POLK COUNTY
DEVELOPMENT REVIEW COMMITTEE
STAFF REPORT

DRC Date:	February 6, 2025	**Level of Review:**	4
PC Date:	April 2, 2025	**Type:**	LDC Text Amendment
BoCC Date:	April 15, 2025 May 6, 2025 June 17 2025 July 15, 2025	**Case Numbers:** **Case Name:**	LDCT-2025-3 Stressed Basins and Stormwater Management
Applicant:	Polk County	**Case Planner:**	Erik Peterson, AICP

Request:	An LDC text amendment amending Chapter 1, Section 105, Relationship To Other Regulations, to incorporate the "Stressed Drainage Basin Map" into the code by reference; amending Chapter 2, Section 227, Filling and Excavating, to require stem wall foundations under certain circumstances; amending Chapter 7, Section 703, Concurrency, and Section 740, Storm Water Management, to add standards for stressed drainage basins; amending Chapter 10, Definitions, to add a definition of Stressed Drainage Basins; amending Appendix A, Section A102.E, Seasonal High-Water Table, to require crushed concrete in high ground water table conditions; providing for severability; providing an effective date.
Location:	n/a
Property Owner:	n/a
Parcel Size (Number):	n/a
Development Area:	n/a
Nearest Municipality:	n/a
DRC Recommendation:	Approval
Planning Commission Vote:	7:0 Approval

The changes to Chapter 1, Section 105, Relationship to Other Regulations:

- Adding Generalized 100-year Storm Event Closed and Stressed Drainage Basin Map to the listed of maps adopted by reference into the LDC.
- Map is described to include sub-basins within the Alafia River, Hillsborough River, Peace River, Kissimmee River, and St. Johns River basins. Notable areas include, but are not limited to, Itchepackasassa Creek, Blackwater Creek, Peace Creek, Kathleen Drain, Fish Hatchery Drain, Crooked Lake, and lakes created by former mining in the area of the Christina Development.
- Boundary determinations at the discretion of the County Engineer

The changes to Chapter 2, Section 227. Filling and Excavating Land:

- Modifying exemptions to apply to 227.B.3 and not Florida Building Code, Section 630 elevation requirements, or additional call for stem walls.
- Adding stem wall requirement where finished floor elevation is greater than 1:4 rise over run.

The changes to Chapter 7, Section 730.H, Storm Water Management:

- Differentiating the Code Section stormwater concurrency in Section 703 and stormwater management standards in Section 740.
- Changing Level of Service Standard for drainage structures on local roads from 10-year to 25-year storm.
- Changing Level of Service Standard for drainage structures on collector roads from 25-year to 50-year storm.

The changes to Chapter 7, Section 740, Storm Water Management:

- Changing Mean Sea Level (MSL) Datum to North American Vertical Datum 1988 (NAVD88)
- Requires an increase in the minimum residential finished floor elevation and flood proofing elevation for commercial sites from one (1) foot above the established base flood elevation (BFE) to 2½ feet above BFE.
- Requiring engineers to consider the effect of a 100-year storm upstream development in stormwater system design and demonstrate that the system can convey such flow without causing adverse effects.
- Require stormwater system emergency overflow to handle 125% of the system's designed flow.
- Requires post-development runoff to be no greater than 80% of the pre-development condition.
- Emphasizes that stormwater requirements also apply to the construction phase of the project.
- Require the site contractor to be responsible to remedy drainage problems caused to off-site properties during construction.
- Additionally, water quality standards shall apply to all phases of development including construction.

The addition to Chapter 10, Definitions:

- Add definition for a Stressed Drainage Basin.

The changes to Appendix A, Section A102.E Seasonal High-Water Table:

- Require crushed concrete when the seasonal high ground water table or high-water elevation is less than one and one-half feet below the proposed roadway base.
- Delete references to outdated materials.

Effective Date: June 17, 2025.

Terminology

STEM WALL FOUNDATION - A type of raised foundation that uses a short, concrete or masonry wall (the stem wall) built on top of a footing to support a structure.

BASIN - geographical area defined by topographic ridges

- **OPEN** BASIN - storm water runoff flows down gradient to a receiving water body
- **CLOSED** BASIN - there is **no outlet for runoff** other than percolation

100-YEAR FLOOD HAZARD AREAS (FLOOD ZONES) – 1 in 100 chance or 1% chance of flooding this year.

FLOODWAYS – areas reserved to discharge the base flood without cumulatively increasing the water surface elevation.

STORM EVENT – amount of rainfall measured over a 24-hour period. A 25-year event is a 1 in 25 chance of occurring in a given year. A 100-year event is a 1 in 100 or 1% chance.

DETENTION - collection and temporary storage of storm water in such a manner as to provide for treatment.

RETENTION - storage of stormwater where discharge is only by percolation through soil or evaporation

OUTFALL – stormwater water released from a drainage structure.

DRAINAGE STRUCTURE - constructed for the purpose of diverting, passing, conveying, storing, or carrying storm water.

FREEBOARD - additional height above a flood level for purposes of floodplain management.

Summary:

The past summer tropical season brought a heightened awareness of how important it is to control and manage stormwater when developing lands in Florida. Not only is there fear of what a hurricane event can cause, but also the more common occurrence of heightened rain events in succession. Staff have known for some time that there are parts of the County where natural drainage systems cannot assimilate high amounts of rainfall in a short period of time. When development is proposed in these areas, staff have advocated for more enhanced drainage designs to manage higher amounts of rainfall onsite and minimize the offsite impact. This proposed amendment addresses stormwater management in these areas of the County challenged by drainage limitations. In addition to stormwater management, this amendment also enhances flood and drainage protections for other aspects of land development such as minimizing the amount of drainage displacement between structures in close proximity, higher finished floor elevations in flood prone areas, and improvements to road design in flood prone areas.

Polk County is the headwaters to seven rivers in Florida. Six of them flow to the Gulf and one to the Atlantic. These river systems gain much of their flow through a series of drainage basins that funnel water to their tributaries. In drainage management, engineers analyze the effects of stormwater runoff on and offsite by gaining an understanding of the drainage basin or basins that affect the property they are developing. When the data shows that there is a clear path for drainage to flow from offsite to these river systems, the area is considered an open basin, or in engineering terms, a positive outfall. When there is not a clear path to these waterways, the basin is labeled as closed. When the basin is closed there is no other way to discharge stormwater other than percolation into the ground or evaporation into the atmosphere. In these areas, a much higher standard of stormwater management must be provided within a development to ensure adequate protection of structures and inhabitants. There are also drainage basins that may function as open under normal circumstances but perform the same as closed basins during periods of higher rainfall. Staff refer to these as stressed basins. This amendment sets forth analysis and design standards to determine and construct the proper drainage system to prepare for the types of rain events that are common in Polk County.

Data and Analysis Summary

Major storm events often create flooding incidents in the County for which the Polk County Roads and Drainage Division is called in to recover infrastructure and identify means to reducing the effects of future storm events. They have conducted and commissioned numerous studies of various drainage basins within the County in order to understand why certain areas continually endure damage as a result of these major events. These studies have identified basins that are open, closed, and stressed.

Staff have reviewed common home construction methods and found that stem wall foundations can be a preventative measure to reduce localized flooding between homes, especially in areas where existing homes in the development were built to lesser drainage standards.

Staff have reviewed the County's history of drainage regulations and found much of the development that occurred prior to the Comprhensive Plan were not designed to address the type of rain events that are more common today.

Staff have reviewed the stormwater design regulations of other Counties in central Florida along with the cities that contain the drainage basins found to be stressed. Staff found that the County's

current standards are better than most. Since the cities in the County have required less accommodation for higher rainfall events and much of the development in the unincorporated areas is downstream of the cities, this must be factored into the design of future development.

Staff have met with the Polk County Builders Association and held discussions with local engineers and site development contractors regarding methods for improving stormwater management and design during all stages of the development process.

Findings of Fact

1. *The request is a Land Development Code text amendment to Chapter 1, Section 105, Relationship To Other Regulations, to incorporate the "Stressed Drainage Basin Map" into the code by reference; amending Chapter 2, Section 227, Filling and Excavating, to require stem wall foundations under certain circumstances; amending Chapter 7, Section 703, Concurrency, and Section 740, Storm Water Management, to add standards for stressed drainage basins; amending Chapter 10, Definitions, to add a definition of Stressed Drainage Basins; amending Appendix A, Section A102.E, Seasonal High-Water Table, to require crushed concrete in high ground water table conditions.*

2. *This amendment applies to all new developments proposed in the unincorporated areas of the County and within the right-of-way of all County maintained roads.*

3. *Section 105 of the Land Development Code incorporates the Comprehensive Plan Map Series, Subdistrict Map Series, and the Sidewalk District Map by reference into the Land Development Code.*

4. *Section 227 of the Land Development Code regulates the filling and excavating of individual properties within the unincorporated areas of the County.*

5. *Section 703 of the Land Development Code sets forth all the requirements that ensure that development is concurrent with infrastructure per Section 163.3180 of the Florida Statutes.*

6. *Section 740 of the Land Development Code provides the design standards for a Storm Water Management Plan that is required for all development in the unincorporated areas of Polk County and in the right-of-way of all Polk County maintained roads.*

7. *Chapter 10 of the Land Development Code is dedicated to defining all pertinent terms in the Land Development Code.*

8. *Appendix A, Section A02 of the Land Development Code provides detailed engineering standards for drainage system design.*

9. *SECTION 3.104 – STORMWATER MANAGMENT of the Comprehensive Plan establishes the County's objective to ensure that no stormwater management plan increases the impact of stormwater discharge more than that occurring in a predeveloped state.*

10. *Chapter 163.3180 of the Florida Statutes requires that local governments ensure that there is adequate capacity of drainage facilities to serve new development concurrent with final approval.*

11. *This amendment does not change the regulation of development in the Green Swamp Area of Critical State Concern.*

12. *This proposed amendment provides a definition in Chapter 10 of the Land Development Code for the identification of a stressed basin.*

13. *Planning staff has reviewed the land development requirements of 11 central Florida counties that bear commonalities with Polk and the five (5) municipalities that contain stressed drainage basins within the County. Staff found that four (4) of the 11 counties rely on only the minimum standards required by state agencies. Only one of the cities within Polk accounts for higher-than-normal rainfall in their stormwater design standards.*

14. *Only four (4) of the 11 counties surveyed require the entire volume of runoff created by a new development to be held onsite for the duration of the storm event before releasing it downstream. This has been a standard in Polk County since 1991.*

15. *Three (3) of the 11 counties surveyed and three (3) of the cities in Polk do not address how to design a development's drainage system within a closed basin where there is no positive outfall for its rainfall to go if a higher volume rainfall event is experienced.*

Development Review Committee Recommendation:

The Land Development Division, based on the information provided with the proposed text amendment application, finds that the proposed text change request is **CONSISTENT** with the Polk County Land Development Code and the Polk County Comprehensive Plan. Staff recommends **APPROVAL** of LDCT-2025-3.

Planning Commission Recommendation:
At an advertised public hearing on April 2, 2025, the Planning Commission voted 7:0 to recommend APPROVAL of LDCT-2025-3 to the Board of County Commissioners after hearing public testimony.

Analysis:

Polk County is different from other counties in central Florida. Rivers do not flow through Polk County, they begin here. The rivers begin with a series of contributing basins. Connections between basins can be slow and easily blocked causing them to back up during peak rainfall. As the basins develop with new homes, businesses, and the roadway infrastructure it takes to support them, these connection weaknesses become more prevalent. Drainage requirements that were once thought to be adequate do not meet the new rainfall challenges. New development must not only manage the typical storm event within the development but also accommodate for inadequate systems upstream and capture more rainfall onsite before releasing it upstream so the basin as a whole can assimilate the growing quantities of stormwater flow. This amendment calls for changes to five sections of the code addressing the overall drainage system within development.

Addition of Closed and Stressed Basin Map

Much of the County lies within an open drainage basin where stormwater runoff drains into a storm sewer system that finds a larger drainage system that flows into a waterbody that eventually leads to the Gulf of Mexico or Atlantic Ocean in some northeastern parts of the County. However, there are several areas where there is no drainage outlet and the only option for stormwater runoff is to either percolate into the ground or evaporate into the air. There is a limited capacity for development in these areas and each addition of impervious surface must be countered with an equal amount of stormwater containment and storage. There are also areas that have a path to the sea, but it is constrained or slow. These are termed "Stressed Basins" in this amendment. The water management districts refer to them as basins of concern. Although the drainage management standards have greatly improved in the unincorporated areas of the County since the 1990s, recent storm events and periods of high rainfall activity have shown that problems continue to occur in these areas if there is not adequate stormwater storage capacity within a development. These basins

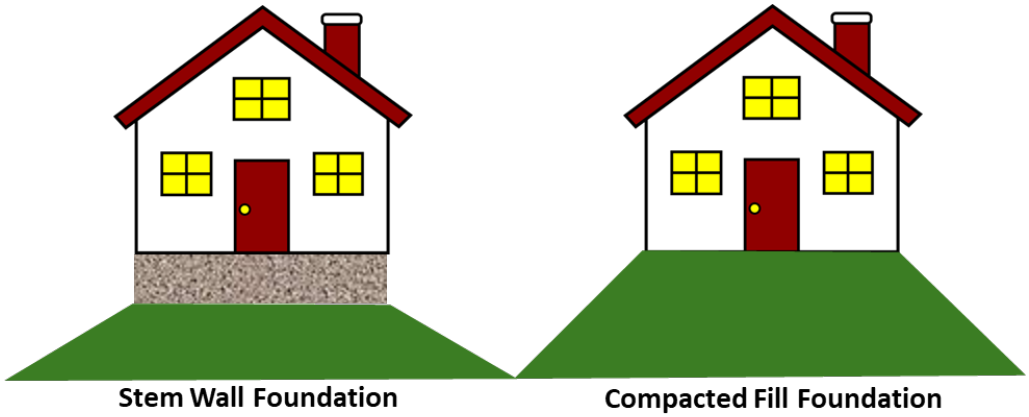
must be viewed as closed until further analysis proves otherwise in order to ensure that new development is not making matters worse in these areas.

All developments in the unincorporated areas have been required to be designed to accommodate the rainfall from a 25-year storm event for 24 hours or more onsite since the summer of 1991. This equates to approximately eight inches of rain in Polk County according to the Hydrograph for Zone 8 in Appendix A, Figure A-2. This is a higher standard than most jurisdictions. The standard for the Southwest Florida Water Management District has been a 25-year design for rainfall rate but not volume. In most jurisdictions, only the first inch is retained onsite for the full event which is the minimum requirement. The district has such a standard because its focus is on treatment upstream to downstream. Their focus is on improving the water quality of lakes and streams to lower turbidity and filter contaminants washed into surface waters. While we all agree that water quality is important, the County is more concerned with the quantity of rainfall and how it is received from upstream flow into a development and conveyed downstream neighboring developments. Treatment is a component of all storm drainage systems. Capture and conveyance of the system is important to protecting property owners from collateral damage of intensifying development within a drainage basin.

The basin map is generalized information and not static. It leads the project engineer and reviewing staff to seek more information before committing to a drainage plan.

Stem Wall Foundation Requirements

Recent storm events have uncovered many instances of localized flooding within older developments where there are existing homes built under lesser past standards and vacant lots are becoming occupied with new homes that are required to meet higher building standards. This discrepancy is often the result of new information with regard to the location of flood hazard areas that were not known prior. While most of this amendment is dedicated to improving drainage standards for site development as a whole, the requirement that stem wall foundation systems be used for individual homes under certain circumstances is addressing the internal drainage problems that can occur in existing developments between homesites. With stem wall foundations, when the slope of the fill exceeds a 4 to 1 slope (12.5%grade) there is less displacement of stormwater between homesites, and drainage is distributed with less velocity from property to property.



Changes to Stormwater Concurrency

Stressed basins should be treated like closed drainage basins for stormwater for all aspects of stormwater design standards. This amendment adds their reference to the drainage level of service standards in Section 703 of the LDC. Residential dwellings in flood hazard areas are required to be built to a finished floor elevation that is one foot above the 100-year base flood elevation. However, the drainage systems within the roadways of a development are only required to meet a 10-year flood event. While the homeowner is safe to stay in the home, the roadways to the home can become impassable during even a modest rain event. During the past three hurricanes, County staff have been unable to provide adequate response to residents in need due to roadways that were so far below standing water that no vehicles could reach them. This increase from the 10-year to the 25-year enables the roadways within a development to be safer and more passible during rain events. Additionally, collector roadway drainage standards are recommended to be built to a 50-year storm event regardless of rural or urban setting.

Changes to the Minimum Residential Finished Floor Elevation and Flood Proofing Elevation for Commercial Sites

The recommended changes in minimum finished floor elevations were identified as a need early on in the damage assessment following Hurricane Milton. There is also another amendment to Section 630 of the LDC to require this of all development in flood prone areas that will be heard in the months to follow. The impact and frequency of named storms that have passed through Polk County have presented the need to look beyond the standard 100-year storm. Our region faces more risk to flooding more than other parts of the US because our rainy season corresponds with hurricane season. Three times in the last decade parts of the County have experienced back-to-back high rain events. Even having only three 25-year events in succession has caused flooding in areas to reach above the 100-year BFE. This requirement of an added 1½ feet of elevation will help avoid severe and catastrophic damage to housing and businesses in the future.

Changes to Stormwater System Design and Modeling

The stormwater management requirements in the unincorporated County are higher than in most jurisdictions. While development in the entire state is required to at least meet a 25-year/24-hour storm design, they are only required to retain the first inch of run-off before releasing it from the property downstream. Within the unincorporated areas of the County, development is required to hold the rainwater onsite throughout the entire 24-hour event for a matching pre and post development volume and rate. That is on average an additional seven inches of rainfall. For many citizens that perceive new development to be the cause of future flooding problems, this actually improves the drainage control in an area post development, but it is not enough to ensure that residents are adequately protected based on recent events. After the last three hurricanes that crossed Polk County, several weaknesses in the County's stormwater system design standards were realized. One of those was that the designer is not required to take into account what happens if upstream properties also experience the same high rainfall without holding back portions of the storm event.

The current standards assume everyone else around is building to the same standards ignoring that much of the existing development in the County was built prior to our current codes. The County did not have an ordinance that provided specific standards for stormwater management until 1988. All development that occurred prior was designed to what the development personnel involved believed was appropriate. The proposed ordinance requires the development design engineer to

consider the effect of a 100-year storm upstream of the proposed development in stormwater system design and demonstrate that the system can convey such flow without causing adverse effects.

The proposed ordinance requires an increase in the amount of rainfall that is held beyond the pre-post volume and rate match for the 24-hour duration. Staff propose that only 80% of the development's stormwater volume be released and 20% held back to either percolate or evaporate. This will result in new developments improving drainage in an area where drainage systems are marginal. This is a necessity since much of the County's existing developments and nearby developments within the cities lack adequate drainage systems.

Crushed Concrete Requirement for High Groundwater Table

Soil cement is no longer considered a viable option for roadway construction material. It is especially inferior when the seasonal high-water table is close to the surface so much that it inundates the road base.

Benefit-cost Analysis of the Amendment:

This amendment brings with it many benefits to new and existing residents and property owners, but it also comes with greater costs to land developers. However, those costs can be offset with more flexible development standards and reductions in liability.

Who does it help?

This ordinance will help the residents in new residential development. It will also benefit residents nearby new development because it requires new development to design beyond the current standards. These standards improve drainage design standards within new developments to meet the realities of Florida's tropical environment and build a more resilient community as more growth continues to occur in Polk County. Development under these standards will provide greater protection for private property, the structures built upon it, and their inhabitants.

The standard length of a home mortgage is 30 years. During that period, there is a one in four chance or greater that the home will experience a 100-year storm event. These requirements ensure that the drainage system of a new residential development is designed with consideration of that possibility and how the flow of stormwater from offsite will be addressed within the development to prevent damage from occurring to the homes. They will also ensure that the roadways in the development are more passable for residents to leave and for emergency vehicles to arrive, if necessary, during and after a major storm event.

Who does it hurt?

These changes will require more land within most residential and non-residential developments to be dedicated to onsite stormwater management because it will require larger facilities to contain water for longer periods during rain events. If more land is required for stormwater management, then less land is available for development. However, this is a pay now or pay later decision. Without proper stormwater design standards, homeowners will continue to experience property loss during above average rain events. These standards will also help to remove the drainage and flooding arguments against new developments.

These changes will require engineers designing residential and non-residential developments to gather and analyze more data regarding offsite drainage patterns. This may require more labor and

will be more time-consuming thereby increasing the cost of development design. However, these added standards help to protect the design engineer from liability claims that come when they point to new developments as cause of on or offsite flooding.

What is the cost?

A Business Impact Estimate pursuant to FS 125.66 (3)(a) has been prepared as an attachment to the casefile. Staff met with the Polk County Builders Association on November 7, 2024, to discuss the changes contemplated for the ordinance. Staff also held roundtable discussions with site contractors and testing labs recently and shortly after Hurricane Milton. Valuable feedback was provided at these meetings that has led to the recommended standards. Many engineers and contractors have been practicing the requirements of this amendment for a long time because it makes sense for the overall Polk County environment.

The cost of requiring a larger amount of land dedicated to stormwater management can be mitigated in residential development by developing more vertically and reducing lot size requirements.

Regulatory History:

Polk County has worked to improve standards for managing stormwater and flooding. Polk County adopted its first Flood Prevention Ordinance in 1977. It required all residences to construct the lowest floor above the base flood elevation. It was amended in 1981 to require development in the 100-year flood hazard areas to avoid causing the base flood elevation to be raised more than one foot. It also required septic tanks to be designed so that they were not impaired during flooding.

The subdivision regulations adopted in 1979 required a 100-year design for stormwater retention if there was no positive outfall (closed basin). Stormwater management plans were not required until the late 1980s with the adoption of Ordinance 88-04. It is not until 1990 that homes built within a 100-year flood hazard area were required to build their first-floor surface one foot above the 100-year floodplain elevation with an amendment to 88-04.

The first introduction of the pre-post rate and volume match came with the adoption of the Comprehensive Plan in April of 1991. It was at that time that Polk County's drainage standards exceeded the standards of most cities in Polk and Hillsborough County. With the adoption of the Green Swamp Critical Area Resource Management Plan in 1994, the County required development within the Green Swamp to hold the 25-year event volume for 14 days.

Limits of the Proposed Ordinance:

The drainage standards proposed in this amendment will apply to the unincorporated areas and development within the rights-of-way on County maintained roads within cities. There is a significant amount of area within stressed and closed basins that is within city limits. Lakeland, Mulberry, Winter Haven, Dundee, Lake Wales, Lake Hamiliton, Frostproof, and Bartow have annexed into these stressed basins. Their stormwater standards are less than the County's current standards. This ordinance will be less effective in areas annexed into these cities unless these governments can be convinced that greater standards are necessary. For the most part the cities are upstream of many of the problem areas. But as they continue to sprawl into them, drainage problems will become more prevalent.

Staff plan to present these changes to development staff members in the city of Lakeland and Winter Haven once the Board has adopted them. Through proper channels and processes, staff will work to encourage the cities to consider strengthening their drainage rules.

Since this amendment applies to all residential and non-residential lots or parcels within the unincorporated areas of the County regardless of the Future Land Use Map district, it includes the Green Swamp Area of Critical State Concern. Florida Commerce requires a 45-day review on all policy changes affecting development in the Green Swamp Area of Critical State Concern regardless of whether it has a direct relationship to the primary purpose of the Critical Area, which is aquifer recharge and protection.

Staff discovered a significant amount of flooding in the Green Swamp during damage assessment conducted after the last four hurricane events. This amendment will improve upon a few of the development standards. But the 14-day retention requirements are still the most effective drainage protection measures in the critical area. This request will be reviewed by the Florida Commerce Community Planning Department Areas of Critical State Concern Program. Staff believe that this amendment will not undermine the standards in the Critical Area since it does not change the special stormwater requirements in the Green Swamp. It will further improve the standards of the Critical Area.

Comparisons to other Jurisdictions:

Staff commonly survey counties on the I-4 corridor for regulatory comparisons because they are most closely similar to Polk. Some of the abutting counties are reviewed along with the two largest cities within the County. Alachua is reviewed because of similar demographic and urban-rural mixtures. The major cities that include stressed basins were also surveyed for comparison. This method of selection creates a survey of 16 total local jurisdictions. In the survey of these jurisdictions staff reviewed the standard stormwater designs, standards for areas without a positive outfall, whether or not pre-post volumes were maintained onsite, and drainage designs for local and collector roads. A summary of the survey results is provided in Table 1 to follow.

Polk County has the higher standards for drainage out of the entire survey. The majority of jurisdictions rely on the water management districts to dictate the stormwater standards, but those are only intended to be the minimum standard. They do not meet the needs of the unincorporated areas of Polk County. Understanding the focus of the district is on water quality first, Polk County has experienced so many extensive rain events that we are compelled to focus on volume in our regulations.

Table 1

Jurisdiction *(Code citation)*	**Stormwater Standards with a Positive Outfall**	**Stormwater Standards Without Positive Outfall**	**Is there a Pre-Post Match for Volume?**	**Roadway Drainage Design Standards?**
Alachua County *Article IX, Section 407.91*	Design "such that the peak rate of discharge does not exceed the predevelopment peak rate of discharge for storm events up to and including the 100-year storm."	Retain "the total volume of stormwater runoff from the contributing watershed for the 100-year critical duration storm event."	**Yes**	Design "so that the edge of pavement is at or above the basin's design high water elevation for the 100-year critical storm event up to the 100-year 24-hour storm event."
Brevard County *Ch. 62, Article X, Section*	"25 year, 24 hour"	"25 year, 96 hour total retention"	**Yes.**	"Streets shall be designed so that the lowest crown

Table 1

Jurisdiction *(Code citation)*	**Stormwater Standards with a Positive Outfall**	**Stormwater Standards <u>Without</u> Positive Outfall**	**Is there a Pre-Post Match for Volume?**	**Roadway Drainage Design Standards?**
62-3751 thru 62-3755				elevation is at or above the 25-year peak flood stage." Roadside swales, swales, channels 10 year, 24 hour
Hardee County *Sec. 5.11.00 LDR*	Minimum SWFWMD standards	Minimum SWFWMD standards	No. Minimum SWFWMD standards	**No**
Highlands County *Section 12.12.400 Section 03.100 thru 03.103*	Minimum SWFWMD standards	Minimum SWFWMD standards	No. Minimum SWFWMD standards	"Limit the quantity of storm sewer water flowing in road to a depth of 1 inch below the crown of local roads and 2 inches below the crown of collector and arterial roads, but in no case shall it flood more than ½ the width of the outside lane on any road regardless of its functional classification"
Hillsborough County *Article VI, Sec. 6.02.11*	Minimum SWFWMD standards	Minimum SWFWMD standards	No. Minimum SWFWMD standards	**No**
Lake County *Sec. 9.06.00 LDR*	**25-year/24 hour**	"provide extended Detention for the difference in volume of Stormwater Discharge for **pre-Development and Post-Development** conditions from the **25-year, 96-hour Storm Event**."	No. Only for closed basins.	Stormwater Flooding for all Arterial and Collector Roads shall not exceed one-half (½) of the Roadway width. For all Local Roads Stormwater Flooding Shall not exceed the crown of the Road for the 10-year, 24-hour storm.
Manatee County *Ch 8, Sec.801.3*	Minimum SWFWMD standards	"In certain watersheds in Manatee County which are known to flood, **the rate of runoff shall be reduced by fifty (50) percent**, or as determined by Public Works staff."	No. Minimum SWFWMD standards	**No**
Orange County *Article VII. Section 34-226 thru 34-268*	25-year frequency/24-hour duration storm	"Where a positive outfall is not available, the site shall be designed to retain 100-year frequency/24-hour duration storm on-site."	Rate match, 50% of volume retained for 72 hours.	25year/24hour design for Collector Roads 10year/24hour design for Local Roads
Osceola County *Sec. 4.5.1*	May "not exceed the pre-developed peak rate of discharge from the site, during a 10-year / 72-hour storm event"	"the volume of runoff for the 100-year/24-hour storm event shall be retained on-site. At least fifty percent (50%) of the 100-year/24-hour storm event volume shall be recovered within fourteen (14) days"	**Yes.**	50year/24hour design for Collector Roads 10year/24hour design for Local Roads
Seminole County *Transportation Standards Manual*	System shall limit peak off-site discharges to predevelopment rates. Design to drawdown 50% of the water quality treatment volume within	100-Year, 24-Hour Total Retention (25-Year, 96-Hour)	Rate match, 50% of volume retained for 24 hours.	10-Year, Hydraulic Gradient Line. 1' below the gutter line on collector roads ½' below gutter line on local roads.

Table 1

Jurisdiction *(Code citation)*	**Stormwater Standards with a Positive Outfall**	**Stormwater Standards <u>Without</u> Positive Outfall**	**Is there a Pre-Post Match for Volume?**	**Roadway Drainage Design Standards?**
	24-30 hours or the entire pond volume within 14 days.			
Volusia County *Art.III. Dv.8 Sec.72-776 thru 72-784*	24-hour, 25-year frequency storm, volume difference may be released over not less than a 24-hour, nor greater than a 72-hour period of time.	"The discharge hydrograph produced for the developed or redeveloped site shall not exceed, in terms of peak flow and total volume, the hydrograph produced by conditions existing before any development occurred on site for a **24-hour, 100-year** frequency storm."	**Yes.**	**No.**
City of Dundee *Sec. 3.06*	25-year intervals, 24-hour duration the difference between pre- and post-development runoff volumes shall be detained onsite	"If the downstream facilities are inadequate to convey the peak discharge for the design rainfall above, the proposed development must accommodate that portion of runoff above the downstream system actual capacity" with protection to a 50-year, 24-hour rainfall.	**Yes.**	**No.**
City of Lakeland *Sec. 6.6*	Minimum SWFWMD standards	Minimum SWFWMD standards	No. Minimum SWFWMD standards	**No**
City of Lake Wales *Sec. 23-701 thru 23-709*	Minimum SWFWMD standards	Minimum SWFWMD standards	No. Minimum SWFWMD standards	**No**
City of Mulberry *Sec. 3.05*	Minimum SWFWMD standards	Minimum SWFWMD standards	No. Minimum SWFWMD standards	**No**
City of Winter Haven *Ch. 21 Art.III Div. 5 Sec21-161*	design shall be a twenty-five-year, 24-hour storm	No.	**Yes.**	Ten-year, 24-hour design storm

It is not enough to improve stressed basin drainage standards in the unincorporated area. Once this legislation is adopted, these standards need to be adopted within the city limits of Lakeland, Winter Haven, Mulberry, Lake Wales, Bartow, Dundee, and even Frostproof to provide the necessary flood protection that is needed in these constrained drainage basins.

Consistency with the Comprehensive Plan

The concept of Drainage Concurrency was established with the adoption of the original Comprehensive Plan in 1991 under Ordinance 91-02. Policy 3.104-A7 required all development from April 19, 1991, forward to be designed where the post-development storm water discharge matched the pre-development discharge for both rate and volume at a minimum 25-year storm event for a full 24 hours. With the adoption of the Land Development Code (LDC) in 2000, this requirement was further detailed in the code. The LDC also addressed the need for a 100-year volume containment when there was not a positive outfall for discharge beyond the 25-year/24-hour event. In 2013, specifics in the Plan were removed to provide more flexibility in the LDC.

Consistency with the Florida Statutes

There are many references in the Florida Statutes to the County's role in managing drainage. But none is as extensive as Chapter 157, titled Drainage by Counties. This statute enables landowners to petition the County to accept control and maintenance of drainage structures that affect multiple property owners. It also establishes funding mechanisms for taxation to pay for the maintenance of drainage structures. The implementation of this legislation has provided the foundation of the County's drainage network.

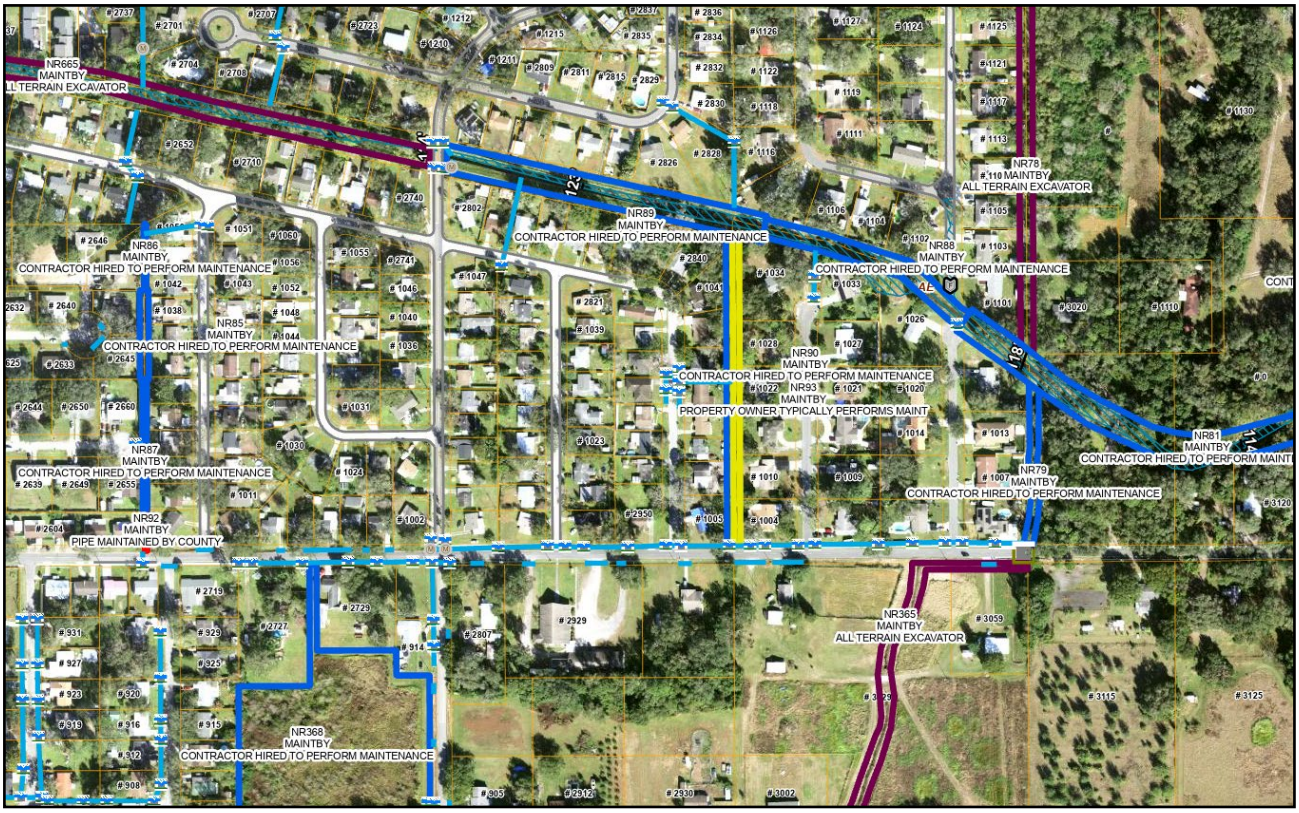
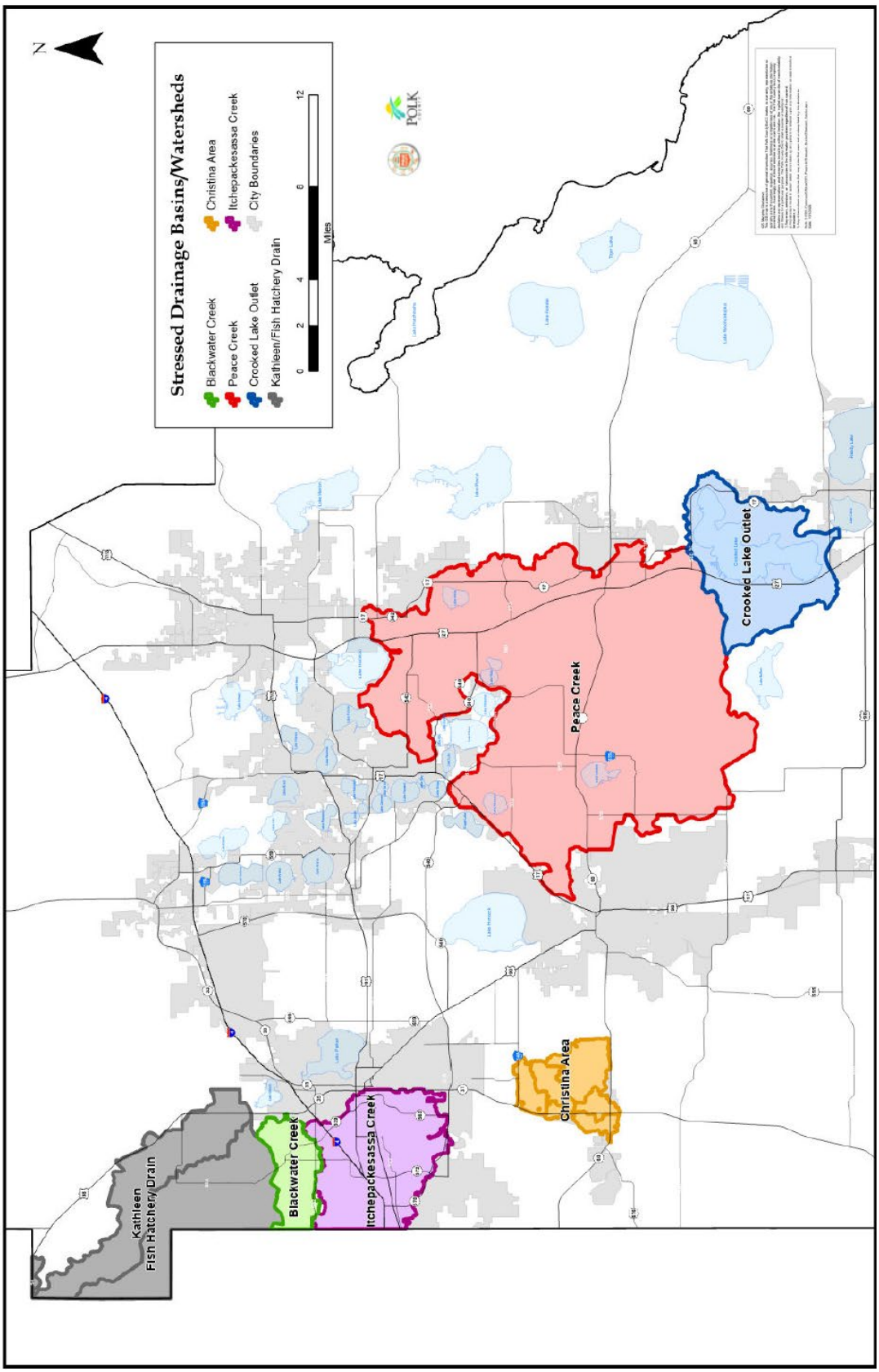


Figure 1 County Drainage System Network shown on Geographical Information System (GIS)

Comments from Other Agencies: Building Division, Roads and Drainage Division, and County Engineer's staff participated in the drafting and review of this request.

Exhibit 1 – Stressed Basins/Watersheds

Draft Ordinance: under separate attachment



Stressed Drainage Basins/Waterhseds