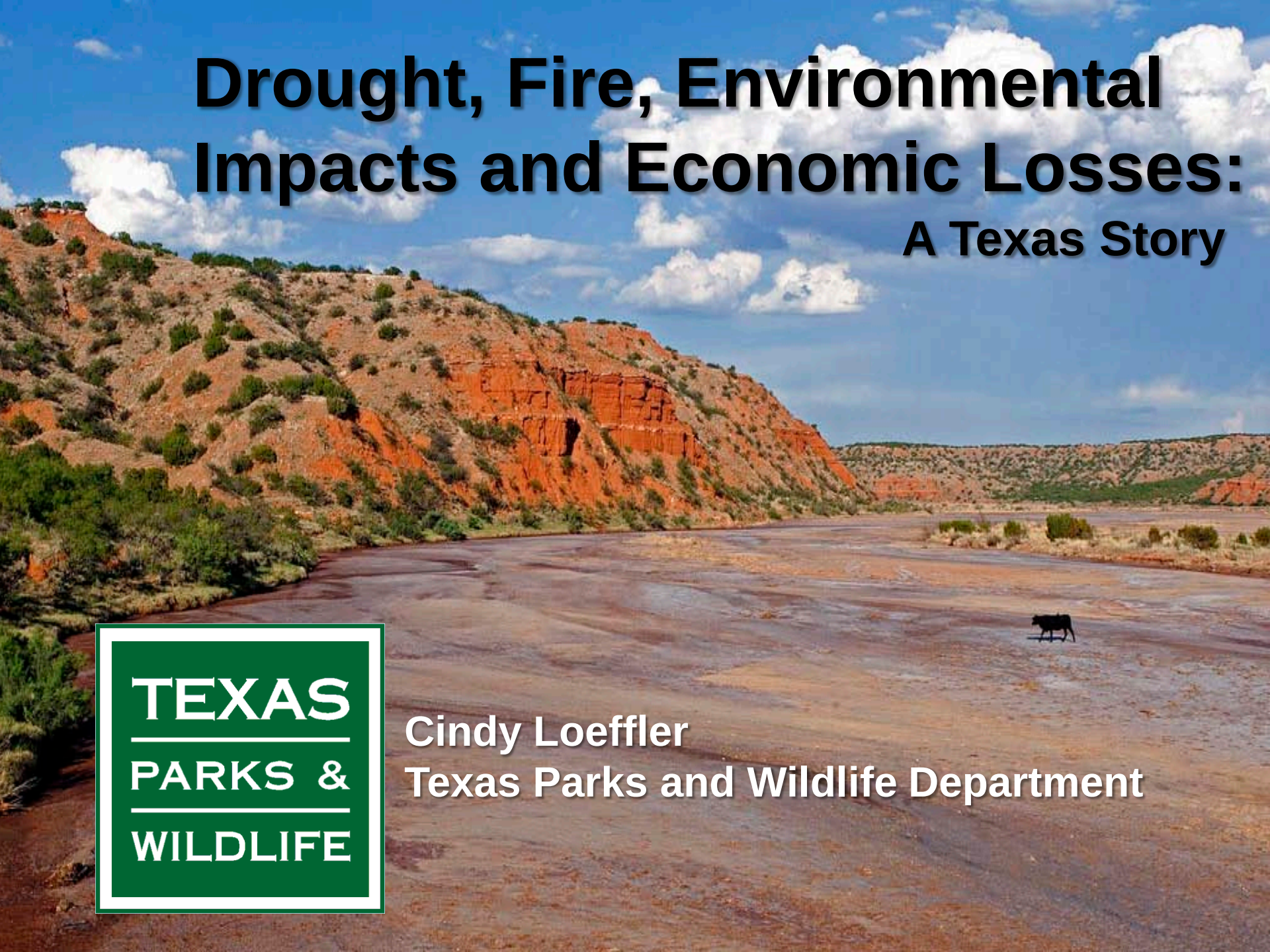
Drought, Fire, Environmental Impacts and Economic Losses:

A Texas Story



TEXAS PARKS & WILDLIFE

Cindy Loeffler
Texas Parks and Wildlife Department

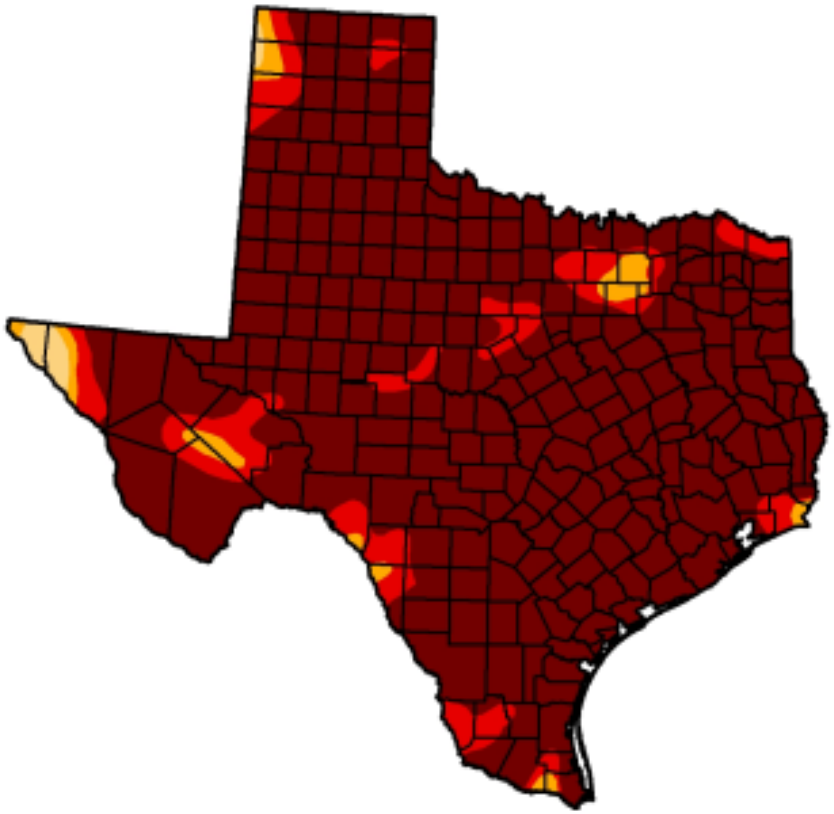
U.S. Drought Monitor

October 4, 2011
Valid 7 a.m. EST

Texas

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	99.16	96.99	87.99
Last Week (09/27/2011 map)	0.00	100.00	100.00	99.16	96.65	85.75
3 Months Ago (07/05/2011 map)	2.41	97.59	95.73	94.39	90.21	71.30
Start of Calendar Year (12/28/2010 map)	7.89	92.11	69.43	37.46	9.59	0.00
Start of Water Year (09/27/2011 map)	0.00	100.00	100.00	99.16	96.65	85.75
One Year Ago (09/28/2010 map)	75.57	24.43	2.43	0.99	0.00	0.00



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://droughtmonitor.unl.edu

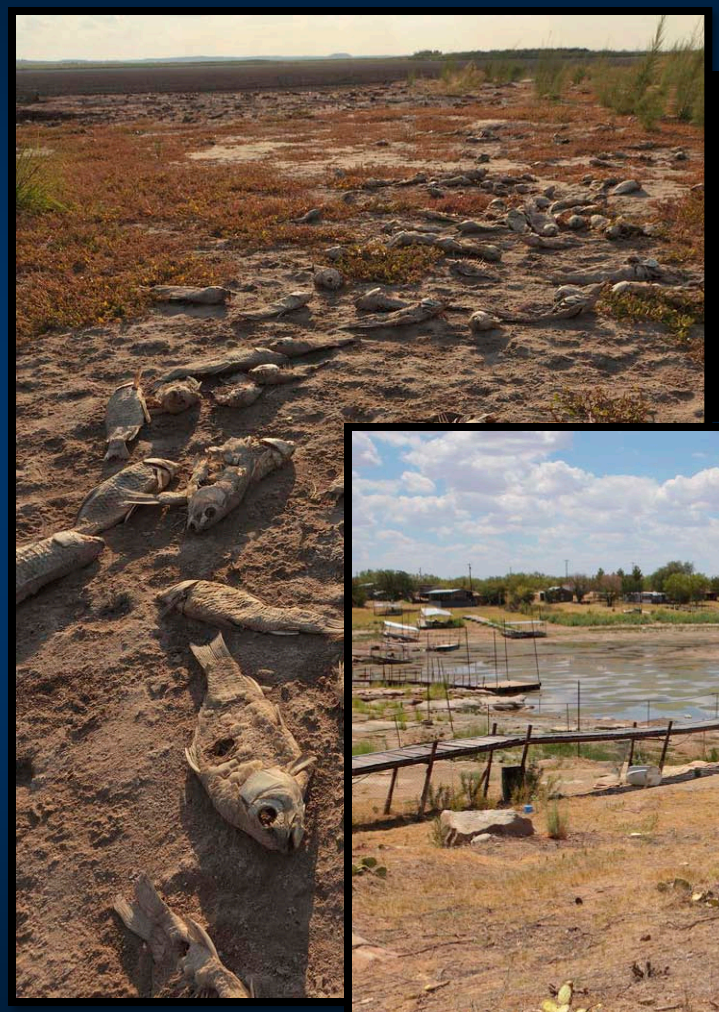
USDA National Drought Mitigation Center

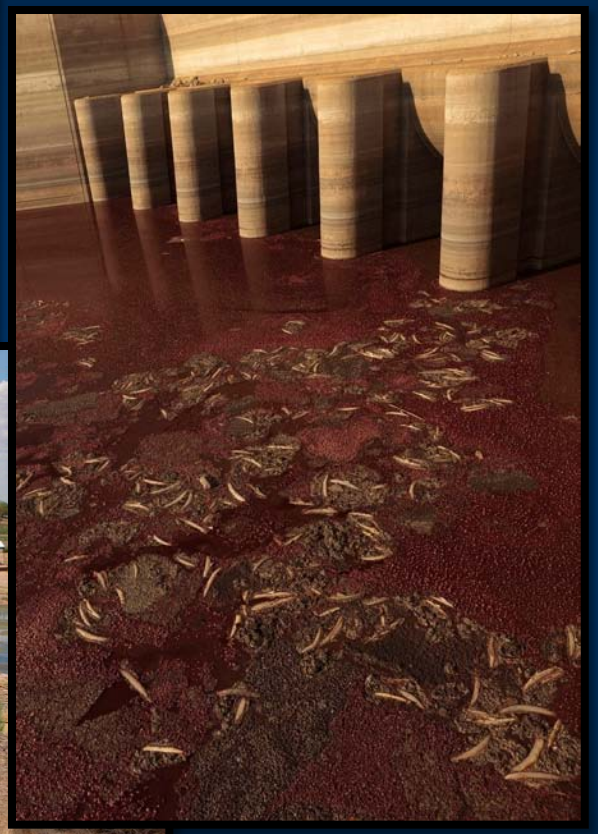
Released Thursday, October 6, 2011

Effects of Drought on the Land

Drying Rivers threaten rare fish

Critically Low Lake Levels impact fisheries and recreation





Reduced Freshwater Inflows to Bays and Estuaries Impact Commercial Fishing

- Bay and estuary salinities are higher than normal due to low freshwater inflows and high temperatures

- Red tides commonly occur during drought years – current bloom started in September

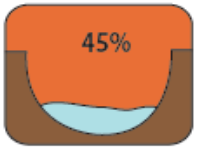
- Oysters have been impacted by parasites and diseases – commercial oyster season closed

Lower Colorado River Authority
Water Management Plan

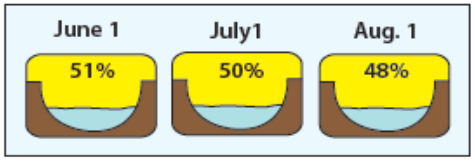
Water Supply Status

September 4, 2012

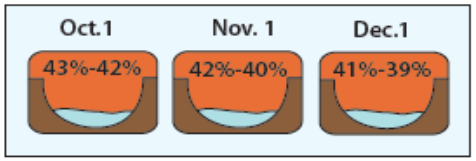
Lakes Travis and Buchanan Current Storage : 897,000 acre-feet (AF)

				We Are Here	
					
Water Supply	**Good** 2 - 1.7 MAF (> 85%)	**Fair** <1.7 - 1.4 MAF (85% - 70%)	**Cautious** < 1.4 MAF - 900,000 AF (70% - 45%)	**Severe** < 900,000 - 600,000 AF (45% - 30%)	**Emergency** < 600,000 AF (< 30%) (Drought worse than Drought of Record)
Impacts	None	Begin environmental reductions**	• Request voluntary firm demand reductions. • Reduce agricultural supply**	• Increase reductions for agriculture* • Increase voluntary reduction for firm demand • Increase reductions for environmental**	• Agricultural supply cutoff • Firm pro-rata curtailment
Actions		January 1, 2011, reduced supply for environmental flows when storage was 1.55 MAF	• May 2, 2011, requested voluntary firm demand reductions, when storage was less than 1.4 MAF. • April 18, 2012, requested continuation of mandatory firm demand reductions until storage exceeds 1.1 MAF.	• August 23, 2011, requested firm water customers implement mandatory water use restrictions. • Jan. 1, 2012 further reduced supply for environmental flows when storage was 0.74 MAF. • March 1, 2012 reduced supply for agriculture when storage was 847,324 AF.	
Forecast				While storage was 902,000 AF on September 1st, storage has dropped below 900,000 AF in early September. Forecasts show potential to either rise above or fall below 900,000 AF over the next month.	

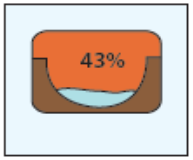
Last Three Months



Outlook***



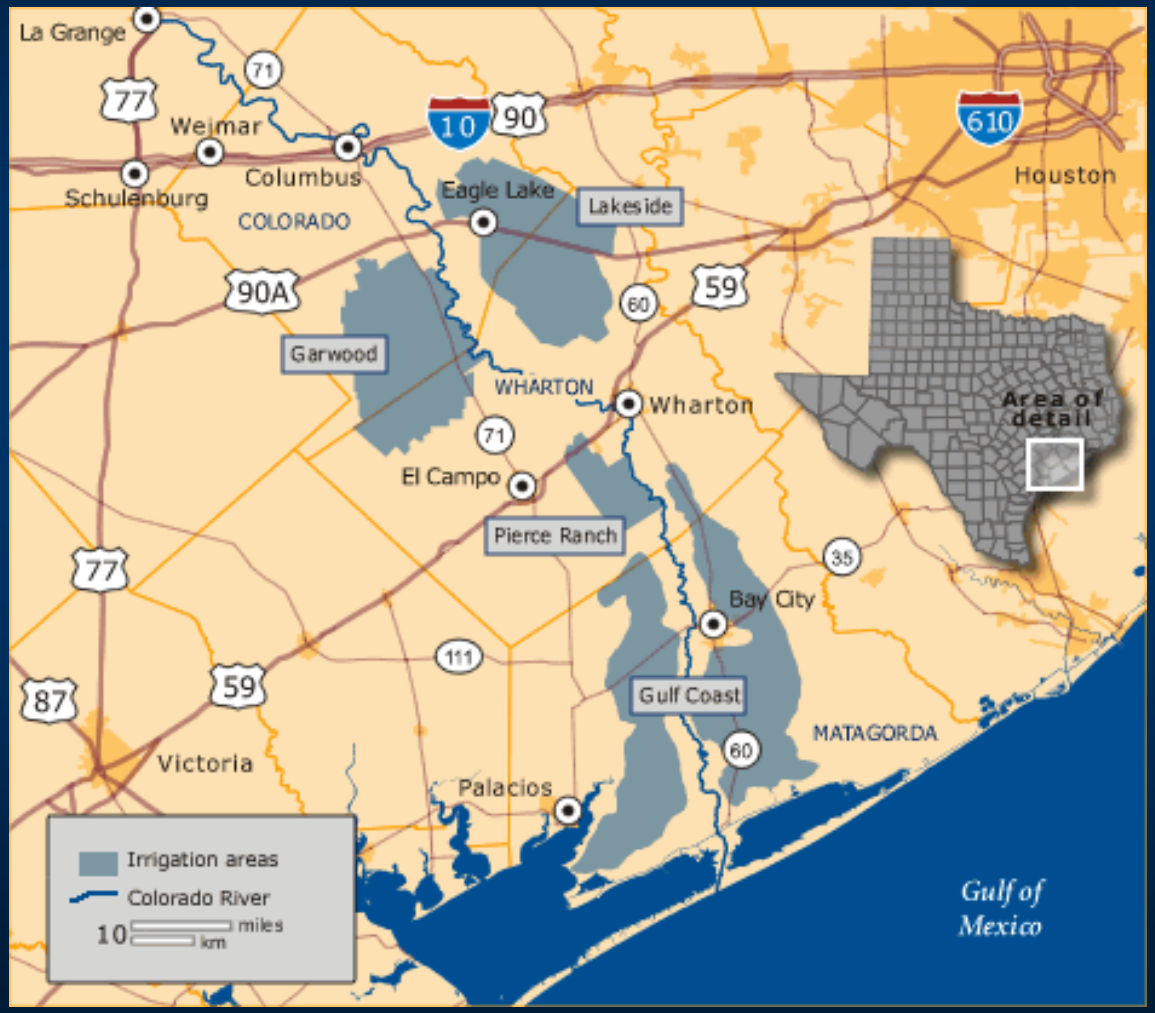
1 Year Ago



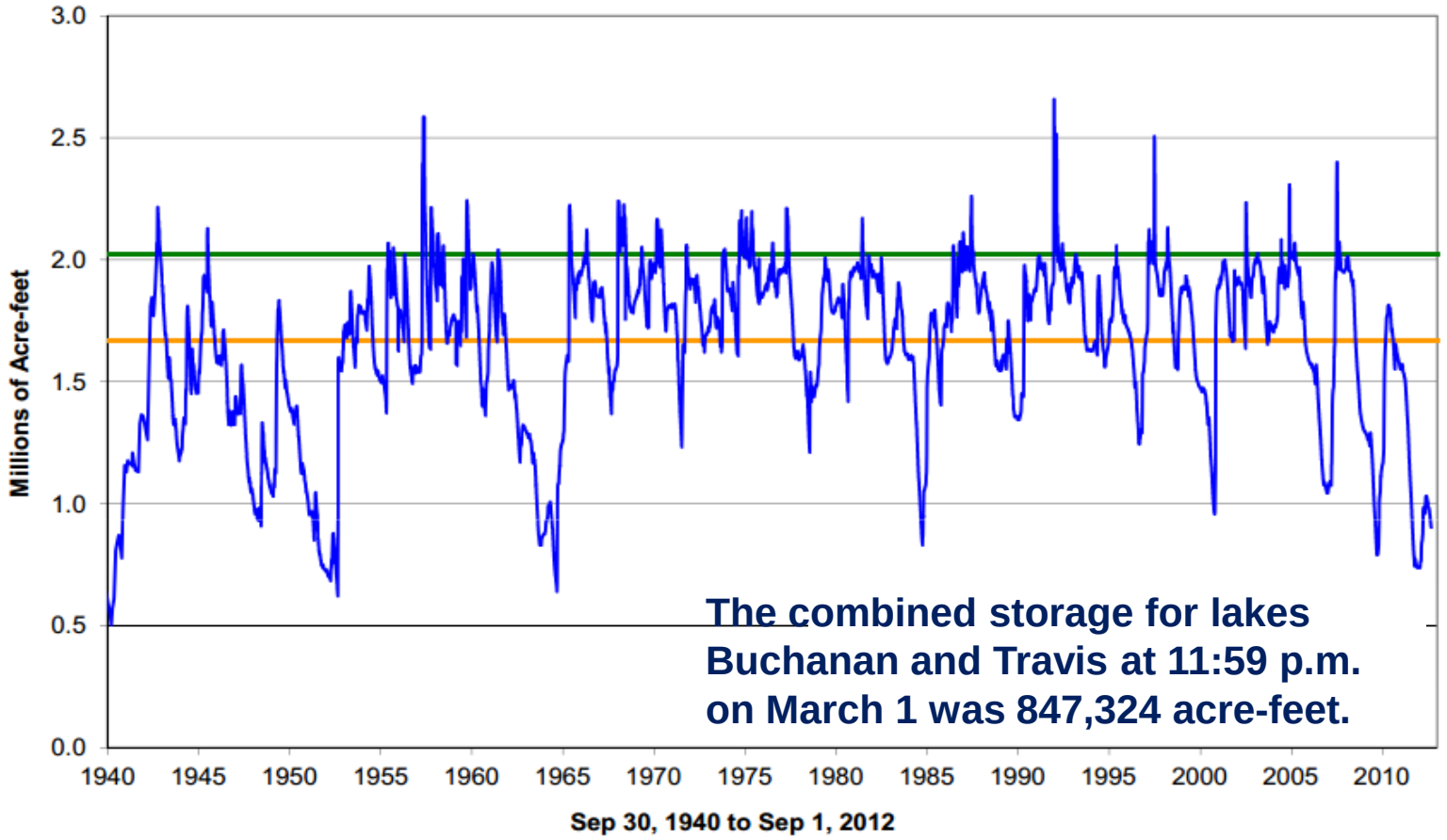
* Based on March 1 storage in lakes
** Based on Jan.1 storage in lakes
*** Based on forecasted continuation of very dry conditions and very low inflows to the Highland Lakes.

Note: One acre-foot (AF) equals 325, 851 gallons.

Emergency Suspension of Interruptible Rice Irrigation

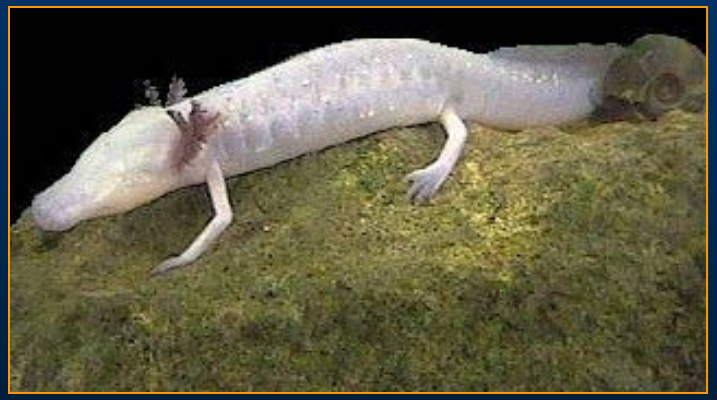


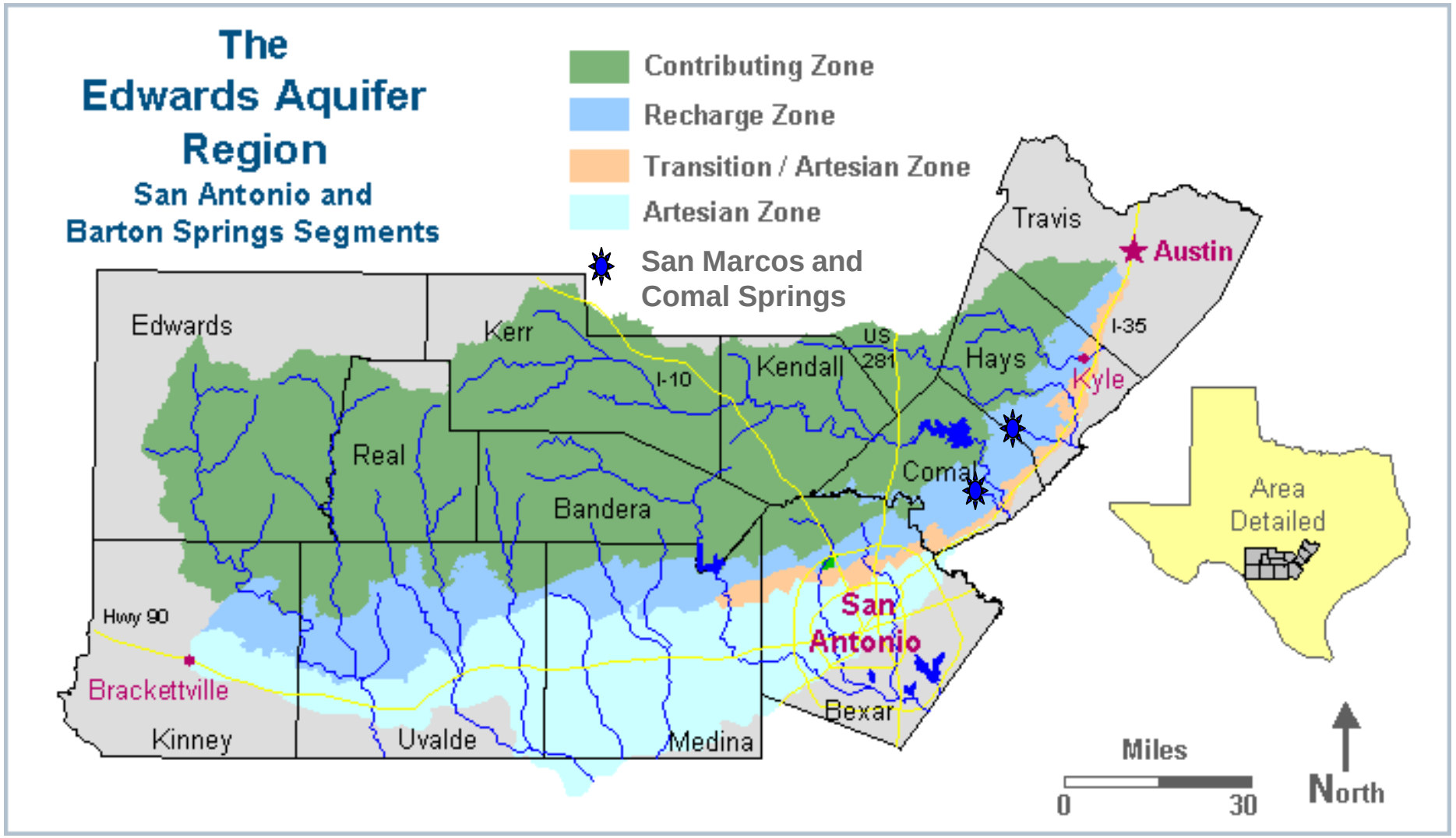
Combined Storage Lakes Travis and Buchanan



The combined storage for lakes Buchanan and Travis at 11:59 p.m. on March 1 was 847,324 acre-feet.

Declining groundwater levels threaten spring flow-dependent species




The
Edwards Aquifer
Region
San Antonio and
Barton Springs Segments
Contributing Zone
Recharge Zone
Transition / Artesian Zone
Artesian Zone
San Marcos and
Comal Springs
Edwards
Kerr
Kendall
Real
Bandera
Travis
Austin
Hays
Kyle
I-35
US
281
I-10
Comal
Area
Detailed
San
Antonio
Bexar
Hwy 90
Brackettville
Kinney
Uvalde
Medina
Miles
0
30
North

Critical Period Triggers, Stages, and Withdrawal Reductions

*The following Critical Period triggers and percent reductions apply to all Municipal, Industrial and Irrigation users.

SAN ANTONIO POOL **

TRIGGER (based on 10-day average)	CRITICAL PERIOD STAGE I	CRITICAL PERIOD STAGE II	CRITICAL PERIOD STAGE III	CRITICAL PERIOD STAGE IV
Index Well J-17 Level (MSL)	<660	<650	<640	<630
San Marcos Springs Flow (CFS)	<96	<80	N/A	N/A
Comal Springs Flow (CFS)	<225	<200	<150	<100
Withdrawal Reduction	20%	30%	35%	40%

UVALDE POOL ***

TRIGGER (based on 10-day average)	CRITICAL PERIOD STAGE I	CRITICAL PERIOD STAGE II	CRITICAL PERIOD STAGE III	CRITICAL PERIOD STAGE IV
Index Well J-27 Level (MSL)	N/A	<850	<845	<842
San Marcos Springs Flow (CFS)	N/A	N/A	N/A	N/A
Comal Springs Flow (CFS)	N/A	N/A	N/A	N/A
Withdrawal Reduction	N/A	5%	20%	35%

Definitions: (MSL) Mean Sea Level (CFS) Cubic Feet Per Second

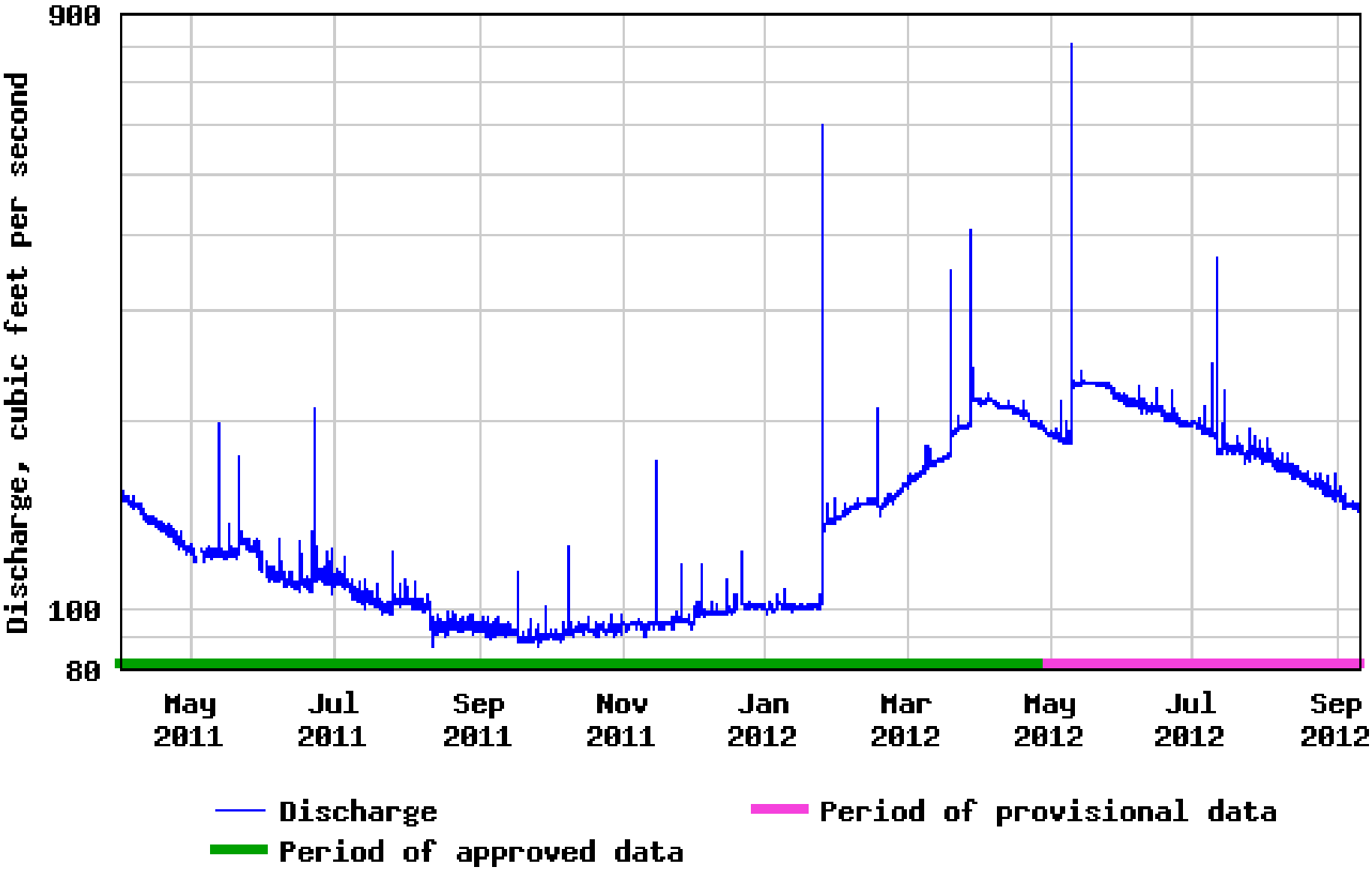
*Applies to any user who is authorized to withdraw more than 3 acre-feet.

**San Antonio Pool--Critical Period is declared when the 10-day average of the rate of springflow at either the Comal or San Marcos springs, or aquifer level readings at the J-17 Index Well in Bexar County drop below the Stage I trigger level. Likewise, a more restrictive stage of Critical Period is activated by any one of these triggers. However, the declaration of a less restrictive stage of Critical Period requires the 10-day averages of all three trigger levels to be above the activation thresholds of the particular stage in effect at the time.

***The Uvalde Pool enters Critical Period at Stage II based on the 10-day average of aquifer level readings at the J-27 Index Well in Uvalde County.

USGS

USGS 08170500 San Marcos Rv at San Marcos, TX



Edwards Aquifer Recovery Implementation Program:

an open, voluntary, collaborative, consensus-based stakeholder process

EARIP Goal: recover federally listed threatened and endangered species that depend on the Edwards Aquifer

Initiated by USFWS in 2006 – codified by SB3 in 2007

26 member Steering Committee includes TPWD and other state agencies, EAA, SAWS, GBRA and SARA, environmental, agricultural, recreational and industrial interests

Edwards Aquifer Habitat Conservation Plan:

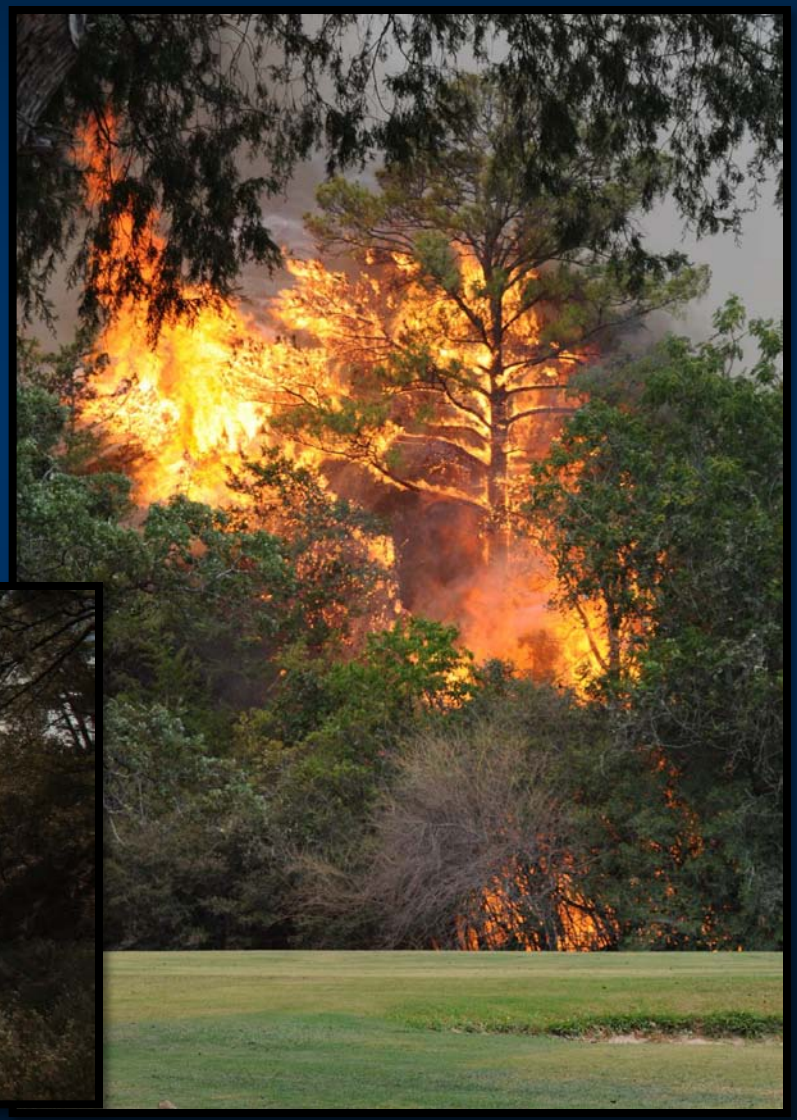
A set of strategies for protecting minimum springflows. Incremental, phased approach includes:

- Additional water conservation measures
- Aquifer Storage and Recovery (ASR)
- Voluntary suspension of irrigation pumping during drought
- New Stage V Critical Period Management
- Ecosystem restoration, including exotic species management and recreation management
- Without this plan in place, aquifer pumping would have to be reduced 87%

2011 Fire Damage to TPWD Lands

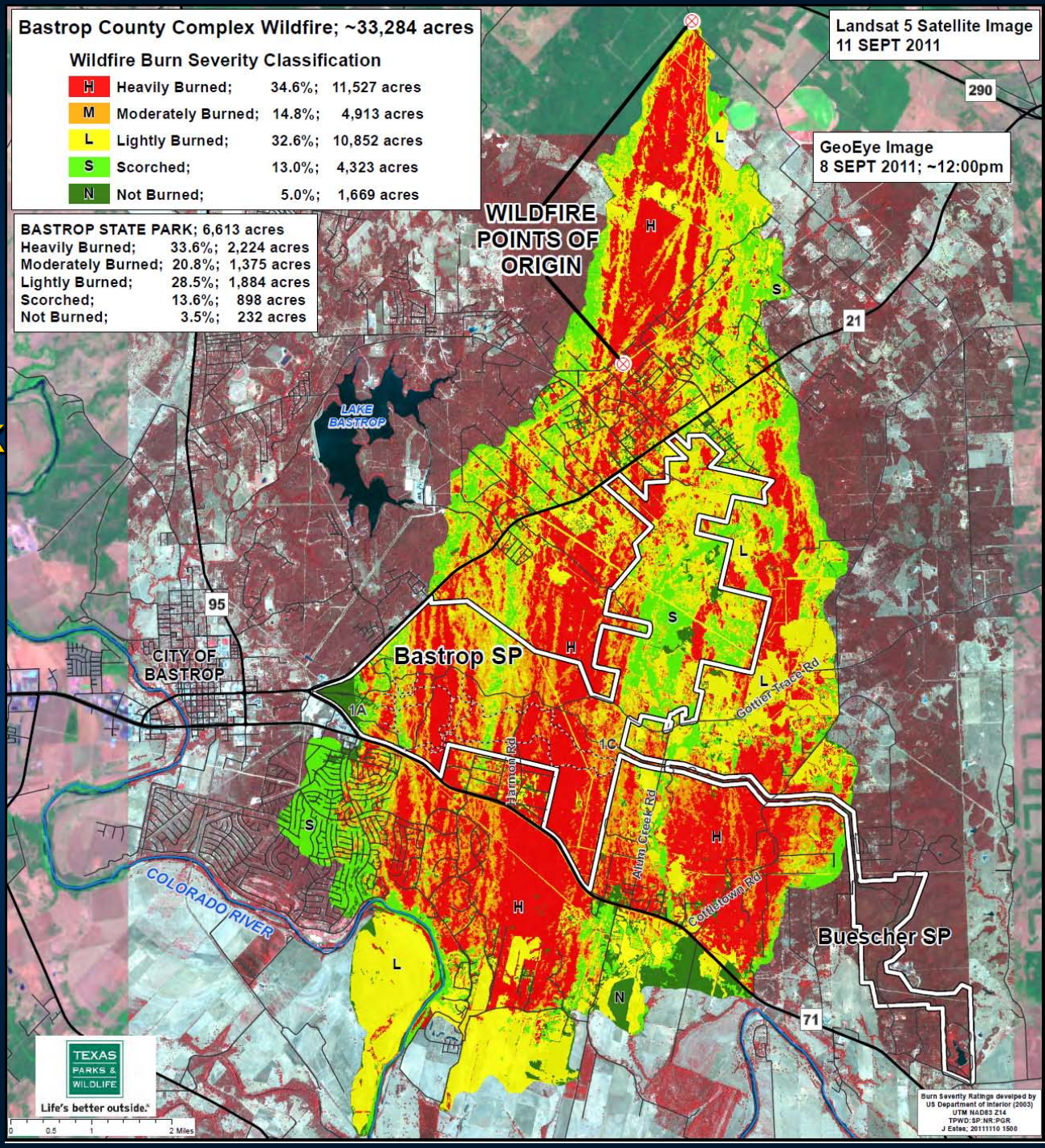
- Davis Mountains SP
- Possum Kingdom SP
- Bastrop SP and Regional Office

Bastrop State Park and Regional Office



Bastrop County Complex Wildfire
33,284 acres

Bastrop State Park
96% - 6,381 acres



Houston toad

- First amphibian to be placed on the endangered species list in 1970
- Lives only in Texas, in Austin, Bastrop and Leon counties
- For breeding they require still or slow-flowing bodies of water that persist for at least 30 days near areas they can use to burrow
- Numbers have been declining, mainly due to habitat fragmentation
- 2011 drought followed by Bastrop Fire cause for concern for future survival of wild population
- Biologists are currently monitoring populations during breeding season to estimate number of surviving toads


BASTROP COUNTY ★ TEXAS PARKS AND WILDLIFE DEPARTMENT ★ TEXAS FOREST SERVICE ★ NATURAL RESOURCES CONSERVATION SERVICE ★ TEXAS AGRILIFE EXTENSION SERVICE ★ TEXAS COMMISSION ON ENVIRONMENTAL QUALITY ★ LOWER COLORADO RIVER AUTHORITY ★ BASTROP SOIL AND WATER CONSERVATION DISTRICT ★ TEXAS STATE UNIVERSITY ★ US FISH AND WILDLIFE SERVICE ★
LOST PINES
RECOVERY TEAM

Restoration Has Begun !


TEXAS
PARKS &
WILDLIFE