

The Texas General Land Office

George P. Bush, Commissioner

2018 Lower Rio Grande Valley

Water Quality Management & Planning Conference

Presentation by Jason Pinchback

Manager, Coastal Resources



Texas General Land Office in the Coastal Zone

Lead Agency Responsible for:

- Revenue for Permanent School Fund
 - Coastal Oil Spill Response
 - Disaster Recovery
 - Manage state owned lands
 - Manage coastal resources
- 367 miles of Gulf shoreline
 - Over 3,300 miles of bay shoreline
 - 18 coastal counties



WHISKEY AND WATER with *CARROTS AND STICKS*

The recipe for a Texas program to enhance water quality and manage coastal NPS pollution



1. Background of the Texas Coastal NPS Pollution Control Program (*carrots and sticks*)
2. Water features, protected areas, and geography in the Coastal Zone
3. Managing NPS pollution in the Coastal Zone using non-regulatory, incentive-based methods (*whiskey and water*)

Coastal Zone Act Reauthorization Amendments (CZARA or § 6217)

1990 - Congress enacted "Protecting Coastal Waters" (16 U.S.C. §1455b, § 6217)

The purpose is " ...to develop and implement management measures for controlling nonpoint source pollution to restore and protect coastal waters, working in close conjunction with other State and local authorities."

Management Measures (56 total) are intervention and mitigation actions and policies that collectively work to “control” NPS pollution.

The purpose is " ...to develop and implement management measures for controlling nonpoint source pollution to restore and protect coastal waters, working in close conjunction with other State and local authorities."

56 Management Measures

FORESTRY (10)	APPROVED
MARINAS (15)	APPROVED
HYDROMODIFICATION (6)	APPROVED
WETLANDS (3)	APPROVED
URBAN (15)	8 APPROVED 7 OUTSTANDING
AGRICULTURE (7)	APPROVED

Management Measure Examples:

Agriculture

- Erosion/sediment control
- CAFO
- Nutrient management
- Pesticide management
- Livestock grazing
- Irrigation water management

Management Measures:

Urban

New development

Existing development

Site development

Watershed protection

Roads, Highways, Bridges

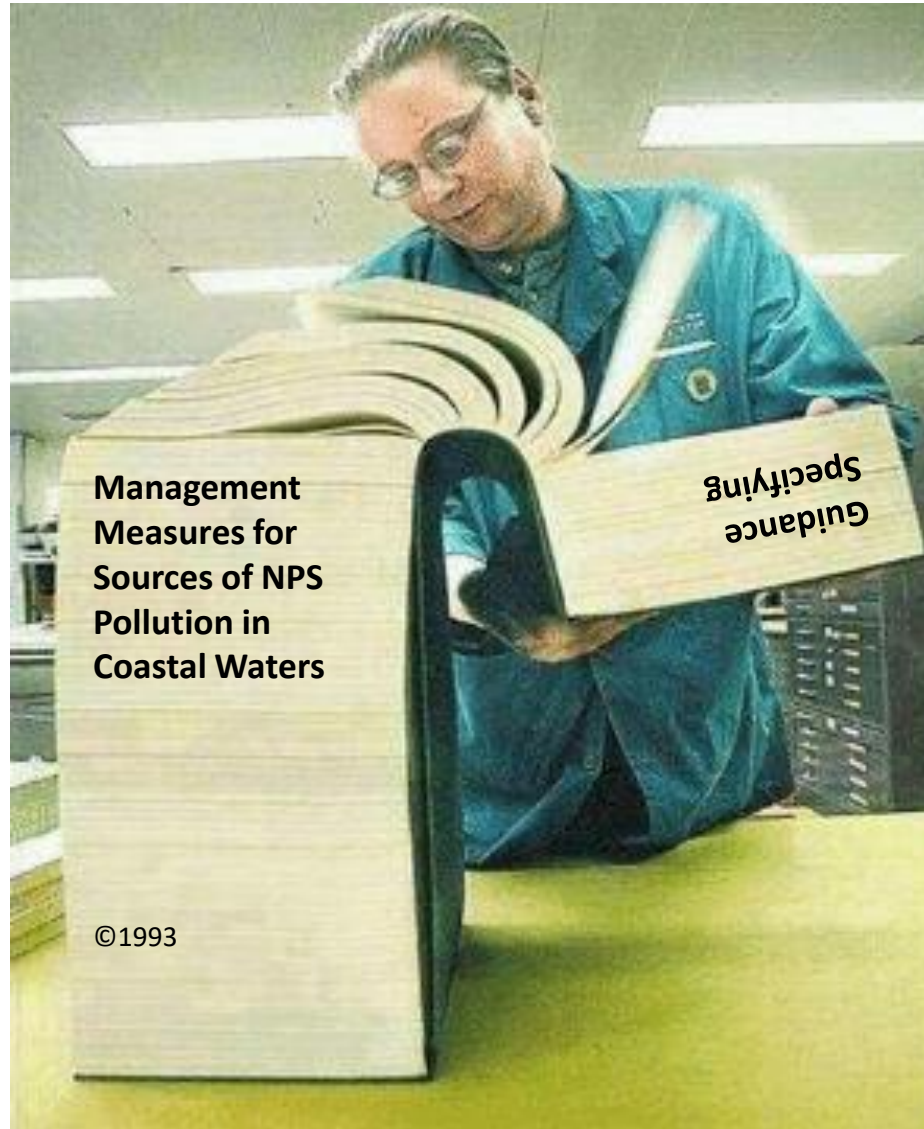
Septic inspections & upgrades

NOT APPROVED YET

Coastal Zone Act Reauthorization Amendments (CZARA or § 6217)

States with a coastal management program must develop and implement a coastal NPS program; EPA and NOAA approval is required.

Texas must achieve full compliance by June 2019 or receive 30% reductions to Texas CWA § 319(h) and Texas Coastal Management Program 306/306A annual funding allocations.



**Management
Measures for
Sources of NPS
Pollution in
Coastal Waters**

**Guidance
Specifying**

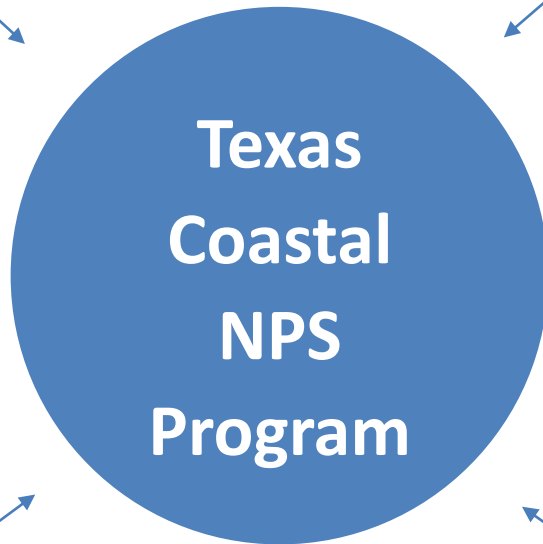
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CZARA STATUS:

22 STATES AND 5 TERRITORIES FULLY APPROVED

**TEXAS COASTAL NPS POLLUTION CONTROL
PROGRAM IS CONDITIONALLY APPROVED**

11 STATES ARE SEEKING FULL APPROVAL



TPWD

- Reviews § 404/401 permits, wetland certifications
- Enhance, conserve, create wetlands
- Enforces boat sewage rules
- Technical/financial assistance

TXDOT

- Manage & implement NPS controls for construction & maintenance of state roads, highways, bridges
- Technical assistance

RRC

- Lead agency for § 401 water quality certifications for oil/gas exploration

Texas Coastal NPS Program

- **Issues coordination**
- **Tracking & reporting**
- **Data review & coordination**

TSSWCB

- Manages agricultural NPS
- Develops, certifies, WQMPs
- WAP, TMDL, WPP development
- Technical/financial assistance

GLO

- Leads the CMP
- Administers Coastal NPS Program
- Manages beach/dune systems
- TMDL review for § 6217g
- Technical/financial assistance

TCEQ

- Manages urban & other non-agricultural NPS
- WAP, TMDL, WPP development
- Enforcement
- Technical/financial assistance

Types of program goals:

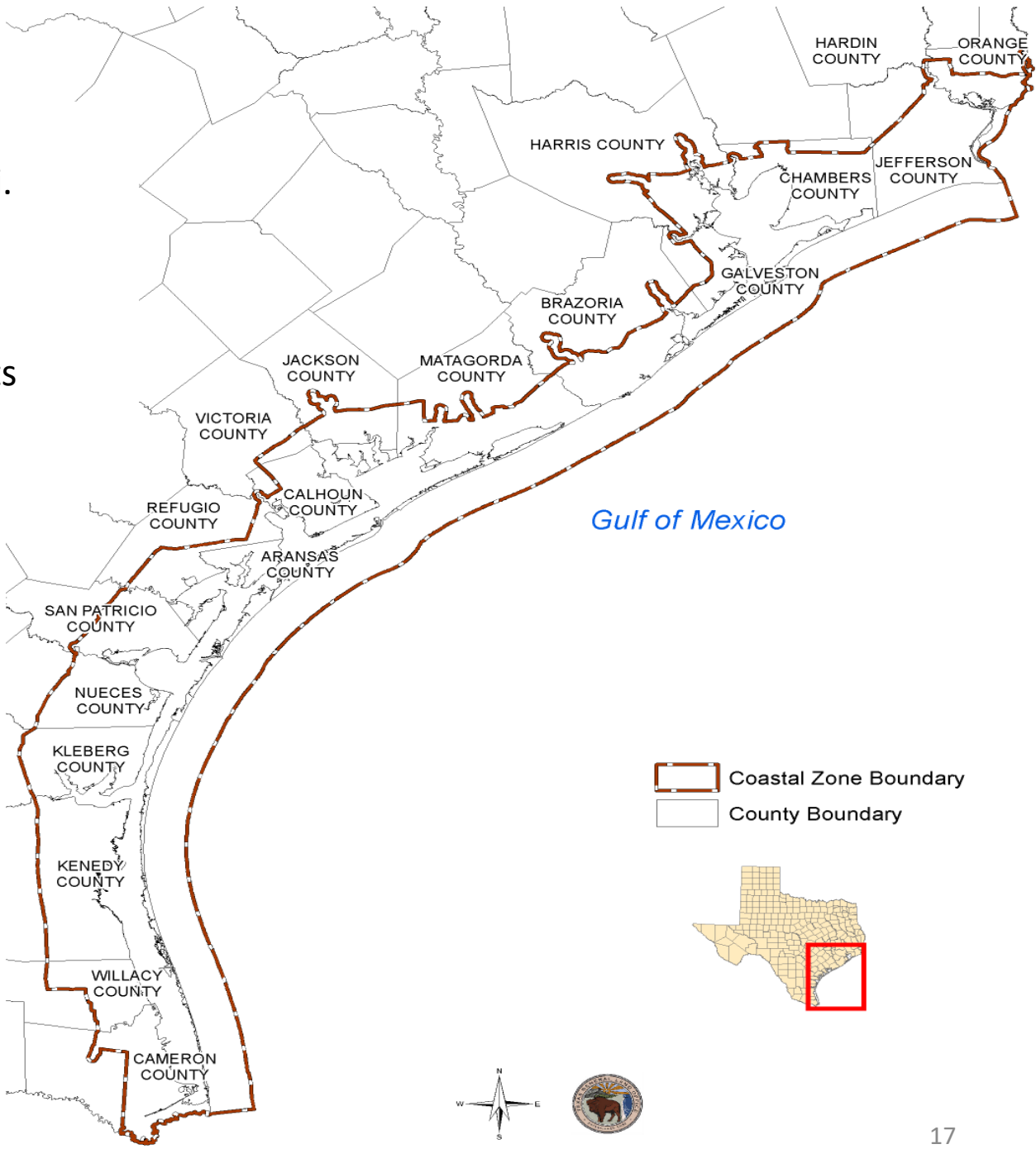
- Maintain pre-development total suspended solids levels
- Maintain pre-development runoff volume/rate
- Nutrients Controls
- Limit impervious areas
- Retrofits for priority pollutant reductions

Types of program goals:

- Maintain pre-development total suspended solids levels
- Maintain pre-development runoff volume/rate
- Nutrients Controls
- Limit impervious areas
- Retrofits for priority pollutant reductions
- Avoid conversion of areas susceptible to erosion
- Preserve areas for water quality benefits
- Limit disturbance of natural drainage features
- Inspect > 63,000 septics

Coastal Zone Boundary (CZB):
8,849,192 acres or 13,827 sq. mi.

The CZB encompasses all or parts
of 18 coastal counties located
between Louisiana and Mexico.



CZB is larger than Maryland

Major rivers

- 12

Named bayous, creeks, rivers, arroyos, bays, and estuaries

- 152

Miles of rivers/streams

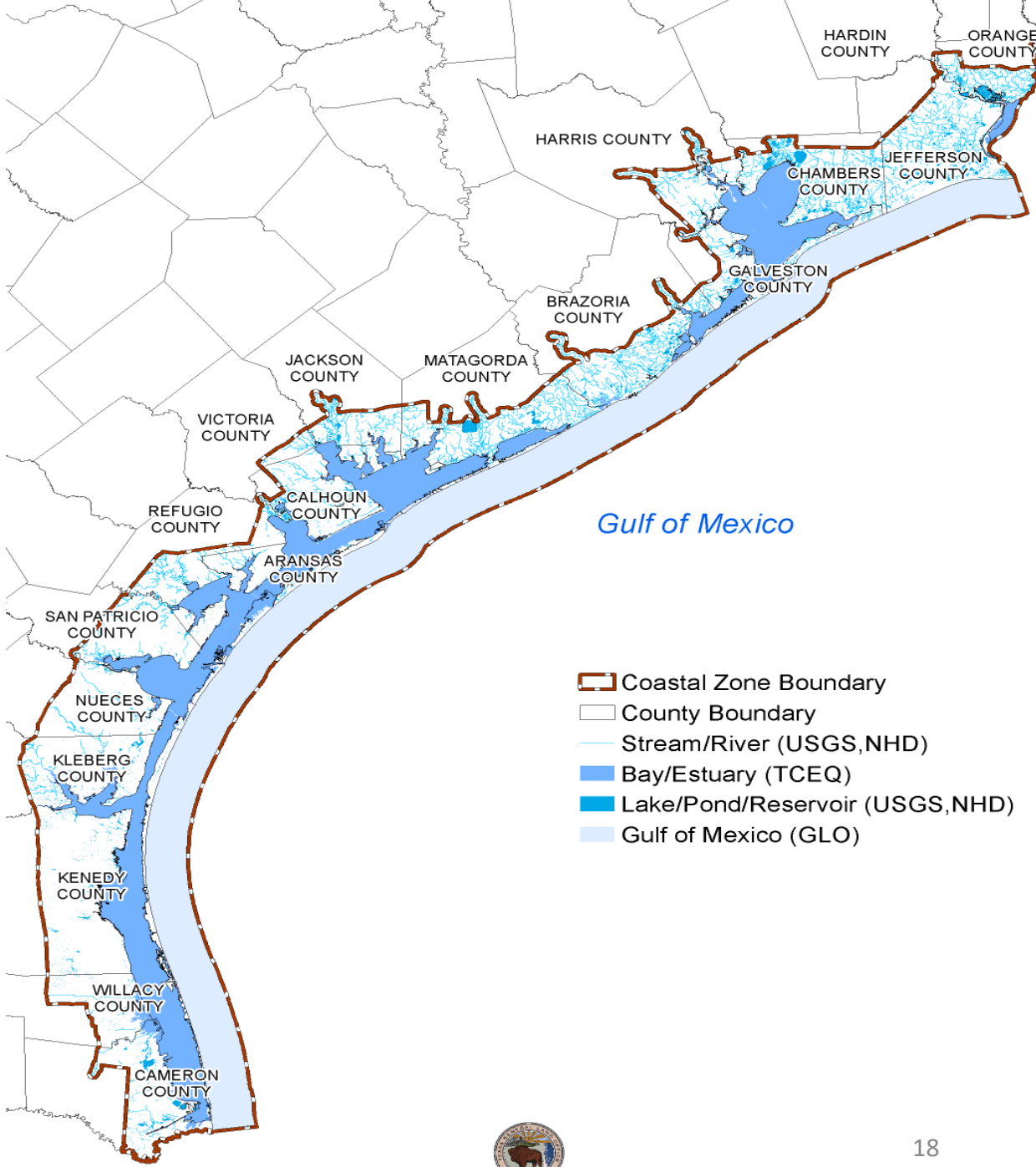
- 4770

Lakes and reservoirs

- 187,103 acres

Water quality monitoring sites:

- 271 bayous, creeks, rivers, streams, arroyos, bays, and estuaries segments
- 164 beach sites



98 Segments Impaired:

Contact Recreation (bacteria/pathogens)

- 77 segments

Aquatic Life (depressed DO)

- 33 segments

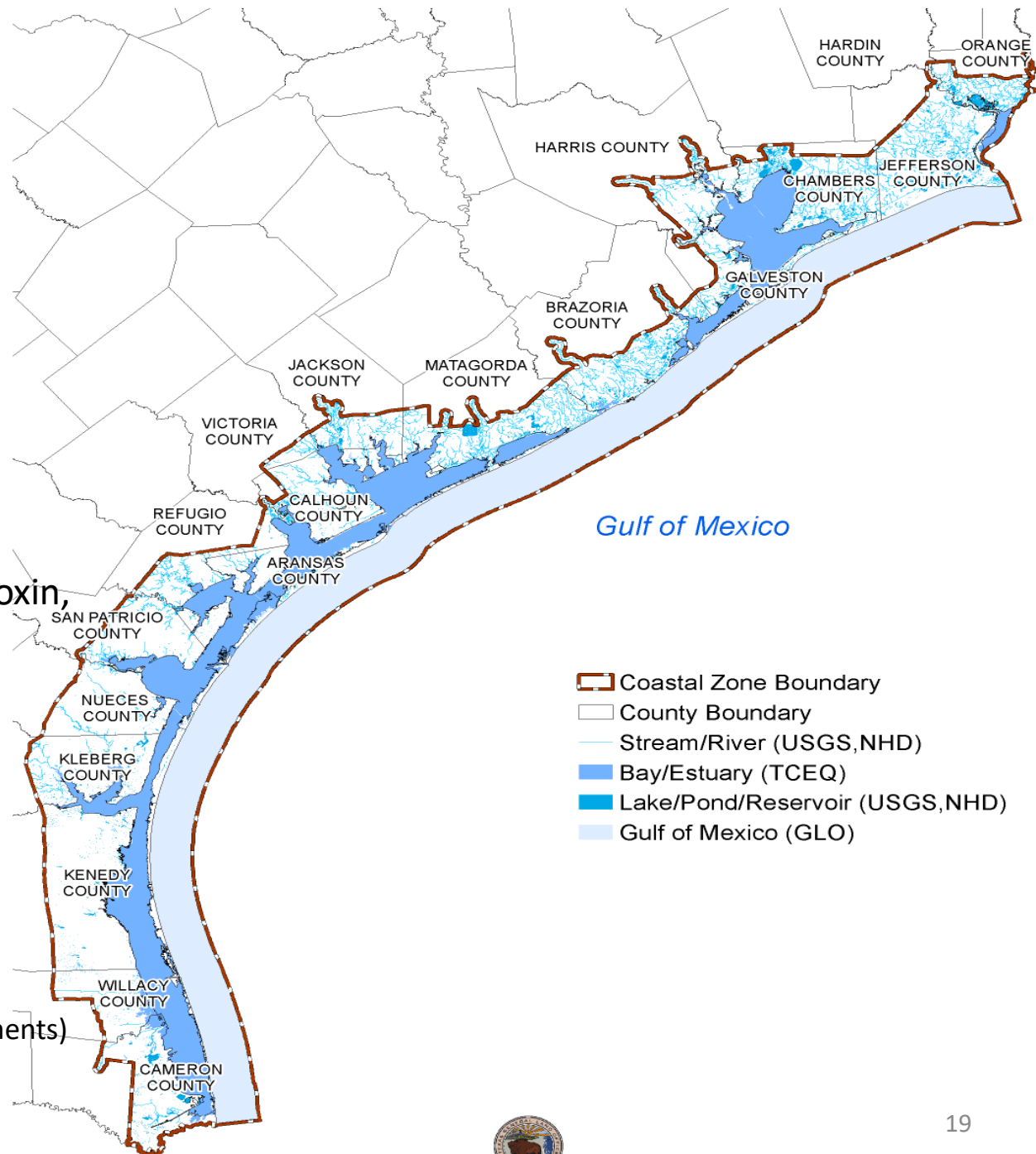
Fish Consumption (mercury, dioxin, DDE,PCBs in edible tissue)

- 34 segments

Oyster Waters (bacteria/pathogens)

- 12 segments

(Some segments have multiple impairments)



Protected Areas (Public)

- 835,776 acres

Protected Areas – Privately held conservation easements*

(not mapped)

- 460,471 acres

Open Beaches Act - Protected Beach Areas** (not mapped)

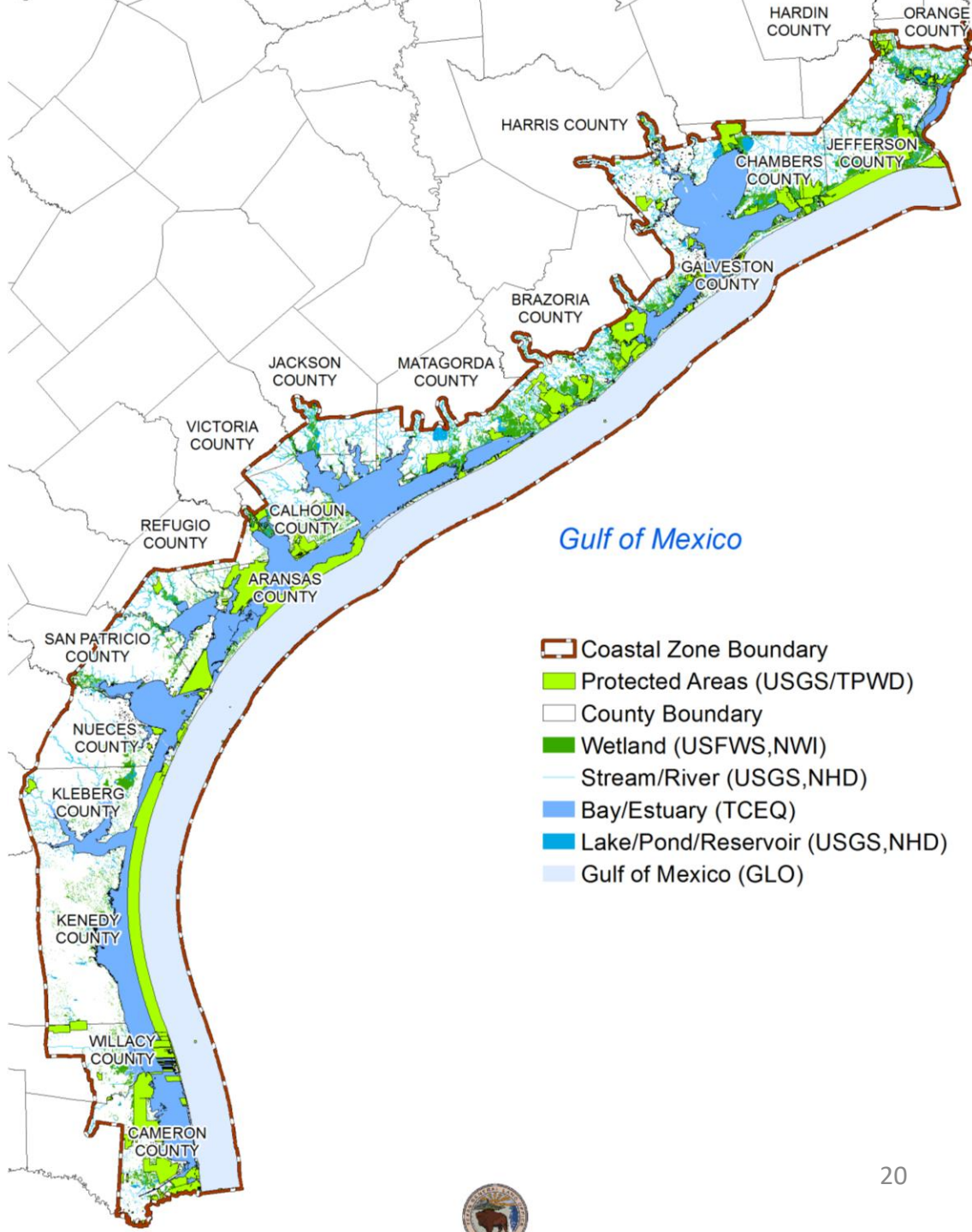
- 7,906 acres

Protected Seagrass Areas

- 452,740 acres

*Texas Farm and Ranch Program,
Texas Parks and Wildlife Department,
Texas Parks and Wildlife Foundation

**GLO



Management Area Summary

Parameter	Measure
Miles of coastline in the Management Area	367 miles
Total Management Area	8,849,192 acres
Water Features	4,299,425 acres
Total Land Area	4,549,767 acres
Existing Protected Areas	1,793,440 acres
Protected Area as a percent of the Total Land Area	39%
MS4 Municipality Incorporated Area	614,622 acres
Non-MS4 Municipality Incorporated Area	75,528 acres
Non-MS4 Municipality Area as percent of Total Land Area	1.7%

Texas Beach Use (Allegory)

Then...



"SURFSIDE BEACH, FREEPORT, TEXAS"



July 11, 1937 - Park at Nueces Bay Causeway

Texas Beach Use

Now



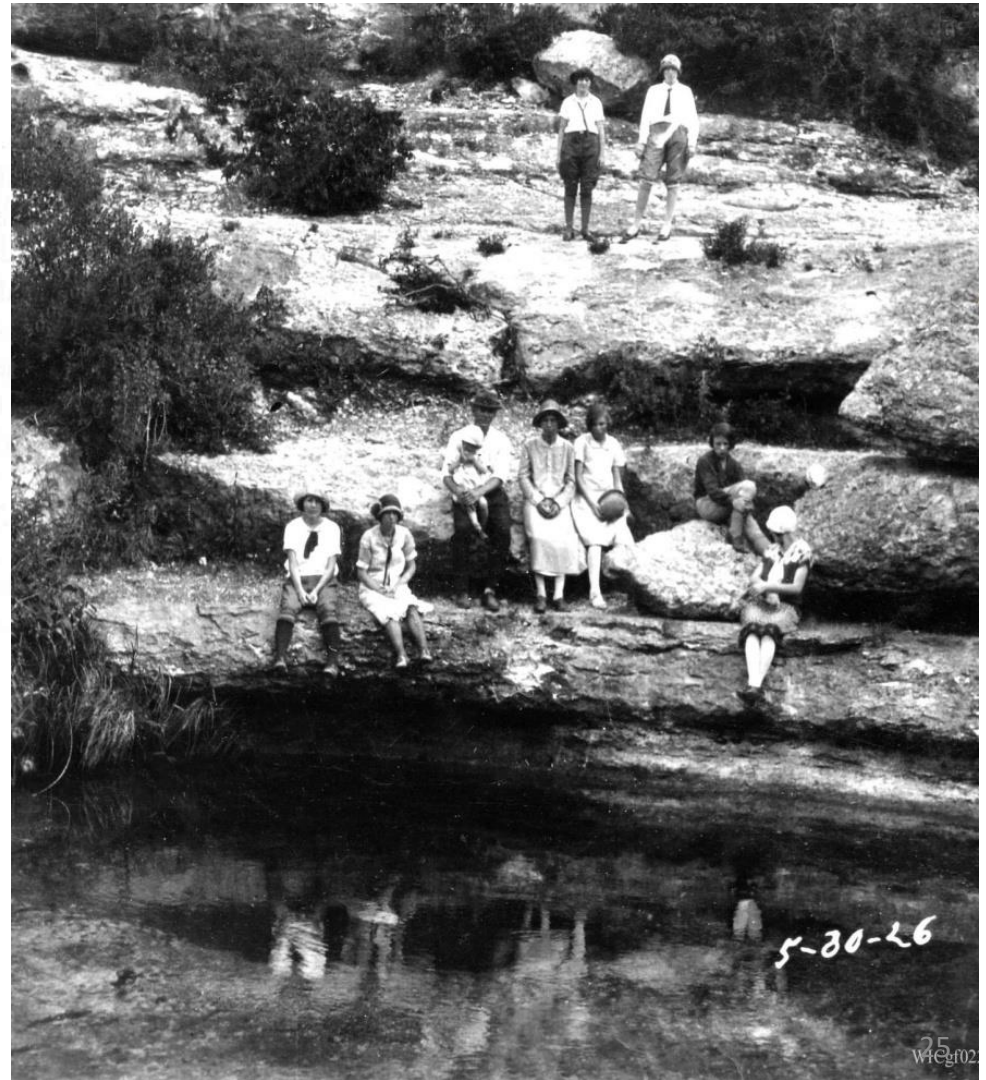
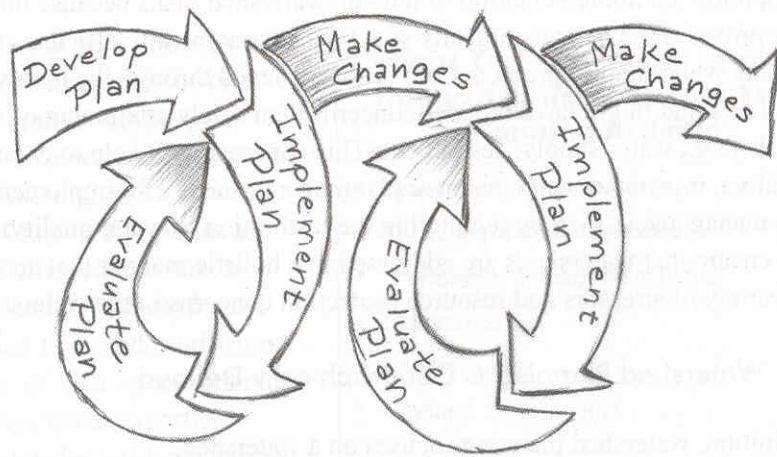
Nueces County
Port Aransas



Nationwide migration trends also occur in Texas

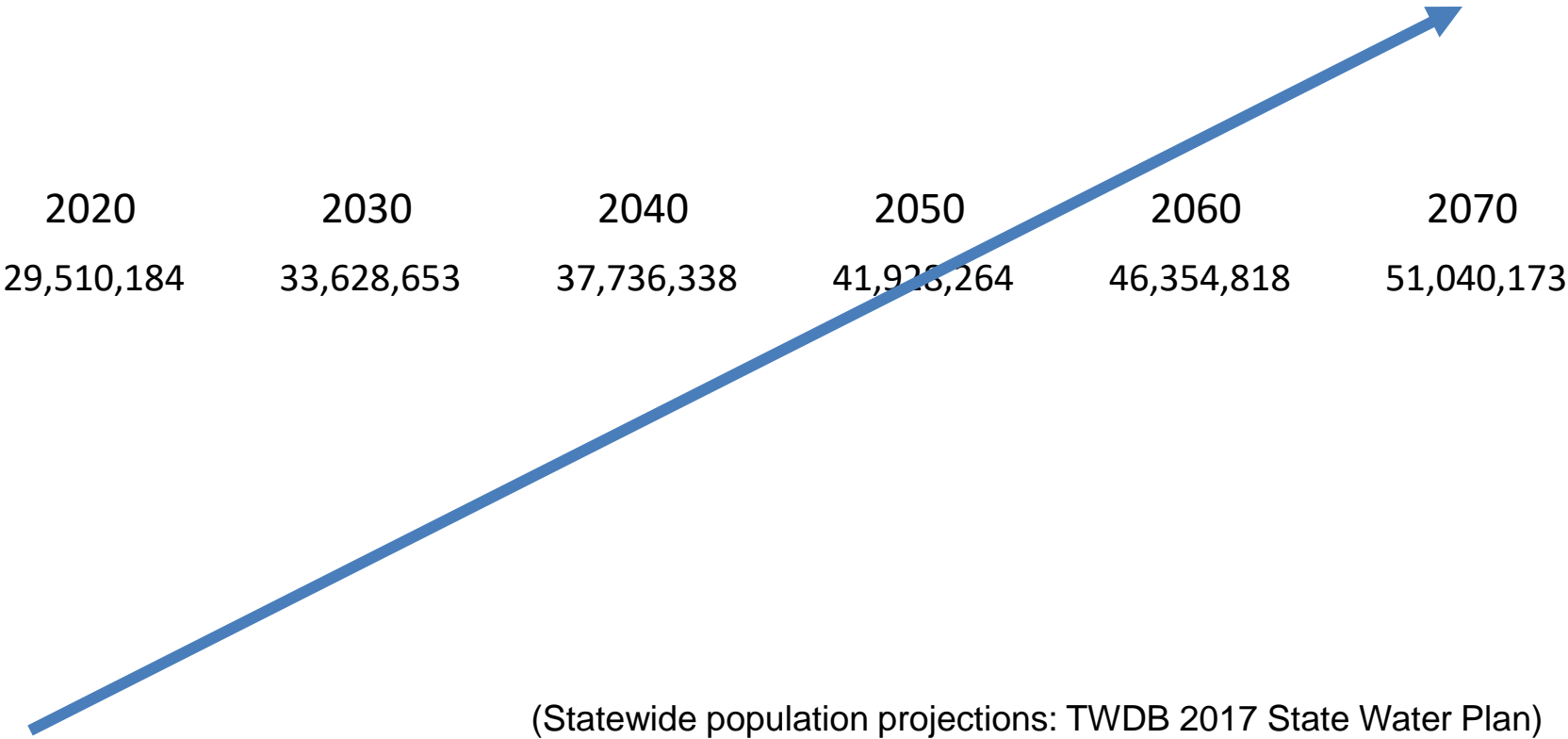
Urban migration of rural population – people are leaving rural areas in the Coastal Zone and moving to cities

Managing water resources and adapting to change...



Planning figure courtesy of U.S EPA *Handbook for Developing Watershed Plans to Restore and Protect Our Waters*.
Photo courtesy of Wimberley Valley Watershed Association.

A significant change agent that impacts water quality is POPULATION INCREASE and the resulting land use change.





Primary Management Area Land Use – grassland, scrub/shrub, pasture, cultivated crops, barren land (NLDC 2011)



Galveston Island, Texas





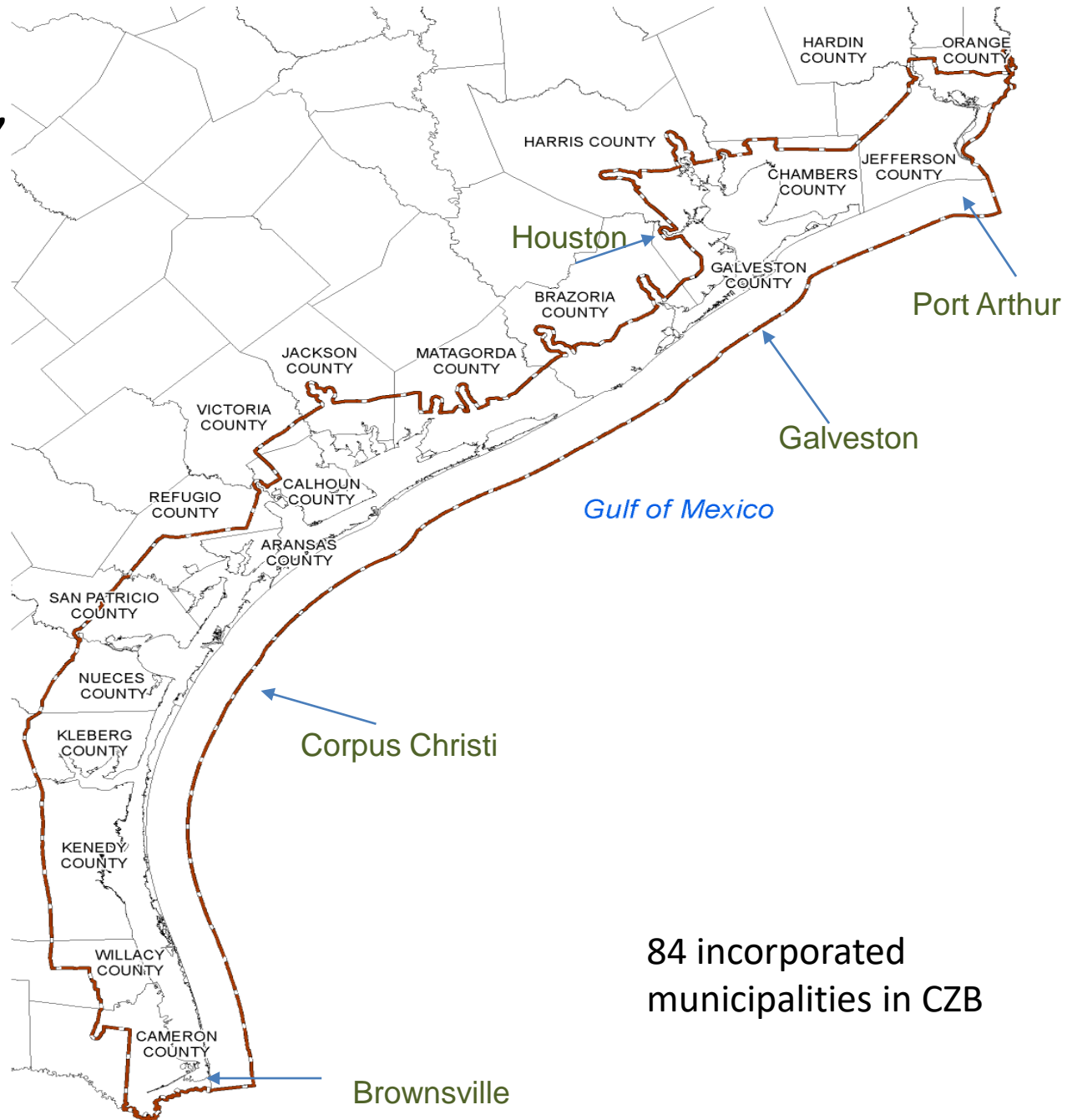
Padre Island National Seashore, Texas



Mar del Plata, Argentina

(<https://hdemiurge.wordpress.com>)

1,750,000 people, or 6% of Texas population, lives in the CZB



85% of people who live in the CZB reside in these **five cities**, which are **MS4s**

84 incorporated municipalities in CZB

(Non-MS4 Cities)

Population changes

1990 – 2010

(i.e. Growing)

...and Average housing

unit change/year

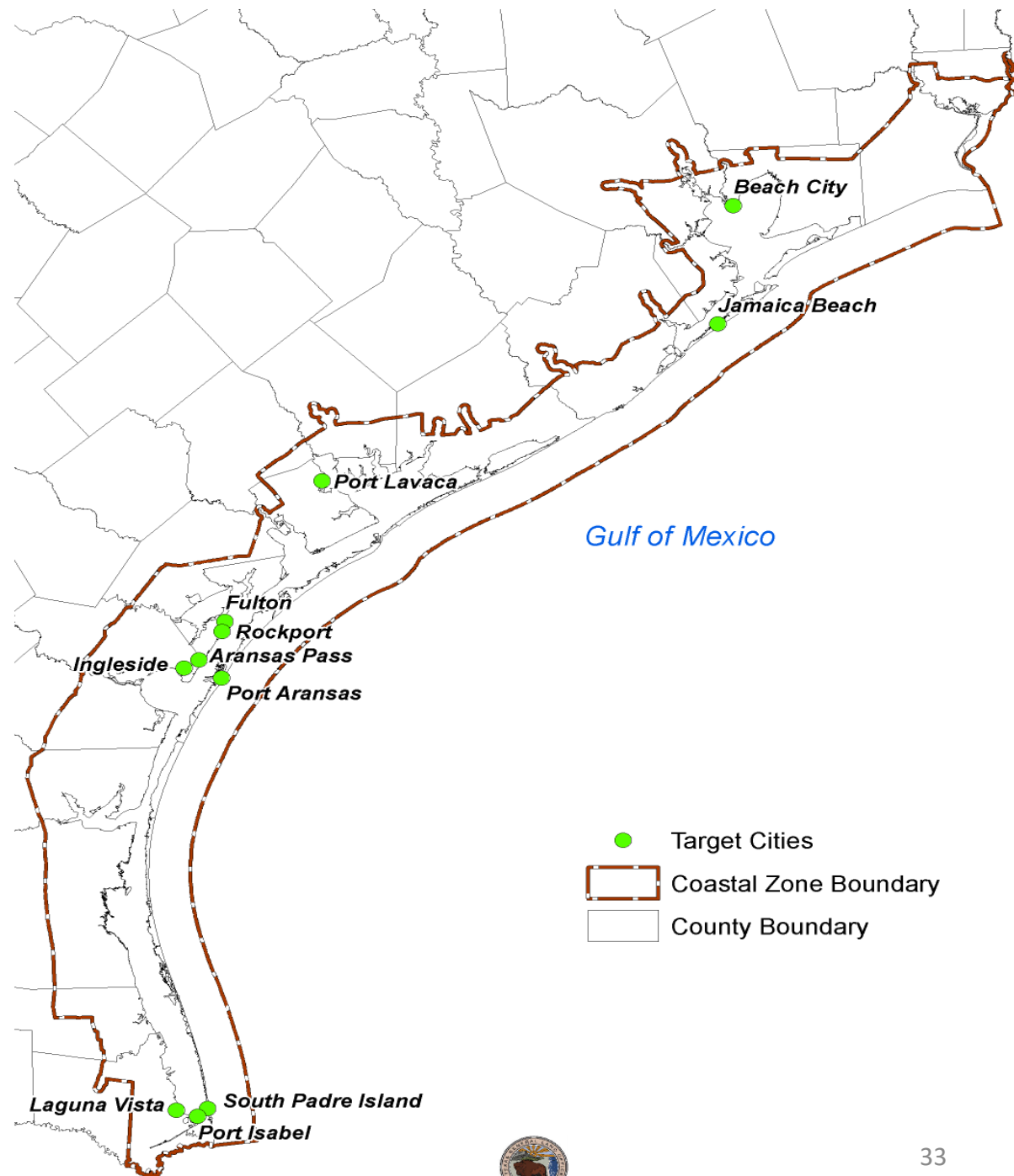
(i.e. > 15/yr)

Focus resources on

areas experiencing

“significant” land use

change.

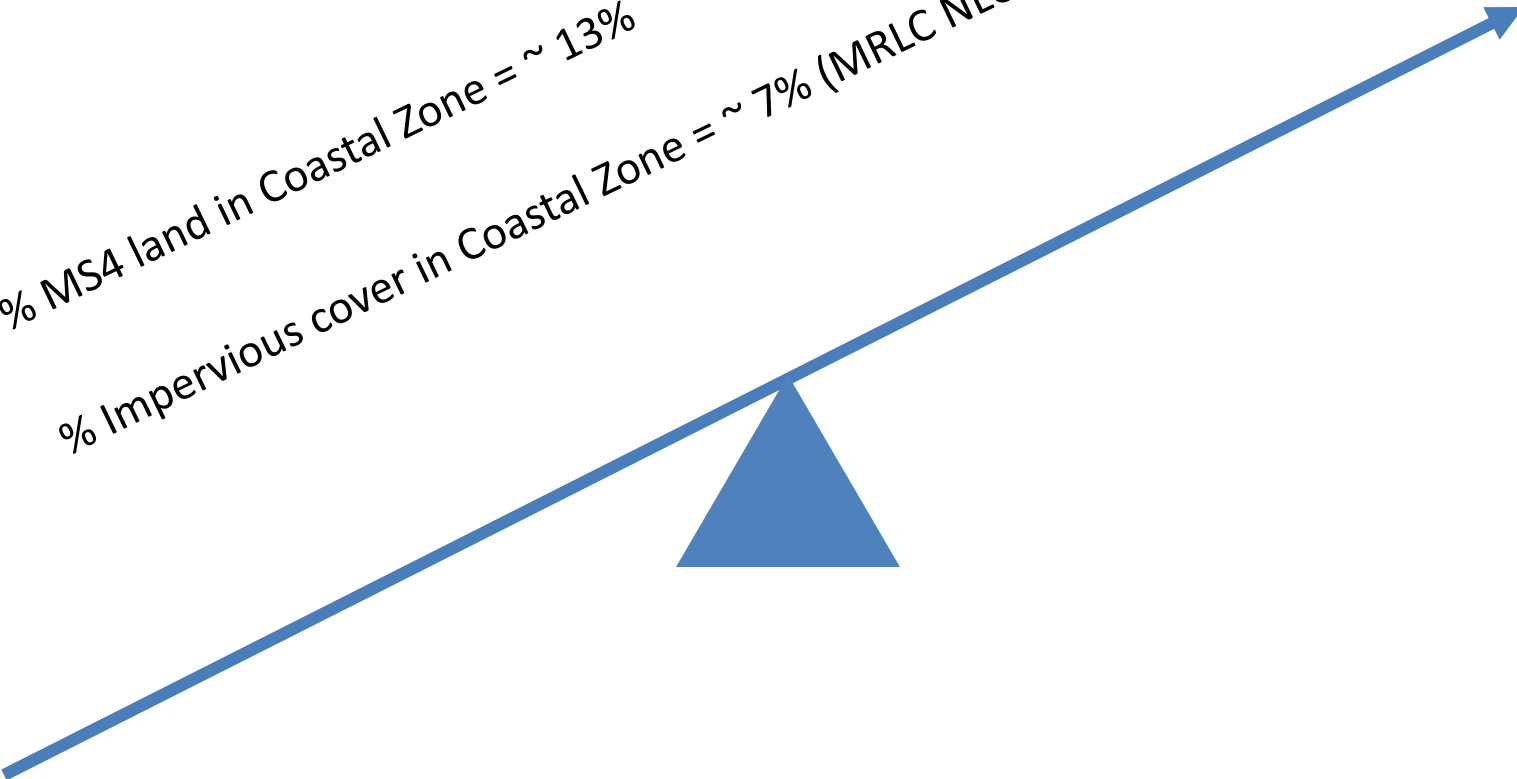


Impervious cover* for counties in the CZB



*USGS

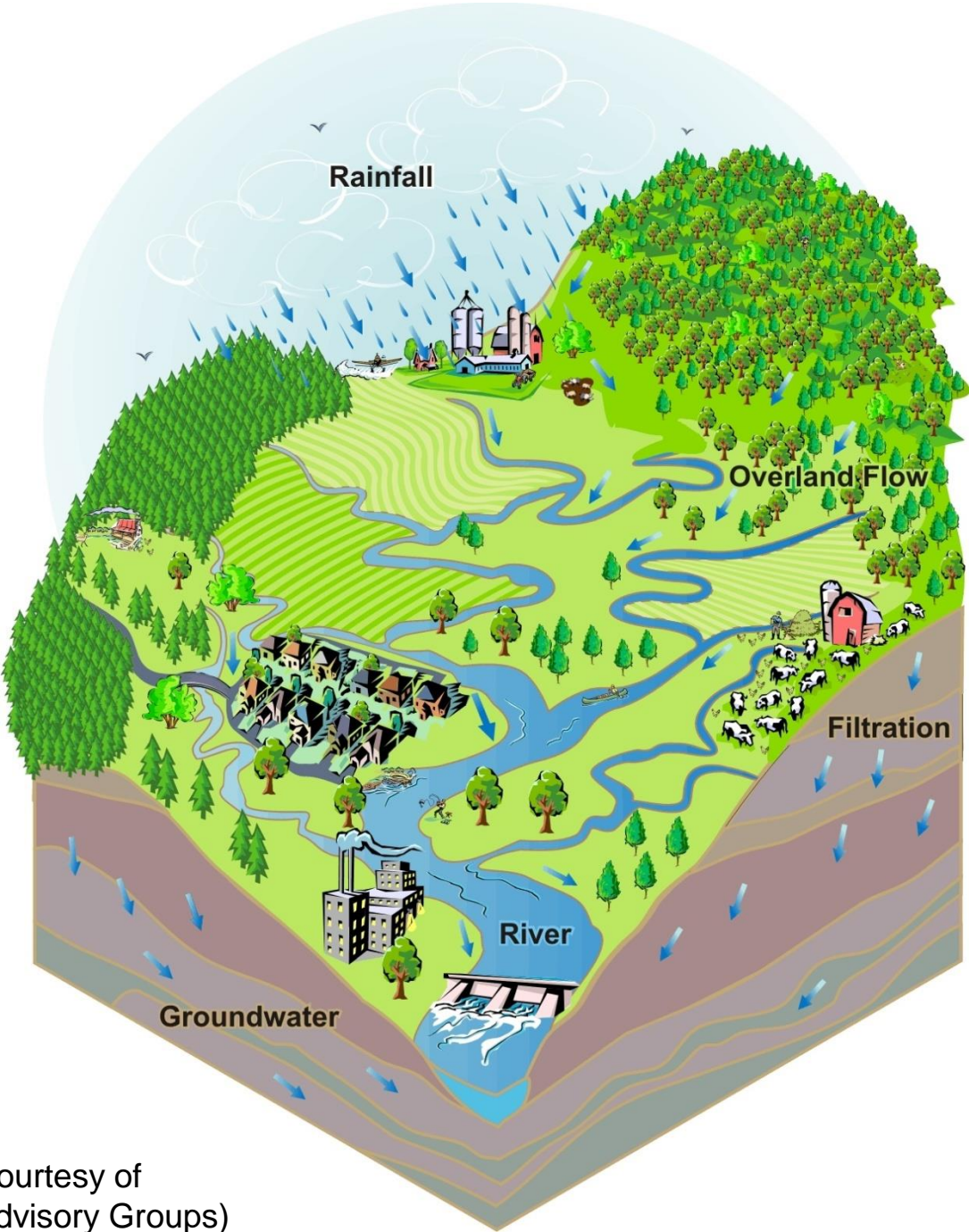




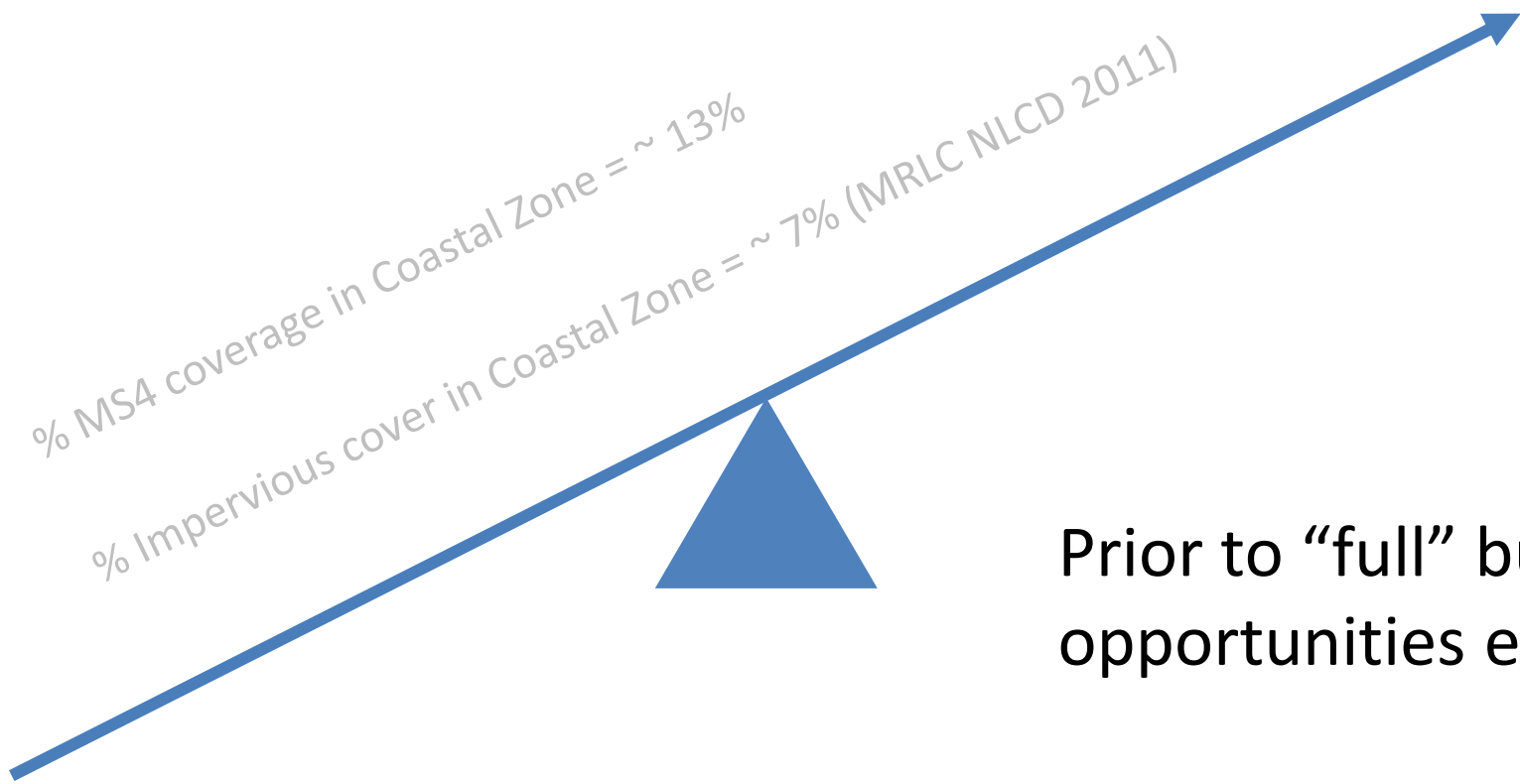
% MS4 land in Coastal Zone = ~ 13%

% Impervious cover in Coastal Zone = ~ 7% (MRLC NLCD 2011)

How to study watershed function...and “control” NPS pollution in the Coastal Zone?

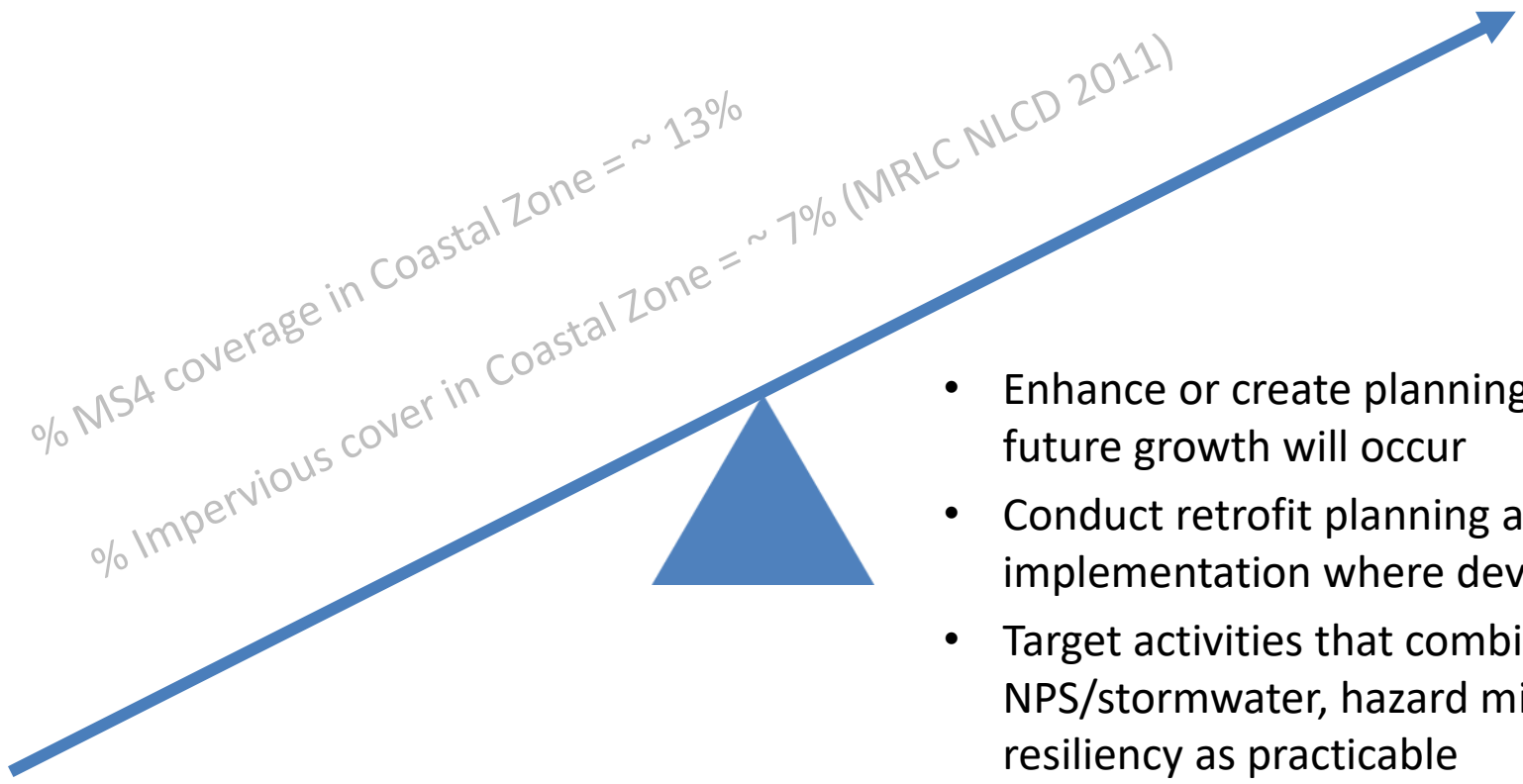


(Watershed Diagram Courtesy of Arkansas Watershed Advisory Groups)



Prior to “full” build out,
opportunities exist...

- Smart site design
- Wetland and stream buffers
- Sediment control
- Water quality and runoff standards & BMP guidance
- Impervious cover incentives/LID measures
- Road, bridge, and highway planning guidance



% MS4 coverage in Coastal Zone = ~ 13%

% Impervious cover in Coastal Zone = ~ 7% (MRLC NLCD 2011)

- Smart site design
- Wetland and stream buffers
- Sediment control
- Water quality and runoff standards & BMP guidance
- Impervious cover incentives/LID measures
- Road, bridge, and highway planning guidance

- Enhance or create planning activities where future growth will occur
- Conduct retrofit planning and implementation where development exists
- Target activities that combine NPS/stormwater, hazard mitigation, and resiliency as practicable
- Engage!

Proposed Program

Voluntary, incentive-based programs...

We won't tell people what to do, but we will provide technical resources, planning tools, support local decision-making, and improve coordination of State agencies in the Coastal Zone.

Proposed Program Overview

Coastal Stormwater Management Manual

Support Land Acquisition/Conservation Easements

Texas Coastal Resiliency Master Plan

Continuation of State programs

Engage!

Proposed Program

Outreach, Engagement and Technical Assistance Highlights

- Develop Texas coastal stormwater/NPS management manual
- Distribute the Manual to 48 MS4 and 40 non-MS4 communities
- Assist targeted non-MS4 communities with manual use
- Retrofit planning
- Distribute Coastal Dunes Protection Manual

Ch 1: Introduction to Water Quality in the Texas Coastal Zone

- 1.1 Stormwater Runoff Basics
- 1.2 Surface Water Quality in the Coastal Zone
- 1.3 Terminology
- 1.4 Benefits of Sustainable Drainage Design
 - 1.4.1 Environmental Benefits
 - 1.4.2 Land Value and Quality of Life Benefits
 - 1.4.3 Other Economic Benefits

Ch 2: Guidance for Sustainable Site Design

- 2.1 Introduction to Sustainable Site Design
- 2.2 Preservation of Natural Features
 - 2.2.1 Creek Buffer Zones
 - 2.2.2 Wetland Buffer Zones
 - 2.2.3 Depression Storage Preservation
- 2.3 Conservation Design
- 2.4 Reduction of Impervious Cover
 - 2.4.1 Streets
 - 2.4.2 Sidewalks
 - 2.4.3 Driveways & Setbacks
 - 2.4.4 Parking
- 2.5 Disconnection
 - 2.5.1 Downspout Disconnection
 - 2.5.2 Disconnecting Urban Elements
- 2.6 Construction Phase Erosion and Sediment Control Planning

Ch 3: Erosion and Sediment Control Best Practices

3.1 INTRODUCTION

3.2 EROSION CONTROL BMPS

- 3.2.1 Interceptor Swale
- 3.2.2 Diversion Dikes
- 3.2.3 Pipe Slope Drain
- 3.2.4 Channel Stabilization
- 3.2.5 Outlet Stabilization
- 3.2.6 Level Spreaders
- 3.2.7 Subsurface Drains
- 3.2.8 Vegetation
- 3.2.9 Irrigation
- 3.2.10 Cedar Mulch
- 3.2.11 Blankets and Matting
- 3.2.12 Organic Compost Mulch
- 3.2.13 Hydraulic Mulch
- 3.2.14 Sod
- 3.2.15 Dust Control

3.3 SEDIMENT CONTROL BMPS

- 3.3.1 General Guidelines
- 3.3.2 Temporary Construction Entrance/Exit
- 3.3.3 Silt Fence
- 3.3.4 Triangular Sediment Filter Dikes
- 3.3.5 Rock Berms
- 3.3.6 High Service Rock Berms
- 3.3.7 Brush Berms
- 3.3.8 Check Dams

- 3.3.9 Vegetative Buffers
- 3.3.10 Inlet Protection
- 3.3.11 Stone Outlet Sediment Trap
- 3.3.12 Sediment Basins
- 3.3.13 Fiber Rolls
- 3.3.14 Dewatering Operations
- 3.3.15 Spill Prevention and Control
- 3.3.16 Creek Crossings
- 3.3.17 Concrete Washout Areas

Ch 4: TSS and Runoff Management

- 4.1 Introduction
- 4.2 Pre-Development Planning
- 4.3 Water Quality Management Design
 - 4.3.1 Low Impact Development Practices and Design Approach
 - 4.3.2 Impervious Cover Incentives
 - 4.3.3 Stormwater Credits
 - 4.3.4 Water Quality BMP Sizing Criteria – TSS and Runoff Management
 - 4.3.5 Design Storm
- 4.4 Water Quality Education

Ch 5: Structural Practices for Sustainable Drainage Design

- 5.1 Minimum Requirements
- 5.2 Submittal Requirements
 - 5.2.1 General Design Guidelines
 - 5.2.2 Site Analysis and Narrative
 - 5.2.3 Site Layout and Drainage Design
 - 5.2.4 Drainage System Maintenance
- 5.3 Vegetated Swales
 - 5.3.1 Introduction
 - 5.3.2 Swale Design Guidelines
 - 5.3.3 Maintenance Requirements
- 5.4 Vegetated Filter Strips
 - 5.4.1 Introduction
 - 5.4.2 Filter Strip Design Guidance
 - 5.4.3 Maintenance Requirements
- 5.5 Porous Pavement
 - 5.5.1 Introduction
 - 5.5.2 Porous Pavement Design Guidelines
 - 5.5.3 Maintenance Requirements
- 5.6 Enhanced Detention
 - 5.6.1 Enhanced Detention Wetland
 - 5.6.2 Enhanced Detention Wet Ponds
 - 5.6.3 Recommended Maintenance
- 5.7 Bioretention
 - 5.7.1 Introduction
 - 5.7.2 Bioretention Design Guidance
 - 5.7.3 Recommended Maintenance
- 5.8 Infiltration Facilities
 - 5.8.1 Introduction
 - 5.8.2 Design and Sizing Guidelines
 - 5.8.3 Recommended Maintenance
- 5.9 Wet Basins

- 5.10 Rain Gardens
- 5.11 Rainwater Harvesting
- 5.12 Natural Area Preservation
- 5.13 Disconnection of Rooftop Runoff
- 5.14 Conservation Landscaping
- 5.15 Soil Amendment
- 5.16 Wet Vaults
- 5.17 Dealing with Multiple Measures
- 5.18 Treatment Train Design Approach

CH 5A: Flood Management Design

- 5A.1 Introduction
- 5A. 2 Design Methodology
- 5A. 3 Measures
- 5A. 4 Plan Review Process Guide

Ch 6: Roads/Highways/Bridges Guidance

- 6.1 Roadway planning and Protection of Natural Features
- 6.2 Bridge Planning
- 6.3 Sediment and Erosion Control
- 6.4 Pollution Prevention Measures
- 6.5 Vegetation Management
- 6.6 Retrofits

Ch 7: Permanent BMP Maintenance Guidance

- 7.1 Maintenance Plan
- 7.2 General Guidelines
- 7.3 Basin De-Watering
- 7.4 Sediment Disposal
- 7.5 General Maintenance Requirements
- 7.6 Maintenance Permit and Inspection Program

Ch 8: Incorporating Structural Practices into Development _ RETROFITS

- 8.1 Projects with Detention Requirements
- 8.2 Single Family Residential
 - 8.2.1 Medium and High Density Residential
 - 8.2.2 Waterfront
- 8.3 Multi-family Developments
- 8.4 Commercial/Retail/Office
- 8.5 Downtown Redevelopment

Ch 9: Model Ordinances

- 9.1 Development Management
- 9.2 Creek and Wetland Buffers
- 9.3 Dune Protection (Dune Protection and Improvement Manual)
- 9.4 Shoreline Protection
- 9.5 Model Ordinance Adoption Toolkit

Ch 10: Example Project Designs

- 10.1 Conventional Approach
- 10.2 Low Impact Development Approach
- 10.3 Creek and Wetland Buffer Establishment

Proposed Program

Outreach, Engagement and Technical Assistance Highlights

- Promote TxDOT training for roads/highways planning, construction
- Website and technical resources will be developed
- Host technical and funding workshops
- Continue land acquisition and conservation easement actions
- Workshops, based on manual, will be developed and delivered to target audiences

Proposed Program

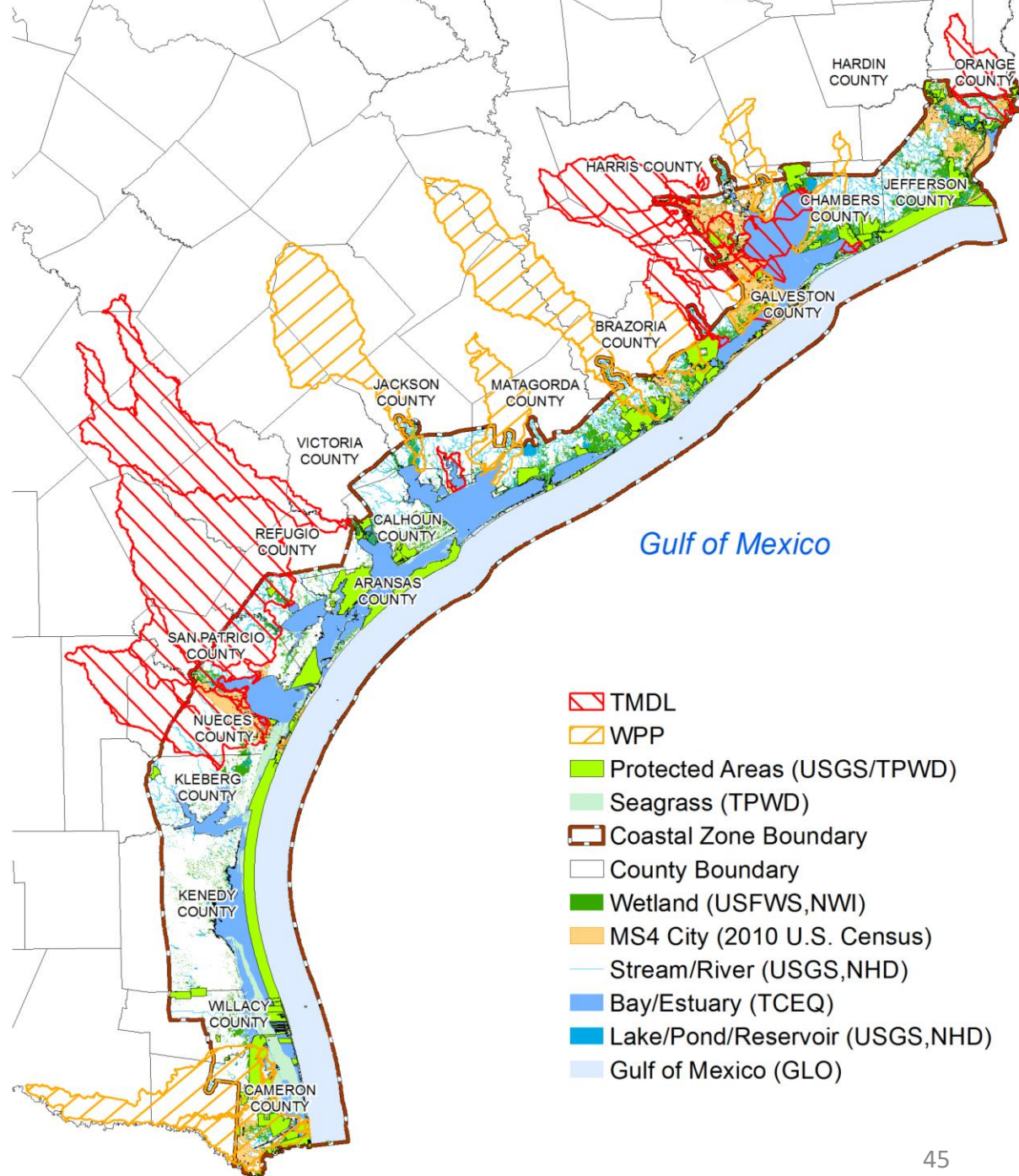
Extension of Existing State Programs

- Clean Water Act 319
- Texas Coastal Management Program
- Coastal Erosion Planning and Response Act
- Adopt-A-Beach Program
- Beach Access and Dune Protection Program
- Gulf of Mexico Energy Security Act
- Texas Farm and Ranch Program
- Coastal Resiliency Master Plan

TCEQ and TSSWCB Watershed Protection Plans and TMDL

Encompass 1,534,000 Acres
in the CZB

Encompass 4,803,327 acres
that drain into the CZB



In Summary

- 2019 Coastal NPS Program deadline (*carrots & sticks*)
- 1.8 M acres set aside to preserve habitat and protect water quality
~39% total area in Coastal Zone...continue acquisitions
- 1.5 M acres in the CZB in a WPP or TMDL
- Beyond the CZB, 4.8 M acres in a WPP or TMDL to improve water quality on the coast
- Coastal Stormwater Management Manual
- Engagement, Technical Assistance, Funding
- Numerous state programs coordinating
- Track, learn, adapt, refine



Questions or comments?



I ❤️
clean
coastal
waters...



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