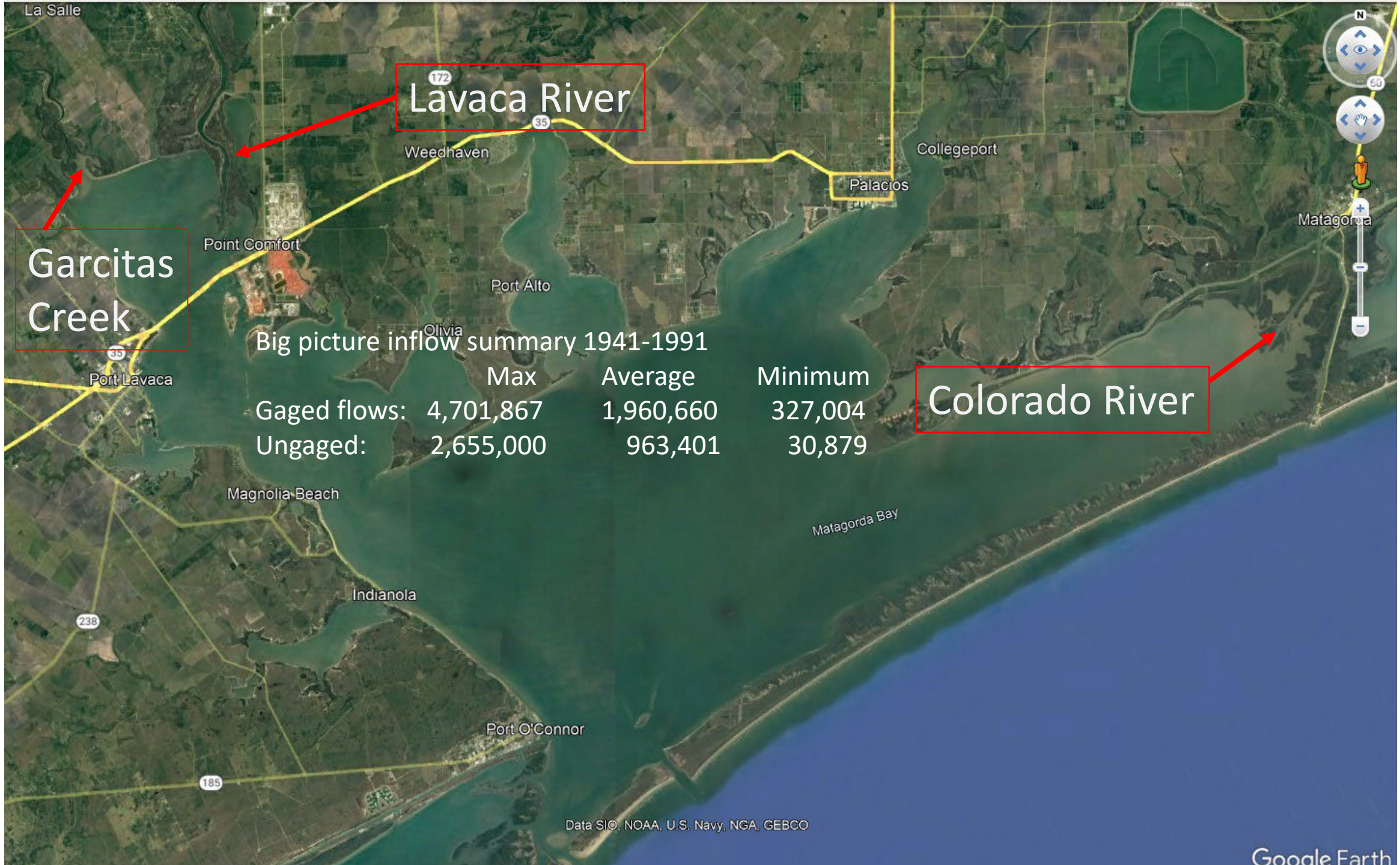
LAVACA BAY, WATER RIGHTS AND FRESHWATER INFLOW

Myron Hess
myron@myronhess.com


La Salle
Lavaca River
172
35
Weedhaven
Collegeport
Palacios
Matagorda
Garcitas Creek
Point Comfort
Port Alto
Olivia
Big picture inflow summary 1941-1991
Max Average Minimum
Gaged flows: 4,701,867 1,960,660 327,004
Ungaged: 2,655,000 963,401 30,879
Colorado River
35
Port Lavaca
Magnolia Beach
Matagorda Bay
Indianola
238
Port O'Connor
185
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Google Earth

ROLE OF FRESHWATER INFLOWS

- Supply nutrients
- Supply sediments
- Maintain salinity balance

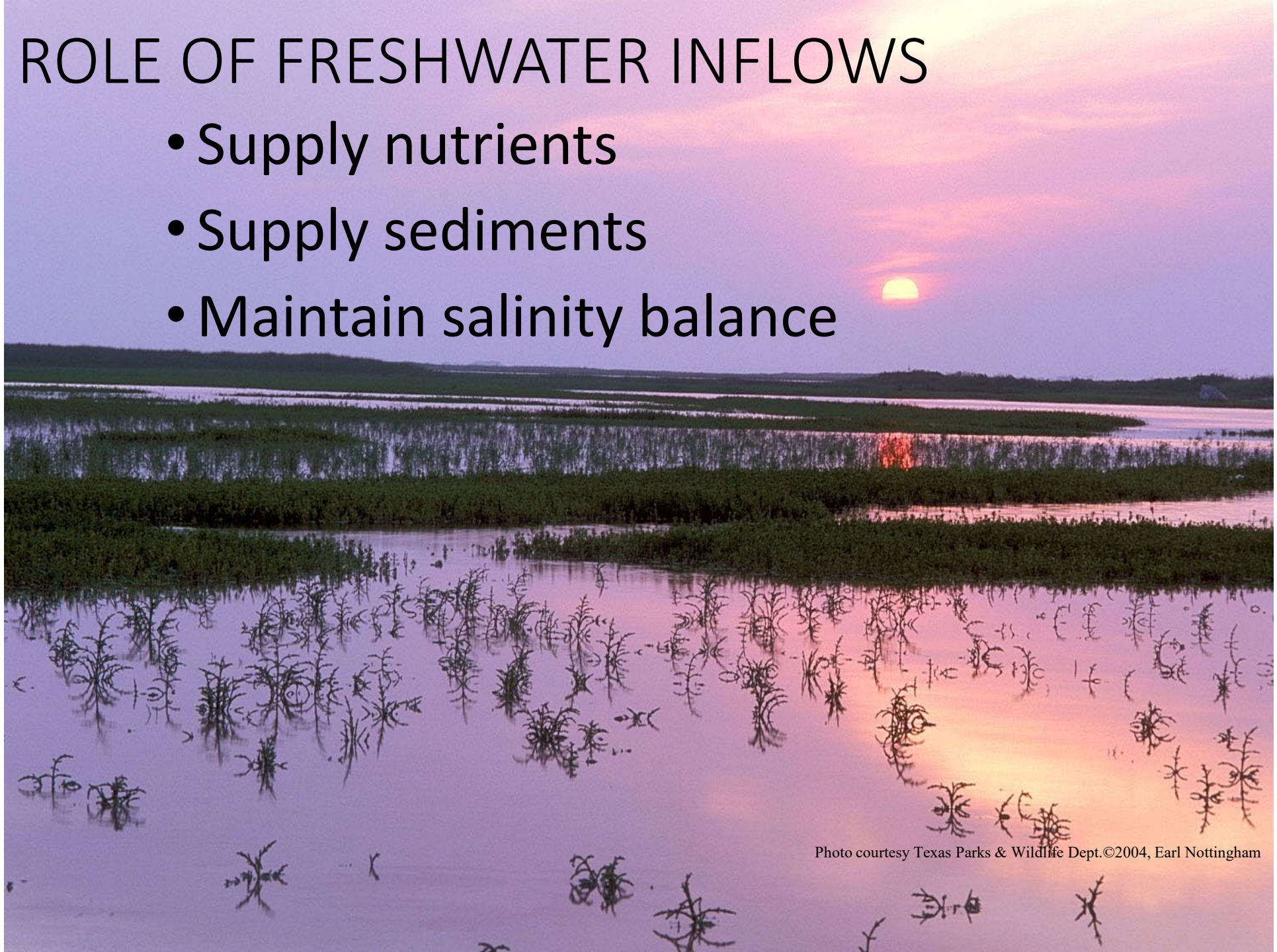
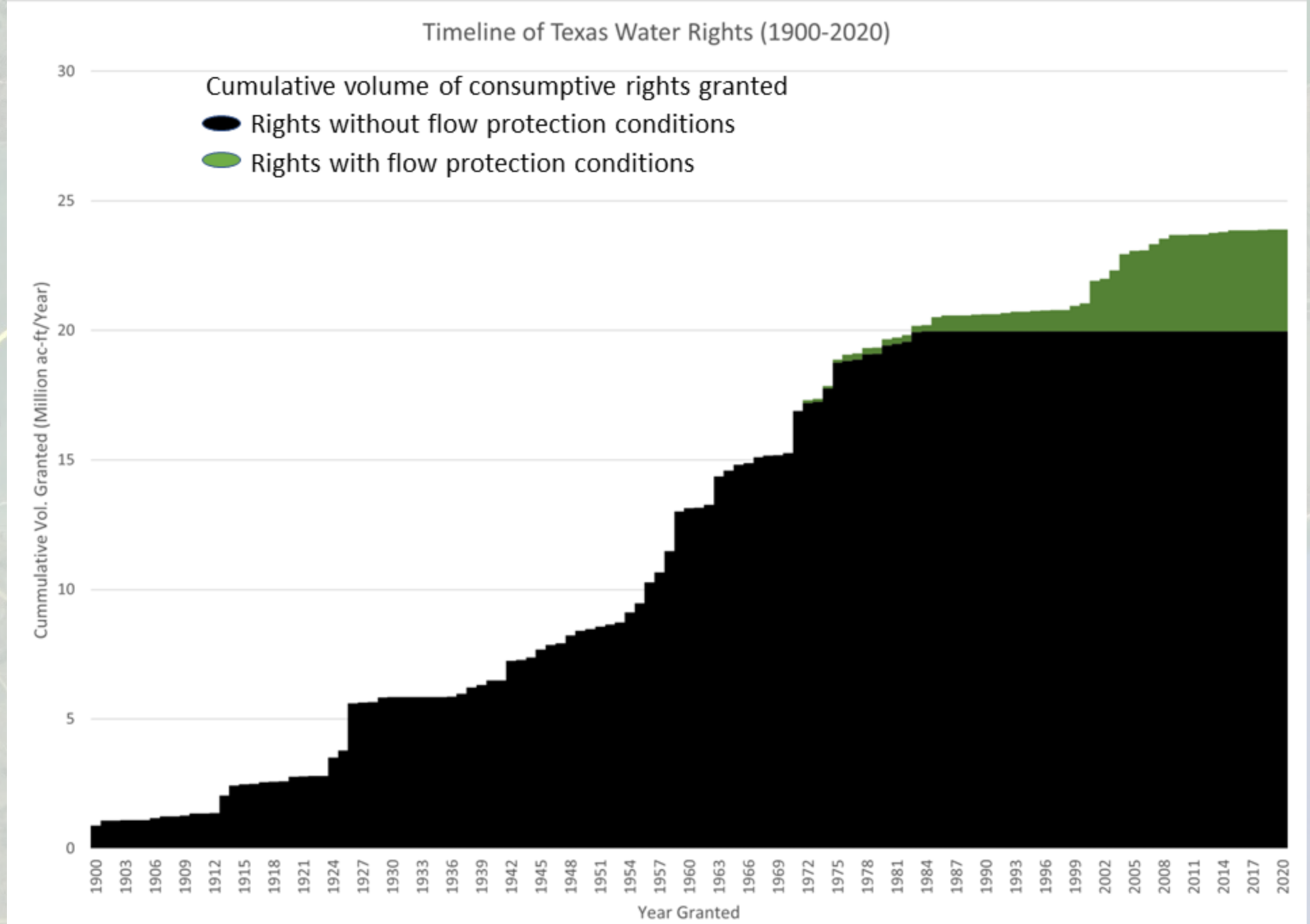


Photo courtesy Texas Parks & Wildlife Dept.©2004, Earl Nottingham



Graphic developed by National Wildlife Federation, used by permission.

Senate Bill 3 Enacted in 2007

- Environmental flow standards applicable to new permits issued after September 1, 2007 (effective date of SB 3) and to help guide proactive flow protection strategies
- Set asides of unappropriated water for flow protection
- Conditions included in new permits to ensure compliance with flow standards and protection of set asides
- Proactive strategies for voluntary conversion of existing permits to flow protection
- Adaptive management process periodically to revise/revisit flow standards, set asides, and proactive strategies (10-year review cycle as default)

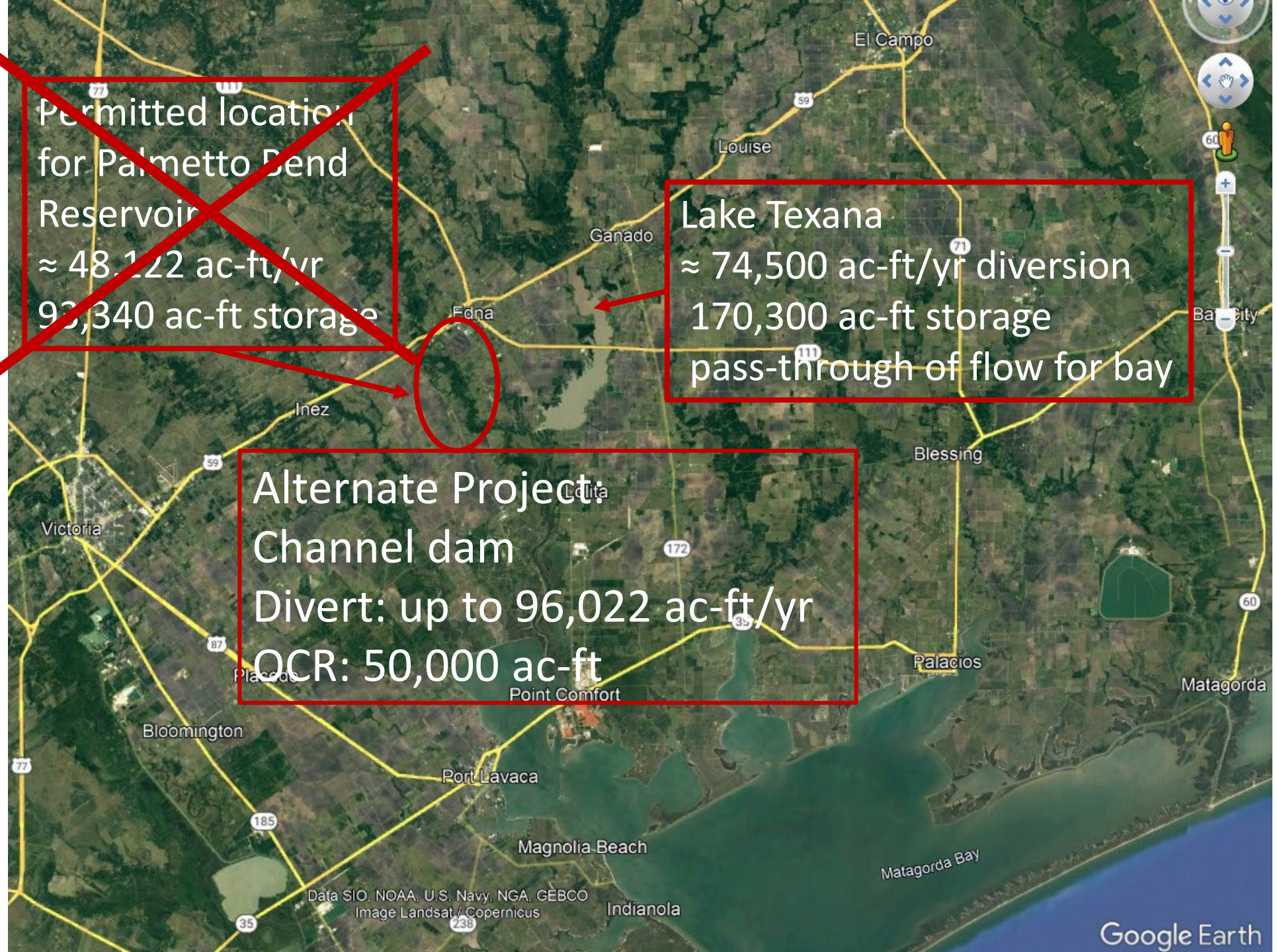
Bay and Estuary Freshwater Inflow Standards for the Lavaca Bay System (applicable for inflows from Lavaca River basin and Garcitas Creek (30 TAC § 298.330 (c), effective August 30, 2012)

Inflow Regime	Spring Inflow Quantity (ac-ft)	Fall Inflow Quantity (ac-ft)	Intervening Inflow Quantity (ac-ft)	Annual Strategy Frequency
Subsistence	13,500	9,600	6,900	96%
Base Dry	55,080	39,168	28,152	82%
Base Average	127,980	91,080	65,412	46%
Base Wet	223,650	158,976	114,264	28%

Acre-foot (ac-ft) = 325,850 gallons; cover one acre to a depth of one foot


Permitted location for Palmetto Bend Reservoir
Lake Texana
El Campo
Louise
Ganado
Edna
Inez
Lolita
Blessing
Victoria
Placedo
Bloomington
Point Comfort
Palacios
Matagorda
Port Lavaca
Magnolia Beach
Matagorda Bay
Indianola
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat / Copernicus
Google Earth


Permitted location for Palmetto Bend Reservoir
≈ 48,122 ac-ft/yr
93,340 ac-ft storage
Lake Texana
≈ 74,500 ac-ft/yr diversion
170,300 ac-ft storage
pass-through of flow for bay
El Campo
Louise
Ganado
Edna
Inez
Victoria
Lolita
Blessing
Placedo
Bloomington
Point Comfort
Palacios
Matagorda
Port Lavaca
Magnolia Beach
Matagorda Bay
Indianola
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat / Copernicus
Google Earth


Permitted location for Palmetto Bend Reservoir
≈ 48,122 ac-ft/yr
93,340 ac-ft storage
Lake Texana
≈ 74,500 ac-ft/yr diversion
170,300 ac-ft storage
pass-through of flow for bay
Alternate Project:
Channel dam
Divert: up to 96,022 ac-ft/yr
OCR: 50,000 ac-ft
El Campo
Louise
Ganado
Edna
Inez
Blessing
Victoria
Point Comfort
Palacios
Matagorda
Bloomington
Port Lavaca
Magnolia Beach
Matagorda Bay
Indianola
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat / Copernicus
Google Earth

Excerpt from existing Certificate of Adjudication held by Lavaca-Navidad River Authority:

B. Upon completion of the Stage 2 dam and reservoir on the Lavaca River, owner Texas Water Development Board is authorized to use an additional amount of 18,122 af/yr, for a total or 48,122 af/yr, of which up to 7,150 af/yr shall be for municipal purposes, up to 22,850 af/yr shall be for industrial purposes, and at least 18,122 af/yr shall be for the maintenance of the Lavaca-Matagorda Bay and Estuary System. The entire Stage 2 appropriation remains subject to release of water for the maintenance of the bay and estuary system until a release schedule is developed pursuant to the provisions of Section 4.B. of this certificate of adjudication.

Upon completion the Stage 2 dam and reservoir …
authorized to use … total of 48,122 af/yr, of which

<u>up to</u> 7,150 af/yr … for municipal …
<u>up to</u> 22,850 af/yr … for industrial … and
<u>at least</u> 18,122 af/yr … for maintenance of … Estuary System.

entire Stage 2 appropriation remains subject to release … for maintenance of … bay and estuary system until a release schedule is developed …

Bay and Estuary Freshwater Inflow Standards for the Lavaca Bay System (applicable for inflows from Lavaca River basin and Garcitas Creek (30 TAC § 298.330 (c), effective August 30, 2012)

Inflow Regime	Spring Inflow Quantity (ac-ft)	Fall Inflow Quantity (ac-ft)	Intervening Inflow Quantity (ac-ft)	Annual Strategy Frequency		
Subsistence	13,500	9,600	6,900	80.7%	96%	86.0%
Base Dry	55,080	39,168	28,152	61.4%	82%	64.9%
Base Average	127,980	91,080	65,412	29.8%	46%	33.3%
Base Wet	223,650	158,976	114,264	21.1%	28%	22.8%

Acre-foot (ac-ft) = 325,850 gallons; cover one acre to a depth of one foot

Permit application proposed baseline with Palmetto Bend Reservoir

Permit application model with alternative project (OCR and storage in Lake Texana)

SOME PARTING THOUGHTS

- We have to act now on flow protection
- We need to give special consideration to drought inflows
- We have to find ways to manage limited drought condition inflows to get the biggest bang for the buck (fastest recovery for the drop?)