### **Preliminary Stormwater Management Calculations for**

# Logan's Walk

(FOR REZONING/ANNEXATION CONCEPTUAL PLANNING ONLY)

#### **PROJECT LOCATION**

Old Concord Road City of Smyrna, Georgia

#### OWNER/DEVELOPER

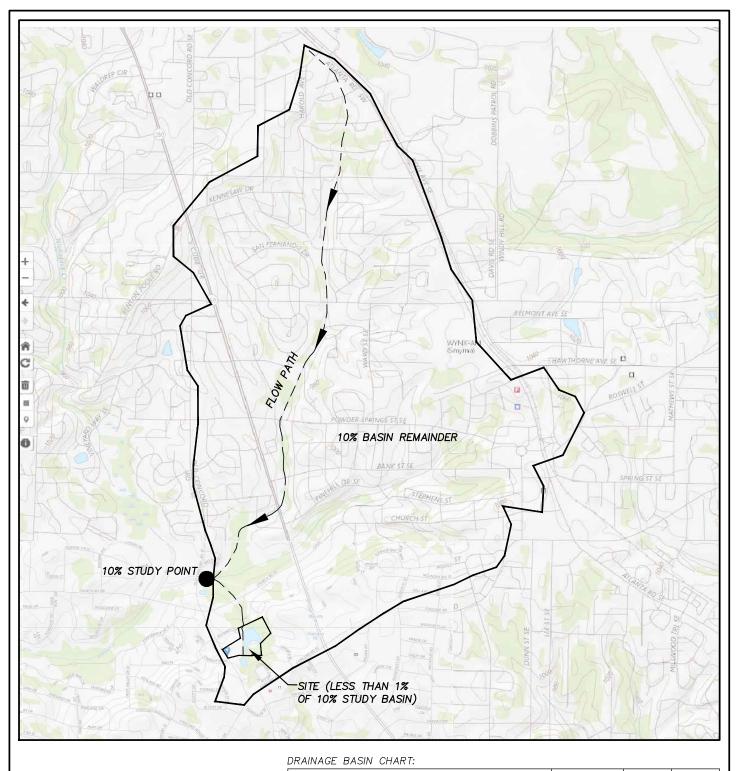
CS Realty Group, LLC 3020 Roswell Road Suite 200 Marietta, GA 30062

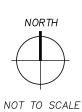
February 28, 2018

### Dovetail Civil Design, Inc.

3651 Mars Hill Road Suite 1800 Watkinsville, GA 30677 (678) 726-3300 www.dovetailcivil.com

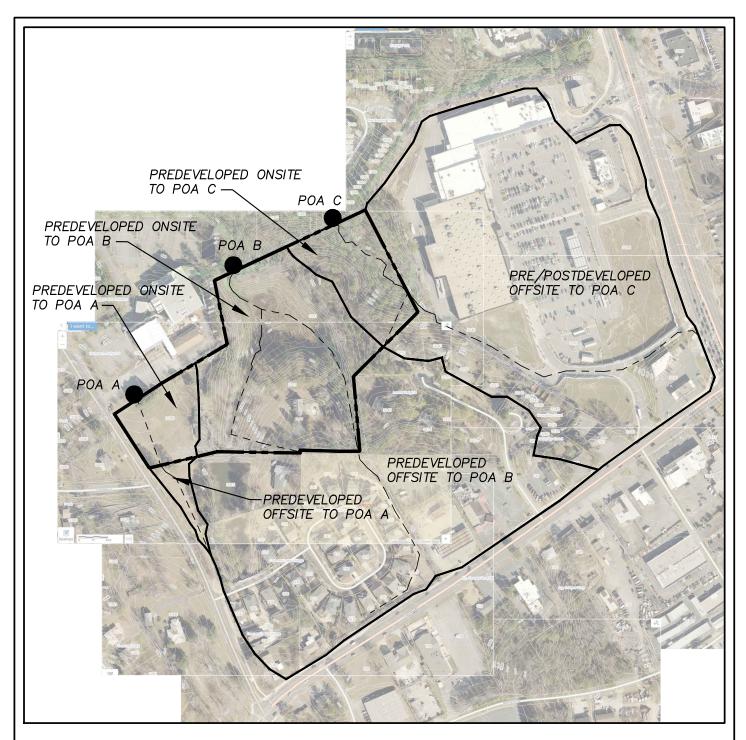
DCD Project #CSR003



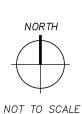


	AREA (AC)	Cn	Tc (MIN)
SITE	11.32	_	_
PRE/POSTDEVELOPED 10% BASIN REMAINDER	1640.00	72	46
TOTAL 10% BASIN	1651.32	_	_

#### 10% STUDY BASIN



#### DRAINAGE BASIN CHART:



	AREA (AC)	Cn	Tc (MIN)
PREDEVELOPED ONSITE TO POA A	1.52	55	5
PREDEVELOPED OFFSITE TO POA A	0.49	72	5
PREDEVELOPED ONSITE TO POA B	7.53	55	5
PREDEVELOPED OFFSITE TO POA B	18.43	72	10
PREDEVELOPED ONSITE TO POA C	2.27	55	5
PRE/POSTDEVELOPED OFFSITE TO POA C	22.95	72	5

#### PREDEVELOPED BASINS

#### **PEAK FLOW RATE SUMMARY**

Note: Peak flow rates and maximum ponding elevations shown here are taken directly from hydrograph models.

Point of Analysis A

Storm Frequency (yrs)	Existing PFR (cfs)	Postdeveloped PFR (cfs)	PFR Reduction
1	1.35	0.73	45.69%
2	2.08	0.96	53.98%
5	3.51	1.35	61.48%
10	4.90	1.72	64.97%
25	7.03	2.25	67.99%
50	8.84	2.69	69.59%
100	10.78	3.14	70.83%

Point of Analysis B

Storm Frequency (yrs)	Predeveloped PFR (cfs)	Postdeveloped PFR (cfs)	PFR Reduction	Max Ponding Elevation (ft)
1	32.14	17.15	46.64%	997.24
2	43.23	22.78	47.31%	997.77
5	63.28	33.49	47.08%	998.44
10	82.41	56.52	31.42%	999.28
25	110.76	95.51	13.77%	1000.28
50	134.35	124.72	7.17%	1000.94
100	159.21	155.29	2.46%	1001.54

**Point of Analysis C** 

Storm Frequency	Predeveloped	Postdeveloped	
(yrs)	PFR (cfs)	PFR (cfs)	PFR Reduction
1	44.07	44.40	-0.75%
2	57.59	57.80	-0.36%
5	81.56	81.46	0.12%
10	103.70	103.26	0.42%
25	136.05	135.07	0.72%
50	162.66	161.18	0.91%
100	190.47	188.42	1.08%

#### DRY EXTENDED DETENTION POND SUMMARY

Project name: Logan's Walk

Pond description: Dry ED Pond - Concept Only

Date: 2/28/2018

Onsite area draining to pond (acres):

Onsite impervious area draining to pond (acres):

Overall area draining to pond (acres):

Overall curve number draining to pond (Cn):

Shared WQV for channel protection storage (%):

5.70

The GSWMM (3.4.1) recommends a

2.45

maximum depth of 10 feet for dry

ponds and a maximum drainage basin

74

of 75 acres. There is no permanent

pool.

#### **Pond Storage**

		_	Incremental	Cumulative
Stage (ft)	Elevation (ft)	Surface Area (sf)	Storage (cf)	Storage (cf)
0.00	992.00	1,000	0	0
2.00	994.00	4,063	5,063	5,063
4.00	996.00	5,472	9,535	14,598
6.00	998.00	7,699	13,171	27,769
8.00	1000.00	9,437	17,136	44,905
10.00	1002.00	11,233	20,670	65,575
12.00	1004.00	13,091	24,324	89,899

Water Quality Design	Required	<u>Proposed</u>	Compliant?
WQ elevation (ft):	995.28	996.00	Yes
WQ volume (cf):	10,846	14,598	Yes
WQ surface area (sf):	2,483	5,472	Yes
WQ orifice invert elevation (ft):	992.00	992.00	Yes
WQ orifice diameter (in):	2.54	2.50	Yes
Channel Protection Design			
CP begin routing elevation (ft):	996.00	996.00	Yes
1-year ponding elevation (ft):	(n/a)	997.24	Yes
CP elevation (ft):	997.24	997.50	Yes
CP storage + water quality volume (cf):	22,247	24,075	Yes
CP orifice invert elevation (ft):	996.00	996.00	Yes
CP orifice diameter (in):	4.65	4.50	Yes
Pond Parameters			
Forebay volume (cf):	1,085	2,000	Yes
100-year ponding elevation (ft):	(n/a)	1001.54	Yes
Freeboard (ft):	1.00	2.46	Yes

#### **STAGE STORAGE SUMMARY**

Pond description: Dry ED Pond - Concept Only

		Surface	Storage	
Stage (ft)	Elevation (ft)	Area (sf)	Volume (cf)	Comments
0.00	992.00	1,000	0	2.5" WQ orifice at 992.00, bottom of pond
0.40	992.40	1,613	523	
0.80	992.80	2,225	1,290	
1.20	993.20	2,838	2,303	
1.60	993.60	3,450	3,560	
2.00	994.00	4,063	5,063	
2.40	994.40	4,345	6,745	
2.80	994.80	4,627	8,539	
3.20	995.20	4,908	10,446	
3.60	995.60	5,190	12,466	
4.00	996.00	5,472	14,598	4.5" CP orifice at 996.00
4.40	996.40	5,917	16,876	
4.80	996.80	6,363	19,332	
5.20	997.20	6,808	21,966	
5.60	997.60	7,254	24,778	3' detention weir at 997.50
6.00	998.00	7,699	27,769	
6.40	998.40	8,047	30,918	
6.80	998.80	8,394	34,206	
7.20	999.20	8,742	37,633	
7.60	999.60	9,089	41,200	
8.00	1000.00	9,437	44,905	
8.40	1000.40	9,796	48,752	
8.80	1000.80	10,155	52,742	
9.20	1001.20	10,515	56,876	
9.60	1001.60	10,874	61,154	100-yr ponding limit at 1001.54
10.00	1002.00	11,233	65,575	
10.40	1002.40	11,605	70,143	Emergency overflow weir at 1002.50
10.80	1002.80	11,976	74,859	
11.20	1003.20	12,348	79,723	
11.60	1003.60	12,719	84,737	
12.00	1004.00	13,091	89,899	Top of pond, top of wall at 1004.00

Logan's Walk 2/28/2018

#### WATER QUALITY CALCULATIONS

Pond description: Dry ED Pond - Concept Only

Water Quality Storage Volume (GSWMM 2.1.7)

Onsite impervious area draining to pond (Ai):

Onsite area draining to pond (At):

5.70 acres

Volumetric runoff coefficient (Rv): 0.437

Rv = 0.050 + (0.009) (Ai / At)

Required water quality volume (WQv): 10,846 cf

WQv = (1.2/12) (Rv) (At)

Required forebay volume (FBv): 1,085 cf

FBv = (WQv) (10%)

Required water quality surface area (Aw): 2,483 sf

Aw = (1%) (At)

Water Quality Orifice Sizing (using maximum head and maximum discharge method, GSWMM 2.3.3.2)

Proposed WQ orifice invert elevation: 992.00 ft
Proposed WQ storage elevation: 996.00 ft
Drawdown duration: 24 hours
Discharge coefficient (C): 0.6
Gravitational acceleration (g): 32.2 ft/s/s

Maximum orifice flow discharge (Qmax): 0.338 cfs

Qmax = (2) (ED storage / drawdown duration)

Maximum hydraulic head (H): 4.00 ft

H = WQ storage elev - WQ orifice ie

Maximum orifice cross-sectional area (A): 0.0351 sf

A = Qmax / [CV(2gH)]

Maximum orifice diameter (D): 2.54 in

 $D = \sqrt{(4A/\pi)}$ 

<sup>\*</sup>Alternatively, when using the average head and average discharge method (GSWMM 2.3.3.3), the maximum orifice diameter (D) becomes 2.13 inches.

Water Quality Summary	<u>Required</u>	<u>Proposed</u>	Compliant?
WQ elevation:	995.28 ft	996.00 ft	Yes
WQ volume:	10,846 cf	14,598 cf	Yes
WQ surface area:	2,483 sf	5,472 sf	Yes
WQ orifice invert elevation:	992.00 ft	992.00 ft	Yes
WQ forebay storage volume:	1,085 cf	2,000 cf	Yes
WQ orifice diameter:	2.54 in	2.50 in	Yes

Logan's Walk 2/28/2018

#### CHANNEL PROTECTION CALCULATIONS

3.51 in

Pond description: Dry ED Pond - Concept Only

#### Assumed Channel Protection Storage Volume (for orifice sizing only)

Overall area draining to pond (At): 15.89 acres 74 Overall curve number for drainage basin (Cn): Accumulated rainfall for a 1-yr storm event (P): 3.36 in

S = 1000/Cn - 10

Accumulated direct runoff (Qa): 1.14 in

 $Qa = (P - 0.2S)^2 / (P + 0.8S)$ 

Potential maximum soil retention (S):

Required channel protection volume (CPv): 66,004 cf\*

CPv = (Qa) (At)

#### Channel Protection Orifice Sizing (using maximum head and maximum discharge method, GSWMM 2.3.3.2)

Proposed WQ elevation: 996.00 ft 0 % Shared percentage of WQ volume for CP storage: Required WQ volume: 10,846 cf Shared WQ volume: 0 cf Additional CP volume needed: 66,004 cf Proposed WQ volume: 14,598 cf Combined volume needed for WQ and CP: 80,602 cf Combined elevation needed for WQ and CP: 1003.27 ft 24 hours Drawdown duration: Discharge coefficient (C): 0.6 Gravitational acceleration (g): 32.2 ft/s/s Maximum orifice flow discharge (Qmax): 1.528 cfs Qmax = (2) (CPv above orifice / drawdown) Maximum hydraulic head (H): 7.27 ft

H = CP storage elev - orifice invert elev

Maximum orifice cross-sectional area (A): 0.1177 sf

A = Qmax / [CV(2gH)]

Maximum orifice diameter (D): 4.65 in\*\*

 $D = \sqrt{(4A/\pi)}$ 

<sup>\*\*</sup>Alternatively, when using the average head and average discharge method (GSWMM 2.3.3.3), the maximum orifice diameter (D) becomes 3.91 inches.

Channel Protection Summary	<u>Required</u>	<u>Proposed</u>	Compliant?
CP begin routing elevation:	996.00 ft	996.00 ft	Yes
CP max elevation based on routed 1-yr ponding:	(n/a) ft	997.24 ft	Yes
CP actual elevation:	997.24 ft	997.50 ft	Yes
CP storage + water quality volume:	22,247 cf	24,075 cf	Yes
CP orifice invert elevation:	996.00 ft	996.00 ft	Yes
CP orifice diameter:	4.65 in	4.50 in	Yes

2/28/2018 Logan's Walk

<sup>\*</sup>Actual channel protection storage volume may be based on 1-year routed storm results.

#### **DRAINAGE BASIN SUMMARY**

**Individual Drainage Basins** 

				Time of Concentration
Basin	Description	Area (ac)	Curve Number	(min)
1	Predeveloped Onsite to POA A	1.52	55	4
2	Predeveloped Offsite to POA A	0.49	72	5
3	Predeveloped Onsite to POA B	7.53	55	5
4	Predeveloped Offsite to POA B	18.43	72	10
5	Predeveloped Onsite to POA C	2.27	55	5
6	Pre/Postdeveloped Offsite to POA C	22.95	72	4
7	Pre/Post 10% Basin Remainder	1640.00	72	46
8	Postdeveloped Onsite Bypass to POA A	0.41	71	4
9	Postdeveloped Onsite to Pond	5.70	77	4
10	Postdeveloped Onsite Bypass to POA B	3.66	61	4
11	Postdeveloped Offsite East to Pond	9.70	72	8
12	Postdeveloped Offsite South to Pond	0.49	72	5
13	Postdeveloped Offsite Bypass to POA B	8.73	72	10
14	Postdeveloped Onsite Bypass to POA C	1.55	59	3
15				

**Combined Drainage Basins** 

	Combined	Overall	Overall	Contributing Basins (mark with "X"):														
Description	Acreage	Cn	Tc (min)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Predeveloped Onsite	11.32	55	5	X		Χ		X										
Postdeveloped Onsite	11.32	69	4								X	Χ	X				X	
Predeveloped 10% Basin																		
Postdeveloped 10% Basin																		
Total to Pond	15.89	74	8									X		X	X			

#### **DRAINAGE BASIN CALCULATIONS**

#### Reference Table: Suface Types for Times of Concentration Calculations

A - Sheet flow over pavement or hard soil (n=0.01)	F - Shallow flow in paved channel (n=0.01)
B - Sheet flow over cultivated or soft soil (n=0.06)	G - Shallow flow in unpaved channel (n=0.03)
C - Sheet flow over pasture or lawns (n=0.15)	H - Open flow in ephemeral waterway (n=0.06)
D - Sheet flow over light underbrush (n=0.40)	I - Open flow in perinneal waterway (n=0.04)
E - Sheet flow over dense underbrush (n=0.80)	J - Open flow in pipe or culvert (n=0.01)

#### **User Input: Basin Desciption, Curve Numbers, Times of Concentration**

Basin #1 Description:	Prede	eveloped Onsi	te to POA A							
			Segment	Length	Δ Elev	Surface	Slope	Velocity	Tc	Tc
<b>Ground Cover</b>	Cn	Area (ac)	Leg	(ft)	(ft)	Type	(%)	(ft/s)	(sec)	(min)
Impervious	98		1	100	4	В	4.0	0.51	195	3.3
Landscaped	61		2	142	6	G	4.2	3.32	43	0.7
Wooded Upland	55	1.52	3							
(Other, if needed)	0		4							
Commercial District	92		5							
Residential District	72		6							
Agriculture District	65		7							
Basin Total	55	1.52		242	10				238	4.0

redeve	loped O	ffsite to	D POA A
	redeve	Predeveloped O	Predeveloped Offsite to

			Segment	Length	Δ Elev	Surface	Slope	Velocity	Tc	Tc
Ground Cover	Cn	Area (ac)	Leg	(ft)	(ft)	Type	(%)	(ft/s)	(sec)	(min)
Impervious	98		1	100	8	В	8.0	0.68	148	2.5
Landscaped	61		2	502	22	G	4.4	3.38	149	2.5
Wooded Upland	55		3							
(Other, if needed)	0		4							
Commercial District	92		5							
Residential District	72	0.49	6							
Agriculture District	65		7							
Basin Total	72	0.49		602	30				297	4.9

Basin #3 Description: Predeveloped Onsite to POA B

			Segment	Length	Δ Elev	Surface	Slope	Velocity	Tc	Tc
Ground Cover	Cn	Area (ac)	Leg	(ft)	(ft)	Type	(%)	(ft/s)	(sec)	(min)
Impervious	98		1	100	16	С	16.0	0.43	233	3.9
Landscaped	61		2	143	16	G	11.2	5.40	27	0.4
Wooded Upland	55	7.53	3	655	14	1	2.1	10.06	65	1.1
(Other, if needed)	0		4							
Commercial District	92		5							
Residential District	72		6							
Agriculture District	65		7							
Basin Total	55	7.53		898	46				325	5.4

Basin #4 Description:	Prede	veloped Olis	ite to POA B							
			Segment	Length	Δ Elev	Surface	Slope	Velocity	Tc	Tc
Ground Cover	Cn	Area (ac)	Leg	(ft)	(ft)	Type	(%)	(ft/s)	(sec)	(min)
Impervious	98		1	100	6	В	6.0	0.60	166	2.8
Landscaped	61		2	1,345	56	G	4.2	3.29	409	6.8
Wooded Upland	55		3	194	4	1	2.1	9.88	20	0.3
(Other, if needed)	0		4							
Commercial District	92		5							
Residential District	72	18.43	6							
Agriculture District	65		7							
Basin Total	72	18.43		1,639	66				594	9.9
Basin #5 Description:	Prede	veloped Onsi	te to POA C							
·		•	Segment	Length	Δ Elev	Surface	Slope	Velocity	Tc	Tc
Ground Cover	Cn	Area (ac)	Leg	(ft)	(ft)	Туре	(%)	(ft/s)	(sec)	(min)
Impervious	98	<u> </u>	1	100	11	C	11.0	0.37	271	4.5
Landscaped	61		2	105	18	G	17.1	6.68	16	0.3
Wooded Upland	55	2.27	3	393	18	ı	4.6	14.73	27	0.4
(Other, if needed)	0		4	333	13	•		5		5
Commercial District	92		5							
Residential District	72		6							
Agriculture District	65		7							
Basin Total	55	2.27		598	47				313	5.2
Ground Cover	Cn	Area (ac)	Segment Leg	Length (ft)	Δ Elev (ft)	Surface Type	Slope (%)	Velocity (ft/s)	Tc (sec)	Tc (min)
	Cn 98	Area (ac)	_	_			· ·	•		
Impervious		Area (ac)	Leg	(ft)	(ft)	Type	(%)	(ft/s)	(sec)	(min)
mpervious Landscaped	98	Area (ac)	Leg 1	(ft)	(ft)	Type B	(%)	(ft/s) 0.68	(sec)	(min) 2.5
Impervious Landscaped Wooded Upland	98 61	Area (ac)	Leg 1 2	(ft) 100 1,021	(ft) 8 40	Type B J	(%) 8.0 3.9	(ft/s) 0.68 23.22	(sec) 148 44	(min) 2.5 0.7
Impervious Landscaped Wooded Upland (Other, if needed)	98 61 55	Area (ac)	Leg 1 2 3	(ft) 100 1,021 123	(ft) 8 40 12	Type B J	8.0 3.9 9.8	(ft/s) 0.68 23.22 5.04	(sec) 148 44 24	(min) 2.5 0.7 0.4
Impervious Landscaped Wooded Upland (Other, if needed) Commercial District	98 61 55 0	Area (ac) 22.95	Leg  1 2 3 4	(ft) 100 1,021 123	(ft) 8 40 12	Type B J	8.0 3.9 9.8	(ft/s) 0.68 23.22 5.04	(sec) 148 44 24	(min) 2.5 0.7 0.4
Impervious Landscaped Wooded Upland (Other, if needed) Commercial District Residential District	98 61 55 0 92	· ·	Leg 1 2 3 4 5	(ft) 100 1,021 123	(ft) 8 40 12	Type B J	8.0 3.9 9.8	(ft/s) 0.68 23.22 5.04	(sec) 148 44 24	(min) 2.5 0.7 0.4
Impervious Landscaped Wooded Upland (Other, if needed) Commercial District Residential District	98 61 55 0 92 72	· ·	Leg  1 2 3 4 5 6	(ft) 100 1,021 123	(ft) 8 40 12	Type B J	8.0 3.9 9.8	(ft/s) 0.68 23.22 5.04	(sec) 148 44 24	(min) 2.5 0.7 0.4
Impervious Landscaped Wooded Upland (Other, if needed) Commercial District Residential District Agriculture District	98 61 55 0 92 72 65	22.95	Leg  1 2 3 4 5 6 7	(ft) 100 1,021 123 393	(ft) 8 40 12 18	Type B J	8.0 3.9 9.8	(ft/s) 0.68 23.22 5.04	(sec) 148 44 24 27	(min) 2.5 0.7 0.4 0.4
Impervious Landscaped Wooded Upland (Other, if needed) Commercial District Residential District Agriculture District Basin Total	98 61 55 0 92 72 65	22.95	Leg  1 2 3 4 5 6 7	(ft) 100 1,021 123 393 1,637	(ft) 8 40 12 18	Type B J	8.0 3.9 9.8	(ft/s) 0.68 23.22 5.04	(sec) 148 44 24 27	(min) 2.5 0.7 0.4 0.4
Impervious Landscaped Wooded Upland (Other, if needed) Commercial District Residential District Agriculture District Basin Total	98 61 55 0 92 72 65 72 Pre/Po	22.95	Leg 1 2 3 4 5 6 7	(ft) 100 1,021 123 393 1,637	(ft) 8 40 12 18	Type  B  J  G	(%) 8.0 3.9 9.8 4.6	(ft/s) 0.68 23.22 5.04 14.73	(sec)  148 44 24 27	(min) 2.5 0.7 0.4 0.4
mpervious Landscaped Wooded Upland (Other, if needed) Commercial District Residential District Agriculture District Basin Total Basin #7 Description:	98 61 55 0 92 72 65 72 Pre/Po	22.95 22.95 ost 10% Basir	Leg  1 2 3 4 5 6 7  Remainder Segment	(ft) 100 1,021 123 393 1,637 Length	8 40 12 18 78 Δ Elev	Type  B  J  G  I	(%) 8.0 3.9 9.8 4.6	(ft/s) 0.68 23.22 5.04 14.73	(sec)  148 44 24 27  243	(min)  2.5  0.7  0.4  0.4  Tc
mpervious Landscaped Wooded Upland (Other, if needed) Commercial District Residential District Agriculture District Basin Total Basin #7 Description: Ground Cover	98 61 55 0 92 72 65 72 Pre/Po	22.95 22.95 ost 10% Basir	Leg  1 2 3 4 5 6 7  Remainder Segment Leg	(ft) 100 1,021 123 393  1,637  Length (ft)	8 40 12 18 78 Δ Elev (ft)	Type  B  J  G  I  Surface Type	(%) 8.0 3.9 9.8 4.6 Slope (%)	(ft/s) 0.68 23.22 5.04 14.73 Velocity (ft/s)	(sec)  148 44 24 27  243  Tc (sec)	(min)  2.5 0.7 0.4 0.4  4.0  Tc (min)
Impervious Landscaped Wooded Upland (Other, if needed) Commercial District Residential District Agriculture District Basin Total  Basin #7 Description:  Ground Cover Impervious Landscaped	98 61 55 0 92 72 65 72 Pre/Po	22.95 22.95 ost 10% Basir	Leg  1 2 3 4 5 6 7  Remainder Segment Leg 1	(ft)  100 1,021 123 393  1,637  Length (ft) 100 4,290	(ft)  8 40 12 18  78  Δ Elev (ft)  5 25	Type  B  J  G  I  Surface Type  D	(%) 8.0 3.9 9.8 4.6 Slope (%) 5.0 0.6	(ft/s)  0.68  23.22  5.04  14.73  Velocity (ft/s)  0.12  8.96	(sec)  148 44 24 27  243  Tc (sec) 814 479	(min)  2.5 0.7 0.4 0.4  4.0  Tc (min)  13.6 8.0
Impervious Landscaped Wooded Upland (Other, if needed) Commercial District Residential District Agriculture District Basin Total  Basin #7 Description:  Ground Cover Impervious Landscaped Wooded Upland	98 61 55 0 92 72 65 72 Pre/Po	22.95 22.95 ost 10% Basir	Leg  1 2 3 4 5 6 7 Remainder Segment Leg 1 2	(ft) 100 1,021 123 393  1,637  Length (ft) 100	8 40 12 18 78 Δ Elev (ft) 5	Type  B  J  G  I  Surface Type  D	(%) 8.0 3.9 9.8 4.6 Slope (%) 5.0	(ft/s)  0.68  23.22  5.04  14.73  Velocity (ft/s)  0.12	(sec)  148 44 24 27  243  Tc (sec) 814	(min)  2.5 0.7 0.4 0.4  4.0  Tc (min) 13.6
Impervious Landscaped Wooded Upland (Other, if needed) Commercial District Residential District Agriculture District Basin Total  Basin #7 Description:	98 61 55 0 92 72 65 72 Pre/Po Cn 98 61 55 0	22.95 22.95 ost 10% Basir	Leg  1 2 3 4 5 6 7  Remainder Segment Leg 1 2 3 4	(ft)  100 1,021 123 393  1,637  Length (ft) 100 4,290	(ft)  8 40 12 18  78  Δ Elev (ft)  5 25	Type  B  J  G  I  Surface Type  D	(%) 8.0 3.9 9.8 4.6 Slope (%) 5.0 0.6	(ft/s)  0.68  23.22  5.04  14.73  Velocity (ft/s)  0.12  8.96	(sec)  148 44 24 27  243  Tc (sec) 814 479	(min)  2.5 0.7 0.4 0.4  4.0  Tc (min) 13.6 8.0
Impervious Landscaped Wooded Upland (Other, if needed) Commercial District Residential District Agriculture District Basin Total  Basin #7 Description:  Ground Cover Impervious Landscaped Wooded Upland (Other, if needed) Commercial District	98 61 55 0 92 72 65 72 Pre/Po Cn 98 61 55 0 92	22.95 22.95 ost 10% Basir Area (ac)	Leg  1 2 3 4 5 6 7  Remainder Segment Leg 1 2 3 4 5 5	(ft)  100 1,021 123 393  1,637  Length (ft) 100 4,290	(ft)  8 40 12 18  78  Δ Elev (ft)  5 25	Type  B  J  G  I  Surface Type  D	(%) 8.0 3.9 9.8 4.6 Slope (%) 5.0 0.6	(ft/s)  0.68  23.22  5.04  14.73  Velocity (ft/s)  0.12  8.96	(sec)  148 44 24 27  243  Tc (sec) 814 479	(min)  2.5 0.7 0.4 0.4  4.0  Tc (min)  13.6 8.0
Impervious Landscaped Wooded Upland (Other, if needed) Commercial District Residential District Agriculture District Basin Total  Basin #7 Description:  Ground Cover Impervious Landscaped Wooded Upland (Other, if needed) Commercial District Residential District	98 61 55 0 92 72 65 72 Pre/Po Cn 98 61 55 0 92 72	22.95 22.95 ost 10% Basir	Leg  1 2 3 4 5 6 7  Remainder Segment Leg 1 2 3 4	(ft)  100 1,021 123 393  1,637  Length (ft) 100 4,290	(ft)  8 40 12 18  78  Δ Elev (ft)  5 25	Type  B  J  G  I  Surface Type  D	(%) 8.0 3.9 9.8 4.6 Slope (%) 5.0 0.6	(ft/s)  0.68  23.22  5.04  14.73  Velocity (ft/s)  0.12  8.96	(sec)  148 44 24 27  243  Tc (sec) 814 479	(min)  2.5 0.7 0.4 0.4  4.0  Tc (min) 13.6 8.0
Impervious Landscaped Wooded Upland (Other, if needed) Commercial District Residential District Agriculture District Basin Total  Basin #7 Description:  Ground Cover Impervious Landscaped Wooded Upland (Other, if needed) Commercial District	98 61 55 0 92 72 65 72 Pre/Po Cn 98 61 55 0 92	22.95 22.95 22.95 ost 10% Basir Area (ac)	Leg  1 2 3 4 5 6 7  Remainder Segment Leg 1 2 3 4 5 6	(ft)  100 1,021 123 393  1,637  Length (ft) 100 4,290	(ft)  8 40 12 18  78  Δ Elev (ft)  5 25	Type  B  J  G  I  Surface Type  D	(%) 8.0 3.9 9.8 4.6 Slope (%) 5.0 0.6	(ft/s)  0.68  23.22  5.04  14.73  Velocity (ft/s)  0.12  8.96	(sec)  148 44 24 27  243  Tc (sec) 814 479	(min)  2.5 0.7 0.4 0.4  4.0  Tc (min) 13.6 8.0

	6		Segment	_	Δ Elev	Surface	Slope	Velocity	Tc	Tc
Ground Cover	Cn	Area (ac)	Leg	(ft)	(ft)	Туре	(%)	(ft/s)	(sec)	(min)
Impervious	98		1	100	5	В	5.0	0.56	178	3.0
Landscaped	61		2	133	5	G	3.8	3.13	43	0.7
Wooded Upland	55		3							
(Other, if needed)	0		4							
Commercial District	92		5							
Residential District	72		6							
Agriculture District	65		7							
Basin Total	71	0.41		233	10				221	3.7
Basin #9 Description:	Postd	eveloped On	site to Pond							
			Segment	Length	Δ Elev	Surface	Slope	Velocity	Tc	Tc
Ground Cover	Cn	Area (ac)	Leg	(ft)	(ft)	Туре	(%)	(ft/s)	(sec)	(min)
Impervious	98	2.45	1	100	4	В	4.0	0.51	195	3.3
Landscaped	61	3.25	2	106	6	G	5.7	3.84	28	0.5
Wooded Upland	55		3	709	16	J	2.3	17.63	40	0.7
(Other, if needed)	0		4							
Commercial District	92		5							
Residential District	72		6							
Agriculture District	65		7							
Basin Total	77	5.70		915	26				263	4.4
Basin #10 Description:	Postd	eveloped On	site Bypass to	POA B						
			Segment	Length	Δ Elev	Surface	Slope	Velocity	Tc	Tc
<b>Ground Cover</b>	Cn	Area (ac)	Leg	(ft)	(ft)	Type	(%)	(ft/s)	(sec)	(min)
Impervious	98	0.25	1	100	10	В	10.0	0.74	135	2.3
Landscaped	61	1.91	2	43	20	G	46.5	11.00	4	0.1
Wooded Upland	55	1.50	3	100	2	J	2.0	16.59	6	0.1
(Other, if needed)	0		4	655	14	1	2.1	10.06	65	1.1
Commercial District	92		5							
Residential District	72		6							
Agriculture District	65		7							
Basin Total	61	3.66		898	46				210	3.5
			site Fast to P	ond						
Basin #11 Description:	Postd	eveloped Off	0.00 =000 00 .							
Basin #11 Description:	Postd	eveloped Off	Segment		Δ Elev	Surface	Slope	Velocity	Tc	Tc
Basin #11 Description: Ground Cover		eveloped Off Area (ac)			Δ Elev (ft)	Surface Type	Slope (%)	Velocity (ft/s)	Tc (sec)	Tc (min)
·		Area (ac)	Segment	Length				•		(min)
Ground Cover	Cn	Area (ac)	Segment Leg	Length (ft)	(ft)	Туре	(%)	(ft/s)	(sec)	
Ground Cover Impervious Landscaped	Cn 98 61	Area (ac)	Segment Leg 1	Length (ft)	(ft) 4	Type B	(%)	(ft/s) 0.51 3.73	(sec) 195 242	(min) 3.3 4.0
Ground Cover Impervious Landscaped Wooded Upland	Cn 98	Area (ac)	Segment Leg 1 2	Length (ft)  100 900	(ft) 4 48	Type B G	(%) 4.0 5.3	(ft/s) 0.51	(sec) 195	(min) 3.3
Ground Cover Impervious Landscaped	Cn 98 61 55	Area (ac)	Segment Leg 1 2 3	Length (ft)  100 900	(ft) 4 48	Type B G	(%) 4.0 5.3	(ft/s) 0.51 3.73	(sec) 195 242	(min) 3.3 4.0

Residential District

Agriculture District

Basin Total

72

65

72

9.70

9.70

6

7

1,207

54

455

7.6

Basin #12 Description:	Postdeveloped Offsite South to Pond

			Segment	Length	Δ Elev	Surface	Slope	Velocity	Tc	Tc
Ground Cover	Cn	Area (ac)	Leg	(ft)	(ft)	Type	(%)	(ft/s)	(sec)	(min)
Impervious	98		1	100	10	В	10.0	0.74	135	2.3
Landscaped	61		2	397	12	G	3.0	2.80	142	2.4
Wooded Upland	55		3	709	16	J	2.3	17.63	40	0.7
(Other, if needed)	0		4							
Commercial District	92		5							
Residential District	72	0.49	6							
Agriculture District	65		7							
Basin Total	72	0.49		1,206	38	•	•		317	5.3

#### Basin #13 Description: Postdeveloped Offsite Bypass to POA B

			Segment	Length	Δ Elev	Surface	Slope	Velocity	Tc	Tc
Ground Cover	Cn	Area (ac)	Leg	(ft)	(ft)	Type	(%)	(ft/s)	(sec)	(min)
Impervious	98		1	100	6	В	6.0	0.60	166	2.8
Landscaped	61		2	1,345	56	G	4.2	3.29	409	6.8
Wooded Upland	55		3	194	4	1	2.1	9.88	20	0.3
(Other, if needed)	0		4							
Commercial District	92		5							
Residential District	72	8.73	6							
Agriculture District	65		7							
Basin Total	72	8.73	•	1.639	66				594	9.9

#### Basin #14 Description: Postdeveloped Onsite Bypass to POA C

			Segment	Length	Δ Elev	Surface	Slope	Velocity	Tc	Tc
<b>Ground Cover</b>	Cn	Area (ac)	Leg	(ft)	(ft)	Type	(%)	(ft/s)	(sec)	(min)
Impervious	98	0.11	1	100	11	В	11.0	0.77	130	2.2
Landscaped	61	0.34	2	105	18	G	17.1	6.68	16	0.3
Wooded Upland	55	1.10	3	393	18	1	4.6	14.73	27	0.4
(Other, if needed)	0		4							
Commercial District	92		5							
Residential District	72		6							
Agriculture District	65		7							
Basin Total	59	1.55		598	47				173	2.9

#### Basin #15 Description:

		Segment	Length	Δ Elev	Surface	Slope	Velocity	Tc	Tc
Ground Cover	Cn Area (ac)	Leg	(ft)	(ft)	Type	(%)	(ft/s)	(sec)	(min)
Impervious	98	1							
Landscaped	61	2							
Wooded Upland	55	3							
(Other, if needed)	0	4							
Commercial District	92	5							
Residential District	72	6							
Agriculture District	65	7							

**Basin Total** 

### Georgia Stormwater Management Manual Stormwater Quality Site Development Review Tool Version 2.2

General Information										
Date Submitted:	2/28/2018									
Permit Number:										
Developer Contact:	Keith Cannon									
Phone Number:										
Name of Engineer(s):	Dovetail Civil Design, Inc.									
Maintenance Responsibility:	HOA									
	Date Submitted: Permit Number: Developer Contact: Phone Number: Name of Engineer(s):									

#### **Site Summary**

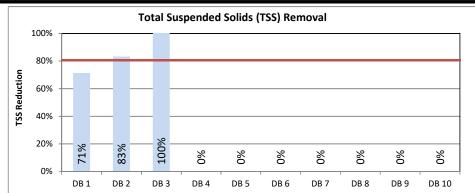
Total Pre-Development Area (ac): 11.32
Total Post-Development Area (ac): 11.30
Total Treated Area (ac): 5.95
Total Untreated Area (ac): 5.35

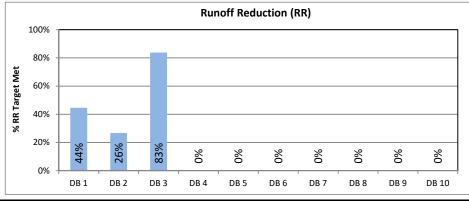
		l (ac)	P (ac)	CA (ac)
Onsite to POA A	DB 1	0.12	0.29	0.00
Onsite to POA B	DB 2	2.70	5.14	1.50
Onsite to POA C	DB 3	0.11	0.44	1.00
Drainage Basin 4	DB 4	0.00	0.00	0.00
Drainage Basin 5	DB 5	0.00	0.00	0.00
Drainage Basin 6	DB 6	0.00	0.00	0.00
Drainage Basin 7	DB 7	0.00	0.00	0.00
Drainage Basin 8	DB 8	0.00	0.00	0.00
Drainage Basin 9	DB 9	0.00	0.00	0.00
Drainage Basin 10	DB 10	0.00	0.00	0.00
	<b>TOTAL</b>	2.93	5.87	2.50

I = Impervious Area, P = Pervious Area, CA = Conservation Area

Target Runoff Reduction Volume Achieved? No Target TSS Removal Achieved? Yes

Total Target Runoff Reduction Volume (cf)
Runoff Reduction Volume Achieved (cf)
Total Target Water Quality Volume (cf)
% TSS Removal Achieved
83%





#### Official Use Only

Tracking #:

Reviewed By:
Date Approved:

Conditions of Approval:

A RECORDED CONSERVATION EASEMENT OR SIMILAR FORM OF PROTECTION IS REQUIRED FOR THIS PROJECT

# Georgia Stormwater Management Manual Stormwater Quality Site Development Review Tool, v2.2

	Otominw	auci	guaire	sy Oito	DCVCI	opine		ICW IC	01, 72	11/2		
Developn	ment Name: Logan's Walk						1			data input cells		
	asin Name: Onsite to POA							l The state of the		calculation cells		
Dramage D.	don't value.	/					1			constant values		
					0:42 Do4					Constant values		
Site Data												
ndicate Pre-Development Land Cover and Runoff	<b>Curve Numbers in the Sit</b>	e's Disturber	d Area									
Cover Type		HSG* A	CN	HSG B (acres)	CN	HSG C	CN	HSG D	CN	Total	% Cover	1
Cover Type		(acres)		` ′		(acres)		(acres)				]
Onen anges Cook	Woods - Good Condition		30	1.52	55		70		77	1.52	100%	4
Open space - Good	d condition (grass cover > 75%) Select a land cover type		39		61		74 0		80	0.00	0% 0%	A
	Select a land cover type		0		0		0		0	0.00	0%	A
	Select a land cover type		0		0		0		0	0.00	0%	f .
	Local Jurisdiction Input									0.00	0%	1
	Other									0.00	0%	1
	Total	0.00		1.52		0.00		0.00		1.52	100%	
HSG = hydrologic soil group								Impervious (ac)	0.00			
Weighted CN 55  Potential Max Soil Retention, S <sub>pre</sub> (in) 8.18												
rotential wax soll Retention, S <sub>pre</sub> (In) 8.18												
ndicate Post-Development Land Cover and Runof	ff Curve Numbers in the S	ite's Disturb	ed Area									
·		HSG A		T		HSG C		HSG D			<u> </u>	1
Cover Type		(acres)	CN	HSG B (acres)	CN	(acres)	CN	(acres)	CN	Total	% Cover	1
	Impervious	(40.22,	98	0.12	98	(0.0.0.)	98	(6.2.2.2,	98	0.12	29%	i e
Pasture, grassland, or range - continuous foraç			39	0.22	61		74		80	0.22	54%	1
	Woods - Good Condition		30	0.07	55		70		77	0.07	17%	1
	Select a land cover type		0		0		0		0	0.00	0%	1
	Select a land cover type		0		0		0		0	0.00	0%	4
	Local Jurisdiction Input									0.00	0%	4
	Other Total	0.00		0.41		0.00		0.00		0.00 0.41	0% 100%	A
	1 2 3 3 1	0.00		0.71		0.00		Impervious (ac)	0.12	<u> </u>	10070	1
								Rv	0.31	i		
								Weighted CN	71	i		
						Po	tential Max Soil F	Retention, S <sub>post</sub> (in)	4.12	1		
								·				
				Conser	vation Are	ea Credits						
				Conce	Vacion Ae	- Greene						
cenario 1: Natural Conservation Area *See the GSMM	1 Volume 2, Section 2.3.3.3 for	r more informat	tion.	I		Scenario 3: §	Soil Restoration	*See the GSMM \	Volume 2, Sec	tion 4.23 for mor	e information.	
				!	İ							
Check the box if a portion of the post-developed	area is protected by a conser	vation easeme	∍nt or equivaler	nt form of	İ						<u>il restoration</u> ar	nd is protected by a
protection.				ļ		-	conservation ear	sement or equivale	ent form of prot	tection.		
				ļ	İ		•					
Area (ac) of development protected by a conserv		•		if the Scenario 1 box				elopment with rest		protected by a c	onservation	Note: The green cell will unlock if the Scenario 3 box above is checked
equivalent form of protection.	а	above is checked	1	ļ	İ		easement or equ	uivalent form of pro	tection.			3 DOX above is checked
					<del> </del>						*Caa tha GSM	MAYalima 2 Caption 422 and 422 for
cenario 2: Site Reforestation/Revegetation *See the G	3SMM Volume 2, Section 4.22	for more inform	mation.	!	 	Scenario 4: 5	Site Reforestatic	on/Revegetation &	& Soil Restora	เหเดก	more information	MM Volume 2, Section 4.22 and 4.23 for
				ļ	İ						mornam	on.
Check the box if a portion of the post-developed	area employs site reforestation	on/revegetation	and is protect	ted hv a			Check the box if	f the same portion	of the post-dev	veloned area em	inlovs site refor	restation/revegetation and soil
check the box if a portion of the post-developed conservation easement or equivalent form of pro		II/Ievegetation	aliu is protost	ed by a	 			is protected by a c				
consolvation described of equivalent form. 5. p. 5	rection.			ļ			restoration, and	is protoctou by a c	Ulioui valion es	ascinorit or oqu	Alone John St F	Tote office.
Area (ac) of development reforested/revegetate	d and protected by a	Note: The green /	cell will unlock if	if the Scenario 2 box	1		Area (ac) with rε	estored soils in a re	eforested & rev	egetated area a	nd protected	Note: The green cell will unlock if the Scenario
conservation easement or equivalent form of pro		above is checked	1	1				on easement or equ				4 box above is checked
contain addonism of a familiar in a familiar	tootio			ļ			1	•		•		
					÷							
		Total Co	nservation Ar	rea Credit (acres)	0.00							

# Georgia Stormwater Management Manual Stormwater Quality Site Development Review Tool, v2.2

Development Name: Logan's Walk

Drainage Basin Name: Onsite to POA A

data input cells calculation cells constant values

### **Water Quality Goals**

Target Runoff Reduction Storm (in) 1.2

Total Site Area for Water Quality Volume (acres) 0.41

Target Runoff Reduction Volume (cf) 560

Target Water Quality Volume (cf) 560

#### Select BMPs for Runoff Reduction and Water Quality

		Area D	Oraining to Eacl	h BMP	04	RR Conveyance Volume Runoff Reduction Calculations			Runoff Reduction Calculations						culations
		On-site Pervious Area (acres)	On-site Impervious Area (acres)	Offsite Area (acres)	Provided by BMP (cf)	Volume Provided by BMP (cf)	Down-stream BMP	RR Volume from Direct Drainage (cf)	RR Volume from Upstream Practices (cf)	Total RR Volume Received by BMP (cf)	Runoff Reduction %	RR Achieved (cf)	Remaining RR Volume (cf)	WQ <sub>v</sub> from Direct Drainage (cf)	Effective TSS Removal %
BMP 1	Downspout Disconnect (A & B hydrologic soils)		0.12			497		497	0	497	50%	248	248	497	80%
BMP 2	Select a BMP							0	0	0	N/A	0	0	0	N/A
BMP 3	Select a BMP							0	0	0	N/A	0	0	0	N/A
BMP 4	Select a BMP							0	0	0	N/A	0	0	0	N/A
BMP 5	Select a BMP							0	0	0	N/A	0	0	0	N/A
BMP 6	Select a BMP							0	0	0	N/A	0	0	0	N/A
BMP 7	Select a BMP							0	0	0	N/A	0	0	0	N/A
BMP 8	Select a BMP							0	0	0	N/A	0	0	0	N/A
BMP 9	Select a BMP							0	0	0	N/A	0	0	0	N/A
BMP 10	Select a BMP							0	0	0	N/A	0	0	0	N/A
	TOTAL UNTREATED AREA (acres)	0.00 0.29	0.12 0.00	0.00				497				248		497	

Target Runoff Reduction Volume (cf)	560
Target Achieved?	No
Remaining Runoff Reduction Volume (cf)	311

Target Water Quality Volume (cf	560
% TSS Removal Achieved	71%
Target Achieved?	No
Remaining TSS Removal %	9%

# Georgia Stormwater Management Manual Stormwater Quality Site Development Review Tool, v2.2

Development Name: Logan's Walk

Drainage Basin Name: Onsite to POA A

data input cells
calculation cells
constant values

#### **Channel and Flood Protection Calculations**

	1-yr, 24-hr	2-yr, 24-hr	25-yr, 24-hr	100-yr, 24-hr
	storm	storm	storm	storm
Target Rainfall Event (in)	3.36	3.80	6.07	7.53

	1-yr, 24-hr	2-yr, 24-hr	25-yr, 24-hr	100-yr, 24-hr
	storm	storm	storm	storm
Pre-Development Runoff Volume (in)	0.30	0.45	1.56	2.47
Post Development Runoff Volume (in) with no BMPs	0.97	1.25	2.94	4.15
Post-Development Runoff Volume (in) with BMPs	0.80	1.08	2.77	3.99
Adjusted CN	68	68	69	69

\*See Stormwater Management Standards to Determine Detention Requirements.

#### Comments

# Georgia Stormwater Management Manual Stormwater Quality Site Development Review Tool, v2.2

<u> </u>								,			
Development Name: Logan's Walk						]			data input cells		
Drainage Basin Name: Onsite to POA									calculation cells		
Diamage Basin Name. Offsite to POP	ТЪ										
									constant values		
				Site Data	a						
ndicate Pre-Development Land Cover and Runoff Curve Numbers in the Sit	dicate Pre-Development Land Cover and Runoff Curve Numbers in the Site's Disturbed Area										
·	HSG* A				HSG C		HSG D				]
Cover Type	(acres)	CN	HSG B (acres)	CN	(acres)	CN	(acres)	CN	Total	% Cover	
Woods - Good Condition		30	7.53	55		70		77	7.53	100%	1
Select a land cover type		0		0		0		0	0.00	0%	
Select a land cover type		0		0		0		0	0.00	0%	
Select a land cover type		0		0		0		0	0.00	0%	
Select a land cover type Local Jurisdiction Input		0		0		0		U	0.00	0% 0%	
Other									0.00	0%	
Total	0.00		7.53		0.00		0.00		7.53	100%	
ISG = hydrologic soil group							Impervious (ac)	0.00			•
Weighted CN 55											
					P	otential Max Soil	Retention, $S_{pre}$ (in)	8.18			
edicate Deet Development Land Cover and Duneff Come Numbers in the C	itala Diatumb	l A									
ndicate Post-Development Land Cover and Runoff Curve Numbers in the S		ed Area	_	Ι	T	1		1			1
Cover Type	HSG A	CN	HSG B (acres)	CN	HSG C	CN	HSG D	CN	Total	% Cover	
	(acres)		` ′		(acres)		(acres)				
Impervious Pasture, grassland, or range - continuous forage for grazing - Good Condition		98 39	2.70 5.14	98 61		98 74		98 80	2.70 5.14	29% 55%	-
Woods - Good Condition		30	1.50	55		70		77	1.50	16%	
Select a land cover type		0	1.00	0		0		0	0.00	0%	1
Select a land cover type		0		0		0		0	0.00	0%	
Local Jurisdiction Input									0.00	0%	1
Other									0.00	0%	
Total	0.00		9.34		0.00		0.00		9.34	100%	
							Impervious (ac)	2.70			
							Rv	0.31			
					D.	tantial Man Cail F	Weighted CN	71			
					PO	ntentiai wax 5011 F	Retention, S <sub>post</sub> (in)	4.14	_		
			Conser	vation Are	ea Credits						
transmin de National Company action Area *Consthe CCMM/Valuma C. Contian C. 2.2.2.5		tion.			Camaria 2. (	Cail Dantauntiau	*0 # 001414	Values 2, Cas	tion 400 for more		
cenario 1: Natural Conservation Area *See the GSMM Volume 2, Section 2.3.3.3 fo	r more informa	tion.			Scenario 3: 3	Soli Restoration	*See the GSMM	voiume 2, Sec	tion 4.23 for mor	e information.	
Check the box if a portion of the post-developed area is protected by a conse	vation accome	nt or oquivalor	at form of	! ! !	_	Chack the box if	f a partian of the pe	act dayalanad	area empleye co	il rectoration a	nd is protected by a
Protection.	valion easeme	ili oi equivalei	it ioiiii oi	 			sement or equivale			ii restoration a	id is protected by a
protection.						conscivation ca	sement or equival	chi form of pro	tootion.		
Area (ac) of development protected by a conservation easement or	Note: The green	cell will unlock if	the Scenario 1 box			Area (ac) of dev	elopment with rest	tored soils and	protected by a c	onservation	Note: The green cell will unlock if the Scenario
1.0									3 box above is checked		
*See the GSMM Volume 2, Section 4.22 for more information.  *See the GSMM Volume 2, Section 4.22 and 4  *See the GSMM Volume 2, Section 4.22 and 4  *See the GSMM Volume 2, Section 4.22 and 4  *See the GSMM Volume 2, Section 4.22 and 4								· ·			
cenario 2. Site Nerolestation/Nevegetation See the Golvilli Volume 2, Section 4.22		Scenario 4. C	one Nerorestatic	on/Nevegetation C	x 3011 Nestora	illon	more informat	on.			
				i ! !	İ						
Check the box if a portion of the post-developed area employs site reforestation	on/revegetation	ı and is protect	ed by a	i I							estation/revegetation and soil
conservation easement or equivalent form of protection.					İ	restoration, and	is protected by a c	conservation ea	asement or equiv	/alent form of p	rotection.
Anna (a) of development referred. If	Note: The green	cell will unlock if	the Scenario 2 box			Aron (an) with	notored acile in a m	oforooted 0 :=-	roactated area =:	nd protected	Note: The green cell will unlock if the Scenario
Thea (ac) of development relorested nevergetated and protested by a	Note: The green above is checked		me ocenano 2 DOX				estored soils in a re on easement or eq			na protectea	4 box above is checked
conservation easement or equivalent form of protection.	210 10 011001101	=				by a conservation	on easement or eq	uivaienii lonn C	n protection.		
	Total Co	nservation Ar	ea Credit (acres)	1.50							

# Georgia Stormwater Management Manual Stormwater Quality Site Development Review Tool, v2.2

Development Name: Logan's Walk

Drainage Basin Name: Onsite to POA B

data input cells
calculation cells
constant values

### **Water Quality Goals**

Target Runoff Reduction Storm (in) 1.2

Total Site Area for Water Quality Volume (acres) 7.84

Target Runoff Reduction Volume (cf) 10,593

Target Water Quality Volume (cf) 10,593

#### Select BMPs for Runoff Reduction and Water Quality

		Area D	raining to Each	n ВМР	Storage Volume	RR Conveyance			Ru	ınoff Reduction	Calculations			WQ Calc	ulations
		On-site Pervious Area (acres)	On-site Impervious Area (acres)	Offsite Area (acres)	Provided by BMP (cf)	Volume Provided by BMP (cf)	Down-stream BMP	RR Volume from Direct Drainage (cf)	RR Volume from Upstream Practices (cf)	Total RR Volume Received by BMP (cf)	Runoff Reduction %	RR Achieved (cf)	Remaining RR Volume (cf)	WQ <sub>v</sub> from Direct Drainage (cf)	Effective TSS Removal %
BMP 1	Downspout Disconnect (A & B hydrologic soils)		0.25			1,035		1,035	0	1,035	50%	517	517	1,035	80%
BMP 2	Downspout Disconnect (A & B hydrologic soils)		1.10			4,552	BMP 3	4,552	0	4,552	50%	2,276	2,276	4,552	80%
BMP 3	Dry Detention Basin	3.02	1.35	10.11	8,000			6,244	2,276	8,520	0%	0	8,520	6,244	60%
BMP 4	Select a BMP							0	0	0	N/A	0	0	0	N/A
BMP 5	Select a BMP							0	0	0	N/A	0	0	0	N/A
BMP 6	Select a BMP							0	0	0	N/A	0	0	0	N/A
BMP 7	Select a BMP							0	0	0	N/A	0	0	0	N/A
BMP 8	Select a BMP							0	0	0	N/A	0	0	0	N/A
BMP 9	Select a BMP							0	0	0	N/A	0	0	0	N/A
BMP 10	Select a BMP							0	0	0	N/A	0	0	0	N/A
	TOTAL UNTREATED AREA (acres)	3.02 3.62	2.70 0.00	10.11				11,831				2,793		11,831	

Target Runoff Reduction V	olume (cf)	10,593
Target A	Achieved?	No
Remaining Runoff Reduction V	olume (cf)	7,799

Target Water Quality Volume (cf)	10,593
% TSS Removal Achieved	83%
Target Achieved?	Yes!
Remaining TSS Removal %	0%

#### Georgia Stormwater Management Manual **Stormwater Quality Site Development Review Tool, v2.2** Development Name: Logan's Walk data input cells **Drainage Basin Name:** Onsite to POA B calculation cells constant values **Channel and Flood Protection Calculations** 2-yr, 24-hr 25-yr, 24-hr 100-yr, 24-hr 1-yr, 24-hr storm storm storm storm 6.07 7.53 Target Rainfall Event (in) 3.80 1-yr, 24-hr 2-yr, 24-hr 25-yr, 24-hr 100-yr, 24-hr storm storm storm storm 0.45 1.56 0.30 2.47 Pre-Development Runoff Volume (in) Post Development Runoff Volume (in) with no BMPs 0.96 1.24 2.93 4.14 Post-Development Runoff Volume (in) with BMPs 0.88 1.16 2.85 4.06 Adjusted CN 69 69 70 70 \*See Stormwater Management Standards to Determine Detention Requirements. **Comments**

A RECORDED CONSERVATION EASEMENT OR SIMILAR FORM OF PROTECTION IS REQUIRED FOR THIS PROJECT

# Georgia Stormwater Management Manual Stormwater Quality Site Development Review Tool, v2.2

	Storing	rater	Qualit	ry One	Devel	Ohme	III IZEV	TEW IC	OI, VZ			
	Development Name: Logan's Walk						 	<del></del>		data input cells		
	Drainage Basin Name: Onsite to POA						l			calculation cells		
	Didiliage Dasili Railie. Olisio to 1 Or	· C					1			constant values		
					Cita Date					Constant values		
					Site Data	a .						
ndicate Pre-Developme	ent Land Cover and Runoff Curve Numbers in the Sit	te's Disturbe	d Area									
	Cover Type	HSG* A	CN	HSG B (acres)	CN	HSG C	CN	HSG D	CN	Total	% Cover	
		(acres)		, ,		(acres)		(acres)				
	Woods - Good Condition Select a land cover type		30	2.27	55 0		70 0		77	2.27 0.00	100% 0%	·
	Select a land cover type Select a land cover type		0		0		0		0	0.00	0%	1
	Select a land cover type		0		0		0		0	0.00	0%	1
	Select a land cover type		0		0		0		0	0.00	0%	1
	Local Jurisdiction Input									0.00	0%	4
	Other Total	0.00		2.27		0.00		0.00		0.00 2.27	0% 100%	1
HSG = hydrologic soil group		0.00		2.21		0.00		Impervious (ac)	0.00	2.21	10070	<b>'</b>
100, a. a. a. a. a. a. a. a. a. a. a. a. a.								Weighted CN	55			
						Po	otential Max Soil	Retention, S <sub>pre</sub> (in)	8.18	1		
adicato Boet-Develonm	nent Land Cover and Runoff Curve Numbers in the S	Sito'e Dieturh	ad Arga									
IUICALE FUSI-DEVEIUPII			MAIGA	<b>T</b>		HSG C		nec D	Τ			1
	Cover Type	HSG A (acres)	CN	HSG B (acres)	CN	(acres)	CN	HSG D (acres)	CN	Total	% Cover	1
	Impervious	(40.00,	98	0.11	98	(6.5.55)	98	(23.52)	98	0.11	7%	1
	Open space - Good condition (grass cover > 75%)		39	0.34	61		74		80	0.34	22%	1
	Woods - Good Condition		30	1.10	55		70		77	1.10	71%	
	Select a land cover type		0		0		0		0	0.00	0% 0%	·
	Select a land cover type Local Jurisdiction Input				U		U		U	0.00	0%	1
	Other									0.00	0%	
	Total	0.00		1.55		0.00		0.00		1.55	100%	1
								Impervious (ac)		4		
								Rv Weighted CN	0.11 59	4		
						Po	tential Max Soil F	Retention, S <sub>post</sub> (in)		i		
										1		
				Consor	vation Are	a Crodite						
				Colliser	valion Are	a Credits						
cenario 1: Natural Cons	ervation Area *See the GSMM Volume 2, Section 2.3.3.3 for	or more informa	tion.	ļ	<u> </u>	Scenario 3: S	Soil Restoration	*See the GSMM \	Volume 2, Sect	tion 4.23 for moi	e information.	
					İ							
<u> </u>	a portion of the post-developed area is protected by a conser	rvation easeme	nt or equivaler	nt form of							<u>il restoration</u> ar	nd is protected by a
protection.				ļ			conservation eas	sement or equivale	ent form of prot	ection.		
Area (ac) of deve	elopment protected by a conservation easement or	Note: The green	aall will unlock if	if the Scenario 1 box			Area (ac) of dev	elopment with rest	tored soils and	protected by a c	conservation	Note: The green cell will unlock if the Scenario
equivalent form		above is checked		the ocenano i box				uivalent form of pro		protoctou 2,		3 box above is checked
·				ļ	 							
cenario 2: Site Reforest	ation/Revegetation *See the GSMM Volume 2, Section 4.22	2 for more infor	mation		 	Scenario 4: 5	Site Reforestatio	on/Revegetation &	& Soil Restora	etion		M Volume 2, Section 4.22 and 4.23 for
Celiano L. One renorda.	MON/Nevegetation 500 the Goldin volume 2, 500ton 122	. 101 IIIOIO IIIIO	nauon.	!	]   	Ocenano 4. C	me nerorestans	minerogolador.	k don nedicia.	uon	more information	on.
Chack the hav if	a nation of the neet developed area ampleye site referentation	an/royogatation	and is protes	ted by a	<u> </u>		Chack the how if	f the same portion	of the neet dev	ralanad area em	andova sita refor	astation/rayagatation and sail
	a portion of the post-developed area employs <u>site reforestation</u> sement or equivalent form of protection.	Jn/revegetation	and is protect	ed by a				ine same portion of the sa				estation/revegetation and soil
CONSCIVATION SAC	ement or equivalent form or protection.			!			lesioration, and	is protected by a c	Ulisei valion ca	15ement or equi	alentionin or pr	Totection.
Area (ac) of dev	diopinionit rolorodioa/rovogotatoa ana protodioa by a			if the Scenario 2 box	ļ		Area (ac) with re	estored soils in a re	eforested & rev	egetated area a	nd protected	Note: The green cell will unlock if the Scenario
	sement or equivalent form of protection.	above is checked	1	ļ				on easement or equ			-	4 box above is checked
				]	l							
		Total Cc	onservation Ar	rea Credit (acres)	1.00							
				2								

# Georgia Stormwater Management Manual Stormwater Quality Site Development Review Tool, v2.2

Development Name: Logan's Walk	data input cells
Drainage Basin Name: Onsite to POA C	calculation cells
	constant values

### **Water Quality Goals**

Target Runoff Reduction Storm (in) 1.2

Total Site Area for Water Quality Volume (acres) 0.55

Target Runoff Reduction Volume (cf) 273

Target Water Quality Volume (cf) 273

### Select BMPs for Runoff Reduction and Water Quality

		Area Draining to Each BMP			Storage Volume RR Conveyar			Runoff Reduction Calculations						WQ Calc	ulations
		On-site Pervious Area (acres)	On-site Impervious Area (acres)	Offsite Area (acres)	Provided by BMP (cf)	Volume Provided by BMP (cf)	Down-stream BMP	RR Volume from Direct Drainage (cf)	RR Volume from Upstream Practices (cf)	Total RR Volume Received by BMP (cf)	Runoff Reduction %	RR Achieved (cf)	Remaining RR Volume (cf)	WQ <sub>v</sub> from Direct Drainage (cf)	Effective TSS Removal %
BMP 1	Downspout Disconnect (A & B hydrologic soils)		0.11			455		455	0	455	50%	228	228	455	80%
BMP 2	Select a BMP							0	0	0	N/A	0	0	0	N/A
BMP 3	Select a BMP							0	0	0	N/A	0	0	0	N/A
BMP 4	Select a BMP							0	0	0	N/A	0	0	0	N/A
BMP 5	Select a BMP							0	0	0	N/A	0	0	0	N/A
BMP 6	Select a BMP							0	0	0	N/A	0	0	0	N/A
BMP 7	Select a BMP							0	0	0	N/A	0	0	0	N/A
BMP 8	Select a BMP							0	0	0	N/A	0	0	0	N/A
BMP 9	Select a BMP							0	0	0	N/A	0	0	0	N/A
BMP 10	Select a BMP							0	0	0	N/A	0	0	0	N/A
	TOTAL UNTREATED AREA (acres)	0.00 1.44	0.11 0.00	0.00				455				228		455	

Target Runoff Reduction Volume (cf)	273
Target Achieved?	No
Remaining Runoff Reduction Volume (cf)	45

Target Water Quality Volume (cf)	273
% TSS Removal Achieved	100%
Target Achieved?	Yes!
Remaining TSS Removal %	0%

#### Georgia Stormwater Management Manual **Stormwater Quality Site Development Review Tool, v2.2** Development Name: Logan's Walk data input cells **Drainage Basin Name:** Onsite to POA C calculation cells constant values **Channel and Flood Protection Calculations** 2-yr, 24-hr 25-yr, 24-hr 100-yr, 24-hr 1-yr, 24-hr storm storm storm storm 6.07 7.53 Target Rainfall Event (in) 3.80 1-yr, 24-hr 2-yr, 24-hr 25-yr, 24-hr 100-yr, 24-hr storm storm storm storm 0.45 1.56 0.30 2.47 Pre-Development Runoff Volume (in) Post Development Runoff Volume (in) with no BMPs 0.45 0.64 1.91 2.92 Post-Development Runoff Volume (in) with BMPs 0.41 0.60 1.87 2.88 Adjusted CN 58 58 59 59 \*See Stormwater Management Standards to Determine Detention Requirements. **Comments**

A RECORDED CONSERVATION EASEMENT OR SIMILAR FORM OF PROTECTION IS REQUIRED FOR THIS PROJECT

# Hydrograph Return Period Recap Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

-	Hydrograph	1				Hydrograph							
No.	type (origin)	hyd(s)	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	Description		
1	SCS Runoff		0.472	0.918		1.832	2.774	4.256	5.541	6.936	Pre Onsite to POA A		
2	SCS Runoff		0.928	1.202		1.683	2.126	2.769	3.296	3.845	Pre Offsite to POA A		
3	Combine	1, 2	1.346	2.075		3.507	4.899	7.025	8.837	10.78	Pre Total to POA A		
4	SCS Runoff		2.339	4.549		9.075	13.74	21.08	27.45	34.36	Pre Onsite to POA B		
5	SCS Runoff		29.80	38.72		54.43	68.89	90.21	107.76	126.08	Pre Offsite to POA B		
6	Combine	4, 5	32.14	43.23		63.28	82.41	110.76	134.35	159.21	Pre Total to POA B		
7	SCS Runoff		0.705	1.371		2.736	4.142	6.355	8.275	10.36	Pre Onsite to POA C		
8	SCS Runoff		43.48	56.29		78.84	99.55	129.70	154.39	180.11	Pre/Post Offsite to POA C		
9	Combine	7, 8	44.07	57.59		81.56	103.70	136.05	162.66	190.47	Pre Total to POA C		
11	SCS Runoff		0.731	0.955		1.351	1.716	2.249	2.687	3.144	Post Onsite Bypass/Total to POA A		
12	SCS Runoff		14.10	17.60		23.63	29.06	36.85	43.19	49.78	Post Onsite to Pond		
13	SCS Runoff		16.52	21.40		30.00	37.90	49.48	59.05	69.04	Post Offsite East to Pond		
14	SCS Runoff		0.928	1.202		1.683	2.126	2.769	3.296	3.845	Post Offsite South to Pond		
15	Combine	12, 13, 14	31.26	39.94		55.13	69.00	89.10	105.50	122.54	Post Total to Pond		
16	Reservoir	15	0.917	2.479		10.25	25.01	47.69	64.97	82.64	Pond		
17	SCS Runoff		2.876	4.338		7.132	9.828	13.92	17.39	21.09	Post Onsite Bypass to POA B		
18	SCS Runoff		14.12	18.34		25.78	32.63	42.73	51.04	59.72	Post Offsite Bypass to POA B		
19	Combine	16, 17, 18	17.15	22.78		33.49	56.52	95.51	124.72	155.29	Post Total to POA B		
20	SCS Runoff		0.954	1.522		2.625	3.711	5.374	6.793	8.316	Post Onsite Bypass to POA C		
21	Combine	8, 20	44.40	57.80		81.46	103.26	135.07	161.18	188.42	Post Total to POA C		

Proj. file: \KANSAS\Active\CSR003 - Old Concord Road\Hydro\CSR003 hydro 2-128e-16eggplay, 02 / 28 / 2018

# Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	AD® Civil 3D® 2014 by Autodesk, Inc. v10  Hydrograph  Description
1	SCS Runoff	0.472	1	720	1,706				Pre Onsite to POA A
2	SCS Runoff	0.928	1	718	1,890				Pre Offsite to POA A
3	Combine	1.346	1	719	3,597	1, 2			Pre Total to POA A
4	SCS Runoff	2.339	1	720	8,454				Pre Onsite to POA B
5	SCS Runoff	29.80	1	720	68,935				Pre Offsite to POA B
6	Combine	32.14	1	720	77,389	4, 5			Pre Total to POA B
7	SCS Runoff	0.705	1	720	2,548				Pre Onsite to POA C
8	SCS Runoff	43.48	1	718	88,524				Pre/Post Offsite to POA C
9	Combine	44.07	1	718	91,073	7, 8			Pre Total to POA C
11	SCS Runoff	0.731	1	718	1,498				Post Onsite Bypass/Total to POA A
12	SCS Runoff	14.10	1	718	28,323				Post Onsite to Pond
13	SCS Runoff	16.52	1	719	35,375				Post Offsite East to Pond
14	SCS Runoff	0.928	1	718	1,890				Post Offsite South to Pond
15	Combine	31.26	1	718	65,588	12, 13, 14			Post Total to Pond
16	Reservoir	0.917	1	925	56,522	15	997.24	38,401	Pond
17	SCS Runoff	2.876	1	719	7,003				Post Onsite Bypass to POA B
18	SCS Runoff	14.12	1	720	32,653				Post Offsite Bypass to POA B
19	Combine	17.15	1	720	96,178	16, 17, 18			Post Total to POA B
20	SCS Runoff	0.954	1	719	2,525				Post Onsite Bypass to POA C
21	Combine	44.40	1	718	91,049	8, 20			Post Total to POA C

\KANSAS\Active\CSR003 - Old Concord RoadReltyutro Resido 03 Myatro 2-28-18.gp\Wednesday, 02 / 28 / 2018

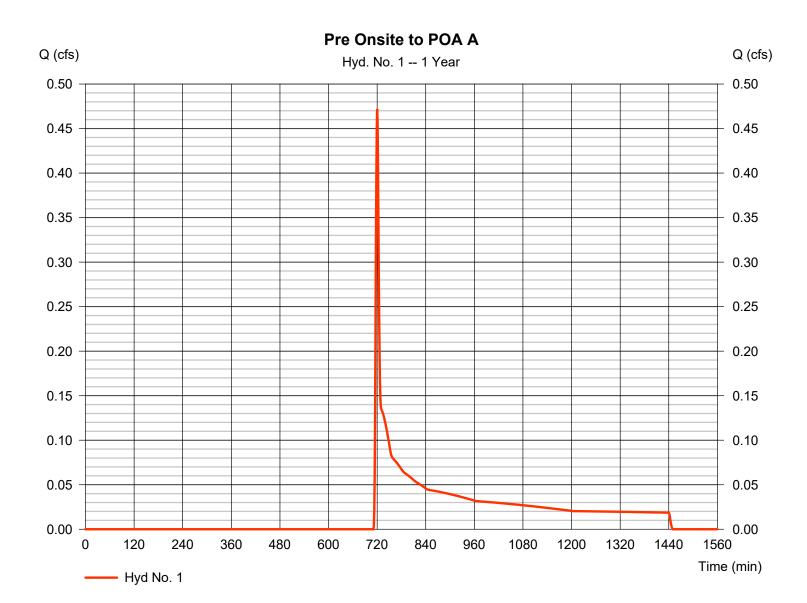
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

Wednesday, 02 / 28 / 2018

#### Hyd. No. 1

Pre Onsite to POA A

Hydrograph type = SCS Runoff Peak discharge = 0.472 cfsStorm frequency Time to peak = 720 min = 1 yrsTime interval = 1 min Hyd. volume = 1,706 cuft Drainage area Curve number = 1.520 ac= 55 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 3.36 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



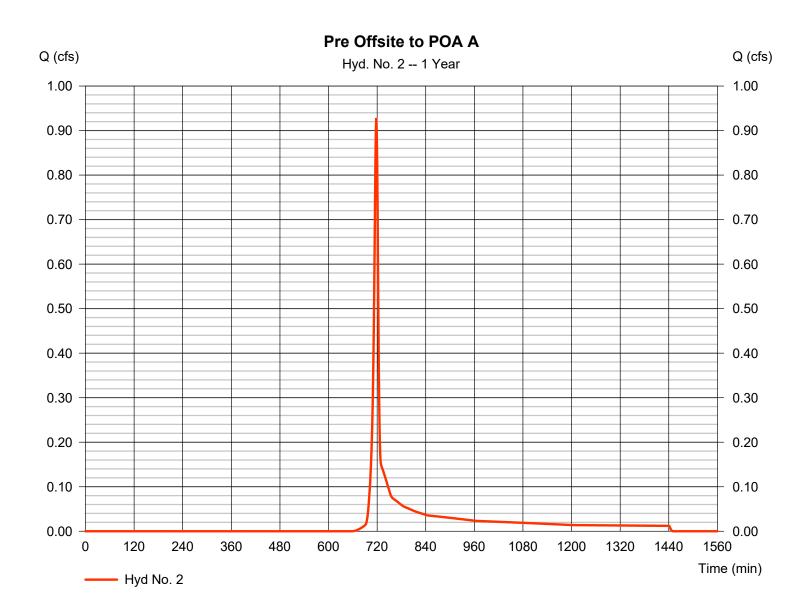
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

Wednesday, 02 / 28 / 2018

#### Hyd. No. 2

Pre Offsite to POA A

Hydrograph type = SCS Runoff Peak discharge = 0.928 cfsStorm frequency Time to peak = 718 min = 1 yrsTime interval = 1 min Hyd. volume = 1.890 cuft Drainage area Curve number = 0.490 ac= 72 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 3.36 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



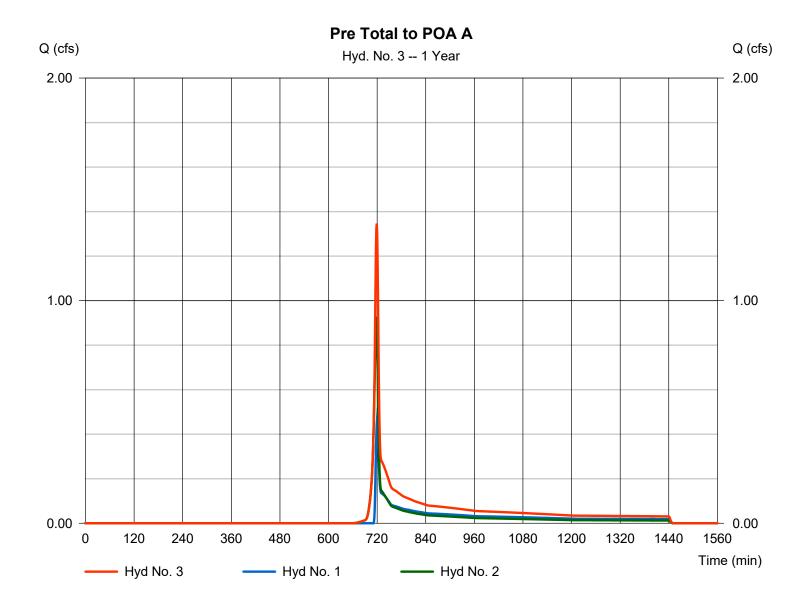
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

Wednesday, 02 / 28 / 2018

#### Hyd. No. 3

Pre Total to POA A

Hydrograph type = Combine = 1.346 cfsPeak discharge Storm frequency = 1 yrsTime to peak = 719 min Time interval = 1 min Hyd. volume = 3,597 cuftInflow hyds. = 2.010 acContrib. drain. area = 1, 2



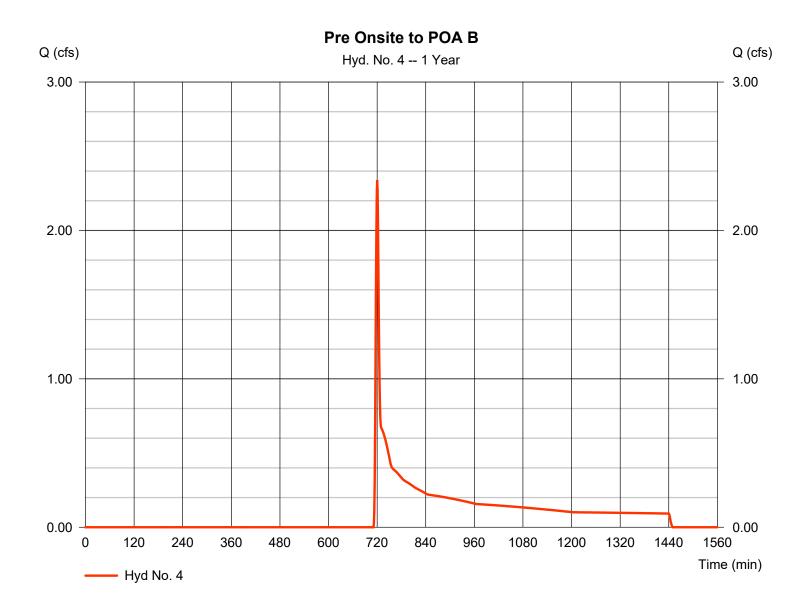
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

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#### Hyd. No. 4

Pre Onsite to POA B

Hydrograph type = SCS Runoff Peak discharge = 2.339 cfsStorm frequency Time to peak = 720 min = 1 yrsTime interval = 1 min Hyd. volume = 8.454 cuft = 7.530 acCurve number Drainage area = 55 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 3.36 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



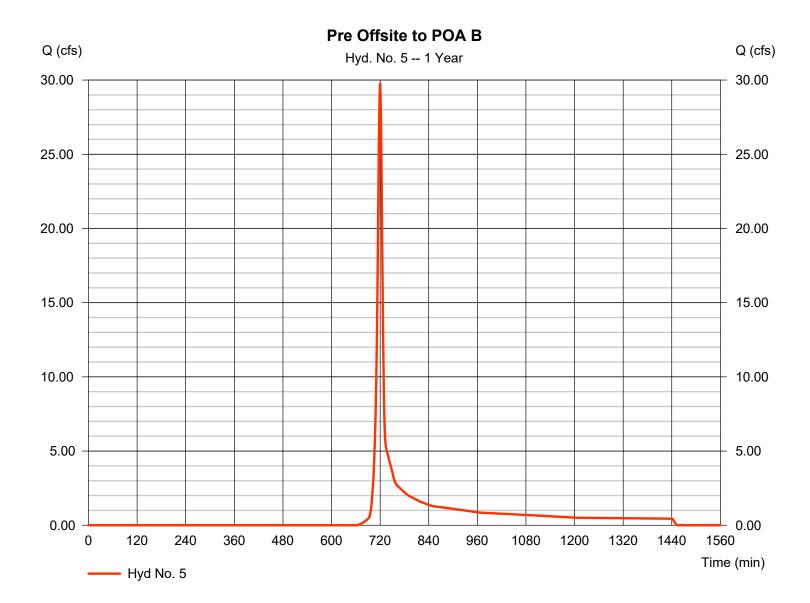
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

Wednesday, 02 / 28 / 2018

#### Hyd. No. 5

Pre Offsite to POA B

Hydrograph type = SCS Runoff Peak discharge = 29.80 cfsStorm frequency Time to peak = 720 min = 1 yrsTime interval = 1 min Hyd. volume = 68,935 cuft Drainage area Curve number = 18.430 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 10.00 min = User Total precip. = 3.36 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



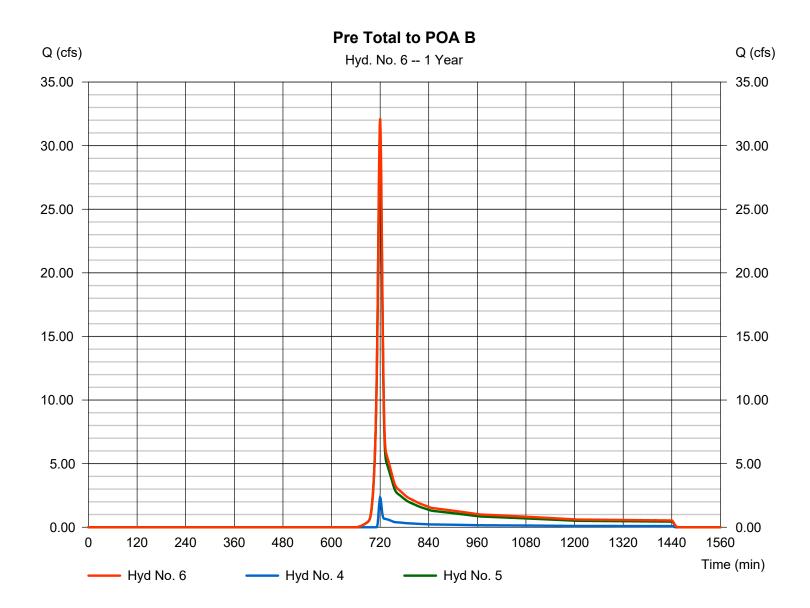
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

Wednesday, 02 / 28 / 2018

#### Hyd. No. 6

Pre Total to POA B

Hydrograph type = Combine Peak discharge = 32.14 cfsStorm frequency Time to peak = 1 yrs= 720 min Time interval = 1 min Hyd. volume = 77,389 cuft Inflow hyds. = 4, 5 Contrib. drain. area = 25.960 ac



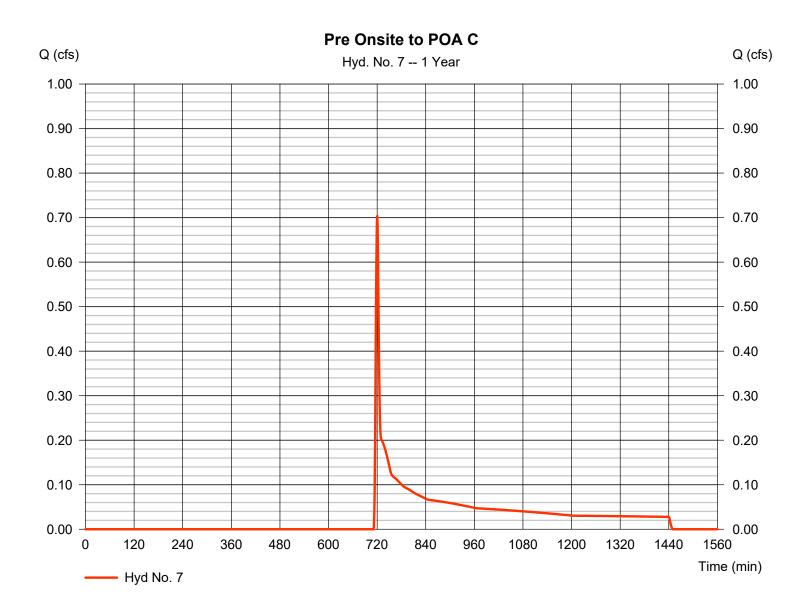
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

Wednesday, 02 / 28 / 2018

#### Hyd. No. 7

Pre Onsite to POA C

Hydrograph type = SCS Runoff Peak discharge = 0.705 cfsStorm frequency Time to peak = 720 min = 1 yrsTime interval = 1 min Hyd. volume = 2.548 cuftDrainage area Curve number = 2.270 ac= 55 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 3.36 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



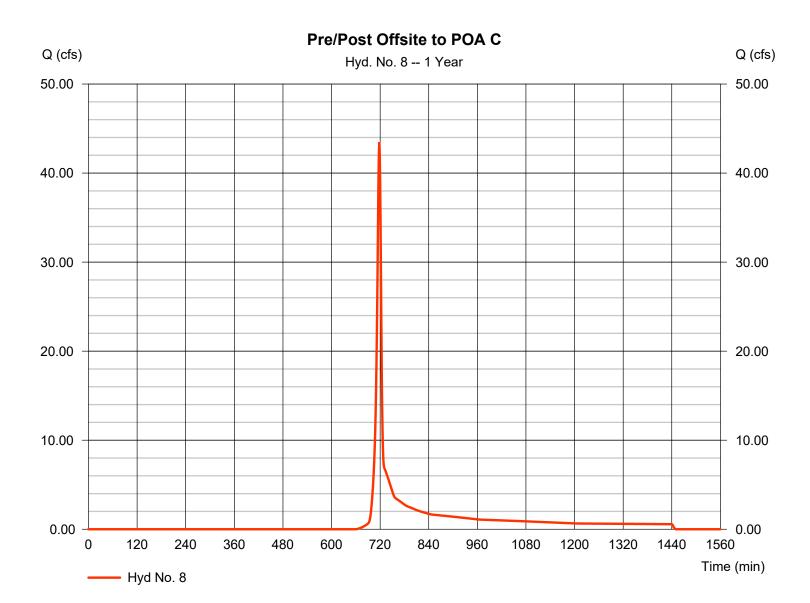
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#### Hyd. No. 8

Pre/Post Offsite to POA C

Hydrograph type = SCS Runoff Peak discharge = 43.48 cfsStorm frequency Time to peak = 718 min = 1 yrsTime interval = 1 min Hyd. volume = 88,524 cuft Curve number Drainage area = 22.950 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 5.00 min = User Total precip. = 3.36 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



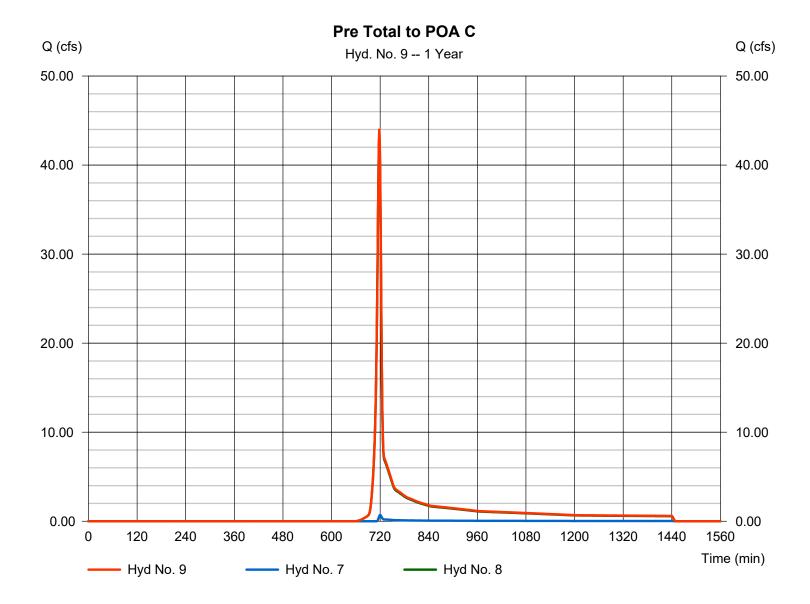
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#### Hyd. No. 9

Pre Total to POA C

Hydrograph type = Combine Peak discharge = 44.07 cfsStorm frequency = 1 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 91,073 cuft Inflow hyds. = 7,8 Contrib. drain. area = 25.220 ac



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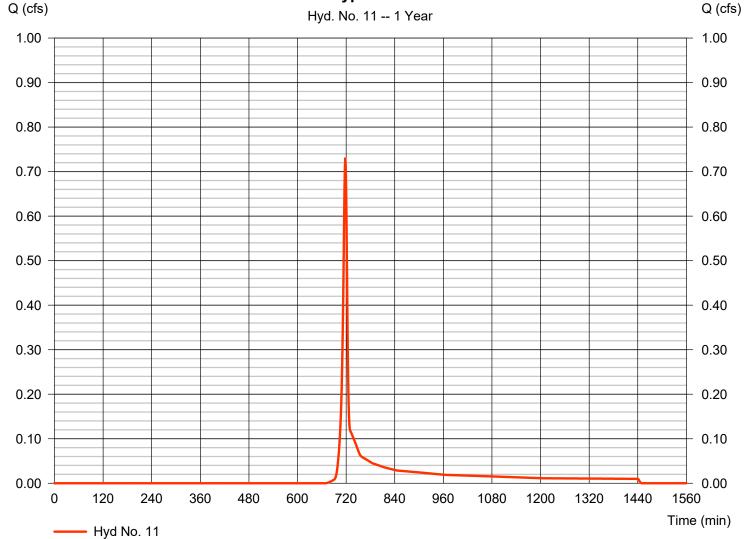
Wednesday, 02 / 28 / 2018

#### Hyd. No. 11

Post Onsite Bypass/Total to POA A

Hydrograph type = SCS Runoff Peak discharge = 0.731 cfsStorm frequency Time to peak = 718 min = 1 yrsTime interval = 1 min Hyd. volume = 1.498 cuft Curve number Drainage area = 0.410 ac= 71 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 3.36 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484





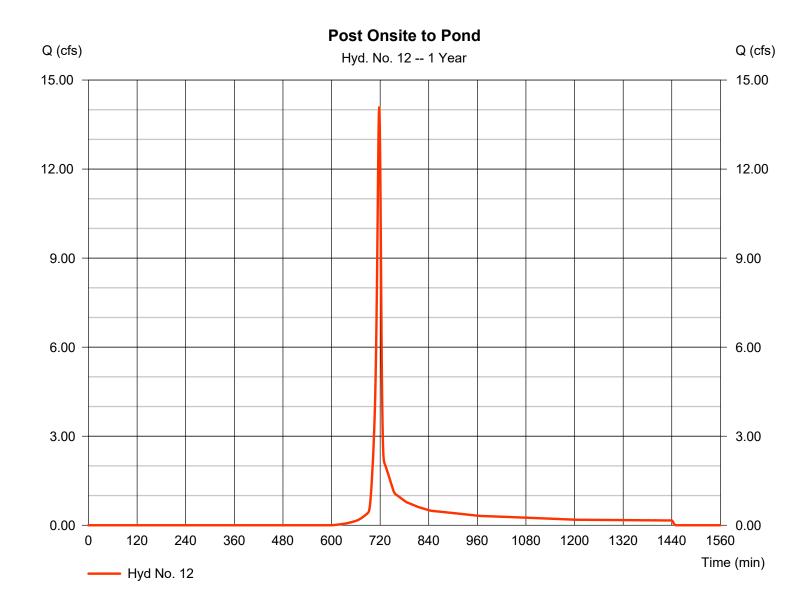
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#### Hyd. No. 12

Post Onsite to Pond

Hydrograph type = SCS Runoff Peak discharge = 14.10 cfsStorm frequency Time to peak = 718 min = 1 yrsTime interval = 1 min Hyd. volume = 28,323 cuft Drainage area Curve number = 5.700 ac= 77 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 5.00 min = User Total precip. = 3.36 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



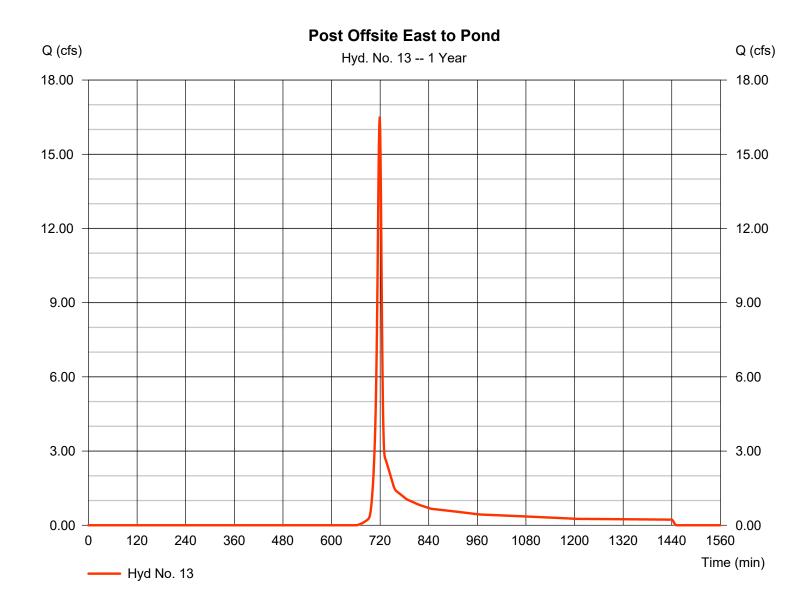
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#### **Hyd. No. 13**

Post Offsite East to Pond

Hydrograph type = SCS Runoff Peak discharge = 16.52 cfsStorm frequency Time to peak = 719 min = 1 yrsTime interval = 1 min Hyd. volume = 35,375 cuftDrainage area Curve number = 9.700 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 8.00 min = User Total precip. = 3.36 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



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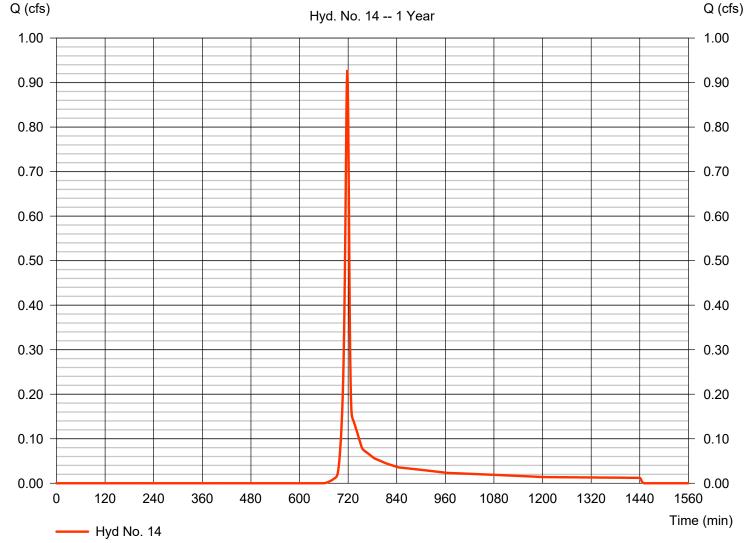
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#### **Hyd. No. 14**

Post Offsite South to Pond

Hydrograph type = SCS Runoff Peak discharge = 0.928 cfsStorm frequency Time to peak = 718 min = 1 yrsTime interval = 1 min Hyd. volume = 1.890 cuft Drainage area Curve number = 0.490 ac= 72 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 3.36 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484





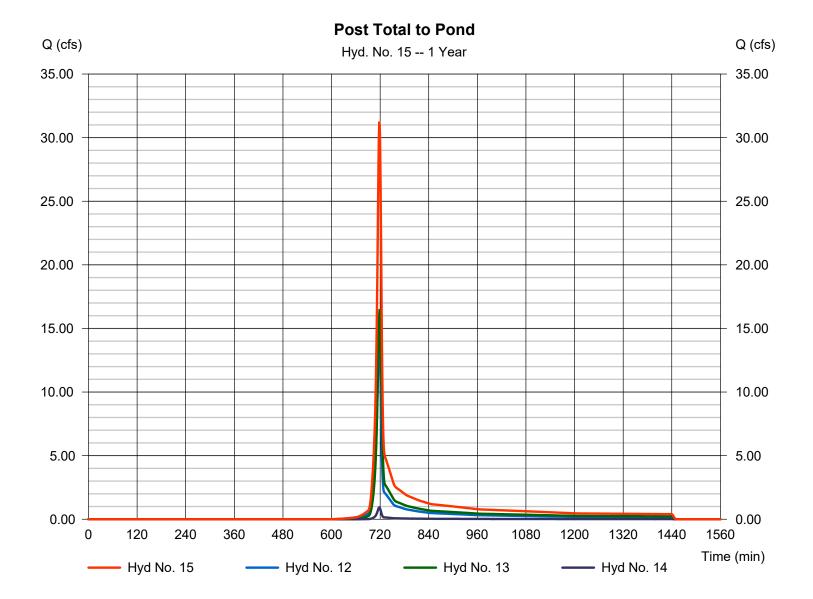
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#### Hyd. No. 15

Post Total to Pond

Hydrograph type Peak discharge = 31.26 cfs= Combine Storm frequency Time to peak = 1 yrs= 718 min Time interval = 1 min Hyd. volume = 65,588 cuft Inflow hyds. = 12, 13, 14 Contrib. drain. area = 15.890 ac



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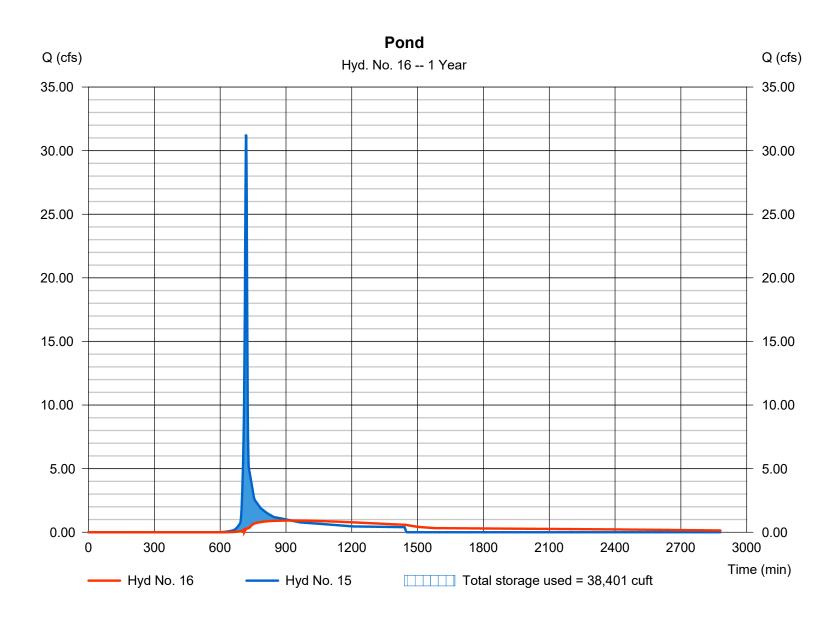
Wednesday, 02 / 28 / 2018

#### **Hyd. No. 16**

Pond

Hydrograph type = Reservoir Peak discharge = 0.917 cfsStorm frequency = 1 yrsTime to peak = 925 min Time interval = 1 min Hyd. volume = 56,522 cuft Inflow hyd. No. = 15 - Post Total to Pond Max. Elevation = 997.24 ft= Pond Reservoir name Max. Storage = 38,401 cuft

Storage Indication method used.



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#### Pond No. 1 - Pond

#### **Pond Data**

Contours -User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 992.00 ft

#### Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	992.00	1,000	0	0
2.00	992.00	4,063	5,063	5,063
4.00	994.00	5,472	9,535	14,598
6.00	996.00	7,699	13,171	27,769
8.00	998.00	9,437	17,136	44,905
10.00	1000.00	11,233	20,670	65,575
12.00	1002.00	13,091	24,324	89,899

#### **Culvert / Orifice Structures**

#### **Weir Structures**

	[A]	[B]	[C]	[PrfRsr]		[A]	[B]	[C]	[D]
Rise (in)	= 2.50	4.50	Inactive	0.00	Crest Len (ft)	= 3.00	8.00	0.00	0.00
Span (in)	= 2.50	4.50	24.00	0.00	Crest El. (ft)	= 997.50	1002.50	0.00	0.00
No. Barrels	= 1	1	1	0	Weir Coeff.	= 3.33	3.33	3.33	3.33
Invert El. (ft)	= 992.00	996.00	997.50	0.00	Weir Type	= Rect	Rect		
Length (ft)	= 0.00	0.00	0.00	0.00	Multi-Stage	= No	No	No	No
Slope (%)	= 1.00	0.00	0.00	n/a					
N-Value	= .013	.013	.013	n/a					
Orifice Coeff.	= 0.60	0.60	0.60	0.60	Exfil.(in/hr)	= 0.000 (by	Contour)		
Multi-Stage	= n/a	No	No	No	TW Elev. (ft)	= 0.00			

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

#### Stage / Storage / Discharge Table

0.00         0         992.00         0.00	Stage ft	Storage cuft	Elevation ft	Clv A cfs	CIv B cfs	CIv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.40	0.00	0	992.00	0.00	0.00	0.00		0.00	0.00					0.000
0.60	0.20	506	992.20	0.05 ic	0.00	0.00		0.00	0.00					0.051
0.60	0.40	1,013	992.40	0.09 ic	0.00	0.00		0.00	0.00					0.089
1.00       2,532       993.00       0.16 ic       0.00       0.00	0.60			0.12 ic	0.00			0.00	0.00					0.116
1.00       2,532       993.00       0.16 ic       0.00       0.00	0.80	2,025	992.80	0.14 ic	0.00	0.00		0.00	0.00					0.137
1.40       3,544       993.40       0.19 ic       0.00       0.00        0.00       0.00        0.187         1.60       4,050       993.80       0.21 ic       0.00       0.00        0.00       0.00        0.201         2.00       5,063       992.00       0.00       0.00       0.00       0.00       0.00         0.000         2.40       6,970       992.40       0.09 ic       0.00       0.00        0.00       0.00        0.051         2.80       7,924       992.60       0.14 ic       0.00       0.00        0.00       0.00        0.088         2.80       7,924       992.80       0.14 ic       0.00       0.00        0.00       0.00        0.137         3.00       9,831       993.00       0.16 ic       0.00       0.00        0.00       0.00         0.137         3.40       11,738       993.80       0.20 ic       0.00       0.00         0.172         3.40       12,691       993.60       0.20 ic <td< td=""><td>1.00</td><td>2,532</td><td></td><td>0.16 ic</td><td>0.00</td><td></td><td></td><td>0.00</td><td>0.00</td><td></td><td></td><td></td><td></td><td>0.155</td></td<>	1.00	2,532		0.16 ic	0.00			0.00	0.00					0.155
1.40       3,544       993.40       0.19 ic       0.00       0.00	1.20	3,038	993.20	0.17 ic	0.00	0.00		0.00	0.00					0.172
1.80       4,557       993.80       0.21 ic       0.00       0.00        0.00       0.00         0.00       0.00        0.00       0.00         0.00       0.00         0.00       0.00         0.00       0.00         0.00       0.00         0.00       0.00         0.00       0.00         0.00       0.00         0.00       0.00         0.00       0.00         0.00       0.00         0.089       2.60       7.924       992.60       0.14 ic       0.00       0.00        0.00       0.00       0.00       0.00       0.00       0.00       0.00       0.00       0.00       0.00       0.00       0.00       0.00       0.00         0.1187       3.00       9,831       993.00       0.16 ic       0.00       0.00        0.00       0.00         0.172       3.40       11,738       993.60       0.20 ic       0.00       0.00 <t< td=""><td>1.40</td><td></td><td>993.40</td><td>0.19 ic</td><td>0.00</td><td>0.00</td><td></td><td>0.00</td><td>0.00</td><td></td><td></td><td></td><td></td><td>0.187</td></t<>	1.40		993.40	0.19 ic	0.00	0.00		0.00	0.00					0.187
2.00         5,063         992.00         0.00         0.00         0.00	1.60	4,050	993.60	0.20 ic	0.00	0.00		0.00	0.00					0.201
2.20       6,017       992.20       0.05 ic       0.00       0.00        0.00       0.00         0.051         2.40       6,970       992.40       0.09 ic       0.00       0.00           0.089         2.60       7,924       992.80       0.14 ic       0.00       0.00        0.00       0.00          0.118         2.80       8,877       992.80       0.14 ic       0.00       0.00        0.00       0.00          0.137         3.00       9,831       993.00       0.16 ic       0.00       0.00        0.00       0.00           0.155         3.20       10,784       993.20       0.17 ic       0.00       0.00        0.00       0.00         0.172         3.40       11,738       993.40       0.19 ic       0.00       0.00        0.00       0.00         0.187         3.60       12,691       993.80       0.21 ic       0.00       0.00	1.80	4,557	993.80	0.21 ic	0.00	0.00		0.00	0.00					0.214
2.40       6,970       992.40       0.09 ic       0.00       0.00        0.00       0.00          0.089         2.60       7,924       992.60       0.12 ic       0.00       0.00        0.00       0.00          0.116         2.80       8,877       992.80       0.14 ic       0.00       0.00        0.00       0.00        0.137         3.00       9,831       993.00       0.16 ic       0.00       0.00       0.00       0.00         0.155         3.20       10,784       993.20       0.17 ic       0.00       0.00        0.00       0.00         0.172         3.40       11,738       993.40       0.19 ic       0.00       0.00        0.00       0.00         0.187         3.80       13,645       993.80       0.21 ic       0.00       0.00        0.00       0.00         0.214         4.00       14,598       994.00       0.23 ic       0.00       0.00        0.00       0.00<	2.00	5,063	992.00	0.00	0.00	0.00		0.00	0.00					0.000
2.60       7,924       992.60       0.12 ic       0.00       0.00        0.00       0.00          0.116         2.80       8,877       992.80       0.14 ic       0.00       0.00        0.00       0.00         0.137         3.00       10,784       993.20       0.17 ic       0.00       0.00        0.00       0.00         0.172         3.40       11,738       993.40       0.19 ic       0.00       0.00        0.00       0.00         0.172         3.80       13,645       993.80       0.21 ic       0.00       0.00        0.00       0.00         0.201         3.80       13,645       993.80       0.21 ic       0.00       0.00        0.00       0.00         0.201         4.00       14,598       994.00       0.23 ic       0.00       0.00        0.00       0.00         0.226         4.20       15,915       994.20       0.24 ic       0.00       0.00        0.00	2.20	6,017	992.20	0.05 ic	0.00	0.00		0.00	0.00					0.051
2.80         8,877         992.80         0.14 ic         0.00         0.00             0.137           3.00         9,831         993.00         0.16 ic         0.00         0.00          0.00         0.00             0.155           3.20         10,784         993.20         0.17 ic         0.00         0.00          0.00         0.00             0.172           3.40         11,738         993.40         0.19 ic         0.00         0.00          0.00         0.00          0.187           3.60         12,691         993.60         0.20 ic         0.00         0.00          0.00         0.00           0.201           3.80         13,645         993.80         0.21 ic         0.00         0.00          0.00         0.00           0.221           4.00         14,598         994.00         0.23 ic         0.00         0.00          0.00         0.00           0.228	2.40	6,970	992.40	0.09 ic	0.00	0.00		0.00	0.00					0.089
3.00       9,831       993.00       0.16 ic       0.00       0.00        0.00       0.00           0.155         3.20       10,784       993.20       0.17 ic       0.00       0.00        0.00       0.00           0.172         3.40       11,738       993.40       0.19 ic       0.00       0.00        0.00       0.00         0.187         3.60       12,691       993.60       0.20 ic       0.00       0.00        0.00       0.00         0.201         3.80       13,645       993.80       0.21 ic       0.00       0.00        0.00       0.00         0.214         4.00       14,598       994.00       0.23 ic       0.00       0.00        0.00       0.00         0.226         4.20       15,915       994.20       0.24 ic       0.00       0.00        0.00       0.00         0.238         4.40       17,232       994.40       0.25 ic       0.00<	2.60	7,924	992.60	0.12 ic	0.00	0.00		0.00	0.00					0.116
3.20       10,784       993.20       0.17 ic       0.00       0.00        0.00       0.00          0.172         3.40       11,738       993.40       0.19 ic       0.00       0.00        0.00       0.00           0.187         3.60       12,691       993.60       0.20 ic       0.00       0.00        0.00       0.00        0.201         3.80       13,645       993.80       0.21 ic       0.00       0.00        0.00       0.00         0.201         4.00       14,598       994.00       0.23 ic       0.00       0.00        0.00       0.00         0.226         4.20       15,915       994.20       0.24 ic       0.00       0.00        0.00       0.00         0.238         4.40       17,232       994.60       0.25 ic       0.00       0.00        0.00       0.00         0.249         4.80       19,866       994.80       0.27 ic       0.00       0.00	2.80	8,877	992.80	0.14 ic	0.00	0.00		0.00	0.00					0.137
3.40       11,738       993.40       0.19 ic       0.00       0.00        0.00       0.00           0.187         3.60       12,691       993.60       0.20 ic       0.00       0.00        0.00       0.00           0.201         3.80       13,645       993.80       0.21 ic       0.00       0.00        0.00       0.00         0.214         4.00       14,598       994.00       0.23 ic       0.00       0.00        0.00       0.00         0.214         4.20       15,915       994.20       0.24 ic       0.00       0.00        0.00       0.00         0.238         4.40       17,232       994.40       0.25 ic       0.00       0.00        0.00       0.00         0.249         4.60       18,549       994.60       0.26 ic       0.00       0.00        0.00       0.00         0.259         4.80       19,866       994.80       0.27 ic       0.00	3.00	9,831	993.00	0.16 ic	0.00	0.00		0.00	0.00					0.155
3.60       12,691       993.60       0.20 ic       0.00       0.00        0.00       0.00          0.201         3.80       13,645       993.80       0.21 ic       0.00       0.00        0.00       0.00          0.214         4.00       14,598       994.00       0.23 ic       0.00       0.00        0.00       0.00         0.226         4.20       15,915       994.20       0.24 ic       0.00       0.00        0.00       0.00         0.238         4.40       17,232       994.40       0.25 ic       0.00       0.00        0.00       0.00         0.249         4.60       18,549       994.60       0.26 ic       0.00       0.00        0.00       0.00          0.249         4.80       19,866       994.80       0.27 ic       0.00       0.00        0.00       0.00          0.269         5.00       21,183       995.00       0.28 ic       0.00	3.20	10,784	993.20	0.17 ic	0.00	0.00		0.00	0.00					0.172
3.80       13,645       993.80       0.21 ic       0.00       0.00        0.00       0.00        0.214         4.00       14,598       994.00       0.23 ic       0.00       0.00        0.00       0.00         0.226         4.20       15,915       994.20       0.24 ic       0.00       0.00        0.00       0.00        0.238         4.40       17,232       994.40       0.25 ic       0.00       0.00        0.00       0.00        0.249         4.60       18,549       994.60       0.26 ic       0.00       0.00        0.00       0.00        0.249         4.80       19,866       994.80       0.27 ic       0.00       0.00        0.00       0.00         0.259         5.00       21,183       995.00       0.28 ic       0.00       0.00        0.00       0.00         0.279         5.20       22,501       995.20       0.29 ic       0.00       0.00        0.00       0.00         0.289 <td>3.40</td> <td>11,738</td> <td>993.40</td> <td>0.19 ic</td> <td>0.00</td> <td></td> <td></td> <td>0.00</td> <td>0.00</td> <td></td> <td></td> <td></td> <td></td> <td>0.187</td>	3.40	11,738	993.40	0.19 ic	0.00			0.00	0.00					0.187
4.00       14,598       994.00       0.23 ic       0.00       0.00        0.00       0.00         0.026         4.20       15,915       994.20       0.24 ic       0.00       0.00        0.00       0.00         0.238         4.40       17,232       994.40       0.25 ic       0.00       0.00        0.00       0.00         0.249         4.60       18,549       994.60       0.26 ic       0.00       0.00        0.00       0.00         0.259         4.80       19,866       994.80       0.27 ic       0.00       0.00        0.00       0.00         0.259         4.80       19,866       994.80       0.27 ic       0.00       0.00        0.00       0.00         0.259         5.00       21,183       995.00       0.28 ic       0.00       0.00        0.00       0.00         0.279         5.40       23,818       995.40       0.30 ic       0.00       0.00        0.00       0	3.60	12,691	993.60	0.20 ic	0.00	0.00		0.00	0.00					0.201
4.20       15,915       994.20       0.24 ic       0.00       0.00        0.00       0.00         0.238         4.40       17,232       994.40       0.25 ic       0.00       0.00        0.00       0.00         0.249         4.60       18,549       994.60       0.26 ic       0.00       0.00        0.00       0.00         0.259         4.80       19,866       994.80       0.27 ic       0.00       0.00        0.00       0.00         0.259         5.00       21,183       995.00       0.28 ic       0.00       0.00        0.00       0.00         0.269         5.20       22,501       995.20       0.29 ic       0.00       0.00        0.00       0.00         0.289         5.40       23,818       995.40       0.30 ic       0.00       0.00        0.00       0.00         0.298         5.60       25,135       995.60       0.31 ic       0.00       0.00        0.00       0	3.80													
4.40       17,232       994.40       0.25 ic       0.00       0.00        0.00       0.00         0.249         4.60       18,549       994.60       0.26 ic       0.00       0.00        0.00       0.00         0.259         4.80       19,866       994.80       0.27 ic       0.00       0.00        0.00       0.00         0.269         5.00       21,183       995.00       0.28 ic       0.00       0.00        0.00       0.00         0.279         5.20       22,501       995.20       0.29 ic       0.00       0.00        0.00       0.00         0.289         5.40       23,818       995.40       0.30 ic       0.00       0.00        0.00       0.00         0.298         5.60       25,135       995.60       0.31 ic       0.00       0.00        0.00       0.00         0.307         5.80       26,452       995.80       0.32 ic       0.00       0.00        0.00       0	4.00	14,598	994.00	0.23 ic	0.00	0.00		0.00	0.00					0.226
4.60       18,549       994.60       0.26 ic       0.00       0.00        0.00       0.00         0.259         4.80       19,866       994.80       0.27 ic       0.00       0.00        0.00       0.00         0.269         5.00       21,183       995.00       0.28 ic       0.00       0.00        0.00       0.00         0.279         5.20       22,501       995.20       0.29 ic       0.00       0.00        0.00       0.00         0.289         5.40       23,818       995.40       0.30 ic       0.00       0.00        0.00       0.00         0.298         5.60       25,135       995.60       0.31 ic       0.00       0.00        0.00       0.00         0.307         5.80       26,452       995.80       0.32 ic       0.00       0.00        0.00       0.00         0.316         6.00       27,769       996.00       0.32 ic       0.00       0.00        0.00       0	4.20	15,915	994.20	0.24 ic	0.00	0.00		0.00	0.00					0.238
4.80       19,866       994.80       0.27 ic       0.00       0.00        0.00       0.00        0.269         5.00       21,183       995.00       0.28 ic       0.00       0.00        0.00       0.00         0.279         5.20       22,501       995.20       0.29 ic       0.00       0.00        0.00       0.00         0.289         5.40       23,818       995.40       0.30 ic       0.00       0.00        0.00       0.00         0.298         5.60       25,135       995.60       0.31 ic       0.00       0.00        0.00       0.00         0.307         5.80       26,452       995.80       0.32 ic       0.00       0.00        0.00       0.00         0.316         6.00       27,769       996.00       0.32 ic       0.00       0.00        0.00       0.00         0.423         6.40       31,196       996.40       0.34 ic       0.25 ic       0.00        0.00       0.00       <	4.40	17,232	994.40	0.25 ic	0.00	0.00		0.00	0.00					0.249
5.00       21,183       995.00       0.28 ic       0.00       0.00        0.00       0.00        0.279         5.20       22,501       995.20       0.29 ic       0.00       0.00        0.00       0.00         0.289         5.40       23,818       995.40       0.30 ic       0.00       0.00        0.00       0.00         0.298         5.60       25,135       995.60       0.31 ic       0.00       0.00        0.00       0.00         0.307         5.80       26,452       995.80       0.32 ic       0.00       0.00        0.00       0.00         0.316         6.00       27,769       996.00       0.32 ic       0.00       0.00        0.00       0.00         0.324         6.20       29,483       996.20       0.33 ic       0.09 ic       0.00        0.00       0.00          0.423         6.40       31,196       996.60       0.35 ic       0.34 ic       0.00        0.00	4.60		994.60		0.00				0.00					
5.20         22,501         995.20         0.29 ic         0.00         0.00          0.00         0.00           0.289           5.40         23,818         995.40         0.30 ic         0.00         0.00          0.00         0.00           0.298           5.60         25,135         995.60         0.31 ic         0.00         0.00          0.00         0.00           0.307           5.80         26,452         995.80         0.32 ic         0.00         0.00          0.00         0.00           0.316           6.00         27,769         996.00         0.32 ic         0.00         0.00          0.00         0.00           0.324           6.20         29,483         996.20         0.33 ic         0.09 ic         0.00          0.00         0.00           0.423           6.40         31,196         996.40         0.34 ic         0.25 ic         0.00          0.00         0.00            0.690	4.80	19,866	994.80	0.27 ic	0.00	0.00		0.00	0.00					0.269
5.40       23,818       995.40       0.30 ic       0.00       0.00        0.00       0.00         0.298         5.60       25,135       995.60       0.31 ic       0.00       0.00        0.00       0.00         0.307         5.80       26,452       995.80       0.32 ic       0.00       0.00        0.00       0.00         0.316         6.00       27,769       996.00       0.32 ic       0.00       0.00        0.00       0.00         0.324         6.20       29,483       996.20       0.33 ic       0.09 ic       0.00        0.00       0.00         0.423         6.40       31,196       996.40       0.34 ic       0.25 ic       0.00        0.00       0.00          0.585         6.60       32,910       996.60       0.35 ic       0.34 ic       0.00        0.00       0.00            0.690         6.80       34,623       996.80       0.36 ic														
5.60       25,135       995.60       0.31 ic       0.00       0.00        0.00       0.00         0.307         5.80       26,452       995.80       0.32 ic       0.00       0.00        0.00       0.00         0.316         6.00       27,769       996.00       0.32 ic       0.00       0.00        0.00       0.00         0.324         6.20       29,483       996.20       0.33 ic       0.09 ic       0.00        0.00       0.00         0.423         6.40       31,196       996.40       0.34 ic       0.25 ic       0.00        0.00       0.00         0.585         6.60       32,910       996.60       0.35 ic       0.34 ic       0.00        0.00       0.00          0.690         6.80       34,623       996.80       0.36 ic       0.42 ic       0.00        0.00       0.00            0.772														
5.80       26,452       995.80       0.32 ic       0.00       0.00        0.00       0.00         0.316         6.00       27,769       996.00       0.32 ic       0.00       0.00        0.00       0.00         0.324         6.20       29,483       996.20       0.33 ic       0.09 ic       0.00        0.00       0.00         0.423         6.40       31,196       996.40       0.34 ic       0.25 ic       0.00        0.00       0.00         0.585         6.60       32,910       996.60       0.35 ic       0.34 ic       0.00        0.00       0.00         0.690         6.80       34,623       996.80       0.36 ic       0.42 ic       0.00        0.00       0.00          0.772														
6.00 27,769 996.00 0.32 ic 0.00 0.00 0.00 0.00 0.324 6.20 29,483 996.20 0.33 ic 0.09 ic 0.00 0.00 0.00 0.423 6.40 31,196 996.40 0.34 ic 0.25 ic 0.00 0.00 0.00 0.585 6.60 32,910 996.60 0.35 ic 0.34 ic 0.00 0.00 0.00 0.690 6.80 34,623 996.80 0.36 ic 0.42 ic 0.00 0.00 0.00 0.772														
6.20 29,483 996.20 0.33 ic 0.09 ic 0.00 0.00 0.00 0.423 6.40 31,196 996.40 0.34 ic 0.25 ic 0.00 0.00 0.00 0.585 6.60 32,910 996.60 0.35 ic 0.34 ic 0.00 0.00 0.00 0.690 6.80 34,623 996.80 0.36 ic 0.42 ic 0.00 0.00 0.00 0.772	5.80													
6.40 31,196 996.40 0.34 ic 0.25 ic 0.00 0.00 0.00 0.585 6.60 32,910 996.60 0.35 ic 0.34 ic 0.00 0.00 0.00 0.690 6.80 34,623 996.80 0.36 ic 0.42 ic 0.00 0.00 0.00 0.772	6.00	27,769	996.00	0.32 ic	0.00	0.00		0.00	0.00					0.324
6.60 32,910 996.60 0.35 ic 0.34 ic 0.00 0.00 0.00 0.690 6.80 34,623 996.80 0.36 ic 0.42 ic 0.00 0.00 0.00 0.772	6.20	29,483		0.33 ic	0.09 ic			0.00	0.00					0.423
6.80 34,623 996.80 0.36 ic 0.42 ic 0.00 0.00 0.00 0.772	6.40	31,196	996.40	0.34 ic	0.25 ic	0.00		0.00	0.00					0.585
7.00 36,337 997.00 0.36 ic 0.48 ic 0.00 0.00 0.00 0.842														
	7.00	36,337	997.00	0.36 ic	0.48 ic	0.00		0.00	0.00					0.842

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Pond Stage / Storage / Discharge Table

•	•	•											
Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	CIv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
7.20	38,051	997.20	0.37 ic	0.54 ic	0.00		0.00	0.00					0.906
7.40	39,764	997.40	0.38 ic	0.59 ic	0.00		0.00	0.00					0.963
7.60	41,478	997.60	0.38 ic	0.63 ic	0.00		0.32	0.00					1.333
7.80	43,191	997.80	0.39 ic	0.68 ic	0.00		1.64	0.00					2.709
8.00	44,905	998.00	0.40 ic	0.72 ic	0.00		3.53	0.00					4.646
8.20	46,972	998.20	0.41 ic	0.75 ic	0.00		5.85	0.00					7.010
8.40	49,039	998.40	0.41 ic	0.79 ic	0.00		8.53	0.00					9.733
8.60	51,106	998.60	0.42 ic	0.83 ic	0.00		11.53	0.00					12.77
8.80	53,173	998.80	0.42 ic	0.86 ic	0.00		14.81	0.00					16.09
9.00	55,240	999.00	0.43 ic	0.89 ic	0.00		18.35	0.00					19.68
9.20	57,307	999.20	0.44 ic	0.92 ic	0.00		22.14	0.00					23.50
9.40	59,374	999.40	0.44 ic	0.95 ic	0.00		26.17	0.00					27.56
9.60	61,441	999.60	0.45 ic	0.98 ic	0.00		30.40	0.00					31.84
9.80	63,508	999.80	0.46 ic	1.01 ic	0.00		34.85	0.00					36.31
10.00	65,575	1000.00	0.46 ic	1.04 ic	0.00		39.49	0.00					40.99
10.20	68,007	1000.20	0.47 ic	1.07 ic	0.00		44.32	0.00					45.85
10.40	70,440	1000.40	0.47 ic	1.09 ic	0.00		49.34	0.00					50.90
10.60	72,872	1000.60	0.48 ic	1.12 ic	0.00		54.53	0.00					56.12
10.80	75,305	1000.80	0.48 ic	1.14 ic	0.00		59.89	0.00					61.51
11.00	77,737	1001.00	0.49 ic	1.17 ic	0.00		65.42	0.00					67.07
11.20	80,169	1001.20	0.49 ic	1.19 ic	0.00		71.10	0.00					72.79
11.40	82,602	1001.40	0.50 ic	1.21 ic	0.00		76.94	0.00					78.66
11.60	85,034	1001.60	0.51 ic	1.24 ic	0.00		82.94	0.00					84.68
11.80	87,467	1001.80	0.51 ic	1.26 ic	0.00		89.08	0.00					90.85
12.00	89,899	1002.00	0.52 ic	1.28 ic	0.00		95.36	0.00					97.16

...End

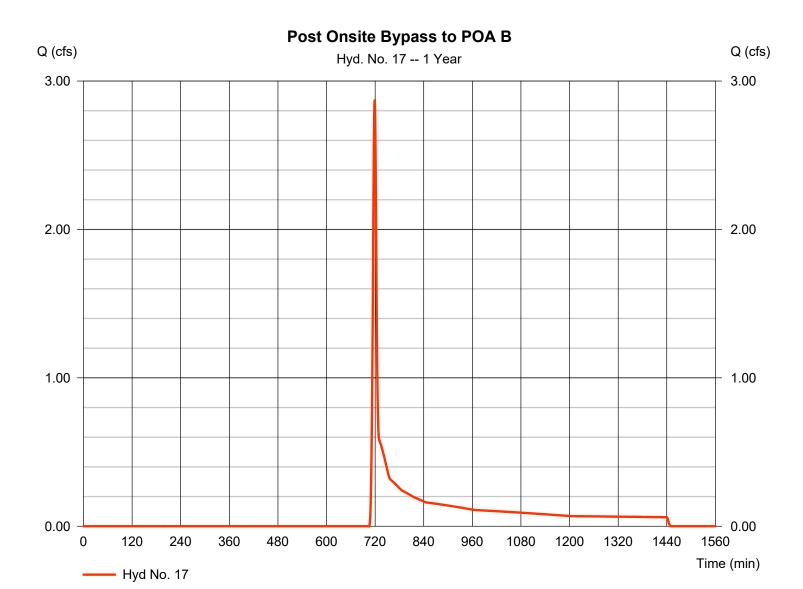
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

Wednesday, 02 / 28 / 2018

#### Hyd. No. 17

Post Onsite Bypass to POA B

Hydrograph type = SCS Runoff Peak discharge = 2.876 cfsStorm frequency Time to peak = 719 min = 1 yrsTime interval = 1 min Hyd. volume = 7,003 cuftDrainage area = 3.660 acCurve number = 61 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 3.36 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



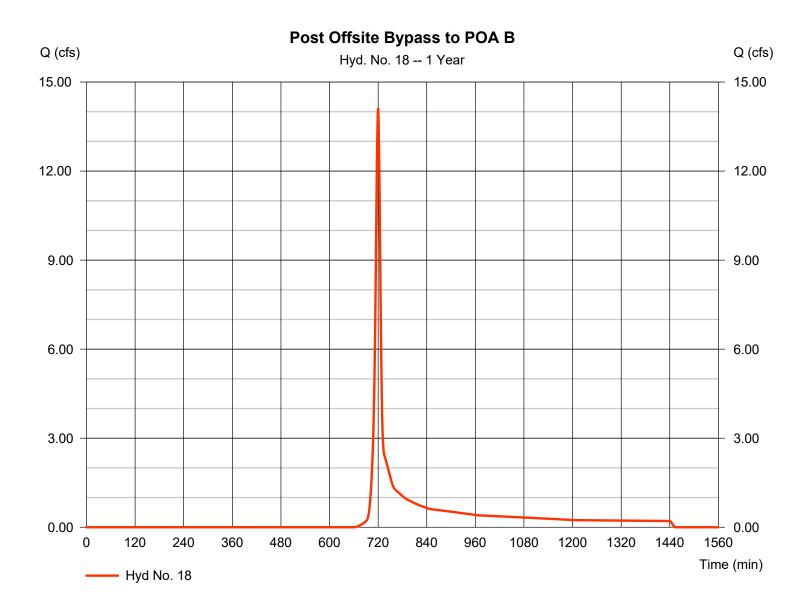
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

Wednesday, 02 / 28 / 2018

#### **Hyd. No. 18**

Post Offsite Bypass to POA B

Hydrograph type = SCS Runoff Peak discharge = 14.12 cfsStorm frequency Time to peak = 720 min = 1 yrsTime interval = 1 min Hyd. volume = 32,653 cuftCurve number Drainage area = 8.730 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 10.00 min = User Total precip. = 3.36 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



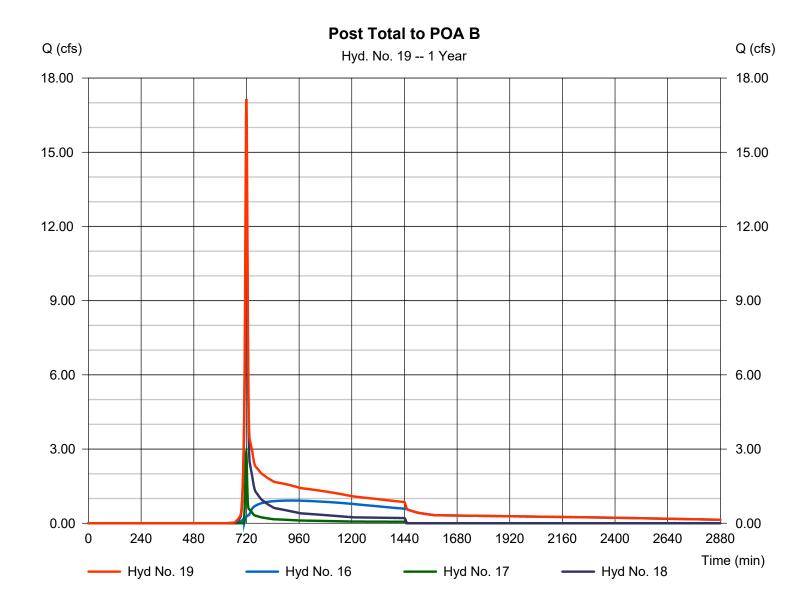
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

Wednesday, 02 / 28 / 2018

### Hyd. No. 19

Post Total to POA B

Hydrograph type Peak discharge = Combine = 17.15 cfsStorm frequency Time to peak = 1 yrs= 720 min Time interval = 1 min Hyd. volume = 96,178 cuft Inflow hyds. = 16, 17, 18 Contrib. drain. area = 12.390 ac



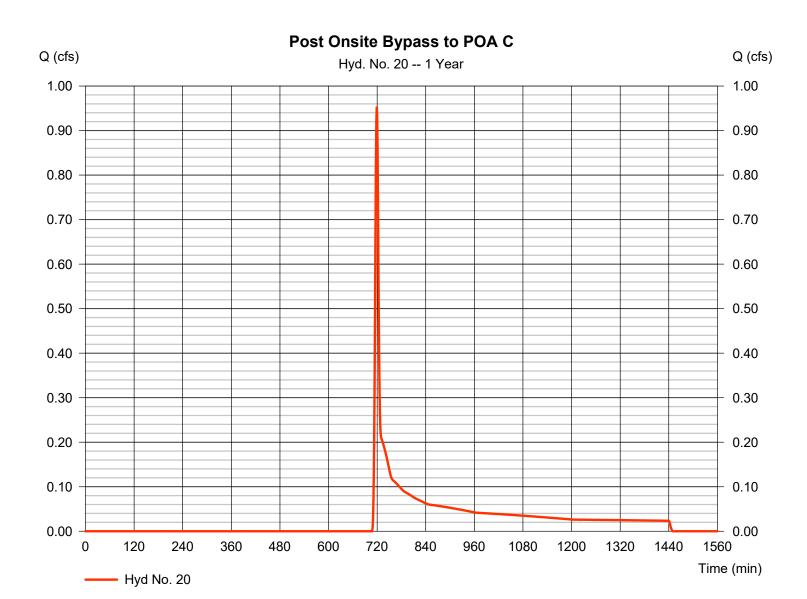
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Wednesday, 02 / 28 / 2018

#### Hyd. No. 20

Post Onsite Bypass to POA C

Hydrograph type = SCS Runoff Peak discharge = 0.954 cfsStorm frequency Time to peak = 719 min = 1 yrsTime interval = 1 min Hyd. volume = 2.525 cuft Curve number Drainage area = 1.550 ac= 59 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 3.36 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



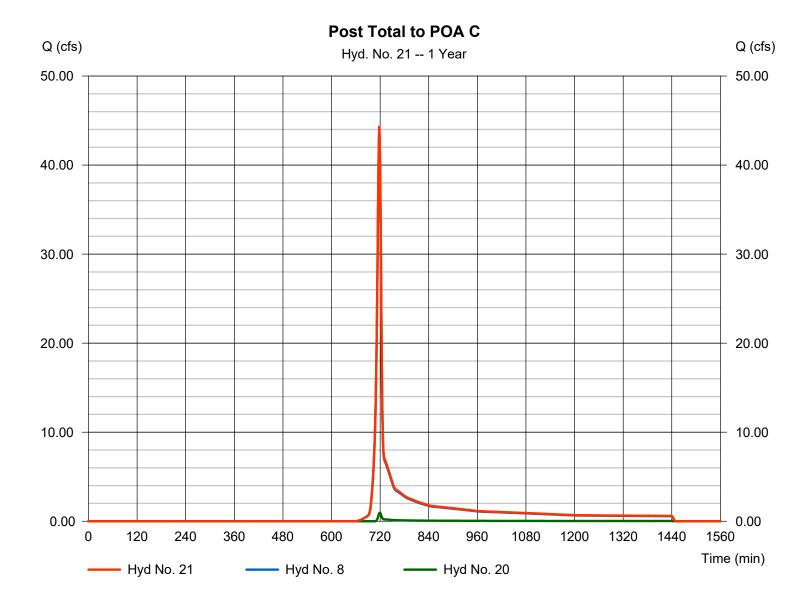
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

Wednesday, 02 / 28 / 2018

#### Hyd. No. 21

Post Total to POA C

Hydrograph type = Combine Peak discharge = 44.40 cfsStorm frequency = 1 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 91,049 cuft Contrib. drain. area = 24.500 acInflow hyds. = 8, 20



# Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

yd. Hydrog o. typ (origi	e f	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1 SCS Ru	ınoff	0.918	1	719	2,575				Pre Onsite to POA A
SCS Ru	ınoff	1.202	1	718	2,424				Pre Offsite to POA A
3 Combin	е	2.075	1	719	4,999	1, 2			Pre Total to POA A
4 SCS Ru	ınoff	4.549	1	719	12,755				Pre Onsite to POA B
SCS Ru	ınoff	38.72	1	720	88,417				Pre Offsite to POA B
6 Combin	е	43.23	1	720	101,172	4, 5			Pre Total to POA B
7 SCS Ru	ınoff	1.371	1	719	3,845				Pre Onsite to POA C
SCS Ru	ınoff	56.29	1	718	113,542				Pre/Post Offsite to POA C
Combin	е	57.59	1	718	117,388	7, 8			Pre Total to POA C
11 SCS Ru	ınoff	0.955	1	718	1,932				Post Onsite Bypass/Total to POA A
12 SCS Ru	inoff	17.60	1	718	35,358				Post Onsite to Pond
13 SCS Ru	inoff	21.40	1	719	45,372				Post Offsite East to Pond
14 SCS Ru	inoff	1.202	1	718	2,424				Post Offsite South to Pond
15 Combin	е	39.94	1	718	83,154	12, 13, 14			Post Total to Pond
16 Reserve	oir	2.479	1	779	73,597	15	997.77	42,904	Pond
17 SCS Ru	inoff	4.338	1	718	9,770				Post Onsite Bypass to POA B
18 SCS Ru	inoff	18.34	1	720	41,882				Post Offsite Bypass to POA B
19 Combin	е	22.78	1	719	125,248	16, 17, 18			Post Total to POA B
20 SCS Ru	inoff	1.522	1	719	3,601				Post Onsite Bypass to POA C
21 Combin	e	57.80	1	718	117,144	8, 20			Post Total to POA C

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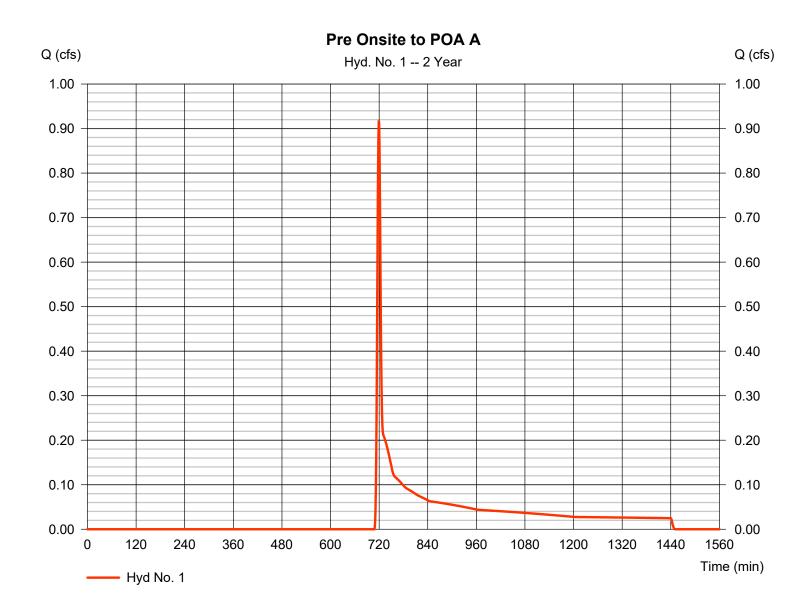
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

Wednesday, 02 / 28 / 2018

#### Hyd. No. 1

Pre Onsite to POA A

Hydrograph type = SCS Runoff Peak discharge = 0.918 cfsStorm frequency = 2 yrsTime to peak = 719 min Time interval = 1 min Hyd. volume = 2.575 cuft Curve number Drainage area = 1.520 ac= 55 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 3.80 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



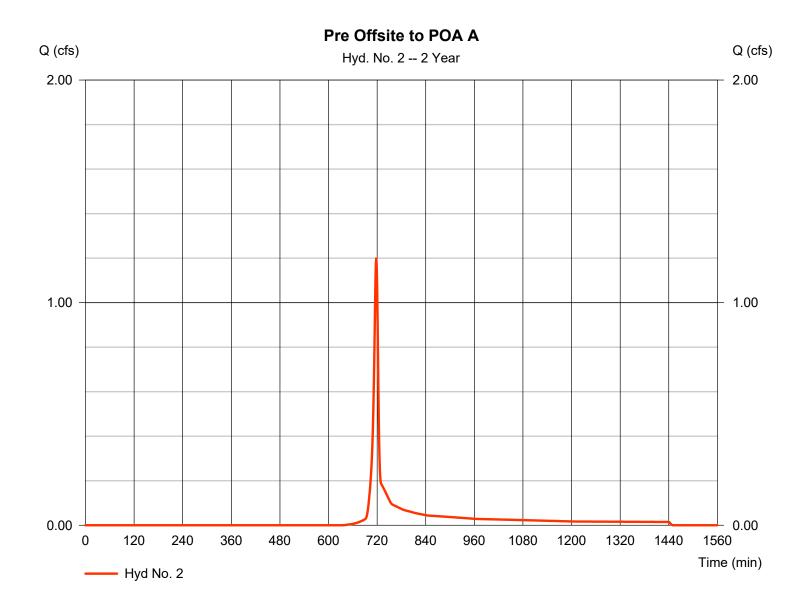
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

Wednesday, 02 / 28 / 2018

#### Hyd. No. 2

Pre Offsite to POA A

= 1.202 cfsHydrograph type = SCS Runoff Peak discharge Storm frequency = 2 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 2.424 cuft Curve number = 72 Drainage area = 0.490 ac= 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 3.80 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



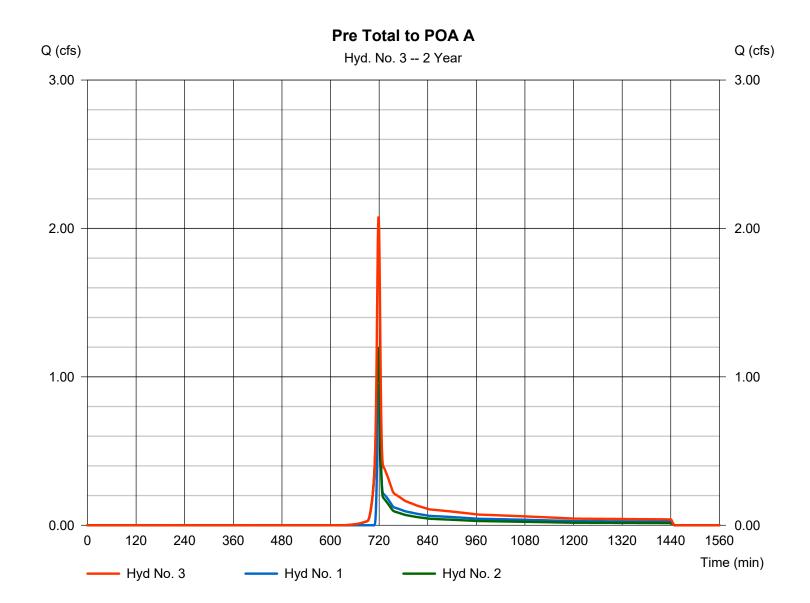
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Wednesday, 02 / 28 / 2018

### Hyd. No. 3

Pre Total to POA A

Hydrograph type = Combine = 2.075 cfsPeak discharge Storm frequency = 2 yrsTime to peak = 719 min Time interval = 1 min Hyd. volume = 4,999 cuftInflow hyds. = 1, 2 Contrib. drain. area = 2.010 ac



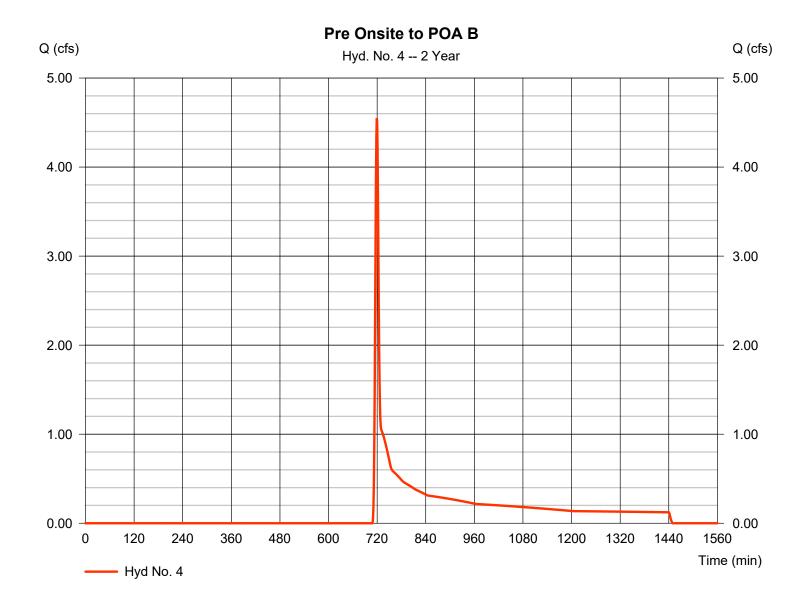
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Wednesday, 02 / 28 / 2018

#### Hyd. No. 4

Pre Onsite to POA B

Hydrograph type = SCS Runoff Peak discharge = 4.549 cfsStorm frequency = 2 yrsTime to peak = 719 min Time interval = 1 min Hyd. volume = 12.755 cuft Drainage area = 7.530 acCurve number = 55 Basin Slope = 0.0 %Hydraulic length = 0 ftTime of conc. (Tc) = 5.00 min Tc method = User Total precip. = 3.80 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



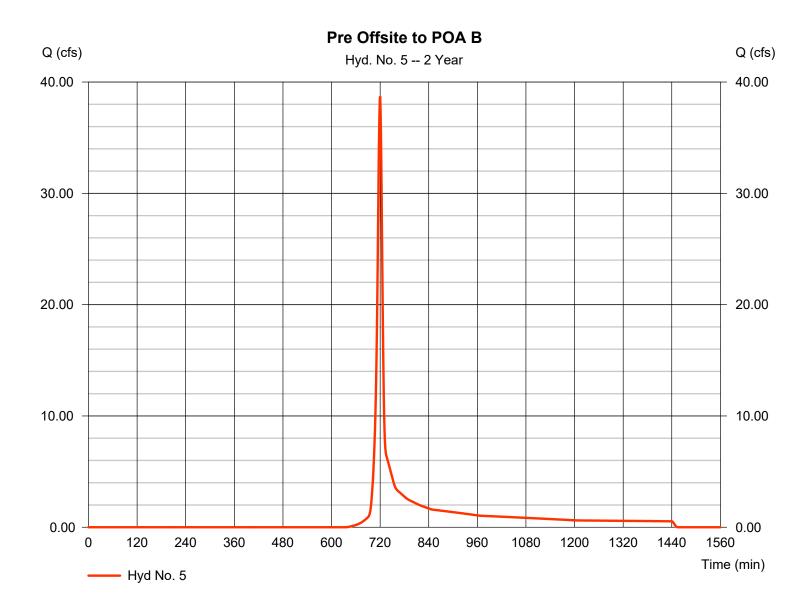
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Wednesday, 02 / 28 / 2018

#### Hyd. No. 5

Pre Offsite to POA B

Hydrograph type = SCS Runoff Peak discharge = 38.72 cfsStorm frequency = 2 yrsTime to peak = 720 min Time interval = 1 min Hyd. volume = 88.417 cuft Curve number Drainage area = 18.430 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 10.00 min = User Total precip. = 3.80 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



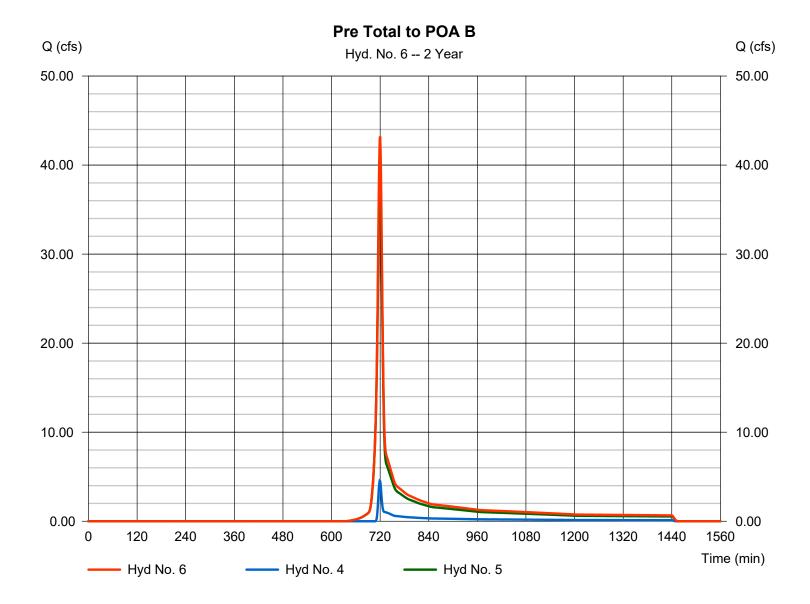
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Wednesday, 02 / 28 / 2018

### Hyd. No. 6

Pre Total to POA B

Hydrograph type = Combine Peak discharge = 43.23 cfsStorm frequency = 2 yrsTime to peak = 720 min Time interval = 1 min Hyd. volume = 101,172 cuft Inflow hyds. = 4, 5 Contrib. drain. area = 25.960 ac



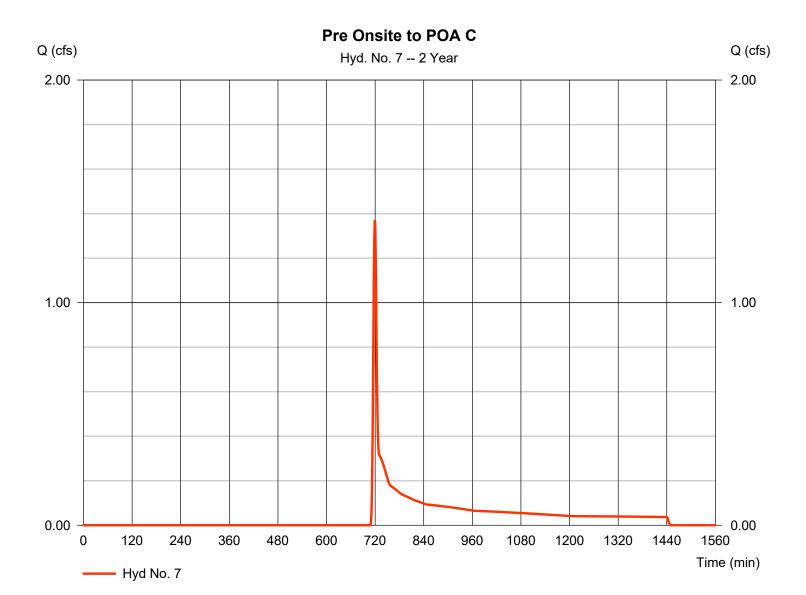
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Wednesday, 02 / 28 / 2018

#### Hyd. No. 7

Pre Onsite to POA C

Hydrograph type = 1.371 cfs= SCS Runoff Peak discharge Storm frequency = 2 yrsTime to peak = 719 min Time interval = 1 min Hyd. volume = 3,845 cuftCurve number Drainage area = 2.270 ac= 55 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 3.80 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



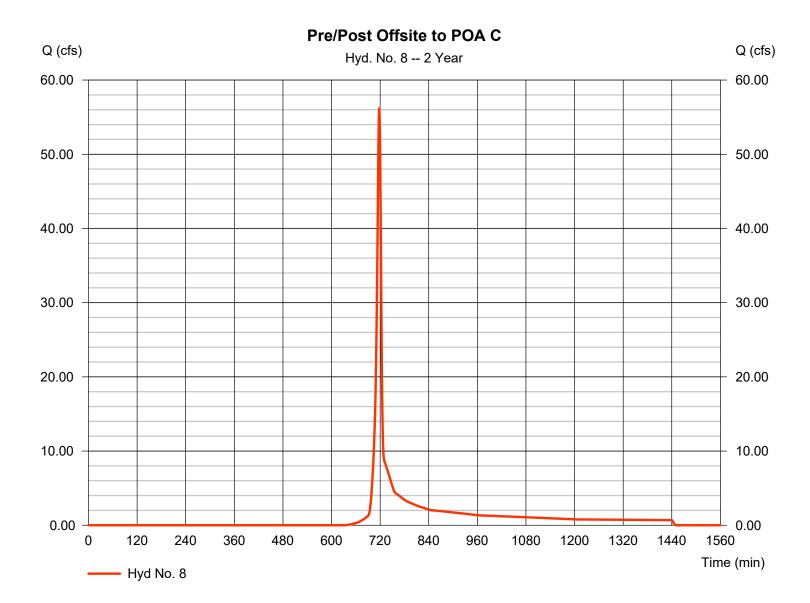
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Wednesday, 02 / 28 / 2018

#### Hyd. No. 8

Pre/Post Offsite to POA C

= 56.29 cfsHydrograph type = SCS Runoff Peak discharge Storm frequency = 2 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 113,542 cuft Curve number Drainage area = 22.950 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 3.80 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



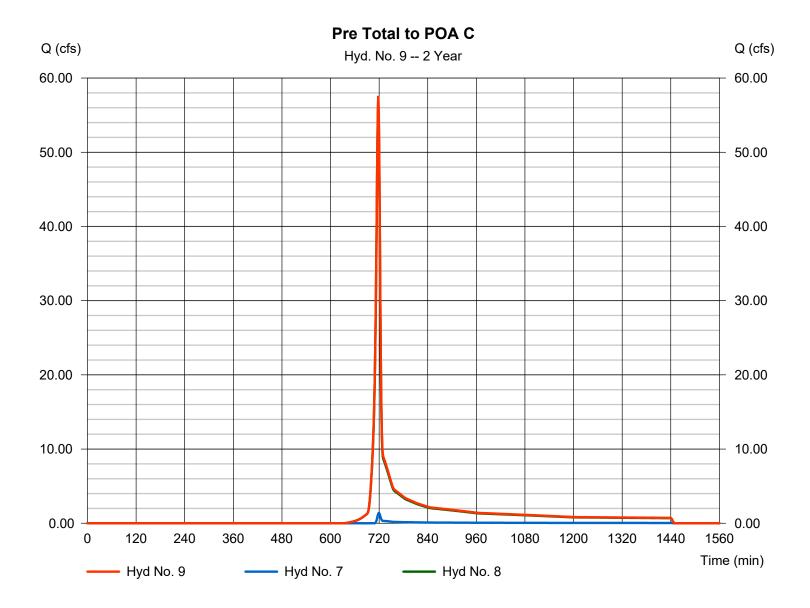
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### Hyd. No. 9

Pre Total to POA C

Hydrograph type = Combine Peak discharge = 57.59 cfsStorm frequency = 2 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 117,388 cuft Inflow hyds. = 7,8 Contrib. drain. area = 25.220 ac



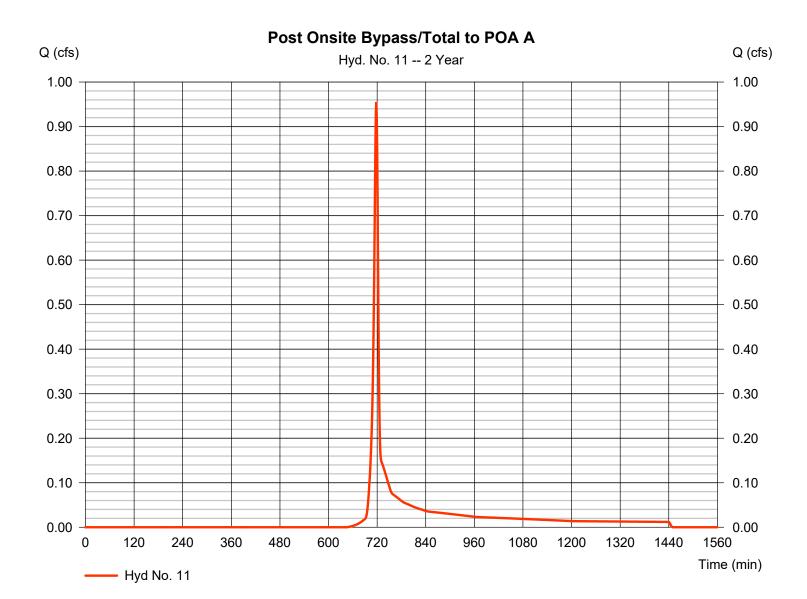
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#### Hyd. No. 11

Post Onsite Bypass/Total to POA A

Hydrograph type = SCS Runoff Peak discharge = 0.955 cfsStorm frequency = 2 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 1.932 cuft Curve number Drainage area = 0.410 ac= 71 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 3.80 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



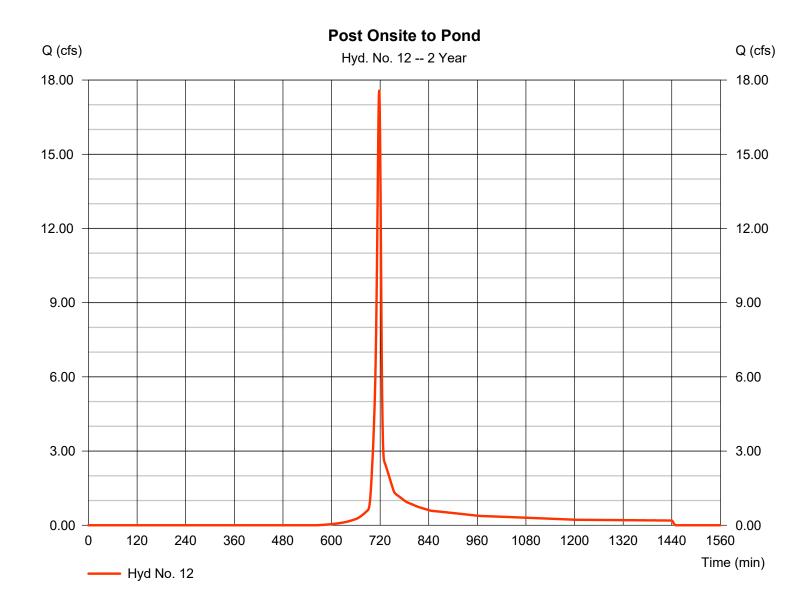
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### Hyd. No. 12

Post Onsite to Pond

Hydrograph type = SCS Runoff Peak discharge = 17.60 cfsStorm frequency = 2 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 35,358 cuft Curve number Drainage area = 5.700 ac= 77 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 5.00 min = User Total precip. = 3.80 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



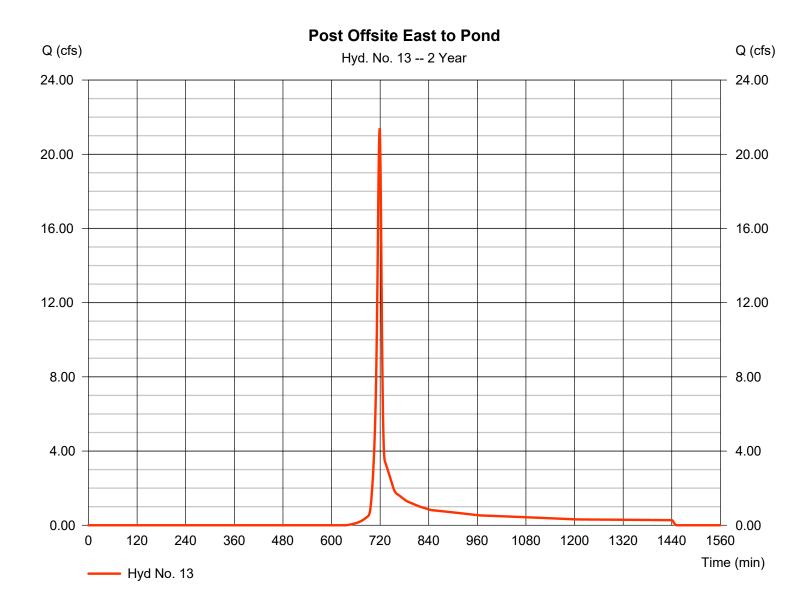
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#### **Hyd. No. 13**

Post Offsite East to Pond

Hydrograph type = SCS Runoff Peak discharge = 21.40 cfsStorm frequency = 2 yrsTime to peak = 719 min Time interval = 1 min Hyd. volume = 45,372 cuft Drainage area Curve number = 9.700 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 8.00 min = User Total precip. = 3.80 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



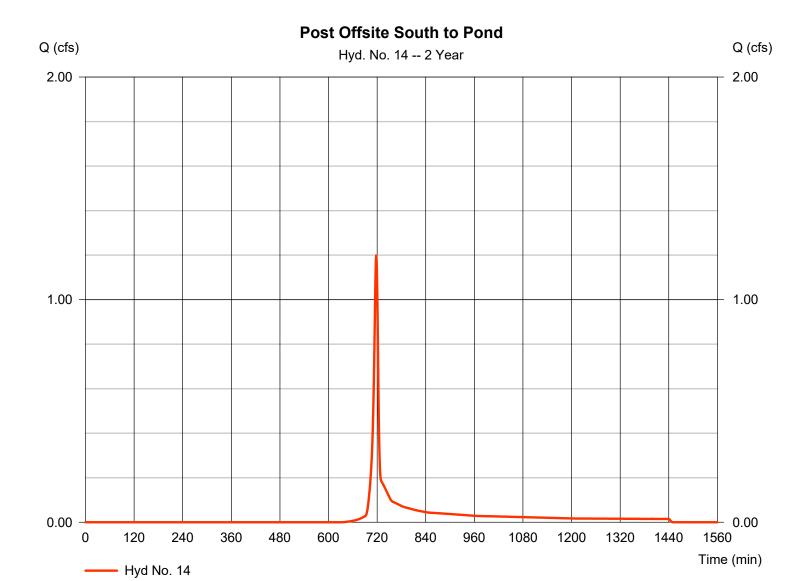
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#### Hyd. No. 14

Post Offsite South to Pond

= 1.202 cfsHydrograph type = SCS Runoff Peak discharge Storm frequency = 2 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 2.424 cuft Curve number = 72 Drainage area = 0.490 ac= 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 5.00 min = User Total precip. = 3.80 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



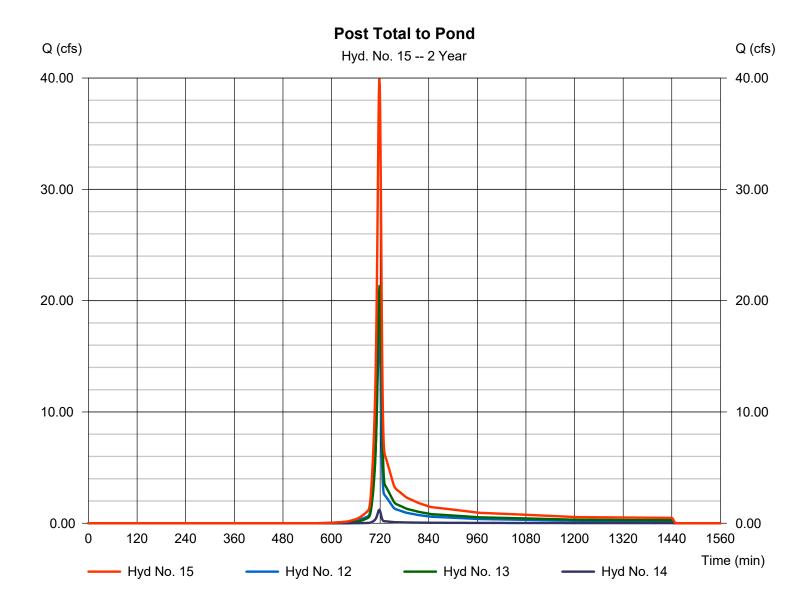
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### Hyd. No. 15

Post Total to Pond

Hydrograph type = Combine Peak discharge = 39.94 cfsStorm frequency = 2 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 83,154 cuft Inflow hyds. = 12, 13, 14 Contrib. drain. area = 15.890 ac



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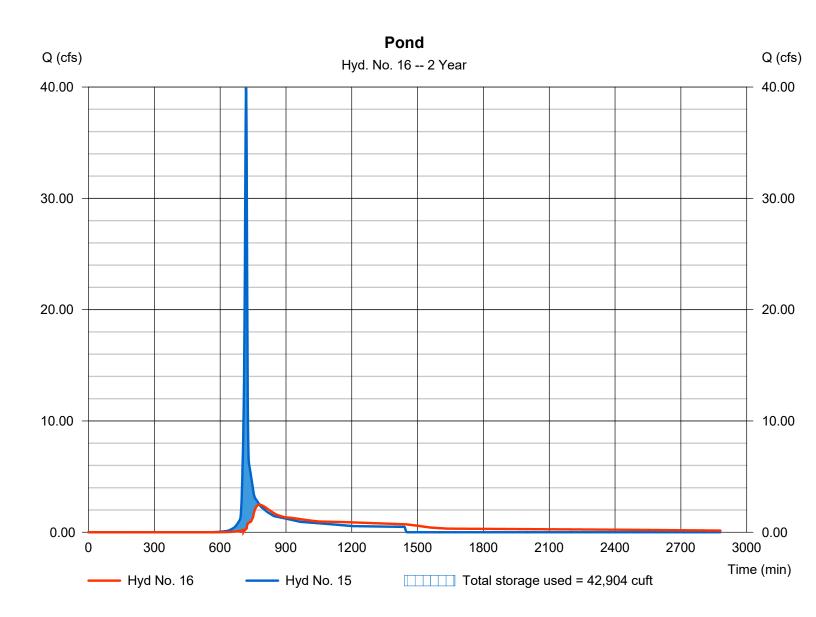
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#### **Hyd. No. 16**

Pond

Hydrograph type = Reservoir Peak discharge = 2.479 cfsStorm frequency = 2 yrsTime to peak = 779 min Time interval = 1 min Hyd. volume = 73,597 cuft= 15 - Post Total to Pond Max. Elevation = 997.77 ftInflow hyd. No. = Pond Reservoir name Max. Storage = 42,904 cuft

Storage Indication method used.



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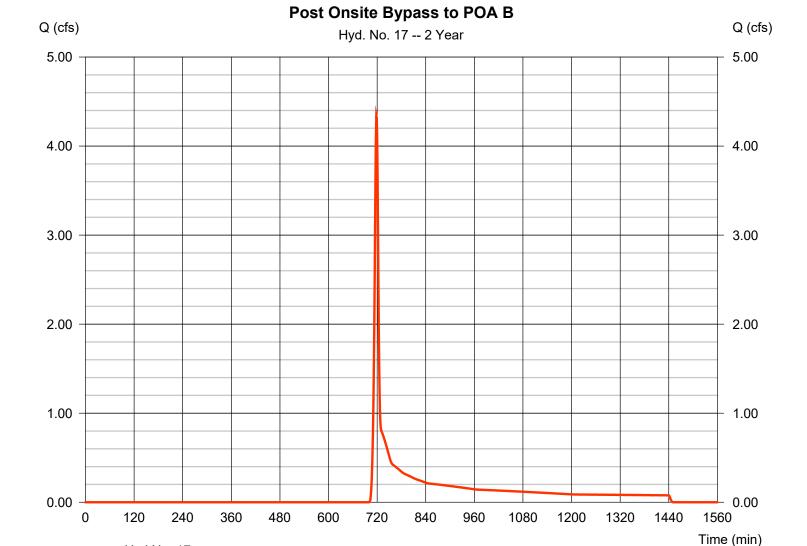
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#### Hyd. No. 17

Post Onsite Bypass to POA B

Hyd No. 17

Hydrograph type = SCS Runoff Peak discharge = 4.338 cfsStorm frequency Time to peak = 718 min = 2 yrsTime interval = 1 min Hyd. volume = 9,770 cuftDrainage area = 3.660 acCurve number = 61 Basin Slope = 0.0 %Hydraulic length = 0 ftTime of conc. (Tc) = 5.00 min Tc method = User Total precip. = 3.80 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



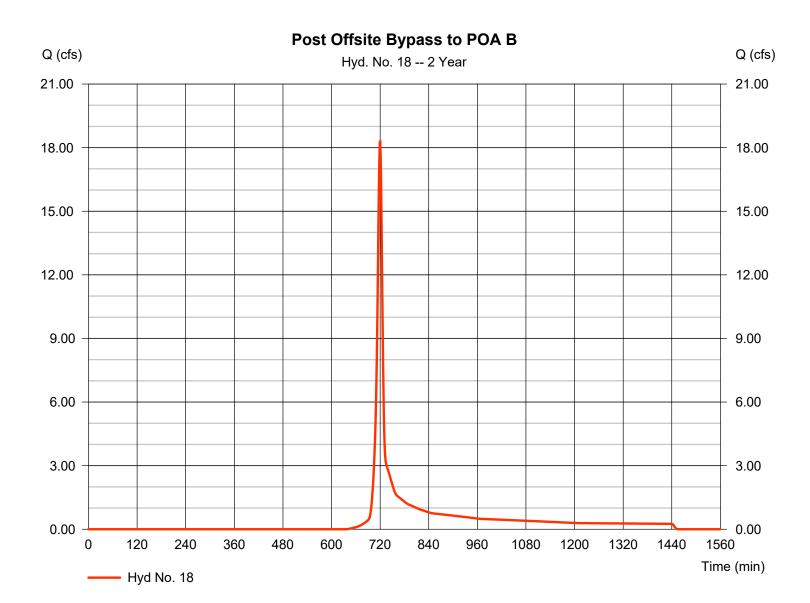
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#### **Hyd. No. 18**

Post Offsite Bypass to POA B

Hydrograph type = SCS Runoff Peak discharge = 18.34 cfsStorm frequency = 2 yrsTime to peak = 720 min Time interval = 1 min Hyd. volume = 41,882 cuft Curve number Drainage area = 8.730 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 10.00 min = User Total precip. = 3.80 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



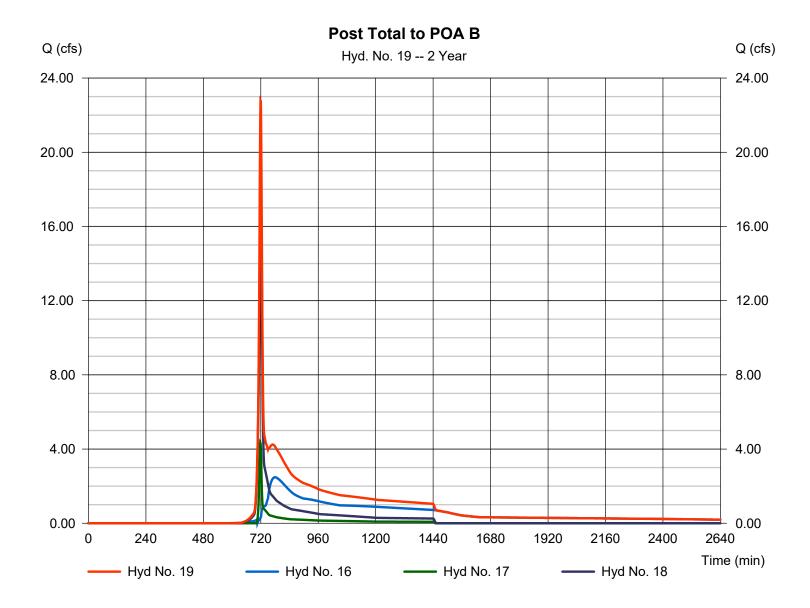
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### Hyd. No. 19

Post Total to POA B

Hydrograph type = 22.78 cfs= Combine Peak discharge Storm frequency = 2 yrsTime to peak = 719 min Time interval = 1 min Hyd. volume = 125,248 cuft = 16, 17, 18 Contrib. drain. area = 12.390 acInflow hyds.



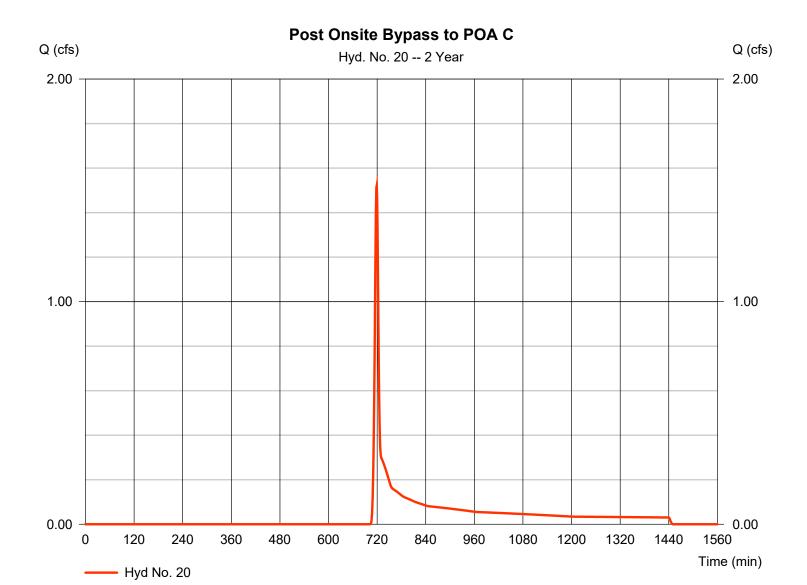
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#### Hyd. No. 20

Post Onsite Bypass to POA C

Hydrograph type = SCS Runoff Peak discharge = 1.522 cfsStorm frequency Time to peak = 719 min = 2 yrsTime interval = 1 min Hyd. volume = 3.601 cuftDrainage area = 1.550 acCurve number = 59 Basin Slope = 0.0 %Hydraulic length = 0 ftTime of conc. (Tc) = 5.00 min Tc method = User Total precip. = 3.80 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



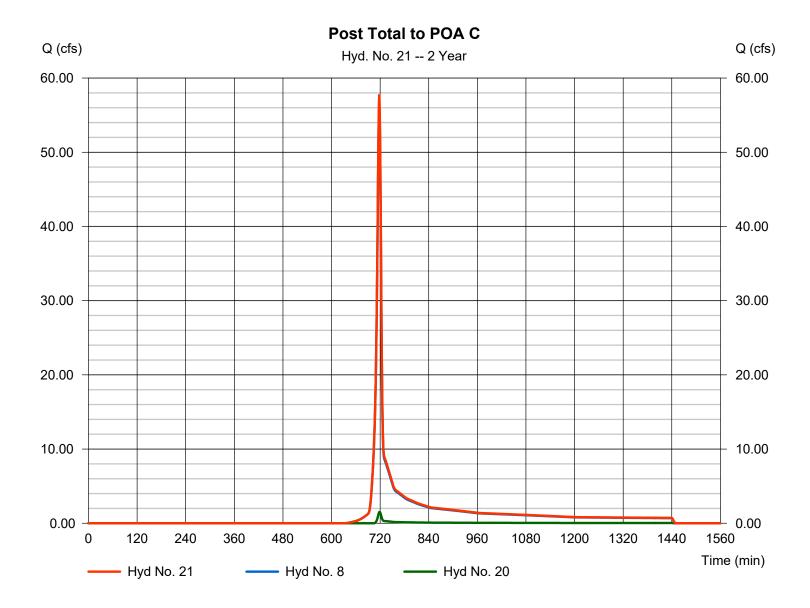
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### Hyd. No. 21

Post Total to POA C

Hydrograph type = Combine Peak discharge = 57.80 cfsTime to peak Storm frequency = 2 yrs= 718 min Time interval = 1 min Hyd. volume = 117,144 cuft Inflow hyds. Contrib. drain. area = 24.500 ac= 8, 20



# Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
	(0.19)	(5.5)	()	()	(Carry)		(1-7)	(Carry	
1	SCS Runoff	1.832	1	719	4,302				Pre Onsite to POA A
2	SCS Runoff	1.683	1	718	3,380				Pre Offsite to POA A
3	Combine	3.507	1	718	7,681	1, 2			Pre Total to POA A
4	SCS Runoff	9.075	1	719	21,310				Pre Onsite to POA B
5	SCS Runoff	54.43	1	720	123,269				Pre Offsite to POA B
6	Combine	63.28	1	719	144,578	4, 5			Pre Total to POA B
7	SCS Runoff	2.736	1	719	6,424				Pre Onsite to POA C
8	SCS Runoff	78.84	1	718	158,297				Pre/Post Offsite to POA C
9	Combine	81.56	1	718	164,721	7, 8			Pre Total to POA C
11	SCS Runoff	1.351	1	718	2,714				Post Onsite Bypass/Total to POA A
12	SCS Runoff	23.63	1	718	47,689				Post Onsite to Pond
13	SCS Runoff	30.00	1	719	63,256				Post Offsite East to Pond
14	SCS Runoff	1.683	1	718	3,380				Post Offsite South to Pond
15	Combine	55.13	1	718	114,326	12, 13, 14			Post Total to Pond
16	Reservoir	10.25	1	728	104,245	15	998.44	49,390	Pond
17	SCS Runoff	7.132	1	718	15,017				Post Onsite Bypass to POA B
18	SCS Runoff	25.78	1	720	58,390				Post Offsite Bypass to POA B
19	Combine	33.49	1	719	177,653	16, 17, 18			Post Total to POA B
20	SCS Runoff	2.625	1	718	5,671				Post Onsite Bypass to POA C
21	Combine	81.46	1	718	163,968	8, 20			Post Total to POA C

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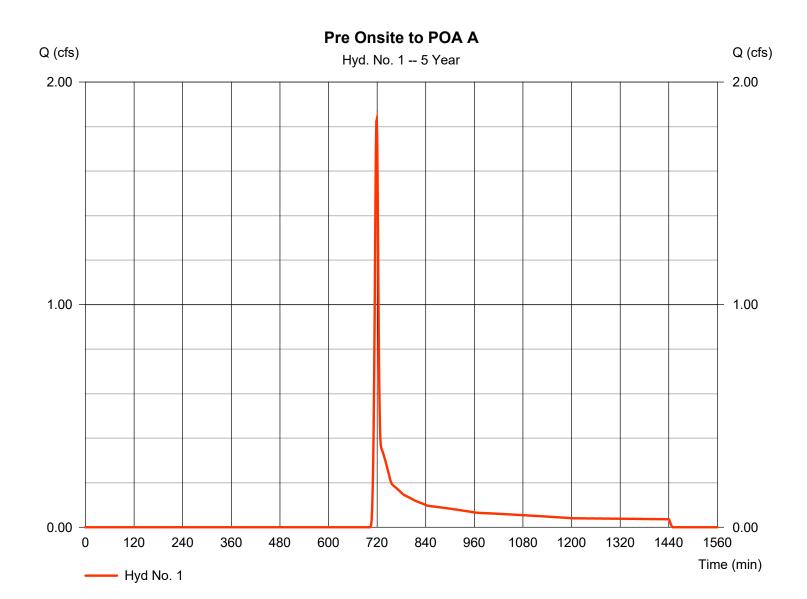
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#### Hyd. No. 1

Pre Onsite to POA A

Hydrograph type = SCS Runoff Peak discharge = 1.832 cfsStorm frequency = 5 yrsTime to peak = 719 min Time interval = 1 min Hyd. volume = 4,302 cuftCurve number Drainage area = 1.520 ac= 55 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 4.53 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



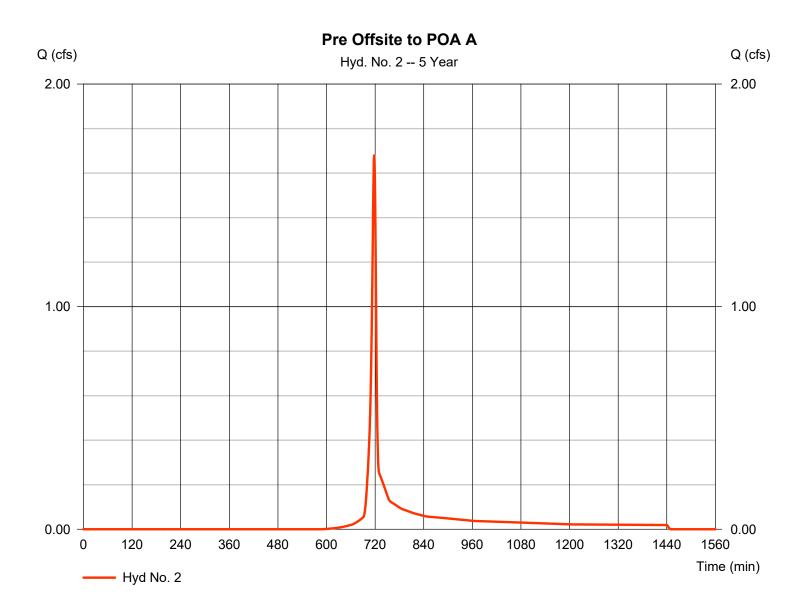
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#### Hyd. No. 2

Pre Offsite to POA A

Hydrograph type = SCS Runoff Peak discharge = 1.683 cfsStorm frequency = 5 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 3.380 cuft = 72 Curve number Drainage area = 0.490 acBasin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 4.53 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



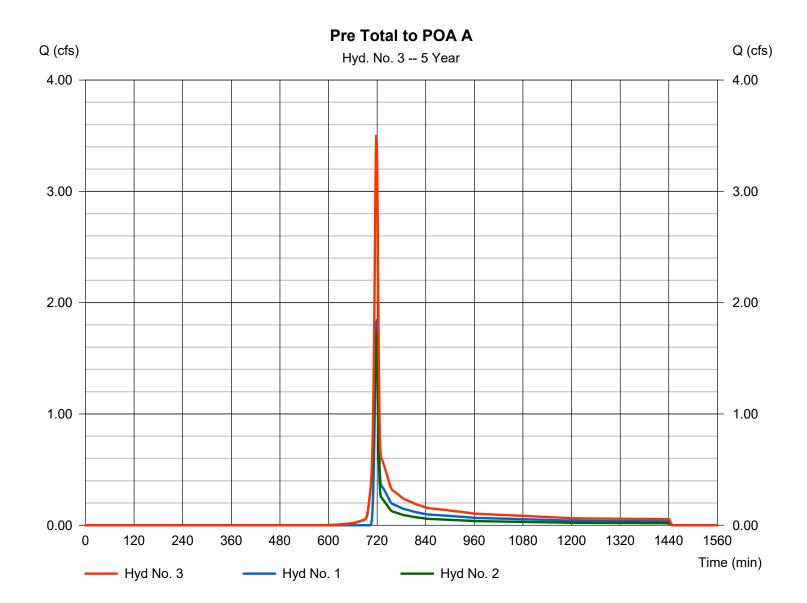
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### Hyd. No. 3

Pre Total to POA A

Hydrograph type = Combine Peak discharge = 3.507 cfsStorm frequency = 5 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 7,681 cuft Inflow hyds. Contrib. drain. area = 2.010 ac= 1, 2



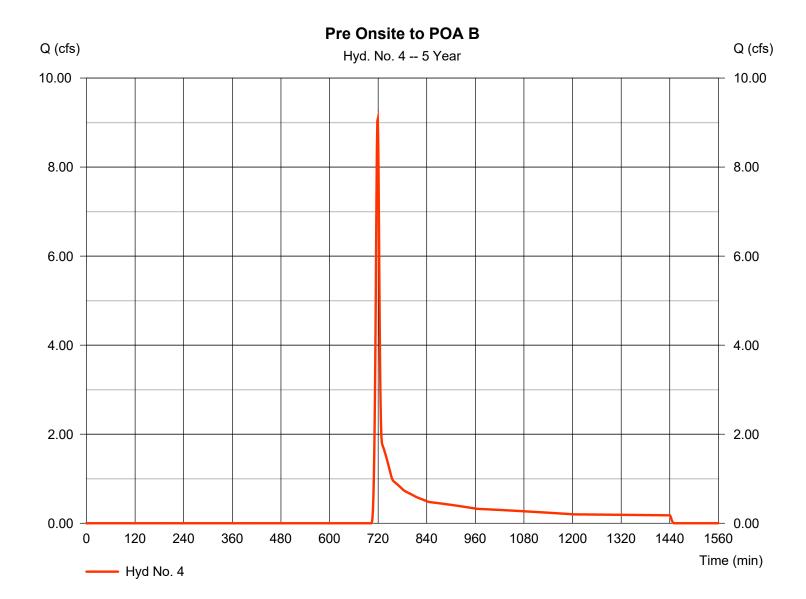
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#### Hyd. No. 4

Pre Onsite to POA B

Hydrograph type = SCS Runoff Peak discharge  $= 9.075 \, \text{cfs}$ Storm frequency = 5 yrsTime to peak = 719 min Time interval = 1 min Hyd. volume = 21,310 cuft = 7.530 acCurve number Drainage area = 55 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 4.53 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



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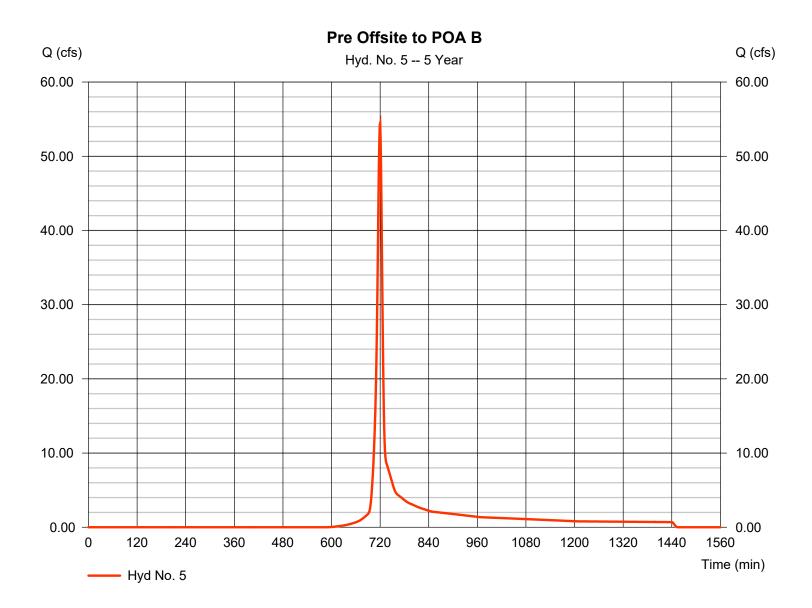
#### Hyd. No. 5

Pre Offsite to POA B

Hydrograph type= SCS RunoffPeak discharge= 54.43 cfsStorm frequency= 5 yrsTime to peak= 720 minTime interval= 1 minHyd. volume= 123,269 cuft

Drainage area = 18.430 ac Curve number = 72 Basin Slope = 0.0 % Hydraulic length = 0.0 ft

Tc method = User Time of conc. (Tc) = 10.00 min
Total precip. = 4.53 in Distribution = Type II
Storm duration = 24 hrs Shape factor = 484



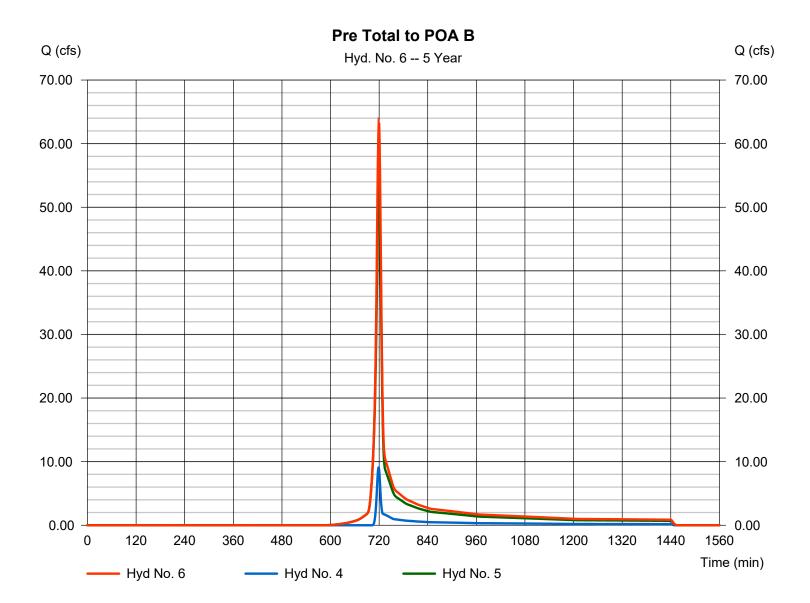
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#### Hyd. No. 6

Pre Total to POA B

Hydrograph type = Combine Peak discharge = 63.28 cfsStorm frequency Time to peak = 5 yrs= 719 min Time interval = 1 min Hyd. volume = 144,578 cuft Inflow hyds. = 4, 5 Contrib. drain. area = 25.960 ac



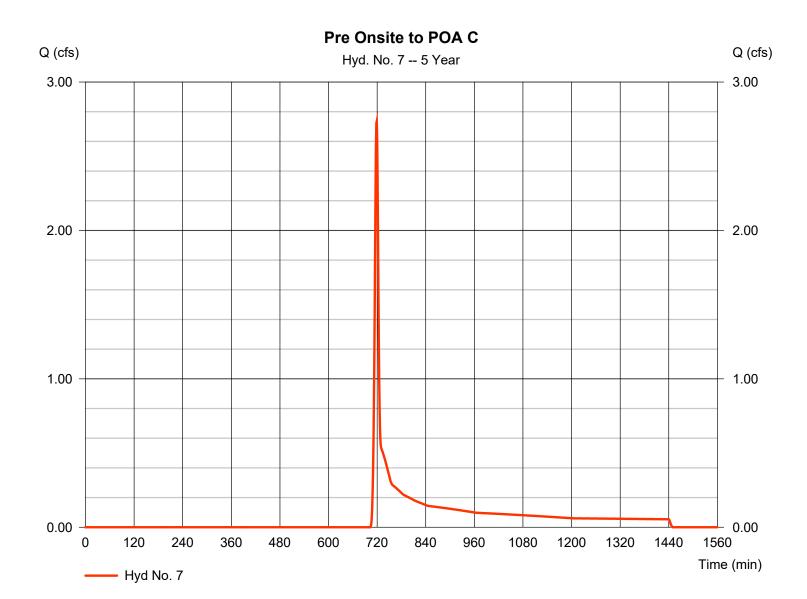
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#### Hyd. No. 7

Pre Onsite to POA C

Hydrograph type = 2.736 cfs= SCS Runoff Peak discharge Storm frequency = 5 yrsTime to peak = 719 min Time interval = 1 min Hyd. volume = 6.424 cuft Curve number Drainage area = 2.270 ac= 55 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 4.53 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



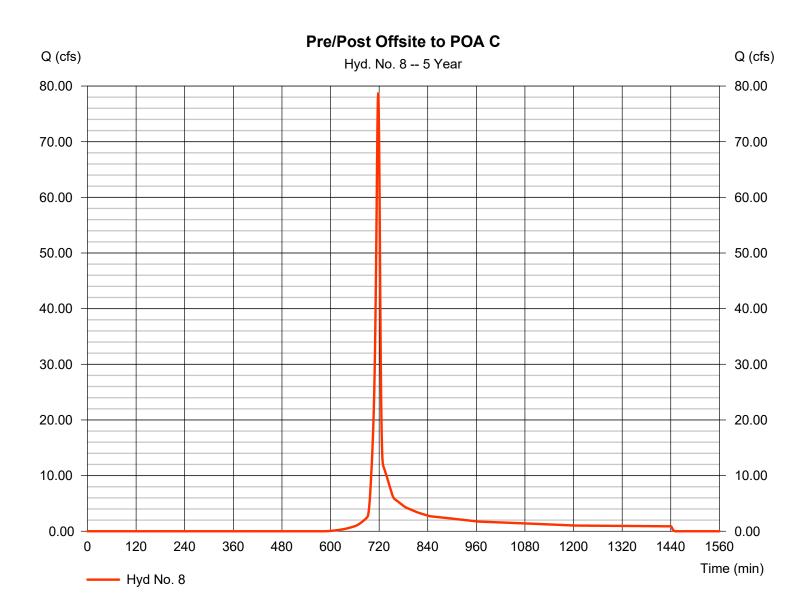
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#### Hyd. No. 8

Pre/Post Offsite to POA C

Hydrograph type = SCS Runoff Peak discharge = 78.84 cfsStorm frequency Time to peak = 718 min = 5 yrsTime interval = 1 min Hyd. volume = 158,297 cuft Curve number Drainage area = 22.950 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 4.53 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



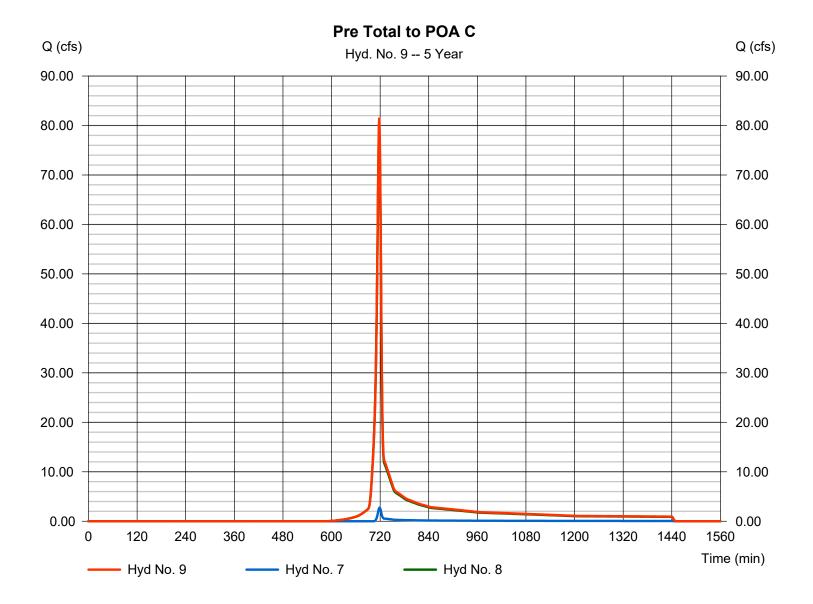
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#### Hyd. No. 9

Pre Total to POA C

Hydrograph type = Combine Peak discharge = 81.56 cfsStorm frequency Time to peak = 5 yrs= 718 min Time interval = 1 min Hyd. volume = 164,721 cuft Inflow hyds. = 7,8 Contrib. drain. area = 25.220 ac



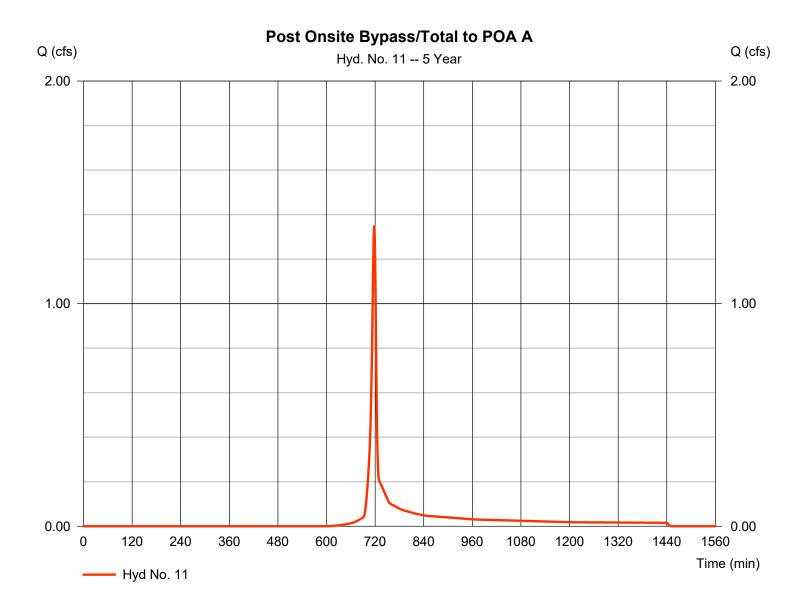
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#### Hyd. No. 11

Post Onsite Bypass/Total to POA A

Hydrograph type = SCS Runoff Peak discharge = 1.351 cfsStorm frequency Time to peak = 718 min = 5 yrsTime interval = 1 min Hyd. volume = 2.714 cuftCurve number = 71 Drainage area = 0.410 acBasin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 4.53 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



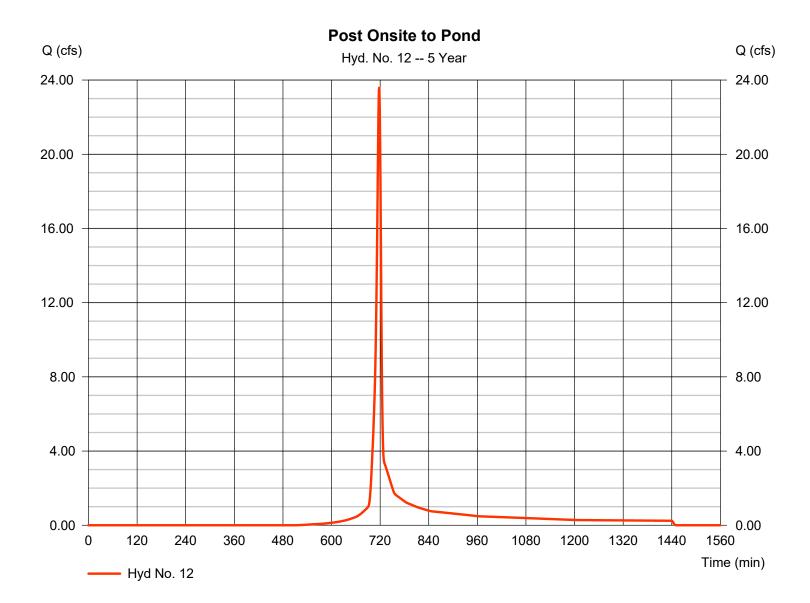
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#### Hyd. No. 12

Post Onsite to Pond

Hydrograph type = SCS Runoff Peak discharge = 23.63 cfsStorm frequency = 5 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 47,689 cuft Drainage area Curve number = 5.700 ac= 77 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 4.53 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



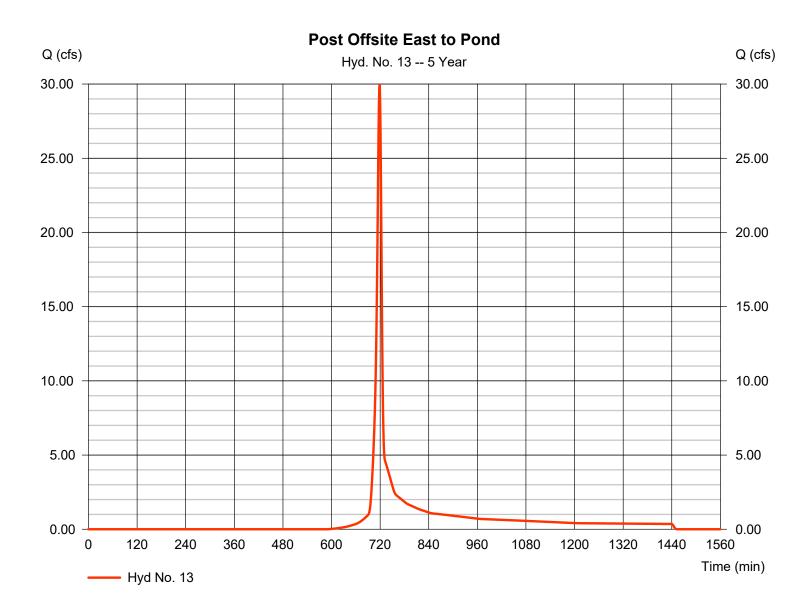
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#### Hyd. No. 13

Post Offsite East to Pond

Hydrograph type = SCS Runoff Peak discharge = 30.00 cfsStorm frequency Time to peak = 719 min = 5 yrsTime interval = 1 min Hyd. volume = 63,256 cuft Curve number Drainage area = 9.700 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 8.00 min = User Total precip. = 4.53 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



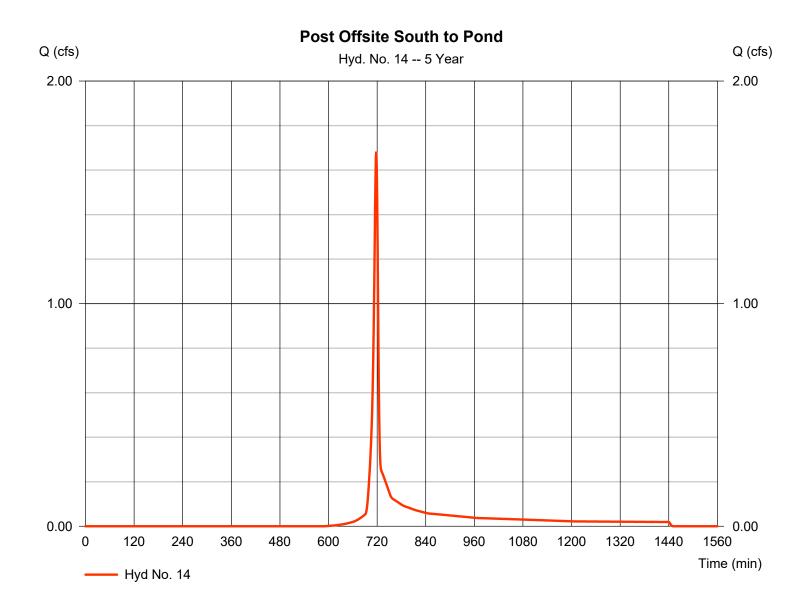
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#### Hyd. No. 14

Post Offsite South to Pond

Hydrograph type = SCS Runoff Peak discharge = 1.683 cfsStorm frequency Time to peak = 718 min = 5 yrsTime interval = 1 min Hyd. volume = 3.380 cuft = 72 Curve number Drainage area = 0.490 ac= 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 5.00 min = User Total precip. = 4.53 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



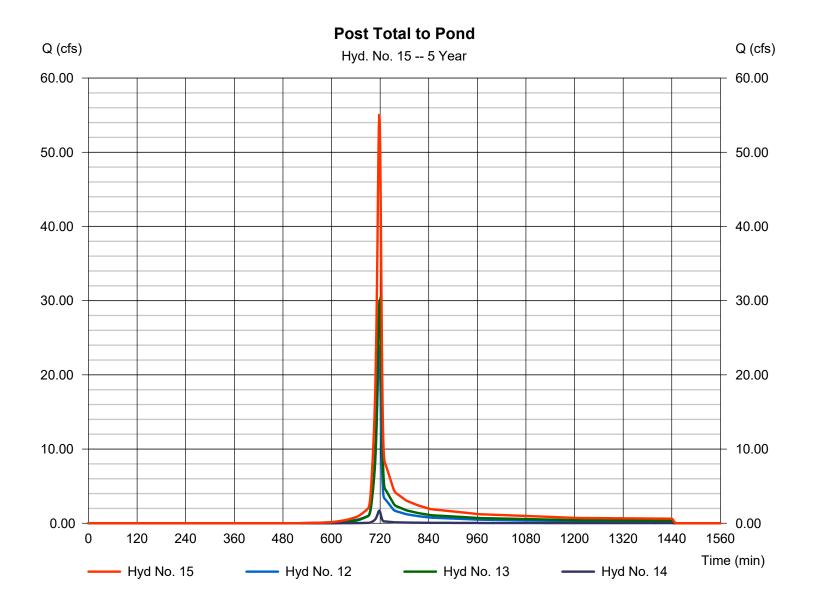
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#### Hyd. No. 15

Post Total to Pond

Hydrograph type = Combine Peak discharge = 55.13 cfsTime to peak Storm frequency = 5 yrs= 718 min Time interval = 1 min Hyd. volume = 114,326 cuft Inflow hyds. = 12, 13, 14 Contrib. drain. area = 15.890 ac



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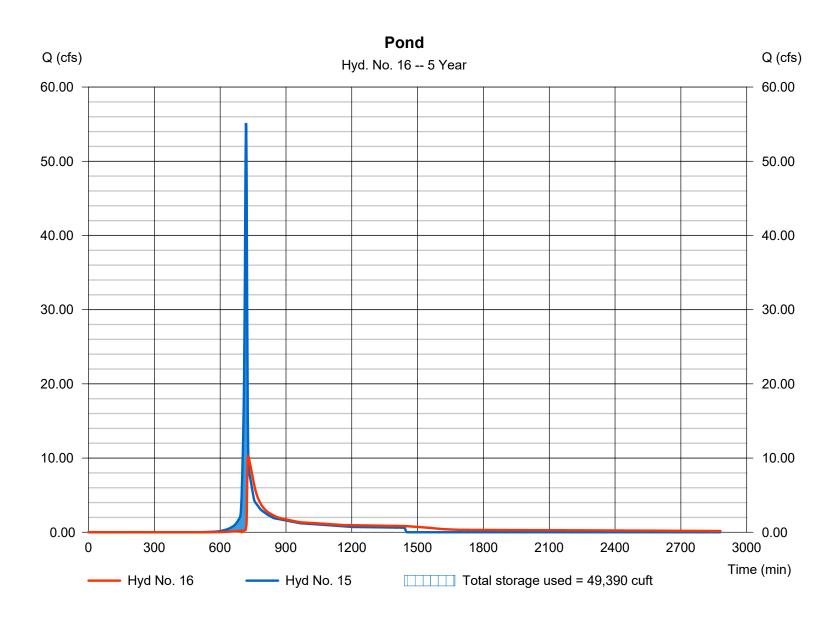
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#### **Hyd. No. 16**

Pond

Hydrograph type = Reservoir Peak discharge = 10.25 cfsStorm frequency = 5 yrsTime to peak = 728 min Time interval = 1 min Hyd. volume = 104,245 cuft = 15 - Post Total to Pond Max. Elevation Inflow hyd. No. = 998.44 ft= Pond Reservoir name Max. Storage = 49,390 cuft

Storage Indication method used.



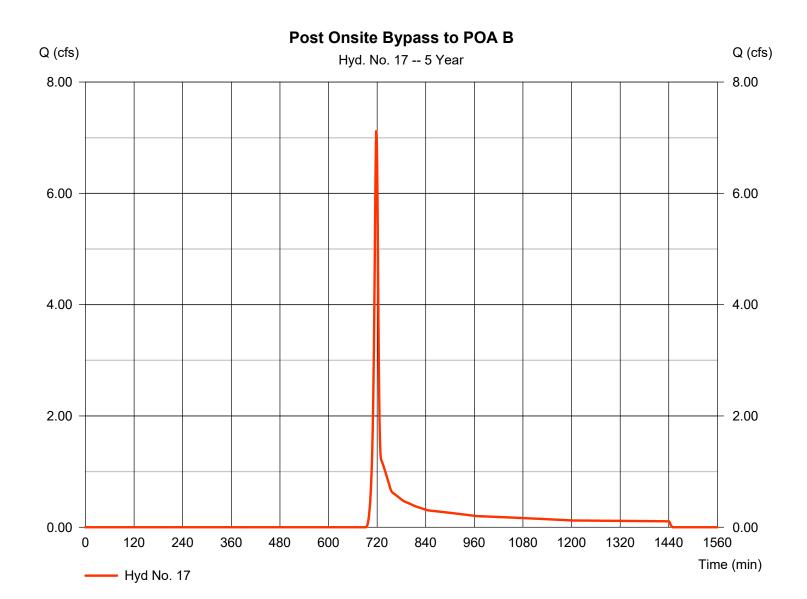
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#### Hyd. No. 17

Post Onsite Bypass to POA B

Hydrograph type = SCS Runoff Peak discharge = 7.132 cfsStorm frequency Time to peak = 718 min = 5 yrsTime interval = 1 min Hyd. volume = 15,017 cuftCurve number = 61 Drainage area = 3.660 acBasin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 4.53 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



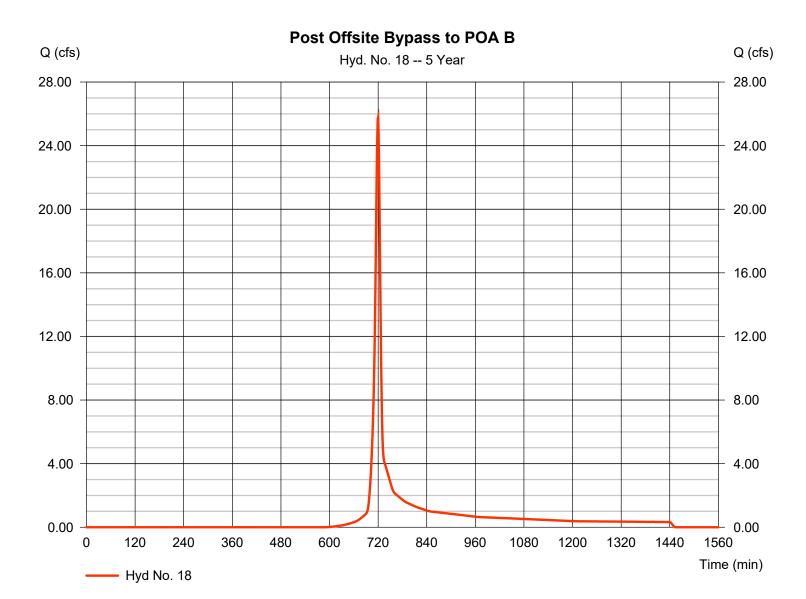
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#### **Hyd. No. 18**

Post Offsite Bypass to POA B

Hydrograph type = SCS Runoff Peak discharge = 25.78 cfsStorm frequency Time to peak = 720 min = 5 yrsTime interval = 1 min Hyd. volume = 58,390 cuftCurve number Drainage area = 8.730 ac= 72 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = User  $= 10.00 \, \text{min}$ Total precip. = 4.53 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



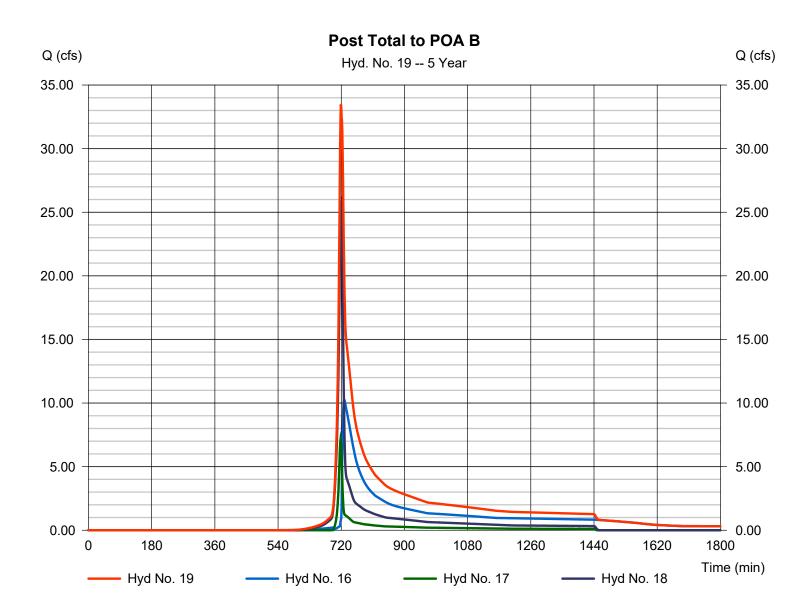
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#### Hyd. No. 19

Post Total to POA B

Hydrograph type = Combine Peak discharge = 33.49 cfsStorm frequency = 5 yrsTime to peak = 719 min Time interval = 1 min Hyd. volume = 177,653 cuft Inflow hyds. = 16, 17, 18 Contrib. drain. area = 12.390 ac



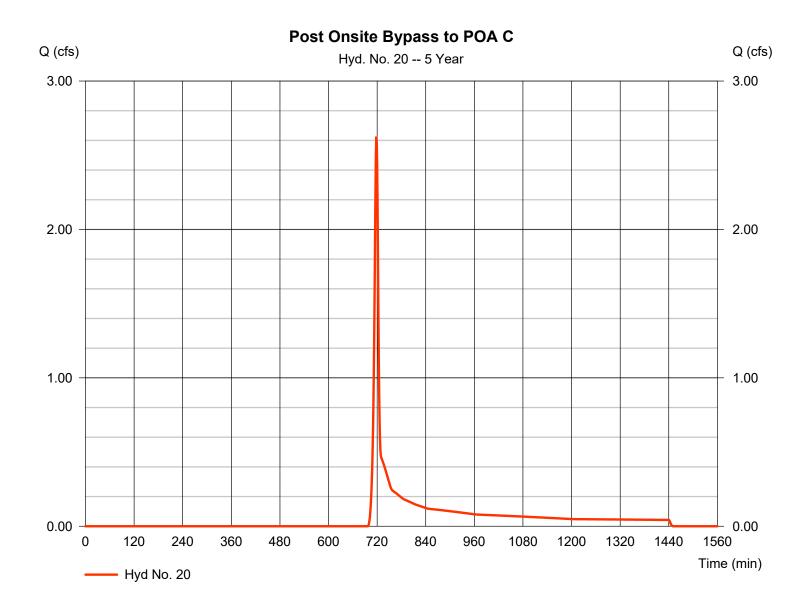
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#### Hyd. No. 20

Post Onsite Bypass to POA C

Hydrograph type = SCS Runoff Peak discharge = 2.625 cfsStorm frequency Time to peak = 718 min = 5 yrsTime interval = 1 min Hyd. volume = 5.671 cuftCurve number Drainage area = 1.550 ac= 59 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 4.53 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



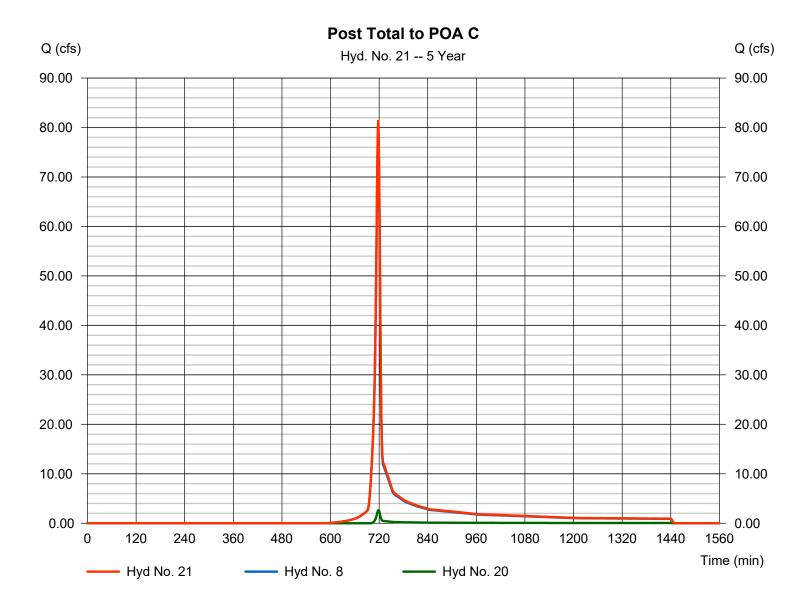
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#### Hyd. No. 21

Post Total to POA C

Hydrograph type = Combine Peak discharge = 81.46 cfsStorm frequency Time to peak = 5 yrs= 718 min Time interval = 1 min Hyd. volume = 163,968 cuft Inflow hyds. Contrib. drain. area = 24.500 ac = 8, 20



# Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	2.774	1	718	6,064				Pre Onsite to POA A
2	SCS Runoff	2.126	1	718	4,273				Pre Offsite to POA A
3	Combine	4.899	1	718	10,337	1, 2			Pre Total to POA A
4	SCS Runoff	13.74	1	718	30,042				Pre Onsite to POA B
5	SCS Runoff	68.89	1	720	155,852				Pre Offsite to POA B
6	Combine	82.41	1	719	185,895	4, 5			Pre Total to POA B
7	SCS Runoff	4.142	1	718	9,057				Pre Onsite to POA C
8	SCS Runoff	99.55	1	718	200,140				Pre/Post Offsite to POA C
9	Combine	103.70	1	718	209,196	7, 8			Pre Total to POA C
11	SCS Runoff	1.716	1	718	3,447				Post Onsite Bypass/Total to POA A
12	SCS Runoff	29.06	1	718	59,016				Post Onsite to Pond
13	SCS Runoff	37.90	1	719	79,977				Post Offsite East to Pond
14	SCS Runoff	2.126	1	718	4,273				Post Offsite South to Pond
15	Combine	69.00	1	718	143,266	12, 13, 14			Post Total to Pond
16	Reservoir	25.01	1	725	132,825	15	999.28	58,076	Pond
17	SCS Runoff	9.828	1	718	20,172				Post Onsite Bypass to POA B
18	SCS Runoff	32.63	1	720	73,825				Post Offsite Bypass to POA B
19	Combine	56.52	1	722	226,822	16, 17, 18			Post Total to POA B
20	SCS Runoff	3.711	1	718	7,728				Post Onsite Bypass to POA C
21	Combine	103.26	1	718	207,868	8, 20			Post Total to POA C

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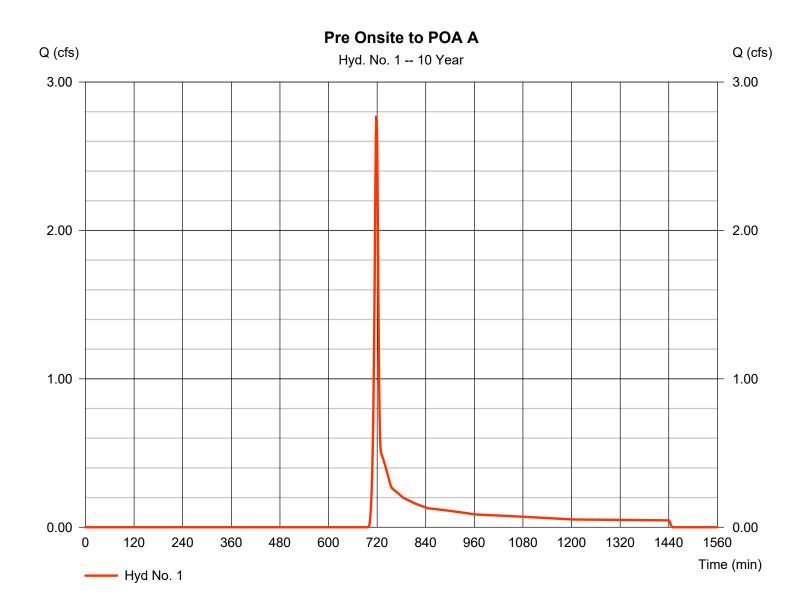
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#### Hyd. No. 1

Pre Onsite to POA A

Hydrograph type = 2.774 cfs= SCS Runoff Peak discharge Storm frequency = 10 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 6,064 cuft Curve number Drainage area = 1.520 ac= 55 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 5.17 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



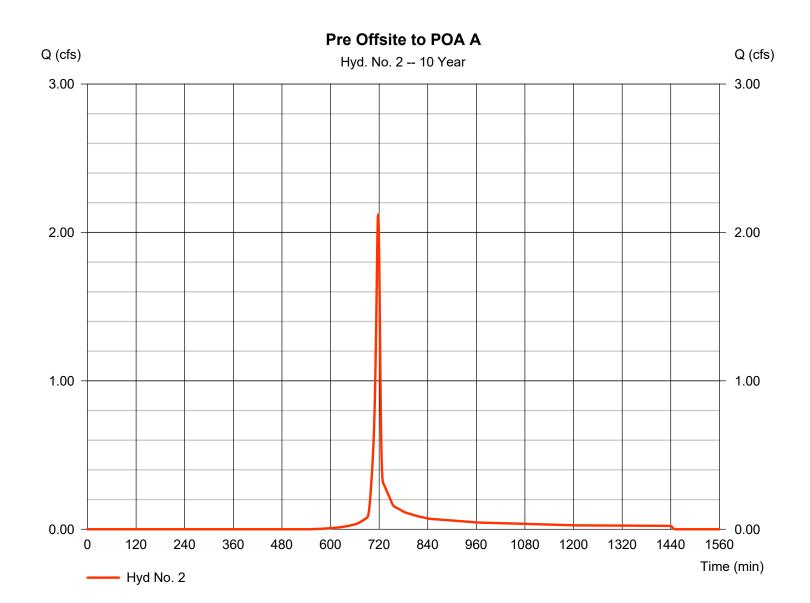
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#### Hyd. No. 2

Pre Offsite to POA A

Hydrograph type = SCS Runoff Peak discharge = 2.126 cfsStorm frequency = 10 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 4,273 cuft Curve number = 72 Drainage area = 0.490 acBasin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 5.17 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



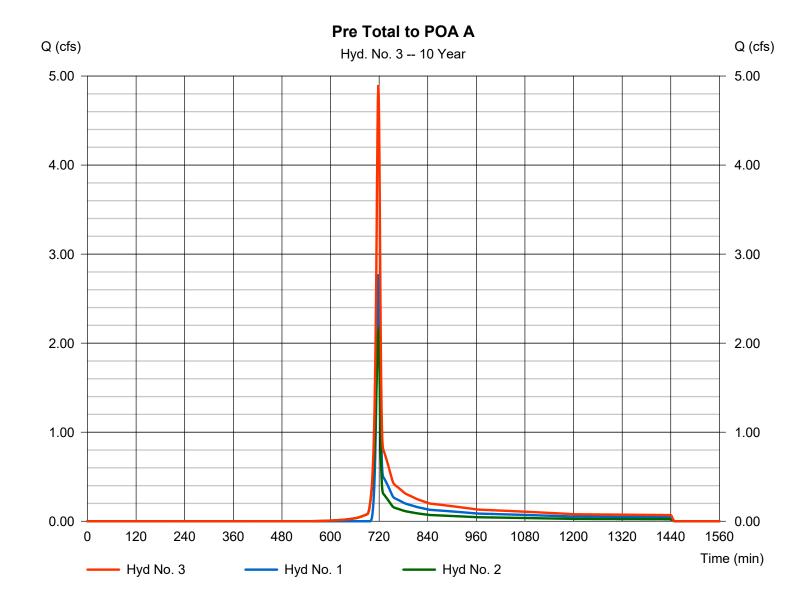
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#### Hyd. No. 3

Pre Total to POA A

Hydrograph type = Combine Peak discharge = 4.899 cfsStorm frequency = 10 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 10,337 cuftInflow hyds. Contrib. drain. area = 2.010 ac= 1, 2



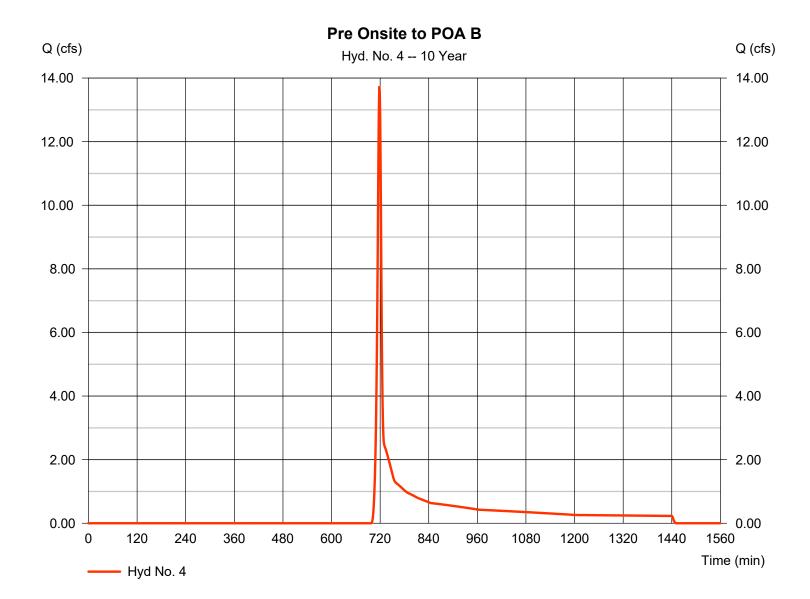
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#### Hyd. No. 4

Pre Onsite to POA B

Hydrograph type = SCS Runoff Peak discharge = 13.74 cfsStorm frequency = 10 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 30.042 cuft Drainage area Curve number = 7.530 ac= 55 Hydraulic length Basin Slope = 0.0 %= 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 5.17 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



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= 24 hrs

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= 484

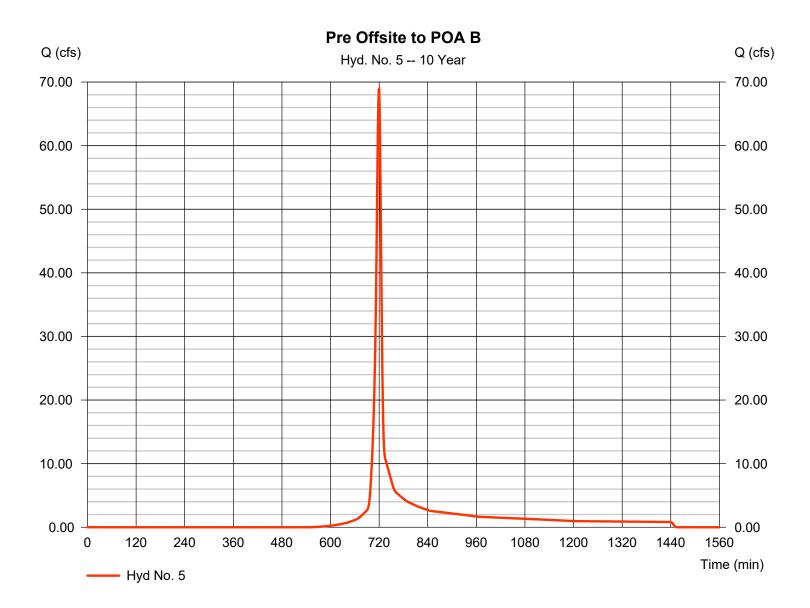
#### Hyd. No. 5

Storm duration

Pre Offsite to POA B

Hydrograph type = SCS Runoff Peak discharge = 68.89 cfsStorm frequency = 10 yrsTime to peak = 720 min Time interval = 1 min Hyd. volume = 155,852 cuft Drainage area Curve number = 18.430 ac= 72 Hydraulic length = 0 ftBasin Slope = 0.0 %Tc method Time of conc. (Tc) = 10.00 min = User Total precip. = 5.17 inDistribution = Type II

Shape factor



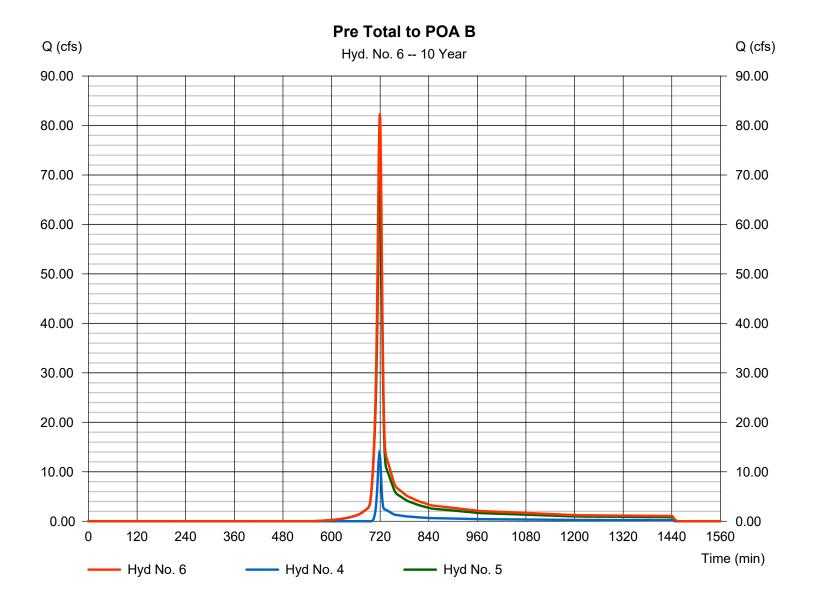
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#### Hyd. No. 6

Pre Total to POA B

Hydrograph type = Combine Peak discharge  $= 82.41 \, \text{cfs}$ Storm frequency Time to peak = 10 yrs= 719 min Time interval = 1 min Hyd. volume = 185,895 cuft Inflow hyds. = 4, 5 Contrib. drain. area = 25.960 ac



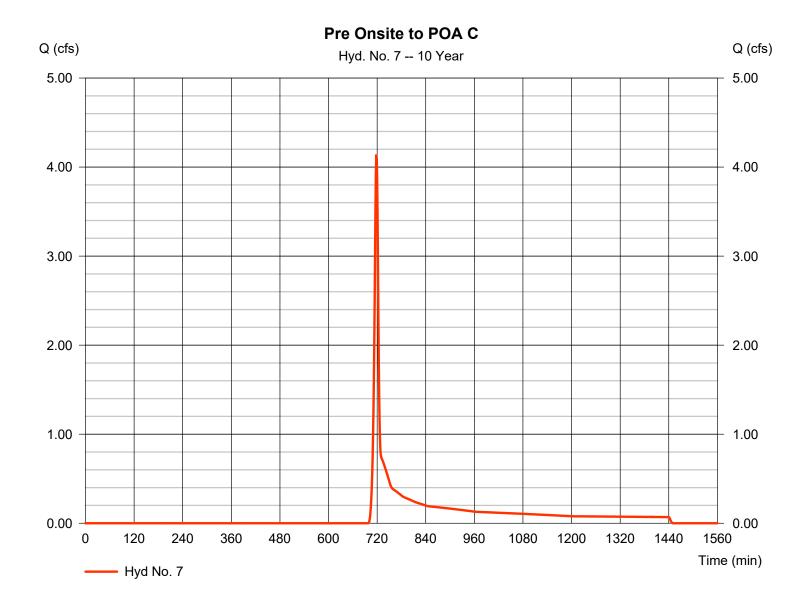
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#### Hyd. No. 7

Pre Onsite to POA C

Hydrograph type = SCS Runoff Peak discharge = 4.142 cfsStorm frequency = 10 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 9.057 cuftCurve number Drainage area = 2.270 ac= 55 Basin Slope = 0.0 %Hydraulic length = 0 ftTime of conc. (Tc) = 5.00 min Tc method = User Total precip. = 5.17 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



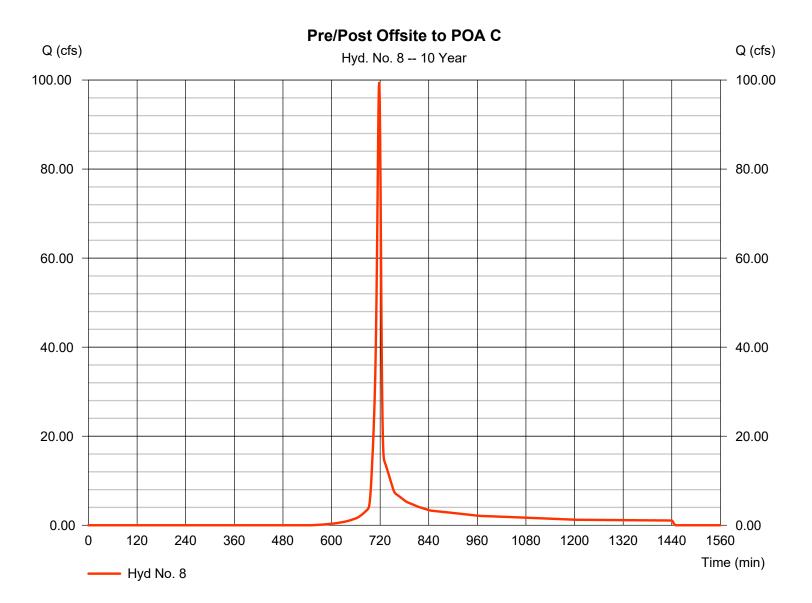
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#### Hyd. No. 8

Pre/Post Offsite to POA C

Hydrograph type = SCS Runoff Peak discharge = 99.55 cfsStorm frequency = 10 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 200.140 cuft Curve number Drainage area = 22.950 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 5.00 min = User Total precip. = 5.17 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



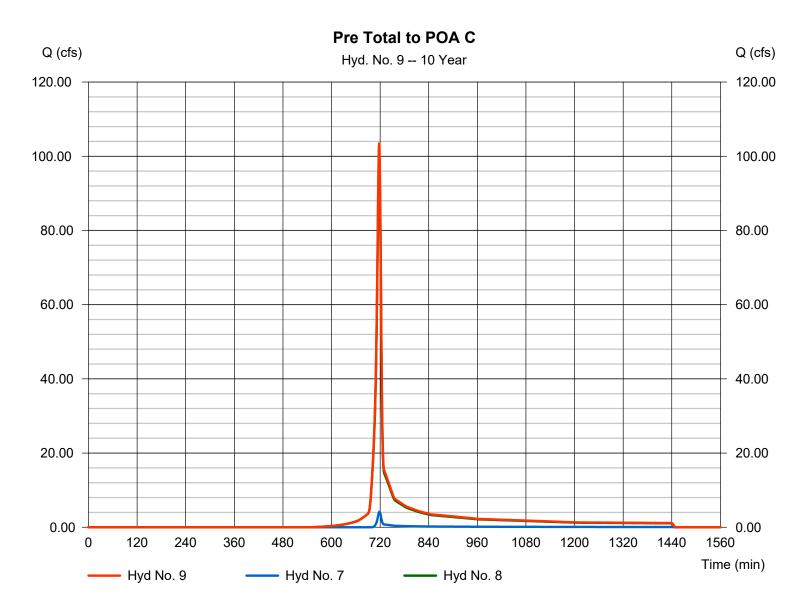
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#### Hyd. No. 9

Pre Total to POA C

Hydrograph type = Combine Peak discharge = 103.70 cfsTime to peak Storm frequency = 10 yrs= 718 min Time interval = 1 min Hyd. volume = 209,196 cuft Inflow hyds. = 7,8 Contrib. drain. area = 25.220 ac



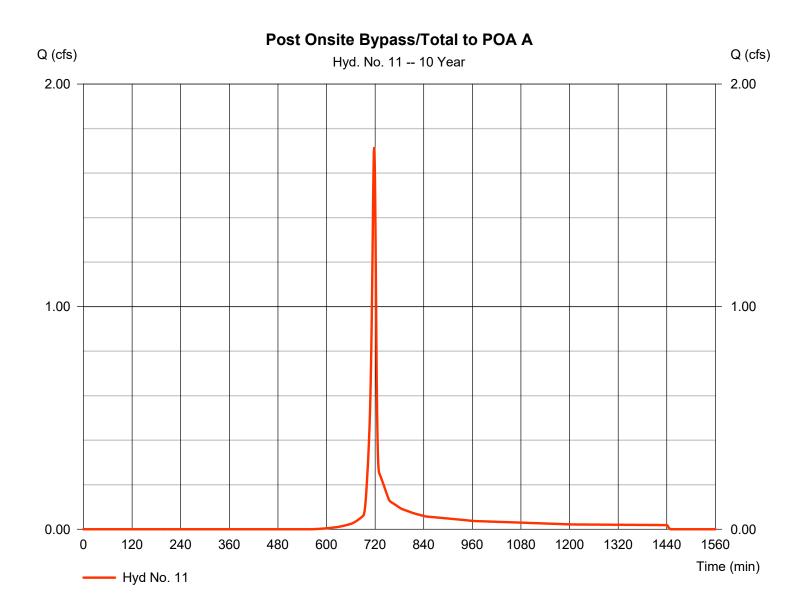
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#### Hyd. No. 11

Post Onsite Bypass/Total to POA A

= 1.716 cfsHydrograph type = SCS Runoff Peak discharge Storm frequency = 10 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 3.447 cuftCurve number Drainage area = 0.410 ac= 71 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 5.17 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



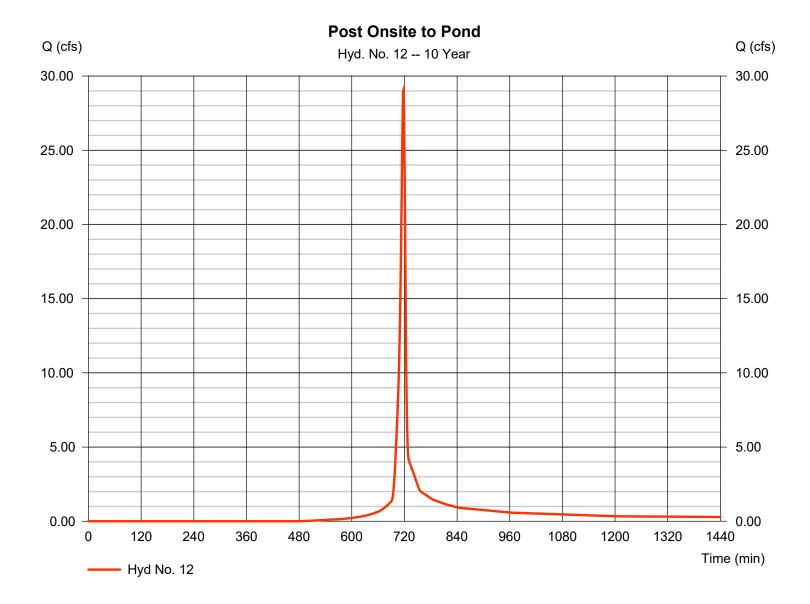
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#### Hyd. No. 12

Post Onsite to Pond

Hydrograph type = SCS Runoff Peak discharge = 29.06 cfsStorm frequency = 10 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 59.016 cuftDrainage area Curve number = 5.700 ac= 77 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 5.17 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



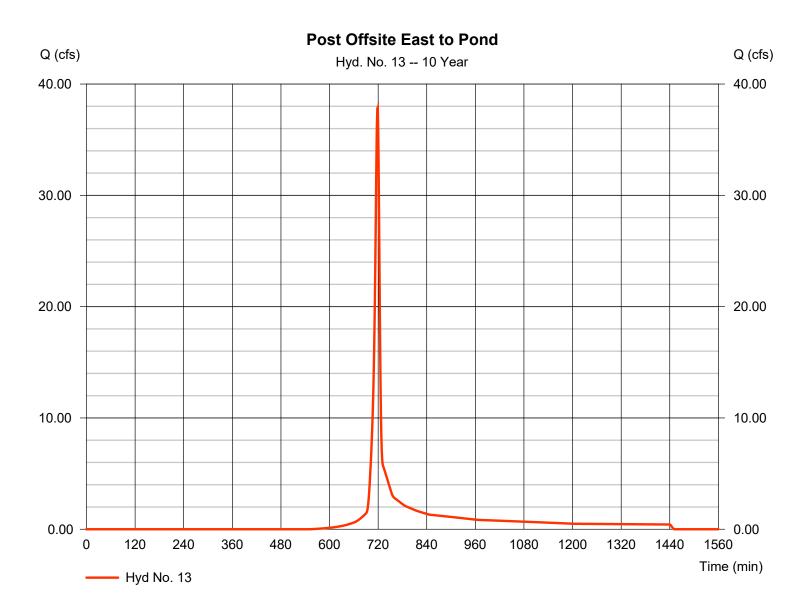
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#### Hyd. No. 13

Post Offsite East to Pond

Hydrograph type = SCS Runoff Peak discharge = 37.90 cfsStorm frequency = 10 yrsTime to peak = 719 min Time interval = 1 min Hyd. volume = 79,977 cuft Drainage area Curve number = 9.700 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 8.00 min = User Total precip. = 5.17 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



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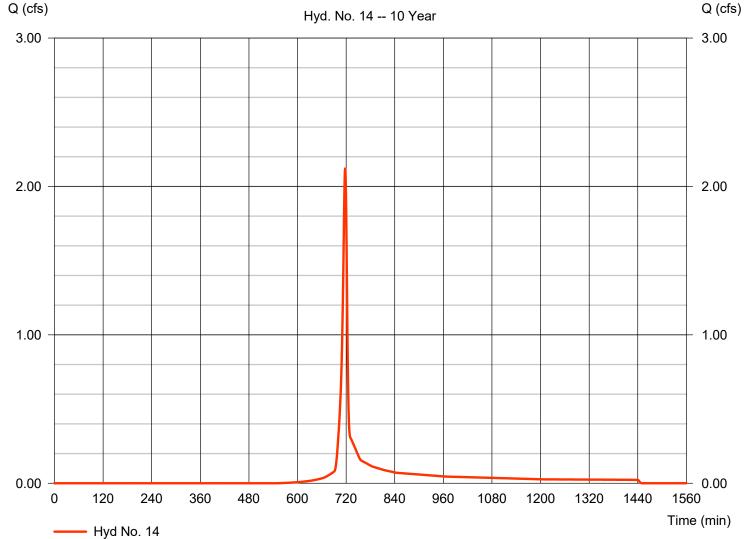
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#### Hyd. No. 14

Post Offsite South to Pond

Hydrograph type = SCS Runoff Peak discharge = 2.126 cfsStorm frequency = 10 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 4.273 cuft Curve number = 72 Drainage area = 0.490 ac= 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 5.00 min = User Total precip. = 5.17 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484





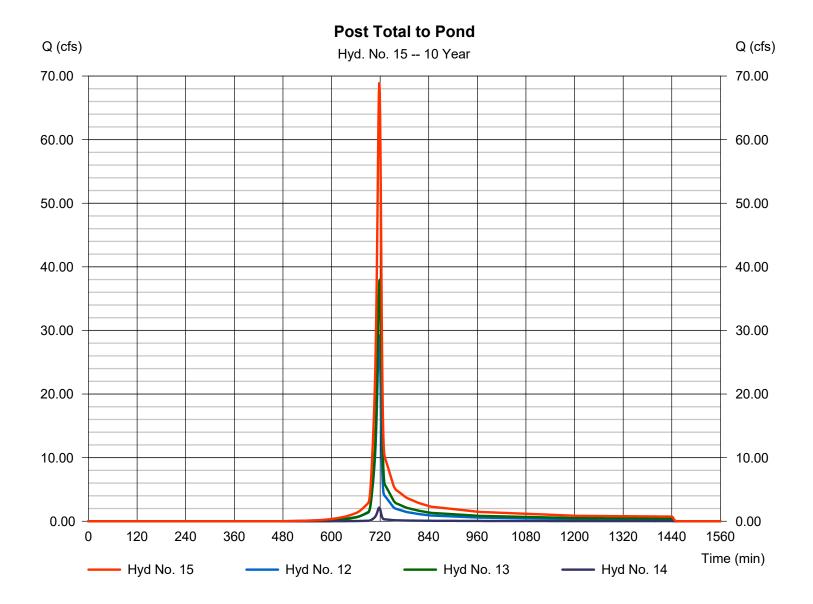
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#### Hyd. No. 15

Post Total to Pond

Hydrograph type = Combine Peak discharge = 69.00 cfsStorm frequency Time to peak = 10 yrs= 718 min Time interval = 1 min Hyd. volume = 143,266 cuft Inflow hyds. = 12, 13, 14 Contrib. drain. area = 15.890 ac



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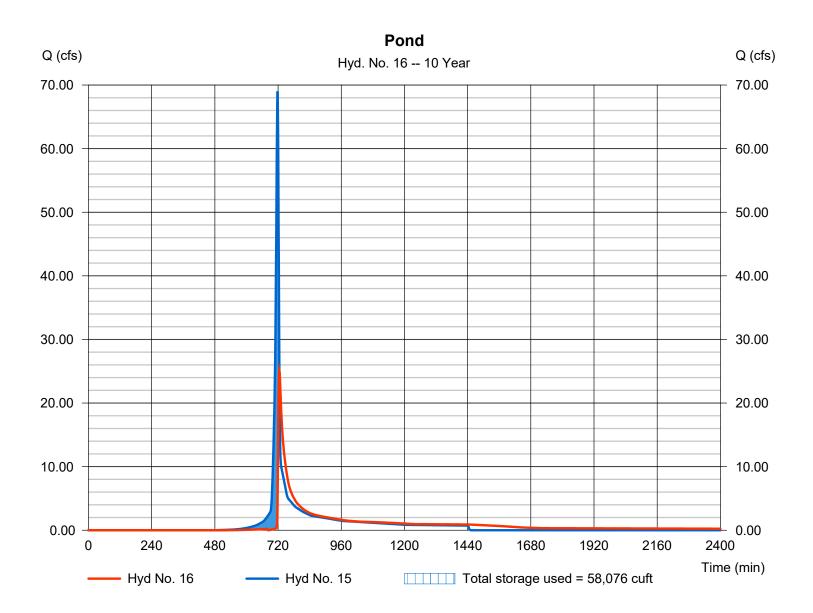
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#### **Hyd. No. 16**

Pond

Hydrograph type = Reservoir Peak discharge = 25.01 cfsStorm frequency = 10 yrsTime to peak = 725 min Time interval = 1 min Hyd. volume = 132,825 cuft Inflow hyd. No. = 15 - Post Total to Pond Max. Elevation = 999.28 ft= Pond = 58,076 cuft Reservoir name Max. Storage

Storage Indication method used.



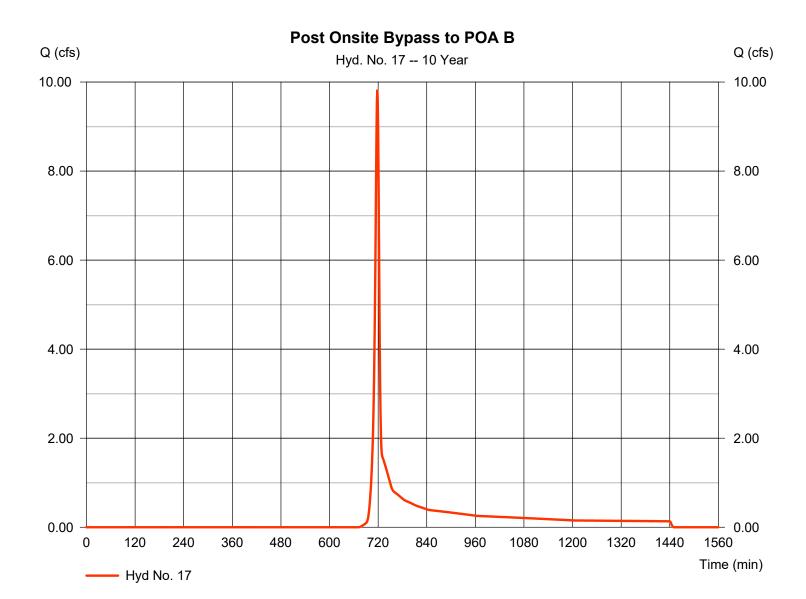
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#### Hyd. No. 17

Post Onsite Bypass to POA B

Hydrograph type = SCS Runoff Peak discharge = 9.828 cfsStorm frequency = 10 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 20.172 cuft Curve number Drainage area = 3.660 ac= 61 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 5.17 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



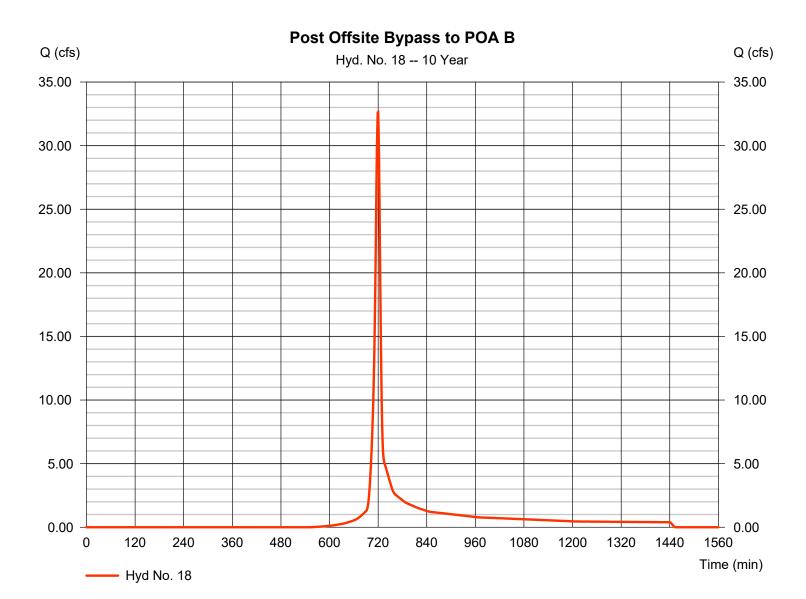
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#### **Hyd. No. 18**

Post Offsite Bypass to POA B

Hydrograph type = SCS Runoff Peak discharge = 32.63 cfsStorm frequency = 10 yrsTime to peak = 720 min Time interval = 1 min Hyd. volume = 73.825 cuft Curve number Drainage area = 8.730 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 10.00 min = User Total precip. = 5.17 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



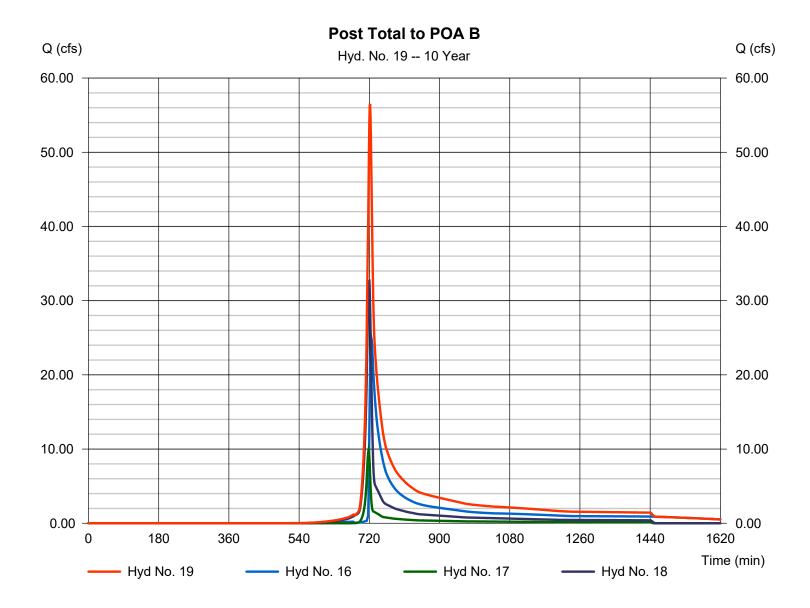
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#### Hyd. No. 19

Post Total to POA B

Hydrograph type = Combine Peak discharge = 56.52 cfsTime to peak Storm frequency = 10 yrs= 722 min Time interval = 1 min Hyd. volume = 226,822 cuft Inflow hyds. = 16, 17, 18 Contrib. drain. area = 12.390 ac



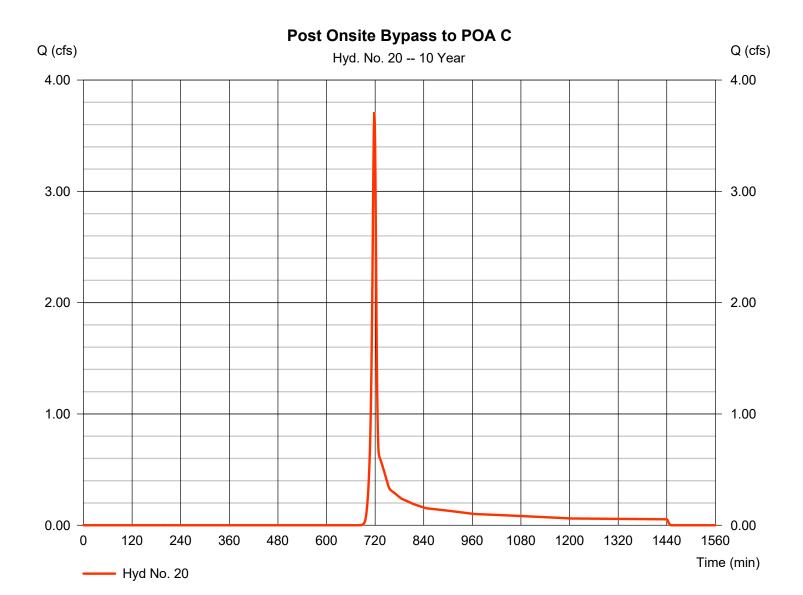
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### Hyd. No. 20

Post Onsite Bypass to POA C

Hydrograph type = SCS Runoff Peak discharge = 3.711 cfsStorm frequency = 10 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 7.728 cuftCurve number Drainage area = 1.550 ac= 59 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 5.17 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



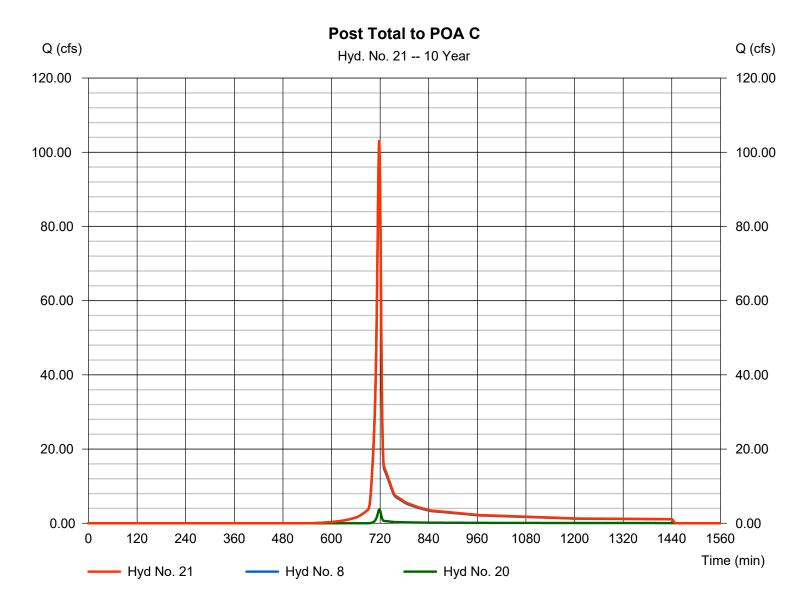
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### Hyd. No. 21

Post Total to POA C

Hydrograph type = Combine Peak discharge = 103.26 cfsStorm frequency Time to peak = 10 yrs= 718 min Time interval = 1 min Hyd. volume = 207,868 cuft Inflow hyds. Contrib. drain. area = 24.500 ac= 8, 20



# Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

Hyd.		Peak	Time	Time to	Hyd.	Inflow	Maximum	Total	AD® Civil 3D® 2014 by Autodesk, Inc. v10.  Hydrograph
No.	type (origin)	flow (cfs)	interval (min)	Peak (min)	volume (cuft)	hyd(s)	elevation (ft)	strge used (cuft)	Description
1	SCS Runoff	4.256	1	718	8,866				Pre Onsite to POA A
2	SCS Runoff	2.769	1	718	5,596				Pre Offsite to POA A
3	Combine	7.025	1	718	14,462	1, 2			Pre Total to POA A
4	SCS Runoff	21.08	1	718	43,922				Pre Onsite to POA B
5	SCS Runoff	90.21	1	719	204,086				Pre Offsite to POA B
6	Combine	110.76	1	719	248,008	4, 5			Pre Total to POA B
7	SCS Runoff	6.355	1	718	13,241				Pre Onsite to POA C
8	SCS Runoff	129.70	1	718	262,080				Pre/Post Offsite to POA C
9	Combine	136.05	1	718	275,321	7, 8			Pre Total to POA C
11	SCS Runoff	2.249	1	718	4,536				Post Onsite Bypass/Total to POA A
12	SCS Runoff	36.85	1	718	75,541				Post Onsite to Pond
13	SCS Runoff	49.48	1	718	104,728				Post Offsite East to Pond
14	SCS Runoff	2.769	1	718	5,596				Post Offsite South to Pond
15	Combine	89.10	1	718	185,865	12, 13, 14			Post Total to Pond
16	Reservoir	47.69	1	723	175,097	15	1000.28	68,892	Pond
17	SCS Runoff	13.92	1	718	28,121				Post Onsite Bypass to POA B
18	SCS Runoff	42.73	1	719	96,672				Post Offsite Bypass to POA B
19	Combine	95.51	1	721	299,890	16, 17, 18			Post Total to POA B
20	SCS Runoff	5.374	1	718	10,929				Post Onsite Bypass to POA C
21	Combine	135.07	1	718	273,009	8, 20			Post Total to POA C

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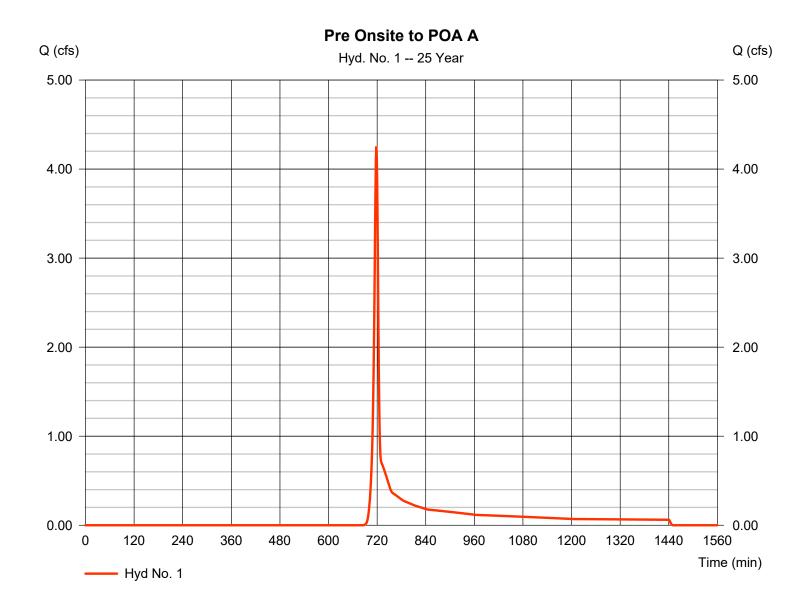
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### Hyd. No. 1

Pre Onsite to POA A

= 4.256 cfsHydrograph type = SCS Runoff Peak discharge Storm frequency = 25 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 8.866 cuft Drainage area = 1.520 acCurve number = 55 Basin Slope = 0.0 %Hydraulic length = 0 ftTime of conc. (Tc) = 5.00 min Tc method = User Total precip. = 6.07 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



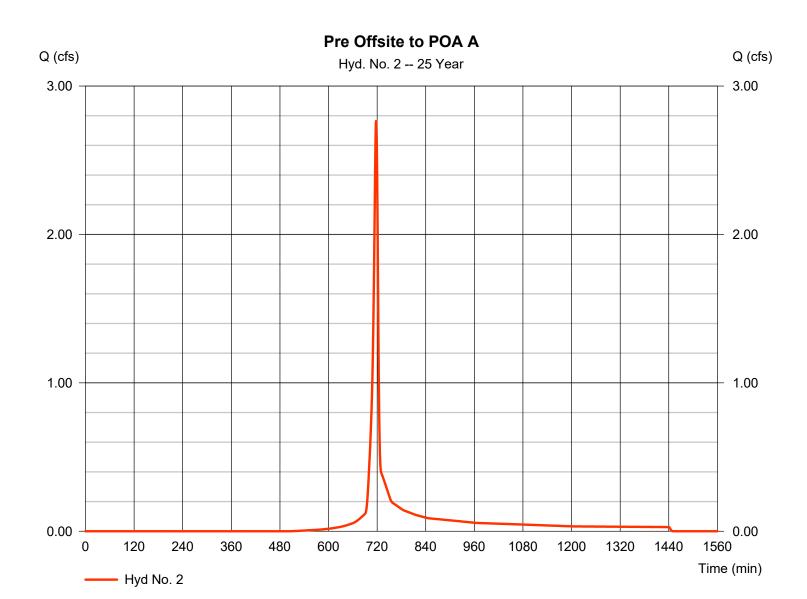
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### Hyd. No. 2

Pre Offsite to POA A

= 2.769 cfsHydrograph type = SCS Runoff Peak discharge Storm frequency = 25 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 5,596 cuftCurve number Drainage area = 0.490 ac= 72 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 6.07 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



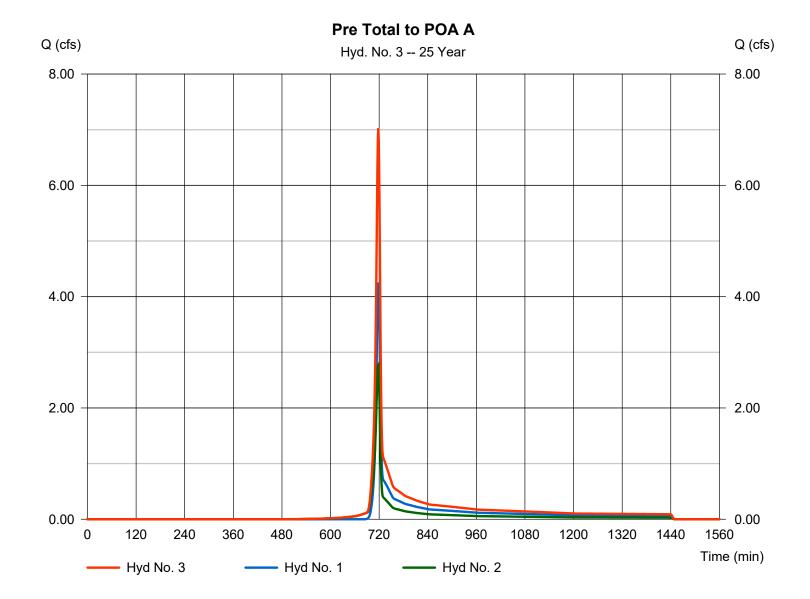
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### Hyd. No. 3

Pre Total to POA A

Hydrograph type = Combine = 7.025 cfsPeak discharge Storm frequency = 25 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 14,462 cuft Inflow hyds. Contrib. drain. area = 2.010 ac= 1, 2



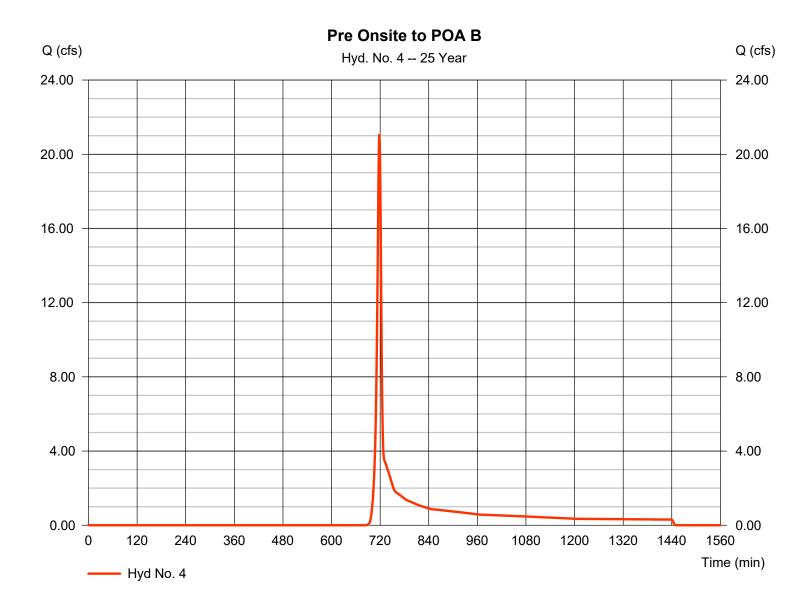
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### Hyd. No. 4

Pre Onsite to POA B

Hydrograph type = SCS Runoff Peak discharge = 21.08 cfsStorm frequency = 25 yrs Time to peak = 718 min Time interval = 1 min Hyd. volume = 43,922 cuft = 7.530 acCurve number Drainage area = 55 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 6.07 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



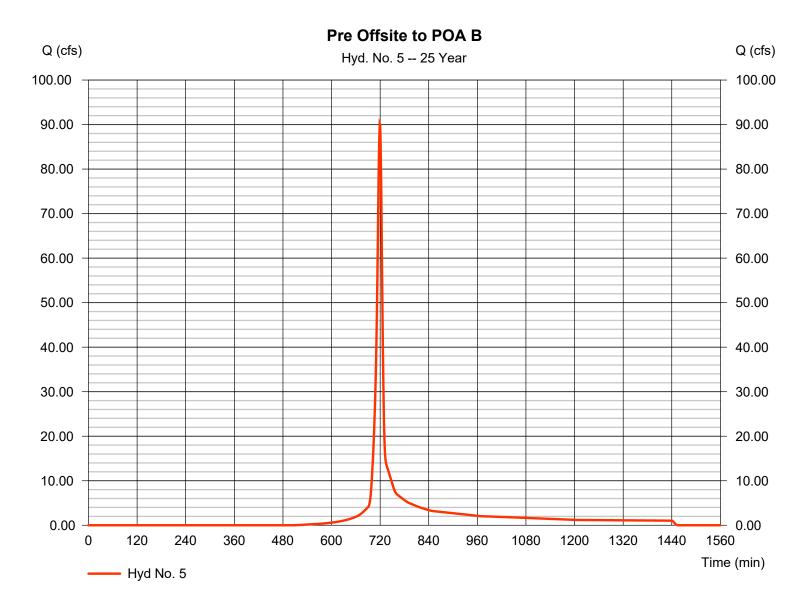
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### Hyd. No. 5

Pre Offsite to POA B

Hydrograph type = SCS Runoff Peak discharge = 90.21 cfsStorm frequency = 25 yrsTime to peak = 719 min Time interval = 1 min Hyd. volume = 204,086 cuft Drainage area Curve number = 18.430 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 10.00 min = User Total precip. = 6.07 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



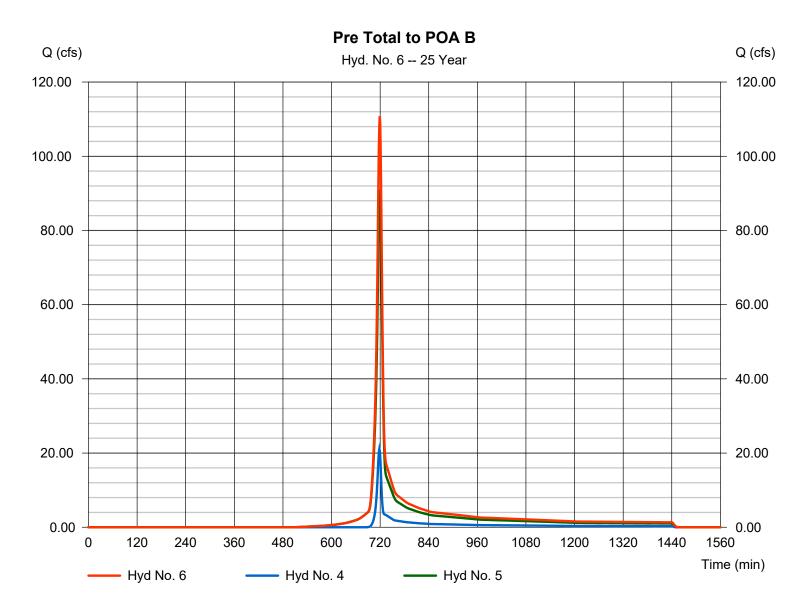
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### Hyd. No. 6

Pre Total to POA B

Hydrograph type = Combine Peak discharge = 110.76 cfsStorm frequency = 25 yrsTime to peak = 719 min Time interval = 1 min Hyd. volume = 248,008 cuft Inflow hyds. = 4, 5 Contrib. drain. area = 25.960 ac



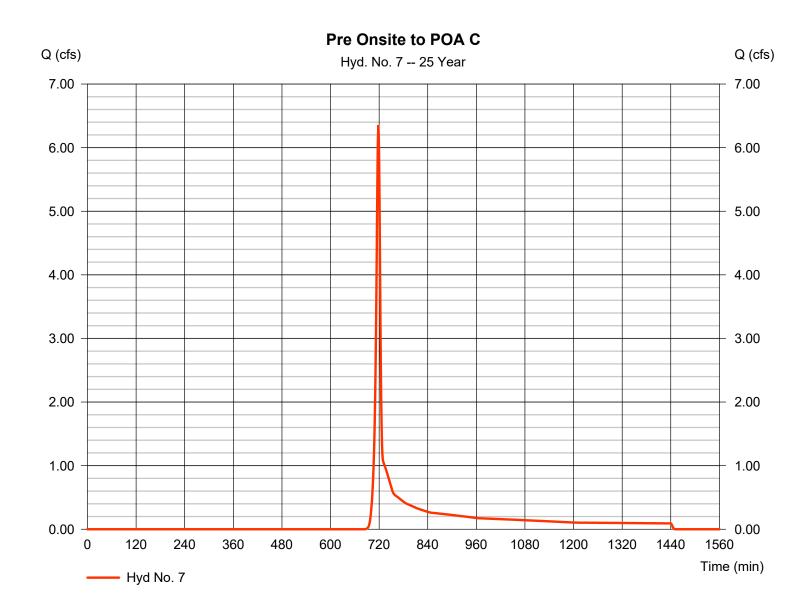
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### Hyd. No. 7

Pre Onsite to POA C

= 6.355 cfsHydrograph type = SCS Runoff Peak discharge Storm frequency = 25 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 13.241 cuft Curve number = 55 Drainage area = 2.270 acBasin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 6.07 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



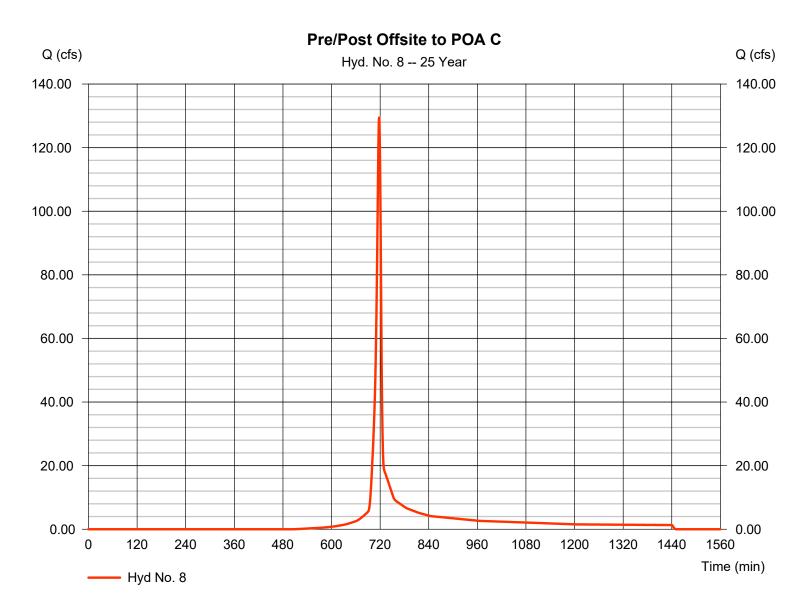
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### Hyd. No. 8

Pre/Post Offsite to POA C

Hydrograph type = SCS Runoff Peak discharge = 129.70 cfsStorm frequency = 25 yrs Time to peak = 718 min Time interval = 1 min Hyd. volume = 262,080 cuftDrainage area Curve number = 22.950 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 6.07 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



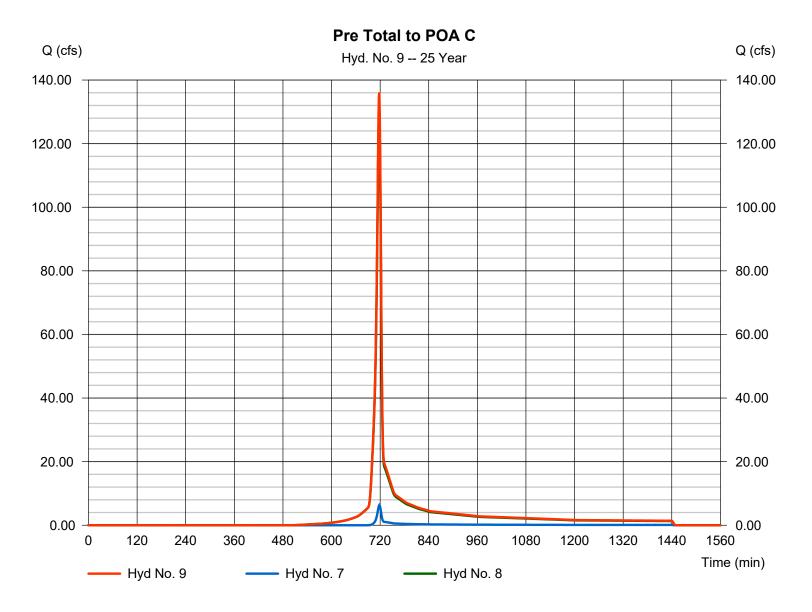
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### Hyd. No. 9

Pre Total to POA C

Hydrograph type = Combine Peak discharge = 136.05 cfsStorm frequency Time to peak = 25 yrs= 718 min Time interval = 1 min Hyd. volume = 275,321 cuft Inflow hyds. = 7,8 Contrib. drain. area = 25.220 ac



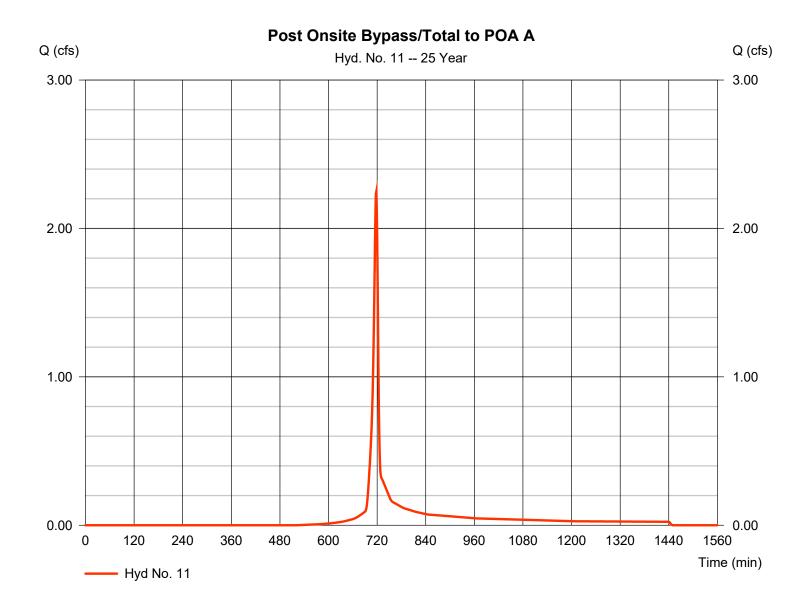
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#### Hyd. No. 11

Post Onsite Bypass/Total to POA A

Hydrograph type = SCS Runoff Peak discharge = 2.249 cfsStorm frequency = 25 yrs Time to peak = 718 min Time interval = 1 min Hyd. volume = 4.536 cuft Drainage area = 0.410 acCurve number = 71 Basin Slope = 0.0 %Hydraulic length = 0 ftTime of conc. (Tc) = 5.00 min Tc method = User Total precip. = 6.07 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



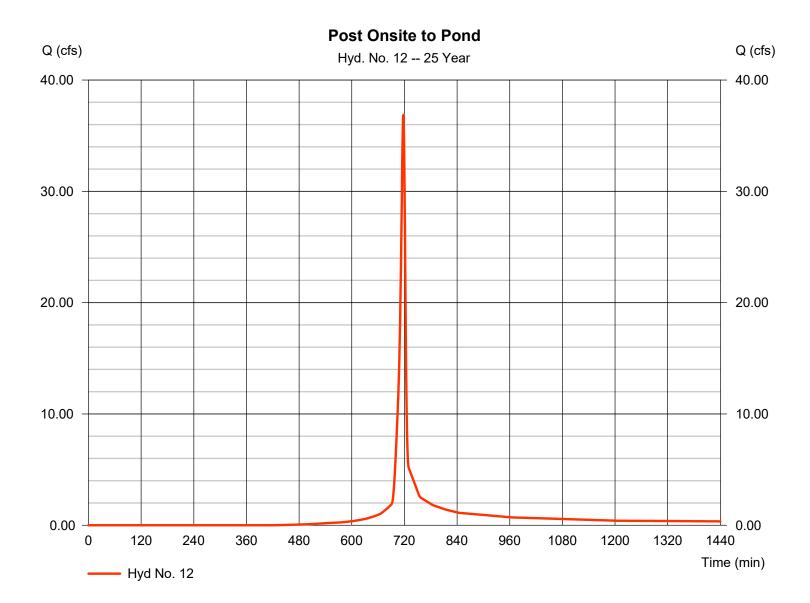
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### Hyd. No. 12

Post Onsite to Pond

Hydrograph type = SCS Runoff Peak discharge = 36.85 cfsStorm frequency = 25 yrs Time to peak = 718 min Time interval = 1 min Hyd. volume = 75,541 cuft Curve number Drainage area = 5.700 ac= 77 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 6.07 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484

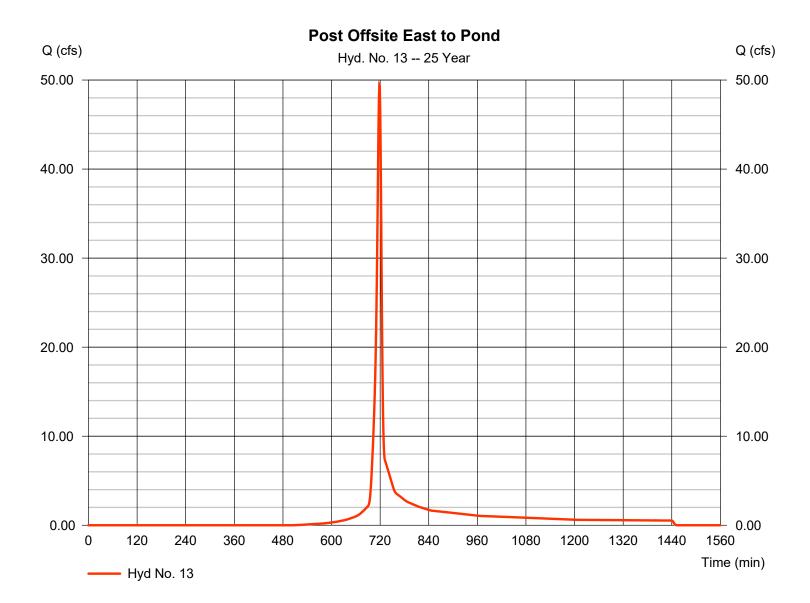


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### **Hyd. No. 13**

Post Offsite East to Pond

Hydrograph type = SCS Runoff Peak discharge = 49.48 cfsStorm frequency = 25 yrs Time to peak = 718 min Time interval = 1 min Hyd. volume = 104,728 cuftCurve number Drainage area = 9.700 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc)  $= 8.00 \, \text{min}$ = User Total precip. = 6.07 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



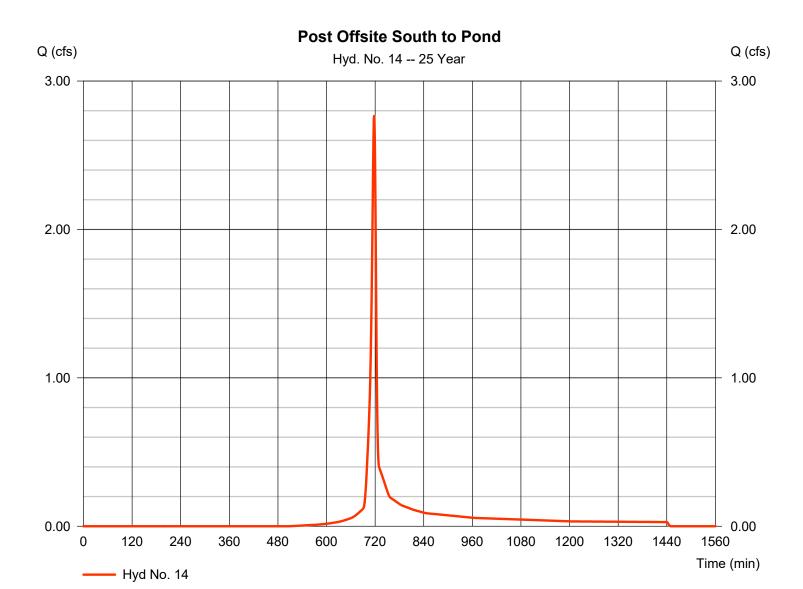
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### Hyd. No. 14

Post Offsite South to Pond

Hydrograph type = 2.769 cfs= SCS Runoff Peak discharge Storm frequency = 25 yrs Time to peak = 718 min Time interval = 1 min Hyd. volume = 5.596 cuft = 72 Drainage area Curve number = 0.490 ac= 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 5.00 min = User Total precip. = 6.07 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484

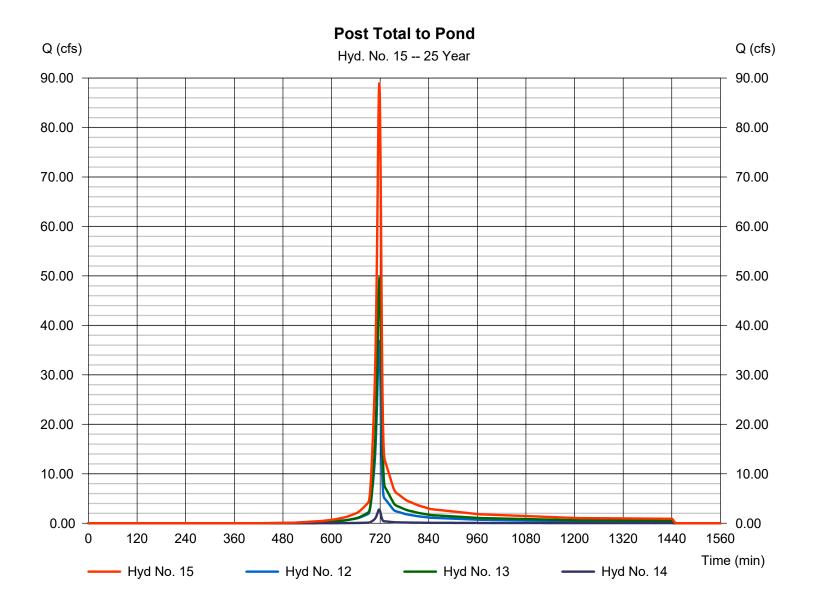


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### Hyd. No. 15

Post Total to Pond

Hydrograph type = Combine Peak discharge = 89.10 cfsStorm frequency Time to peak = 25 yrs= 718 min Time interval = 1 min Hyd. volume = 185,865 cuft Inflow hyds. = 12, 13, 14 Contrib. drain. area = 15.890 ac



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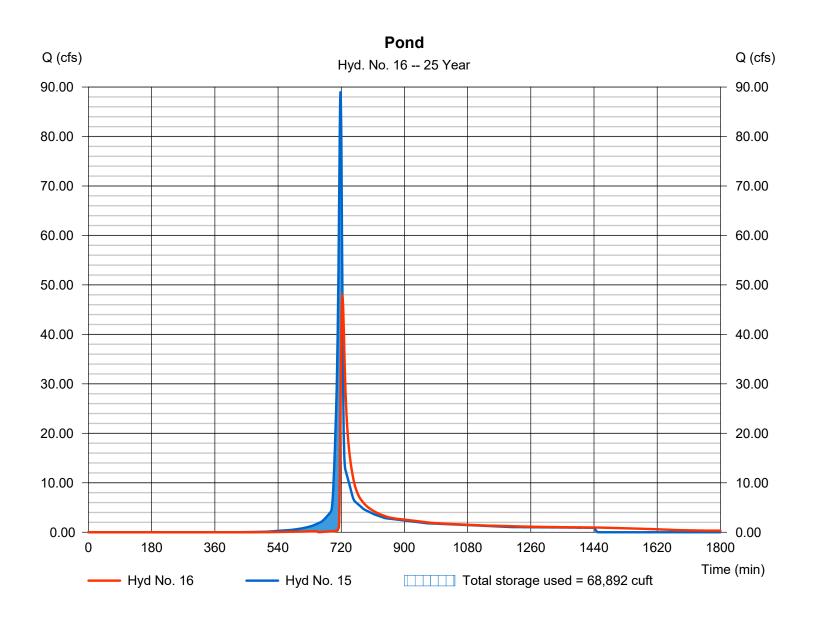
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### **Hyd. No. 16**

Pond

Hydrograph type = Reservoir Peak discharge = 47.69 cfsStorm frequency = 25 yrsTime to peak = 723 min Time interval = 1 min Hyd. volume = 175,097 cuft Inflow hyd. No. = 15 - Post Total to Pond Max. Elevation = 1000.28 ft= Pond = 68,892 cuft Reservoir name Max. Storage

Storage Indication method used.

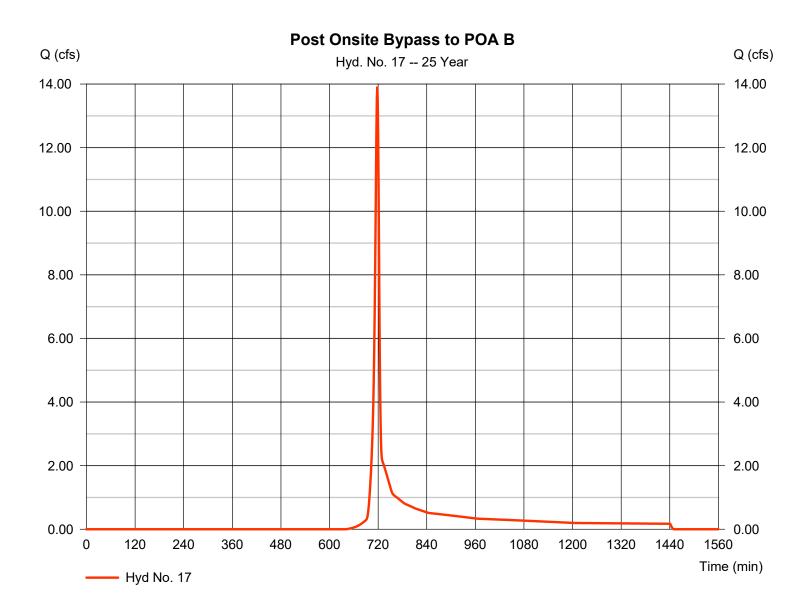


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### Hyd. No. 17

Post Onsite Bypass to POA B

Hydrograph type = SCS Runoff Peak discharge = 13.92 cfsStorm frequency = 25 yrs Time to peak = 718 min Time interval = 1 min Hyd. volume = 28,121 cuft Curve number Drainage area = 3.660 ac= 61 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 6.07 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484

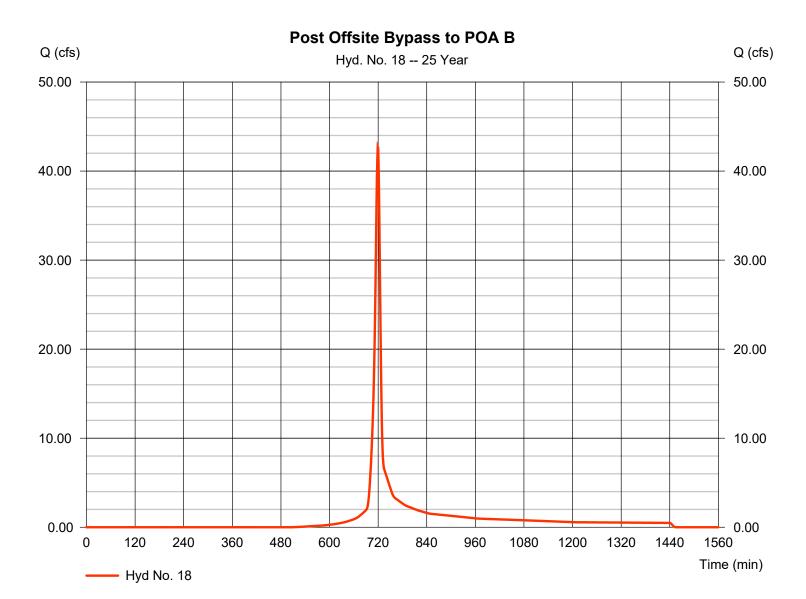


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#### **Hyd. No. 18**

Post Offsite Bypass to POA B

Hydrograph type = SCS Runoff Peak discharge = 42.73 cfsStorm frequency = 25 yrs Time to peak = 719 min Time interval = 1 min Hyd. volume = 96,672 cuft Curve number Drainage area = 8.730 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 10.00 min = User Total precip. = 6.07 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484

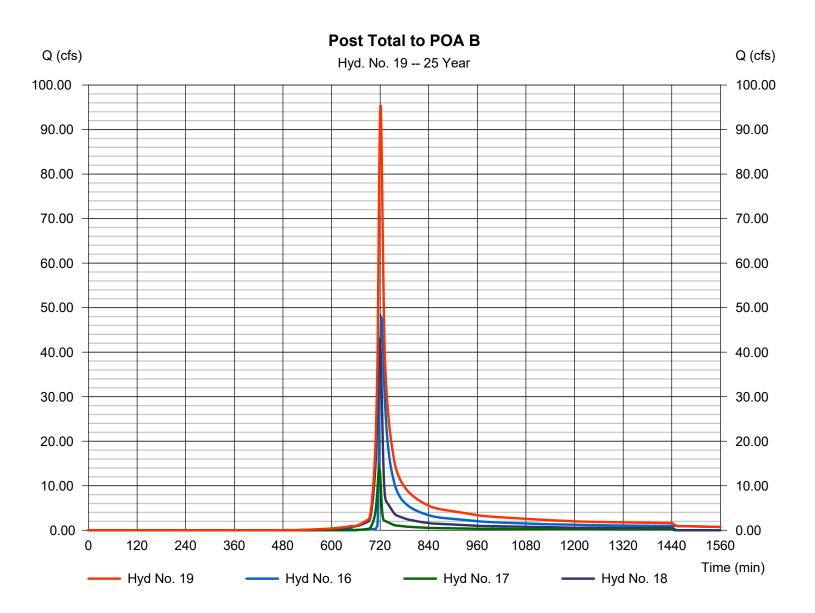


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### Hyd. No. 19

Post Total to POA B

Hydrograph type = Combine Peak discharge = 95.51 cfsStorm frequency Time to peak = 25 yrs= 721 min Time interval = 1 min Hyd. volume = 299,890 cuft Inflow hyds. = 16, 17, 18 Contrib. drain. area = 12.390 ac



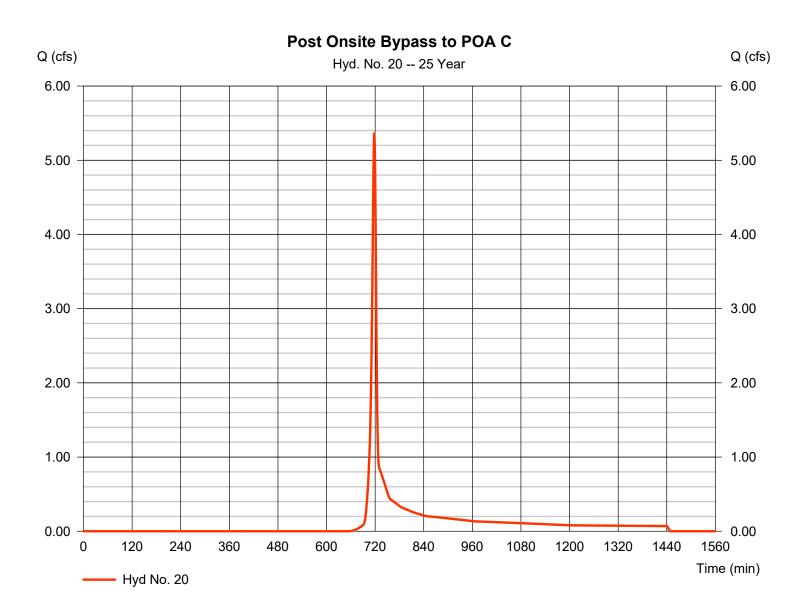
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### Hyd. No. 20

Post Onsite Bypass to POA C

Hydrograph type = SCS Runoff Peak discharge = 5.374 cfsStorm frequency = 25 yrs Time to peak = 718 min Time interval = 1 min Hyd. volume = 10.929 cuftCurve number Drainage area = 1.550 ac= 59 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 6.07 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484

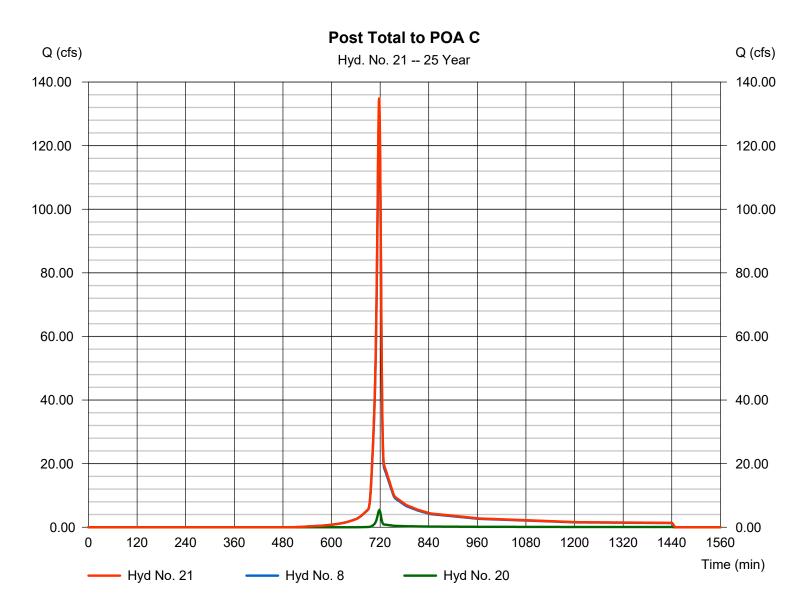


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### Hyd. No. 21

Post Total to POA C

Hydrograph type = Combine Peak discharge = 135.07 cfsStorm frequency Time to peak = 25 yrs= 718 min Time interval = 1 min Hyd. volume = 273,009 cuft Inflow hyds. Contrib. drain. area = 24.500 ac= 8, 20



## Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

о.		Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1 SC	CS Runoff	5.541	1	718	11,333				Pre Onsite to POA A
2 SC	CS Runoff	3.296	1	718	6,697				Pre Offsite to POA A
3 Co	ombine	8.837	1	718	18,029	1, 2			Pre Total to POA A
4 SC	CS Runoff	27.45	1	718	56,142				Pre Onsite to POA B
5 SC	CS Runoff	107.76	1	719	244,241				Pre Offsite to POA B
6 Co	ombine	134.35	1	719	300,382	4, 5			Pre Total to POA B
7 SC	CS Runoff	8.275	1	718	16,925				Pre Onsite to POA C
s sc	CS Runoff	154.39	1	718	313,646				Pre/Post Offsite to POA C
Co	ombine	162.66	1	718	330,570	7, 8			Pre Total to POA C
11 SC	CS Runoff	2.687	1	718	5,445				Post Onsite Bypass/Total to POA A
12 SC	CS Runoff	43.19	1	717	89,139				Post Onsite to Pond
13 SC	CS Runoff	59.05	1	718	125,334				Post Offsite East to Pond
14 SC	CS Runoff	3.296	1	718	6,697				Post Offsite South to Pond
15 Co	ombine	105.50	1	718	221,170	12, 13, 14			Post Total to Pond
16 Re	eservoir	64.97	1	723	210,291	15	1000.94	76,818	Pond
17 SC	CS Runoff	17.39	1	718	34,958				Post Onsite Bypass to POA B
18 SC	CS Runoff	51.04	1	719	115,693				Post Offsite Bypass to POA B
19 Co	ombine	124.72	1	720	360,942	16, 17, 18			Post Total to POA B
20 SC	CS Runoff	6.793	1	718	13,702				Post Onsite Bypass to POA C
21 Co	ombine	161.18	1	718	327,348	8, 20			Post Total to POA C

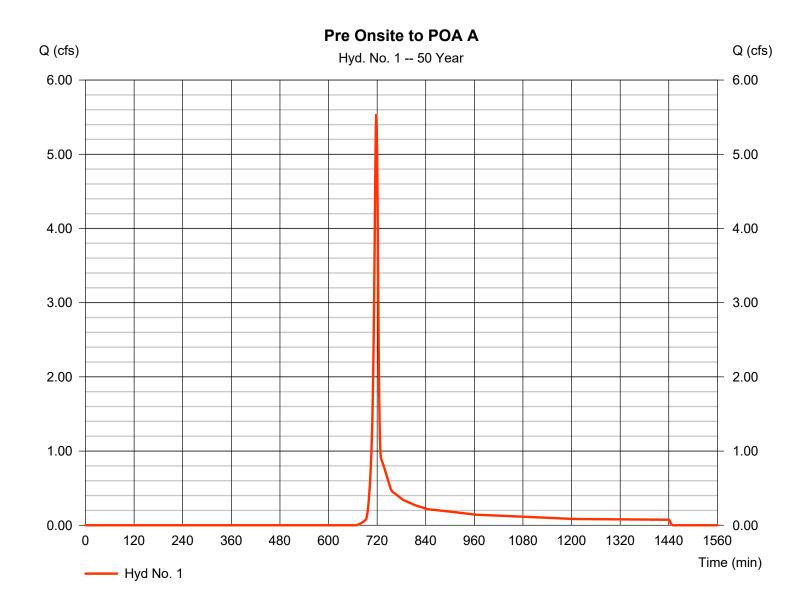
\KANSAS\Active\CSR003 - Old Concord Road Religatro Reside 0.05 Chydrau 2-28-18.gp Wednesday, 02 / 28 / 2018

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### Hyd. No. 1

Pre Onsite to POA A

Hydrograph type = SCS Runoff Peak discharge = 5.541 cfsStorm frequency = 50 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 11,333 cuft Curve number Drainage area = 1.520 ac= 55 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 6.79 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484

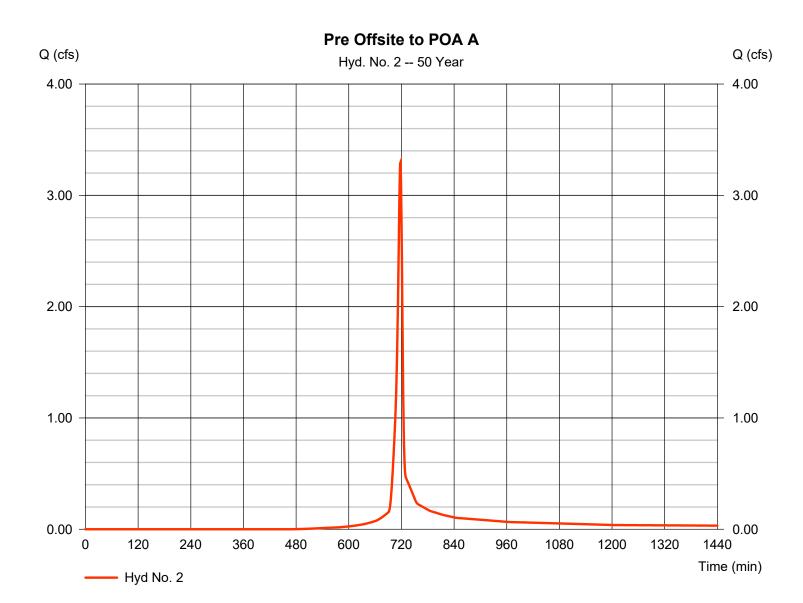


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### Hyd. No. 2

Pre Offsite to POA A

Hydrograph type = SCS Runoff Peak discharge = 3.296 cfsStorm frequency = 50 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 6.697 cuft = 72 Drainage area Curve number = 0.490 acBasin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 6.79 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



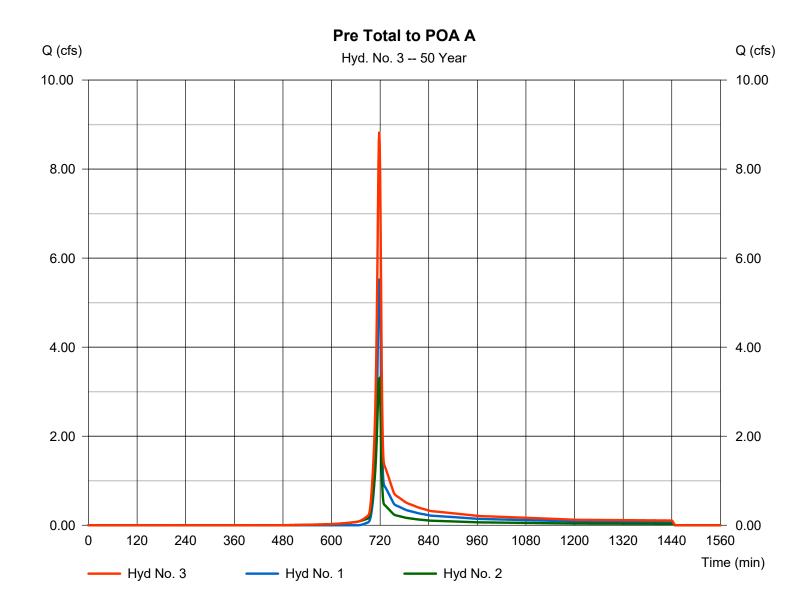
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### Hyd. No. 3

Pre Total to POA A

Hydrograph type = Combine Peak discharge = 8.837 cfsTime to peak Storm frequency = 50 yrs= 718 min Time interval = 1 min Hyd. volume = 18,029 cuft Inflow hyds. Contrib. drain. area = 2.010 ac= 1, 2

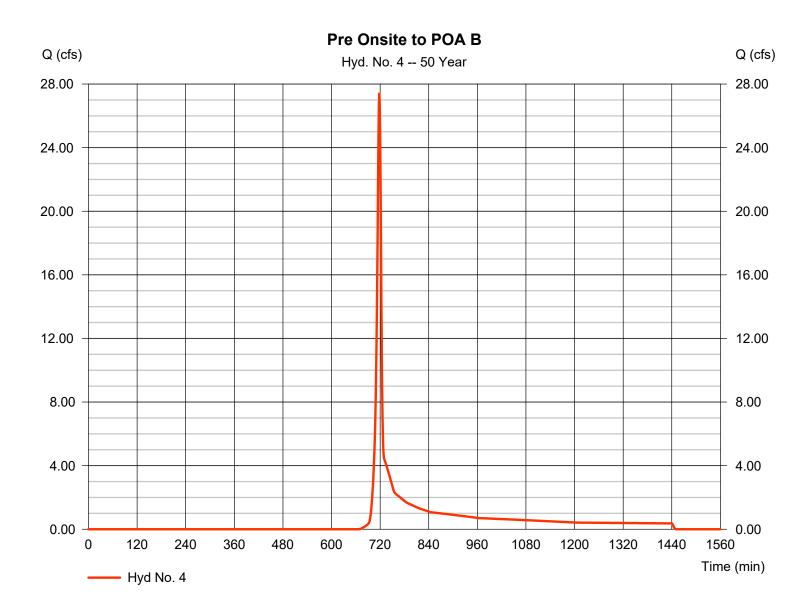


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#### Hyd. No. 4

Pre Onsite to POA B

Hydrograph type = 27.45 cfs= SCS Runoff Peak discharge Storm frequency = 50 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 56.142 cuft Drainage area = 7.530 acCurve number = 55 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 6.79 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



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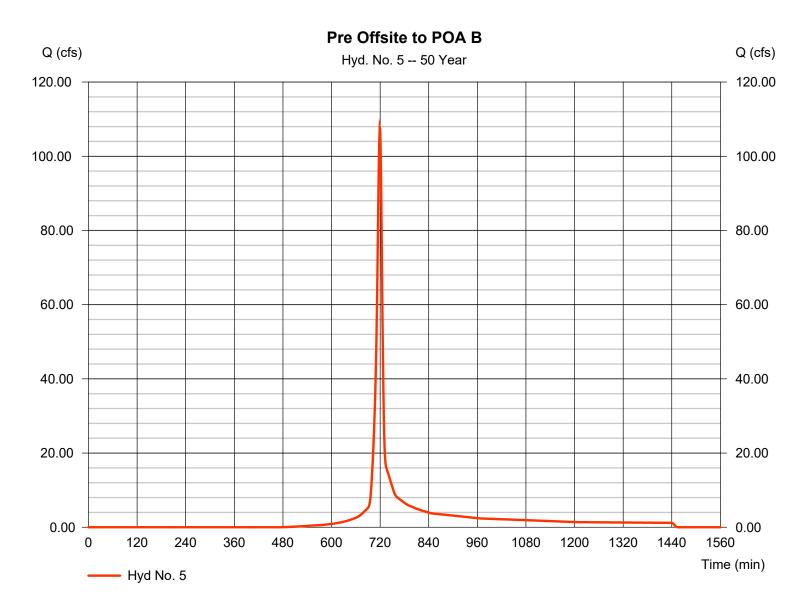
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### Hyd. No. 5

Pre Offsite to POA B

Hydrograph type = SCS Runoff Peak discharge = 107.76 cfsStorm frequency = 50 yrsTime to peak = 719 min Time interval = 1 min Hyd. volume = 244,241 cuft Curve number Drainage area = 18.430 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length

Tc method = User Time of conc. (Tc) = 10.00 min
Total precip. = 6.79 in Distribution = Type II
Storm duration = 24 hrs Shape factor = 484



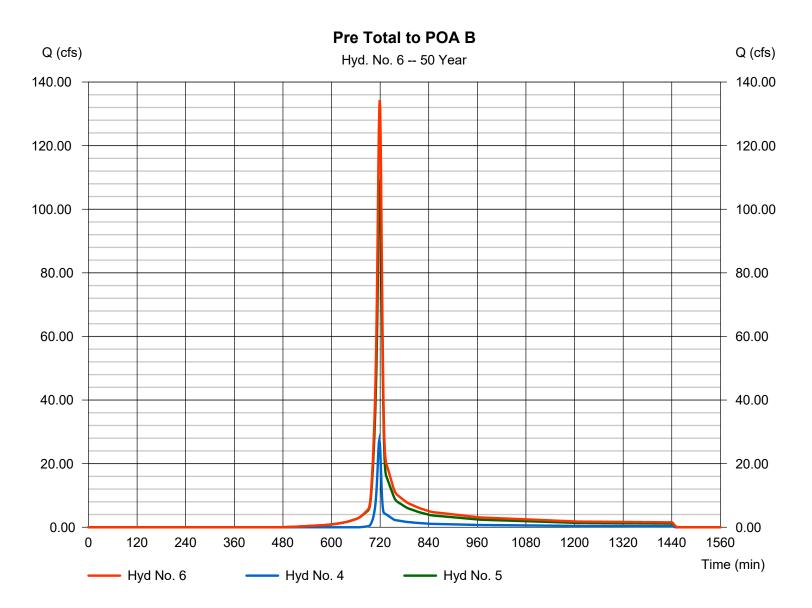
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### Hyd. No. 6

Pre Total to POA B

Hydrograph type = Combine Peak discharge = 134.35 cfsStorm frequency Time to peak = 50 yrs= 719 min Time interval = 1 min Hyd. volume = 300,382 cuft Inflow hyds. = 4, 5 Contrib. drain. area = 25.960 ac

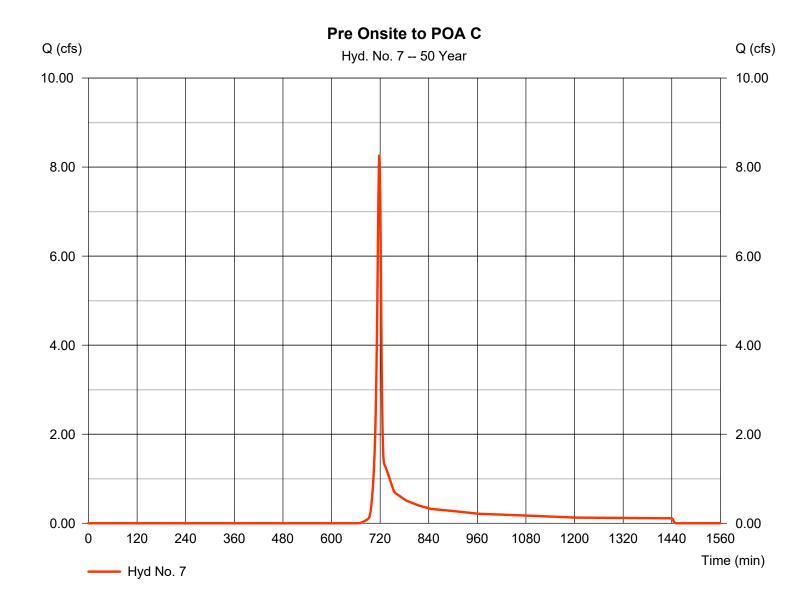


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### Hyd. No. 7

Pre Onsite to POA C

Hydrograph type = SCS Runoff Peak discharge = 8.275 cfsStorm frequency = 50 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 16,925 cuft Drainage area Curve number = 2.270 ac= 55 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 6.79 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484

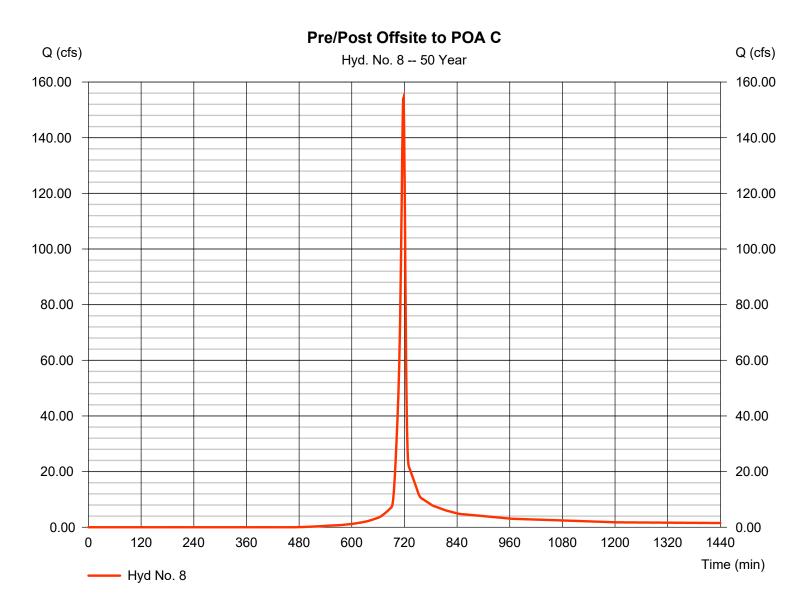


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### Hyd. No. 8

Pre/Post Offsite to POA C

Hydrograph type = SCS Runoff Peak discharge = 154.39 cfsStorm frequency Time to peak = 50 yrs= 718 min Time interval = 1 min Hyd. volume = 313,646 cuft = 72 Drainage area Curve number = 22.950 acHydraulic length = 0 ftBasin Slope = 0.0 %Tc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 6.79 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



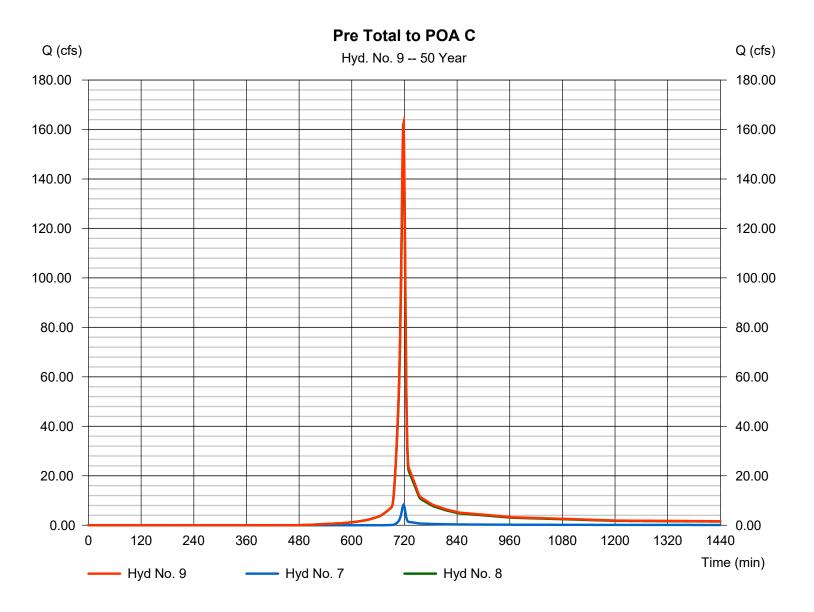
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### Hyd. No. 9

Pre Total to POA C

Hydrograph type = Combine Peak discharge = 162.66 cfsStorm frequency Time to peak = 50 yrs= 718 min Time interval = 1 min Hyd. volume = 330,570 cuftInflow hyds. = 7,8 Contrib. drain. area = 25.220 ac

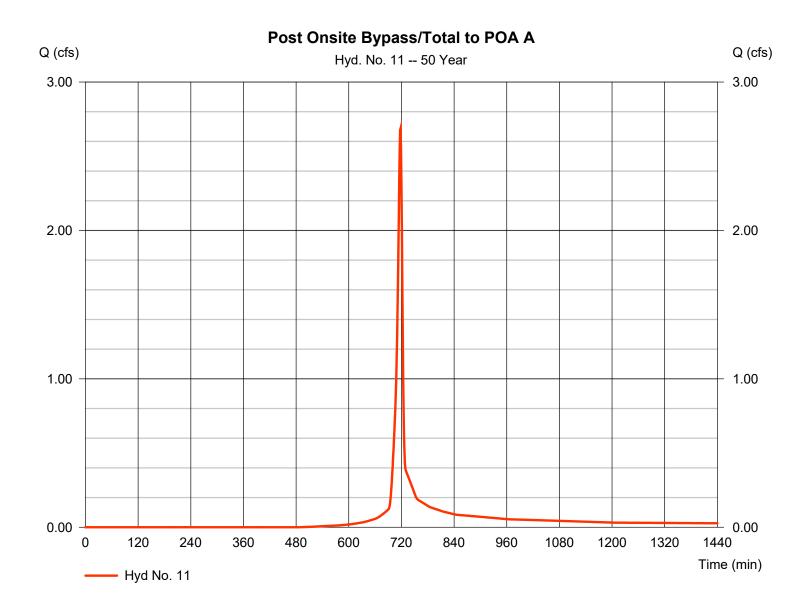


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#### Hyd. No. 11

Post Onsite Bypass/Total to POA A

Hydrograph type = SCS Runoff Peak discharge = 2.687 cfsStorm frequency = 50 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 5.445 cuft Curve number Drainage area = 0.410 ac= 71 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 6.79 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484

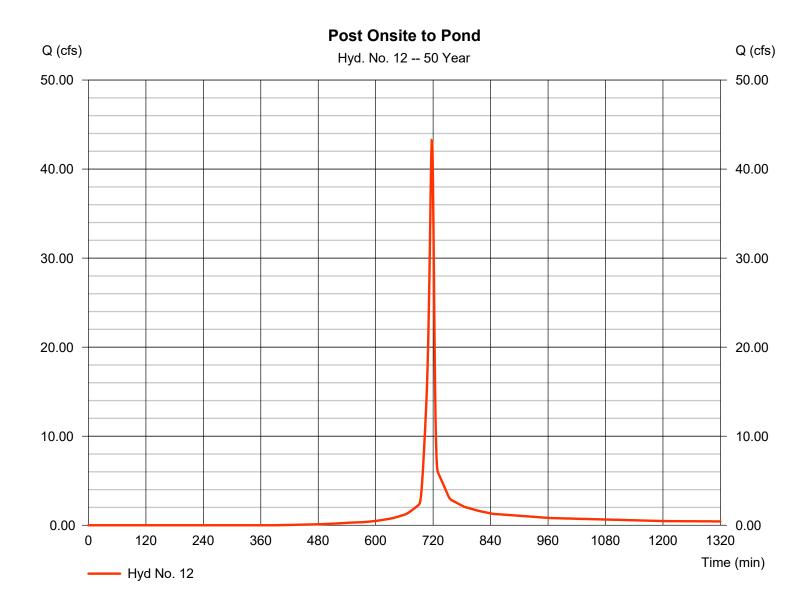


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### Hyd. No. 12

Post Onsite to Pond

Hydrograph type = SCS Runoff Peak discharge = 43.19 cfsStorm frequency = 50 yrsTime to peak = 717 min Time interval = 1 min Hyd. volume = 89.139 cuft Curve number Drainage area = 5.700 ac= 77 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 6.79 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



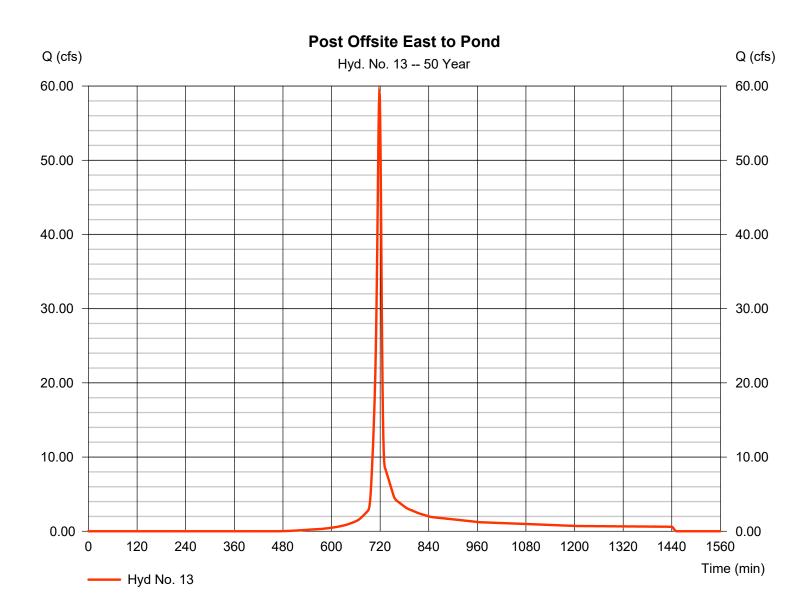
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### **Hyd. No. 13**

Post Offsite East to Pond

Hydrograph type = SCS Runoff Peak discharge = 59.05 cfsStorm frequency = 50 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 125,334 cuft Drainage area Curve number = 9.700 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 8.00 min = User Total precip. = 6.79 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



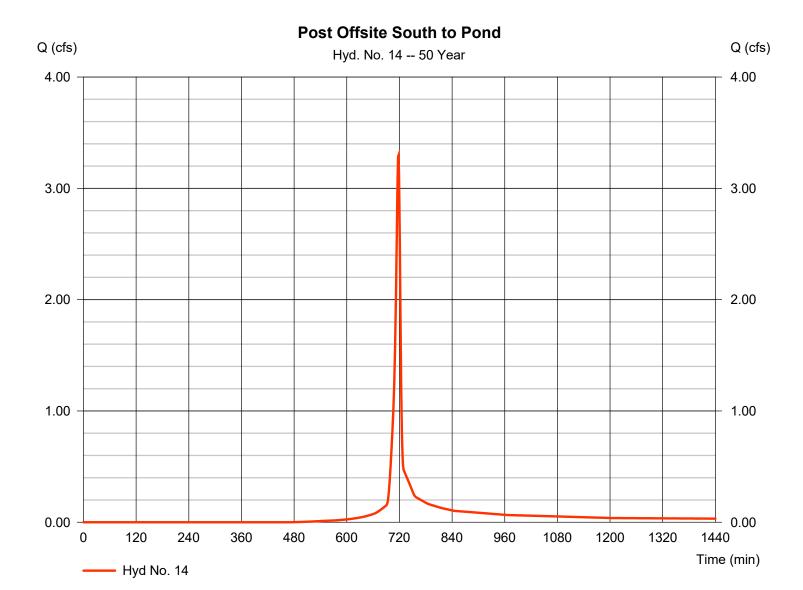
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### Hyd. No. 14

Post Offsite South to Pond

Hydrograph type = SCS Runoff Peak discharge = 3.296 cfsStorm frequency = 50 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 6.697 cuft = 72 Drainage area Curve number = 0.490 ac= 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 5.00 min = User Total precip. = 6.79 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



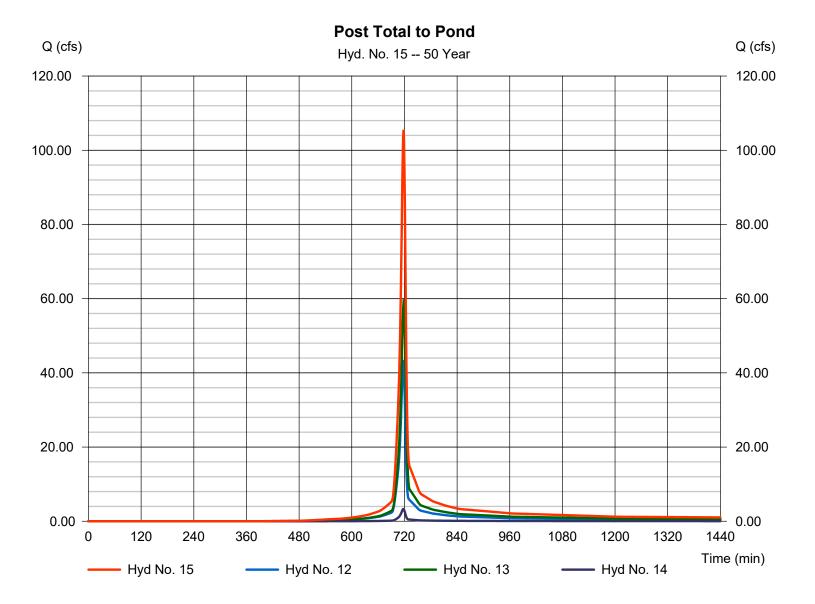
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### Hyd. No. 15

Post Total to Pond

Hydrograph type = Combine
Storm frequency = 50 yrs
Time interval = 1 min
Inflow hyds. = 12, 13, 14

Peak discharge = 105.50 cfs
Time to peak = 718 min
Hyd. volume = 221,170 cuft
Contrib. drain. area = 15.890 ac



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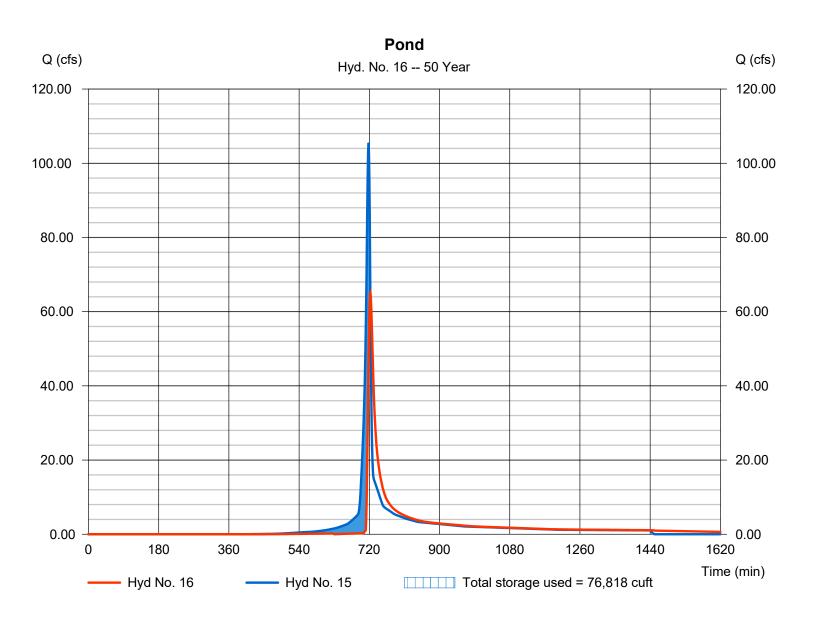
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### Hyd. No. 16

Pond

Hydrograph type = Reservoir Peak discharge = 64.97 cfsStorm frequency = 50 yrsTime to peak = 723 min Time interval = 1 min Hyd. volume = 210,291 cuft = 15 - Post Total to Pond Max. Elevation Inflow hyd. No. = 1000.94 ftReservoir name = Pond Max. Storage = 76,818 cuft

Storage Indication method used.

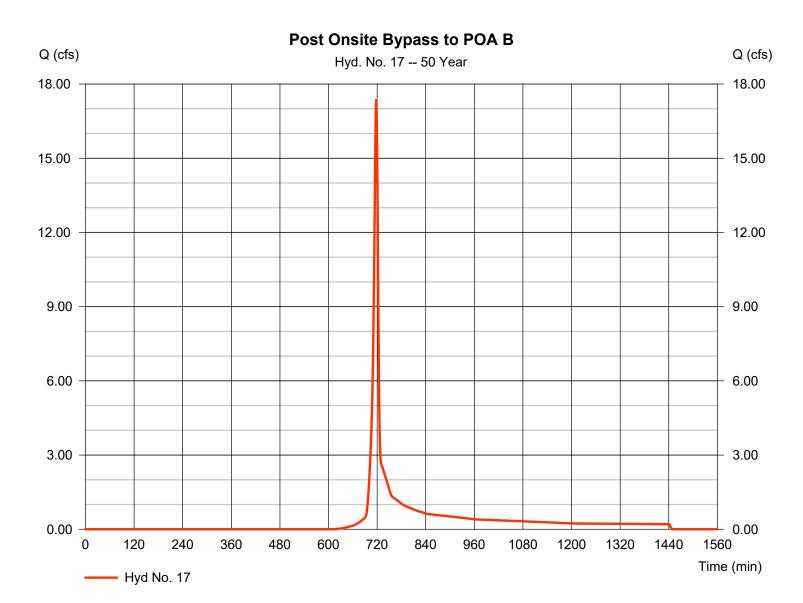


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### Hyd. No. 17

Post Onsite Bypass to POA B

Hydrograph type = SCS Runoff Peak discharge = 17.39 cfsStorm frequency = 50 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 34.958 cuft Curve number Drainage area = 3.660 ac= 61 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 6.79 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



= 24 hrs

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= 484

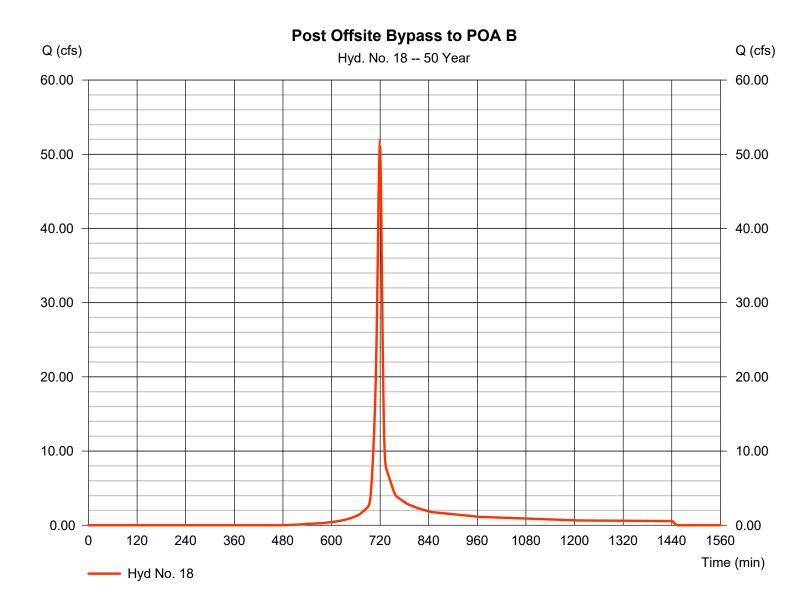
### **Hyd. No. 18**

Storm duration

Post Offsite Bypass to POA B

Hydrograph type = SCS Runoff Peak discharge = 51.04 cfsStorm frequency = 50 yrsTime to peak = 719 min Time interval = 1 min Hyd. volume = 115,693 cuft Curve number Drainage area = 8.730 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 10.00 min = User Total precip. = 6.79 inDistribution = Type II

Shape factor



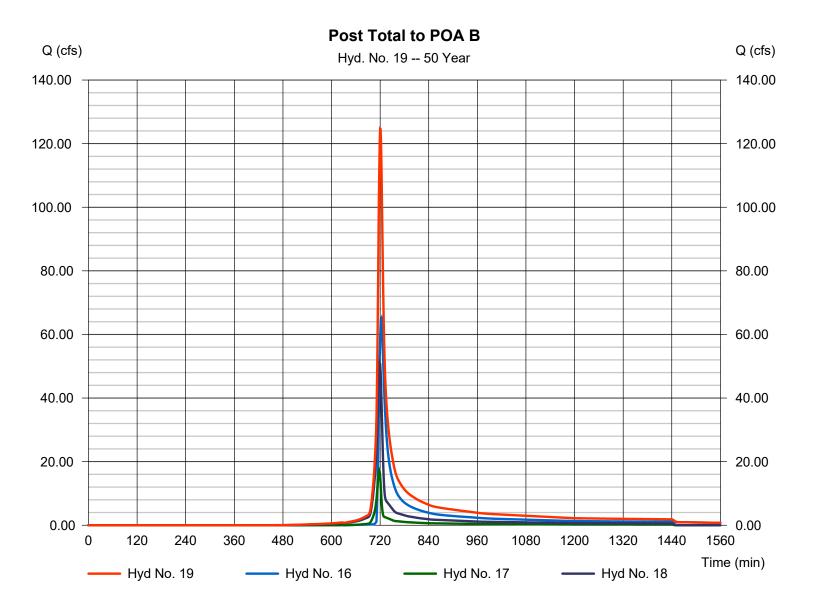
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### Hyd. No. 19

Post Total to POA B

Hydrograph type = Combine Peak discharge = 124.72 cfsStorm frequency Time to peak = 50 yrs= 720 min Time interval = 1 min Hyd. volume = 360,942 cuft Inflow hyds. = 16, 17, 18 Contrib. drain. area = 12.390 ac

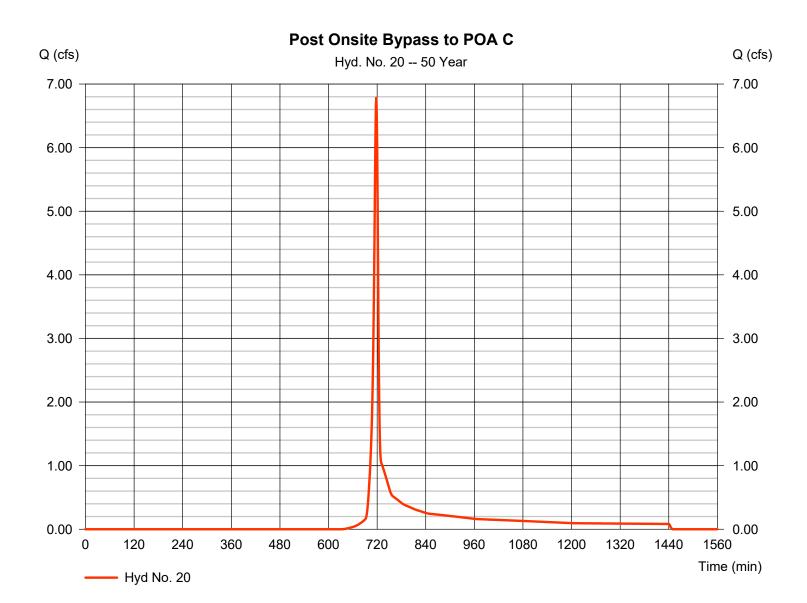


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### Hyd. No. 20

Post Onsite Bypass to POA C

Hydrograph type = SCS Runoff Peak discharge = 6.793 cfsStorm frequency = 50 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 13.702 cuftCurve number Drainage area = 1.550 ac= 59 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 6.79 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484

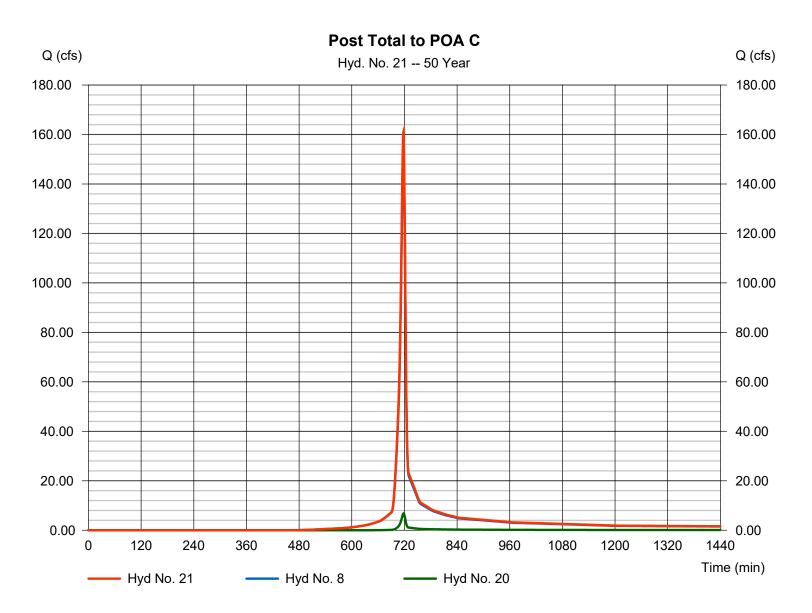


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### Hyd. No. 21

Post Total to POA C

Hydrograph type = Combine Peak discharge = 161.18 cfsStorm frequency Time to peak = 50 yrs= 718 min Time interval = 1 min Hyd. volume = 327,348 cuft Inflow hyds. Contrib. drain. area = 24.500 ac = 8, 20



# Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

Hyd.				Time to	Hyd.	Inflow Maximum Total			toCAD® Civil 3D® 2014 by Autodesk, Inc. v10
No.	type (origin)	flow (cfs)	interval (min)	Peak (min)	volume (cuft)	hyd(s)	elevation (ft)	strge used (cuft)	Description
1	SCS Runoff	6.936	1	718	14,042				Pre Onsite to POA A
2	SCS Runoff	3.845	1	718	7,859				Pre Offsite to POA A
3	Combine	10.78	1	718	21,901	1, 2			Pre Total to POA A
4	SCS Runoff	34.36	1	718	69,562				Pre Onsite to POA B
5	SCS Runoff	126.08	1	719	286,641				Pre Offsite to POA B
6	Combine	159.21	1	719	356,203	4, 5			Pre Total to POA B
7	SCS Runoff	10.36	1	718	20,970				Pre Onsite to POA C
8	SCS Runoff	180.11	1	718	368,094				Pre/Post Offsite to POA C
9	Combine	190.47	1	718	389,065	7, 8			Pre Total to POA C
11	SCS Runoff	3.144	1	718	6,406				Post Onsite Bypass/Total to POA A
12	SCS Runoff	49.78	1	717	103,381				Post Onsite to Pond
13	SCS Runoff	69.04	1	718	147,092				Post Offsite East to Pond
14	SCS Runoff	3.845	1	718	7,859				Post Offsite South to Pond
15	Combine	122.54	1	718	258,333	12, 13, 14			Post Total to Pond
16	Reservoir	82.64	1	722	247,359	15	1001.54	84,208	Pond
17	SCS Runoff	21.09	1	718	42,343				Post Onsite Bypass to POA B
18	SCS Runoff	59.72	1	719	135,777				Post Offsite Bypass to POA B
19	Combine	155.29	1	720	425,479	16, 17, 18			Post Total to POA B
20	SCS Runoff	8.316	1	718	16,713				Post Onsite Bypass to POA C
21	Combine	188.42	1	718	384,807	8, 20			Post Total to POA C

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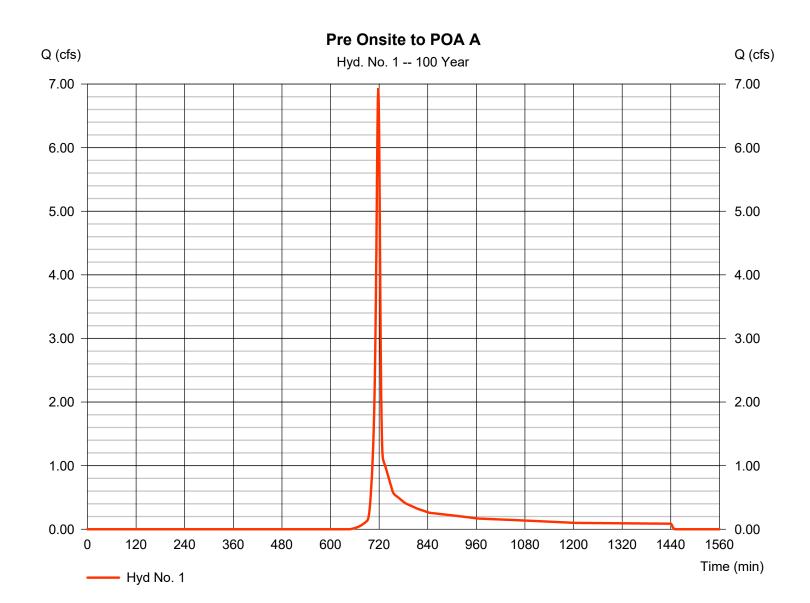
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### Hyd. No. 1

Pre Onsite to POA A

Hydrograph type = SCS Runoff Peak discharge = 6.936 cfsStorm frequency = 100 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 14.042 cuft Drainage area Curve number = 1.520 ac= 55 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 7.53 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484

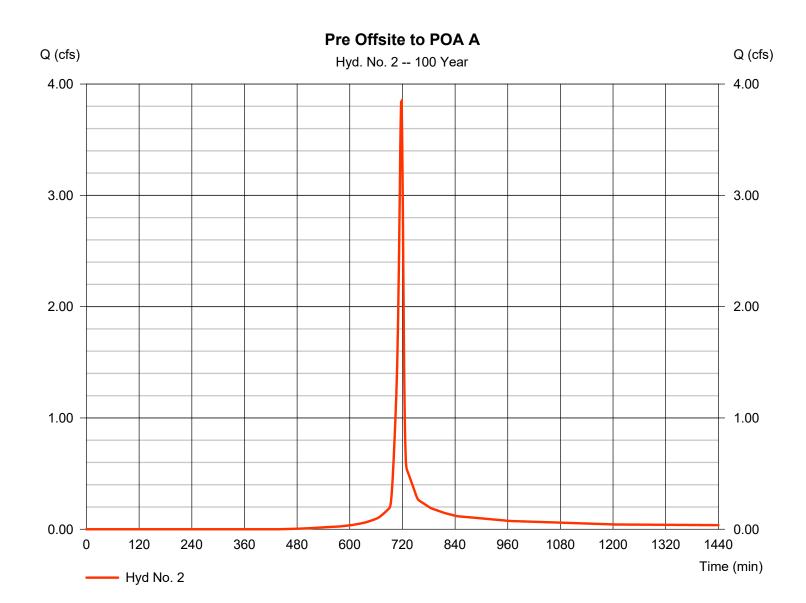


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### Hyd. No. 2

Pre Offsite to POA A

Hydrograph type = SCS Runoff Peak discharge = 3.845 cfsStorm frequency = 100 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 7.859 cuftDrainage area Curve number = 0.490 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 7.53 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



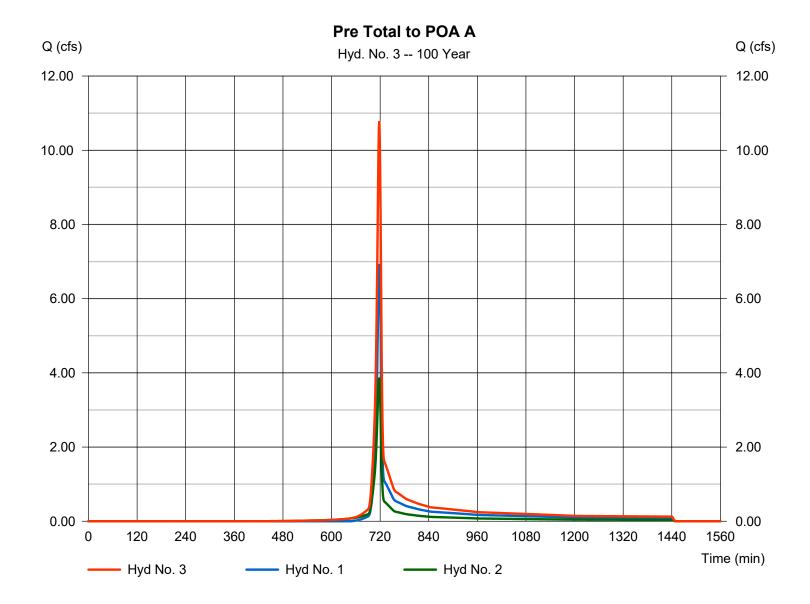
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### Hyd. No. 3

Pre Total to POA A

Hydrograph type = Combine Peak discharge = 10.78 cfsStorm frequency Time to peak = 100 yrs= 718 min Time interval = 1 min Hyd. volume = 21,901 cuft Inflow hyds. = 1, 2 Contrib. drain. area = 2.010 ac

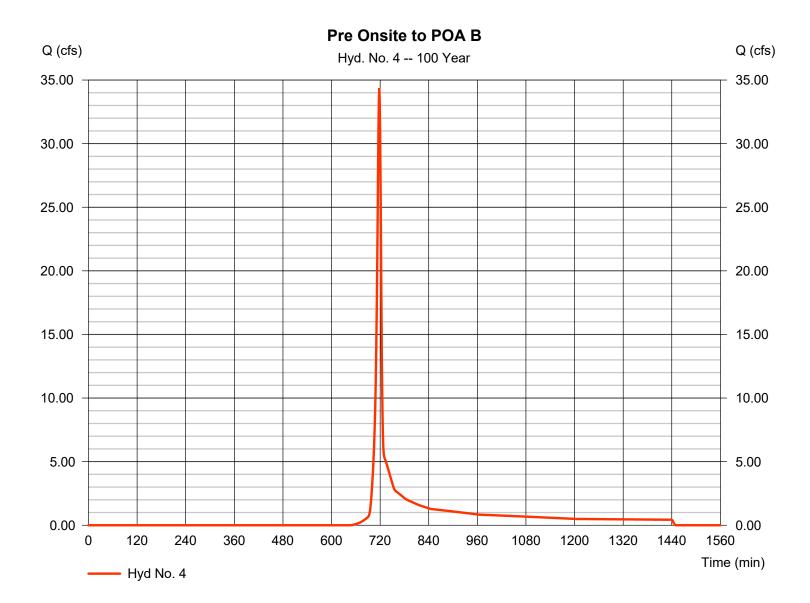


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### Hyd. No. 4

Pre Onsite to POA B

Hydrograph type = SCS Runoff Peak discharge = 34.36 cfsStorm frequency = 100 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 69.562 cuft Drainage area Curve number = 7.530 ac= 55 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 7.53 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484

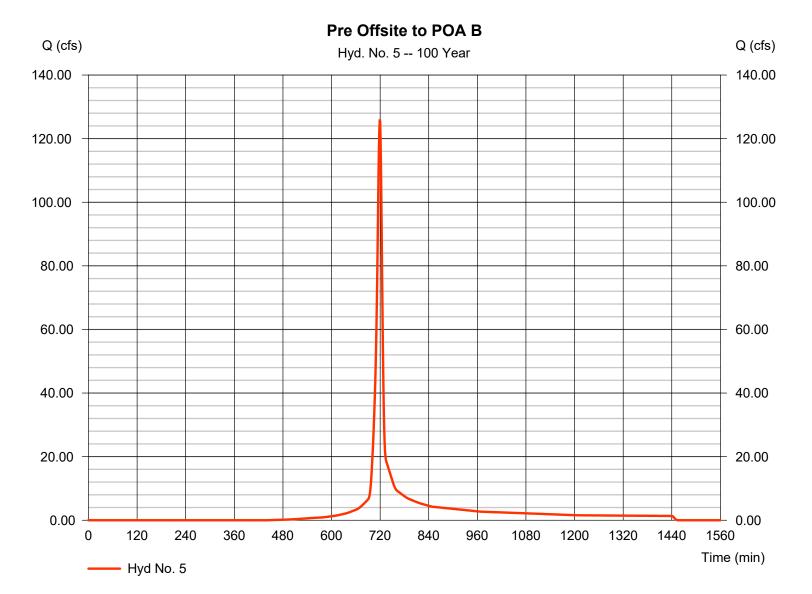


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### Hyd. No. 5

Pre Offsite to POA B

Hydrograph type = SCS Runoff Peak discharge = 126.08 cfsStorm frequency = 100 yrsTime to peak = 719 min Time interval = 1 min Hyd. volume = 286.641 cuft Drainage area Curve number = 18.430 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 10.00 min = User Total precip. = 7.53 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



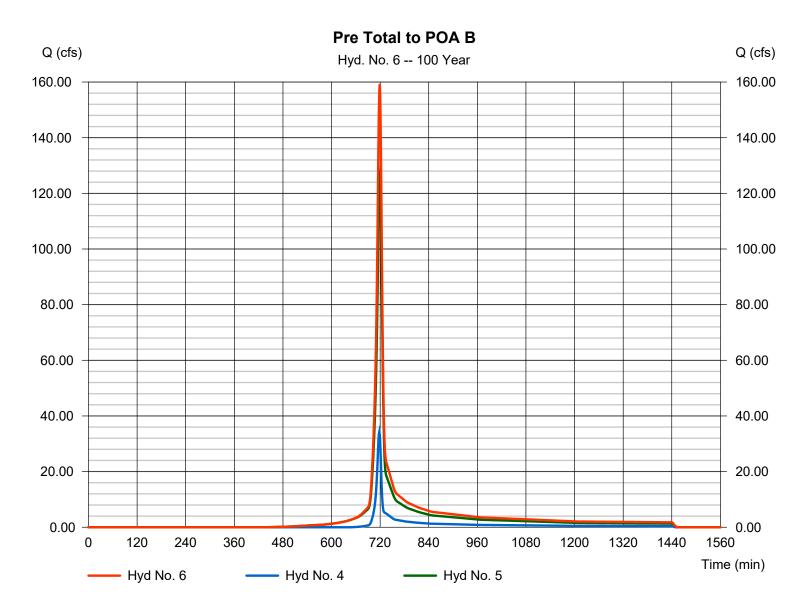
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### Hyd. No. 6

Pre Total to POA B

Hydrograph type = Combine Peak discharge = 159.21 cfsStorm frequency Time to peak = 100 yrs= 719 min Time interval = 1 min Hyd. volume = 356,203 cuft Inflow hyds. = 4, 5 Contrib. drain. area = 25.960 ac

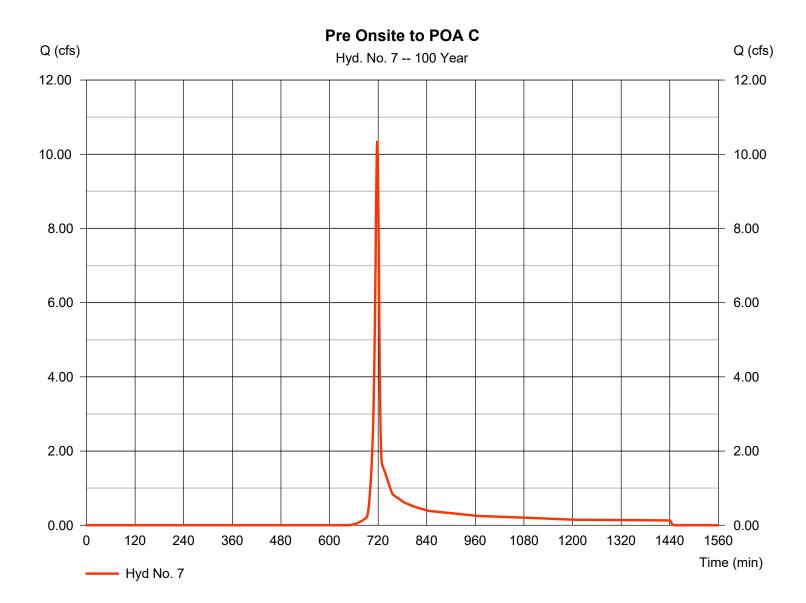


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### Hyd. No. 7

Pre Onsite to POA C

Hydrograph type = SCS Runoff Peak discharge = 10.36 cfsStorm frequency = 100 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 20,970 cuft Drainage area Curve number = 2.270 ac= 55 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 7.53 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484

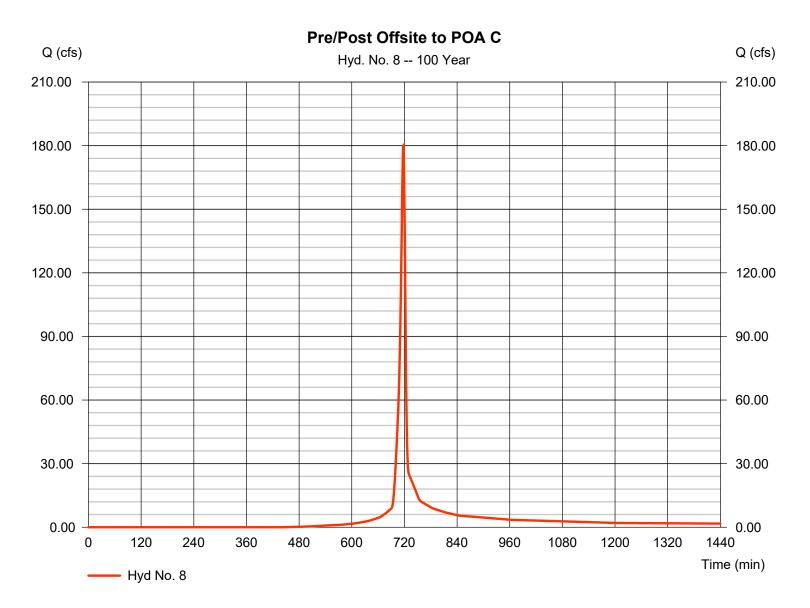


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### Hyd. No. 8

Pre/Post Offsite to POA C

Hydrograph type = SCS Runoff Peak discharge = 180.11 cfsStorm frequency = 100 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 368.094 cuft Drainage area Curve number = 22.950 ac= 72 Hydraulic length = 0 ftBasin Slope = 0.0 %Tc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 7.53 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



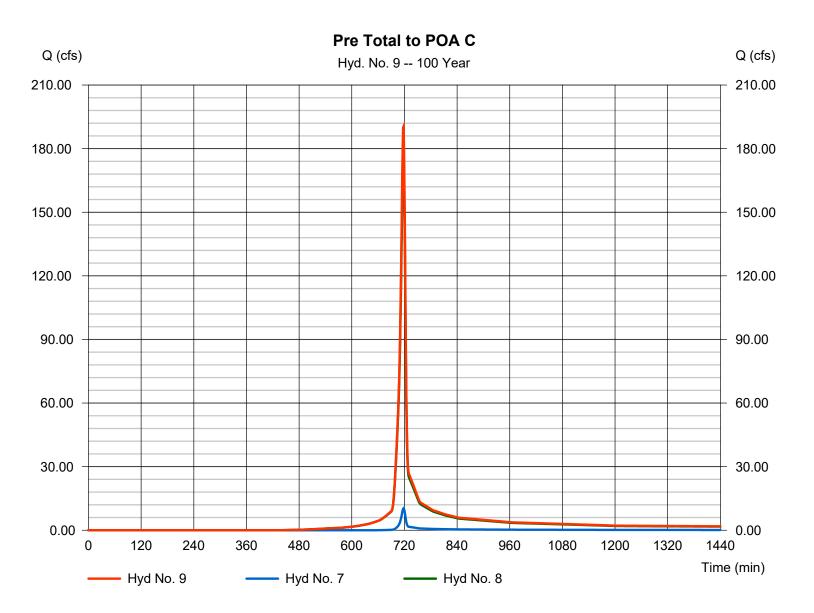
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### Hyd. No. 9

Pre Total to POA C

Hydrograph type = Combine Peak discharge = 190.47 cfsStorm frequency Time to peak = 100 yrs= 718 min Time interval = 1 min Hyd. volume = 389,065 cuft Inflow hyds. = 7,8 Contrib. drain. area = 25.220 ac

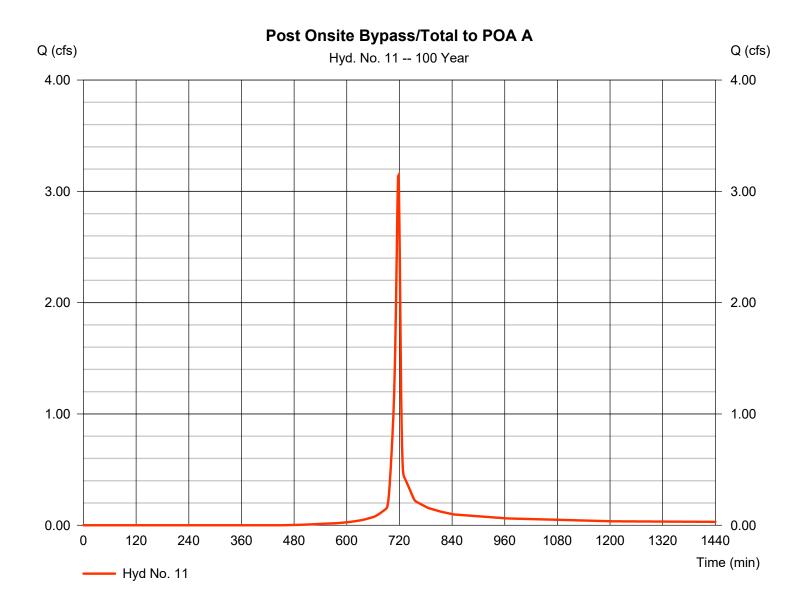


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### Hyd. No. 11

Post Onsite Bypass/Total to POA A

Hydrograph type = SCS Runoff Peak discharge = 3.144 cfsStorm frequency = 100 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 6.406 cuftCurve number Drainage area = 0.410 ac= 71 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 7.53 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



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= 24 hrs

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= 484

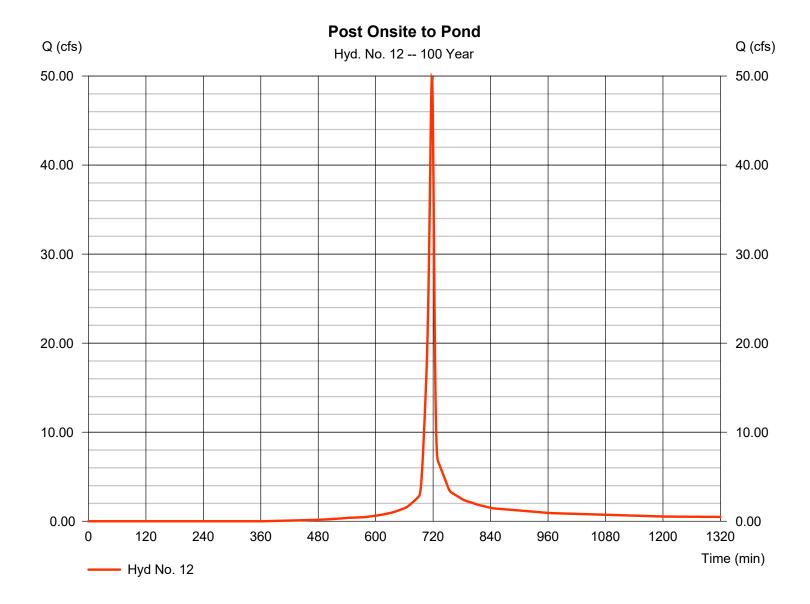
### Hyd. No. 12

Storm duration

Post Onsite to Pond

Hydrograph type = SCS Runoff Peak discharge = 49.78 cfsStorm frequency = 100 yrsTime to peak = 717 min Time interval = 1 min Hyd. volume = 103,381 cuft Curve number Drainage area = 5.700 ac= 77 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 7.53 inDistribution = Type II

Shape factor



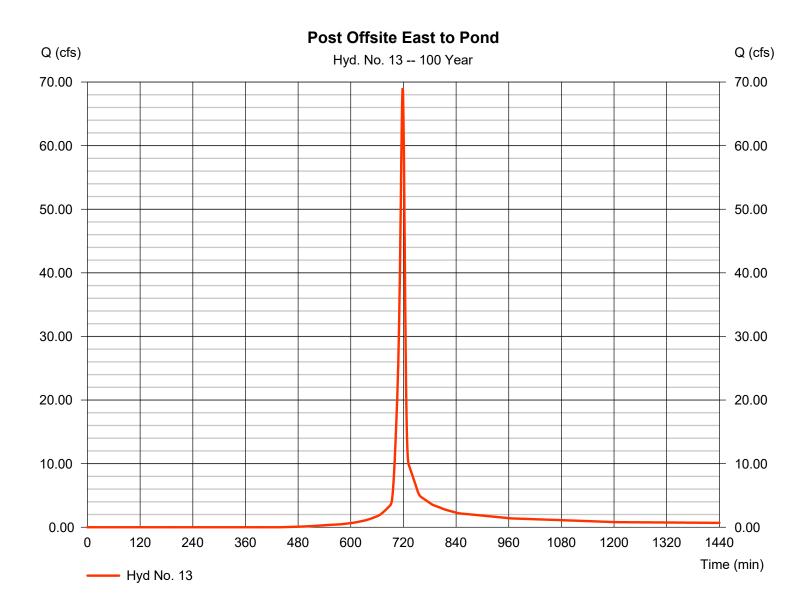
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### Hyd. No. 13

Post Offsite East to Pond

Peak discharge Hydrograph type = SCS Runoff = 69.04 cfsStorm frequency = 100 yrsTime to peak = 718 min = 147,092 cuft Time interval = 1 min Hyd. volume Drainage area Curve number = 9.700 ac= 72 Hydraulic length = 0 ftBasin Slope = 0.0 %Tc method Time of conc. (Tc)  $= 8.00 \, \text{min}$ = User Total precip. = 7.53 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484

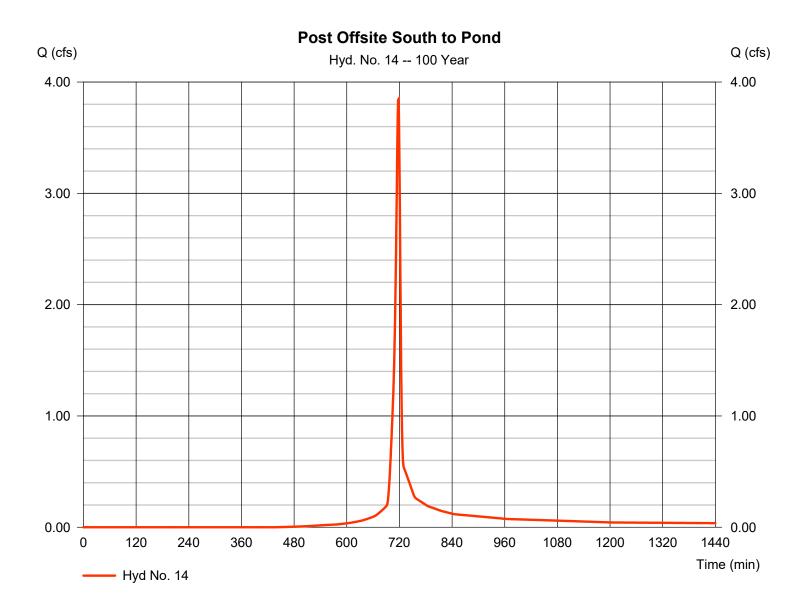


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#### Hyd. No. 14

Post Offsite South to Pond

Hydrograph type = SCS Runoff Peak discharge = 3.845 cfsStorm frequency = 100 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 7.859 cuft = 72 Drainage area Curve number = 0.490 ac= 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 5.00 min = User Total precip. = 7.53 inDistribution = Type II Storm duration = 24 hrs Shape factor = 484



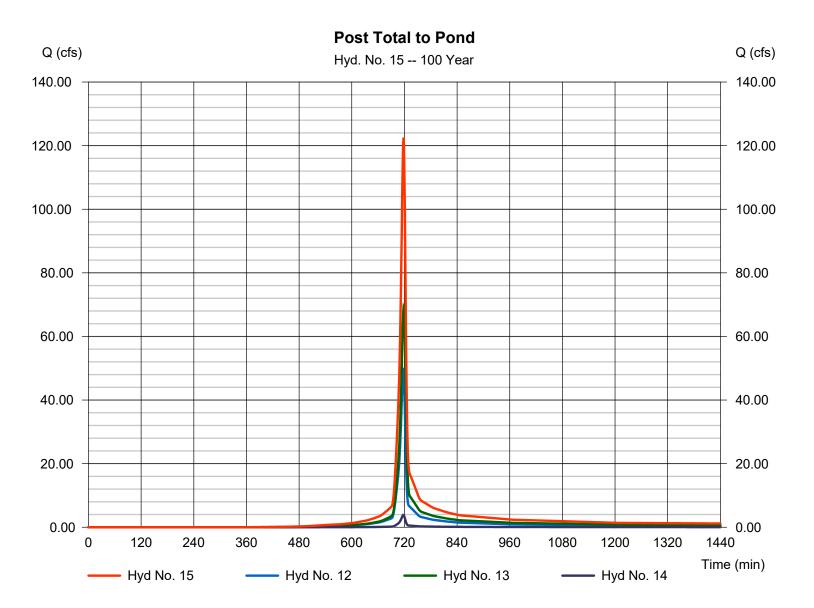
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### Hyd. No. 15

Post Total to Pond

Hydrograph type = Combine Peak discharge = 122.54 cfsStorm frequency Time to peak = 100 yrs= 718 min Time interval = 1 min Hyd. volume = 258,333 cuft Inflow hyds. = 12, 13, 14 Contrib. drain. area = 15.890 ac



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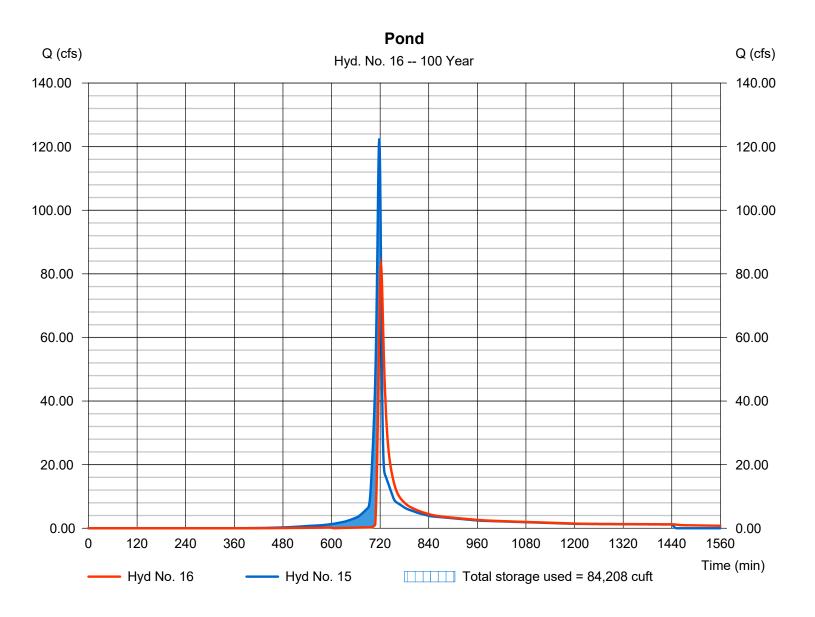
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### Hyd. No. 16

Pond

Hydrograph type = Reservoir Peak discharge = 82.64 cfsStorm frequency = 100 yrsTime to peak = 722 min Time interval = 1 min Hyd. volume = 247,359 cuftInflow hyd. No. Max. Elevation = 1001.54 ft= 15 - Post Total to Pond = 84,208 cuft Reservoir name = Pond Max. Storage

Storage Indication method used.

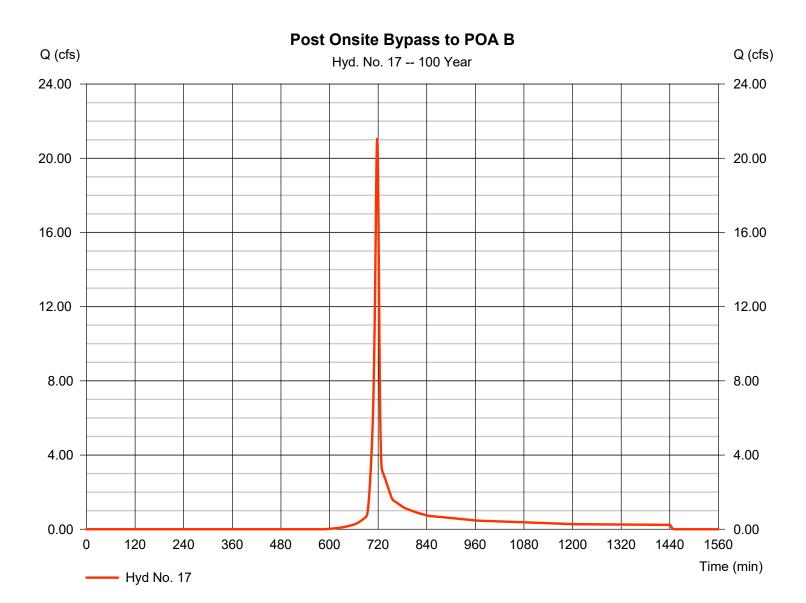


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### Hyd. No. 17

Post Onsite Bypass to POA B

Hydrograph type = SCS Runoff Peak discharge = 21.09 cfsStorm frequency = 100 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 42.343 cuft Curve number Drainage area = 3.660 ac= 61 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc) = 5.00 min = User Total precip. = 7.53 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484

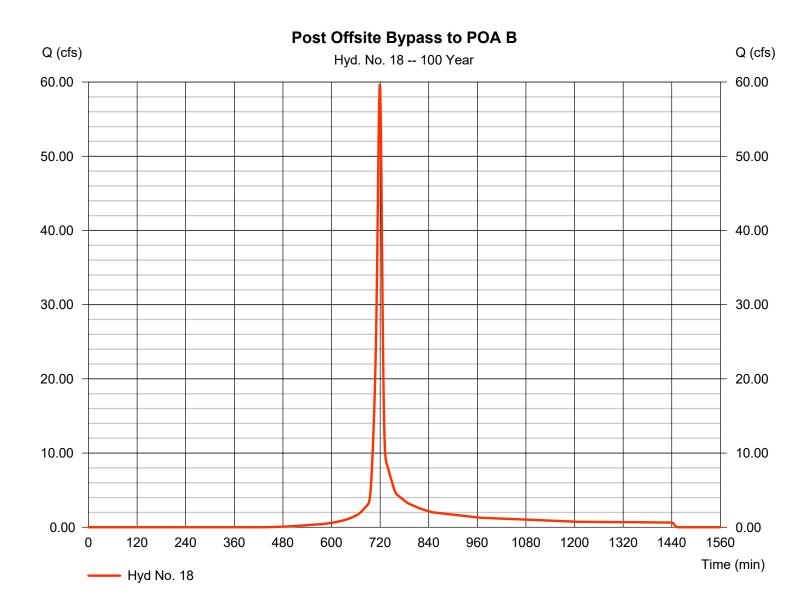


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### **Hyd. No. 18**

Post Offsite Bypass to POA B

Hydrograph type = SCS Runoff Peak discharge = 59.72 cfsStorm frequency = 100 yrsTime to peak = 719 min Time interval = 1 min Hyd. volume = 135,777 cuft Curve number Drainage area = 8.730 ac= 72 = 0 ftBasin Slope = 0.0 %Hydraulic length Tc method Time of conc. (Tc) = 10.00 min = User Total precip. = 7.53 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484

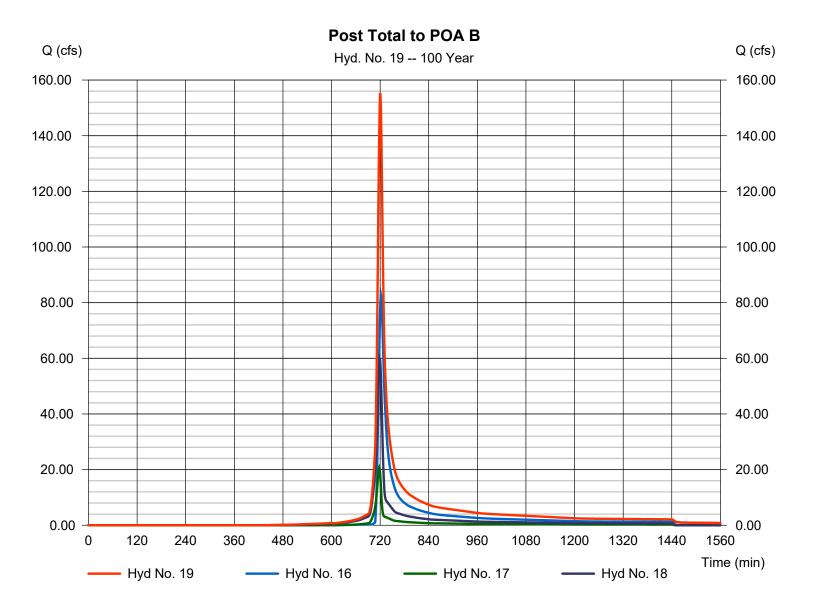


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### Hyd. No. 19

Post Total to POA B

Hydrograph type = Combine Peak discharge = 155.29 cfsStorm frequency Time to peak = 100 yrs= 720 min = 425,479 cuft Time interval = 1 min Hyd. volume Inflow hyds. = 16, 17, 18 Contrib. drain. area = 12.390 ac

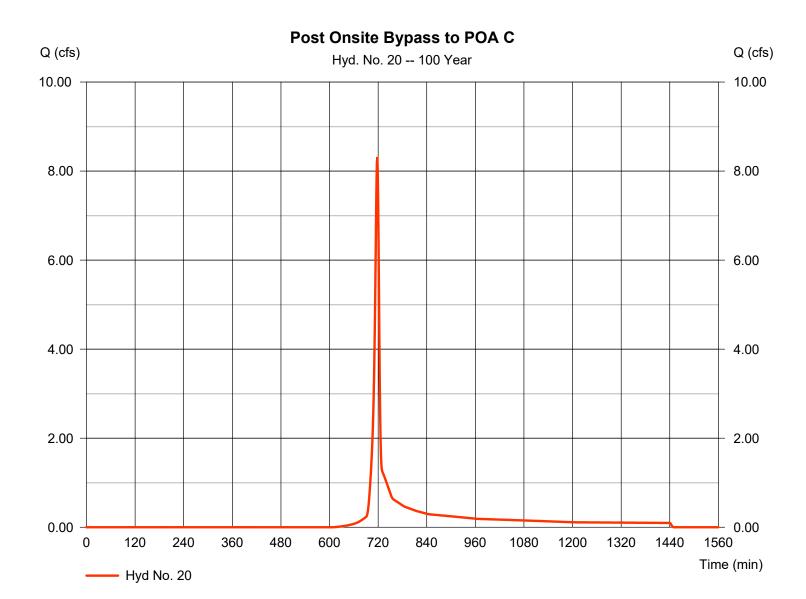


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### Hyd. No. 20

Post Onsite Bypass to POA C

Hydrograph type = SCS Runoff Peak discharge = 8.316 cfsStorm frequency = 100 yrsTime to peak = 718 min Time interval = 1 min Hyd. volume = 16,713 cuft Curve number Drainage area = 1.550 ac= 59 Basin Slope = 0.0 %Hydraulic length = 0 ftTc method Time of conc. (Tc)  $= 5.00 \, \text{min}$ = User Total precip. = 7.53 inDistribution = Type II Shape factor Storm duration = 24 hrs = 484



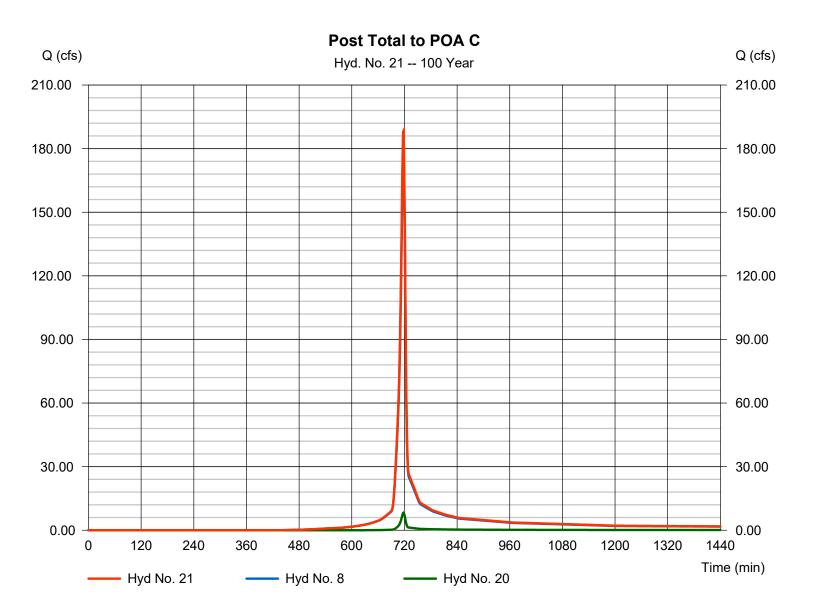
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### Hyd. No. 21

Post Total to POA C

Hydrograph type = Combine Peak discharge = 188.42 cfsStorm frequency Time to peak = 100 yrs= 718 min Time interval = 1 min Hyd. volume = 384,807 cuft Inflow hyds. = 8, 20 Contrib. drain. area = 24.500 ac



## Hydraflow Table of Contents \\KANSAS\Active\CSR003 - Old Concord Road\\Hydro\CSR003 hydro 2-28-18.gpw

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