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CONCEPT DRAINAGE REPORT

LORSON RANCH

SKETCH PLAN AMENDMENT

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JANUARY 20, 2015

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CORE
ENGINEERING GROUP

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1. General Location and Description

1.A. Location

The proposed Lorson Ranch Development is located portions of the north half of Section 23, the north half of Section 24, the south half of Section 13, the south half of Section 14 and the northeast quarter of Section 22 east of the county road known as Marksheffel Road, except any portion of said northeast quarter within the north lot of Brownsville Subdivision No.2 as recorded in plat book H-6 at page 81 of the County of El Paso, State of Colorado Records. The site consists of 1,400 acres, more or less, all in Township 15 South, Range 65 West of the 6th P.M., County of El Paso, State of Colorado.

As shown on the Vicinity Map included in Appendix A, the property is situated on both sides of Jimmy Camp Creek and its East Tributary, which run from north to south through the property. The property is bounded on the west by Marksheffel Road, and on the east by existing ranch land and the future Meridian Road. On the north the property is bounded by Banning Lewis Ranch, an undeveloped rural area within the City of Colorado Springs, and on the south by Peaceful Valley Estates, a residential subdivision and vacant golf course within El Paso County.

1.B. Description of Property

The site consists of developed, undeveloped areas, as well as land uses for agriculture and ranching. Jimmy Camp Creek flows from north to south near the western boundary. The East Tributary of Jimmy Camp Creek (which will be hereafter referred to as the East Tributary) enters the site at the center of the northern boundary, flowing south. In the southern part of the site, it turns west, turning south again before it reaches the main channel of Jimmy Camp Creek south of Lorson Ranch in the vacant golf course. The majority of the land between the two drainageways has been developed as part of Lorson Ranch. The land west of Jimmy Camp Creek is fairly flat, with slopes less than 2%. The land east and south of the East Tributary consists of hilly terrain with slopes up to 12%.

The owner plans to construct residential development, varying from low to high density, including schools and parks on the site. One commercial center is planned to be located at the west end of the site near Marksheffel Road. The electrical easement with transmission towers in it running through the eastern portion of the site will be set aside as open space and detention ponds. Fontaine Boulevard will be extended through the site as a major roadway. Local and collector roads will be constructed for access throughout the site. Please see the Drainage Plan located in the back folder of this report for an overview of the site plan.

2. Drainage Basins and Sub-Basins

2.A. Major Basin Description

The majority of the property is located in the Jimmy Camp Creek Basin. The majority of the site drains either to Jimmy Camp Creek or to the East Tributary, which both flow south/southwest towards the southwest comer of the property. A small portion of the southwest comer of the site drains away from Jimmy Camp Creek off of the property, where it drains into a small drainageway that returns to Jimmy Camp Creek further south. A portion of the southeast comer of the property drains to the southeast and is tributary to Williams Creek. The Jimmy Camp Creek Drainage Planning Study prepared by Kiowa Engineering will be used as a criteria reference for this design since it assumes full spectrum detention ponds in the developed conditions flow which should be adopted by El Paso County in January, 2015. The original 100-year floodplain boundary for the property is shown on map number 08041C0957-F of the FEMA Flood Insurance Rate Map for El Paso County, Colorado dated March 17,1997 shown in Appendix B. In addition, Lorson Ranch has submitted and has received approval for two LOMR's on Lorson Ranch. The revised floodplain is shown on an exhibit in Appendix B. The floodplain limits are shown on the Drainage Plan included with this report. All proposed building envelopes for the subdivision will be located out of the post-development floodplain.

2.B. Sub-Basin Description

The existing topography consists of areas with slopes varying from 0.5% to up to 12%.
The development of this site will maintain the existing drainage patterns to the extent possible. Storm runoff will be directed to Jimmy Camp Creek and the East Tributary via overland flow, street and pipe flow, and open channel flow. Any channels or swales will be designed with erosion protection as necessary.

3. Drainage Design Criteria

3.A. Regulations

Drainage facilities have been analyzed in accordance with the *El Paso County Drainage Criteria Manual,* El Paso County, Colorado (The Criteria) for the 5-year and 100-year storms.

3.B. Development Criteria Reference and Constraints

The following reports and plans were reviewed in the process of preparing this drainage sketch plan:

1. *"Drainage Report for Sketch Plan Submittal for Lorson Ranch," prepared by Drexel, Barrell & Co, dated January 27, 2004.*
2. *"City of Colorado Springs/El Paso County Drainage Criteria Manual",* prepared by City of Colorado Springs, El Paso County, dated October 1987, revised 1991.
3. *Jimmy Camp Creek Drainage Planning Study,* prepared by Kiowa Engineering Corporation for Banning Lewis Ranch, dated January, 2009.

3.C. Hydrological Criteria

The design rainfall listed in the Criteria is the 5-year rainfall event for the minor storm and the 100-year rainfall event for the major storm. Per El Paso County criteria, the Rational Method was utilized to calculate runoff for basins less than 100 acres. This study did not calculate flows in either Jimmy Camp or the East Tributary but will use the flows calculated by Kiowa Engineering DBPS for JCC. The Soil Conservation Service (SCS) Hydrograph Procedure as described in the Criteria used to calculate runoff for basins in excess of 100 acres was not used since the DBPS runoff rates are used.

A hydrologic analysis for Lorson Ranch was performed utilizing Hydraflow Hydrographs software to determine the 5-year and 100-year runoff flows before and after development.

Undeveloped basins consist of native grass that has been grazed. There are a few trees on the undeveloped portions of the site and are mainly located next to the East Tributary. Developed portions of this site consist of typical urban development and one townhome development.

Basin A1

Basin A1 consists of existing lots developed as Meadows Filing No. 2&2a , Fontaine Boulevard, and Old Glory Drive. Runoff flows south in curb/gutter and storm sewer to existing Pond A1 where runoff is detained and treated for water quality. The total developed flow from this 57acre basin entering Pond A1 is 115cfs/238cfs for the 5/100-year storm event.

Basin A2

Basin A2 consists of existing lots developed as Ponderosa Filing No. 1 & 2 and Fontaine Boulevard. Runoff flows southwest in curb/gutter and storm sewer to existing Pond A2 where it is detained prior to entering storm sewer which flows to Pond A1. The total developed flow from this 21.6acre basin entering Pond A2 is 42.7cfs/88.6cfs for the 5/100-year storm event. This existing pond does not include water quality which is provided in existing Pond A1.

Basin A3
Basin A3 consists of existing lots developed as Ponderosa Filing No. 1, a vacant parcel (assumed to be developed), and Old Glory Drive. Runoff flows southwest overland and in curb/gutter and storm sewer to Future Pond A3. At Design Point A3 existing storm sewer picks up the runoff and conveys it southwest to Pond A1 where runoff is detained and treated for water quality. The total developed flow from this 15.8acre basin is 30cfs/76cfs for the 5/100-year storm event. This flow does not include outflow from Pond A4. The future pond A3 will need to be sized so the existing storm does not exceed the capacity of the existing storm sewer system in Old Glory Drive when the vacant lot is developed.

Basin A4
Basin A4 consists of existing lots developed as Pioneer Landing Filing No. 1 & 1a and a portion of Townhomes at Lorson Ranch. Runoff flows south in curb/gutter and storm sewer to existing Pond A4 where runoff is detained and treated for water quality. The total developed flow from this 21.2acre basin entering Pond A4 is 39.5cfs/82cfs for the 5/100-year storm event.

Basin A5
Basin A5 consists of existing lots developed as Buffalo Crossing Filing 1 & 2 and a portion of Townhomes at Lorson Ranch. Runoff flows southwest in curb/gutter and storm sewer to existing Pond A5 where runoff is detained and treated for water quality. The total developed flow from this 31acre basin entering Pond A5 is 60cfs/123cfs for the 5/100-year storm event.

Basin B1
Basin B1 consists of existing lots developed as Pioneer Landing Filing 1a, the future Pioneer Landing Filing No. 2 (assumed to be developed), Old Glory Drive, and Fontaine Boulevard. Runoff flows southeast in curb/gutter and storm sewer to existing Pond B1 where runoff is detained and treated for water quality. The total developed flow from this 52.5acre basin entering Pond B1 is 98.4cfs/204.2cfs for the 5/100-year storm event. Existing Pond B1 will need to be modified when Pioneer Landing Filing No. 2 is developed to meet the discharge conditions set in the approved MDDP1 for Lorson Ranch.

Basin B2
Basin B2 consists of existing lots developed as Meadows Filing No. 3. Runoff flows southeast in curb/gutter and storm sewer to existing Pond B2 where runoff is detained and treated for water quality. The total developed flow from this 38.3acre basin entering Pond B2 is 87.9cfs/195.5cfs for the 5/100-year storm event.

Basin B3
Basin B3 consists of vacant land. Runoff flows south overland to the East Tributary of Jimmy Camp Creek. The total undeveloped flow from this 6.8acre basin is 7.9cfs/18.7cfs for the 5/100-year storm event. When this basin is developed it will be required to detain developed flow to existing amounts including water quality.

Basin C1
Basin C1 consists of existing lots developed as Meadows Filing No. 4, Allegiant, and a portion of Meadows Filing No. 1. Runoff flows south in curb/gutter and storm sewer to existing Pond C1 where runoff is detained and treated for water quality. The undeveloped portions of this basin adjacent to the East Tributary are assumed to be developed since Pond C1 is designed to accept that flow. The total developed flow from this 110.5acre basin entering Pond C1 is 210cfs/435cfs for the 5/100-year storm event.

Basin C3
Basin C3 consists of lots developed as Meadows Filing No. 4. Runoff flows south in curb/gutter and storm sewer to Pond C3 where runoff is detained and treated for water quality prior to discharging to Jimmy Camp Creek. The total developed flow from this 14.8acre basin entering Pond C3 is 30.9cfs/64.1cfs for the 5/100-year storm event.

Basin C4
Basin C4 consists of vacant land adjacent to the East Tributary. Runoff flows south overland to the East Tributary of Jimmy Camp Creek. The total undeveloped flow from this 21.5acre basin is 21.3cfs/50.4cfs for the 5/100-year storm event. When this basin is developed it will be required to detain developed flow to existing amounts including water quality.

Basin D
Basin D consists of runoff from Carriage Meadows which was approved but hasn't been built yet. Runoff flows southeast via curb/gutter and storm sewer to a proposed detention pond and to the existing FMIC drainage ditch diversion. The drainage ditch diversion was constructed in 2006 and includes a storm sewer outfall for Carriage Meadows. Refer to the approved drainage report for Carriage Meadows. The total flow from this 27.5acre basin is 41.4cfs/86.8cfs for the 5/100-year storm event.

Basin F
Basin F consists of vacant land. Runoff flows west overland to the East Tributary of Jimmy Camp Creek. The total undeveloped flow from this 466acre basin is xcfs/xxxcfs for the 5/100-year storm event. When this basin is developed it will be required to detain developed flow to existing amounts prior to entering the East Tributary of Jimmy Camp Creek.

Basin G
Basin G consists of vacant land. Runoff flows west overland to the East Tributary of Jimmy Camp Creek. The total undeveloped flow from this 92.1acre basin is 65.2cfs/158.8cfs for the 5/100-year storm event. When this basin is developed it will be required to detain developed flow to existing amounts prior to entering the East Tributary of Jimmy Camp Creek.

Basin H
Basin H consists of vacant land. Runoff flows northwest overland to the East Tributary of Jimmy Camp Creek. The total undeveloped flow from this 181.7acre basin is xcfs/xxcfs for the 5/100-year storm event. When this basin is developed it will be required to detain developed flow to existing amounts prior to entering the East Tributary of Jimmy Camp Creek.

Basin J
Basin J consists of vacant land on Lorson Ranch and existing residential developments in the City of Fountain, and the existing large lot rural subdivision in El Paso County. Runoff flows north overland to the East Tributary of Jimmy Camp Creek. The total flow from this 58.2acre basin is 99cfs/219.1cfs for the 5/100-year storm event. When this basin is developed it will be required to detain developed flow from Lorson Ranch only and the offsite flow to existing amounts prior to entering the East Tributary of Jimmy Camp Creek.

Basin K
Basin K consists of vacant land in the northeast corner of Lorson Ranch. Runoff flows northwest overland and drains offsite to the north. The total undeveloped flow from this 16.1acre basin is 17.6cfs/41.7cfs for the 5/100-year storm event. When this basin is developed it will be required to detain developed flows to existing amounts prior to discharging to the north including water quality.

Basin L
Basin L consists of vacant land in the east end of Lorson Ranch. Runoff flows east overland and drains offsite to the east. The total undeveloped flow from this 40.5acre basin is 36.9cfs/87.4cfs for the 5/100-year storm event. When this basin is developed it will be required to detain developed flows to existing amounts prior to discharging to the east including water quality.

Basin M
Basin M consists of vacant land in the southeast corner of Lorson Ranch. Runoff flows south overland and drains offsite to the south. The total undeveloped flow from this 14.4acre basin is 16cfs/38.1cfs for

the 5/100-year storm event. When this basin is developed it will be required to detain developed flow to existing amounts prior to discharging to the south including water quality.

Basin N
Basin N consists of vacant land in the southeast corner of Lorson Ranch. Runoff flows south overland and drains offsite to the south. The total undeveloped flow from this 26acre basin is 26.8cfs/64.7cfs for the 5/100-year storm event. When this basin is developed it will be required to detain developed flow to existing amounts prior to discharging to the south including water quality.

Basin OS-1
Basin OS-1 is an offsite basin consisting of Cottonwood Meadows Filing No. 1 and 2 and Marksheffel Road. This basin was studied in great detail in the FDR for Marksheffel Road 280 lot subdivision. Runoff flows east via curb/gutter and storm sewer to an existing detention pond adjacent to the FMIC Irrigation Channel. The pond discharge enters the FMIC Channel and flows east picking up additional flow from Marksheffel Road and continues east. The flow reaches the future Carriage Meadows Drive where the stormwater is diverted from the channel into Jimmy Camp Creek via an existing diversion structure. See Design Point O1 for flow amounts.

Basin OS-2
Basin OS-2 is an offsite basin consisting of the future Peaceful Ridge subdivision and Marksheffel Road. This basin was studied in great detail in the FDR for Peaceful Ridge at Fountain Valley subdivision prepared by Kiowa Engineering. Runoff flows east via curb/gutter and storm sewer to a proposed detention pond adjacent to Marksheffel Road. The pond discharge enters the Marksheffel Road ditch and flows east under the road and enters Carriage Meadows on Lorson Ranch. Carriage Meadows is required to convey the flow east to Jimmy Camp Creek. See Design Point O2 and O3 for flow amounts.

Basin P
Basin P consists of vacant land west of Jimmy Camp Creek. Runoff flows south overland and drains to Jimmy Camp Creek. The total undeveloped flow from this 87.3acre basin is 55.1cfs/130.6cfs for the 5/100-year storm event. When this basin is developed it will be required to detain developed flow to existing amounts prior to discharging to Jimmy Camp Creek including water quality.

Basin Q
Basin Q consists of vacant land in the southwest corner of Lorson Ranch. Runoff flows southwest overland and drains offsite to the south. The total undeveloped flow from this 27.1acre basin is 16.5cfs/39.2cfs for the 5/100-year storm event. When this basin is developed it will be required to detain developed flow to existing amounts prior to discharging to the south including water quality.

4. Drainage Facility Design

4.A. General Concept
The Jimmy Camp Creek Drainage Planning Study by Kiowa Engineering evaluated sub-regional detention and full spectrum detention ponds within the DBPS boundaries and concluded that the full spectrum detention pond alternative was more feasible. El Paso County is currently going through the process of adopting the full spectrum detention which should be approved by the board in January 27, 2015. Future detention ponds in Lorson Ranch should implement full spectrum detention ponds which will restrict developed runoff to existing runoff rates flowing into Jimmy Camp Creek and the East Tributary. The middle portions of Lorson Ranch have already been constructed using conventional detention ponds which will be allowed to remain as constructed with no modifications including Carriage Meadows. Water quality Best Management Practices (BMP's) will be implemented at the time of development.

The general drainage concept for the proposed Lorson Ranch subdivision is to direct storm water runoff utilizing swales, curb and gutter and storm sewer to detention ponds that discharge either to Jimmy Camp Creek or to its East Tributary. Offsite flows enters the project site as shown on the Offsite Basin Map in Appendix D. Any tributary offsite flow will be routed through the Lorson Ranch property to their respective drainageways in properly designed swales, channels, storm sewer, or sheet flow as the drainage and site design progresses beyond the Sketch Plan level.

Runoff that is not tributary to these two drainageways will be maintained at historic levels using detention ponds to regulate flows. The existing Fontaine Boulevard currently crosses Jimmy Camp Creek via a bridge. Fontaine Boulevard will cross the East Tributary via box culverts. All runoff from Jimmy Camp Creek and its East Tributary 100 year events will flow under these drainage structures. Jimmy Camp Creek has been channelized through Lorson Ranch and the followup LOMR has been approved by FEMA. The East Tributary has been partially channelized and a LOMR has been approved by FEMA. The remaining portions of the East Tributary will remain but may require selective channel armoring on the outside bends which will be studied in future drainage reports as the adjacent subdivisions are developed.

4.B. Specific Details

Several on-site and off-site drainage basins have been identified as shown on the Drainage Plan in the back cover of this report. Offsite basins are shown on the map in an exhibit located in Appendix D. Runoff calculations are included in the Appendix. The appendix also contains the Future Land Use Maps for the area, which was utilized to determine runoff coefficients for developed flows.

The runoff calculations and design points for the on-site basins do not include the baseflow in Jimmy Camp Creek or the East Tributary. The existing runoff is calculated for on-site drainage areas at design points which have been strategically placed where proposed detention ponds will be located. This will allow the ponds to be sized to discharge developed runoff at existing rates.

The calculated existing flows from the JCC DBPS have been included in this report and are taken directly from the Kiowa Engineering DBPS for JCC. By limiting each on-site design point to existing rates the flow in JCC should remain the same throughout development of Lorson Ranch.

Design Point A1

Design Point A1 is located on Jimmy Camp Creek and is the discharge point for Pond A1. Tributary areas for this pond are fully developed and the pond does not need to be modified in the future. The total discharge at this design point is 47.5cfs/110.6cfs for the 5/100-year storm event.

Design Point A2

Design Point A2 is located within Ponderosa Filing No. 1 and is the discharge point for Pond A2. Tributary areas for this pond are fully developed and the pond does not need to be modified in the future. The total discharge at this design point is 15.8cfs/45.6cfs for the 5/100-year storm event.

Design Point A3

Design Point A3 is located within Ponderosa Filing No. 1 on a vacant lot and is the discharge point for a future Pond A3. Tributary areas for this pond are almost fully developed and the pond will not need to be full spectrum when it is built. The total discharge at this design point is 12.0cfs/43.6cfs for the 5/100-year storm event.

Design Point A4

Design Point A4 is located within Pioneer Landing Filing No. 1 and is the discharge point for Pond A4. Tributary areas for this pond are fully developed and the pond is constructed for the developed area. The total discharge at this design point is 3.3cfs/22cfs for the 5/100-year storm event.

Design Point A5
Design Point A5 is located within Buffalo Crossing and is the discharge point for Pond A5. Tributary areas for this pond are fully developed and the pond is constructed for the developed area. The total discharge at this design point is 9.5cfs/75cfs for the 5/100-year storm event.

Design Point B1
Design Point B1 is located within the future Pioneer Landing Filing No. 2 and is the discharge point for existing Pond B1. Tributary areas for this pond are assumed to be fully developed and the pond should be constructed for the developed area. It is possible to retrofit this pond to be full spectrum. There is an existing pond in this location but the bottom and outlet structure will need to be modified when Pioneer Landing 2 is developed. The total discharge at this design point is 4cfs/9cfs for the 5/100-year storm event.

Design Point B2
Design Point B2 is located within Meadows Filing No. 3 and is the discharge point for existing Pond B2. Tributary areas for this pond are fully developed and the pond has been constructed for the developed area. The total discharge at this design point is 9cfs/27.2cfs for the 5/100-year storm event.

Design Point C1
Design Point C1 is located south of Meadows Filing No. 4 and is the discharge point for existing Pond C1. Tributary areas for this pond are almost fully developed and the pond has been constructed for the developed area. The total discharge at this design point is 19.5cfs/75.5cfs for the 5/100-year storm event.

Design Point C3
Design Point C3 is located within Meadows Filing No. 4 and is the discharge point for existing Pond C3. Tributary areas for this pond are to be fully developed and the pond will be constructed for the developed area. The total discharge at this design point is 3cfs/28.2cfs for the 5/100-year storm event.

Design Point D1
Design Point D1 is located within Carriage Meadows and is the discharge point for Pond D1. Tributary areas for this pond are to be fully developed and the pond will be constructed for the developed area. Full spectrum will not be implemented in this pond due to the limited area available. The total discharge at this design point is 17.3cfs/28.4cfs for the 5/100-year storm event.

Design Point O1
Design Point O1 is located within Carriage Meadows and is in the FMIC irrigation channel. Tributary areas for this pond are fully developed and include base flows from the FMIC irrigation channel as outlined in the FDR for the 280 Lot intersection Plan for Marksheffel Road. The total discharge at this design point is 113cfs/214cfs for the 5/100-year storm event. The storm runoff is diverted from the irrigation baseflow just to the east of this design point at Carriage Meadows drive where a diversion structure is located.

Design Point O2
Design Point O2 is located within the Peaceful Ridge at Fountain Valley subdivision. Tributary areas for this pond will fully developed as outlined in the FDR for the Peaceful Ridge Subdivision. The total discharge at this design point is from the proposed pond and is 31cfs/79cfs for the 5/100-year storm event. The discharge enters an existing culvert under Marksheffel Road where Carriage Meadows will be required to convey the flow east to Jimmy Camp Creek.

Design Point O3
Design Point O3 is located within the Peaceful Ridge at Fountain Valley subdivision. Tributary areas for this pond will fully developed as outlined in the FDR for the Peaceful Ridge Subdivision. The total discharge at this design point is 41cfs/104cfs for the 5/100-year storm event. The discharge enters a

proposed culvert under Marksheffel Road (by Peaceful Ridge) where Carriage Meadows will be required to convey the flow east to Jimmy Camp Creek.

5. Conclusions

5.A. Compliance with Standards

The drainage design for the proposed Lorson Ranch residential subdivision has been performed in conformance with the *City of Colorado Springs/El Paso County Drainage Criteria Manual, Jimmy Camp Creek Drainage Planning Study,* and the *Urban Drainage and Flood Control District Drainage Criteria Manual.*

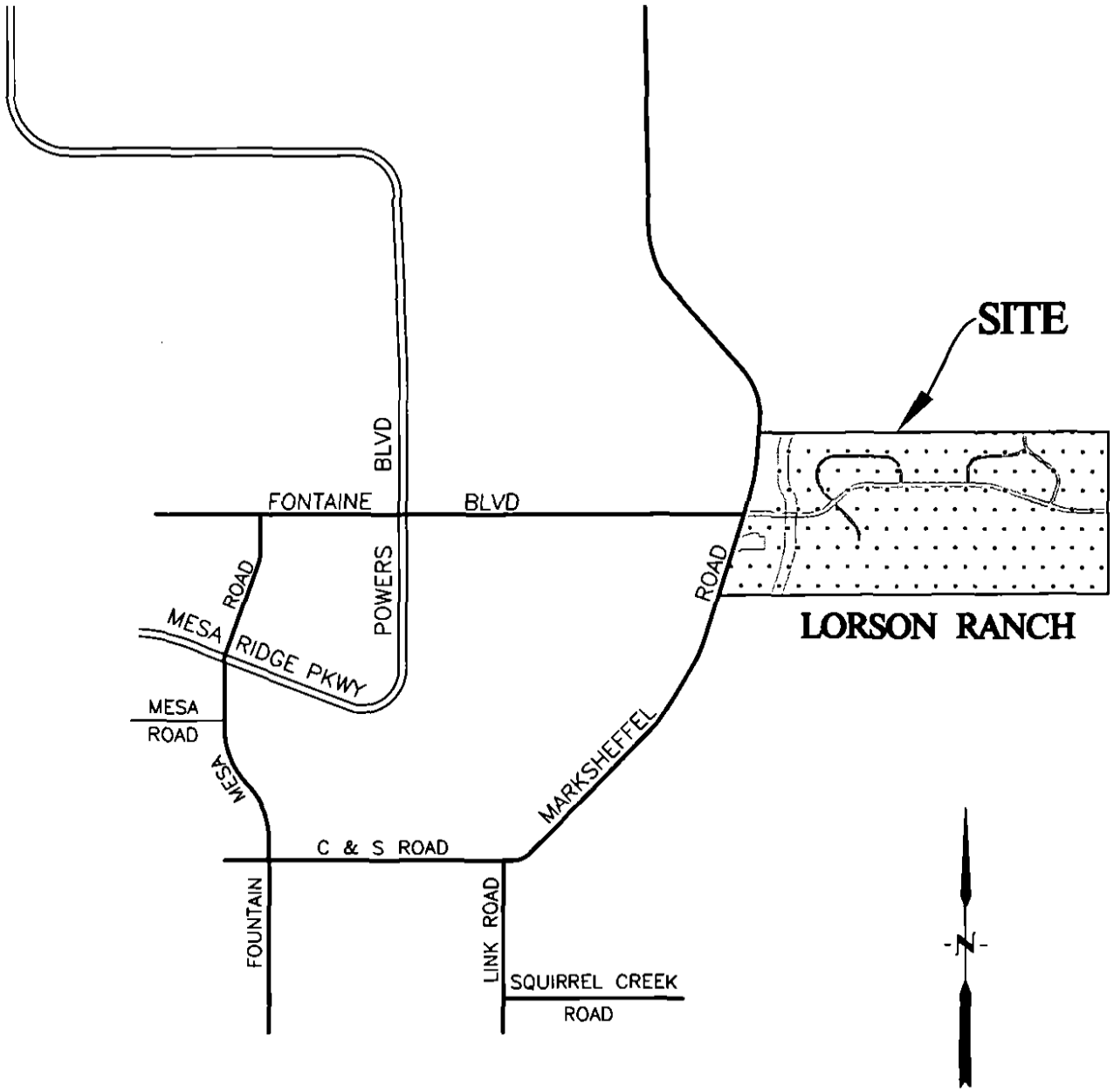
5.B. Drainage Concept

The overall design concept for the proposed residential subdivision, Lorson Ranch, will be designed to protect structures from the 100-year flood event. Existing drainage patterns will be maintained as much as possible following natural drainage corridors to the greatest extent possible. Drainage improvements will be provided to accommodate both the 5-year and 100-year storm events. A more complete, detailed analysis, including a Master Development Drainage Plan (MDDP), for this site will be submitted with the preliminary design phases for the remaining areas to be developed.

6. References

1. ***City of Colorado Springs/El Paso County Drainage Criteria Manual,*** Colorado Springs, Colorado, 1991
2. ***Sketch Plan Drainage Report,*** Drexel Barrell & Co, January 27, 2004
3. ***Jimmy Camp Creek Drainage Planning Study,*** Kiowa Engineering Corporation, January 27, 2009
4. ***Soil Survey of El Paso County Area, Colorado,*** U.S. Department of Agriculture, Soil Conservation Service.
5. ***Urban Storm Drainage Criteria Manual Volume* 1,** Urban Drainage and Flood Control District, Denver, Colorado, June 2001.
6. ***Urban Storm Drainage Criteria Manual Volume* 2,** Urban Drainage and Flood Control District, Denver, Colorado, June 2001.
7. ***Flood Insurance Rate Map,*** El Paso County, Colorado, Map Number 08041C0957-F, March 17, 1997
8. ***MDDP1 for Lorson Ranch,*** Pentacor Engineering, October, 2006
9. ***Marksheffel Road 280lot Intersection FDR, C***ore Engineering Group, May, 2008
10. ***Peaceful Ridge at Fountain Valley FDR,*** Kiowa Engineering, July, 2006

Appendix A



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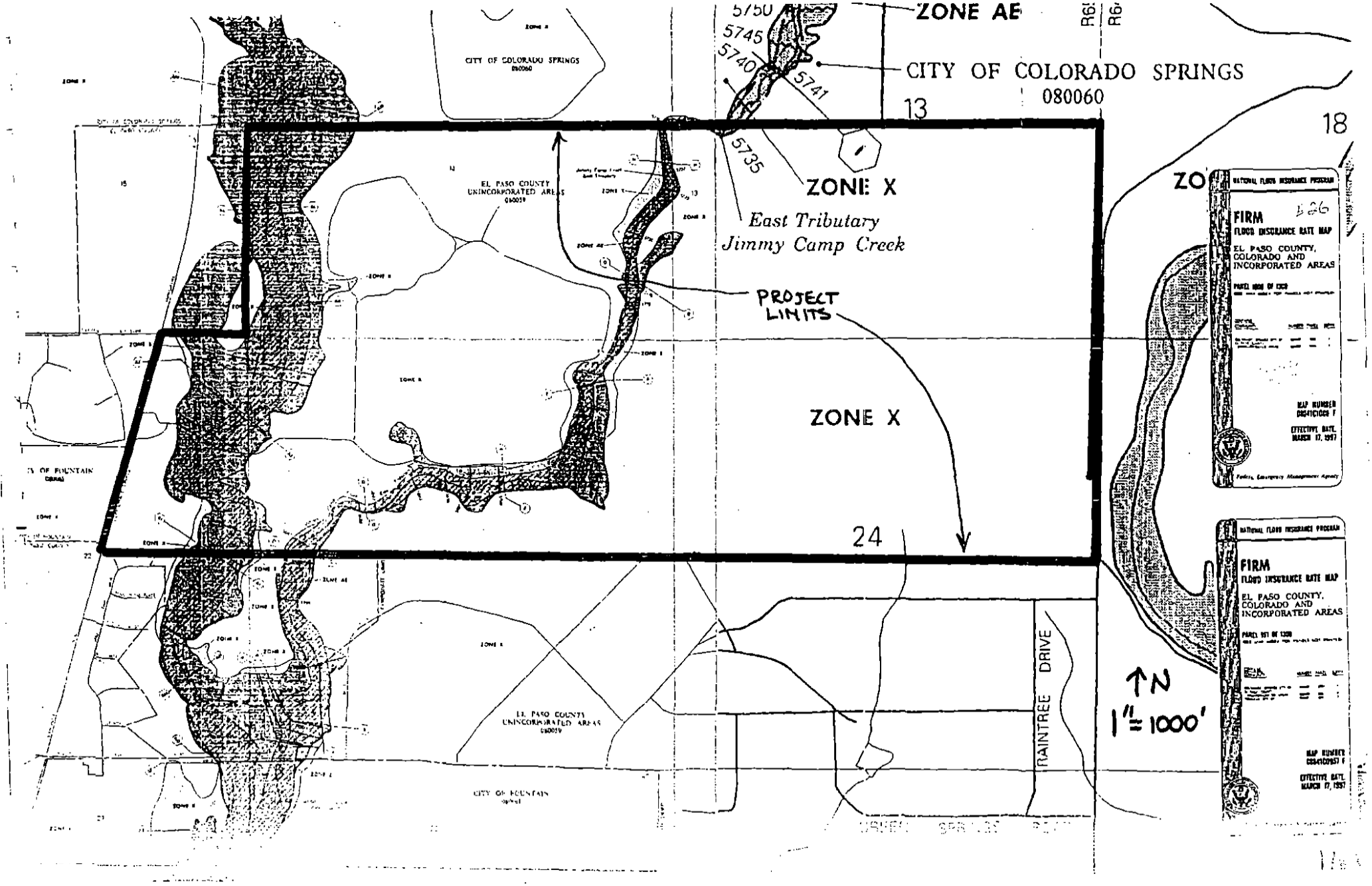
EMAIL: Rich@ceg1.com

LORSON RANCH SKETCH PLAN AMENDMENT
VICINITY MAP

SCALE:	DATE:	FIGURE NO.
NTS	JANUARY, 2015	1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CITY OF COLORADO SPRINGS
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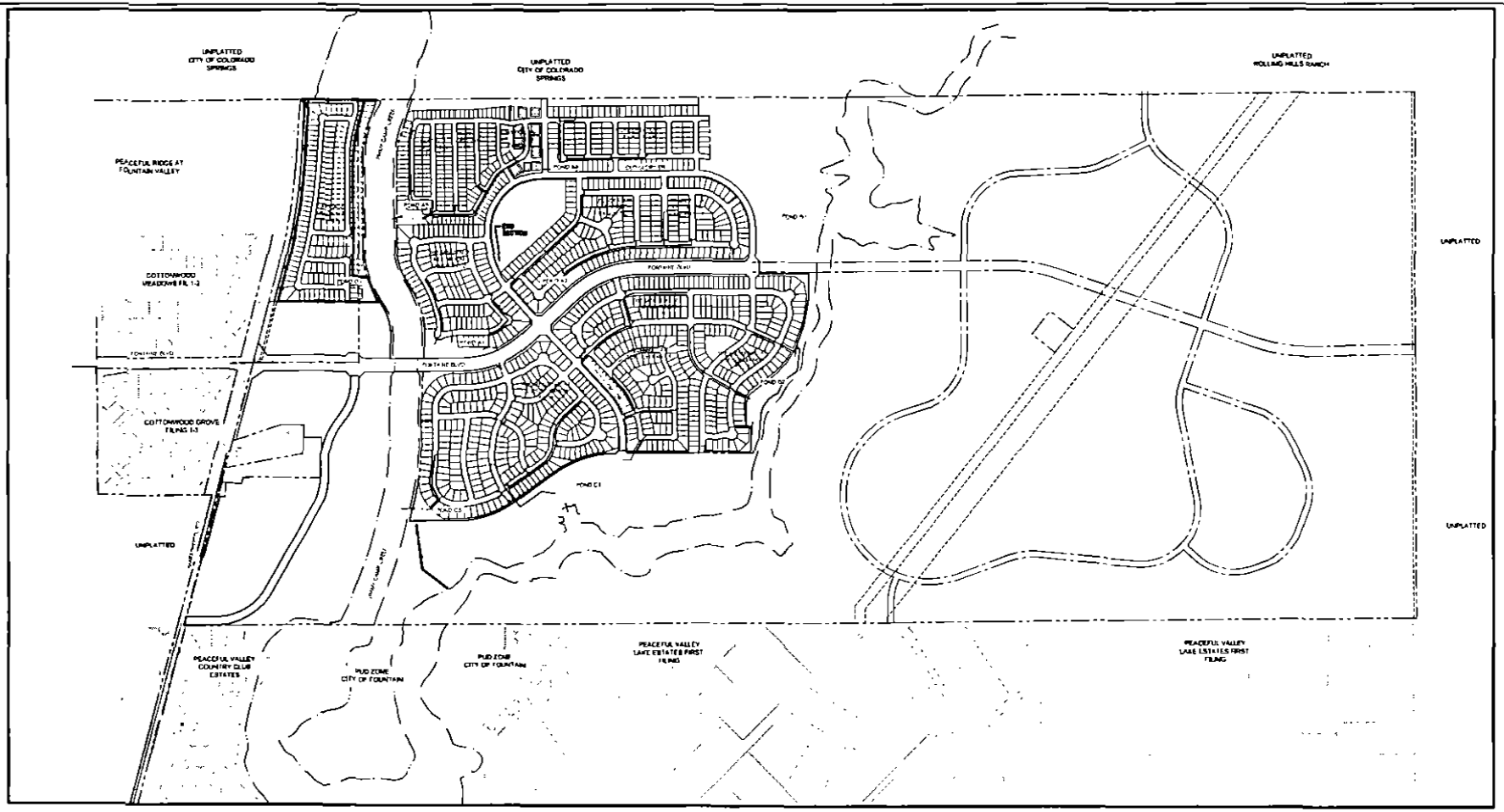
5745
5740
5741
5735
13
18
24
ZONE X
East Tributary
Jimmy Camp Creek
PROJECT LIMITS
ZONE X
EL PASO COUNTY
UNINCORPORATED AREAS
080059
CITY OF COLORADO SPRINGS
080060
CITY OF FOUNTAIN
080062
EL PASO COUNTY
UNINCORPORATED AREAS
080059
CITY OF FOUNTAIN
080062
RAINTREE DRIVE
N
1" = 1000'
FIRM
FLOOD INSURANCE RATE MAP
EL PASO COUNTY, COLORADO AND INCORPORATED AREAS
FIRM
FLOOD INSURANCE RATE MAP
EL PASO COUNTY, COLORADO AND INCORPORATED AREAS



LEGEND

REVISED FEMA FLOODPLAIN

N

SCALE 1"=500'

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LORSON SOUTH LAND CORP

LORSON RANCH
SKETCH PLAN AMENDMENT

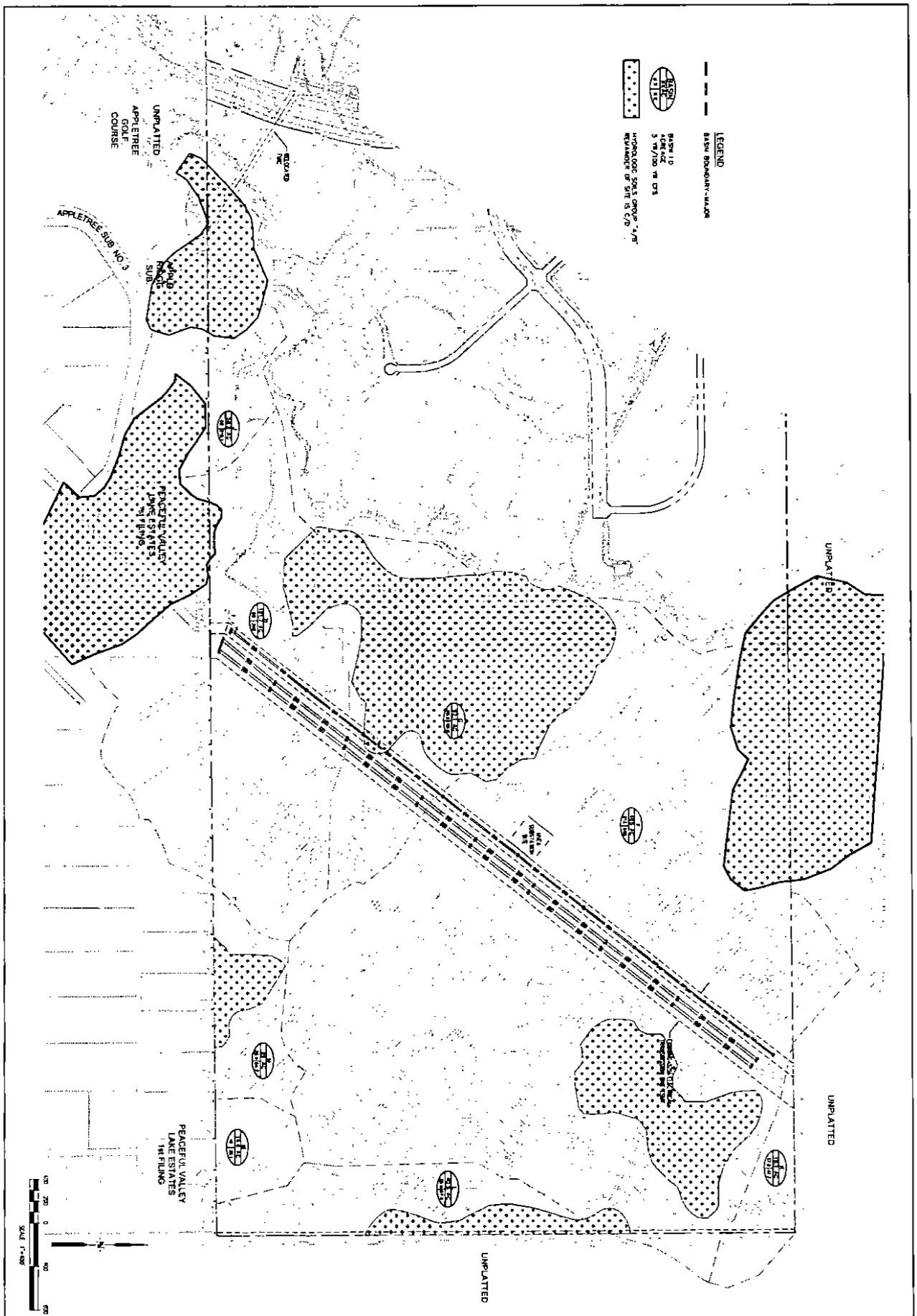
FEMA FLOODPLAIN
SKETCH PLAN AMENDMENT
REVISED BY LOMR'S

DATE
JANUARY, 2015

PROJECT NO.
100.029

SHEET NUMBER
1

TOTAL SHEETS: 1



SOILS MAP
SKETCH PLAN AMENDMENT
DRAINAGE REPORT

LORSON RANCH
SKETCH PLAN
EL PASO COUNTY COLORADO

PREPARED FOR
LORSON SOUTH DEV. CORP

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JANUARY, 2015

100.020

1

TOTAL SHEETS: 1

Appendix B

CORE
ENGINEERING GROUP

PROJECT NAME: Sketch Plan Amendment
PROJECT NUMBER: 100.029
ENGINEER: RLS
DATE: January, 2015

Basin	Area	Cover (%)	C5	Wtd. C5	C100	Wtd. C100			Type of Cover
B3.3	1.20	41.52%	0.30	0.12	0.45	0.19			backyard
	1.10	38.06%	0.65	0.25	0.75	0.29			houses
	0.59	20.42%	0.90	0.18	0.95	0.19			street
	2.89	100.00%		0.56		0.67			
A1.8	0.18	7.69%	0.30	0.02	0.45	0.03			
	1.05	44.87%	0.65	0.29	0.75	0.34			
	1.11	47.44%	0.90	0.43	0.95	0.45			
	2.34	100.00%		0.74		0.82			
A3	4.80	30.38%	0.80	0.24	0.90	0.27			ROW & backyards
	11.00	69.62%	0.60	0.42	0.70	0.49			future development
	0.00	0.00%	0.90	0.00	0.95	0.00			
	15.80	100.00%		0.66		0.76			
F	76.00	41.83%	0.45	0.19	0.55	0.23			Peaceful Valley
	105.70	58.17%	0.30	0.17	0.40	0.23			range land
	181.70	100.00%		0.36		0.46			
G	60.00	65.15%	0.25	0.16	0.35	0.23			Type A/B Hydr. Group
	32.10	34.85%	0.30	0.10	0.40	0.14			Type D/C Hydr. Group
	92.10	100.00%		0.27		0.37			
J	33.20	57.04%	0.50	0.29	0.60	0.34			Type A/B Hydr. Group-Peaceful Valley
	25.00	42.96%	0.30	0.13	0.40	0.17			Type D/C Hydr. Group
	58.20	100.00%		0.41		0.51			
N	10.00	38.46%	0.25	0.10	0.35	0.13			Type A/B Hydr. Group
	16.00	61.54%	0.30	0.18	0.40	0.25			Type D/C Hydr. Group
	26.00	100.00%		0.28		0.38			

CORE
ENGINEERING GROUP

15004 1st Avenue S.
Burnsville, MN 55306

PROJECT NAME: Sketch Plan Amendment for Lorson Ranch
PROJECT NUMBER: 100.029
ENGINEER: RLS
DATE: 01/20/2014

Sketch Plan Drainage Plan
EXISTING CONDITIONS HYDROLOGY CALCULATIONS

BASIN	CRITERIA REFERENCE[1]	A1	A2	A3	A4	A5	B1	B2	B3	C1	C3	C4	D	F	
AREA, A [ACRE]	-	57.00	21.60	15.80	21.20	31.00	52.50	38.30	6.80	110.50	14.80	21.50	27.50	466.00	
RUN-OFF COEFFICIENT, C5	-	0.60	0.60	0.66	0.60	0.65	0.60	0.60	0.30	0.60	0.60	0.30	0.56		
OVERLAND DROP [FT]	-	2.00	2.00	1.00	1.00	2.00	2.00	2.00	2.00	1.00	2.00	1.00	2.00	14.0	
OVERLAND FLOW LENGTH, L_O [FT]	-	100.00	100.00	50.00	50.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00	100.00	300.00	
OVERLAND SLOPE, S_O [%]	-	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	1.00%	2.00%	4.7%	
OVERLAND FLOW TIME, t_t [MIN]	-	7.1	7.1	4.4	5.1	6.4	7.1	7.1	11.4	5.1	7.1	14.4	7.7	18.5	
TRAVEL FLOW DROP [FT]	-	11.5	12.0	14.0	20.0	13.0	14.0	8.0	3.0	22.0	12.0	4.0	13.0	134.0	
TRAVEL FLOW LENGTH, Lt [FT]	-	1600.0	1700.0	2600.0	2500.0	2200.0	2000.0	1000.0	300.0	2500.0	1500.0	600.0	2500.0	5700.0	
TRAVEL SLOPE, S_t [%]	-	0.72%	0.71%	0.54%	0.80%	0.59%	0.70%	0.80%	1.00%	0.88%	0.80%	0.67%	0.52%	2.4%	
TRAVEL VELOCITY, V_t [FT/SEC]	"V"	2.50	2.48	2.16	2.64	2.27	2.47	2.64	2.95	2.77	2.64	2.41	2.13	3.07	
TRAVEL TIME, t_t [MIN]	-	10.7	11.4	20.0	15.8	16.2	13.5	6.3	1.7	15.1	9.5	4.2	19.6	31.0	
TIME OF CONCENTRATION, FROM TR55 t_c	t_t+t_t	17.8	18.6	24.5	20.8	22.6	20.7	13.5	13.1	20.1	16.6	16.6	27.3	49.5	
CURVE NUMBER														73.3	
5-YR RUN-OFF COEFFICIENT, C5	-	0.60	0.60	0.66	0.60	0.65	0.60	0.60	0.30	0.60	0.60	0.30	0.56	See SCS	
5-YR RAINFALL INTENSITY, I5 [IN/HR]	-	3.36	3.29	2.86	3.11	2.98	3.12	3.83	3.87	3.17	3.48	3.30	2.69	Hydroflow Calcs	
5-YR MAXIMUM RUN-OFF, Q5 [CFS]	Q=CIA	115.0	42.7	29.8	39.5	60.1	98.4	87.9	7.9	209.9	30.9	21.3	41.4	212.0	
100-YR RUN-OFF COEFFICIENT, C_{100}		0.70	0.70	0.76	0.70	0.75	0.70	0.75	0.40	0.70	0.70	0.40	0.66	See SCS	
100-YR RAINFALL INTENSITY, I_{100} [IN/HR]	-	5.98	5.86	5.08	5.53	5.30	5.56	6.81	6.88	5.63	6.18	5.86	4.78	Hydroflow Calcs	
100-YR MAXIMUM RUN-OFF, Q_{100} [CFS]	Q=CIA	238.7	88.6	61.0	82.0	123.2	204.2	185.5	18.7	435.5	64.1	50.4	86.8	568.0	
														SCS method	

[1] *City of Colorado Springs and El Paso County Drainage Criteria Manual* unless otherwise noted.
[2] *Urban Drainage Criteria Manual*

CORE
ENGINEERING GROUP

15004 1st Avenue S.
Burnsville, MN 55306

PROJECT NAME: Sketch Plan Amendment for Lorson Ranch
PROJECT NUMBER: 100.029
ENGINEER: RLS
DATE: 01/20/2014

Sketch Plan Drainage Plan
EXISTING CONDITIONS HYDROLOGY CALCULATIONS

BASIN	CRITERIA REFERENCE[1]	G	H	J	K	L	M	N	P	Q
AREA, A [ACRE]	-	92.10	188.00	58.20	16.10	40.50	14.40	26.00	87.30	27.10
RUN-OFF COEFFICIENT, C5	-	0.27		0.41	0.30	0.30	0.30	0.28	0.30	0.30
OVERLAND DROP [FT]	-	8.00	13.0	5.00	8.00	2.00	6.00	4.00	3.00	4.00
OVERLAND FLOW LENGTH, L_O [FT]	-	300.00	300.00	100.00	200.00	200.00	180.00	142.00	300.00	400.00
OVERLAND SLOPE, S_O [%]	-	2.67%	4.3%	5.00%	4.00%	1.00%	3.33%	2.82%	1.00%	1.00%
OVERLAND FLOW TIME, t_i [MIN]	-	18.7	19.1	7.3	12.8	20.4	12.9	12.5	24.9	28.8
TRAVEL FLOW DROP [FT]	-	96.0	110.0	60.0	32.0	18.0	32.0	64.0	18.0	17.0
TRAVEL FLOW LENGTH, Lt [FT]	-	3100.0	3670.0	1400.0	800.0	500.0	600.0	1000.0	2500.0	2300.0
TRAVEL SLOPE, S_t [%]	-	3.10%	3.0%	4.29%	4.00%	3.60%	5.33%	6.40%	0.72%	0.74%
TRAVEL VELOCITY, V_t [FT/SEC]	"V"	5.19	3.46	6.11	5.90	5.60	6.81	7.46	2.50	2.54
TRAVEL TIME, t_t [MIN]	-	10.0	17.7	3.8	2.3	1.5	1.5	2.2	16.6	15.1
TIME OF CONCENTRATION, FROM TR55 t_c	t_i+t_t	28.6	36.7	11.1	15.1	21.9	14.4	14.7	41.6	43.9
CURVE NUMBER			72.1							
5-YR RUN-OFF COEFFICIENT, C5	-	0.27	See SCS	0.41	0.30	0.30	0.30	0.28	0.30	0.30
5-YR RAINFALL INTENSITY, I5 [IN/HR]	-	2.62	Hydraflow Calcs	4.15	3.64	3.03	3.71	3.68	2.10	2.03
5-YR MAXIMUM RUN-OFF, Q5 [CFS]	Q=CIA	65.2	90.0	99.0	17.6	36.9	16.0	26.8	55.1	16.5
100-YR RUN-OFF COEFFICIENT, C_{100}		0.37	See SCS	0.51	0.40	0.40	0.40	0.38	0.40	0.40
100-YR RAINFALL INTENSITY, I_{100} [IN/HR]	-	4.66	Hydraflow Calcs	7.38	6.47	5.40	6.61	6.55	3.74	3.62
100-YR MAXIMUM RUN-OFF, Q_{100} [CFS]	Q=CIA	158.8	260.0	219.1	41.7	87.4	38.1	64.7	130.8	39.2

SCS method

[1] *City of Colorado Springs and El Paso County Drainage Criteria Manual* unless otherwise noted.
[2] *Urban Drainage Criteria Manual*

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

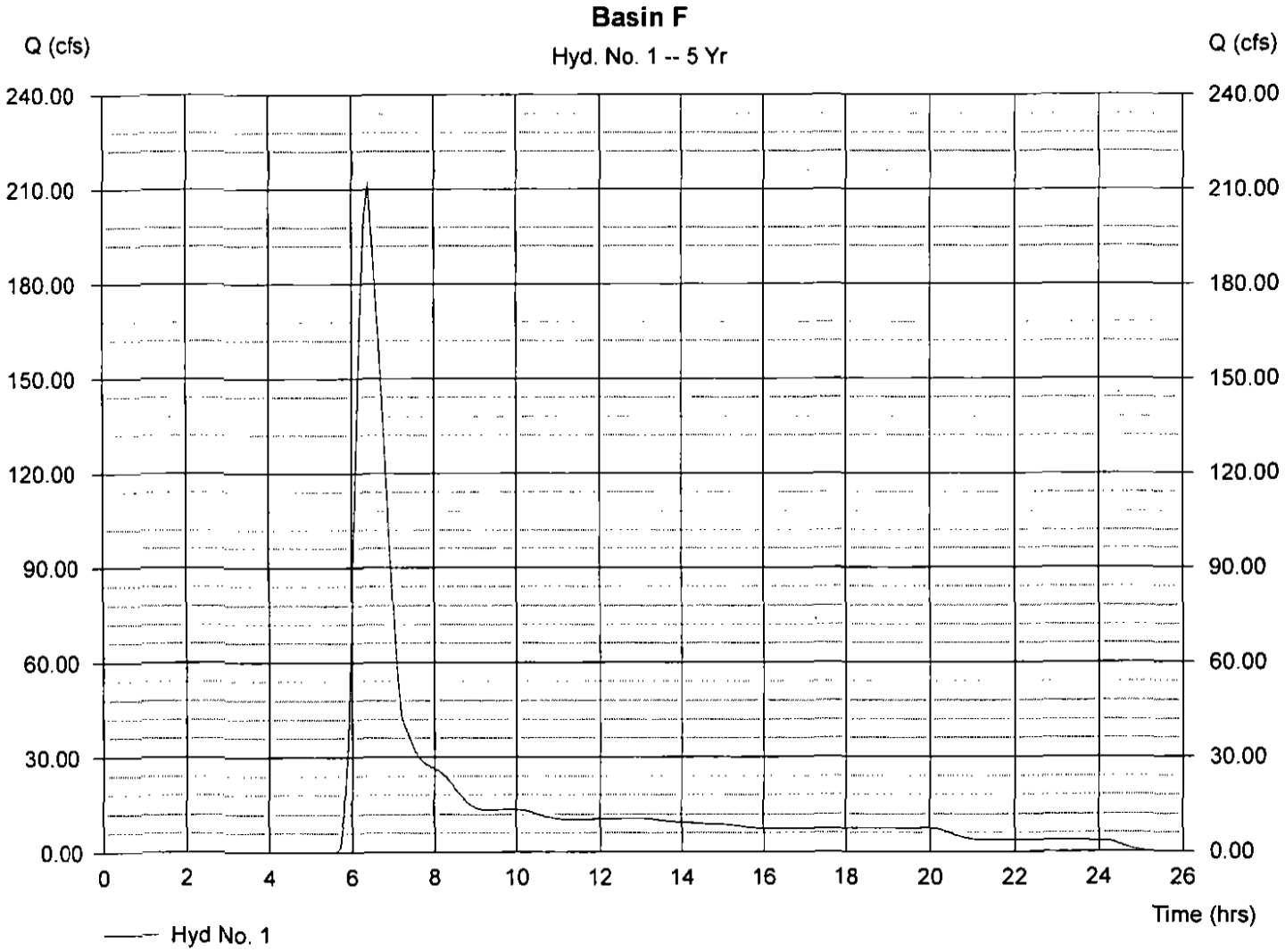
Tuesday, Jan 20 2015, 9:15 AM

Hyd. No. 1

Basin F

Hydrograph type	= SCS Runoff	Peak discharge	= 212.26 cfs
Storm frequency	= 5 yrs	Time interval	= 6 min
Drainage area	= 466.000 ac	Curve number	= 73.3
Basin Slope	= 0.0 %	Hydraulic length	= 7400 ft
Tc method	= USER	Time of conc. (Tc)	= 49.50 min
Total precip.	= 2.80 in	Distribution	= Custom
Storm duration	= CSpring_IIA-6min.cds	Shape factor	= 484

Hydrograph Volume = 1,232,647 cuft



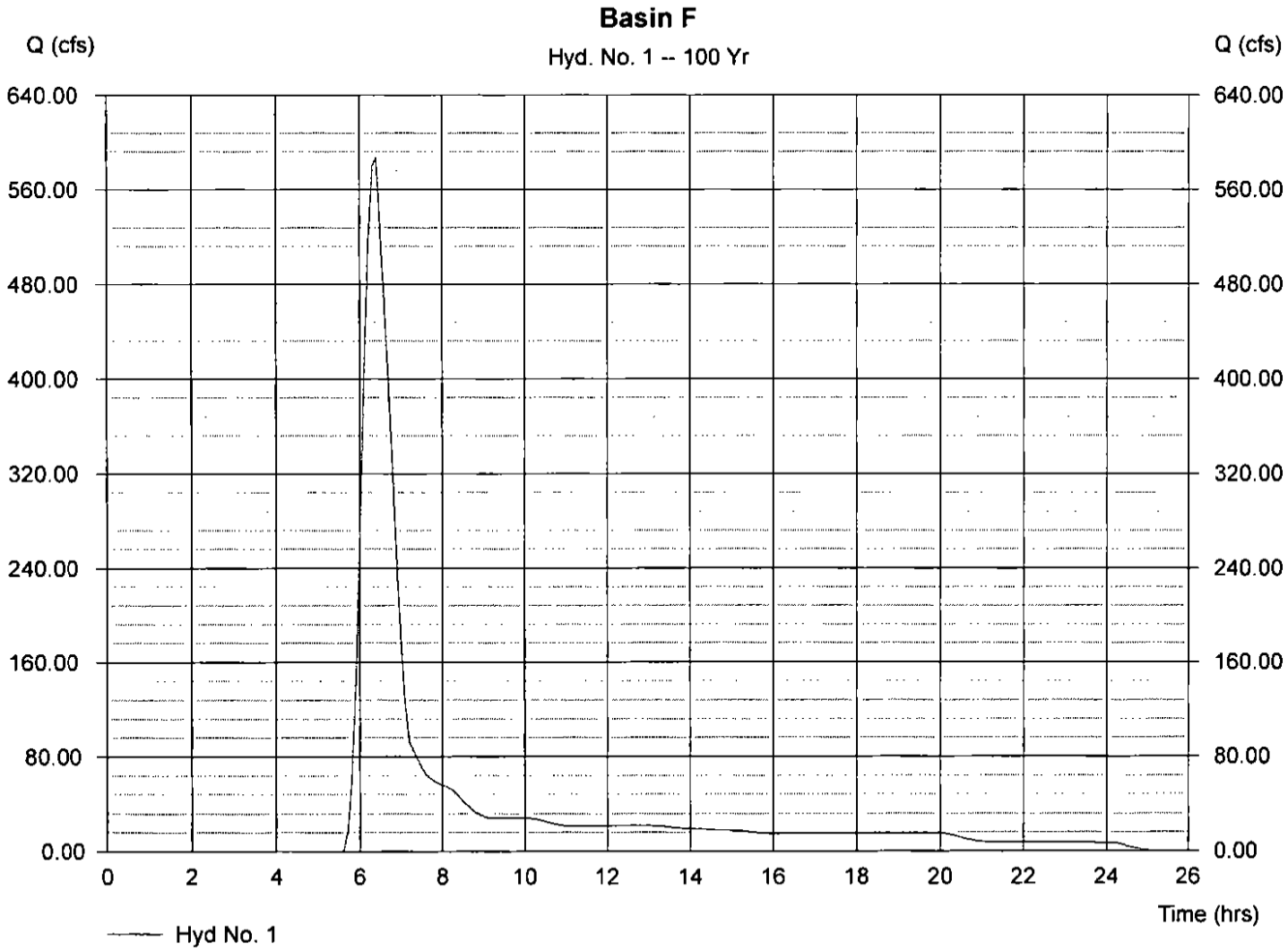
Hydrograph Plot

Hyd. No. 1

Basin F

Hydrograph type	= SCS Runoff	Peak discharge	= 588.00 cfs
Storm frequency	= 100 yrs	Time interval	= 6 min
Drainage area	= 466.000 ac	Curve number	= 73.3
Basin Slope	= 0.0 %	Hydraulic length	= 7400 ft
Tc method	= USER	Time of conc. (Tc)	= 49.50 min
Total precip.	= 4.40 in	Distribution	= Custom
Storm duration	= CSpring_IIA-6min.cds	Shape factor	= 484

Hydrograph Volume = 3,015,280 cuft



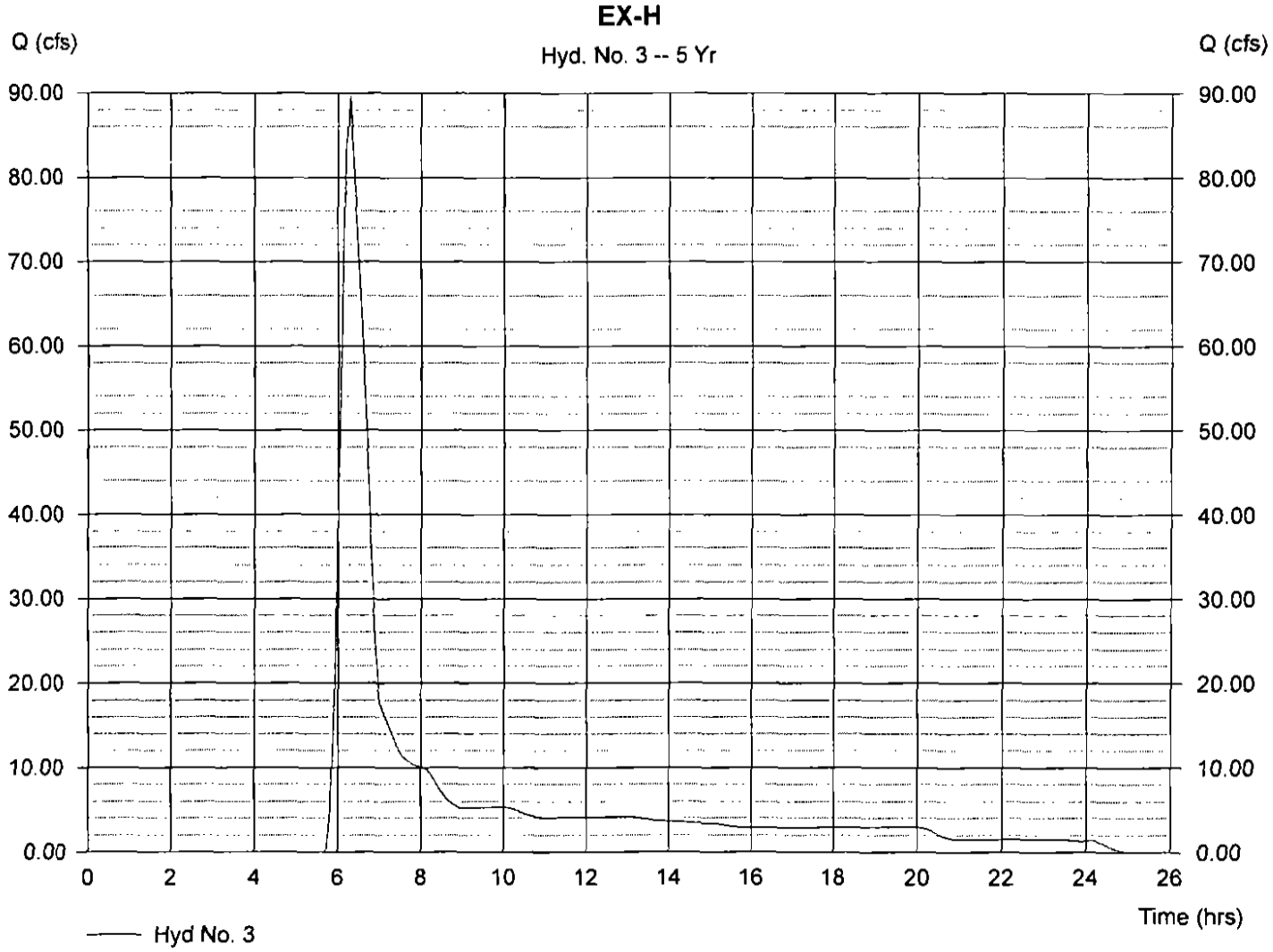
Hydrograph Plot

Hyd. No. 3

EX-H

Hydrograph type	= SCS Runoff	Peak discharge	= 89.64 cfs
Storm frequency	= 5 yrs	Time interval	= 6 min
Drainage area	= 182.000 ac	Curve number	= 72.1
Basin Slope	= 0.0 %	Hydraulic length	= 4150 ft
Tc method	= USER	Time of conc. (Tc)	= 36.70 min
Total precip.	= 2.80 in	Distribution	= Custom
Storm duration	= CSpring_IIA-6min.cds	Shape factor	= 484

Hydrograph Volume = 469,792 cuft



Hydrograph Plot

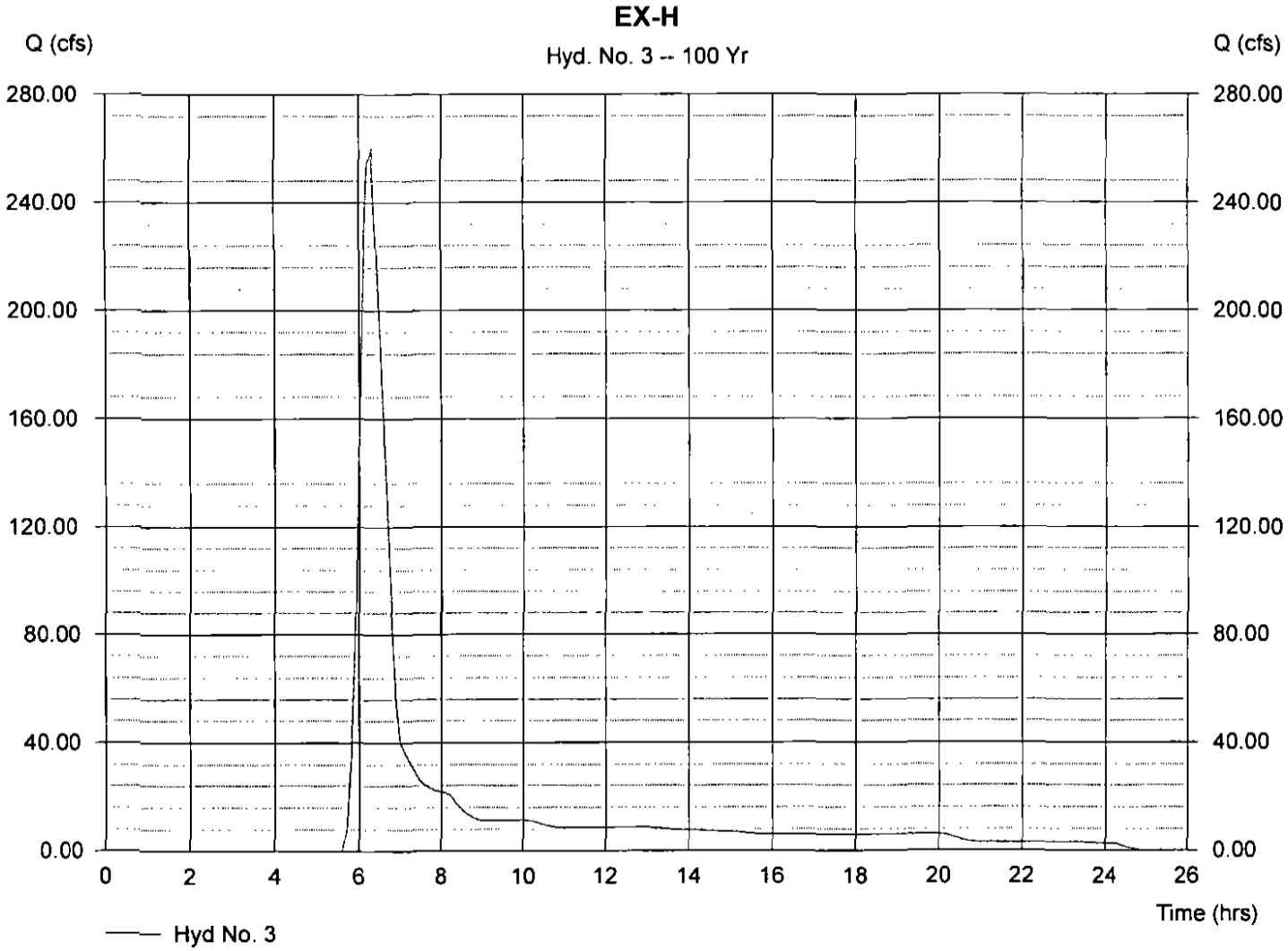
Hydraflow Hydrographs by Intelisolve | Tuesday, Jan 20 2015, 9:20 AM

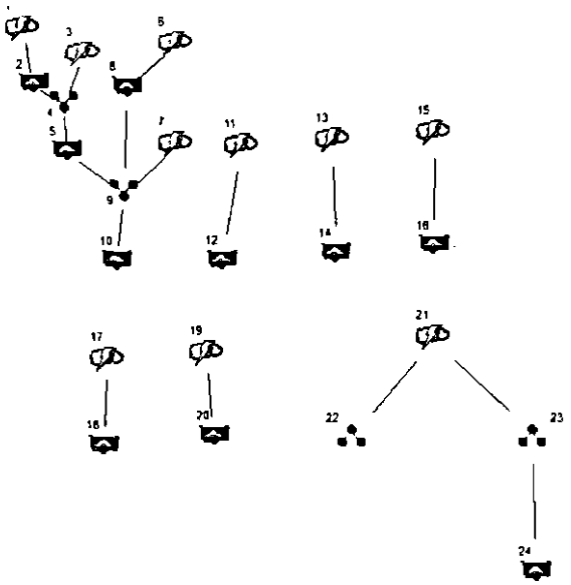
Hyd. No. 3

EX-H

Hydrograph type	= SCS Runoff	Peak discharge	= 260.32 cfs
Storm frequency	= 100 yrs	Time interval	= 6 min
Drainage area	= 182.000 ac	Curve number	= 72.1
Basin Slope	= 0.0 %	Hydraulic length	= 4150 ft
Tc method	= USER	Time of conc. (Tc)	= 36.70 min
Total precip.	= 4.40 in	Distribution	= Custom
Storm duration	= CSpring_IIA-6min.cds	Shape factor	= 484

Hydrograph Volume = 1,188,782 cuft





Legend

Hyd.	Origin	Description
1	Rational	A4
2	Reservoir	Pond A4
3	Rational	A3
4	Combine	Flow into Pond A3
5	Reservoir	Pond A3
6	Rational	A2
7	Rational	A1
8	Reservoir	Pond A2
9	Combine	flow into pond A1
10	Reservoir	Pond A1
11	Rational	A5
12	Reservoir	Pond A5
13	Rational	B1
14	Reservoir	Pond B1
15	Rational	B2
16	Reservoir	Pond B2
17	Rational	C1
18	Reservoir	Pond C1
19	Rational	C3
20	Reservoir	Pond C3
21	Rational	D
22	Diversion1	flow to 48 inch
23	Diversion2	to pond D1
24	Reservoir	Pond D1

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	Rational	45.61	1	17	46,522	----	----	----	A4
2	Reservoir	3.273	1	33	45,951	1	5717.71	55,556	Pond A4
3	Rational	28.20	1	24	40,615	----	----	----	A3
4	Combine	30.01	1	24	86,566	2, 3	------	------	Flow into Pond A3
5	Reservoir	12.03	1	40	86,258	4	5708.78	27,455	Pond A3
6	Rational	41.02	1	18	44,304	----	----	----	A2
7	Rational	111.48	1	17	113,711	----	----	----	A1
8	Reservoir	15.80	1	29	43,737	6	5708.76	26,632	Pond A2
9	Combine	126.44	1	17	243,707	5, 7, 8	----	----	flow into pond A1
10	Reservoir	47.48	1	31	242,086	9	5703.21	203,191	Pond A1
11	Rational	57.25	1	22	75,566	----	----	----	A5
12	Reservoir	9.475	1	40	48,906	11	5714.03	71,445	Pond A5
13	Rational	95.87	1	20	115,041	----	----	----	B1
14	Reservoir	3.755	1	39	109,003	13	5710.96	179,171	Pond B1
15	Rational	85.24	1	13	66,485	----	----	----	B2
16	Reservoir	8.758	1	25	58,488	15	5700.42	103,043	Pond B2
17	Rational	203.99	1	19	232,550	----	------	------	C1
18	Reservoir	19.47	1	36	217,828	17	5689.65	346,149	Pond C1
19	Rational	29.84	1	16	28,648	----	----	----	C3
20	Reservoir	2.841	1	30	26,958	19	5693.42	26,232	Pond C3
21	Rational	46.10	1	20	55,320	----	----	----	D
22	Diversion1	5.071	1	20	6,085	21	----	----	to 48 inch
23	Diversion2	41.03	1	20	49,235	21	------	------	to pond D1
24	Reservoir	17.27	1	32	16,166	23	5708.94	39,729	Pond D1

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	Rational	85.87	1	17	87,586	—	—	—	A4
2	Reservoir	22.20	1	30	86,988	1	5718.63	83,929	Pond A4
3	Rational	57.67	1	24	83,047	—	—	—	A3
4	Combine	75.57	1	24	170,035	2, 3	—	—	Flow into Pond A3
5	Reservoir	43.61	1	37	169,720	4	5710.76	56,138	Pond A3
6	Rational	84.96	1	18	91,755	—	—	—	A2
7	Rational	230.87	1	17	235,490	—	—	—	A1
8	Reservoir	45.57	1	26	91,188	6	5710.50	50,222	Pond A2
9	Combine	258.83	1	17	496,399	5, 7, 8	—	—	flow into pond A1
10	Reservoir	110.61	1	32	494,714	9	5704.73	296,688	Pond A1
11	Rational	117.28	1	22	154,808	—	—	—	A5
12	Reservoir	74.86	1	30	128,148	11	5715.07	97,310	Pond A5
13	Rational	195.31	1	20	234,367	—	—	—	B1
14	Reservoir	8.259	1	39	197,737	13	5712.68	266,222	Pond B1
15	Rational	176.51	1	13	137,681	—	—	—	B2
16	Reservoir	27.17	1	24	98,374	15	5700.87	134,922	Pond B2
17	Rational	422.49	1	19	481,634	—	—	—	C1
18	Reservoir	75.49	1	35	466,588	17	5691.52	553,505	Pond C1
19	Rational	61.80	1	16	59,326	—	—	—	C3
20	Reservoir	28.22	1	25	57,634	19	5694.13	41,557	Pond C3
21	Rational	96.46	1	20	115,749	—	—	—	D
22	Diversion1	45.33	1	20	54,402	21	—	—	flow to 48 inch
23	Diversion2	51.12	1	20	61,347	21	—	—	to pond D1
24	Reservoir	28.43	1	29	28,278	23	5709.12	42,763	Pond D1

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

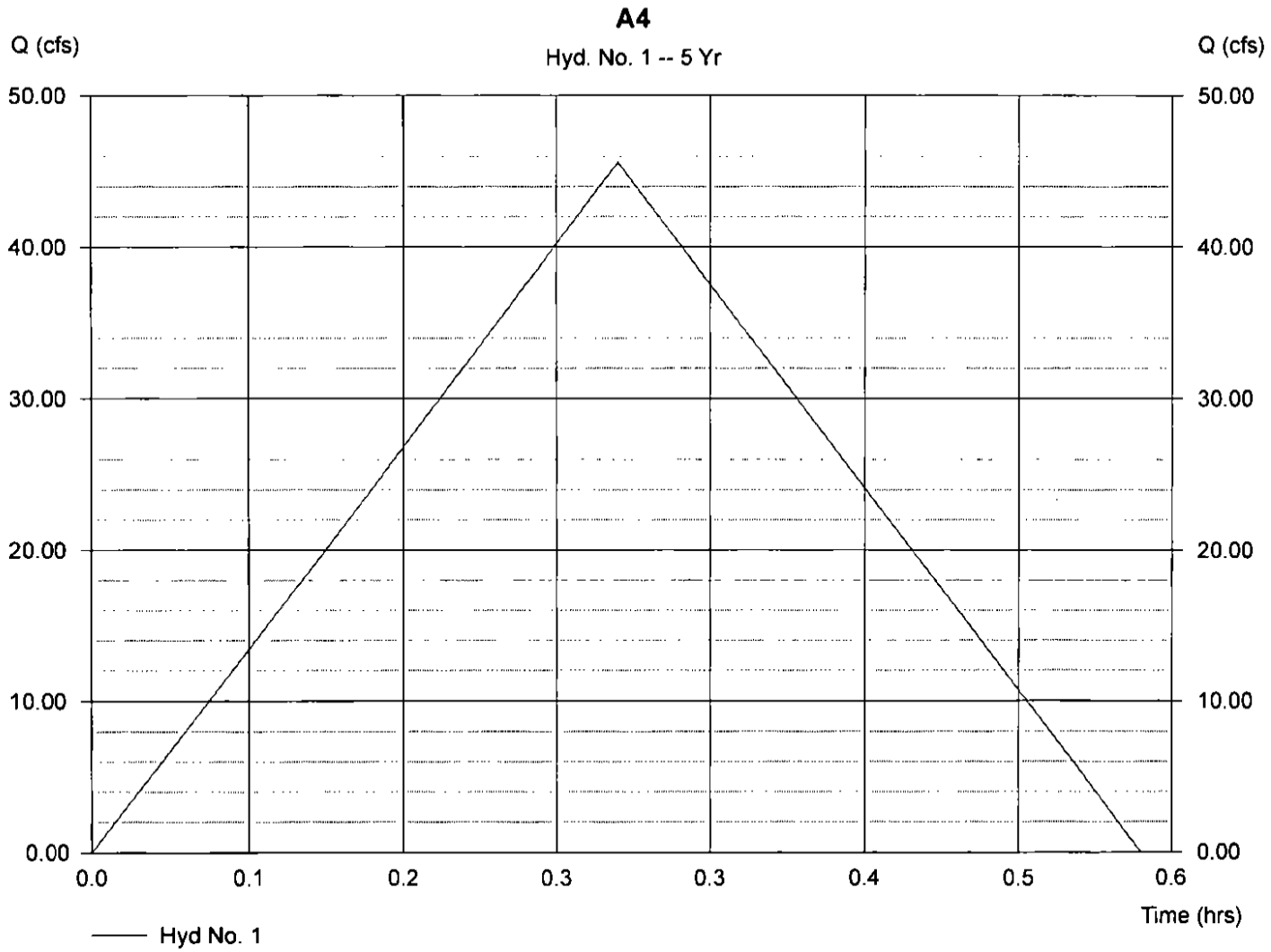
Tuesday, Jan 20 2015, 9:2 AM

Hyd. No. 1

A4

Hydrograph type	= Rational	Peak discharge	= 45.61 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Drainage area	= 21.200 ac	Runoff coeff.	= 0.66
Intensity	= 3.260 in/hr	Tc by User	= 17.00 min
IDF Curve	= CS-IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 46,522 cuft



Hydrograph Plot

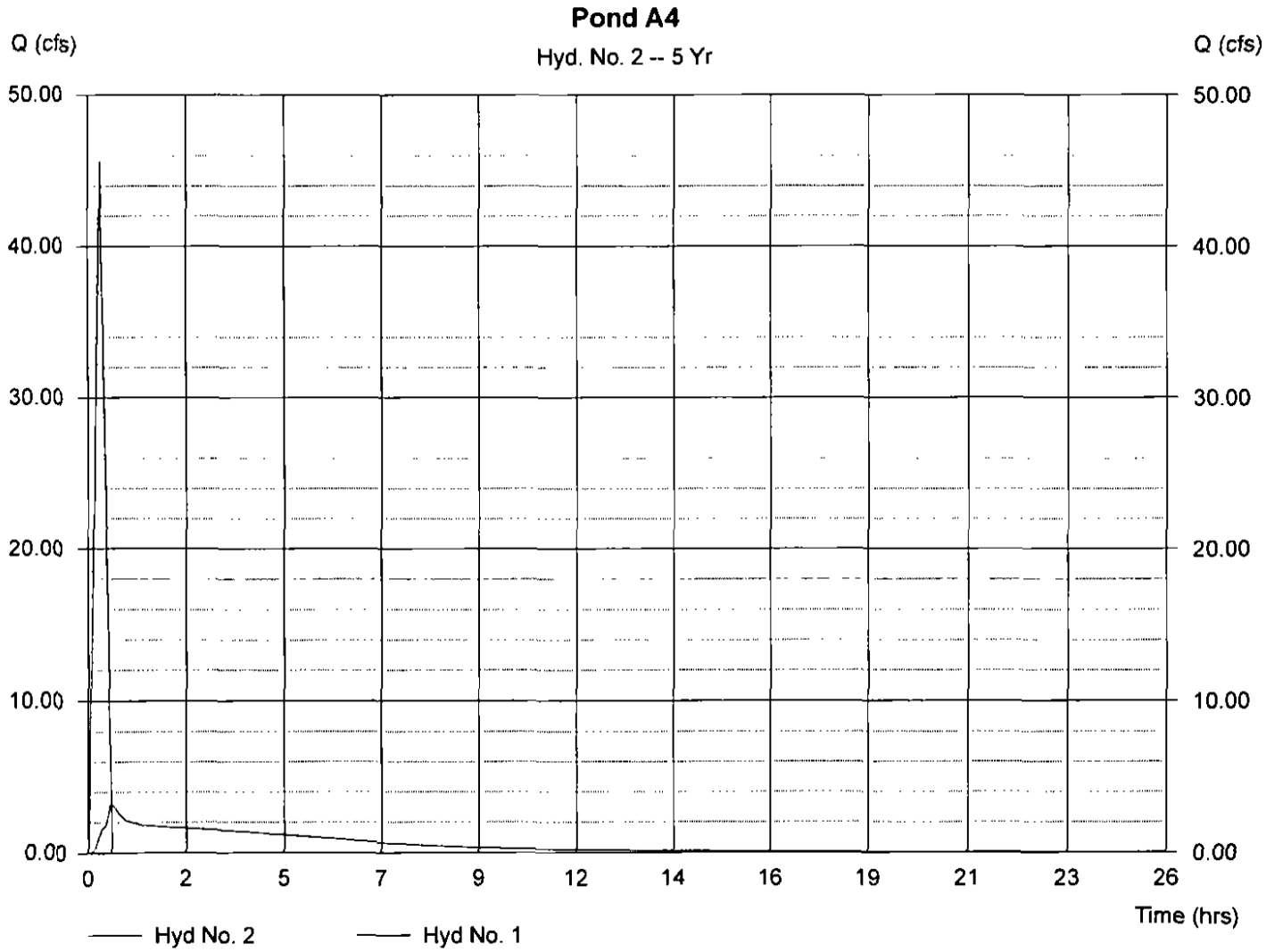
Hydraflow Hydrographs by Intelisolve — Tuesday, Jan 20 2015, 9:2 AM

Hyd. No. 2

Pond A4

Hydrograph type	= Reservoir	Peak discharge	= 3.273 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Inflow hyd. No.	= 1	Max. Elevation	= 5717.71 ft
Reservoir name	= Pond A4	Max. Storage	= 55,556 cuft

Storage Indication method used. Wet pond routing start elevation = 5716.00 ft. — Hydrograph Volume = 45,951 cuft



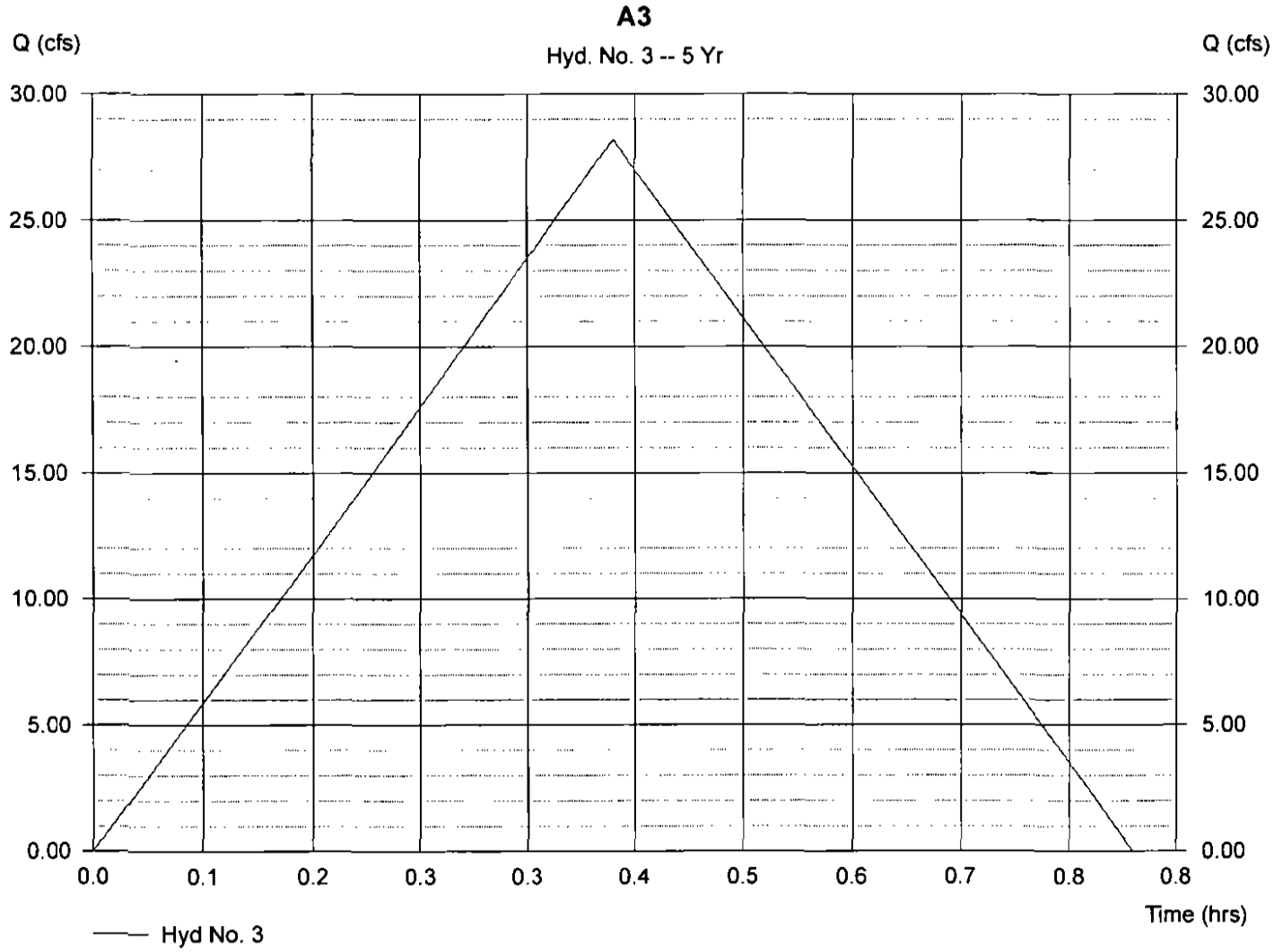
Hydrograph Plot

Hyd. No. 3

A3

Hydrograph type	= Rational	Peak discharge	= 28.20 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Drainage area	= 15.800 ac	Runoff coeff.	= 0.66
Intensity	= 2.705 in/hr	Tc by User	= 24.00 min
IDF Curve	= CS-IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 40,615 cuft



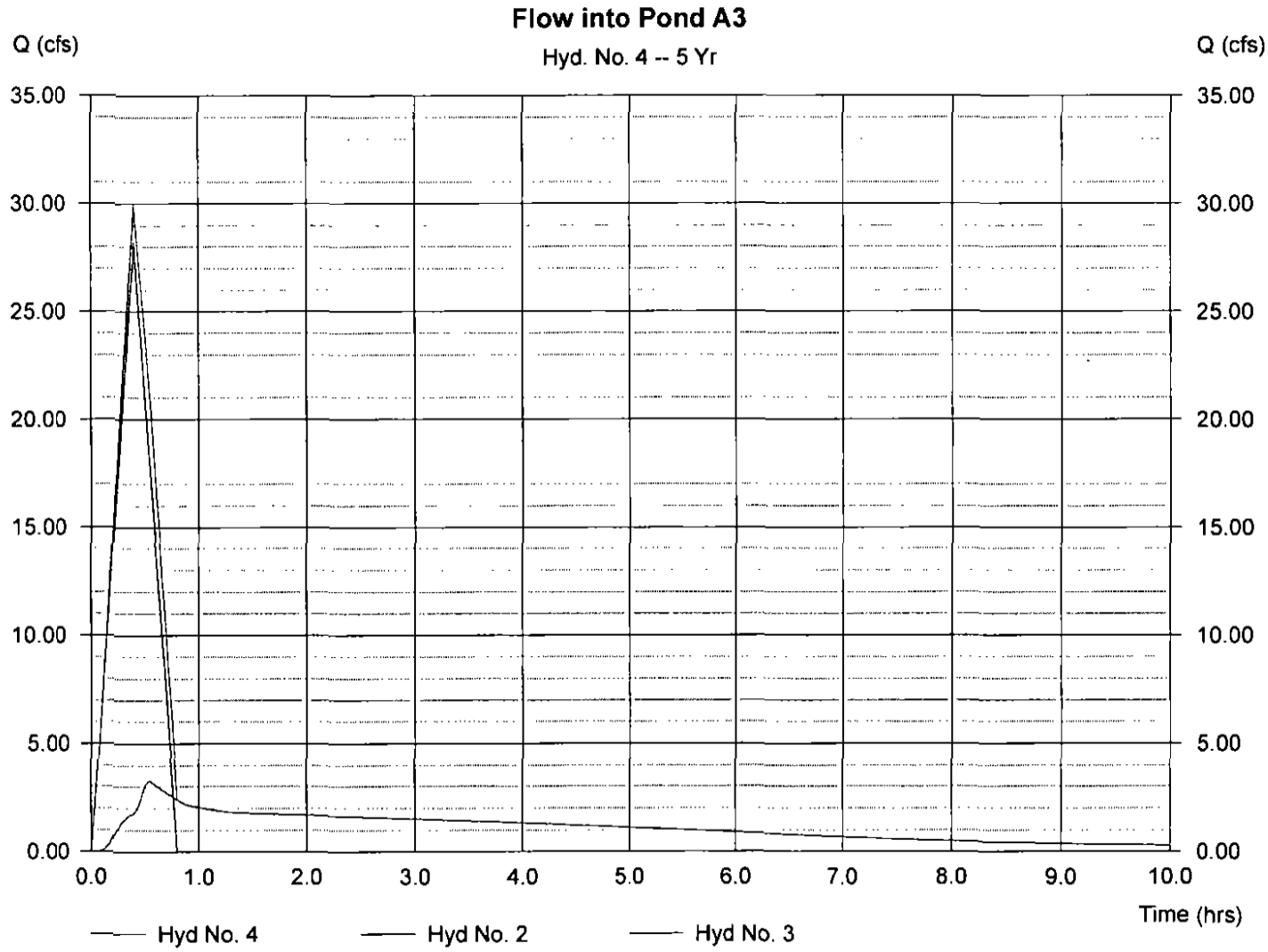
Hydrograph Plot

Hyd. No. 4

Flow into Pond A3

Hydrograph type	= Combine	Peak discharge	= 30.01 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Inflow hyds.	= 2, 3		

Hydrograph Volume = 86,566 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Tuesday, Jan 20 2015, 9:2 AM

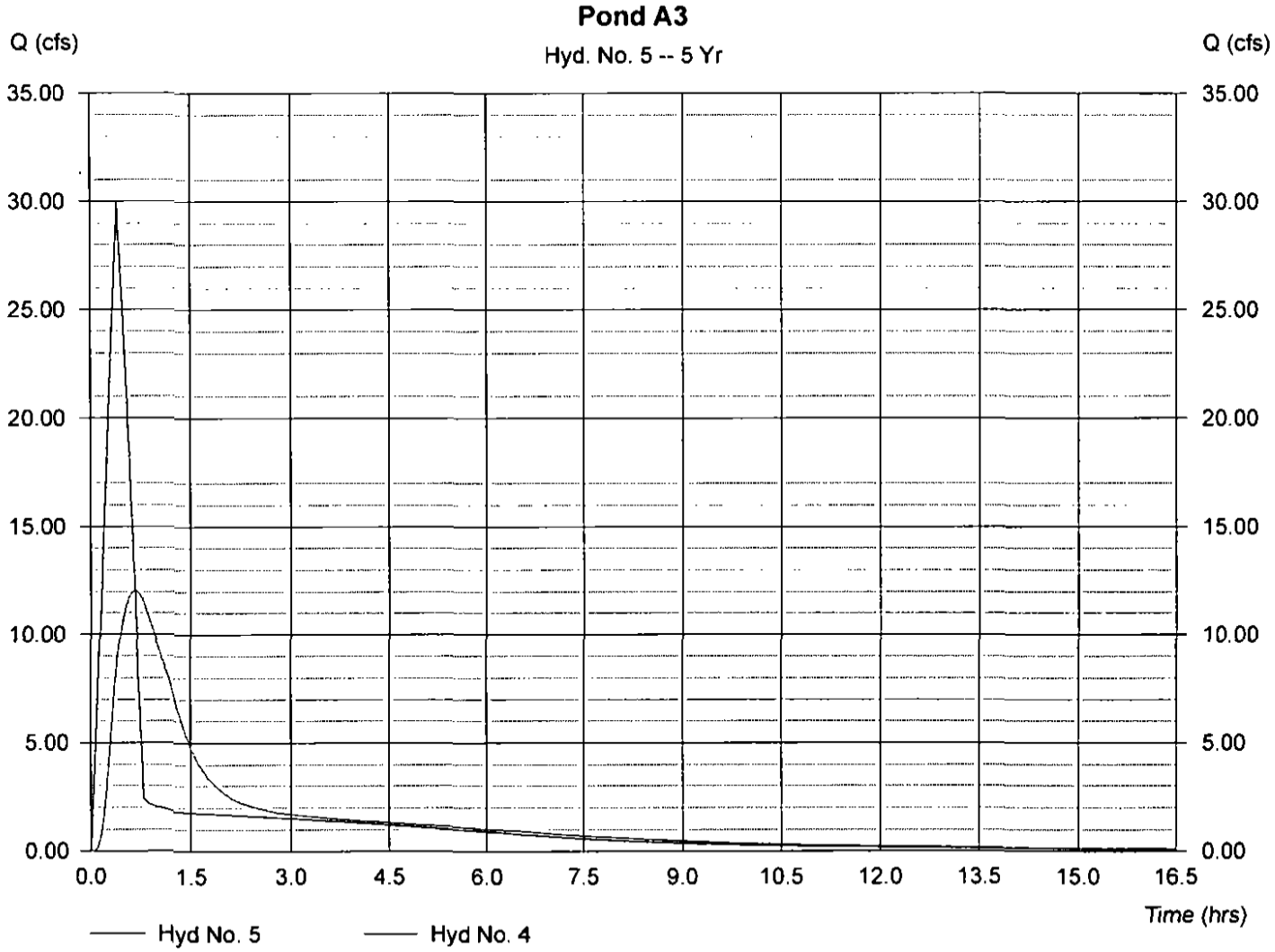
Hyd. No. 5

Pond A3

Hydrograph type	= Reservoir	Peak discharge	= 12.03 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Inflow hyd. No.	= 4	Max. Elevation	= 5708.78 ft
Reservoir name	= POND A3	Max. Storage	= 27,455 cuft

Storage Indication method used.

Hydrograph Volume = 86,258 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

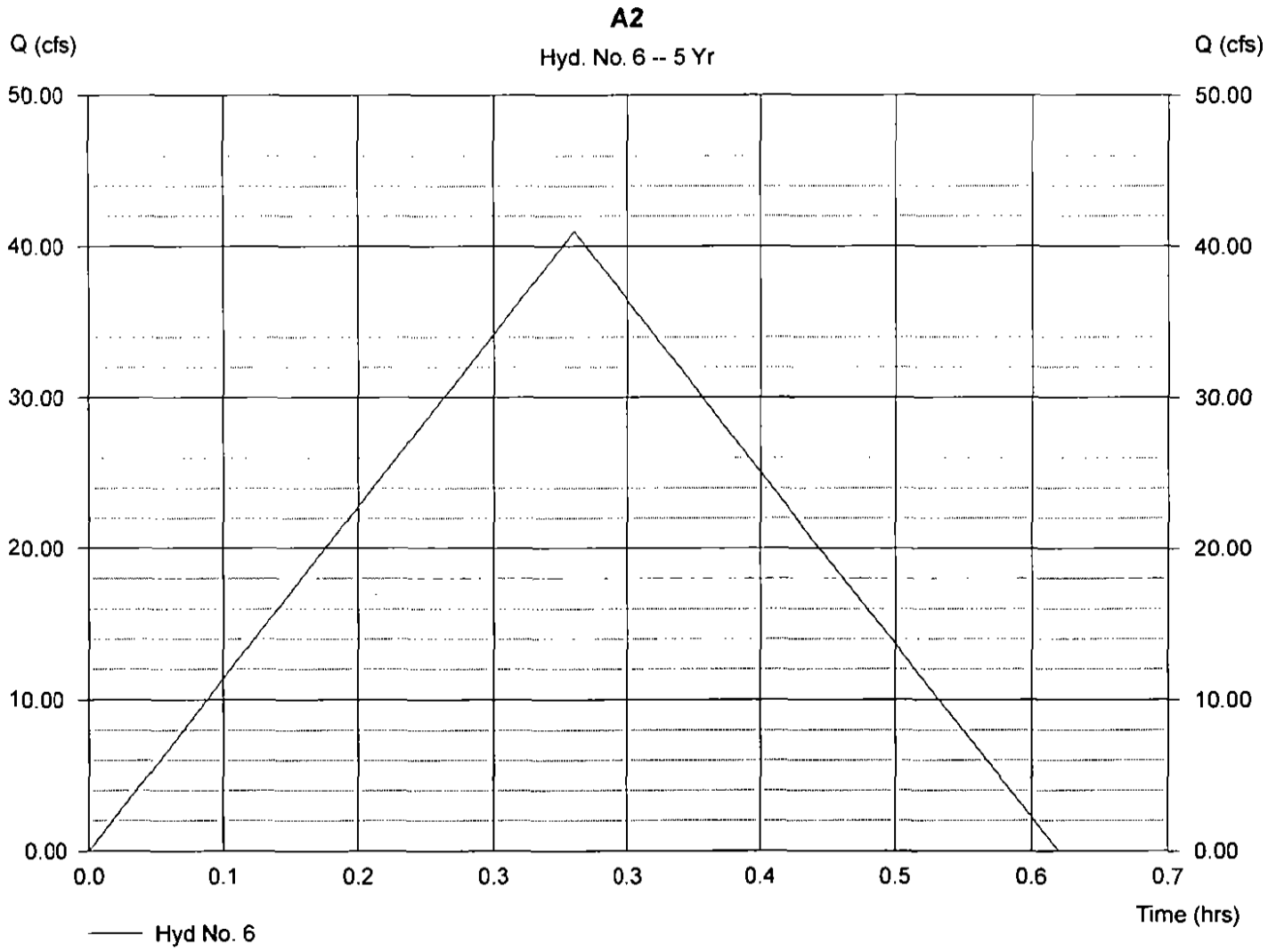
Tuesday, Jan 20 2015, 9:2 AM

Hyd. No. 6

A2

Hydrograph type	= Rational	Peak discharge	= 41.02 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Drainage area	= 21.600 ac	Runoff coeff.	= 0.6
Intensity	= 3.165 in/hr	Tc by User	= 18.00 min
IDF Curve	= CS-IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 44,304 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

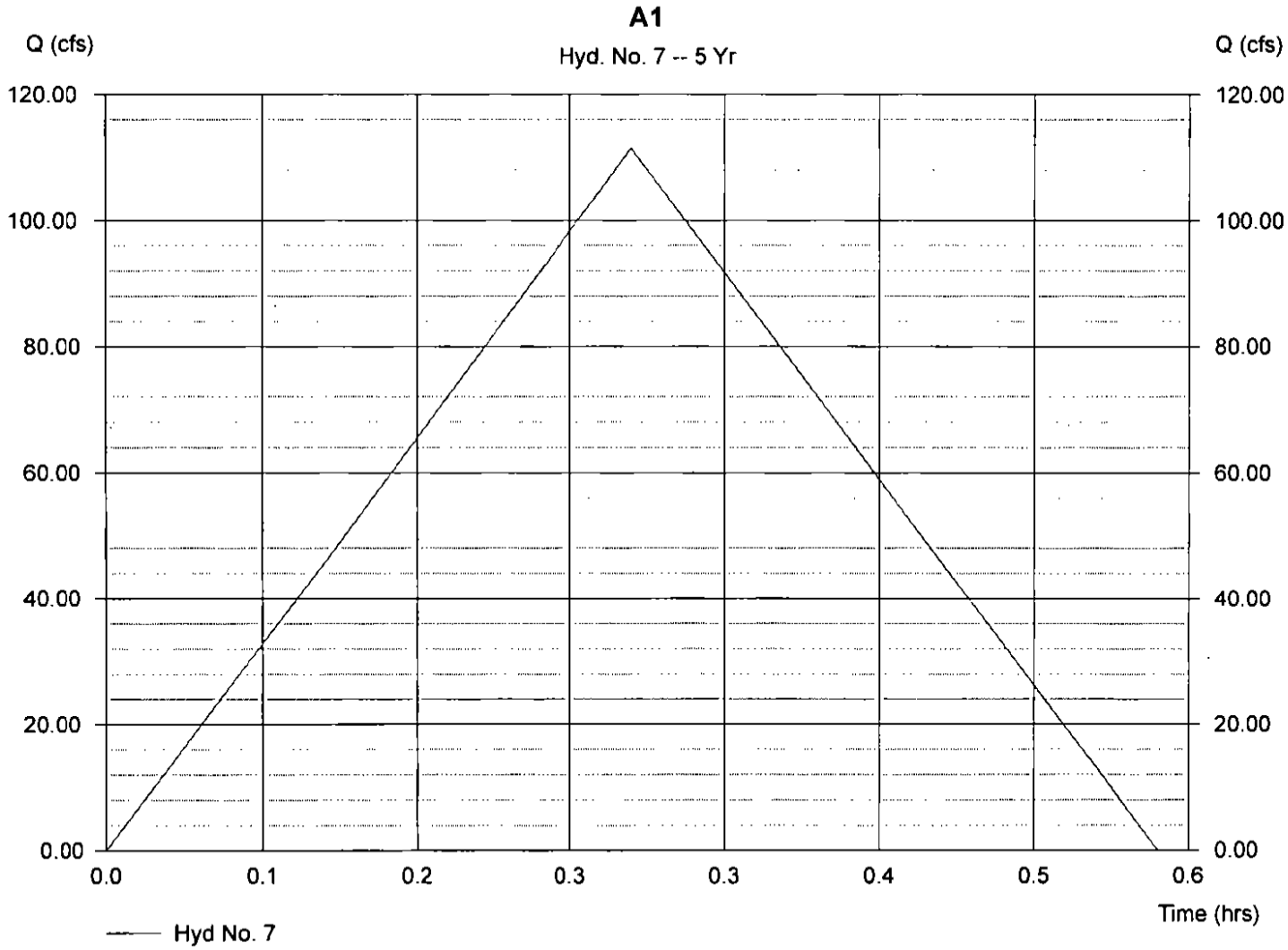
Tuesday, Jan 20 2015, 9:2 AM

Hyd. No. 7

A1

Hydrograph type	= Rational	Peak discharge	= 111.48 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Drainage area	= 57.000 ac	Runoff coeff.	= 0.6
Intensity	= 3.260 in/hr	Tc by User	= 17.00 min
IDF Curve	= CS-IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 113,711 cuft



Hydrograph Plot

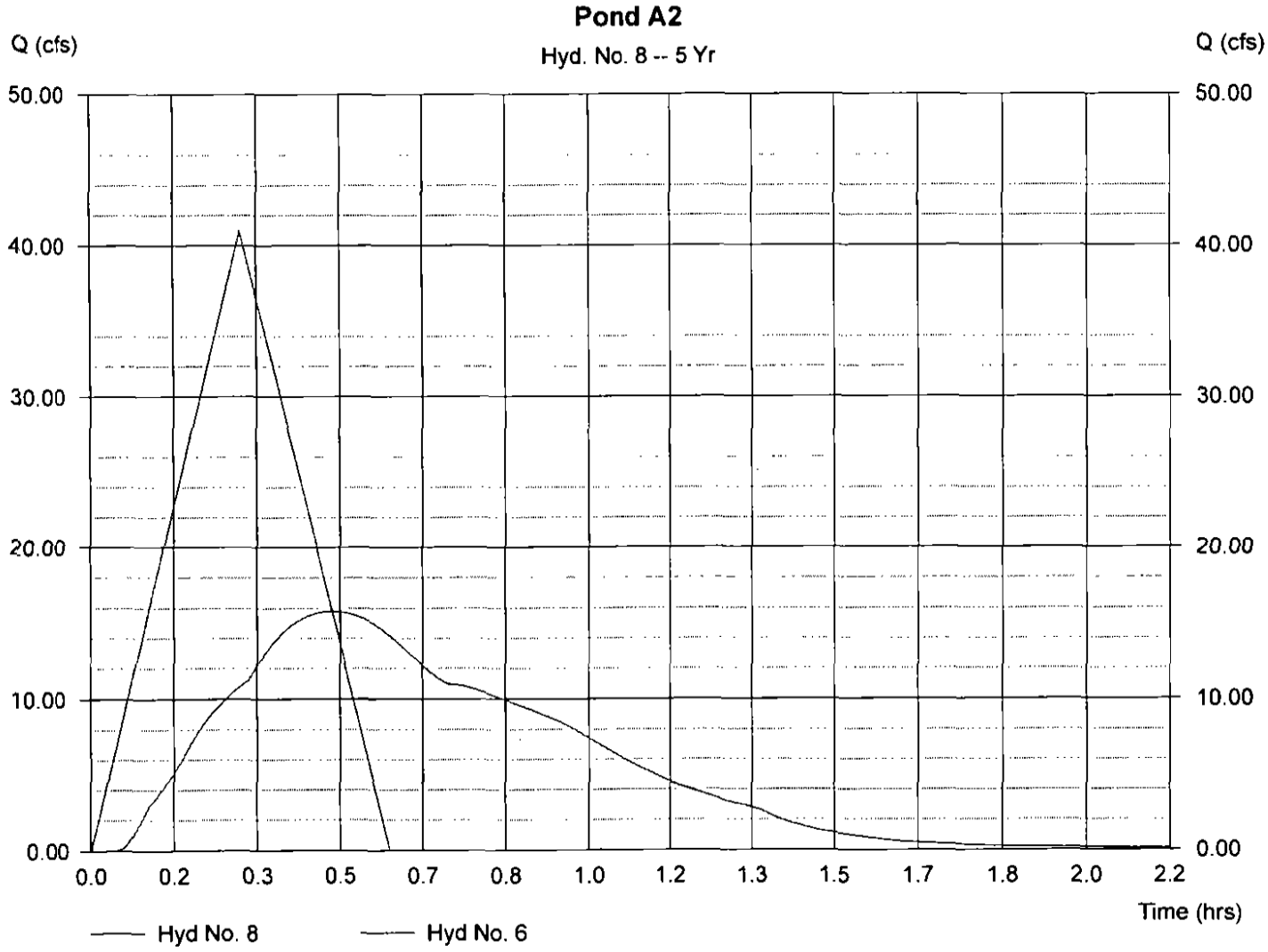
Hydraflow Hydrographs by Intelisolve | Tuesday, Jan 20 2015, 9:2 AM

Hyd. No. 8

Pond A2

Hydrograph type	= Reservoir	Peak discharge	= 15.80 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Inflow hyd. No.	= 6	Max. Elevation	= 5708.76 ft
Reservoir name	= POND A2	Max. Storage	= 26,632 cuft

Storage Indication method used. | Hydrograph Volume = 43,737 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

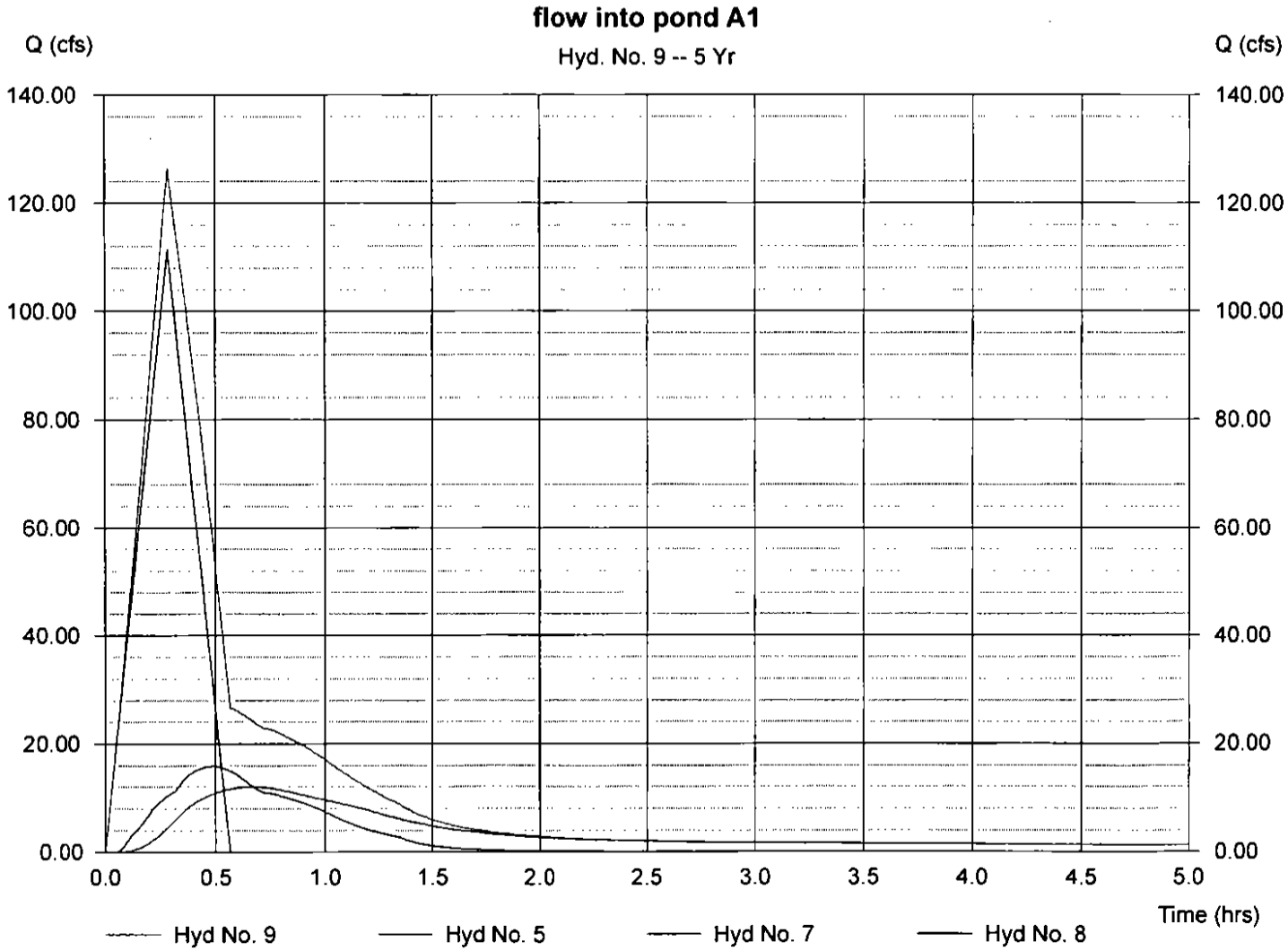
Tuesday, Jan 20 2015, 9:2 AM

Hyd. No. 9

flow into pond A1

Hydrograph type	= Combine	Peak discharge	= 126.44 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Inflow hyds.	= 5, 7, 8		

Hydrograph Volume = 243,707 cuft



Hydrograph Plot

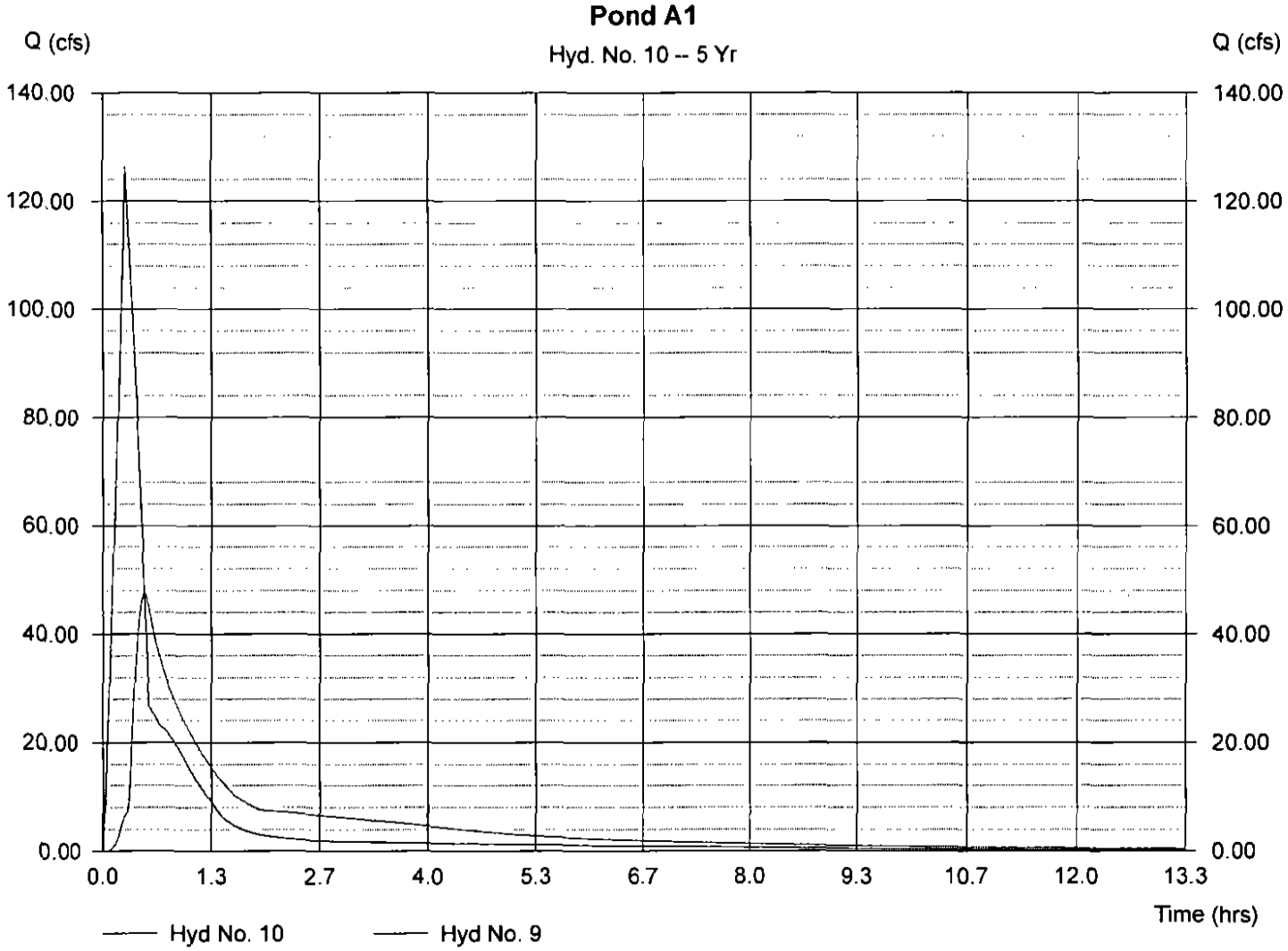
Hydraflow Hydrographs by Intelisolve — Tuesday, Jan 20 2015, 9:2 AM

Hyd. No. 10

Pond A1

Hydrograph type	= Reservoir	Peak discharge	= 47.48 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Inflow hyd. No.	= 9	Max. Elevation	= 5703.21 ft
Reservoir name	= POND A1	Max. Storage	= 203,191 cuft

Storage Indication method used. Wet pond routing start elevation = 5701.00 ft. — Hydrograph Volume = 242,086 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

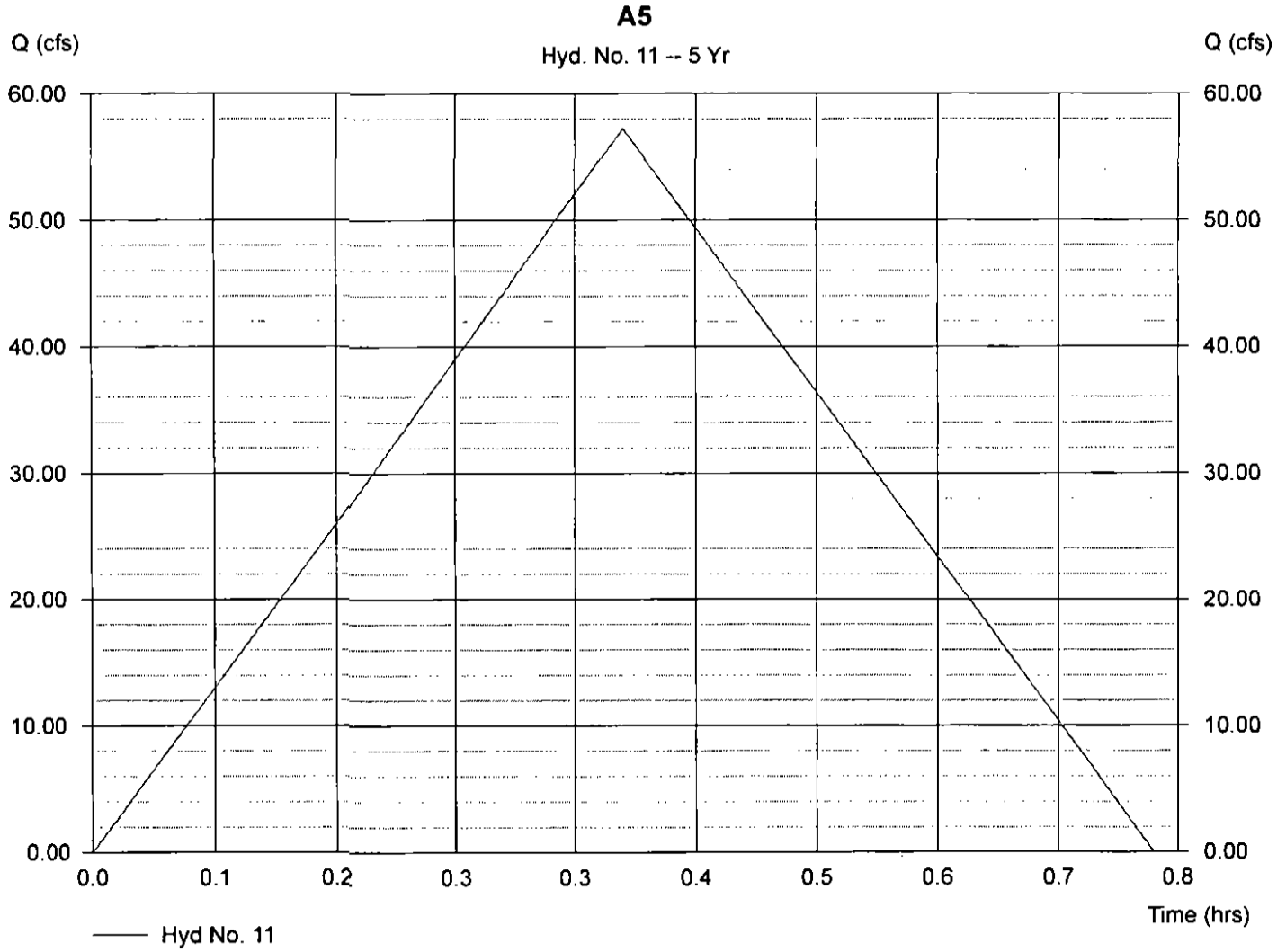
Tuesday, Jan 20 2015, 9:2 AM

Hyd. No. 11

A5

Hydrograph type	= Rational	Peak discharge	= 57.25 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Drainage area	= 31.000 ac	Runoff coeff.	= 0.65
Intensity	= 2.841 in/hr	Tc by User	= 22.00 min
IDF Curve	= CS-IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 75,566 cuft



Hydrograph Plot

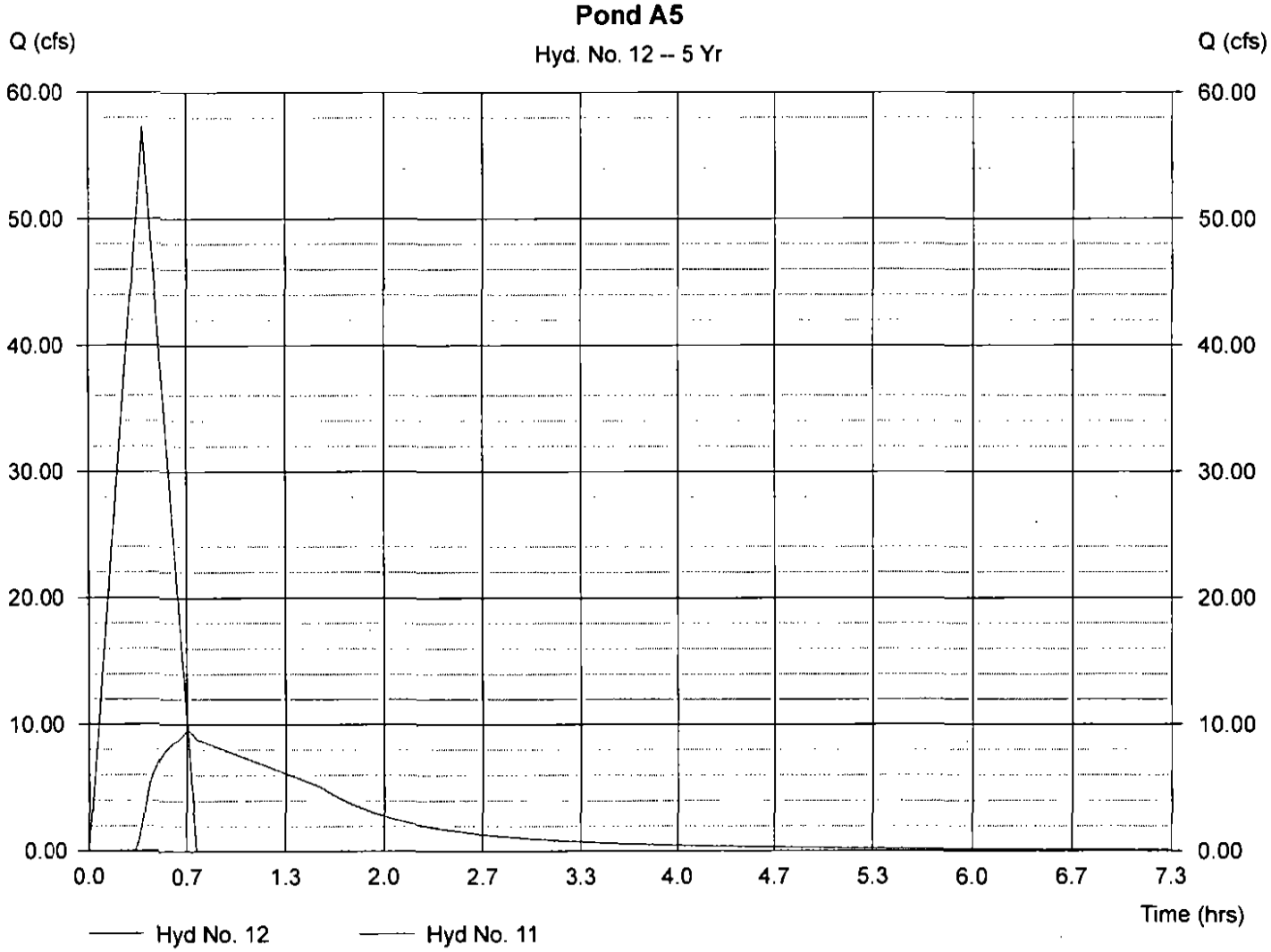
Hydraflow Hydrographs by Intelisolve — Tuesday, Jan 20 2015, 9:2 AM

Hyd. No. 12

Pond A5

Hydrograph type	= Reservoir	Peak discharge	= 9.475 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Inflow hyd. No.	= 11	Max. Elevation	= 5714.03 ft
Reservoir name	= Pond A5	Max. Storage	= 71,445 cuft

Storage Indication method used. Wet pond routing start elevation = 5710.00 ft. — Hydrograph Volume = 48,906 cuft



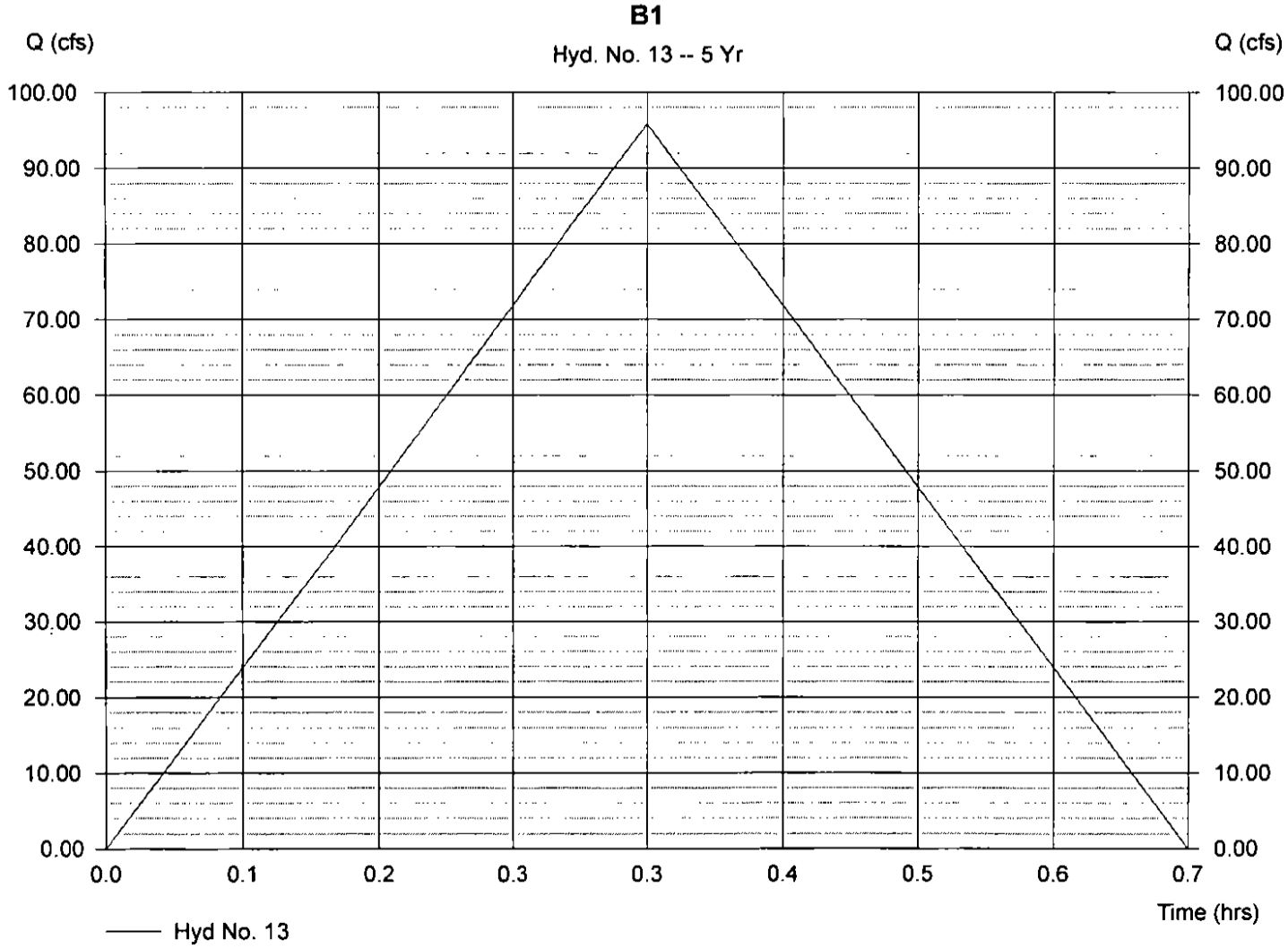
Hydrograph Plot

Hyd. No. 13

B1

Hydrograph type	= Rational	Peak discharge	= 95.87 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Drainage area	= 52.500 ac	Runoff coeff.	= 0.61
Intensity	= 2.994 in/hr	Tc by User	= 20.00 min
IDF Curve	= CS-IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 115,041 cuft



Hydrograph Plot

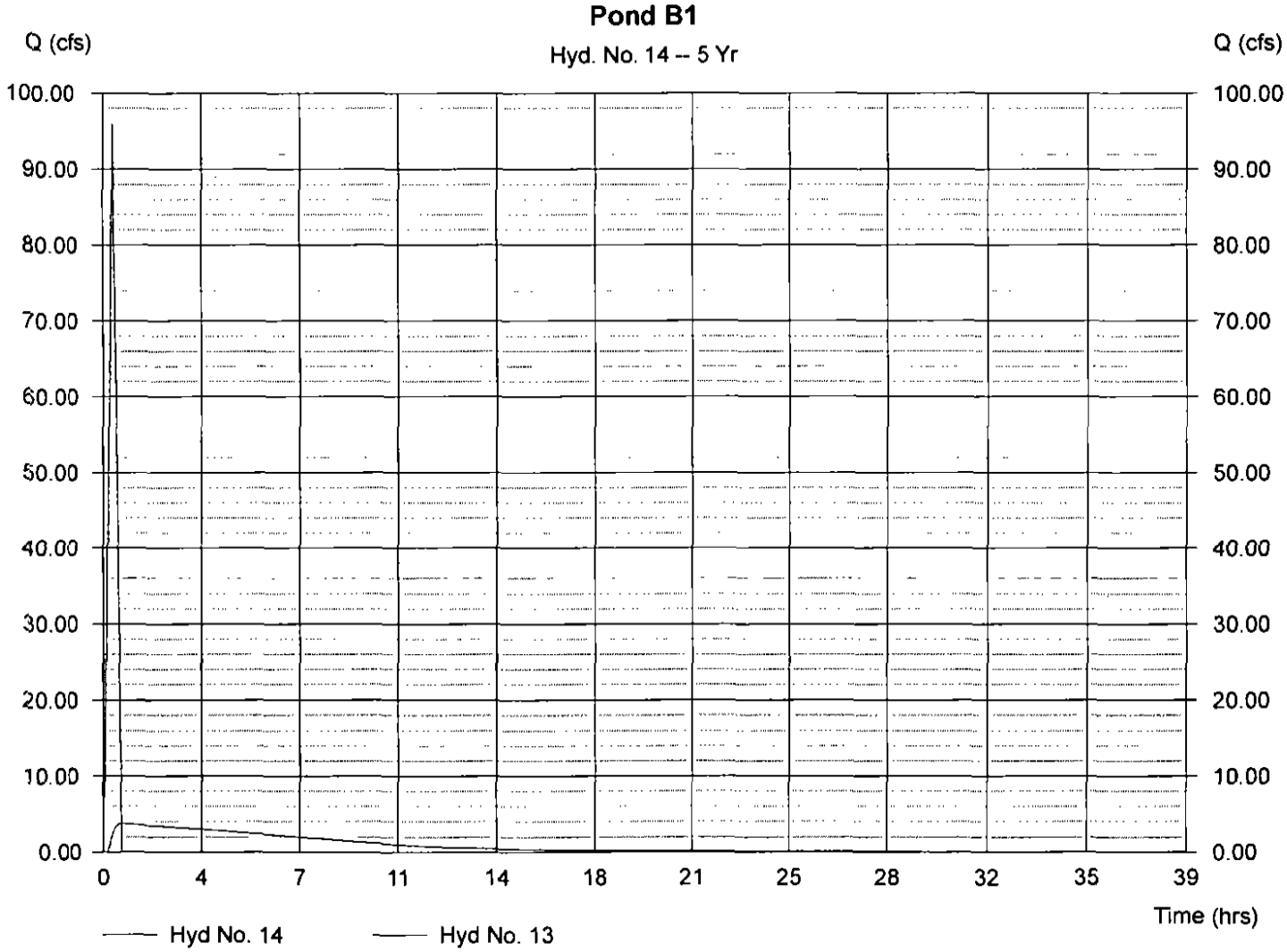
Hydraflow Hydrographs by Intelisolve — Tuesday, Jan 20 2015, 9:2 AM

Hyd. No. 14

Pond B1

Hydrograph type	= Reservoir	Peak discharge	= 3.755 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Inflow hyd. No.	= 13	Max. Elevation	= 5710.96 ft
Reservoir name	= Pond B1	Max. Storage	= 179,171 cuft

Storage Indication method used. Wet pond routing start elevation = 5708.40 ft. — Hydrograph Volume = 109,003 cuft



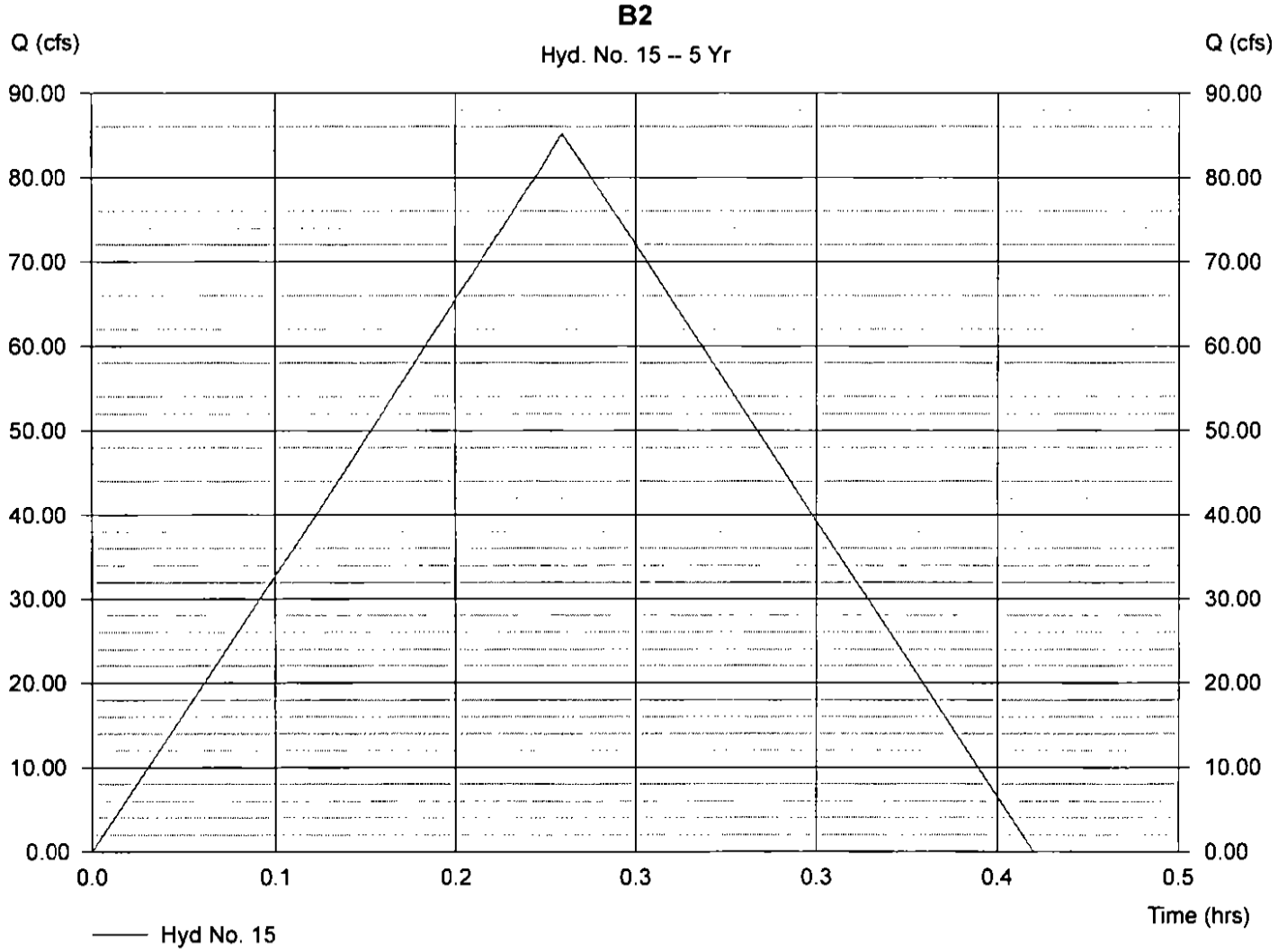
Hydrograph Plot

Hyd. No. 15

B2

Hydrograph type	= Rational	Peak discharge	= 85.24 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Drainage area	= 38.300 ac	Runoff coeff.	= 0.6
Intensity	= 3.709 in/hr	Tc by User	= 13.00 min
IDF Curve	= CS-IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 66,485 cuft



Hydrograph Plot

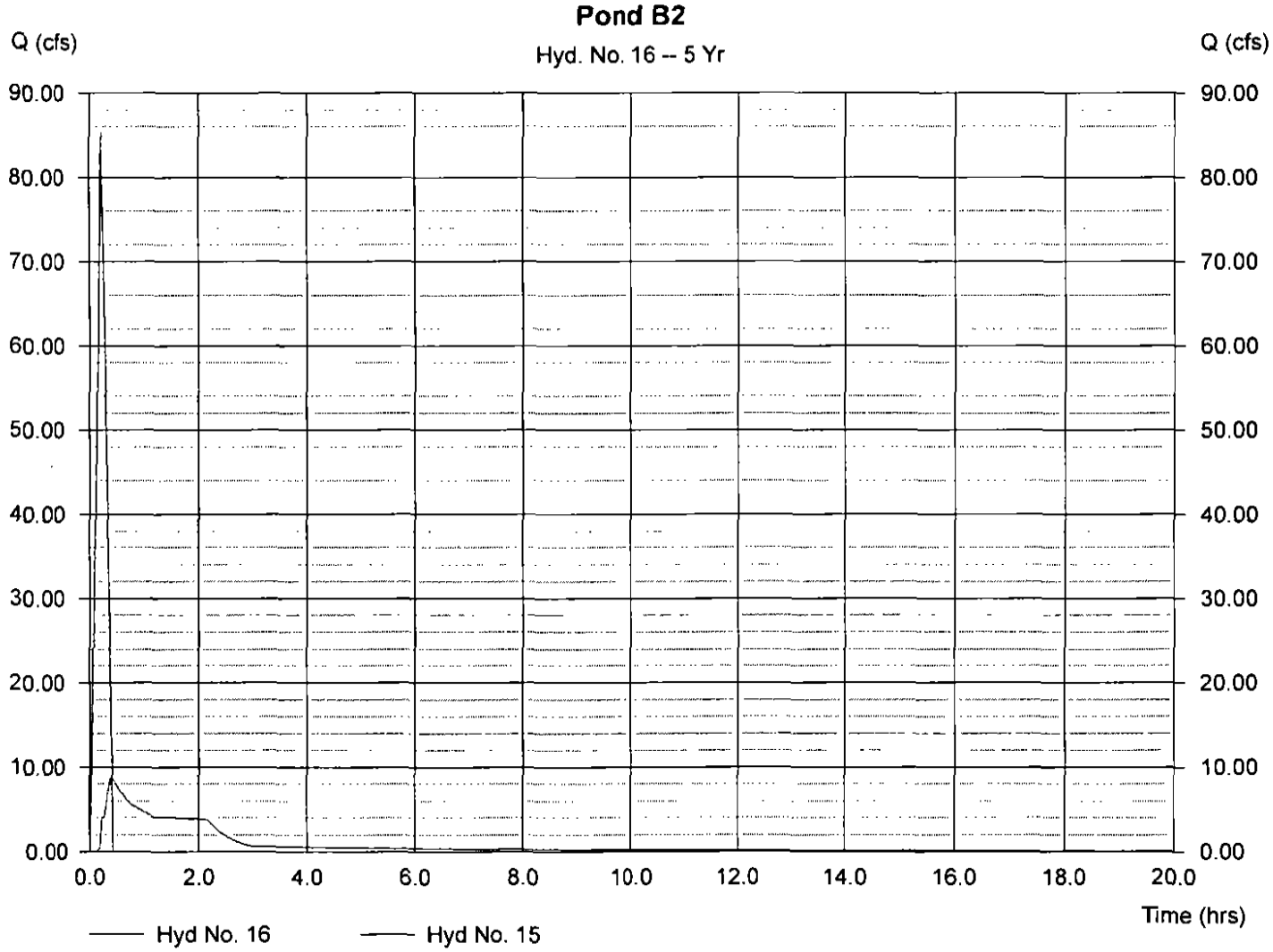
Hydraflow Hydrographs by Intelisolve | Tuesday, Jan 20 2015, 9:2 AM

Hyd. No. 16

Pond B2

Hydrograph type	= Reservoir	Peak discharge	= 8.758 cfs
Storm frequency	= 5 yrs	*Time interval*	= 1 *min*
Inflow hyd. No.	= 15	Max. Elevation	= 5700.42 ft
Reservoir name	= Pond B2	Max. Storage	= 103,043 cuft

Storage Indication method used. Wet pond routing start elevation = 5698.40 ft. | Hydrograph Volume = 58,488 cuft



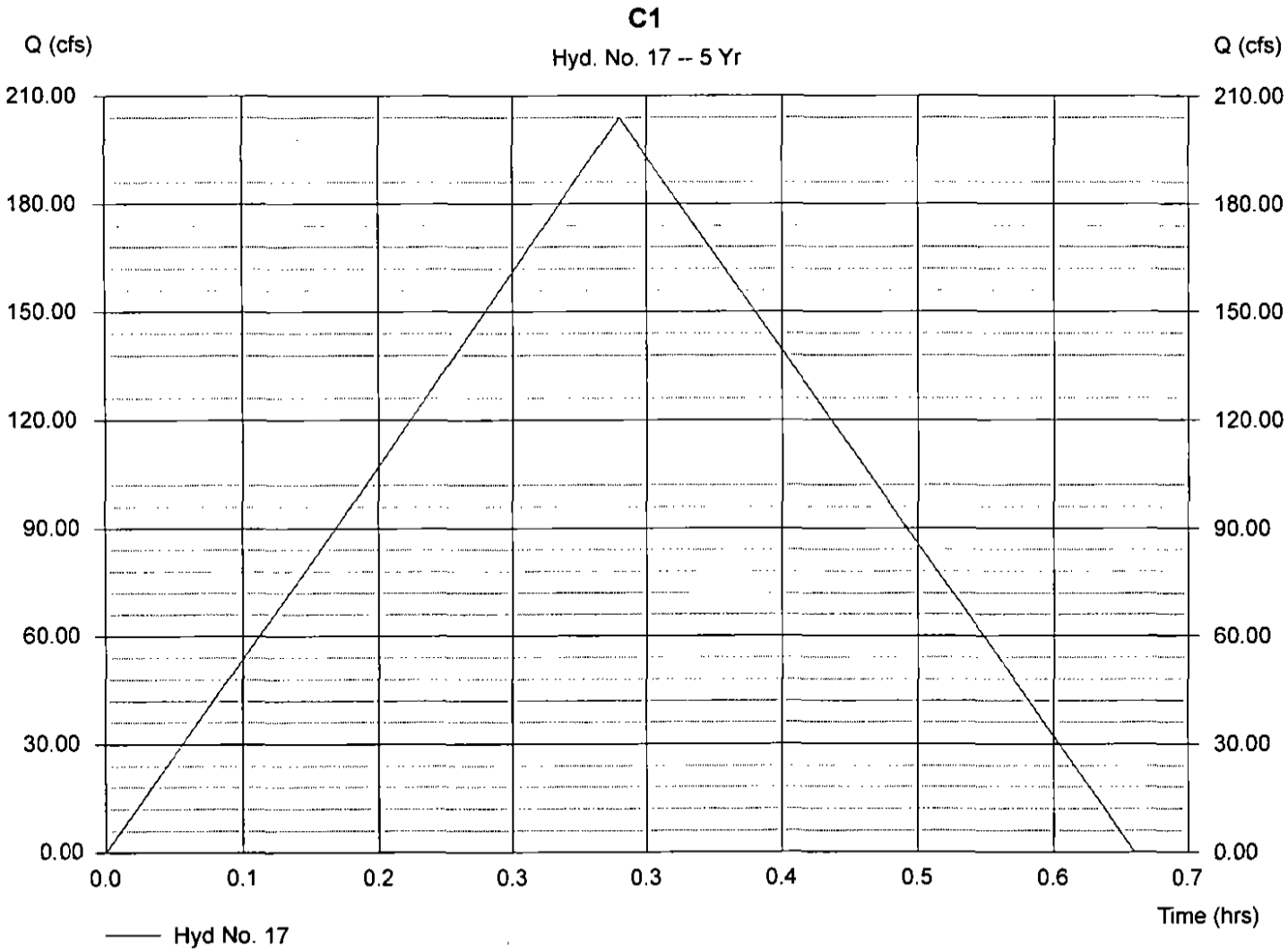
Hydrograph Plot

Hyd. No. 17

C1

Hydrograph type	= Rational	Peak discharge	= 203.99 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Drainage area	= 110.500 ac	Runoff coeff.	= 0.6
Intensity	= 3.077 in/hr	Tc by User	= 19.00 min
IDF Curve	= CS-IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 232,550 cuft



Hydrograph Plot

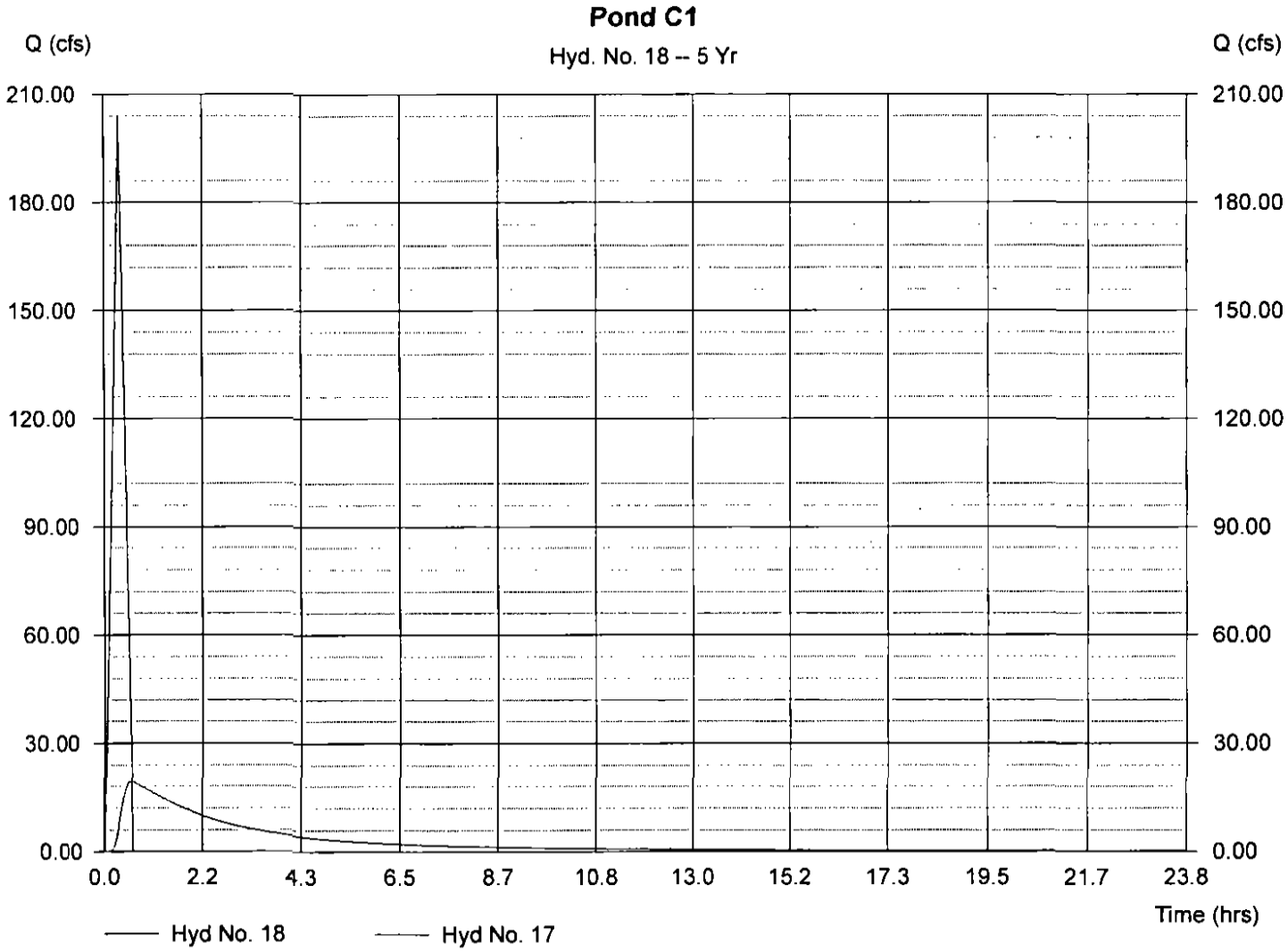
Hydraflow Hydrographs by Intelisolve | Tuesday, Jan 20 2015, 9:2 AM

Hyd. No. 18

Pond C1

Hydrograph type	= Reservoir	Peak discharge	= 19.47 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Inflow hyd. No.	= 17	Max. Elevation	= 5689.65 ft
Reservoir name	= Pond C1	Max. Storage	= 346,149 cuft

Storage Indication method used. Wet pond routing start elevation = 5687.40 ft. | Hydrograph Volume = 217,828 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

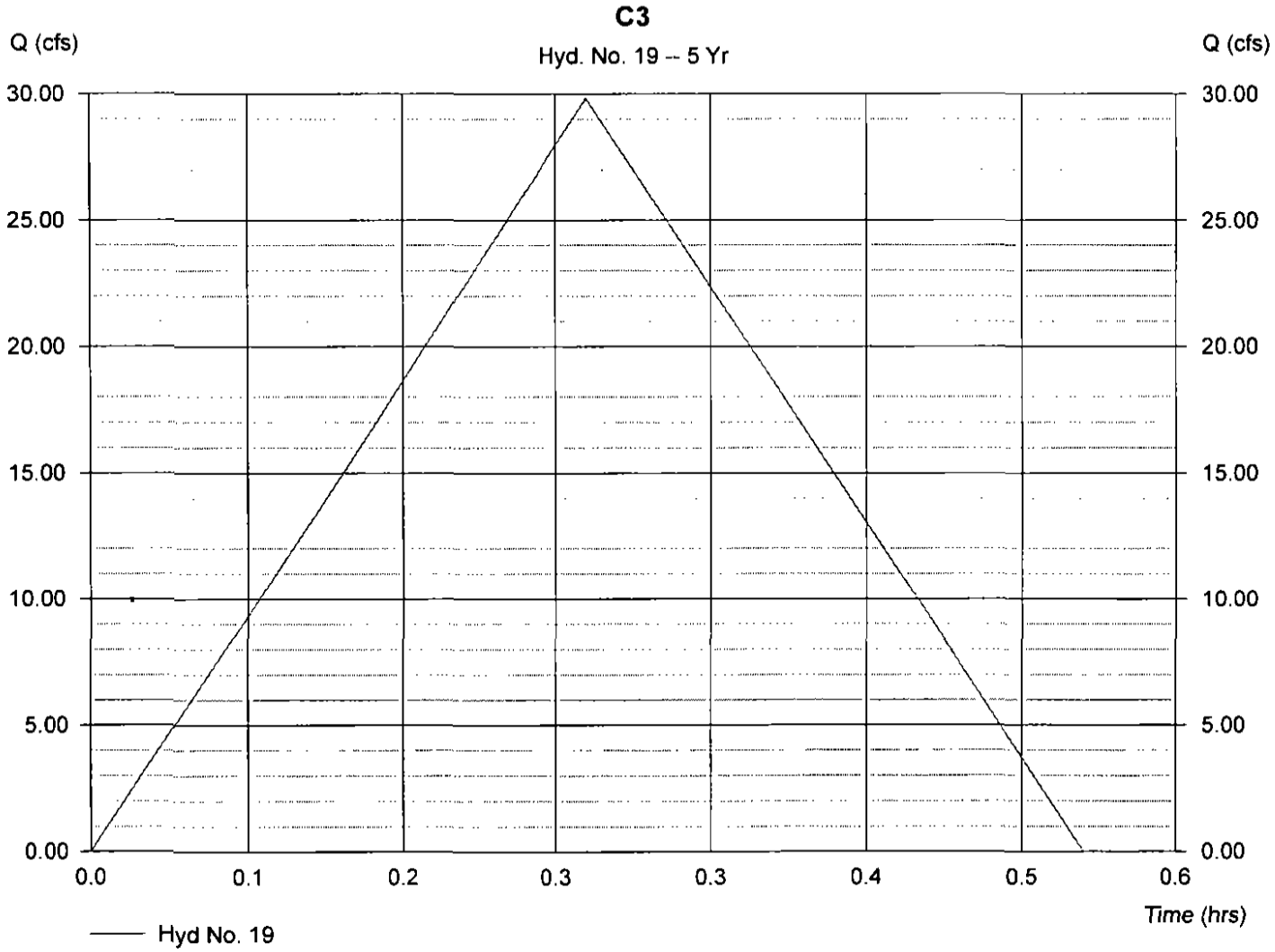
Tuesday, Jan 20 2015, 9:2 AM

Hyd. No. 19

C3

Hydrograph type	= Rational	Peak discharge	= 29.84 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Drainage area	= 14.800 ac	Runoff coeff.	= 0.6
Intensity	= 3.360 in/hr	Tc by User	= 16.00 min
IDF Curve	= CS-IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 28,648 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Tuesday, Jan 20 2015, 9:2 AM

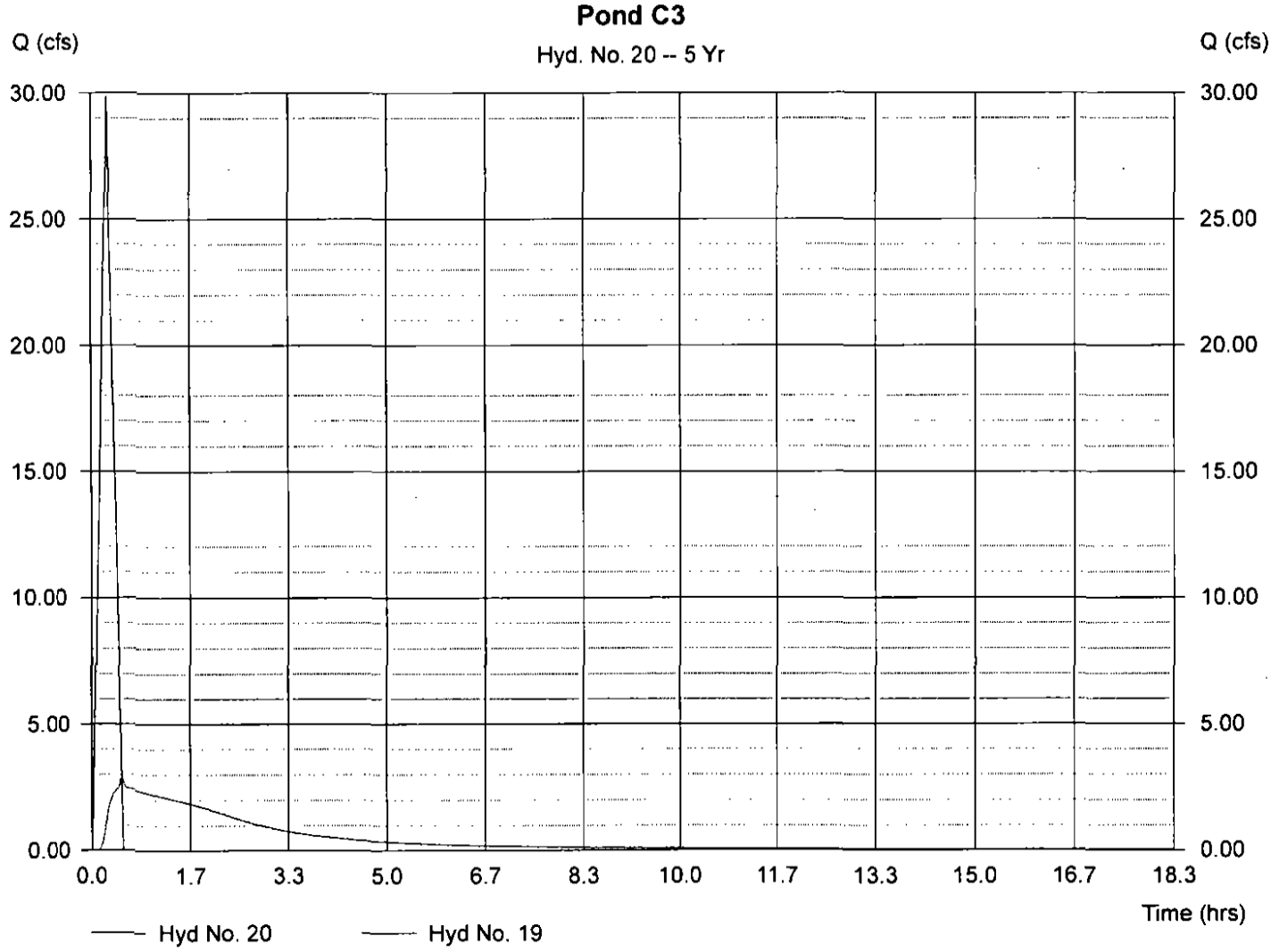
Hyd. No. 20

Pond C3

Hydrograph type	= Reservoir	Peak discharge	= 2.841 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Inflow hyd. No.	= 19	Max. Elevation	= 5693.42 ft
Reservoir name	= Pond C3	Max. Storage	= 26,232 cuft

Storage Indication method used.

Hydrograph Volume = 26,958 cuft



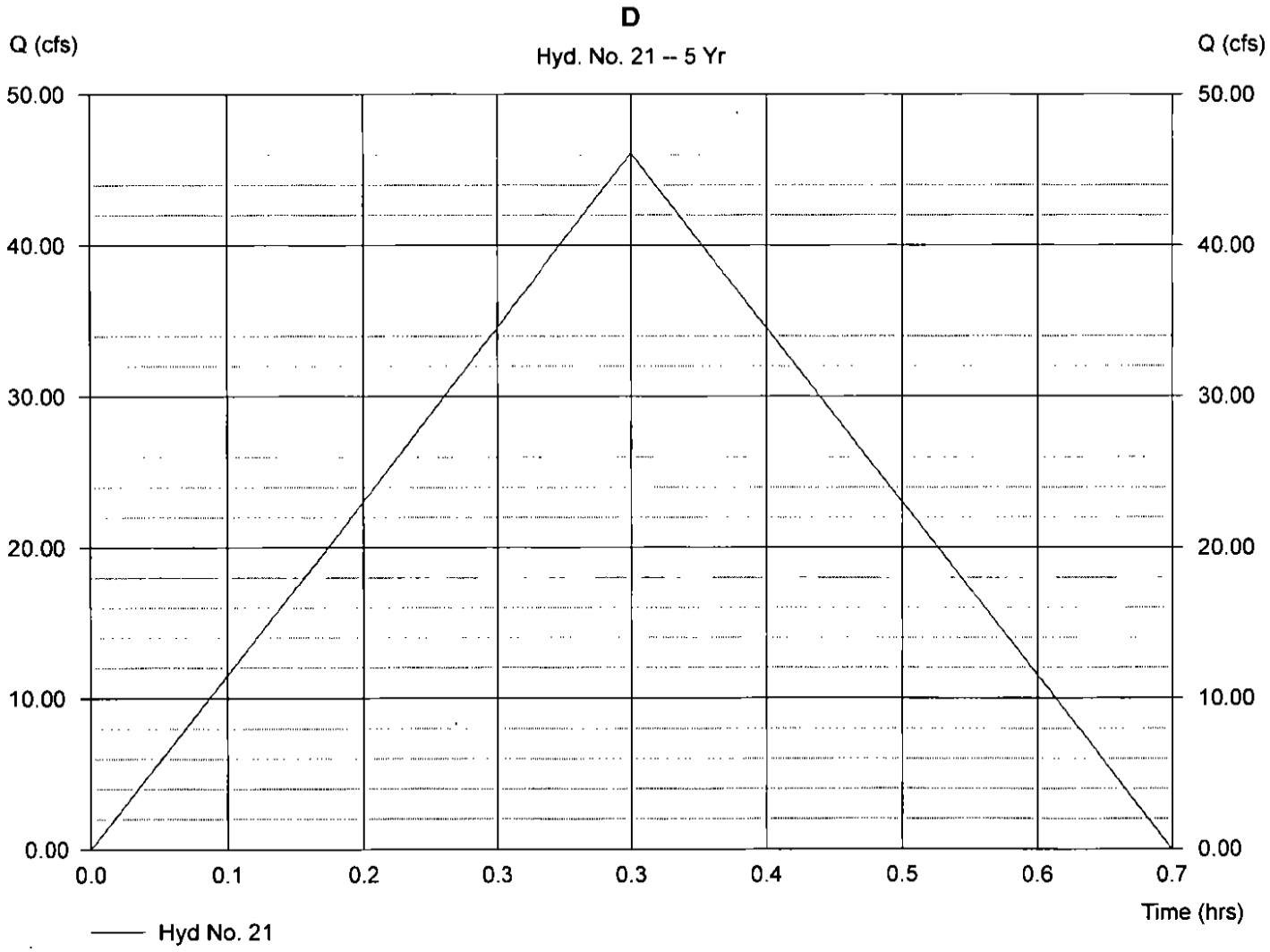
Hydrograph Plot

Hyd. No. 21

D

Hydrograph type	= Rational	Peak discharge	= 46.10 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Drainage area	= 27.500 ac	Runoff coeff.	= 0.56
Intensity	= 2.994 in/hr	Tc by User	= 20.00 min
IDF Curve	= CS-IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 55,320 cuft



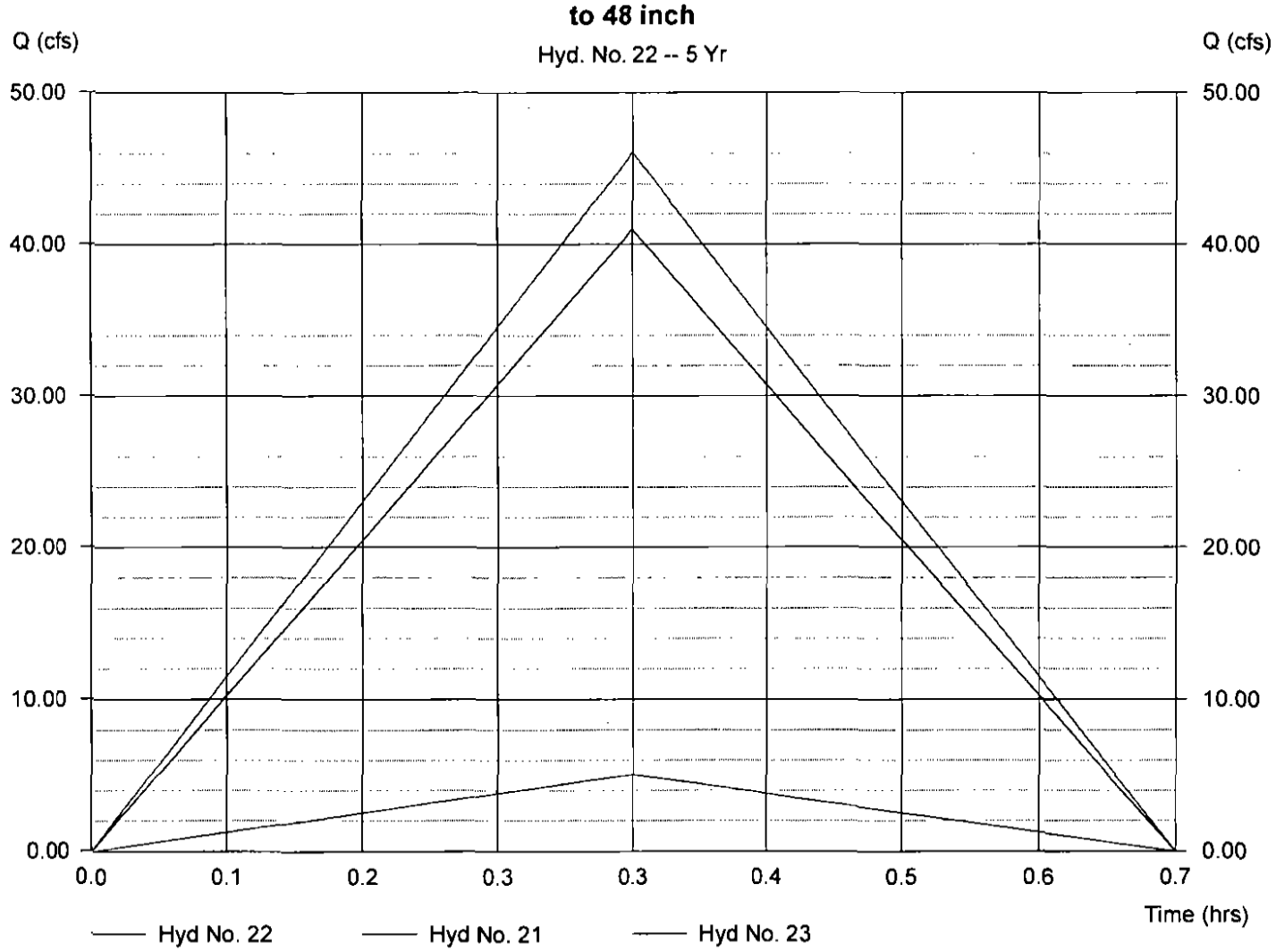
Hydrograph Plot

Hyd. No. 22

to 48 inch

Hydrograph type	= Diversion1	Peak discharge	= 5.071 cfs
Storm frequency	= 5 yrs	*Time interval*	= 1 *min*
Inflow hydrograph	= 21	2nd diverted hyd.	= 23
Diversion method	= Flow Ratio	Flow ratio	= 0.11

Hydrograph Volume = 6,085 cuft



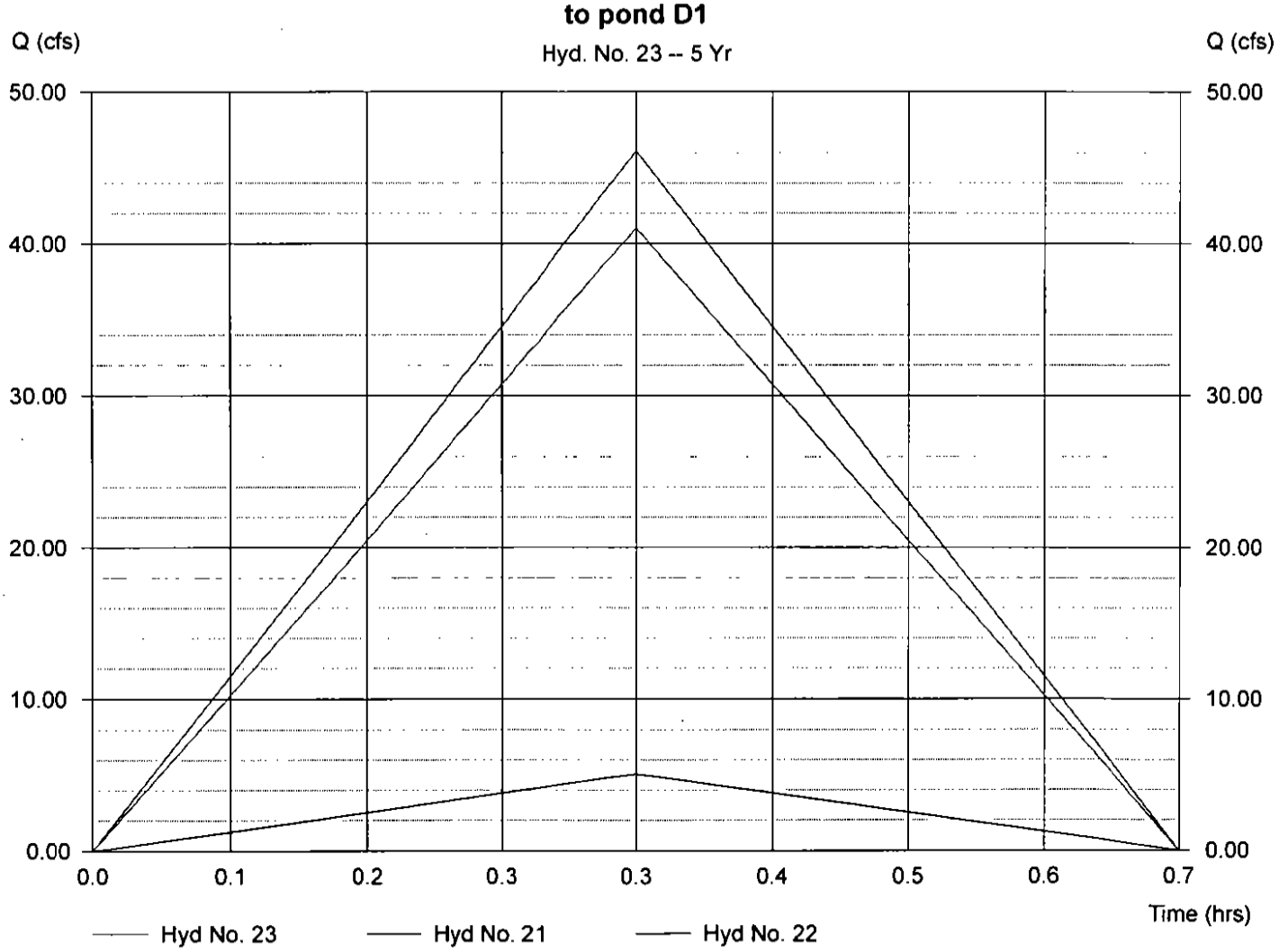
Hydrograph Plot

Hyd. No. 23

to pond D1

Hydrograph type	= Diversion2	Peak discharge	= 41.03 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Inflow hydrograph	= 21	2nd diverted hyd.	= 22
Diversion method	= Flow Ratio	Flow ratio	= 0.11

Hydrograph Volume = 49,235 cuft



Hydrograph Plot

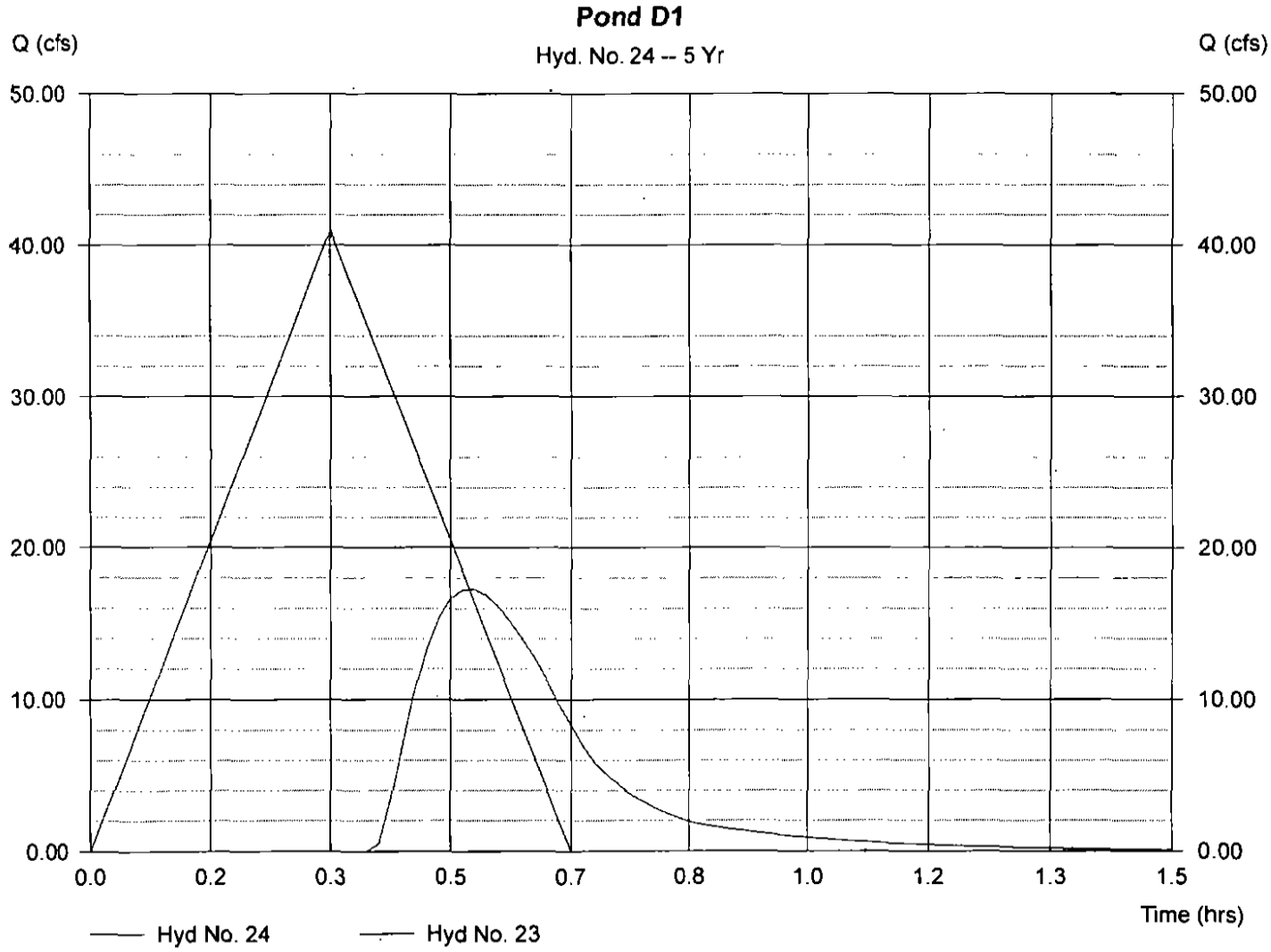
Hydraflow Hydrographs by Intelisolve — Tuesday, Jan 20 2015, 9:2 AM

Hyd. No. 24

Pond D1

Hydrograph type	= Reservoir	Peak discharge	= 17.27 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Inflow hyd. No.	= 23	Max. Elevation	= 5708.94 ft
Reservoir name	= Pond D1	Max. Storage	= 39,729 cuft

Storage Indication method used. — Hydrograph Volume = 16,166 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

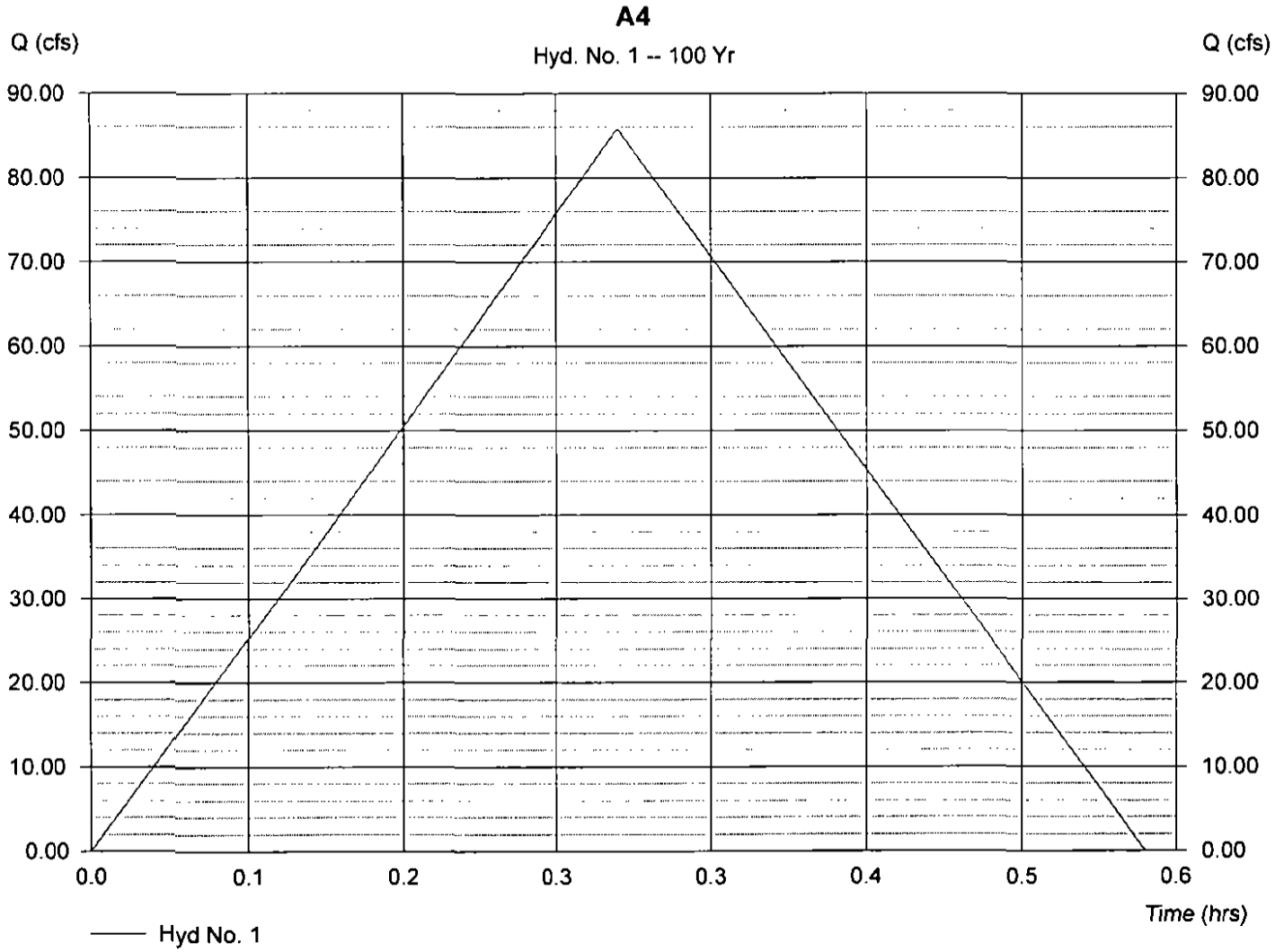
Tuesday, Jan 20 2015, 7:32 AM

Hyd. No. 1

A4

Hydrograph type	= Rational	Peak discharge	= 85.87 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 21.200 ac	Runoff coeff.	= 0.7
Intensity	= 5.786 in/hr	Tc by User	= 17.00 min
IDF Curve	= CS-IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 87,586 cuft



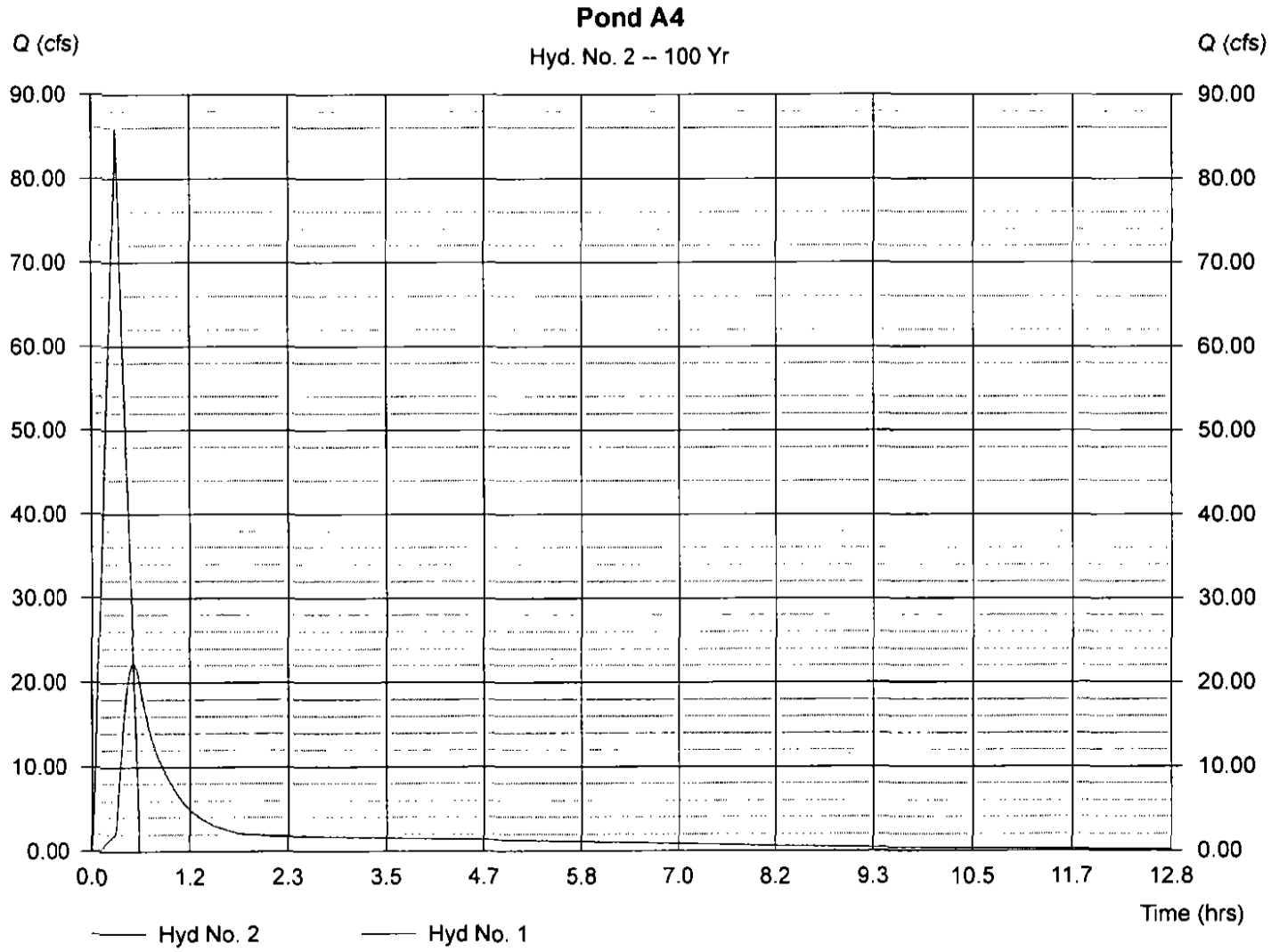
Hydrograph Plot

Hyd. No. 2

Pond A4

Hydrograph type	= Reservoir	Peak discharge	= 22.20 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hyd. No.	= 1	Max. Elevation	= 5718.63 ft
Reservoir name	= Pond A4	Max. Storage	= 83,929 cuft

Storage Indication method used. Wet pond routing start elevation = 5716.00 ft. Hydrograph Volume = 86,988 cuft



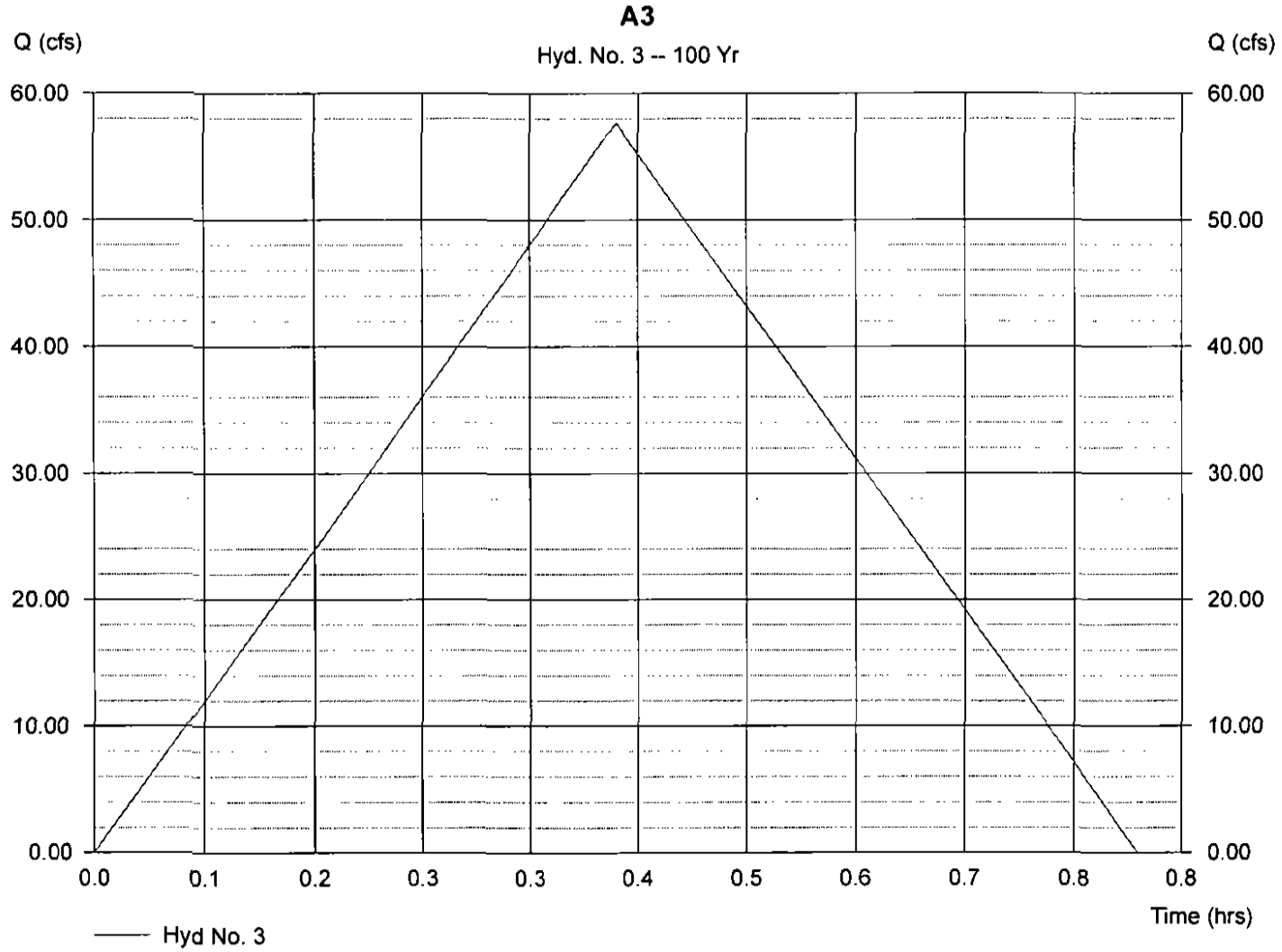
Hydrograph Plot

Hyd. No. 3

A3

Hydrograph type	= Rational	Peak discharge	= 57.67 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 15.800 ac	Runoff coeff.	= 0.76
Intensity	= 4.803 in/hr	Tc by User	= 24.00 min
IDF Curve	= CS-IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 83,047 cuft



Hydrograph Plot

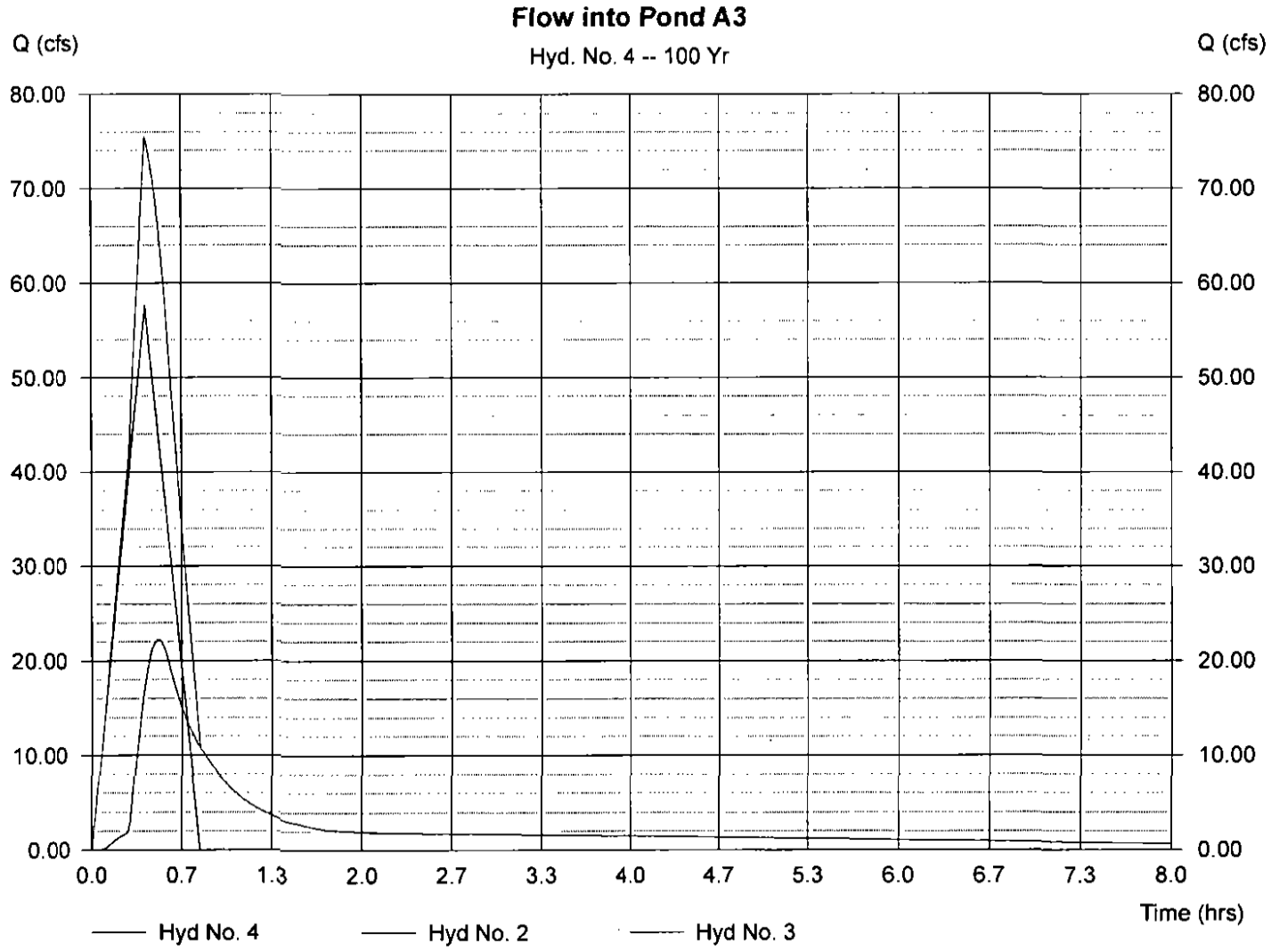
Hydraflow Hydrographs by Intelisolve | Tuesday, Jan 20 2015, 7:32 AM

Hyd. No. 4

Flow into Pond A3

Hydrograph type	= Combine	Peak discharge	= 75.57 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hyds.	= 2, 3		

Hydrograph Volume = 170,035 cuft



Hydrograph Plot

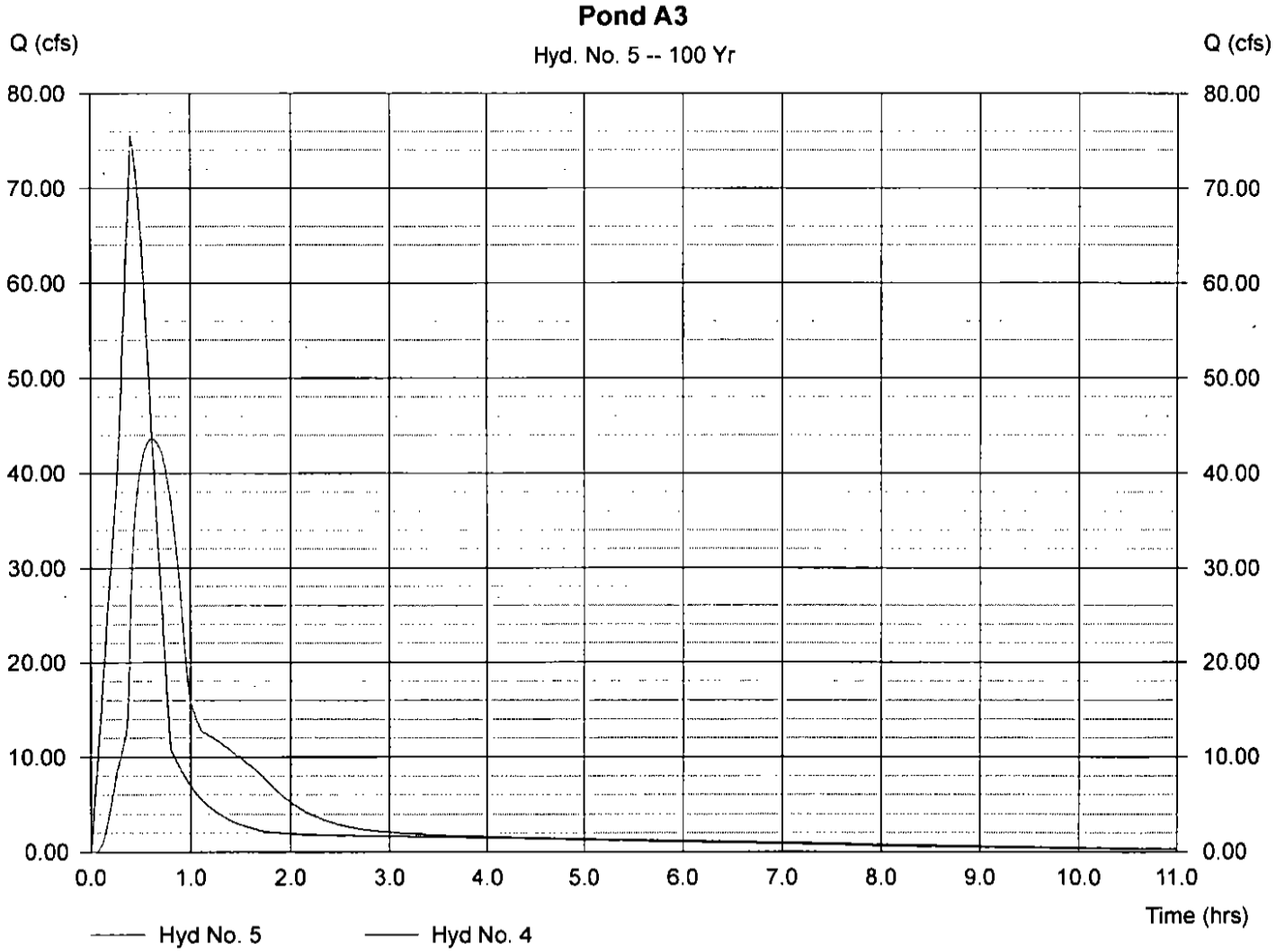
Hydraflow Hydrographs by Intelisolve | Tuesday, Jan 20 2015, 7:32 AM

Hyd. No. 5

Pond A3

Hydrograph type	= Reservoir	Peak discharge	= 43.61 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hyd. No.	= 4	Max. Elevation	= 5710.76 ft
Reservoir name	= POND A3	Max. Storage	= 56,138 cuft

Storage Indication method used. | Hydrograph Volume = 169,720 cuft



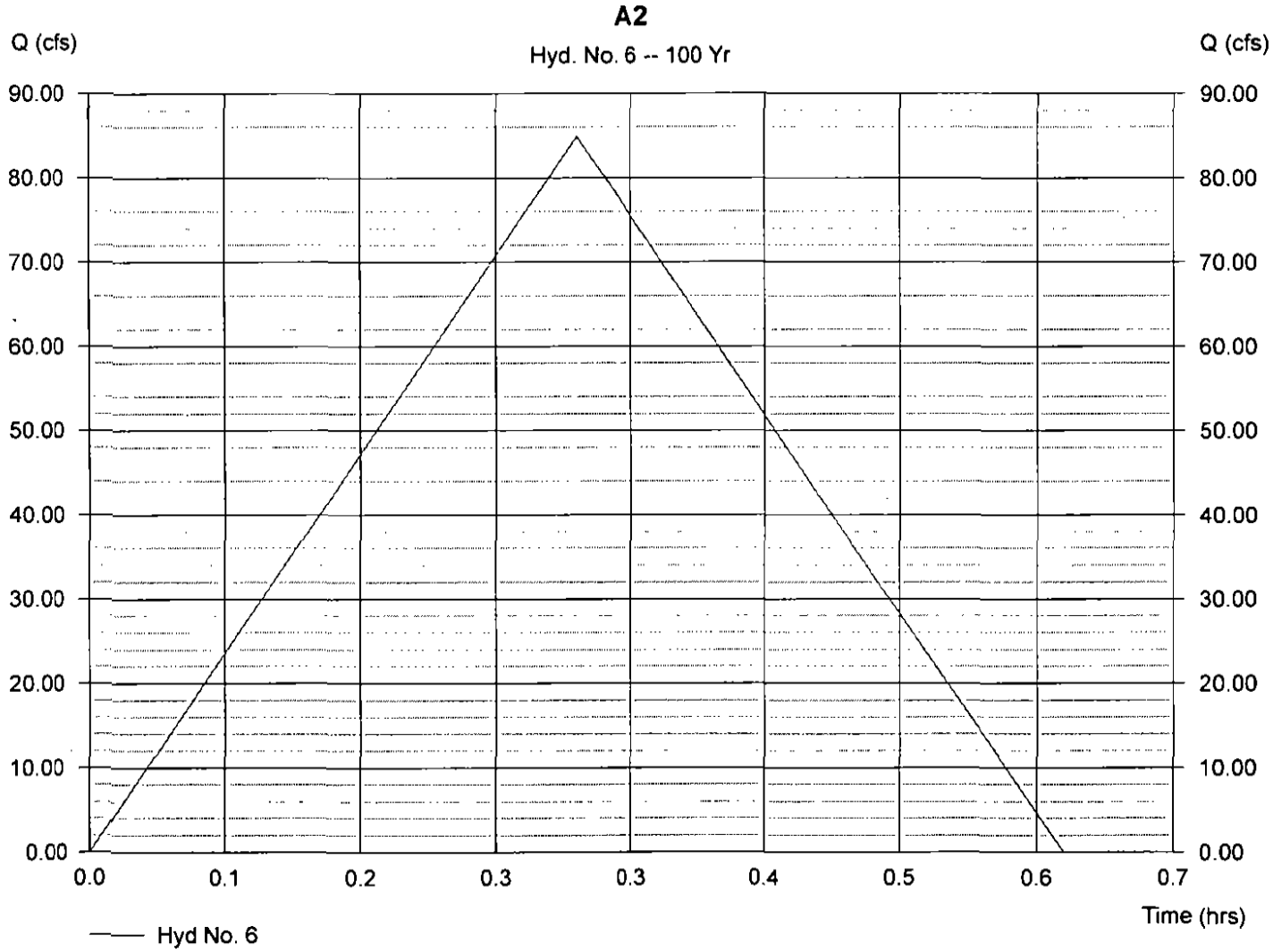
Hydrograph Plot

Hyd. No. 6

A2

Hydrograph type	= Rational	Peak discharge	= 84.96 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 21.600 ac	Runoff coeff.	= 0.7
Intensity	= 5.619 in/hr	Tc by User	= 18.00 min
IDF Curve	= CS-IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 91,755 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

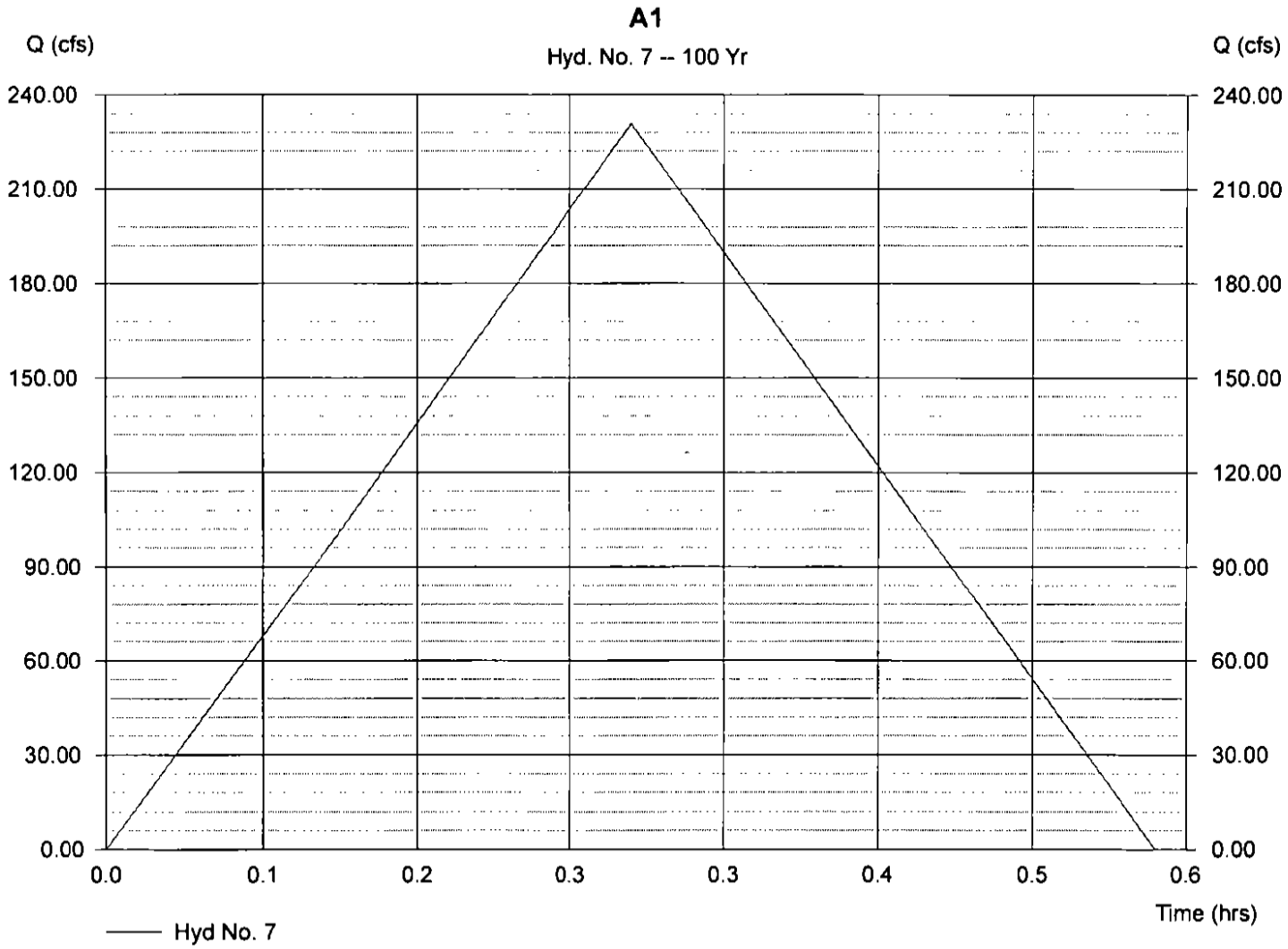
Tuesday, Jan 20 2015, 7:32 AM

Hyd. No. 7

A1

Hydrograph type	= Rational	Peak discharge	= 230.87 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 57.000 ac	Runoff coeff.	= 0.7
Intensity	= 5.786 in/hr	Tc by User	= 17.00 min
IDF Curve	= CS-IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 235,490 cuft



Hydrograph Plot

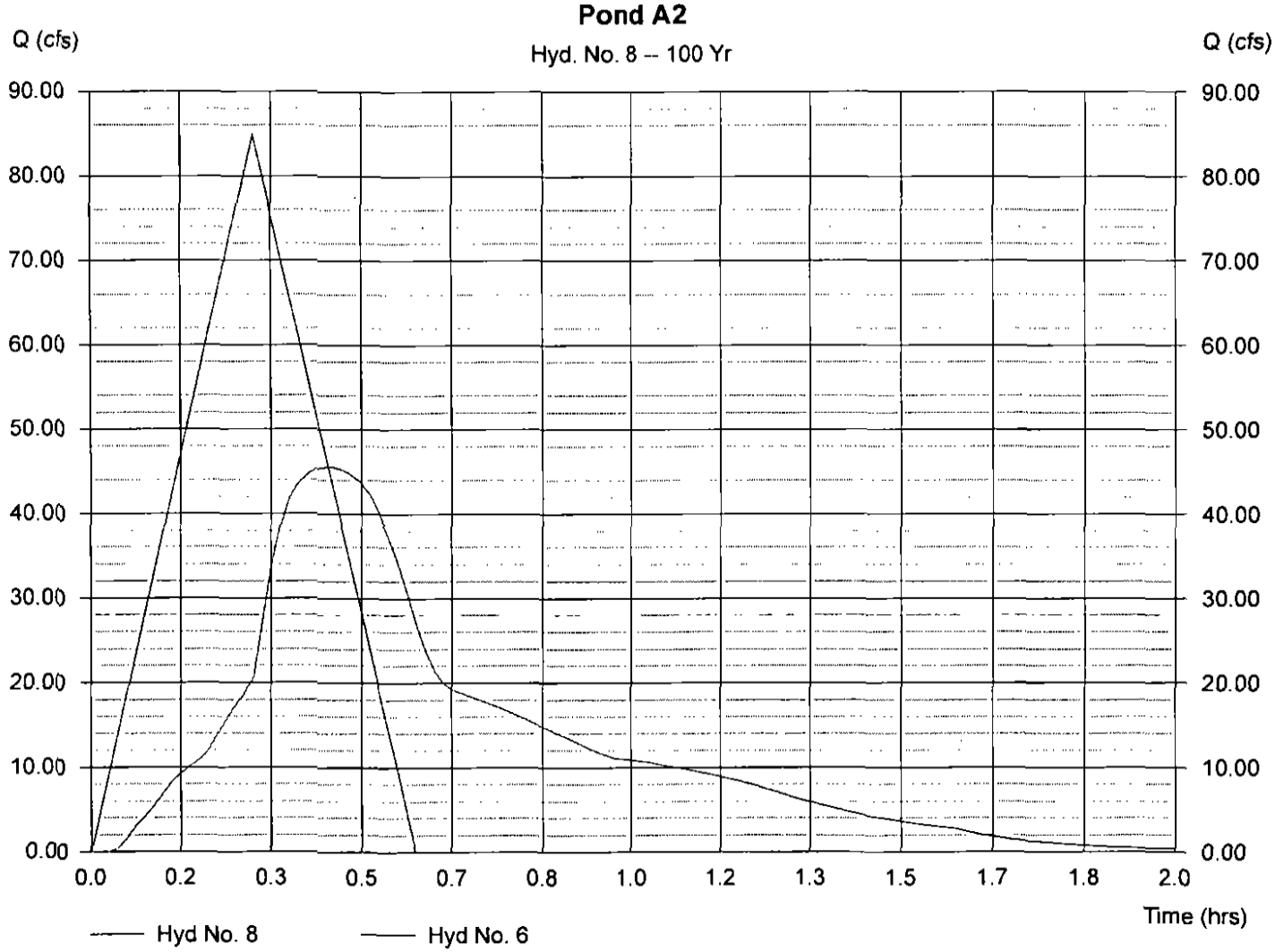
Hydraflow Hydrographs by Intelisolve | Tuesday, Jan 20 2015, 7:32 AM

Hyd. No. 8

Pond A2

Hydrograph type	= Reservoir	Peak discharge	= 45.57 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hyd. No.	= 6	Max. Elevation	= 5710.50 ft
Reservoir name	= POND A2	Max. Storage	= 50,221 cuft

Storage Indication method used. | Hydrograph Volume = 91,188 cuft



Hydrograph Plot

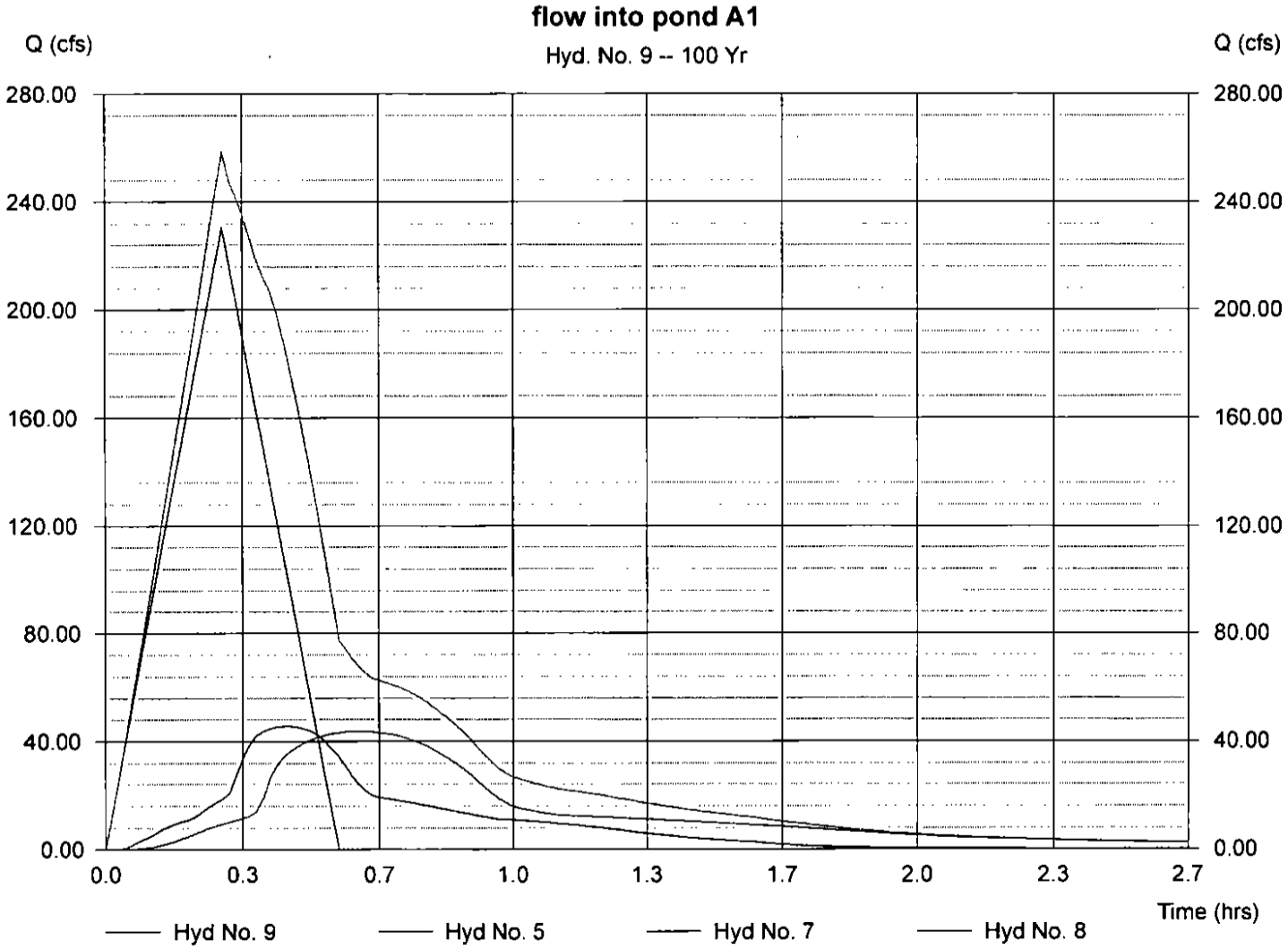
Hydraflow Hydrographs by Intelisolve | Tuesday, Jan 20 2015, 7:32 AM

Hyd. No. 9

flow into pond A1

Hydrograph type	= Combine	Peak discharge	= 258.83 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hyds.	= 5, 7, 8		

Hydrograph Volume = 496,399 cuft



Hydrograph Plot

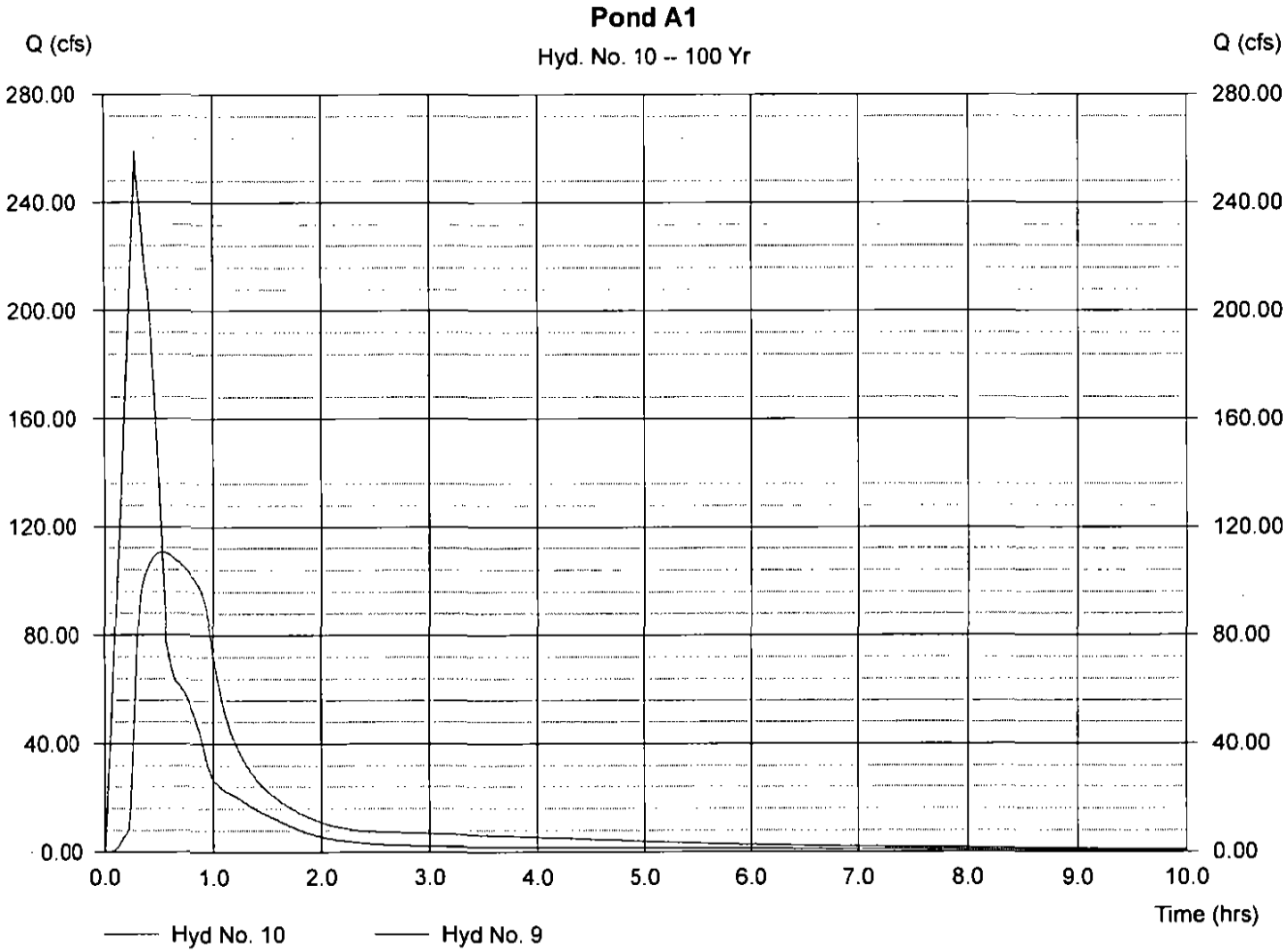
Hydraflow Hydrographs by Intelisolve | Tuesday, Jan 20 2015, 7:32 AM

Hyd. No. 10

Pond A1

Hydrograph type	= Reservoir	Peak discharge	= 110.61 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hyd. No.	= 9	Max. Elevation	= 5704.73 ft
Reservoir name	= POND A1	Max. Storage	= 296,688 cuft

Storage Indication method used. Wet pond routing start elevation = 5701.00 ft. | Hydrograph Volume = 494,715 cuft



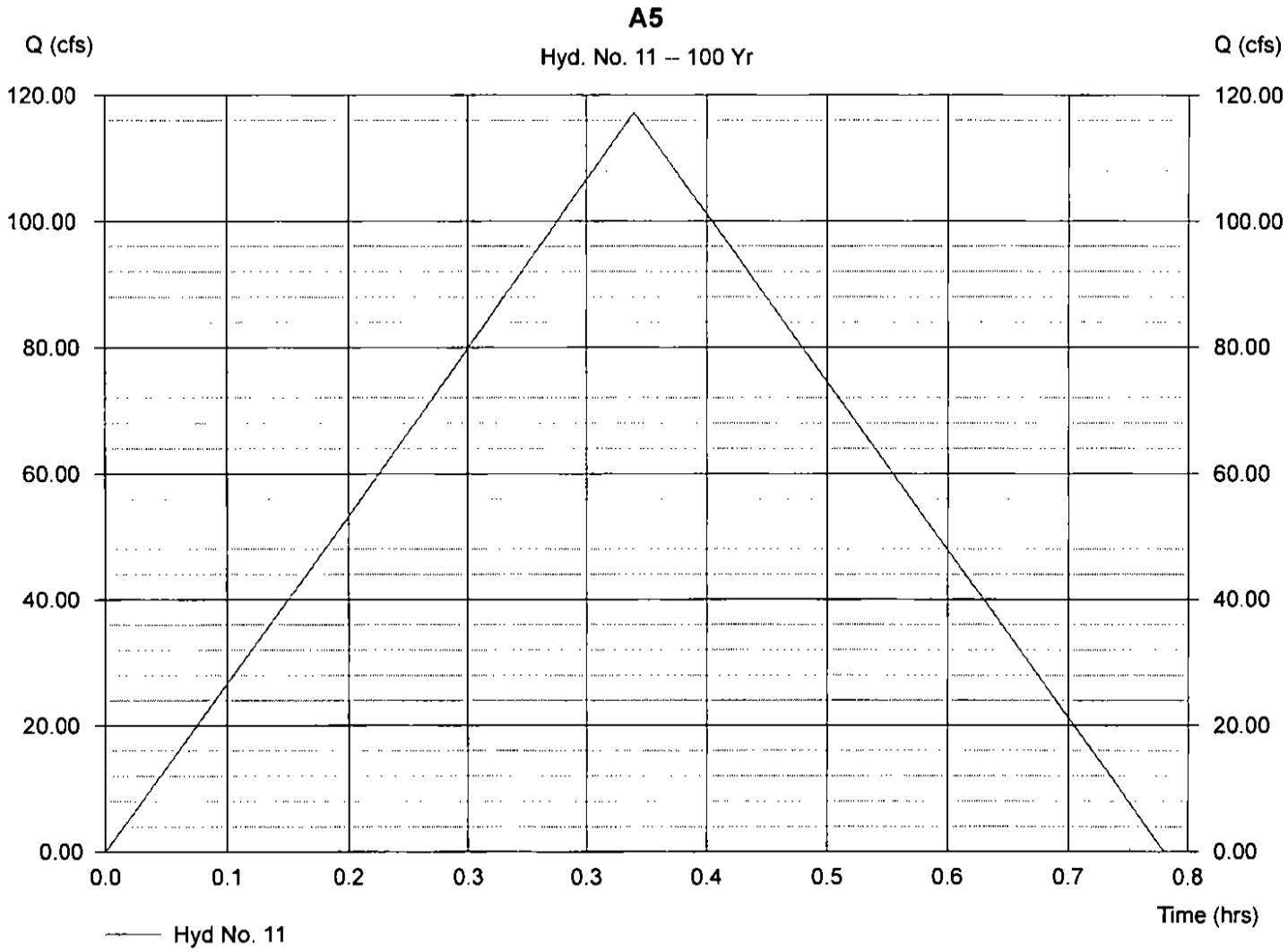
Hydrograph Plot

Hyd. No. 11

A5

Hydrograph type	= Rational	Peak discharge	= 117.28 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 31.000 ac	Runoff coeff.	= 0.75
Intensity	= 5.044 in/hr	Tc by User	= 22.00 min
IDF Curve	= CS-IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 154,808 cuft



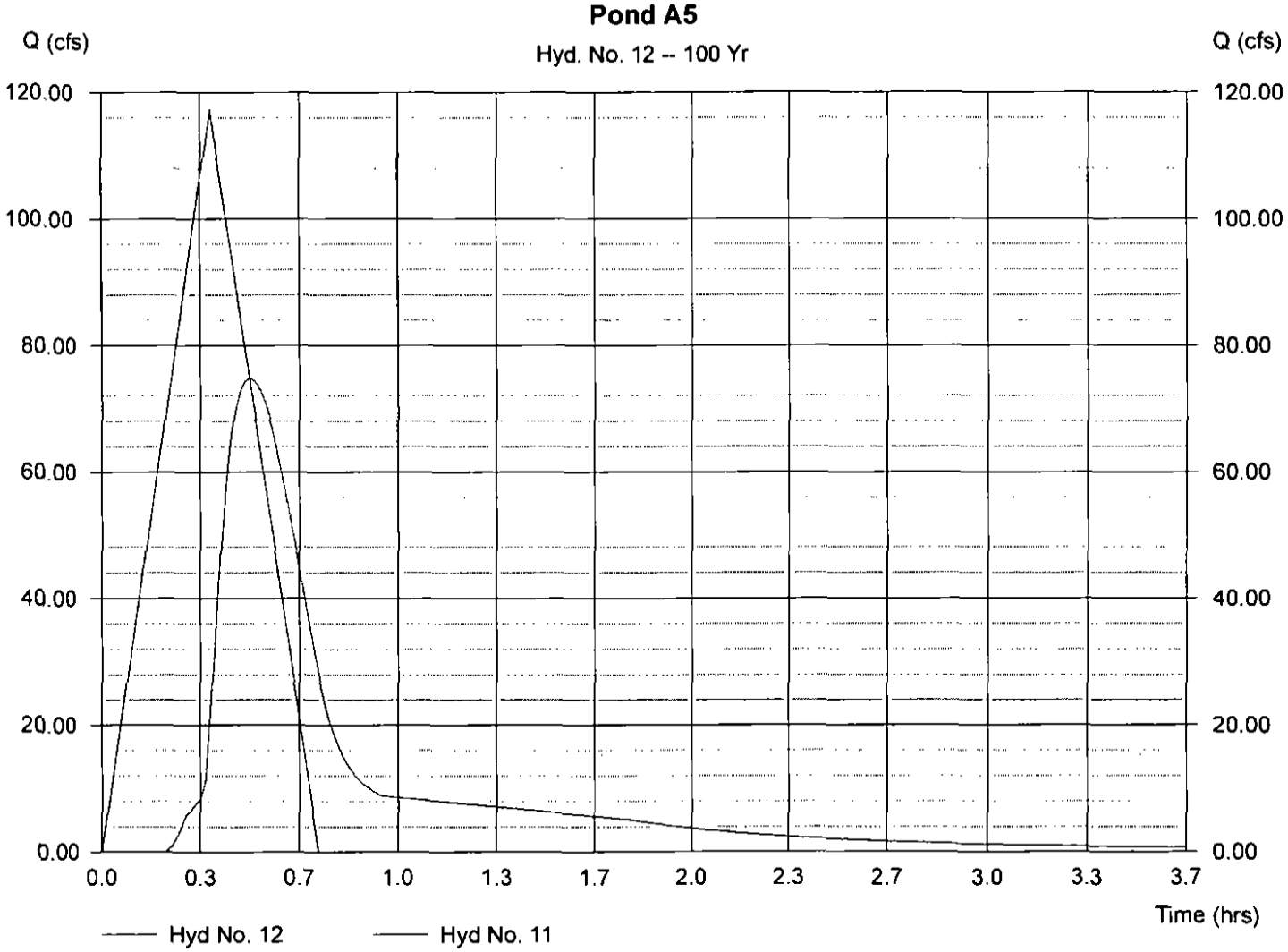
Hydrograph Plot

Hyd. No. 12

Pond A5

Hydrograph type	= Reservoir	Peak discharge	= 74.86 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hyd. No.	= 11	Max. Elevation	= 5715.07 ft
Reservoir name	= Pond A5	Max. Storage	= 97,310 cuft

Storage Indication method used. Wet pond routing start elevation = 5710.00 ft. Hydrograph Volume = 128,148 cuft



Hydrograph Plot

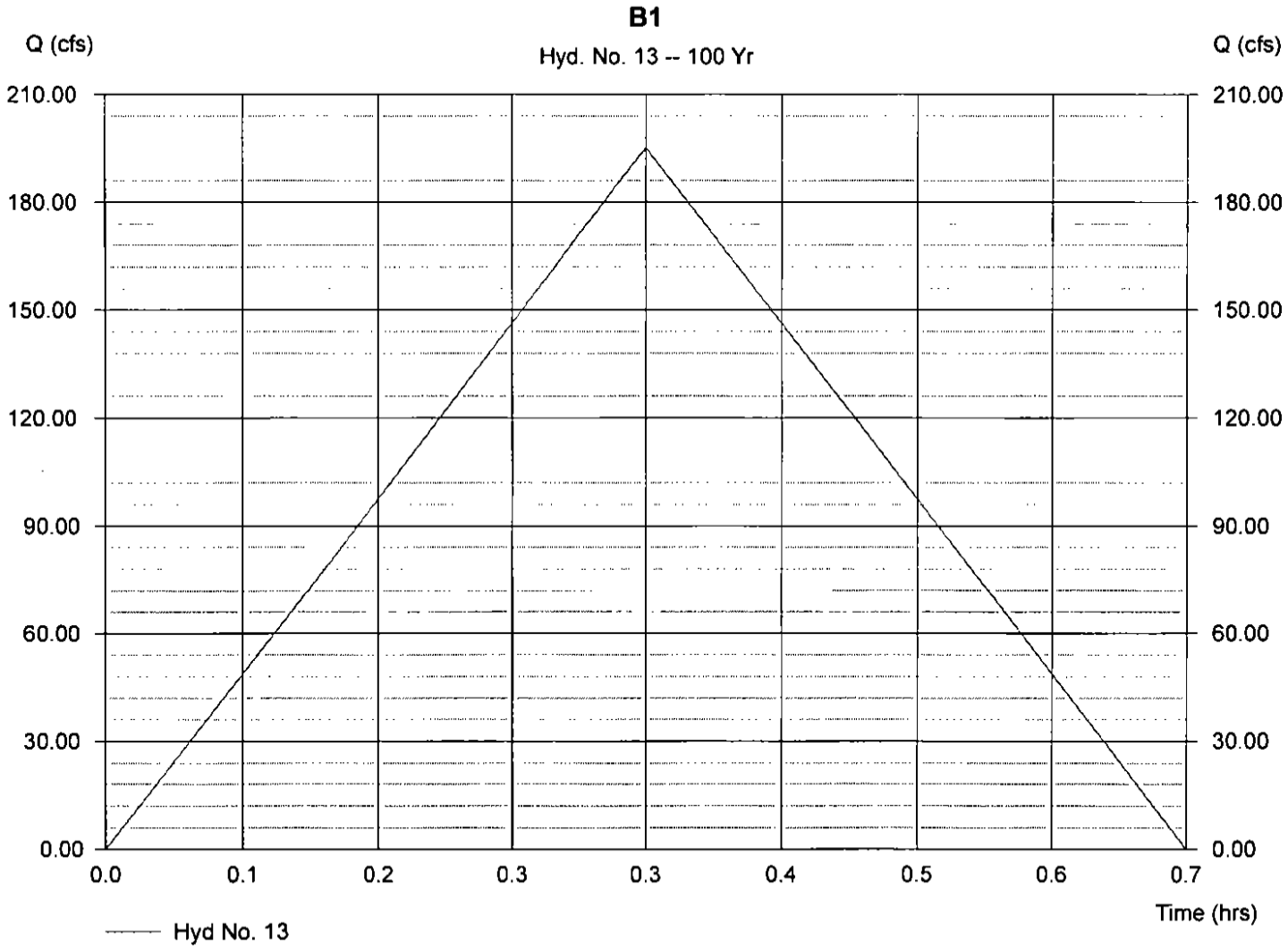
Hydraflow Hydrographs by Intelisolve | Tuesday, Jan 20 2015, 7:32 AM

Hyd. No. 13

B1

Hydrograph type	= Rational	Peak discharge	= 195.31 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 52.500 ac	Runoff coeff.	= 0.7
Intensity	= 5.314 in/hr	Tc by User	= 20.00 min
IDF Curve	= CS-IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 234,367 cuft



Hydrograph Plot

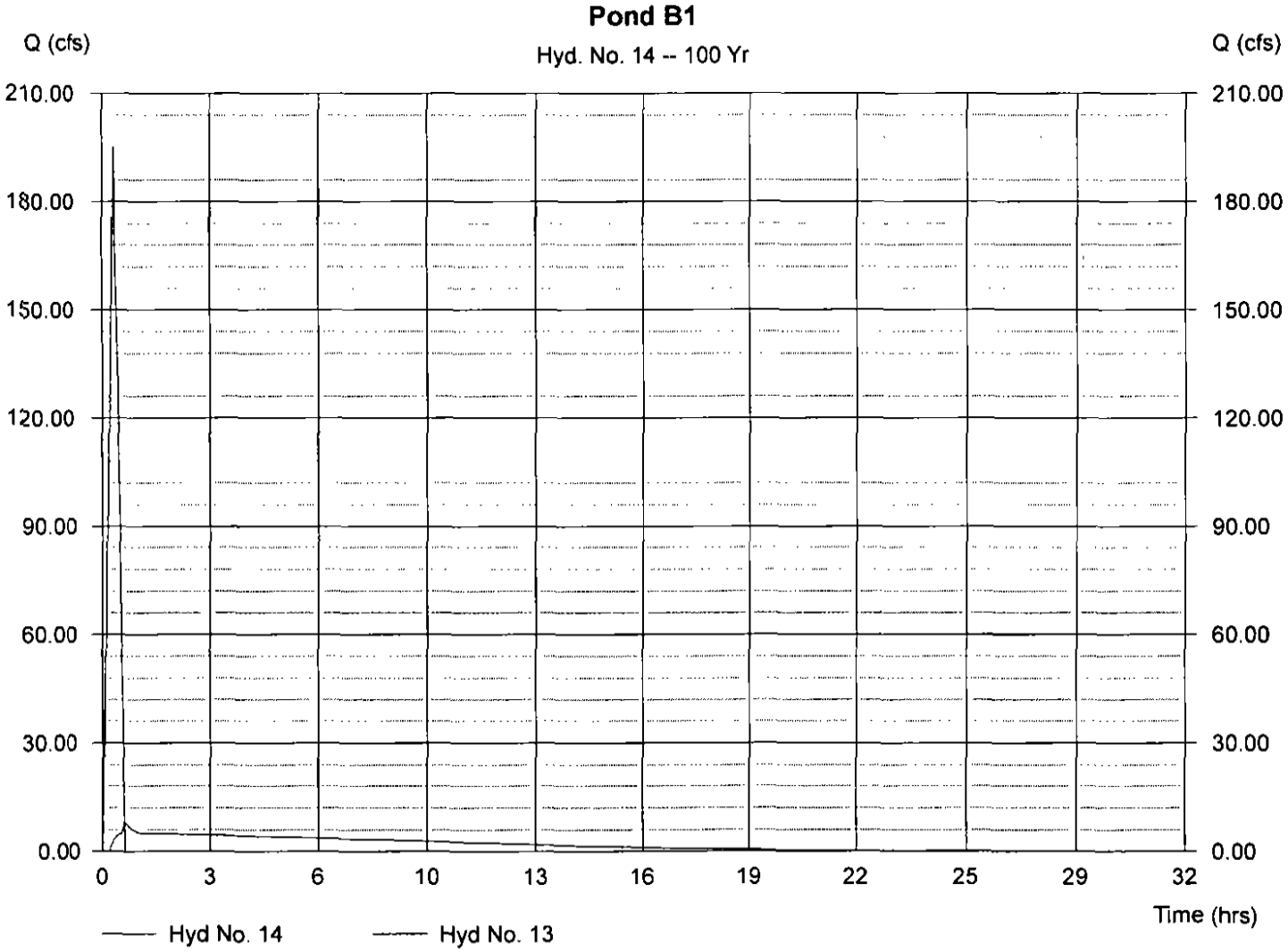
Hyd. No. 14

Pond B1

Hydrograph type	= Reservoir	Peak discharge	= 8.259 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hyd. No.	= 13	Max. Elevation	= 5712.68 ft
Reservoir name	= Pond B1	Max. Storage	= 266,222 cuft

Storage Indication method used. Wet pond routing start elevation = 5707.60 ft.

Hydrograph Volume = 197,737 cuft



Hydrograph Plot

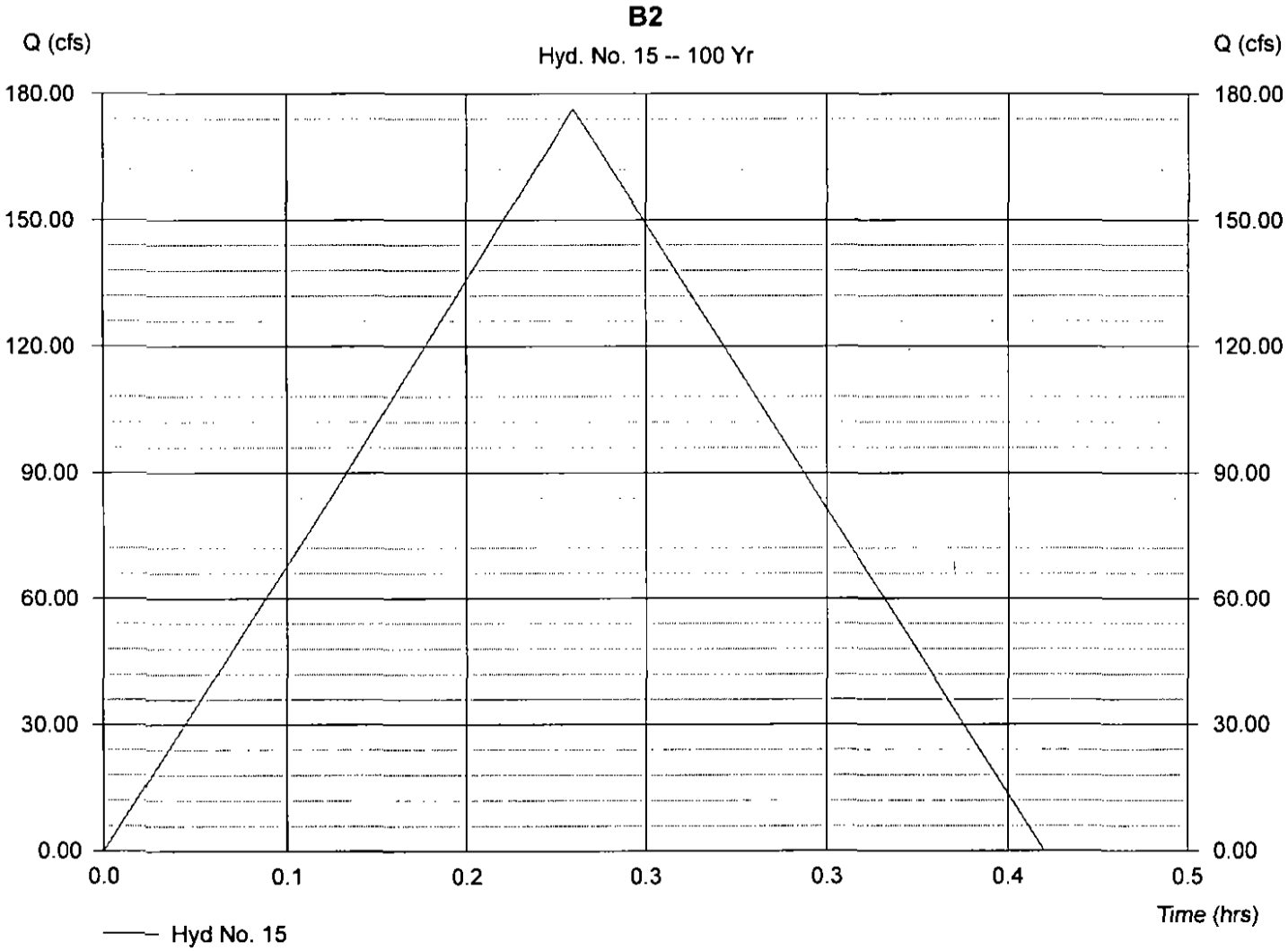
Hydraflow Hydrographs by Intelisolve | Tuesday, Jan 20 2015, 7:32 AM

Hyd. No. 15

B2

Hydrograph type	= Rational	Peak discharge	= 176.51 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 38.300 ac	Runoff coeff.	= 0.7
Intensity	= 6.584 in/hr	Tc by User	= 13.00 min
IDF Curve	= CS-IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 137,681 cuft



Hydrograph Plot

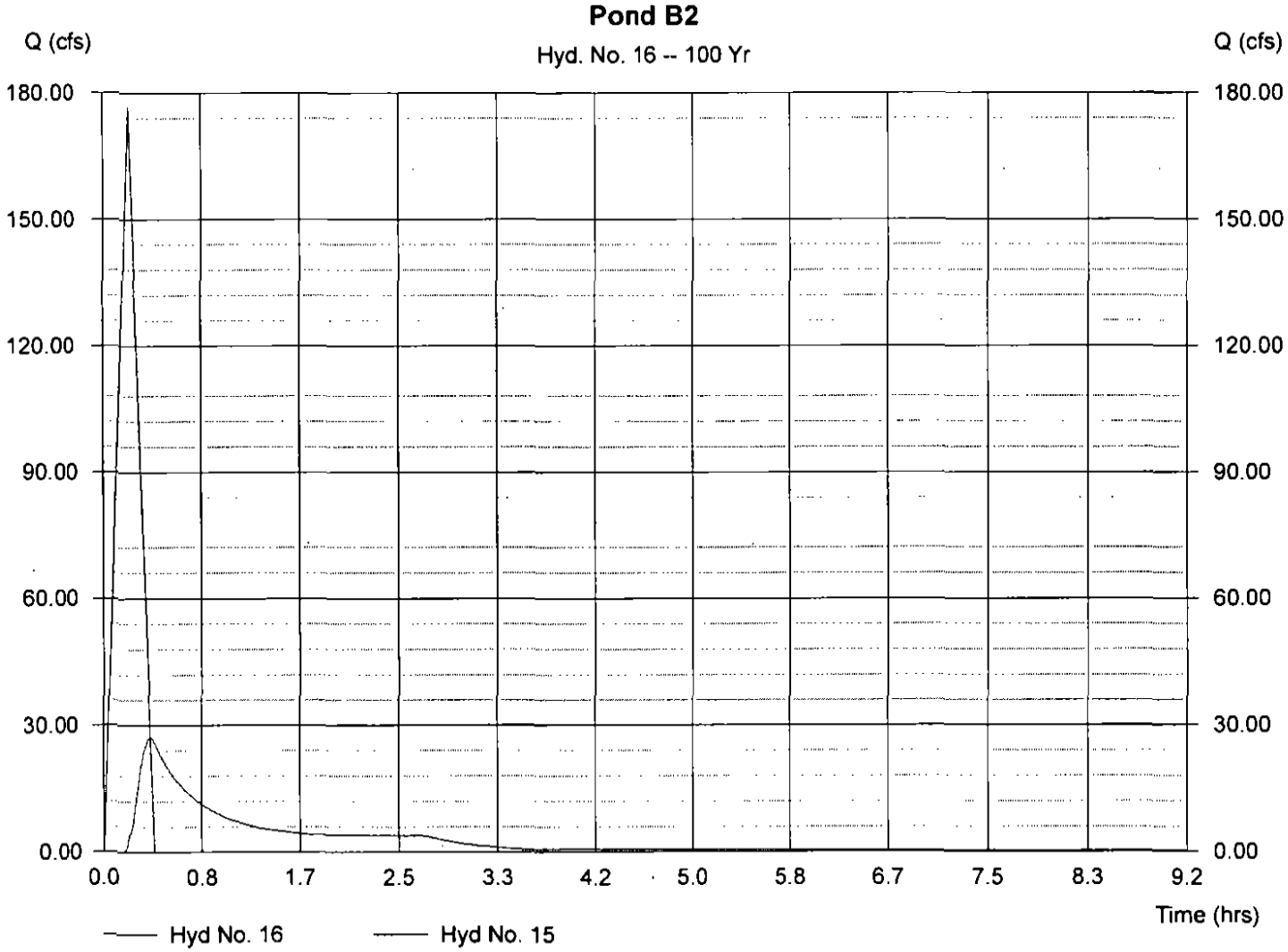
Hydraflow Hydrographs by Intelisolve | Tuesday, Jan 20 2015, 7:32 AM

Hyd. No. 16

Pond B2

Hydrograph type	= Reservoir	Peak discharge	= 27.17 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hyd. No.	= 15	Max. Elevation	= 5700.87 ft
Reservoir name	= Pond B2	Max. Storage	= 134,922 cuft

Storage Indication method used. Wet pond routing start elevation = 5696.50 ft. | Hydrograph Volume = 98,374 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

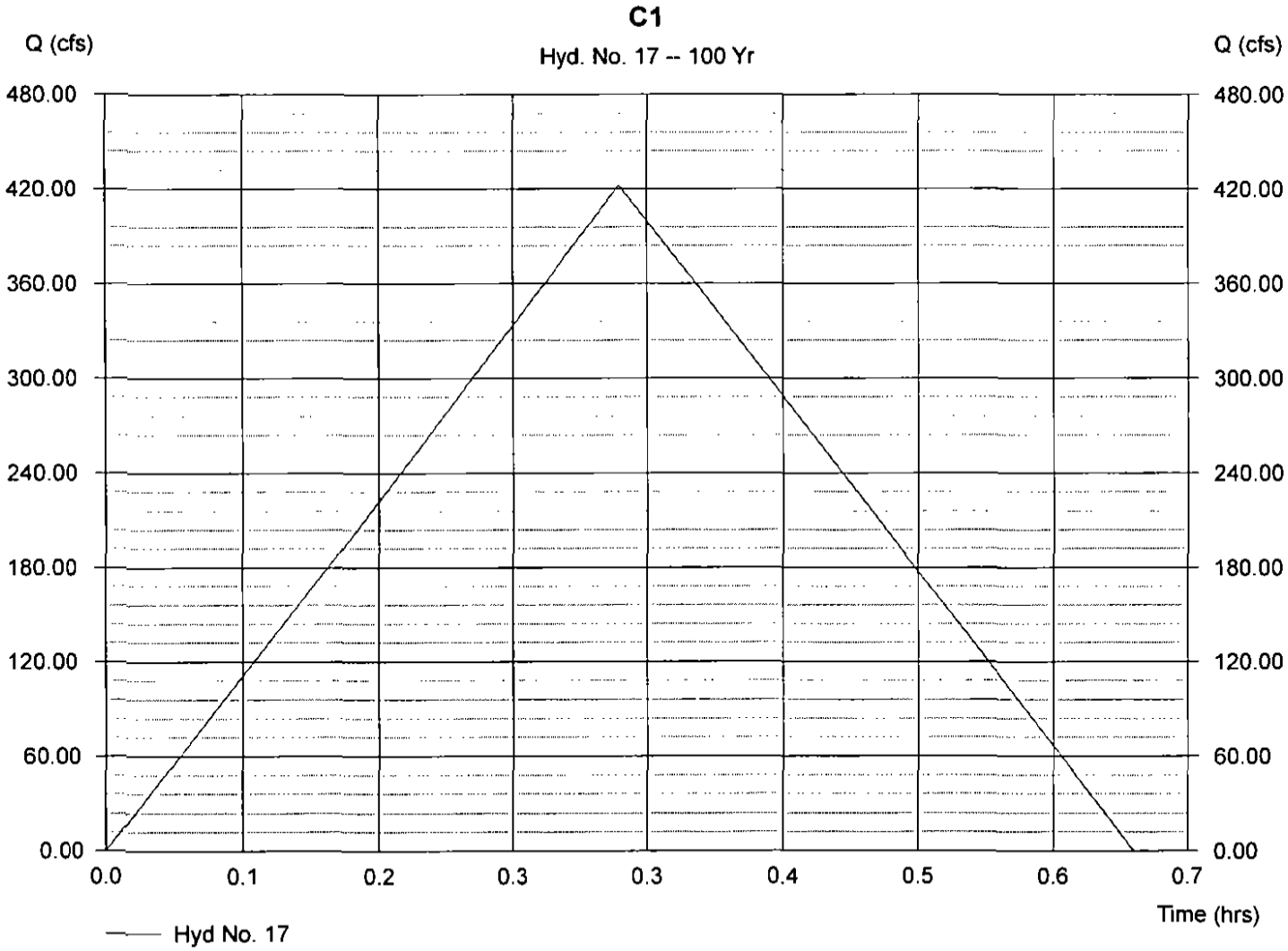
Tuesday, Jan 20 2015, 7:32 AM

Hyd. No. 17

C1

Hydrograph type	= Rational	Peak discharge	= 422.49 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 110.500 ac	Runoff coeff.	= 0.7
Intensity	= 5.462 in/hr	Tc by User	= 19.00 min
IDF Curve	= CS-IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 481,634 cuft



Hydrograph Plot

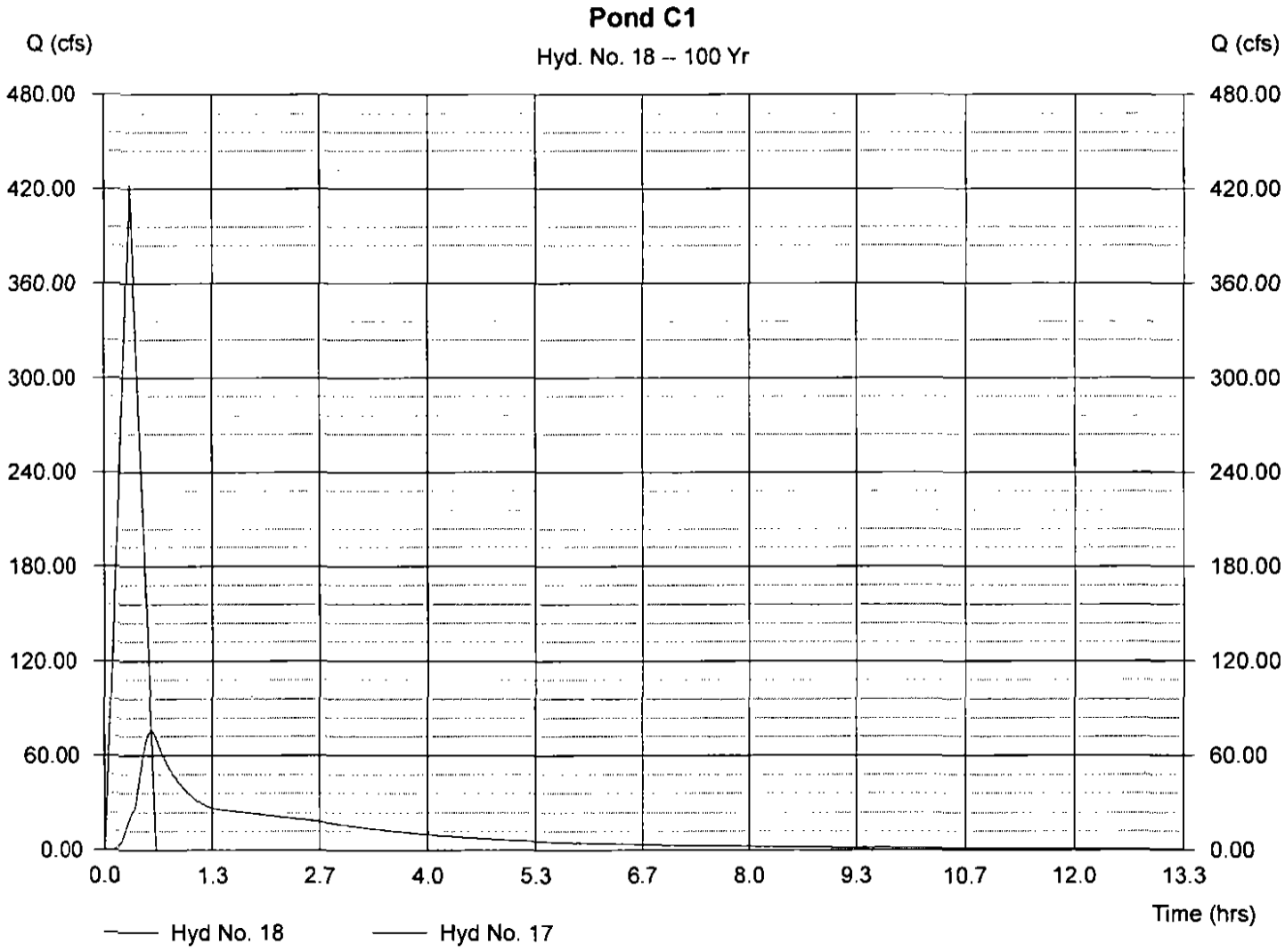
Hydraflow Hydrographs by Intelisolve | Tuesday, Jan 20 2015, 7:32 AM

Hyd. No. 18

Pond C1

Hydrograph type	= Reservoir	Peak discharge	= 75.49 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hyd. No.	= 17	Max. Elevation	= 5691.52 ft
Reservoir name	= Pond C1	Max. Storage	= 553,505 cuft

Storage Indication method used. Wet pond routing start elevation = 5687.40 ft. | Hydrograph Volume = 466,588 cuft



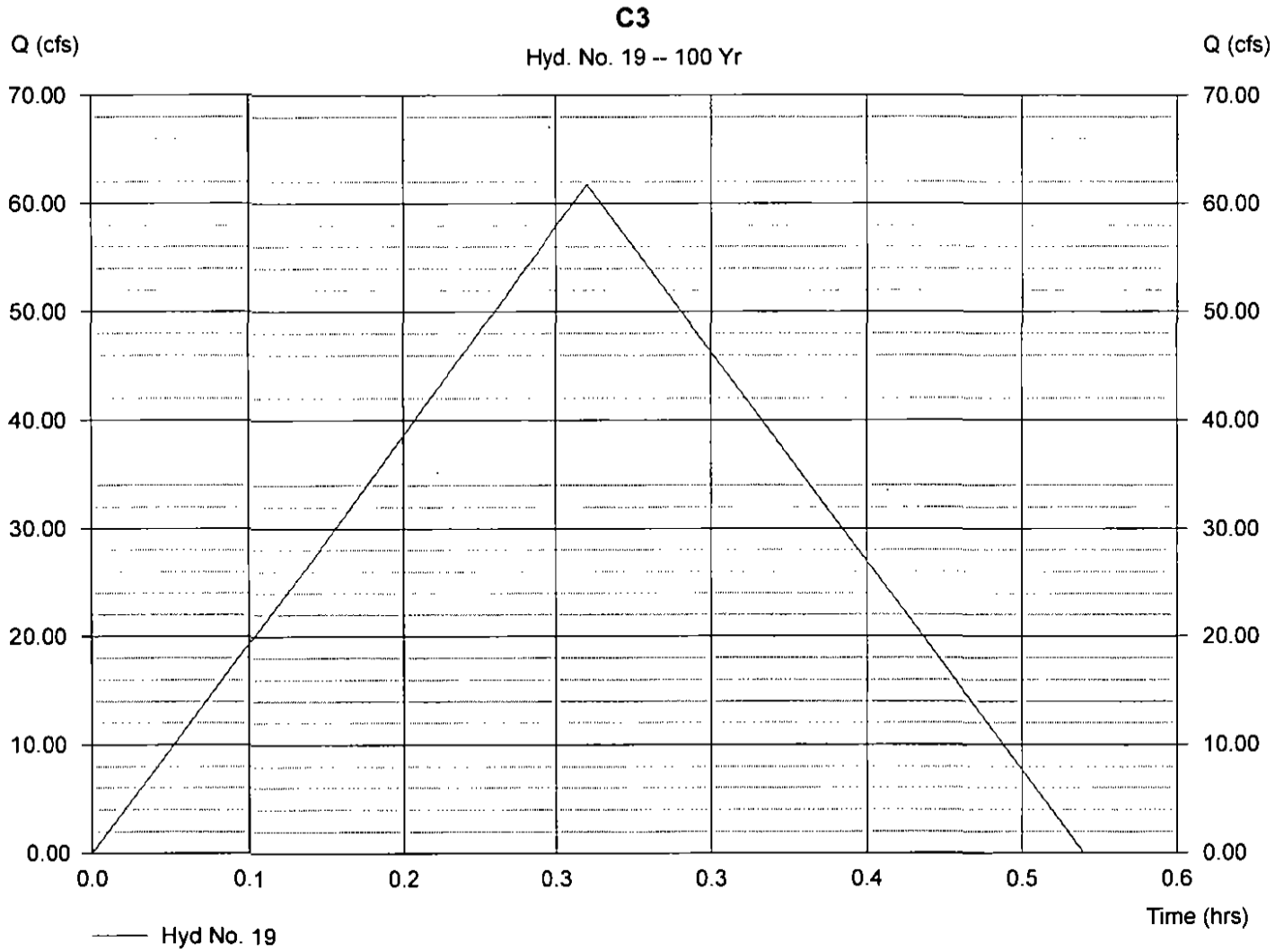
Hydrograph Plot

Hyd. No. 19

C3

Hydrograph type	= Rational	Peak discharge	= 61.80 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 14.800 ac	Runoff coeff.	= 0.7
Intensity	= 5.965 in/hr	Tc by User	= 16.00 min
IDF Curve	= CS-IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 59,326 cuft



Hydrograph Plot

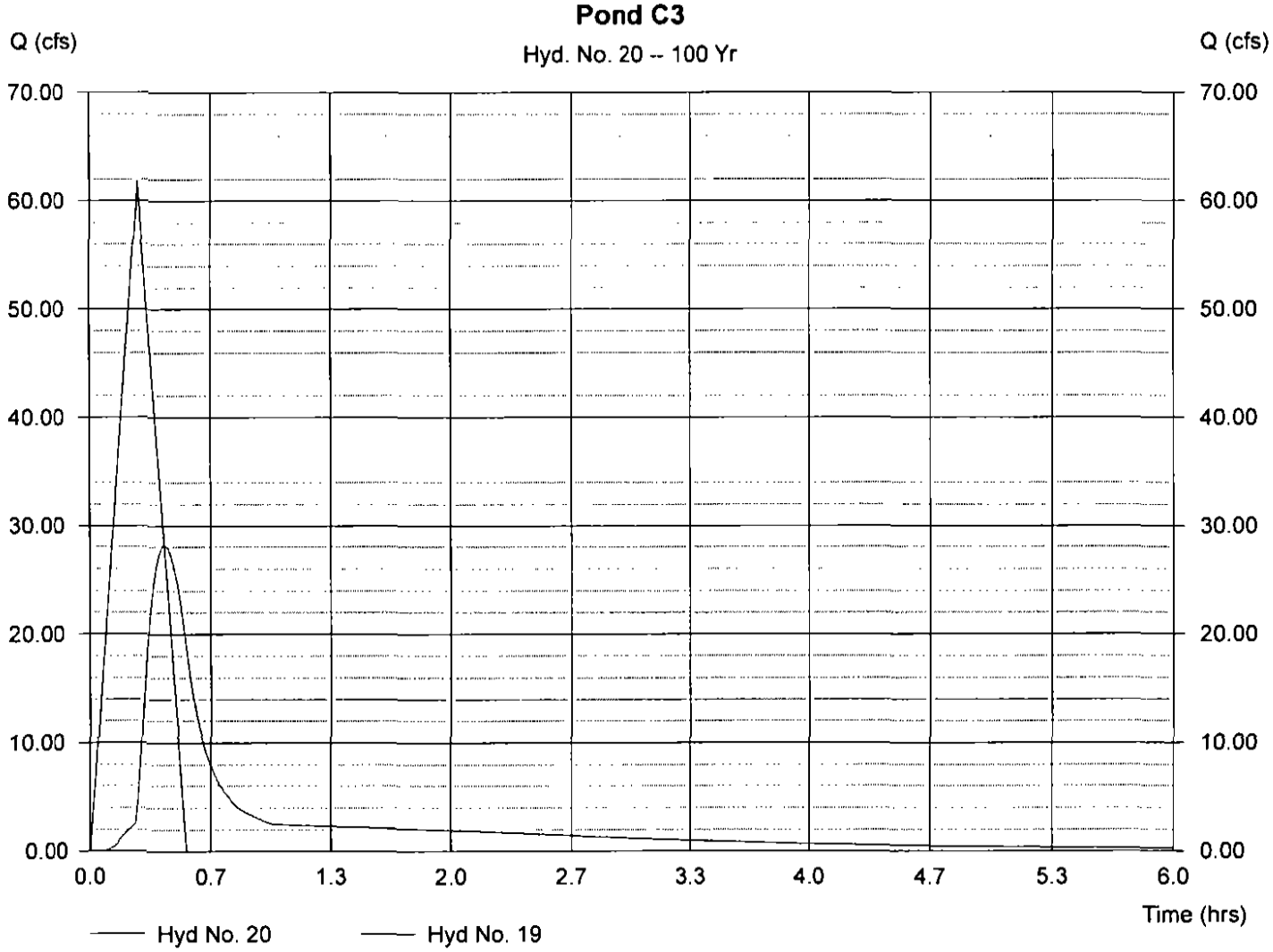
Hydraflow Hydrographs by Intelisolve | Tuesday, Jan 20 2015, 7:32 AM

Hyd. No. 20

Pond C3

Hydrograph type	= Reservoir	Peak discharge	= 28.22 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hyd. No.	= 19	Max. Elevation	= 5694.13 ft
Reservoir name	= Pond C3	Max. Storage	= 41,557 cuft

Storage Indication method used. | Hydrograph Volume = 57,634 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

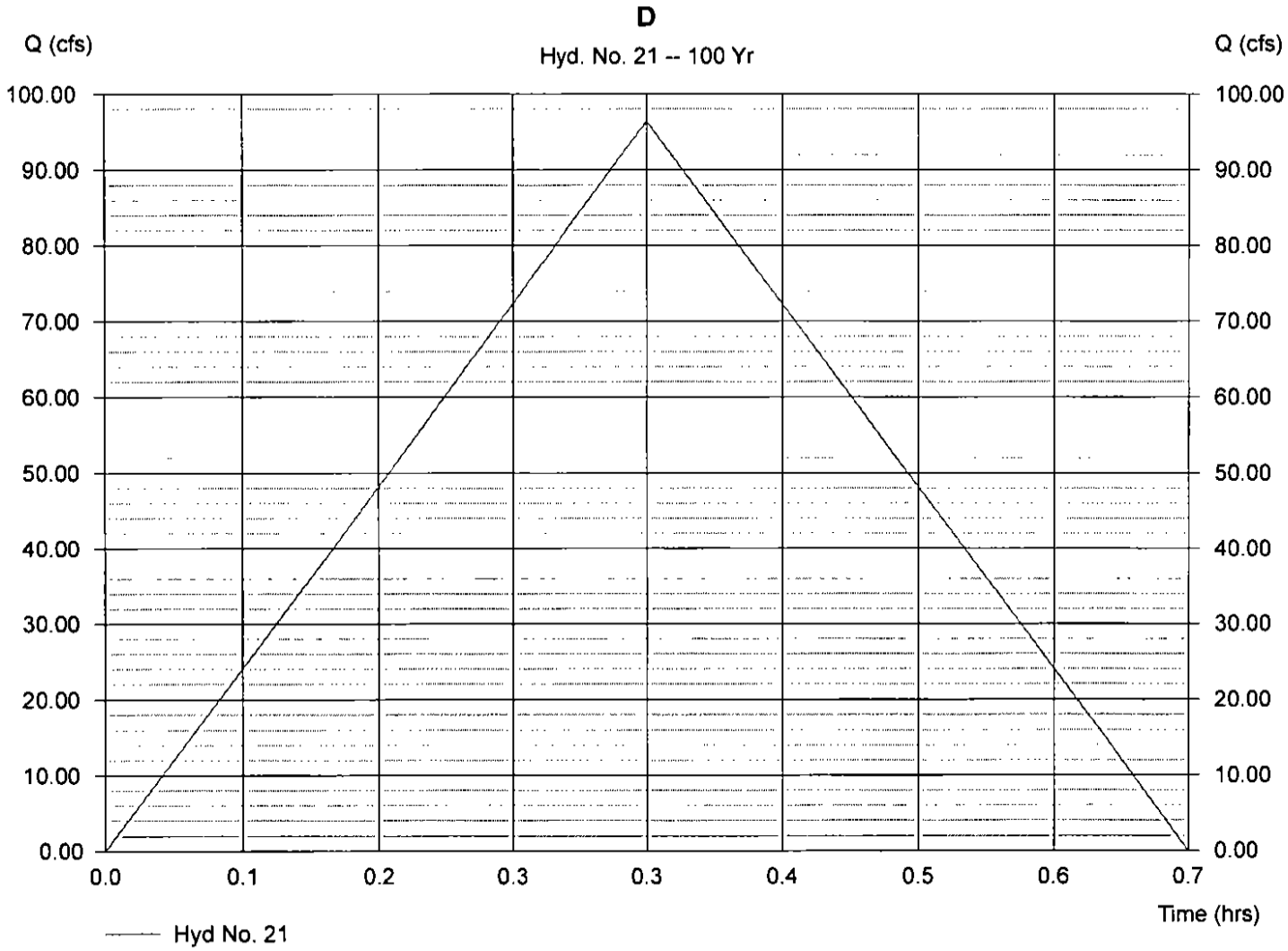
Tuesday, Jan 20 2015, 7:32 AM

Hyd. No. 21

D

Hydrograph type	= Rational	Peak discharge	= 96.46 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 27.500 ac	Runoff coeff.	= 0.66
Intensity	= 5.314 in/hr	Tc by User	= 20.00 min
IDF Curve	= CS-IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 115,749 cuft



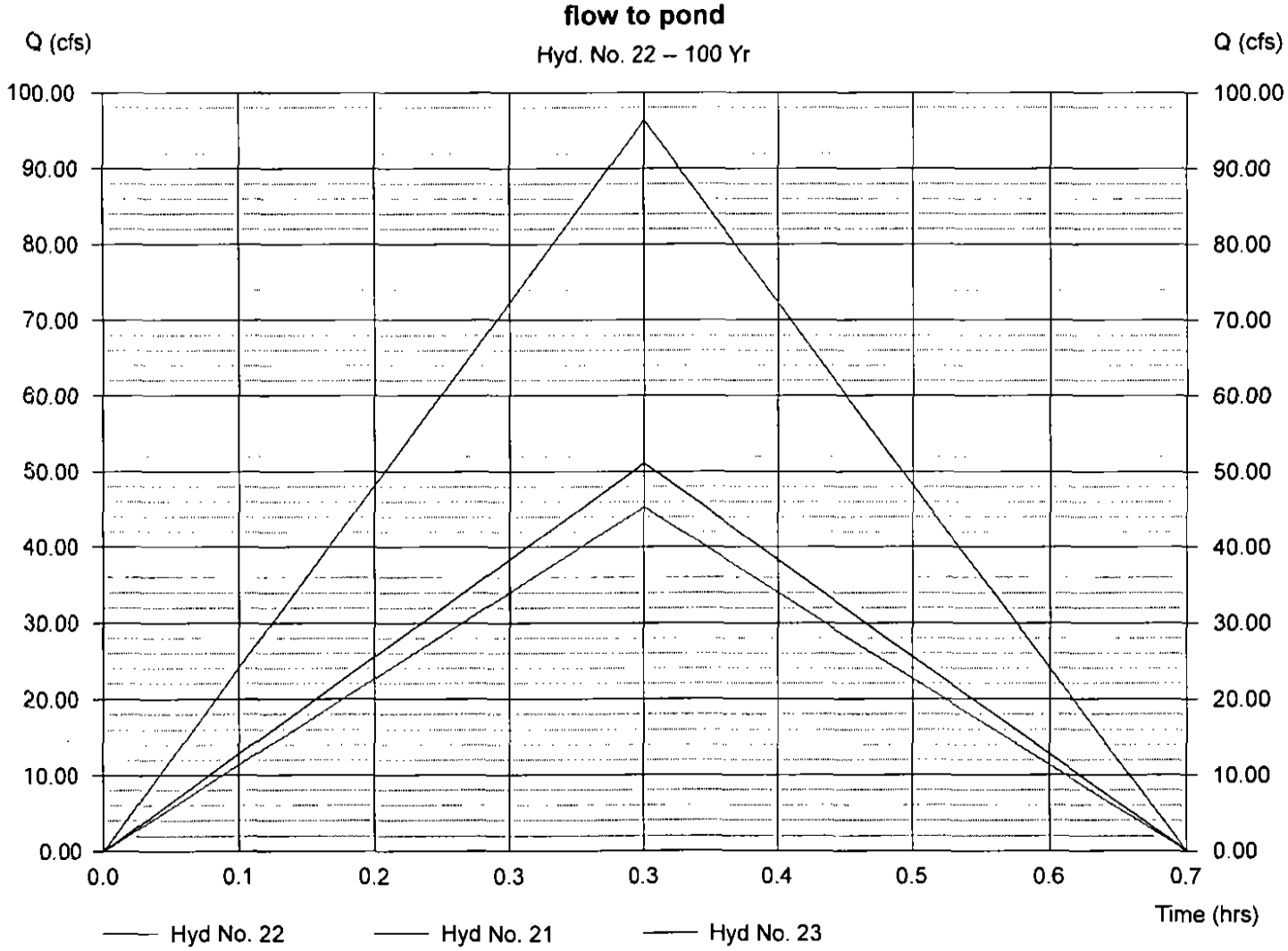
Hydrograph Plot

Hyd. No. 22

flow to pond

Hydrograph type	= Diversion1	Peak discharge	= 45.33 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hydrograph	= 21	2nd diverted hyd.	= 23
Diversion method	= Flow Ratio	Flow ratio	= 0.47

Hydrograph Volume = 54,402 cuft



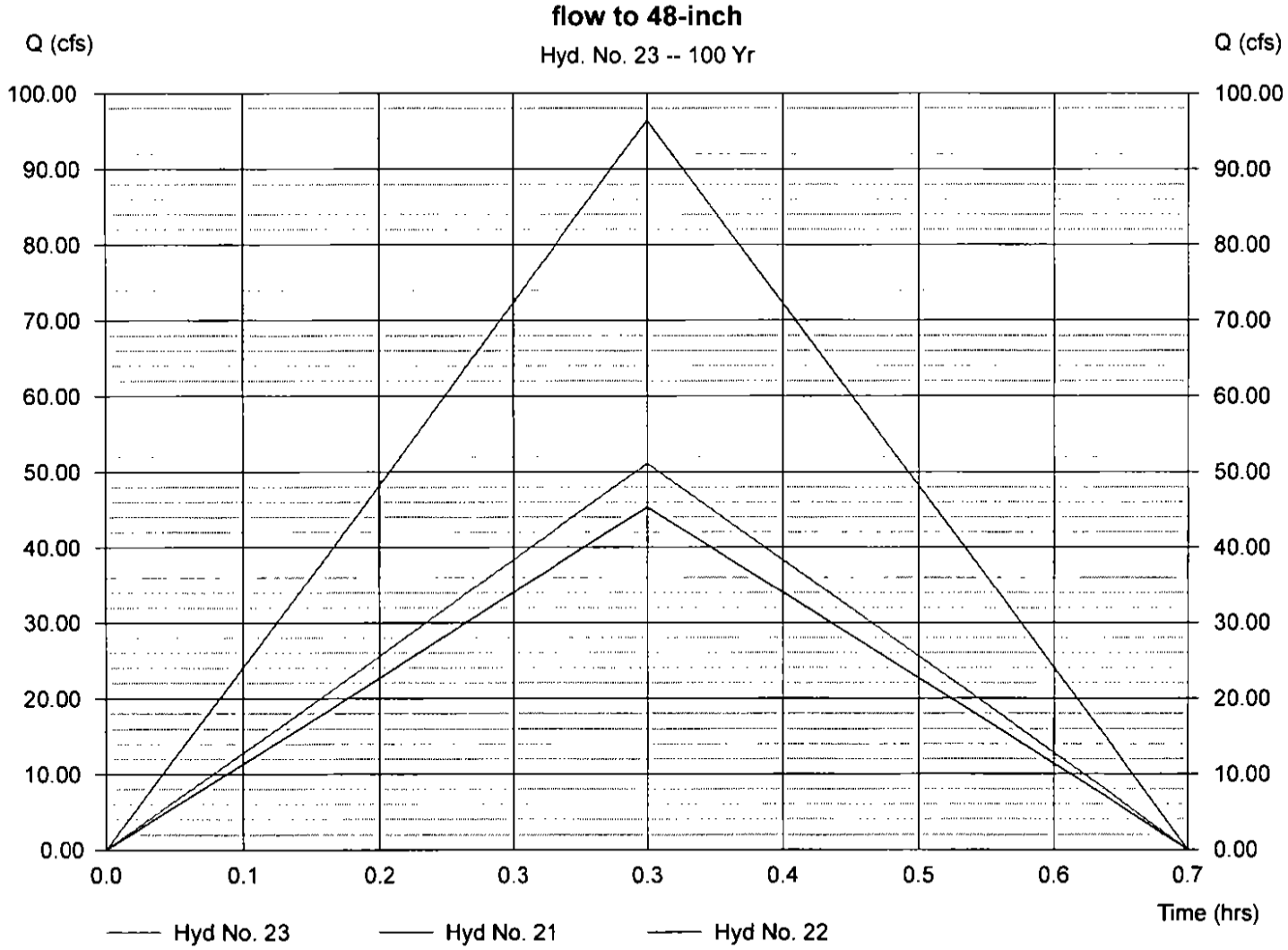
Hydrograph Plot

Hyd. No. 23

flow to 48-inch

Hydrograph type	= Diversion2	Peak discharge	= 51.12 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hydrograph	= 21	2nd diverted hyd.	= 22
Diversion method	= Flow Ratio	Flow ratio	= 0.47

Hydrograph Volume = 61,347 cuft



Hydrograph Plot

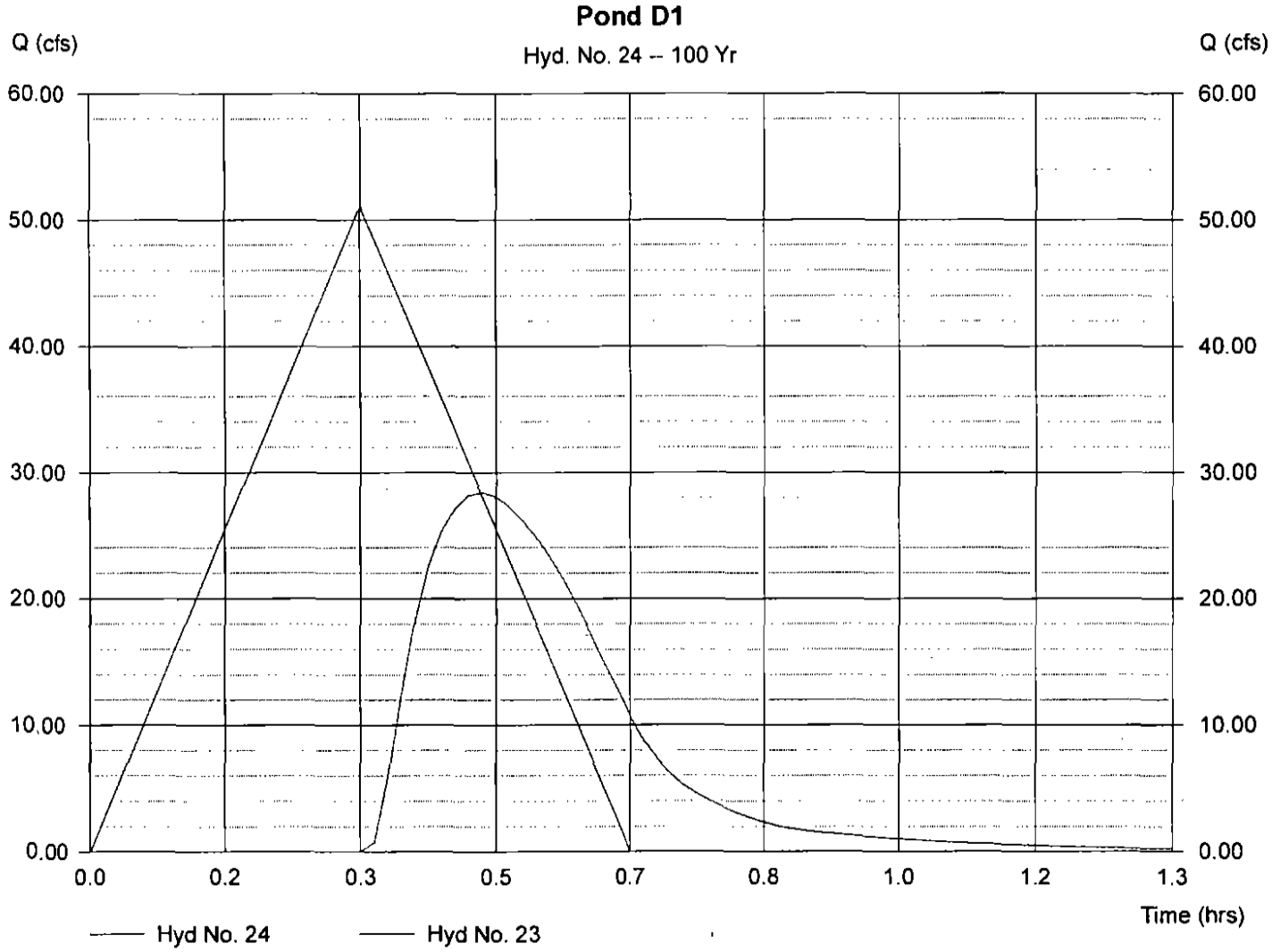
Hydraflow Hydrographs by Intelisolve — Tuesday, Jan 20 2015, 7:32 AM

Hyd. No. 24

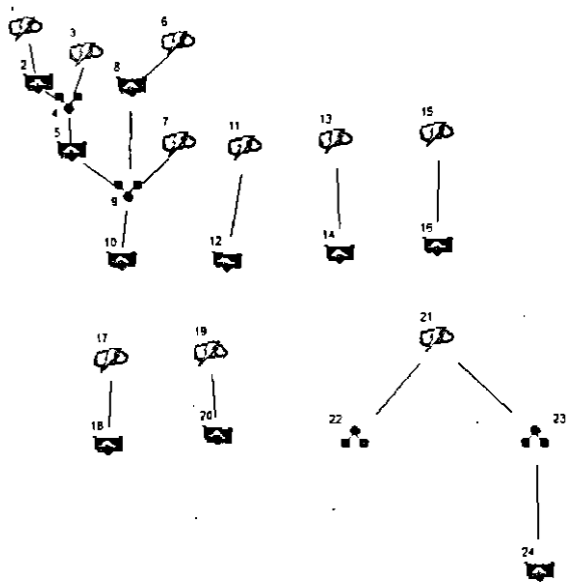
Pond D1

Hydrograph type	= Reservoir	Peak discharge	= 28.43 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hyd. No.	= 23	Max. Elevation	= 5709.12 ft
Reservoir name	= Pond D1	Max. Storage	= 42,763 cuft

Storage Indication method used. — Hydrograph Volume = 28,278 cuft



Appendix C



Legend

Hyd.	Origin	Description
1	Rational	A4
2	Reservoir	Pond A4
3	Rational	A3
4	Combine	Flow into Pond A3
5	Reservoir	Pond A3
6	Rational	A2
7	Rational	A1
8	Reservoir	Pond A2
9	Combine	flow into pond A1
10	Reservoir	Pond A1
11	Rational	A5
12	Reservoir	Pond A5
13	Rational	B1
14	Reservoir	Pond B1
15	Rational	B2
16	Reservoir	Pond B2
17	Rational	C1
18	Reservoir	Pond C1
19	Rational	C3
20	Reservoir	Pond C3
21	Rational	D
22	Diversion1	flow to 48 inch
23	Diversion2	to pond D1
24	Reservoir	Pond D1

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	Rational	45.61	1	17	46,522	----	----	----	A4
2	Reservoir	3.273	1	33	45,951	1	5717.71	55,556	Pond A4
3	Rational	28.20	1	24	40,615	----	----	----	A3
4	Combine	30.01	1	24	86,566	2, 3	----	----	Flow into Pond A3
5	Reservoir	12.03	1	40	86,258	4	5708.78	27,455	Pond A3
6	Rational	41.02	1	18	44,304	----	----	----	A2
7	Rational	111.48	1	17	113,711	----	----	----	A1
8	Reservoir	15.80	1	29	43,737	6	5708.76	26,632	Pond A2
9	Combine	126.44	1	17	243,707	5, 7, 8	----	----	flow into pond A1
10	Reservoir	47.48	1	31	242,086	9	5703.21	203,191	Pond A1
11	Rational	57.25	1	22	75,566	----	----	----	A5
12	Reservoir	9.475	1	40	48,906	11	5714.03	71,445	Pond A5
13	Rational	95.87	1	20	115,041	----	----	----	B1
14	Reservoir	3.755	1	39	109,003	13	5710.96	179,171	Pond B1
15	Rational	85.24	1	13	66,485	----	----	----	B2
16	Reservoir	8.758	1	25	58,488	15	5700.42	103,043	Pond B2
17	Rational	203.99	1	19	232,550	----	----	----	C1
18	Reservoir	19.47	1	36	217,828	17	5689.65	346,149	Pond C1
19	Rational	29.84	1	16	28,648	----	----	----	C3
20	Reservoir	2.841	1	30	26,958	19	5693.42	26,232	Pond C3
21	Rational	46.10	1	20	55,320	----	----	----	D
22	Diversion1	5.071	1	20	6,085	21	----	----	to 48 inch
23	Diversion2	41.03	1	20	49,235	21	----	----	to pond D1
24	Reservoir	17.27	1	32	16,166	23	5708.94	39,729	Pond D1

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	Rational	85.87	1	17	87,586	—	—	—	A4
2	Reservoir	22.20	1	30	86,988	1	5718.63	83,929	Pond A4
3	Rational	57.67	1	24	83,047	—	—	—	A3
4	Combine	75.57	1	24	170,035	2, 3	—	—	Flow into Pond A3
5	Reservoir	43.61	1	37	169,720	4	5710.76	56,138	Pond A3
6	Rational	84.96	1	18	91,755	—	—	—	A2
7	Rational	230.87	1	17	235,490	—	—	—	A1
8	Reservoir	45.57	1	26	91,188	6	5710.50	50,222	Pond A2
9	Combine	258.83	1	17	496,399	5, 7, 8	—	—	flow into pond A1
10	Reservoir	110.61	1	32	494,714	9	5704.73	296,688	Pond A1
11	Rational	117.28	1	22	154,808	—	—	—	A5
12	Reservoir	74.86	1	30	128,148	11	5715.07	97,310	Pond A5
13	Rational	195.31	1	20	234,367	—	—	—	B1
14	Reservoir	8.259	1	39	197,737	13	5712.68	266,222	Pond B1
15	Rational	176.51	1	13	137,681	—	—	—	B2
16	Reservoir	27.17	1	24	98,374	15	5700.87	134,922	Pond B2
17	Rational	422.49	1	19	481,634	—	—	—	C1
18	Reservoir	75.49	1	35	466,588	17	5691.52	553,505	Pond C1
19	Rational	61.80	1	16	59,326	—	—	—	C3
20	Reservoir	28.22	1	25	57,634	19	5694.13	41,557	Pond C3
21	Rational	96.46	1	20	115,749	—	—	—	D
22	Diversion1	45.33	1	20	54,402	21	—	—	flow to 48 inch
23	Diversion2	51.12	1	20	61,347	21	—	—	to pond D1
24	Reservoir	28.43	1	29	28,278	23	5709.12	42,763	Pond D1

Pond Report

Hydraflow Hydrographs by Intelisolve — Tuesday, Jan 20 2015, 7:35 AM

Pond No. 4 - POND A1

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	5697.00	00	0	0
1.00	5698.00	11,871	5,936	5,936
2.00	5699.00	25,769	18,820	24,756
3.00	5700.00	35,352	30,561	55,316
4.00	5701.00	41,861	38,607	93,923
5.00	5702.00	48,424	45,143	139,065
6.00	5703.00	55,110	51,767	190,832
7.00	5704.00	61,943	58,527	249,359
8.00	5705.00	68,882	65,413	314,771
9.00	5706.00	75,946	72,414	387,185

Culvert / Orifice Structures

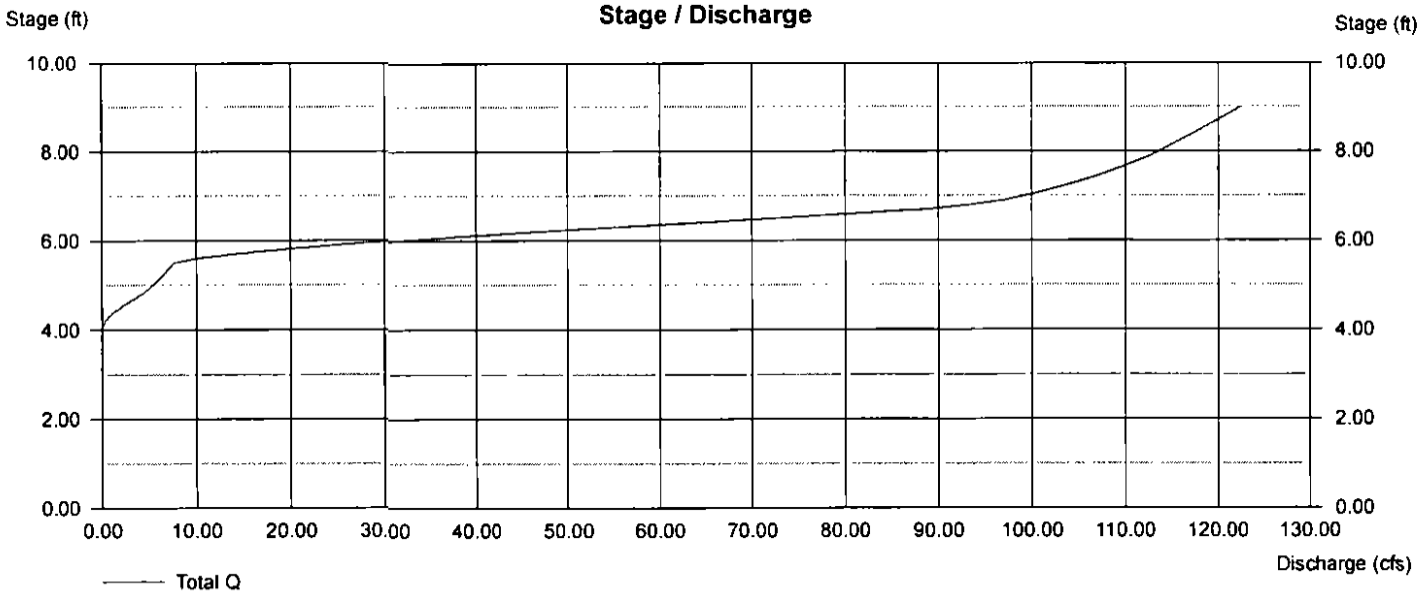
	[A]	[B]	[C]	[D]
Rise (in)	= 42.00	12.00	0.00	0.00
Span (in)	= 42.00	12.00	0.00	0.00
No. Barrels	= 1	2	0	0
Invert El. (ft)	= 5697.00	5701.00	0.00	0.00
Length (ft)	= 60.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	0.00
N-Value	= .013	.013	.013	.000
Orif. Coeff.	= 0.60	0.60	0.60	0.00
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 18.80	0.00	0.00	0.00
Crest El. (ft)	= 5702.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	0.00	0.00	0.00
Weir Type	= Riser	---	---	---
Multi-Stage	= Yes	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. Weir riser checked for orifice conditions.



Pond Report

Hydraflow Hydrographs by Intelisolve — Tuesday, Jan 20 2015, 7:34 AM

Pond No. 1 - POND A2

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	5705.00	00	0	0
1.00	5706.00	5,628	2,814	2,814
2.00	5707.00	7,770	6,699	9,513
3.00	5708.00	9,886	8,828	18,341
4.00	5709.00	12,027	10,957	29,298
5.00	5710.00	14,271	13,149	42,447
6.00	5711.00	16,643	15,457	57,904
7.00	5712.00	19,136	17,890	75,793
8.00	5713.00	22,000	20,568	96,361

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise (in)	= 30.00	24.00	0.00	0.00
Span (in)	= 30.00	24.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 5705.00	5705.20	0.00	0.00
Length (ft)	= 50.00	10.00	0.00	0.00
Slope (%)	= 0.30	0.50	0.00	0.00
N-Value	= .013	.013	.000	.000
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.00	0.00	0.00	0.00
Crest El. (ft)	= 5709.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	0.00	0.00	0.00
Weir Type	= Riser	---	---	---
Multi-Stage	= Yes	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. Weir riser checked for orifice conditions.

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.00	0	5705.00	0.00	0.00	---	---	0.00	---	---	---	---	0.00
1.00	2,814	5706.00	2.78	2.76	---	---	0.00	---	---	---	---	2.76
2.00	9,513	5707.00	8.03	8.03	---	---	0.00	---	---	---	---	8.03
3.00	18,341	5708.00	10.99	10.99	---	---	0.00	---	---	---	---	10.99
4.00	29,298	5709.00	17.12	17.11	---	---	0.00	---	---	---	---	17.11
5.00	42,447	5710.00	31.84	17.71	---	---	14.13	---	---	---	---	31.84
6.00	57,904	5711.00	50.12	7.60	---	---	42.50	---	---	---	---	50.11
7.00	75,793	5712.00	55.34	7.80	---	---	47.54	---	---	---	---	55.34
8.00	96,361	5713.00	60.03	8.26	---	---	51.76	---	---	---	---	60.02

Pond Report

Hydraflow Hydrographs by Intelisolve — Tuesday, Jan 20 2015, 7:35 AM

Pond No. 3 - POND A3

Pond Data

Bottom LxW = 150.0 x 50.0 ft Side slope = 4.0:1 Bottom elev. = 5706.00 ft Depth = 6.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	5706.00	7,500	0	0
0.30	5706.30	7,986	2,323	2,323
0.60	5706.60	8,483	2,470	4,793
0.90	5706.90	8,992	2,621	7,414
1.20	5707.20	9,512	2,775	10,189
1.50	5707.50	10,044	2,933	13,122
1.80	5707.80	10,587	3,094	16,216
2.10	5708.10	11,142	3,259	19,476
2.40	5708.40	11,709	3,427	22,903
2.70	5708.70	12,287	3,599	26,502
3.00	5709.00	12,876	3,774	30,276
3.30	5709.30	13,477	3,953	34,229
3.60	5709.60	14,089	4,135	38,363
3.90	5709.90	14,713	4,320	42,683
4.20	5710.20	15,349	4,509	47,193
4.50	5710.50	15,996	4,701	51,894
4.80	5710.80	16,655	4,897	56,791
5.10	5711.10	17,325	5,097	61,888
5.40	5711.40	18,006	5,299	67,187
5.70	5711.70	18,699	5,506	72,693
6.00	5712.00	19,404	5,715	78,408

Culvert / Orifice Structures

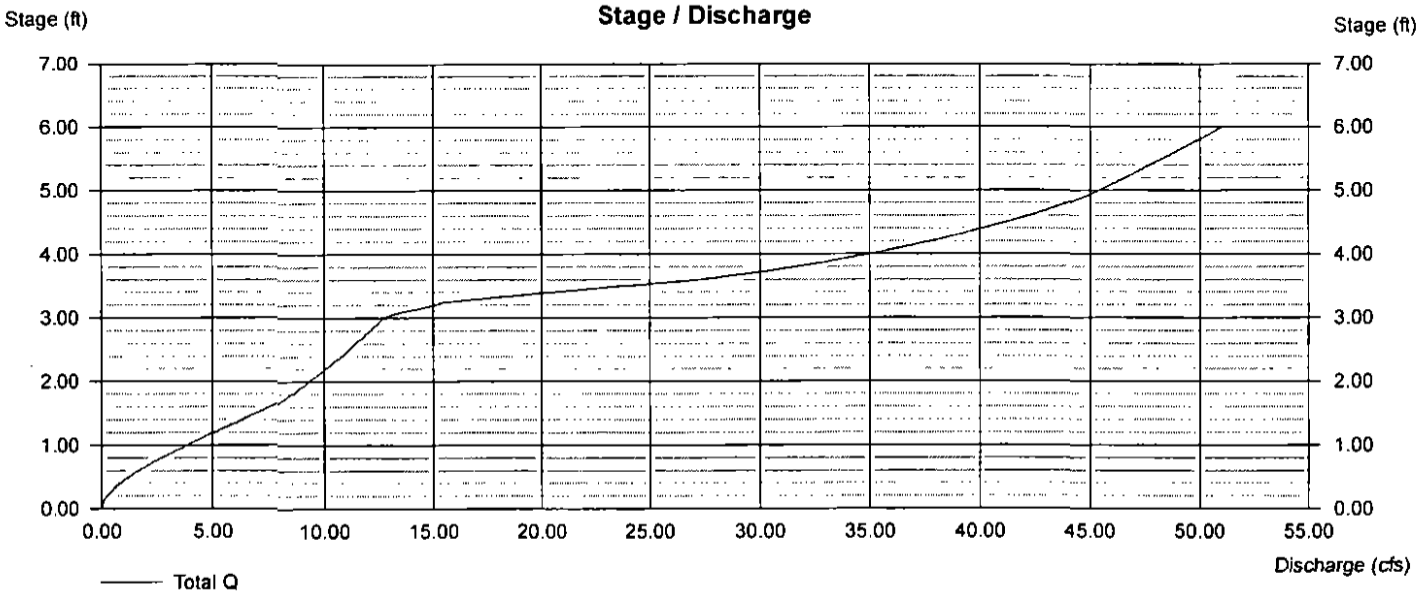
	[A]	[B]	[C]	[D]
Rise (in)	= 30.00	21.00	0.00	0.00
Span (in)	= 30.00	21.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 5705.90	5706.00	0.00	0.00
Length (ft)	= 60.00	10.00	0.00	0.00
Slope (%)	= 0.50	0.50	0.00	0.00
N-Value	= .013	.013	.000	.000
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.50	0.00	0.00	0.00
Crest El. (ft)	= 5709.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	0.00	0.00	0.00
Weir Type	= Riser	---	---	---
Multi-Stage	= Yes	No	No	No

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

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control. Weir riser checked for orifice conditions.



Pond Report

Hydraflow Hydrographs by Intelisolve — Tuesday, Jan 20 2015, 7:33 AM

Pond No. 2 - Pond A4

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	5714.50	00	0	0
1.00	5715.00	1,091	546	546
2.00	5716.00	21,056	11,074	11,619
3.00	5717.00	26,412	23,734	35,353
4.00	5718.00	30,288	28,350	63,703
5.00	5719.00	34,314	32,301	96,004
6.00	5720.00	55,193	44,754	140,758

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise (in)	= 30.00	8.00	0.00	0.00
Span (in)	= 30.00	8.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 5714.24	5716.00	0.00	0.00
Length (ft)	= 21.50	0.00	0.00	0.00
Slope (%)	= 0.60	0.00	0.00	0.00
N-Value	= .013	.013	.000	.000
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 5.34	0.00	0.00	0.00
Crest El. (ft)	= 5717.54	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	0.00	0.00
Weir Type	= Riser	---	---	---
Multi-Stage	= Yes	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

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.00	0	5714.50	0.00	0.00	---	---	0.00	---	---	---	---	0.00
1.00	546	5715.00	0.48	0.00	---	---	0.00	---	---	---	---	0.00
2.00	11,619	5716.00	0.48	0.00	---	---	0.00	---	---	---	---	0.00
3.00	35,353	5717.00	1.42	1.37	---	---	0.00	---	---	---	---	1.37
4.00	63,703	5718.00	7.81	2.17	---	---	5.55	---	---	---	---	7.72
5.00	96,004	5719.00	32.49	1.87	---	---	30.62	---	---	---	---	32.49
6.00	140,758	5720.00	46.73	1.30	---	---	45.42	---	---	---	---	46.73

Pond Report

Hydraflow Hydrographs by Intelisolve — Tuesday, Jan 20 2015, 7:36 AM

Pond No. 5 - Pond A5

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	0.00	00	0	0
1.00	5710.00	10,506	5,253	5,253
2.00	5711.00	13,282	11,894	17,147
3.00	5712.00	16,228	14,755	31,902
4.00	5713.00	19,335	17,782	49,684
5.00	5714.00	22,721	21,028	70,712
6.00	5715.00	26,373	24,547	95,259
7.00	5716.00	30,316	28,345	123,603
8.00	5717.00	34,620	32,468	156,071
9.00	5718.00	39,680	37,150	193,221

Culvert / Orifice Structures

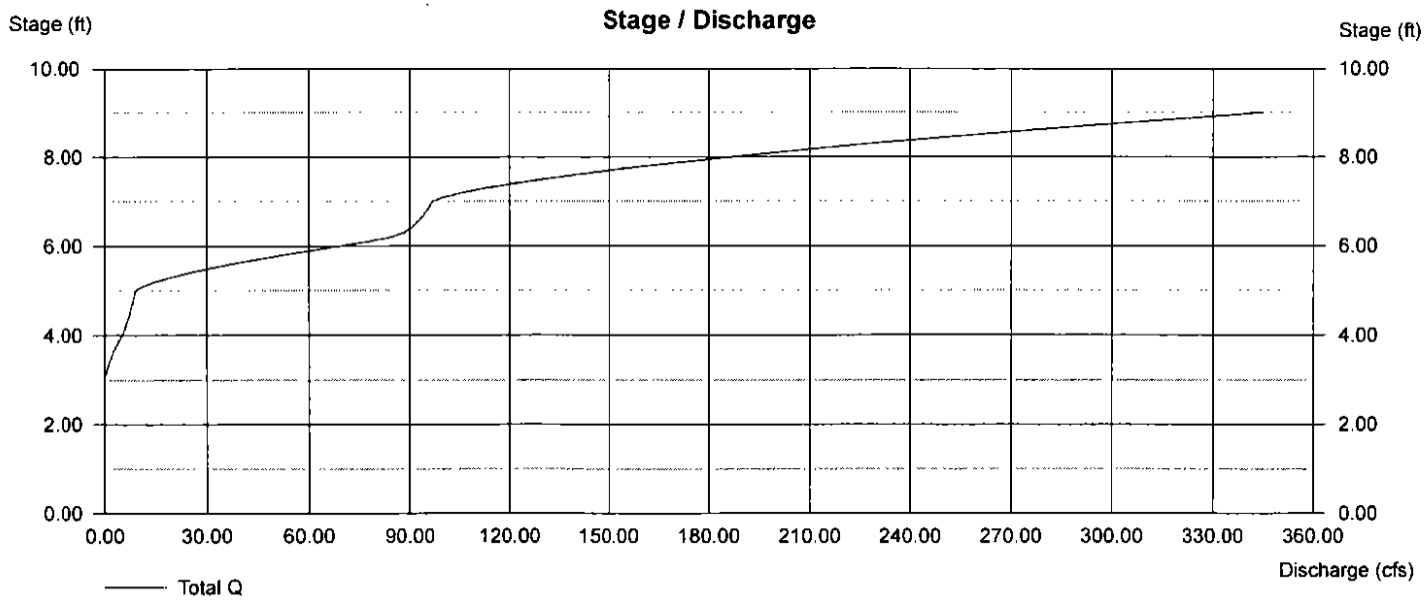
	[A]	[B]	[C]	[D]
Rise (in)	= 36.00	12.00	0.00	0.00
Span (in)	= 36.00	18.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 5706.08	5712.00	0.00	0.00
Length (ft)	= 100.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	0.00
N-Value	= .013	.013	.000	.000
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 17.20	25.00	0.00	0.00
Crest El. (ft)	= 5714.00	5716.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	0.00	0.00
Weir Type	= Riser	Ciplti	---	---
Multi-Stage	= Yes	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.



Pond Report

Hydraflow Hydrographs by Intelisolve — Tuesday, Jan 20 2015, 7:36 AM

Pond No. 6 - Pond B1

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	5706.00	00	0	0
1.00	5707.00	34,450	17,225	17,225
2.00	5708.00	37,600	36,025	53,250
3.00	5709.00	40,850	39,225	92,475
4.00	5710.00	44,198	42,524	134,999
5.00	5711.00	47,653	45,926	180,925
6.00	5712.00	51,212	49,433	230,357
7.00	5713.00	54,870	53,041	283,398
8.00	5714.00	58,640	56,755	340,153
9.00	5715.00	62,500	60,570	400,723

Culvert / Orifice Structures

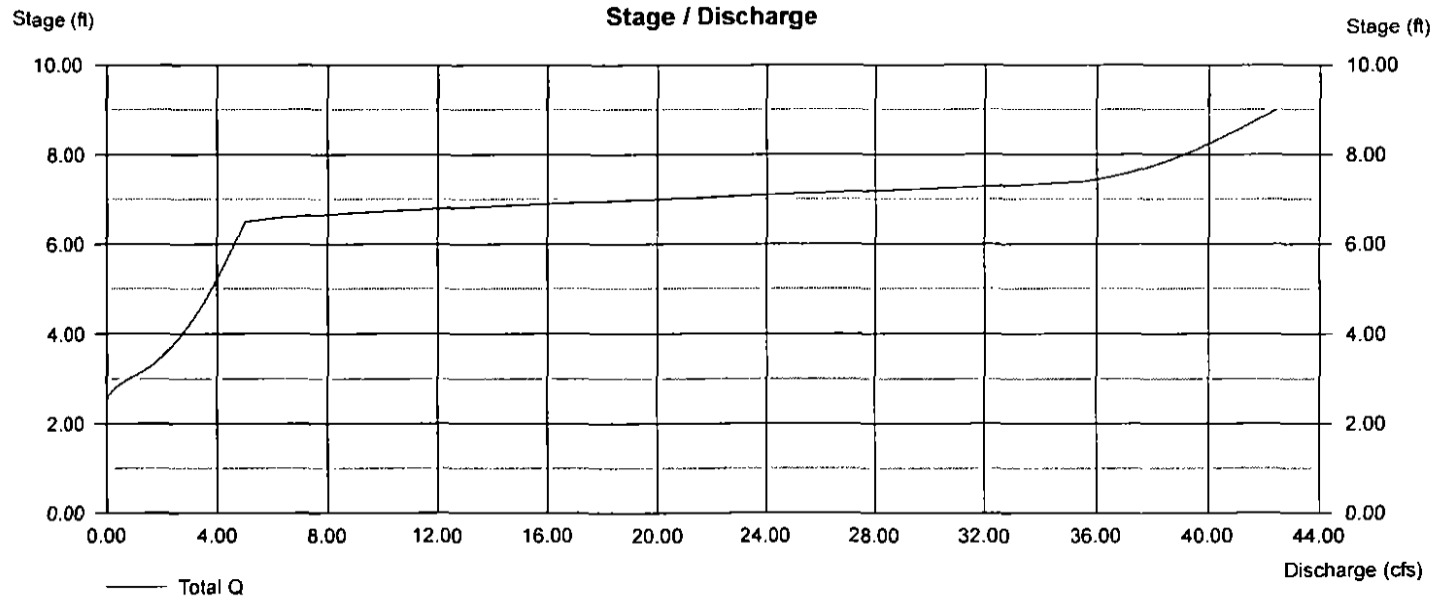
	[A]	[B]	[C]	[D]
Rise (in)	= 24.00	10.00	0.00	0.00
Span (in)	= *24.00*	*10.00*	*0.00*	*0.00*
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 5706.00	5708.50	0.00	0.00
Length (ft)	= 90.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	0.00
N-Value	= *.013*	*.013*	*.000*	*.000*
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.50	0.00	0.00	0.00
Crest El. (ft)	= *5712.50*	*0.00*	*0.00*	*0.00*
Weir Coeff.	= 3.33	0.00	0.00	0.00
Weir Type	= Riser	—	—	—
Multi-Stage	= Yes	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.



Pond Report

Hydraflow Hydrographs by Intelisolve — Tuesday, Jan 20 2015, 7:37 AM

Pond No. 7 - Pond B2

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	5696.00	00	0	0
1.00	5698.00	41,200	20,600	20,600
2.00	5700.00	63,610	52,405	73,005
3.00	5702.00	78,640	71,125	144,130
4.00	5704.00	94,250	86,445	230,575
5.00	5706.00	111,400	102,825	333,400

Culvert / Orifice Structures

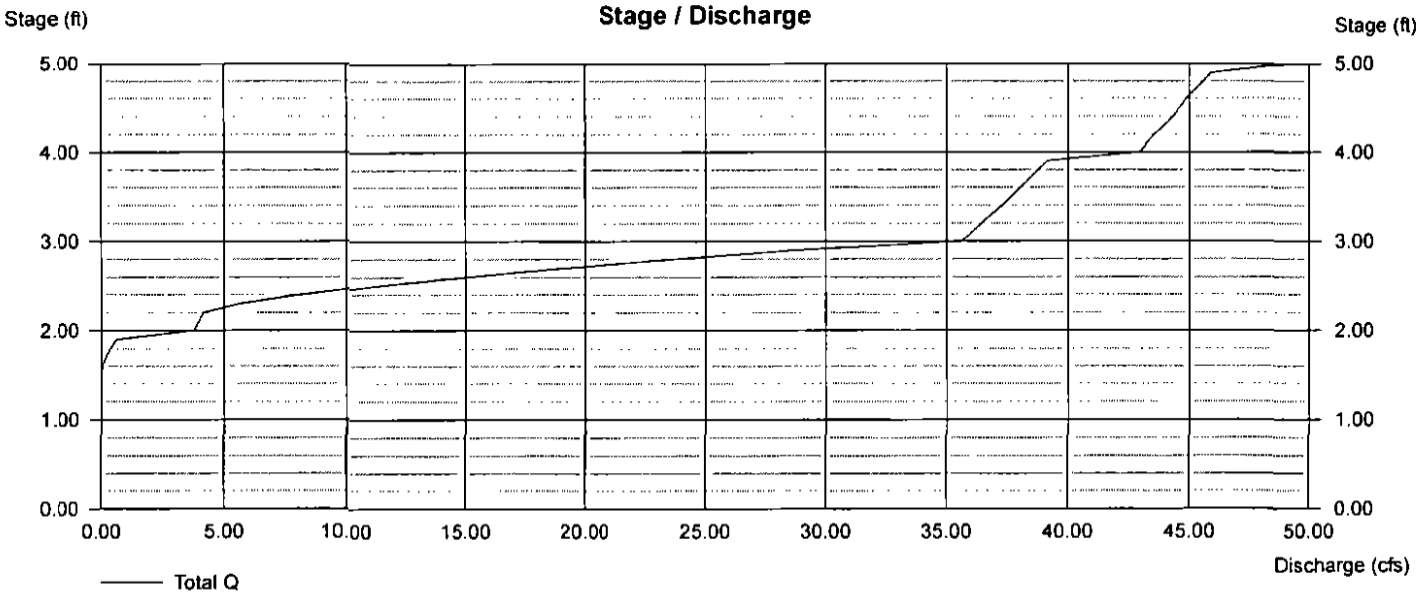
	[A]	[B]	[C]	[D]
Rise (in)	= 24.00	12.00	0.00	0.00
Span (in)	= 24.00	12.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 5695.90	5698.50	0.00	0.00
Length (ft)	= 180.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	0.00
N-Value	= .013	.013	.000	.000
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.00	0.00	0.00	0.00
Crest El. (ft)	= 5700.20	0.00	0.00	0.00
Weir Coeff.	= 3.33	0.00	0.00	0.00
Weir Type	= Riser	---	---	---
Multi-Stage	= Yes	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.



Pond Report

Hydraflow Hydrographs by Intelisolve — Tuesday, Jan 20 2015, 7:37 AM

Pond No. 8 - Pond C1

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	5684.00	00	0	0
1.00	5685.00	11,456	5,728	5,728
2.00	5686.00	44,890	28,173	33,901
3.00	5687.00	82,996	63,943	97,844
4.00	5688.00	91,041	87,019	184,863
5.00	5689.00	99,130	95,086	279,948
6.00	5690.00	106,283	102,707	382,655
7.00	5691.00	113,531	109,907	492,562
8.00	5692.00	120,991	117,261	609,823
9.00	5693.00	128,724	124,858	734,680
10.00	5694.00	136,579	132,652	867,332

Culvert / Orifice Structures

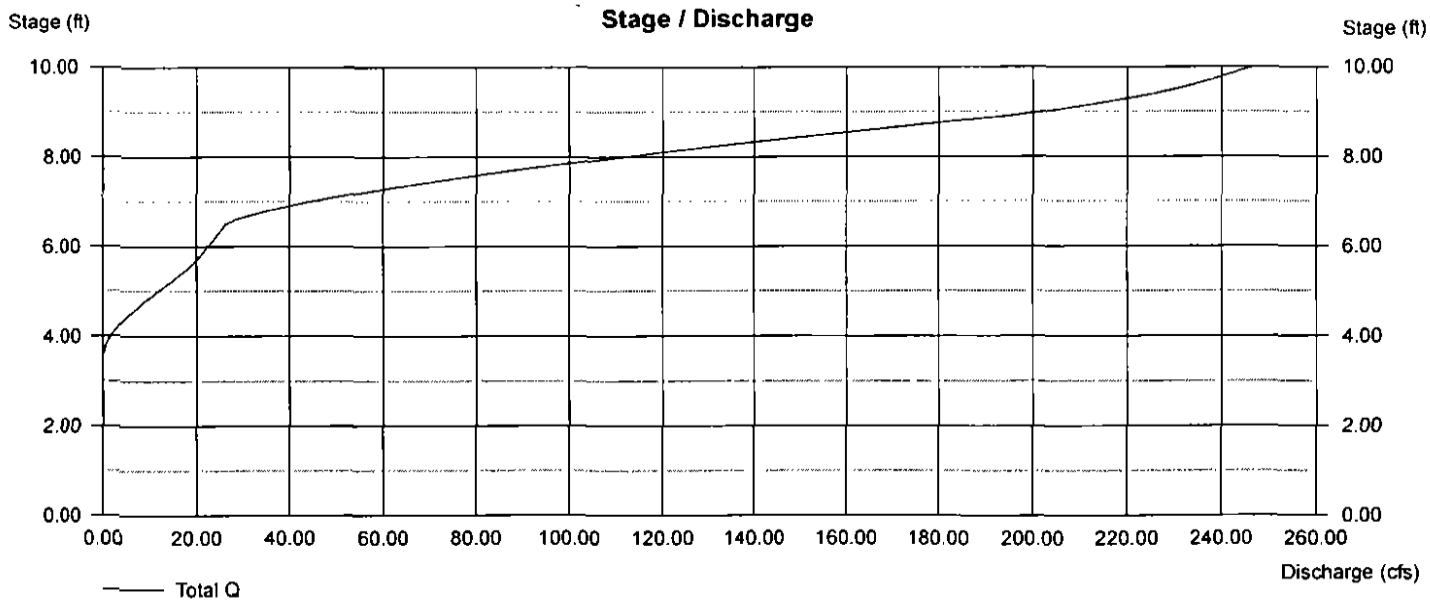
	[A]	[B]	[C]	[D]
Riso (in)	= 54.00	27.00	0.00	0.00
Span (in)	= 54.00	27.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 5683.60	5687.50	0.00	0.00
Length (ft)	= 78.00	0.00	0.00	0.00
Slope (%)	= 0.30	0.00	0.00	0.00
N-Value	= .013	.013	.000	.000
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.50	0.00	0.00	0.00
Crest El. (ft)	= 5690.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	0.00	0.00	0.00
Weir Type	= Riser	---	---	---
Multi-Stage	= Yes	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.



Pond Report

Hydraflow Hydrographs by Intelisolve — Tuesday, Jan 20 2015, 7:38 AM

Pond No. 9 - Pond C3

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	5692.00	15,416	0	0
1.00	5693.00	19,151	17,284	17,284
2.00	5694.00	23,016	21,084	38,367
3.00	5695.00	26,818	24,917	63,284

Culvert / Orifice Structures

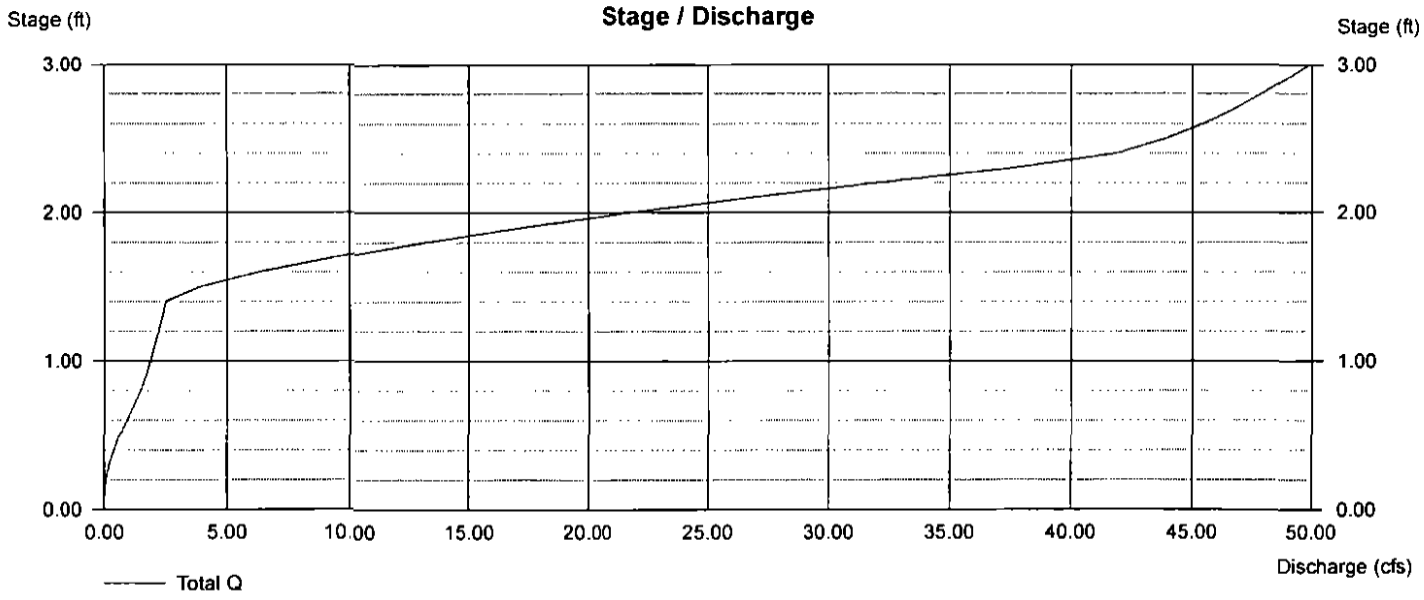
	[A]	[B]	[C]	[D]
Rise (in)	= 30.00	10.00	0.00	0.00
Span (in)	= 30.00	10.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 5689.75	5692.08	0.00	0.00
Length (ft)	= 132.00	0.00	0.00	0.00
Slope (%)	= 2.80	0.00	0.00	0.00
N-Value	= .013	.013	.000	.000
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.00	0.00	0.00	0.00
Crest El. (ft)	= 5693.40	0.00	0.00	0.00
Weir Coeff.	= 3.33	0.00	0.00	0.00
Weir Type	= Riser	—	—	—
Multi-Stage	= Yes	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.



Pond Report

Hydraflow Hydrographs by Intelisolve — Tuesday, Jan 20 2015, 7:38 AM

Pond No. 10 - Pond D1

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	5705.00	00	0	0
1.00	5706.00	7,066	3,533	3,533
2.00	5707.00	11,553	9,310	12,843
3.00	5708.00	13,855	12,704	25,547
4.00	5709.00	16,235	15,045	40,592
5.00	5710.00	20,283	18,259	58,851
6.00	5711.00	23,184	21,734	80,584
7.00	5712.00	26,220	24,702	105,286

Culvert / Orifice Structures

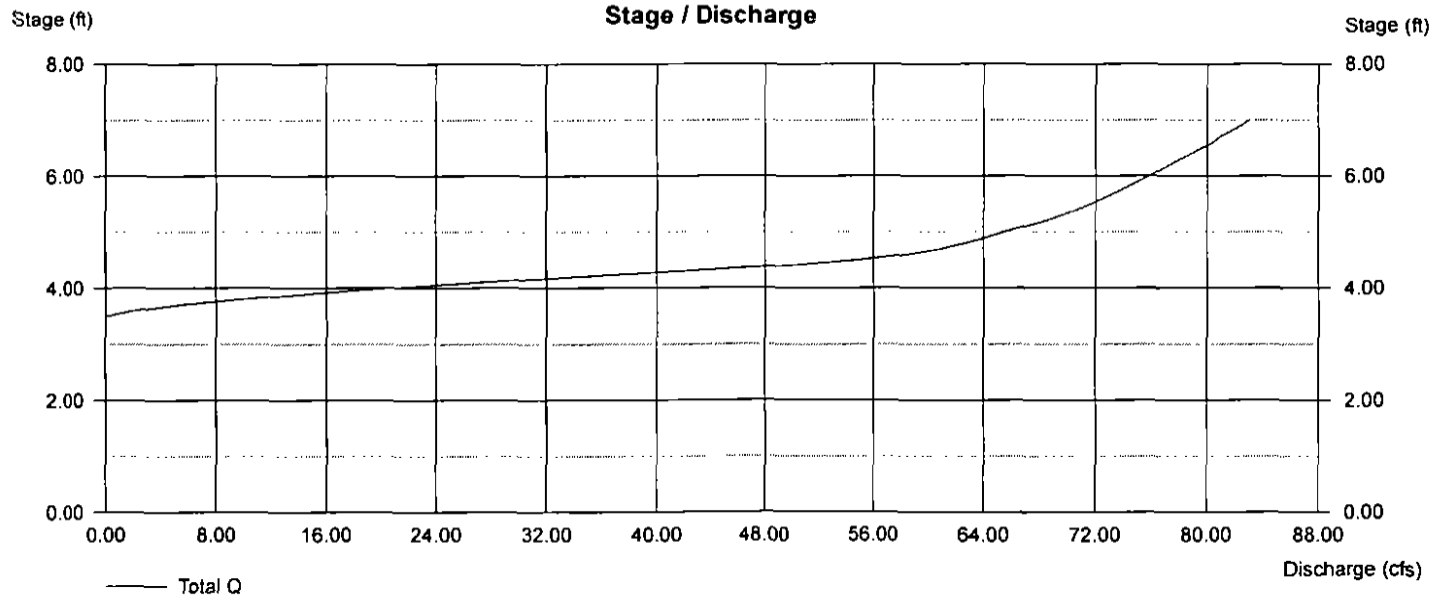
	[A]	[B]	[C]	[D]
Rise (in)	= *36.00*	*0.00*	*0.00*	*0.00*
Span (in)	= 36.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 5704.50	0.00	0.00	0.00
Length (ft)	= 40.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	0.00
N-Value	= .013	.000	.000	.000
Orif. Coeff.	= 0.60	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= *17.50*	*40.00*	*0.00*	*0.00*
Crest El. (ft)	= 5708.50	5710.00	0.00	0.00
Weir Coeff.	= 3.33	2.60	0.00	0.00
Weir Type	= Riser	Broad	—	---
Multi-Stage	= Yes	Yes	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.



Appendix D

LEGEND

100-YR FLOODPLAIN

STREAM FLOWLINE

CORPORATE LIMITS

STABILIZED LOW FLOW CHANNEL

STABILIZED BANK

PROPOSED FILL

POTENTIAL JURISDICTIONAL WETLANDS

OPEN WATER

RIPARIAN TREES AND SHRUBS
MAY INCLUDE SMALL AREAS OF WETLANDS

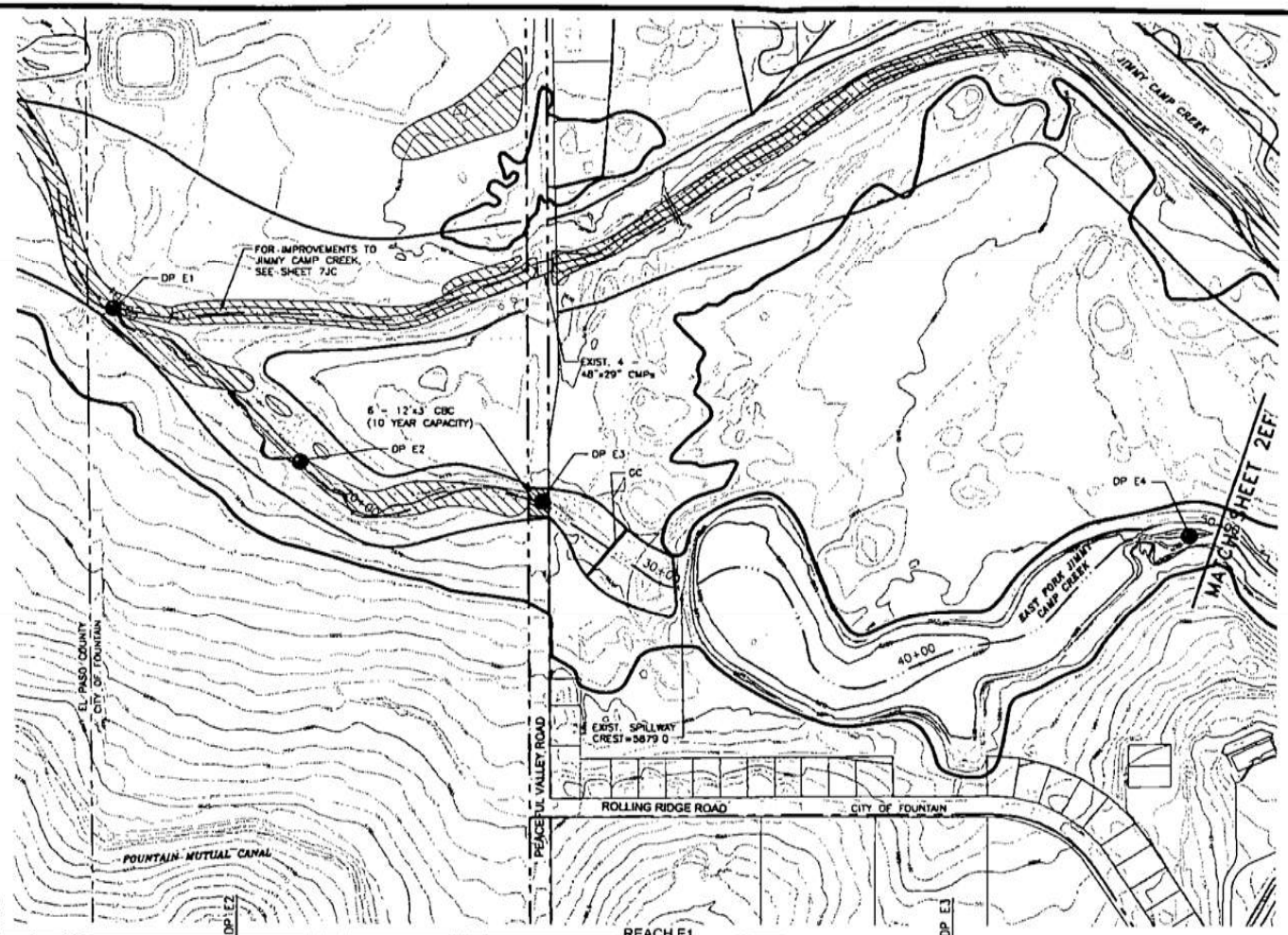
POTENTIAL JURISDICTIONAL WATERS OF THE U.S. MAY INCLUDE SMALL AREAS OF WETLANDS AND/OR RIPARIAN SPECIES

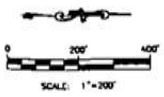
JURISDICTIONAL WATERS AND WETLANDS ARE INDISTINCT BOUNDARY DUE TO LACK OF AN ORDINARY HIGH WATER MARKS. JURISDICTIONAL DETERMINATION WILL NEED TO BE VERIFIED BY THE USACE PRIOR TO CONSTRUCTION

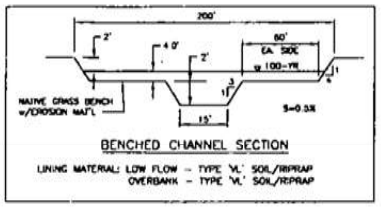
FLOODPLAIN BOUNDARIES ARE FOR PLANNING INFORMATION ONLY AND ARE NOT INTENDED TO BE USED FOR FLOODPLAIN REGULATION OR MANAGEMENT.

THIS DRAWING IS A PLANNING EXHIBIT REPRESENTING CONCEPTUAL ENGINEERING AND IS SUBJECT TO CHANGE. THIS DRAWING SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES.

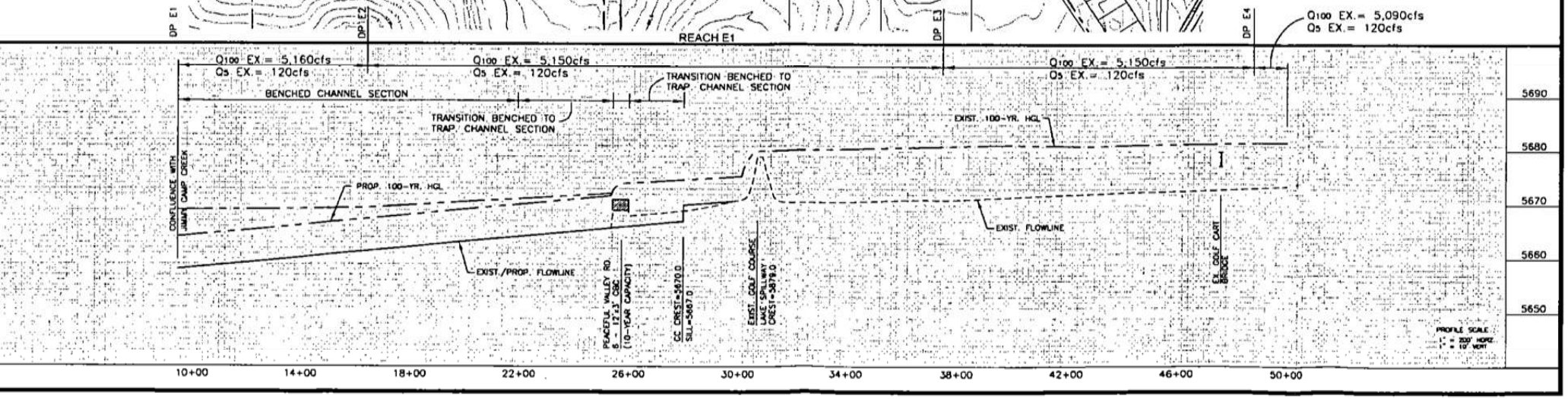
DP E1 DISCHARGES UPSTREAM OF DP E1 HAD NO AREA ADJUSTMENT APPLIED







NOTE: TOPOGRAPHIC BASE MAPS USED FOR EAST FORK JIMMY CAMP CREEK VARIES FROM TOPOGRAPHIC BASE MAPPING SHOWN ON SHEET 7JC.



JIMMY CAMP CREEK DRAINAGE BASIN PLANNING STUDY

Project:
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Revisi

LEGEND

100-YR FLOODPLAIN

STREAM FLOWLINE

CORPORATE LIMITS

STABILIZED LOW FLOW CHANNEL

STABILIZED BANK

PROPOSED FILL

POTENTIAL JURISDICTIONAL WETLANDS

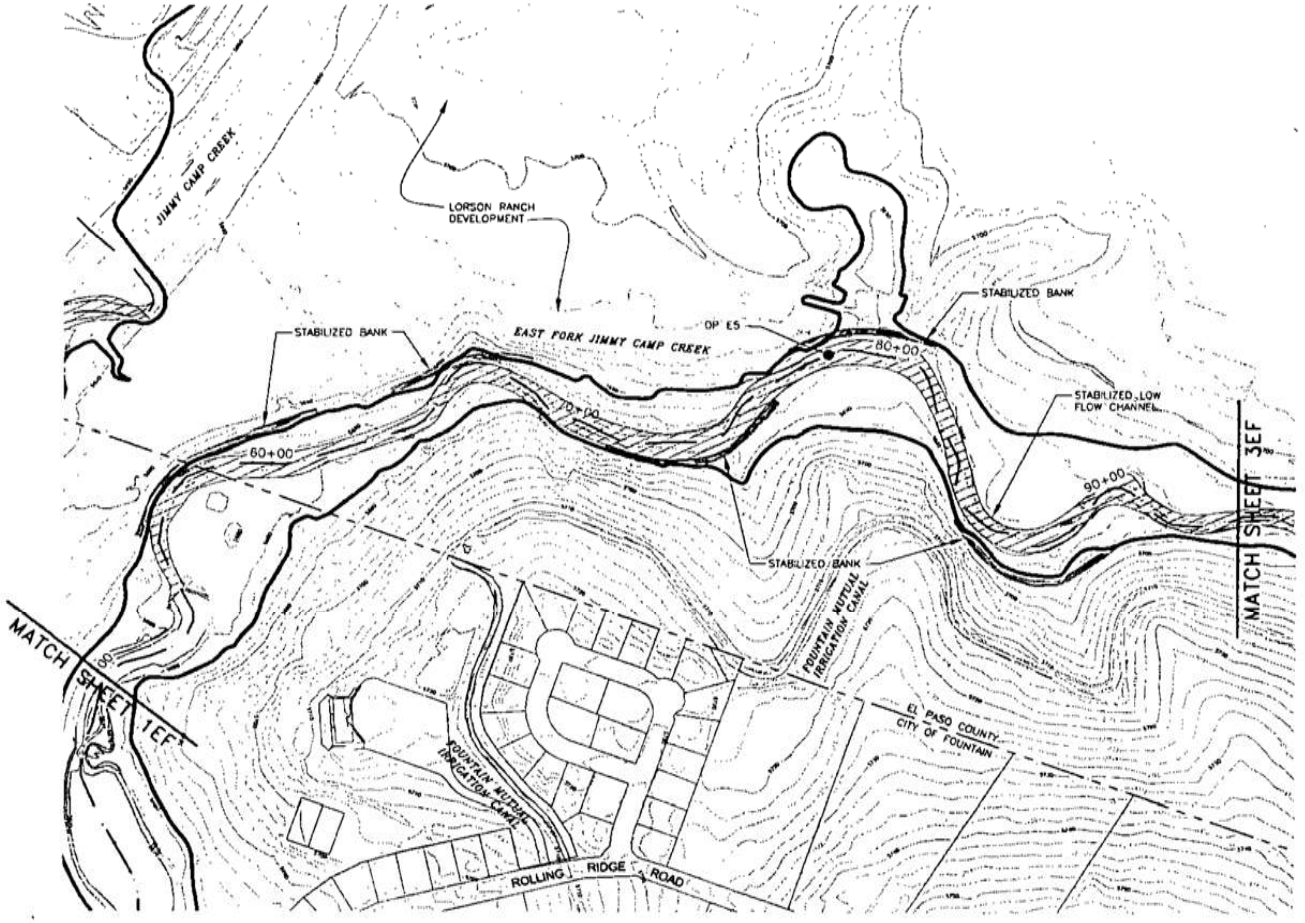
OPEN WATER

RIPARIAN TREES AND SHRUBS MAY INCLUDE SMALL AREAS OF WETLANDS POTENTIAL JURISDICTIONAL WATERS OF THE U.S. MAY INCLUDE SMALL AREAS OF WETLANDS AND/OR RIPARIAN SPECIES

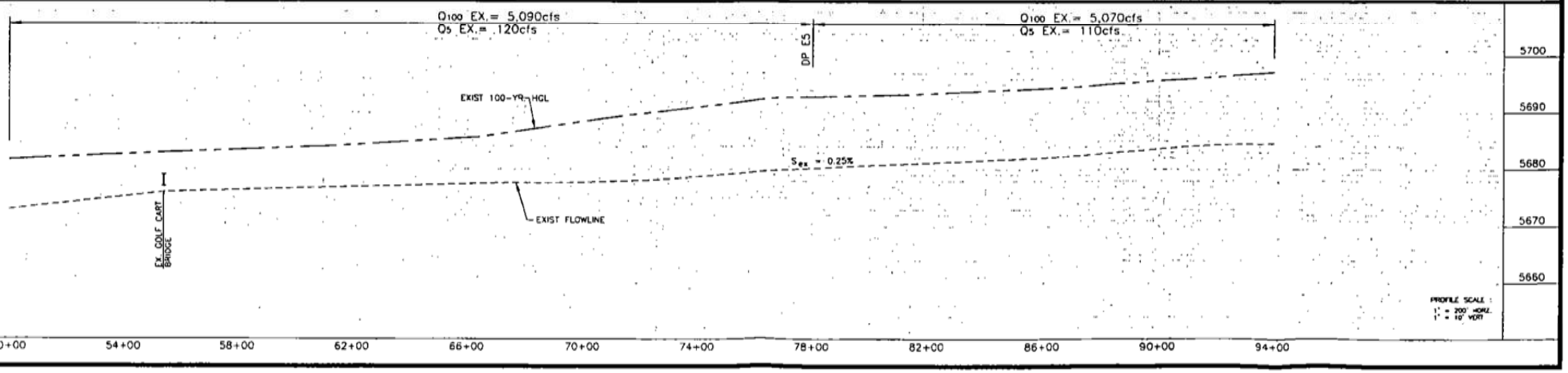
OPLAIN BOUNDARIES ARE FOR ING INFORMATION ONLY AND ARE NOT DED TO BE USED FOR FLOODPLAIN LATION OR MANAGEMENT.

DRAWING IS A PLANNING EXHIBIT RESENTING CONCEPTUAL EERING AND IS SUBJECT TO EMENT. THIS DRAWING SHOULD NOT ED FOR CONSTRUCTION PURPOSES

DISCHARGES UPSTREAM OF DP E1 HAD NO AREA ADJUSTMENT APPLIED



REACH E1



JIMMY CAMP CREEK DRAINAGE BASIN PLANNING STUDY

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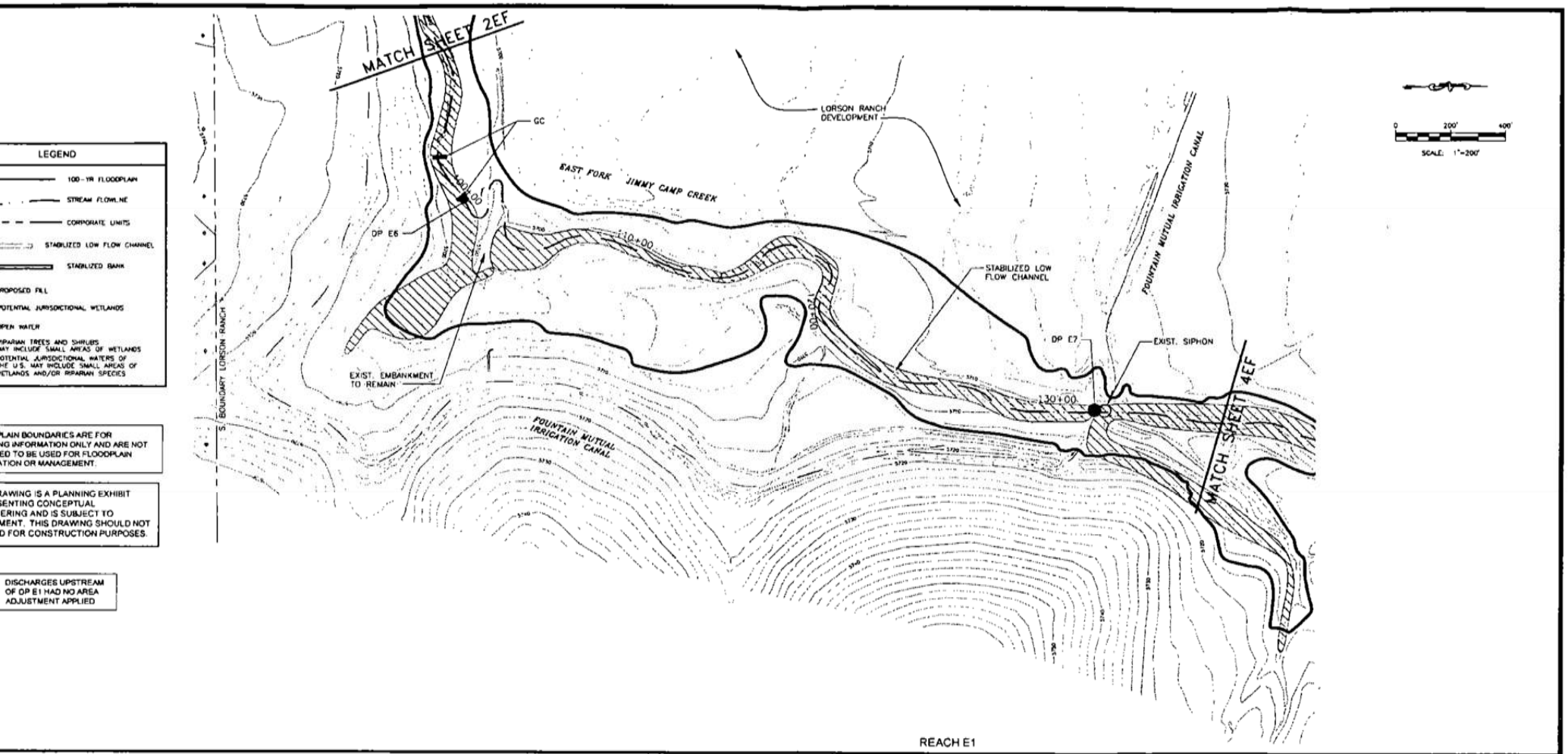

JIMMY CAMP CREEK DRAINAGE BASIN PLANNING STUDY

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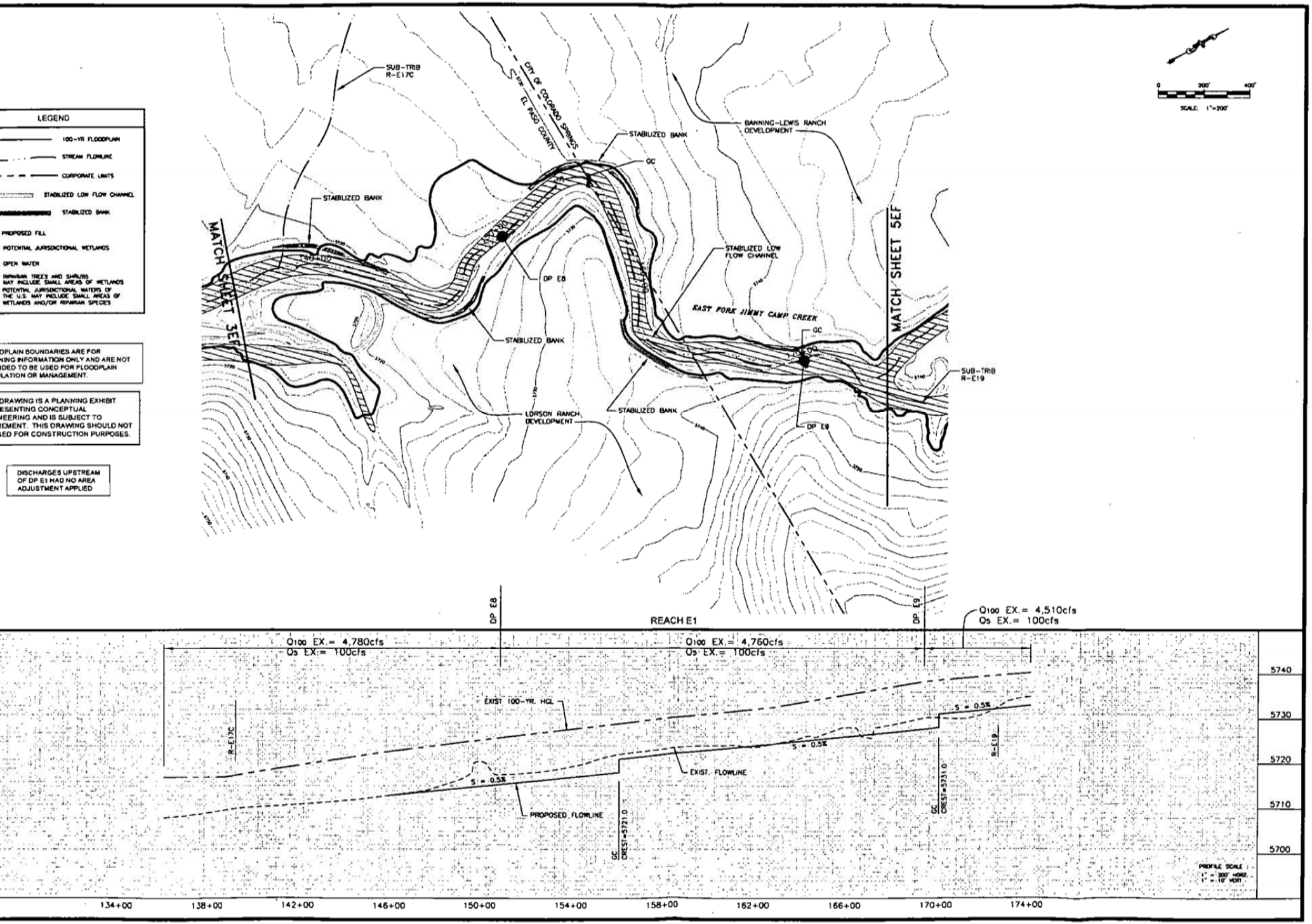

JIMMY CAMP CREEK DRAINAGE BASIN PLANNING STUDY

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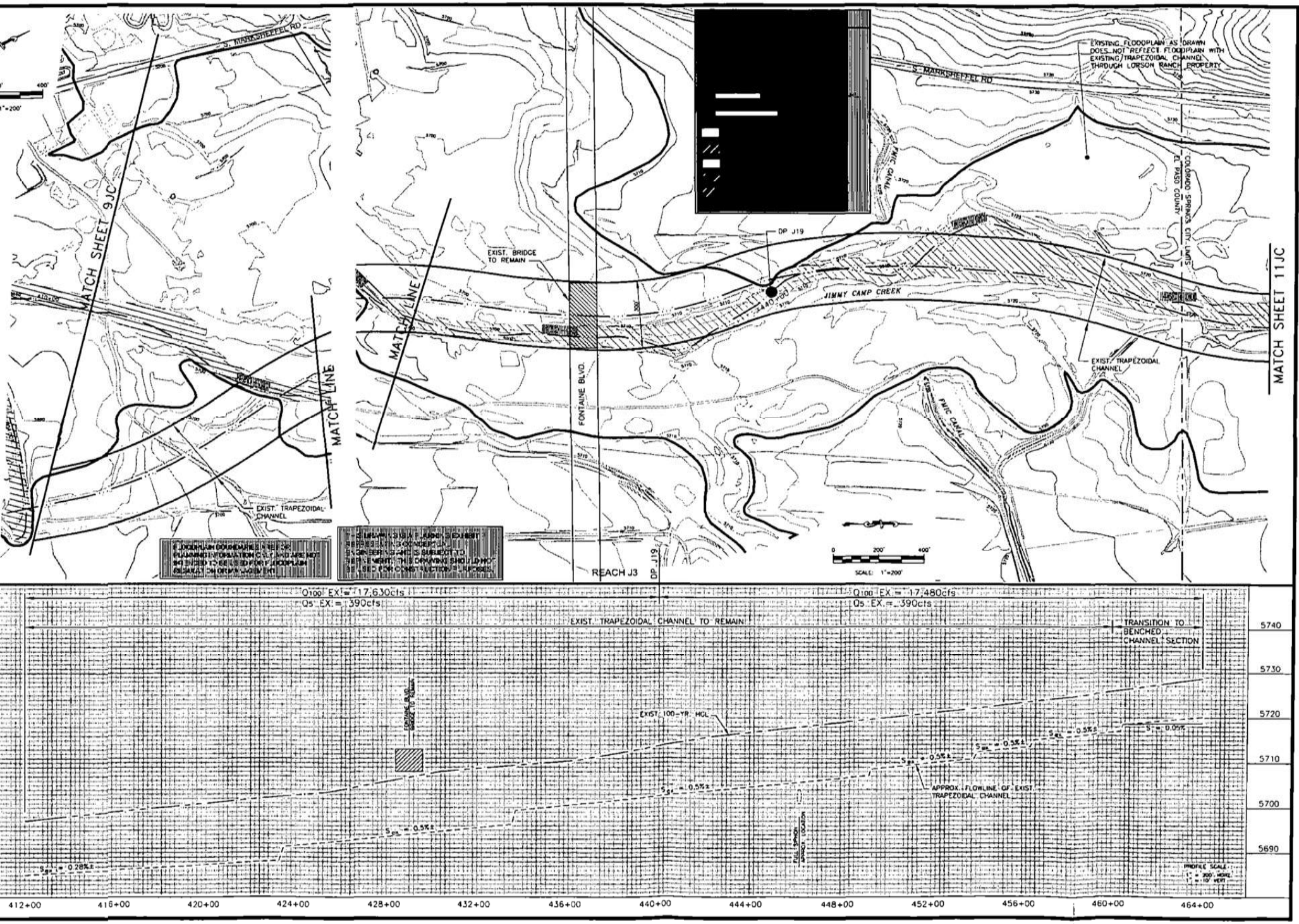

JIMMY CAMP CREEK DRAINAGE BASIN PLANNING STUDY

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Revision

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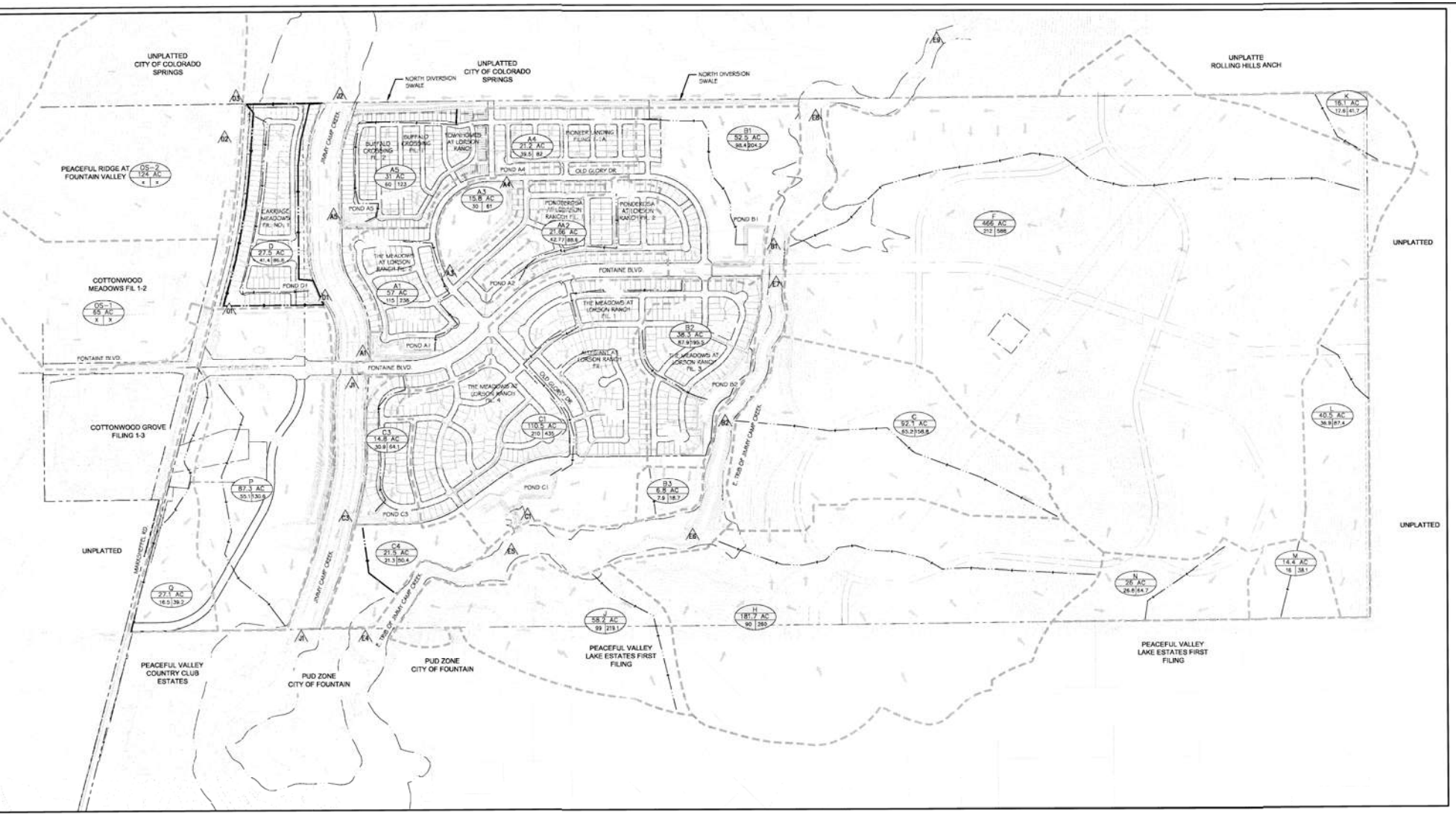


POND SUMMARY TABLE				
DESIGN POINT		RUNOFF 5 YR (CFS)	RUNOFF 10 YR (CFS)	COMMENTS
A1		47.5	110.6	POND A1 OUTFLOW
A2		15.8	45.6	POND A2 OUTFLOW
A3		12.0	43.6	FUTURE POND A3
A4		3.3	22.0	POND A4 OUTFLOW
A5		9.5	75.0	POND A5 OUTFLOW
B1		4.0	9.0	POND B1 OUTFLOW
B2		9.0	27.2	POND B2 OUTFLOW
C1		19.5	75.5	POND C1 OUTFLOW
C3		3.0	28.2	POND C3 OUTFLOW
D1		17.3	28.4	POND D1 OUTFLOW

DESIGN POINT SUMMARY TABLE				
DESIGN POINT	DRAINAGE AREA (AC)	RUNOFF 5 YR (CFS)	RUNOFF 10 YR (CFS)	COMMENTS
E4		120	5090	JCC DBPS
E5		120	5090	JCC DBPS
E6		110	5070	JCC DBPS
E7		110	5040	JCC DBPS
E8		100	4780	JCC DBPS
E9		100	4760	JCC DBPS
J1		390	17630	JCC DBPS
J2		390	17480	JCC DBPS
O1		113	214	FROM 280 LOT FDR (DP-23)
O2		31	79	FROM PEACEFUL RIDGE FDR (DP-9)
O3		41	104	FROM PEACEFUL RIDGE FDR (DP-8)

LEGEND

- BASIN BOUNDARY
- BASIN DESIGN POINT
- XXX 46.9 AC 35.5 89.0 — BASIN I.D. / ACREAGE / 5 YR/100 YR CFS
- DIRECTION OF FLOW
- EXISTING CONTOUR
- EXISTING CONTOUR AFTER GRADING BY LORSON RANCH
- TIME OF CONCENTRATION

SCALE: 1"=500'

CORE ENGINEERING GROUP
15004 1st AVENUE, S.
SUITE A
BURNSVILLE, MN 55306

NO. | DESCRIPTION | DATE

PREPARED FOR:

PROJECT:

DRAWN: RLS
DESIGNED: RLS
CHECKED: RLS

EXISTING CONDITIONS
SKETCH PLAN AMENDMENT

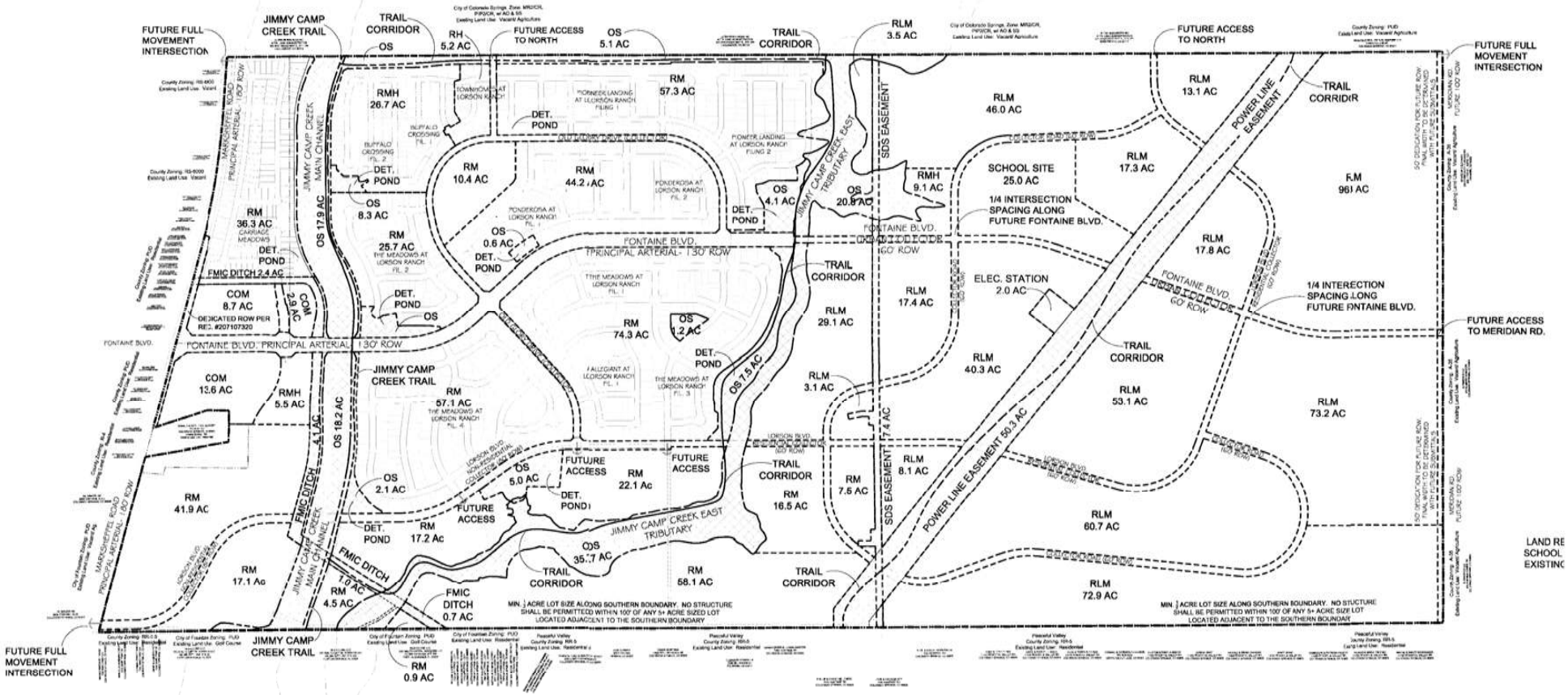
DATE
JANUARY

PROJECT
100.0

SHEET NU
1
TOTAL SHEET

LORSON RANCH

SKETCH PLAN AMENDMENT



DEVELOPMENT STANDARDS AND GUIDELINES

RL - LOW RESIDENTIAL WITH A GROSS DENSITY (1-2 DU/AC) FOR RURAL-RESIDENTIAL UNITS.
RLM - LOW/ MEDIUM RESIDENTIAL WITH A GROSS DENSITY (4-6 DU/AC) FOR SINGLE FAMILY RESIDENTIAL LOTS.
RM - MEDIUM RESIDENTIAL WITH A GROSS DENSITY (7-10 DU/AC) FOR SINGLE FAMILY RESIDENTIAL LOTS.
RMH - MEDIUM/ HIGH RESIDENTIAL WITH A GROSS DENSITY (10-13 DU/AC) FOR SINGLE OR MULTI FAMILY RESIDENTIAL LOTS.
RH - HIGH RESIDENTIAL WITH A GROSS DENSITY (17-20 DU/AC) FOR MULTI-FAMILY RESIDENTIAL UNITS.
COMM - COMMERCIAL RELATED USES

NORTH

0 500' 1000'

SCALE: 1" = 500'

DSD FILE NO.: SKP-15-001

THOMAS THOMAS

REV #	REVISIONS	DATE	DRAWN	CHECKED	APPROVED
1	UPDATED PLAN PER COMMENTS	2/5/16	JRA		
2	COUNTY COMMENTS	3/21/16	JRA		
3					

DESIGNED	JRA	01.28.15
DRAWN	JRA	01.28.15
CHECKED	LMT	01.28.15
PROJECT NUMBER:		28.16.09

Lorson Ranch

SP2