



Innovations in Stormwater Management New Frontiers

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Town of Bluffton - Introduction

- Est. 1825
- Pop. 12,345
- Rapid growth during last two decades
- River town on the May River
- Traditional economy steeped in coastal traditions



Bluffton Covenant

- **Protect the River**
- **Celebrate history of River Town**
- **Responsibility & stewardship**
- **Protect traditional maritime industry**
 - (oystering, shrimping, fishing)
- **Partner for improvements**



May River Concerns

- Fecal coliform
- Sediment & other pollutants
- Unsafe oyster harvesting
- Effect on estuarine habitat
- Increased usage by boaters & population

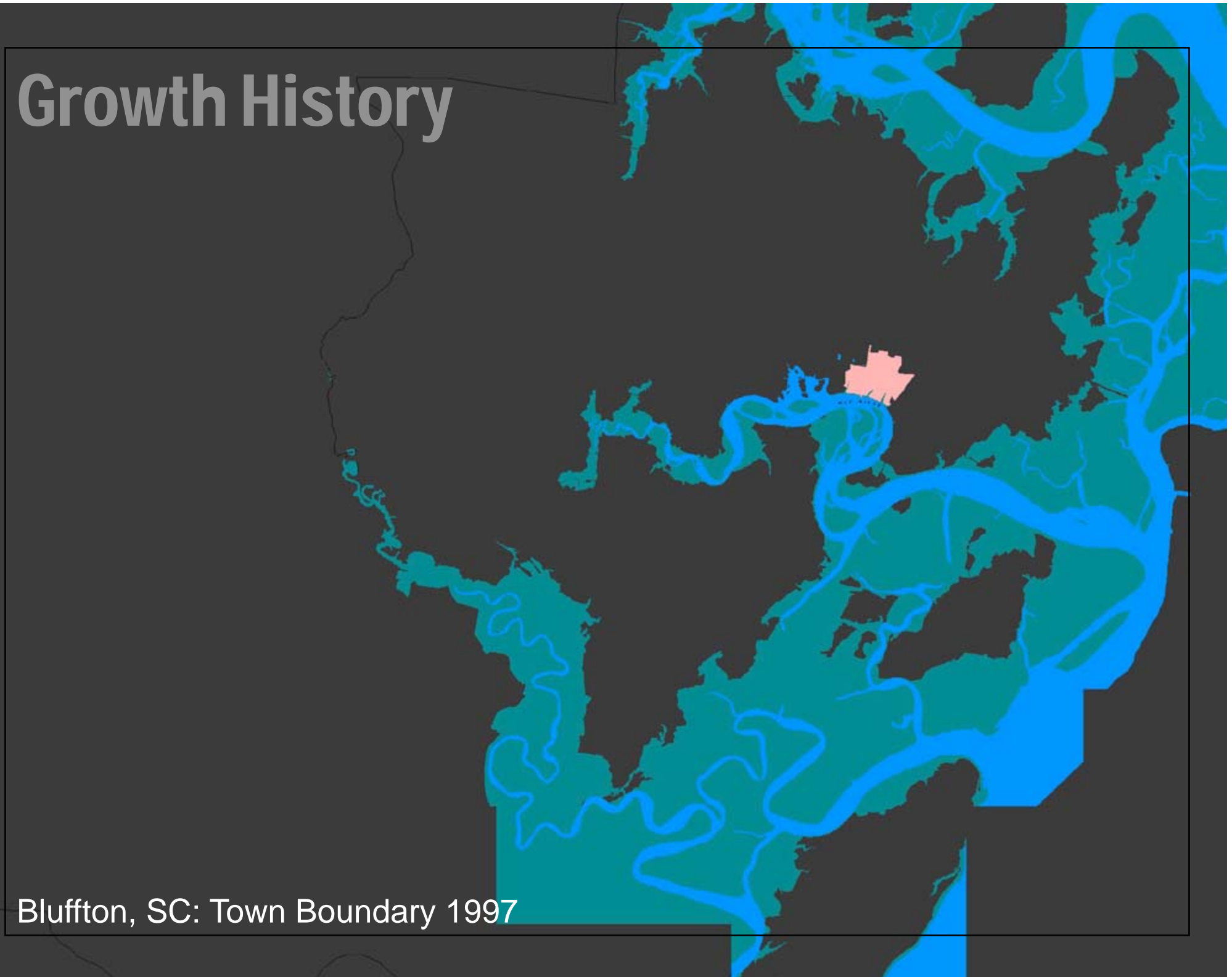


Community Growth & Development

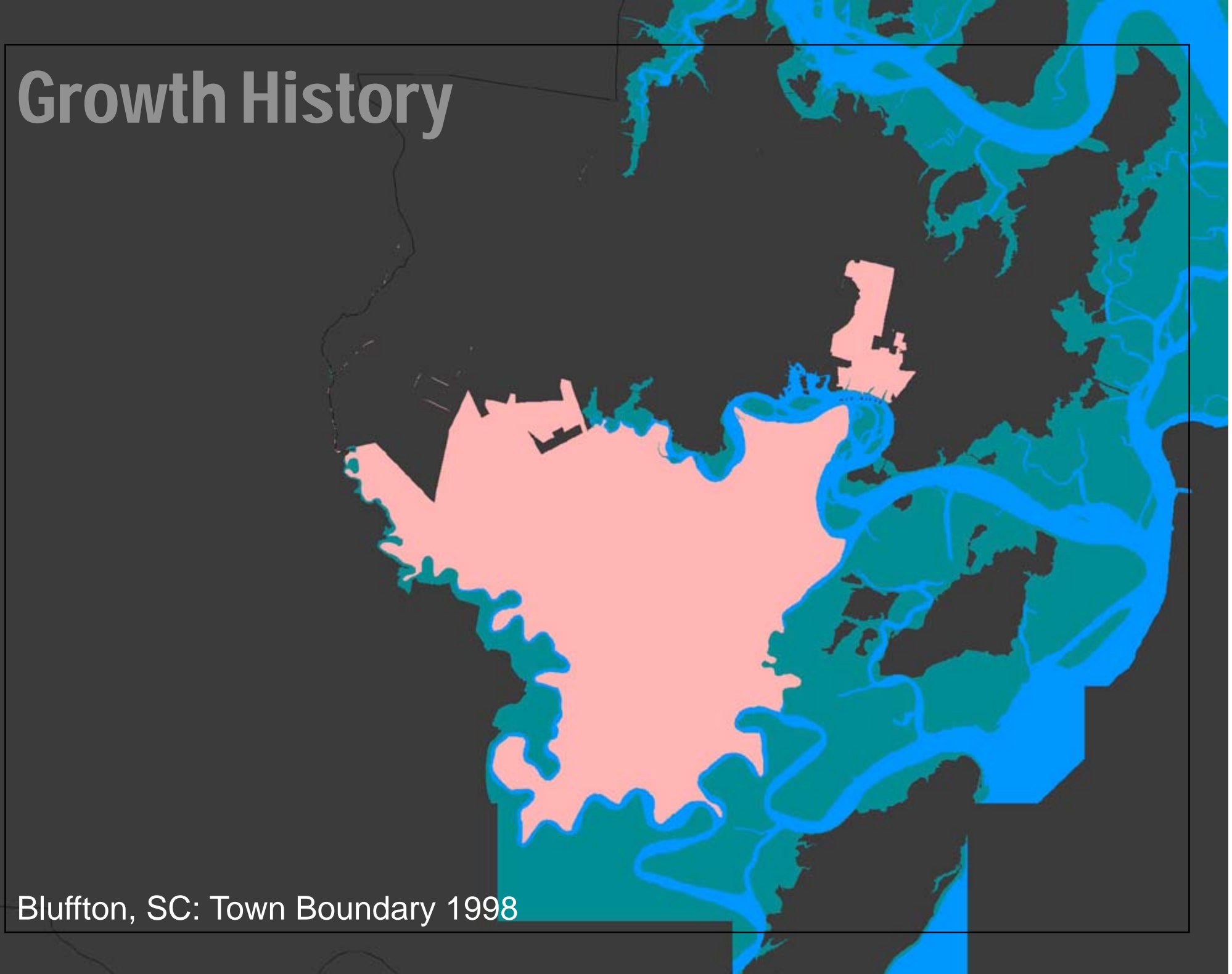
- **Rapid population growth during last decade**
- **1 square mile (Old Town – Historic District)**
- **54 square miles**
- **Approved through development agreements**
 - **More than 33,000 dwellings**
 - **19 million square feet of commercial**

Growth History

Bluffton, SC: Town Boundary 1997

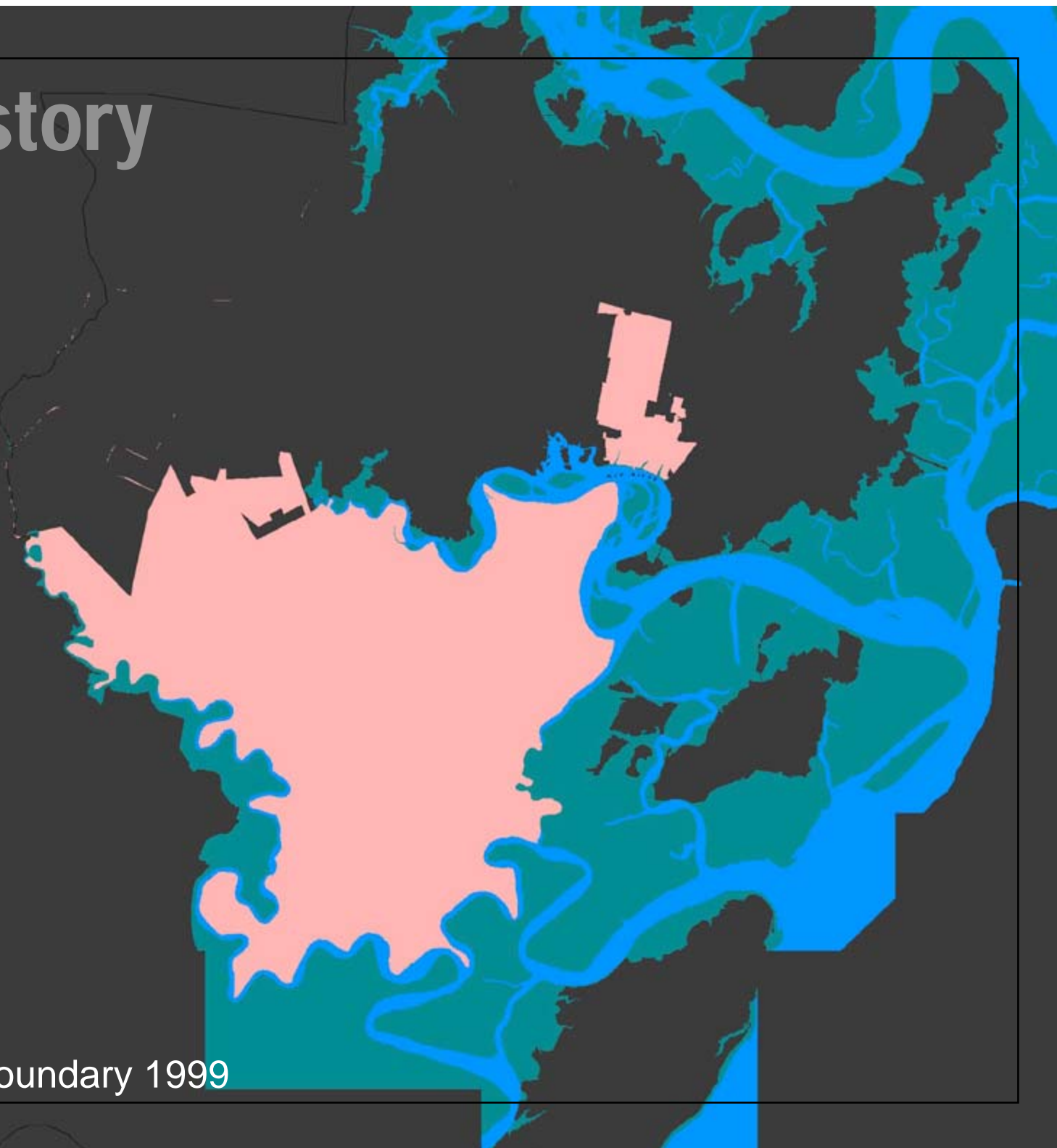


Growth History



Bluffton, SC: Town Boundary 1998

Growth History



Bluffton, SC: Town Boundary 1999

Growth History



Bluffton, SC: Town Boundary 2000

Growth History



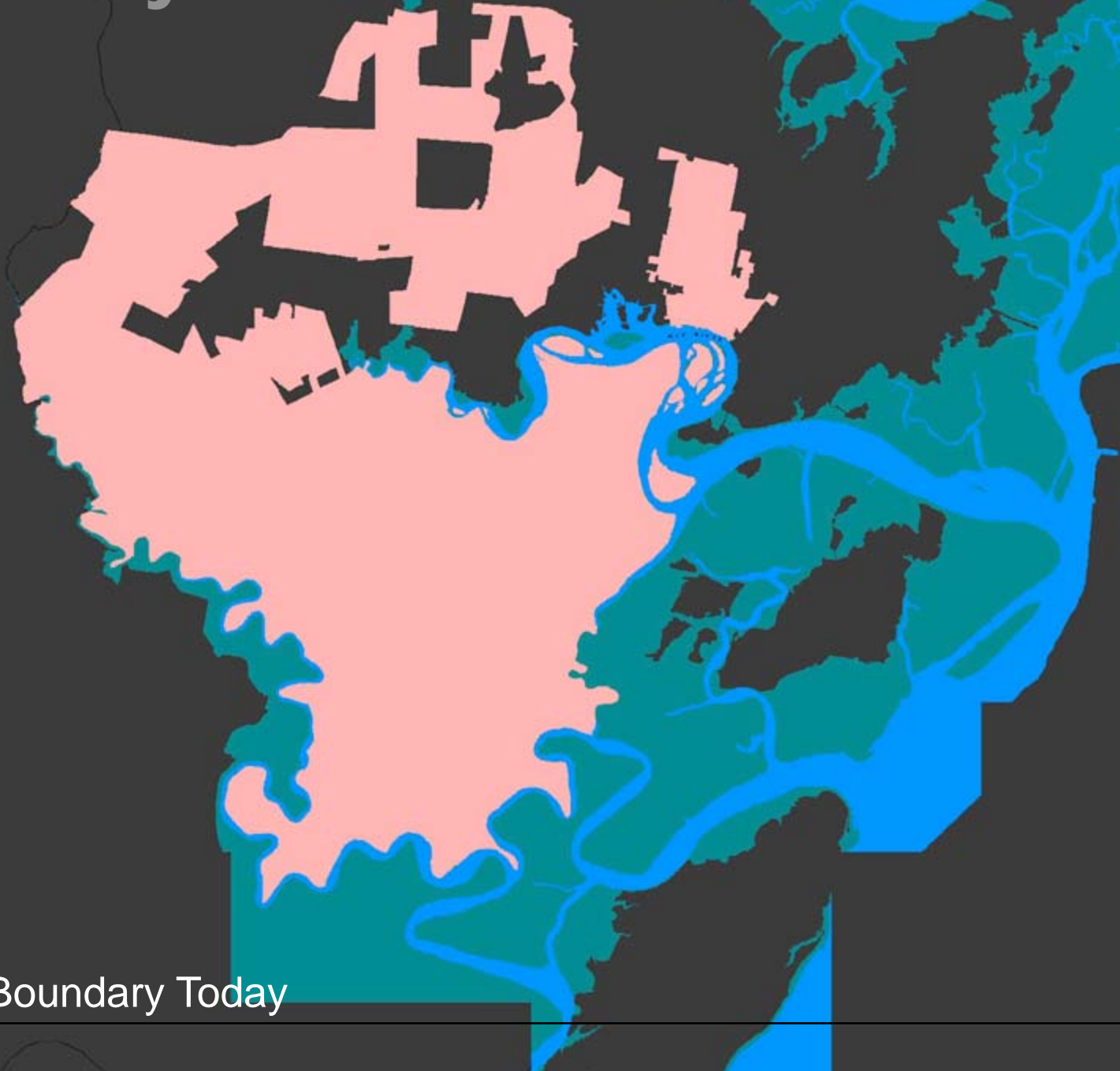
Bluffton, SC: Town Boundary 2001

Growth History



Bluffton, SC: Town Boundary 2002

Growth History



Bluffton, SC: Town Boundary Today

Activism in Bluffton/So. Beaufort County

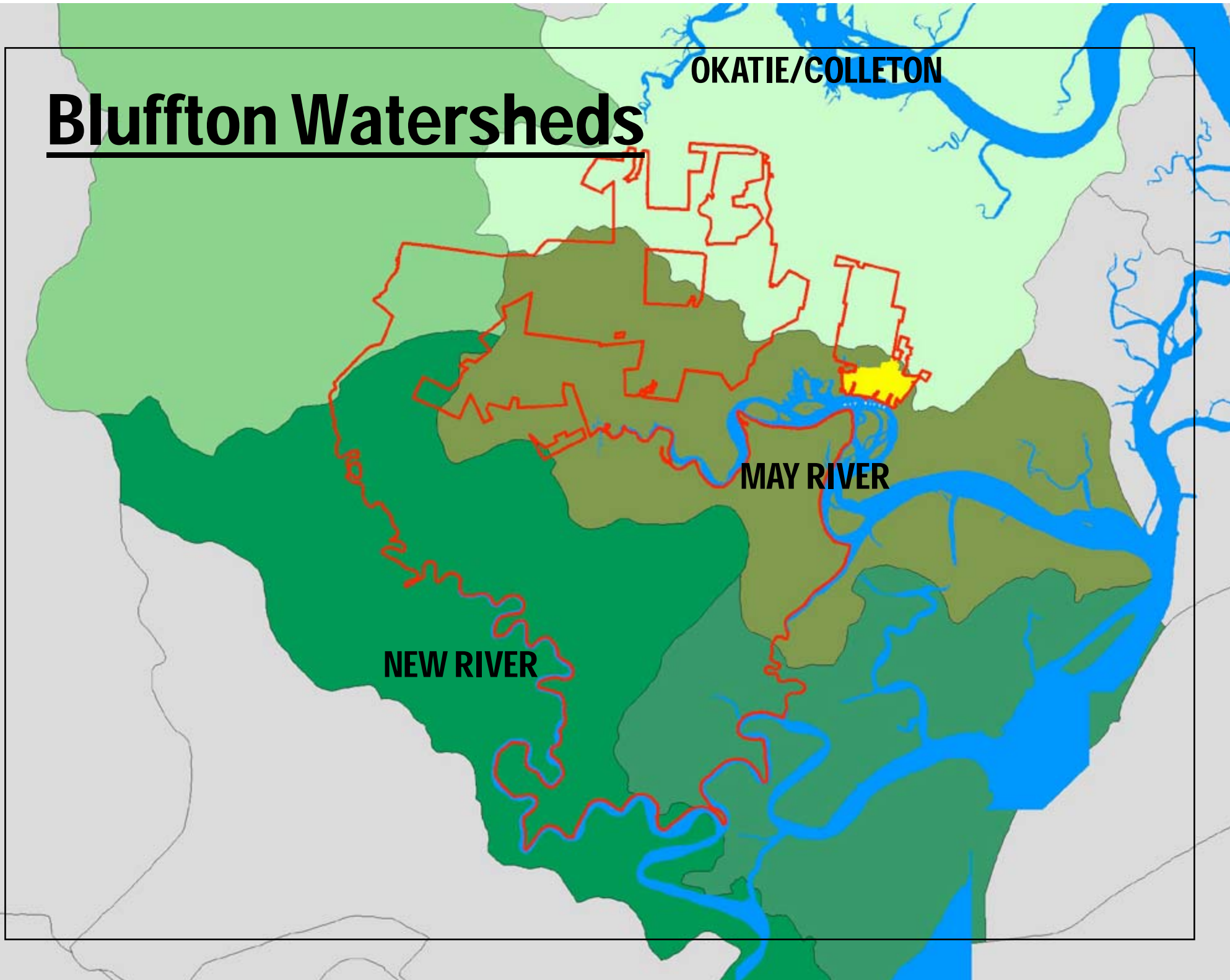
- **Clean Water Task Force (mid 1990's)**
 - Focus on River Resources
 - Oysters are the “Canary in the Coal Mine”
 - Prevention of additional damage to coastal/estuarine environments
- **SC Coastal Conservation League**
 - Watershed Retrofit that addresses Land Use/Land Form Relationship
 - 4 River/watershed systems
 - (May River/Colleton River/Okatie River/New River

Bluffton Watersheds

OKATIE/COLLETON

MAY RIVER

NEW RIVER



Activism in Bluffton/So. Beaufort County

- **May River Watershed Action Plan**
 - **Intergovernmental Agreement w/Beaufort County**
 - **Mapping of current and projected impervious area**
 - **Definition of drainage and catchment areas**
 - **Identification of priority investment areas/ preservation areas**
 - **Expandable to other affected watersheds**
 - **Overhaul Zoning Code and Land Development Stds**

Stormwater Management in Small Towns

- **Off-site impacts not assessed adequately**
- **Sites are addressed out of context**
- **Path of least resistance is often cheap and ugly and REPEATABLE**
- **“Greenwashing” practices**
 - **L.I.D. that doesn’t address urban or community form**
 - **Hyper-sprawl in large lots with large houses**



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Punitive Approach for Land Development

- **Impervious Surface Limits**
- **Penalize compact/higher density development**
- **Promotes extension of sprawl**
- **No full cost accounting**
- **One size fits all BMP manuals discourage creative problem solving**

Innovative Trends

- **Low Impact Development for Stormwater Mgmt.**
- **Light Imprint New Urbanism**
- **Sustainable Sites Initiative**
- **LEED-ND**

**PROMOTE BETTER BEHAVIOR IN SITE SPECIFIC/PROJECT
SPECIFIC DESIGN**

Cannot promote greener sprawl

Non-punitive Approach

- **New Frontier for stormwater management**
- **Volume Control Requirements**
- **Promote Growth zones (existing development, brownfields/greyfields, primary jobs centers)**
- **Incentivise disadvantaged corridors**
- **Align the housing, transportation, environmental position expressed by federal leadership**

Role of Public Funding & Incentives

- **Finance Structure**
- **Special Districts/TIF/MCIP/SWF**
 - **Promote Partnerships in Collective Solutions**
 - **Shared Design Goals**
 - **Customized Solutions**
- **Measurable Criteria**

A Bluffton Example – The Calhoun Street Promenade

The table shows a rough estimation of impervious surface coverage if the same level of development at the Promenade were constructed under Bluffton’s older conventional zoning code elsewhere in the watershed. Note that the Promenade features both neighborhood and site scale practices to reduce the impacts of development.

	Calhoun Street Promenade	Conventional zoning and site design
Housing Units	64	64
Retail & Commercial	82,176 square feet	82,176 square feet
Parking spaces	263	425
Impervious Cover	204,900 square feet	473,000 square feet



Much of the impervious cover reduction comes through use of 2 and 3 story buildings



The green space in the Promenade is not large, but serves several purposes

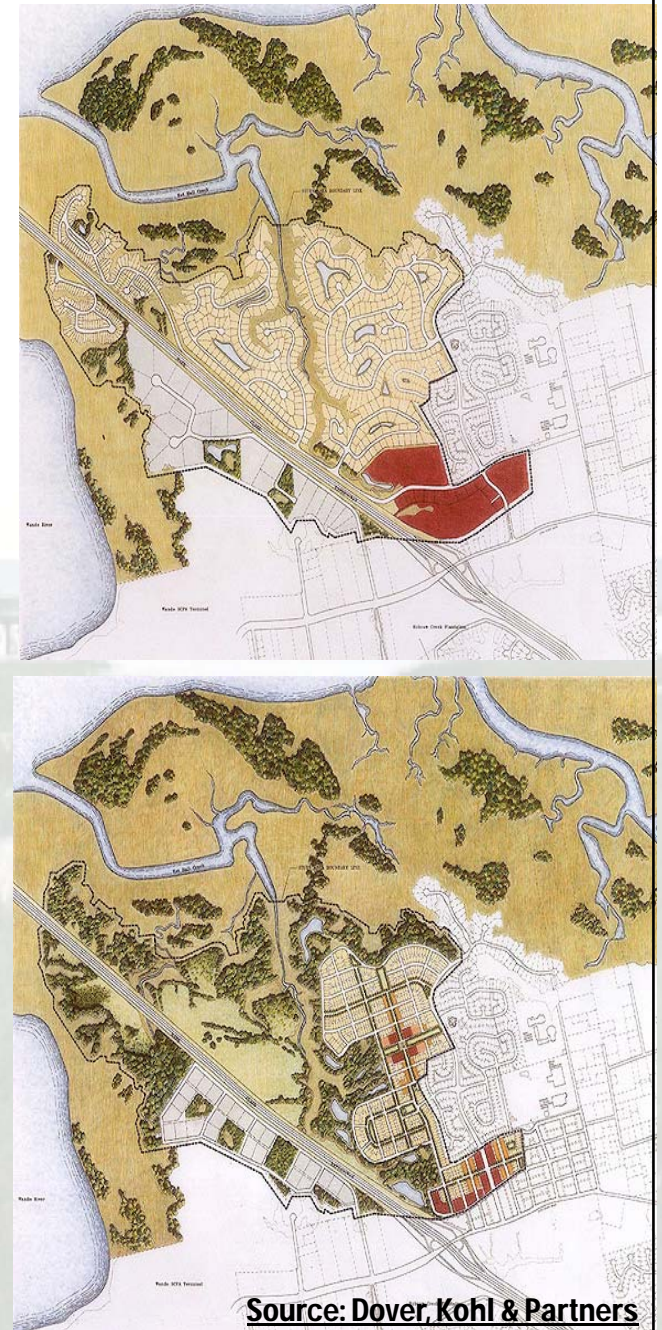


Some of the impervious cover relief comes through design features. The patio at Captain Woody’s is highly pervious, while this downspout sends water into planter areas, not the street system.



Appropriate Criteria

- Pedestrian shed
- Per - Capita results
- Context – adjusted
- Measurable elements
- Clearly identified priorities



Context - Adjusted

	Rural Forested	Suburban	Urban or Town Center
Transportation	Investments are tied to rural travel and tripmaking, with attention to ditch maintenance for natural stormwater control.	Augment auto oriented travel with infill and new development to support “park once” policies and walk share to the extent possible.	Use the “pedestrian-shed” as a gauge for efficient land development design.
Housing	Maintain larger lot pattern with options for clustered rural housing.	Plan the use and housing mix based on local tripmaking to supply daily goods and services closer to users.	Introduce more use mix and higher densities (2 and 3 stories)
Commercial	Identify crossroads commercial and retail options, as well as sites suitable for rural industrial uses.	Reorient strip shopping designs to support local tripmaking. Look for retrofit and infill opportunities on existing centers.	Mixed use, identification of market opportunities in higher density centers
Open Space	Identify and protect large tracts of continuous opens space	Look to regional parks and developer-supplied open space for watershed management.	Design smaller multi-use open space, landscaping and streetscape improvements.
Site BMPs	Conserve larger tracts of valuable forest and absorptive landscapes Use TDRs to conserve rural parcels.	Use cluster type strategies for new development and infill. Use TDRs to direct growth to growth areas. Combine site design and building design BMPs	Develop a special menu of BMPs for higher density development and redevelopment. Take advantage of shared runoff management systems & landscaping.
Overall future strategy	Greater attention to strategic preservation of open space and conservation design tied to the rural economy	Cluster and mixed use designs to reduce the overall footprint of development. Site plans will be less isolated and more connected to the greater development plan	These centers will be higher density but on a smaller footprint, so volume reduction will come from building design and landscaping.

Retrofit - Public spaces

Bluffton has several retrofit projects underway, including:

- **The cistern at City Hall, which captures rainwater for irrigation**
- **The paving alternatives project, also at City Hall**
- **The May River Road streetscape project**

Other public spaces for additional stormwater retrofits:

- **Schools and post office buildings**
- **Parks**
- **Streets, curbs and gutters**



Elements of an effective strategy

- **Stormwater Free Development Zones**
 - **Promote alignment of Housing, Transport, Environmental Management at Neighborhood Scale**
 - **Downtowns, Growth Centers, Disadvantaged Corridors**
 - **Appropriate public involvement for regional solutions**
 - **Public open space acquisition**

Elements of an effective strategy

- **Consistent definition of Watershed Solutions**
- **Consistent definition of what Pre-development means**
- **Definable Action Plan that promotes now-, short-, and long-term solutions that apply and align community goals**
 - supported in Comp. Plan, Zoning, Transportation, Sewer
- **Measurable Time Frame**
- **Clear identification of partners, roles, and responsibilities**

Questions to ask?

- **Does Location Matter?**
- **How should performance be measured?**
- **What about scale?**
- **Does regulatory structure support changes?**
- **Do Greenfields need different strategies than infill and redevelopment?**
- **How do Zoning and Land Development Standards need to be adjusted?**
- **Are there other incentives for transit oriented development/corridors?**