



# Watershed Management Plan

May 5, 2011

**ATKINS**



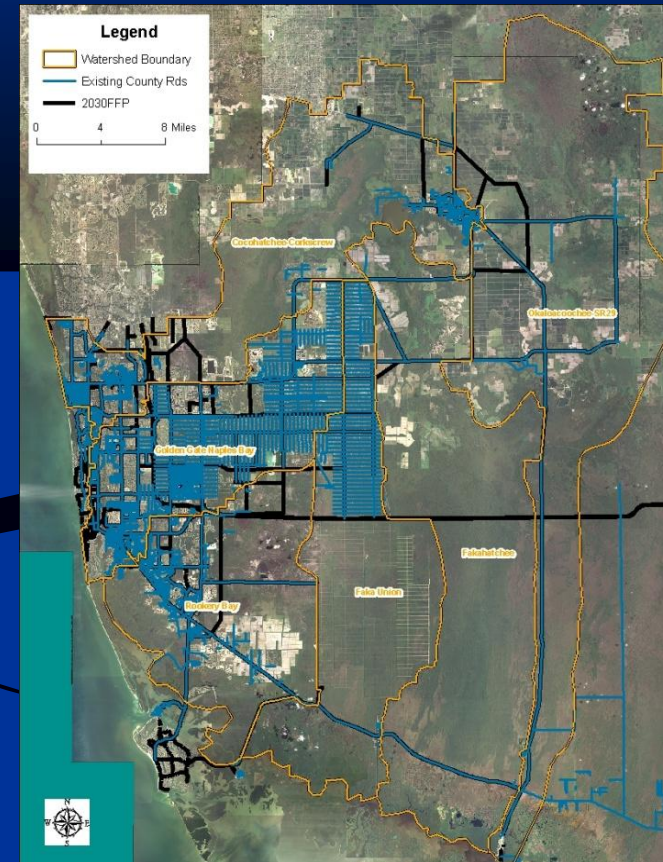
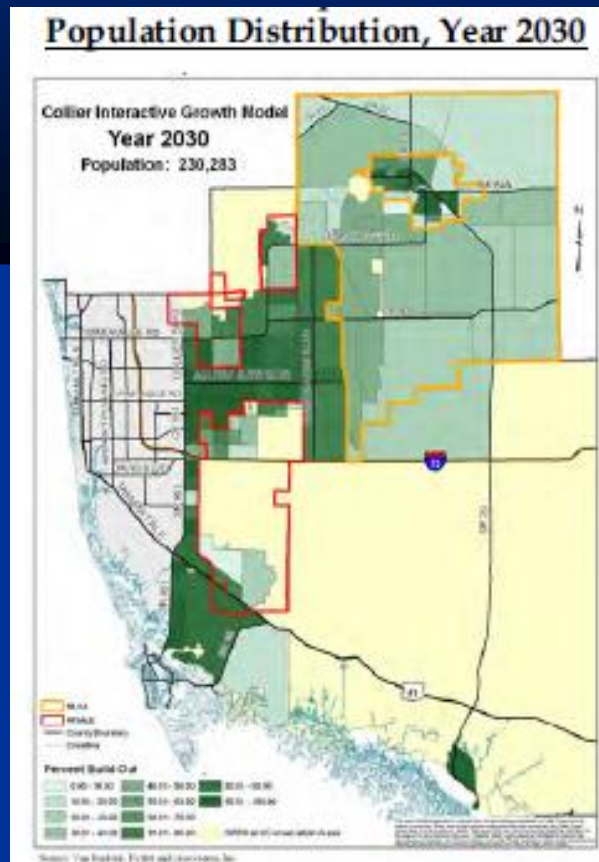
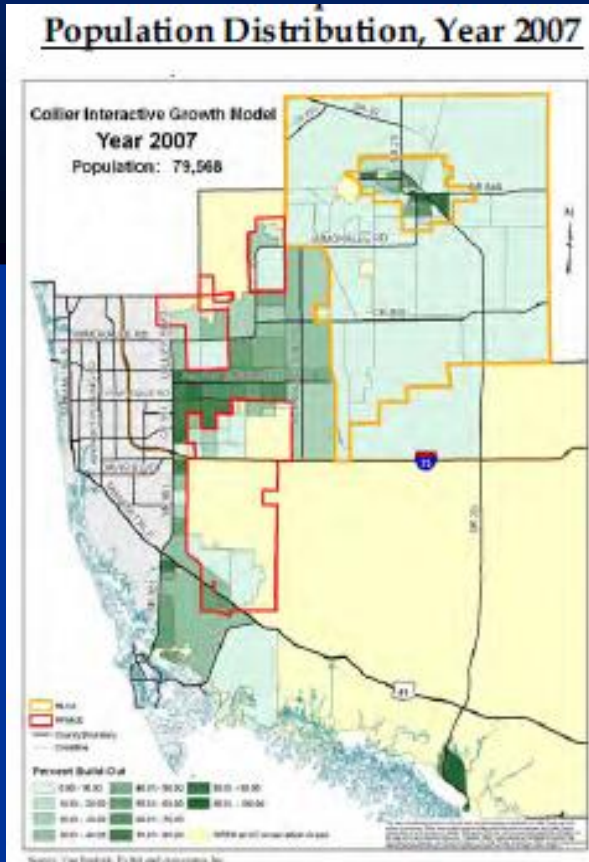
# Watershed Management Plan

## Regulatory Review and Recommendations

# Current Stormwater Management Approach



# County Growth Projections

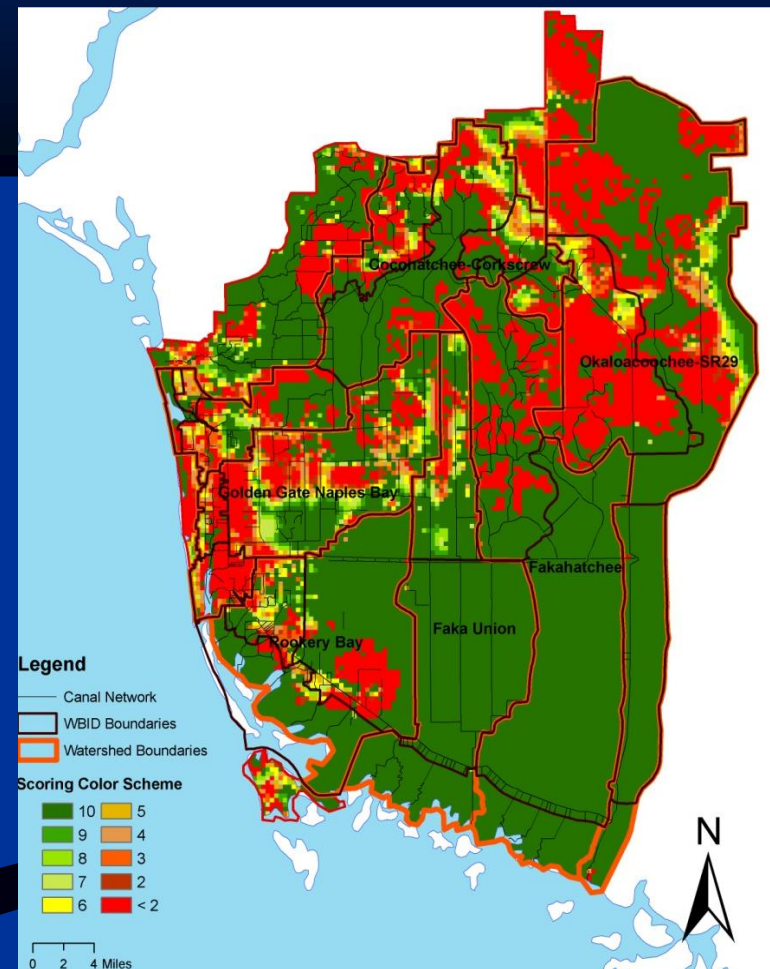




# Water Quality and Pollution Load Issues

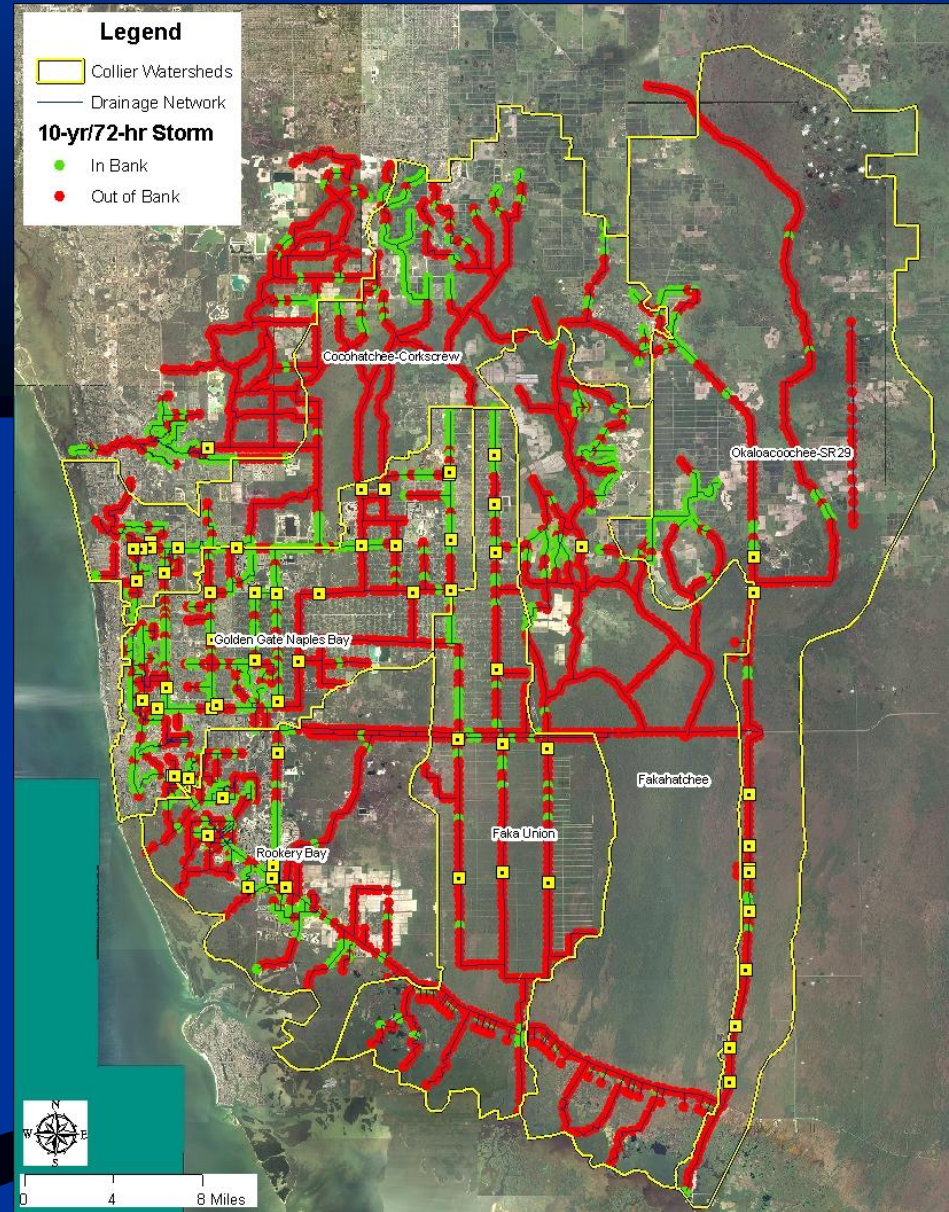
- Several impaired water bodies
- Numerous areas with no runoff pollution control
- GMP Conservation and Coastal Element requires no increase in pollution load from pre-development

## Total Nitrogen Load



# Current Canal Capacity

- Model results show limited conveyance capacity in numerous canal segments





# Objective

- Help implement a **Countywide Sustainable Stormwater Management Program**
- The program should aim to:
  - Promote more effective site planning
  - Promote preservation of the natural system
  - Help reduce development costs
  - Help reduce cost of future drainage system improvements
  - Provide incentives for stormwater retrofits

# Recommended Initiatives

- Water Quality and Low Impact Development (LID)
- Stormwater Retrofit Program
- Fee - Based Stormwater Utility
- Water Quantity and Flood Protection
- TDR/Mitigation Area
- Water Control Structure Operation
- Water Quality Monitoring
- Additional Protection Programs



# Recommended Initiatives

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# Low Impact Development Program

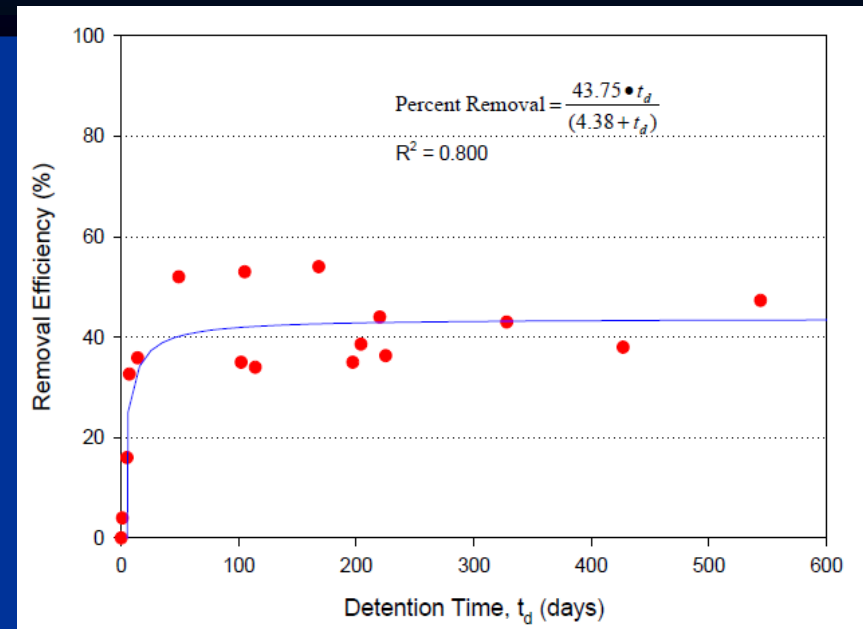
- Main Issue: How to provide water quality credits for development
- Not feasible under current State regulations.  
Feasible under proposed new stormwater rules.

# Water Quality Treatment Requirement Growth Management Plan

All new development and redevelopment projects shall meet 150% of the water quality volumetric requirements of Section 5.2.1a of the Basis of Review for ERP applications (Ordinance 2008-10, 3.07.02 Interim Watershed Regulations)



Photo by A. Murray  
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Removal Efficiency of TN

# LID Promotes Management of Stormwater by:

- Encouraging management of stormwater at the site
- Minimizing the extent of directly connected impervious areas
- Minimizing site disturbance
- Maintaining or restore a site's natural hydrology
- Maximizing the site's assimilative capacity
- Helping reduce pollutant load



# Low Impact Development (LID)



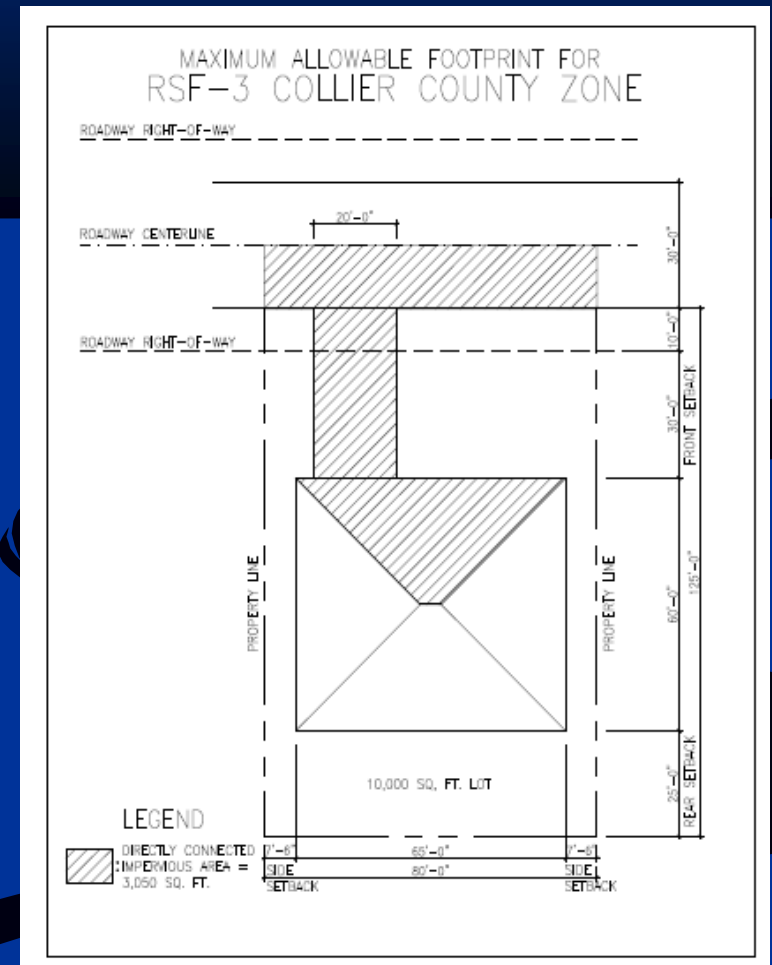
# Recommendation

- Require treatment by LID of 50% of ERP requirement (provide retention of pollutant load associated with the additional treated runoff volume)
- Approach is to create incentives for implementation of LID techniques
- Create incentives by modifying the LDC

# Directly Connected Impervious Area (DCIA) Current Conditions

Current Code Design Standards:

- Impervious area in RSF-3 – RSF-6 is about 45%
- DCIA in RSF-3 to RSF-6 areas is about the same as impervious area



# Recommended Changes to Land Development Code

## **4.02.01 Dimensional standards for principle uses**

1. Allow 18-ft width on local roads having an ADT of 400 trips (36 single family homes) when using cluster development standards

## **4.04.00 Transportation System Standards**

1. Promote design of swales on local roads.

## **6.05.01 Stormwater management system requirements**

1. Allow in--ground percolation type retention systems to achieve water quality retention if designed per LID manual requirements



# Recommended Changes to Land Development Code

## 4.05.02 Parking design standards

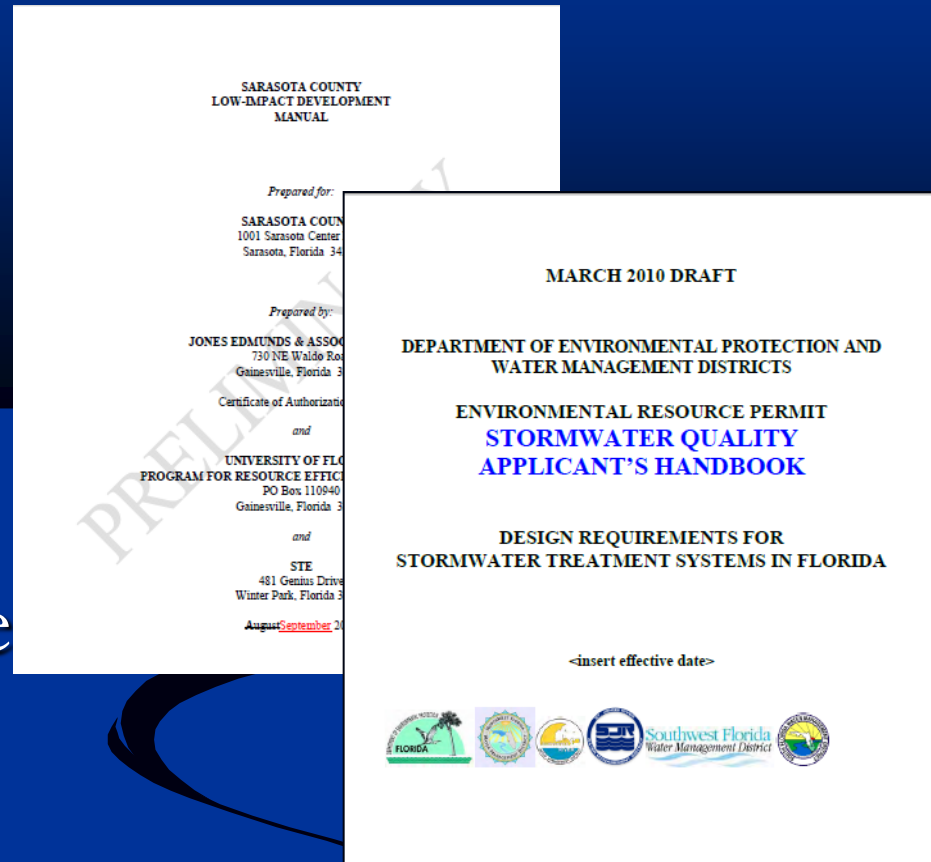
1. Aisle width reduced by 2' except for parallel parking
2. Allow grassed swale dividers along opposing parking spaces. Parking space depth reduced from 18' to 16.5' if wheel stop is located 0.5' from edge of swale

## 4.06.03 Landscaping requirements for vehicular use areas and rights-of-way

1. Allow use of depressed landscape islands
2. Allow rows of parking spaces to contain 20 spaces, instead of 10, between islands if drainage is directed to grassed swale dividers
3. Allow swale divider area to count as part of the off-parking interior vegetated areas
4. Allow parking stalls to be up to 100 ft away from a tree. Allow one tree for every 500 ft<sup>2</sup> on interior landscaped area

# LID Design Standards

- Adopt standards in the Draft Proposed Stormwater Rule.
- Use Sarasota County LID Manual as reference



<http://dep.state.fl.us/water/wetlands/erp/rules/stormwater/index.htm>

<http://www.scgov.net/EnvironmentalServices/Water/SurfaceWater/LowImpactDevelopment.asp>

# Program Implementation

Task	Days to Complete
Policy Discussion Regarding GMP and LDC amendments	90
Preparation of final draft GMP amendments	150
DCA Review	70
County review of ORC and Adjustments	120
DCA issues Notice of Intent (NOI)	50
LDC Amendment Final Preparation and hearings	100
Estimated Time for Completion	580

- Projected program set-up cost to be provided

# Recommended Initiatives

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# Stormwater Retrofit Program

- Dedicate funds exclusively to retrofit projects
- Identify locations where retrofit is possible, i.e. parking lots in government buildings and schools



# Retrofit of Public Facilities

## Potential Retrofits

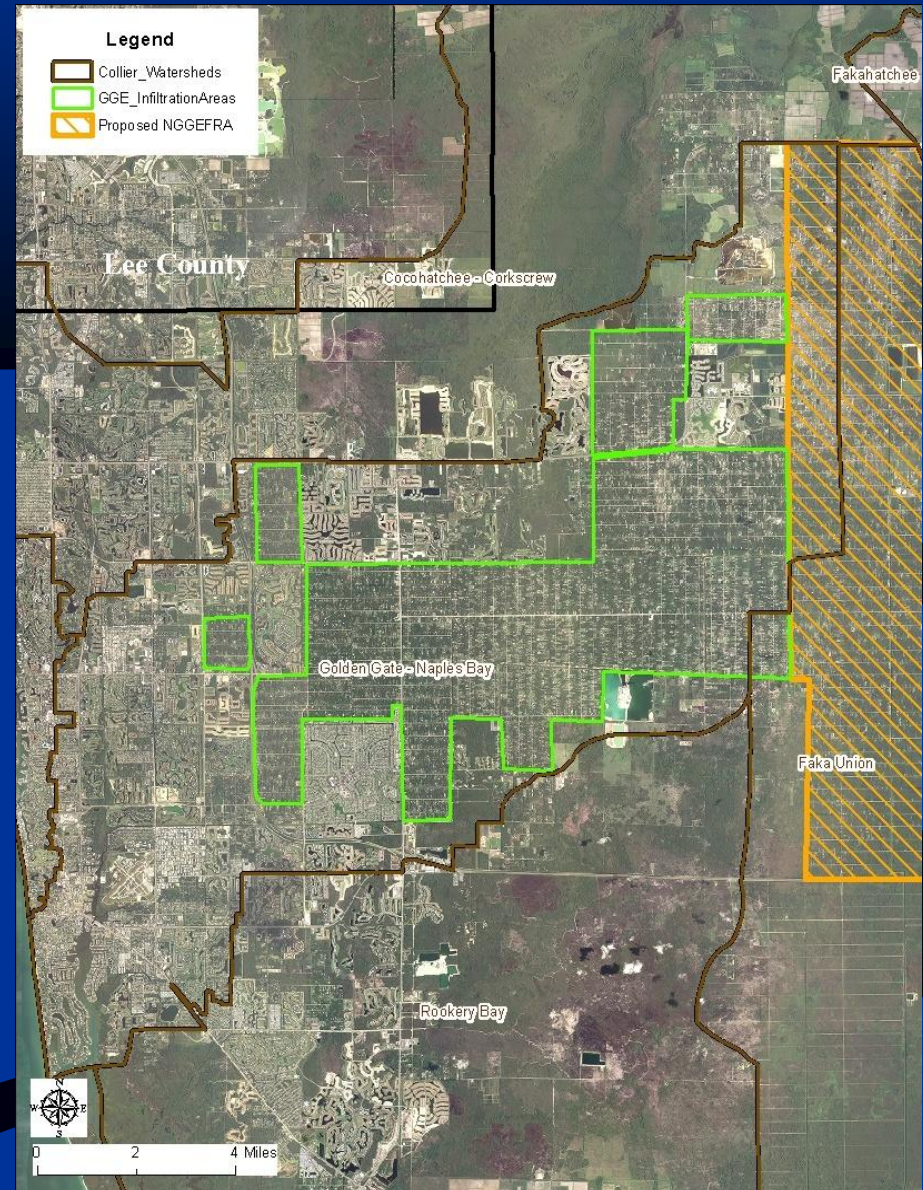


- Utilize islands as infiltration basins
- Install pervious pavement in low traffic areas
- Install rain gardens to capture roof runoff



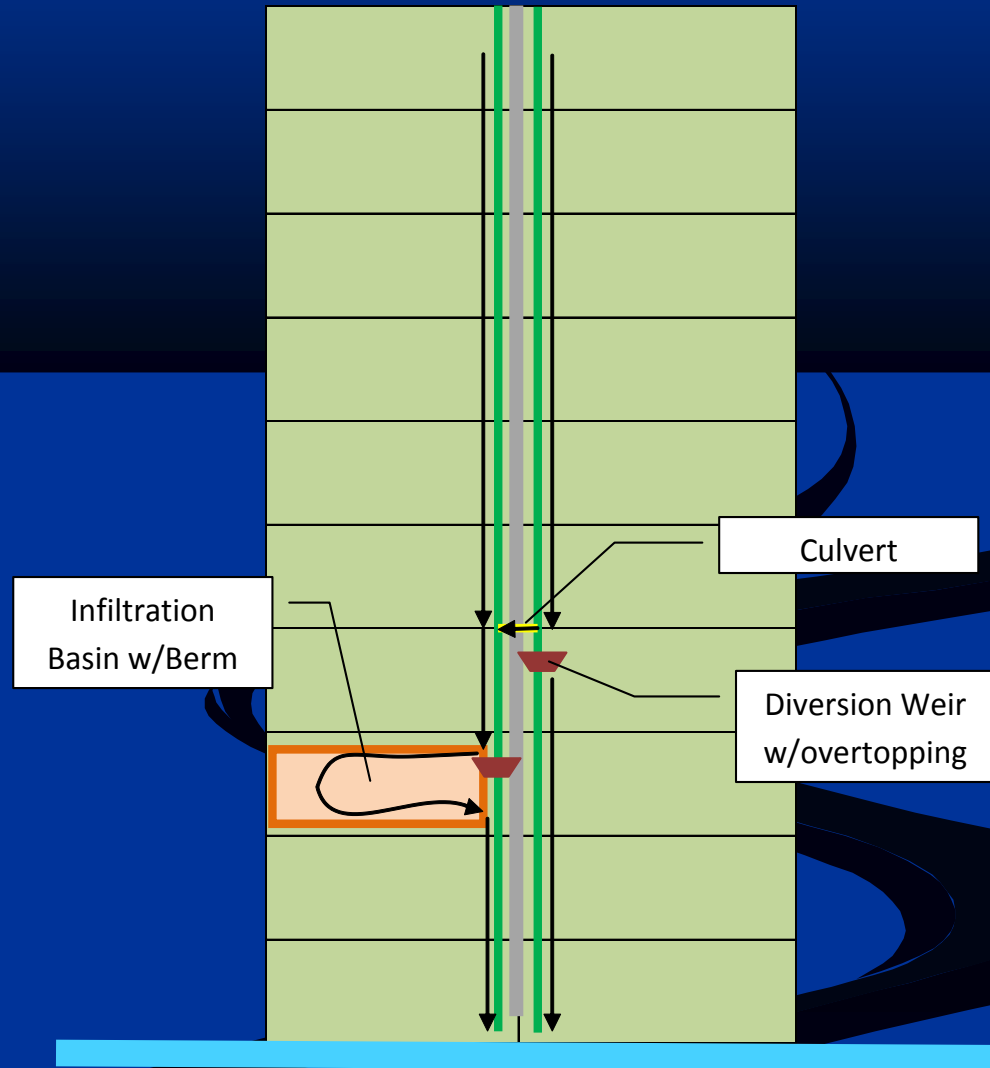
# Retrofits to Provide Local Stormwater Treatment

- Golden Gate Estates Stormwater Management
  - Road side swales and canals comprise current stormwater management
  - More than 400 residential streets in GGE that dead end at a canal



# Retrofits to Provide Local Stormwater Treatment

- Golden Gate Estates Retrofits
  - Develop a program to purchase 5-acre lots on as many streets as possible
  - Develop infiltration basins
  - Typical Drainage Area is approximately 70 acres
  - Treats approximately 60% of total runoff
  - Maintenance required





# Program Implementation

- Allocated funds to be managed by County's Stormwater staff
- Could be used to encourage LID redevelopment through MSTUs

# Recommended Initiatives

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# Fee – Based Stormwater Utility

- Ordinance 2008-80 creates the Stormwater Capital Improvement Fund – 0.15 mills of ad valorem tax revenues
- Change the focus of the County's Stormwater Utility to a fee structure based on discharged runoff volume

# Fee – Based Stormwater Utility

- Benefits:
  - Utility fees provide an incentive to retrofit private property using LID
  - Should help developers market areas where the assessment is lower



# Program Implementation

- Conduct financial analysis to define expected fee structure to match existing revenue generated through the ad valorem system
- Estimate of cost and timeframe to establish program will be provided

# Recommended Initiatives

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# Flood Protection and Levels of Service

- GMP Drainage Sub-Element Policy 1.2:
  - “County drainage system .... adequate stormwater management facility capacity available at the time a development permit is issued”
- Issue: Current regulations focus on control of peak discharge
- Recommendations
  - Volume Control
  - Flood Risk
  - Levels of Service

# Stormwater Volume Control

- Recommendation 1:
  - Require volume control for the 25-year/24-hour design event (allow control of peak, volume and timing of stormwater discharges)

Percent of Site Needed to Control Additional Volume	
DCIA for Developed Area*	% of Built Area
50	14.07
40	12.1
30	9.87
25	8.89
20	7.9
15	6.66



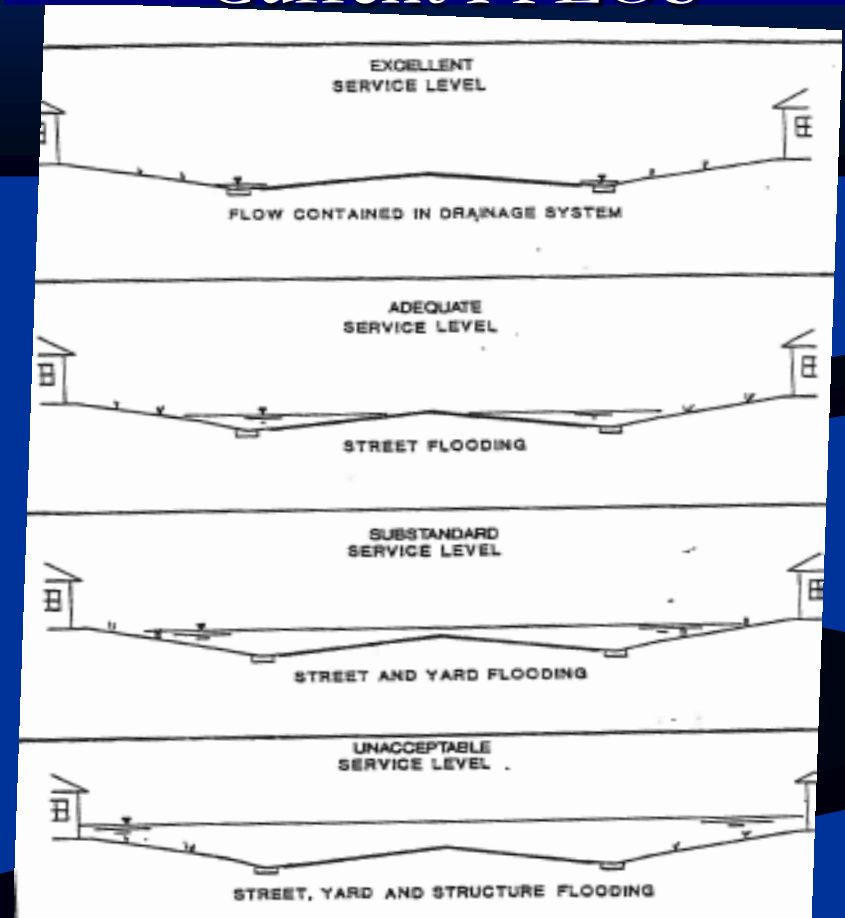
# Flood Risk

- Recommendation 2:
  - No increases in 100-year/72 hour flood elevations upstream or downstream
  - Use of watershed models to assess impacts

# Flood Protection Levels of Service (FPLOS)

- Issue: Current flood protection levels of service (FPLOS) define conditions from Levels A–D
- Most County roads meet only Level D

## Current FPLOS

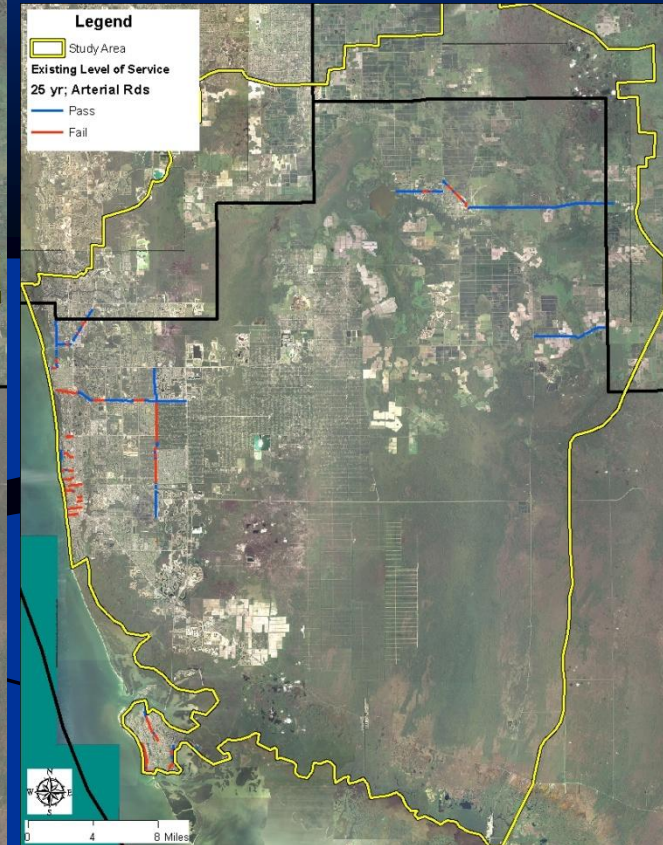
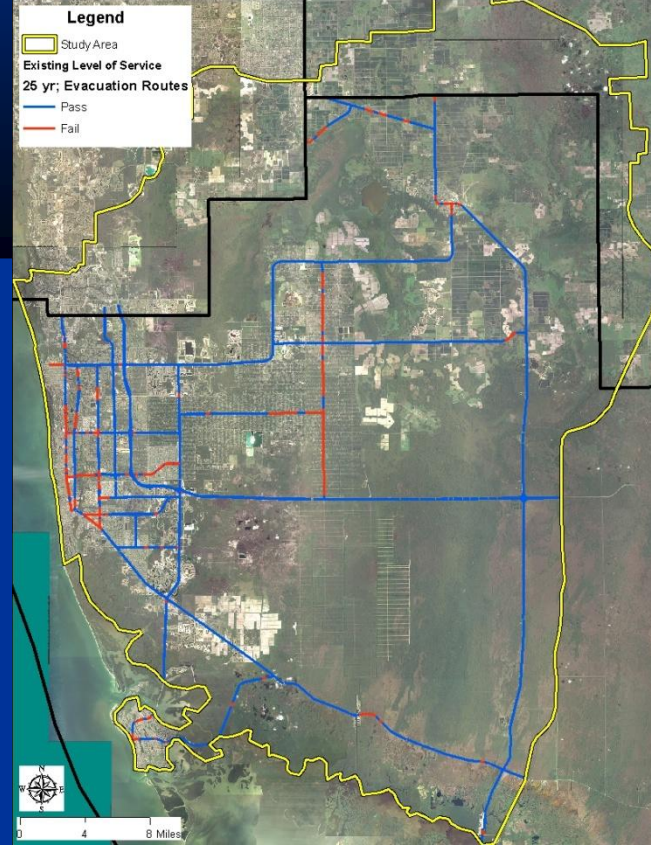
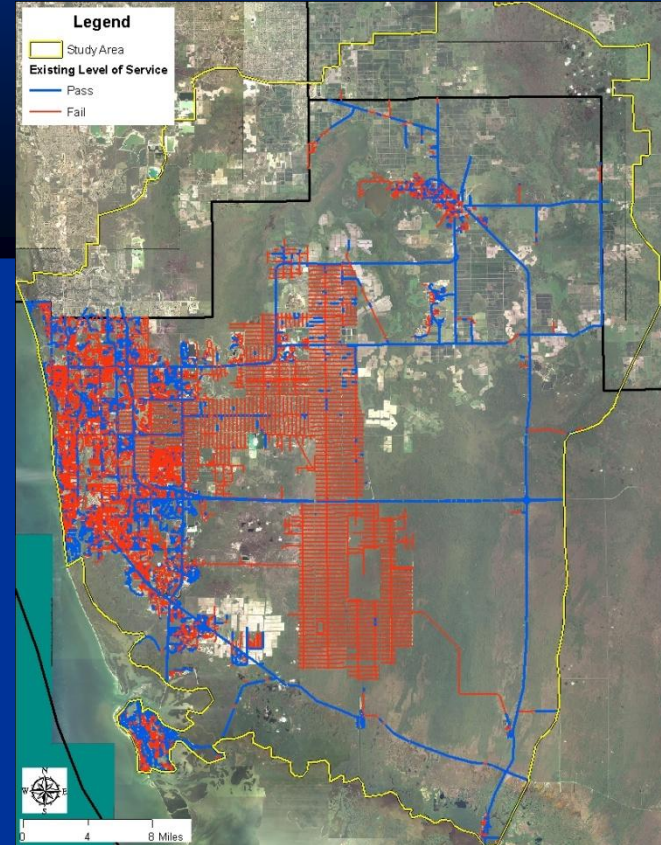


# Existing FPLOS

## All Roads

## Evacuation Routes

## Arterial Roads

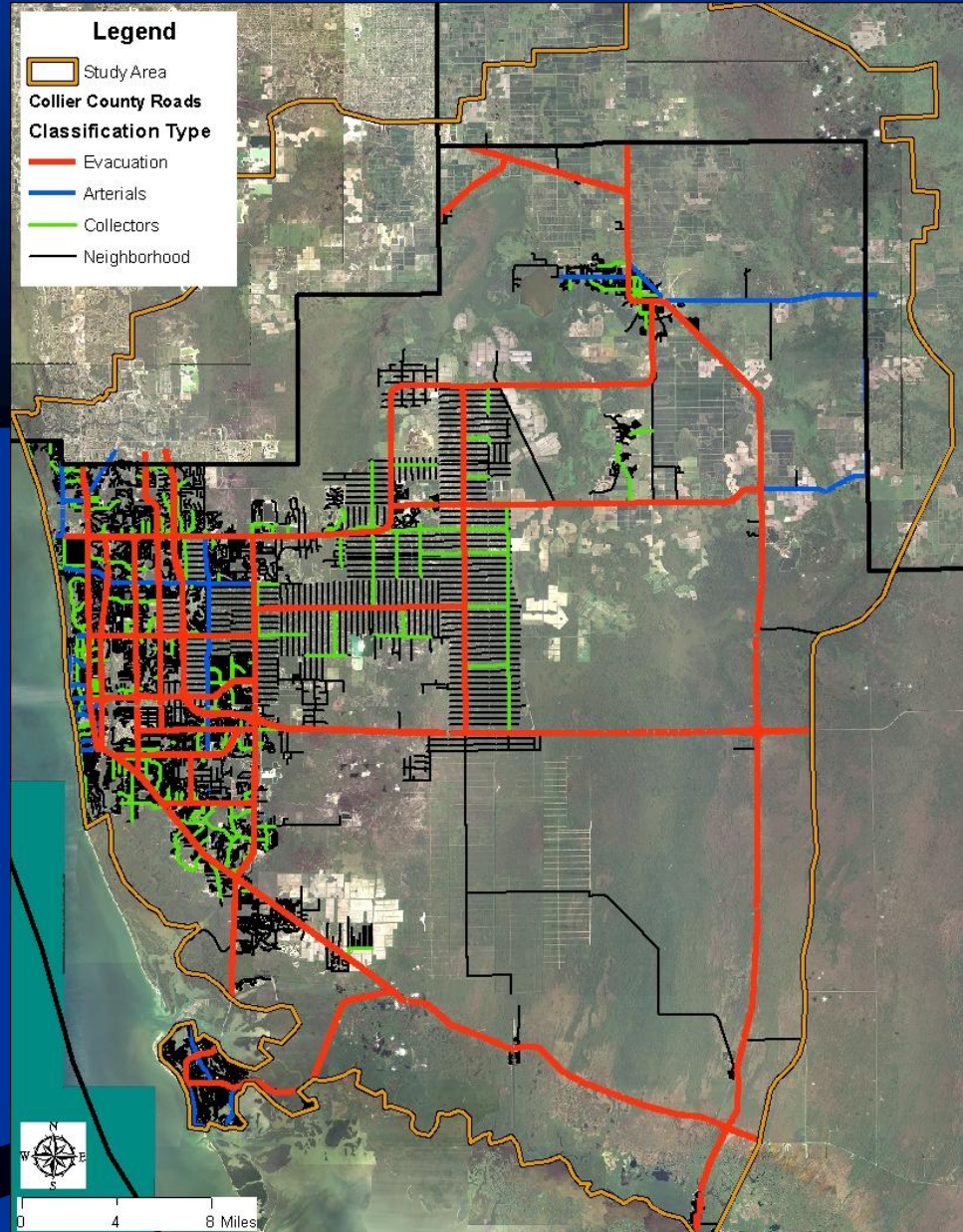




# Proposed FPLOS

## Proposed FPLOS

Roadways	Storm Return Period (years)		
	10	25	100
A. Evacuation Routes	None	None	None
B. Arterials	None	None	6 inches
C. Collectors	None	6 inches	9 inches
D. Neighborhood	6 inches	9 inches	12 inches
<b>Open Space</b>			
Flooding of open space is acceptable if it does not compromise public health and safety			



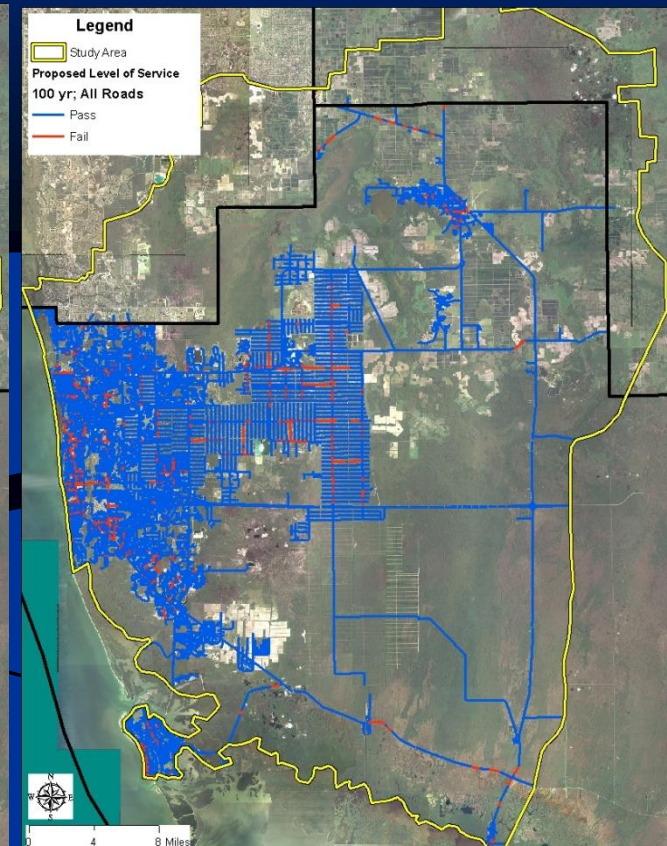
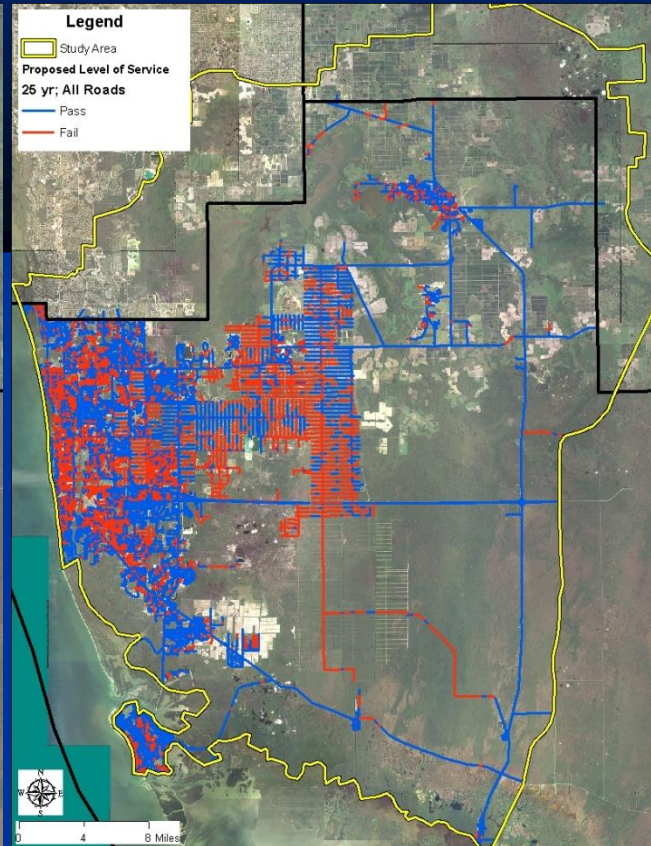
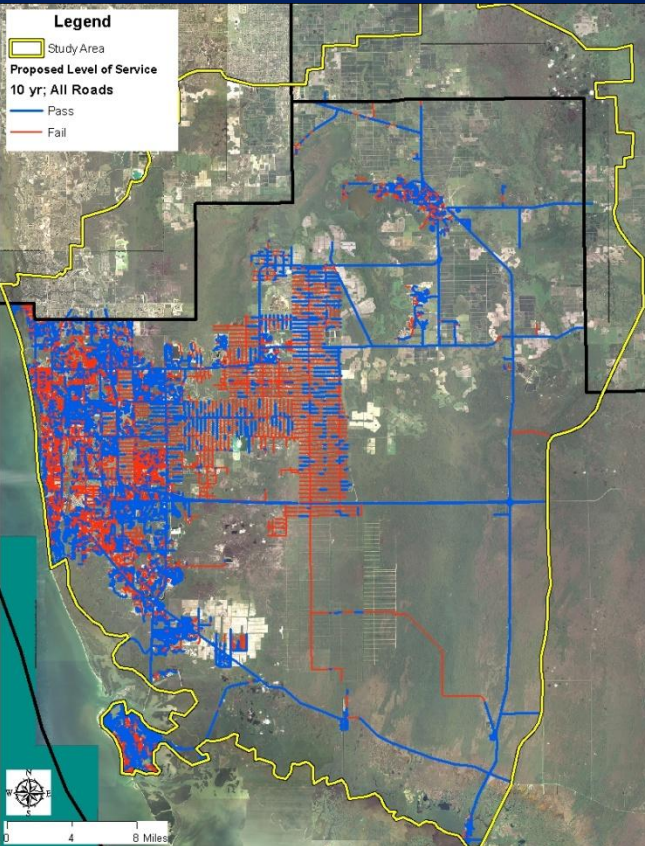


# Proposed FPLOS

## 10-yr; 72-hr Storm

## 25-yr; 72-hr Storm

## 100-yr; 72-hr Storm



# Program Implementation

- Program set up similar to LID program

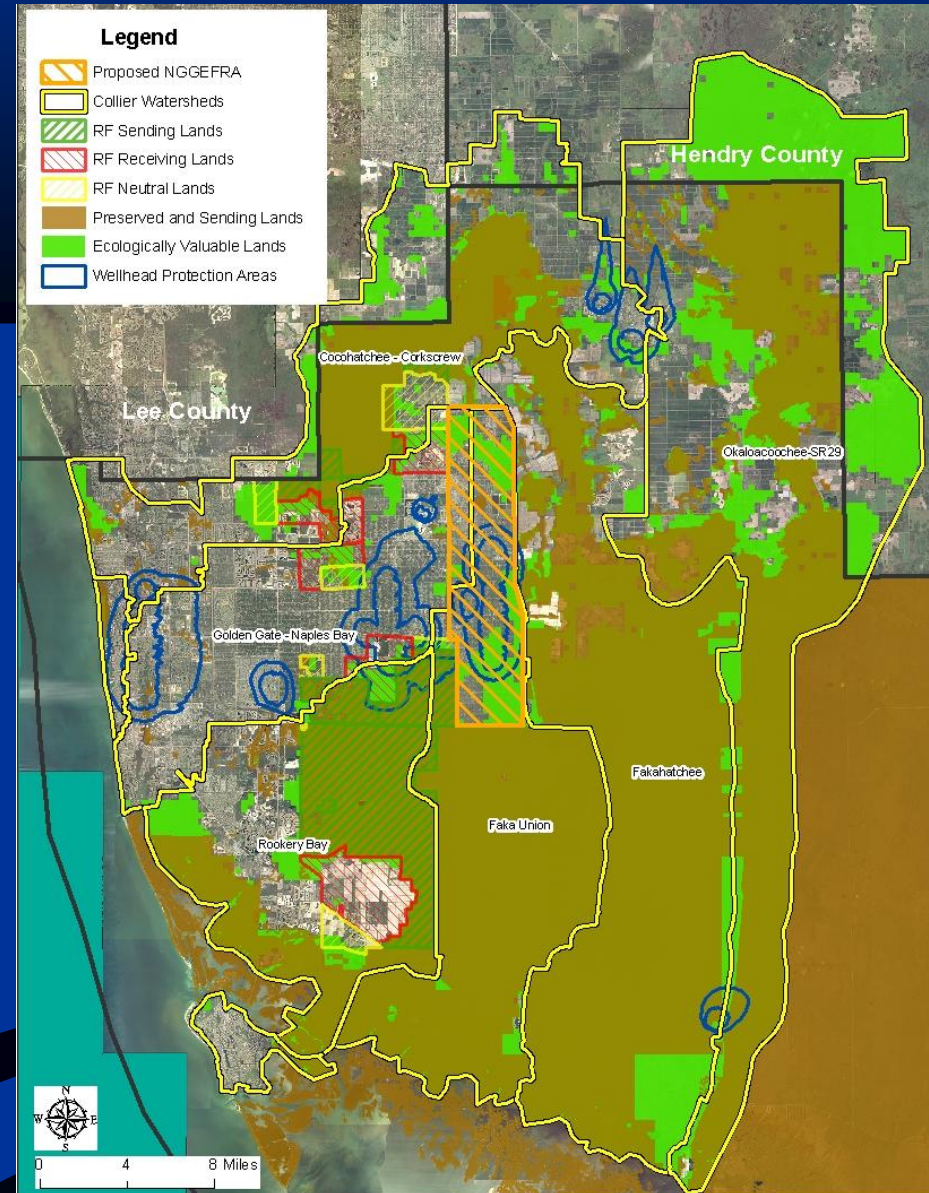
# Recommended Initiatives

- Water Quality and Low Impact Development (LID)
- Stormwater Retrofit Program
- Fee – Based Stormwater Utility
- Water Quantity and Flood Protection
- TDR/Mitigation Area in Golden Gate Estates
- Water Control Structure Operation
- Water Quality Monitoring
- Additional Protection Programs



# TDR Program for Golden Gate Estates

- Recommended Area includes valuable Ecological lands
- Wellhead protection area

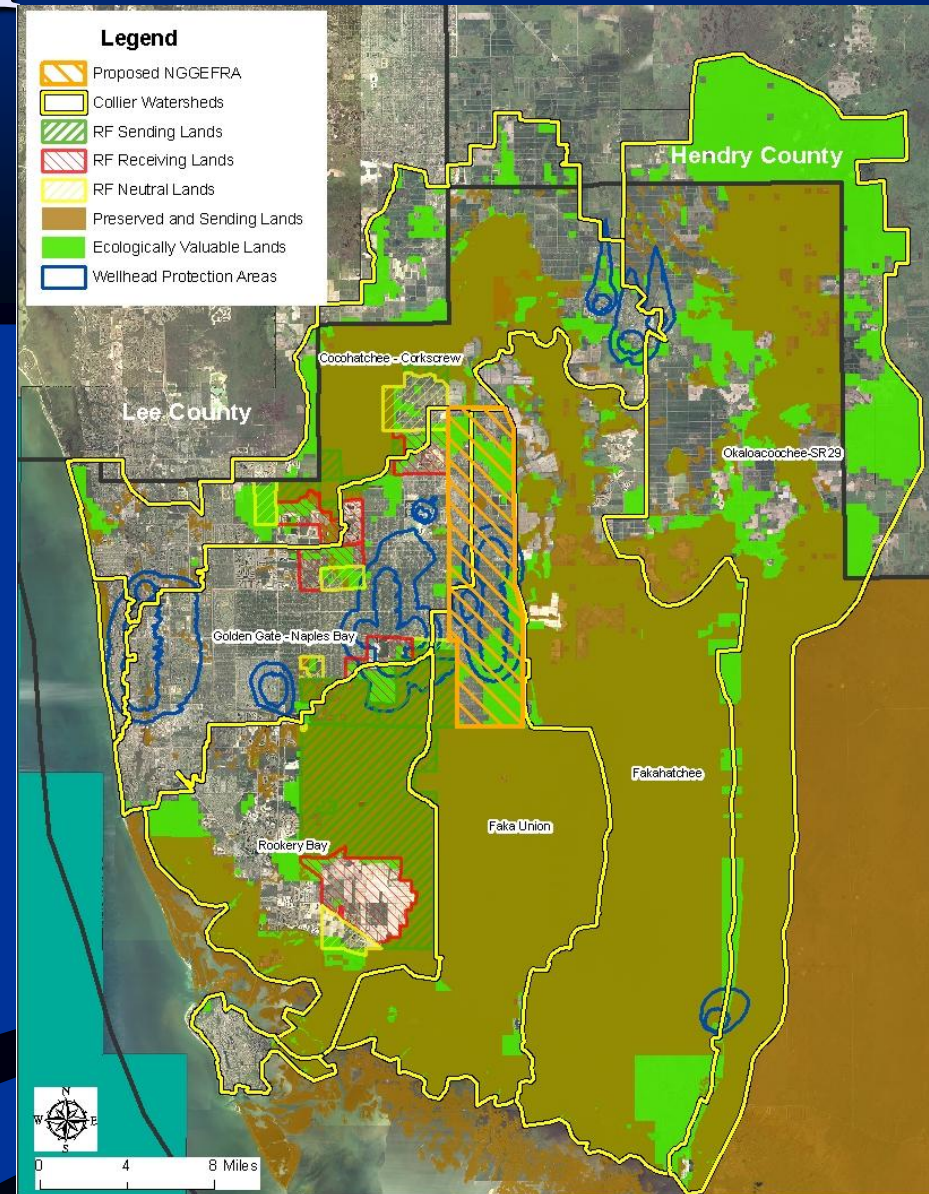




# TDR Program for GGE

## Key Components

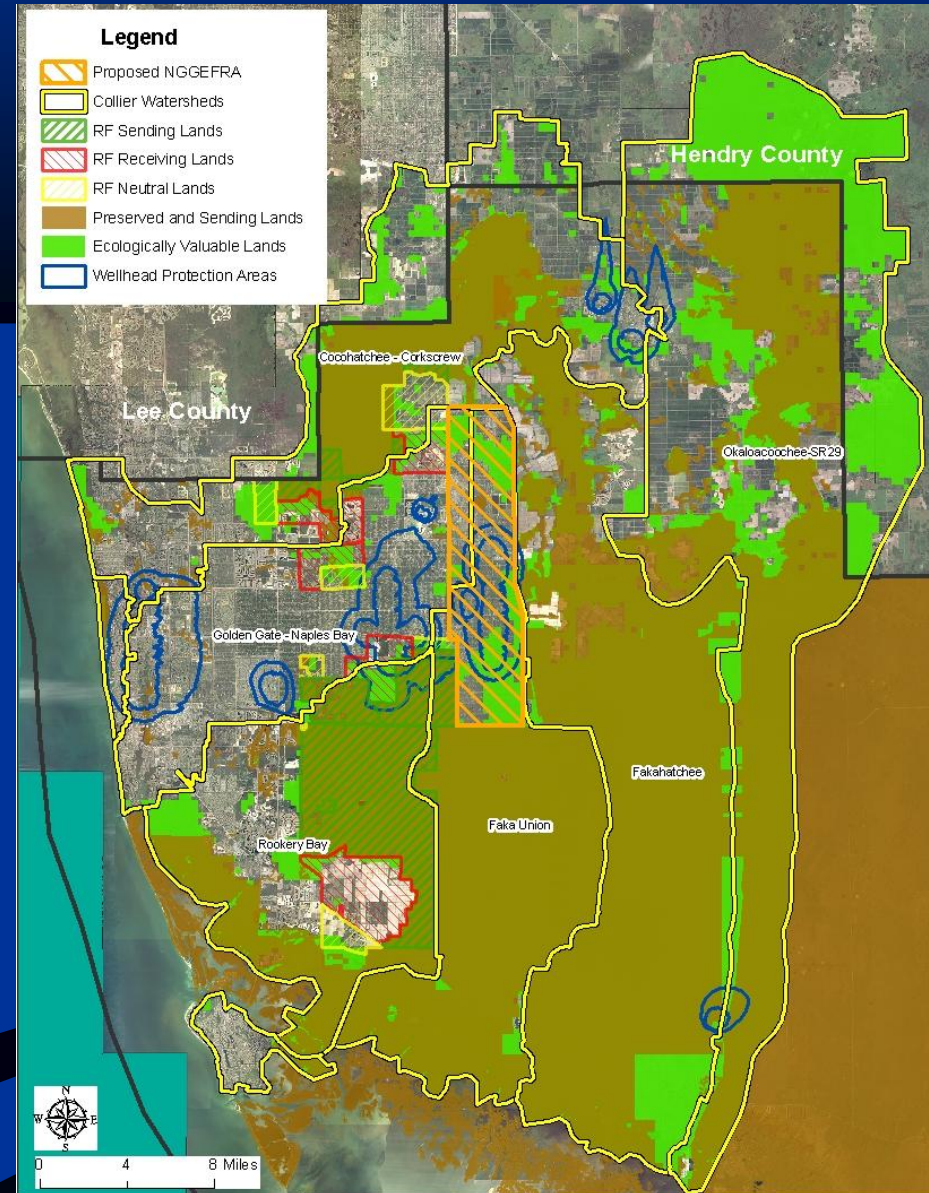
- Distinct from existing TDR programs that have been ineffective
- Goal is to provide sufficient market attraction
- Utilize existing receiving lands



# TDR Program for GGE

## Benefits

- Allow transfer for urban infill
- Program is voluntary – with incentives
- Use incentives to encourage aggregation of parcels
- Used for mitigation within the NGGE

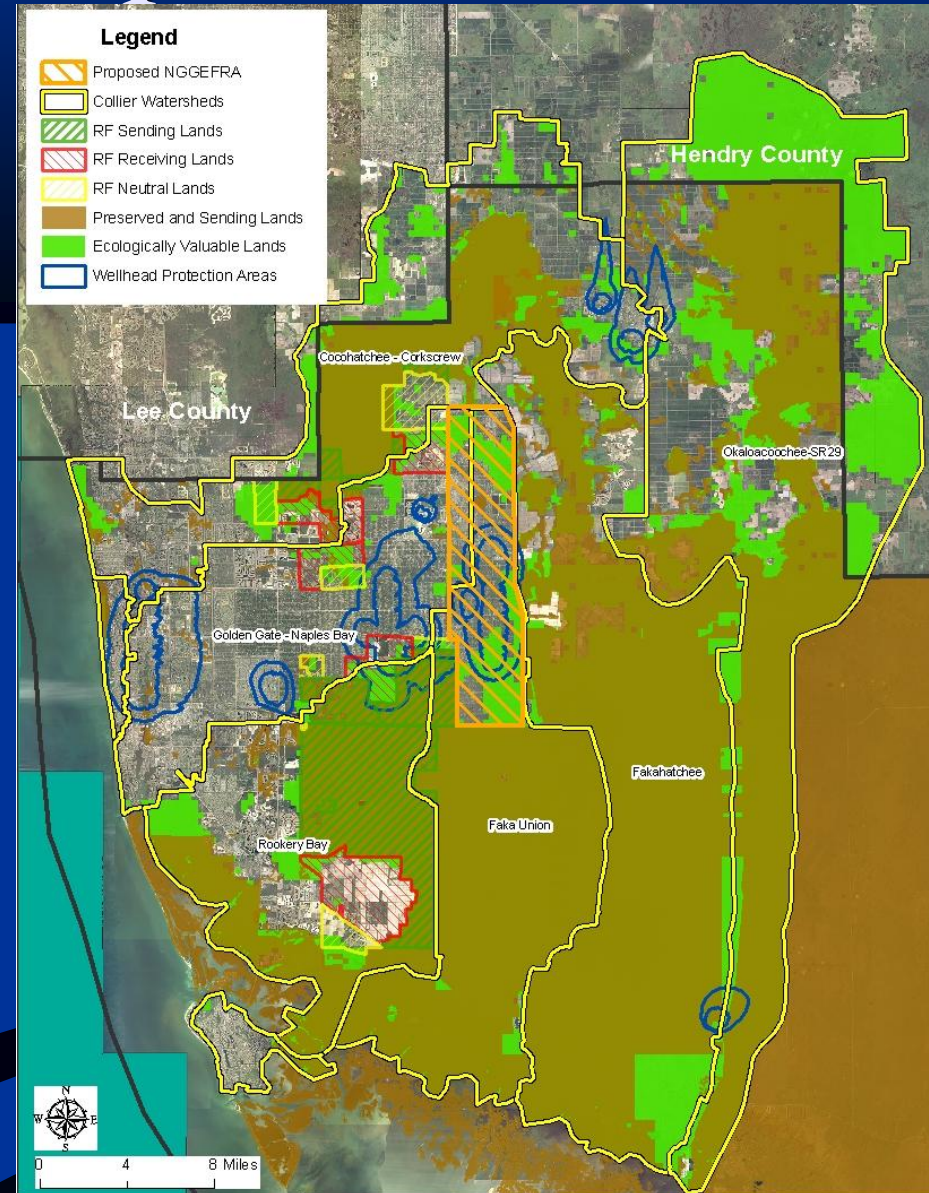




# TDR Program for GGE

## Next Steps

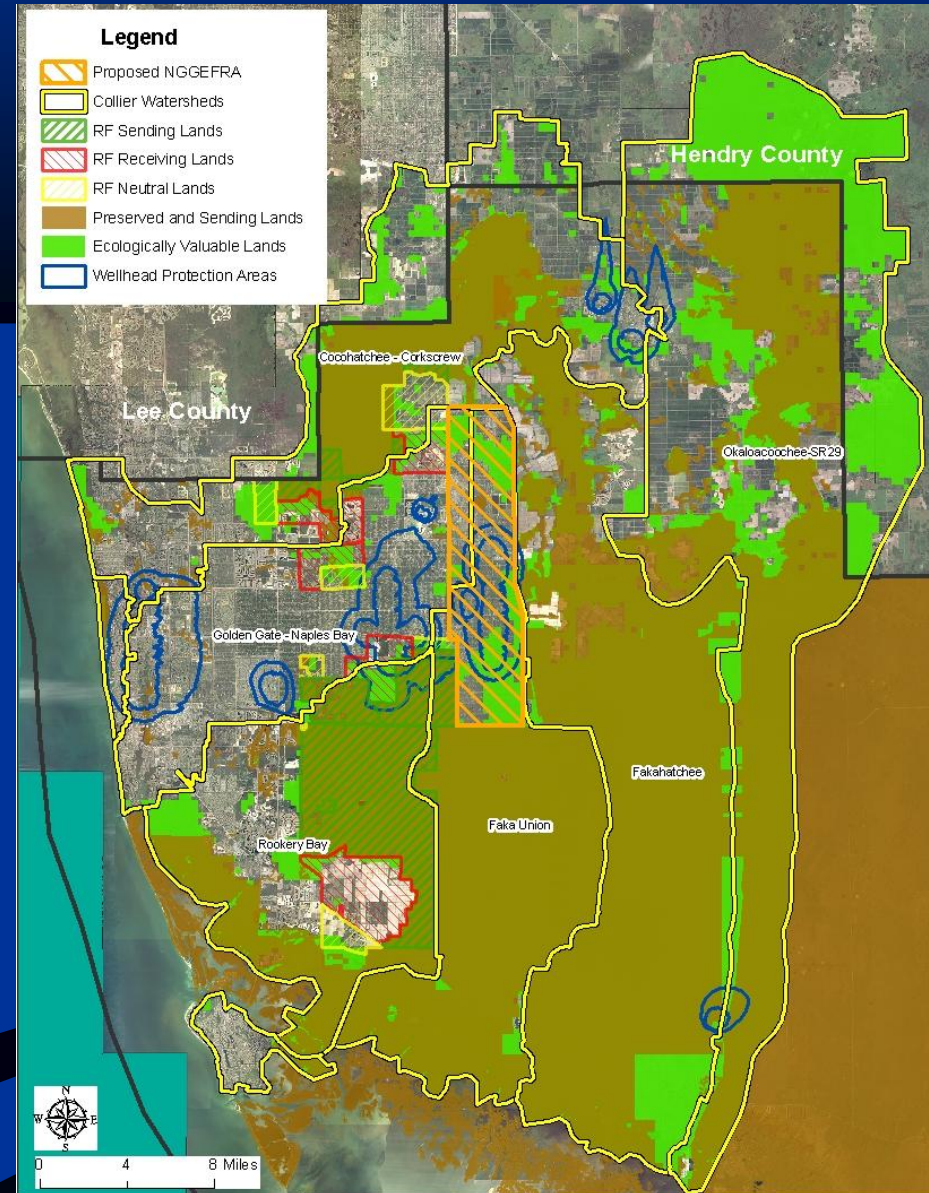
- Establish 9 person Oversight Committee to develop specifics of the program
- Quantify the number of nonconforming and conforming parcels



# TDR Program for GGE

## Key Issues to be Resolved

- Extent of the Protection Area
- Economics and Relationship to Existing TDR Program
- Receiving Lands
- Funding





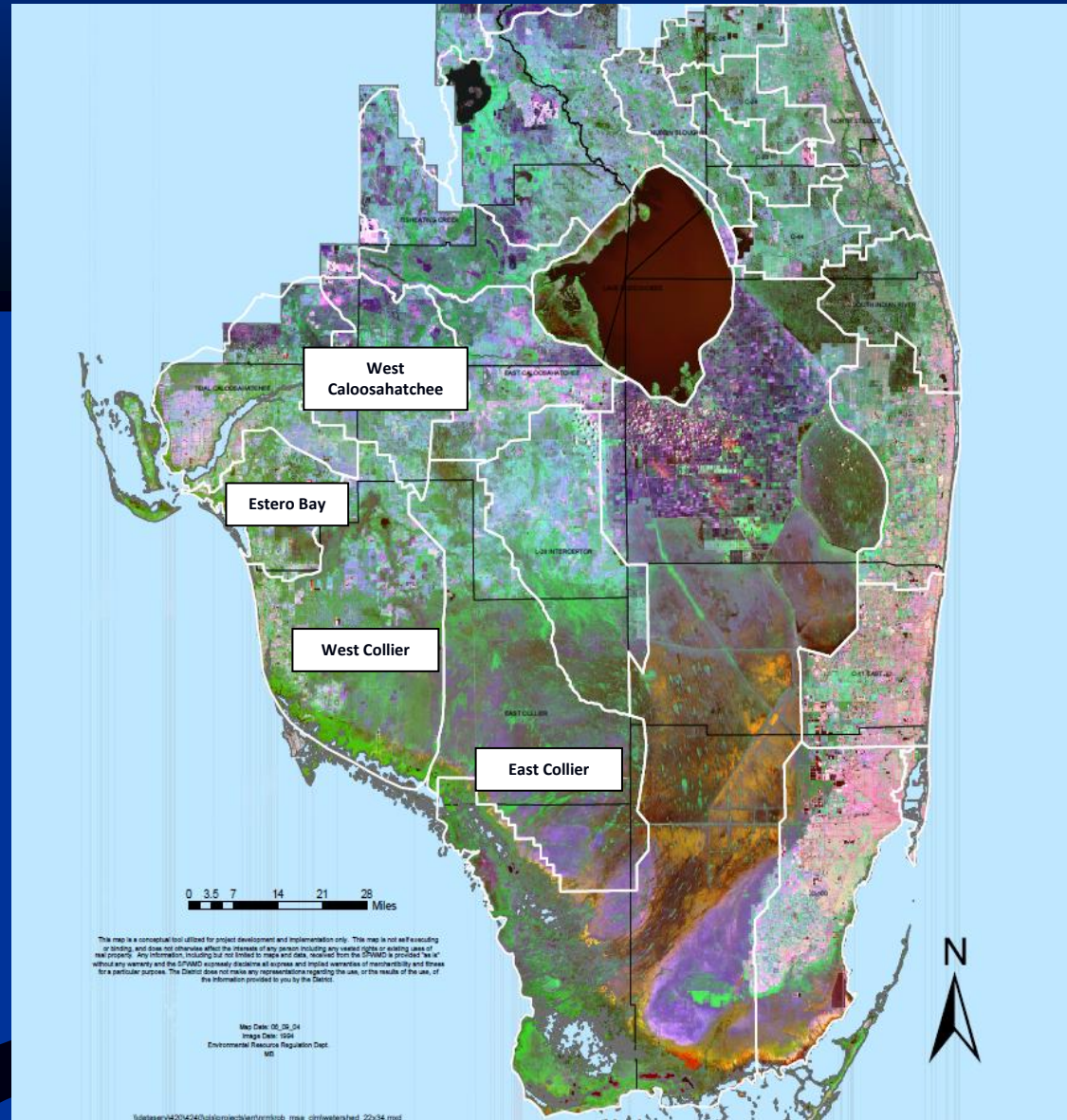
# TDR Program Implementation Conceptual Timeline

Task	Days to Complete
Policy Discussion Regarding GMP and LDC amendments	90
Creation of TDR Oversight Committee*	250
Preparation of final draft GMP amendments	150
DCA Review	70
County review of ORC and Adjustments	120
DCA issues Notice of Intent (NOI)	50
LDC Amendment Final Preparation and hearings	100
<b>Estimated Time for Completion</b>	<b>830</b>

\* Oversight Committee as proposed is limited in Scope to TDR Program

# Mitigation Issues

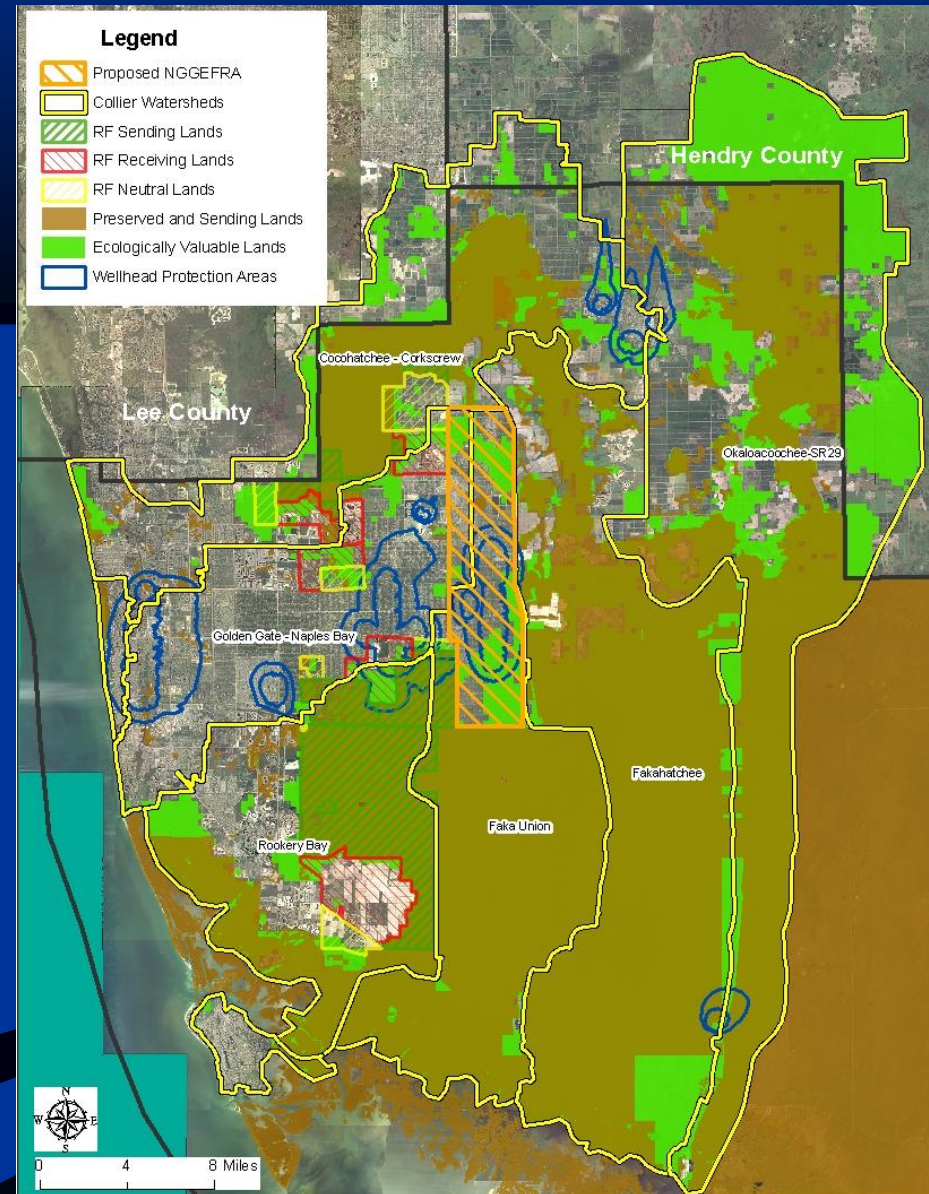
- No regulatory mechanism to require mitigation within a functional watershed
- Economics determine where mitigation occurs





# Recommendations to Establish Mitigation Area in NGGE

- Regional Offsite Mitigation Area located within proposed NGGE TDR area
- Phase I:
  - Permitted by FDEP for single family mitigation
  - Acquisition funded through TDR, grants, sale of credits, or direct County funding



# Recommendations to Establish Mitigation Area in NGGE

- Phase 2:
  - Permitted by SFWMD for public works projects
  - Funded by internal sale of credits (Collier County to Collier County)



# Wrap Up

- If you didn't sign in, please do so
  - Include your E-mail address and Phone Number
- Comments via E-Mail

[machatcher@colliergov.net](mailto:machatcher@colliergov.net)

- Formal position papers
  - Please mail to Mac Hatcher