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INTRODUCTION

The Florida Natural Areas Inventory has prioritized several conservation areas partially or wholly within Lake County, including, but not limited to: the Green Swamp Area of Critical State Concern, and the Wekiva/Ocala Greenway. Select ecosystems of Lake County are thus fragile and closely linked with the ecological sustainability of communities within and beyond the county's boundaries. Issues of plant and animal biodiversity and water supply are among the most important environmental considerations for the County.

The county is faced with the challenge of balancing development pressures with the preservation of the natural environment. To this end, Lake County will comply with all legislation (Federal, State, Regional and Local) as it pertains to Lake County's environmental sensitive areas.

DEFINITIONS

GOAL STORM 1

Lake County shall provide sound stormwater, surface water, and groundwater resource management to prevent flood damage and protect water quality to ensure the safety and well being of the citizens of Lake County.

OBJECTIVE 1.0 CORRECTING EXISTING DEFICIENCIES

The County shall implement a Stormwater Management Program to systematically identify and correct existing deficiencies and meet future needs. The County shall address known problems such as decreased levels of service and degradation of surface and ground water quality. The County Stormwater Management Program shall address deficiencies and to fulfill the requirements of the National Pollutant Discharge Elimination System (NPDES) and Total Maximum Daily Load (TMDL) mandates. The County will enhance aquifer recharge through the management of stormwater where practical and without negative impact to water quality.

1.1 Implementation of Stormwater Management Program

Lake County shall maintain its Stormwater Management Program. The Stormwater Management Program shall assess existing information, evaluate the watersheds within the County, inventory and characterize stormwater management systems and establish priorities based on this information to address water quality and water quantity-based stormwater problems. The county, in coordination with the appropriate Federal and State and Local agencies, shall seek opportunities for developing joint projects to facilitate the Stormwater Management Program and further efforts required by the NPDES and TMDL mandates. The County shall amend its Comprehensive Plan and Land Development Regulations to reflect prevailing requirements of federal and state regulations, as appropriate.

1.2 Priorities for Stormwater Master Planning

A prioritized list of the approximately 252 watersheds in the county, as listed in the Data, Inventory and Analysis, shall be utilized in developing a work plan for performing basin evaluations. Prioritization was based on the following criteria: “drainage problems,” “flooding potential,” “receiving water body,” “natural wildlife” and “population.” Lake County shall develop corrective measures for improving stormwater quality, repairing/replacing/upgrading existing infrastructure and minimizing or eliminating identified public threats.

1.3 Stormwater Management Regulations

Lake County shall implement, update, and improve the Lake County Stormwater Management Regulations as given in the county’s Land Development Regulations. The Regulations shall remain compatible with those of the regulatory agencies to ensure uniform application.

1.4 Funding for Stormwater Management

The County shall use the Stormwater Municipal Services Taxing Unit (MSTU) as the dedicated funding source for the continued implementation of the Stormwater Management Program.

1.5 Contour Interval Mapping

The County shall pursue a complete, detailed County-wide mapping at one (1) foot contour intervals to improve accuracy and efficiency of basin evaluations and Base Flood Elevation (BFE) determinations. The Federal Insurance Rate Map (FIRM) shall be used as a tool for development review.

1.6 Coordination with Adjacent Jurisdictions

Lake County shall coordinate and consult with the 14 municipalities, adjoining counties and appropriate state and federal agencies, in the implementation of the Stormwater Management Plan. The coordination and consultation shall include specifically, issues regarding TMDL and any adopted TMDL legislation, guidelines, implementation and potential joint projects.

OBJECTIVE 2.0 FUTURE DEVELOPMENT

Lake County shall manage and coordinate its stormwater review and implementation process to address the potential impacts of future development.

2.1 Impact Assessment During Development Review

Lake County shall require, as part of the development review process, an impact assessment that addresses the effects of new development on existing stormwater management systems. Review shall also account for the cumulative effects of stormwater management systems within individual watersheds. This review process shall consider how the stormwater management systems will operate at build-out.

~~**2.2 Review of Land Development Regulations**~~

~~Lake County's Land Development Regulations shall require that stormwater permits comply with federal, state, and local regulations. Any violation of these regulations would constitute a violation of the County's Code. The County shall also adopt additional regulations for safe and aesthetically pleasing stormwater design standards.~~

2.3 Stormwater Conveyance Rights-of-Way

Lake County shall pursue, if necessary, the acquisition of stormwater rights-of-way and/or easements necessary for the expansion/upgrade and the operation and maintenance of the County's stormwater management system.

~~**2.4 Design of Stormwater Management Systems**~~

~~Lake County shall require that all stormwater management systems constructed be designed in accordance with Federal, state, regional, and local regulations.~~

2.5 Provide Stormwater Services

Lake County shall provide adequate stormwater services to maintain the adopted level of service standards based upon, but not limited to, the following considerations:

- A. The protection and maintenance of the public's health, safety, and welfare;

- B. The protection and maintenance of the property;
- C. The protection of existing public investment;
- D. The protection of water quality and the environment;
- E. The reduction of operating and maintenance costs; and,
- F. The achievement and satisfaction of Local, State, Regional and Federal regulations.

2.6 Provide Effective Stormwater Treatment

Lake County, in a coordinated effort with the Water Management District, shall require that plans for expansion, modifications, and replacement of existing development, excluding phased development, meet the adopted level of service, where such stormwater treatment is currently inadequate.

2.7 Non-Structural Best Management Practices

Lake County shall require that non-structural Best Management Practices (BMPs) be utilized in conjunction with structural BMPs to solve existing and future stormwater problems. Non-structural BMPs may include the use of conservation areas, public education, street sweeping and maintaining floodplain protection (capacity) through the provision of compensating storage.

2.8 Cost Effective Stormwater Management

Stormwater management systems shall employ the most cost-effective pollutant control techniques available that are consistent with sound environmental management and which provide the greatest efficiency in stormwater runoff pollutant removal. A continuing maintenance program shall be approved by the County.

2.9 Design Storms and Pollution Abatement Level of Service Standards

Lake County hereby adopts the following minimum level of service standards for design storms and pollution abatement level of service standards:

FACILITY	FREQUENCY AND DURATION
Bridges	50 Year 24 Hours
Principal arterial bridges and evacuation routes	100 Year 24 Hours
Canals, ditches, swales or culverts for drainage external to the development	25 Year 24 Hours
Canals, ditches, swales, or culverts for drainage internal to the development	10 Year 24 hour
Detention and retention basins contributory to land-locked areas with no positive outlet	25 Year 96 hours

FACILITY	FREQUENCY AND DURATION
Detention/Retention Structures with a positive outlet	25 Year 24 Hours Mean Annual Storm
Storm sewers	10 year storm

If the site's runoff directly discharges to Class I, Class II or Outstanding Florida Waters (OFW), then the Pollution Abatement Treatment Requirements shall be increased an additional fifty percent (50%) more than described, and off-line retention or off-line detention with filtration of the first one-half inch of runoff or off-line detention without filtration of the first inch of runoff shall be required. Lake County shall discourage the use of detention with filtration pollution abatement systems due to their high failure rate and costly maintenance; thus, Lake County shall allow detention with filtration only if detention without filtration cannot be used.

2.10 Design Storm Level of Service Standard for Landlocked Areas

Landlocked areas shall maintain a twenty-five (25) year ninety-six (96) hour design storm level of service standard.

2.11 Stormwater Management for Roadway Construction

Lake County, in coordination with the Florida Department of Transportation, shall require appropriate or suitable stormwater management systems for the construction of all arterial and collector roadways within the County. Appropriate or suitable stormwater management systems for reconstruction shall be considered by the County on a site by site basis.

~~**2.12 Consideration for Natural Hydroperiod**~~

~~**2.13 Lake County shall maintain the natural hydroperiod (timing and duration of inundation) of receiving waters when stormwater management systems are designed. Protection of Recharge Volume**~~

~~In addition to requiring minimum level of service standards established by the Comprehensive Plan Stormwater Sub-Element, the County shall ensure that post-development recharge volume conditions approximate pre-development recharge volume conditions within protected recharge areas. This shall be accomplished in the Land Development Regulations by requiring that the first three inches of stormwater be retained on site within protected recharge areas. As an alternative, an applicant may conduct a hydrological survey and site analysis to demonstrate that post-development recharge is equal to or greater than pre-development recharge.~~

2.14 Design Strategies for Aquifer Recharge Protection

Development within a protected aquifer recharge area or in an area most vulnerable to contamination shall be required to maintain pre-development net retention in a manner that protects ground and surface water quality. Exemptions may be given for agricultural activities utilizing Best Management Practices adopted by FDEP, USDA, NRCS, and IFAS that protect ground and surface water quality. The use of stormwater capture, swales, dry wells, grass parking, porous pavement, pervious concrete, turf blocks and other innovative technologies

shall be encouraged as a method of protecting aquifer recharge. Porous pavement, pervious concrete and turf blocks however shall not be used to completely fulfill this requirement because these materials tend to become impervious over time.

2.15 Accepted Stormwater Run-Off Volume and Peak Rate Calculations

The Lake County Land Development Regulations shall include provisions for the acceptance of methods of run-off volume and peak rate calculations approved by the Water Management Districts, Florida Department of Transportation (FDOT) and Army Corps of Engineers (COE).

OBJECTIVE 3.0 MAINTAIN OR IMPROVE LEVEL OF SERVICE

Lake County shall maintain or improve the levels of service of existing stormwater facilities. The County shall employ innovative technologies, where appropriate, if they meet or exceed adopted levels of service.

~~3.1 Utilize New Technologies Structural and Non-Structural Best Management Practices (BMPs)~~

~~Lake County shall utilize new technologies in structural and non-structural BMPs and operational procedures as appropriate.~~

3.2 Innovative Stormwater Management

The County shall actively develop and participate in the development of innovative and alternative stormwater management systems, BMP's and programs which protect and conserve the County's water resources.

3.3 Best Management Practices

Lake County shall require that Best Management Practices for agriculture, construction and silviculture be employed to protect the function of existing stormwater management systems and to minimize contributions of poor quality stormwater run-off to receiving water bodies. Construction activities shall require a National Pollutant Discharge Elimination System (NPDES) permit, as appropriate.

~~3.4 Alternative Stormwater Systems~~

~~Lake County shall investigate and utilize innovative and alternative stormwater management systems and BMPs for providing efficient stormwater management service.~~

~~3.5 Stormwater Management Design Standards~~

~~The Lake County Land Development Regulations shall incorporate the Lake County Stormwater Design Standards for construction and maintenance requirements of all stormwater management facilities and ensure compliance with these requirements to prevent degradation of the receiving water bodies.~~

~~3.6 Adequate Flood Protection~~

~~Lake County Land Development Regulations shall include provisions that require stormwater management systems within all development to be designed and installed to provide adequate flood protection for all primary structures and to protect the structural integrity of all roadways.~~

3.7 Provide for Stormwater Run-Off

Lake County Land Development Regulations shall require that all new stormwater management systems provide for the safe handling of all stormwater run-off that flows into, across, and is discharged from the site without creating any additional flooding to adjacent property owners.

OBJECTIVE 4.0 MINIMIZE FLOODING AND PROHIBIT DRAINAGE WELLS

Lake County shall: 1) Address occurrences of flooding that are threats to public health and safety, 2) Prohibit drainage wells for the purposes of stormwater management.

4.1 ~~Minimize Flooding Through the Land Development Regulations and the Stormwater Management Ordinance~~ Floodplain Protection

Lake County shall comply with or exceed FEMA regulation in order to ensure that the floodplain management regulations, contained in the Land Development Regulations, minimize flooding by approving only those developments that are consistent with them. All developments within the riverine flood hazard areas shall be designed to maintain the flood carrying capacity of the floodway such that the base flood elevations are not increased, either upstream or downstream.

4.2 ~~Location of Retention/Detention Areas~~

~~Lake County shall require that retention/detention areas be designed and located so as to not adversely reduce the existing flood storage of the flood plain.~~

4.3 Minimization of Threats to Life and Property through the Provisions Contained within Ordinance 1978-8, the Lake County Flood Ordinance

Lake County shall minimize the threat to life and property from flooding.

4.4 ~~Floodplain Protection~~

~~Lake County shall minimize the adverse impacts of development on floodplains by protecting the natural flow regime of and between drainage basins and the capacity of floodplains through the maintenance of hydraulic and hydrologic characteristics of the drainage basins.~~

4.5 Drainage and Injection Wells

Consistent with the Conservation Element, Lake County shall prohibit the use of drainage and injection wells for the purposes of stormwater management. Existing drainage and injection wells situated within the County shall be filled and/or capped by the owner of the well and/or the County. These drainage and injection wells, used for the purpose of stormwater management, shall be phased out if technically feasible.

OBJECTIVE 5.0 WEKIVA STUDY AREA – MASTER STORMWATER PLAN

Lake County shall improve its ability to manage stormwater so as to minimize the degradation of surface and ground water. This objective shall be made measurable by implementing the following policies.

5.1 Regional Master Stormwater Management Plan

Lake County shall cooperate and consult with the Water Management District, the Florida Department of Environmental Protection and adjoining local governments and municipalities for the development and implementation of the Wekiva Study Area regional master stormwater management plan. This may include the establishment of a regional stormwater environmental utility to fund needed improvements and projects. Once the regional stormwater master plan is completed and approved by the BCC, the County will incorporate its data and recommendations into the Comprehensive plan.

5.2 Stormwater Run-off

No stormwater runoff shall be allowed to drain directly through any sinkhole or other karst feature. All runoff recharging the Floridan Aquifer shall be pre-treated to remove nutrients and other contaminants so that post-development water quality equals pre-development recharge water quality to the greatest extent feasible.

5.3 Drainage Retention Areas

All stormwater management and drainage systems proposed to be constructed in karst sensitive areas, areas with known sinkholes, and areas with shallow depth to limestone bedrock, shall be evaluated for the presence of sinkholes through appropriate geotechnical testing. All proposed Drainage Retention Areas (DRAs) shall be tested for the presence of cavities and voids beneath them. No DRAs or other stormwater facilities, excluding conveyance facilities, shall be located over unfilled voids.

5.4 Sinkholes

If there is an existing sinkhole within or adjacent to a development site, or any indication that a sinkhole may develop in the future, then a detailed geological/geotechnical investigation shall be required. This investigation must be conducted by a professional geologist or engineer experienced in geohydrology and a report submitted to the County for consideration. The geologic investigation shall be comprehensive enough that recommendations for site planning, engineering design and construction techniques may be made. The County shall approve, approve with conditions, or deny development proposals based upon the scale of the development and the hazards revealed within the investigation.

5.5 Karst Sensitive Areas

The County shall cooperate with the Water Management District and will adopt in the Land Development Code appropriate, specific requirements for stormwater structures or facilities located within karst sensitive areas. Such requirements may include evaluations by certified geologists or professional engineers experienced in geohydrology that the area is safe and

that there is no subsurface connection that may cause contamination or damage to the groundwater.

5.6 Best Management Practices

The County will evaluate and adopt, as appropriate and feasible, Best Management Practices (BMPs) for all stormwater management systems located in the Wekiva Study Area. Systems in areas of high recharge and karst sensitive areas should be designed to address maintenance of water quality. Such BMPs may include lining of stormwater ponds, use of biological treatment trains for nutrient and contaminant removal, incorporation of stormwater management systems into landscaping and irrigation, and minimizing directly connected impervious surface areas.

5.7 Reuse

The County will continue to seek ways to expand its efforts in reusing stormwater for irrigation, aquifer recharge, and other non-potable uses. The County will evaluate and establish, as appropriate, a threshold wherein a project that generates sufficient quantities of runoff shall be required to reuse that stormwater.

5.8 Comprehensive Plan/Land Development Regulations

Lake County shall amend this Comprehensive Plan and/or the County's Land Development Regulations as required by the Master Plan.

OBJECTIVE 6.0 DEVELOPMENT WITHIN THE GREEN SWAMP AREA OF CRITICAL STATE CONCERN AS IT RELATES TO THE PROVISION OF PUBLIC FACILITIES

Lake County Shall Protect its Aquifer Recharge Areas. Protection of Groundwater Resources in the Green Swamp Area of Critical State Concern as Required by the Principles for Guiding Development for the Green Swamp Area of Critical State Concern per Future Land Use Element **Policy GSACSC 1.3-6**.

6.1 Ensure the Convenience and Safety of the Public by Controlling Surface Water Runoff and Flow

Lake County shall, in the Green Swamp Area of Critical State Concern, conserve and protect the environmental resources consistent with the Principles for Guiding Development for the Green Swamp Area of Critical State Concern as it relates to stormwater runoff. Lake County shall prepare and adopt a comprehensive stormwater management ordinance which meets or exceeds the site alteration criteria as found within Section 28-28.008 (7), Florida Administrative Code. Wetland alteration shall be consistent with **Policy 1-2.1** (wetlands) and policies in the Conservation Element. Stormwater shall be treated to the level for quality and quantity (Levels of Service) as established within the Stormwater Sub-element Goals, Objectives, and Policies and in conformance with **Policies 1-2.2 and 1-2.11** as well as policies within the Conservation Element.

OBJECTIVE 7.0 WATER REUSE AND IRRIGATION

7.1 Water Reuse and Irrigation Program

~~The County shall establish a water reuse and irrigation program that encourages reuse of stormwater on a site basis for development over a size threshold to be determined by a jurisdiction-wide basis to minimize pumpage of groundwater for nonpotable useage.~~

The County will continue to seek ways to expand its efforts in reusing stormwater for irrigation, aquifer recharge, and other non-potable uses. The County will evaluate and establish, as appropriate, a threshold wherein a project that generates sufficient quantities of runoff shall be required to reuse that stormwater.

GOAL STORM 2

Reduce the quantity and improve the quality of stormwater within delineated springsheds and springshed protection zones. Per the publication titled “Protecting Florida’s Springs – Land Use Planning Strategies and Best Management Practices” put out by the Department of Community Affairs, springsheds can be defined as, “the area of land whose water will eventually end us in a spring and spring run. The shape of this recharge area, or springshed, is influenced not only by topography but also by what is happening unseen under the ground – the presence of cave systems, fissures and other karst features.” Springshed Protection Zones can be defined as, “a land planning area wherein special features such as environmentally sensitive karst landscape and associated spring require differing or added type of management and protection.”

OBJECTIVE 8.0 REDUCTION OF EROSION, SEDIMENTATION AND STORMWATER RUNOFF

Reduce the amount of erosion, sedimentation, and stormwater runoff caused by development in the delineated springsheds and zones of protection around and up gradient of the springsheds.

8.1 Create Special Land Development Regulations

Create and adopt special land development regulations aimed at reducing the amount of erosion, sedimentation, and stormwater runoff emanating from developments within designated springshed protection zones.

GOAL STORM 3

The County will work to establish Land Development Regulations that address the particular needs of springshed/karst areas.

OBJECTIVE 9.0 STORMWATER MANAGEMENT SYSTEMS

Stormwater management systems should be designed to assure adequate treatment of the stormwater before it enters the aquifer, and to preclude the formation of solution pipe sinkholes in the stormwater system. Many different stormwater management system designs will achieve these goals, therefore the County does not require any specific system design. However, to assure protection of the aquifer, certain design features should be considered. Individual site characteristics may affect what design features will be required.