

# PANEL DISCUSSION

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# COMMON ISSUES DURING PLAN REVIEW: Incorrect Data Used

WinSLAMM - Incorrect Winter Season and/or Rain File

WisReg - Milwaukee WI 1969.RAN	Dec 6 - Mar 28
WisReg - Madison WI 1981.RAN	Dec 2 - Mar 12

# COMMON ISSUES DURING PLAN REVIEW: Incorrect Data Used

## Incorrect Rainfall Depths

Project area: Midwestern States					Waukesha County					
Latitude: 43.0230°										
Longitude: -88.3460°										
Elevation: 1035 ft*										
* source: Google Maps										
<b>PRECIPITATION FREQUENCY ESTIMATES</b>										
by duration for ARI:	<b>1</b>	<b>2</b>	<b>5</b>	<b>10</b>	<b>25</b>	<b>50</b>	<b>100</b>	<b>200</b>	<b>500</b>	<b>1000 years</b>
5-min:	0.34	0.41	0.52	0.6	0.72	0.81	0.9	0.98	1.09	1.18
10-min:	0.5	0.6	0.75	0.88	1.05	1.18	1.31	1.44	1.6	1.72
15-min:	0.61	0.73	0.92	1.07	1.28	1.44	1.6	1.75	1.95	2.1
30-min:	0.83	1	1.27	1.49	1.79	2.01	2.23	2.45	2.73	2.93
60-min:	1.07	1.28	1.64	1.94	2.36	2.69	3.02	3.37	3.84	4.2
2-hr:	1.3	1.56	2	2.38	2.93	3.37	3.82	4.3	4.95	5.47
3-hr:	1.46	1.73	2.22	2.65	3.29	3.81	4.37	4.96	5.79	6.46
6-hr:	1.75	2.04	2.56	3.04	3.79	4.42	5.11	5.87	6.95	7.83
12-hr:	2.09	2.36	2.87	3.37	4.14	4.82	5.57	6.4	7.61	8.61
24-hr:	2.4	2.7	3.27	3.81	4.66	5.38	6.18	7.06	8.33	9.38

# COMMON ISSUES DURING PLAN REVIEW: Incorrect Data Used

## Incorrect IDF Equation Parameters

Kenosha County IDF Equation Parameters						
Recurrence Interval (Years)	Duration of 5 minutes or more but less than 60 minutes			Duration of 60 minutes or more through 24 hours		
	<i>a</i>	<i>b</i>	<i>k</i>	<i>a</i>	<i>b</i>	<i>k</i>
1	22.262	2.370	0.708	24.069	0.777	0.754
2	23.052	1.892	0.675	40.481	4.543	0.806
5	25.989	1.566	0.648	78.184	13.073	0.868
10	26.885	1.199	0.618	109.108	17.782	0.892
25	30.483	1.043	0.603	155.500	23.614	0.913
50	35.380	1.118	0.606	184.546	25.466	0.917
100	34.852	0.786	0.576	215.407	27.166	0.921

Milwaukee County IDF Equation Parameters						
Recurrence Interval (Years)	Duration of 5 minutes or more but less than 60 minutes			Duration of 60 minutes or more through 24 hours		
	<i>a</i>	<i>b</i>	<i>k</i>	<i>a</i>	<i>b</i>	<i>k</i>
1	19.662	2.025	0.683	29.823	3.823	0.782
2	22.612	1.865	0.674	46.461	7.149	0.828
5	28.138	1.818	0.668	74.758	11.435	0.868
10	30.188	1.518	0.646	95.190	13.156	0.880
25	36.244	1.532	0.644	122.810	15.389	0.886
50	35.717	1.131	0.613	146.180	17.441	0.888
100	40.822	1.224	0.618	167.292	18.945	0.886

Waukesha County IDF Equation Parameters						
Recurrence Interval (Years)	Duration of 5 minutes or more but less than 60 minutes			Duration of 60 minutes or more through 24 hours		
	<i>a</i>	<i>b</i>	<i>k</i>	<i>a</i>	<i>b</i>	<i>k</i>
1	22.639	2.380	0.714	26.026	1.867	0.760
2	27.427	2.453	0.716	41.363	4.828	0.809
5	32.233	2.151	0.696	68.958	8.984	0.855
10	35.227	1.895	0.679	92.328	11.900	0.873
25	37.612	1.510	0.640	125.060	15.622	0.887

$$i = \frac{a}{t^k + b}$$

# COMMON ISSUES DURING PLAN REVIEW:

Check with the Community for Guidance Documents



## Section I - Design Standards and Material Specifications

Title	Page
A. Water Main	I-2
B. Sanitary Sewer	I-11
C. Storm Sewer and Stormwater Management	I-17
D. Roadways, Sidewalks, and Pathways	I-24
E. Grading	I-26
F. Erosion Control	I-27

- ✓ Flowcharts
- ✓ Checklists
- ✓ Samples
- ✓ Standard Details
- ✓ Guidance Docs.
- ✓ Requirements



# COMMON ISSUES DURING PLAN REVIEW:

- ❖ Phone calls + Concept mtg + Checklists + Development
- ❖ Handbook: Helps reduce missing SW information.
- ❖ Waukesha County Airport/Crites Field: located within City of Waukesha.
  - FAA Advisory Circular 150 5200 33B: Confirm applicability of proposed wet pond design to FAA requirements for separation of wet ponds within 5 miles of airport.
  - Coordinate with Waukesha County Airport Manager or FAA staff.
- ❖ Including tailwater effect in stormwater design.

# Recording SW Maintenance Agreements

Brookfield:

Record Agreements in two parts - prior to construction beginning & after as-built data is available.

Waukesha:

Approved by BPW/Council and provide recorded MA prior to issuance of building permit or starting work.

# SWM Agreements: Special Requirements

6. Owner agrees to indemnify and hold harmless the City, its officers, agents and employees against any and all actions, damages, judgments, costs, or fees of any kind whatsoever arising out of any act, error, or omission of the Owner, its agents, or employees relating to this agreement.
7. Copies of all inspection reports must be submitted to the City of Brookfield every other year, beginning on the first even year after the signing of the Agreement (e.g. Agreement signed in 2023, first report is due in 2024, then 2026, and so on). Inspection reports must be sent by January 31 to: ATTN: Stormwater Engineer, City of Brookfield – Engineering, 2000 N. Calhoun Road, Brookfield, WI 53005.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 202\_\_\_\_\_.

**Owner:**

Waukesha:

Collect financial guarantee for Maintenance Agreement Addendum





# SWM Agreements: Older Developments

## Waukesha:

- Having knowledge of locations where MA's are needed and a GIS or listing of current agreements for quick reference is helpful.
- When modifications to sites come to PC for approval, then the MA can be added as a condition.
- Don't issue building permit until SW Agreement is recorded

# SWM Agreements:

## Problem Areas in Enforcement & Solutions

- ❖ Owner/HOA hasn't budgeted for regular or major maintenance activities:
  1. Ensure Owner(s) are aware of responsibilities and costs upfront.
  2. Engineer/Designer should specify SW BMPs that fit with the development's likely inspection and maintenance abilities.
  3. Annual reminders of maintenance duties.
- ❖ Residents/HOA's lacking understanding of what to do and when to do it.
  1. Meet with HOA.
  2. Provide resources.

# SWM Agreements: Problem Areas in Enforcement & Solutions

- ❖ SW BMP's & Agreements;
  1. Lack of understanding what a Qualified Professional is.
  2. Not submitting documentation of annual inspections.
  3. Documentation inaccurate.



# SWM Agreements:

## Problem Areas in Enforcement & Solutions

- ❖ Continued education (e.g. Waukesha SW Workshop)
- ❖ Atypical Enforcement Options:
  1. Site meetings.
  2. Verbal & written reminders/warnings.
  3. Conditions on project approvals.

# Questions?

