

**Flood Design Frequency Selection Chart**

Design Frequency - Years					Drainage Structures
Rural Class			Urban Class		
STH/CTH (1) T1, T2, T3, T4, T5, T6	STH/CTH (2) T7	STH (3)	Urban Streets 1, 2, 3, 4, 5,	Urban Expressways & Freeways 1, 2, 3	
See <a href="#">FDM 13-10-1</a> , discussion of Major Drainage Structures					Bridges & Box Culverts
50	50	50	50	50	Underpass Storm Sewers
25	50	50	50	50	Main or Primary Channels
25	25	50	50	50	Cross Drain Pipe Culverts
25	25	25	25	25	Side Drain Pipe Culverts
25	25	25	25	25	Side Ditches and Channels
X	X	25	X	25	Median Ditches and Channels
X	X	X	10 (4) Check 25 Yr.	25	Urban Gutters, Inlets and Storm Sewers

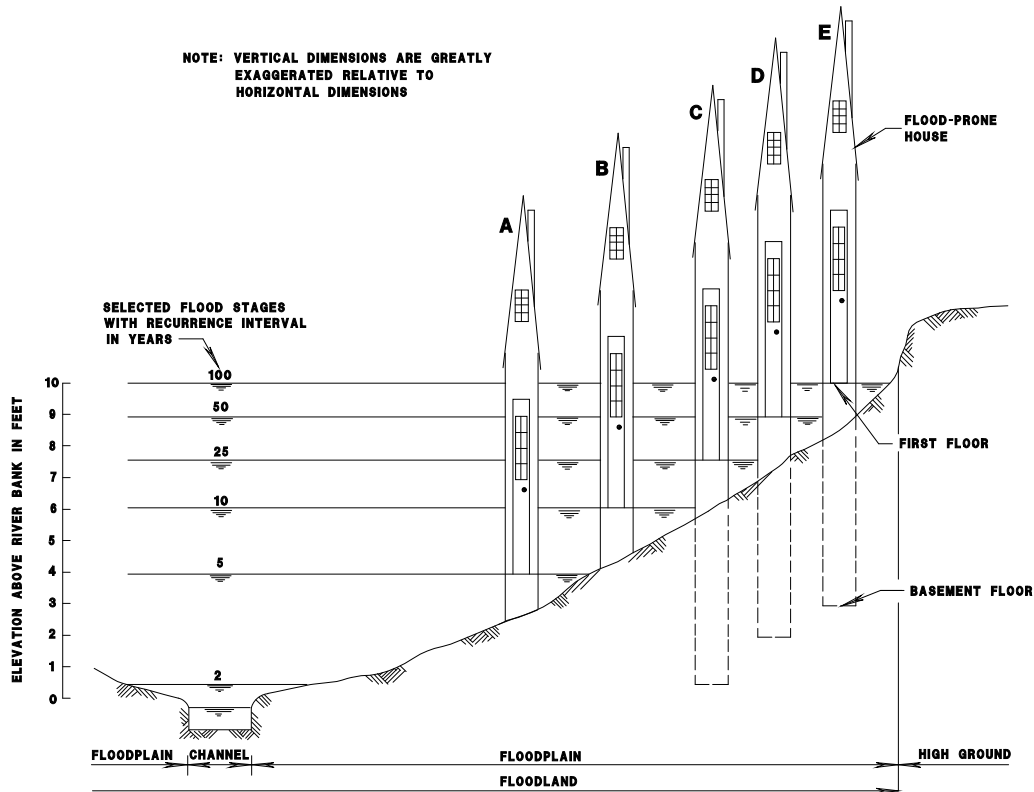
- (1) All state trunk highways with design ADT under 1500 and all county trunk highways with design ADT under 4000.
- (2) All state trunk highways with design ADT of 1500-7000 and all county trunk highways with design ADT over 4000.
- (3) All state trunk highways with design ADT of over 7000.
- (4) See [FDM 13-25-20](#)

**PROBABILITY OF FLOOD OCCURRENCE**

Percent Chance of Equaling or Exceeding such a Flood at Least Once in This Many Years					Recurrence Interval (Years)
100 Years	50 Years	25 Years	10 Years	Any 1 Year	
--	99	93	65	10	10
98	87	64	34	4	25
87	64	40	18	2	50
64	40	22	10	1	100

# PROBABILITY OF FLOOD DAMAGE BEFORE PAYMENT OF 25 YEAR MORTGAGE

## CHANNEL, FLOODPLAIN, AND FLOOD-PRONE HOUSES

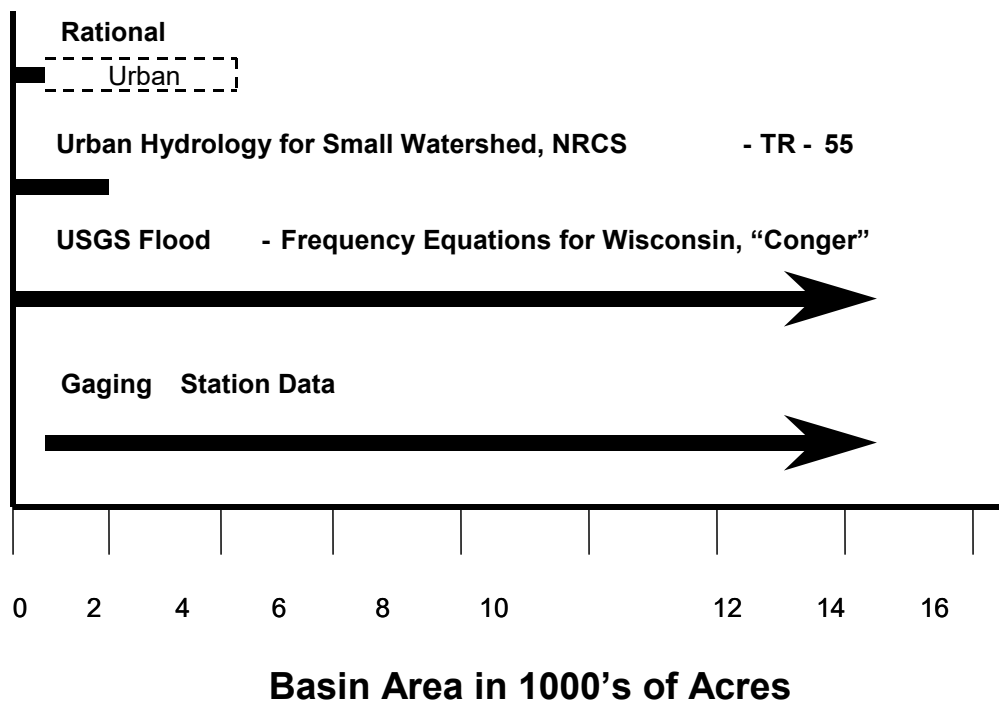


### RISK OF FLOODLAND OCCUPANCY

Identification	House	Percent Probability of First Floor or More Damage in Any Year	Percent Probability of First Floor or More Damage Before 25-Year Mortgage is Paid
	Position in Floodplain-First Floor Coincident With:		
A	5-Year Recurrence Interval Flood Stage	20.0	99.6
B	10-Year Recurrence Interval Flood Stage	10.0	92.8
C	25-Year Recurrence Interval Flood Stage	4.0	64.0
D	50-Year Recurrence Interval Flood Stage	2.0	40.0
E	100-Year Recurrence Interval Flood Stage	1.0	22.2

Source: SEWRPC.

### Area Limits for Peak Discharge Methods



**Detail A - Runoff Coefficients (C), Rational Formula**

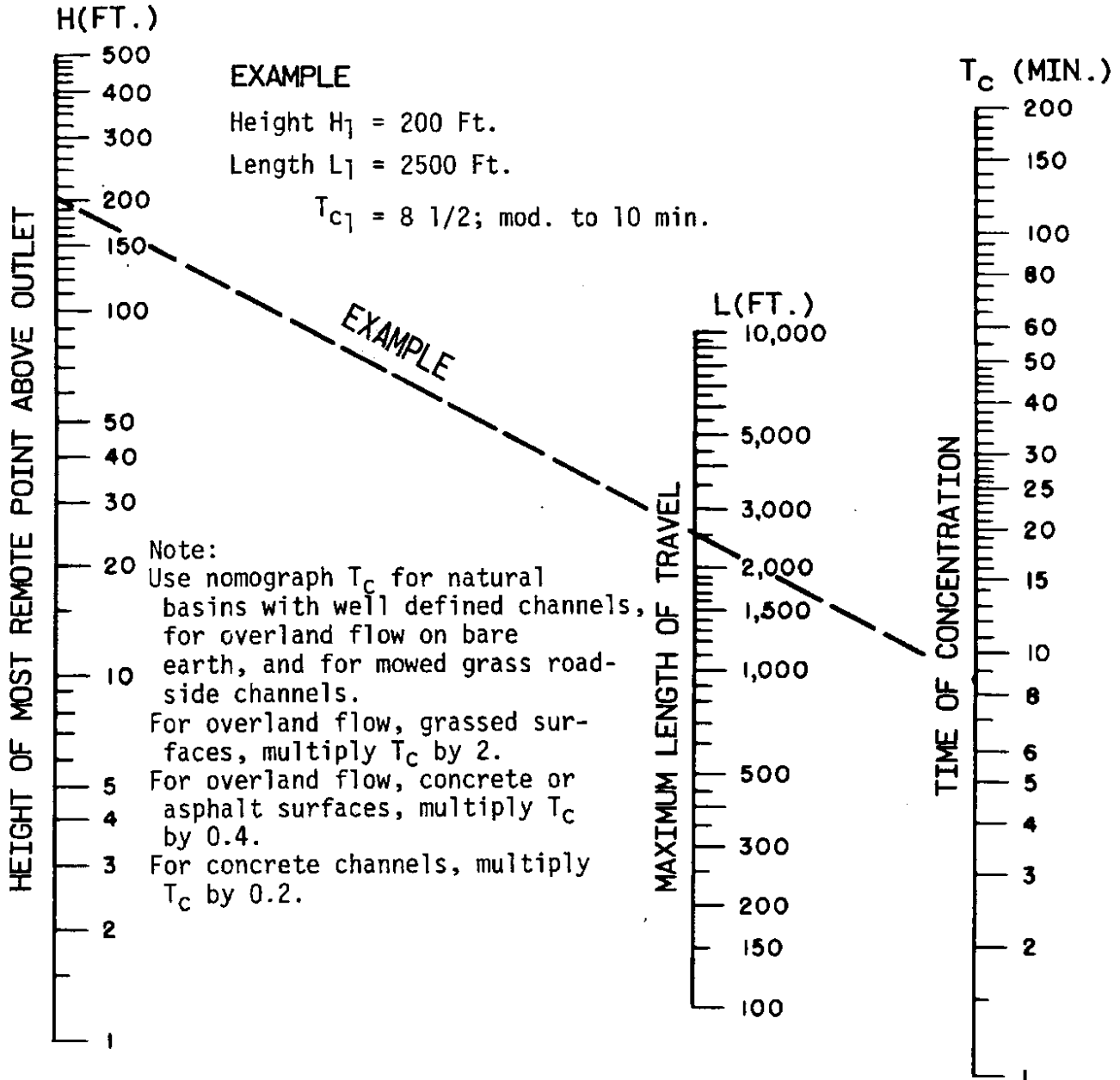
Land Use	Percent Impervious Area	Hydrologic Soil Group											
		A			B			C			D		
		Slope Range Percent			Slope Range Percent			Slope Range Percent			Slope Range Percent		
		0-2	2-6	6 & over	0-2	2-6	6 & over	0-2	2-6	6 & over	0-2	2-6	6 & over
Industrial	90	0.67	0.68	0.68	0.68	0.68	0.69	0.68	0.69	0.69	0.69	0.69	0.70
		0.85	0.85	0.86	0.85	0.86	0.86	0.86	0.86	0.87	0.86	0.86	0.88
Commercial	95	0.71	0.71	0.72	0.71	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
		0.88	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.90	0.89	0.89	0.90
High Density Residential	60	0.47	0.49	0.50	0.48	0.50	0.52	0.49	0.51	0.54	0.51	0.53	0.56
		0.58	0.60	0.61	0.59	0.61	0.64	0.60	0.62	0.66	0.62	0.64	0.69
Med. Density Residential	30	0.25	0.28	0.31	0.27	0.30	0.35	0.30	0.33	0.38	0.33	0.36	0.42
		0.33	0.37	0.40	0.35	0.39	0.44	0.38	0.42	0.49	0.41	0.45	0.54
Low Density Residential	15	0.14	0.19	0.22	0.17	0.21	0.26	0.20	0.25	0.31	0.24	0.28	0.35
		0.22	0.26	0.29	0.24	0.28	0.34	0.28	0.32	0.40	0.31	0.35	0.46
Agriculture	5	0.08	0.13	0.16	0.11	0.15	0.21	0.14	0.19	0.26	0.18	0.23	0.31
		0.14	0.18	0.22	0.16	0.21	0.28	0.20	0.25	0.34	0.24	0.29	0.41
Open Space	2	0.05	0.10	0.14	0.08	0.13	0.19	0.12	0.17	0.24	0.16	0.21	0.28
		0.11	0.16	0.20	0.14	0.19	0.26	0.18	0.23	0.32	0.22	0.27	0.39
Freeways & Expressways	70	0.57	0.59	0.60	0.58	0.60	0.61	0.59	0.61	0.63	0.60	0.62	0.64
		0.70	0.71	0.72	0.71	0.72	0.74	0.72	0.73	0.76	0.73	0.75	0.78

**Detail B - Runoff Coefficients for Specific Land Use**

Land Use	Hydrologic Soil Group											
	A			B			C			D		
	Slope Range Percent			Slope Range Percent			Slope Range Percent			Slope Range Percent		
	0-2	2-6	6 & over	0-2	2-6	6 & over	0-2	2-6	6 & over	0-2	2-6	6 & over
Row Crops	.08	.16	.22	.12	.20	.27	.15	.24	.33	.19	.28	.38
	.22	.30	.38	.26	.34	.44	.30	.37	.50	.34	.41	.56
Median Stripturf	.19	.20	.24	.19	.22	.26	.20	.23	.30	.20	.25	.30
	.24	.26	.30	.25	.28	.33	.26	.30	.37	.27	.32	.40
Side Slopeturf			.25			.27			.28			.30
			.32			.34			.36			.38
PAVEMENT												
Asphalt	.70 - .95											
Concrete	.80 - .95											
Brick	.70 - .80											
Drives, Walks	.75 - .85											
Roofs	.75 - .95											
Gravel Roads Shoulders	.40 - .60											

**NOTE:** The lower C values in each range should be used with the relatively low intensities associated with 2 to 10-year design recurrence intervals whereas the higher C values should be used for intensities associated with the longer 25 to 100 year deign recurrence intervals.

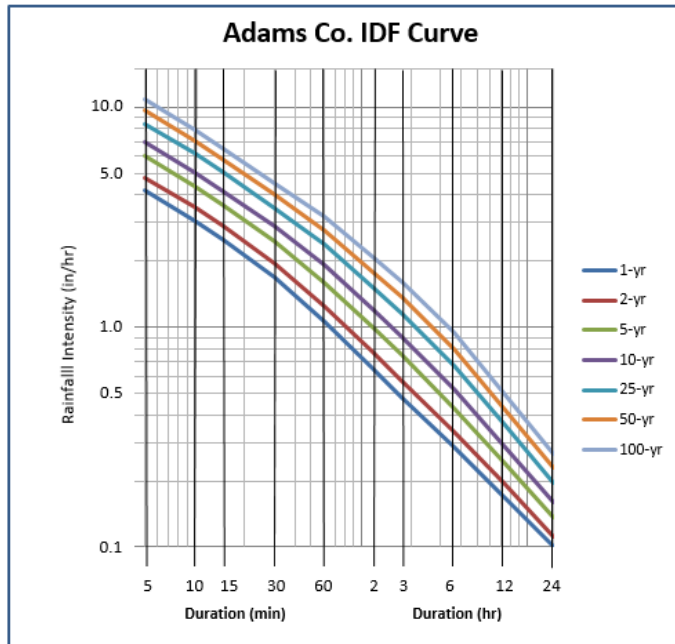
# TIME OF CONCENTRATION OF SMALL $T_c$ DRAINAGE BASINS



Based on study by P. Z. Kirpich,  
 Civil Engineering, Vol. 10, No. 6, June 1940, p.362

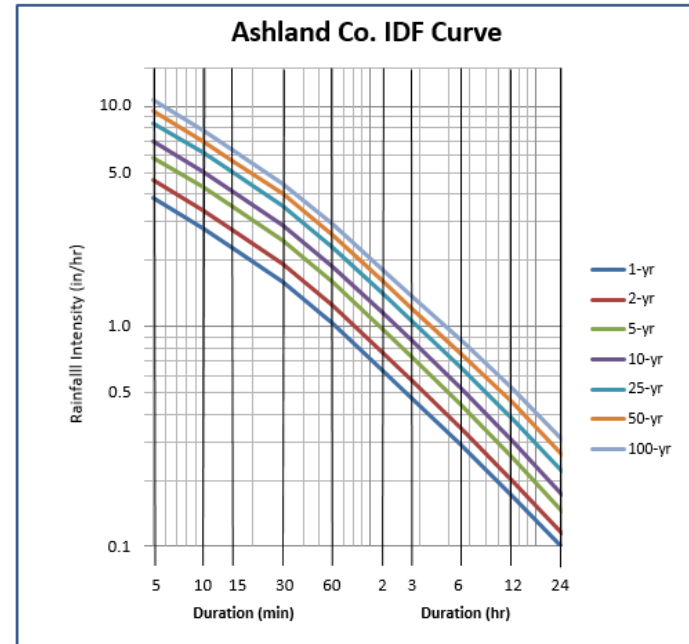
Adams County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.20	3.06	2.48	1.68	1.06	0.64	0.47	0.29	0.17	0.10
2-yr	4.80	3.54	2.88	1.96	1.25	0.77	0.57	0.34	0.20	0.11
5-yr	6.00	4.38	3.56	2.46	1.60	0.99	0.74	0.43	0.24	0.14
10-yr	6.96	5.10	4.16	2.88	1.92	1.20	0.90	0.52	0.29	0.16
25-yr	8.40	6.18	5.04	3.50	2.39	1.51	1.15	0.67	0.36	0.20
50-yr	9.72	7.08	5.76	4.02	2.78	1.78	1.37	0.80	0.43	0.23
100-yr	10.92	7.98	6.52	4.54	3.20	2.07	1.60	0.94	0.50	0.27



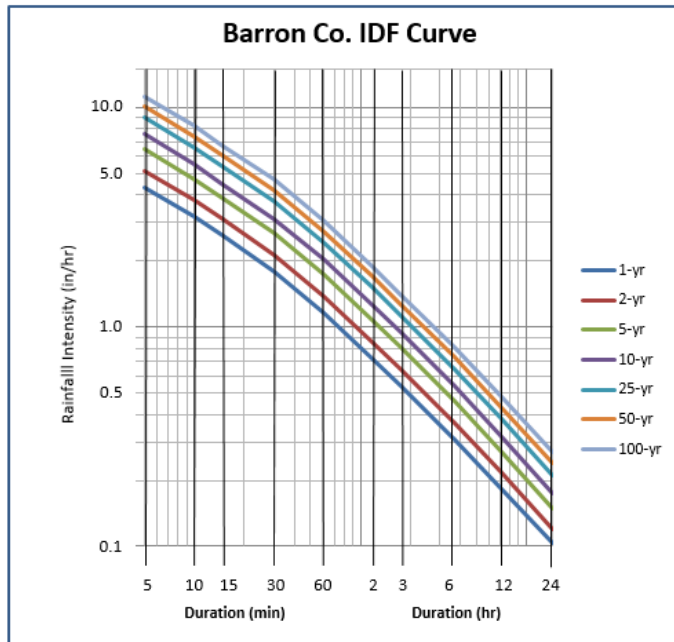
Ashland County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.84	2.82	2.28	1.60	1.03	0.64	0.48	0.29	0.17	0.10
2-yr	4.68	3.36	2.76	1.92	1.24	0.77	0.57	0.34	0.20	0.11
5-yr	5.88	4.32	3.52	2.46	1.59	0.98	0.73	0.43	0.25	0.14
10-yr	6.96	5.10	4.16	2.90	1.88	1.16	0.87	0.52	0.30	0.17
25-yr	8.40	6.18	5.04	3.52	2.29	1.42	1.06	0.64	0.38	0.22
50-yr	9.60	7.02	5.72	4.00	2.61	1.62	1.22	0.75	0.45	0.26
100-yr	10.80	7.86	6.40	4.48	2.94	1.82	1.38	0.86	0.52	0.31



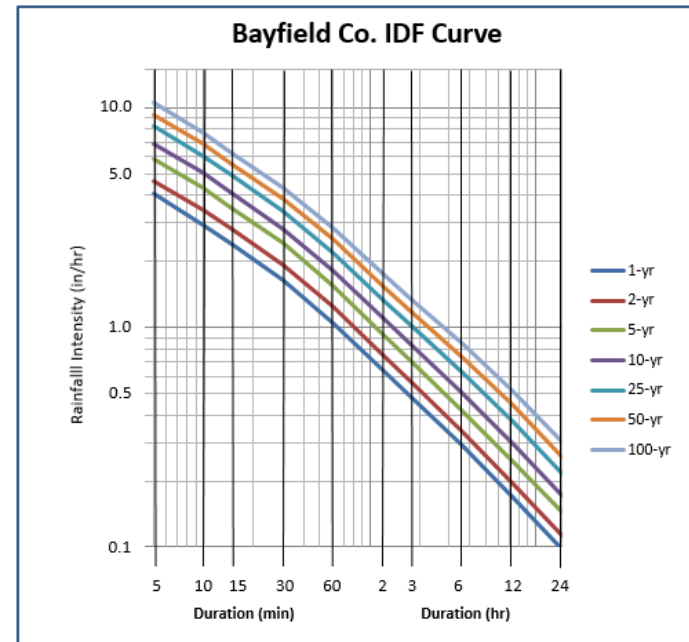
**Barron County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8**

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.32	3.18	2.60	1.80	1.16	0.71	0.53	0.31	0.18	0.10
2-yr	5.16	3.78	3.08	2.12	1.38	0.85	0.63	0.37	0.21	0.12
5-yr	6.48	4.74	3.84	2.68	1.74	1.07	0.80	0.47	0.27	0.15
10-yr	7.56	5.52	4.48	3.12	2.03	1.25	0.93	0.55	0.31	0.17
25-yr	9.00	6.60	5.36	3.74	2.43	1.50	1.12	0.66	0.37	0.21
50-yr	10.20	7.44	6.04	4.22	2.74	1.69	1.25	0.74	0.42	0.24
100-yr	11.28	8.28	6.72	4.70	3.04	1.87	1.39	0.82	0.48	0.27



**Bayfield County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8**

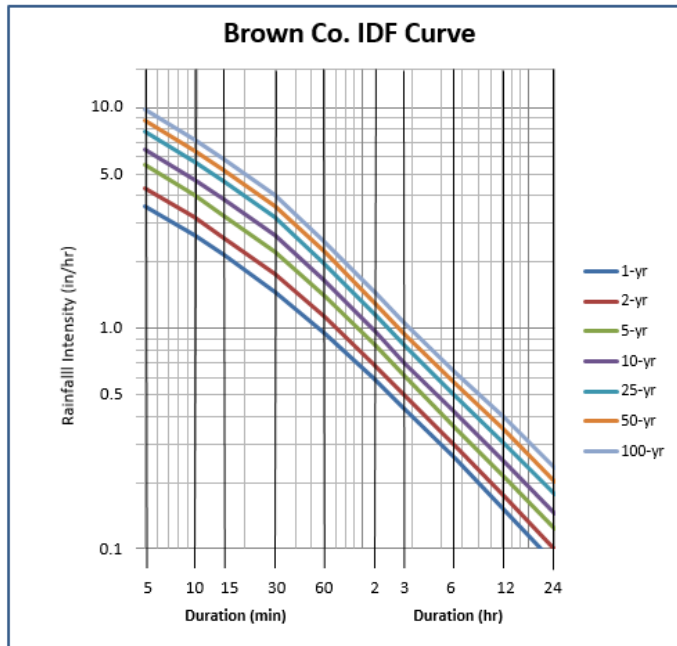
RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.08	2.94	2.40	1.64	1.05	0.65	0.48	0.29	0.17	0.10
2-yr	4.68	3.42	2.80	1.92	1.24	0.76	0.56	0.33	0.20	0.11
5-yr	5.88	4.32	3.48	2.42	1.54	0.94	0.70	0.42	0.25	0.14
10-yr	6.84	5.04	4.08	2.82	1.81	1.11	0.83	0.50	0.30	0.17
25-yr	8.28	6.06	4.92	3.40	2.20	1.35	1.02	0.62	0.38	0.22
50-yr	9.36	6.84	5.56	3.86	2.52	1.55	1.18	0.73	0.44	0.26
100-yr	10.56	7.68	6.24	4.34	2.85	1.77	1.35	0.84	0.52	0.30





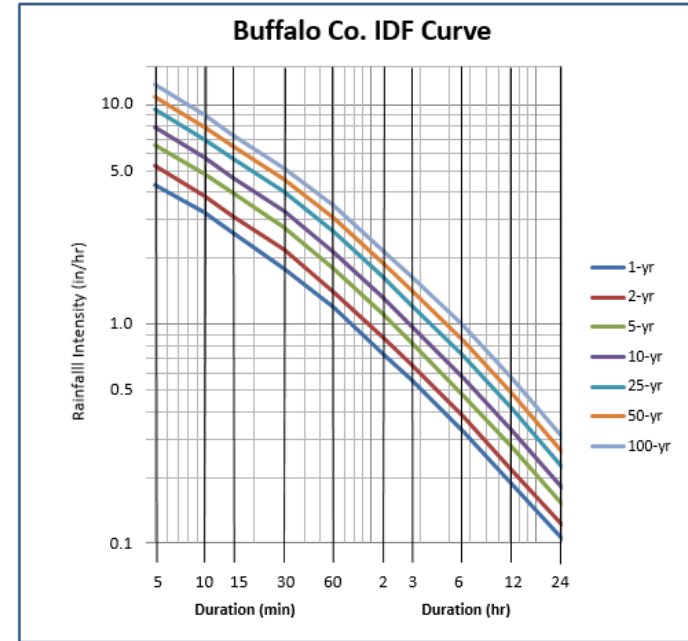
**Brown County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8**

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.60	2.64	2.16	1.46	0.95	0.59	0.43	0.26	0.15	0.09
2-yr	4.32	3.18	2.56	1.76	1.12	0.68	0.50	0.29	0.17	0.10
5-yr	5.52	4.02	3.24	2.24	1.40	0.84	0.61	0.36	0.21	0.12
10-yr	6.48	4.74	3.84	2.64	1.63	0.98	0.70	0.41	0.25	0.14
25-yr	7.80	5.70	4.64	3.18	1.96	1.17	0.84	0.50	0.30	0.18
50-yr	8.76	6.42	5.24	3.60	2.21	1.31	0.95	0.56	0.34	0.20
100-yr	9.84	7.20	5.88	4.02	2.47	1.46	1.06	0.63	0.39	0.23



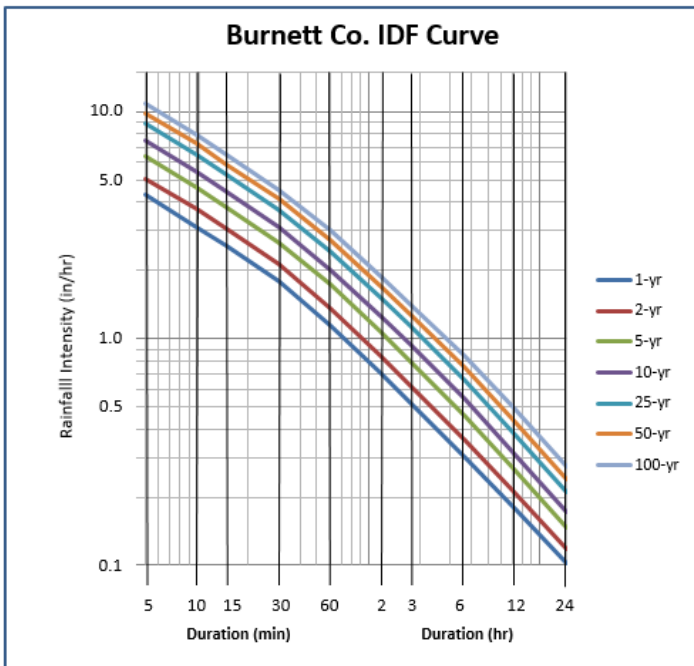
**Buffalo County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8**

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.32	3.24	2.60	1.80	1.19	0.74	0.55	0.33	0.18	0.10
2-yr	5.28	3.84	3.12	2.18	1.41	0.87	0.65	0.38	0.22	0.12
5-yr	6.60	4.86	3.96	2.78	1.80	1.11	0.82	0.48	0.27	0.15
10-yr	7.92	5.76	4.68	3.30	2.14	1.32	0.97	0.57	0.33	0.18
25-yr	9.60	7.02	5.72	4.02	2.63	1.63	1.22	0.72	0.41	0.22
50-yr	10.92	7.98	6.52	4.58	3.04	1.90	1.43	0.85	0.48	0.26
100-yr	12.36	9.00	7.32	5.16	3.47	2.18	1.65	0.99	0.56	0.31



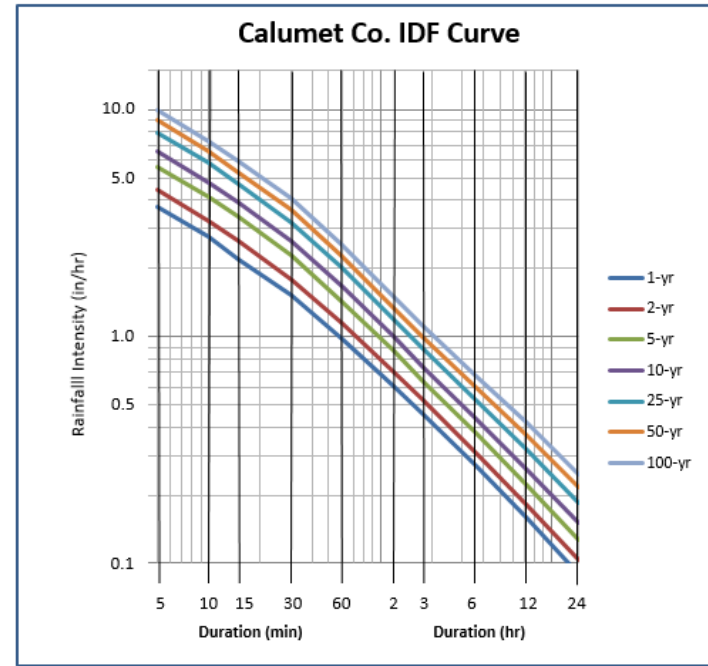
**Burnett County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8**

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.32	3.12	2.56	1.78	1.14	0.70	0.51	0.30	0.18	0.10
2-yr	5.04	3.72	3.04	2.12	1.36	0.84	0.62	0.36	0.21	0.12
5-yr	6.36	4.68	3.80	2.66	1.73	1.06	0.79	0.46	0.26	0.15
10-yr	7.44	5.46	4.44	3.10	2.02	1.25	0.93	0.54	0.31	0.17
25-yr	8.88	6.48	5.28	3.68	2.42	1.50	1.12	0.66	0.38	0.21
50-yr	9.84	7.26	5.88	4.12	2.71	1.69	1.26	0.75	0.43	0.24
100-yr	10.92	7.98	6.52	4.54	3.00	1.87	1.41	0.84	0.49	0.27



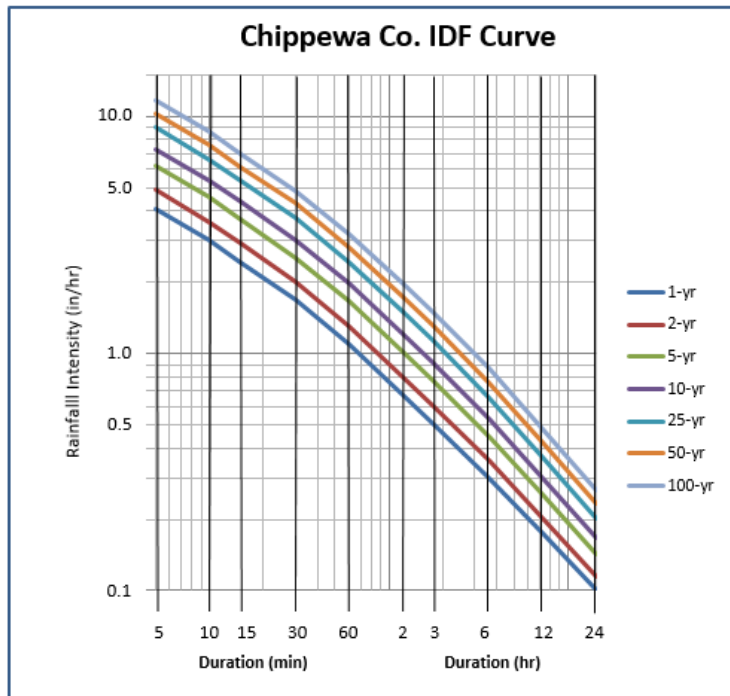
**Calumet County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8**

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.72	2.76	2.20	1.52	0.98	0.61	0.45	0.27	0.16	0.09
2-yr	4.44	3.24	2.64	1.80	1.15	0.70	0.52	0.31	0.18	0.10
5-yr	5.64	4.14	3.36	2.28	1.43	0.87	0.63	0.38	0.22	0.13
10-yr	6.60	4.80	3.92	2.66	1.67	1.00	0.73	0.43	0.26	0.15
25-yr	7.92	5.82	4.72	3.20	2.00	1.20	0.88	0.52	0.32	0.19
50-yr	9.00	6.54	5.32	3.62	2.26	1.35	0.99	0.60	0.36	0.22
100-yr	9.96	7.32	5.96	4.06	2.52	1.51	1.11	0.67	0.42	0.25



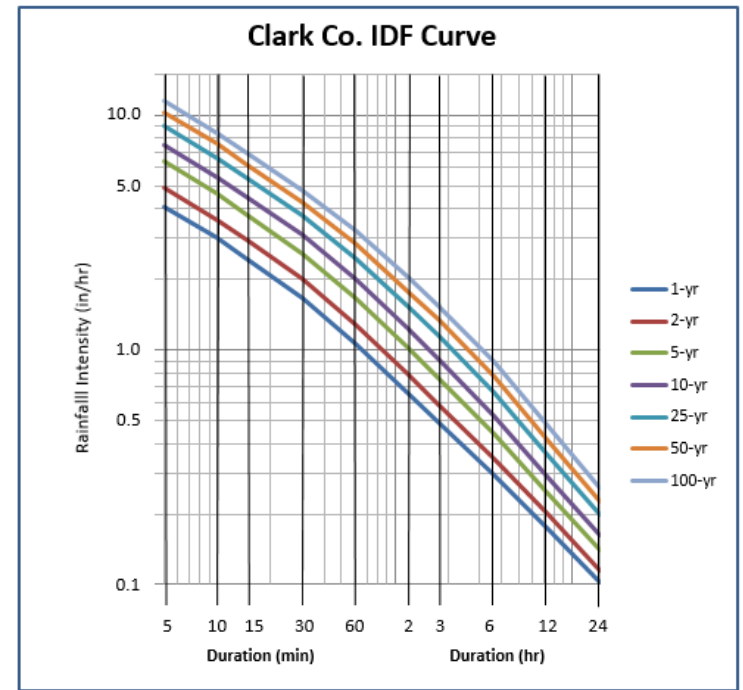
Chippewa County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.08	3.00	2.44	1.68	1.09	0.67	0.50	0.30	0.18	0.10
2-yr	4.92	3.60	2.92	2.00	1.30	0.80	0.60	0.35	0.20	0.12
5-yr	6.24	4.56	3.68	2.54	1.66	1.02	0.76	0.45	0.25	0.14
10-yr	7.32	5.40	4.36	3.02	1.97	1.22	0.91	0.53	0.30	0.17
25-yr	9.00	6.60	5.36	3.72	2.43	1.51	1.12	0.65	0.37	0.20
50-yr	10.32	7.56	6.16	4.30	2.81	1.74	1.30	0.76	0.42	0.23
100-yr	11.76	8.64	7.00	4.88	3.21	1.99	1.48	0.87	0.48	0.27



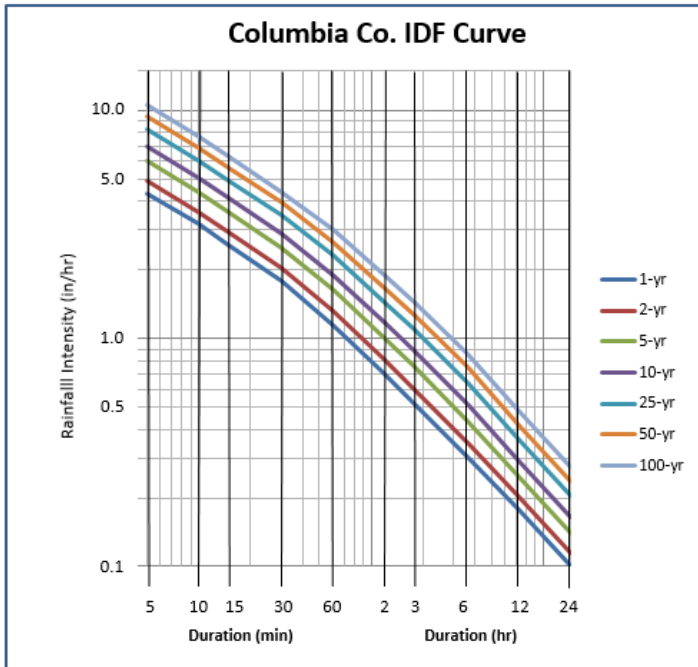
Clark County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.08	3.00	2.44	1.66	1.06	0.65	0.49	0.29	0.18	0.10
2-yr	4.92	3.60	2.92	2.02	1.29	0.79	0.58	0.35	0.20	0.12
5-yr	6.36	4.62	3.76	2.58	1.67	1.02	0.76	0.44	0.25	0.14
10-yr	7.44	5.46	4.44	3.08	2.00	1.23	0.91	0.53	0.29	0.16
25-yr	9.00	6.60	5.40	3.74	2.47	1.53	1.14	0.66	0.36	0.20
50-yr	10.32	7.56	6.12	4.26	2.84	1.78	1.33	0.77	0.42	0.23
100-yr	11.52	8.46	6.88	4.80	3.23	2.03	1.53	0.89	0.48	0.26



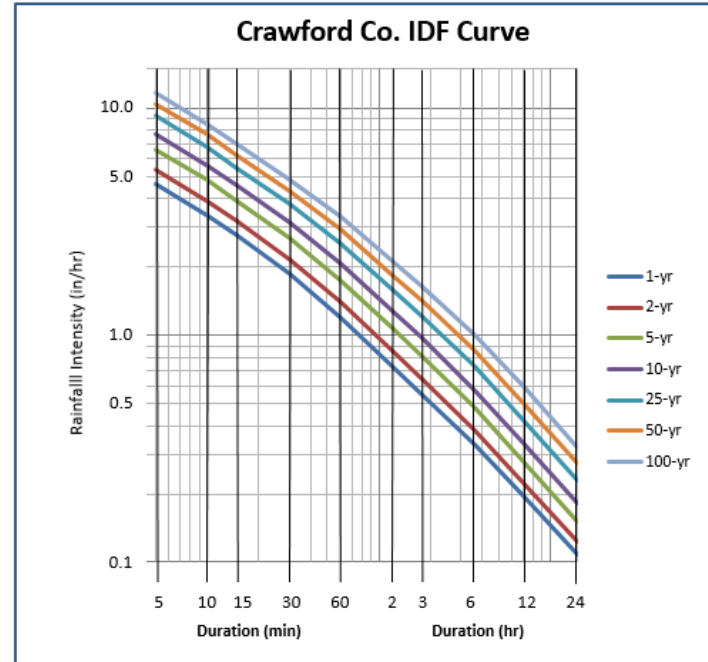
Columbia County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.32	3.18	2.56	1.80	1.15	0.70	0.51	0.30	0.18	0.10
2-yr	4.92	3.60	2.92	2.04	1.32	0.81	0.60	0.35	0.20	0.12
5-yr	6.00	4.38	3.56	2.50	1.63	1.01	0.75	0.44	0.25	0.14
10-yr	6.96	5.10	4.12	2.88	1.91	1.19	0.89	0.52	0.29	0.17
25-yr	8.28	6.06	4.96	3.46	2.31	1.45	1.09	0.64	0.36	0.20
50-yr	9.48	6.90	5.60	3.94	2.65	1.67	1.27	0.75	0.42	0.24
100-yr	10.56	7.74	6.32	4.42	3.00	1.90	1.45	0.86	0.48	0.27



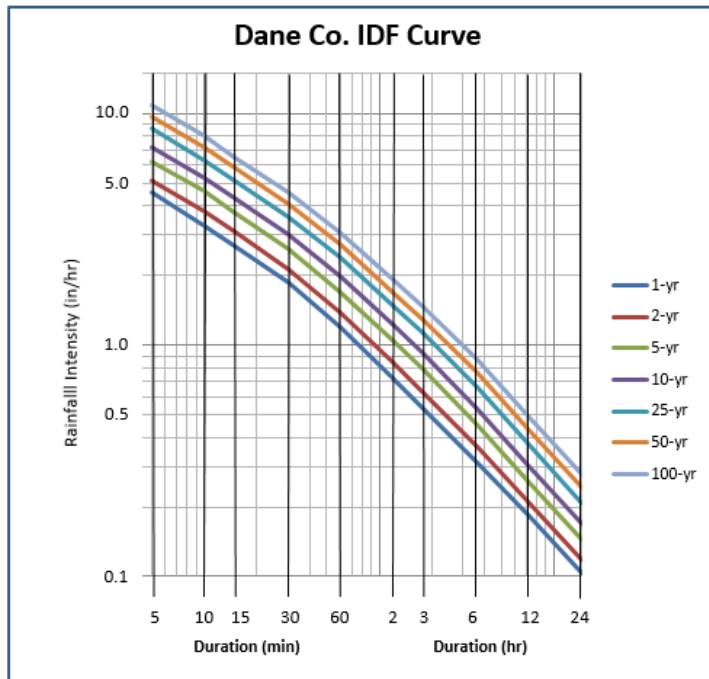
Crawford County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.68	3.36	2.76	1.86	1.19	0.73	0.55	0.33	0.19	0.11
2-yr	5.40	3.90	3.20	2.16	1.40	0.86	0.64	0.38	0.22	0.12
5-yr	6.60	4.86	3.92	2.68	1.75	1.08	0.81	0.48	0.27	0.15
10-yr	7.68	5.64	4.60	3.14	2.07	1.29	0.97	0.57	0.32	0.18
25-yr	9.24	6.78	5.48	3.78	2.54	1.59	1.21	0.73	0.41	0.23
50-yr	10.44	7.68	6.24	4.30	2.92	1.85	1.42	0.86	0.49	0.27
100-yr	11.76	8.58	7.00	4.84	3.33	2.12	1.65	1.01	0.58	0.32



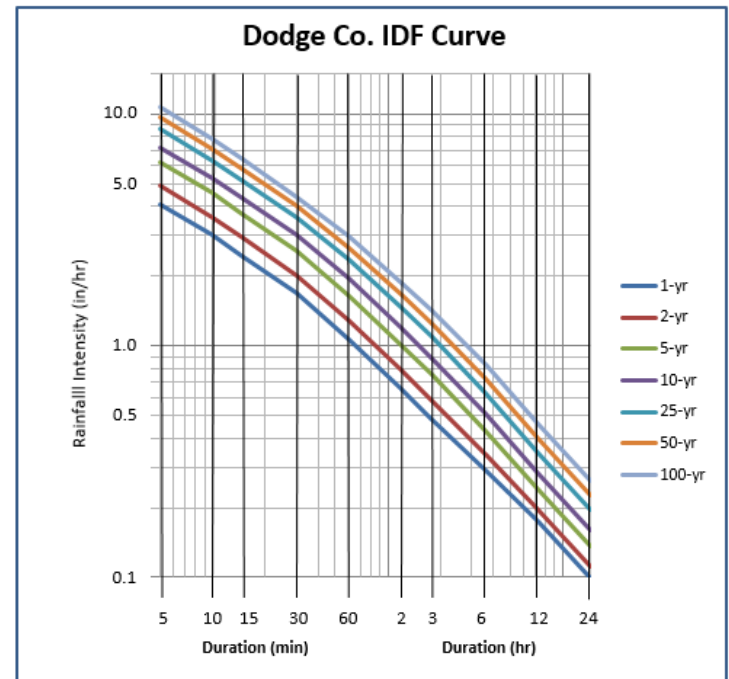
Dane County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.56	3.30	2.68	1.88	1.19	0.72	0.53	0.31	0.18	0.10
2-yr	5.16	3.78	3.08	2.14	1.38	0.84	0.62	0.36	0.21	0.12
5-yr	6.24	4.62	3.72	2.60	1.70	1.05	0.78	0.45	0.26	0.15
10-yr	7.20	5.28	4.32	3.00	1.98	1.23	0.92	0.54	0.30	0.17
25-yr	8.64	6.30	5.16	3.60	2.38	1.49	1.12	0.66	0.37	0.21
50-yr	9.72	7.14	5.84	4.06	2.71	1.70	1.29	0.76	0.43	0.24
100-yr	10.92	8.04	6.52	4.56	3.06	1.92	1.46	0.87	0.49	0.28



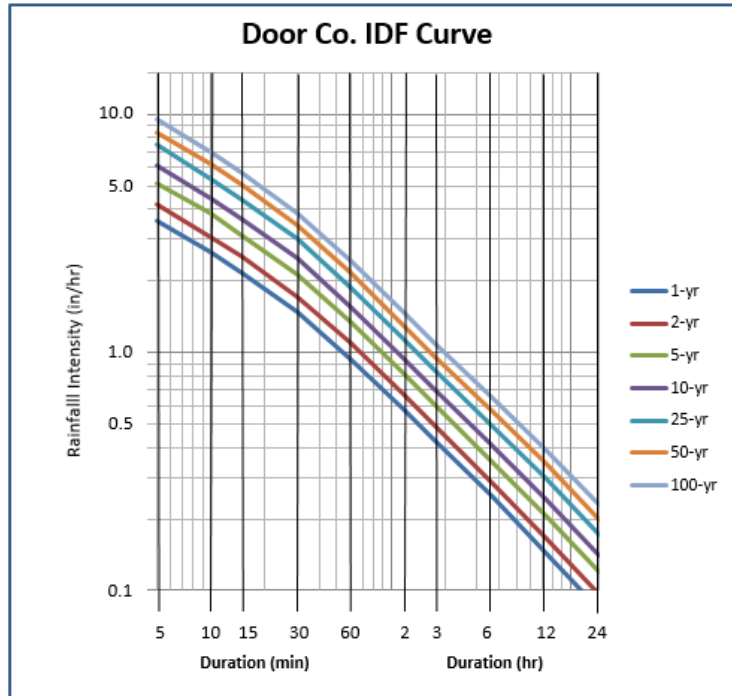
Dodge County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.08	3.00	2.44	1.68	1.07	0.65	0.48	0.29	0.17	0.10
2-yr	4.92	3.60	2.92	2.02	1.29	0.79	0.58	0.34	0.20	0.11
5-yr	6.24	4.56	3.68	2.56	1.65	1.01	0.75	0.43	0.24	0.14
10-yr	7.20	5.28	4.32	3.00	1.95	1.20	0.89	0.51	0.28	0.16
25-yr	8.64	6.30	5.12	3.58	2.35	1.46	1.09	0.63	0.34	0.19
50-yr	9.72	7.08	5.76	4.00	2.66	1.66	1.25	0.73	0.40	0.23
100-yr	10.68	7.80	6.36	4.42	2.97	1.87	1.41	0.83	0.46	0.26



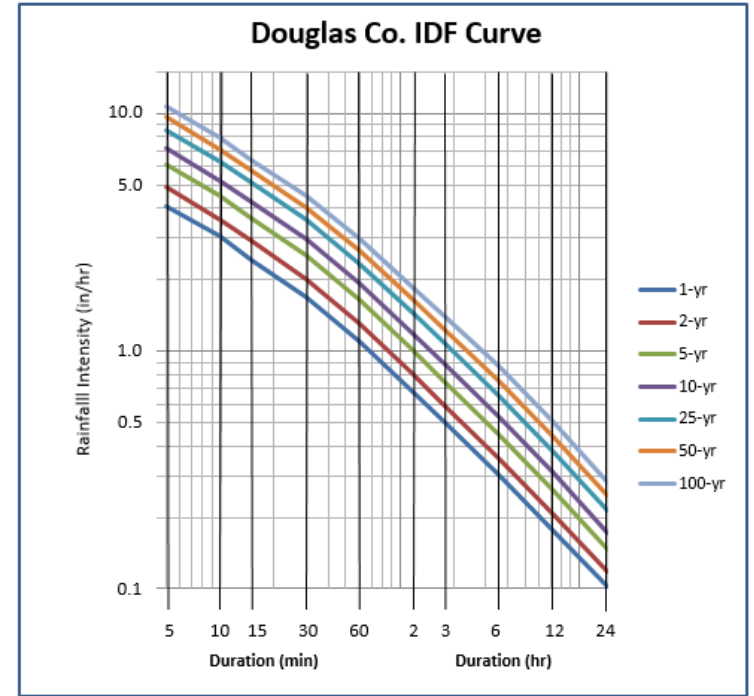
Door County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.60	2.64	2.16	1.48	0.94	0.58	0.42	0.25	0.14	0.08
2-yr	4.20	3.06	2.52	1.72	1.09	0.66	0.49	0.29	0.17	0.10
5-yr	5.16	3.84	3.12	2.12	1.34	0.81	0.59	0.35	0.21	0.12
10-yr	6.12	4.44	3.64	2.48	1.56	0.94	0.69	0.41	0.24	0.14
25-yr	7.44	5.40	4.40	3.00	1.88	1.13	0.83	0.50	0.30	0.17
50-yr	8.40	6.18	5.04	3.44	2.15	1.29	0.95	0.57	0.34	0.20
100-yr	9.60	6.96	5.68	3.88	2.43	1.46	1.08	0.65	0.39	0.23



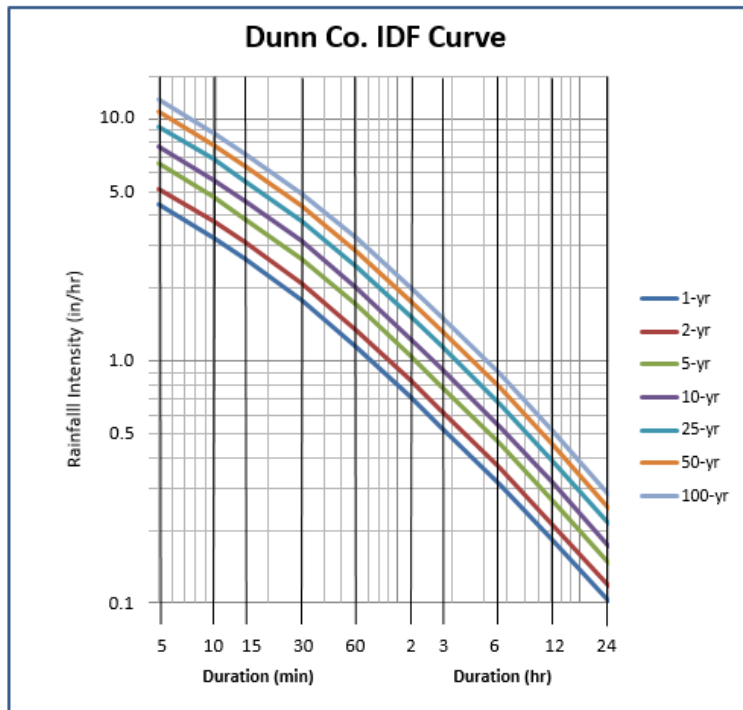
Douglas County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.08	3.06	2.44	1.70	1.09	0.67	0.50	0.30	0.17	0.10
2-yr	4.92	3.60	2.92	2.02	1.30	0.80	0.59	0.35	0.20	0.12
5-yr	6.12	4.50	3.64	2.54	1.64	1.00	0.74	0.44	0.26	0.15
10-yr	7.20	5.22	4.24	2.98	1.93	1.18	0.88	0.52	0.31	0.17
25-yr	8.52	6.30	5.12	3.58	2.33	1.44	1.08	0.65	0.38	0.21
50-yr	9.72	7.08	5.76	4.04	2.65	1.65	1.24	0.75	0.44	0.25
100-yr	10.80	7.92	6.40	4.50	2.98	1.86	1.40	0.85	0.50	0.28



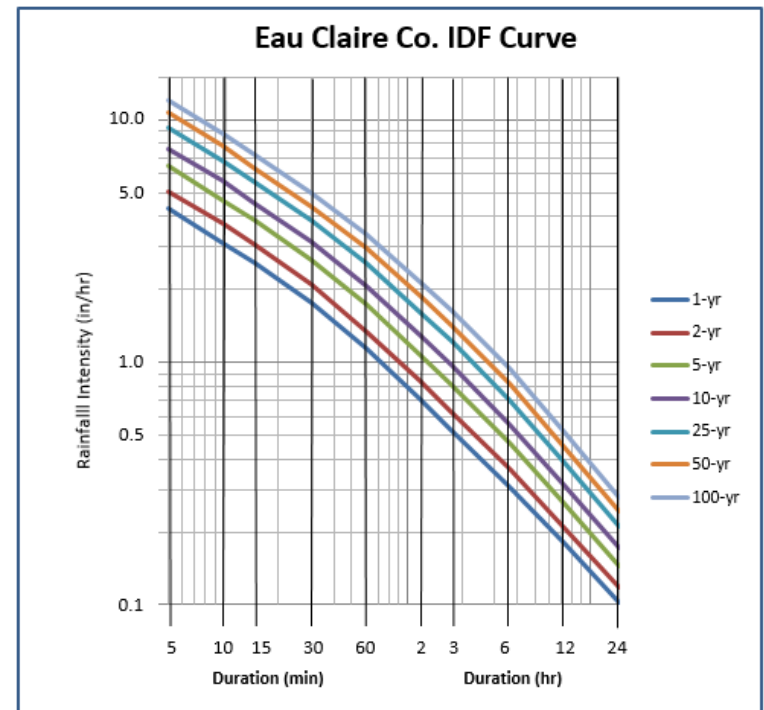
Dunn County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.44	3.24	2.64	1.78	1.15	0.71	0.53	0.31	0.18	0.10
2-yr	5.16	3.78	3.08	2.10	1.35	0.83	0.62	0.36	0.21	0.12
5-yr	6.60	4.80	3.88	2.66	1.71	1.05	0.78	0.46	0.26	0.15
10-yr	7.68	5.64	4.60	3.14	2.02	1.24	0.92	0.54	0.31	0.17
25-yr	9.36	6.84	5.56	3.82	2.47	1.52	1.14	0.67	0.38	0.21
50-yr	10.68	7.80	6.36	4.36	2.85	1.76	1.32	0.78	0.45	0.25
100-yr	12.00	8.82	7.16	4.94	3.24	2.01	1.51	0.90	0.51	0.28



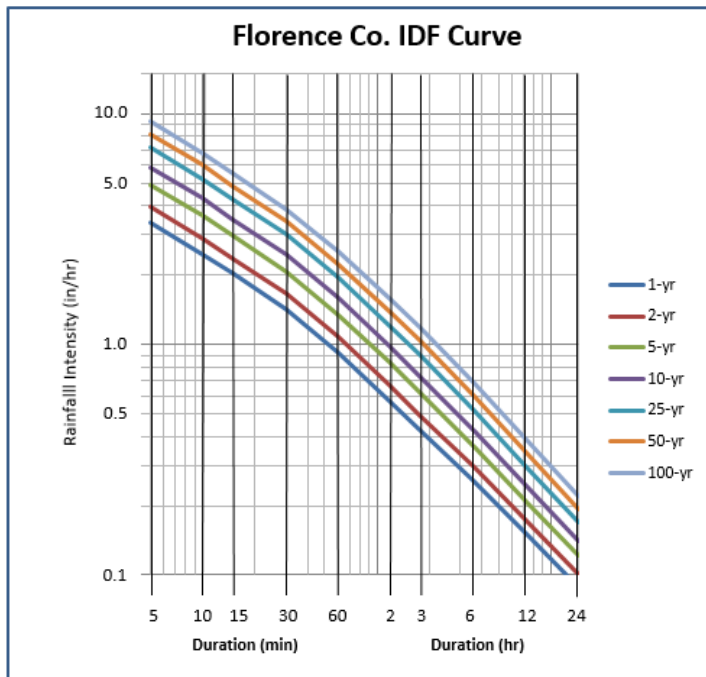
Eau Claire County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.32	3.12	2.56	1.76	1.14	0.70	0.52	0.31	0.18	0.10
2-yr	5.04	3.72	3.04	2.10	1.35	0.83	0.62	0.36	0.21	0.12
5-yr	6.48	4.68	3.84	2.66	1.74	1.07	0.80	0.47	0.26	0.15
10-yr	7.56	5.58	4.52	3.14	2.07	1.29	0.96	0.56	0.31	0.17
25-yr	9.24	6.78	5.52	3.86	2.56	1.60	1.20	0.70	0.39	0.21
50-yr	10.68	7.80	6.32	4.42	2.97	1.86	1.40	0.82	0.45	0.24
100-yr	12.00	8.82	7.16	5.02	3.39	2.14	1.62	0.95	0.52	0.28



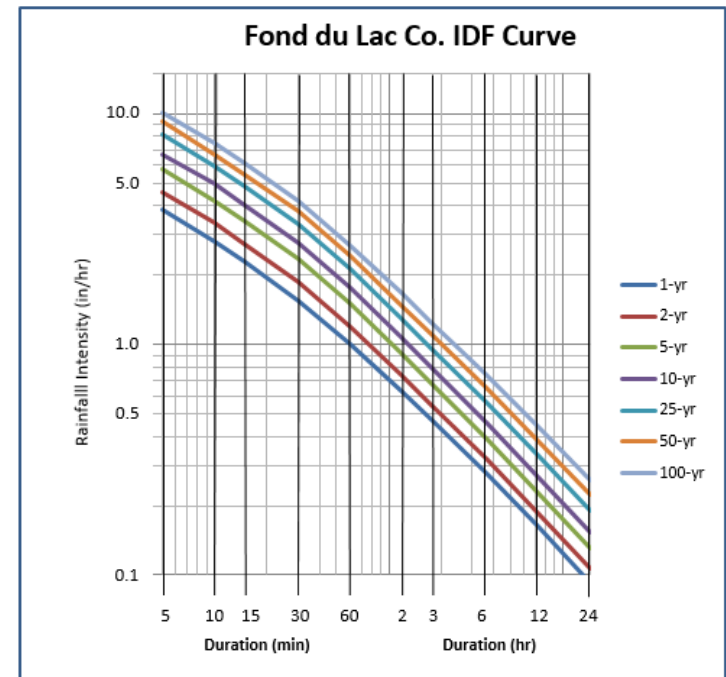
**Florence County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8**

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.36	2.46	2.04	1.42	0.92	0.57	0.42	0.25	0.15	0.09
2-yr	3.96	2.88	2.36	1.66	1.08	0.66	0.49	0.29	0.17	0.10
5-yr	4.92	3.66	2.96	2.08	1.35	0.83	0.61	0.36	0.21	0.12
10-yr	5.88	4.32	3.48	2.46	1.59	0.98	0.72	0.42	0.24	0.14
25-yr	7.20	5.22	4.24	3.00	1.94	1.20	0.89	0.52	0.29	0.17
50-yr	8.16	6.00	4.88	3.42	2.23	1.38	1.03	0.60	0.34	0.19
100-yr	9.24	6.78	5.52	3.88	2.54	1.57	1.17	0.68	0.39	0.22



**Fond du Lac County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8**

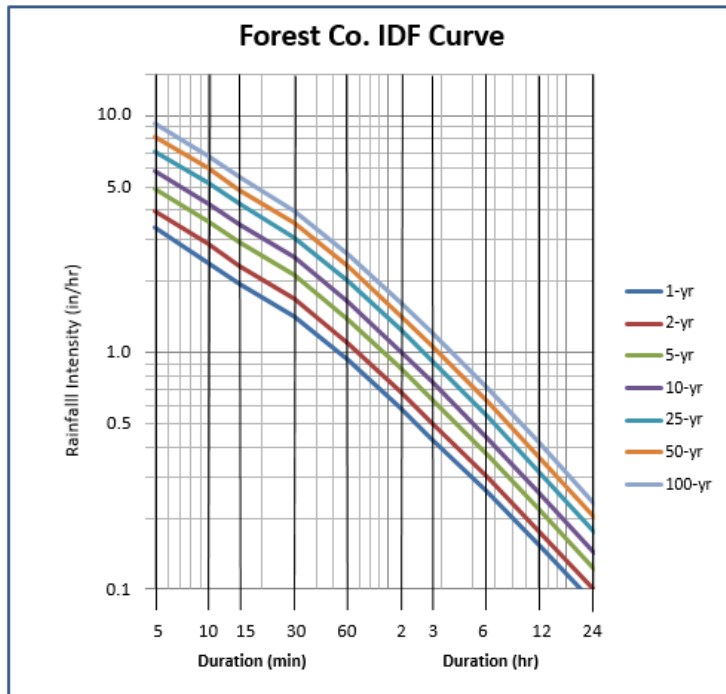
RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.84	2.82	2.28	1.56	1.01	0.62	0.46	0.28	0.16	0.09
2-yr	4.56	3.36	2.72	1.88	1.20	0.73	0.54	0.32	0.19	0.11
5-yr	5.76	4.20	3.44	2.36	1.50	0.91	0.67	0.39	0.23	0.13
10-yr	6.72	4.98	4.04	2.78	1.76	1.07	0.79	0.46	0.27	0.15
25-yr	8.16	5.94	4.84	3.34	2.13	1.29	0.95	0.56	0.33	0.19
50-yr	9.24	6.72	5.48	3.78	2.41	1.47	1.09	0.65	0.38	0.22
100-yr	10.20	7.50	6.12	4.20	2.70	1.66	1.24	0.74	0.44	0.26





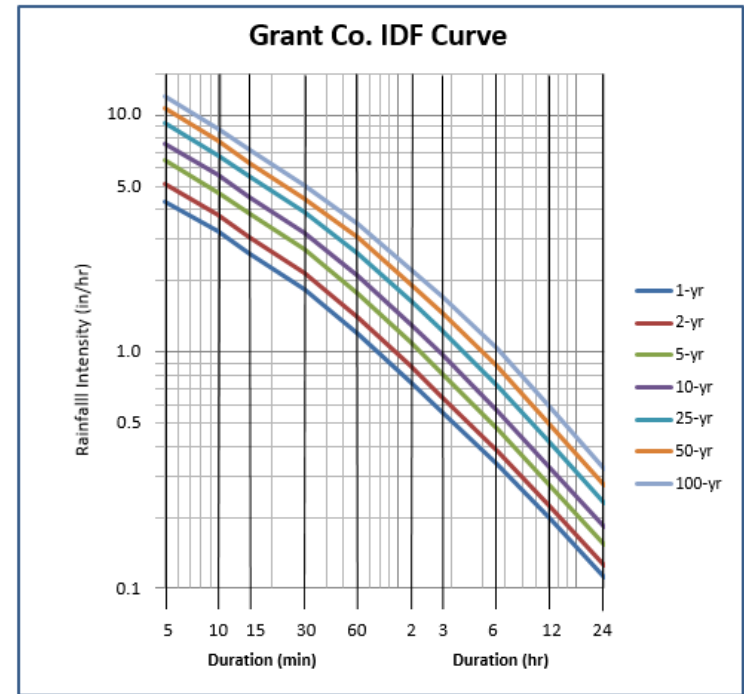
Forest County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.36	2.40	1.96	1.42	0.93	0.58	0.43	0.26	0.15	0.09
2-yr	3.96	2.88	2.32	1.68	1.10	0.68	0.50	0.30	0.17	0.10
5-yr	4.92	3.60	2.92	2.12	1.39	0.86	0.63	0.37	0.21	0.12
10-yr	5.88	4.26	3.48	2.52	1.64	1.01	0.75	0.44	0.25	0.14
25-yr	7.08	5.22	4.24	3.06	2.01	1.24	0.92	0.54	0.31	0.17
50-yr	8.16	6.00	4.88	3.52	2.31	1.43	1.06	0.62	0.35	0.20
100-yr	9.24	6.78	5.52	3.98	2.62	1.63	1.21	0.71	0.41	0.23



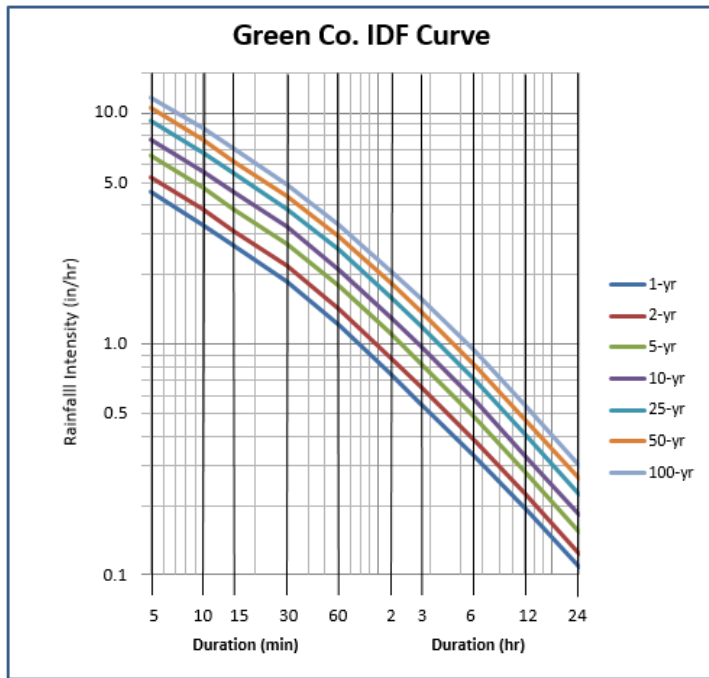
Grant County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.32	3.24	2.60	1.84	1.20	0.74	0.55	0.33	0.20	0.11
2-yr	5.16	3.78	3.04	2.16	1.40	0.87	0.64	0.38	0.22	0.13
5-yr	6.48	4.74	3.84	2.72	1.77	1.09	0.81	0.47	0.27	0.15
10-yr	7.56	5.58	4.52	3.20	2.10	1.30	0.97	0.57	0.32	0.18
25-yr	9.24	6.78	5.52	3.90	2.61	1.63	1.23	0.73	0.41	0.23
50-yr	10.68	7.80	6.32	4.48	3.04	1.92	1.46	0.87	0.49	0.27
100-yr	12.12	8.82	7.20	5.10	3.50	2.23	1.71	1.03	0.58	0.32



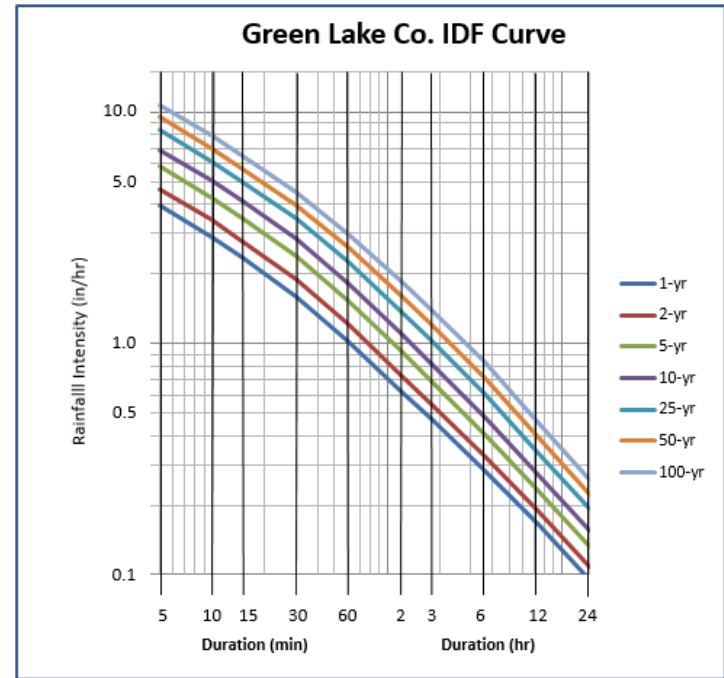
Green County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.56	3.30	2.68	1.86	1.21	0.74	0.55	0.33	0.19	0.11
2-yr	5.28	3.84	3.12	2.20	1.43	0.88	0.65	0.38	0.22	0.12
5-yr	6.60	4.80	3.88	2.74	1.79	1.11	0.82	0.48	0.27	0.15
10-yr	7.68	5.64	4.56	3.22	2.11	1.31	0.98	0.57	0.32	0.18
25-yr	9.24	6.78	5.52	3.88	2.57	1.60	1.20	0.70	0.40	0.22
50-yr	10.56	7.68	6.24	4.42	2.93	1.83	1.38	0.81	0.46	0.26
100-yr	11.76	8.64	7.04	4.96	3.31	2.07	1.56	0.93	0.53	0.30



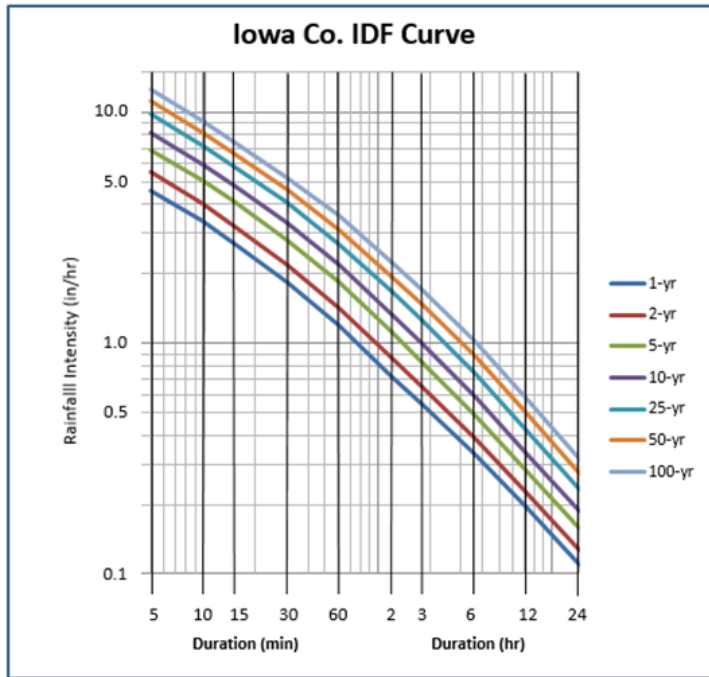
Green Lake County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.96	2.88	2.36	1.60	1.02	0.63	0.47	0.28	0.17	0.10
2-yr	4.68	3.42	2.76	1.90	1.21	0.74	0.55	0.32	0.19	0.11
5-yr	5.88	4.26	3.48	2.40	1.53	0.93	0.69	0.40	0.23	0.13
10-yr	6.84	5.04	4.12	2.84	1.82	1.11	0.82	0.48	0.27	0.16
25-yr	8.40	6.12	5.00	3.46	2.25	1.39	1.03	0.60	0.34	0.19
50-yr	9.60	7.02	5.72	3.96	2.60	1.62	1.21	0.71	0.40	0.22
100-yr	10.80	7.92	6.44	4.50	2.98	1.86	1.40	0.83	0.46	0.26



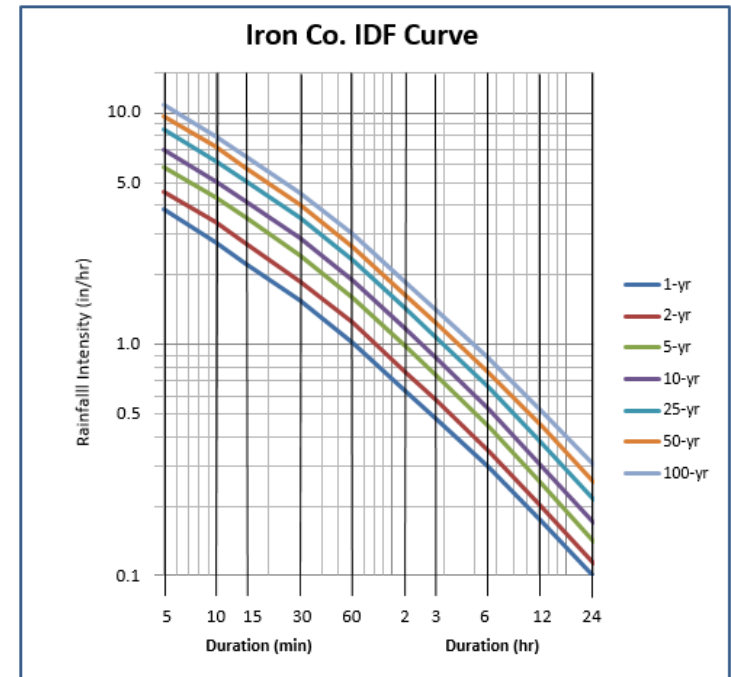
Iowa County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.56	3.36	2.72	1.84	1.19	0.73	0.55	0.33	0.19	0.11
2-yr	5.52	4.02	3.24	2.20	1.42	0.87	0.65	0.39	0.22	0.13
5-yr	6.84	5.04	4.12	2.82	1.83	1.12	0.84	0.49	0.28	0.16
10-yr	8.16	5.94	4.84	3.34	2.18	1.35	1.01	0.59	0.33	0.19
25-yr	9.84	7.20	5.88	4.08	2.70	1.68	1.26	0.74	0.42	0.23
50-yr	11.16	8.22	6.68	4.66	3.12	1.96	1.48	0.88	0.49	0.27
100-yr	12.60	9.24	7.52	5.24	3.56	2.25	1.71	1.02	0.57	0.32



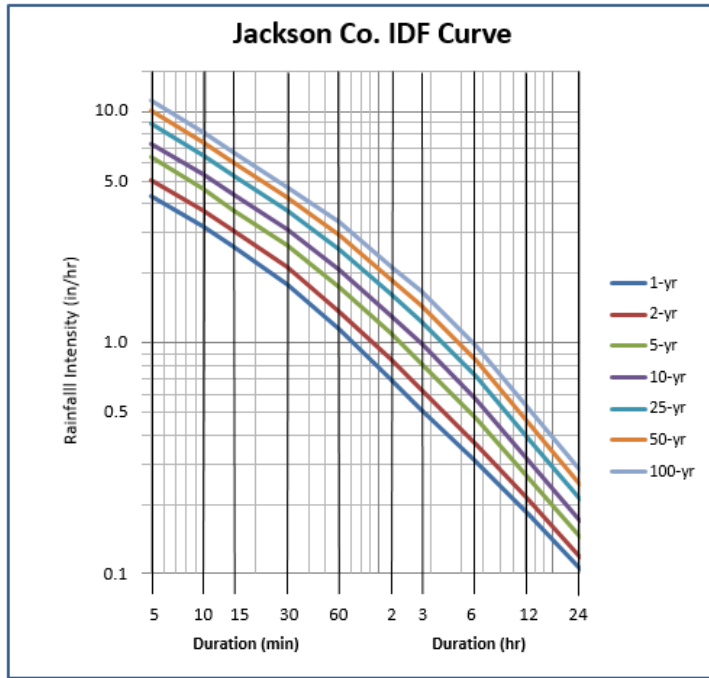
Iron County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.84	2.76	2.24	1.54	1.02	0.64	0.48	0.29	0.17	0.10
2-yr	4.56	3.36	2.72	1.88	1.24	0.77	0.58	0.35	0.20	0.11
5-yr	5.88	4.32	3.52	2.44	1.59	0.99	0.74	0.44	0.25	0.14
10-yr	6.96	5.10	4.16	2.90	1.90	1.18	0.88	0.52	0.30	0.17
25-yr	8.52	6.24	5.08	3.54	2.33	1.44	1.08	0.65	0.38	0.21
50-yr	9.72	7.14	5.80	4.04	2.66	1.65	1.25	0.76	0.45	0.26
100-yr	10.92	7.98	6.48	4.54	3.00	1.87	1.42	0.87	0.52	0.30



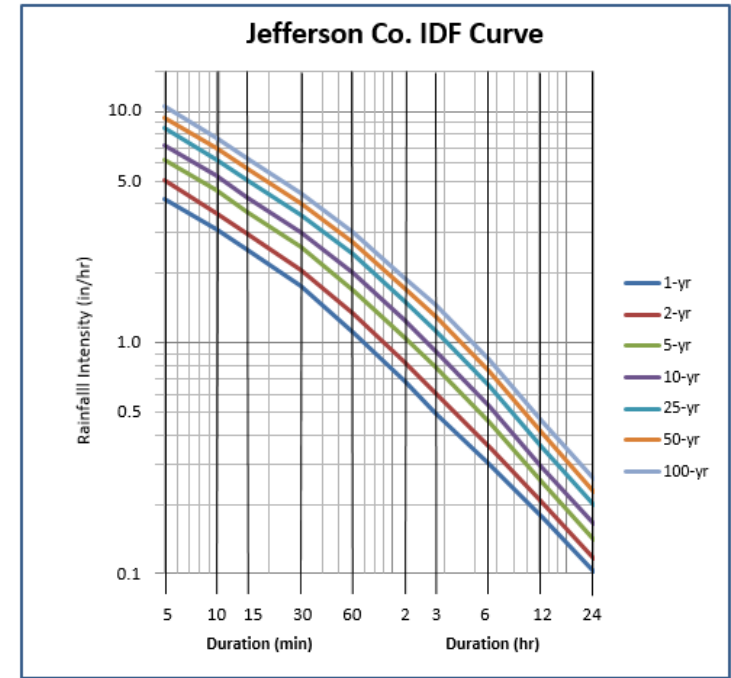
Jackson County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.32	3.18	2.60	1.80	1.14	0.69	0.51	0.31	0.18	0.11
2-yr	5.04	3.72	3.04	2.12	1.37	0.84	0.62	0.36	0.21	0.12
5-yr	6.36	4.62	3.76	2.66	1.75	1.09	0.81	0.47	0.26	0.15
10-yr	7.32	5.40	4.40	3.10	2.08	1.31	0.98	0.57	0.31	0.17
25-yr	8.88	6.48	5.28	3.74	2.55	1.62	1.23	0.72	0.39	0.21
50-yr	10.08	7.38	6.00	4.24	2.93	1.88	1.44	0.84	0.45	0.24
100-yr	11.28	8.22	6.68	4.74	3.32	2.14	1.66	0.98	0.52	0.28



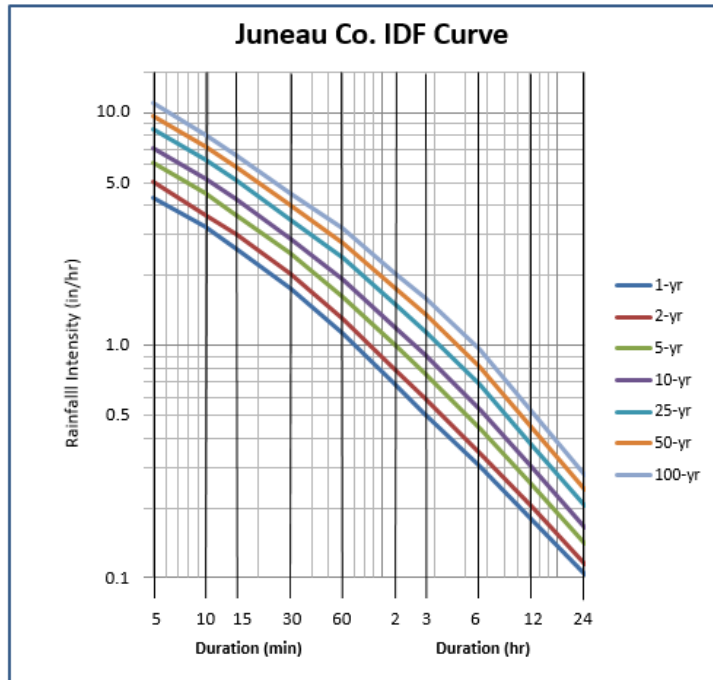
Jefferson County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.20	3.12	2.52	1.76	1.11	0.68	0.50	0.30	0.18	0.10
2-yr	5.04	3.66	2.96	2.08	1.34	0.82	0.60	0.35	0.20	0.12
5-yr	6.24	4.56	3.68	2.60	1.70	1.05	0.78	0.45	0.25	0.14
10-yr	7.20	5.28	4.28	3.02	2.00	1.25	0.93	0.53	0.29	0.16
25-yr	8.52	6.24	5.08	3.58	2.41	1.51	1.13	0.65	0.35	0.20
50-yr	9.48	6.96	5.68	4.02	2.71	1.71	1.29	0.75	0.41	0.23
100-yr	10.56	7.74	6.28	4.44	3.02	1.91	1.45	0.85	0.46	0.26



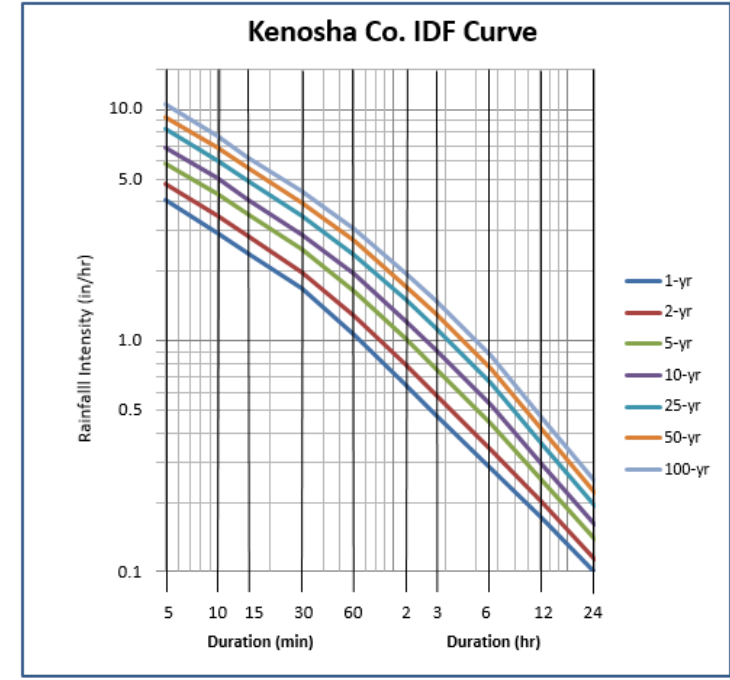
Juneau County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.32	3.24	2.60	1.76	1.12	0.68	0.50	0.30	0.18	0.10
2-yr	5.04	3.66	3.00	2.04	1.30	0.79	0.59	0.35	0.20	0.12
5-yr	6.12	4.50	3.64	2.50	1.62	1.00	0.75	0.44	0.25	0.14
10-yr	7.08	5.22	4.24	2.90	1.92	1.20	0.90	0.53	0.30	0.17
25-yr	8.52	6.30	5.12	3.50	2.38	1.50	1.15	0.68	0.37	0.20
50-yr	9.72	7.14	5.84	4.00	2.76	1.76	1.36	0.81	0.44	0.24
100-yr	11.04	8.10	6.56	4.52	3.18	2.05	1.60	0.96	0.52	0.28



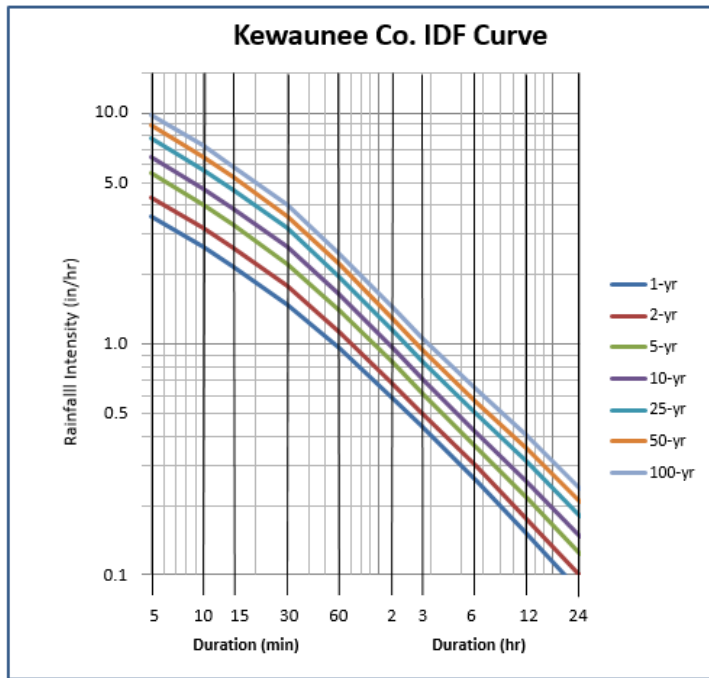
Kenosha County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.08	2.94	2.40	1.70	1.06	0.64	0.47	0.28	0.17	0.10
2-yr	4.80	3.48	2.84	1.98	1.28	0.78	0.58	0.34	0.20	0.11
5-yr	5.88	4.32	3.52	2.48	1.63	1.02	0.76	0.44	0.25	0.14
10-yr	6.84	5.04	4.08	2.90	1.94	1.22	0.91	0.53	0.29	0.16
25-yr	8.28	6.06	4.92	3.48	2.37	1.50	1.13	0.66	0.35	0.19
50-yr	9.36	6.90	5.60	3.96	2.71	1.72	1.31	0.76	0.41	0.22
100-yr	10.56	7.68	6.24	4.44	3.06	1.95	1.49	0.87	0.46	0.25



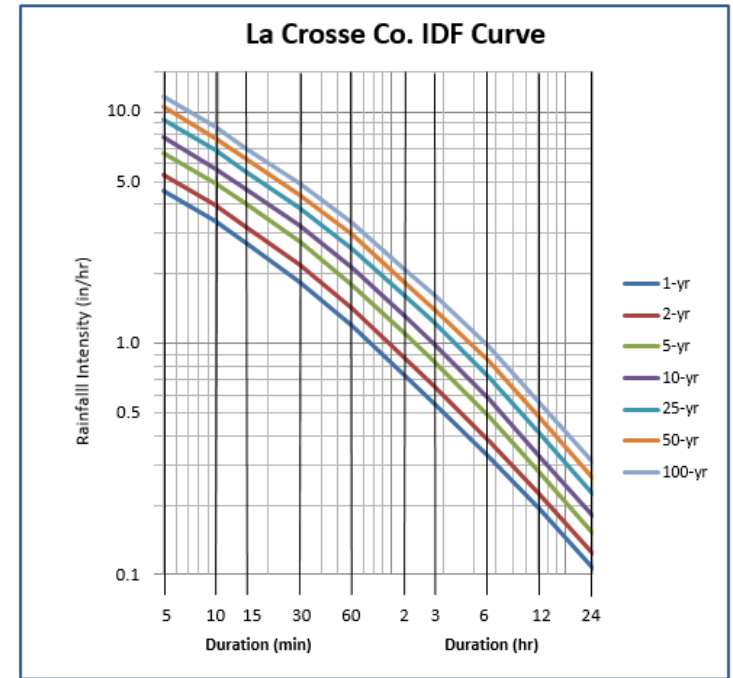
**Kewaunee County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8**

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.60	2.64	2.16	1.48	0.96	0.59	0.44	0.26	0.15	0.08
2-yr	4.32	3.18	2.60	1.78	1.12	0.68	0.50	0.30	0.17	0.10
5-yr	5.52	4.02	3.28	2.24	1.40	0.84	0.61	0.36	0.21	0.12
10-yr	6.48	4.74	3.84	2.64	1.64	0.98	0.71	0.42	0.25	0.15
25-yr	7.80	5.70	4.64	3.18	1.96	1.16	0.84	0.50	0.31	0.18
50-yr	8.88	6.48	5.28	3.60	2.21	1.31	0.95	0.57	0.35	0.21
100-yr	9.84	7.26	5.88	4.02	2.46	1.46	1.06	0.64	0.40	0.24



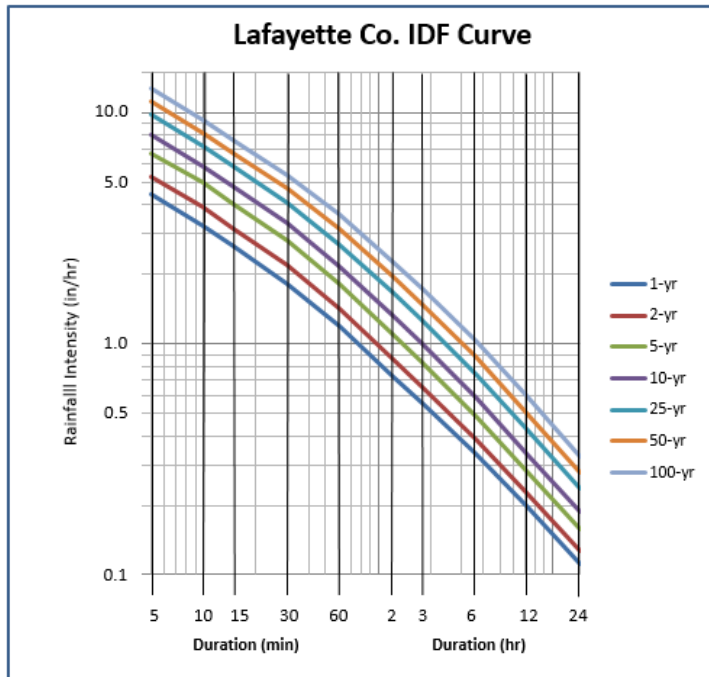
**La Crosse County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8**

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.56	3.36	2.72	1.84	1.19	0.73	0.55	0.33	0.19	0.11
2-yr	5.40	3.96	3.20	2.18	1.42	0.87	0.65	0.38	0.22	0.12
5-yr	6.72	4.92	4.00	2.76	1.80	1.11	0.83	0.49	0.27	0.15
10-yr	7.80	5.70	4.64	3.22	2.12	1.32	0.99	0.58	0.32	0.18
25-yr	9.36	6.84	5.56	3.88	2.58	1.62	1.22	0.72	0.40	0.22
50-yr	10.56	7.74	6.28	4.38	2.95	1.86	1.41	0.84	0.47	0.26
100-yr	11.76	8.64	7.00	4.90	3.33	2.10	1.61	0.97	0.55	0.30



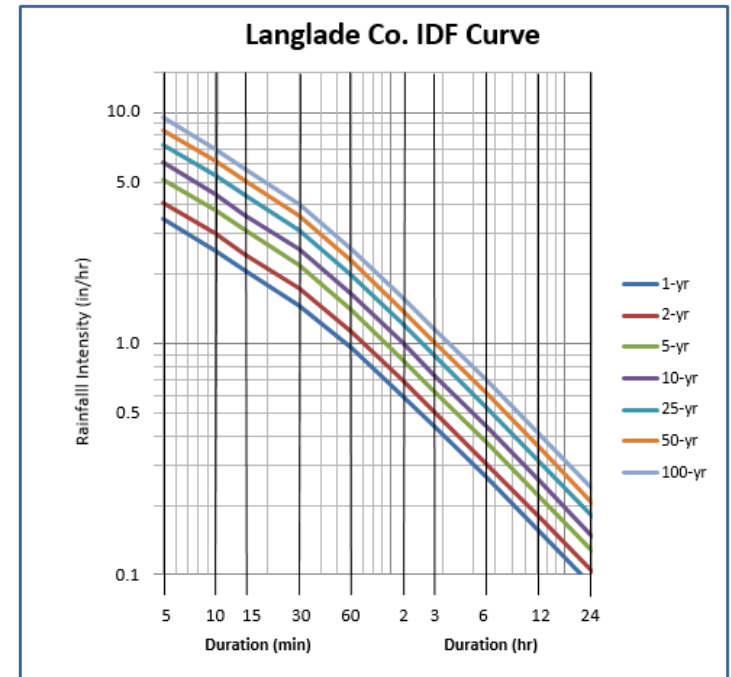
Lafayette County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.44	3.24	2.64	1.82	1.19	0.74	0.55	0.33	0.20	0.11
2-yr	5.28	3.90	3.16	2.18	1.42	0.87	0.65	0.39	0.22	0.13
5-yr	6.72	4.98	4.04	2.80	1.81	1.12	0.83	0.49	0.28	0.16
10-yr	8.04	5.88	4.76	3.32	2.17	1.34	1.00	0.59	0.33	0.19
25-yr	9.84	7.20	5.84	4.08	2.70	1.68	1.26	0.74	0.42	0.24
50-yr	11.28	8.22	6.72	4.70	3.15	1.97	1.49	0.88	0.50	0.28
100-yr	12.72	9.30	7.60	5.34	3.62	2.29	1.74	1.04	0.58	0.32



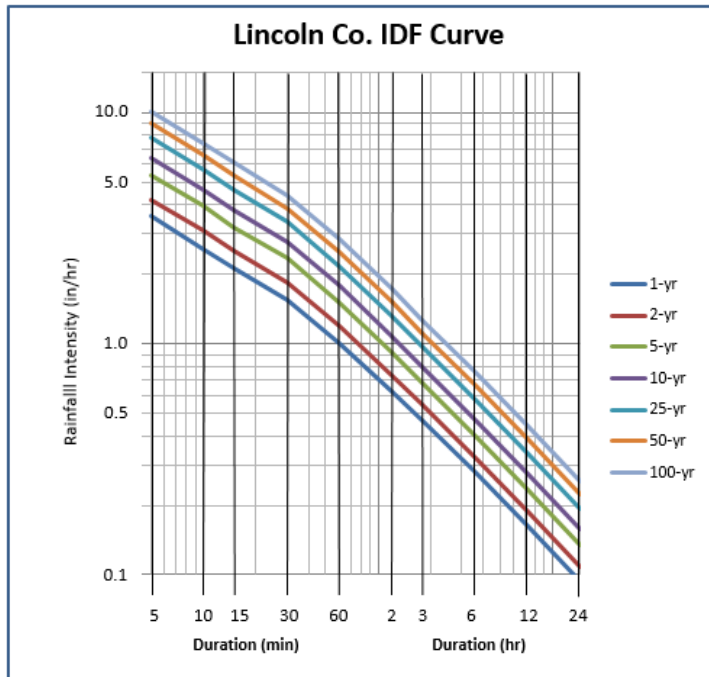
Langlade County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.48	2.52	2.08	1.46	0.96	0.59	0.44	0.26	0.15	0.09
2-yr	4.08	3.00	2.44	1.74	1.12	0.69	0.51	0.30	0.18	0.10
5-yr	5.16	3.78	3.08	2.18	1.40	0.85	0.63	0.37	0.22	0.13
10-yr	6.12	4.44	3.60	2.56	1.64	1.00	0.73	0.43	0.25	0.15
25-yr	7.32	5.40	4.40	3.12	1.99	1.21	0.89	0.53	0.31	0.18
50-yr	8.40	6.18	5.04	3.56	2.28	1.39	1.02	0.60	0.36	0.21
100-yr	9.60	7.02	5.68	4.02	2.58	1.57	1.16	0.69	0.40	0.23



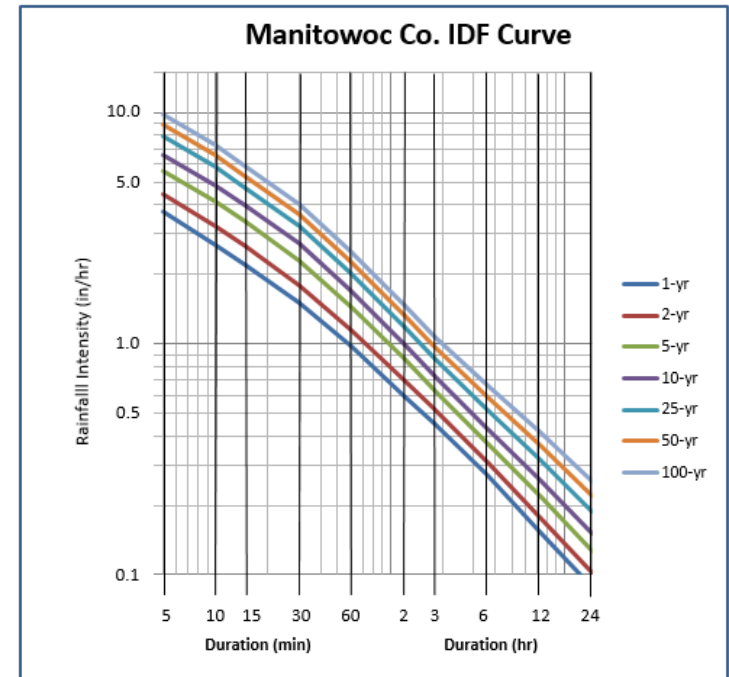
Lincoln County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.60	2.58	2.12	1.54	1.01	0.63	0.47	0.28	0.16	0.09
2-yr	4.20	3.12	2.52	1.84	1.19	0.74	0.54	0.32	0.19	0.11
5-yr	5.40	3.96	3.20	2.34	1.50	0.92	0.68	0.40	0.23	0.13
10-yr	6.36	4.68	3.80	2.76	1.78	1.09	0.80	0.47	0.27	0.16
25-yr	7.80	5.70	4.68	3.38	2.17	1.33	0.97	0.57	0.34	0.19
50-yr	9.00	6.60	5.36	3.88	2.50	1.53	1.12	0.66	0.39	0.22
100-yr	10.20	7.44	6.08	4.40	2.83	1.73	1.27	0.75	0.44	0.25



Manitowoc County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

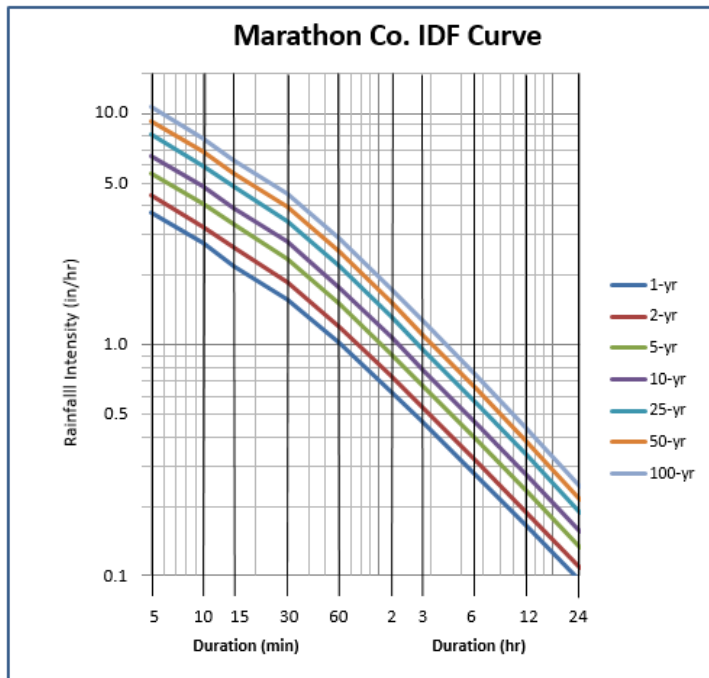
RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.72	2.70	2.20	1.50	0.97	0.60	0.45	0.27	0.15	0.09
2-yr	4.44	3.24	2.64	1.80	1.15	0.70	0.52	0.31	0.18	0.10
5-yr	5.64	4.14	3.36	2.30	1.44	0.87	0.63	0.37	0.22	0.13
10-yr	6.60	4.86	3.96	2.72	1.68	1.01	0.73	0.43	0.26	0.15
25-yr	7.92	5.82	4.72	3.24	2.00	1.19	0.86	0.52	0.32	0.19
50-yr	8.88	6.54	5.32	3.64	2.25	1.34	0.97	0.59	0.36	0.22
100-yr	9.84	7.26	5.88	4.04	2.48	1.48	1.08	0.66	0.42	0.25





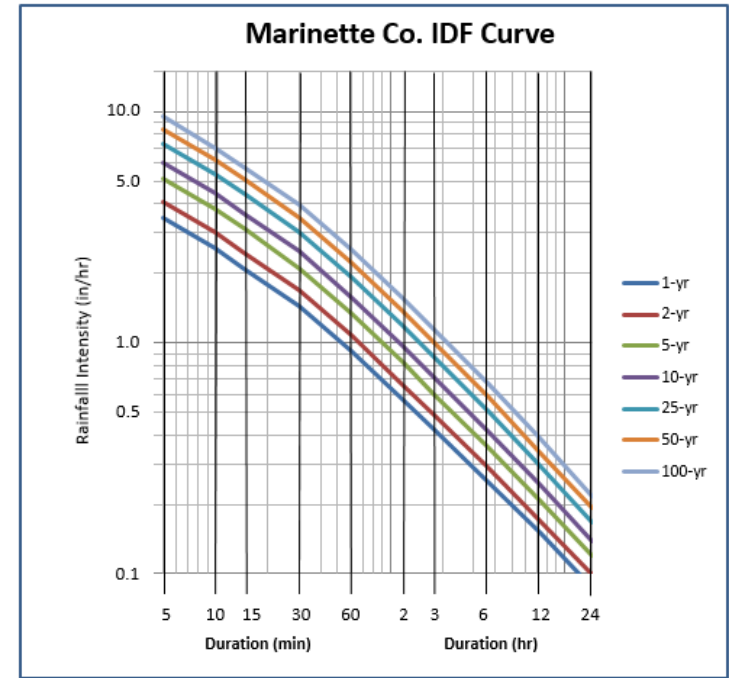
Marathon County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.72	2.76	2.20	1.58	1.02	0.63	0.46	0.27	0.16	0.09
2-yr	4.44	3.24	2.64	1.86	1.20	0.73	0.54	0.32	0.19	0.11
5-yr	5.52	4.08	3.32	2.36	1.50	0.91	0.67	0.39	0.23	0.13
10-yr	6.60	4.86	3.92	2.80	1.77	1.08	0.79	0.46	0.27	0.16
25-yr	8.16	5.94	4.84	3.44	2.18	1.33	0.96	0.56	0.33	0.19
50-yr	9.36	6.84	5.56	3.96	2.52	1.53	1.12	0.65	0.38	0.22
100-yr	10.68	7.80	6.32	4.52	2.88	1.75	1.28	0.74	0.43	0.24



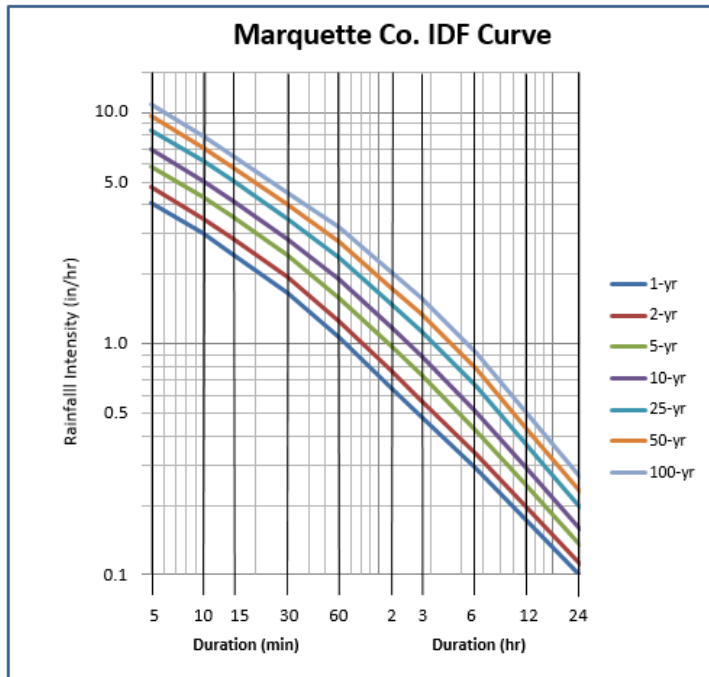
Marinette County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.48	2.58	2.08	1.44	0.92	0.57	0.42	0.25	0.15	0.09
2-yr	4.08	3.00	2.44	1.68	1.08	0.66	0.49	0.29	0.17	0.10
5-yr	5.16	3.78	3.08	2.10	1.34	0.82	0.60	0.36	0.21	0.12
10-yr	6.00	4.44	3.60	2.48	1.58	0.96	0.71	0.42	0.24	0.14
25-yr	7.32	5.40	4.36	3.02	1.93	1.18	0.87	0.51	0.29	0.17
50-yr	8.40	6.18	5.04	3.48	2.23	1.36	1.00	0.59	0.34	0.19
100-yr	9.60	7.02	5.68	3.94	2.54	1.55	1.15	0.67	0.38	0.22



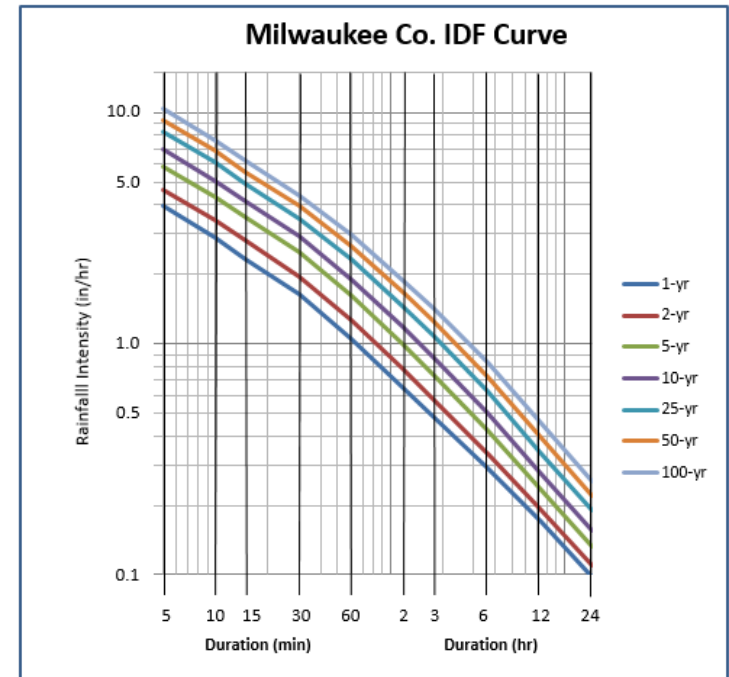
Marquette County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.08	3.00	2.44	1.66	1.06	0.65	0.48	0.29	0.17	0.10
2-yr	4.80	3.48	2.84	1.94	1.25	0.76	0.56	0.33	0.19	0.11
5-yr	5.88	4.32	3.52	2.44	1.58	0.98	0.73	0.42	0.24	0.13
10-yr	6.96	5.10	4.12	2.86	1.89	1.18	0.88	0.51	0.29	0.16
25-yr	8.40	6.18	5.04	3.50	2.35	1.48	1.12	0.66	0.36	0.20
50-yr	9.72	7.08	5.76	4.00	2.75	1.75	1.34	0.78	0.42	0.23
100-yr	10.92	7.98	6.52	4.54	3.17	2.04	1.57	0.93	0.50	0.27



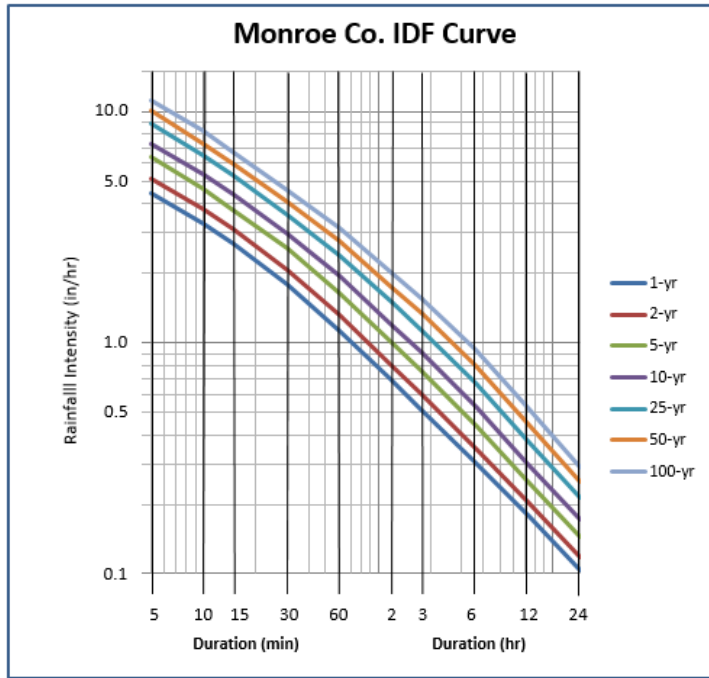
Milwaukee County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.96	2.88	2.32	1.64	1.05	0.65	0.48	0.29	0.17	0.10
2-yr	4.68	3.42	2.80	1.96	1.26	0.78	0.57	0.34	0.19	0.11
5-yr	5.88	4.32	3.52	2.48	1.61	0.99	0.73	0.42	0.24	0.13
10-yr	6.96	5.10	4.12	2.92	1.91	1.18	0.87	0.50	0.28	0.16
25-yr	8.28	6.12	4.96	3.50	2.32	1.44	1.08	0.62	0.34	0.19
50-yr	9.36	6.84	5.56	3.94	2.64	1.66	1.25	0.72	0.40	0.22
100-yr	10.44	7.62	6.20	4.36	2.96	1.88	1.42	0.84	0.46	0.25



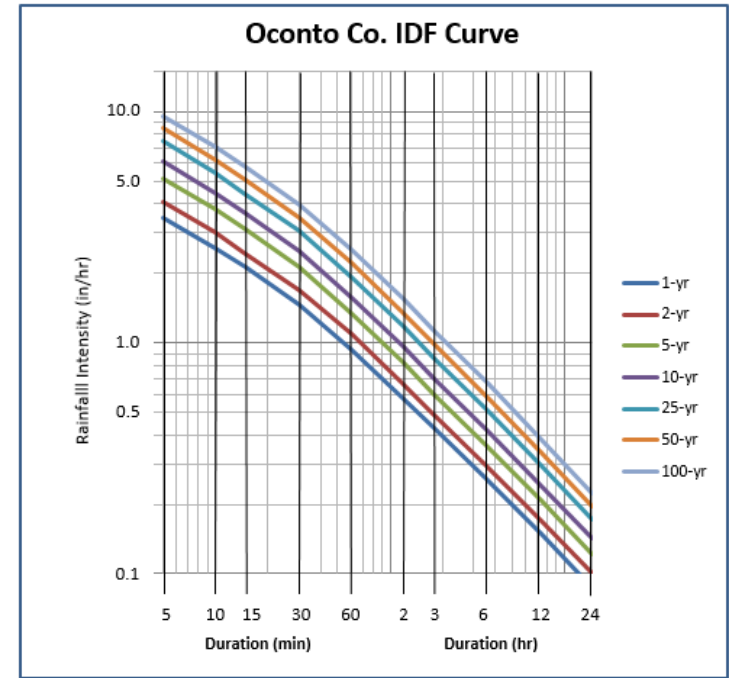
Monroe County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.44	3.30	2.68	1.80	1.13	0.69	0.51	0.30	0.18	0.10
2-yr	5.16	3.78	3.08	2.08	1.32	0.80	0.59	0.35	0.20	0.12
5-yr	6.36	4.62	3.76	2.56	1.65	1.01	0.75	0.44	0.25	0.15
10-yr	7.32	5.40	4.40	2.98	1.95	1.20	0.90	0.53	0.30	0.17
25-yr	8.88	6.48	5.28	3.60	2.39	1.50	1.13	0.67	0.38	0.21
50-yr	10.08	7.32	5.96	4.08	2.76	1.74	1.33	0.80	0.45	0.25
100-yr	11.28	8.28	6.72	4.60	3.15	2.01	1.55	0.94	0.52	0.29



Oconto County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.48	2.58	2.12	1.46	0.94	0.58	0.43	0.26	0.15	0.09
2-yr	4.08	3.00	2.44	1.70	1.09	0.66	0.49	0.29	0.17	0.10
5-yr	5.16	3.78	3.08	2.12	1.35	0.82	0.60	0.36	0.21	0.12
10-yr	6.12	4.44	3.64	2.50	1.58	0.96	0.70	0.42	0.24	0.14
25-yr	7.44	5.46	4.40	3.04	1.93	1.17	0.86	0.51	0.30	0.17
50-yr	8.52	6.24	5.08	3.50	2.22	1.35	0.99	0.58	0.34	0.20
100-yr	9.60	7.08	5.76	3.98	2.53	1.54	1.13	0.67	0.39	0.22

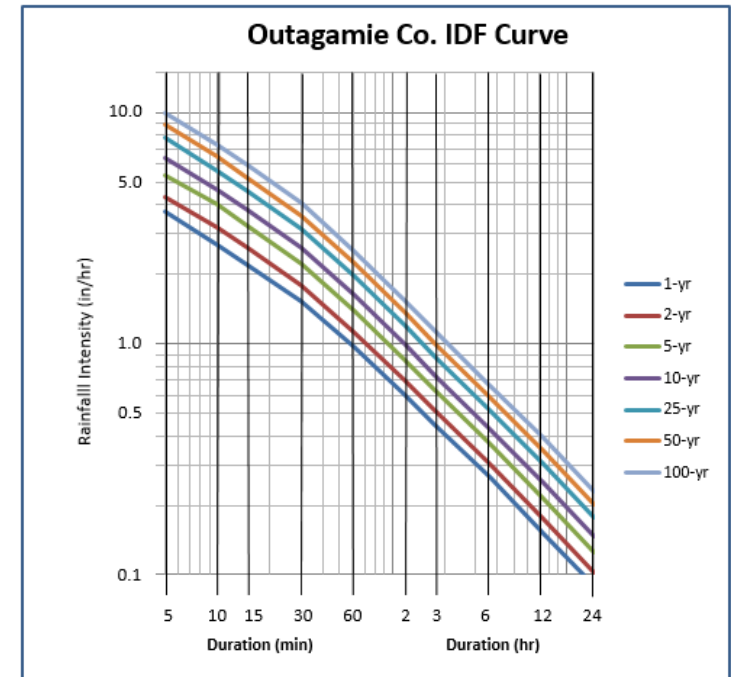
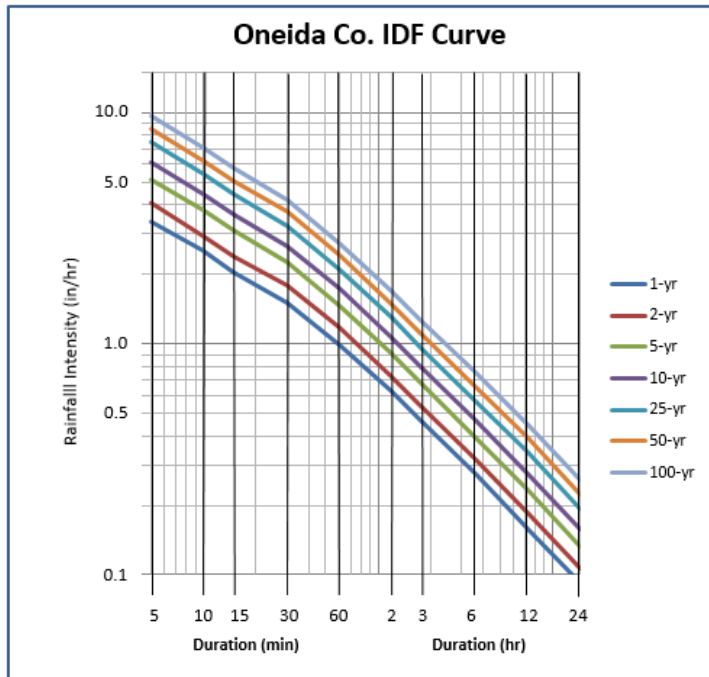


Oneida County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.36	2.52	2.04	1.50	0.99	0.62	0.46	0.27	0.16	0.09
2-yr	4.08	2.94	2.40	1.78	1.17	0.73	0.53	0.32	0.18	0.11
5-yr	5.16	3.78	3.08	2.26	1.47	0.91	0.67	0.39	0.23	0.13
10-yr	6.12	4.44	3.64	2.66	1.73	1.06	0.78	0.46	0.27	0.16
25-yr	7.44	5.46	4.44	3.26	2.11	1.30	0.95	0.57	0.34	0.19
50-yr	8.52	6.24	5.08	3.72	2.42	1.49	1.10	0.66	0.39	0.22
100-yr	9.72	7.08	5.76	4.22	2.74	1.69	1.25	0.75	0.45	0.26

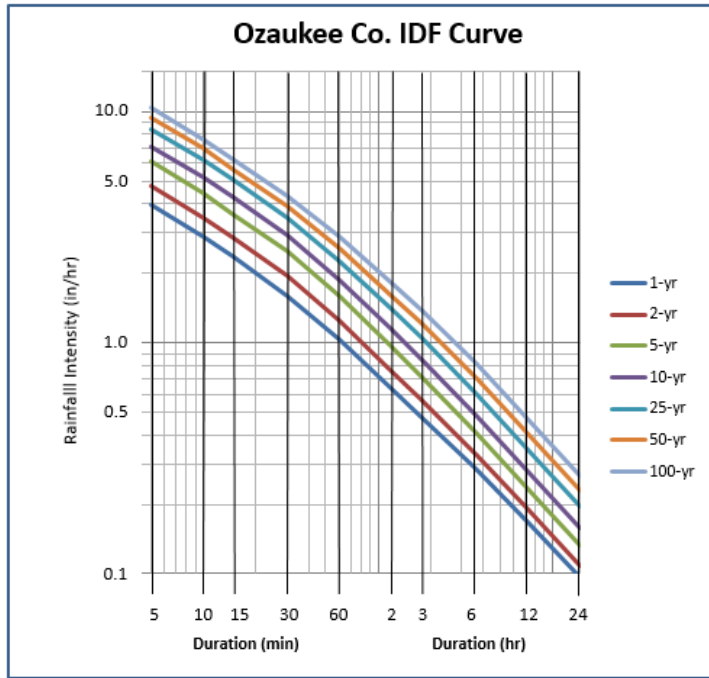
Outagamie County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.72	2.70	2.20	1.52	0.97	0.60	0.44	0.27	0.15	0.09
2-yr	4.32	3.18	2.60	1.78	1.13	0.69	0.51	0.30	0.18	0.10
5-yr	5.40	4.02	3.24	2.22	1.41	0.85	0.62	0.37	0.22	0.13
10-yr	6.36	4.68	3.80	2.62	1.64	0.99	0.72	0.43	0.25	0.15
25-yr	7.80	5.64	4.60	3.16	1.98	1.19	0.87	0.51	0.31	0.18
50-yr	8.88	6.48	5.24	3.60	2.26	1.36	0.99	0.59	0.35	0.20
100-yr	9.96	7.26	5.92	4.06	2.55	1.53	1.12	0.66	0.40	0.23



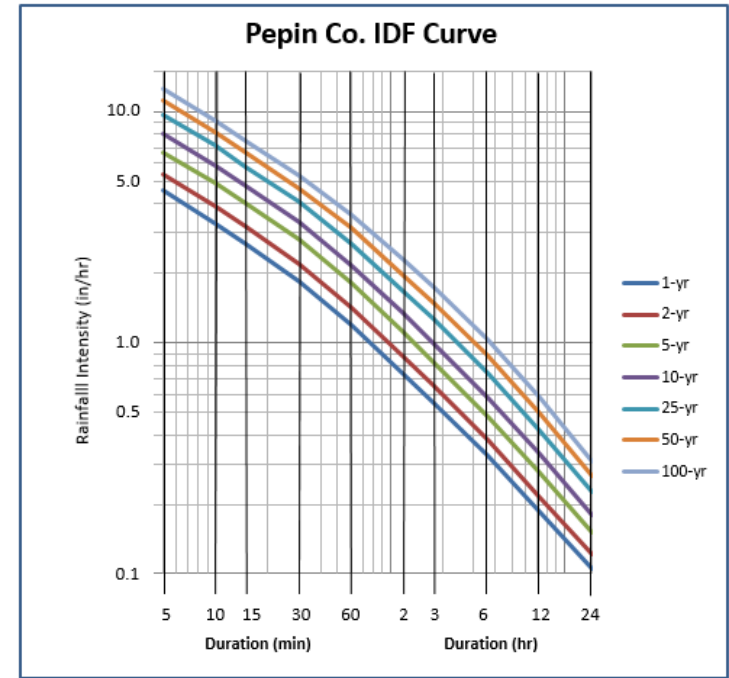
Ozaukee County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.96	2.88	2.36	1.60	1.03	0.63	0.47	0.29	0.17	0.10
2-yr	4.80	3.48	2.84	1.94	1.24	0.76	0.56	0.33	0.19	0.11
5-yr	6.12	4.44	3.60	2.50	1.59	0.97	0.71	0.41	0.23	0.13
10-yr	7.08	5.22	4.24	2.92	1.88	1.15	0.85	0.49	0.28	0.16
25-yr	8.40	6.18	5.04	3.50	2.27	1.40	1.04	0.61	0.34	0.20
50-yr	9.48	6.96	5.64	3.92	2.58	1.61	1.21	0.71	0.40	0.23
100-yr	10.44	7.62	6.20	4.32	2.89	1.81	1.38	0.82	0.47	0.27



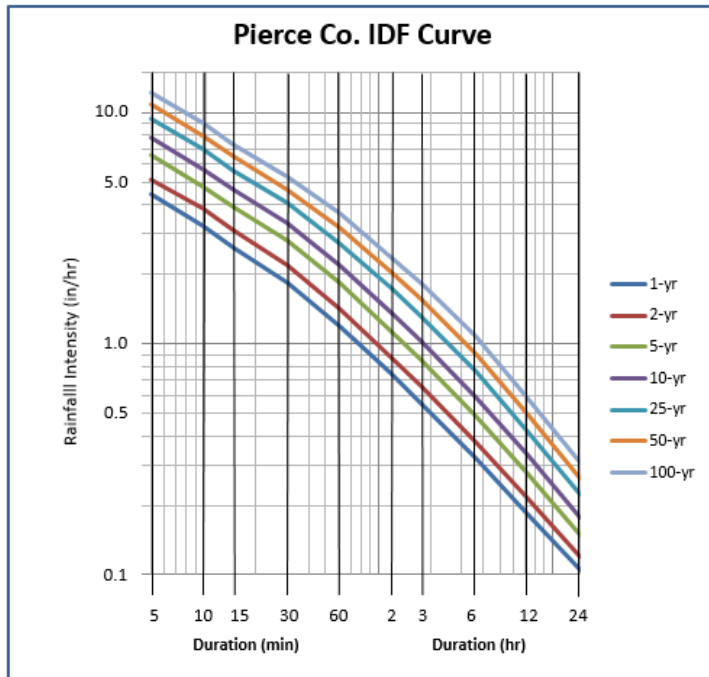
Pepin County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.56	3.30	2.68	1.84	1.19	0.74	0.55	0.33	0.18	0.10
2-yr	5.40	3.90	3.20	2.20	1.42	0.87	0.65	0.38	0.22	0.12
5-yr	6.72	4.92	4.04	2.80	1.81	1.11	0.82	0.48	0.27	0.15
10-yr	8.04	5.82	4.76	3.32	2.16	1.34	0.99	0.58	0.33	0.18
25-yr	9.72	7.14	5.80	4.06	2.69	1.68	1.26	0.74	0.42	0.23
50-yr	11.16	8.16	6.64	4.66	3.13	1.97	1.49	0.88	0.49	0.27
100-yr	12.60	9.18	7.48	5.26	3.60	2.28	1.74	1.04	0.58	0.31



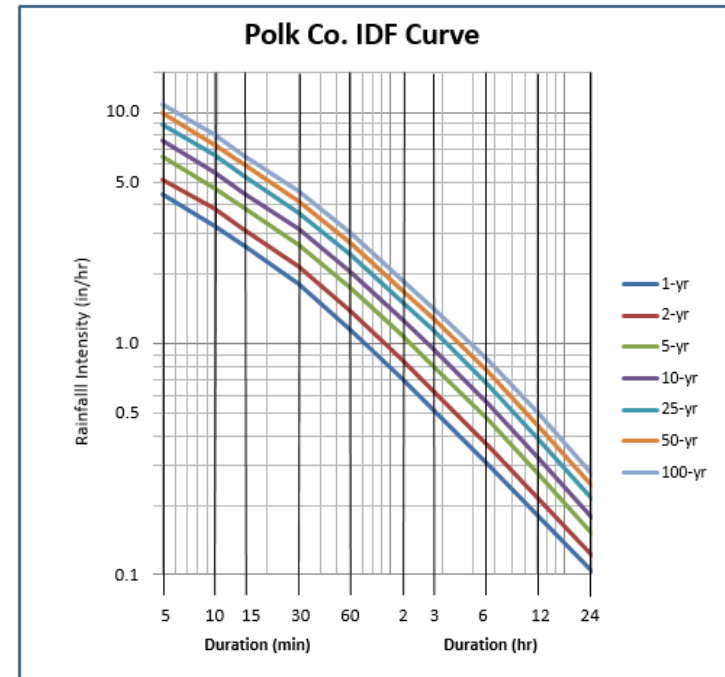
Pierce County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.44	3.24	2.60	1.84	1.20	0.74	0.55	0.32	0.18	0.10
2-yr	5.16	3.84	3.08	2.20	1.42	0.88	0.65	0.38	0.21	0.12
5-yr	6.60	4.80	3.92	2.80	1.83	1.13	0.84	0.49	0.27	0.15
10-yr	7.80	5.70	4.64	3.32	2.20	1.37	1.02	0.59	0.33	0.18
25-yr	9.48	6.96	5.64	4.06	2.74	1.73	1.30	0.76	0.42	0.22
50-yr	10.92	7.98	6.48	4.66	3.20	2.04	1.55	0.91	0.50	0.26
100-yr	12.24	9.00	7.32	5.28	3.69	2.37	1.82	1.08	0.58	0.31



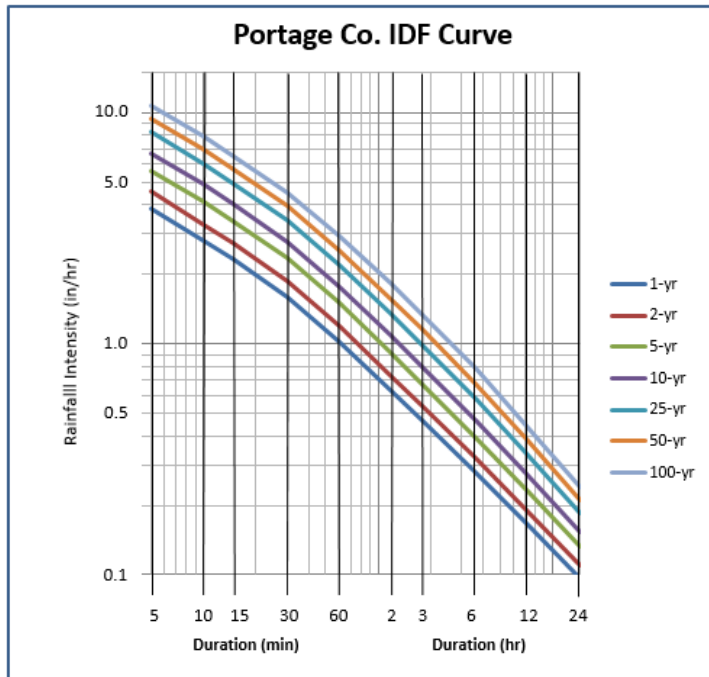
Polk County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.44	3.24	2.64	1.82	1.15	0.70	0.51	0.30	0.18	0.10
2-yr	5.16	3.84	3.12	2.16	1.38	0.85	0.62	0.37	0.21	0.12
5-yr	6.48	4.74	3.84	2.70	1.75	1.08	0.80	0.47	0.27	0.15
10-yr	7.56	5.52	4.48	3.14	2.05	1.27	0.94	0.56	0.32	0.18
25-yr	8.88	6.54	5.28	3.70	2.44	1.52	1.14	0.67	0.38	0.21
50-yr	9.96	7.26	5.92	4.14	2.73	1.70	1.28	0.76	0.44	0.24
100-yr	10.92	8.04	6.52	4.56	3.02	1.88	1.42	0.85	0.49	0.27



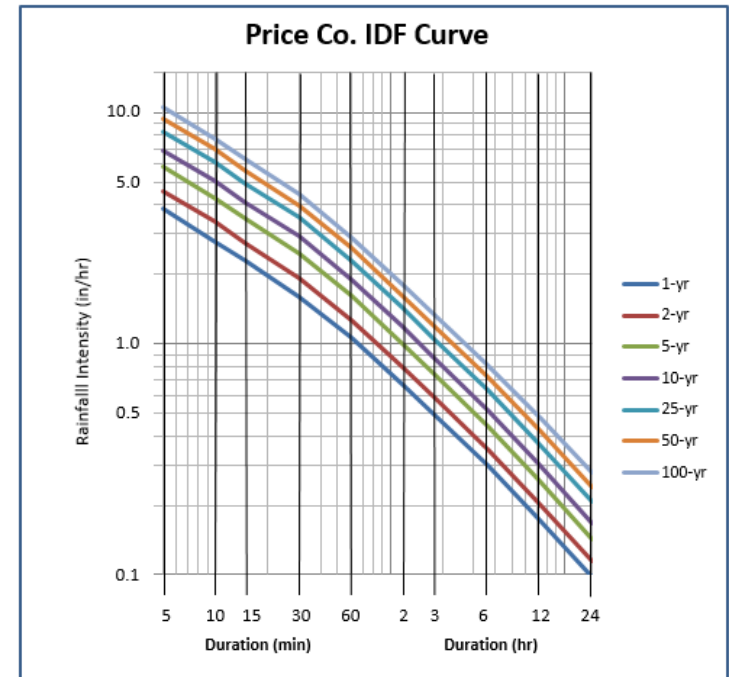
Portage County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.84	2.82	2.32	1.60	1.02	0.63	0.47	0.28	0.17	0.10
2-yr	4.56	3.30	2.72	1.88	1.19	0.73	0.54	0.32	0.19	0.11
5-yr	5.64	4.14	3.40	2.36	1.50	0.91	0.67	0.39	0.23	0.13
10-yr	6.72	4.92	4.00	2.78	1.77	1.08	0.79	0.47	0.27	0.15
25-yr	8.28	6.06	4.92	3.42	2.19	1.34	0.99	0.58	0.33	0.19
50-yr	9.48	6.96	5.68	3.94	2.55	1.56	1.16	0.67	0.38	0.21
100-yr	10.80	7.92	6.44	4.50	2.93	1.81	1.34	0.78	0.44	0.24



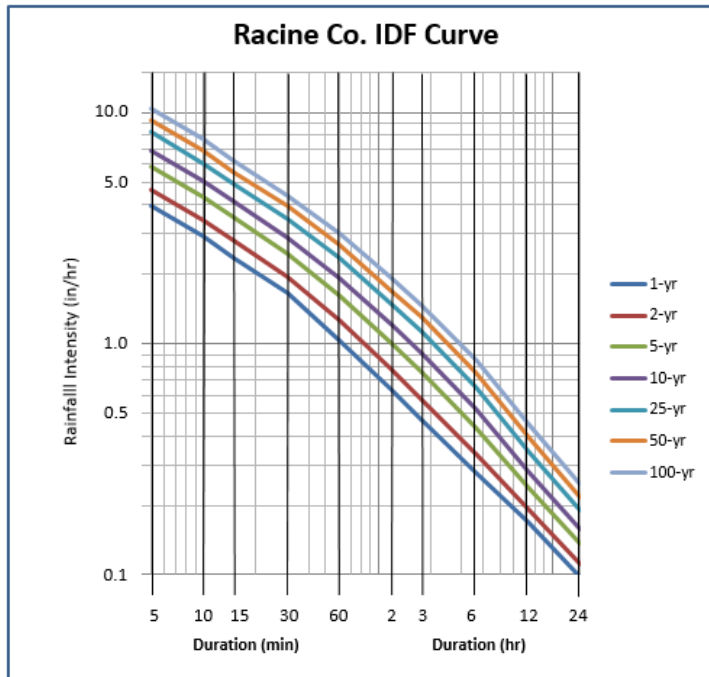
Price County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.84	2.76	2.28	1.60	1.06	0.66	0.50	0.30	0.17	0.10
2-yr	4.56	3.36	2.72	1.92	1.27	0.79	0.59	0.35	0.20	0.11
5-yr	5.88	4.26	3.48	2.46	1.61	1.00	0.74	0.44	0.25	0.14
10-yr	6.84	5.04	4.08	2.92	1.90	1.17	0.87	0.52	0.30	0.17
25-yr	8.28	6.12	4.96	3.52	2.29	1.42	1.05	0.63	0.37	0.21
50-yr	9.48	6.96	5.64	3.98	2.60	1.60	1.20	0.72	0.42	0.24
100-yr	10.56	7.74	6.32	4.46	2.90	1.79	1.34	0.81	0.48	0.28



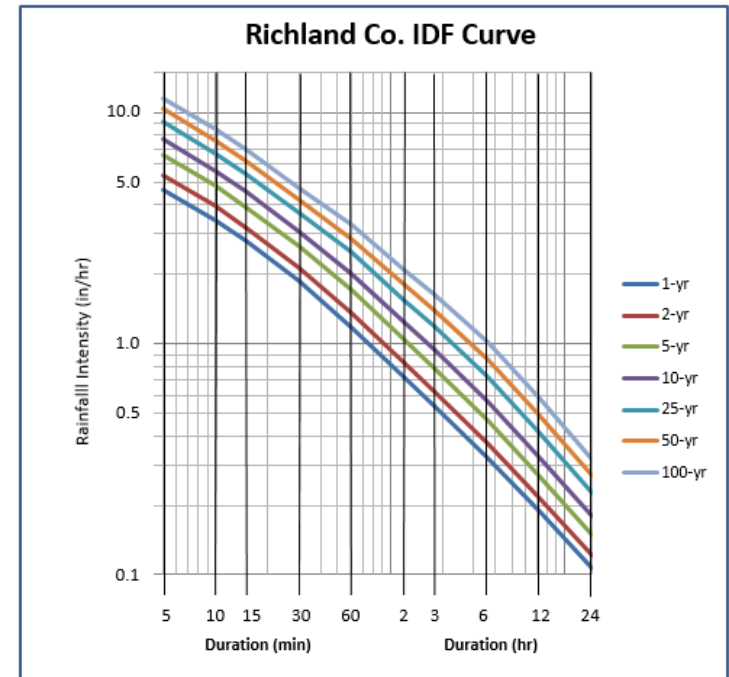
Racine County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.96	2.94	2.36	1.66	1.04	0.63	0.46	0.28	0.17	0.10
2-yr	4.68	3.42	2.80	1.96	1.26	0.77	0.57	0.34	0.19	0.11
5-yr	5.88	4.32	3.52	2.46	1.62	1.01	0.75	0.44	0.24	0.14
10-yr	6.84	5.04	4.12	2.90	1.93	1.21	0.90	0.52	0.28	0.16
25-yr	8.28	6.06	4.92	3.48	2.35	1.49	1.12	0.65	0.35	0.19
50-yr	9.36	6.84	5.56	3.94	2.69	1.70	1.29	0.75	0.40	0.22
100-yr	10.44	7.68	6.24	4.40	3.02	1.93	1.47	0.85	0.46	0.25



Richland County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

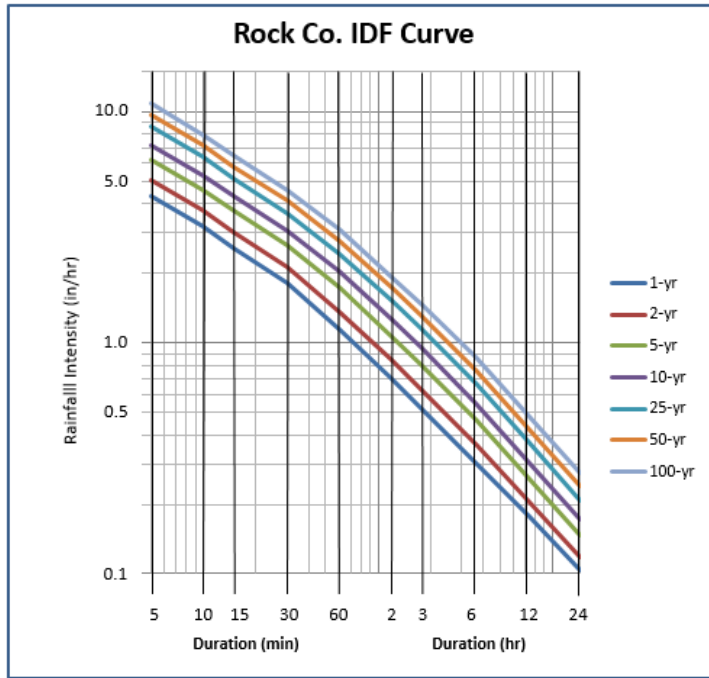
RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.68	3.42	2.80	1.86	1.18	0.72	0.54	0.32	0.19	0.11
2-yr	5.40	3.96	3.20	2.14	1.37	0.84	0.62	0.37	0.21	0.12
5-yr	6.60	4.86	3.92	2.64	1.71	1.05	0.79	0.47	0.27	0.15
10-yr	7.68	5.58	4.56	3.06	2.01	1.25	0.94	0.56	0.32	0.18
25-yr	9.12	6.72	5.44	3.68	2.48	1.56	1.19	0.72	0.41	0.23
50-yr	10.44	7.62	6.20	4.18	2.86	1.82	1.41	0.86	0.49	0.27
100-yr	11.64	8.58	6.96	4.70	3.27	2.10	1.65	1.02	0.58	0.32





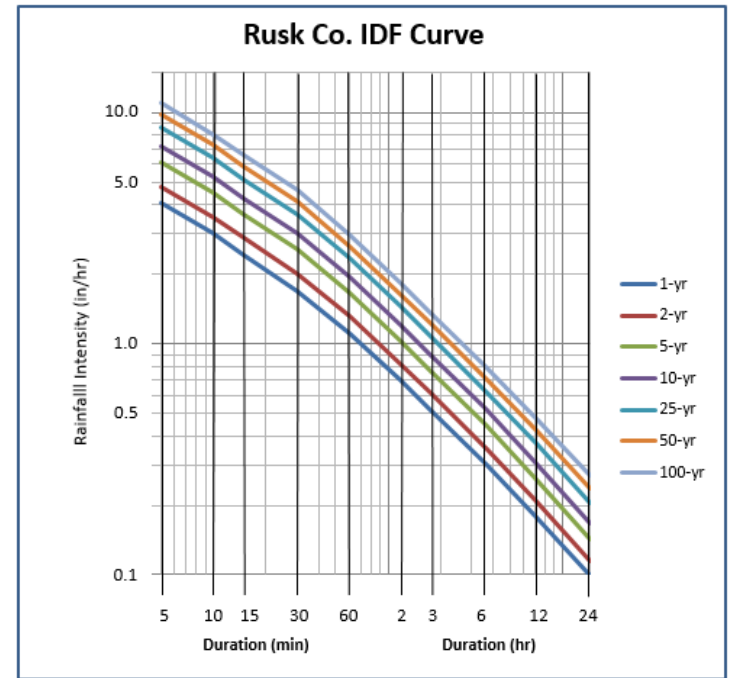
Rock County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.32	3.18	2.56	1.82	1.15	0.70	0.51	0.30	0.18	0.10
2-yr	5.04	3.72	3.00	2.12	1.37	0.84	0.62	0.36	0.21	0.12
5-yr	6.24	4.56	3.72	2.64	1.73	1.07	0.80	0.46	0.26	0.15
10-yr	7.20	5.28	4.32	3.06	2.03	1.26	0.94	0.55	0.31	0.17
25-yr	8.64	6.36	5.16	3.66	2.44	1.53	1.14	0.67	0.37	0.21
50-yr	9.72	7.14	5.80	4.14	2.76	1.73	1.30	0.77	0.43	0.24
100-yr	10.92	7.92	6.48	4.60	3.08	1.94	1.46	0.86	0.49	0.27



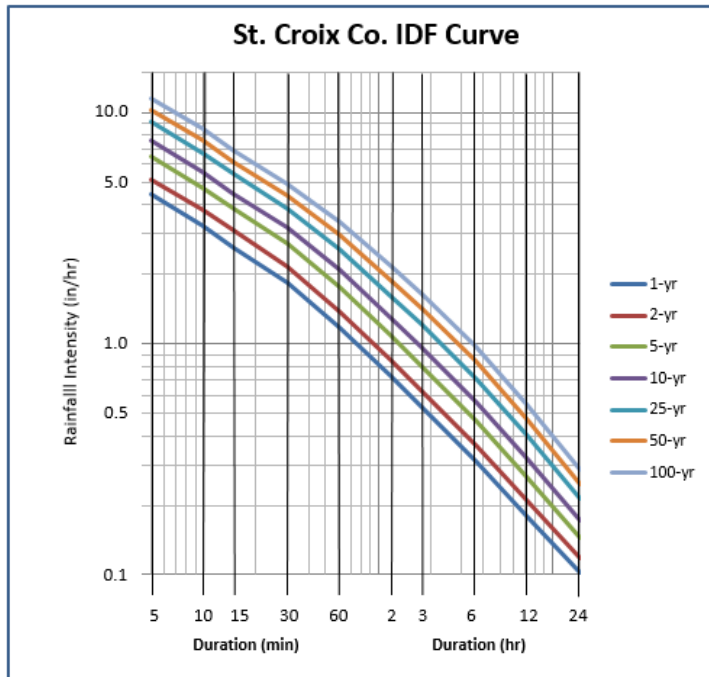
Rusk County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.08	3.00	2.44	1.70	1.11	0.69	0.51	0.30	0.17	0.10
2-yr	4.80	3.54	2.88	2.02	1.32	0.81	0.60	0.36	0.20	0.12
5-yr	6.12	4.50	3.64	2.56	1.66	1.02	0.76	0.45	0.26	0.14
10-yr	7.20	5.28	4.28	3.00	1.95	1.20	0.89	0.52	0.30	0.17
25-yr	8.64	6.36	5.16	3.64	2.35	1.44	1.06	0.63	0.36	0.21
50-yr	9.84	7.26	5.88	4.14	2.66	1.63	1.20	0.71	0.42	0.24
100-yr	11.04	8.10	6.60	4.64	2.98	1.82	1.35	0.80	0.47	0.27



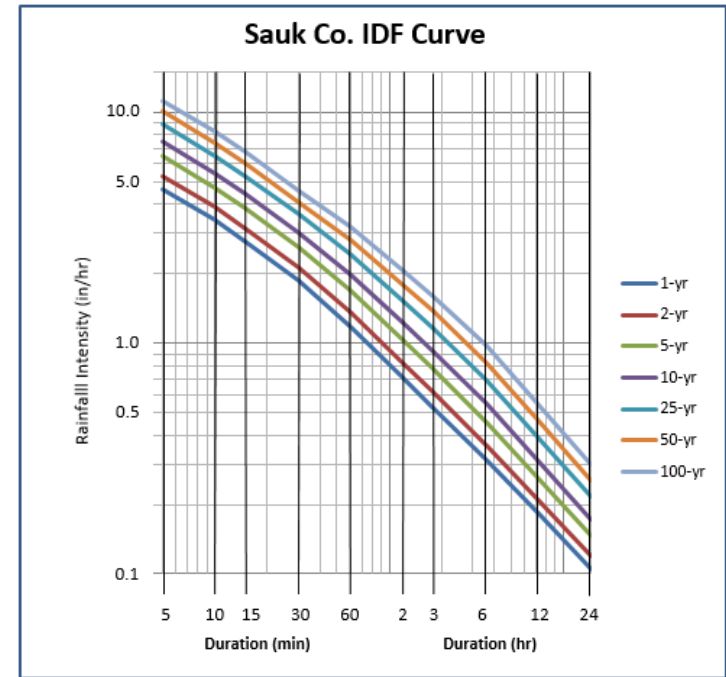
St. Croix County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.44	3.24	2.60	1.84	1.18	0.72	0.53	0.31	0.18	0.10
2-yr	5.16	3.78	3.08	2.16	1.39	0.85	0.63	0.36	0.21	0.12
5-yr	6.48	4.74	3.84	2.72	1.76	1.08	0.80	0.47	0.26	0.15
10-yr	7.56	5.52	4.48	3.18	2.09	1.29	0.96	0.56	0.32	0.17
25-yr	9.12	6.66	5.44	3.84	2.57	1.61	1.21	0.71	0.40	0.21
50-yr	10.32	7.56	6.16	4.38	2.96	1.87	1.42	0.84	0.47	0.25
100-yr	11.64	8.52	6.92	4.90	3.38	2.15	1.65	0.98	0.54	0.29



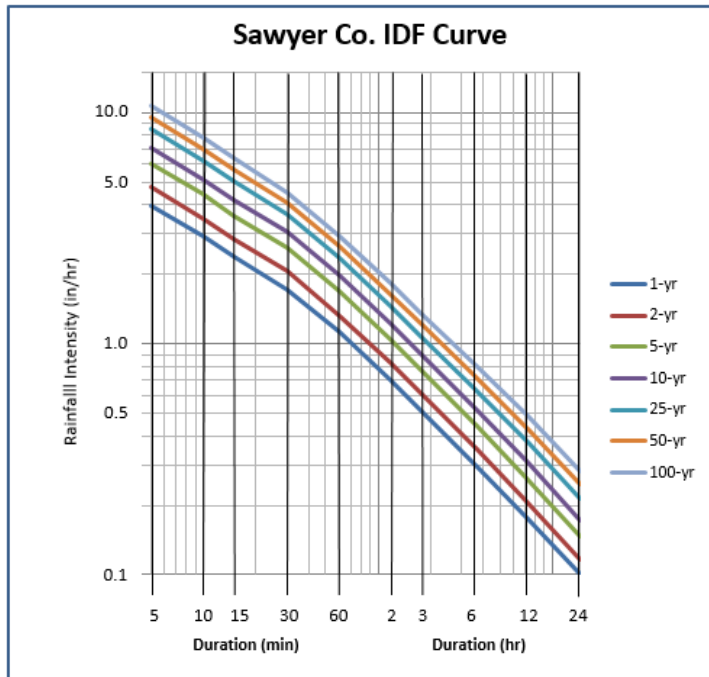
Sauk County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.68	3.42	2.76	1.86	1.18	0.71	0.52	0.31	0.18	0.11
2-yr	5.28	3.90	3.16	2.14	1.36	0.83	0.61	0.36	0.21	0.12
5-yr	6.48	4.74	3.84	2.60	1.69	1.04	0.77	0.45	0.26	0.15
10-yr	7.44	5.46	4.44	3.02	1.98	1.23	0.92	0.54	0.31	0.17
25-yr	8.88	6.48	5.28	3.62	2.43	1.53	1.17	0.69	0.39	0.22
50-yr	10.08	7.38	6.00	4.10	2.81	1.78	1.37	0.83	0.46	0.25
100-yr	11.28	8.28	6.76	4.60	3.21	2.06	1.60	0.97	0.54	0.30



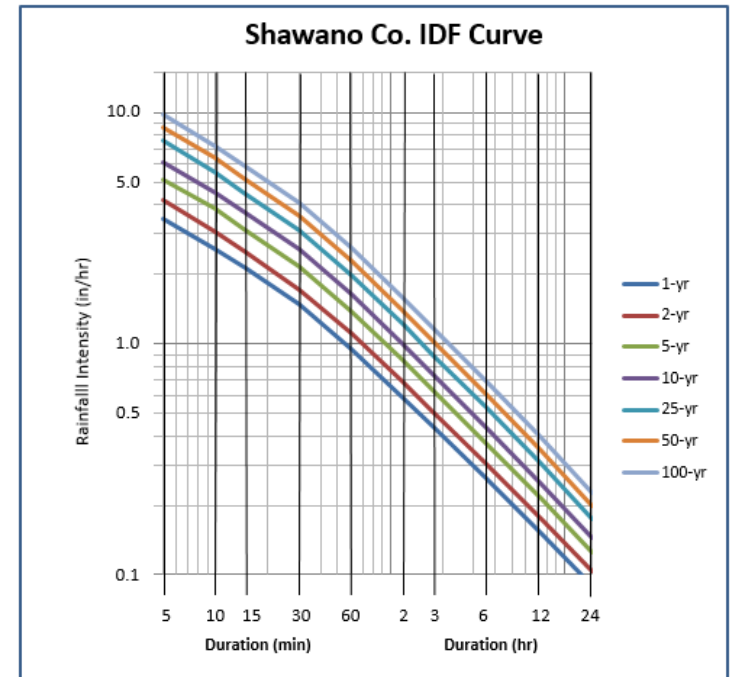
Sawyer County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.96	2.94	2.40	1.72	1.12	0.69	0.51	0.30	0.17	0.10
2-yr	4.80	3.48	2.84	2.06	1.33	0.82	0.61	0.36	0.21	0.12
5-yr	6.00	4.44	3.60	2.60	1.68	1.04	0.76	0.45	0.26	0.15
10-yr	7.08	5.16	4.20	3.04	1.97	1.21	0.89	0.53	0.31	0.17
25-yr	8.52	6.24	5.08	3.64	2.36	1.45	1.07	0.64	0.37	0.21
50-yr	9.60	7.02	5.72	4.10	2.65	1.63	1.21	0.72	0.43	0.25
100-yr	10.68	7.80	6.36	4.54	2.94	1.81	1.34	0.81	0.49	0.28



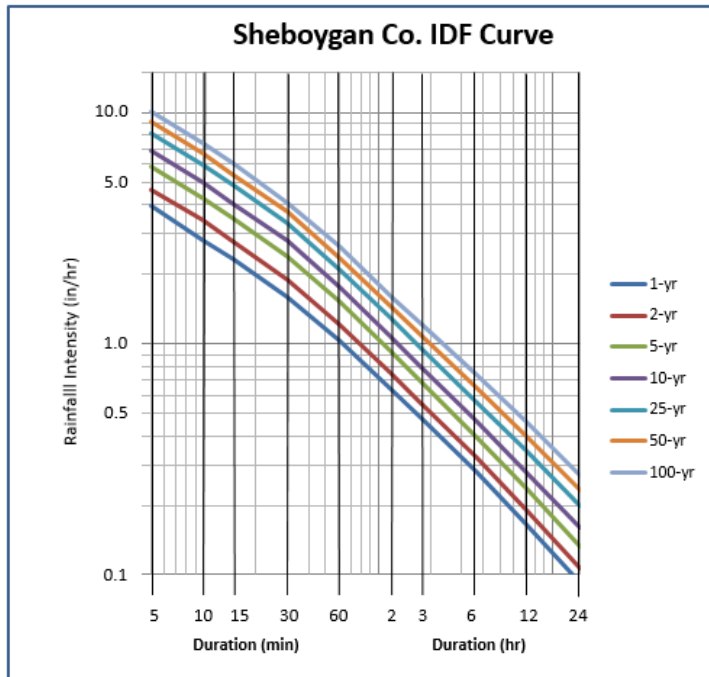
Shawano County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.48	2.58	2.12	1.48	0.95	0.58	0.43	0.26	0.15	0.09
2-yr	4.20	3.06	2.48	1.72	1.11	0.68	0.50	0.30	0.18	0.10
5-yr	5.16	3.84	3.12	2.16	1.38	0.84	0.62	0.37	0.22	0.13
10-yr	6.12	4.50	3.68	2.56	1.63	0.99	0.73	0.43	0.25	0.15
25-yr	7.56	5.52	4.48	3.12	1.99	1.21	0.89	0.52	0.31	0.18
50-yr	8.64	6.36	5.16	3.60	2.29	1.39	1.02	0.60	0.35	0.20
100-yr	9.84	7.20	5.88	4.08	2.60	1.58	1.16	0.68	0.40	0.23



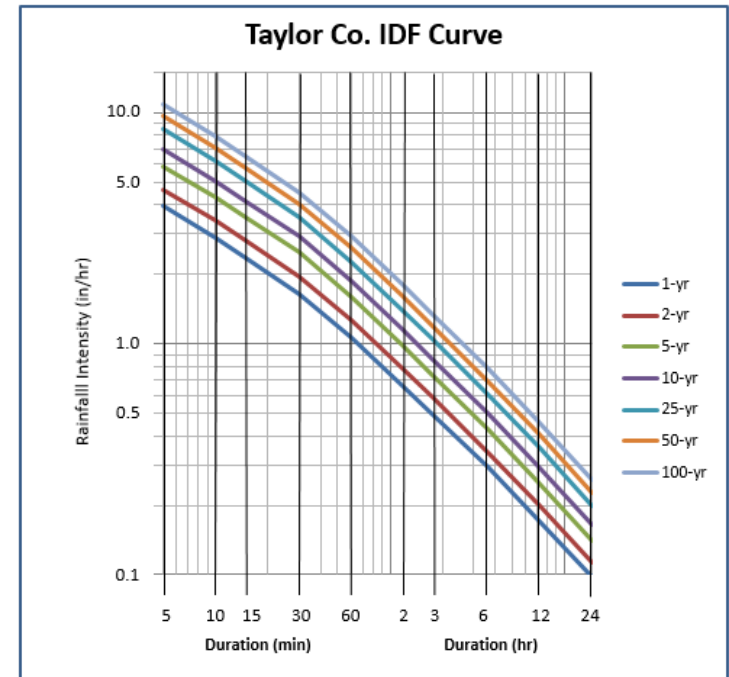
Sheboygan County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.96	2.82	2.32	1.60	1.03	0.64	0.47	0.28	0.16	0.09
2-yr	4.68	3.42	2.76	1.90	1.22	0.74	0.55	0.32	0.19	0.11
5-yr	5.88	4.26	3.48	2.40	1.52	0.92	0.68	0.40	0.23	0.13
10-yr	6.84	4.98	4.04	2.80	1.77	1.07	0.79	0.47	0.27	0.16
25-yr	8.16	5.94	4.84	3.32	2.11	1.28	0.95	0.57	0.34	0.20
50-yr	9.12	6.66	5.40	3.72	2.37	1.44	1.07	0.65	0.39	0.23
100-yr	10.08	7.38	6.00	4.10	2.63	1.61	1.21	0.74	0.46	0.27



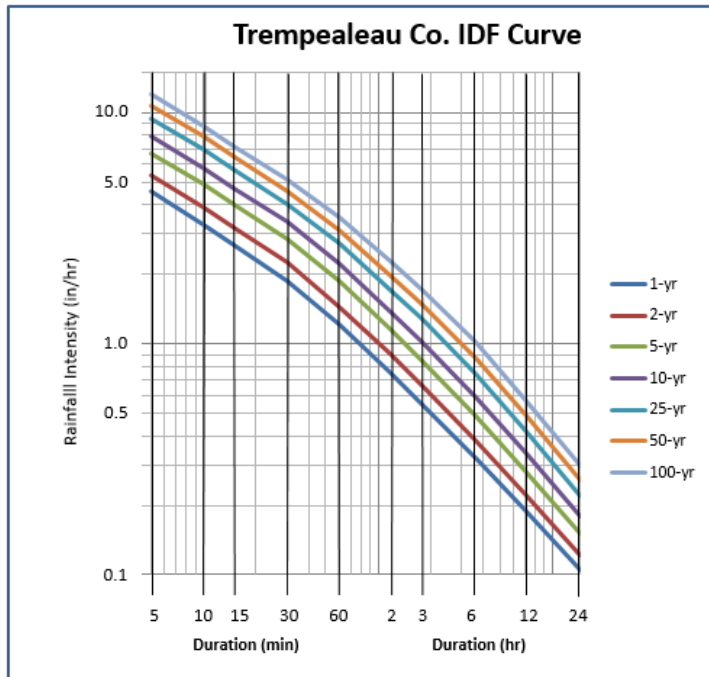
Taylor County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.96	2.88	2.36	1.64	1.06	0.66	0.49	0.29	0.17	0.10
2-yr	4.68	3.42	2.80	1.94	1.26	0.78	0.58	0.34	0.20	0.11
5-yr	5.88	4.32	3.52	2.48	1.59	0.98	0.72	0.43	0.25	0.14
10-yr	6.96	5.10	4.16	2.92	1.87	1.15	0.85	0.50	0.29	0.16
25-yr	8.52	6.18	5.04	3.54	2.27	1.39	1.03	0.61	0.35	0.20
50-yr	9.72	7.08	5.76	4.04	2.59	1.59	1.17	0.69	0.40	0.23
100-yr	10.92	7.98	6.48	4.54	2.92	1.79	1.32	0.78	0.46	0.26



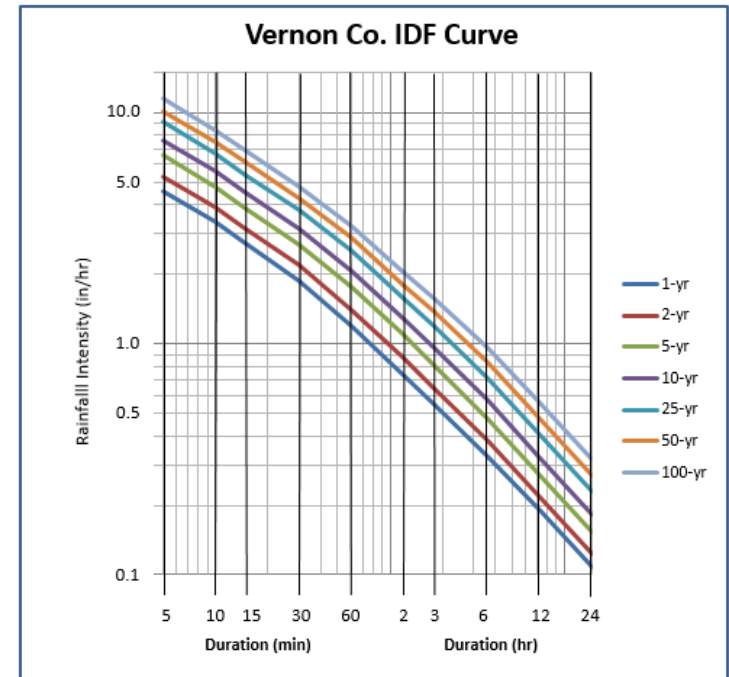
Trempealeau Co. Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.56	3.30	2.68	1.88	1.21	0.75	0.55	0.32	0.19	0.11
2-yr	5.40	3.90	3.20	2.26	1.45	0.89	0.66	0.38	0.22	0.12
5-yr	6.72	4.92	4.00	2.86	1.86	1.15	0.85	0.49	0.27	0.15
10-yr	7.92	5.76	4.72	3.36	2.21	1.37	1.02	0.59	0.33	0.18
25-yr	9.48	6.96	5.68	4.04	2.71	1.70	1.28	0.74	0.41	0.22
50-yr	10.80	7.92	6.44	4.58	3.11	1.97	1.49	0.87	0.48	0.26
100-yr	12.12	8.82	7.20	5.12	3.53	2.25	1.72	1.02	0.55	0.30



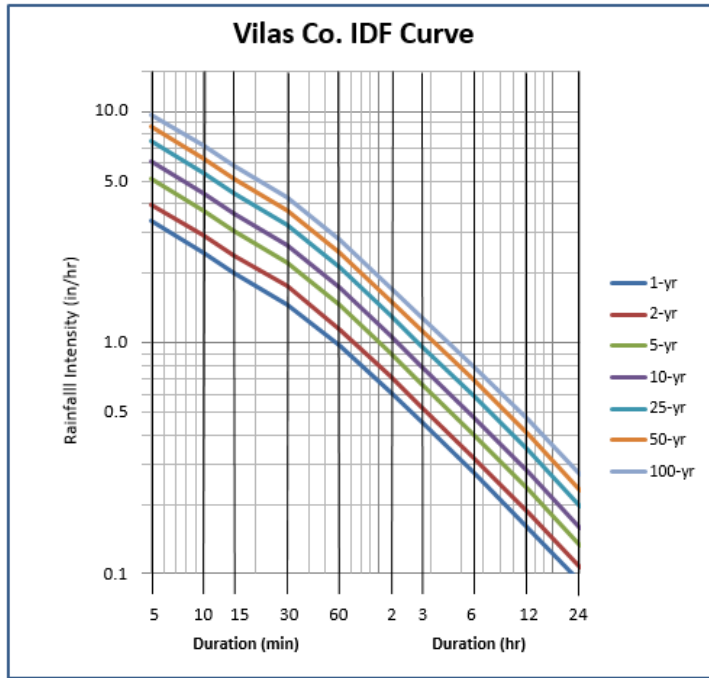
Vernon County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.56	3.36	2.72	1.86	1.20	0.73	0.54	0.32	0.19	0.11
2-yr	5.28	3.90	3.16	2.18	1.41	0.87	0.64	0.38	0.22	0.12
5-yr	6.60	4.80	3.88	2.70	1.77	1.09	0.81	0.48	0.27	0.15
10-yr	7.56	5.58	4.52	3.16	2.07	1.29	0.97	0.57	0.32	0.18
25-yr	9.12	6.66	5.40	3.78	2.52	1.57	1.19	0.71	0.40	0.23
50-yr	10.20	7.50	6.12	4.28	2.87	1.80	1.37	0.83	0.48	0.27
100-yr	11.52	8.40	6.84	4.78	3.23	2.04	1.57	0.96	0.56	0.32



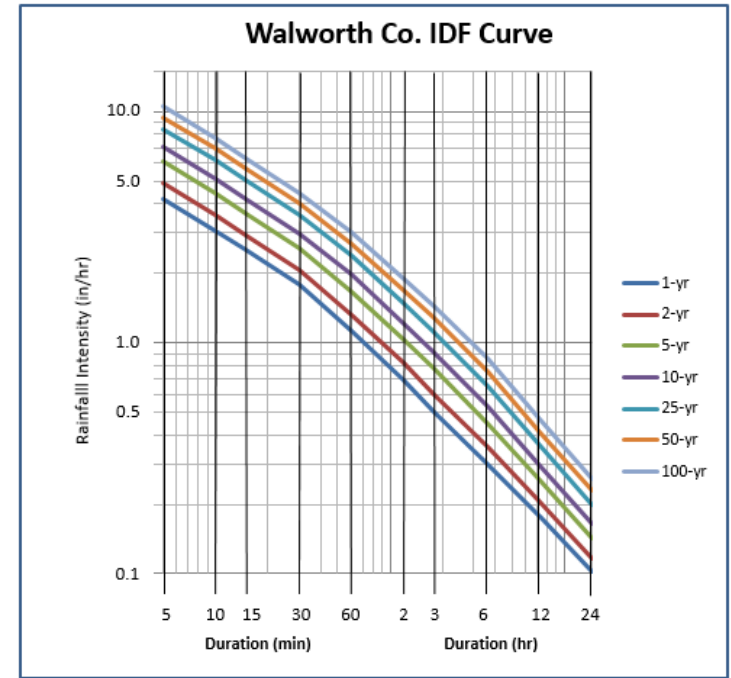
Vilas County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.36	2.46	2.00	1.46	0.97	0.61	0.45	0.27	0.16	0.09
2-yr	3.96	2.94	2.40	1.76	1.15	0.71	0.53	0.31	0.18	0.11
5-yr	5.16	3.72	3.04	2.24	1.46	0.90	0.66	0.39	0.23	0.13
10-yr	6.12	4.44	3.64	2.66	1.73	1.06	0.78	0.47	0.28	0.16
25-yr	7.44	5.46	4.44	3.26	2.12	1.31	0.97	0.58	0.35	0.20
50-yr	8.64	6.30	5.12	3.76	2.45	1.51	1.12	0.68	0.40	0.23
100-yr	9.72	7.14	5.84	4.26	2.79	1.73	1.28	0.78	0.47	0.27



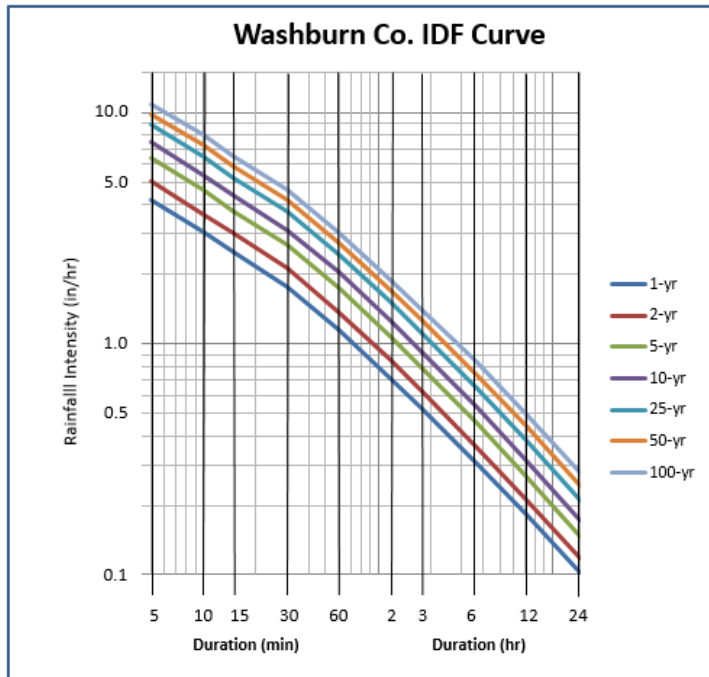
Walworth County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.20	3.06	2.52	1.78	1.13	0.69	0.50	0.30	0.18	0.10
2-yr	4.92	3.60	2.92	2.06	1.33	0.82	0.60	0.35	0.20	0.12
5-yr	6.12	4.44	3.64	2.56	1.67	1.04	0.77	0.45	0.25	0.14
10-yr	7.08	5.16	4.20	2.98	1.97	1.22	0.91	0.53	0.30	0.17
25-yr	8.40	6.18	5.04	3.56	2.38	1.49	1.12	0.65	0.36	0.20
50-yr	9.48	6.96	5.68	4.02	2.70	1.70	1.28	0.75	0.41	0.23
100-yr	10.56	7.74	6.32	4.48	3.03	1.91	1.45	0.85	0.47	0.26



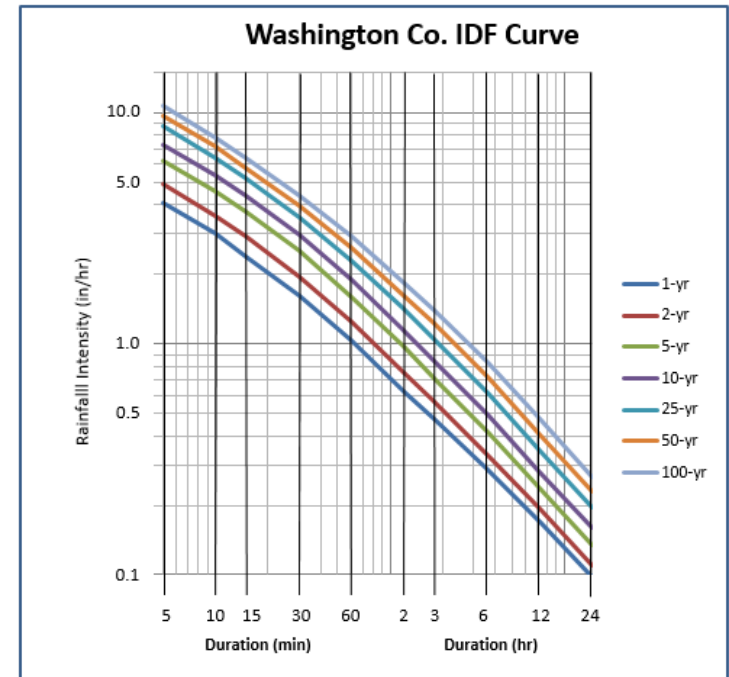
Washburn County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.20	3.06	2.48	1.76	1.14	0.70	0.52	0.31	0.18	0.10
2-yr	5.04	3.66	3.00	2.12	1.37	0.84	0.62	0.36	0.21	0.12
5-yr	6.36	4.62	3.76	2.68	1.73	1.06	0.78	0.46	0.26	0.15
10-yr	7.44	5.40	4.40	3.12	2.03	1.25	0.92	0.54	0.31	0.17
25-yr	8.88	6.48	5.24	3.74	2.43	1.50	1.11	0.65	0.38	0.21
50-yr	9.84	7.26	5.88	4.18	2.73	1.69	1.26	0.75	0.43	0.24
100-yr	10.92	8.04	6.52	4.62	3.03	1.88	1.41	0.84	0.49	0.28



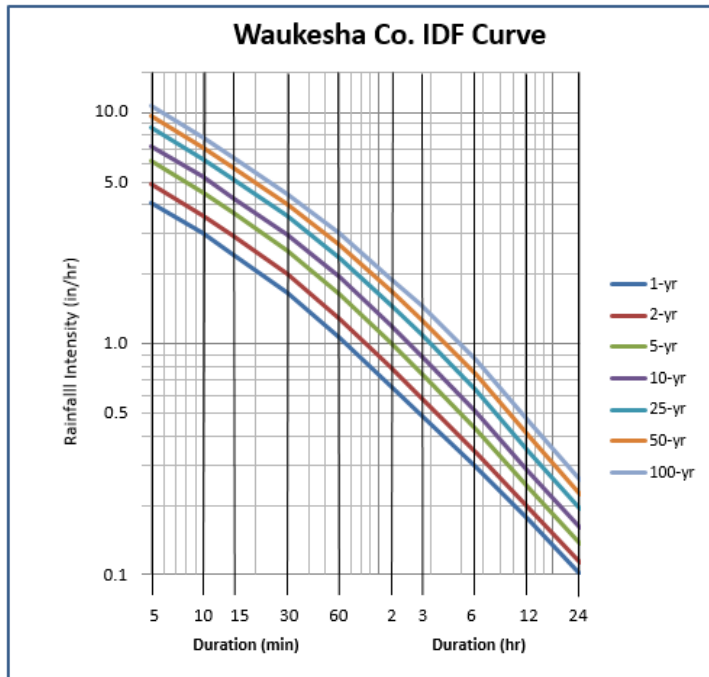
Washington Co. Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.08	3.00	2.40	1.62	1.03	0.63	0.47	0.29	0.17	0.10
2-yr	4.92	3.60	2.92	1.96	1.24	0.76	0.56	0.33	0.19	0.11
5-yr	6.24	4.56	3.72	2.52	1.60	0.97	0.71	0.41	0.24	0.14
10-yr	7.32	5.34	4.36	2.96	1.89	1.15	0.85	0.49	0.28	0.16
25-yr	8.76	6.36	5.20	3.54	2.30	1.42	1.05	0.62	0.35	0.20
50-yr	9.72	7.14	5.80	3.98	2.62	1.63	1.22	0.72	0.41	0.23
100-yr	10.80	7.86	6.40	4.40	2.94	1.84	1.40	0.83	0.47	0.27



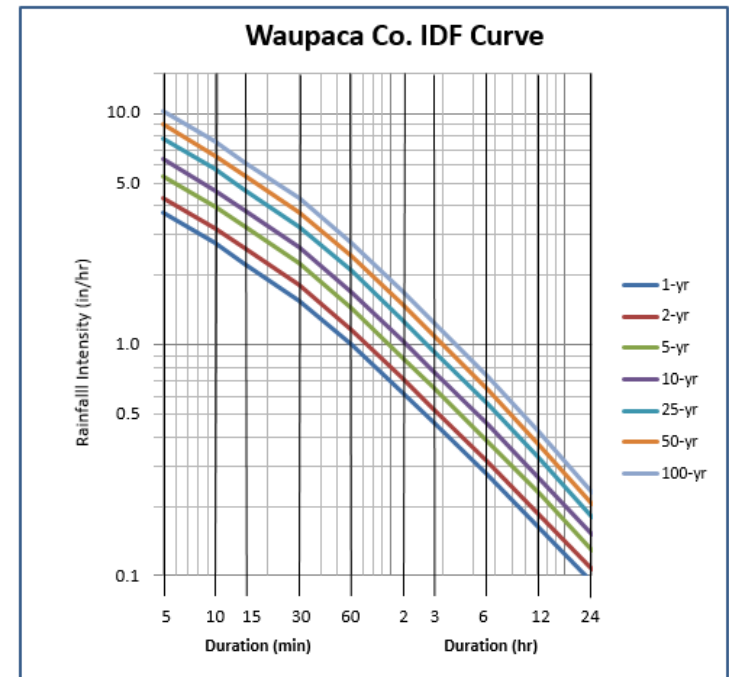
Waukesha County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.08	3.00	2.44	1.66	1.07	0.65	0.49	0.29	0.17	0.10
2-yr	4.92	3.60	2.92	2.00	1.28	0.78	0.58	0.34	0.20	0.11
5-yr	6.24	4.50	3.68	2.54	1.64	1.00	0.74	0.43	0.24	0.14
10-yr	7.20	5.28	4.28	2.98	1.94	1.19	0.88	0.51	0.28	0.16
25-yr	8.64	6.30	5.12	3.58	2.36	1.47	1.10	0.63	0.35	0.19
50-yr	9.72	7.08	5.76	4.02	2.69	1.69	1.27	0.74	0.40	0.22
100-yr	10.80	7.86	6.40	4.46	3.02	1.91	1.46	0.85	0.46	0.26



Waupaca County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

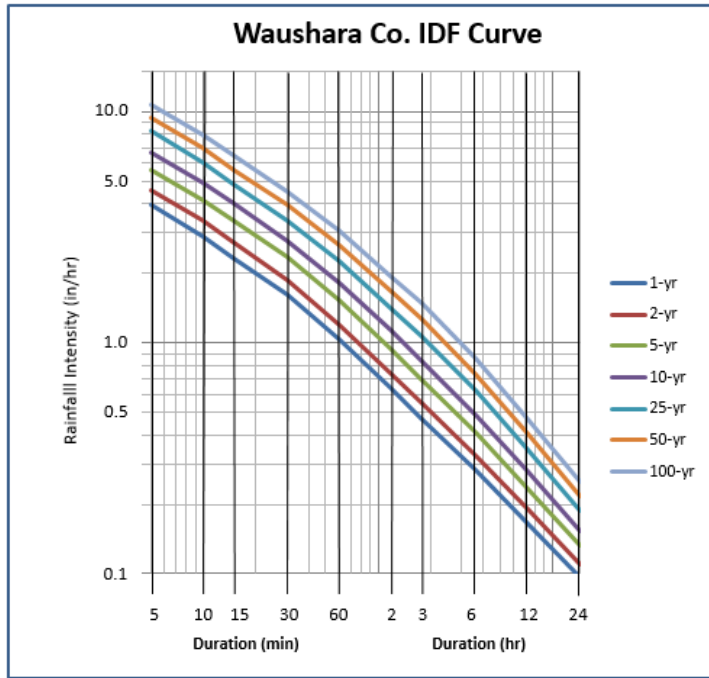
RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.72	2.76	2.24	1.56	1.01	0.62	0.46	0.27	0.16	0.09
2-yr	4.32	3.18	2.60	1.82	1.16	0.71	0.52	0.31	0.18	0.11
5-yr	5.40	3.96	3.24	2.26	1.44	0.88	0.65	0.38	0.23	0.13
10-yr	6.36	4.68	3.80	2.66	1.70	1.03	0.76	0.45	0.26	0.15
25-yr	7.80	5.76	4.68	3.26	2.09	1.27	0.94	0.55	0.32	0.18
50-yr	9.00	6.60	5.36	3.76	2.42	1.48	1.09	0.64	0.37	0.20
100-yr	10.32	7.56	6.16	4.30	2.78	1.70	1.25	0.73	0.42	0.23





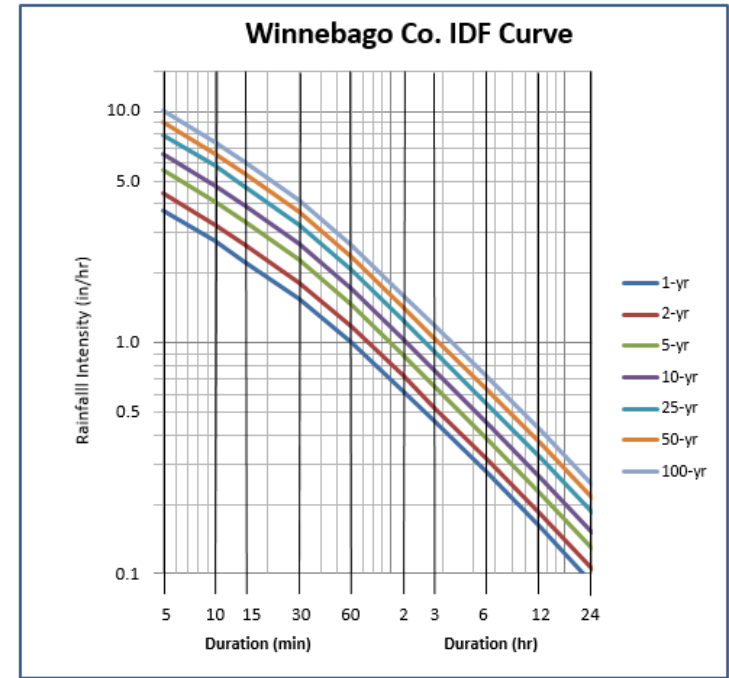
Waushara County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.96	2.88	2.32	1.62	1.03	0.63	0.47	0.28	0.17	0.10
2-yr	4.56	3.36	2.72	1.88	1.20	0.74	0.55	0.32	0.19	0.11
5-yr	5.64	4.14	3.40	2.34	1.52	0.94	0.69	0.41	0.23	0.13
10-yr	6.72	4.92	4.00	2.78	1.81	1.12	0.84	0.49	0.28	0.15
25-yr	8.28	6.00	4.88	3.40	2.26	1.41	1.06	0.62	0.34	0.19
50-yr	9.48	6.96	5.64	3.94	2.65	1.67	1.26	0.74	0.40	0.22
100-yr	10.80	7.92	6.44	4.50	3.06	1.94	1.47	0.86	0.47	0.25



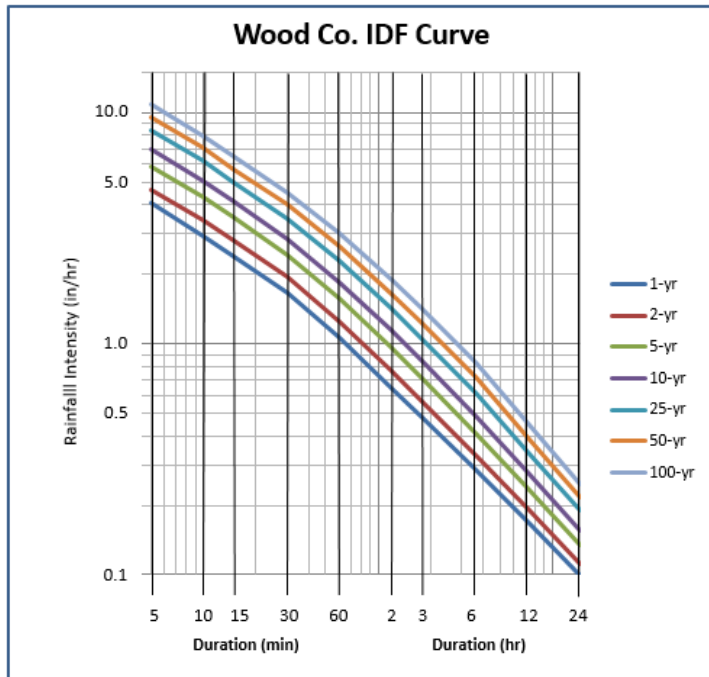
Winnebago County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.72	2.76	2.24	1.54	1.00	0.61	0.46	0.27	0.16	0.09
2-yr	4.44	3.24	2.64	1.82	1.17	0.72	0.53	0.31	0.18	0.10
5-yr	5.64	4.08	3.32	2.30	1.46	0.89	0.65	0.38	0.22	0.13
10-yr	6.60	4.80	3.92	2.70	1.71	1.04	0.76	0.45	0.26	0.15
25-yr	7.92	5.82	4.72	3.26	2.06	1.25	0.92	0.54	0.32	0.18
50-yr	9.00	6.60	5.36	3.70	2.35	1.43	1.05	0.62	0.37	0.21
100-yr	10.20	7.44	6.04	4.16	2.65	1.61	1.19	0.71	0.42	0.24



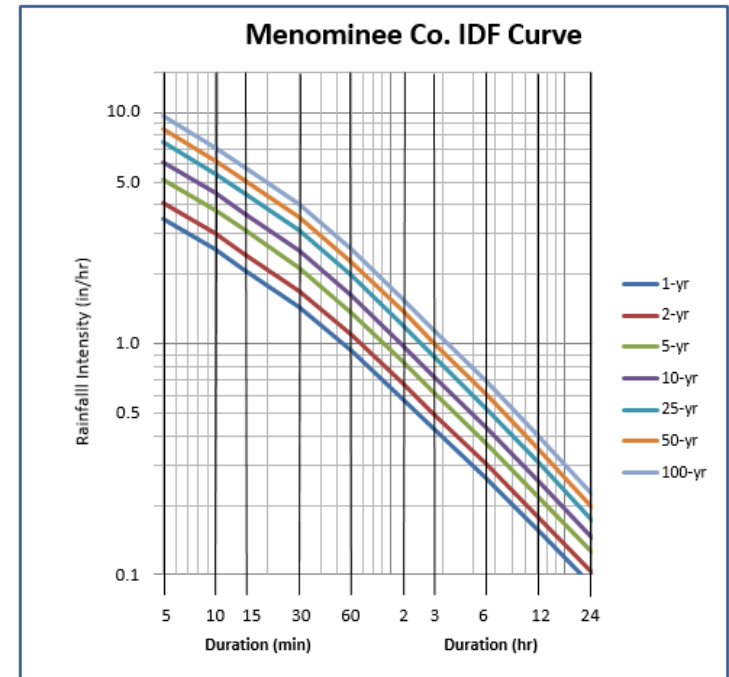
Wood County Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	4.08	2.94	2.40	1.66	1.06	0.65	0.48	0.29	0.17	0.10
2-yr	4.68	3.42	2.80	1.94	1.24	0.76	0.56	0.33	0.19	0.11
5-yr	5.88	4.32	3.52	2.44	1.57	0.96	0.71	0.41	0.24	0.13
10-yr	6.96	5.04	4.12	2.86	1.85	1.14	0.84	0.49	0.28	0.16
25-yr	8.40	6.18	5.00	3.50	2.29	1.42	1.05	0.61	0.34	0.19
50-yr	9.60	7.08	5.72	4.00	2.65	1.65	1.23	0.72	0.39	0.22
100-yr	10.92	7.98	6.48	4.54	3.03	1.90	1.43	0.83	0.45	0.25

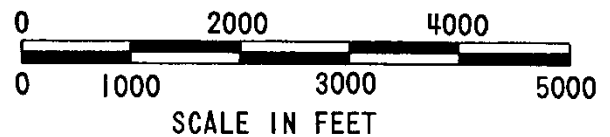
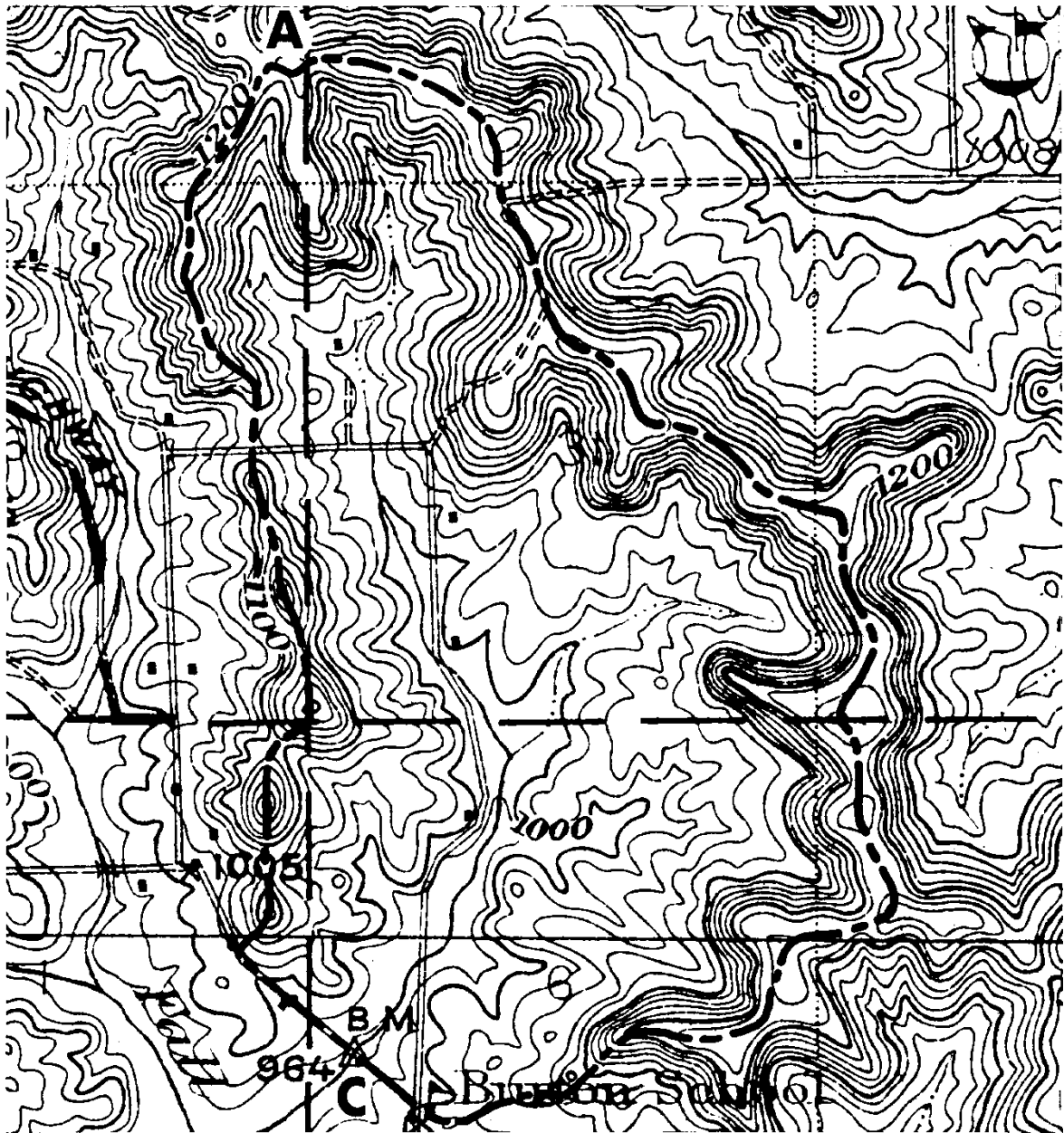


Menominee Co. Rainfall Intensity-Duration-Frequency- NOAA Atlas 14, Volume 8

RI (yr)	Duration (min)									
	5	10	15	30	60	120	180	360	720	1440
1-yr	3.48	2.58	2.08	1.44	0.94	0.58	0.43	0.26	0.15	0.09
2-yr	4.08	3.00	2.44	1.70	1.09	0.67	0.50	0.30	0.18	0.10
5-yr	5.16	3.78	3.08	2.14	1.37	0.84	0.62	0.37	0.22	0.12
10-yr	6.12	4.50	3.64	2.54	1.61	0.98	0.72	0.43	0.25	0.14
25-yr	7.44	5.46	4.44	3.10	1.97	1.20	0.88	0.52	0.30	0.17
50-yr	8.52	6.24	5.08	3.54	2.26	1.38	1.01	0.59	0.35	0.20
100-yr	9.72	7.08	5.76	4.02	2.57	1.56	1.15	0.68	0.39	0.22



### CONTOUR MAP FOR EXAMPLE PROBLEM



----- INDICATES BASIN LIMITS

- |                     |   |
|---------------------|---|
| Location            | - NW Jackson County   |
| Drainage Basin Area | - 1067 Acres  |
| Length              | - 10,800 ft. = 2.05 mi., from inlet (C) along natural waterway to most remote point (A) |
| Soil                | - Sandy silt loams over sand and limestone  |
| Cover(estimated)    | - 40% woods, 60% mixed cover  |
| Design frequency    | - 50 years  |
| Contour interval    | - 20 foot   |

**Runoff Curve Number (CN) NRCS - TR55 Method**

**Soil Types**

- A. (Lowest runoff potential). Includes deep sands with very little silt and clay, also deep, rapidly permeable loess.
- B. Mostly sandy soils less deep than A, and loess less deep or less aggregated than A, but the type has above average infiltration after thorough wetting.
- C. Comprises shallow soils and soil containing considerable clay and colloid, through less than D.
- D. (Highest runoff potential). Includes mostly clays of high swelling percent, but the group also includes some shallow soils with nearly impermeable sub-horizons near the surface.

**Runoff Curve Number CN**

Cover	Surface Condition	Soil Type			
		A	B	C	D
Fallow	Straight Row	77	86	91	94
Row Crops	Straight Row	70	80	87	90
	Contoured	67	77	83	87
	Contoured & Terraced	64	73	79	82
Small Grains	Straight Row	64	76	84	88
	Contoured	62	74	82	85
	Contoured & Terraced	60	71	79	82
Legumes or Rotation Meadow	Straight Row	62	75	83	87
	Contoured	60	72	81	84
	Contoured & Terraced	57	70	78	82
Native Pasture or Range	Poor	68	79	86	89
	Normal	49	69	79	84
	Good	39	61	74	80
	Contoured, Poor	47	67	81	88
	Contoured, Normal	25	59	75	83
	Contoured, Good	6	35	70	79
Meadow (Permanent)	Normal	30	58	71	78
Woods (farm wood lot)	Sparse	45	66	77	83
	Normal	36	60	73	79
	Dense	25	55	70	77
Farmsteads	Normal	59	74	82	86
Roads	Dirt	72	82	87	89
	Hard Surface	74	84	90	92
Forest	Very Sparse	56	75	86	91
	Sparse	46	68	78	84
	Normal	36	60	70	76
	Dense	26	52	62	69
	Very Dense	15	44	54	61
Impervious Surface		100	100	100	100
Suburban Areas	Range depending on density or impervious areas as roofs, street, asphalt lots, etc.	50	67	80	85
		to	to	to	to
		67	80	85	90

**TR-55 Graphical Discharge Method      Version 1.11**

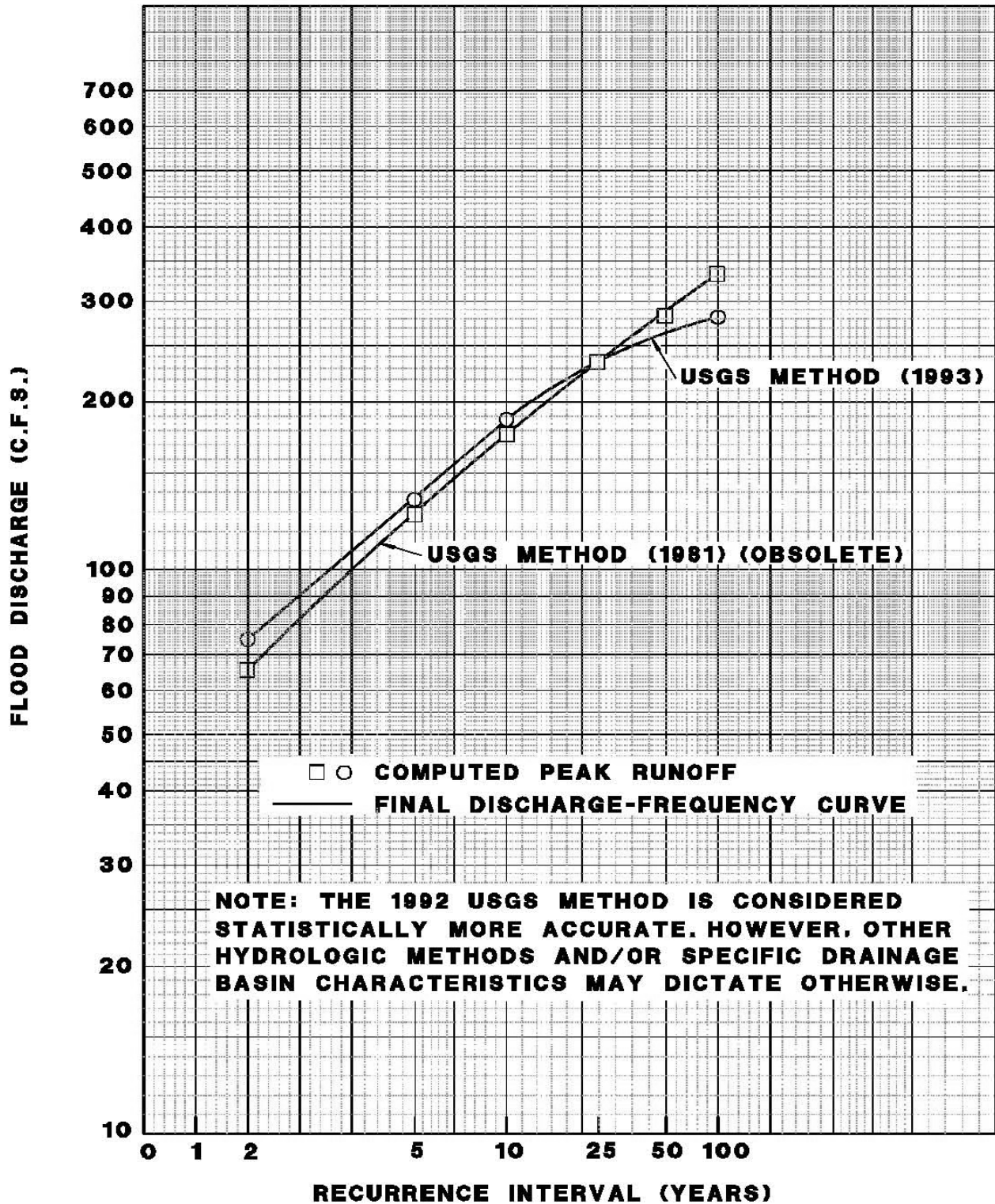
Project:            Example Problem                    User: DOT                    Date: 03-14-95  
 County:           Jackson                                    State: WI                    Checked: \_\_\_\_\_ Date: \_\_\_\_\_

Data:

Drainage Area:                    1067 Acres  
 Runoff Curve Number:            70  
 Time of Concentration:           1.43 Hours  
 Rainfall Type:                    II  
 Pond and Swamp Area:           None

Storm Number	1	2	3	4	5	6	7
Frequency (yrs)	1	2	5	10	25	50	100
24-Hr Rainfall (in)	2.4	2.8	3.6	4.2	4.8	5.3	6
Ia/P Ratio	0.36	0.31	0.24	0.20	0.18	0.16	0.14
Runoff (in)	0.41	0.61	1.07	1.46	1.89	2.26	2.81
Unit Peak Discharge (cfs/acre/in)	0.322	0.358	0.388	0.402	0.412	0.419	0.427
Pond and Swamp Factor 0.0% Ponds Used	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Peak Discharge (cfs)	140	232	443	628	831	1011	1277

# DISCHARGE FREQUENCY GRAPH N/W JACKSON COUNTY



**Basin Watershed Data (Attachment 1A)**

Project \_\_\_\_\_ Location \_\_\_\_\_ By \_\_\_\_\_ Date \_\_\_\_\_

Circle One: Present Developed \_\_\_\_\_ Frequency (yr) \_\_\_\_\_ Checked \_\_\_\_\_ Date \_\_\_\_\_

Subarea Name									
Drainage Area A <sub>m</sub> (mi <sup>2</sup> )									
Time of Concentration T <sub>c</sub> (hr)									
Travel Time through subarea T <sub>t</sub> (hr)									
Downstream Subarea names									
Travel time summation to outlet Σ T <sub>t</sub> (hr)									
24-hr Rainfall P (in.)									
Runoff Curve number CN									
Runoff Q (in.) A <sub>m</sub> Q (mi <sup>2</sup> - in.)									
Initial abstration I <sub>a</sub> (in.)									
I <sub>a</sub> /P									

**Basin Watershed Data Example (Attachment 1B)**

Project Detention Example Location \_\_\_\_\_ By WisDOT Date \_\_\_\_\_

Circle One: Present Developed \_\_\_\_\_ Frequency (yr) 50 Checked \_\_\_\_\_ Date \_\_\_\_\_

Subarea Name	<b>#1</b>								
Drainage Area A <sub>m</sub> (mi <sup>2</sup> )	<b>10 ACRE =.0156</b>								
Time of Concentration T <sub>c</sub> (hr)	<b>.3</b>								
Travel Time through subarea T <sub>t</sub> (hr)	<b>0</b>								
Downstream Subarea names	<b>--</b>								
Travel time summation to outlet Σ T <sub>t</sub> (hr)	<b>--</b>								
24-hr Rainfall P (in.)	<b>5</b>								
Runoff Curve number CN	<b>75</b>								
Runoff Q (in.)	<b>2.45</b>								
A <sub>m</sub> Q (mi <sup>2</sup> - in.)	<b>.038</b>								
Initial abstration I <sub>a</sub> (in.)	<b>.667</b>								
I <sub>a</sub> /P	<b>.1</b>								



**Hydrograph Development Work Sheet (Attachment 2A)**

Project \_\_\_\_\_ Location \_\_\_\_\_ By \_\_\_\_\_ Date \_\_\_\_\_

(Circle One) Present Developed \_\_\_\_\_ Frequency (yr) \_\_\_\_\_ Date \_\_\_\_\_

Subarea Name	Basic Watershed Data used *				Select and enter hydrography times in hours **														
	Sub-area Tc (hr)	$\Sigma Tt$ to outlet (hr)	Ia/P	AmQ (mi <sup>2</sup> -in)															
					Discharge at selected hydrography time **														
					------(cfs)-----														
Composite hydrography at outlet																			

\* From FDM 13-10-10, Attachment 1  
 \*\* Use rainfall distribution Type II for Wisconsin  
 \*\*\* Hydrography discharge for selected times is AmQ multiplied by tabular discharge.

**Hydrograph Development Work Sheet Example (Attachment 2B)**

Project Detention Example Location \_\_\_\_\_ By WisDOT\_\_ Date \_\_\_\_\_

(Circle One) Present Developed \_\_\_\_\_ Frequency (yr) 50\_\_ Checked \_\_\_\_\_ Date \_\_\_\_\_

Subarea Name	Basic Watershed Data used *				Select and enter hydrography times in hours **													
	Sub-area Tc (hr)	ΣTt to outlet (hr)	Ia/P	AmQ (mi <sup>2</sup> -in)	11.0	11.3	11.6	11.9	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	
					Discharge at selected hydrography time **													
					------(cfs)-----													
#1	.3	.0	.1	.038	.76	1.1	1.6	4.5	8.9	17	25.7	25.7	17.4	10.6	7.4	5.5	4.3	
					HOURS													
#1	.3	0	.1	.038	13.0	13.2	13.4	13.6										
					3	2.5	2.2	1.9										
Composite hydrography at outlet																		

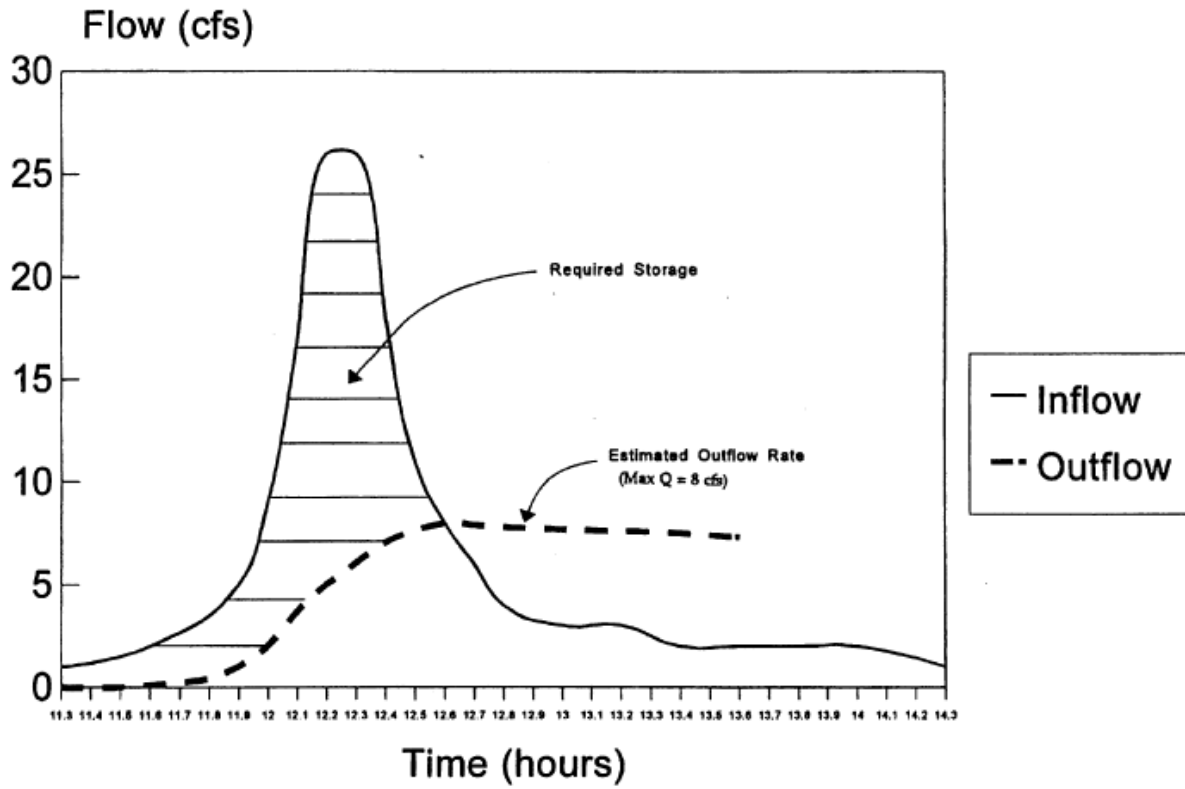
\* From FDM 13-10-10, Attachment 1

\*\* Use rainfall distribution Type II for Wisconsin

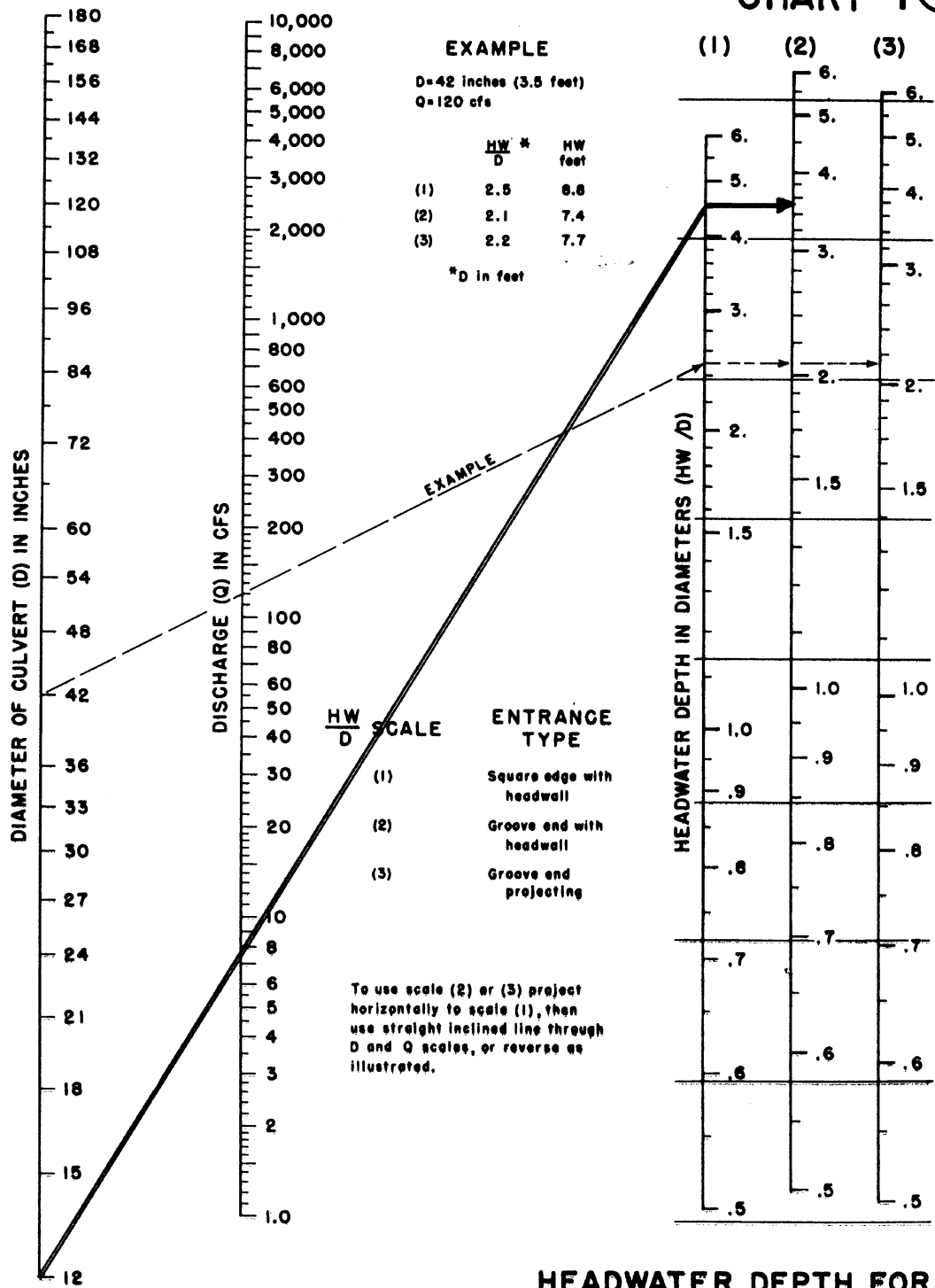
\*\*\* Hydrography discharge for selected times is AmQ multiplied by tabular discharge.

# Detention Example

## 50 year, 24hr storm



# CHART 1



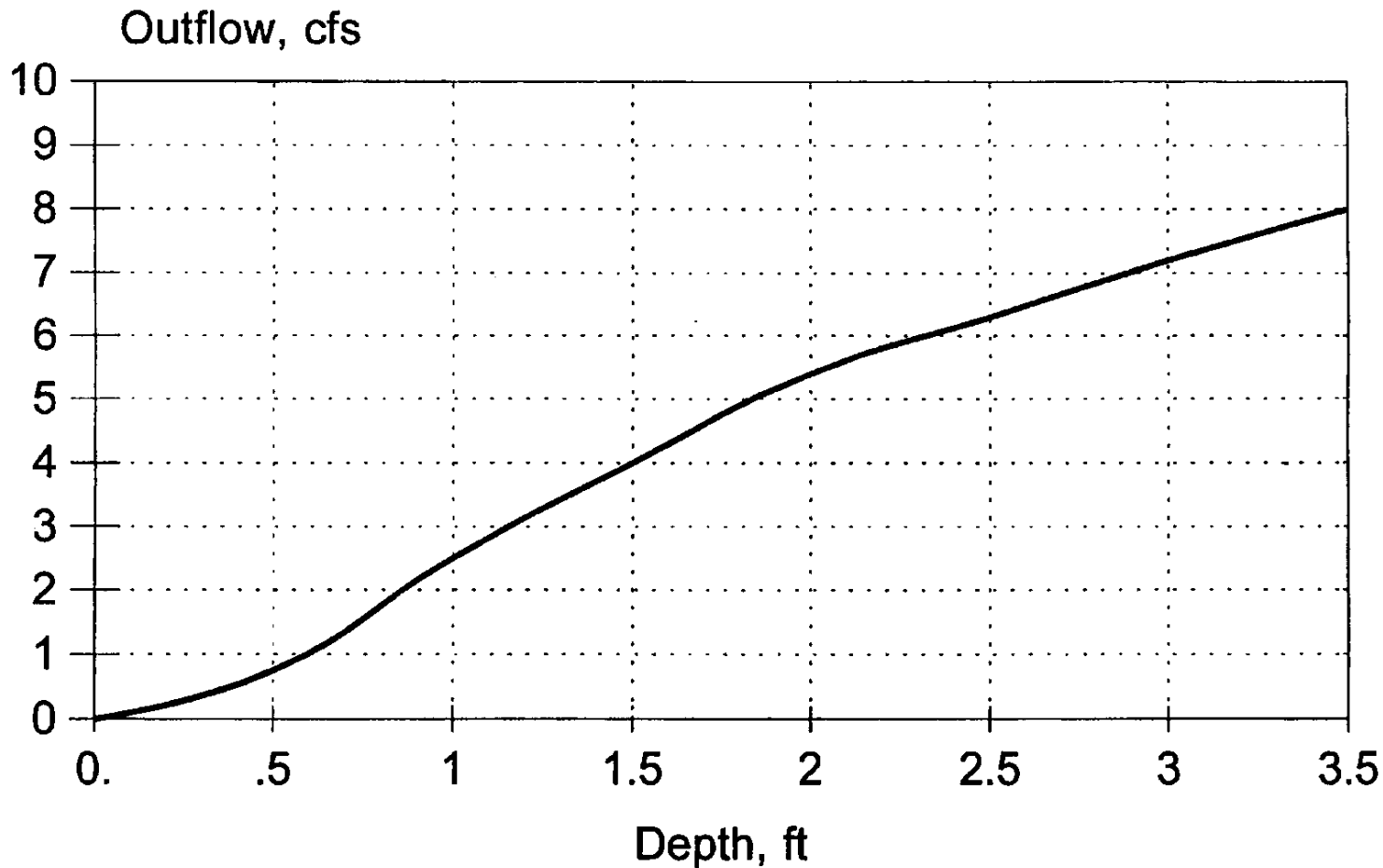
## HEADWATER DEPTH FOR CONCRETE PIPE CULVERTS WITH INLET CONTROL

HEADWATER SCALES 283  
 REVISED MAY 1964

BUREAU OF PUBLIC ROADS JAN. 1963

# Depth - Outflow

## 12" RCP



## Storage Indicator Curve Work Sheet (Attachment 6A)

Table Number 1

Elevation (ft) (1)	Discharge (ft) (2)	Storage (ft <sup>3</sup> ) (3)	$\frac{O_2}{2}$ (4)	$S_2$ $\Delta T$ (5)	$\frac{S_2 + \frac{O_2}{2}}{\Delta T}$ (6)

 $\Delta T = 360 \text{ sec.}$

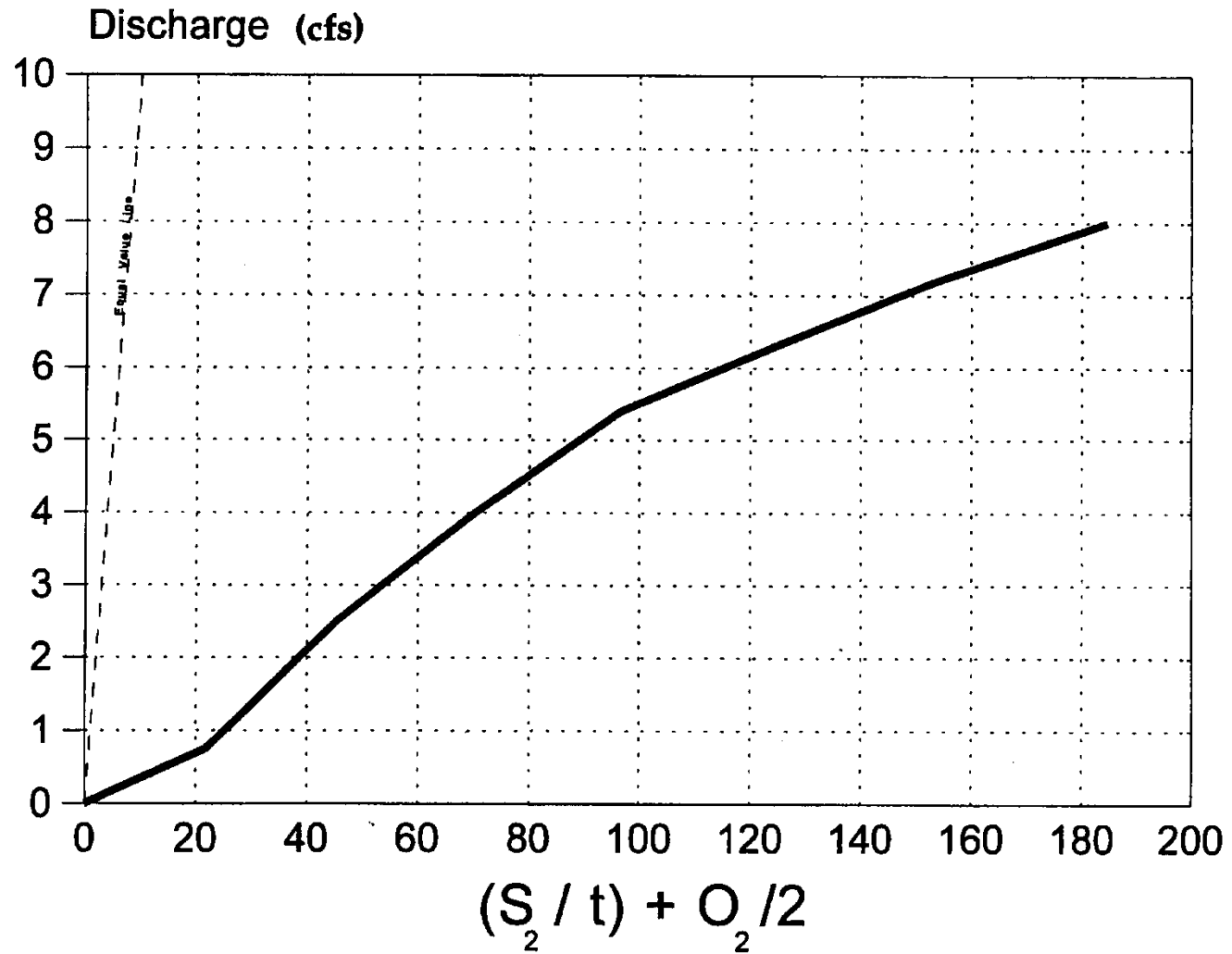
**Storage Indicator Curve Work Sheet Example (Attachment 6B)**

**Table Number 1**

Elevation (ft) (1)	Discharge (ft) (2)	Storage (ft <sup>3</sup> ) (3)	$\frac{0.2}{2}$ (4)	$\frac{S}{\Delta T}$ (5)	$\frac{S}{\Delta T} + \frac{0.2}{2}$ (6)
0.0	0.0	0.0	0	0	0
0.5	.75	7688	0.38	21.4	21.78
1.0	2.5	15881	1.25	44.1	45.35
1.5	4.0	24594	2.0	68.3	70.3
2.0	5.4	33842	2.7	94	96.7
2.5	6.3	43643	3.15	121.2	124.35
3.0	7.2	54011	3.6	150.0	153.6
3.5	8.0	64963	4.0	180.5	184.5

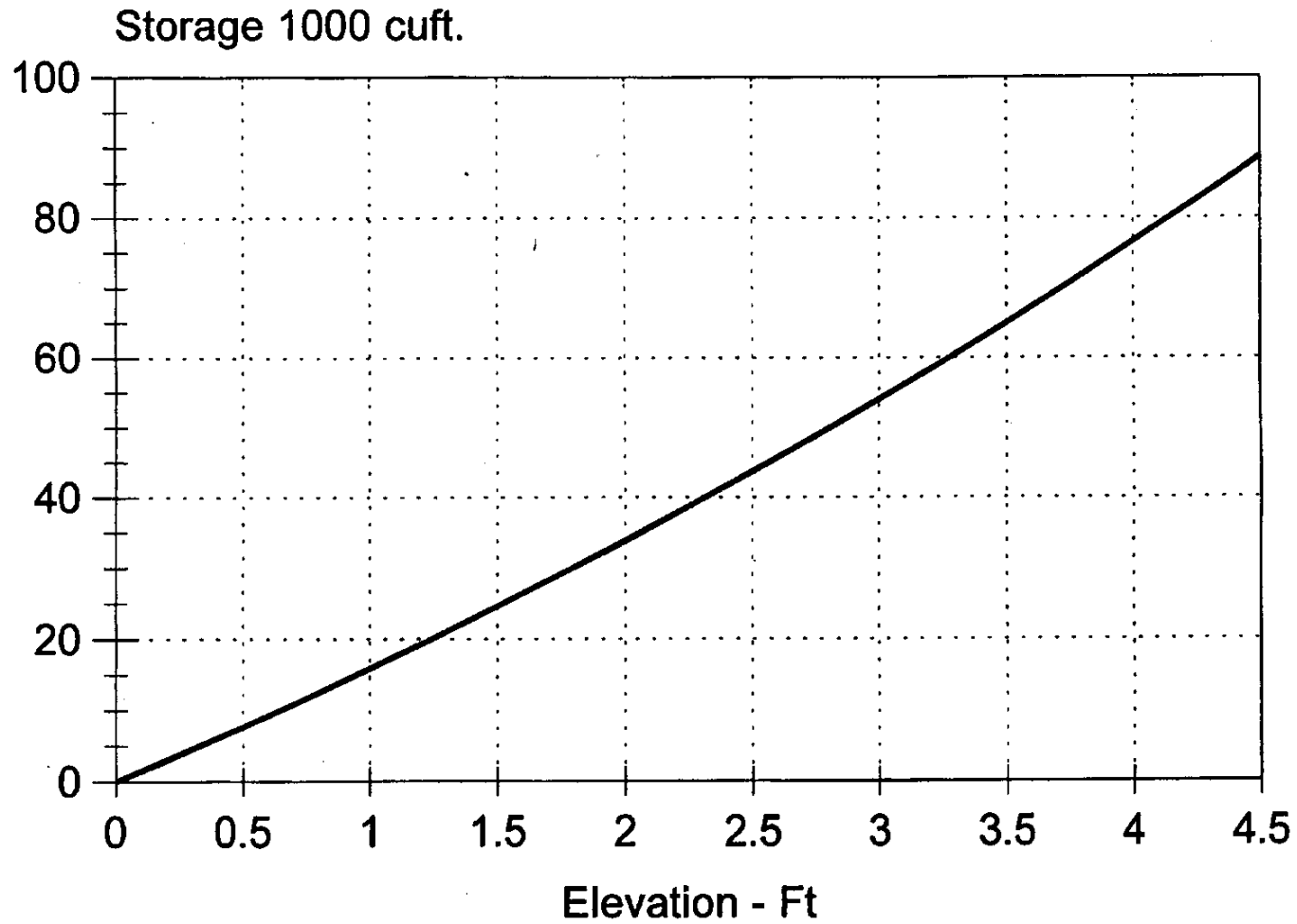
$\Delta T = 360 \text{ sec.}$

# Storage - Indicator Curve





# Stage - Storage Curve



**Hydrograph Data Work Sheet (Attachment 9A)**

**Table Number 2**

Time (hrs) (1)	Inflow (cfs) (2)	$\frac{I_1 + I_2}{2}$ (3)	$\frac{S_1 + O_1}{\Delta T}$ (4)	$O_1$ (cfs) (5)	$\frac{S_2 + O_2}{\Delta T}$ (6)	$O_2$ (cfs) (7)

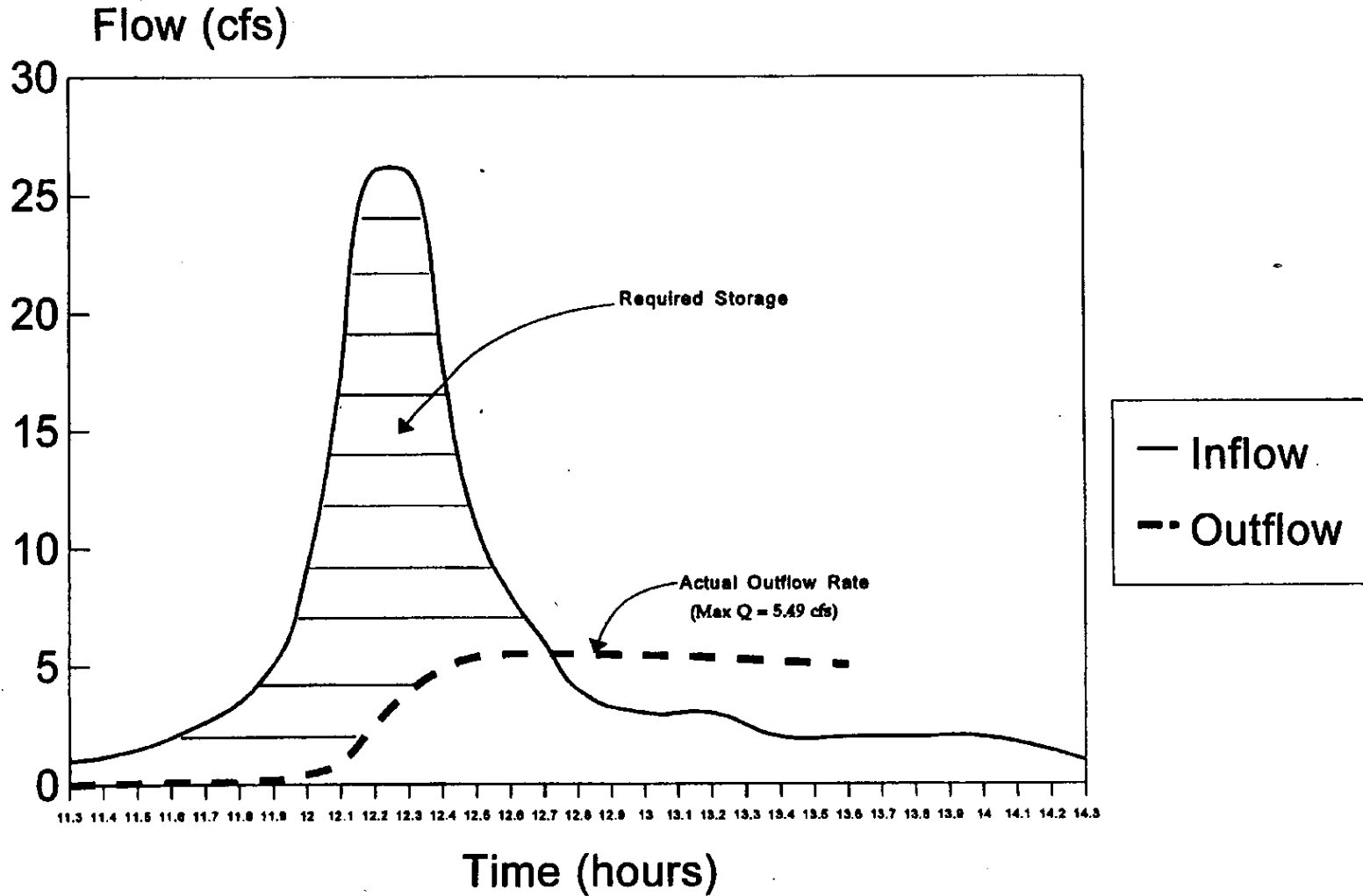
Hydrograph Data Work Sheet Example (Attachment 9B)

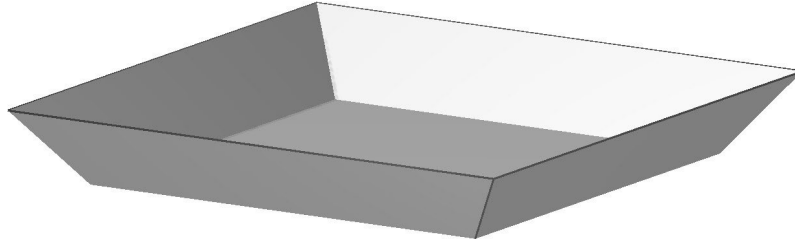
Table Number

Time (hrs) (1)	Inflow (cfs) (2)	$\frac{I_1 + I_2}{2}$ (3)	$\frac{S_1 + O_1}{\Delta T}$ (4)	O <sub>1</sub> (cfs) (5)	$\frac{S_2 + O_2}{\Delta T}$ (6)	O <sub>2</sub> (cfs) (7)
11.0	.76					
11.3	1.1	.093	0	0.0	.93	0.0
11.6	1.6	1.35	.93	0.0	2.28	0.11
11.9	4.5	3.1	2.28	0.11	5.27	0.19
12.0	8.9	6.7	5.27	0.19	11.8	0.42
12.1	17	12.95	11.8	0.42	24.3	0.94
12.2	25.7	21.35	24.3	0.94	44.7	2.52
12.3	25.7	25.7	44.7	2.52	67.9	3.89
12.4	17.4	21.6	67.9	3.89	85.6	4.84
12.5	10.6	14.0	85.6	4.84	94.8	5.37
12.6	7.4	9.0	94.8	5.37	98.4	5.47
12.7	5.5	6.45	98.4	5.47	99.4	5.49
12.8	4.3	4.90	99.4	5.49	98.8	5.47
13.0	3	3.65	98.8	5.47	97.0	5.43
13.2	2.5	2.75	97.0	5.43	94.3	5.33
13.4	2.2	2.35	94.3	5.33	91.3	5.16
13.6	1.9	2.10	91.3	5.16	88.2	5.03
13.8	1.8	1.85	88.2	5.03	85.02	4.95
14.0	1.7	1.75	85.02	4.95	81.82	5.40
14.3	1.0	1.35	81.82	4.50	78.67	4.40

# Detention Example

## 50 year, 24hr storm





Given :

side slopes of pond = 4:1 = Z  
depth = D = 3.5 feet, use 0.5 foot increments  
dimensions of pond bottom = W = L = 122 feet  
122 feet x 122 feet

For a trapezoidal basin:

Using equation:  $\text{Volume} = LWD + (L + W)ZD^2 + 4/3Z^2D^3$

$$\text{Volume}_{1.5 \text{ feet}} = (122)(122)(1.5) + (122+122)(4)(1.5)^2 + 4/3(4)^2(1.5)^3$$

$$\text{Volume}_{1.5 \text{ feet}} = 24594 \text{ ft}^3$$