



ULDC Stormwater Update

October 24, 2023

Ramon D. Gavarrete, P.E.
Public Works Director



Unified Land Development Code (ULDC) Rainfall volumes update

- The purpose is to provide clarity and remove conflicting information regarding rainfall volumes in the Code.
- The current ULDC states that the rainfall volumes used to design the stormwater basins use volumes from Florida Department of Transportation (FDOT) drainage manual.
- The two Water Management Districts have varying requirements.
- The rainfall volumes are being updated to provide uniformity and consistency by analyzing the FDOT referencing the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 data over the entire County and comparing with the WMD requirements.



Rainfall Volumes under future Climate conditions

- **Change Factors (CFs) are multipliers that can be applied to current design storm rainfall depths to determine future design rainfall depths.**
- **Change factors have been developed by Florida International University (FIU) in the “Updating the Statewide Extreme Rainfall Projections” report (Obeysekera, et al., June 2021).**
- **Change factors are available for storm durations for 100-year 1 day, 3 day, 7 day and 10 day storm events.**
- **Future rainfall volumes were considered by multiplying the lower and upper 50th percentile change factors to current Atlas 14 Rainfall.**
 - **The Climate Vulnerability Analysis used upper 50th percentile change factors.**

Future Rainfall Change Factor Example 100 year 1 day storm

- Near future conditions 2030-2069
- 100-year, 1-day storm
- Lower and upper 50th percentile change factors

<u>Rainfall (in)</u>		<u>Change Factor</u>		<u>Future Rainfall (in)</u>
10	X	1.11	(Lower)	= 11.1
10	X	1.35	(Upper)	= 13.5



Example 1- Gainesville 3 WSW Station (UF Campus on Natural Area Drive)

100-year Storm Duration	Current NOAA Atlas 14	2030-2069 Lower 50% Percentile *	2030-2069 Upper 50% Percentile*	Proposed ULDC
1 Day	9.84	10.92	13.28	11.04
3 Day	13	14.69	16.51	13.8
7 Day	14.5	16.68	17.69	16
10 Day	15.3	17.75	18.51	18

* Rainfall depth determined by multiplying current NOAA Atlas 14 rainfall by FIU change factor



Example 2- East of CR 225 near Gainesville Raceway

100-year Storm Duration	Current NOAA Atlas 14	2030-2069 Lower 50% Percentile*	2030-2069 Upper 50% Percentile*	Proposed ULDC
1 Day	9.4	10.43	12.69	11.04
3 Day	12.7	14.35	16.13	13.8
7 Day	13.9	15.99	16.96	16
10 Day	14.6	16.94	17.67	18

* Rainfall depth determined by multiplying current NOAA Atlas 14 rainfall by FIU change factor



Example 3- SW Alachua County at SW 296th Street

100-year Storm Duration	Current NOAA Atlas 14	2030-2069 Lower 50% Percentile*	2030-2069 Upper 50% Percentile*	Proposed ULDC
1 Day	11.7	12.99	15.8	11.04
3 Day	15.3	17.29	19.43	13.8
7 Day	16.8	19.32	20.50	16
10 Day	17.7	20.53	21.42	18

* Rainfall depth determined by multiplying current NOAA Atlas 14 rainfall by FIU change factor



Example 4- Fort Clarke Boulevard-Lullwater

100-year Storm Duration	Current NOAA Atlas 14	2030-2069 Lower 50% Percentile*	2030-2069 Upper 50% Percentile*	Proposed ULDC
1 Day	9.97	11.07	13.46	11.04
3 Day	13.1	14.80	16.64	13.8
7 Day	14.7	16.91	17.93	16
10 Day	15.5	17.98	18.76	18

* Rainfall depth determined by multiplying current NOAA Atlas 14 rainfall by FIU change factor



Conclusion- ULDC Rainfall volumes update

- The Suwannee River Water Management District (SRWMD) rainfall volumes are consistent with near future (2030 to 2069) rainfall conditions.
- Since ULDC update in 2006, the use of SRWMD rainfall volumes on Alachua County development projects have functioned well for stormwater basins and have not resulted in basins overflowing and flooding.
- The use of 100 year-3 day, 7 day and 10 day design storms have helped in creating basins for storing additional volumes of rainfall during back-to-back storm events which have been frequent in Alachua County.



Accept Staff Recommendation



Discussion for Stormwater Update

