

FRESHWATER INFLOWS 2010 AND BEYOND

FRESHWATER INFLOW
MANAGEMENT ISSUES
IN TEXAS: WHAT'S BEING DONE?

MYRON HESS
NATIONAL WILDLIFE FEDERATION

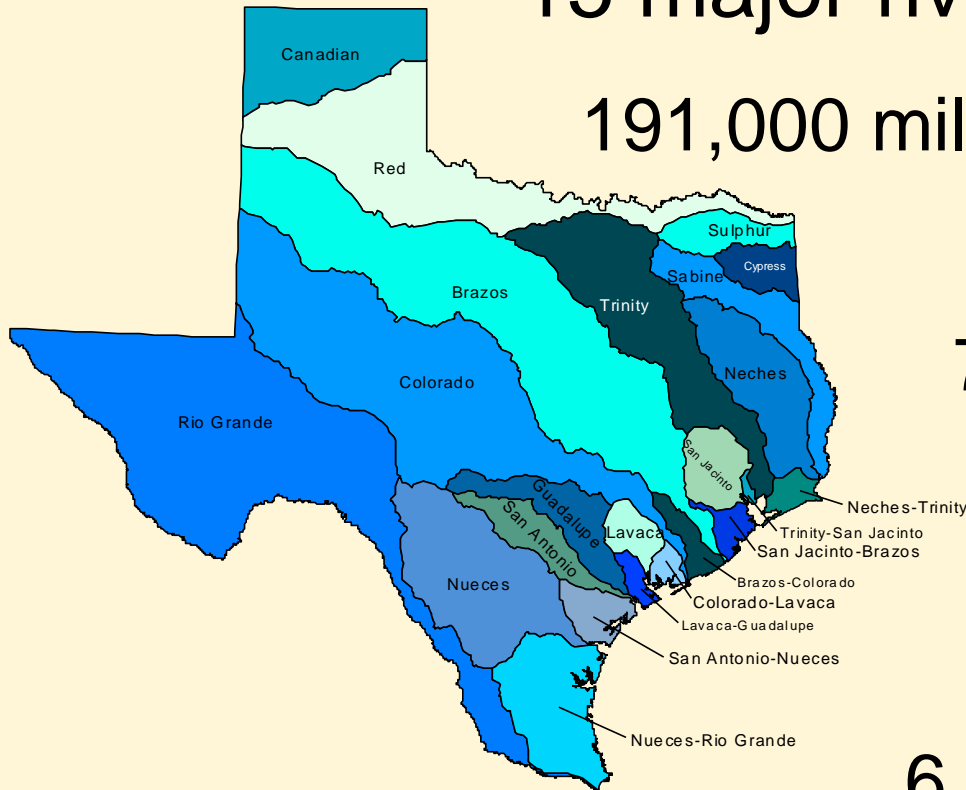
Photo courtesy Michael A. Murphy/TxDOT

FRESHWATER INFLOWS 2010 AND BEYOND

Texas Surface Water Resources

15 major river basins

191,000 miles of rivers and streams

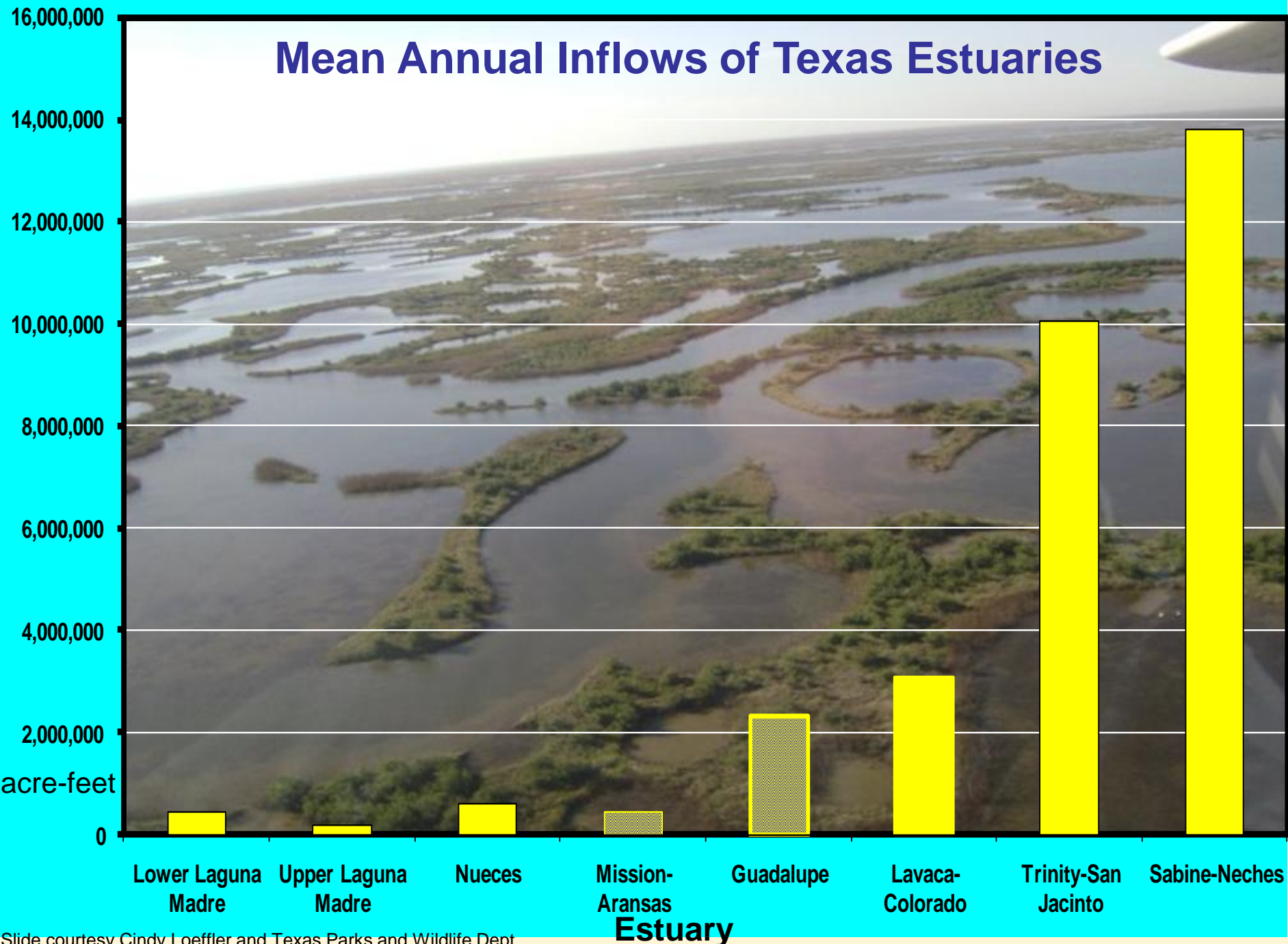


7 major estuaries

~ 200 springs

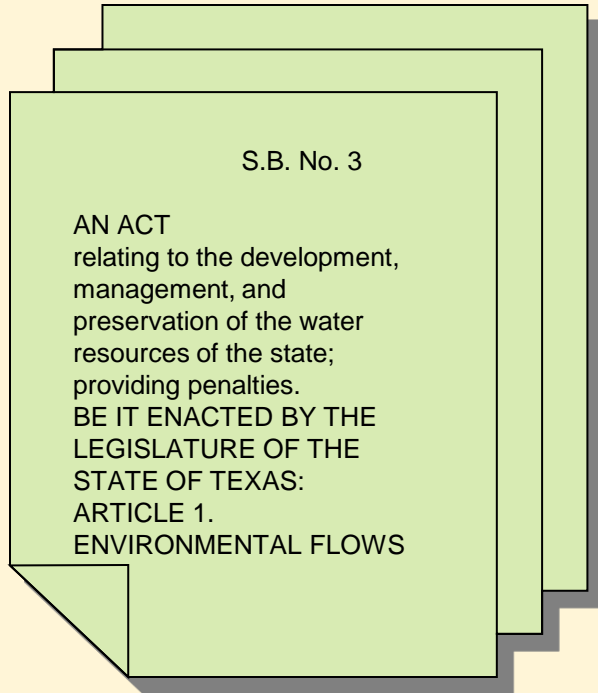
6 million acres of
bottomland hardwoods
and forested wetlands

Mean Annual Inflows of Texas Estuaries



Slide courtesy Cindy Loeffler and Texas Parks and Wildlife Dept.

SENATE BILL 3



CREATES PROCESS TO HELP
ANSWER KEY QUESTIONS:

HOW MUCH FLOW DO WE NEED?

WHERE SHOULD THAT WATER
COME FROM?

WHAT DO WE DO IF WE ARE WRONG
ABOUT HOW MUCH IS NEEDED?

Expert Science Team Charge

“basin and bay expert science team shall develop environmental flow analyses and a recommended environmental flow regime for the river and bay system ... through a collaborative process designed to achieve consensus”

“must consider all reasonably available science, without regard to the need for the water for other uses, and ... the recommendations must be based solely on the best science available.”

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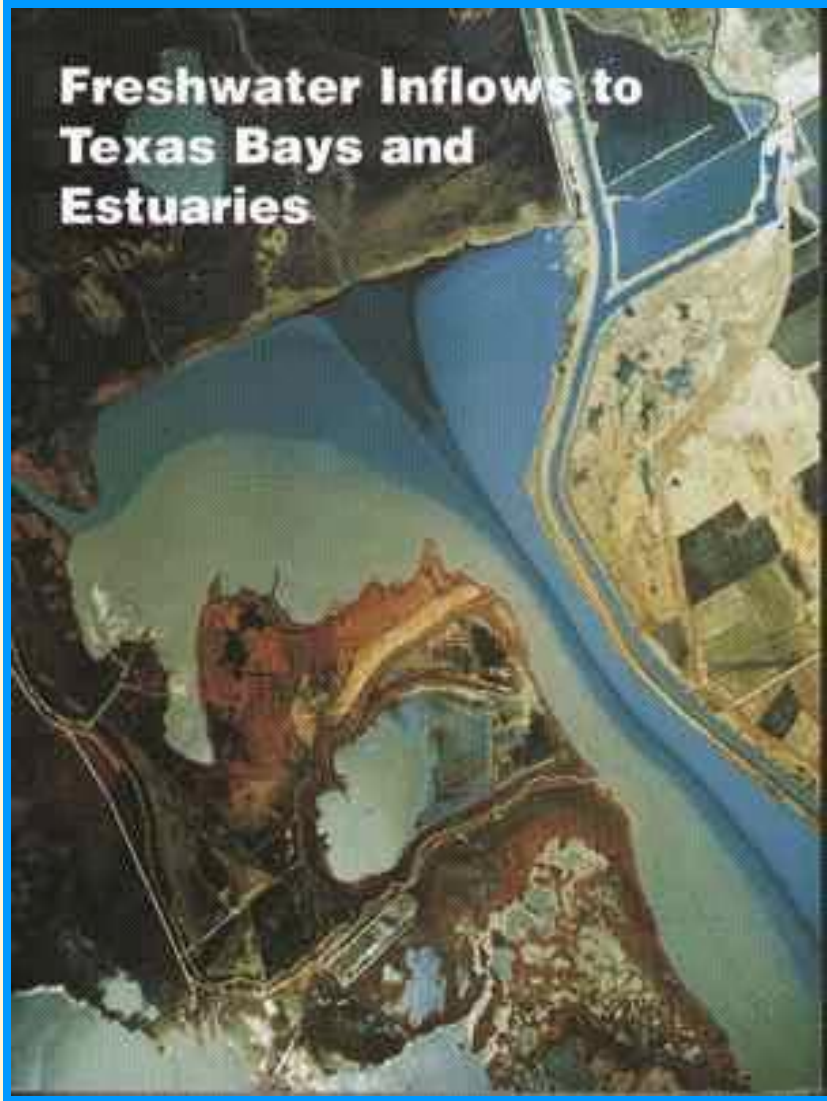
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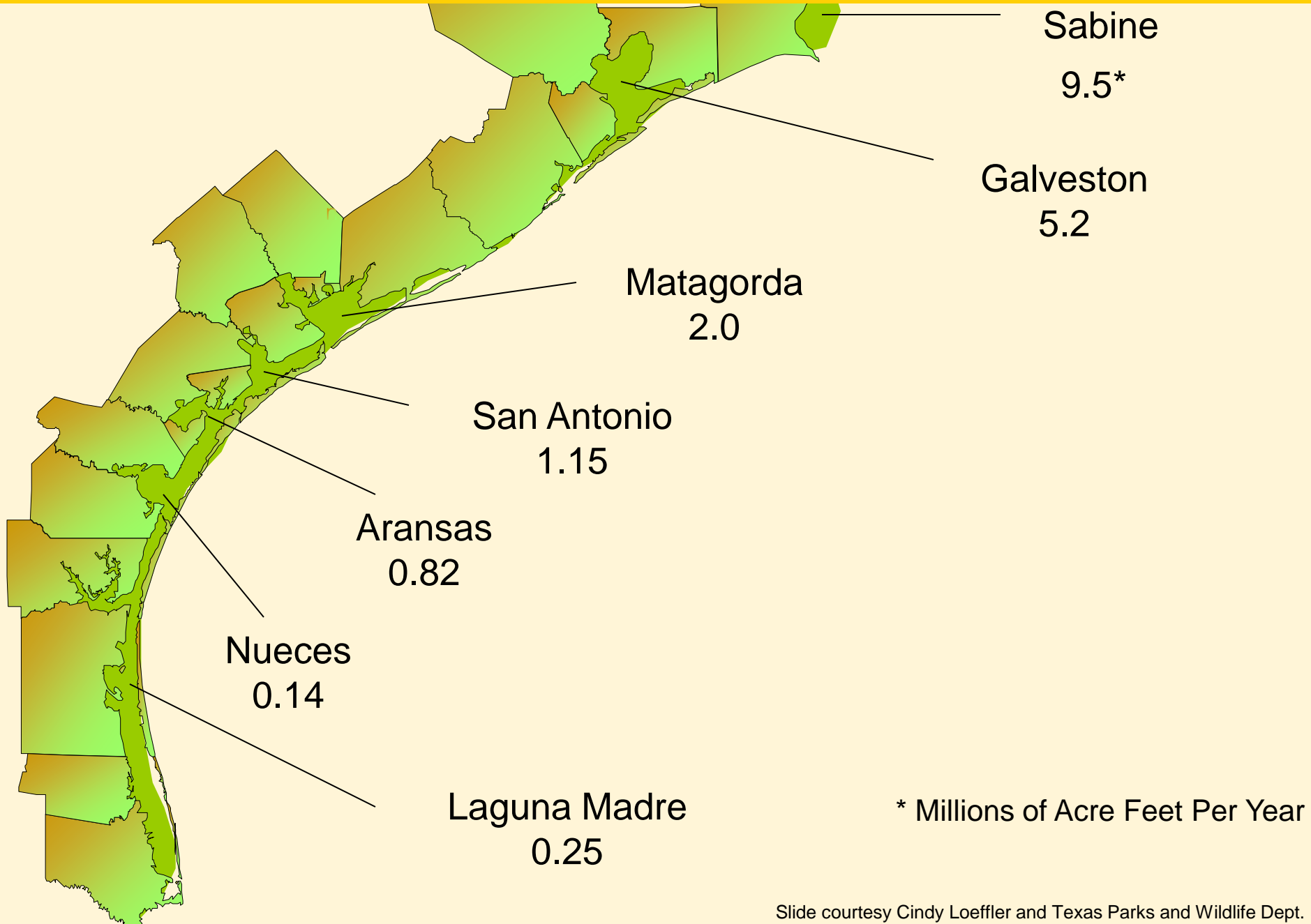
FRESHWATER INFLOWS 2010 AND BEYOND



Best Science Available:

Legislatively mandated studies to determine “beneficial inflows” necessary to conserve health and productivity of Texas major estuaries have been completed. Some are being updated.

FRESHWATER INFLOWS 2010 AND BEYOND



* Millions of Acre Feet Per Year

FRESHWATER INFLOWS 2010 AND BEYOND

Final Draft Report

Matagorda Bay Inflow Criteria (Colorado River)

Matagorda Bay Health Evaluation

Lower Colorado
and San Antonio



LC
Wa

Final Report

Matagorda Bay Health Evaluation

Habitat Assessment

Prepared for
Lower Colorado River Authority
and San Antonio Water System



Final Report

Matagorda Bay Health Evaluation

Hydrodynamic/Salinity Modeling

Prepared for
Lower Colorado River Authority
and San Antonio Water System

December 2006



Stakeholder Charge

shall review environmental flow analyses and flow regime recommendations and **consider them with other factors, including the present and future needs for water for other uses** ...

committee shall develop recommendations regarding environmental flow standards and strategies to meet the environmental flow standards

in developing its recommendations, ...committee shall operate on a consensus basis to the maximum extent possible

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Texas Water Code § 11.02362 (o)

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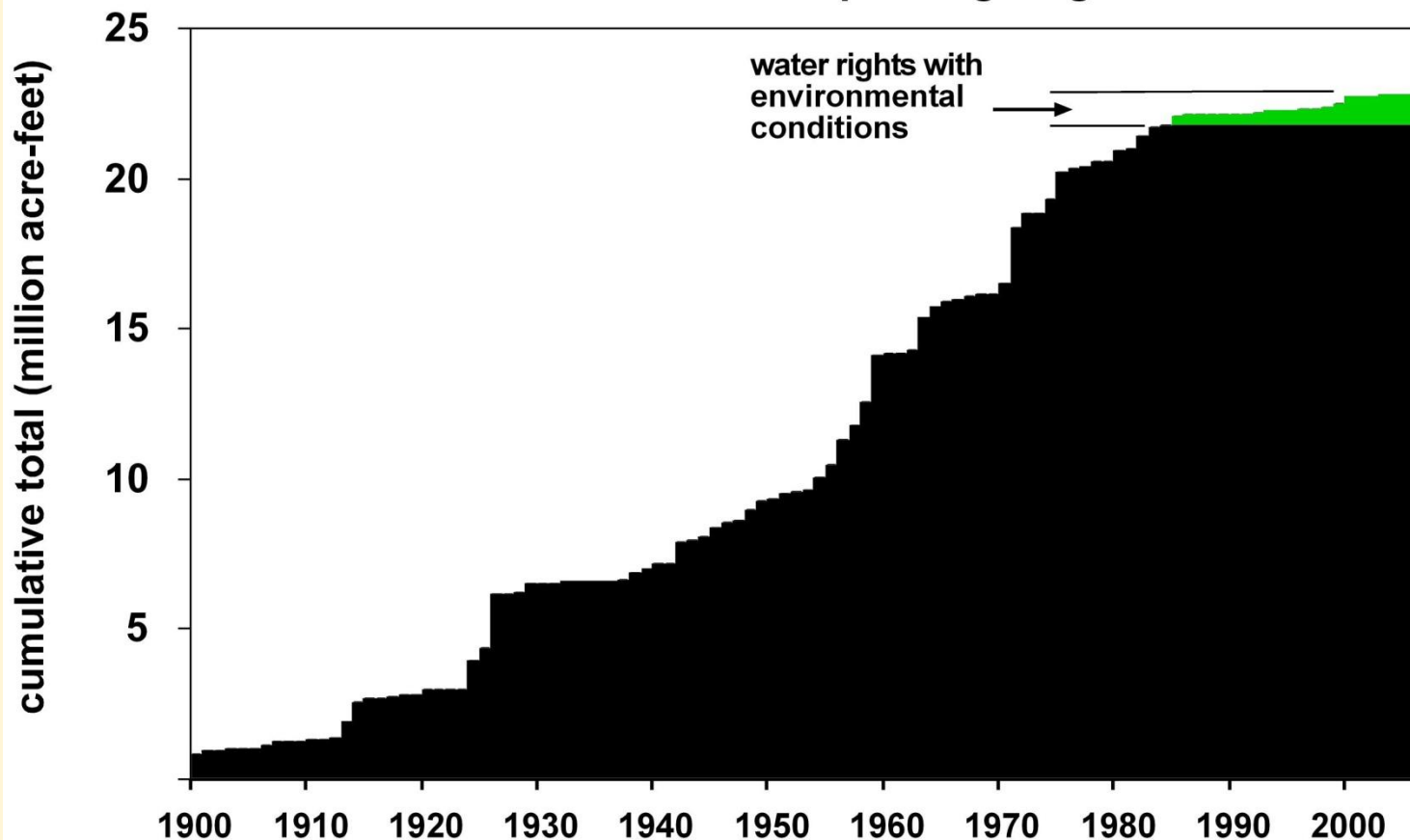
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- **STRATEGY OPTION EXAMPLES:**
 - ENVIRONMENTAL FLOW SET-ASIDE
 - DEDICATION OF RETURN FLOWS
 - VOLUNTARY CONVERSION OF EXISTING WATER RIGHTS
 - FUNDING FOR CONSERVATION WITH SAVINGS DEDICATED TO ENVIRONMENTAL FLOWS

FRESHWATER INFLOWS 2010 AND BEYOND

Texas Water Rights - Timeline of all consumptive rights granted



Source: data from Texas Commission on Environmental Quality.



DEVELOPMENT OF WORK PLAN

stakeholders committee, with the assistance of the pertinent basin and bay expert science team, shall prepare and submit ... a work plan:

periodic review of flow analyses and flow regime recommendations, flow standards and strategies ... at least once every 10 years

specific monitoring, studies, and activities

schedule for continuing validation or refinement of flow analyses, regime recommendations, adopted flow standards, and strategies

Environmental Flows Allocation Process Schedule

JULY 2008, STAKEHOLDER GROUPS APPOINTED

JUNE, 2011, TCEQ ADOPTS FLOW STANDARD AND ENVIRONMENTAL FLOW SET-ASIDE

JUNE 2010, STAKEHOLDER FLOW STANDARD RECOMMENDATION AND STRATEGIES (1ST SET)

2008

2009

2010

2011

WORK PLAN BEGUN

DEC. 2009, SCIENCE-BASED FLOW REGIME (1ST SET)

DEC. 2008, 1ST SET OF EXPERT SCIENCE TEAMS APPOINTED

MARCH 2011, 2ND SET OF SCIENCE -BASED FLOW REGIMES (*LIKELY*)

FRESHWATER INFLOWS 2010 AND BEYOND

PROGRESS TO DATE:

GALVESTON BAY

SCIENCE TEAM:

SPLIT DECISION

SABINE LAKE SCIENCE TEAM:

INSTREAM FLOW FOCUS

MATAGORDA BAY,

SAN ANTONIO BAY &

MISSION BAY, and

CORPUS CHRISTI BAY:

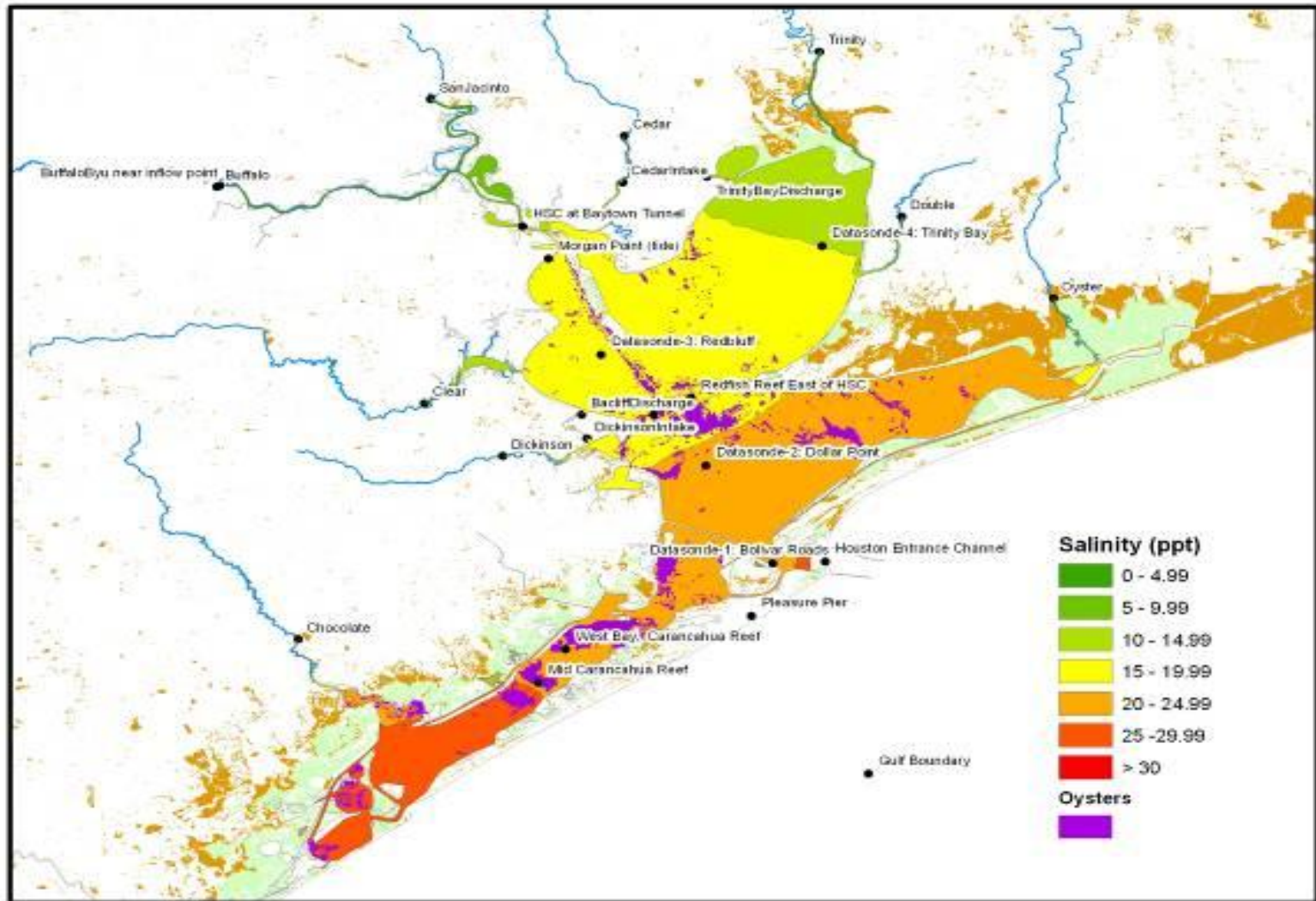
JUST STARTING



http://www.tceq.state.tx.us/permitting/water_supply/water_rights/eflows

FRESHWATER INFLOWS 2010

TXBlend Model of 5 psu salinity zones in Galveston Bay for the flow pattern of May 2000. (50th percentile of flows for the period of record used by TXBlend.)



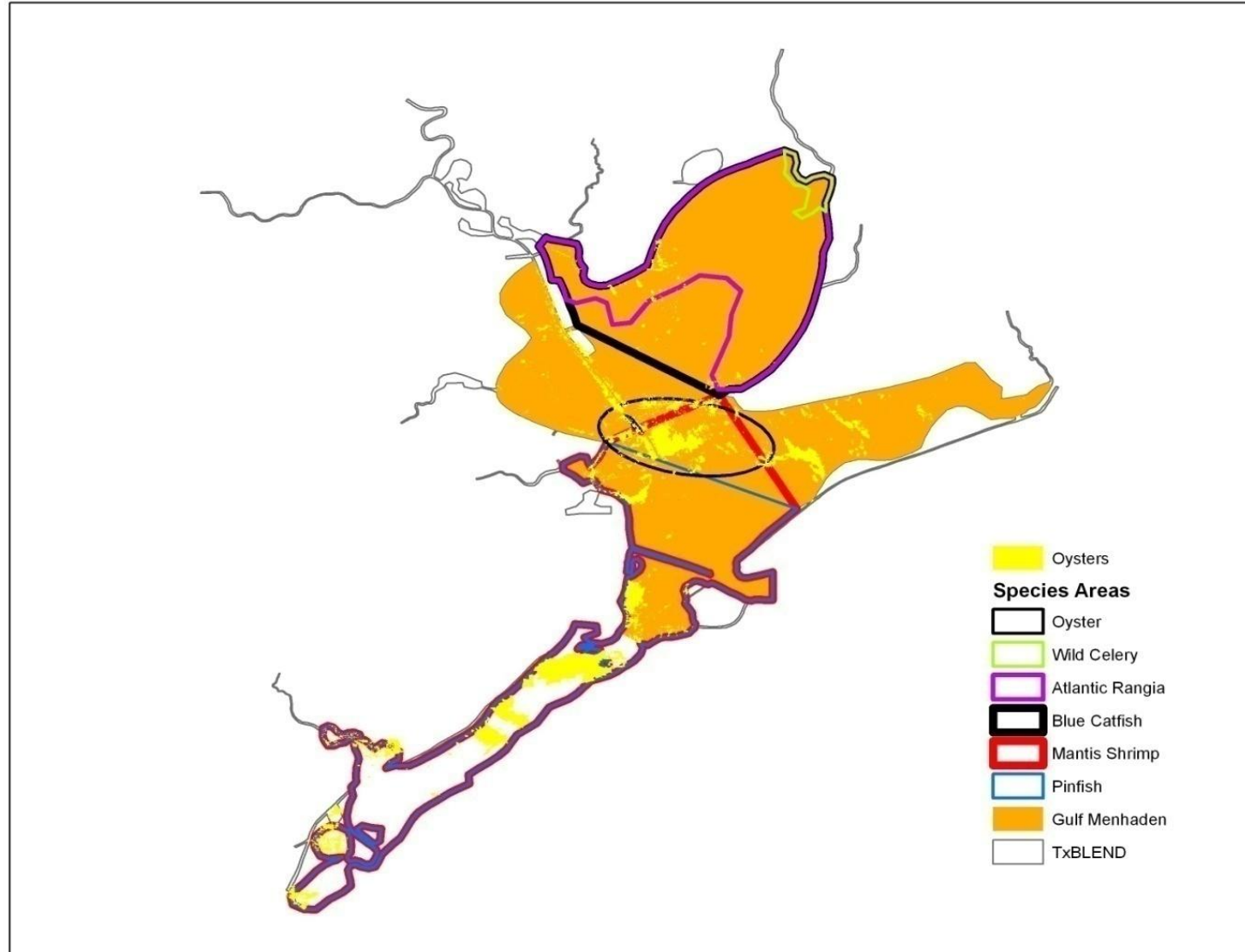
FRESHWATER INFLOWS 2010 AND BEYOND

Identified Biological Indicators for Evaluating Freshwater Inflow Needs to Galveston Bay. Emphasis was placed on the sessile organisms: wild celery, Atlantic Rangia and oyster parasites and predators.

	Common Name	Scientific Name	Criterion	Period of Concern
Habitat Indicator	Wild Celery	<i>Vallisneria americana</i>	<5 psu for germination and establishment	Spring
	“	“	<10 psu for survival	Summer and Fall
Low Salinity Indicators	Atlantic Rangia	<i>Rangia cuneata</i>	2 – 10 psu for spawning and larval survival	Spring and Fall
	Gulf menhaden	<i>Brevoortia patronus</i>	5 – 15 psu for occurrence as forage fish	Winter and Spring
Oyster Health Indicators	Dermo and oyster drill impacts on oyster	Dermo= <i>Perkinsus marinus</i> Oyster drill= <i>Stramonita haemastoma</i> Oyster= <i>Crassostrea virginica</i>	10 – 20 psu to prevent excessive parasitism and predation	July - September

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Areas assigned to each biological indicator for evaluation of flow effects on the salinity criteria.



FRESHWATER INFLOWS 2010 AND BEYOND

Trinity

Season	Spring	Summer	Fall	Winter
Flow (ac-ft)	742000	205000	141000	253000
Periodicity within season	1 of 3 mo.	2 of 3 mo.	2 of 3 mo.	1 of 3 mo.
Periodicity among seasons	1 in 2 yrs.	1 in 2 yrs.	1 in 3 yrs.	1 in 2 yrs.
Indicator	Vallisneria	Vallisneria	Vallisneria	Menhaden

San Jacinto

Season	Spring	Summer	Fall	Winter
Flow (ac-ft)	302000	257000	250000	131000
Periodicity within season	1 of 3 mo.	2 of 3 mo.	1 of 3 mo.	1 of 3 mo.
Periodicity among seasons	1 in 2 yrs.	1 in 5 yrs.	1 in 2 yrs.	1 in 2 yrs.
Indicator	Rangia	Oyster	Rangia	Menhaden

Coastal Streams

Season	Spring	Summer	Fall	Winter
Flow (ac-ft)	455000	196000	244000	84000
Periodicity within season	1 of 3 mo.	2 of 3 mo.	1 of 3 mo.	1 of 3 mo.
Periodicity among seasons	1 in 2 yrs.	1 in 4 yrs.	1 in 4 yrs.	1 in 2 yrs.
Indicator	Rangia	Oyster	Rangia	Menhaden

Plus Decadal Flood