Green Infrastructure Strategies in Alachua County

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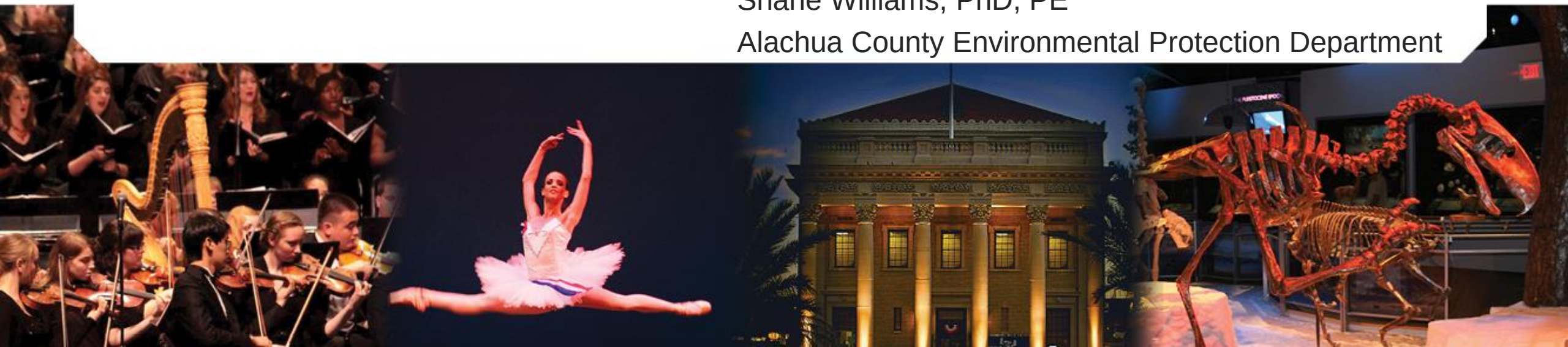


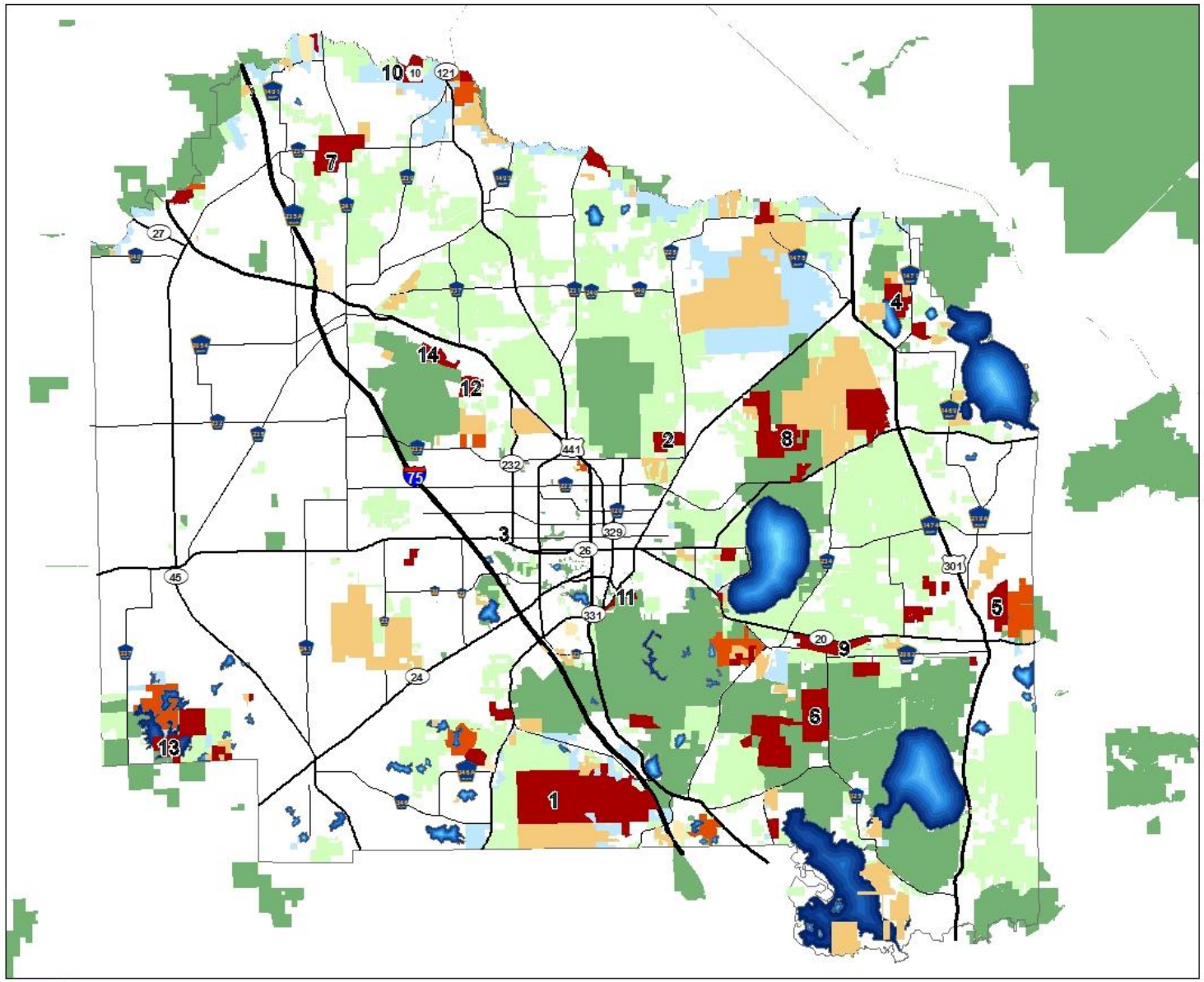
Green Infrastructure Investment Strategy

- Protect Natural Areas at all three scales:
  - Landscape: Land use planning, Land acquisition,
  - Subdivision/parcel: Land development codes, Water quality code,
  - Individual/Household: Education & Outreach

Regulatory Framework

- County Comprehensive Plan and Land Development Code place a high value on natural areas
- Water Quality Code
- Local Code Enforcement responding to inappropriate uses on private property
- Maintain urban boundary and protect rural character

Alachua County Forever Acquisition List Projects



Alachua County, Florida
Parks and Conservation Lands

Legend

- ACF Acquisitions
- Acquisition List
- Priority Pool
- Eligibility Pool
- Acquired by Partners
- Nominated
- Conservation Lands
- Lakes

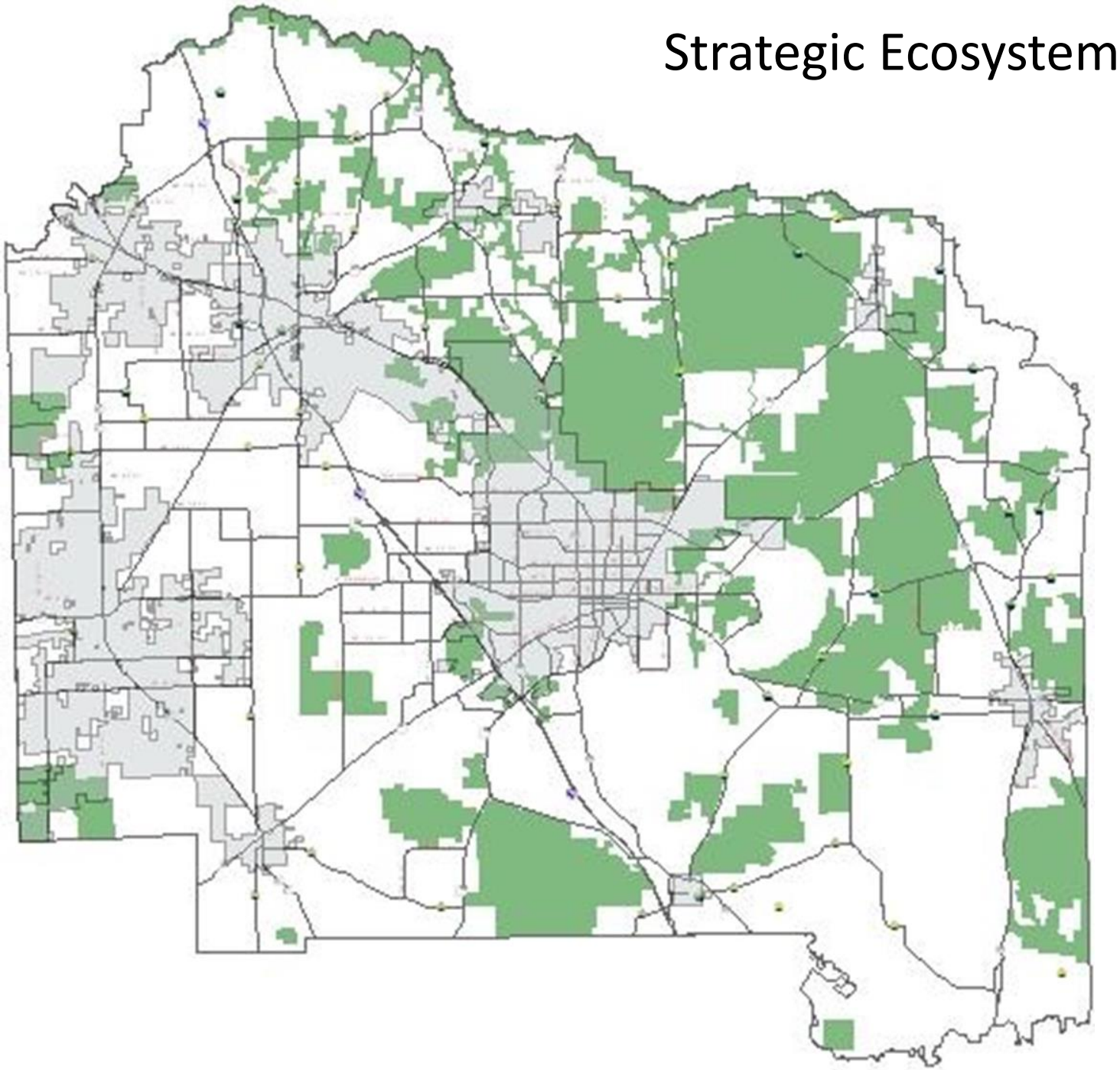
Open/Open Soon Nature Preserves

Map #	Purchased with ACF funds	Acreage	Notes
1	Barr Hammock Preserve	5702	
2	Buck Bay flatwoods Preserve	464	
3	Cofrin Nature Park	23	
4	Lake Alto Preserve	592	
5	Little Orange Creek	700	with ACF funds
6	Longleaf Flatwoods Preserve	2816	
7	Mill Creek Preserve	1226	
8	Newnans Lake Conservation Area	1866	with ACF funds
9	Phifer Flatwoods Preserve	1015	
10	Santa Fe River Ranch	464	with ACF funds
11	Sweetwater Preserve	125	
12	Turkey Creek Preserve	377	
13	Watermelon Pond Preserve	1269	
14	San Felasco Hammock Additions	272	

N W E S

0 5 10 20 30 Miles

Strategic Ecosystems Location Map



Land Development Standards

- Require large natural buffers along all water features (wetlands, streams, floodways, lakes)
- Require open space and connectivity between developments
- Upland habitat protection standards
- Protect trees and require minimum % of preserved canopy coverage
- Identify and require strong protection standards for critical natural systems (i.e. strategic ecosystems)
- Transfer of development rights (TDR) program
- 100 year critical storm event capacity planning for stormwater
- Landscaping with native vegetation

New Green Infrastructure Efforts

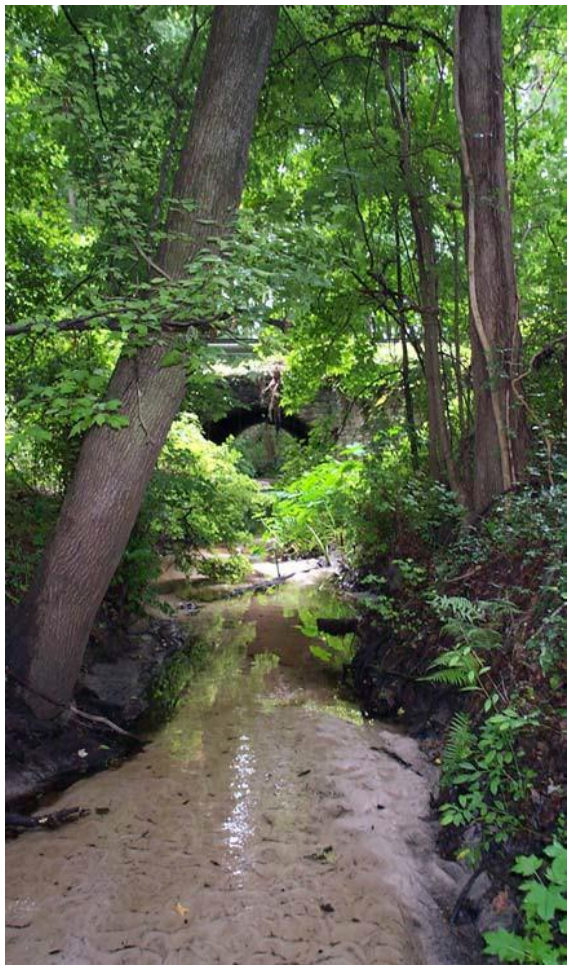
- The Water Quality Code is being updated.
  - Buffer requirements for wetlands were made Countywide in early 2018.
  - Pollutant load reduction standards for stormwater will be added this fall with emphasis on Low Impact design (LID).
  - Fertilizer Code being moved into Water Quality Code with new retail sign requirements.
  - The additions build upon existing code that had incentives to use LID and smaller wetland buffers.

- Requirement to review irrigation systems.

- These additions are intended make development more compatible with, and to protect Green Infrastructure with water resources.

Water Quality Code: Wetland Protection

- In 2005 County increased minimum buffer distance wetlands from 35 feet to 75 feet (average) for most.
- In 2018 made effective countywide to include incorporated cities.
- Self-certification within cities.



Water Quality Code: Stormwater

- Sets nutrient treatment standards for surface waters that can be met using LID:
  - 70%/80% Total Nitrogen and Total Phosphorus post-development load reduction.
  - Increases to 95% for OFWs.
  - For impaired waters, post-development load must be 10% below pre-development.

- Protects groundwater by requiring LID to treat 1” of runoff in sensitive karst areas.

Why LID?

- Present stormwater management practices are optimized for sediment and metals, not nutrients.
- Adding LID as part of a treatment train will provide greater removal of nutrients from runoff.
- In karst areas LID distributes runoff over larger area increasing the opportunity for uptake of nutrients.
- LID also includes site planning principles that reduce runoff and require less fertilizer use.

LID Strategies for Different Land Use Densities

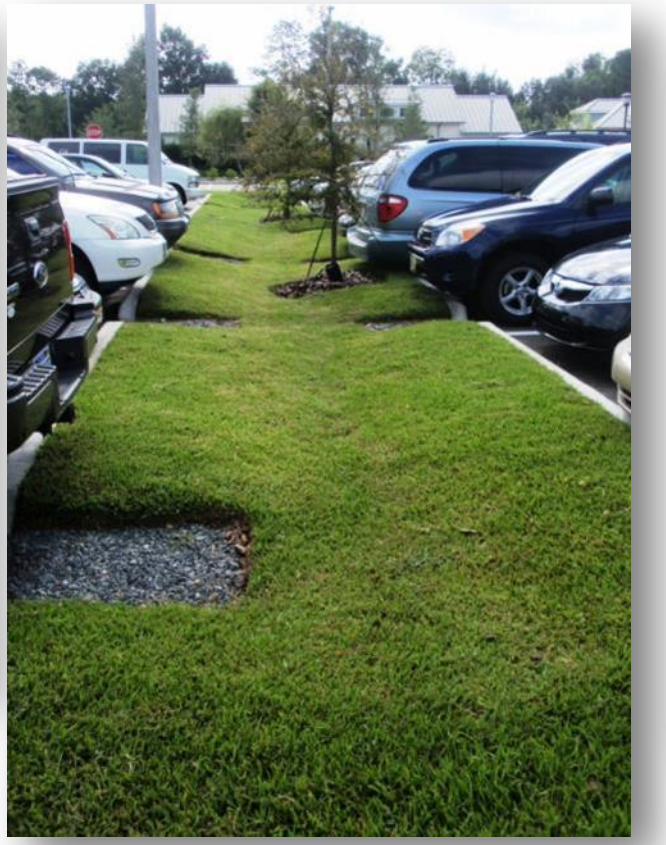
Rural ⟷ Urban				
Natural Area	Rural Agriculture	Suburban/ Large Lot	Urban/ Small Lot	Urban/ Activity Center
Leave unimpacted Preserve and protect	Cluster design Vegetated swales Bioretention Rain barrel/ cistern	Vegetated swales Vegetated natural buffers Bioretention Rain barrel/cisterns Curb elimination/ cuts Native plantings Enhanced stormwater ponds	Vegetated swales Bioretention Rain barrel/cisterns Permeable surfaces Soil amendments Exfiltration Curb cuts Green roofs w/ cisterns Native plantings Enhanced stormwater ponds	Green roofs w/cisterns Cisterns Permeable surfaces Soil amendments Exfiltration Curb cuts Tree filter boxes Native plantings Recessed parking Islands

Some LID Examples: Madera Subdivision

Clustered design, retention of native vegetation and soils (site fingerprinting), underground storage (exfiltration tank, pervious pavers, narrow roads, Florida-friendly landscaping, maintained hydrologic regime, on-site bioretention, educational signage, stem wall construction, energy efficient home design, floodplain protection.

Some LID Examples: Bioretention

Green Street: NW 140th Street

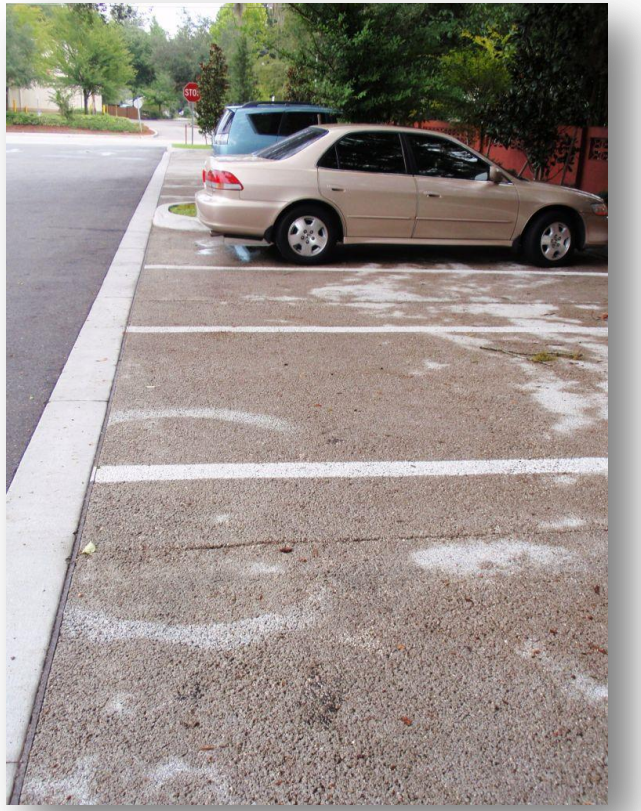


Recessed Parking Lot Islands: Campus USA HQ

SW Rec Center - UF Campus

Some LID Examples: Pervious Pavement

CVS: Archer Rd. And Tower Rd.



CVS: NW 16th Ave. and NW 13th St.

Some LID Examples: Green Roof

Rinker Hall/Perry Construction Yard on UF Campus

Benefits of New Code

- Our water quality code focuses on the pollutants, nutrients, that are impacting our waters not sediment or metals.
- Nutrient reductions must be quantified for surface waters.
- LID will generate less runoff and less nutrients. It will provide better treatment of nutrients in runoff than conventional stormwater management.
- Extension of wetland buffers to cities improves water quality and increases flood protection by protecting more floodplain.

How We Got Here

- Stakeholder groups were engaged during the process to provide feedback.
- 10 Case studies were done for the stormwater requirements using actual development projects.
- A stormwater manual was developed to aid design professionals and past experience with LID by the design community was helpful.
- Recognized gaps in scientific knowledge and developed standards accordingly.

Moving Forward

- In the future nutrient reduction standards will have to be met for groundwater.
- In order to do this we need to know the full picture of nutrient movement to groundwater.
- We will also be looking at improvements to LID best management practices to enhance nutrient removal from stormwater.

Questions?

Where Nature and Culture Meet