DRAFT

Chapter 7: Drought Response Information, Activities, and Recommendations

2026 Initially Prepared Plan

Prepared for:

East Texas Regional Water Planning Group

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ABBREVIATION	DESCRIPTION
DCP	Drought Conservation Plan
DWW	Drinking Water Watch
ETRWPA	East Texas Regional Water Planning Area
ETRWPG	East Texas Regional Water Planning Group
HCWCID	Houston County Water Conservation Independent District
LNVA	Lower Neches Valley Authority
LP	Limited Partnership
MGD	Million Gallons per Day
MGL	Mean Sea Level
MUD	Municipal Utility District
MWD	Municipal Water District
PHDI	Palmer Hydrological Drought Index
PWS	Public Water Systems
SRA	Sabine River Authority
SUD	Special Utility District
TCEQ	Texas Commission on Environmental Quality
TDS	Total Dissolved Solids
UNRMWA	Upper Neches River Municipal Water Authority
USGS	United States Geological Survey
WCID	Water Control and Improvements District
WSC	Water Supply Corporation
WUG	Water User Group

7 DROUGHT RESPONSE INFORMATION, ACTIVITIES, AND RECOMMENDATIONS

Drought response and management have long been important aspects of regional water planning. The extensive drought experienced in Texas during the 2010-2012 timeframe, however, served to re-focus attention on the need for comprehensive consideration of drought management measures. Requirements for improved drought planning in the State through the regional water planning process are found in Title 31 of the Texas Administrative Code, Part 10, Chapter 357, Subchapter D. Specifically, §357.42 of Subchapter D includes requirements related to drought response information, activities, and recommendations. This chapter addresses the requirements found in §357.42.

While the East Texas Regional Water Planning Area (ETRWPA) is generally less prone to extreme drought compared to other regions across Texas, there have been significant historical droughts identified throughout the region. These have tended to be sub-regional in nature, meaning a significant or extreme drought is more likely to be localized than in other, drier regions of the State. This limited geographic extent affects how the region prepares for and responds to drought when it does occur.

7.1 DROUGHTS OF RECORD

A central principle of regional water planning is that the availability of water sources is determined for drought-of-record conditions. State-wide, the drought of the 1950's is often considered the drought of record, but on regional or sub-regional bases, droughts during other periods of time may actually be demonstrated to have been more severe. Chapter 7 includes a detailed examination of preparations for and responses to drought conditions in the region, as required by §357.42. Such examination begins with identification of significant recent droughts within the region.

7.1.1 Historical Droughts of Record

As described in Chapter 3, the surface water supplies for the regional water plans were determined using the Texas Commission on Environmental Quality (TCEQ)-approved Water Availability Models (WAMs).[1] The WAMs can be used to simulate the response of existing and proposed water supply reservoirs to historical hydrologic conditions assuming all water rights utilize their maximum authorized amounts in priority date order. The firm yield of a reservoir is the greatest amount of water the reservoir can supply on an annual basis without shortage during a repeat of historical drought-of-record conditions. The WAMs incorporate historical hydrologic conditions that occurred between 1940 and 2018 in the Neches River Basin and between 1940 and 1996 in the Sabine and Trinity River Basins. The historical droughts of record that were used to evaluate currently available water supplies occurred during these periods. Table 7.1 shows the historical drought of record for each major reservoir in the ETRWPA.

Table 7.1 Historical Droughts of Record for Major Water Supply Reservoirs

Reservoir Name	Counties	Drought of Record[a]	
		Start Date	End Date
Trinity River Basin			
Houston County	Houston	Jul 1953	Apr 1957
Neches River Basin			
Lake Athens	Henderson	May 1947	Jan 1957
Lake Jacksonville	Cherokee	May 1953	Mar 1957
Lake Palestine	Anderson, Cherokee, Henderson, Smith	May 1962	Dec 1964
Sam Rayburn	Angelina, Jasper, Nacogdoches, Sabine, San	Apr 2010	Nov 2011

Reservoir Name	Counties	Drought of Record[a]	
		Start Date	End Date
	Augustine		
B. A. Steinhagen	Jasper, Tyler		
Lake Columbia[b]	Cherokee, Smith	Jul 1962	Dec 1967
Lake Naconiche	Nacogdoches	Mar 2010	Nov 2011
Striker Creek Reservoir	Cherokee, Rusk	Apr 2010	Nov 2011
Lake Nacogdoches	Nacogdoches	May 1969	Oct 1972
Lake Pinkston	Shelby	May 1962	Oct 1972
Lake Tyler/Tyler East	Smith	Apr 2010	Sep 2013
Sabine River Basin			
Lake Cherokee	Gregg, Rusk	May 1962	Nov 1964
Lake Murvaul	Panola	Jun 1962	Jan 1965
Toledo Bend Reservoir	Newton, Panola, Sabine, Shelby	May 1962	Dec 1967

[a] For each location, the drought of record refers to a set of hydrologic conditions that is used to evaluate the firm yield of an existing or proposed reservoir.

[b] Lake Columbia is permitted but not yet constructed and is in the process of U.S. Army Corps of Engineers permitting.

The drought of record can be different for different geographic locations. There have been four primary droughts of record in the East Texas Region:

- The drought of the 1950s in the western and central portions of the region.
- The drought beginning in about 1962 and spanning the mid-1960s for eastern and north central portions of the region.
- The drought period in the late 1960s to early 1970s in the north central portion of the region.
- The drought of the early 2010s in the north central portion of the region.

7.1.2 Recent Droughts in the Region

There are a number of ways to measure drought, including the U.S. Drought Monitor index, the Palmer Hydrological Drought Index (PHDI), and reservoir water levels. These indicators were used in an attempt to identify significant new droughts in the ETRWPA since the mid-1990's.

The Drought Monitor is a composite index that is calculated weekly based on measurements of climatic, hydrologic, and soil conditions, as well as reported impacts and observations from more than 350 contributors around the country.[2] The Drought Monitor was initiated in 2000, and data can be obtained for each county in the United States. Figure 7.1 shows a composite Drought Monitor index calculated for the 20 counties in the ETRWPA over the period of record. This composite index shows the percentage of the land area in the affected counties that experienced different levels of drought. Approximately 15 to 30 percent of the region experienced extreme drought in 2006, 2007, and for a brief period in 2013. The Drought Monitor index indicates that the region experienced extreme/exceptional drought conditions from late 2010 through early 2012. In October 2011, the entire region experienced exceptional drought conditions. Since 2011 no major periods of drought have been recorded; however, a short period of drought during late 2023 and early-mid 2024 was observed in Region I area.

Compared to climatic effects of drought, the hydrological effects, such as lower reservoir and groundwater levels, may take longer to develop and take longer to recover from. The PHDI was developed as an indicator of the long-term cumulative moisture supply. The monthly PHDI has been developed since 1900 for ten climatic zones in each state.[3] The East Texas climatic zone includes most of the ETRWPA, as well as parts of Regions C, G, and H and the Northeast Texas Regional Water Planning Area. Figure 7.2 shows the PHDI for the East Texas climatic zone. The PHDI reflects extreme droughts in this area during the 1950s, as well as in 1981, 1998, 2005-06, and 2010-12. According to the PHDI, the 2010-2012 drought was more severe than any of the individual droughts in the 1950s.

Since construction of the Sam Rayburn and Toledo Bend Reservoirs in the late 1960s, reservoirs in the ETRWPA reached minimum conservation storage during the droughts of 1995-1996 and 2010-2012, with several smaller droughts occurring during the period (Figure 7.3).[4]

Each of the three drought indicators suggests that the 2010-2012 period was one of significant droughts for the ETRWPA. However, each of these indicators applies to the ETRWPA as a whole, and more localized hydrologic information is necessary to evaluate whether accounting for recent droughts would change the estimates of available surface water supplies. In 2021, the TCEQ Neches River Basin WAM was updated, which included the extension of hydrology data (e.g., inflows, evaporation) from 1996 to 2018. The updated Neches WAM was used to analyze surface water supply availability in the Neches River Basin for the 2026 ETRWP. As shown in Table 7.1, the updated Neches WAM analysis for the ETRWP indicated that the are several major reservoirs in the Neches River Basin with new droughts of record during the early 2010s period. For a full evaluation of the impact of a potential new drought of record on surface water supply availability across the region, the Sabine and Trinity River Basin WAMs should be updated to incorporate the hydrologic conditions that have occurred since 1996.

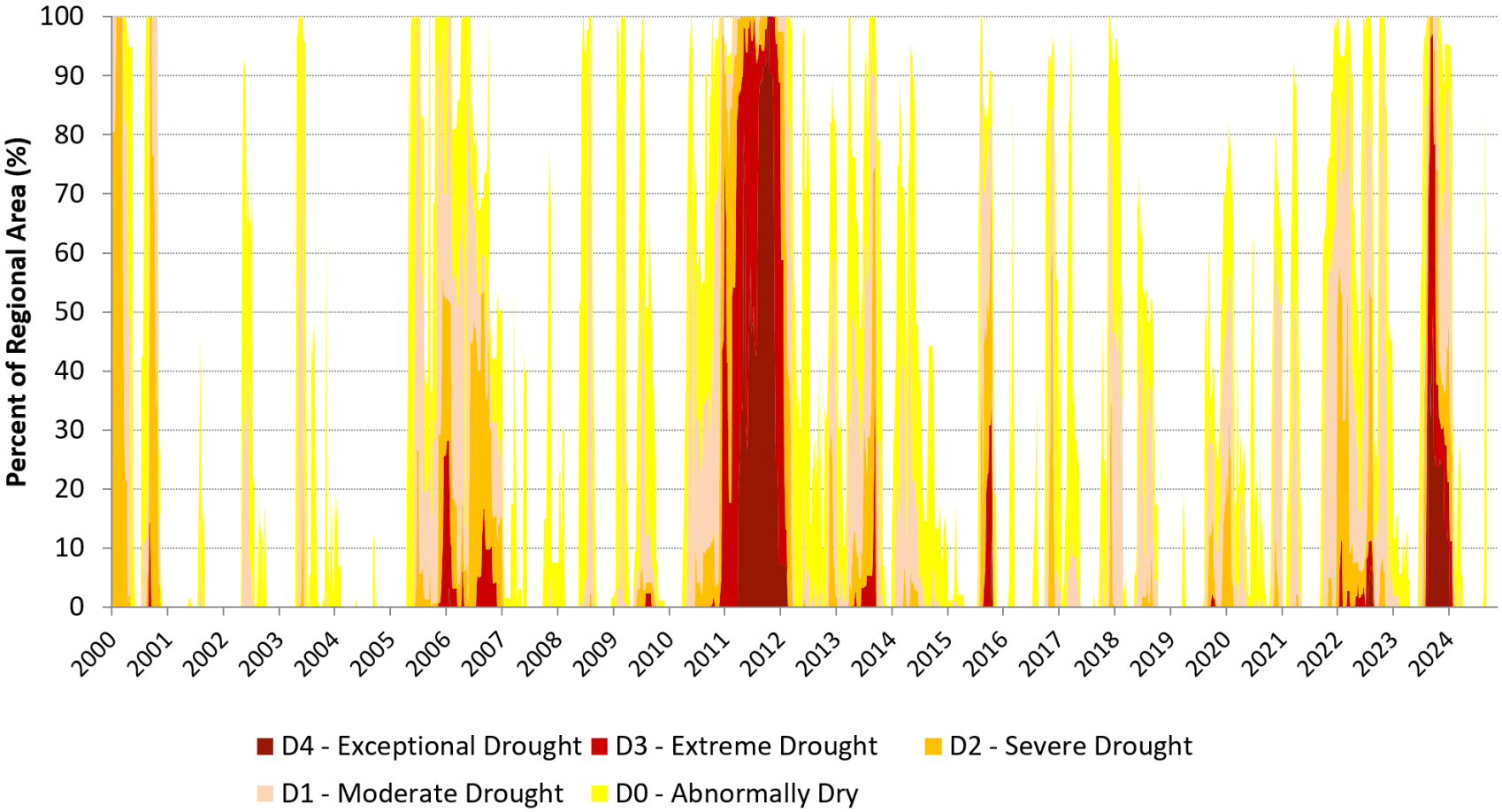
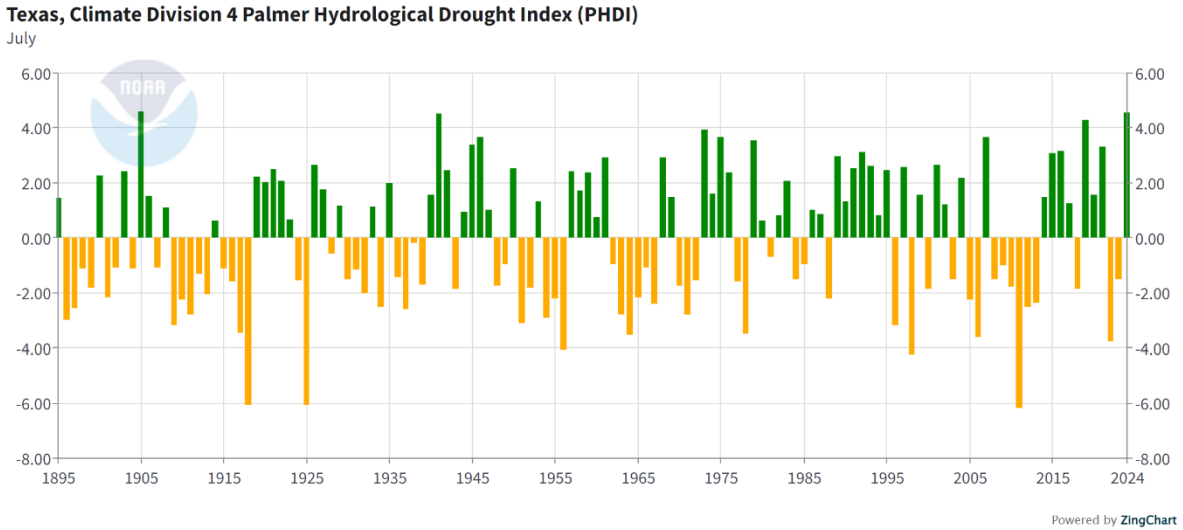


Figure 7.1 Composite Drought Monitor Index for Counties in the East Texas Regional Water Planning Area

SOURCE: DATA OBTAINED FROM THE U.S. DROUGHT MONITOR, SEPTEMBER 2024.

HTTPS://DROUGHTMONITOR.UNL.EDU/DMDATA/DATADOWNLOAD/COMPREHENSIVESTATISTICS.ASPX



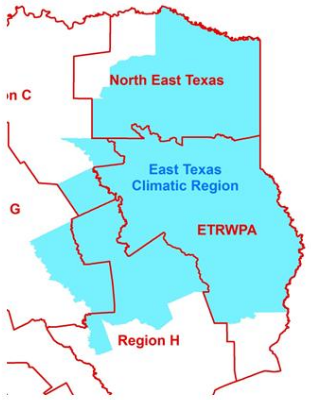


Figure 7.2 Palmer Hydrological Drought Index for the East Texas Climatic Zone

SOURCE: NOAA, NATIONAL CENTERS FOR ENVIRONMENTAL INFORMAITON,
https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/divisional/time-series/4104/phdi/1/7/1895-2024

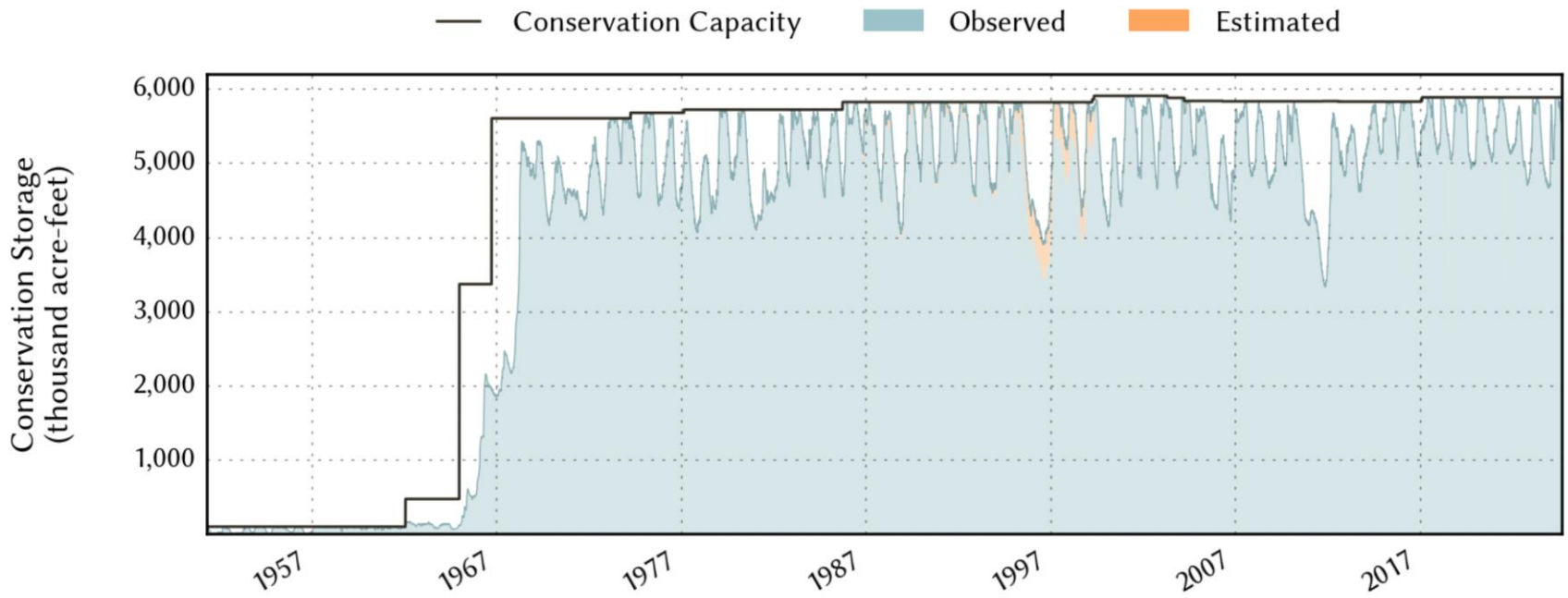


Figure 7.3 Composite Reservoir Storage in the East Texas Regional Water Planning Area

SOURCE: TEXAS WATER DEVELOPMENT BOARD: EAST TEXAS PLANNING REGION RESERVOIRS, URL: HTTPS://WWW.WATERDATAFORTEXAS.ORG/RESERVOIRS/CLIMATE/EAST-TEXAS, ACCESSED SEPTEMBER 2024.

7.2 UNCERTAINTY AND DROUGHT(S) WORSE THAN THE DROUGHT OF RECORD

This section highlights Region I's approach to addressing uncertainty and preparing for extreme drought conditions and summarizes the measures to enhance resilience against drought(s) worse than the drought of record (DWDOR).

7.2.1 Planning for Uncertainty

The RWPG acknowledges the inherent uncertainties associated with planning factors such as population, demand, and supply during the planning process. To address these potential uncertainties and mitigate future drought conditions, the RWP utilizes several conservative planning assumptions. For example, baseline water demands used to develop demand projections for the ETRWP reflect demands during recent high-use, dry year conditions.

Additionally, the WAM used to determine surface water supply availability has a number of conservative assumptions built into it, including assuming that water right holders attempt to divert their full permitted amounts and full consumptive use (no return flows). In reality, water users typically do not divert 100 percent of their permitted amounts, which leaves more water available for others, and some percentage of water is typically returned to the river in the form of wastewater discharges.

Furthermore, if DWDOR conditions occurred, recommended water management strategies in the 2026 ETRWP could potentially be implemented earlier than what is shown. Alternative strategies that are currently impractical for Water User Groups (WUGs) or Major Water Providers (MWPs) in Region I, such as brackish groundwater desalination or seawater desalination, may become more feasible in response to DWDOR conditions. Given that the RWP is updated every five years, the ETRWPG will closely monitor and review demand, supply, and future strategy conditions, ensuring ongoing preparedness.

7.2.2 Existing Measures for Preparation of the DWDOR

Section 7.2.2 outlines two existing measures that Region I has implemented to prepare for DWDOR conditions. These measures are described below:

Total Supply Greater Than Water Demand

One approach to mitigate planning uncertainties and DWDOR impacts is to ensure that total water supply exceeds projected water demand, as reflected by a management supply factor[1] greater than one. The majority of Major Water Providers in Region I are projected to maintain available supplies that exceed their current and projected demands, i.e., they have a management supply factor greater than one.

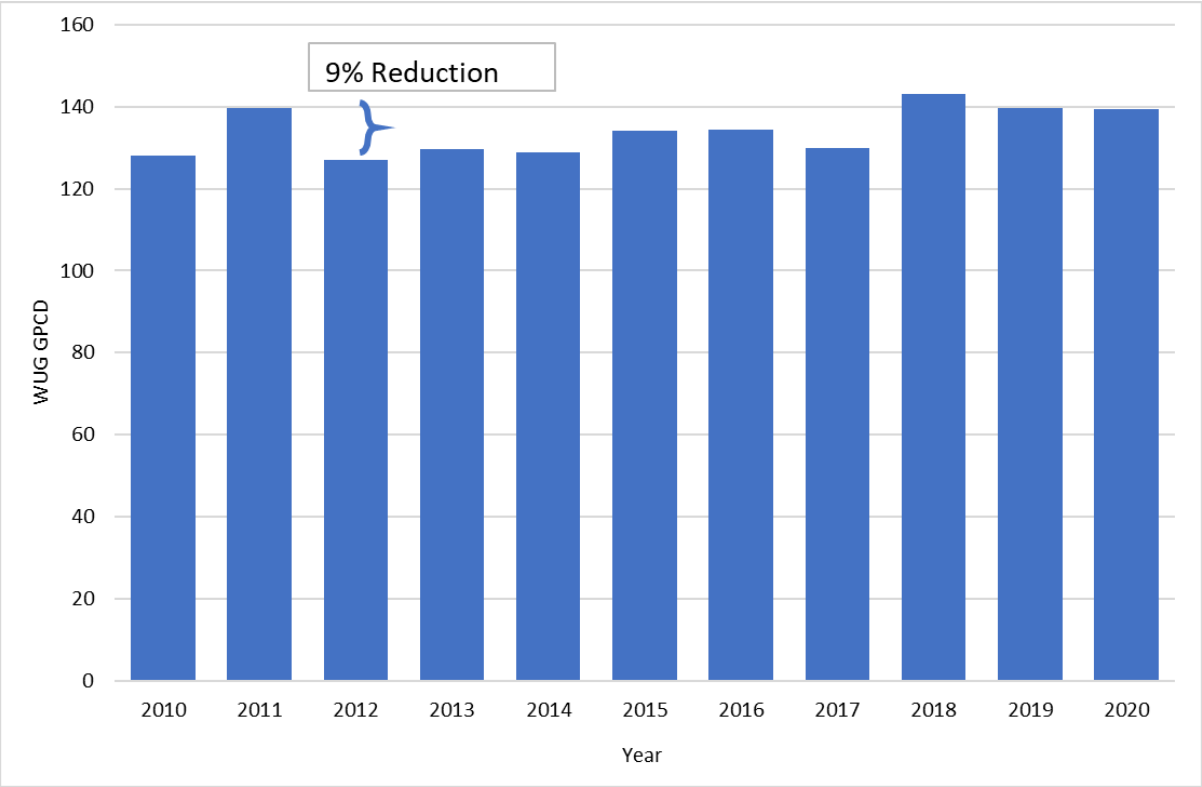
Drought and Emergency Management Measures

The Region I RWPG does not recommend drought management strategies to meet projected long-term water needs. Instead, these strategies are reserved for water providers to address DWDOR conditions or other emergency water supply situations. The DCPs are also updated every five years and have evolving triggers and measures that are refined based on experiences during drought conditions.

Existing and potential drought and emergency management measures are expected to be available to Region I WUGs during a DWDOR. As shown in Figure 7.4, Region I WUGs achieved an average demand

[1] The management supply factor is the ratio of the projected available supply to the projected demand. A factor greater than one indicates a supply surplus.

reduction of 9% in 2012 compared to 2011 during the drought of the 2010s.



Sources: TWDB-provided spreadsheet dated March 2022 (CORRECTED - WUG_HistoricalData_2026RWPs.xlsx)

Figure 7.4 Average Per Capita Water Use of Region I WUGs

7.2.3 Potential Additional Measures for DWDOR Resilience

Water providers in Region I may have other tools to address DWDORs that are not specifically addressed in this plan. For example, water providers with multiple sources may have the potential to gain extra yield from system operations of their supplies. Emergency interconnects with and/or interim emergency purchases from other providers provide another potential option for obtaining water during a DWDOR. More discussion regarding existing and potential emergency interconnects in Region I can be found in Section 7.5.

7.3 CURRENT DROUGHT PREPARATIONS AND RESPONSES IN REGION I

The TCEQ requires the following types of water providers to submit drought contingency plans to the agency:

- Retail public water suppliers serving 3,300 connections or more
- Wholesale public water suppliers
- Irrigation districts
- Applicants for new or amended water rights
- Investor-owned or privately-owned water utilities

In addition, the TCEQ requires retail public water suppliers serving fewer than 3,300 connections to

prepare and adopt a drought contingency plan (DCP) and make the plan available upon request. A list of water users, totaling 49 entities, that are required by Texas Water Code Section 11.1272 to submit a drought contingency plan is included in Table 7.2. For retail public water suppliers, the current number of connections was obtained from the TCEQ Water Utility Database. Drought contingency plans were to be updated and submitted to the TCEQ and East Texas Regional Water Planning Group (ETRWPG) by May 1, 2024. Failure to submit a drought contingency plan is a violation of the Texas Water Code, Section 11.1272 and the Texas Administrative Code, Section 288.30, and is subject to enforcement by the TCEQ.

7.3.1 Summary of Current Drought Triggers, Goals, and Response Measures

The majority of the DCPs in the ETRWPA use trigger conditions based on a combination of water supply and demands placed on the water distribution system.

Utilities use water supply-based triggers to identify the onset of drought and to reduce water usage accordingly. Typical supply-based triggers depend on water levels in wells, water levels in reservoirs, and/or water system storage capacity.

Demand-based triggers are based on limitations in a utility's ability to treat and/or convey water to its customers. Demand-based triggers are typically expressed as a percentage of water production capacity.

Drought contingency plans typically identify different stages of drought and specific triggers and responses for each stage. In addition, the plan must specify quantifiable targets for water use reductions for each stage, and a means and method for enforcement.

Table 7.3 lists the 55 entities who have either submitted their plans to the ETRWPG during these two planning cycles[2] or have plans available online. As shown in Table 7.3, the recent DCPs of the Region I WUGs include 3 to 6 stages, typically with voluntary measures beginning in Stage 1 and mandatory measures beginning in Stage 2. Some DCPs include an emergency stage not directly related to drought but based on system rupture or failure. Other DCPs have a water rationing section, apparently for situations that are more severe than the final drought contingency stage. In these instances, water rationing is listed as the final stage.

[2] The 2019 DCPs are the most recent plans available online for many WUGs, suggesting that the information in the 2019 DCPs might still serve as a good indicator of the drought responses of Region I WUGs. Although some entities are required to update their DCPs in 2024 per the TCEQ requirements, some might elect not to update their DCPs due to other considerations that are not discussed herein.

Table 7.2 East Texas Regional Water Planning Area Water Suppliers Required to Submit Drought Contingency Plans

Angelina & Neches River Authority	City of Silsbee
Athens Municipal Water Authority	City of Tyler
Carolynn Estates (1)	Four Pines WSC
City of Athens	G M WSC
City of Beaumont	Houston County WCID 1
City of Bridge City	Hudson WSC
City of Carthage	Lake Livingston WSC
City of Diboll	Leveretts Chapel WSC (1)
City of Groves	Lindale Rural WSC
City of Hemphill	Lower Neches Valley Authority
City of Henderson	Lumberton MUD
City of Jacksonville	Mauriceville SUD
City of Jasper	Orange County WCID 1
City of Joaquin	Orangefield WSC
City of Kilgore	Panola County FWSD 1
City of Lufkin	Pennington WSC
City of Nacogdoches	Sabine River Authority
City of Nederland	Slocum WSC
City of Newton	South Sabine WSC(1)
City of Orange	Southern Utilities
City of Palestine	The Consolidated WSC
City of Port Arthur	Trinity River Authority
City of Port Neches	Upper Neches River Municipal Water Authority
City of Rusk	West Jefferson County MWD
City of San Augustine	

Note: (1) Entities are too small to be classified as a water user group in the 2026 RWP,
Source: TWDB provided the required DCP submittal list to the RWPG in 2024.

Table 7.3 Drought Trigger Conditions and Strategies Documented in Drought Contingency Plans

Entity	Plan Date	Trigger Based On:		No. of Stages	First Stage with Mandatory Measures	Retail Water Sales	Wholesale Water Sales	Water Use Reduction Goals by Stage: (Percent Reduction in Total Use Unless Otherwise Specified) [a]				
		Supply	Demand					1	2	3	4	5
Angelina and Neches River Authority	2019	•	•	5	2	•	•	5%	10%	10%	10%	10%
Angelina Nacogdoches WCID 1	2019	•		4	2		•	0%	10%	25%	50%	n/a
Athens Municipal Water Authority	2019	•	•	6	2		•	10%	4 MGD[b]	4 MGD[b]	4 MGD[b]	4 MGD[b]
B C Y WSC	2024	•	•	4	2	•		n/a	n/a	n/a	n/a	n/a
Bevil Oaks	2022	•		5	2	•		5%	10%	20%	40%	50%
Cherokee Water Company	2024	•		4	2	•		5%	10%	15%	n/a	n/a
City of Beaumont	2019	•	•	5	2	•	•	8%	10%	12.5%	17.5%	30%
City of Bridge City	2015	•	•	6	2	•		5%	10%	15%	25%	40%
City of Carthage	2019	•	•	5	2	•	•	5%	10%	15%	20%	25%
City of Center	2019	•	•	4	2	•	•	5%	10%	15%	n/a	n/a
City of Crockett	2014	•	•	4	2	•	•	10%	20%	30%	n/a	n/a
City of Garrison[C]	2022	•		5	2	•	•	15%	25%	50%	60%	50%[b]
City of Grapeland	2019	•	•	4	2	•	•	10%	20%	30%	n/a	n/a
City of Groves	2019	•	•	6	2	•		5%	10%	12.5%	15%	15%
City of Hemphill	2019	•	•	4	2	•	•	10%	15%	20%	25%	n/a
City of Henderson	2014	•	•	3	2	•		10%	10%	10%[c]	n/a	n/a
City of Huntington	2017	•	•	4	3	•		n/a	n/a	n/a	n/a	n/a
City of Jacksonville	2014	•	•	3	2	•	•	5%	10%	12.5%	12.5%	n/a
City of Jasper	2019	•	•	2	2	•		10%	n/a	n/a	n/a	n/a
City of Kountze	2017	•	•	5	2	•		5%	10%	15%	20%	25%
City of Lufkin	2019	•	•	6	2	•	•	5%	10%	10%	10%	10%
City of Nacogdoches	2024	•	•	4	2	•		5%	7%	9%	n/a	n/a

Entity	Plan Date	Trigger Based On:		No. of Stages	First Stage with Mandatory Measures	Retail Water Sales	Wholesale Water Sales	Water Use Reduction Goals by Stage: (Percent Reduction in Total Use Unless Otherwise Specified) [a]				
		Supply	Demand					1	2	3	4	5
City of Orange	2019	•	•	4	2	•		10%	15%	25%	n/a	n/a
City of Palestine	2019	•	•	4	2	•		n/a	n/a	n/a	n/a	n/a
City of Pinehurst[C]	2020	•	•	4	2	•		25%	50%	75%	100%	n/a
City of Pineland	2019	•	•	5	2	•	•	5%	7%	10%	15%	20%
City of Port Arthur	2019	•	•	3	2	•		n/a	n/a	n/a	n/a	n/a
City of Port Neches	2019	•	•	5	2	•		n/a	n/a	n/a	n/a	n/a
City of Rusk	2014	•	•	4	2	•	•	10%	15%	20%	n/a	n/a
City of San Augustine	2021	•		4	2	•	•	5%	15%	25%	n/a	n/a
City of Silsbee	2024	•	•	4	2	•		5%	15%	25%	n/a	n/a
City of Tyler	2024	•	•	4	2	•	•	5%	10%	15%	n/a	n/a
Craft Turney WSC	2019	•	•	5	2	•		5%	10%	15%	20%	75%
DeBerry	2024	•	•	3	1	•		n/a	n/a	n/a	n/a	n/a
Four Pines WSC	2014	•	•	3	2	•	•	20%	30%	40%	n/a	n/a
G M WSC	2024	•		5	2	•		5%	10%	20%	30%	40%
Houston County WCID No. 1	2019	•	•	4	2	•	•	10%	20%	30%	n/a	n/a
Lindale Rural WSC	2019	•	•	4	2	•		10%	15%	20%	25%	n/a
Lower Neches Valley Authority	2022	•		4	n/a		•	10%	20%	30%	n/a	n/a
Lumberton MUD	2019	•	•	6	2	•		25%	30%	50%	60%	70%
Mauriceville MUD	2019	•	•	6	2	•		20%	30%	40%	50%	60%
Meeker MWD	2023	•		6	2	•		10%	15%	20%	25%	30%
New Prospect WSC [C]	2024		•	4	2	•		10%	10%	9%	50%	n/a
North Cherokee WSC	2000	•		6	2	•		n/a	n/a	n/a	n/a	n/a
Orange County WCID 1	2024	•	•	6	2	•		10%	15%	20%	25%	30%
Redland WSC	2023		•	5	2	•		10%	20%	30%	40%	50%
Sabine River Authority	2024	•		3	2		•	n/a	10%	20%	n/a	n/a

Entity	Plan Date	Trigger Based On:		No. of Stages	First Stage with Mandatory Measures	Retail Water Sales	Wholesale Water Sales	Water Use Reduction Goals by Stage: (Percent Reduction in Total Use Unless Otherwise Specified) [a]				
		Supply	Demand					1	2	3	4	5
Slocum WSC	2019	•	•	3	1	•	•	n/a	n/a	n/a	n/a	n/a
South Jasper WSC	2023		•	4	2	•	•	10%	25%	50%	n/a	n/a
South Sabine WSC	2023	•	•	4	2	•	•	10%	15%	50%	n/a	n/a
Southern Utilities	2019	•	•	5	2	•		5%	5%[e]	7%	10%	15%
Upper Neches River Municipal Water Authority	2024	•		4	2		•	5%	10%	15%	n/a	n/a
West Jefferson County MUD	2024	•	•	4	2	•		16%	23.3%	28.3%	n/a	n/a

[a] Blank cell indicates entity does not have reduction goal.

[b] Only the first five stages are shown herein, as the sixth stage is typically the emergency stage without quantified savings. As noted by the City of Garrison's DCP, a saving goal of 50% was listed as the goal for stage 5.

[c] These saving goals are not typo.

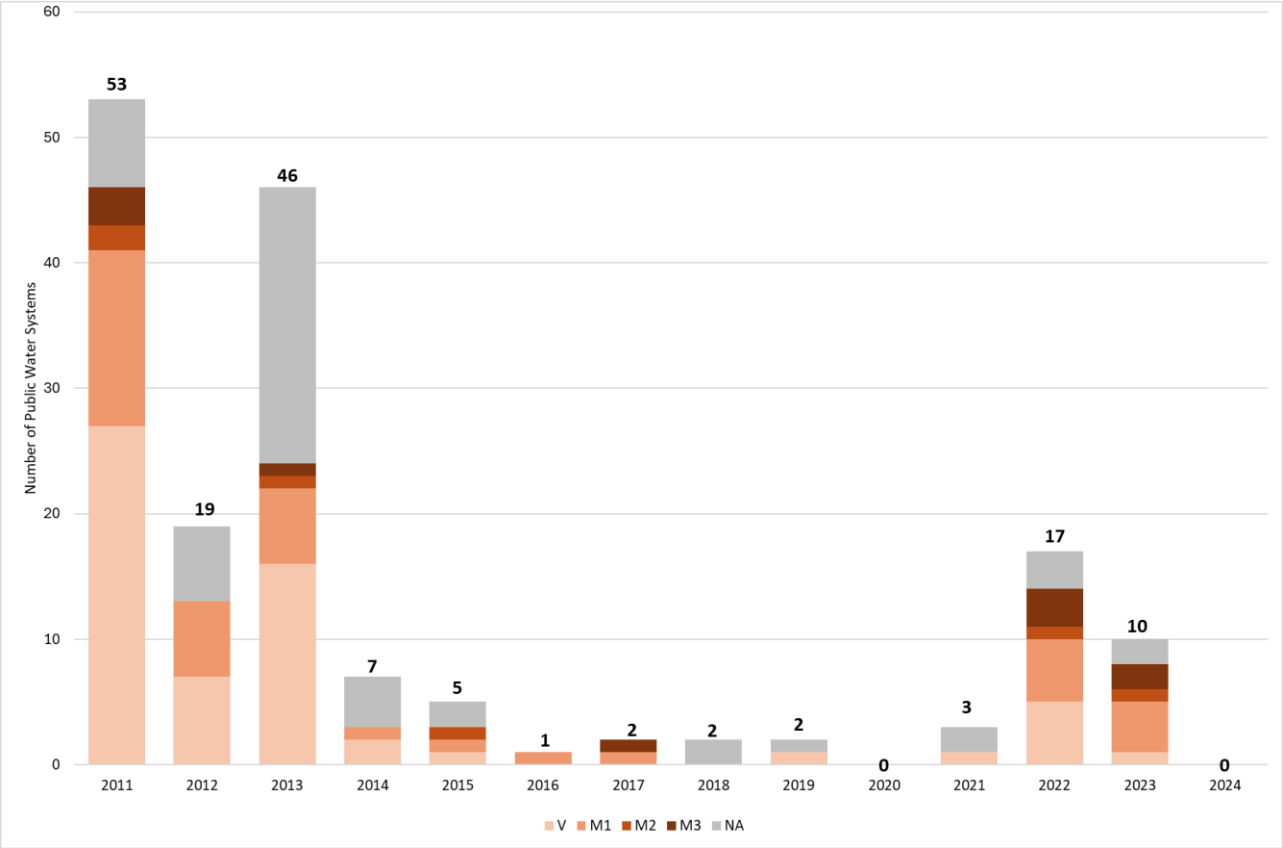
One of the primary drought response measures for retail water suppliers is restricting irrigation. Many plans include the following progression of irrigation limits:

- Stage 1: Voluntary limits on irrigation days (maximum of twice per week, odd/even schedule, etc.) and hours (no irrigation in the middle of the day).
- Stage 2: Mandatory limits on irrigation days and hours.
- Stage 3: No use of hose-end sprinklers.
- Stage 4: No use of automatic irrigation systems.
- Stage 5: No irrigation.

TCEQ collects data on Texas public water systems (PWSs) that have reported water use restrictions and priority levels due to drought or emergency conditions. The most recent list of Texas PWSs limiting water use is found here: https://www.tceq.texas.gov/drinkingwater/trot/droughtw.html.

The Region I RWPG analyzed records available from the TCEQ website to determine which Region I PWSs implemented water restrictions and to what extent the restrictions were implemented (Figure 7.5). The ETRWPG conducted an analysis of TCEQ records between May 2011 and August 2024 to determine which Region I PWSs implemented water restrictions and to what extent the restrictions were implemented.

The results of this analysis are shown in Figure 7.5. The impacts of the 2011 drought and continuing dry conditions through 2013 are apparent, as nearly 118 Region I PWSs reported water use restrictions during that time span. Reports decreased significantly since 2014, with zero reports in 2020, before increasing again in 2022. As of December 2024, no Region I PWS has reported any water use restrictions.



Note:
V: Voluntary watering schedule
M1: Mandatory limited watering schedule
M2: Mandatory limited to hand-held hose only
M3: Mandatory no outside watering
NA: Not applicable; not currently implementing DCP

Figure 7.5 Region I Public Water Systems Restricting Outdoor Water Use

7.3.2 Drought Contingency Plan Recommendations

During the review of submitted DCPs, eight common water sources were identified. In the following sections, DCPs are compared for entities that sell or receive water from these common water sources. The comparison focuses on the number of response stages, the triggers that initiate the stages, the water savings goals, and the response measures.

Lake Athens

The Athens Municipal Water Authority supplies treated water from Lake Athens to the City of Athens. The 2019 DCPs for Athens Municipal Water Authority and Athens are identical. The City of Athens adopted its 2019 DCPs in their 2024 Water Conservation Plan.

Houston County Lake

The Houston County Water Control and Improvement District No. 1 (HCWCID 1) supplies treated water

from Houston County Lake to the Cities of Crockett and Grapeland. In the 2019 DCPs for HCWCID 1 and Crockett, the triggers, stages, and goals are aligned, and the response measures are complementary. In the DCPs for HCWCID 1 and Grapeland, the triggers, stages, and goals are aligned, and the response measures are the same. However, response measures for the HCWCID 1 are general in nature and not necessarily appropriate for a retail water provider. Grapeland should consider adding details about the specific response measures that will be used to achieve its goals for each response stage. No updated DCPs were available this cycle.

Lake Jacksonville

The City of Jacksonville[3] supplies treated water from Lake Jacksonville to the North Cherokee water supply corporation (WSC). Jacksonville's 2019 DCP has three stages (i.e., the current DCP on the City website), while the North Cherokee WSC 2019 DCP has six stages. Neither plan specifies water savings goals for any of the stages. Response measures are not well-aligned, probably due to the different numbers of stages. For example, the third stage in each plan is labeled "Severe Conditions," but Jacksonville's plan bans all outdoor water use, while North Cherokee WSC's plan appears to allow twice-weekly irrigation by hand or drip irrigation system.

Both Jacksonville and North Cherokee WSC should specify water savings goals by response stage. In addition, North Cherokee WSC and Jacksonville should consider revising their plans to have the same number of response stages and commensurate response measures.

Sam Rayburn Reservoir-Steinhagen Lake System

The Lower Neches Valley Authority (LNVA) supplies raw water from the Sam Rayburn Reservoir-Steinhagen Lake System and their Neches Run-of-River supplies to the cities of Beaumont, Groves, Nederland, Nome, Port Arthur, Port Neches, and Woodville, as well as Bolivar Peninsula Special Utility District (SUD), Jefferson County Water Control and Improvement District (WCID) 10, and West Jefferson County MWD. The triggers in the 2022 LNVA and 2019 Groves DCPs are aligned, but the Groves water savings goal for Stages 3 is significantly lower than LNVA's goal (12.5 percent vs. 30 percent for Stage 3). Groves should consider revising response measures for Stages 3 through 5 to achieve water savings goals similar to LNVA's goals.

The Port Arthur 2019 DCP has three stages, while the LNVA 2022 DCP has four stages. Some of the Port Arthur triggers depend on LNVA declarations of "mild", "moderate", or "severe" conditions, and LNVA's stages are labeled “mild", "moderate", “severe”, or "emergency". Port Arthur and LNVA should consider revising plans to have the same number of response stages and commensurate response measures, and Port Arthur should specify water savings goals by response stage. There are also other LNVA customers whose DCPs were not readily available and therefore not discussed in the 2026 RWP.

Lake Fork Reservoir

The Sabine River Authority (SRA) Iron Bridge/Lake Fork Division supplies raw water from Lake Fork Reservoir to the Cities of Henderson and Kilgore. The Henderson 2019 DCP has three stages, while the SRA Iron Bridge/Lake Fork DCP has four stages (not counting the emergency stage). Henderson's water savings goals appear to be commensurate with or more stringent than SRA's, so the response measures appear to be complementary. Henderson's triggers are based on its treatment/distribution capacity and not on raw water supply conditions. Henderson and SRA should consider revising the plans to have the

[3] The City of Jacksonville also supplies water to Craft Turney WSC, Afton Grove WSC, and Gum Creek WSC. However, no DCPs were available for those entities.

same number of response stages, and Henderson should consider adding triggers based on raw water supply conditions.

The Kilgore 2019 DCP has six stages, while the 2024 SRA Iron Bridge/Lake Fork DCP has four stages (not counting the emergency stage). Kilgore's triggers consider the SRA response stages. However, there is no mention of SRA Stage 5 or SRA "Emergency Water Shortage Conditions", partly due to different numbers of stages between the plans. Kilgore's water savings goals appear to be commensurate with or more stringent than SRA's, so the response measures appear to be complementary. Kilgore and SRA should consider revising the plans to have the same number of response stages, and Kilgore should consider amending triggers to acknowledge SRA Stage 5 and SRA "Emergency Water Shortage Conditions".

Toledo Bend Reservoir

The Sabine River Authority (SRA) Toledo Bend/Gulf Coast Division supplies raw water from Toledo Bend Reservoir to the City of Hemphill, which in turn provides treated water to the G M WSC. No drought contingency plan was available for the City of Hemphill.

The G M WSC 2019 DCP has five stages, while the SRA Toledo Bend/Gulf Coast 2019 DCP has three stages (not counting the emergency stage). G M WSC's water savings goals are commensurate with or more stringent than SRA's, so the response measures appear to be complementary. For each response stage, the SRA DCP contains triggers that are based on the water surface elevation in Toledo Bend Reservoir (165.1 feet in Stage 1, 162.2 feet in Stage 2, and 156 feet in Stage 3). The G M WSC DCP only contains trigger based on the Toledo Bend Reservoir elevation in Stage 1 (168 feet). The other stages are triggered based only on demands.

In coordination with the City of Hemphill, G M WSC and SRA should consider revising the plans to have the same number of response stages. In addition, G M WSC should consider adding Stage 2 and Stage 3 triggers based on raw water supply conditions (similar or complementary to SRA's and/or Hemphill's triggers).

Lake Palestine

The Upper Neches River Municipal Water Authority (UNRMWA) supplies raw water from Lake Palestine to the City of Tyler, which in turn provides treated water to the Southern Utilities. Tyler's triggers, presented in its 2024 DCP, are based on its treatment/distribution/storage capacity as well as raw water supply conditions. Tyler's water savings goals align with UNRMWA's goals in its 2024 DCP. The latest Southern Utilities DCP was not available online.

The UNRMWA also supplies raw water from Lake Palestine to the City of Palestine via the Neches River. The UNRMWA and Palestine DCPs have the same number of response stages. Palestine’s triggers are based on demand volume, water levels in storage tanks, and UNRMWA drought stage. Although Palestine has not listed water savings goals for its drought stages, the response measures for each stage appear to be commensurate with UNRMWA's goals. Therefore, the triggers, stages, and goals in the UNRMWA and Palestine DCPs are aligned.

Yegua-Jackson Aquifer

The City of Pineland supplies treated water from the Yegua-Jackson Aquifer to the G M WSC. The G M WSC triggers are based on its Toledo Bend Reservoir and Carrizo-Wilcox Aquifer supplies but not on Pineland water supply conditions. The G M WSC 2019 DCP has five stages, and the Pineland 2019 DCP has four stages. G M WSC's water savings goals in the latter stages (5-15 percent) are also smaller than Pineland's (5-20 percent).

However, the water purchased from Pineland comprises only a small amount of the G M WSC water supply (4.3 percent in 2023 per their Water Use Survey). For this reason, major changes to the GM-WSC plan do

not appear to be necessary.

7.3.3 Summary of Unnecessary or Counterproductive Drought Response Efforts

House Bill 807, was passed by the 86th Texas Legislature in 2019, amended Section 16.053 of the Texas Water Code to include the requirement that RWPGs "identify unnecessary or counterproductive variations in specific drought response strategies, including outdoor watering restrictions, among user groups in the regional water planning area that may confuse the public or otherwise impede drought response efforts" (TWC §16.053(e)(3)(E)).

The TWDB provided the following guidance to meet this requirement: "consider drought contingency plans from each WUG, as necessary, to inform WMS evaluations and recommendations and to determine which drought response efforts are unnecessary or counterproductive." This information has been reviewed, and this chapter has been updated with the following information showing how Region I water providers have made efforts to reduce any confusing or counterproductive variations in drought response strategies, including the DCP recommendations presented in Sections 7.3.1 and 7.2.2.

7.4 REGION-SPECIFIC RECOMMENDATIONS REGARDING TRIGGERS AND ACTIONS TO BE TAKEN IN DROUGHT

Region-specific drought response recommendations regarding the management of existing surface water and groundwater sources are presented in the following sections. These recommendations include:

- Factors specific to each source of water supply to be considered in determining whether to initiate a drought response for each water source, including specific recommended drought response triggers;
- Actions to be taken as part of the drought response by the manager of each water source and the entities relying on each source, including the number of drought stages;
- Triggers and actions consider existing triggers and actions associated with existing drought contingency plans.

7.4.1 Drought Trigger Conditions for Reservoirs

The major recommended triggers and potential actions for reservoirs in the ETRWPA are presented in this section. Where possible, the ETRWPG has incorporated triggers and major actions from drought contingency plans that have been developed for these water sources. A summary of triggers and actions for 12 reservoir systems in the ETRWPA is provided in Tables 7.4 through 7.16. An additional five reservoirs in the region have not submitted drought contingency plans. Therefore, generic drought triggers and actions have been developed by the consulting team for the reservoirs in the region that have not submitted drought contingency plans in Table 7.16. These drought contingency plans may require more actions than shown in this section and may contain exceptions to these potential actions. These additional potential actions and exceptions are also endorsed by the ETRWPA.

The potential actions are generally cumulative between stages: actions implemented in Stage 1 remain in effect in Stage 2 and so on.

Lake Athens (Athens Municipal Water Authority)

The Athens Municipal Water Authority adopted its drought contingency plan in May 2019. The triggers and actions are related to water demand and the elevation of Lake Athens and are summarized below in Table 7.4.

Table 7.4 Lake Athens Triggers and Potential Actions

Drought Stage	Trigger	Potential Action
Mild	Total daily usage of potable water exceeds 4.5 million gallons per day (MGD).	Request voluntary conservation measures, including odd/even watering schedule and limited irrigation hours. Request customers to practice water conservation and to minimize or discontinue water use for nonessential purposes.
Moderate	Total daily usage of potable water exceeds 4.5 MGD and the storage facilities do not refill to a level above 80% capacity overnight.	Implement mandatory conservation measures, including odd/even watering schedule and limited irrigation hours. Limit water use for vehicle washing and filling pools. Prohibit operation of ornamental fountains or ponds except where necessary to support aquatic life or those equipped with a recirculation system. Limit water use from fire hydrants. Prohibit non-essential water use.
Severe	Total daily usage of potable water exceeds 4.5 MGD and the storage facilities do not refill to a level above 65% capacity overnight.	Implement mandatory conservation measures, including continued odd/even watering schedule and limited irrigation hours. Prohibit oil/gas/construction water use from fire hydrants. Prohibit irrigation of golf course tees and greens. Restaurants serve water only on request.
Critical	Total daily usage of potable water exceeds 4.5 MGD and the storage facilities do not refill to a level above 50% capacity overnight.	Implement mandatory conservation measures, including continued odd/even watering schedule and curtailed irrigation hours. Prohibit use of hose end sprinklers and permanently installed automatic sprinkler systems. Prohibit adding water to pools and spas. Prohibit vehicle washing not occurring at commercial facilities. Prohibit operation of ornamental fountains or ponds except where necessary to support aquatic life or those equipped with a recirculation system. No new, additional, expanded, or increased-in size connections, meters, service lines, pipeline extensions, mains, or water service facilities.
Emergency	• Major water line breaks or pump or system failures occur, which cause an unprecedented loss of capability to provide water service; or • Natural or man-made contamination of the water supply source(s) occurs	Prohibit irrigation of landscaped areas. Prohibit vehicle washing.

Note: To be confirmed upon receipt of the most recent DCP. The information above reflects the 2019 DCP.

Lake Center and Lake Pinkston (Center)

Center adopted its latest Drought Contingency Plan in 2019 per the available information. The triggers are associated with water demands and total storage in the reservoirs. The triggers and actions related to Lake Center and Lake Pinkston are outlined below in Table 7.5.

Table 7.5 Lake Center and Lake Pinkston Triggers and Potential Actions

Drought Stage	Trigger	Potential Action
Mild	Water demand reaches 90% of production capacity; or Distribution limitations	Implement mandatory maximum twice-weekly watering schedule. Request that customers discontinue non-essential water uses.
Moderate	Water demand reaches 95% of production capacity; Water storage falls to 50% of storage capacity; or Distribution limitations	Implement mandatory maximum once-weekly watering schedule. Require that customers discontinue non-essential water uses. Expand enforcement.
Severe	Water demand reaches 100% of production capacity; Water storage falls to 25% of storage capacity; or Major distribution limitations	Prohibit all landscape, non-essential, and discretionary water uses. Continued enforcement. Examine alternative sources.

Houston County Lake (Houston County WCID No. 1)

The Houston County WCID No. 1 adopted its latest Drought Contingency Plan in January 2019 per the available information. The triggers are associated with water demands, weather conditions, and the reservoir's elevation. The triggers and actions related to Houston County Lake are outlined below in Table 7.6.

The Consolidated WSC and the Cities of Crockett, Lovelady and Grapeland purchase water from the Houston County WCID No. 1. Recommendations for aligning their DCPs with the Houston County WCID No. 1 DCP are presented in Section 7.3.3.

Table 7.6 Houston County Lake Triggers and Potential Actions

Drought Stage	Trigger	Potential Action
Mild	a) Water demand has reached 90% of the capacity of the system for three consecutive days with the plant operating at 100% of the rated production; or b) Weather conditions that will result in reduced water supply available from the Houston County Lake for an extended period of time; or c) Water level at the Lake drops below 258 feet above mean sea level, which is 2 feet below pool (260 feet mean sea level).	Request voluntary conservation measures.

Drought Stage	Trigger	Potential Action
Moderate	a) Water demand has reached 100% of the capacity of the system for three consecutive days with the plant operating at 100% of the rated production; or b) Weather conditions that result in Lake levels falling to 256 mean sea level, which is 3 feet below pool; or c) Water supply storage facilities are not maintaining a constant level with the plant operating at 100% of the rated production.	Implement mandatory conservation measures, limiting outdoor watering to hand-held hose use only. Require wholesale customers to initiate Stage 2 of their DCPs. Prepare for curtailment by preparing a monthly usage allocation for each wholesale customer.
Severe	a) The treatment plant is non-operational due to a malfunction at the site; or b) Water levels drop at the reservoir to a point where pumping equipment will not function properly.	Implement additional mandatory conservation measures, including prohibition of outdoor watering except for livestock. Initiate pro-rata curtailment of water sales to each wholesale customer.
Emergency	a) A major water line breaks which causes considerable water loss; or b) Pumps or system failures occur which causes the inability to obtain the water from the Lake, treat the water adequately, or supply the water to our customers; or c) Natural or man-made contamination of the water supply source.	Assess the severity of the problem, and identify actions needed and time required to solve the problem. If necessary, notify city, county, and/or state emergency response officials for assistance. Undertake necessary actions as needed.

Lake Jacksonville (Jacksonville)

The City of Jacksonville adopted its current Drought Contingency Plan on September 10, 2019 per the City website. The triggers are associated with water demands and the status of water supply facilities such as storage tanks and pumps. The triggers and actions related to Lake Jacksonville are outlined below in Table 7.7.

The North Cherokee, Afton Grove, Gum Creek, and Craft Turney WCSs purchase water from the City of Jacksonville. Recommendations for aligning the DCPs for these entities are presented in Section 7.3.3.

Table 7.7 Lake Jacksonville Triggers and Potential Actions

Drought Stage	Trigger	Potential Action
Mild	a) Water demand is approaching the safe capacity of the system on a sustained basis. Sustained water usage over 85%	Warn customers to reduce water use.

Drought Stage	Trigger	Potential Action
	of safe capacity, or 7.04 million gallons per day (MGD) (five consecutive days) should be taken as a trigger condition for mild conditions. b) Mild contamination is noted in the water supply, but water can still be treated by existing facilities by means such as increasing chlorine dosage; or contamination is reported in updip portions of aquifer. c) Additional well drilling in the vicinity threatens interference with water wells. d) Water levels in tanks are consistently below 75% full (five days uninterrupted). e) Local power failures are imminent as a result of power station failures, storms, transmission problems, or excessive power demand in the area. f) Performance of well water pumps, high service pumps, or other equipment indicates imminent failure. g) Transmission line from surface water plant to Dorothy St. tank is in danger of failure.	Recommend a voluntary lawn watering schedule. Explore the possibility of interconnection with other systems. Take steps toward increasing system capacity, including repair of wells not currently in use.
Moderate	a) Water demand occasionally reaches the safe limit of system (two days within a 30-day period), and failure of any pump or chlorine feeder could reduce the level of service to the system. Safe limit is 8.38 MGD as discussed above. b) Contamination of supply water is approaching limit of treatability with existing facilities; or brackish water is very near the well. c) Additional wells in vicinity are drawing water at a rate which interferes with production rate of City's wells. d) Over 20% of storage tank capacity is out of service due to structural failure, leakage, maintenance, or contamination. e) Water level in tanks is consistently below half full (three days uninterrupted). f) Water emergencies in adjacent communities require diversion of so much water that the level of service to any part of the Jacksonville system is threatened. g) Severe freezing conditions have resulted in widespread damage to home plumbing or distribution lines.	Implement mandatory lawn watering schedule. Prohibit wasteful water uses. Seek reduced usage from commercial users and industries. Take steps toward interconnection with other systems. Impose system surcharge. Take steps toward increasing system capacity, including repair of wells not currently in use.
Severe	a) Water demand is exceeding safe capacity (8.38 MGD) on a regular basis (more than five consecutive days). b) Supply water is so contaminated that it cannot be treated with existing facilities or such contamination is imminent because of nearby aquifer pollution. c) Rupture of transmission lines from the raw water pumps or from the water treatment plant. d) An immediate health or safety hazard could result from	Prohibit all outdoor use and all wasteful use. Impose system surcharge. Impose rationing. Require commercial users and industries to stop using City

Drought Stage	Trigger	Potential Action
	actual or imminent failure of system components. e) Water levels in elevated tanks are too low to provide adequate fire protection (generally less than 1/4 full). f) Over half of storage tank capacity is out of service. g) All service pumps are out of service. h) Water emergencies in adjacent communities require so much water diversion that service to portions of the Jacksonville system is severely disrupted.	water for processes, cooling, or recreation. Implement interconnection with other systems. Implement increased system capacity.

Lake Murvaul (Panola County Fresh Water Supply District No. 1)

The Panola County Fresh Water Supply District No. 1 did not submit a drought contingency plan. Therefore, recommendations are based on the drought contingency plan for the City of Carthage, which purchases water from the Panola County Fresh Water Supply District No. 1. Carthage adopted its most recent drought contingency plan in 2019. The triggers and actions are based on water demands, weather conditions, and reservoir storage. These are outlined in Table 7.8 below.

Table 7.8 Lake Murvaul Triggers and Potential Actions

Drought Stage	Trigger	Potential Action
Mild	a) Average daily water consumption reaches 90% of the water treatment plant's production capacity for three consecutive days. b) Water level in Lake Murvaul is declining at a rate that could disrupt water supply in the future. c) Weather conditions are considered in drought classification determination. Predicted long, cold, or dry periods are to be considered in impact analysis.	Encourage voluntary reduction of water use. Discuss conservation with industrial and commercial customers. Implement system oversight. Discuss conservation/ rationing with wholesale customers and request voluntary measures.
Moderate	a) Average daily water consumption reaches 100% of the water treatment plant's production capacity for three consecutive days. b) Water levels in Lake Murvaul continue to decline or are declining at a rate that makes supply problems imminent. c) Weather conditions indicate mild drought will exist for five or more consecutive days.	Implement mandatory conservation measures, including odd/even watering schedule and limited watering hours. Discontinue irrigation of parks and public areas. Limit water use for vehicle washing. Prohibit water use from fire hydrants except for firefighting. Request wholesale customers implement mandatory conservation/ rationing measures. Prepare monthly water usage allocations for wholesale customers

Drought Stage	Trigger	Potential Action
		in advance of pro rata curtailment.
Severe	a) Average daily water consumption reaches 110% of the water treatment plant's production capacity for three consecutive days. b) Water storage levels are drained daily and recover only during overnight periods of low demand. c) Lake Murvaul water levels have declined to the point where any additional loss of water will expose an intake point to the atmosphere. d) Lake Murvaul water levels have declined to the point where water withdrawal is impeded. e) e. A clear well at the water treatment plant is taken out of service during a mild or moderate water shortage period.	Prohibit use of hose-end sprinklers. Prohibit use of water for street washing, filling pools, water athletic fields and courses, and dust control. Initiate development of alternative supply sources. Initiate pro rata curtailment for wholesale customers.
Critical	a) Average daily water consumption reaches 115% of the water treatment plant's production capacity for any one day. b) Water storage levels do not fully recover even during overnight periods of low demand. c) Lake Murvaul water levels have declined to the point where water withdrawal is impeded due to exposed water inlets on the intake structure. d) System demand exceeds available high service pump capacity.	Prohibit vehicle washing.
Emergency	a) Average daily water consumption reaches 120% of the water treatment plant's production capacity for any one day. b) Lake Murvaul water levels have declined to the point where water withdrawal is impeded or equipment could be damaged by normal operation of water supply system facilities and equipment due to water supply deficiency. c) Water system is contaminated, either accidentally or intentionally. Severe condition is reached immediately upon detection. d) Water system fails-- from acts of God	Prohibit all non-essential water uses, including landscape watering and vehicle washing. Implement alternative supply sources. Implement pro-rata water allocation.

Drought Stage	Trigger	Potential Action
	(tornados, hurricanes) or man. Severe condition is reached immediately upon detection.	

Lake Nacogdoches (Nacogdoches)

Nacogdoches adopted its latest drought contingency plan in 2019 per available information. The triggers and actions are based on water demands and production capacity. These are outlined in Table 7.10 below.

Table 7.9 Lake Nacogdoches Triggers and Potential Actions

Drought Stage	Trigger	Potential Action
Mild	When total daily water demand equals or exceeds 90% of the daily water production capacity for 4 consecutive days or 92% of water capacity production on a single day.	Reduce flushing of water mains. Discontinue water hydrant testing. Repair major water main leaks and breaks. Discuss conservation/ rationing with wholesale customers; request voluntary measures.
Moderate	When total daily water demand equals or exceeds 92% of the daily water production capacity for 4 consecutive days or 94% of the daily production capacity on a single day.	Implement mandatory conservation measures, including maximum twice-weekly watering schedule and limited watering hours. Prohibit non-essential water use. Limit water use for vehicle washing and filling of pools. Limit water use from fire hydrants. Limit irrigation of golf course greens, tees and fairways. Discontinue irrigation of public areas. Prepare monthly water usage allocations for wholesale customers in advance of pro rata curtailment. Prohibit non-essential water uses. Restaurants serve water only on request.
Severe	When total daily water production capacity equals or exceeds 94% of the daily production capacity for 4 consecutive days or 96% of the daily water production capacity on a single day.	Initiate pro rata curtailment for wholesale customers.
Emergency	When the City Manager, or designee, determines a water supply emergency exists based on: Major water line breaks, or pump or system failures occur which cause unprecedented loss of capability to provide water service; or	Assess the severity of the problem and identify the actions needed and time required to solve the problem. Prepare a post-event assessment report on the incident and critique of emergency response procedures and actions. If appropriate, notify city, county, and/or state emergency response officials for assistance. Undertake necessary actions, including repairs and/or clean-up as needed. Inform

Table 7.9 Lake Nacogdoches Triggers and Potential Actions

Drought Stage	Trigger	Potential Action
	b. Natural or man-made contamination of water supply source(s).	the utility director or other responsible official of each wholesale water customer by telephone or in person and suggest actions, as appropriate, to alleviate problems

Lake Palestine (Upper Neches River Municipal Water Authority)

The UNRMWA adopted its most recent drought contingency plan in 2024. The triggers and actions are based on water elevations in the reservoir. These are outlined in Table 7.11 below.

In the ETRWPA, the Cities of Tyler and Palestine purchase water from the UNRMWA. In addition, Southern Utilities purchases water from Tyler. Recommendations for aligning these DCPs are presented in Section 7.3.3.

Table 7.10 Lake Palestine Triggers and Potential Actions

Drought Stage	Trigger	Potential Action
Mild	When the stage elevation of Lake Palestine reaches or drops below 339.5 feet for three consecutive days.	Minimize unnecessary releases from Lake Palestine. Encourage wholesale customers to use alternative water sources. Request that wholesale customers implement voluntary conservation measures and Stage 1 of drought contingency plan (DCP).
Moderate	When the stage elevation of Lake Palestine reaches or drops below 336 feet for three consecutive days.	Request that wholesale customers implement mandatory conservation measures and Stage 2 of DCP. Prepare monthly water usage allocation in preparation for pro-rata curtailment. Provide a weekly report to news media regarding the drought stage information.
Severe	When the stage elevation of Lake Palestine reaches or drops below 333 feet for three consecutive days.	Coordinate with authorities to reduce or eliminate releases downstream. Request that wholesale customers implement additional mandatory conservation measures and Stage 3 of DCP. Initiate pro-rata curtailment of water diversions/deliveries. Provide a weekly report to news media regarding the drought stage information.
Emergency	When any of the following occur: a) A dam, spillway, or outlet works and associated appurtenances failure occurs, which cause unprecedented	Assess the severity of the problem, and identify actions needed and time required to solve the problem. If necessary, notify city, county, and/or state emergency response officials for assistance. Undertake necessary actions as needed. Prepare a post-event assessment report on the incident and critique of emergency response procedures and actions. Inform the utility

Drought Stage	Trigger	Potential Action
	loss of capability to provide water service; or b) Natural or man-made contamination of the water supply source occurs.	director or other responsible official of each wholesale water customer by telephone or in person and suggest actions, as appropriate, to alleviate problems.

Rusk City Lake (Rusk)

Rusk adopted its most recent drought contingency plan in 2014 per the latest information. The triggers and actions are based on water demands. These are outlined in Table 7.12 below.

Table 7.11 Rusk City Lake Triggers and Potential Actions

Drought Stage	Trigger	Potential Action
Mild	When total daily water demand equals or exceeds 800,000 gallons for five consecutive days or 1,600,000 gallons on a single day.	Request that wholesale customers implement voluntary conservation measures and Stage 1 of drought contingency plan (DCP).
Moderate	When total daily water demand equals or exceeds 1,600,000 gallons for five consecutive days or 1,900,000 gallons on a single day.	Request that wholesale customers implement mandatory conservation measures and Stage 2 of DCP. Prepare monthly water usage allocation in preparation for pro-rata curtailment.
Severe	When total daily water demand equals or exceeds 1,900,000 gallons for five consecutive days or 2,200,000 gallons on a single day.	Request that wholesale customers implement additional mandatory conservation measures and Stage 3 of DCP. Initiate pro-rata curtailment of water diversions/deliveries.
Emergency	When there exist major water line breaks, or pump or system failures occur, which cause unprecedented loss of capability to provide water service; or natural or man-made contamination of the water supply source(s).	Assess the severity of the problem, and identify actions needed and time required to solve the problem. If necessary, notify city, county, and/or state emergency response officials for assistance. Undertake necessary actions as needed.

Sam Rayburn/B.A. Steinhagen System (Lower Neches Valley Authority)

The LNVA adopted its most recent drought contingency plan in 2022. The triggers and actions are based on water elevations in the Sam Rayburn Reservoir. These are outlined in Table 7.13 below.

The cities of Beaumont, Groves, Nederland, Nome, Port Athur, Port Neches, and Woodville, as well as Boliver Peninsula SUD, Jefferson County WCID 10, and West Jefferson County MWD purchase water from

the LNVA. In addition, LNVA supplies water from their Sam Rayburn/Steinhagen system to several public water systems and industrial and irrigation users. Recommendations for aligning these DCPs are presented in Section 7.3.3.

Table 7.12 Sam Rayburn/B. A. Steinhagen System Triggers and Potential Actions

Drought Stage	Trigger	Potential Action
Mild	When the water surface elevation in Sam Rayburn Reservoir falls below 153.0 MSL for a continuous period of five (5) days.	Inform customers and news media. Request municipal customers evaluate the need for mandatory water use restrictions. Request industrial customers minimize process water use to the extent feasible and encourage basic water conservation practices among employees. Monitor irrigation field levees, laterals, drains and other water delivery facilities to prevent wasting of water.
Moderate	When the water surface elevation in Sam Rayburn Reservoir falls below 151.5 MSL for a continuous period of five (5) days.	Inform customers and news media. Request its municipal customers initiate mandatory water use restrictions. These restrictions may include prohibited outdoor water use and implementation of applicable conservation measures to minimize indoor uses. Request industrial customers minimize process water use to the extent feasible and encourage basic water conservation practices among employees. Monitor irrigation field levees, laterals, drains and other water delivery facilities to prevent wasting of water. No longer allow keep up streams to be supplied for irrigation customers, and field top-offs will be utilized. No new water sales contracts for low priority customers, such as small water sales, or issue and permits for irrigation and temporary construction.
Severe	When the water surface elevation in Sam Rayburn Reservoir falls below 149.00 MSL for a continuous period of five (5) days.	Inform customers and news media. Direct its municipal customers initiate mandatory water use restrictions. These restrictions may include prohibited outdoor water use and implementation of applicable conservation measures to minimize indoor uses. Direct industrial customers minimize process water use to the extent feasible and encourage basic water conservation practices among employees. All

Drought Stage	Trigger	Potential Action
		interconnects delivering water from the Neches basin to the Devers South will be closed. All interruptible water supplies will be evaluated to determine availability on March 1st of every year. No stored water will be released from the Sam Rayburn Reservoir to provide water for interruptible uses.
Emergency	The LNVA will recognize that an Emergency Water Shortage Condition is in progress upon the failure of a major component of the water supply including the pumps or canals in the LNVA's distribution system, or the contamination of the canals or source water supply which substantially curtails LNVA's ability to supply water to its customers.	Inform customers and depending on extent of area affected, the news media. Notify affected customers and make operational changes as needed until the situation is resolved. Assess the severity of the problem, and identify actions needed and time required to solve the problem. Inform the utility director or other responsible official of each wholesale water customer by telephone or in person and suggest actions, as appropriate, to alleviate problems. If necessary, notify city, county, and/or state emergency response officials for assistance. Undertake necessary actions as needed.

Lake Striker (Angelina Nacogdoches WCID)

The Angelina Nacogdoches WCID adopted its most recent drought contingency plan in 2019 per their website. The triggers and actions are based on water elevations in the lake. These are outlined in Table 7.14 below.

Table 7.13 Lake Striker Triggers and Potential Actions

Drought Stage	Trigger	Potential Action
Mild	When the water level in Lake Striker Reservoir drops to 290.00 annual mean sea level (amsl).	Request that customers implement voluntary conservation measures and Stage 1 of their drought contingency plans (DCP)
Moderate	When the water level in Lake Striker Reservoir drops to 288.00 amsl.	Initiate contact with water customers to discuss water supply and pro rata allocation of water diversion. Request that customers initiate mandatory conservation measures and Stage 2 of their DCPs. May initiate pro rata allocations of

Drought Stage	Trigger	Potential Action
		water diversions for each customer.
Severe	When the water level in Lake Striker Reservoir drops to 286.00 amsl.	Initiate additional pro-rata curtailment of diversions/deliveries. Request that customers initiate additional mandatory conservation measures and Stage 3 of their DCPs.
Emergency	When the water level in Lake Striker Reservoir is at 284.00 amsl.	Initiate additional pro-rata curtailment of diversions/deliveries. Request that customers initiate additional mandatory conservation measures and additional stages of their DCPs.

Toledo Bend Reservoir (Sabine River Authority)

The SRA adopted its most recent drought contingency plan in 2024. The triggers and actions are based on water elevations in the reservoir and downstream flows in the Sabine River. These are outlined in Table 7.14 below.

The cities of Hemphill and Huxley, as well as G M WSC and El Camino WSC purchase water from Toledo Bend through the Sabine River Authority. In addition, SRA currently has contracts to supply water from the Toledo Bend Reservoir to a steam electric power facility in Rusk County, an industrial facility in Orange County, and mining in Panola, Shelby, and Sabine counties. Recommendations for aligning these DCPs are presented in 7.3.3.

Table 7.14 Toledo Bend Reservoir Triggers and Potential Actions

Drought Stage	Trigger	Potential Action
Mild	a) The water surface elevation in Toledo Bend falls to and remains at or below 165.1 feet for fourteen consecutive days, or b) The flow measured by the U.S. Geological Survey (USGS) gage on the Sabine River near Ruliff, Texas falls to and remains at or below the mild conditions flow in Table 10 of the Sabine River Authority of Texas' (SRA) drought contingency plan (DCP) for fourteen consecutive days. The trigger flow at the Ruliff gage depends on the amount of water SRA is contracted to deliver.	Inform customers of drought conditions and advise customers of Toledo Bend Reservoir elevation and river level at USGS gage near Ruliff every business day on SRA website. Request each customer entity to follow its individual measures for mild water shortage conditions. Representatives of SRA and its customers will initiate discussion of the drought condition and its impact on the water supply situation with the news media.
Moderate	a) The water surface elevation in Toledo Bend falls to and remains at or below 162.2 feet for fourteen consecutive days,	Inform customers of drought conditions and advise customers of Toledo Bend Reservoir elevation and river level at USGS

Drought Stage	Trigger	Potential Action
	or b) The flow measured by the USGS gage on the Sabine River near Ruliff, Texas, falls to and remains at or below the moderate conditions flow in Table 10 of the SRA DCP for fourteen consecutive days. The trigger flow at the Ruliff gage depends on the amount of water SRA is contracted to deliver.	gage near Ruliff every business day on SRA website. SRA may curtail water delivered to its customers, if necessary. May request that customers prohibit non-essential outdoor uses, such as lawn irrigation, vehicle washing, filling of swimming pools, or routine maintenance of facilities. Notify TCEQ Executive Director within five business days of implementing any mandatory provisions of DCP.
Severe	a) The water surface elevation in Toledo Bend falls to and remains at or below 156 feet for fourteen consecutive days, or b) The flow measured by the USGS gage on the Sabine River near Ruliff, Texas, falls to the severe conditions flow in Table 10 of the SRA DCP for fourteen consecutive days. The trigger flow at the Ruliff gage depends on the amount of water SRA is contracted to deliver.	Inform customers and news media of drought conditions. Issue situation reports weekly to customers and news media. May call emergency meetings with customers, if necessary. Advise customers of Toledo Bend Reservoir elevation and river level at USGS gage near Ruliff every business day on SRA website. SRA may request that customers prohibit all outdoor water use (except for livestock watering) and initiate measures to reduce indoor water use. SRA may reduce water delivered to its customers, as the situation dictates. Notify TCEQ Executive Director within five business days of implementing any mandatory provisions of DCP.
Emergency	a) There is a major contamination or a major required drawdown of Toledo Bend for emergency repairs of major infrastructure, or b) The failure of a major component of the pumps or canals in the John W. Simmons Gulf Coast Canal System significantly impacts the supply of water to its customers.	Inform customers and news media of conditions. Issue situation reports weekly to customers and news media. May call emergency meetings with customers, if necessary. Advise customers of Toledo Bend Reservoir elevation and river level at USGS gage near Ruliff every business day on SRA website. SRA may reduce water delivery to its customers as the situation dictates. Request that customers prohibit all outdoor water use (except for livestock watering) and initiate measures to reduce indoor water use. Specific to John W. Simmons Gulf Coast Canal System and Early Williams Pump Station, SRA will notify customers and make such operational changes it finds necessary while

Drought Stage	Trigger	Potential Action
		emergency condition exists.

Lake Tyler/Lake Tyler East/Lake Bellwood (Tyler)

Tyler adopted its most recent drought contingency plan in 2024. The triggers and actions are based on water demands, production and storage capacity, and weather conditions. These are outlined in Table 7.15 below.

The Southern Utilities, Walnut Grove WSC, City of Whitehouse, , and Community Water Co. Montgomery Garden purchase water from Tyler. Recommendations for aligning these DCPs are presented in Section 7.3.3.

Table 7.15 Lake Tyler/Lake Tyler East/Lake Bellwood Triggers

Drought Stage	Trigger	Potential Action
Mild	a) Average daily water consumption reaches 85% of production capacity. Production capacity is defined as online capacity in case of failure of a water source. b) Consumption (85%) has existed for a period of three days. c) Weather conditions are considered in drought classification determination. Predicted long, hot or dry periods are to be considered in the impact analysis.	Encourage voluntary reduction of water use of 5%. Contact commercial and industrial users and explain necessity for implementation of the Drought Contingency Plan and initiation of strict conservation methods. Implement corrections to system oversights and make adjustments required to meet changing conditions.
Moderate	a) Lake Tyler storage is less than 60% of conservation storage. b) Average daily water consumption reaches 90% of rated production capacity for a three-day period. Production capacity is defined as online capacity in case of failure or shut down of one or both water treatment plants. c) Weather conditions indicate drought conditions will persist. d) One or more ground storage tanks are taken out of service during mild drought period. e) Storage capacity (water level) is not being maintained during period of 100% rated production	Implement mandatory water conservation measures, including twice-a-week outdoor water use schedule and limited outdoor water use hours. Wholesale water customers during this stage will be required to reduce their average daily demand. The following uses of water are defined as non-essential and are prohibited: wash down of any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas; use of water to wash down buildings or structures for purposes other than immediate fire protection; use of water for dust control; flushing gutters or permitting water to run or accumulate in any gutter or street; and failure to repair a controllable leak(s) within a reasonable period

Drought Stage	Trigger	Potential Action
	period. f) Existence of any one listed condition for a duration of 36 hours.	after having been given notice directing the repair of such leak(s).
Severe	a) Water demand exceeds 98% of production capacity for one (1) day. b) Water demand exceeds the storage tank capacity. c) System demand exceeds available high service pump capacity. d) Any two (2) conditions listed in moderate drought classification occur at the same time for a 24-hour period. e) Water system is contaminated either accidentally or intentionally. Severe condition is reached immediately upon detection. f) Water supply system is unable to deliver water due to failure or damage to major water system components. g) A portion of the water distribution system has a shortage in supply or experiences equipment damage. Measures may be implemented for the portion of the system impacted.	The City Manager will ban the use of water for: Vehicle washing, window washing, and outside watering (lawn, shrub, faucet dripping, garden, etc.). Public water uses which are not essential for health, safety and sanitary purposes. Street washing, fire hydrant flushing, filling of pools, watering of athletic fields and golf courses, and dust control sprinkling. The average daily water consumption will be reduced by 25% or 6.25 MGD. Irrigation of landscaped areas shall be limited to designated watering days between the before 10:00 a.m. and after 6:00 p.m. and shall be by means of hand-held hoses, hand-held buckets, or drip irrigation only. The use of hose end sprinklers or permanently installed automatic sprinkler systems are prohibited at all times.

Surface Water Supplies without Site-Specific Drought Contingency Plans

The ETRWPG did not receive drought contingency plans from suppliers that use water from other lakes that are not discussed in Tables 7.4 through 7.15. Therefore, the ETRWPG recommends drought triggers and response actions based primarily on the water volume stored in the reservoir (Table 7.16). These recommendations are generic in nature, and no site-specific studies have been performed to develop them. They are meant to provide guidance until site-specific drought contingency plans are developed and submitted. Drought response actions in addition to those recommended in Table 7.16 may also be appropriate. Site-specific plans may include other types of triggers, including those related to local water demands and the operation of water supply systems.

Table 7.16 Recommended Triggers and Potential Actions for Lakes Without Site-Specific Drought Contingency Plans

Drought Stage	Trigger	Potential Action
Mild	Water volume stored in the lake drops to 80% of the conservation storage capacity	Increase public education efforts on ways to reduce water use. Encourage reduction of non-essential water use and auditing of irrigation systems. Implement maximum twice per week watering for hose-end sprinklers and automatic irrigation systems. Limit hours of irrigation to reduce evaporative losses. Prohibit water waste, such as operating an irrigation system with broken spray heads or excessive runoff.
Moderate	Water volume stored in the lake drops to 60% of the conservation storage capacity	Continue actions implemented in the previous stage. Initiate engineering studies to evaluate water supply alternatives. Accelerate public education efforts on ways to reduce water use. Eliminate non-essential water use. Implement maximum once per week watering for hose-end sprinklers and automatic irrigation systems.
Severe	Water volume stored in the lake drops to 40% of the conservation storage capacity	Continue actions implemented in the previous stage. Implement water supply alternatives. Increase frequency of media releases explaining water supply conditions. Prohibit outdoor watering with hose-end sprinklers and automatic irrigation systems. Prohibit washing of paved areas or hosing of buildings (exceptions for public health and safety). Limit vehicle washing to commercial car

Drought Stage	Trigger	Potential Action
		washes. Prohibit permitting of new swimming pools. Prohibit operation of ornamental fountains or ponds that use potable water except where necessary to support aquatic life. Initiate measures to reduce indoor water use. Initiate surcharge on excessive water use Establish water allocations for each customer to be used if conditions worsen.
Emergency	a) Water volume stored in the lake drops to 30% of the conservation storage capacity; or b) Major water line breaks or pump or system failures occur; or c) Natural or man-made contamination of the water supply source(s) occurs; d) Water levels have declined to the point where water withdrawal is impeded or equipment could be damaged by normal operation; or e) Other emergency conditions exist	Implement water supply alternatives. Increase frequency of media releases explaining water supply conditions. Increase surcharge on excessive water use. Initiate water allocation by customer.

7.4.2 Drought Trigger Conditions for Run-of-River and Ground Water Supplies

Run-of-river and ground water supplies typically serve many water users over a broad geographical area. Some water providers may have drought contingency plans, while other water users, particularly agricultural or industrial users, may not have drought contingency plans. For these water supplies, the ETRWPG proposes to use the U.S. Drought Monitor for Texas as a trigger for drought response actions. This information is easily accessible through the U.S. Drought Monitor web site and is updated regularly. It does not require monitoring of well water levels or stream gages, and drought triggers can be identified on a local basis. Table 7.17 shows the drought severity classifications adopted by the U.S. Drought Monitor and the associated Palmer Drought Index.

Table 7.17 Drought Severity Classification

Category	Description	Possible Impacts	Palmer Drought Index
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered	-1.0 to -1.9
D1	Moderate Drought	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested	-2.0 to -2.9
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed	-3.0 to -3.9
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions	-4.0 to -4.9
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less

SOURCE: U.S. DROUGHT MONITOR:
HTTPS://DROUGHTMONITOR.UNL.EDU/ABOUT/WHATISTHEUSDM.ASPX

The ETRWPG recommends the following actions based on each of the drought classifications listed above:

- Abnormally Dry – Entities should review the status of supplies and demands to determine if implementation of a DCP stage is necessary.
- Moderate Drought – Entities should review the status of supplies and demands to determine if implementation of a DCP stage is necessary. Other potential actions include voluntary water conservation measures, such as restrictions on lawn watering days and hours, vehicle washing, pool filling, and non-essential water uses.
- Severe Drought – Entities should review the status of supplies and demands to determine if implementation of a DCP stage or changing to a more stringent stage is necessary. Entities should begin considering alternative supplies. Other potential actions include mandatory water conservation measures, such as restrictions on lawn watering days and hours, vehicle washing, pool filling, and non-essential water uses.

- Extreme Drought – Entities should review the status of supplies and demands to determine if implementation of a DCP stage or changing to a more stringent stage is necessary. Entities should begin to plan implementation of alternative supplies and prepare monthly water usage allocations in preparation for water rationing. Other potential actions include additional mandatory water conservation measures, such as more stringent restrictions on lawn watering days and hours, vehicle washing, pool filling, and non-essential water uses.

- Exceptional Drought – Entities should review the status of supplies and demands to determine if implementation of a DCP stage or changing to a more stringent stage is necessary. Entities should implement alternative supplies. Other potential actions include additional mandatory water conservation measures, such as prohibition of outdoor watering and non-essential water uses. If necessary, entities should implement water rationing.

7.5 EXISTING AND POTENTIAL EMERGENCY INTERCONNECTS

Regional water planning requirements include collection of information on existing major water infrastructure facilities that could be used for interconnections with water user groups (WUG) in the event of an emergency shortage of water (§357.42(d)). However, Texas Water Code §16.053(c) requires such information to be confidential and may not be released to the public. Texas Water Development Board guidance on the subject states that the regional water planning group will collect such information confidentially and separately from the 2026 Plan. However, a general description in the plan that does not divulge details such as interconnect locations is acceptable. This section of Chapter 7 provides the required general information regarding the use of interconnections in the region and how they are or may be used as potential drought management measures, the methodology used to collect emergency interconnect information, the methodology for determining potential future emergency interconnects, and a summary of the evaluations performed.

In a region where drought may be more geographically limited, emergency interconnects become an effective tool to mitigate its effects. As emergency interconnects become more common in the region, it may be necessary to encourage the connected communities to coordinate closely on their individual drought planning processes to that when emergency interconnections are utilized, all affected communities are aware of the need and can help facilitate water transfers with a minimum of adverse impact on all parties.

Interconnecting with another water system is a potential drought response measure. The drought contingency plans reviewed in Section 7.3 establish the following interconnection drought response measures.

- Evaluate the potential for interconnecting with other neighboring systems (Stage 1)
- Implement protocols to establish interconnections with other neighboring systems, if appropriate (Stage 2)
- Interconnect with other neighboring systems/implement agreements with adjacent water providers (Stage 3)

Section 7.5 of this chapter discusses the methodology for identifying potential future emergency interconnects and Table 7.21 reports on the 274 potential interconnects identified by this evaluation.

Existing emergency interconnect information was obtained from the Texas Commission on Environmental Quality, Texas Drinking Water Watch available at https://dww2.tceq.texas.gov/DWW/ and by soliciting such information from wholesale water providers regarding their own water distribution systems as well as those of their customers. The ETRWPG found that 23 WUGs have an existing emergency interconnect

with another utility as shown in Table 7.18.

Table 7.18. Emergency Interconnect

WUG	Emergency Interconnect
Angelina WSC	City of Lufkin
Appleby WSC	City of Nacogdoches
Central WCID of Angelina County	City of Lufkin
Craft Turney WSC	City of Jacksonville
D & M WSC	City of Nacogdoches
East Lamar WSC	City of Center
Flat Fork WSC	City of Center
Four Pines WSC	City of Palestine
Four Way SUD	City of Huntington
City of Grapeland	Houston County WCID 1
City of Groves	City of Port Neches
City of Huntington	City of Lufkin
Lilly Grove SUD	City of Nacogdoches
City of Lufkin	Central WCID
M & M WSC	City of Lufkin
Meeker MWD	City of Beaumont
Melrose WSC	City of Nacogdoches
City of Port Neches	City of Nederland
Sand Hills WSC	City of Center
Tyler County SUD	City of Colmesneil
Walston Springs WSC	Slocum WSC
Woden WSC	City of Nacogdoches

7.6 DROUGHT MANAGEMENT WATER MANAGEMENT STRATEGIES

Drought management and emergency response measures are important planning tools for all water suppliers. They are temporary measures that are implemented when certain criteria are met and are terminated when these criteria are no longer met. They are intended to preserve water resources for the most essential uses when water supplies are threatened by extraordinary conditions, such as:

- A multi-year drought,
- An unexpected increase in demand,
- The inability to use a water supply due to a chemical spill or due to invasive species,
- A water supply system component failure, or
- A water management strategy is not fully implemented when it is needed.

The ETRWPG supports implementation of DCPs under appropriate conditions by water providers in order

to prolong the availability of existing water supplies and reduce impacts to water users and local economies. However, drought management and emergency response measures are not a reliable source of additional supplies to meet growing demands. Therefore, drought management measures are not recommended as a water management strategy to provide additional supplies for the ETRWPA.

7.7 EMERGENCY RESPONSES TO LOCAL DROUGHT CONDITIONS OR LOSS OF MUNICIPAL SUPPLY

For all County-Other WUGs and for municipal WUGs with 2020 population less than 7,500 that rely on a sole water source, regional water planning rules require an evaluation of potential emergency response to local drought conditions or temporary loss of existing water supplies.

Of the 146 municipal WUGs with a 2020 Census population of less than 7,500 people, 117 of them rely on a single water source. Of these municipal WUGs, most rely on groundwater (108) and nine purchase surface water from other entities. Figure 7.6 shows the relative distribution of sole water supplies for these municipal WUGs.

The ETRWPG conducted a limited, screening-level review of emergency response options available to the WUGs described in the previous section. The results are to serve as a general indicator of the potential options that might be considered in the event of a local emergency and should be investigated in greater detail by the subject WUG(s) before implementation. For the purposes of this analysis, it is assumed that the emergency response option must provide additional water within 180 days.

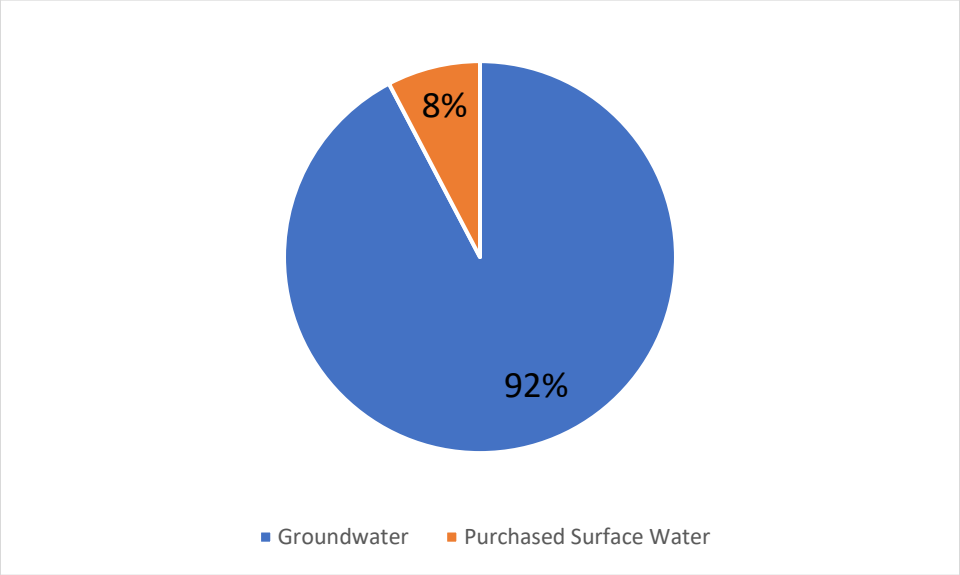


Figure 7.6 Summary of Sole-Source Water Supplies for Municipal Water User Groups with Population Less Than 7,500

Emergency response options considered include:

- Additional local groundwater well(s),
- Use of brackish groundwater,
- Voluntary redistribution,
- Emergency interconnect(s), and
- Trucked-in water.

7.7.1 Additional Local Groundwater Wells

Depending on the emergency, drilling one or more wells may be a potential option for obtaining an emergency water supply. Since virtually the entire region is underlain by water supply aquifers, this is a potential option that each of the subject WUGs should evaluate in more detail.

The required infrastructure would include a new well and additional conveyance facilities. If the subject WUG is located within a Groundwater Conservation District, additional rules may apply.

7.7.2 Brackish Groundwater

Brackish water has total dissolved solids (TDS) concentrations between 1,000 and 10,000 milligrams per liter (mg/L). Brackish groundwater can be obtained from two locations in the ETRWPA: (1) relatively narrow bands of the Carrizo-Wilcox, Queen City, Sparta, and Yegua-Jackson aquifers that cross the middle of the ETRWPA in an east-west orientation and (2) a narrow band of the Gulf Coast aquifer that crosses Jefferson and Orange Counties near the coast in an east-west orientation.[5] Subject WUGs that are located in these bands should evaluate the emergency use of brackish groundwater in more detail (Table 7.19).

The required infrastructure would include a new well into the brackish part of the formation and additional conveyance facilities. Treatment to remove dissolved salts might also be included. However, such treatment is very expensive, and disposal of treatment residuals is often difficult. Therefore, treatment is considered to be a viable component of using brackish groundwater only in extraordinary circumstances.

For brackish groundwater that is at the lower end of elevated TDS concentrations, the brackish water could be blended with existing non-brackish supplies to create an emergency potable supply. As the TDS of a brackish source increases or as fresh water supplies diminish, blending may become less practical. For reasons noted above, brackish groundwater at the higher end of TDS concentrations would likely not be a viable alternative, even for emergency situations.

Table 7.19 Potential Brackish Groundwater Sources for Subject Water User Groups

Subject WUG	Aquifer			
	Carrizo-Wilcox	Gulf Coast	Queen City/ Sparta	Yegua-Jackson
Angelina Water Supply Corporation (WSC)	x		x	
Colmesneil				x
Diboll	x		x	
Four Way Special Utility District	x		x	
Groveton	x			
Hemphill	x		x	
Hudson WSC	x		x	
Lufkin	x		x	
Pineland	x		x	
Tyler County WSC				x
Woodville				x
Angelina County-Other	x		x	
Houston County-Other	x		x	
Jasper County-Other				x
Jefferson County-Other		x		

Subject WUG	Aquifer			
	Carrizo-Wilcox	Gulf Coast	Queen City/ Sparta	Yegua-Jackson
Nacogdoches County-Other	x		x	
Newton County-Other				x
Orange County-Other		x		
Polk County-Other				x
Sabine County-Other	x		x	
San Augustine County-Other	x		x	
Trinity County-Other	x		x	x
Tyler County-Other				x

Brackish groundwater availability, productivity, and production costs are summarized for each aquifer in Table 7.20. In the counties where brackish groundwater is located, availability is moderate to high. The major aquifers (Carrizo-Wilcox and Gulf Coast) have greater productivity than the minor aquifers. The production cost for the Carrizo-Wilcox aquifer is moderate to high, since the depth to the brackish groundwater may be 3,000 to 6,000 feet.

Table 7.20 Summary of East Texas Regional Water Planning Area Potential Emergency

Aquifer	Availability	Productivity	Source Water Production Cost	Primary Counties
Carrizo-Wilcox	High	Moderate	Moderate to High	Houston, Trinity, Angelina, Nacogdoches, San Augustine, Sabine
Queen City/ Sparta	High	Low	Moderate	
Gulf Coast	High	High	Low to Moderate	Jefferson, Orange
Yegua-Jackson	Moderate	Low	Moderate	Trinity, Polk, Tyler, Jasper, Newton

SOURCE: LBG-GUYTON ASSOCIATES IN ASSOCIATION WITH NRS CONSULTING ENGINEERS: BRACKISH GROUNDWATER MANUAL FOR TEXAS REGIONAL WATER PLANNING GROUPS, PREPARED FOR TEXAS WATER DEVELOPMENT BOARD, AUSTIN, FEBRUARY 2003.

7.7.3 Voluntary Redistribution

Another emergency response option for WUGs that already treat surface water is a voluntary redistribution of water from upstream water right holders. This option requires a contract with an upstream entity for water to release from an upstream reservoir for diversion by the subject WUG downstream. For purposes of this evaluation, if a watercourse downstream of a major reservoir flows through or within close proximity to the Certificate of Convenience and Necessity of a subject WUG that treats surface water and has an existing surface water intake, then a release from an upstream reservoir is considered a potential emergency response alternative (Table 7.21). The TCEQ's Water Utilities Map Viewer was used to identify subject WUGs and potential emergency releases from upstream reservoirs.[6]

Required infrastructure may include upgrades to existing intake and conveyance facilities. It has been assumed that WUGs that would use this emergency response option already treat surface water, but improvements to treatment processes may also be necessary. This option would require an agreement with one or more water right holders or their contracts in the upstream reservoir and would require approval of the treatment facilities by the TCEQ. This option would also require a new or amended water

right permit from the TCEQ that authorizes the use of stream bed and banks for conveyance of the water and a new diversion point.

Table 7.21 Potential Supplies from Releases from an Upstream Reservoir for Subject Water User Groups

Subject WUG	Upstream Reservoir	Water Right Holders
Cherokee County-Other	Lake Palestine; Lake Jacksonville; Striker Lake; Lake Tyler; Lake Tyler East	Upper Neches River Municipal Water Authority; Jacksonville; Angelina Nacogdoches WCID 1; Tyler; Tyler
Houston County-Other	Lake Palestine; Lake Jacksonville; Various Region C Reservoirs	Upper Neches River Municipal Water Authority; Jacksonville; Various
Nacogdoches County-Other	Striker Lake; Lake Tyler; Lake Tyler East; Lake Naconiche	Angelina Nacogdoches WCID 1; Tyler; Tyler; County of Nacogdoches
Panola County-Other	Lake Cherokee; Martin Lake; Lake Tawakoni/Lake Fork	Cherokee Water Company; Luminant Generation Company LLC; SRA, North Texas Municipal Water District
San Augustine County-Other	Lake Pinkston; Lake Naconiche; San Augustine City Lake	Center; County of Nacogdoches; San Augustine
Shelby County-Other	Lake Murvaul; Lake Cherokee; Martin Lake; Lake Tawakoni/Lake Fork	Panola County FWSD 1; Cherokee Water Company; Luminant Generation Company LLC; SRA, North Texas Municipal Water District
Trinity County-Other	Lake Palestine; Lake Jacksonville	Upper Neches River Municipal Water Authority; Jacksonville

WCID – water control & improvement district
LNVA – Lower Neches Valley Authority
SRA – Sabine River Authority of Texas

7.7.4 Emergency Interconnect

An emergency interconnect is an alternative for subject WUGs that are located in close proximity to another water provider. For purposes of this evaluation, it is assumed that an emergency interconnect is a potential emergency response option if there is another Certificate of Convenience and Necessity located contiguous to or within proximity to the subject WUG's Certificate of Convenience and Necessity. Potential emergency interconnects are summarized in Table 7.22. Some of these potential emergency interconnects may already be in place. Subject WUGs should investigate further the potential for obtaining potable water through emergency interconnects with neighboring water systems.

Table 7.22 Potential Emergency Interconnect Sources for Subject Water User Groups

Subject WUG	Potential Emergency Interconnects
Alto	Alto Rural WSC
Alto Rural WSC	Alto, Rusk Rural WSC, Rusk, Iron Hill WSC, Lilbert-Looneyville WSC, D & M WSC, Forest WSC
Angelina WSC	Lufkin, Beulah WSC, M & M WSC, Four Way SUD
Appleby WSC	Nacogdoches, Caro WSC, Swift WSC, Libby WSC, Garrison
Arp	Jackson WSC, Wright City WSC,
Beckville	Fairplay WSC, Rock Hill WSC, Hollands Quarter, Riderville WSC

Subject WUG	Potential Emergency Interconnects
Berryville	Frankston Rural WSC, Monarch Utilities I LP
Bethel Ash WSC	Eustace, Quality Water of East Texas, Monarch Utilities I LP, Leagueville WSC, Virginia Hill WSC, Athens, Payne Springs WSC
Bevil Oaks	Water Necessities Inc., Hardin County WCID 1, Lumberton MUD, Meeker MWD
Brownsboro	Leagueville WSC, Edom WSC, Union Hill WSC, Moore Station WSC
Brushy Creek WSC	BBS WSC, Virginia Hill WSC, Poynor Community WSC, Dogwood Springs WSC, Frankston Rural WSC, Norwood WSC, Montalba WSC
Bullard	Southern Utilities, Walnut Grove WSC, North Cherokee WSC
Central WCID Of Angelina County	Woodlawn WSC, Hudson WSC, Pollok Redtown WSC, D & M WSC, Redland WSC, Angelina County FWSD 1, Lufkin
Chalk Hill SUD	New Prospect WSC, Crims Chapel WSC, Elderville WSC, Crystal Farms WSC, Tatum
Chandler	R P M WSC, Chandler Water Company, Three Community WSC, Dean WSC
China	Meeker MWD
Colmesneil	Tyler County WSC, Lakeside Water Supply
Corrigan	Damascus Stryker Water Supply, Moscow WSC
Cross Roads SUD	Kilgore, Elderville WSC, Kennedy Road WSC, Leveretts Chapel WSC, Jacobs WSC
Crystal Systems Texas	Texas Water Systems Inc., Carroll WSC, Lindale Rural WSC, Lindale, Tyler, Southern Utilities
Cushing	Lilbert-Looneyville WSC, Sacul WSC, Caro WSC, South Rusk County WSC
Dean WSC	Southern Utilities, Tyler, R P M WSC, Chandler Water Company, Chandler
Diboll	Prairie Grove WSC, Lufkin
Elderville WSC	Chalk Hill SUD
Elkhart	Slocum WSC, Walston Springs WSC
Four Pines WSC	Palestine, BCY WSC, Tucker WSC, Pleasant Springs WSC, Lone Pine WSC
Four Way SUD	Zavalla, Angelina WSC, Huntington, M & M WSC
Frankston	Frankston Rural WSC,
Garrison	Appleby WSC, Timpson Rural WSC, Arlam Concord WSC
Gill WSC	Marshall, Deadwood WSC, Dewberry WSC, Elysian Fields WSC, Blocker-Crossroads WSC
Groveton	Pennington WSC, Centerville WSC, Woodlake-Josserand WSC, Trinity Rural WSC, Glendale WSC
Hemphill	G M WSC
Hudson WSC	Lufkin, Woodlawn WSC, Central WCID of Angelina County
Jackson WSC	Wright City WSC, Lakeshore Utility Co. Inc., Southern Utilities, Tyler, Star Mountain WSC, Starrville WSC, West Gregg WSC
Jasper County WCID 1	South Jasper County WSC, Cougar Country Water System
Jefferson County WCID 10	Beaumont, Nederland
Joaquin	Deadwood WSC, Paxton WSC,
Kirbyville	Upper Jasper County Water Authority, South Kirbyville Rural WSC
Kountze	West Hardin WSC, Johnson Water Service, Ranchland POA Inc.
Lilly Grove SUD	Nacogdoches, D & M WSC, Lilbert-Looneyville WSC, Caro WSC

Subject WUG	Potential Emergency Interconnects
Lindale	Tyler, Lindale Rural WSC, Crystal Systems Texas
Lufkin	Hudson WSC, Diboll, Woodlawn WSC, Central WCID of Angelina County
Meeker MWD	Beaumont, West Jefferson County MWD, China, Bevil Oaks, Lumberton MUD
Melrose WSC	Nacogdoches, Woden WSC, Swift WSC, New WSC, Denning WSC
Murchison	Bethel Ash WSC, Leagueville WSC
New London	Overton, Wright City WSC, Gaston WSC, Pleasant Hill WSC, Jacobs WSC
Silsbee	North Hardin WSC, Johnson Water Service, Lumberton MUD
Sour Lake	Hardin County WCID 1, Water Necessities Inc.
South Newton WSC	Orange, Mauriceville SUD
Southern Utilities	Algonquin Water Resources, Tyler, Dean WSC, Jackson WSC, Lakeshore Utility Co. Inc., Wright City WSC, Walnut Grove WSC
Swift WSC	Melrose WSC, Nacogdoches, Woden WSC, Appleby WSC, Libby WSC, Sand Hills WSC
Tatum	Crystal Farms WSC, Chalk Hill SUD, Rock Hill WSC
Tenaha	Tennessee WSC, Paxton WSC, Flat Fork WSC, Buena Vista WSC
Timpson	Timpson Rural WSC, Tennessee WSC, Buena Vista WSC,
Troup	Blackjack WSC, Wright City WSC,
Tyler County WSC	North Hardin WSC, Colmesneil, Warren WSC, Monarch Utilities I LP, Seneca WSC, Woodville, Chester WSC, Upper Jasper County Water Authority
Virginia Hill WSC	Aqua Texas Inc., Brushy Creek WSC, Athens, Double Diamond Utilities Co, Leagueville WSC, Bethel Ash WSC, Moore Station WSC, Poynor Community WSC
Walston Springs WSC	Slocum WSC, Anderson County Cedar Creek WSC, Pleasant Springs WSC, Neches WSC, Palestine
Wells	Pollok Redtown WSC, Forest WSC
West Gregg SUD	Kilgore, Jackson WSC, Starrville WSC, Liberty City WSC, Southern Utilities
West Hardin WSC	Hardin WSC, Lake Livingston Water Supply and Sewer Service Company, Johnson Water Service
Woden WSC	Nacogdoches, Melrose, WSC, Swift WSC, D & M WSC
Woodville	Cypress Creek WSC, Doucette Water System, Tyler County WSC,
Wright City WSC	Southern Utilities, Jackson WSC, Price WSC, New Concord WSC, Blackjack WSC, Troup
Zavalla	Four Way SUD, Raylake WSC

WSC - water supply corporation
WCID - water control & improvements district
MUD - municipal utility district
MWD - municipal water district

Potential emergency interconnects were not identified for County-Other WUGs. In a given county, the County-Other WUG may represent many small utilities, and an emergency interconnect that may be a feasible emergency source for one of these utilities may not be a feasible source for another. Therefore, an extensive list of potential emergency interconnects in each county will not be sufficiently “local” to assist an individual utility that is a component of the County-Other WUG. Utilities that are not named in Table 7.22, should consult local maps/data to identify nearby utilities that may be potential emergency interconnect supplies.

Required infrastructure would include piping and valving necessary to connect the systems. If the relative system pressures are not appropriate for the proposed connection, additional pressurization and/or conveyance facilities may be needed. This option would require an agreement with one or more neighboring utilities. Construction would require authorization from the TCEQ.

7.7.5 Trucked-In Water

Trucked-in water is considered to be an emergency response option for every subject WUG. Although this would likely require little infrastructure, it would require agreements with a treated water provider and a water transporter.

Findings for the subject WUGs and the County-Other WUGs are briefly summarized in Table 7.23.

Table 7.23 Summary of Potential Emergency Supplies for Subject Water User Groups

Entity		Potential Emergency Water Supply Source(s)					
Water User Group Name	County (a)	Local groundwater well	Brackish groundwater	Other named local supply	Release from upstream reservoir	Emergency interconnect	Trucked-in water
Alto	Cherokee	X				X	X
Alto Rural WSC	Cherokee	X		X	X	X	X
Anderson County Cedar Creek WSC	Anderson	X					X
Angelina WSC	Angelina	X	X	X		X	X
Arp	Smith	X		X		X	X
B B S WSC	Henderson, Anderson	X					X
B C Y WSC	Anderson	X					X
Beckville	Panola	X				X	X
Berryville	Anderson, Henderson	X		X		X	X
Bethel Ash WSC	Henderson	X		X		X	X
Bevil Oaks	Jefferson	X		X		X	X
Blackjack WSC	Cherokee	X					X
Bon Wier WSC	Newton	X					X
Brownsboro	Henderson	X				X	X
Brushy Creek WSC	Henderson	X		X		X	X
Caro WSC	Nacogdoches	X					X
Centerville WSC	Trinity	X					X
Central WCID Of Angelina County	Angelina	X		X		X	X
Chalk Hill SUD	Gregg, Rusk	X		X		X	X
Chandler	Henderson	X		X		X	X
Chester WSC	Polk, Tyler	X					X
China	Jefferson	X		X	X	X	X
Choice WSC	San Augustine, Shelby	X					X

Entity		Potential Emergency Water Supply Source(s)					
Water User Group Name	County (a)	Local groundwater well	Brackish groundwater	Other named local supply	Release from upstream reservoir	Emergency interconnect	Trucked-in water
Colmesneil	Tyler	X	X	X		X	X
Corrigan	Polk	X				X	X
Crystal Farms WSC	Rusk	X					X
Cushing	Nacogdoches	X		X		X	X
Cypress Creek WSC	Tyler	X					X
Damascus-Stryker WSC	Polk	X					X
Dean WSC	Smith	X		X		X	X
Deberry WSC	Panola	X					X
Denning WSC	San Augustine	X					X
East Lamar WSC	Shelby	X				X	X
Ebenezer WSC	Rusk	X					X
Elkhart	Anderson	X		X		X	X
Emerald Bay Mud	Smith	X		X			X
Etoile WSC	Nacogdoches	X		X			X
Federal Correctional Complex Beaumont	Jefferson	X					X
Five Way WSC	Shelby	X					X
Flat Fork WSC	Shelby	X				X	X
Four Pines WSC	Anderson	X		X		X	X
Four Way SUD	Angelina	X	X	X		X	X
Frankston	Anderson, Henderson	X		X		X	X
Frankston Rural WSC	Anderson	X				X	X
Garrison	Nacogdoches, Rusk	X		X		X	X
Gaston WSC	Rusk	X					X
Goodsprings WSC	Rusk	X					X
Hardin County WCID 1	Hardin	X					X
Hemphill	Sabine	X	X	X		X	X
Huxley	Shelby	X					X
Jackson WSC	Smith	X		X		X	X
Jacobs WSC	Rusk	X					X
Jasper County WCID 1	Jasper	X				X	X
Jefferson County WCID 10	Jefferson	X		X	X	X	X
Joaquin	Shelby	X		X	X	X	X
Kelly G Brewer	Orange	X					X
Kirbyville	Jasper	X				X	X
Kountze	Hardin	X				X	X
Leagueville WSC	Henderson	X					X

Entity		Potential Emergency Water Supply Source(s)					
Water User Group Name	County (a)	Local groundwater well	Brackish groundwater	Other named local supply	Release from upstream reservoir	Emergency interconnect	Trucked-in water
Lilly Grove SUD	Nacogdoches	X				X	X
M & M WSC	Angelina	X		X		X	X
Mcclelland WSC	Shelby	X					X
Minden Brachfield WSC	Panola, Rusk	X					X
Moore Station WSC	Henderson	X		X			X
Moscow WSC	Polk, Tyler	X					X
Mt Enterprise WSC	Rusk	X					X
Murchison	Henderson	X		X		X	X
Neches WSC	Anderson	X					X
New London	Rusk	X		X		X	X
New Prospect WSC	Rusk	X					X
New Summerfield	Cherokee	X				X	X
New WSC	Sabine, Shelby	X		X			X
Newton	Newton	X				X	X
Nome	Jefferson	X					X
North Hardin WSC	Hardin	X		X	X	X	X
Norwood WSC	Anderson	X					X
Orange County WCID 2	Orange	X		X		X	X
Orangefield WSC	Orange	X				X	X
Overton	Smith	X		X		X	X
Pennington WSC	Trinity	X					X
Pinehurst	Orange	X		X		X	X
Pineland	Sabine	X	X	X		X	X
Pollok-Redtown WSC	Angelina, Cherokee	X					X
Rayburn Country Mud	Jasper	X		X			X
Redland WSC	Angelina	X					X
Rehobeth WSC	Panola	X					X
Rural WSC	Jasper	X		X			X
Rusk Rural WSC	Cherokee	X					X
San Augustine	San Augustine	X				X	X
San Augustine Rural WSC	San Augustine	X		X			X
Seneca WSC	Tyler	X					X
Silsbee	Hardin	X		X	X	X	X
Slocum WSC	Anderson	X					X
Sour Lake	Hardin	X		X		X	X
South Jasper County WSC	Jasper	X					X
South Kirbyville Rural WSC	Jasper, Newton	X					X

Entity		Potential Emergency Water Supply Source(s)					
Water User Group Name	County (a)	Local groundwater well	Brackish groundwater	Other named local supply	Release from upstream reservoir	Emergency interconnect	Trucked-in water
South Newton WSC	Newton, Orange	X		X	X	X	X
South Rusk County WSC	Cherokee, Rusk	X		X			X
Swift WSC	Nacogdoches	X		X	X	X	X
Tatum	Panola, Rusk	X		X	X	X	X
Tdcj Beto Gurney & Powledge Units	Anderson	X					X
Tdcj Coffield Michael	Anderson	X					X
Tdcj Eastham Unit	Houston	X					X
Tenaha	Shelby	X		X		X	X
Timpson	Shelby	X		X		X	X
Troup	Cherokee, Smith	X		X	X	X	X
Tucker WSC	Anderson	X					X
Tyler County SUD	Tyler	X		X		X	X
Walston Springs WSC	Anderson	X		X	X	X	X
Warren WSC	Tyler	X					X
Wells	Cherokee	X				X	X
West Hardin WSC	Liberty, Hardin	X		X		X	X
West Jacksonville WSC	Cherokee	X					X
Wildwood POA	Hardin, Tyler	X					X
Woodlawn WSC	Angelina	X					X
Wright City WSC	Cherokee, Smith	X		X		X	X
Zavalla	Angelina	X		X		X	X
Anderson County-Other	Anderson	x		n/a[b]	x	n/a	x
Angelina County-Other	Angelina	x	x	n/a	x	n/a	x
Cherokee County-Other	Cherokee	x		n/a	x	n/a	x
Hardin County-Other	Hardin	x		n/a		n/a	x
Henderson County-Other	Henderson	x		n/a	x	n/a	x
Houston County-Other	Houston	x	x	n/a	x	n/a	x
Jasper County-Other	Jasper	x	x	n/a	x	n/a	x
Jefferson County-Other	Jefferson	x	x	n/a		n/a	x
Nacogdoches County-Other	Nacogdoches	x	x	n/a	x	n/a	x
Newton County-Other	Newton	x	x	n/a	x	n/a	x
Orange County-Other	Orange	x	x	n/a	x	n/a	x
Panola County-Other	Panola	x		n/a	x	n/a	x
Polk County-Other	Polk	x	x	n/a		n/a	x
Rusk County-Other	Rusk	x		n/a	x	n/a	x
Sabine County-Other	Sabine	x	x	n/a		n/a	x

Entity		Potential Emergency Water Supply Source(s)					
Water User Group Name	County (a)	Local groundwater well	Brackish groundwater	Other named local supply	Release from upstream reservoir	Emergency interconnect	Trucked-in water
San Augustine County-Other	San Augustine	x	x	n/a	x	n/a	x
Shelby County-Other	Shelby	x		n/a	x	n/a	x
Smith County-Other	Smith	x		n/a		n/a	x
Trinity County-Other	Trinity	x	x	n/a	x	n/a	x
Tyler County-Other	Tyler	x	x	n/a	x	n/a	x

Note:

[a] A WUG might be located in more than one county.

[b] "n/a" indicates that this potential emergency water supply was not evaluated for a given WUG. Additional discussion is provided in Section 7.4.

7.8 OTHER DROUGHT RELATED CONSIDERATIONS AND RECOMMENDATIONS

This section discusses other drought-related considerations and recommendations.

7.8.1 Drought Preparedness Council

Title 31 of the Texas Administrative Code, §357.42(h), requires each regional water planning group to consider recommendations from the Drought Preparedness Council. On February 8, 2024, the Drought Preparedness Council provided the ETRWPG with a letter with the following three recommendations:

- "The regional water plans and state water plan shall serve as water supply plans under drought of record conditions. The DPC encourages regional water planning groups to consider planning for drought conditions worse than the drought of record, including scenarios that reflect greater rainfall deficits and/or higher surface temperatures."
    - Region I Response: Region I has utilized the Chapter 7 template provided by TWDB staff and has addressed the requirements related to a DWDOR, as shown in Section 7.2.
- "The Drought Preparedness Council encourages regional water planning groups to incorporate projected future reservoir evaporation rates in their assessments of future surface water availability."
    - Region I Response: While it is possible to quantitatively assess a range of input variables including hydrology worse than the drought of record, the existing regional water planning framework does not support evaluating a range of possible futures (e.g., future evaporation rates) for the 2026 regional water plans. However, the 2026 ETRWP accounts for several conservative assumptions to plan for and mitigate against potential droughts worse than the drought of record, as discussed in Section 7.2. For example, the RWP evaluates needs and strategies based on high use, dry-year water demand projections and water supply availability based on historical drought-of-record conditions. Furthermore, management supply factors above one, supply diversification, regionalization, and drought contingency response measures are all part of the region's

efforts to plan for droughts worse than the drought of record.

- "The Drought Preparedness Council encourages regional water planning groups to identify in their plans utilities within their boundaries that reported having less than 180 days of available water supply to the Texas Commission on Environmental Quality during the current or preceding planning cycle. For systems that appeared on the 180-day list, RWPGs should perform the evaluation required by Texas Administrative Code Section 357.42(g), if it has not already been completed for that system."
    - Region I Response: Region I has utilized the Chapter 7 template provided by TWDB staff and has addressed the requirements consistent TAC §357.42(g), as shown in Section 7.7.

7.9 REGION-SPECIFIC MODEL DROUGHT CONTINGENCY PLANS

Model DCPs for use by WUGs in the ETRWPA are provided on the planning group's website at www.etexwaterplan.org. Model DCPs were developed for a Public Water Supplier (municipal water use), Irrigation District (irrigation water use), and Manufacturer (manufacturing water use).

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