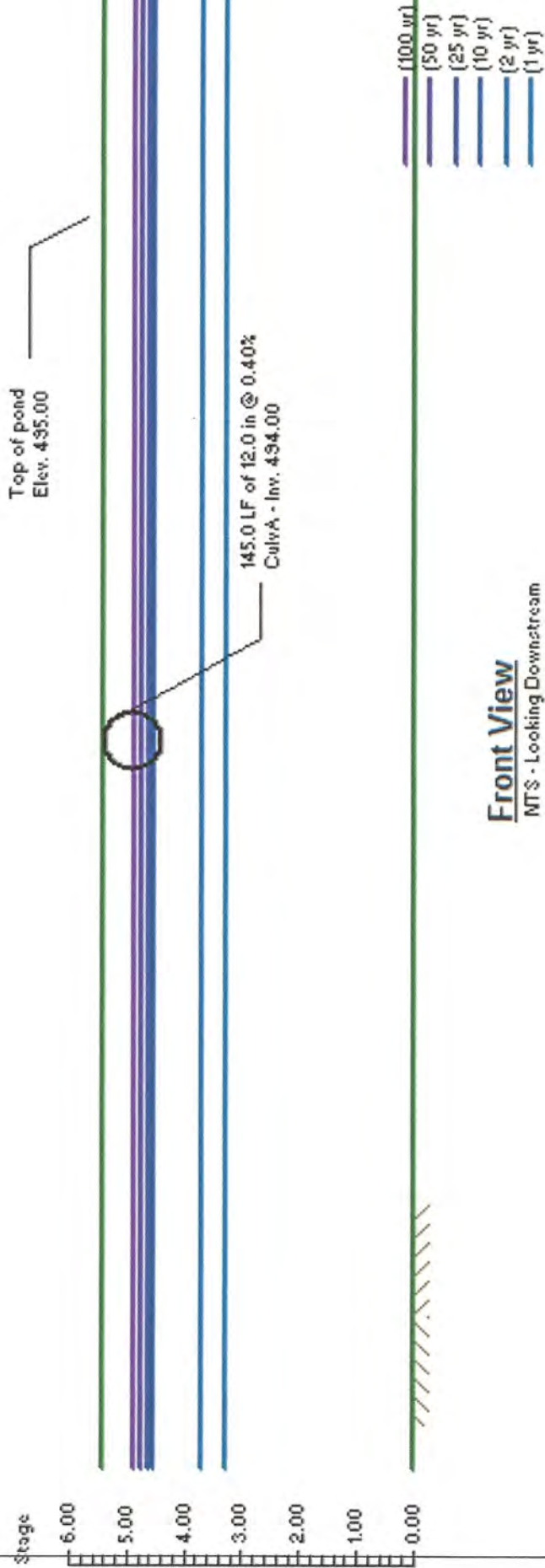
	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	0.00	0.00	0.00
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



BASIN #2 (C-1)



Schematic only. Not for construction.

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jul 24 2020, 5:58 PM

Hyd. No. 8

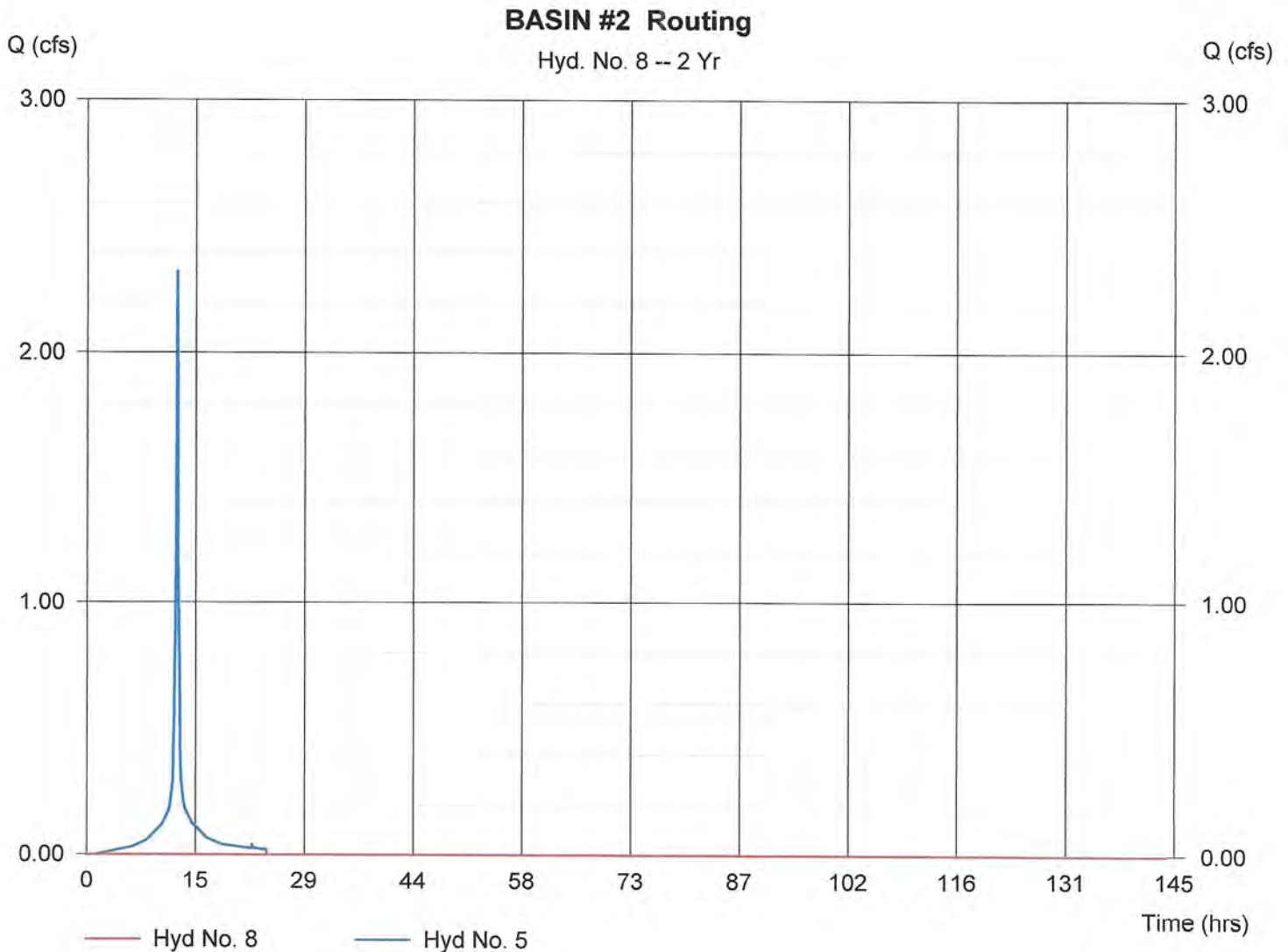
BASIN #2 Routing

Hydrograph type = Reservoir
Storm frequency = 2 yrs
Inflow hyd. No. = 5
Reservoir name = BASIN #2 (C-1)

Peak discharge = 0.00 cfs
Time interval = 3 min
Max. Elevation = 493.31 ft
Max. Storage = 8,754 cuft

Storage Indication method used.

Hydrograph Volume = 0 cuft



Hydrograph Plot

Hyd. No. 8

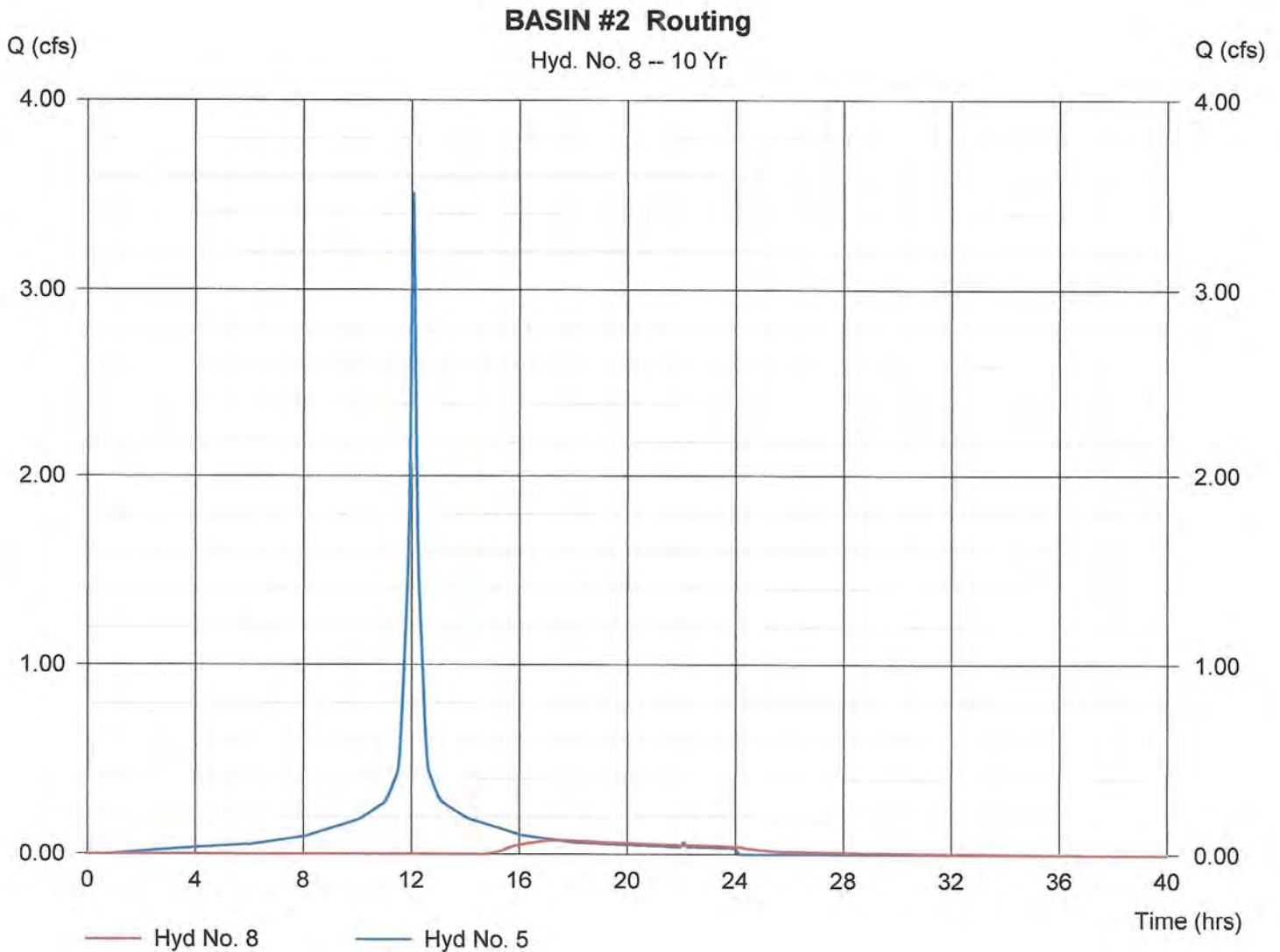
BASIN #2 Routing

Hydrograph type = Reservoir
Storm frequency = 10 yrs
Inflow hyd. No. = 5
Reservoir name = BASIN #2 (C-1)

Peak discharge = 0.07 cfs
Time interval = 3 min
Max. Elevation = 494.13 ft
Max. Storage = 11,818 cuft

Storage Indication method used.

Hydrograph Volume = 2,209 cuft



Hydrograph Plot

Hyd. No. 8

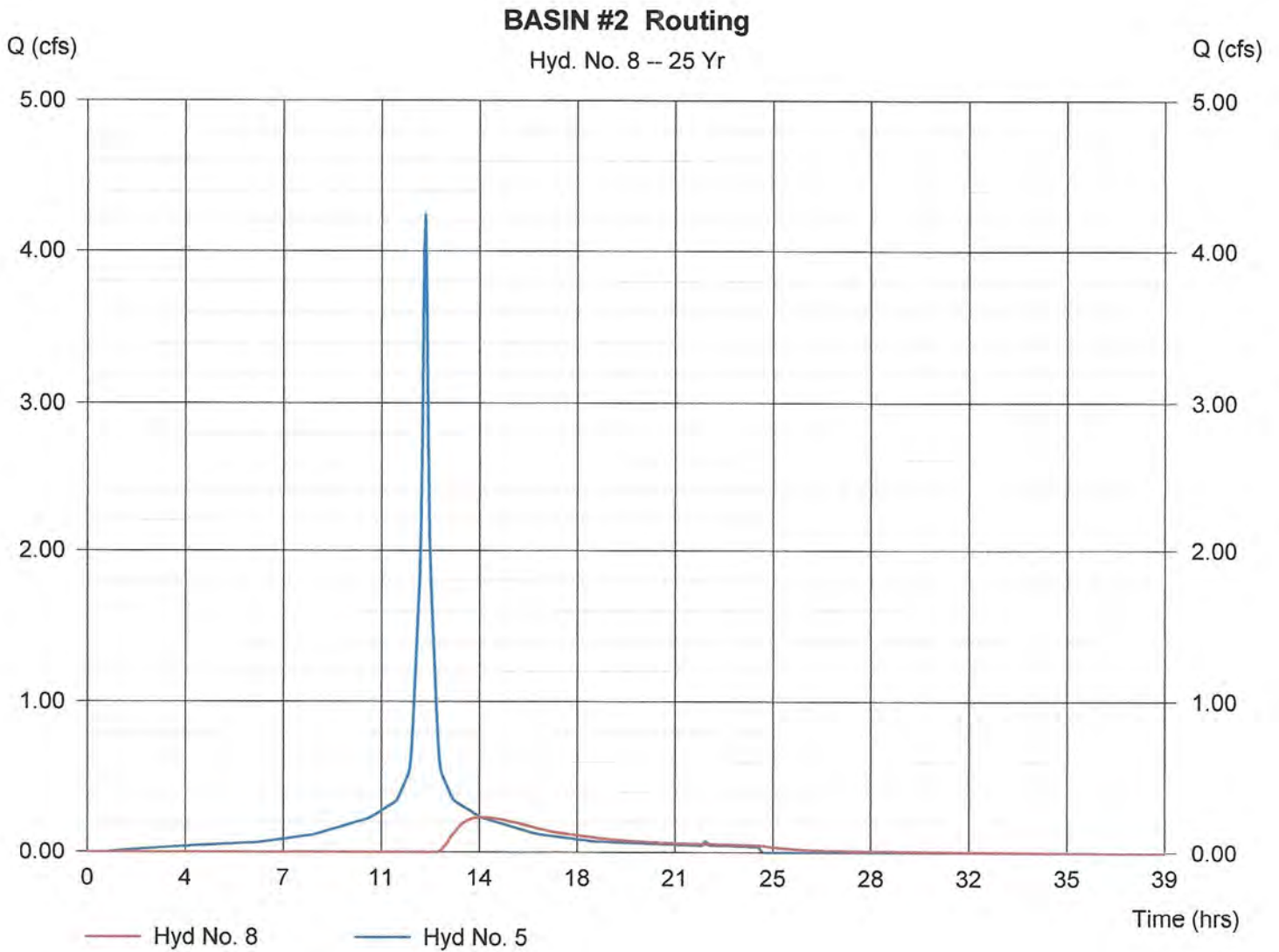
BASIN #2 Routing

Hydrograph type = Reservoir
Storm frequency = 25 yrs
Inflow hyd. No. = 5
Reservoir name = BASIN #2 (C-1)

Peak discharge = 0.23 cfs
Time interval = 3 min
Max. Elevation = 494.23 ft
Max. Storage = 12,322 cuft

Storage Indication method used.

Hydrograph Volume = 5,135 cuft



Hydrograph Plot

Hyd. No. 8

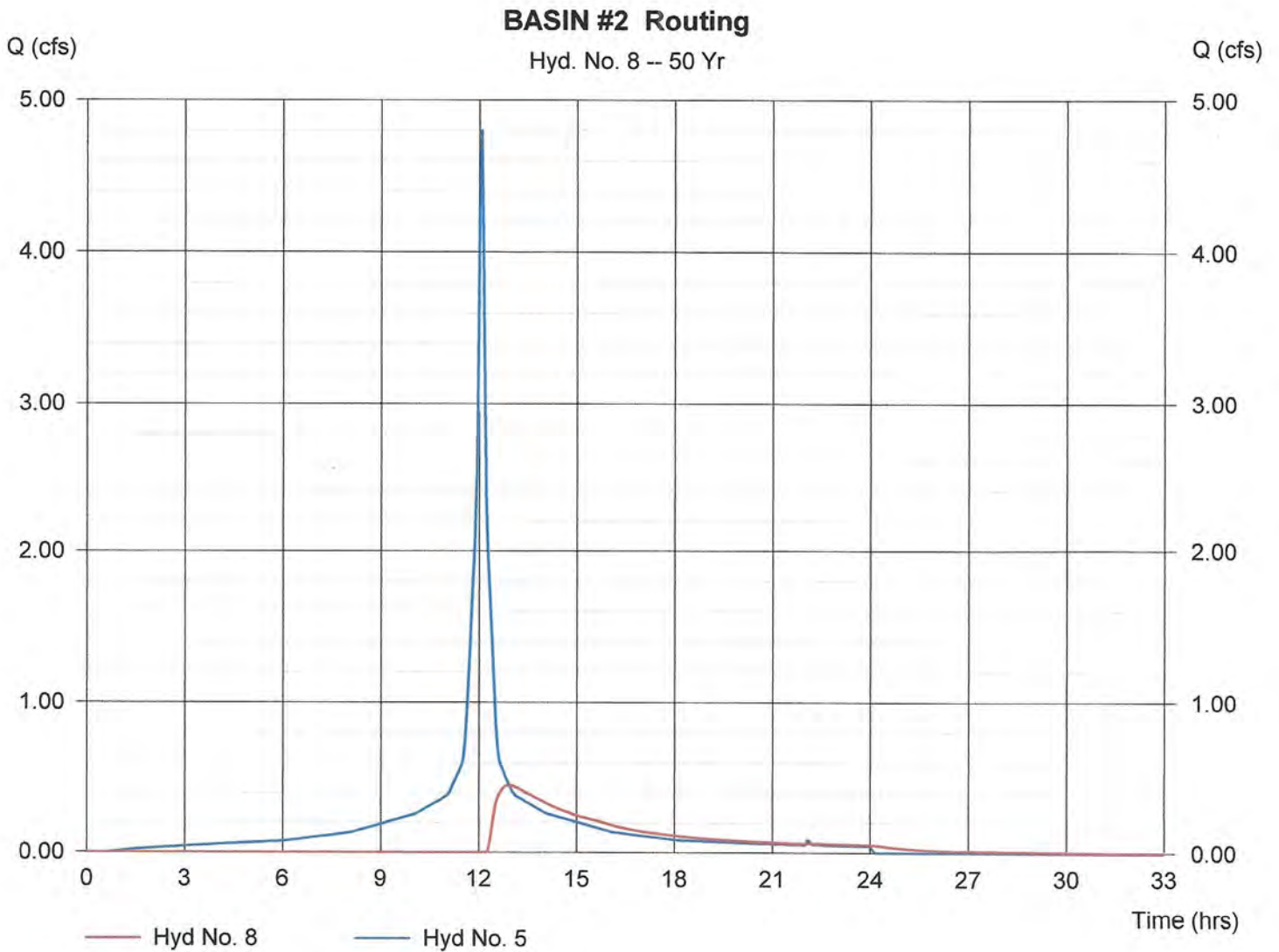
BASIN #2 Routing

Hydrograph type = Reservoir
Storm frequency = 50 yrs
Inflow hyd. No. = 5
Reservoir name = BASIN #2 (C-1)

Peak discharge = 0.45 cfs
Time interval = 3 min
Max. Elevation = 494.33 ft
Max. Storage = 12,786 cuft

Storage Indication method used.

Hydrograph Volume = 7,337 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jul 24 2020, 5:59 PM

Hyd. No. 8

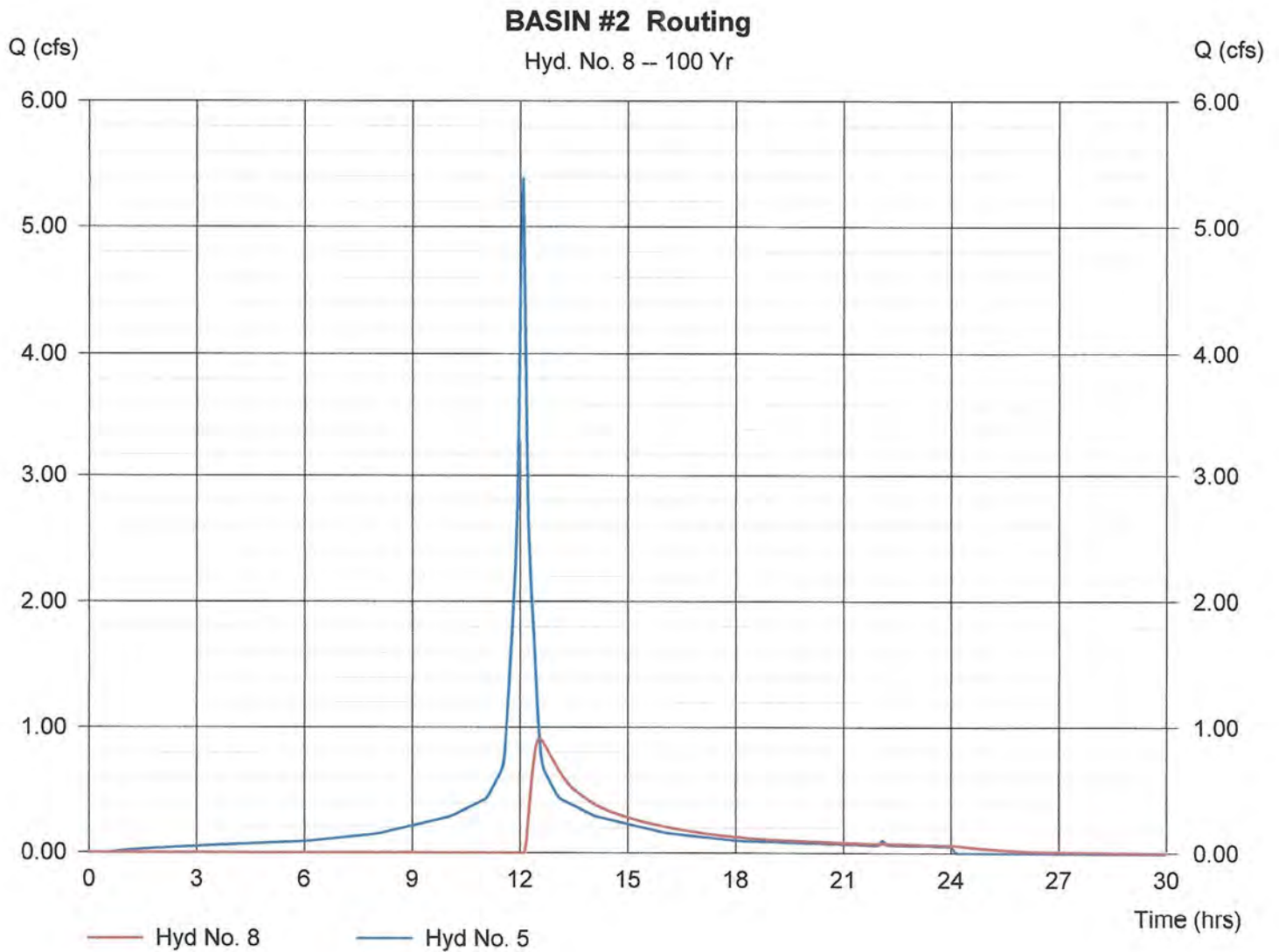
BASIN #2 Routing

Hydrograph type = Reservoir
Storm frequency = 100 yrs
Inflow hyd. No. = 5
Reservoir name = BASIN #2 (C-1)

Peak discharge = 0.91 cfs
Time interval = 3 min
Max. Elevation = 494.49 ft
Max. Storage = 13,534 cuft

Storage Indication method used.

Hydrograph Volume = 9,652 cuft



OVERFLOW PIPE DESIGN

FOR

BASIN #2

12" PVC Pipe from Basin #2
to M.H. #5

Worksheet for Circular Pipe

Project Description

Flow Element: Circular Pipe
Friction Method: Manning Formula
Solve For: Normal Depth

Input Data

Roughness Coefficient: 0.010
Channel Slope: 0.00400 ft/ft
Diameter: 1.00 ft
Discharge: 0.91 ft³/s

Results

Normal Depth: 0.38 ft
Flow Area: 0.28 ft²
Wetted Perimeter: 1.33 ft
Top Width: 0.97 ft
Critical Depth: 0.40 ft
Percent Full: 38.2 %
Critical Slope: 0.00341 ft/ft
Velocity: 3.29 ft/s
Velocity Head: 0.17 ft
Specific Energy: 0.55 ft
Froude Number: 1.09
Maximum Discharge: 3.15 ft³/s
Discharge Full: 2.93 ft³/s
Slope Full: 0.00039 ft/ft
Flow Type: SuperCritical

GVF Input Data

Downstream Depth: 0.00 ft
Length: 0.00 ft
Number Of Steps: 0

GVF Output Data

Upstream Depth: 0.00 ft
Profile Description:
Profile Headloss: 0.00 ft
Average End Depth Over Rise: 0.00 %
Normal Depth Over Rise: 0.38 %
Downstream Velocity: Infinity ft/s

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-----	0.90	1.08	-----	-----	1.63	1.98	2.23	2.50	Ex. Conditions - Watershed A
2	SCS Runoff	-----	2.14	2.58	-----	-----	3.89	4.71	5.32	5.97	Ex. Conditions - Watershed B
3	SCS Runoff	-----	1.83	2.21	-----	-----	3.33	4.03	4.56	5.11	Ex. Conditions Watershed C
4	SCS Runoff	-----	3.60	4.34	-----	-----	6.54	7.92	8.95	10.04	Proposed Dev. (A-1 + B-1)
5	SCS Runoff	-----	1.93	2.33	-----	-----	3.51	4.24	4.80	5.38	Prosed Dev. (C-1)
6	SCS Runoff	-----	0.26	0.31	-----	-----	0.47	0.57	0.64	0.72	Proposed Dev. (To RT-6)
7	SCS Runoff	-----	0.90	1.26	-----	-----	2.43	3.19	3.76	4.37	WQF TO BASIN #1
8	Reservoir	5	0.00	0.00	-----	-----	0.07	0.23	0.45	0.91	BASIN #2 Routing
9	Combine	4, 8	3.60	4.34	-----	-----	6.54	7.92	8.95	10.04	COMBINED HYDR. #4 & 8
10	Reservoir	9	3.36	4.08	-----	-----	6.19	7.59	8.59	9.65	BASIN #1 Routing

REVISED STORMWATER DRAINAGE
PIPE DESIGNS FOR BASIN #1

Hydrograph Return Period Recap

Storm Drainage System

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	----	----	0.55	----	----	0.84	1.02	1.16	1.30	CATCH BASIN #1
2	SCS Runoff	----	----	0.79	----	----	1.20	1.45	1.64	1.84	CATCH BASIN #2
3	SCS Runoff	----	----	0.76	----	----	1.14	1.38	1.56	1.75	CATCH BASIN #3
4	SCS Runoff	----	----	1.52	----	----	2.30	2.78	3.14	3.52	CATCH BASIN #4
5	SCS Runoff	----	----	0.19	----	----	0.28	0.34	0.39	0.43	CANOPY ROOF WATER
6	SCS Runoff	----	----	0.33	----	----	0.50	0.60	0.68	0.76	BUILDING ROOF WATER

WQF
 #1 - 0.96 cfs
 #2 - 0.43 cfs

MH#5 → Basin #1
12" PVC

Worksheet for Circular Pipe -

Project Description

Flow Element: Circular Pipe
Friction Method: Manning Formula
Solve For: Normal Depth

Input Data

Roughness Coefficient: 0.010
Channel Slope: 0.00210 ft/ft
Diameter: 1.00 ft
Discharge: 2.10 ft³/s ← Basin #2 + Roofwater

Results

Normal Depth: 0.81 ft
Flow Area: 0.68 ft²
Wetted Perimeter: 2.24 ft
Top Width: 0.78 ft
Critical Depth: 0.62 ft
Percent Full: 81.0 %
Critical Slope: 0.00414 ft/ft
Velocity: 3.08 ft/s
Velocity Head: 0.15 ft
Specific Energy: 0.96 ft
Froude Number: 0.58
Maximum Discharge: 2.28 ft³/s
Discharge Full: 2.12 ft³/s
Slope Full: 0.00206 ft/ft
Flow Type: SubCritical

GVF Input Data

Downstream Depth: 0.00 ft
Length: 0.00 ft
Number Of Steps: 0

GVF Output Data

Upstream Depth: 0.00 ft
Profile Description:
Profile Headloss: 0.00 ft
Average End Depth Over Rise: 0.00 %
Normal Depth Over Rise: 0.81 %
Downstream Velocity: Infinity ft/s

CA#3 To O/P Separator
12" PVC

Worksheet for Circular Pipe -

Project Description

Flow Element: Circular Pipe
Friction Method: Manning Formula
Solve For: Normal Depth

Input Data

Roughness Coefficient: 0.010
Channel Slope: 0.00740 ft/ft
Diameter: 1.00 ft
Discharge: 1.75 ft³/s

Results

Normal Depth: 0.46 ft
Flow Area: 0.36 ft²
Wetted Perimeter: 1.50 ft
Top Width: 1.00 ft
Critical Depth: 0.56 ft
Percent Full: 46.4 %
Critical Slope: 0.00386 ft/ft
Velocity: 4.91 ft/s
Velocity Head: 0.37 ft
Specific Energy: 0.84 ft
Froude Number: 1.45
Maximum Discharge: 4.29 ft³/s
Discharge Full: 3.98 ft³/s
Slope Full: 0.00143 ft/ft
Flow Type: SuperCritical

GVF Input Data

Downstream Depth: 0.00 ft
Length: 0.00 ft
Number Of Steps: 0

GVF Output Data

Upstream Depth: 0.00 ft
Profile Description:
Profile Headloss: 0.00 ft
Average End Depth Over Rise: 0.00 %
Normal Depth Over Rise: 0.46 %
Downstream Velocity: Infinity ft/s

CB#4 to O/P Separator
12" PVC

Worksheet for Circular Pipe -

Project Description

Flow Element: Circular Pipe
Friction Method: Manning Formula
Solve For: Normal Depth

Input Data

Roughness Coefficient: 0.010
Channel Slope: 0.01000 ft/ft
Diameter: 1.00 ft
Discharge: 3.52 ft³/s

Results

Normal Depth: 0.65 ft
Flow Area: 0.54 ft²
Wetted Perimeter: 1.88 ft
Top Width: 0.95 ft
Critical Depth: 0.80 ft
Percent Full: 65.2 %
Critical Slope: 0.00602 ft/ft
Velocity: 6.49 ft/s
Velocity Head: 0.65 ft
Specific Energy: 1.31 ft
Froude Number: 1.52
Maximum Discharge: 4.98 ft³/s
Discharge Full: 4.63 ft³/s
Slope Full: 0.00578 ft/ft
Flow Type: SuperCritical

GVF Input Data

Downstream Depth: 0.00 ft
Length: 0.00 ft
Number Of Steps: 0

GVF Output Data

Upstream Depth: 0.00 ft
Profile Description:
Profile Headloss: 0.00 ft
Average End Depth Over Rise: 0.00 %
Normal Depth Over Rise: 0.65 %
Downstream Velocity: Infinity ft/s

O/P Separator To Basin #1
15" HDPE

Worksheet for Circular Pipe -

Project Description

Flow Element: Circular Pipe
Friction Method: Manning Formula
Solve For: Normal Depth

Input Data

Roughness Coefficient: 0.012
Channel Slope: 0.00400 ft/ft
Diameter: 1.25 ft
Discharge: 5.27 ft³/s

Results

Normal Depth: 1.02 ft
Flow Area: 1.07 ft²
Wetted Perimeter: 2.81 ft
Top Width: 0.98 ft
Critical Depth: 0.93 ft
Percent Full: 81.3 %
Critical Slope: 0.00482 ft/ft
Velocity: 4.93 ft/s
Velocity Head: 0.38 ft
Specific Energy: 1.39 ft
Froude Number: 0.83
Maximum Discharge: 5.71 ft³/s
Discharge Full: 5.31 ft³/s
Slope Full: 0.00394 ft/ft
Flow Type: SubCritical

GVF Input Data

Downstream Depth: 0.00 ft
Length: 0.00 ft
Number Of Steps: 0

GVF Output Data

Upstream Depth: 0.00 ft
Profile Description:
Profile Headloss: 0.00 ft
Average End Depth Over Rise: 0.00 %
Normal Depth Over Rise: 0.81 %
Downstream Velocity: Infinity ft/s

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Oct 11 2019, 7:37 AM

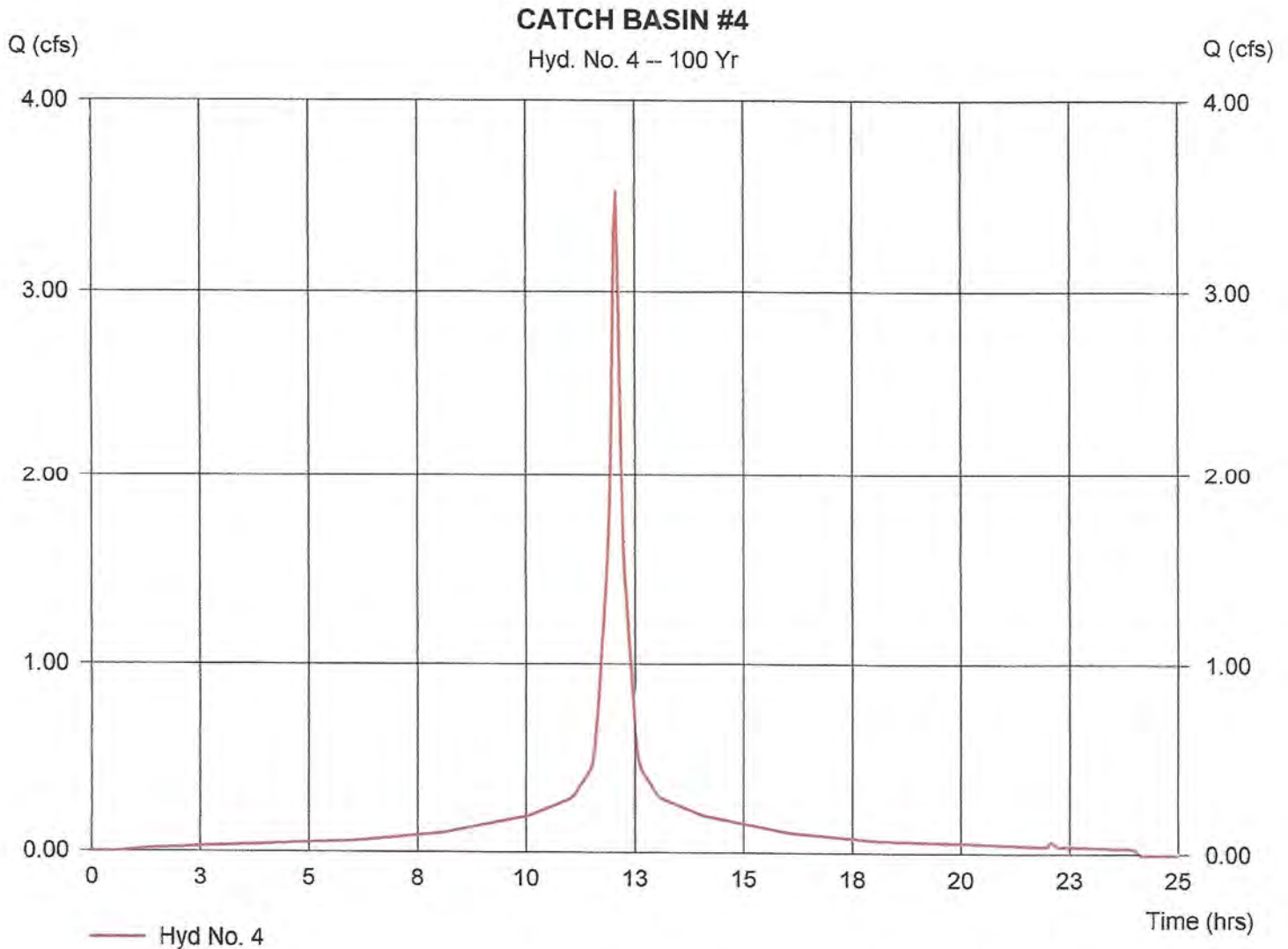
Hyd.

CATCH BASIN #4

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 0.54 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.72 in
Storm duration = 24 hrs

Peak discharge = 3.52 cfs
Time interval = 3 min
Curve number = 98
Hydraulic length = 0 ft
Time of conc. (Tc) = 5 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 13,670 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Oct 11 2019, 7:37 AM

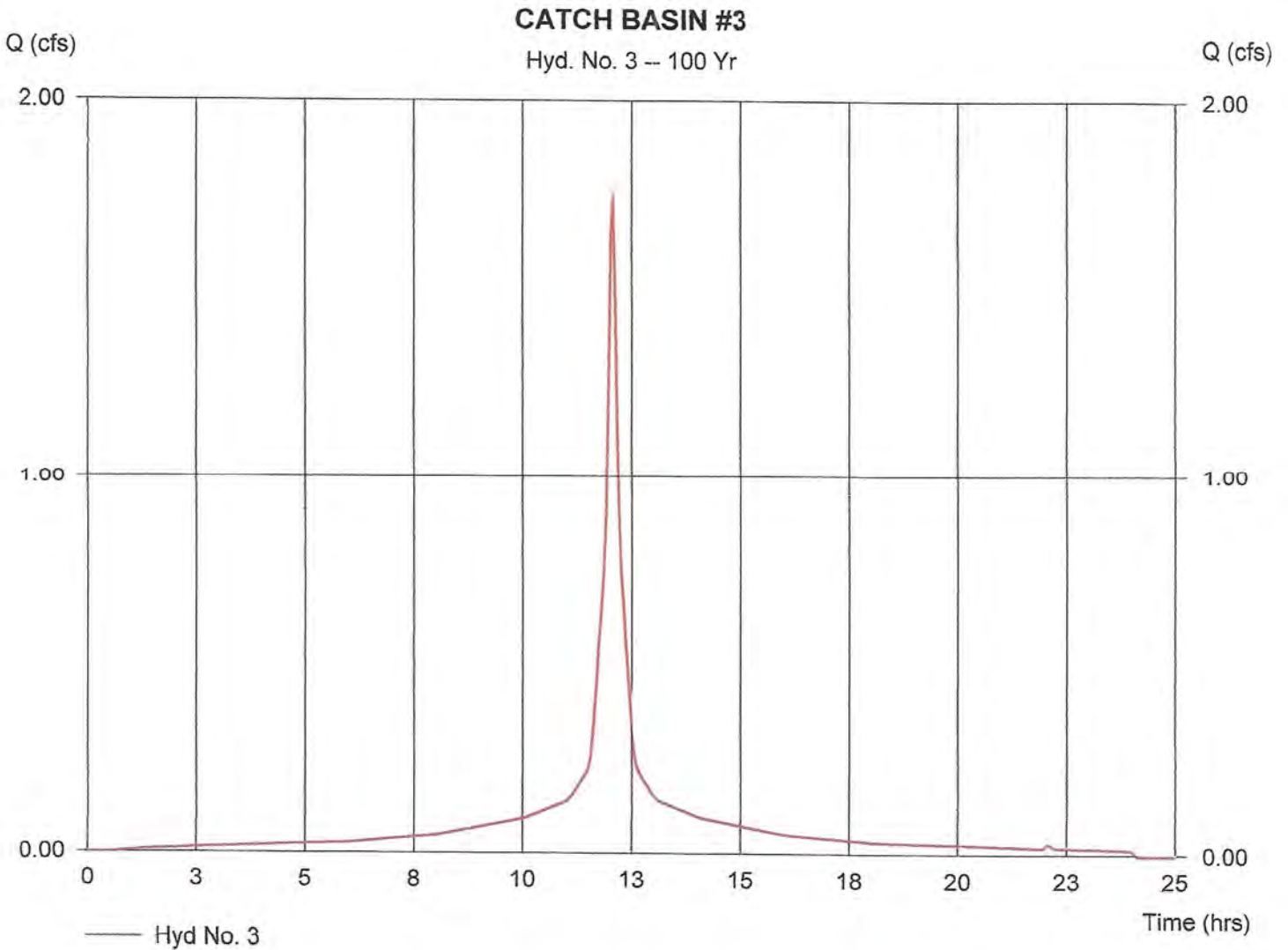
Hyd.

CATCH BASIN #3

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 0.27 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.72 in
Storm duration = 24 hrs

Peak discharge = 1.75 cfs
Time interval = 3 min
Curve number = 98
Hydraulic length = 0 ft
Time of conc. (Tc) = 5 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 6,797 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Oct 11 2019, 7:37 AM

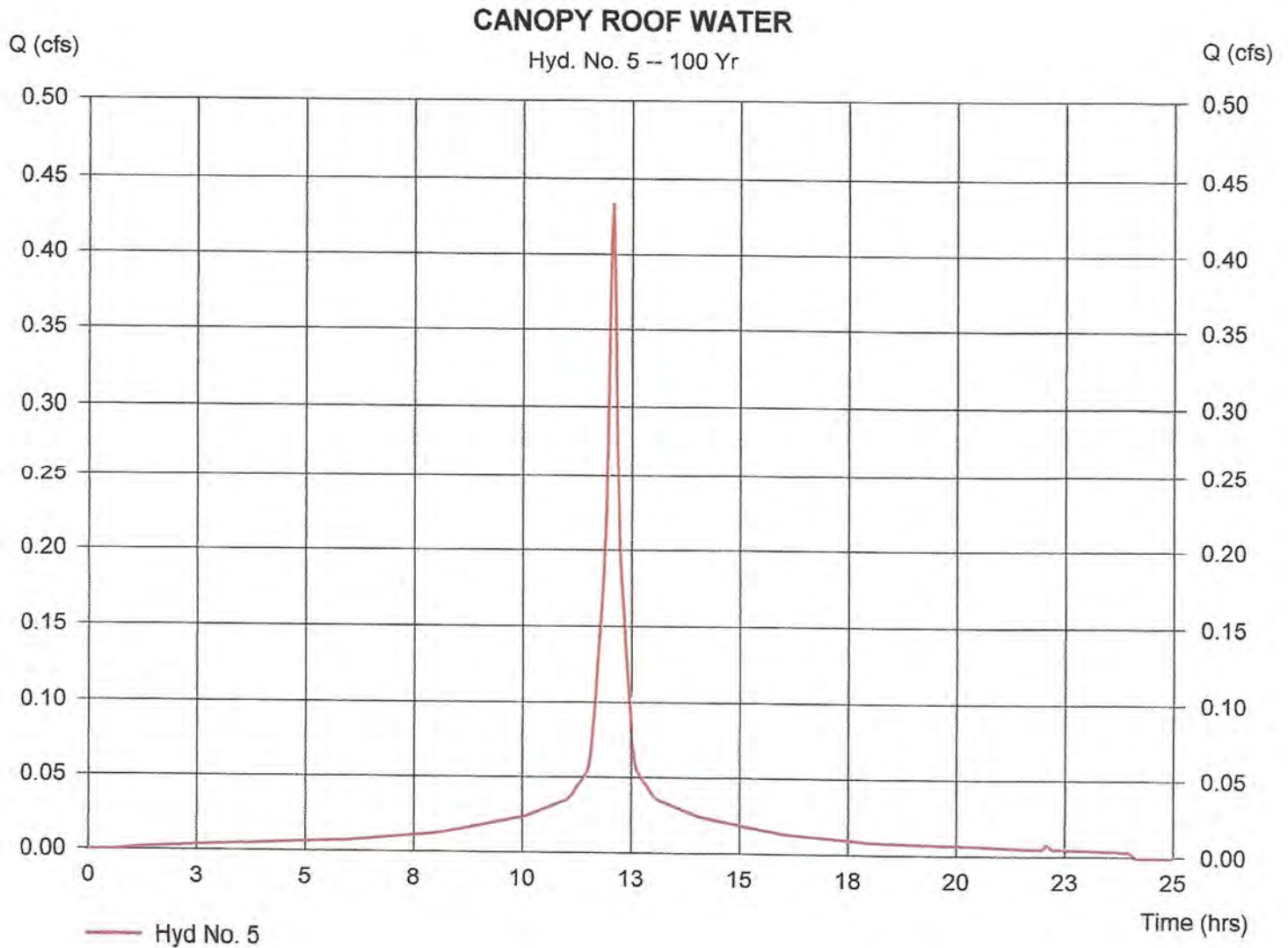
Hyd.

CANOPY ROOF WATER

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 0.07 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.72 in
Storm duration = 24 hrs

Peak discharge = 0.43 cfs
Time interval = 3 min
Curve number = 98
Hydraulic length = 0 ft
Time of conc. (Tc) = 5 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 1,680 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Oct 11 2019, 8:16 AM

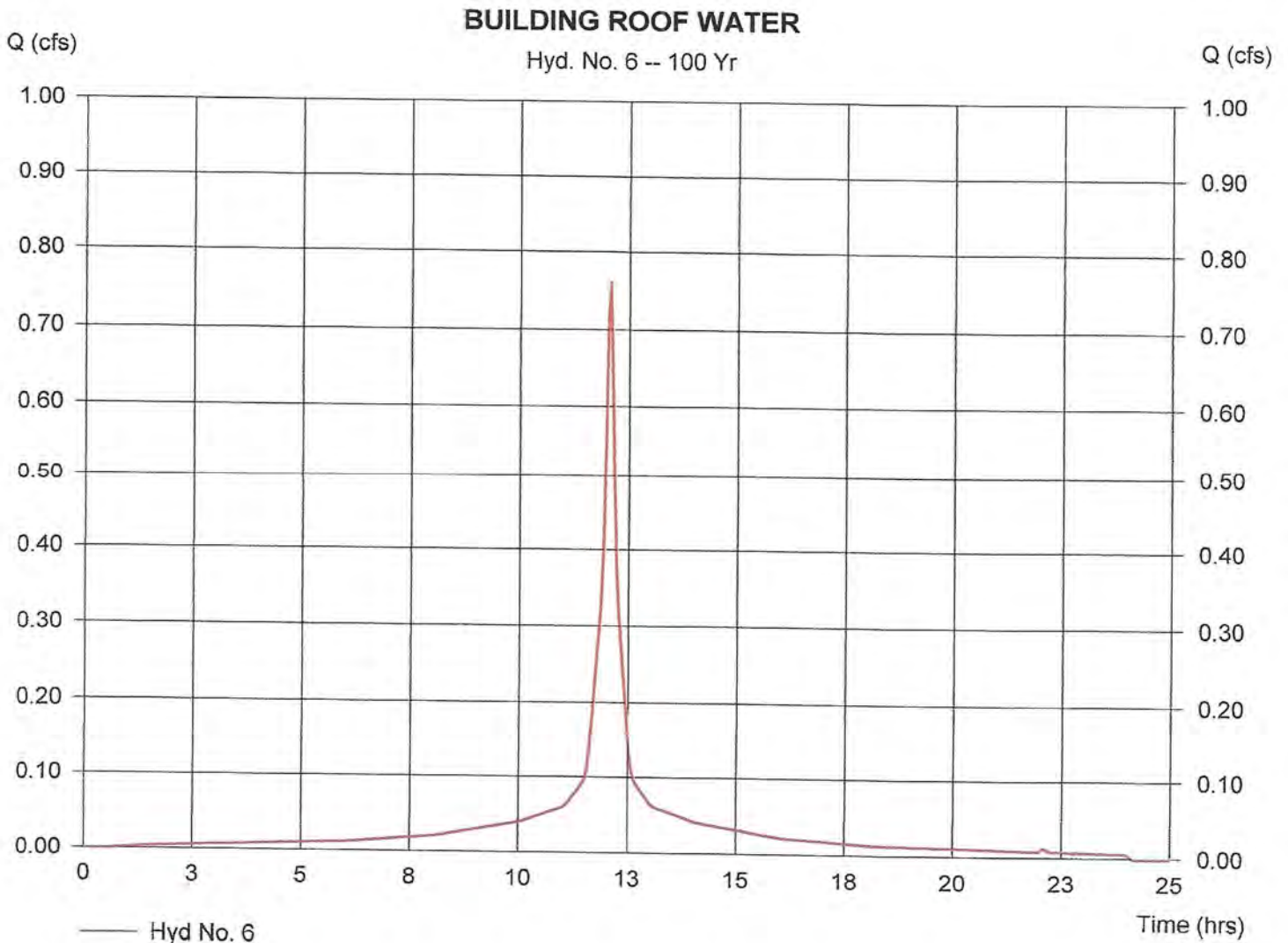
Hyd.

BUILDING ROOF WATER

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 0.12 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.72 in
Storm duration = 24 hrs

Peak discharge = 0.76 cfs
Time interval = 3 min
Curve number = 98
Hydraulic length = 0 ft
Time of conc. (Tc) = 5 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 2,953 cuft



HYDROGRAPH SUMMARY REPORT
OCT. 18, 2019

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description	
1	SCS Runoff	0.00	6	1332	6	---	---	---	Ex. Conditions - Watershed A	
2	SCS Runoff	0.00	3	0	0	---	---	---	Ex. Conditions - Watershed B	
3	SCS Runoff	0.01	6	834	341	---	---	---	Ex. Conditions Watershed C	
4	SCS Runoff	0.35	3	729	2,097	---	---	---	Proposed Dev. (A-1 + B-1)	
5	SCS Runoff	0.71	3	726	2,592	---	---	---	Proposed Dev. (C-1)	
6	SCS Runoff	0.01	3	735	113	---	---	---	Proposed Dev. (To RT-6)	
7	Reservoir	0.21	3	747	2,096	4	493.15	235	BASIN #1 ROUTING	
8	Reservoir	0.38	3	738	2,591	5	491.45	425	BASIN #2 ROUTING	
BESTWAY F & F - CHAPLIN.gpw					Return Period: 2 Year			Thursday, Oct 17 2019, 8:49 AM		

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description	
1	SCS Runoff	0.02	6	756	351	----	-----	-----	Ex. Conditions - Watershed A	
2	SCS Runoff	0.02	3	873	449	----	-----	-----	Ex. Conditions - Watershed B	
3	SCS Runoff	0.26	6	744	1,882	----	-----	-----	Ex. Conditions Watershed C	
4	SCS Runoff	1.63	3	726	6,229	----	-----	-----	Proposed Dev. (A-1 + B-1)	
5	SCS Runoff	1.71	3	726	5,786	----	-----	-----	Prosed Dev. (C-1)	
6	SCS Runoff	0.09	3	726	376	----	-----	-----	Proposed Dev. (To RT-6)	
7	Reservoir	0.88	3	741	6,228	4	493.64	969	BASIN #1 ROUTING	
8	Reservoir	0.88	3	738	5,785	5	492.06	1,056	BASIN #2 ROUTING	
BESTWAY F & F - CHAPLIN.gpw					Return Period: 10 Year			Thursday, Oct 17 2019, 8:49 AM		

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	0.08	6	744	791	---	---	---	Ex. Conditions - Watershed A
2	SCS Runoff	0.10	3	744	1,140	---	---	---	Ex. Conditions - Watershed B
3	SCS Runoff	0.57	6	738	3,327	---	---	---	Ex. Conditions Watershed C
4	SCS Runoff	2.66	3	726	9,473	---	---	---	Proposed Dev. (A-1 + B-1)
5	SCS Runoff	2.41	3	726	8,050	---	---	---	Proposed Dev. (C-1)
6	SCS Runoff	0.16	3	726	590	---	---	---	Proposed Dev. (To RT-6)
7	Reservoir	1.40	3	738	9,472	4	494.02	1,591	BASIN #1 ROUTING
8	Reservoir	1.04	3	741	8,049	5	492.38	1,664	BASIN #2 ROUTING
BESTWAY F & F - CHAPLIN.gpw					Return Period: 25 Year		Thursday, Oct 17 2019, 8:49 AM		

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	0.16	6	744	1,209	---	---	---	Ex. Conditions - Watershed A
2	SCS Runoff	0.22	3	738	1,833	---	---	---	Ex. Conditions - Watershed B
3	SCS Runoff	0.86	6	732	4,592	---	---	---	Ex. Conditions Watershed C
4	SCS Runoff	3.51	3	726	12,157	---	---	---	Proposed Dev. (A-1 + B-1)
5	SCS Runoff	2.96	3	726	9,843	---	---	---	Proposed Dev. (C-1)
6	SCS Runoff	0.22	3	726	769	---	---	---	Proposed Dev. (To RT-6)
7	Reservoir	1.61	3	741	12,156	4	494.24	2,278	BASIN #1 ROUTING
8	Reservoir	1.17	3	741	9,842	5	492.66	2,177	BASIN #2 ROUTING
BESTWAY F & F - CHAPLIN.gpw					Return Period: 50 Year		Thursday, Oct 17 2019, 8:49 AM		

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	0.27	6	738	1,737	---	---	---	Ex. Conditions - Watershed A
2	SCS Runoff	0.42	3	729	2,701	---	---	---	Ex. Conditions - Watershed B
3	SCS Runoff	1.23	6	732	6,070	---	---	---	Ex. Conditions Watershed C
4	SCS Runoff	4.45	3	726	15,156	---	---	---	Proposed Dev. (A-1 + B-1)
5	SCS Runoff	3.55	3	726	11,789	---	---	---	Proposed Dev. (C-1)
6	SCS Runoff	0.28	3	726	971	---	---	---	Proposed Dev. (To RT-6)
7	Reservoir	1.87	3	744	15,155	4	494.50	3,112	BASIN #1 ROUTING
8	Reservoir	1.93	3	735	11,788	5	492.82	2,484	BASIN #2 ROUTING

*500
 750
 del
 1000
 1500*

BESTWAY F & F - CHAPLIN.gpw

Return Period: 100 Year

Thursday, Oct 17 2019, 8:49 AM

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Oct 11 2019, 7:50 AM

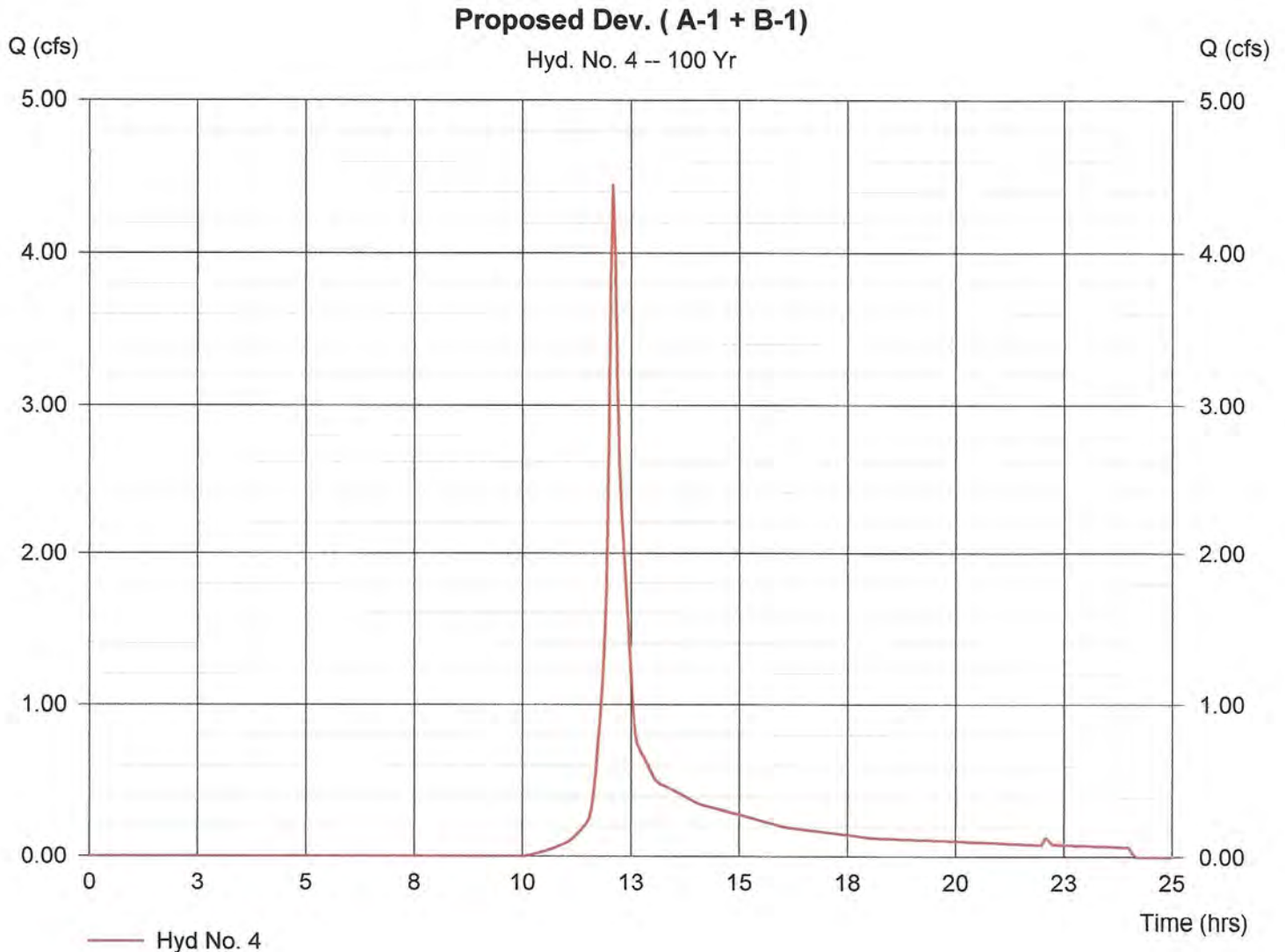
Hyd. No. 4

Proposed Dev. (A-1 + B-1)

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 1.53 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.72 in
Storm duration = 24 hrs

Peak discharge = 4.45 cfs
Time interval = 3 min
Curve number = 58
Hydraulic length = 0 ft
Time of conc. (Tc) = 5 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 15,156 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Oct 11 2019, 7:50 AM

Hyd. No. 5

Prosed Dev. (C-1)

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 0.82 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.72 in
Storm duration = 24 hrs

Peak discharge = 3.55 cfs
Time interval = 3 min
Curve number = 70
Hydraulic length = 0 ft
Time of conc. (Tc) = 5 min
Distribution = Type III
Shape factor = 484

Hydrograph Volume = 11,789 cuft

