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9R Burlake Road LLC

Hydrologic & Drainage Study

Prepared by

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June 4 2009
rev 6/12/09

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Stormwater Analysis

Proposed Development at 120 Gay Hill Road
Montville, Connecticut

June 4, 2009

The purpose of this stormwater analysis is to assist municipal officials and their agents in reviewing the effects of the proposed development with respect to current site drainage conditions.

This analysis is based on the Site Development Plans for 120 Gay Hill Road as prepared by Tarbell, Heintz, & Assoc., Inc.. The applicant is proposing the creation of forty new residential building lots. The stormwater facilities have been designed following guidance provided by the "2004 Connecticut Stormwater Quality Manual". They are intended to address the control of stormwater quantity as well as quality in an attempt to preserve the pre-development site hydrology.

Urbanization (e.i. site improvements) changes a watershed's response to precipitation. The most common effects are reduced infiltration and decreased travel time, which significantly increase peak discharges and runoff. Runoff is determined primarily by the amount of precipitation and by infiltration characteristics related to soil type, soil moisture, antecedent rainfall, cover type, impervious surface and surface retention.

Travel time is determined primarily by slope, length of flow path, depth of flow and roughness of flow surface. Peak discharges are based on the relationship of these parameters and on the total of drainage area of the watershed, the location of the development, the effect of any flood control works or other natural or manmade storage, and the time distribution or rainfall during a given storm event.

The following stormwater analysis follows the methodology of previous work by Martinez Couch and Associates, LLC. Minor changes to the pre development watershed models were made to improve the accuracy of the estimated pre development discharges.

In order to establish the impact of the proposed development, the pre-development and post development watershed systems were estimated. These allow the differences to be evaluated and designs to the post development to accommodate acceptable changes.

The pre development watershed mapping shows that there are principally three runoff regimes with eight individual properties. These relate to the inland wetland corridor to the south of the property, to the inland wetland corridor to the east of the property, and the direct discharge toward Gay

Hill Road and to the properties of Nelson, Videll, Champion Mortgage, Fernandes, Evans, Souza, Jenson, and Marsala.

The post development watershed mapping maintains the pre development regimes with the three-runoff areas. These relate to the inland wetland corridor to the south of the property with pond 3, to the inland wetland corridor to the east of the property with pond 2 and the direct discharge toward Gay Hill Road with pond 1.

The runoff characteristics for the storm events of a 2, 10, 25, 50 and 100 year events were estimated using a hydrologic computer modeling software package "Hydraflow Hydrographs by Intelisolve". The SCS TR-55 methodology was used. The land area calculations, with soil type and Curve Number, along with the flow characteristics and results are shown in this attached report.

The existing watershed areas are labeled as E-1 (Total to Gay Hill Road) E-2 to Videll, E-3 to Champion Mortgage, E-4 to Fernandes, E-5 to Evans, E-6 to Souza, E-7 to Jenson, E-8 to Marsala property. This allows for an understanding of discharges onto individual properties. The rates are summarized at the end of this section.

The post development watershed mapping shows the individual drainage areas that generate flow and the inlet structures and conveyance methods for the stormwater to detention basins, prior to discharging off-site. The pre development watershed regimes have been maintained.

The resulting increase of stormwater runoff from the proposed roof areas will be collected in a stormwater depression located on each lot, as topography allow. This promotes the recharging of the groundwater from the surface water. The footing drains are shown to discharge to the individual stormwater depressions or to the nearest stormwater catch basin or manhole.

The main control of the rate of surface water flow is in the use of detention basins. These receive the collected and conveyed stormwater. The discharge from ponds 1, 2 and 3 will be controlled using a discharge structure. The detention ponds will also act as water quality devices and can be viewed as a level spreader with a plunge pool capacity. The outlets force the storage of water and control the post development discharges so that they are less that the pre development storms in the 2, 5, 10, 25, 50 and 100- year events.

The discharges in rate in cubic feet per second for the storm events are as follows:

Area to Pond 1 to Gay Hill Road

Period Years	Type	Pre Develop	Post Develop	Impact
100	Rate	25.2 cfs	22.4 cfs	reduced 2.8 cfs
50	Rate	21.1 cfs	19.0 cfs	reduced 2.1 cfs
25	Rate	18.1 cfs	16.4 cfs	reduced 1.7 cfs
10	Rate	17.1 cfs	15.5 cfs	reduced 1.6 cfs
2	Rate	7.3 cfs	6.9 cfs	reduced 0.4 cfs

Area from Dennis Drive to Videll Property

Period Years	Type	Pre Develop	Post Develop	Impact
100	Rate	7.0 cfs	5.7 cfs	reduced 1.3 cfs
50	Rate	5.8 cfs	4.8 cfs	reduced 1.0 cfs
25	Rate	4.9 cfs	4.2 cfs	reduced 0.7 cfs
10	Rate	4.6 cfs	3.9 cfs	reduced 0.7 cfs
2	Rate	1.8 cfs	1.7 cfs	reduced 0.1 cfs

The discharges in rate in cubic feet per second for the storm events are as follows:

Area to Champion Mortgage to the Northeast

Period Years	Type	Pre Develop	Post Develop	Impact
100	Rate	3.0 cfs	2.9 cfs	reduced 0.1 cfs
50	Rate	2.5 cfs	2.4 cfs	reduced 0.1 cfs
25	Rate	2.1 cfs	2.1 cfs	no change
10	Rate	2.0 cfs	2.0 cfs	no change
2	Rate	0.8 cfs	0.8 cfs	no change

Area to Fernandes Property to East

Period Years	Type	Pre Develop	Post Develop	Impact
100	Rate	2.4 cfs	2.3 cfs	reduced 0.1 cfs
50	Rate	2.0 cfs	1.9 cfs	reduced 0.1 cfs
25	Rate	1.7 cfs	1.7 cfs	no change
10	Rate	1.6 cfs	1.6 cfs	no change
2	Rate	0.7 cfs	0.7 cfs	no change

The discharges in rate in cubic feet per second for the storm events are as follows:

Area to Evans Property to East

Period Years	Type	Pre Develop	Post Develop	Impact
100	Rate	31.7 cfs	30.1 cfs	reduced 1.6 cfs
50	Rate	26.4 cfs	25.4 cfs	reduced 1.0 cfs
25	Rate	22.5 cfs	21.9 cfs	reduced 0.6 cfs
10	Rate	21.2 cfs	20.8 cfs	reduced 0.4 cfs
2	Rate	8.6 cfs	9.2 cfs *	see note

* – Further reduction of 1.2 cfs is achieved by inclusion of rain gardens that serve as detention basins for roof water. Net reduction for 2 year storm is 0.6 cfs.

Area to Souza Property to East

Period Years	Type	Pre Develop	Post Develop	Impact
100	Rate	10.0 cfs	8.4 cfs	reduced 1.6 cfs
50	Rate	8.3 cfs	7.0 cfs	reduced 1.3 cfs
25	Rate	7.0 cfs	6.0 cfs	reduced 1.0 cfs
10	Rate	6.6 cfs	5.6 cfs	reduced 1.0 cfs
2	Rate	2.6 cfs	2.3 cfs	reduced 0.3 cfs

The discharges in rate in cubic feet per second for the storm events are as follows:

Area to Jenson Property to Southeast

Period Years	Type	Pre Develop	Post Develop	Impact
100	Rate	7.1 cfs	7.0 cfs	reduced 0.1 cfs
50	Rate	5.9 cfs	5.9 cfs	no change
25	Rate	5.0 cfs	5.0 cfs	no change
10	Rate	4.7 cfs	4.7 cfs	no change
2	Rate	1.9 cfs	1.9 cfs	no change

Area of Pond 3 to Marsala Property Southeast

Period Years	Type	Pre Develop	Post Develop	Impact
100	Rate	41.9 cfs	37.8 cfs	reduced 4.1 cfs
50	Rate	34.9 cfs	31.6 cfs	reduced 3.3 cfs
25	Rate	29.7 cfs	27.1 cfs	reduced 2.6 cfs
10	Rate	28.0 cfs	25.6 cfs	reduced 2.4 cfs
2	Rate	11.3 cfs	10.6 cfs	reduced 0.7 cfs

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25 - Year

50 - Year

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	-------	-------	7.276	-------	11.35	17.14	18.13	21.14	25.20	Area E1-Pre to Gay Hill Rd
2	SCS Runoff	-------	-------	1.816	-------	2.965	4.637	4.926	5.806	7.002	Area E2-Pre to Videll
3	SCS Runoff	-------	-------	0.781	-------	1.268	1.979	2.102	2.476	2.985	Area E3- Pre to Champion
4	SCS Runoff	-------	-------	0.634	-------	1.027	1.597	1.697	2.000	2.413	Area E4-Pre to Fernandez
5	SCS Runoff	-------	-------	8.567	-------	13.71	21.17	22.46	26.37	31.68	Area E8-Pre to Evans
6	SCS Runoff	-------	-------	2.607	-------	4.228	6.601	7.011	8.260	9.956	Area E6-Pre to Souza
7	SCS Runoff	-------	-------	1.850	-------	3.000	4.685	4.976	5.862	7.066	Area E7-Pre to Jensen
8	SCS Runoff	-------	-------	11.33	-------	18.15	27.97	29.67	34.86	41.90	Area E8-Pre to Marsala
9	SCS Runoff	-------	-------	2.301	-------	3.409	4.948	5.210	6.003	7.066	Post to D-Basin1
10	Reservoir	9	-------	1.159	-------	1.568	2.020	2.090	2.290	2.525	Outflow D-Basin1
11	SCS Runoff	-------	-------	5.848	-------	9.119	13.78	14.58	16.99	20.25	Post Bypass D-Basin1
12	Combine	10, 11	-------	6.884	-------	10.48	15.53	16.39	18.98	22.45	Total Post to Gay Hill Rd
13	SCS Runoff	-------	-------	1.756	-------	2.668	3.951	4.169	4.828	5.715	Area E2-Post to Videll
14	SCS Runoff	-------	-------	0.842	-------	1.313	1.983	2.098	2.445	2.915	Area P36-Post to Champion
15	SCS Runoff	-------	-------	0.692	-------	1.060	1.589	1.679	1.952	2.320	Area P35-Post to Fernandez
16	SCS Runoff	-------	-------	2.418	-------	3.502	4.987	5.237	5.988	6.991	Post to D-Basin2
17	Reservoir	16	-------	1.052	-------	1.250	1.506	1.547	1.668	1.776	Outflow D-Basin2
18	SCS Runoff	-------	-------	8.187	-------	12.74	19.25	20.37	23.77	28.36	Post Bypass D-Basin2
19	Combine	17, 18	-------	9.188	-------	13.98	20.76	21.92	25.44	30.14	Total Post to Evans
20	SCS Runoff	-------	-------	2.340	-------	3.694	5.641	5.975	6.989	8.361	Area P33-Post to Souza
21	SCS Runoff	-------	-------	1.961	-------	3.097	4.728	5.008	5.858	7.009	Area P32-Post to Jensen
22	SCS Runoff	-------	-------	11.07	-------	16.24	23.39	24.59	28.23	33.09	Post to D-Basin3
23	Reservoir	22	-------	1.676	-------	2.174	2.702	2.779	3.001	3.253	Outflow D-Basin3
24	SCS Runoff	-------	-------	9.546	-------	15.29	23.60	25.04	29.39	35.28	Post Bypass D-Basin3
25	Combine	23, 24	-------	10.60	-------	16.77	25.58	27.07	31.61	37.75	Total Post to Marsala

Hydrograph Summary Report

Hyd.	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	7.276	2	738	36,969	----	------	------	Area E1-Pre to Gay Hill Rd
2	SCS Runoff	1.816	6	738	10,059	----	------	------	Area E2-Pre to Videll
3	SCS Runoff	0.781	2	738	3,906	----	------	------	Area E3- Pre to Champion
4	SCS Runoff	0.634	2	732	2,718	----	------	------	Area E4-Pre to Fernandez
5	SCS Runoff	8.567	2	752	56,626	----	------	------	Area E8-Pre to Evans
6	SCS Runoff	2.607	2	740	13,561	----	------	------	Area E6-Pre to Souza
7	SCS Runoff	1.850	2	740	9,624	----	------	------	Area E7-Pre to Jensen
8	SCS Runoff	11.33	2	748	67,809	----	------	------	Area E8-Pre to Marsala
9	SCS Runoff	2.301	2	734	10,233	----	------	------	Post to D-Basin1
10	Reservoir	1.159	2	752	9,578	9	316.31	3,071	Outflow D-Basin1
11	SCS Runoff	5.848	2	738	29,714	----	------	------	Post Bypass D-Basin1
12	Combine	6.884	2	740	39,291	10, 11	------	------	Total Post to Gay Hill Rd
13	SCS Runoff	1.756	2	736	8,458	----	------	------	Area E2-Post to Videll
14	SCS Runoff	0.842	2	736	4,109	----	------	------	Area P36-Post to Champion
15	SCS Runoff	0.692	2	732	2,881	----	------	------	Area P35-Post to Fernandez
[illegible]	SCS Runoff	2.418	2	724	7,233	----	------	------	Post to D-Basin2
17	Reservoir	1.052	2	736	6,949	16	333.99	1,713	Outflow D-Basin2
18	SCS Runoff	8.187	2	746	48,175	----	------	------	Post Bypass D-Basin2
19	Combine	9.188	2	746	55,124	17, 18	------	------	Total Post to Evans
20	SCS Runoff	2.340	2	740	11,969	----	------	------	Area P33-Post to Souza
21	SCS Runoff	1.961	2	740	10,033	----	------	------	Area P32-Post to Jensen
22	SCS Runoff	11.07	2	736	52,631	----	------	------	Post to D-Basin3
23	Reservoir	1.676	2	796	48,551	22	337.83	25,586	Outflow D-Basin3
24	SCS Runoff	9.546	2	738	47,350	----	------	------	Post Bypass D-Basin3
25	Combine	10.60	2	738	95,901	23, 24	------	------	Total Post to Marsala

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

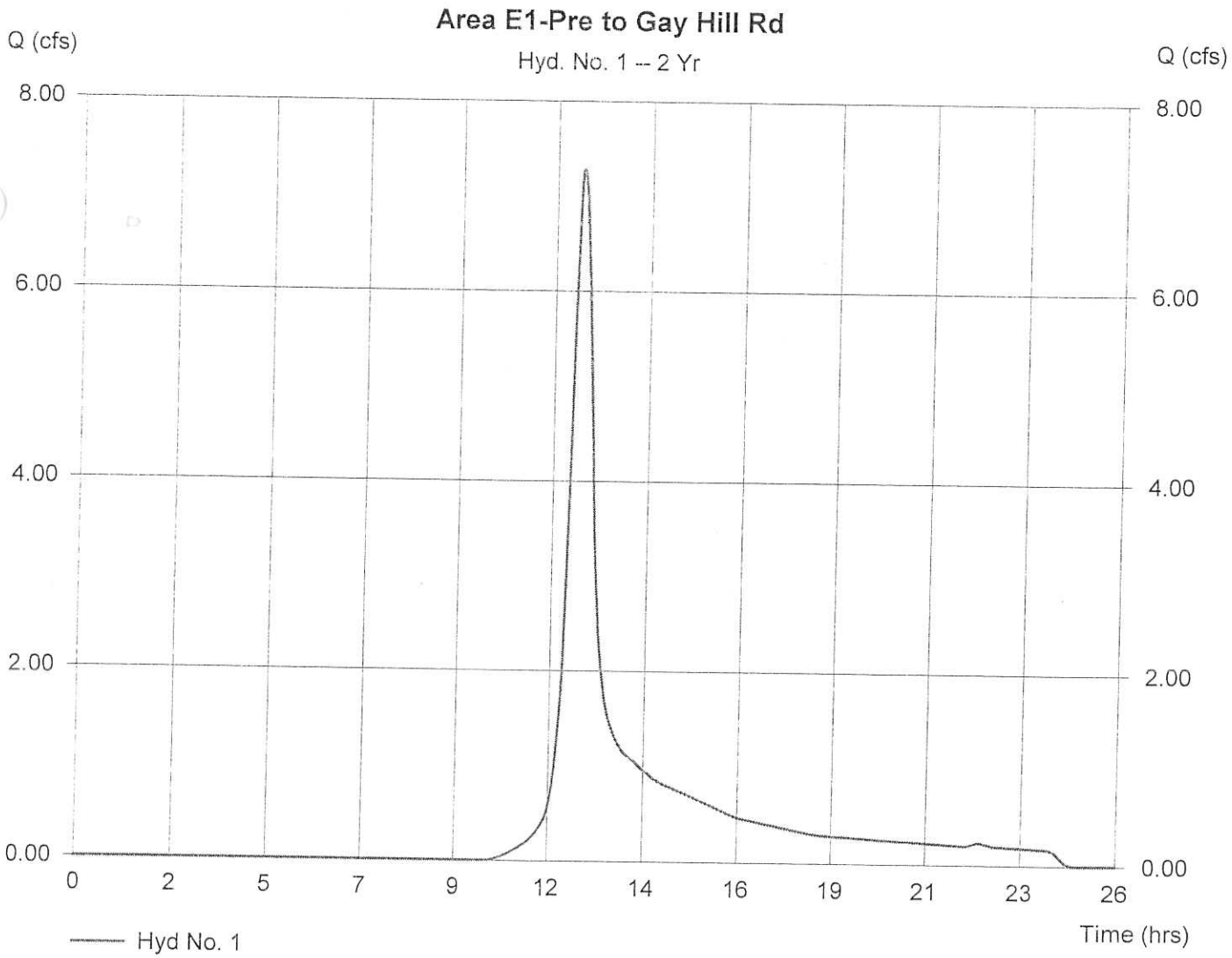
Friday, Jun 12 2009, 10:0 AM

Hyd. No. 1

Area E1-Pre to Gay Hill Rd

Hydrograph type	= SCS Runoff	Peak discharge	= 7.276 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Drainage area	= 8.000 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 25.20 min
Total precip.	= 3.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 36,969 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

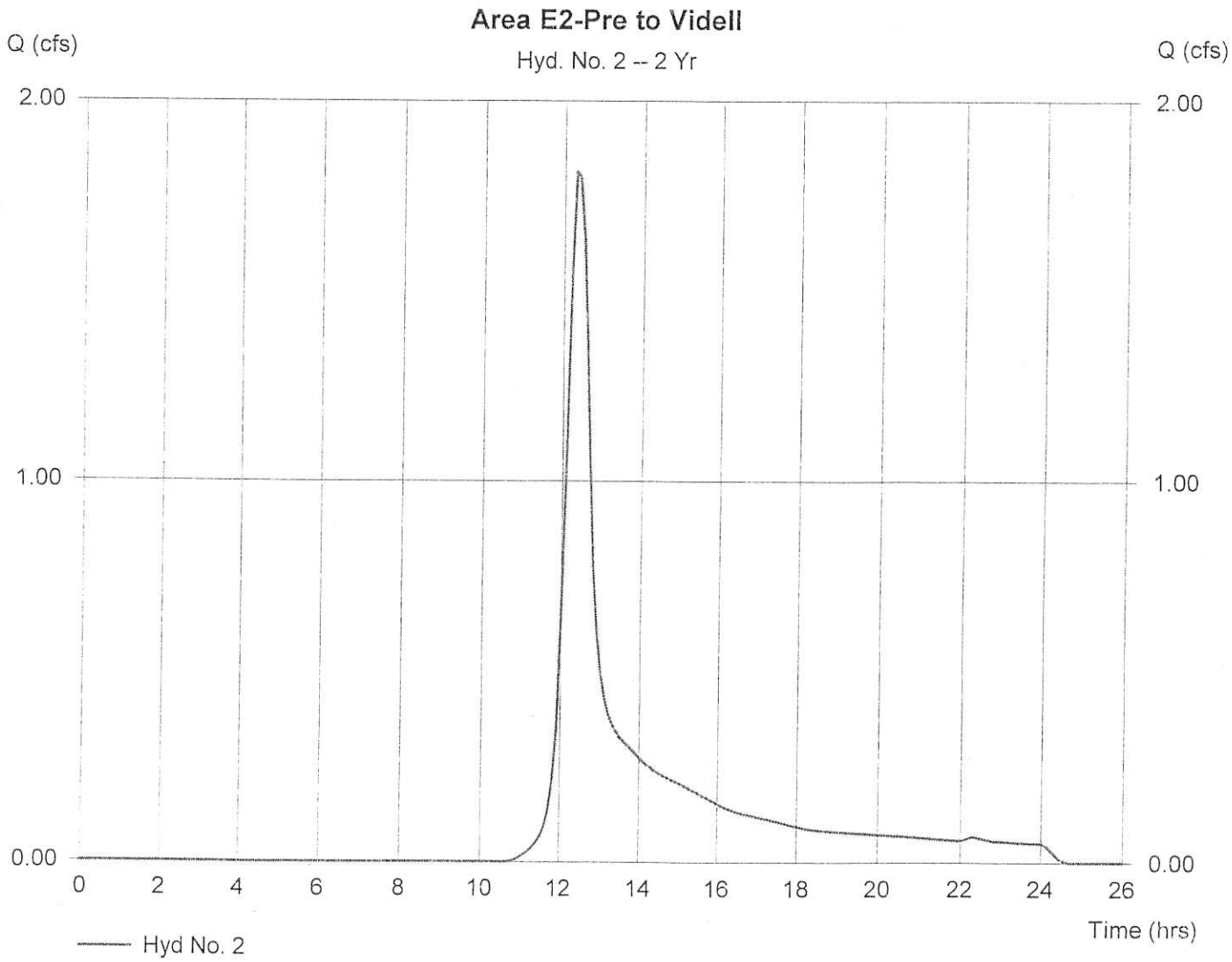
Friday, Jun 12 2009, 10:0 AM

Hyd. No. 2

Area E2-Pre to Videll

Hydrograph type	= SCS Runoff	Peak discharge	= 1.816 cfs
Storm frequency	= 2 yrs	Time interval	= 6 min
Drainage area	= 2.490 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 22.38 min
Total precip.	= 3.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 10,059 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

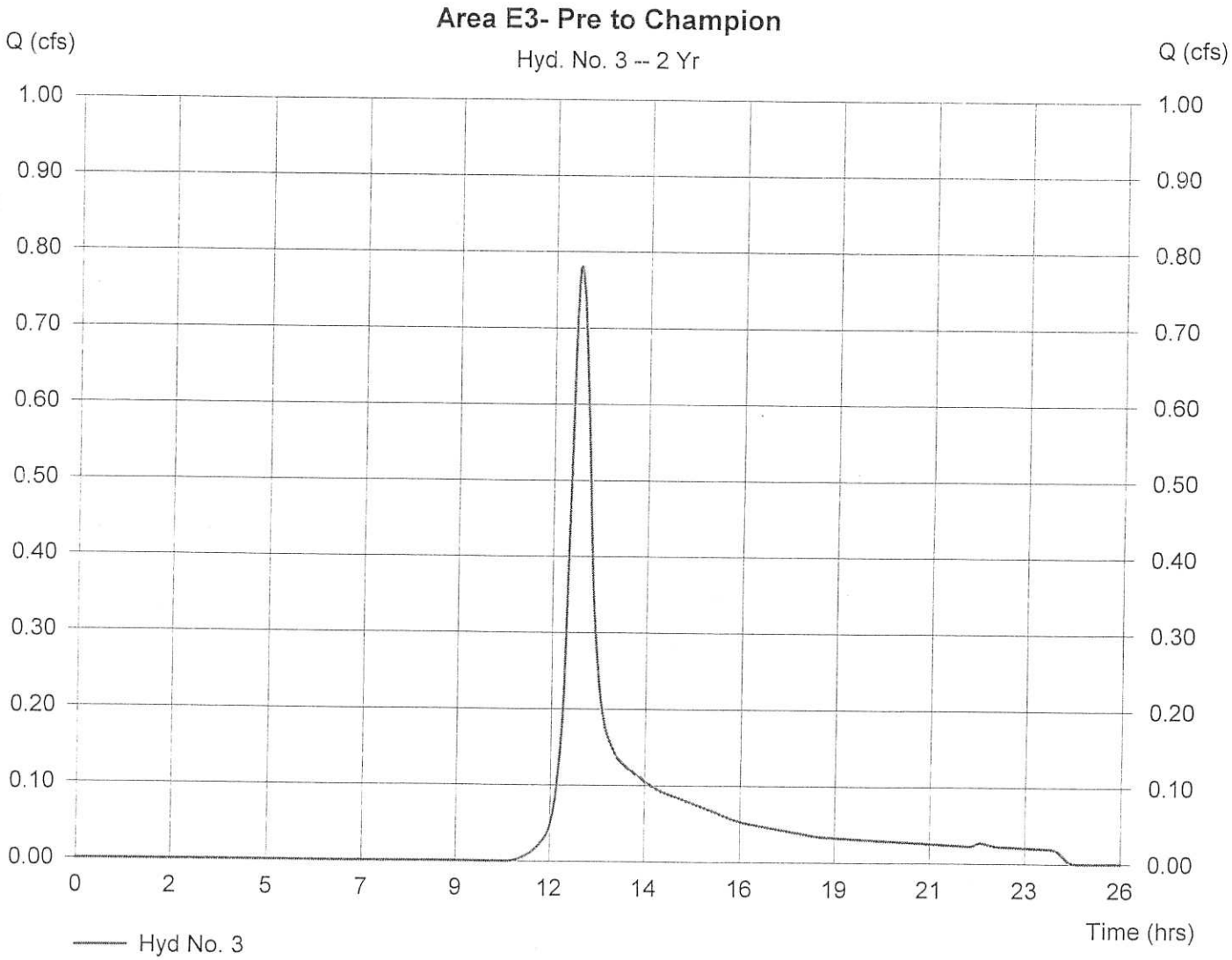
Friday, Jun 12 2009, 10:0 AM

Hyd. No. 3

Area E3- Pre to Champion

Hydrograph type	= SCS Runoff	Peak discharge	= 0.781 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Drainage area	= 0.950 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 22.60 min
Total precip.	= 3.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 3,906 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

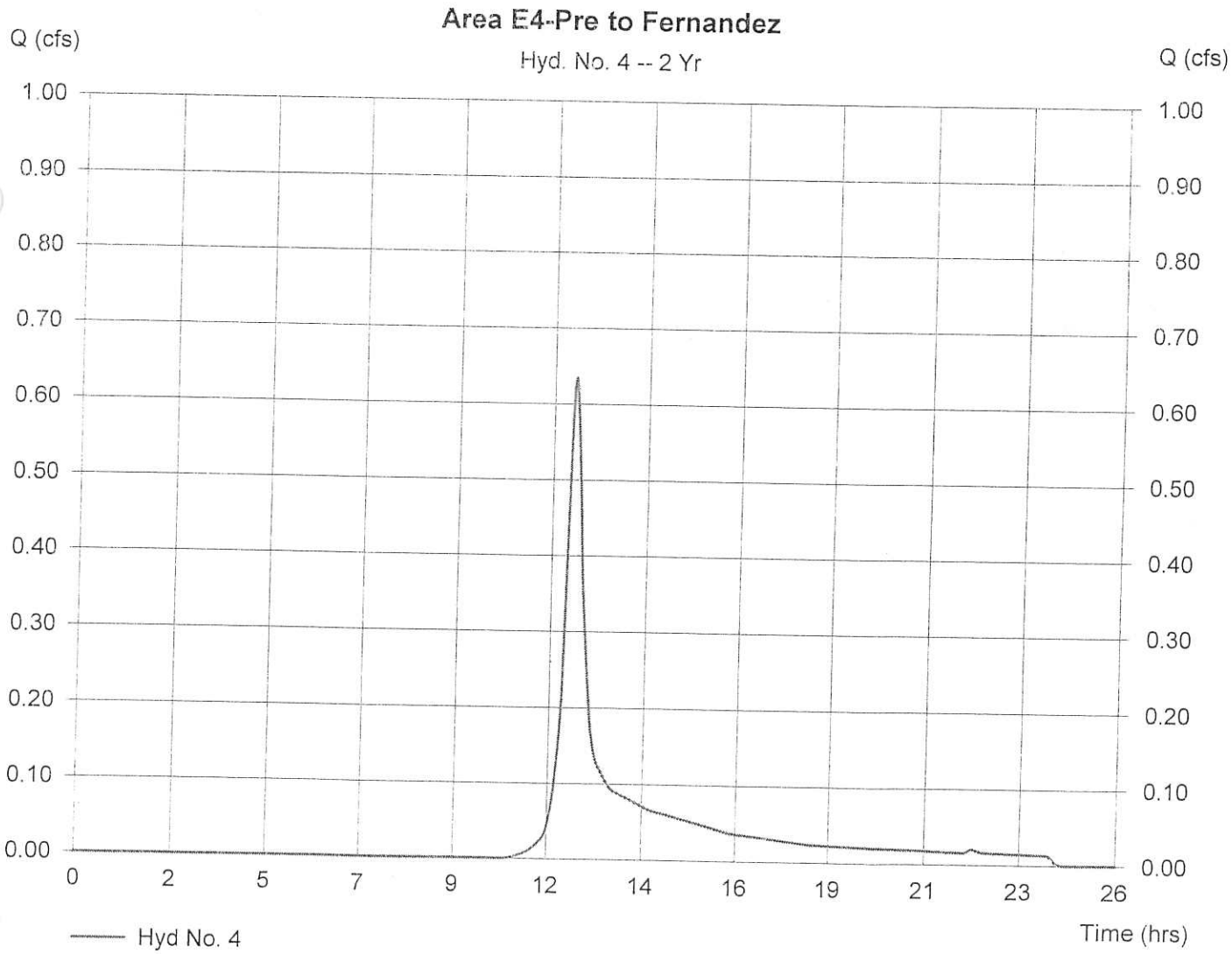
Friday, Jun 12 2009, 10:0 AM

Hyd. No. 4

Area E4-Pre to Fernandez

Hydrograph type	= SCS Runoff	Peak discharge	= 0.634 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Drainage area	= 0.690 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 14.76 min
Total precip.	= 3.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 2,718 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

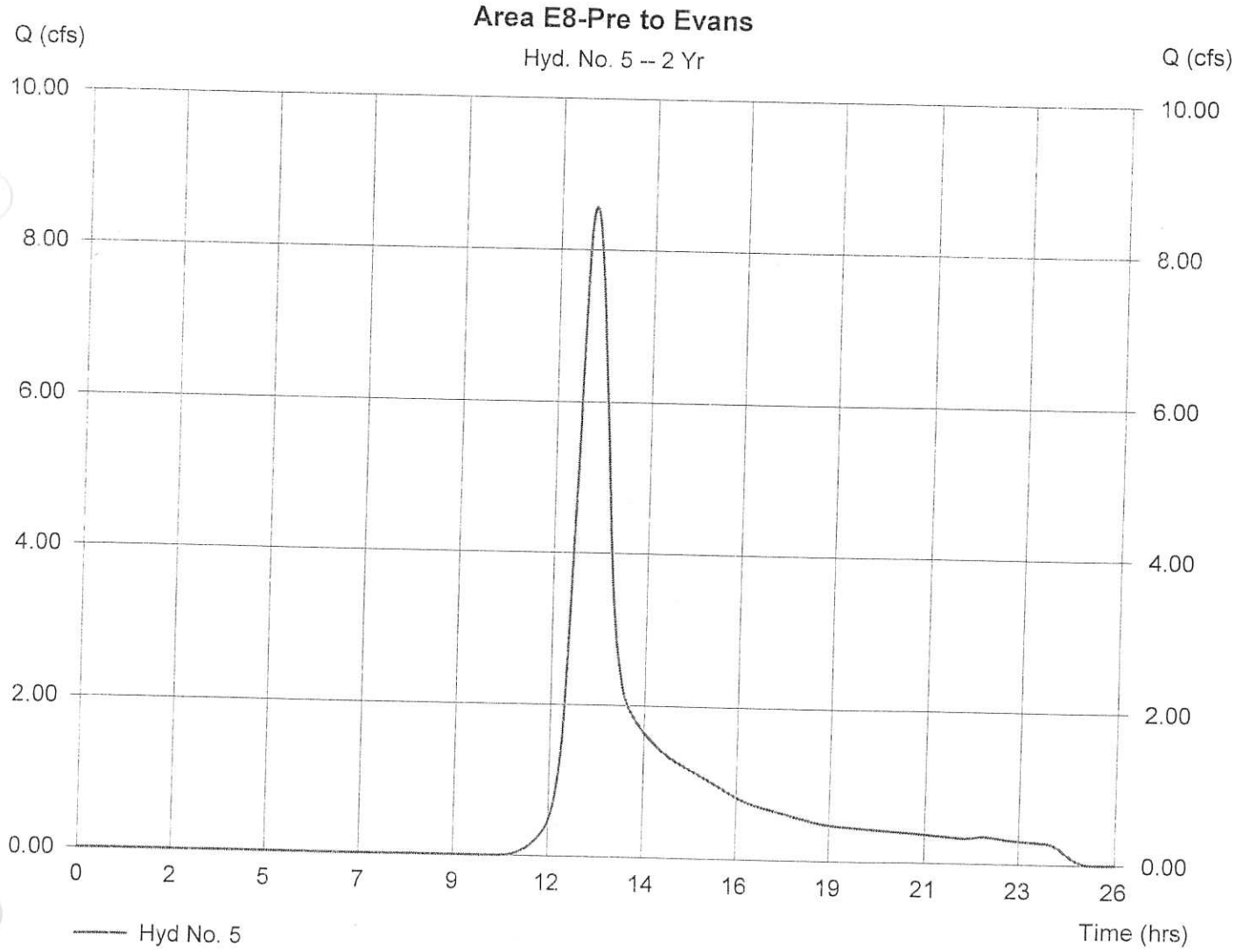
Friday, Jun 12 2009, 10:0 AM

Hyd. No. 5

Area E8-Pre to Evans

Hydrograph type	= SCS Runoff	Peak discharge	= 8.567 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Drainage area	= 13.190 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 40.80 min
Total precip.	= 3.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 56,626 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

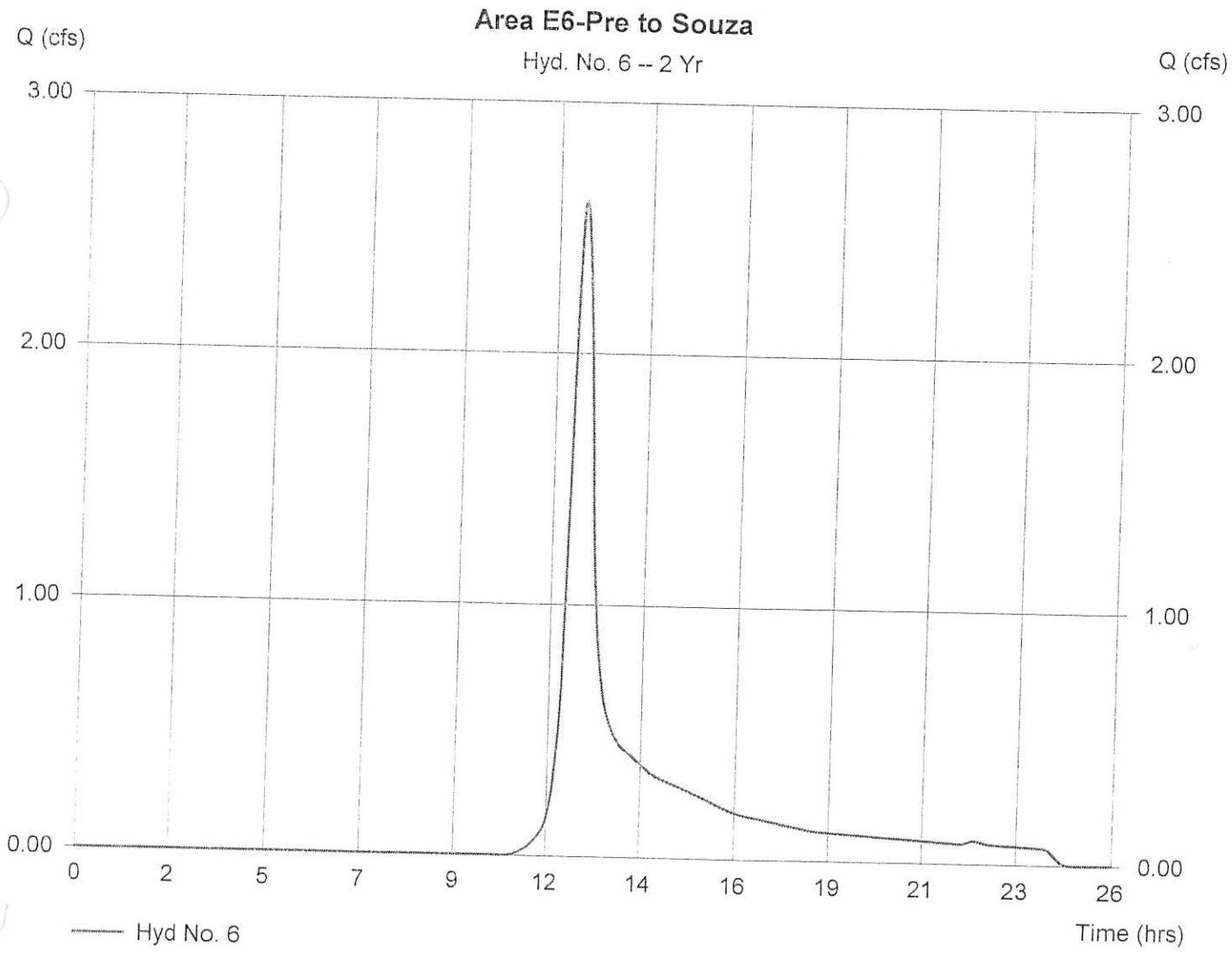
Friday, Jun 12 2009, 10:0 AM

Hyd. No. 6

Area E6-Pre to Souza

Hydrograph type	= SCS Runoff	Peak discharge	= 2.607 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Drainage area	= 3.410 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 24.30 min
Total precip.	= 3.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 13,561 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

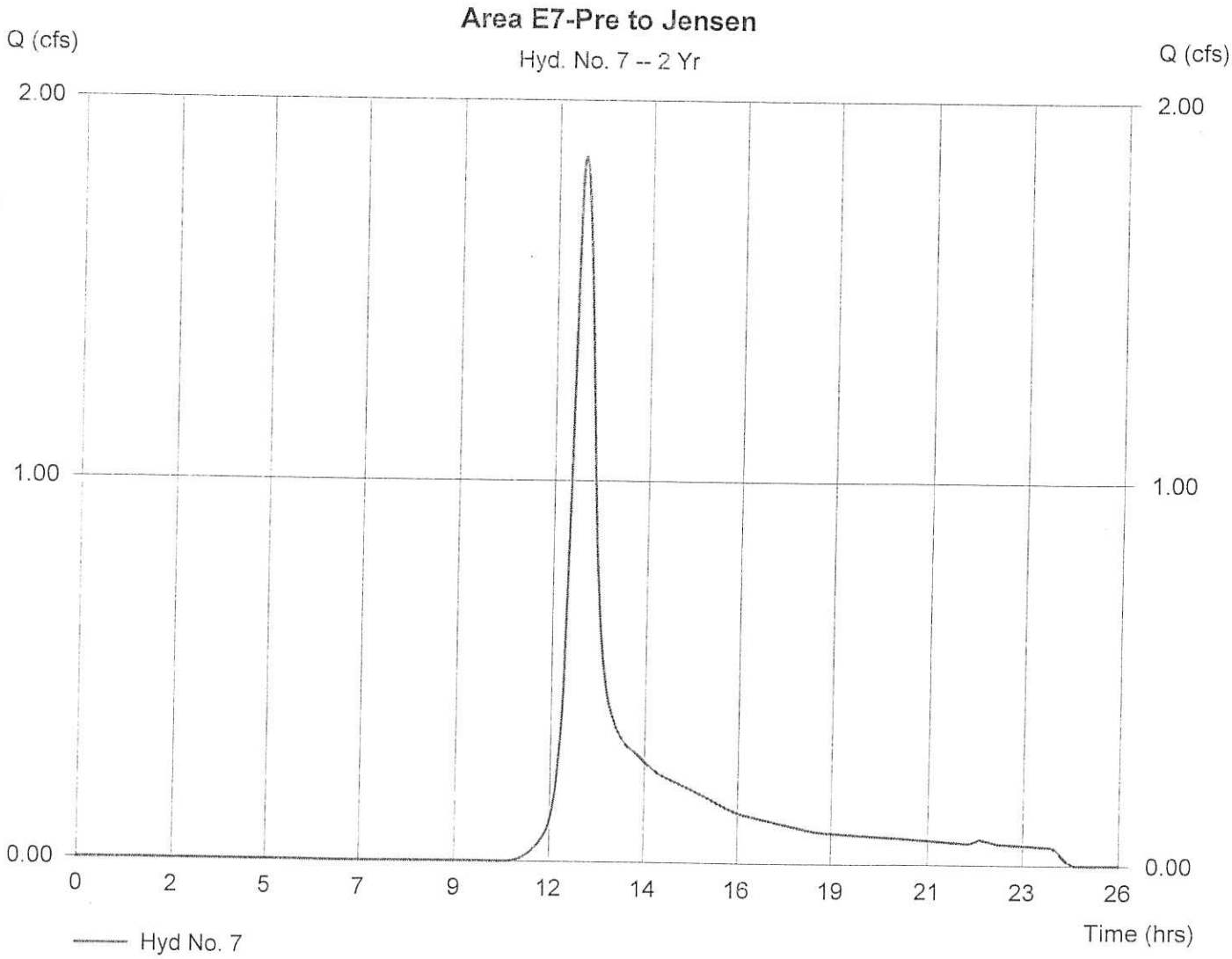
Friday, Jun 12 2009, 10:0 AM

Hyd. No. 7

Area E7-Pre to Jensen

Hydrograph type	= SCS Runoff	Peak discharge	= 1.850 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Drainage area	= 2.420 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 23.76 min
Total precip.	= 3.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 9,624 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

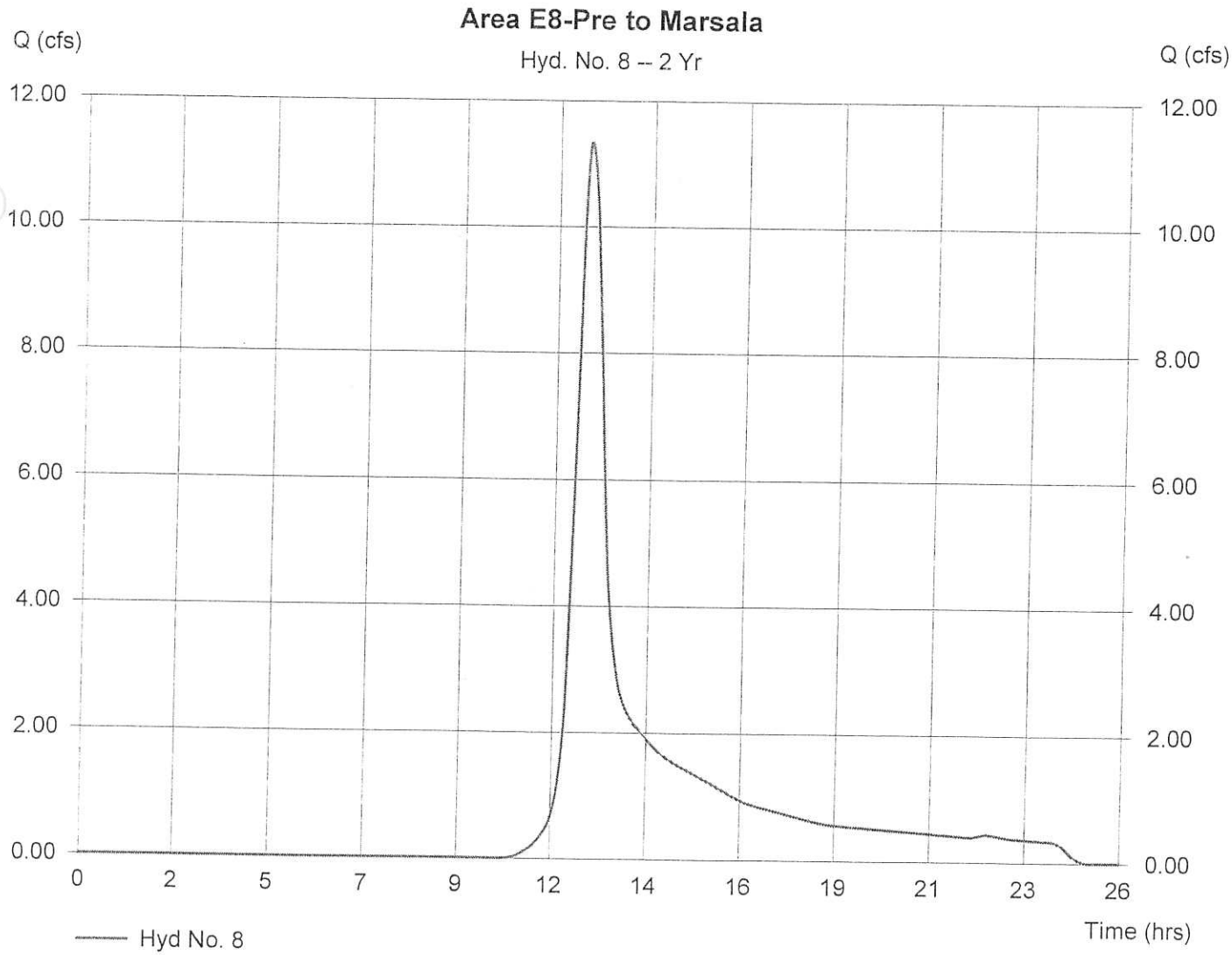
Friday, Jun 12 2009, 10:0 AM

Hyd. No. 8

Area E8-Pre to Marsala

Hydrograph type	= SCS Runoff	Peak discharge	= 11.33 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Drainage area	= 16.130 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 34.56 min
Total precip.	= 3.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 67,809 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

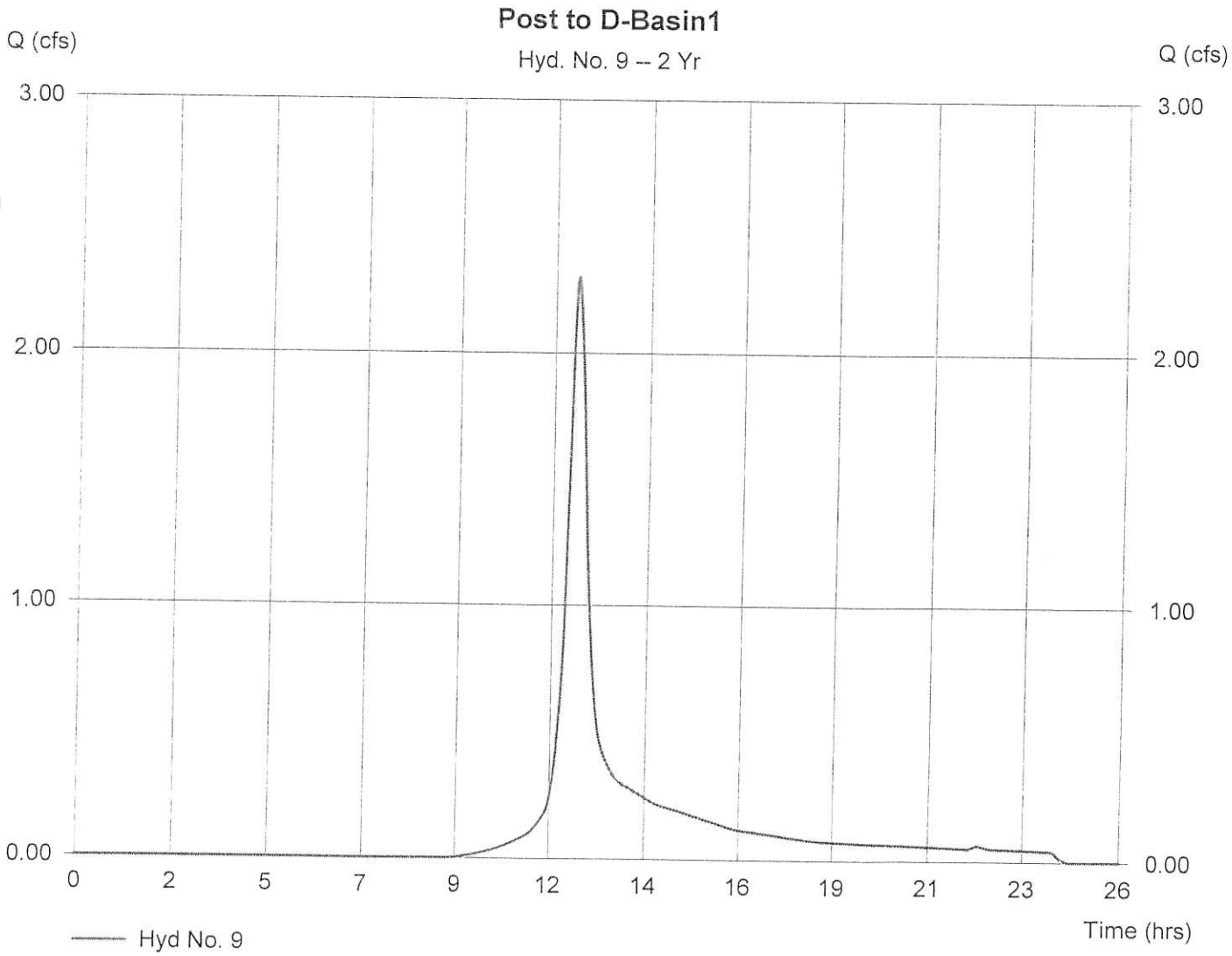
Friday, Jun 12 2009, 10:0 AM

Hyd. No. 9

Post to D-Basin1

Hydrograph type	= SCS Runoff	Peak discharge	= 2.301 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Drainage area	= 1.810 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 18.00 min
Total precip.	= 3.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 10,233 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 12 2009, 10:0 AM

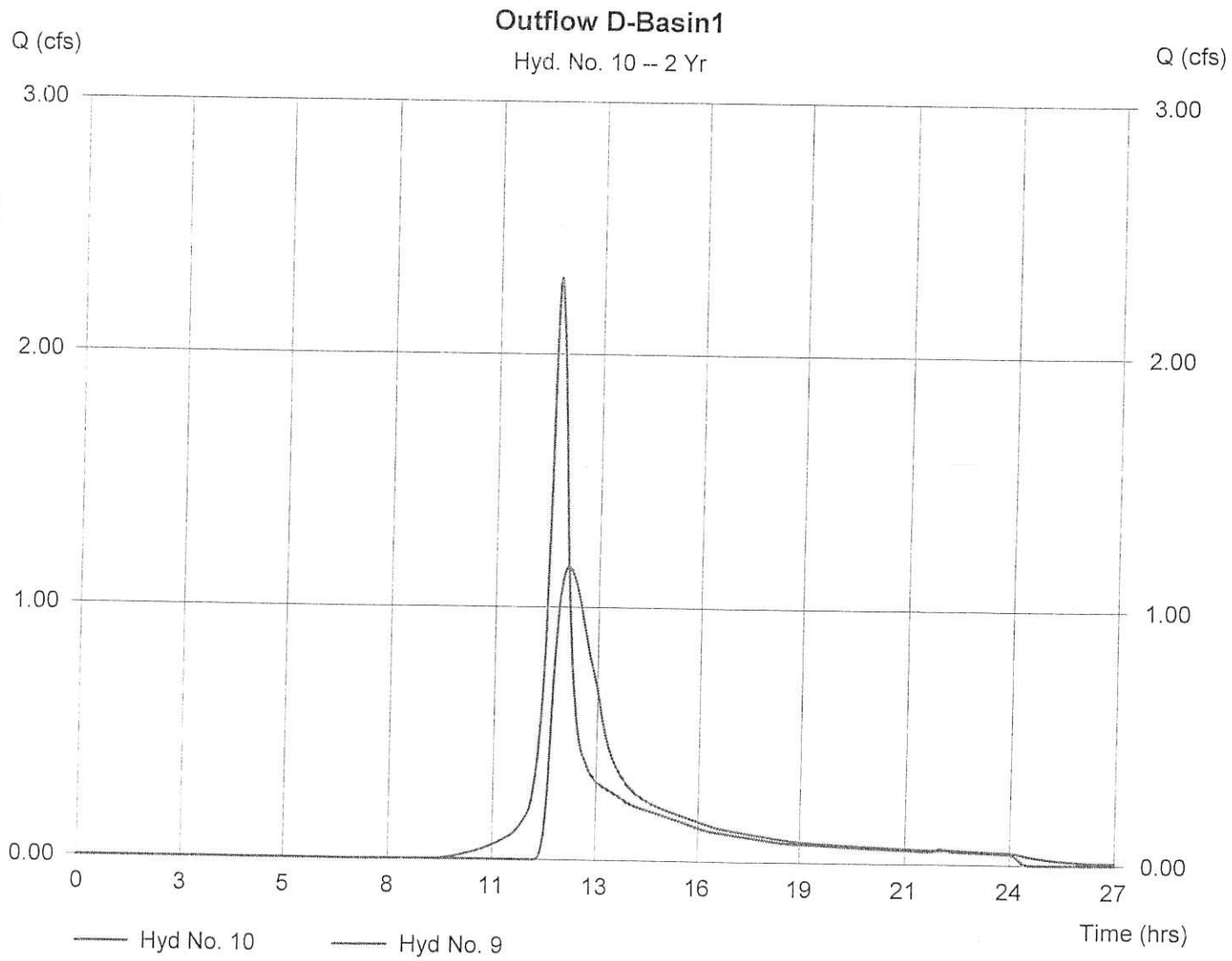
Hyd. No. 10

Outflow D-Basin1

Hydrograph type	= Reservoir	Peak discharge	= 1.159 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Inflow hyd. No.	= 9	Max. Elevation	= 316.31 ft
Reservoir name	= D-Basin1	Max. Storage	= 3,071 cuft

Storage Indication method used.

Hydrograph Volume = 9,578 cuft



Pond Report

Hydraflow Hydrographs by Intelisolve

Friday, Jun 12 2009, 10:0 AM

Pond No. 1 - D-Basin1

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	315.00	725	0	0
0.50	315.50	1,843	642	642
1.00	316.00	2,960	1,201	1,843
3.00	318.00	4,850	7,810	9,653
3.70	318.70	5,630	3,668	13,321

Culvert / Orifice Structures

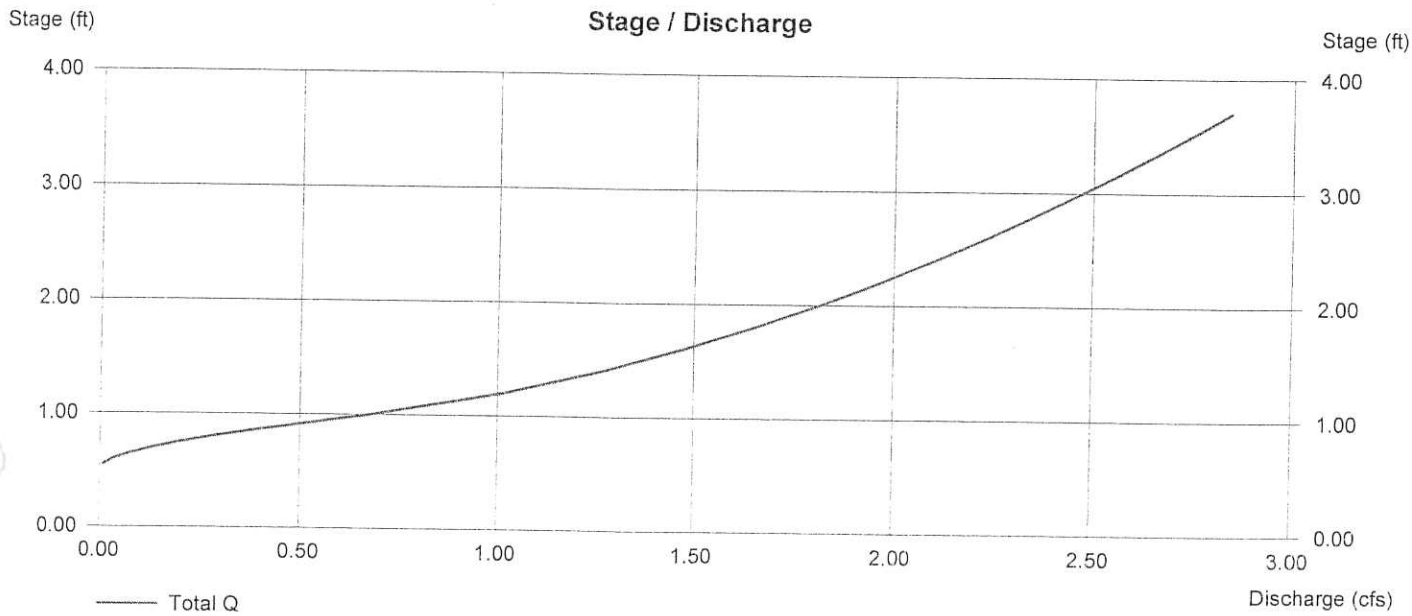
	[A]	[B]	[C]	[D]
Rise (in)	= 8.00	0.00	0.00	0.00
Span (in)	= 8.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 315.50	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	0.00
N-Value	= .013	.000	.000	.000
Orif. Coeff.	= 0.60	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

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.	= 0.00	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.



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

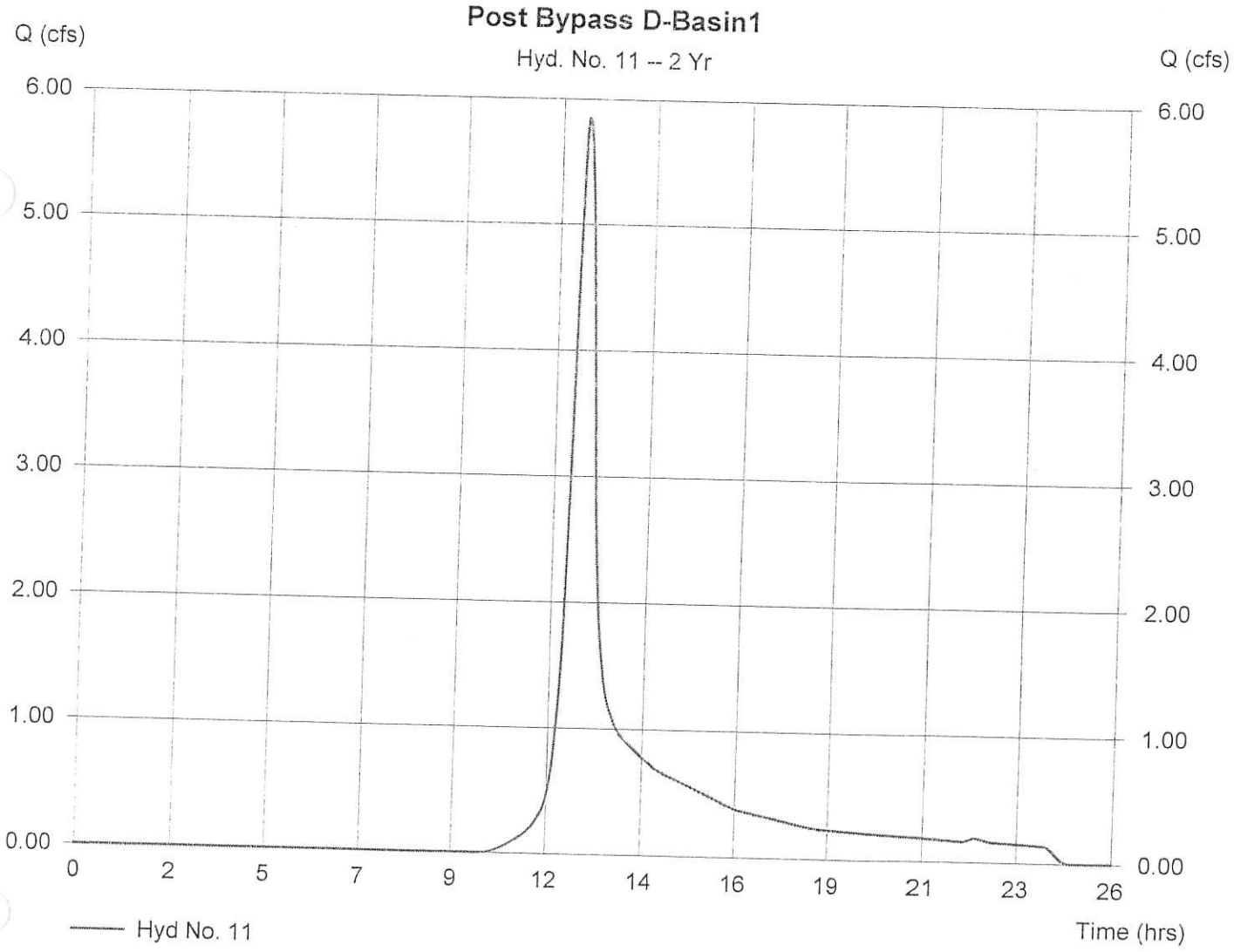
Friday, Jun 12 2009, 10:0 AM

Hyd. No. 11

Post Bypass D-Basin1

Hydrograph type	= SCS Runoff	Peak discharge	= 5.848 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Drainage area	= 6.430 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 26.16 min
Total precip.	= 3.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 29,714 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 12 2009, 10:0 AM

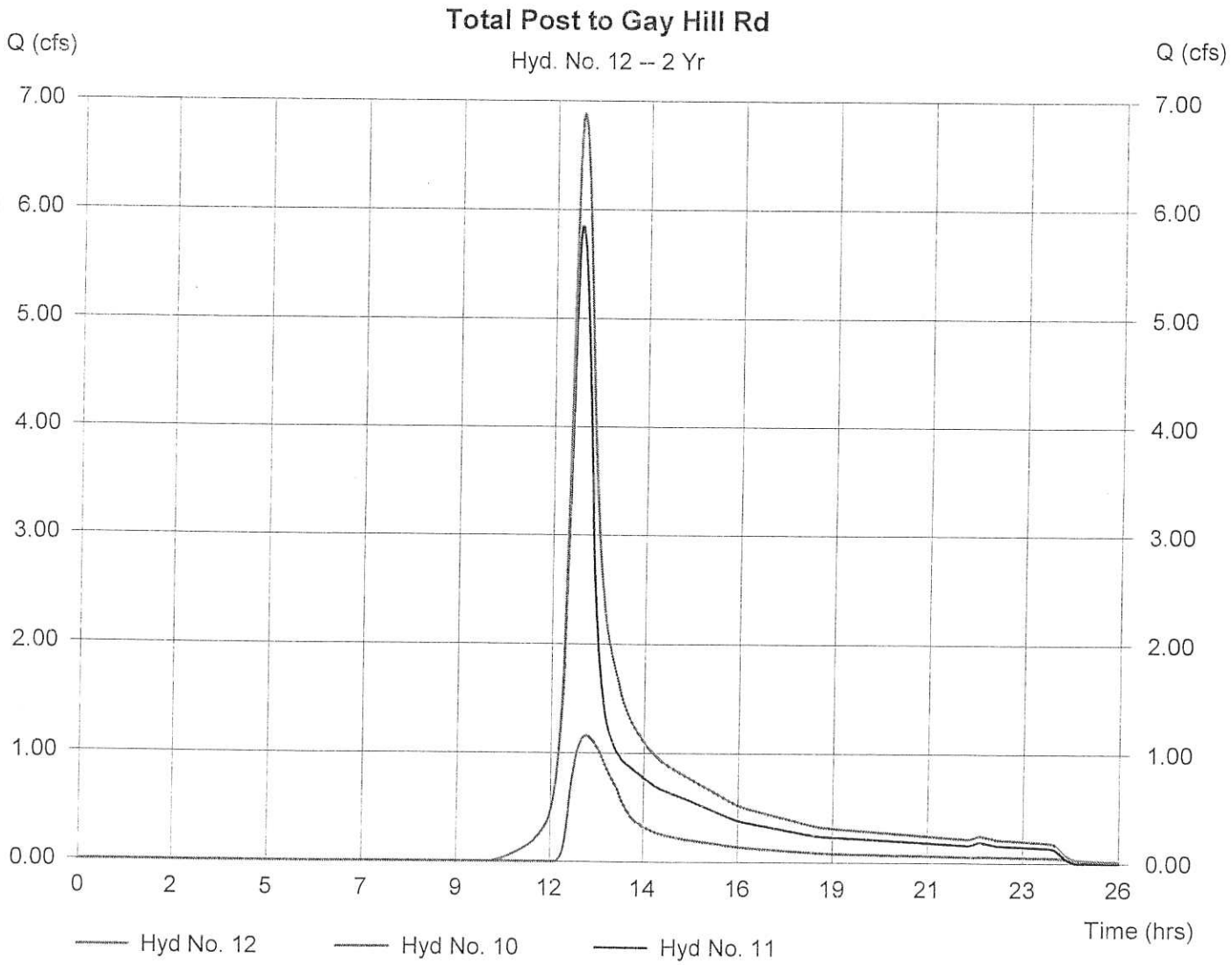
Hyd. No. 12

Total Post to Gay Hill Rd

Hydrograph type = Combine
Storm frequency = 2 yrs
Inflow hyds. = 10, 11

Peak discharge = 6.884 cfs
Time interval = 2 min

Hydrograph Volume = 39,291 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

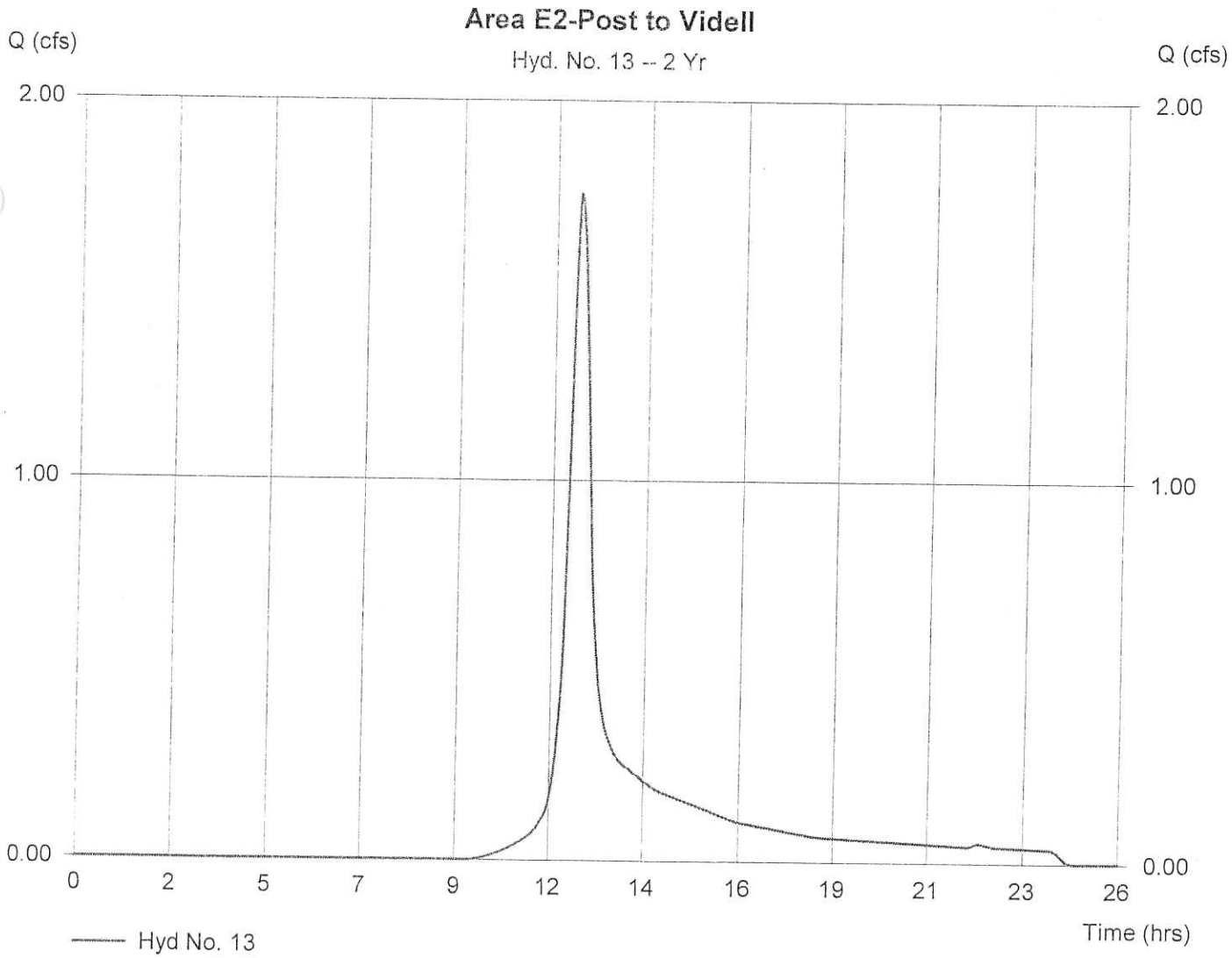
Friday, Jun 12 2009, 10:0 AM

Hyd. No. 13

Area E2-Post to Videll

Hydrograph type	= SCS Runoff	Peak discharge	= 1.756 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Drainage area	= 1.610 ac	Curve number	= 78
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 22.38 min
Total precip.	= 3.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 8,458 cuft



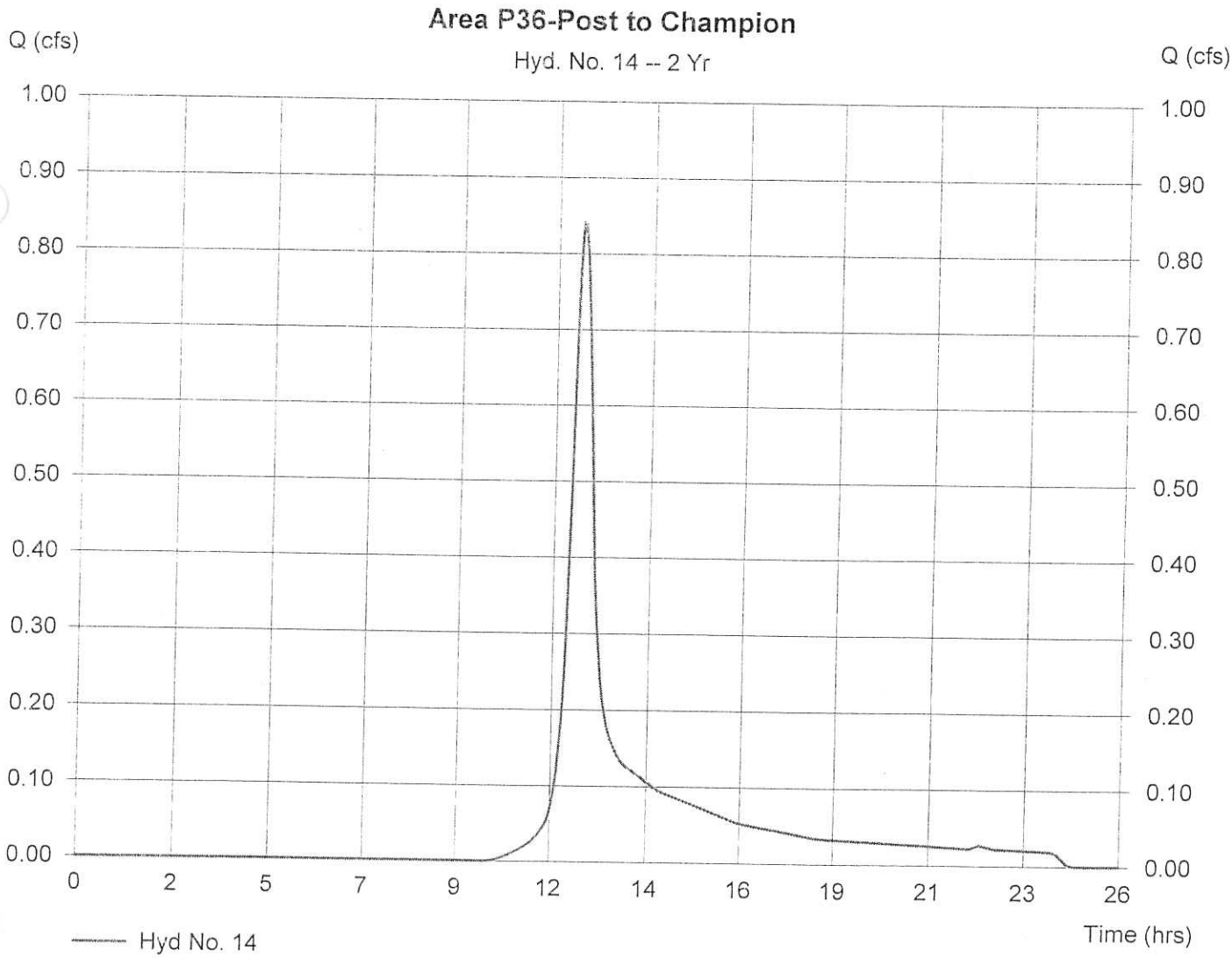
Hydrograph Plot

Hyd. No. 14

Area P36-Post to Champion

Hydrograph type	= SCS Runoff	Peak discharge	= 0.842 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Drainage area	= 0.860 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 22.62 min
Total precip.	= 3.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 4,109 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

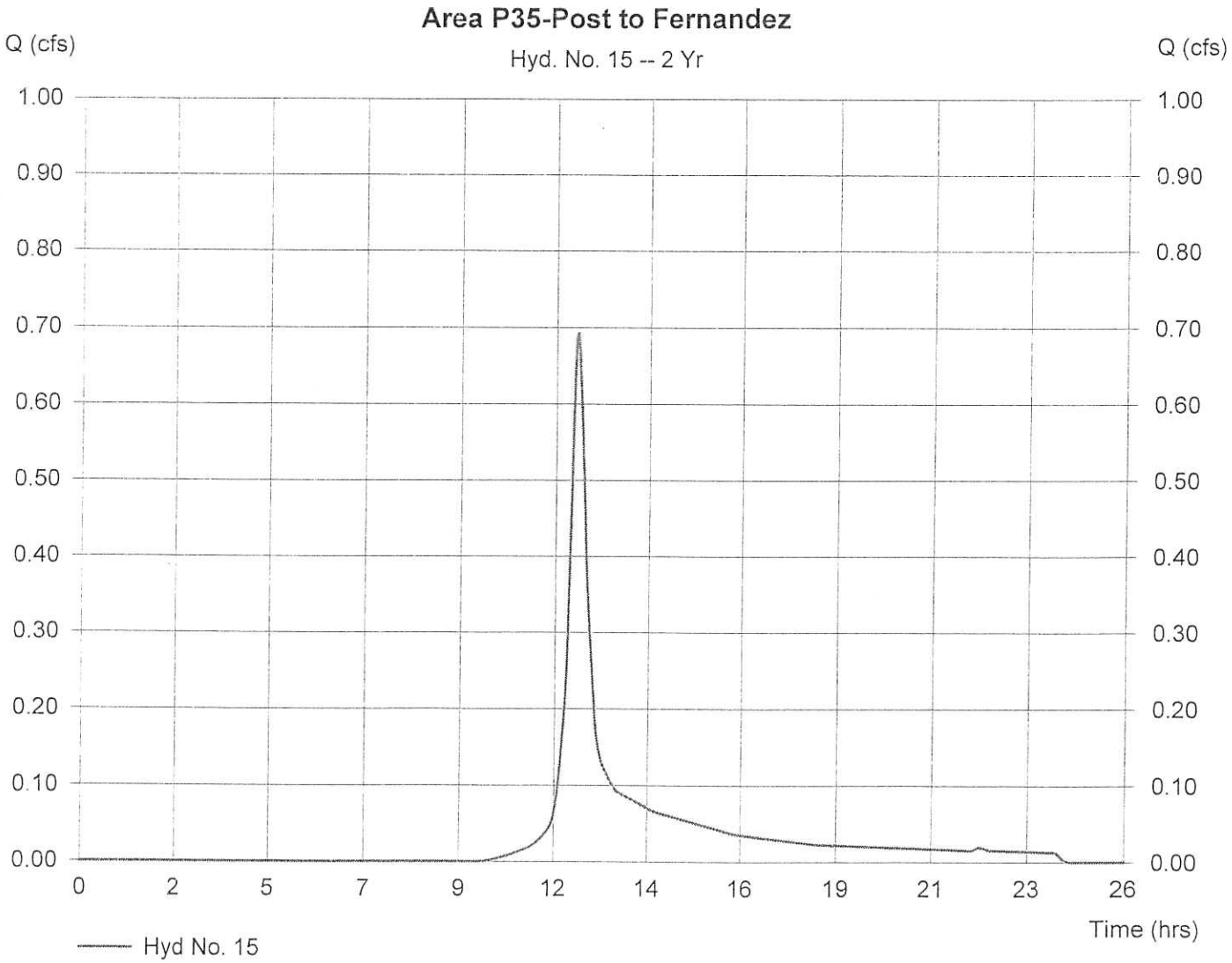
Friday, Jun 12 2009, 10:0 AM

Hyd. No. 15

Area P35-Post to Fernandez

Hydrograph type	= SCS Runoff	Peak discharge	= 0.692 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Drainage area	= 0.600 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 14.76 min
Total precip.	= 3.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 2,881 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

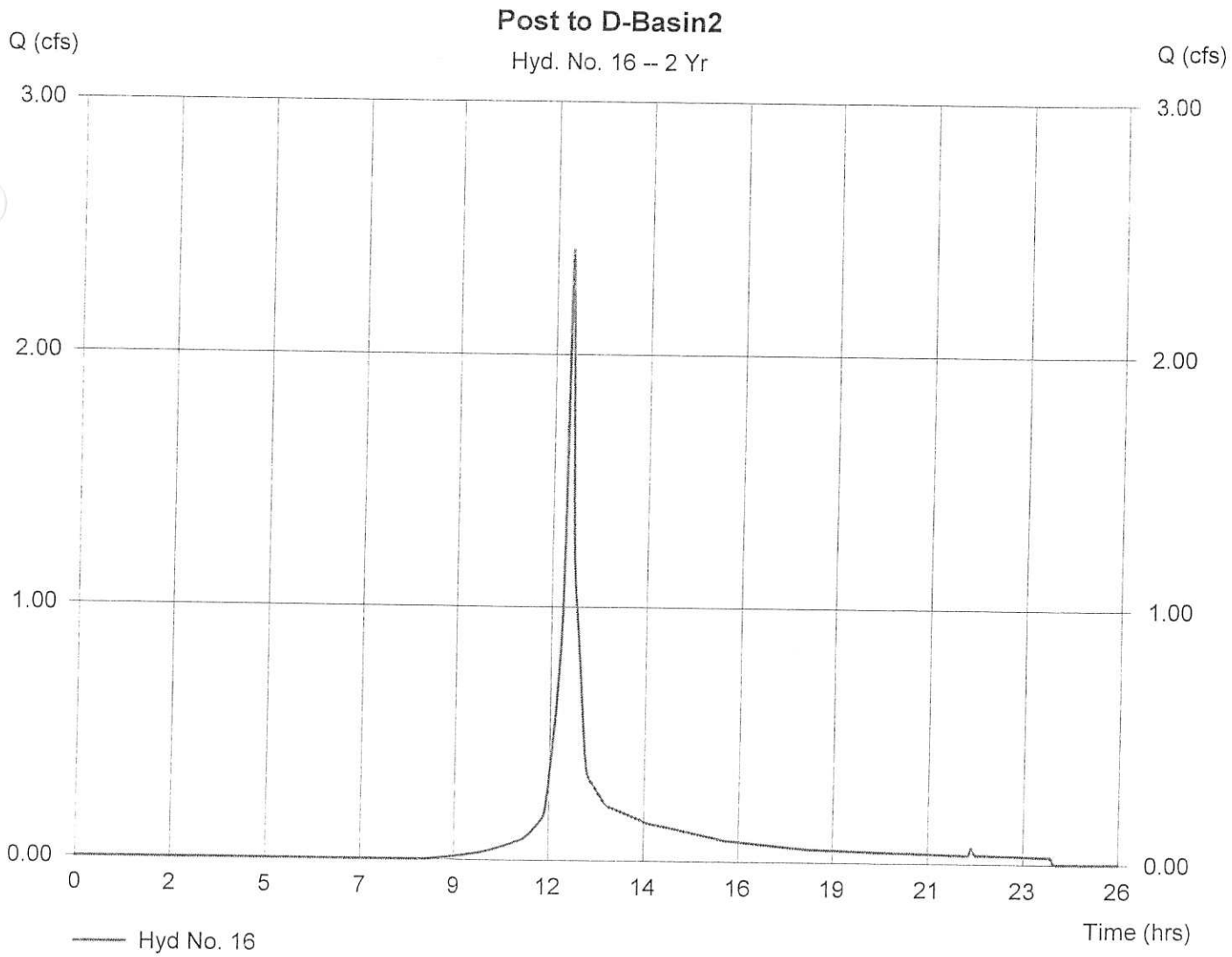
Friday, Jun 12 2009, 10:0 AM

Hyd. No. 16

Post to D-Basin2

Hydrograph type	= SCS Runoff	Peak discharge	= 2.418 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Drainage area	= 1.250 ac	Curve number	= 82
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 7,233 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 12 2009, 10:0 AM

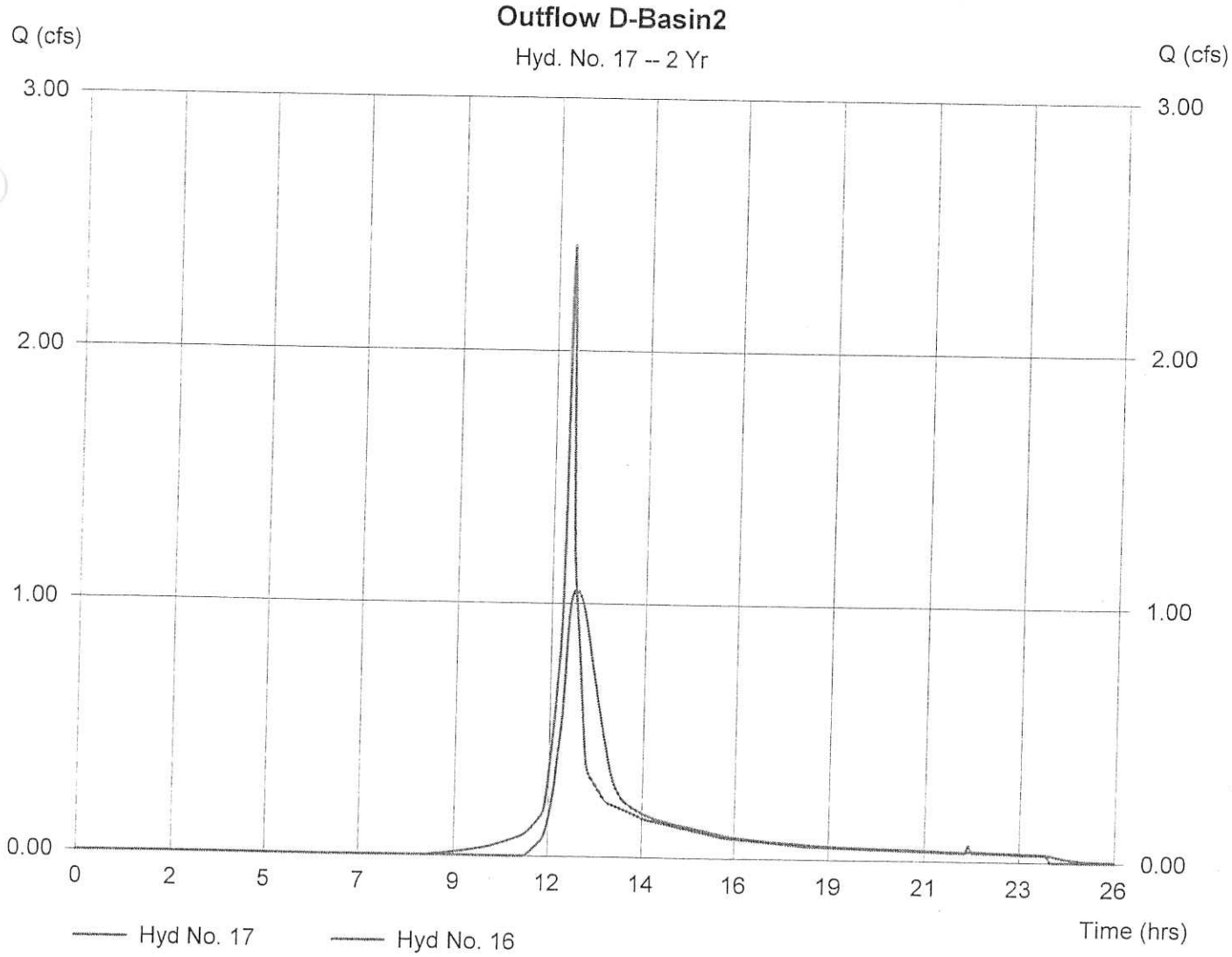
Hyd. No. 17

Outflow D-Basin2

Hydrograph type	= Reservoir	Peak discharge	= 1.052 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Inflow hyd. No.	= 16	Max. Elevation	= 333.99 ft
Reservoir name	= D-Basin2	Max. Storage	= 1,713 cuft

Storage Indication method used.

Hydrograph Volume = 6,949 cuft



Pond Report

Hydraflow Hydrographs by Intelisolve

Friday, Jun 12 2009, 10:0 AM

Pond No. 2 - D-Basin2

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	332.00	465	0	0
0.50	332.50	663	282	282
2.00	334.00	1,260	1,442	1,724
4.00	336.00	2,335	3,595	5,319
5.50	337.50	3,800	4,601	9,921

Culvert / Orifice Structures

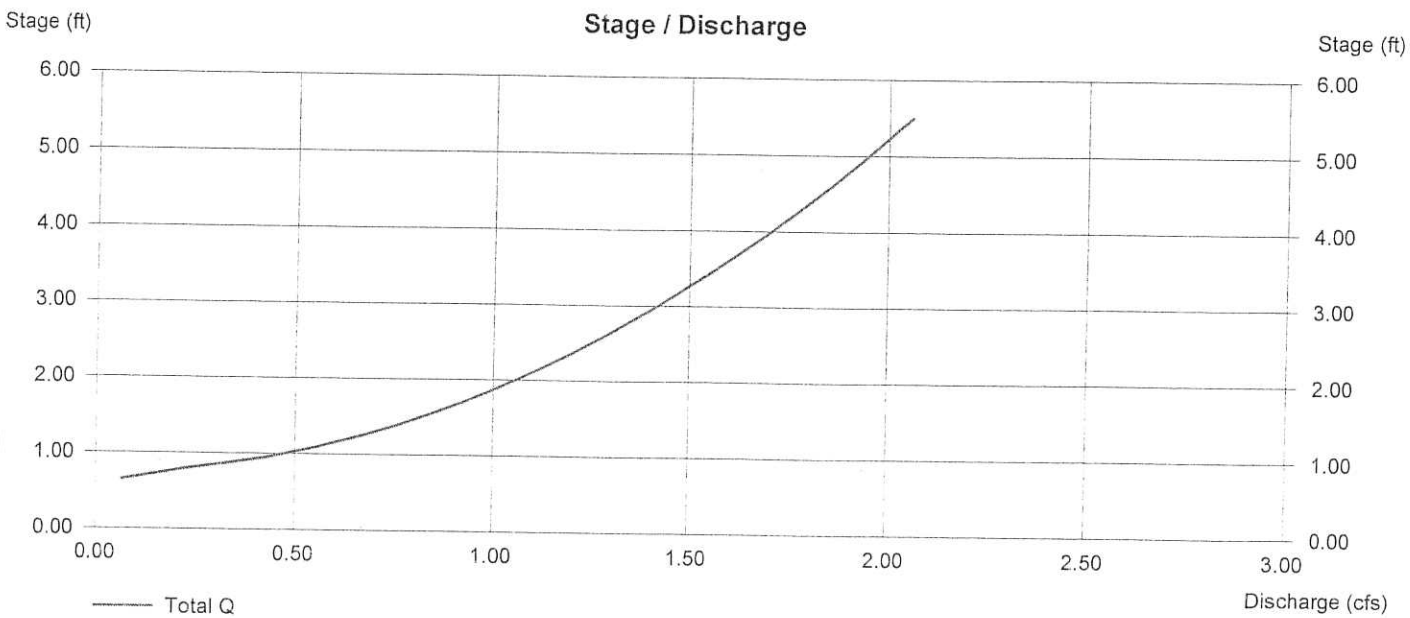
	[A]	[B]	[C]	[D]
Rise (in)	= 6.00	0.00	0.00	0.00
Span (in)	= 6.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 332.50	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	0.00
N-Value	= .013	.000	.000	.000
Orif. Coeff.	= 0.60	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

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.	= 0.00	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.



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

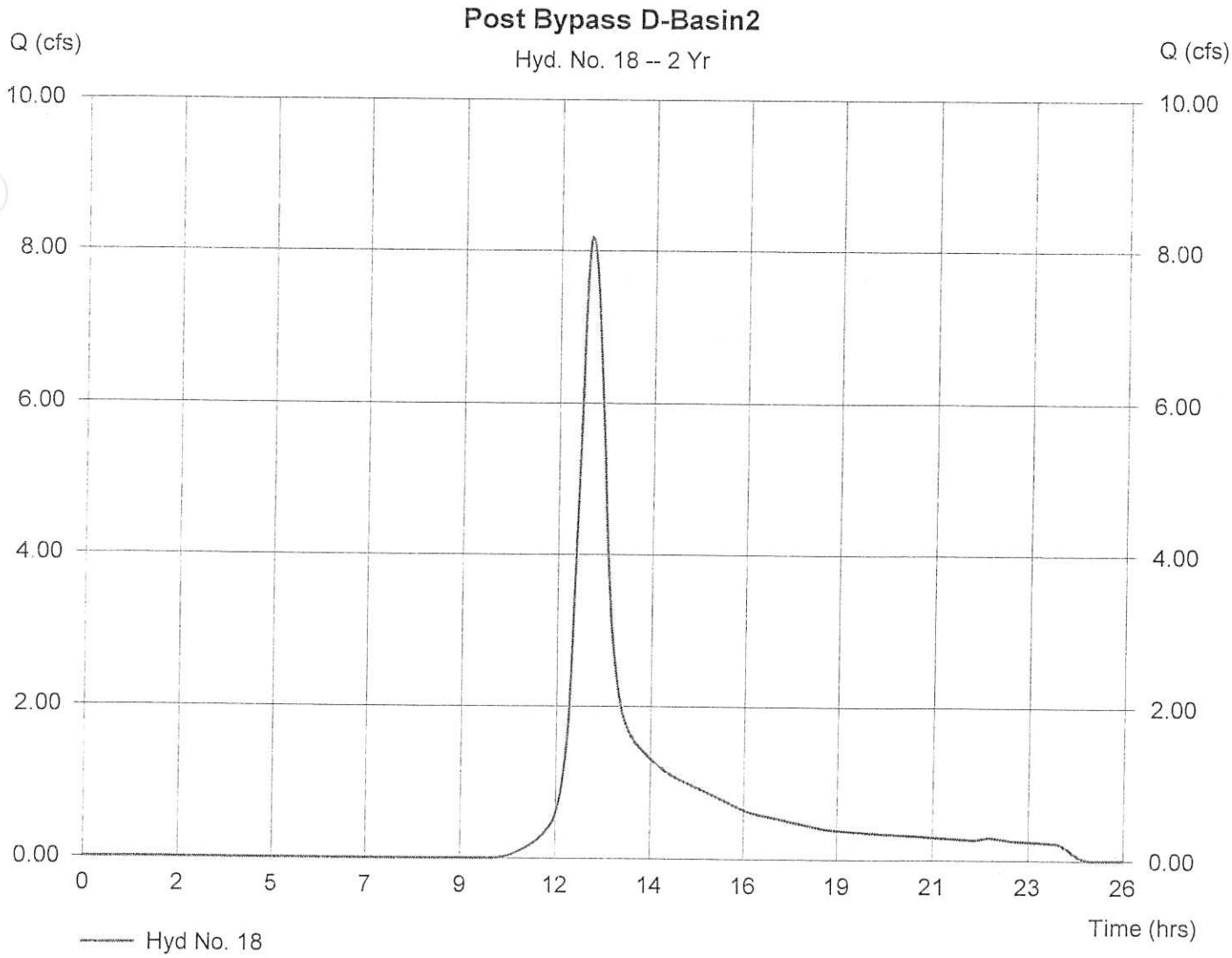
Friday, Jun 12 2009, 10:0 AM

Hyd. No. 18

Post Bypass D-Basin2

Hydrograph type	= SCS Runoff	Peak discharge	= 8.187 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Drainage area	= 10.380 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 34.62 min
Total precip.	= 3.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 48,175 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

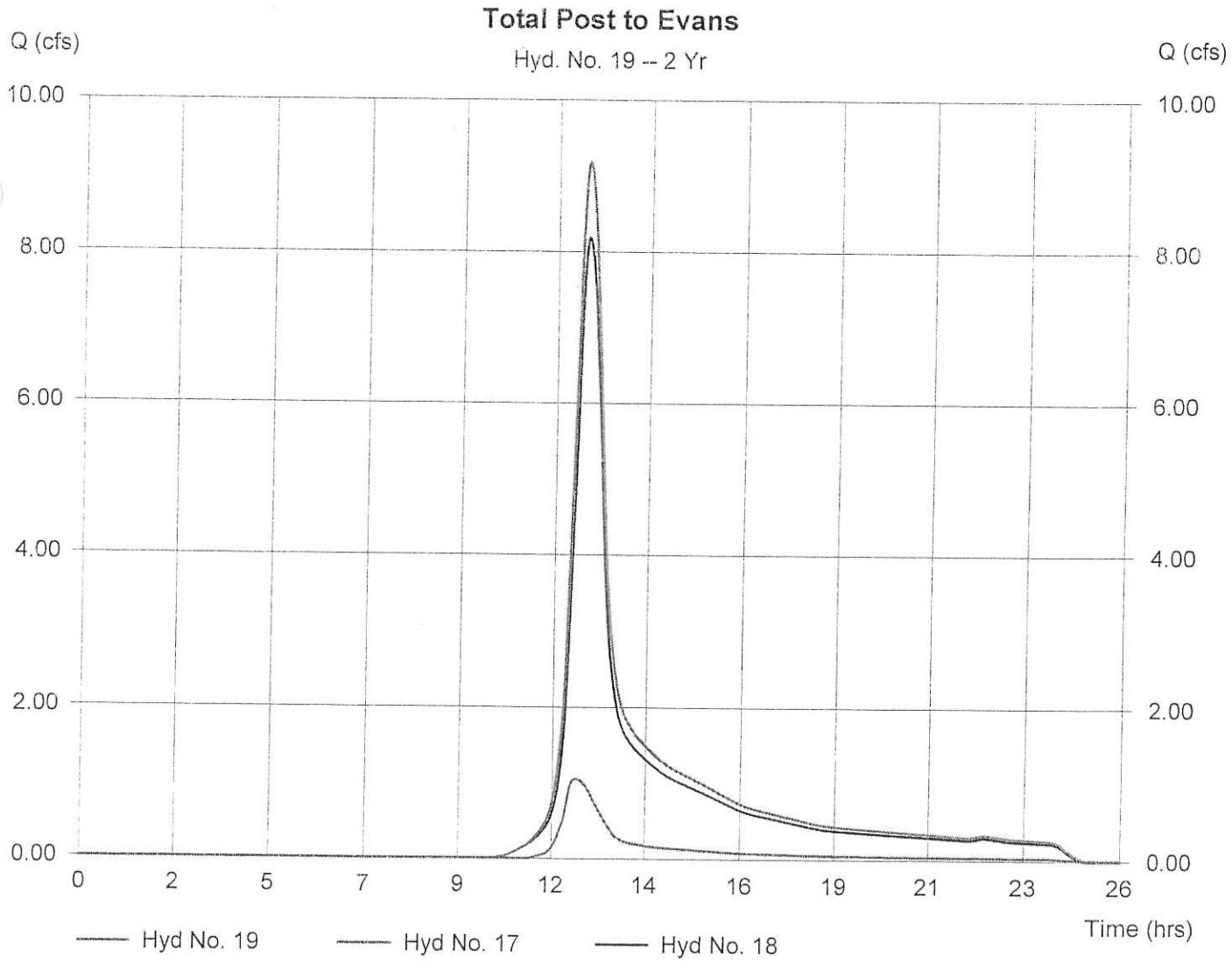
Friday, Jun 12 2009, 10:0 AM

Hyd. No. 19

Total Post to Evans

Hydrograph type	= Combine	Peak discharge	= 9.188 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Inflow hyds.	= 17, 18		

Hydrograph Volume = 55,124 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

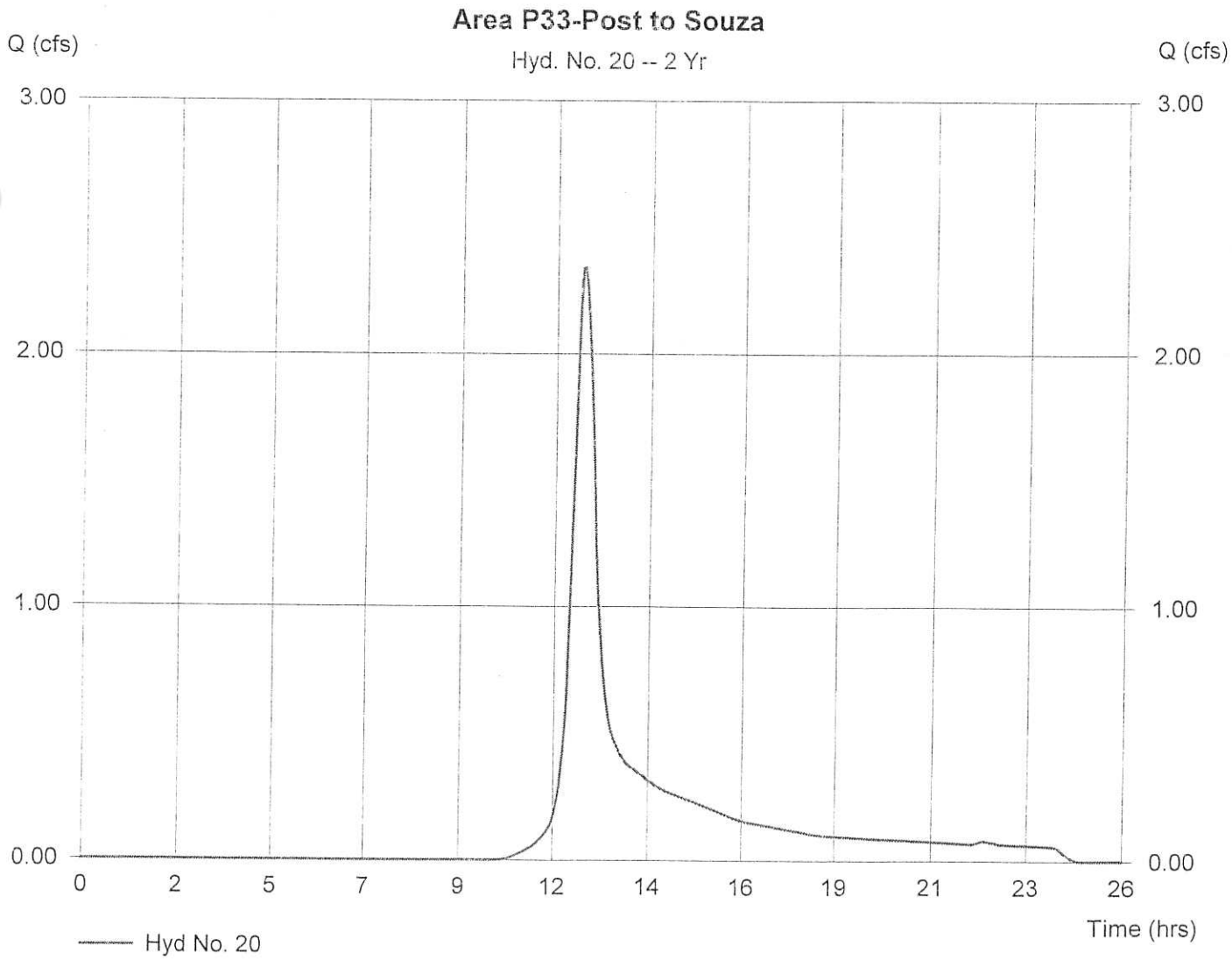
Friday, Jun 12 2009, 10:0 AM

Hyd. No. 20

Area P33-Post to Souza

Hydrograph type	= SCS Runoff	Peak discharge	= 2.340 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Drainage area	= 2.720 ac	Curve number	= 75
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 24.30 min
Total precip.	= 3.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 11,969 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

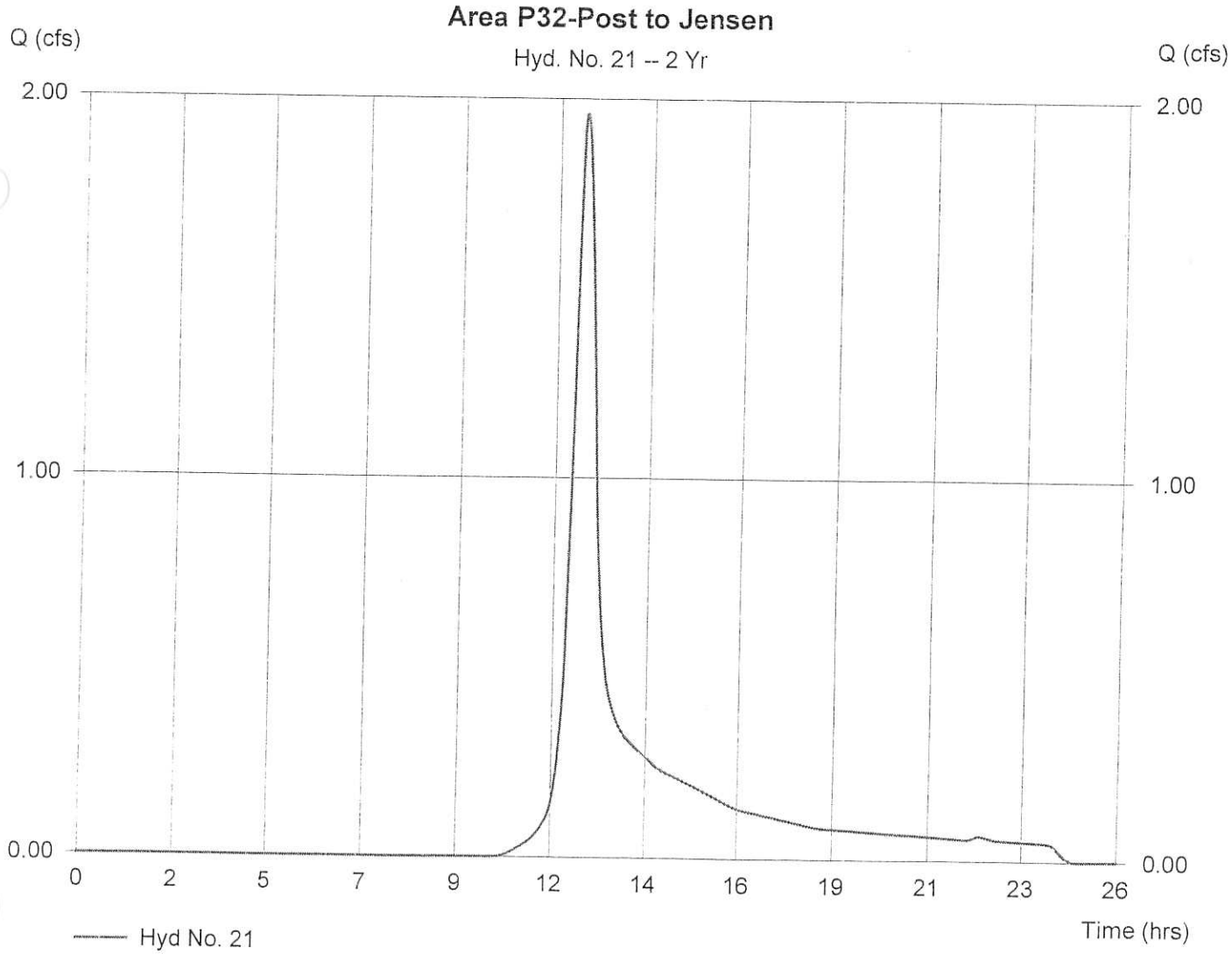
Friday, Jun 12 2009, 10:0 AM

Hyd. No. 21

Area P32-Post to Jensen

Hydrograph type	= SCS Runoff	Peak discharge	= 1.961 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Drainage area	= 2.280 ac	Curve number	= 75
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 23.76 min
Total precip.	= 3.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 10,033 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

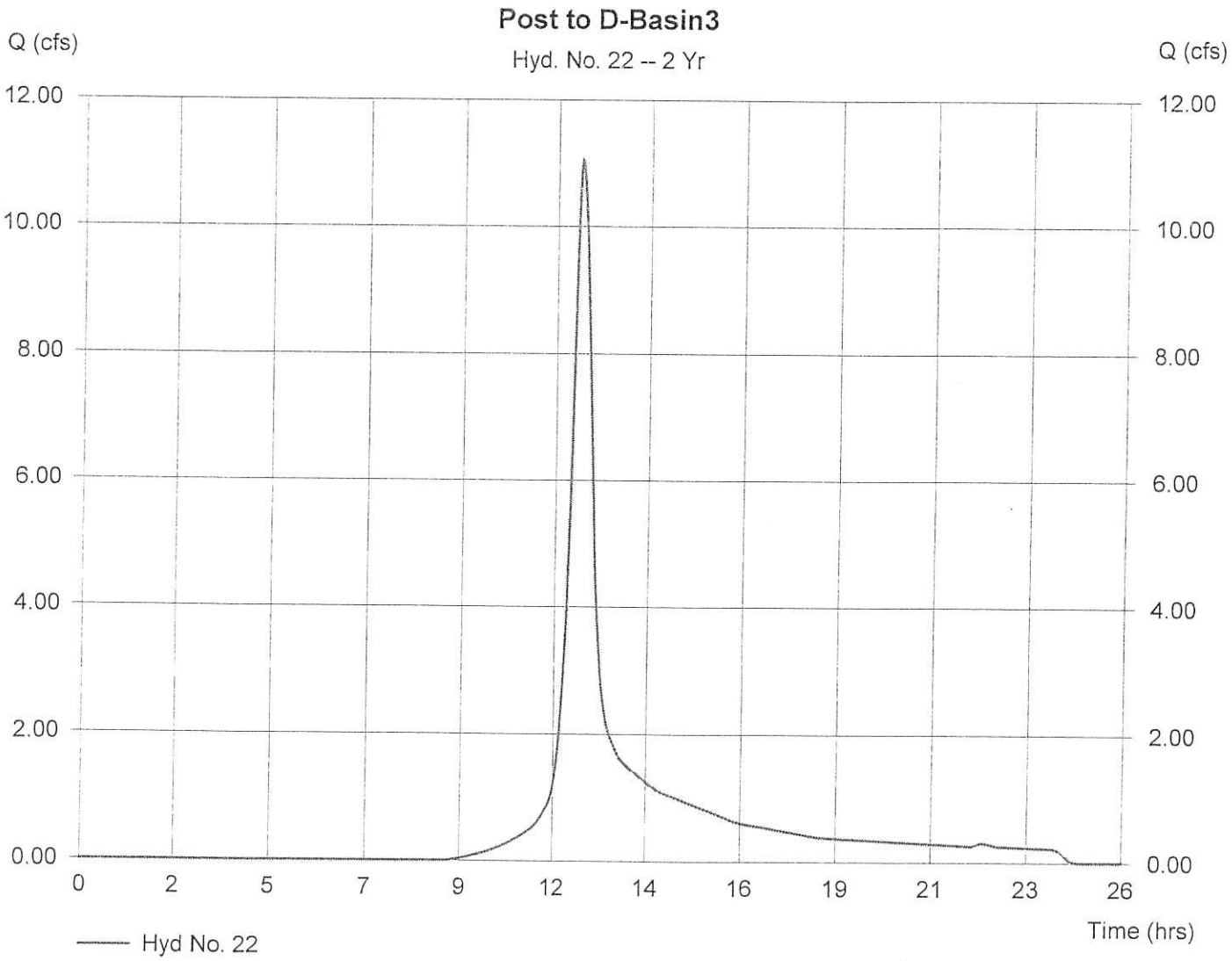
Friday, Jun 12 2009, 10:0 AM

Hyd. No. 22

Post to D-Basin3

Hydrograph type	= SCS Runoff	Peak discharge	= 11.07 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Drainage area	= 8.750 ac	Curve number	= 81
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 20.82 min
Total precip.	= 3.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 52,631 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 12 2009, 10:0 AM

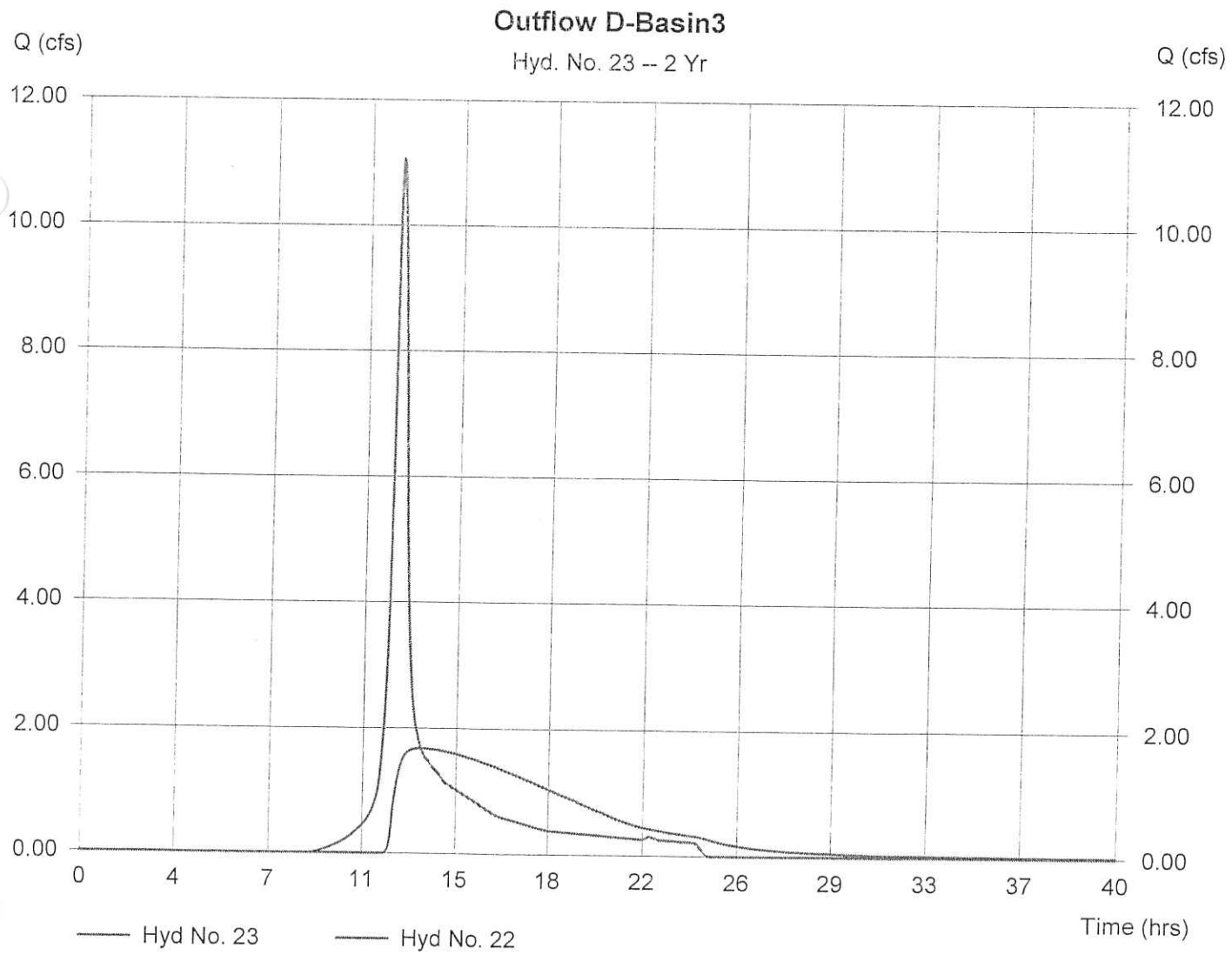
Hyd. No. 23

Outflow D-Basin3

Hydrograph type	= Reservoir	Peak discharge	= 1.676 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Inflow hyd. No.	= 22	Max. Elevation	= 337.83 ft
Reservoir name	= D-Basin3	Max. Storage	= 25,586 cuft

Storage Indication method used.

Hydrograph Volume = 48,551 cuft



Pond Report

Hydraflow Hydrographs by Intelisolve

Friday, Jun 12 2009, 10:0 AM

Pond No. 3 - D-Basin3

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	336.00	5,355	0	0
0.50	336.50	10,675	4,008	4,008
1.00	337.00	15,995	6,668	10,675
2.00	338.00	20,015	18,005	28,680
3.00	339.00	22,085	21,050	49,730
4.00	340.00	24,700	23,393	73,123
5.00	341.00	28,345	26,523	99,645

Culvert / Orifice Structures

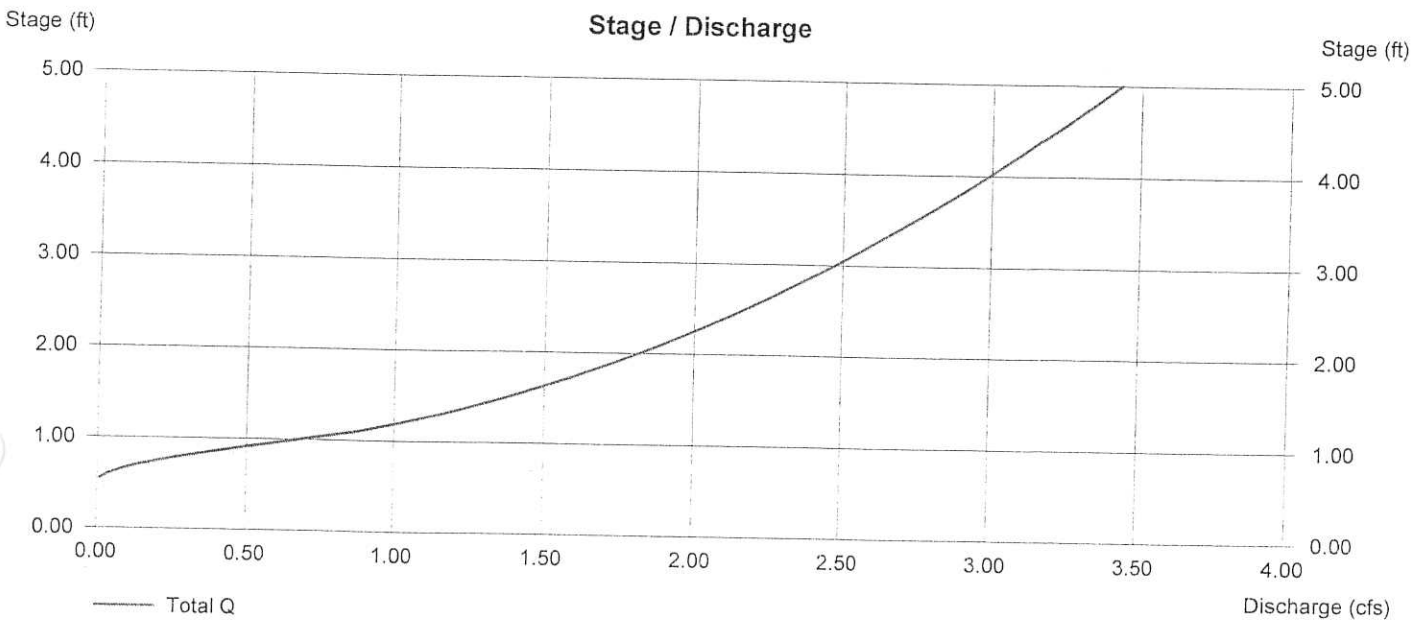
	[A]	[B]	[C]	[D]
Rise (in)	= 8.00	0.00	0.00	0.00
Span (in)	= 8.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 336.50	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	0.00
N-Value	= .013	.000	.000	.000
Orif. Coeff.	= 0.60	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

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.	= 0.00	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



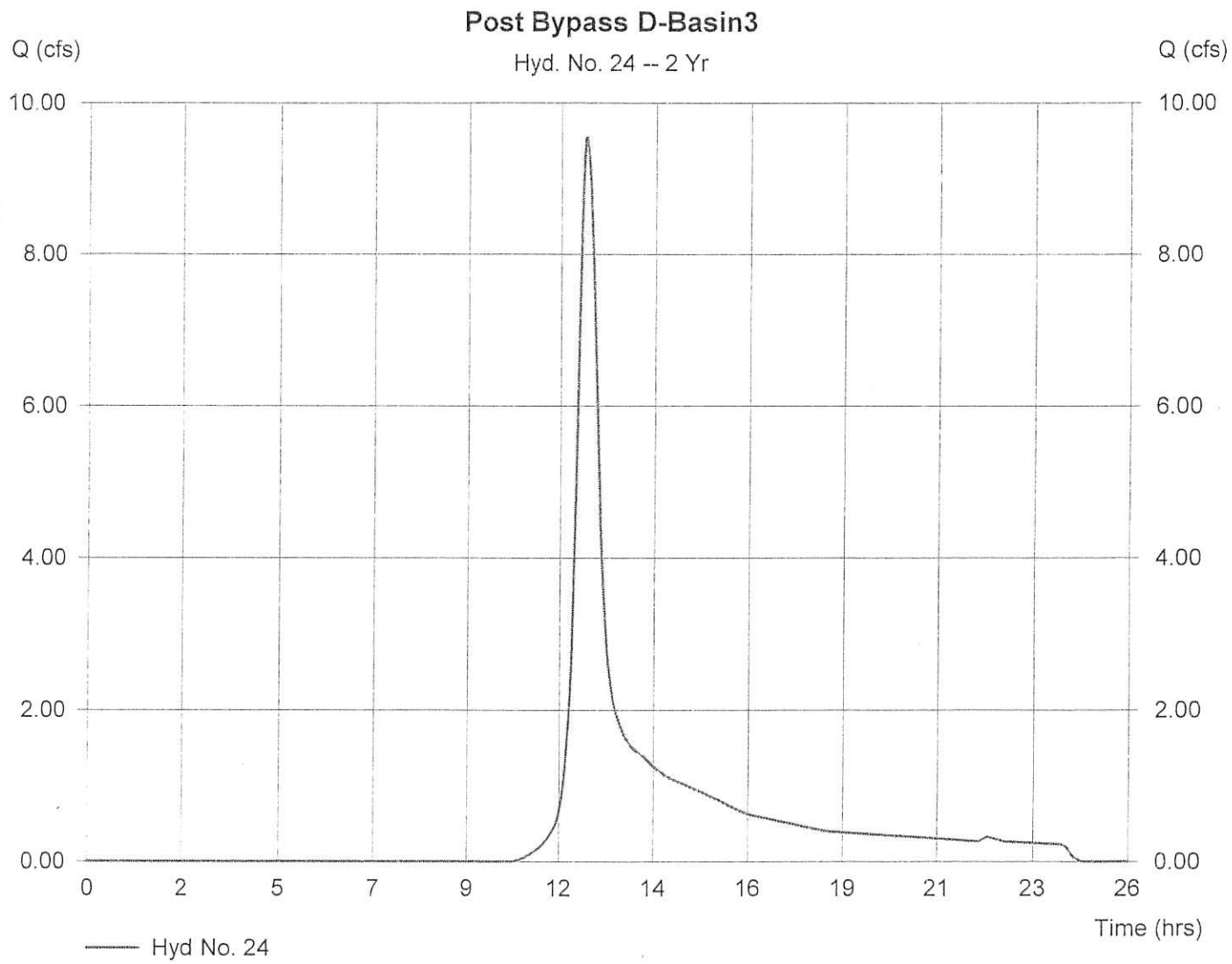
Hydrograph Plot

Hyd. No. 24

Post Bypass D-Basin3

Hydrograph type	= SCS Runoff	Peak discharge	= 9.546 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Drainage area	= 10.940 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 20.90 min
Total precip.	= 3.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 47,350 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

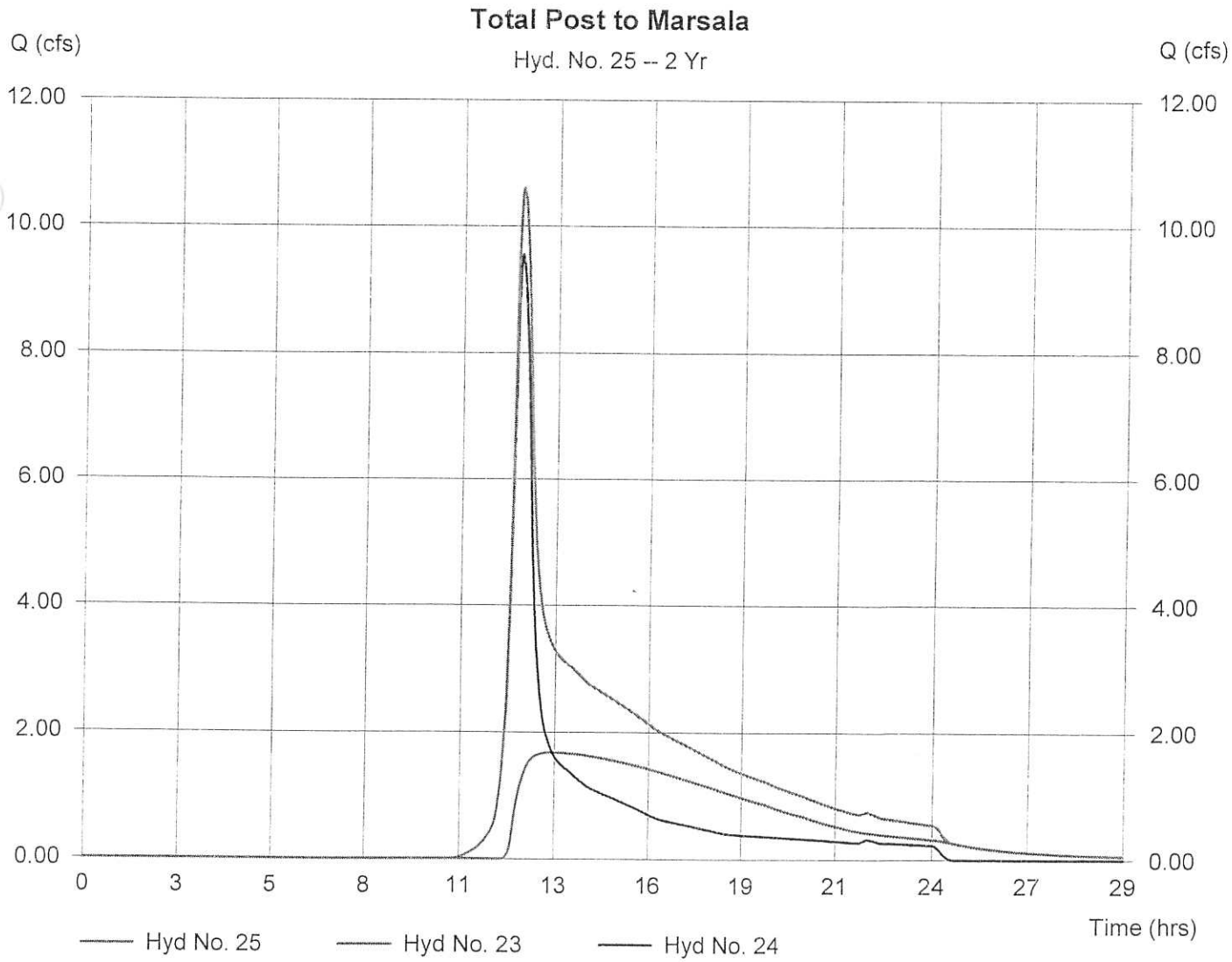
Friday, Jun 12 2009, 10:0 AM

Hyd. No. 25

Total Post to Marsala

Hydrograph type	= Combine	Peak discharge	= 10.60 cfs
Storm frequency	= 2 yrs	Time interval	= 2 min
Inflow hyds.	= 23, 24		

Hydrograph Volume = 95,901 cuft



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	17.14	2	738	84,415	----	------	------	Area E1-Pre to Gay Hill Rd
2	SCS Runoff	4.637	6	738	24,213	----	------	------	Area E2-Pre to Videll
3	SCS Runoff	1.979	2	736	9,403	----	------	------	Area E3- Pre to Champion
4	SCS Runoff	1.597	2	730	6,542	----	------	------	Area E4-Pre to Fernandez
5	SCS Runoff	21.17	2	750	133,862	----	------	------	Area E8-Pre to Evans
6	SCS Runoff	6.601	2	738	32,642	----	------	------	Area E6-Pre to Souza
7	SCS Runoff	4.685	2	738	23,165	----	------	------	Area E7-Pre to Jensen
8	SCS Runoff	27.97	2	746	160,298	----	------	------	Area E8-Pre to Marsala
9	SCS Runoff	4.948	2	732	21,901	----	------	------	Post to D-Basin1
10	Reservoir	2.020	2	754	21,246	9	317.28	6,840	Outflow D-Basin1
11	SCS Runoff	13.78	2	738	67,848	----	------	------	Post Bypass D-Basin1
12	Combine	15.53	2	738	89,094	10, 11	------	------	Total Post to Gay Hill Rd
13	SCS Runoff	3.951	2	736	18,685	----	------	------	Area E2-Post to Videll
14	SCS Runoff	1.983	2	736	9,383	----	------	------	Area P36-Post to Champion
15	SCS Runoff	1.589	2	730	6,469	----	------	------	Area P35-Post to Fernandez
16	SCS Runoff	4.987	2	724	15,016	----	------	------	Post to D-Basin2
17	Reservoir	1.506	2	742	14,732	16	335.29	4,042	Outflow D-Basin2
18	SCS Runoff	19.25	2	744	110,002	----	------	------	Post Bypass D-Basin2
19	Combine	20.76	2	744	124,734	17, 18	------	------	Total Post to Evans
20	SCS Runoff	5.641	2	738	27,803	----	------	------	Area P33-Post to Souza
21	SCS Runoff	4.728	2	738	23,305	----	------	------	Area P32-Post to Jensen
22	SCS Runoff	23.39	2	736	110,926	----	------	------	Post to D-Basin3
23	Reservoir	2.702	2	818	106,845	22	339.42	59,501	Outflow D-Basin3
24	SCS Runoff	23.60	2	736	111,934	----	------	------	Post Bypass D-Basin3
25	Combine	25.58	2	736	218,779	23, 24	------	------	Total Post to Marsala

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

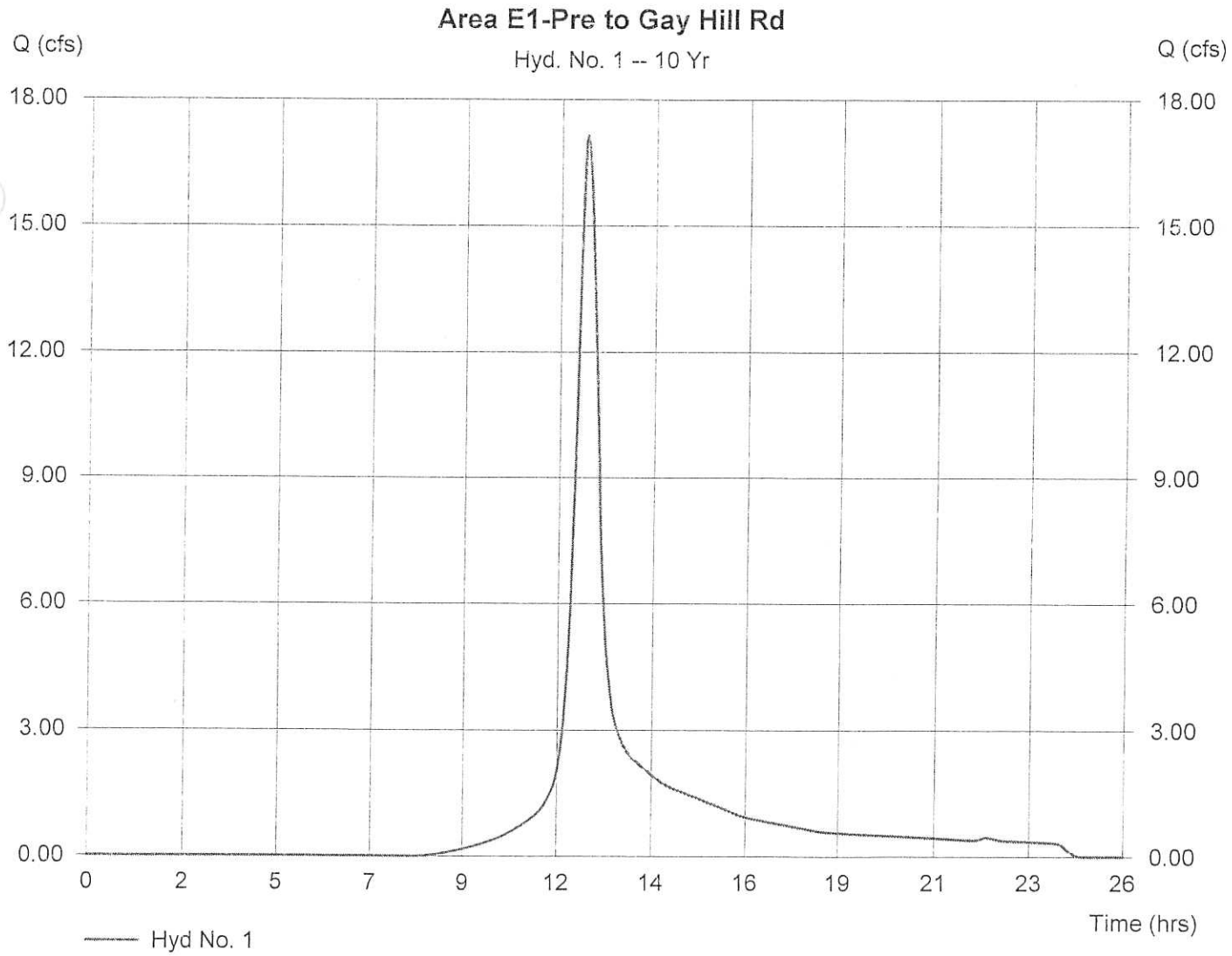
Friday, Jun 12 2009, 10:0 AM

Hyd. No. 1

Area E1-Pre to Gay Hill Rd

Hydrograph type	= SCS Runoff	Peak discharge	= 17.14 cfs
Storm frequency	= 10 yrs	Time interval	= 2 min
Drainage area	= 8.000 ac	Curve number	= 76
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 25.20 min
Total precip.	= 5.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 84,415 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

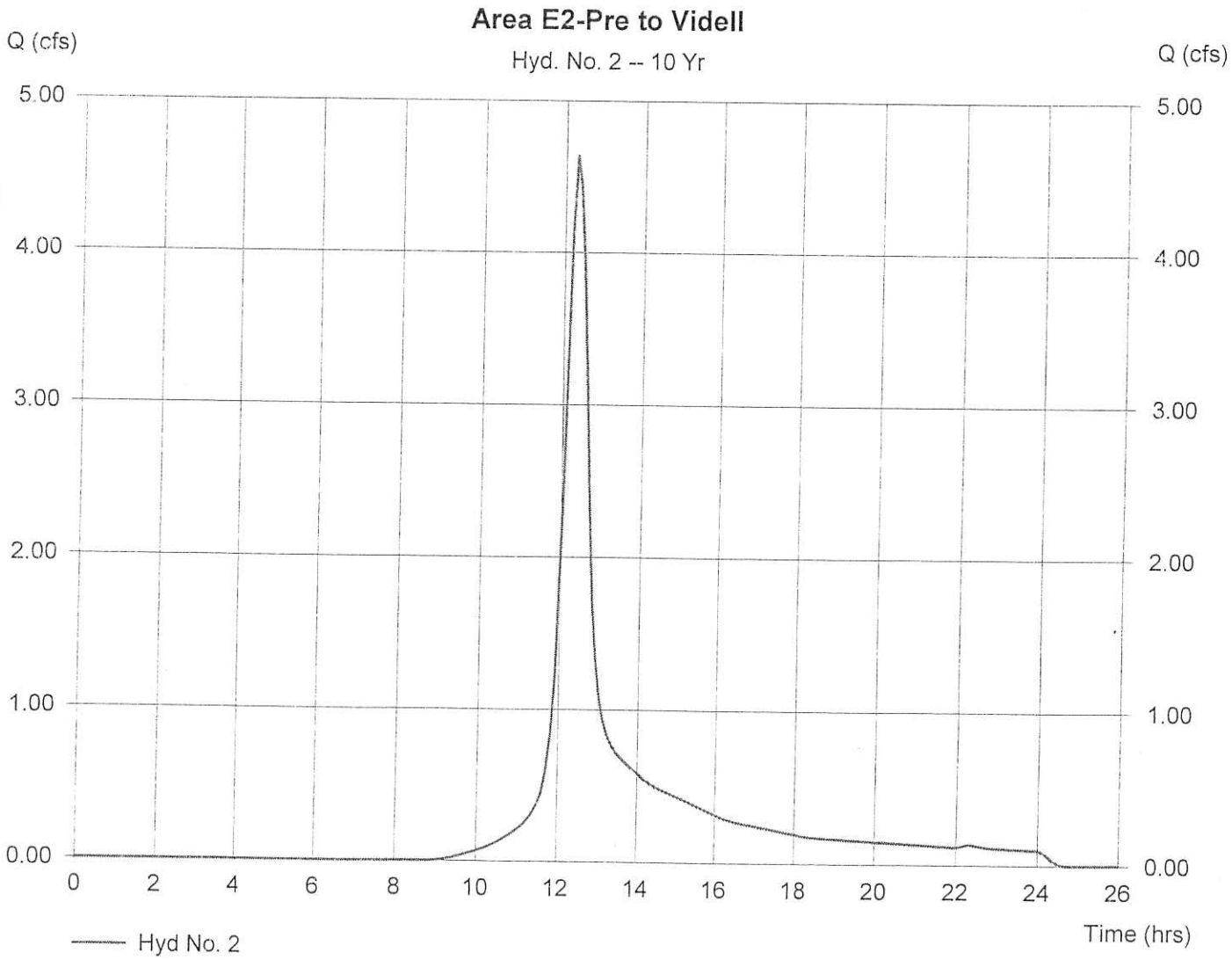
Friday, Jun 12 2009, 10:0 AM

Hyd. No. 2

Area E2-Pre to Videll

Hydrograph type	= SCS Runoff	Peak discharge	= 4.637 cfs
Storm frequency	= 10 yrs	Time interval	= 6 min
Drainage area	= 2.490 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 22.38 min
Total precip.	= 5.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 24,213 cuft



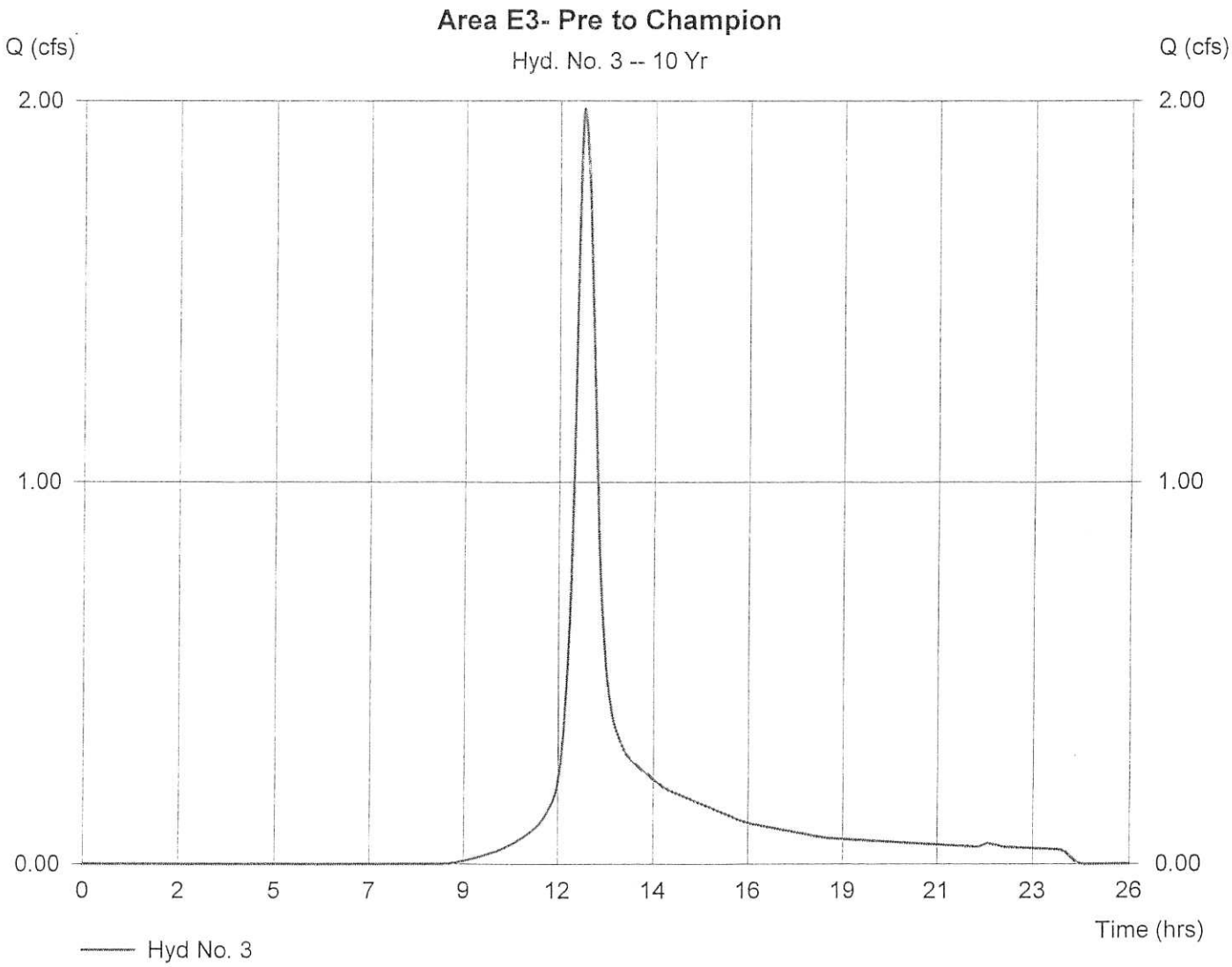
Hydrograph Plot

Hyd. No. 3

Area E3- Pre to Champion

Hydrograph type	= SCS Runoff	Peak discharge	= 1.979 cfs
Storm frequency	= 10 yrs	Time interval	= 2 min
Drainage area	= 0.950 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 22.60 min
Total precip.	= 5.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 9,403 cuft



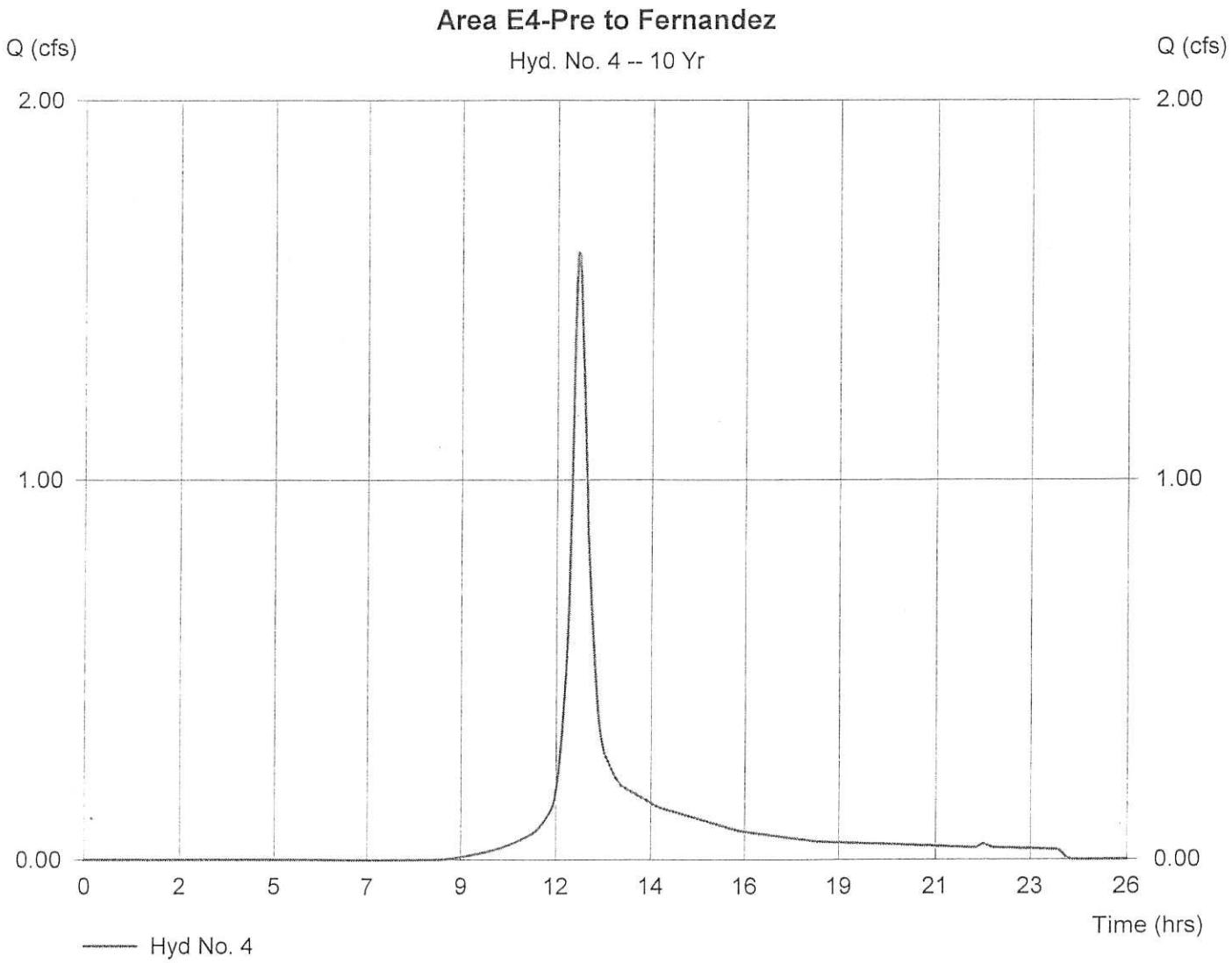
Hydrograph Plot

Hyd. No. 4

Area E4-Pre to Fernandez

Hydrograph type	= SCS Runoff	Peak discharge	= 1.597 cfs
Storm frequency	= 10 yrs	Time interval	= 2 min
Drainage area	= 0.690 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 14.76 min
Total precip.	= 5.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 6,542 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

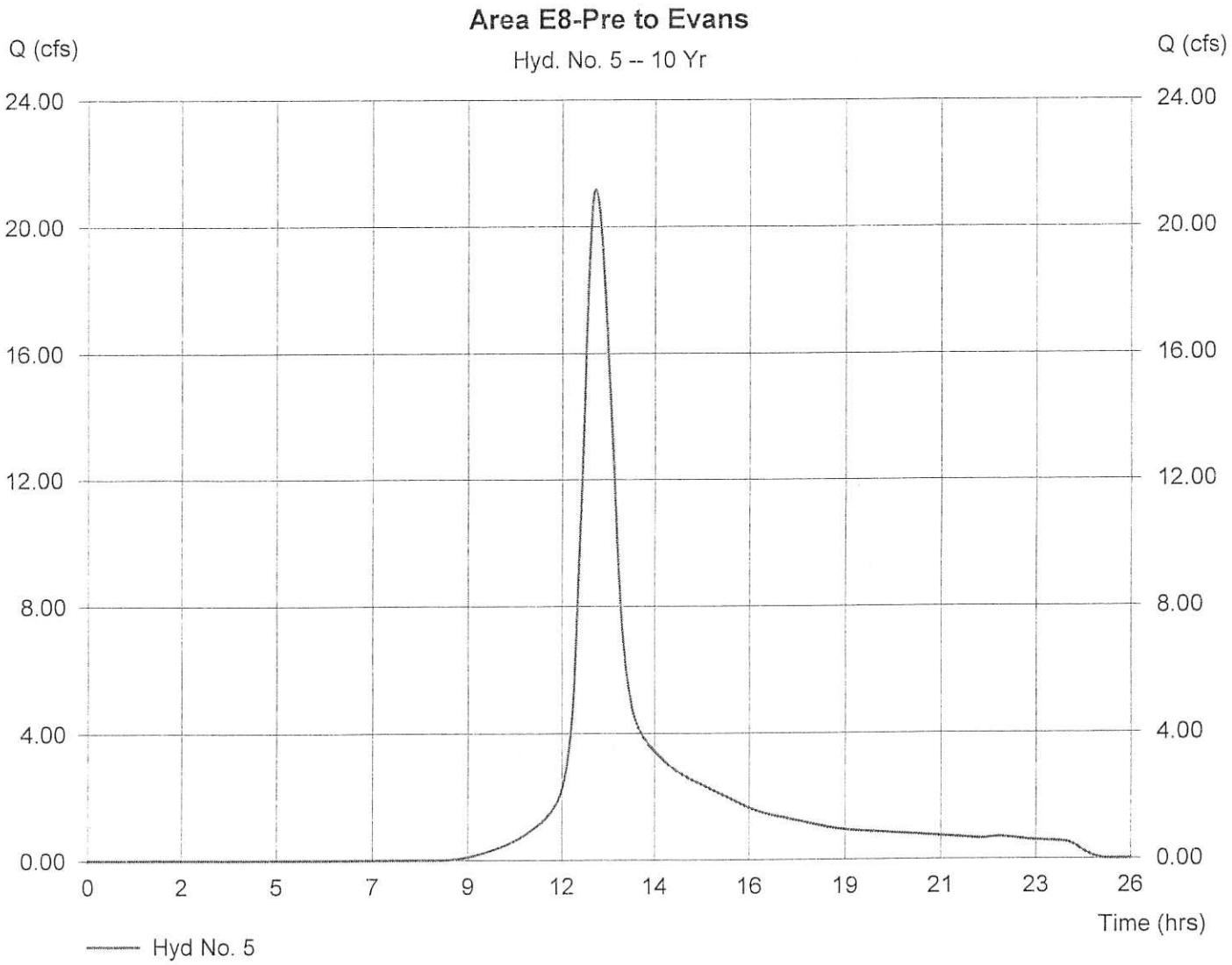
Friday, Jun 12 2009, 10:0 AM

Hyd. No. 5

Area E8-Pre to Evans

Hydrograph type	= SCS Runoff	Peak discharge	= 21.17 cfs
Storm frequency	= 10 yrs	Time interval	= 2 min
Drainage area	= 13.190 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 40.80 min
Total precip.	= 5.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 133,862 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Friday, Jun 12 2009, 10:0 AM

Hyd. No. 6

Area E6-Pre to Souza

Hydrograph type	= SCS Runoff	Peak discharge	= 6.601 cfs
Storm frequency	= 10 yrs	Time interval	= 2 min
Drainage area	= 3.410 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 24.30 min
Total precip.	= 5.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 32,642 cuft